

Document ref: C-02035-CALA-M1-LR-003

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TW18 3AX

8 October 2019

Parcel M1, Princess Royal Barracks, Deepcut, Surrey - Validation of clean Cover System in garden areas

Dear Adam,

We are writing to provide a summary of the validation of the clean Cover System implemented in the garden areas of Parcel M1 at Princess Royal Barracks, Deepcut, Surrey. This report details the works undertaken to date.

## 1. INTRODUCTION

Hydrock Consultants Limited was commissioned by CALA Homes (Thames) Ltd to undertake validation of the clean Cover System implemented across private gardens in the residential development at Parcel M1 of the above-mentioned site.

A site plan showing the proposed development layout is provided by Ashby Design Limited (00263-ASH-XX-TA-SP-3000\_T1) and presented in the appendix.

## 2. GARDEN VALIDATION

Validation works were carried out to confirm a minimum engineered capping thickness of 600mm was placed in the gardens (Cover System). As agreed with the Local Authority (Surrey Heath Borough Council) at least 150mm of soils within the Cover System should comprise topsoil over a minimum of 450mm subsoil. Where Made Ground is identified below the 600mm engineered capping material a geotextile membrane should be present to separate the materials. It is noted that the Local Authority have stipulated that no "man-made materials" should be present within the Cover System (e.g. brick, crushed concrete, glass etc). The minimum testing ratio at the site has been agreed as 40% of plots to be tested.

The Cover System was derived from site-won soils. The soils were tested prior to initial excavation, screened and tested again after placement in gardens.

The validation works were carried out in accordance with Hydrock's Remediation Method Statement (report ref: C14817-0019).

## 2.1 Site inspections

The site was visited to complete a plot inspection as detailed in Table 1.0 below. Hydrock will continue to visit the site when plots are ready for inspection as informed by CALA.

Table 1.0: Summary of site inspections for garden validation works

Date of inspection	Plots inspected
23/08/2019	26, 28, 70 & 71
19/09/2019	67 & 69

A series of hand excavated trial pits were undertaken to a minimum depth of 0.6m in the rear garden areas of the plots to assess installation of the Cover System and inspect topsoil and subsoil materials present. Photographic records are presented in the Appendix.

Representative soil samples were obtained and scheduled for laboratory testing which incorporated a comprehensive soils suite. Laboratory test results are presented in the Appendix.

## 2.2 Soils Assessment

Laboratory results were compared to soil screening values for the residential with plant uptake land use scenario. The soil screening values used are generic assessment criteria (GAC). The Category 4 Screening Levels (C4SL) have been used for Benzo(a) Pyrene (5mg/kg) as agreed with the Local Authority. Statistical testing is used where data sets are suitable.

The results of the assessment are summarised below and screening tables are presented in the Appendix.

### 2.2.1 Topsoil results

From the comparison of topsoil test results against the relevant GAC's, the following comments apply:

- The screening exercise confirmed that topsoil samples obtained from the tested plots were not in exceedance of the relevant GAC's and deemed suitable for use.
- No asbestos was identified within the topsoil materials.
- A minimum of 150mm of topsoil was present, no significant "man-made materials" were encountered.

### 2.2.2 Subsoil results

From the comparison of subsoil test results against the relevant GAC's, the following comments apply:

- The screening exercise confirmed that subsoil samples obtained from the tested plots were not in exceedance of the relevant GAC's and deemed suitable for use.
- No asbestos was identified within the subsoil materials.
- A minimum of 450mm subsoil was present, no significant "man-made materials" were encountered.
- A geotextile membrane was encountered at 0.6m bgl within plots 28, 70 and 71. A geotextile membrane was not noted within the remaining plots, where subsoil materials were noted to extend to depths greater than 0.6m bgl.

### 3. Conclusions

Based on the remediation and verification works undertaken, the results of the plot inspections are outlined in Table 2.0 below. Those noted as "pass" are considered suitable for use and no further remedial works are required. Those noted as "fail" are subject to further remediation.

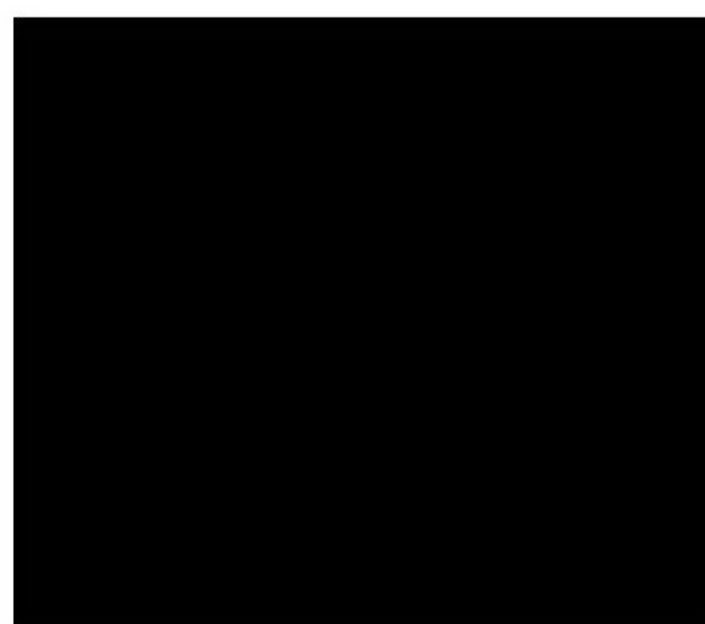
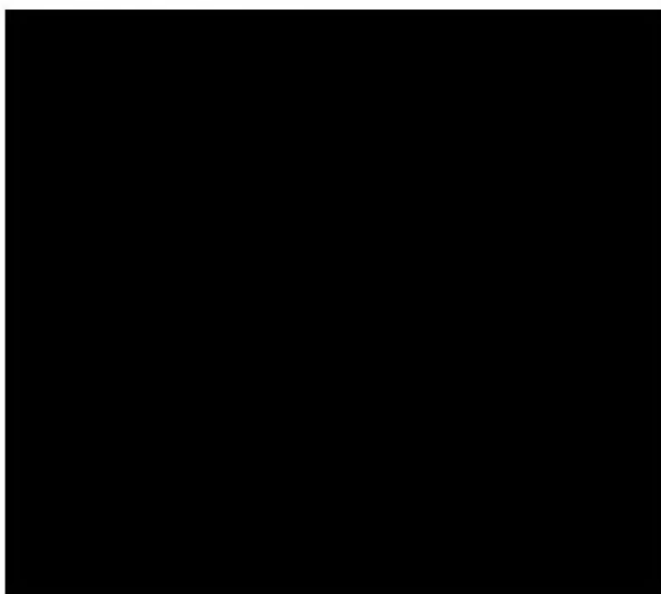
*Table 2.0: Summary of site inspections for garden validation works*

Plots Inspected	Recommendation	Notes
26	Pass	N/A
28	Pass	N/A
67	Pass	N/A
69	Pass	N/A
70	Pass	N/A
71	Pass	N/A

It is recommended that this summary report be passed to the relevant regulators (Local Authority and NHBC) for review.

Should you have any queries, please do not hesitate to contact the undersigned.

Yours faithfully



### Appendices

*Appendix A – Drawings*

*Appendix B – Site Visit Records*

*Appendix C – Laboratory Results/ Testing Certificates*

*Appendix D – Screening Tables*

Appendix A

Drawings

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GENERAL KEY	
	CARRIAGEWAY - IMPERMEABLE BLOCKWORK (PAVEMENT TYPE B)
	PRIVATE DRIVE - BLOCK PAVING (PAVING TYPE A)
	PAVING - PERMEABLE BLOCKWORK (PAVEMENT TYPE E)
	PRIVATE FOOTPATH - INDIAN SANDSTONE (PAVEMENT TYPE C)
	ROAD - TARMAC (PAVEMENT TYPE D)
	PATIOS
	TARMAC FOOTPATH
	VEHICLE CROSSOVER
	SITE BOUNDARY
	BOUNDARY WALL - 1.8M HIGH WITH PIERS
	RETAINING WALL
	EXPOSED BRICK
	STEP BETWEEN FINISHED FLOOR LEVELS
	PARKING BAY
	VISIBILITY SPLAYS (2m x 2m)
	PROPOSED NEW TREE (TBC BY LANDSCAPE ARCHITECT)
	EXISTING TREE TO BE REMOVED (TBC BY LANDSCAPE ARCHITECT)
	DOOR ENTRANCE (LEVEL THRESHOLD)
	REFUSE
	CYCLE STORE

DRAWINGS TO BE READ IN CONJUNCTION WITH ENGINEERS' & LANDSCAPE ARCHITECTS UP TO DATE DRAWINGS & SPECIFICATION

T1 External works, Est. Steps, Exposed Bricks and Retaining walls shown in correspondence to the Engineer's latest drawings. Patios, Ben and Cycle Stores added as per Client's e-mail dated 19.02.18.  
A Drawing status updated to Tender.



**BRUNSWICK ROAD**

**ROAD**

**Police Houses**

**Telephone Exchange**

Footpath link between M1 and M2 indicative only



**KEY**

- Sample Location
- Plot covered by validation

**NOTES**

- All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.
- This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.
- This drawing has been based on the following drawings and information:  
Topographic survey provided by Skanska Construction UK Limited on Sept 2016. Drawing Ref. DC1-SMS-EU-101-00-DR-05-T001 22/12/15
- Land use boundaries taken from JTP Drawing no: 00752\_SK030 Rev M 03/08/17.
- Layout based on unreferenced drawing supplied by the Client.

P3			
SAMPLE LOCATIONS ADDED	SD	07/10/19	JB
		07/10/19	
P2			
SAMPLE LOCATIONS UPDATED	SD	20/08/19	JB
		20/08/19	
P1			
FIRST ISSUE	SD	18/07/19	AJ
		18/07/19	
REV.			
REVISION NOTES/COMMENTS	DRAWN BY	DATE	CHECKED BY
		DATE	APPROVED BY
		DATE	

CLIENT <b>CALA Homes (Thames)</b>	
PROJECT <b>PRINCESS ROYAL BARRACKS, DEEPCUT</b>	

TITLE <b>SAMPLE LOCATION PLAN (PARCEL M1)</b>	
HYDROCK PROJECT NO. <b>C-02035-C</b>	SCALE @ A3
PURPOSE OF ISSUE <b>SUITABLE FOR CO-ORDINATION</b>	STATUS <b>S1</b>
DRAWING NO. (PROJECT CODE-ORIGINATOR_ZONE-LEVEL-TYPE-ROLE-NUMBER) <b>02035-HYD-XX-ZZ-DR-GE-1001</b>	REVISION <b>P3</b>

Over Court Barrs Over Lane Almondsbury, Bristol BS32 4DF TEL: 01454 619 533 FAX: 01454 614 125 E-Mail: bristol@hydrock.com or visit www.hydrock.com	
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Appendix B

Site Visit Records

SITE VISIT RECORD 004		SHEET NO: 1 of 3
Project: Princess Royal Barrack, Deepcut, Surrey		Date of Visit: 23.08.2019
Client: CALA Homes (Thames) Ltd	Weather Conditions: Sunny, cloudy, dry	
Contract No.: C-02035-C		
Visit Carried Out By: Jane Baird		
Present: Hydrock Consultants		

Summary of Work Activities:
Validation sampling of garden plots 26, 28, 70 & 71

Comments/Discussions:
<p>Geology descriptions of hand excavated pits comprised:</p> <p><b>Plot 26</b></p> <p>Ground level to 0.3m bgl comprised topsoil of dark greyish brown sandy slightly gravelly silt with roots and rootlets. Sand was fine to medium grained. Gravel was flint. Between 0.3m and 0.6m was dark greyish brown sandy slightly gravelly silt. Gravel was flint. Geotextile membrane was not encountered.</p> <p><b>Plot 28</b></p> <p>Ground level to 0.3m bgl comprised topsoil of dark greyish brown sandy slightly gravelly silt with roots and rootlets. Sand was fine to medium grained. Gravel was flint. Between 0.3m and 0.6m was dark greyish brown sandy slightly gravelly silt. Gravel was flint. Geotextile membrane (black colour) was present at 0.6m.</p> <p><b>Plot 70</b></p> <p>Ground level to 0.3m bgl comprised topsoil of dark greyish brown sandy slightly gravelly silt with roots and rootlets. Sand was fine to medium grained. Gravel was flint. Between 0.3m and 0.6m was dark greyish brown sandy slightly gravelly silt. Gravel was flint. Geotextile membrane (black colour) was present at 0.6m.</p> <p><b>Plot 71</b></p> <p>Ground level to 0.3m bgl comprised topsoil of dark greyish brown sandy slightly gravelly silt with roots and rootlets. Sand was fine to medium grained. Gravel was flint. Between 0.3m and 0.6m was dark greyish brown sandy slightly gravelly silt. Gravel was flint. Geotextile membrane (black colour) was present at 0.6m.</p>



**SITE INSPECTION REPORT 004**

**SHEET NO: 2 of 3**



Plot 26 hand excavated pit



Plot 28 hand excavated pit

**SITE INSPECTION REPORT 004**

**SHEET NO: 3 of 3**



Plot 70 hand excavated pit



Plot 71 hand excavated pit

SITE VISIT RECORD 005		SHEET NO: 1 of 2
Project: Princess Royal Barrack, Deepcut, Surrey		Date of Visit: 19.09.2019
Client: CALA Homes (Thames) Ltd	Weather Conditions: Sunny, dry	
Contract No.: C-02035-C		
Visit Carried Out By: Jane Baird		
Present: Hydrock Consultants		

Summary of Work Activities:
Validation sampling of garden plots 67 & 69

Comments/Discussions:
<p>Geology descriptions of hand excavated pits comprised:</p> <p><b>Plot 67</b></p> <p>Ground level to 0.3m bgl comprised topsoil of dark greyish brown sandy slightly gravelly silt with roots and rootlets. Sand was fine to medium grained. Gravel was flint. Between 0.3m and 0.6m was dark greyish brown sandy slightly gravelly silt. Gravel was flint. Geotextile membrane was not encountered.</p> <p><b>Plot 69</b></p> <p>Ground level to 0.3m bgl comprised topsoil of dark greyish brown sandy slightly gravelly silt with roots and rootlets. Sand was fine to medium grained. Gravel was flint. Between 0.3m and 0.6m was dark greyish brown sandy slightly gravelly silt. Gravel was flint. Geotextile membrane was not encountered.</p>

**SITE INSPECTION REPORT 005**

**SHEET NO: 2 of 2**



Plot 67 hand excavated pit



Plot 69 hand excavated pit

## Appendix C

### Laboratory Results/ Testing Certificates



**Jane Baird**  
Hydrock Consultants Ltd  
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Southampton  
Hampshire  
SO15 2NP

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

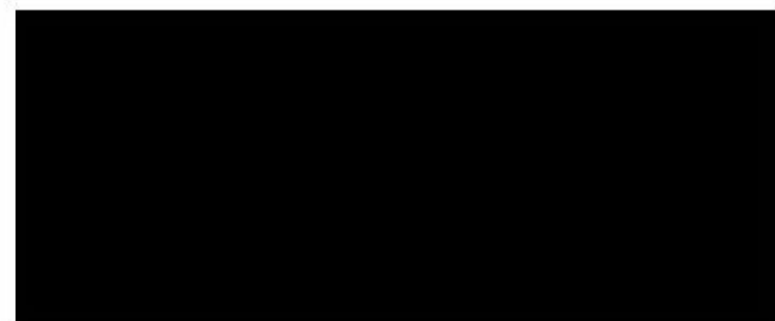
**e:** JaneBaird@hydrock.com

**t:** 01923 225404  
**f:** 01923 237404  
**e:** reception@i2analytical.com

## **Analytical Report Number : 19-56478-D**

Replaces Analytical Report Number : 19-56478, issue no. 5

<b>Project / Site name:</b>	Deepcut	<b>Samples received on:</b>	27/08/2019
<b>Your job number:</b>	C-02035-C	<b>Samples instructed on:</b>	27/08/2019
<b>Your order number:</b>	POP031650	<b>Analysis completed by:</b>	30/09/2019
<b>Report Issue Number:</b>	6	<b>Report issued on:</b>	07/10/2019
<b>Samples Analysed:</b>	8 soil samples		



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 19-56478-6D Deepcut C-02035-C

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

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Environmental Science

Analytical Report Number: 19-56478-D

Project / Site name: Deepcut

Your Order No: POP031650

Lab Sample Number	1300874	1300876	1300877	1300878	1300879			
Sample Reference	Plot 26	Plot 28	Plot 70	Plot 71	Plot 26			
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied			
Depth (m)	0.10	0.10	0.10	0.10	0.40			
Date Sampled	23/08/2019	23/08/2019	23/08/2019	23/08/2019	23/08/2019			
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	17	8.6	6.2	< 0.1
Moisture Content	%	N/A	NONE	14	12	12	14	16
Total mass of sample received	kg	0.001	NONE	1.2	1.2	1.2	1.1	1.1

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
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**General Inorganics**

pH - Automated	pH Units	N/A	MCERTS	6.2	6.7	6.5	7.1	6.6
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.071	0.13	0.16	0.15	0.15
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	0.037	0.026	0.029	0.028	0.033

**Total Phenols**

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
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**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	0.38
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	2.3	2.5	1.6	1.7	2.2
Anthracene	mg/kg	0.05	MCERTS	0.35	0.47	0.37	0.29	0.55
Fluoranthene	mg/kg	0.05	MCERTS	3.9	4.3	3.8	4.0	4.5
Pyrene	mg/kg	0.05	MCERTS	3.5	3.8	3.3	3.6	4.0
Benzo(a)anthracene	mg/kg	0.05	MCERTS	2.2	2.7	1.9	2.4	2.4
Chrysene	mg/kg	0.05	MCERTS	2.1	2.3	1.9	2.0	2.2
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	2.5	3.6	2.1	2.8	2.7
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	1.2	1.6	1.2	1.2	1.2
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.4	3.3	2.0	2.4	2.4
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.4	1.3	1.2	1.4	1.2
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.39	0.32	0.36	0.40
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.5	1.6	1.4	1.6	1.5

**Total PAH**

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	23.4	27.8	21.0	23.7	25.5
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**Heavy Metals / Metalloids**

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11	7.1	5.8	4.0	8.0
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.86	0.39	0.31	0.38	0.31
Boron (water soluble)	mg/kg	0.2	MCERTS	< 0.2	0.5	0.3	0.4	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	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	25	14	13	14	11
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	26	15	13	14	11
Copper (aqua regia extractable)	mg/kg	1	MCERTS	53	17	18	18	17
Lead (aqua regia extractable)	mg/kg	1	MCERTS	59	56	55	51	58
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	0.5	0.5
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	16	8.0	8.6	8.2	6.1
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	2.3	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	35	20	20	21	14
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	55	65	58	60

Iss No 19-56478-6D Deepcut C-02035-C

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

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Analytical Report Number: 19-56478-D

Project / Site name: Deepcut

Your Order No: POP031650

Lab Sample Number	1300881	1300882	1300883			
Sample Reference	Plot 28	Plot 70	Plot 71			
Sample Number	None Supplied	None Supplied	None Supplied			
Depth (m)	0.50	0.40	0.40			
Date Sampled	23/08/2019	23/08/2019	23/08/2019			
Time Taken	None Supplied	None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			
Stone Content	%	0.1	NONE	7.0	8.7	< 0.1
Moisture Content	%	N/A	NONE	11	12	12
Total mass of sample received	kg	0.001	NONE	1.1	1.1	1.1

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

**General Inorganics**

pH - Automated	pH Units	N/A	MCERTS	7.7	7.2	7.0
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.34	0.42	0.57
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	0.016	0.028	0.023

**Total Phenols**

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

**Speciated PAHs**

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.42	0.96	0.85
Anthracene	mg/kg	0.05	MCERTS	0.13	0.22	0.19
Fluoranthene	mg/kg	0.05	MCERTS	1.1	2.8	2.7
Pyrene	mg/kg	0.05	MCERTS	1.1	2.5	2.5
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.89	1.8	1.5
Chrysene	mg/kg	0.05	MCERTS	0.58	1.2	1.6
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.83	1.9	1.9
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.61	0.81	0.83
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.87	1.6	1.7
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.49	0.92	0.93
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.28	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.59	1.2	1.2

**Total PAH**

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	7.63	16.1	15.7

**Heavy Metals / Metalloids**

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	5.7	9.4	6.0
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.35	0.34	0.33
Boron (water soluble)	mg/kg	0.2	MCERTS	0.5	0.7	0.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	14	11	12
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	15	12	12
Copper (aqua regia extractable)	mg/kg	1	MCERTS	18	18	17
Lead (aqua regia extractable)	mg/kg	1	MCERTS	31	46	36
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	7.3	6.5	8.1
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	18	18	23
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	48	44	43





**Analytical Report Number : 19-56478-D**

**Project / Site name: Deepcut**

\* 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 topsoil/loam 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 *
1300874	Plot 26	None Supplied	0.10	Brown loam and sand with gravel.
1300876	Plot 28	None Supplied	0.10	Brown loam and sand with stones and vegetation.
1300877	Plot 70	None Supplied	0.10	Brown loam and sand with stones and vegetation.
1300878	Plot 71	None Supplied	0.10	Brown loam and clay with stones and vegetation.
1300879	Plot 26	None Supplied	0.40	Brown loam and sand with gravel and vegetation.
1300881	Plot 28	None Supplied	0.50	Brown loam and clay with stones and vegetation.
1300882	Plot 70	None Supplied	0.40	Brown loam and sand with stones.
1300883	Plot 71	None Supplied	0.40	Brown loam and sand with gravel and vegetation.

Analytical Report Number : 19-56478-D

Project / Site name: Deepcut

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
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
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
Free cyanide in soil	Determination of free 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
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.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical 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
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

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 30°C.



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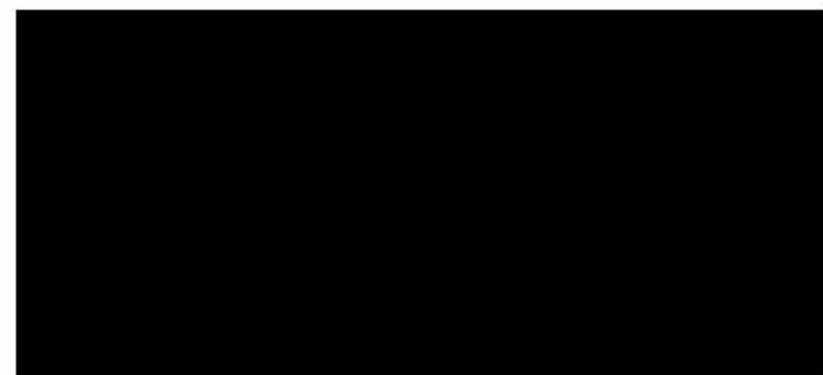
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## **Analytical Report Number : 19-61935**

<b>Project / Site name:</b>	Deepcut	<b>Samples received on:</b>	20/09/2019
<b>Your job number:</b>	C-02035-C	<b>Samples instructed on:</b>	20/09/2019
<b>Your order number:</b>	POP032212	<b>Analysis completed by:</b>	26/09/2019
<b>Report Issue Number:</b>	1	<b>Report issued on:</b>	26/09/2019
<b>Samples Analysed:</b>	4 soil samples		



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 19-61935-1 Deepcut C-02035-C

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

Page 1 of 5



Analytical Report Number: 19-61935

Project / Site name: Deepcut

Your Order No: POP032212

Lab Sample Number	10881	10882	10883	10884				
Sample Reference	Plot 67	Plot 69	Plot 67	Plot 69				
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied				
Depth (m)	0.20	0.20	0.6	0.50				
Date Sampled	19/09/2019	19/09/2019	19/09/2019	19/09/2019				
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
<b>SOILS</b>								
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	9.1	10	8.5	10	
Total mass of sample received	kg	0.001	NONE	0.80	0.80	0.80	0.80	
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	
<b>General Inorganics</b>								
pH - Automated	pH Units	N/A	MCERTS	7.5	7.4	8.1	7.9	
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	
Water Soluble SO <sub>4</sub> (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	0.20	0.25	0.13	0.29	
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.020	0.023	0.021	0.017	
<b>Total Phenols</b>								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	



Analytical Report Number: 19-61935

Project / Site name: Deepcut

Your Order No: POP032212

Lab Sample Number	10881	10882	10883	10884	
Sample Reference	Plot 67	Plot 69	Plot 67	Plot 69	
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)	0.20	0.20	0.6	0.50	
Date Sampled	19/09/2019	19/09/2019	19/09/2019	19/09/2019	
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

**Speciated PAHs**

Analytical Parameter	Units	Limit of detection	Accreditation Status	10881	10882	10883	10884
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	1.5	0.65	0.56	0.44
Anthracene	mg/kg	0.05	MCERTS	0.37	0.22	0.14	0.11
Fluoranthene	mg/kg	0.05	MCERTS	3.2	2.1	1.6	1.1
Pyrene	mg/kg	0.05	MCERTS	2.8	1.8	1.4	1.1
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.7	1.2	0.84	0.69
Chrysene	mg/kg	0.05	MCERTS	1.6	1.2	0.99	0.71
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.9	1.5	1.3	0.79
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.89	0.61	0.43	0.46
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.6	1.2	0.95	0.70
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.84	0.71	0.56	0.43
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.21	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.96	0.80	0.60	0.47

**Total PAH**

Parameter	Units	Limit of detection	Accreditation Status	10881	10882	10883	10884
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	17.5	12.0	9.28	7.02

**Heavy Metals / Metalloids**

Analytical Parameter	Units	Limit of detection	Accreditation Status	10881	10882	10883	10884
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	2.3	8.9	7.6	5.1
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.31	0.26	0.36	0.32
Boron (water soluble)	mg/kg	0.2	MCERTS	0.9	1.1	0.7	1.1
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.4	< 0.2	0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	11	13	12	13
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	11	13	12	13
Copper (aqua regia extractable)	mg/kg	1	MCERTS	12	16	9.9	14
Lead (aqua regia extractable)	mg/kg	1	MCERTS	40	45	39	34
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	7.4	11	6.2	7.9
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	18	18	19	17
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	49	60	51	56

U/S = Unsuitable Sample I/S = Insufficient Sample



**Analytical Report Number : 19-61935**

**Project / Site name: Deepcut**

\* 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 *
10881	Plot 67	None Supplied	0.20	Brown loam and sand with gravel and vegetation.
10882	Plot 69	None Supplied	0.20	Brown loam and sand with gravel and vegetation.
10883	Plot 67	None Supplied	0.6	Brown loam and sand with gravel and vegetation.
10884	Plot 69	None Supplied	0.50	Brown loam with vegetation and gravel.



Analytical Report Number : 19-61935

Project / Site name: Deepcut

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
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
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	NONE
Free cyanide in soil	Determination of free 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
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.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical 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
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
Sulphate, water soluble, in soil (1hr extraction)	Sulphate, water soluble, in soil (1hr extraction)	In-house method	L038-PL	D	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 30°C.

Appendix D

Screening Tables



## Assessment of Chemicals of Potential Concern to Human Health



All values in mg/kg unless otherwise stated								Soil Type	SS	SS	SS	SS	SS	SS							
Chemical of Potential Concern	Lab. RL	No. Samples	Min. Value	Max. Value	No. Samples > or = GAC	GAC	US <sub>95</sub>	Result of Significance Test	Location & Depth	Plot 26	Plot 28	Plot 67	Plot 69	Plot 70	Plot 71						
									0.4	0.5	0.6	0.5	0.4	0.4							
Arsenic	1	6	5.1	9.4	0	37	9.8820403	POTENTIALLY SUITABLE FOR USE	8	5.7	7.6	5.1	9.4	6							
Beryllium	0.06	6	0.31	0.36	0	73	0.3683001	POTENTIALLY SUITABLE FOR USE	0.31	0.35	0.36	0.32	0.34	0.33							
Boron	0.2	6	0.4	1.1	0	300	1.0967671	POTENTIALLY SUITABLE FOR USE	0.4	0.5	0.7	1.1	0.7	0.5							
Cadmium	0.2	6	0.2	0.2	0	14	0.2	POTENTIALLY SUITABLE FOR USE	0.2	0.2	0.2	0.2	0.2	0.2							
Chromium (III)	1	6	11	14	0	890	14.247523	POTENTIALLY SUITABLE FOR USE	11	14	12	13	11	12							
Chromium (VI)	1.2	6	1.2	1.2	0	6.1	1.2	POTENTIALLY SUITABLE FOR USE	1.2	1.2	1.2	1.2	1.2	1.2							
Copper	1	6	9.9	18	0	2500	21.305409	POTENTIALLY SUITABLE FOR USE	17	18	9.9	14	18	17							
Lead	2	6	31	58	0	200	58.311354	POTENTIALLY SUITABLE FOR USE	58	31	39	34	46	36							
Mercury, inorganic	0.3	6	0.3	0.5	0	170	0.4786667	POTENTIALLY SUITABLE FOR USE	0.5	0.3	0.3	0.3	0.3	0.3							
Nickel	2	6	6.1	8.1	0	130	8.5701026	POTENTIALLY SUITABLE FOR USE	6.1	7.3	6.2	7.9	6.5	8.1							
Selenium	1	6	1	1	0	360	1	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1							
Vanadium	1	6	14	23	0	410	23.376416	POTENTIALLY SUITABLE FOR USE	14	18	19	17	18	23							
Zinc	2	6	43	60	0	3900	62.282527	POTENTIALLY SUITABLE FOR USE	60	48	51	56	44	43							
Cyanide (free)	1	6	1	1	0	790	1	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1							
Phenol (total)	2	6	1	1	0	290	1	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1							
Acenaphthene	0.05	6	0.05	0.05	0	220	0.05	POTENTIALLY SUITABLE FOR USE	0.05	0.05	0.05	0.05	0.05	0.05							
Acenaphthylene	0.05	6	0.05	0.38	0	180	0.3448	POTENTIALLY SUITABLE FOR USE	0.38	0.05	0.05	0.05	0.05	0.05							
Anthracene	0.05	6	0.11	0.55	0	2400	0.5172518	POTENTIALLY SUITABLE FOR USE	0.55	0.13	0.14	0.11	0.22	0.19							
Benz(a)anthracene	0.05	6	0.69	2.4	0	4.2	2.5433107	POTENTIALLY SUITABLE FOR USE	2.4	0.89	0.84	0.69	1.8	1.5							
Benzo(a)pyrene	0.05	6	0.87	2.4	3	1.5	2.4622678	FURTHER ASSESSMENT REQUIRED	2.4	0.87	1.4	1.1	1.6	1.7							
Benzo(b)fluoranthene	0.05	6	0.79	2.7	0	7.6	2.883704	POTENTIALLY SUITABLE FOR USE	2.7	0.83	1.3	0.79	1.9	1.9							
Benzo(ghi)perylene	0.05	6	0.47	1.5	0	64	1.6846605	POTENTIALLY SUITABLE FOR USE	1.5	0.59	0.6	0.47	1.2	1.2							
Benzo(k)fluoranthene	0.05	6	0.43	1.2	0	12	1.2357235	POTENTIALLY SUITABLE FOR USE	1.2	0.61	0.43	0.46	0.81	0.83							
Chrysene	0.05	6	0.58	2.2	0	7.7	2.2894479	POTENTIALLY SUITABLE FOR USE	2.2	0.58	0.99	0.71	1.2	1.6							
Dibenz(a,h)anthracene	0.05	6	0.05	0.4	0	1.1	0.4216502	POTENTIALLY SUITABLE FOR USE	0.4	0.05	0.05	0.05	0.28	0.05							
Fluoranthene	0.05	6	1.1	4.5	0	290	4.6371118	POTENTIALLY SUITABLE FOR USE	4.5	1.1	1.6	1.1	2.8	2.7							
Fluorene	0.05	6	0.05	0.05	0	170	0.05	POTENTIALLY SUITABLE FOR USE	0.05	0.05	0.05	0.05	0.05	0.05							
Indeno(1,2,3,cd)pyrene	0.05	6	0.43	1.2	0	4.3	1.300581	POTENTIALLY SUITABLE FOR USE	1.2	0.49	0.56	0.43	0.92	0.93							
Naphthalene	0.05	6	0.05	0.05	0	2.2	0.05	POTENTIALLY SUITABLE FOR USE	0.05	0.05	0.05	0.05	0.05	0.05							
Phenanthrene	0.05	6	0.42	2.2	0	97	2.0999768	POTENTIALLY SUITABLE FOR USE	2.2	0.42	0.56	0.44	0.96	0.85							
Pyrene	0.05	6	1.1	4	0	620	4.1169418	POTENTIALLY SUITABLE FOR USE	4	1.1	1.4	1.1	2.5	2.5							
Asbestos identified	Y/N								N	N	N	N	N	N							
FOC (dimensionless)	0.023 (mean)								0.033	0.016	0.021	0.017	0.028	0.023							
SOM (calculated)	3.97% (mean)								5.69%	2.76%	3.62%	2.93%	4.83%	3.97%							
pH (su)	7.4 (mean)								6.6	7.7	8.1	7.9	7.2	7							

**Risk parameter:** Human health - residential with plant uptake (1%SOM)

**Data set:** Subsoil

**Client:** CALA Homes Ltd

**Site:** Parcel M1 - Deepcut

**Job no.:** C-02035

**Lab. report no(s):** 19-51641, 19-56478

**Legend:** Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate. Values in red are equal to, or greater than, the generic assessment criterion (GAC). SS denotes Subsoil

## Assessment of Chemicals of Potential Concern to Plant Life

All values in mg/kg unless otherwise stated								Soil Type	SS	SS	SS	SS	SS	SS					
Chemical of Potential Concern	Lab. RL	No. Samples	Min. Value	Max. Value	No. Samples > or = GAC	GAC	US <sub>95</sub>	Location & Depth	Plot 26	Plot 28	Plot 67	Plot 69	Plot 70	Plot 71					
									0.4	0.5	0.6	0.5	0.4	0.4					
Arsenic	1	6	5.1	9.4	0	250	9.88204	POTENTIALLY SUITABLE FOR USE	8	5.7	7.6	5.1	9.4	6					
Boron	0.2	6	0.4	1.1	0	3	1.096767	POTENTIALLY SUITABLE FOR USE	0.4	0.5	0.7	1.1	0.7	0.5					
Chromium (III)	1	6	11	14	0	400	14.24752	POTENTIALLY SUITABLE FOR USE	11	14	12	13	11	12					
Chromium (VI)	1.2	6	1.2	1.2	0	25	1.2	POTENTIALLY SUITABLE FOR USE	1.2	1.2	1.2	1.2	1.2	1.2					
Copper	1	6	9.9	18	0	135	21.30541	POTENTIALLY SUITABLE FOR USE	17	18	9.9	14	18	17					
Nickel	2	6	6.1	8.1	0	75	8.570103	POTENTIALLY SUITABLE FOR USE	6.1	7.3	6.2	7.9	6.5	8.1					
Zinc	2	6	43	60	0	300	62.28253	POTENTIALLY SUITABLE FOR USE	60	48	51	56	44	43					
	<b>Mean</b>																		
pH (su)	7.4								6.6	7.7	8.1	7.9	7.2	7					

**Risk parameter:** Plant life pH 7

**Data set:** Subsoil

**Client:** CALA Homes Ltd

**Site:** Parcel M1 - Deepcut

**Job no.:** C-02035

**Lab. report no(s):** 19-51641, 19-56478

**Legend:** Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate. Values in red are equal to, or greater than, the generic assessment criterion (GAC). SS denotes Subsoil

## Assessment of Chemicals of Potential Concern to Human Health

All values in mg/kg unless otherwise stated								Soil Type	TS	TS	TS	TS	TS	TS
Chemical of Potential Concern	Lab. RL	No. Samples	Min. Value	Max. Value	No. Samples > or = GAC	GAC	US <sub>95</sub>	Location & Depth	Plot 26	Plot 28	Plot 67	Plot 69	Plot 70	Plot 71
								Result of Significance Test	0.1	0.10	0.2	0.2	0.1	0.1
Arsenic	1	6	2.3	11	0	37	12.187368	POTENTIALLY SUITABLE FOR USE	11	7.1	2.3	8.9	5.8	4
Beryllium	0.06	6	0.26	0.86	0	73	0.8130545	POTENTIALLY SUITABLE FOR USE	0.86	0.39	0.31	0.26	0.31	0.38
Boron	0.2	6	0.2	1.1	0	300	1.20016	POTENTIALLY SUITABLE FOR USE	0.2	0.5	0.9	1.1	0.3	0.4
Cadmium	0.2	6	0.2	0.4	0	14	0.3786667	POTENTIALLY SUITABLE FOR USE	0.2	0.2	0.2	0.4	0.2	0.2
Chromium (III)	1	6	11	25	0	890	23.935341	POTENTIALLY SUITABLE FOR USE	25	14	11	13	13	14
Chromium (VI)	1.2	6	1.2	1.2	0	6.1	1.2	POTENTIALLY SUITABLE FOR USE	1.2	1.2	1.2	1.2	1.2	1.2
Copper	1	6	12	53	0	2500	49.366896	POTENTIALLY SUITABLE FOR USE	53	17	12	16	18	18
Lead	2	6	40	59	0	200	63.884765	POTENTIALLY SUITABLE FOR USE	59	56	40	45	55	51
Mercury, inorganic	0.3	6	0.3	0.5	0	170	0.4786667	POTENTIALLY SUITABLE FOR USE	0.3	0.3	0.3	0.3	0.3	0.5
Nickel	2	6	7.4	16	0	130	15.653781	POTENTIALLY SUITABLE FOR USE	16	8	7.4	11	8.6	8.2
Selenium	1	6	1	2.3	0	360	2.1613333	POTENTIALLY SUITABLE FOR USE	2.3	1	1	1	1	1
Vanadium	1	6	18	35	0	410	33.535476	POTENTIALLY SUITABLE FOR USE	35	20	18	18	20	21
Zinc	2	6	49	110	0	3900	105.54235	POTENTIALLY SUITABLE FOR USE	110	55	49	60	65	58
Cyanide (free)	1	6	1	1	0	790	1	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1
Phenol (total)	2	6	1	1	0	290	1	POTENTIALLY SUITABLE FOR USE	1	1	1	1	1	1
Acenaphthene	0.05	6	0.05	0.05	0	220	0.05	POTENTIALLY SUITABLE FOR USE	0.05	0.05	0.05	0.05	0.05	0.05
Acenaphthylene	0.05	6	0.05	0.05	0	180	0.05	POTENTIALLY SUITABLE FOR USE	0.05	0.05	0.05	0.05	0.05	0.05
Anthracene	0.05	6	0.22	0.47	0	2400	0.4950879	POTENTIALLY SUITABLE FOR USE	0.35	0.47	0.37	0.22	0.37	0.29
Benzo(a)anthracene	0.05	6	1.2	2.7	0	4.2	2.9680174	POTENTIALLY SUITABLE FOR USE	2.2	2.7	1.7	1.2	1.9	2.4
Benzo(a)pyrene	0.05	6	1.2	3.3	5	1.5	3.4519304	FURTHER ASSESSMENT REQUIRED	2.4	3.3	1.6	1.2	2	2.4
Benzo(b)fluoranthene	0.05	6	1.5	3.6	0	7.6	3.7224535	POTENTIALLY SUITABLE FOR USE	2.5	3.6	1.9	1.5	2.1	2.8
Benzo(ghi)perylene	0.05	6	0.8	1.6	0	64	1.9240226	POTENTIALLY SUITABLE FOR USE	1.5	1.6	0.96	0.8	1.4	1.6
Benzo(k)fluoranthene	0.05	6	0.61	1.6	0	12	1.7137019	POTENTIALLY SUITABLE FOR USE	1.2	1.6	0.89	0.61	1.2	1.2
Chrysene	0.05	6	1.2	2.3	0	7.7	2.550772	POTENTIALLY SUITABLE FOR USE	2.1	2.3	1.6	1.2	1.9	2
Dibenz(a,h)anthracene	0.05	6	0.05	0.39	0	1.1	0.500882	POTENTIALLY SUITABLE FOR USE	0.05	0.39	0.21	0.05	0.32	0.36
Fluoranthene	0.05	6	2.1	4.3	0	290	4.9683967	POTENTIALLY SUITABLE FOR USE	3.9	4.3	3.2	2.1	3.8	4
Fluorene	0.05	6	0.05	0.05	0	170	0.05	POTENTIALLY SUITABLE FOR USE	0.05	0.05	0.05	0.05	0.05	0.05
Indeno(1,2,3,cd)pyrene	0.05	6	0.71	1.4	0	4.3	1.6692587	POTENTIALLY SUITABLE FOR USE	1.4	1.3	0.84	0.71	1.2	1.4
Naphthalene	0.05	6	0.05	0.05	0	2.2	0.05	POTENTIALLY SUITABLE FOR USE	0.05	0.05	0.05	0.05	0.05	0.05
Phenanthrene	0.05	6	0.65	2.5	0	97	2.8760982	POTENTIALLY SUITABLE FOR USE	2.3	2.5	1.5	0.65	1.6	1.7
Pyrene	0.05	6	1.8	3.8	0	620	4.444559	POTENTIALLY SUITABLE FOR USE	3.5	3.8	2.8	1.8	3.3	3.6
Asbestos identified	Y/N								N	N	N	N	N	N
FOC (dimensionless)	0.027167	(mean)							0.037	0.026	0.02	0.023	0.029	0.028
SOM (calculated)	4.68%	(mean)							6.38%	4.48%	3.45%	3.97%	5.00%	4.83%
pH (su)	6.9	(mean)							6.2	6.7	7.5	7.4	6.5	7.1

**Risk parameter: Human health - residential with plant uptake (1%SOM)**

**Data set: Topsoil**

**Client: CALA Homes Ltd**

**Site: Deepcut - Parcel M1**

**Job no.: C-02035**

**Lab. report no(s): 19-51641, 19-56478**

**Legend:** Values in **blue** are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate. Values in **red** are equal to, or greater than, the generic assessment criterion (GAC). TS denotes Topsoil

## Assessment of Chemicals of Potential Concern to Plant Life

All values in mg/kg unless otherwise stated								Soil Type	TS	TS	TS	TS	TS	TS								
Chemical of Potential Concern	Lab. RL	No. Samples	Min. Value	Max. Value	No. Samples > or = GAC	GAC	US <sub>95</sub>	Location & Depth	Plot 26	Plot 28	Plot 67	Plot 69	Plot 70	Plot 71								
								Result of Significance Test	0.1	0.10	0.2	0.2	0.1	0.1								
Arsenic	1	6	2.3	11	0	250	12.18737	POTENTIALLY SUITABLE FOR USE	11	7.1	2.3	8.9	5.8	4								
Boron	0.2	6	0.2	1.1	0	3	1.20016	POTENTIALLY SUITABLE FOR USE	0.2	0.5	0.9	1.1	0.3	0.4								
Chromium (III)	1	6	11	25	0	400	23.93534	POTENTIALLY SUITABLE FOR USE	25	14	11	13	13	14								
Chromium (VI)	1.2	6	1.2	1.2	0	25	1.2	POTENTIALLY SUITABLE FOR USE	1.2	1.2	1.2	1.2	1.2	1.2								
Copper	1	6	12	53	0	135	49.3669	POTENTIALLY SUITABLE FOR USE	53	17	12	16	18	18								
Nickel	2	6	7.4	16	0	75	15.65378	POTENTIALLY SUITABLE FOR USE	16	8	7.4	11	8.6	8.2								
Zinc	2	6	49	110	0	300	105.5423	POTENTIALLY SUITABLE FOR USE	110	55	49	60	65	58								
	<b>Mean</b>																					
pH (su)	6.9								6.2	6.7	7.5	7.4	6.5	7.1								

**Risk parameter:** Plant life pH 7

**Data set:** Topsoil

**Client:** CALA Homes Ltd

**Site:** Deepcut - Parcel M1

**Job no.:** C-02035

**Lab. report no(s):** 19-51641, 19-56478

**Legend:** Values in blue are at or below the laboratory reporting limit (where a single value is indicated) and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate. Values in red are equal to, or greater than, the generic assessment criterion (GAC). TS denotes Topsoil