

Document ref: C-02035-CALA-M2-LR-015-P1

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22 March 2021

Parcel M2, Princess Royal Barracks, Deepcut, Surrey - Validation of clean Cover System in rear 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 M2 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 M2 of the above-mentioned site.

A site plan showing the proposed development layout is provided by Odyssey Consult (17-154-E-0000-006) and presented in appendix A.

2. GARDEN VALIDATION

The watching brief was 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. 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 subsoil and imported topsoil which was supplied with certification from the source, as presented in Appendix F. All soils were tested after placement in gardens.

The validation works were carried out in accordance with Hydrock's Remediation Method Statement (report ref: C14817-0019, dated 10/07/2018).

2.1 Watching Brief

A watching brief was carried out as detailed in Table 1.0 below. Hydrock will continue to visit the site when plots are ready for placement of the Cover System as informed by CALA.

Table 1.0: Summary of site inspections for garden validation works

Watching Brief Days	Plots
19/10/20 - 30/11/20	178 - 183

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

2.2 Discussion - Surrey Heath Borough Council

Following the initial verification works undertaken in 2019, a site visit was undertaken by Garry Carter of Surrey Heath Borough Council (SHBC) in early January 2020. Garry identified a significant issue with presence of man-made materials in Plot 61. Following this visit, a site meeting was held between Hydrock, SHBC and CALA to discuss a way forward, summarised in Garden Validation Report 08 (ref: C-02035-CALA-M1-LR-008).

In July 2020 further meetings were held to discuss methods to improve the validation method to ensure that man-made material, and in particular glass fragments, within the Cover System were no more frequent than 'rare' in occurrence. It was deemed that inspection pits did not assess enough of the Cover System to have confidence of this. To increase the robustness of the Cover System validation of site-won soils, in terms of man-made material occurrence, a full-time Watching Brief method was proposed.

The Watching Brief method is detailed within Houlihan & Co (the groundworks main contractor) Method Statement Revision 5 (dated 14/08/20, see Appendix E) and the Hydrock Watching Brief daily record for 13/08/20 (see Appendix B).

Within the Watching Brief method, imported topsoil will be used above site-won subsoil that is extensively screened and raked by Houlihan & Co when it is placed in garden plots, to remove all man-made materials encountered. Hydrock will be present for the placement of all subsoil to witness the screening process and take samples for lab analysis at a 40% testing ratio.

Houlihan & Co have provided an updated method statement to include the above changes in Section 19.0, included in Appendix E for reference.

The method of subsoil placement was agreed with Hydrock on site on 13/08/2020, as recorded in the relevant Watching Brief Report, and included below for information:

- *Formation depth of the plot is checked by Houlihan, with a minimum of 600mm required*
- *A geotextile membrane is installed by Houlihan if required*
- *Excavator places site won subsoil in approx. 100mm thick layers*
- *Excavator rakes layers with bucket teeth producing approx. 100mm deep furrows*
- *Any visible man-made material is removed by Houlihan groundworkers*
- *Houlihan groundworkers manually rake through the furrows and remove any man made material encountered*
- *The next layer is then added*
- *Layers are added and tracked in by excavator until a 150mm space remains for topsoil*

Photographs and Watching Brief daily records are presented in Appendix B for information.

2.3 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 assessment tables are presented in the Appendix C and D respectively.

2.3.1 Topsoil results

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

- Lab testing confirmed that topsoil and subsoil samples obtained from all plots were not in exceedance of the relevant GAC's.
- No asbestos was identified within the topsoil materials.
- A minimum of 150mm of topsoil was present, no significant "man-made materials" were encountered.

2.3.2 Subsoil results

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

- Lab testing confirmed that subsoil samples obtained from the tested plots were not in exceedance of the relevant GAC's.
- No asbestos was identified within the subsoil materials.
- A minimum of 450mm subsoil was present, no man-made materials were identified following the screening process.
- A geotextile was installed in all plots where Made Ground was identified beneath the cover system.

3. Conclusions

Based on the 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
178	Pass	
179	Pass	
180	Pass	
181	Pass	
182	Pass	
183	Pass	

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 Record

Appendix C – Laboratory Results / Test Certificates

Appendix D – Screening Tables

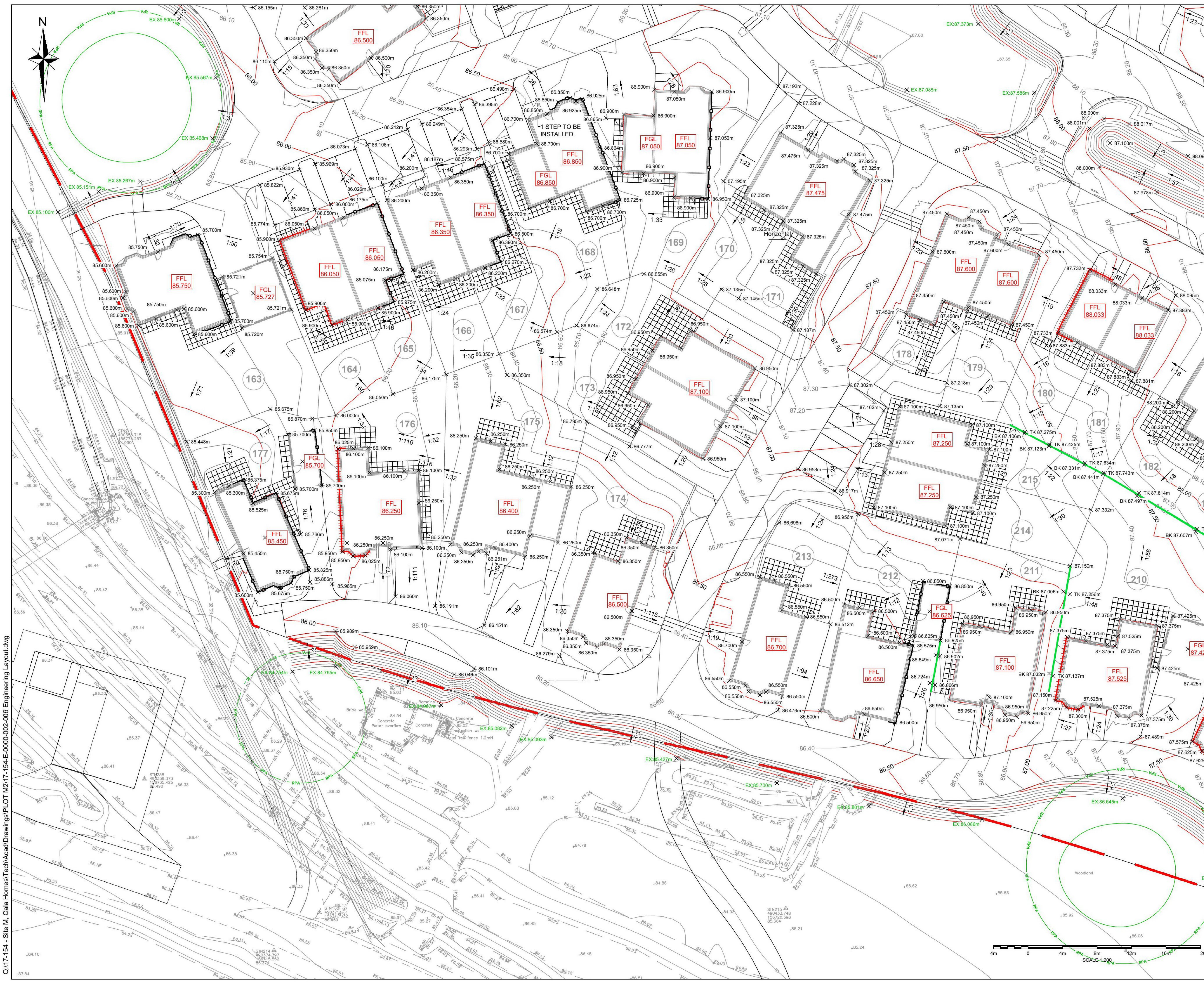
Appendix E – Houlihan & Co Method Statement

Appendix F - Imported Soil Certifications

Appendix A

Drawings

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- NOTES**
- DO NOT SCALE FROM THIS DRAWING. WORK FROM FIGURED DIMENSIONS ONLY.
 - ALL DIMENSIONS SHOWN IN METRES UNLESS NOTED OTHERWISE.
 - ALL DIMENSIONS, LEVELS AND SURVEY GRID CO-ORDINATES ARE TO BE CHECKED ONSITE AND THE ENGINEER NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES PRIOR TO THE COMMENCEMENT OF THE WORKS.
 - NO DEVIATION FROM THE DETAILS SHOWN ON THIS DRAWING IS PERMITTED WITHOUT PERMISSION FROM THE ENGINEER.
 - THE TOPOGRAPHICAL SURVEY INFORMATION IS BASED ON DANDO SURVEYING LIMITED SHEET ID SHDEEPCUT3D DATED 14TH MAY 2015
 - SITE LAYOUT BASED UPON ASHBY DESIGN LIMITED DRAWING 00263-ASH-XX-TA-SP-3001-C7 DATED 14/02/2020.
 - REFER TO REPORT 17-154-02-T04 FOR HIGHWAY SETTING OUT INFORMATION.
 - REFER TO DRAWING 17-154-E-0700-015-C02 FOR HIGHWAY ALIGNMENT CHAINAGES.
 - REFER TO DRAWINGS 17-154-E-0000-010 - 016 FOR HOUSE SETTING OUT INFORMATION.
 - REFER TO DRAWINGS 17-154-E-0000-017 - 023 FOR FENCES AND RETAINING WALLS SETTING OUT INFORMATION.
 - REFER TO DRAWINGS 17-154-E-0000-024 - 031 FOR FOOTPATH AND PARKING SETTING OUT INFORMATION.
 - REFER TO DRAWINGS 17-154-E-0700-001 - 006 FOR EXTERNAL WORKS.

KEY

- SITE BOUNDARY
- FFL 86.625 FINISHED FLOOR LEVEL
- FGL 86.625 FINISHED GARAGE LEVEL
- PROPOSED CONTOURS (0.10m & 0.50m)
- EXISTING TOPOGRAPHICAL SURVEY CONTOURS
- X 87.395m PROPOSED SPOT LEVEL
- X BW 87.395m PROPOSED GROUND LEVEL AT BOTTOM OF RETAINING WALL SPOT LEVEL
- X TW 87.395m PROPOSED GROUND LEVEL AT TOP OF RETAINING WALL SPOT LEVEL
- X BK 87.395m PROPOSED BOTTOM OF GRAVEL KICKER BOARD SPOT LEVEL
- X TK 87.395m PROPOSED TOP OF GRAVEL KICKER BOARD SPOT LEVEL
- +92.63 EXISTING TOPOGRAPHICAL SURVEY SPOT LEVEL
- X EX 87.395m EXISTING SPOT LEVEL
- 1:20 GRADIENT
- TREE ROOT PROTECTION AREAS
- RASIED DPC
- GRAVEL KICKER BOARD (MAX 300mm)
- EXPOSED BRICK
- STEP BETWEEN FLOOR LEVELS
- STEP
- RETAINING WALL (< 600mm)
- RETAINING WALL (600-1200mm)
- RETAINING WALL (> 1200mm)

C02	LEVELS AMENDED TO NEW SITE LAYOUT	DE	DS	PD	09/03/20
C01	ISSUED FOR CONSTRUCTION	DE	DS	PD	31/01/20
T08	MISSING LEVEL INFORMATION ADDED	DE	DS	PD	02/09/19
T05	PLOT LABEL NUMBERS AMENDED & PLOT 168 LEVEL INFORMATION UPDATED	DE	DS	PD	25/07/19
Rev	Amendments	Dm	Chk	App	Date

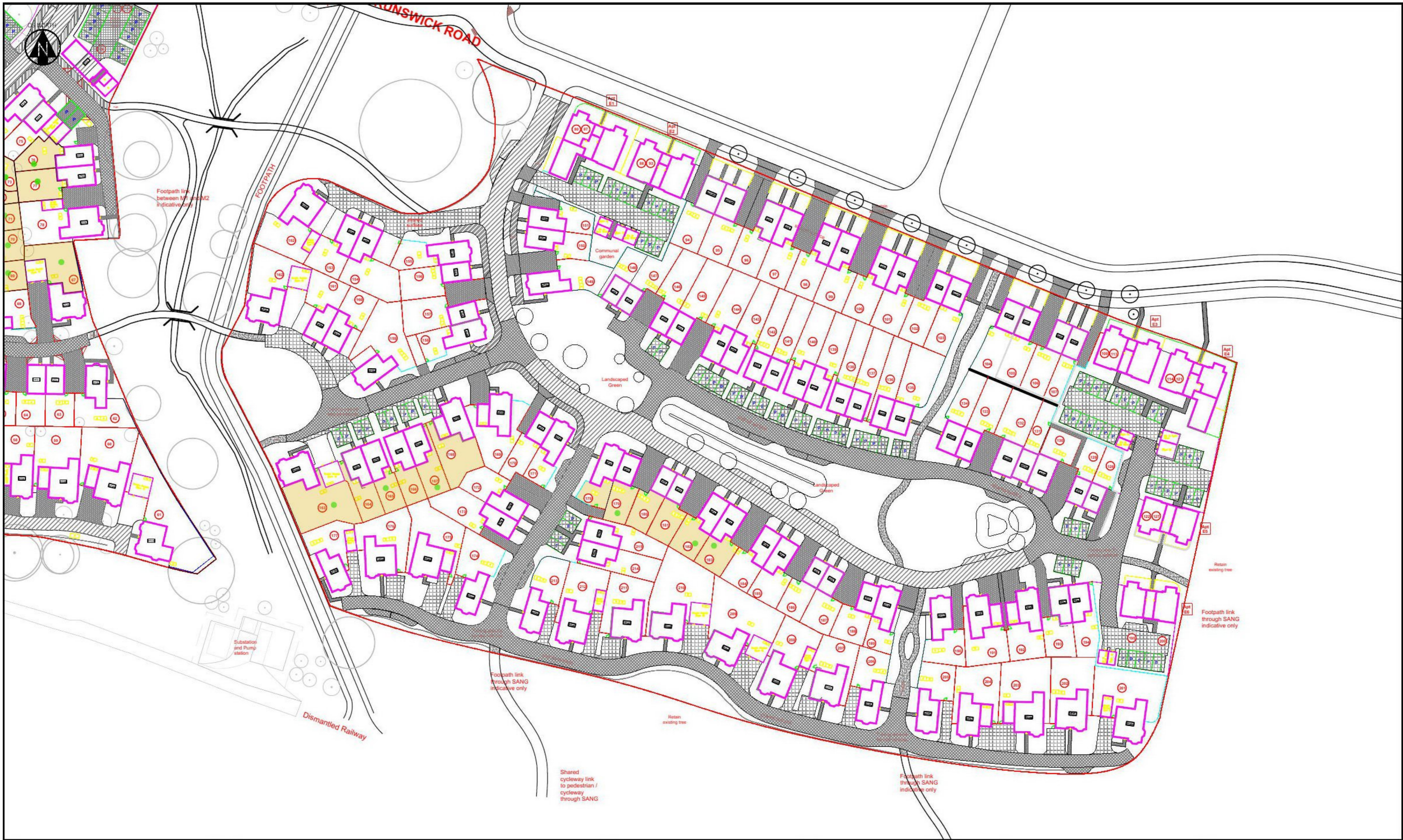
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Job Title		
PHASE 2B CALA HOMES		
Drawing Title		
CALA HOMES PLOT M2 ENGINEERING LAYOUT SHEET 5		
Client		
CALA HOMES		
Scale	Date	Designed
1:200 @A1	MARCH.18	CDU
Drawn	Checked	Approved
HM	MR	SRB
Job No	Drawing No	Rev
17-154	17-154-E-0000-006	C02

Q:17-154 - Site M - Cala Homes/Engineering Layout.dwg



KEY	
	Sample Location
	Plots 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.

P5	SAMPLE LOCATIONS ADDED	SD	17/12/19	AJ	19/09/20	AJ	19/09/20
P4	SAMPLE LOCATIONS ADDED	SD	17/10/19	JB	17/10/19	AJ	17/10/19
P3	SAMPLE LOCATIONS ADDED	SD	07/10/19	JB	07/10/19	AJ	07/10/19
P2	SAMPLE LOCATIONS UPDATED	SD	20/08/19	JB	20/08/19	AJ	20/08/19
P1	FIRST ISSUE	SD	18/07/19	AJ	18/07/19	AJ	18/07/19
REV.	REVISION NOTES/COMMENTS						
P7	SAMPLE LOCATIONS UPDATED	MR	12/03/21	AJ	12/03/21	AJ	12/03/21
P6	SAMPLE LOCATIONS UPDATED	MR	19/09/20	AJ	19/09/20	AJ	19/09/20

DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE

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 E-Mail: bristol@hydrock.com
 or visit www.hydrock.com

CLIENT
CALA Homes (Thames)

PROJECT
PRINCESS ROYAL BARRACKS, DEEPCUT

TITLE	
SAMPLE LOCATION PLAN (PARCEL M2)	
HYDROCK PROJECT NO. C-02035-C	SCALE @ A3 1:1000
PURPOSE OF ISSUE SUITABLE FOR CO-ORDINATION	STATUS S1
DRAWING NO. (PROJECT CODE ORIGINATOR ZONE LEVEL TYPE ROLE NUMBER) 02035-HYD-XX-ZZ-DR-GE-1001	REVISION P7

Appendix B

Site Visit Record

M2 Validation Watching Brief		SHEET NO: 1 of 3
Project: Princess Royal Barrack, Deepcut, Surrey		Date of Visit: 19.10.2020
Client: CALA Homes (Thames) Ltd	Weather Conditions: Light showers and overcast	
Contract No.: C-02035-C		
Present: Hydrock Consultants - David Pethica, Cala Homes – Alastair Campbell, Houlihans – Graham Knight		

Summary of Work Activities:
M2 Rear Garden Validation Watching Brief for rear gardens of plots 180 and 181.

Comments/Discussions:
<p>Progress:</p> <p>08:00 – 10:00</p> <p>Plots were excavated to formation prior to arrival at site (600mm below final ground level) and soils for placement stockpiled next to the garden area. Reduced level was measured by tape from top of patio and by string across to pegged out levels on opposite side of rear garden. Membrane was placed across garden area closest to houses and first couple of layers placed, raked, inspected and handpicked as necessary.</p> <p>10:30 – 17:00</p> <p>Membrane was placed across areas of garden furthest from the house and layers placed across the garden area in circa 100mm uplifts, raked, inspected and handpicked as necessary.</p> <p>Neighbouring plots of 182-183 were noted to be short of 600mm below formation and reduction of levels in this area was commenced toward the end of the day.</p> <p>Geological Notes:</p> <p>Subsoil consisted of damp, very soft to soft, dark brown, slightly sandy, slightly gravelly clayey silt. Gravel consisted of fine to coarse subrounded to angular flint. Occasional roots and rootlets. Rare gravel sized fragments of brick, tile or glass. All encountered glass fragments were removed.</p> <p>Samples Taken:</p> <p>No samples were taken of placed soils.</p>

M2 Validation Watching Brief

SHEET NO: 2 of 3



Placement of membrane at 600mm below formation level in Plots 180 and 181



Placement and raking of circa 100mm layers across the plots

M2 Validation Watching Brief

SHEET NO: 3 of 3



Continued placement, raking and handpicking where necessary of soils in Plots 180 and 181



450mm of subsoil placed across Plots 180 and 181

M2 Validation Watching Brief		SHEET NO: 1 of 3
Project: Princess Royal Barrack, Deepcut, Surrey		Date of Visit: 20.10.2020
Client: CALA Homes (Thames) Ltd	Weather Conditions: Light showers and overcast	
Contract No.: C-02035-C		
Present: Hydrock Consultants - David Pethica, Cala Homes – Alastair Campbell, Houlihans – Graham Knight		

Summary of Work Activities:
M2 Rear Garden Validation Watching Brief for rear gardens of plots 182 and 183.

Comments/Discussions:
<p>Progress:</p> <p>08:00 – 10:00</p> <p>Continued excavation of plots to formation (600mm below final ground level) measured from top of patio level and pegged out levels on opposite site of rear garden. Membrane was placed across garden area closest to houses and first layer placed, raked, inspected and handpicked as necessary.</p> <p>10:30 – 17:00</p> <p>Further layers placed across the garden area in circa 100mm uplifts, raked, inspected and handpicked as necessary. By the end of the day plots 182 and 183 had been brought up to 150mm below formation ready for topsoil placement.</p> <p>Plots 178-179 were inspected and determined to be less than 600mm below formation and Made Ground evident.</p> <p>Geological Notes:</p> <p>Subsoil consisted of damp, very soft to soft, dark brown, slightly sandy, slightly gravelly clayey silt. Gravel consisted of fine to coarse subrounded to angular flint. Occasional roots and rootlets. Rare gravel sized fragments of brick, tile or glass. All encountered glass fragments were removed.</p> <p>Samples Taken:</p> <p>A sample was taken from 300mm below formation in plot 182 sub soils.</p>

M2 Validation Watching Brief

SHEET NO: 2 of 3



Placement of membrane at 600mm below formation level in Plots 182 and 183



Placement and raking of circa 100mm layers across the plots

M2 Validation Watching Brief

SHEET NO: 3 of 3



Continued placement, raking and handpicking where necessary of soils in Plots 182 and 183



450mm of subsoil placed across Plots 182 and 183

M2 Validation Watching Brief		SHEET NO: 1 of 3
Project: Princess Royal Barrack, Deepcut, Surrey		Date of Visit: 22.10.2020
Client: CALA Homes (Thames) Ltd	Weather Conditions: Showers	
Contract No.: C-02035-C		
Present: Hydrock Consultants - Mike Rudd, Cala Homes – Alastair Campbell, Houlihans – Graham Knight		

Summary of Work Activities:
M2 Rear Garden Validation Watching Brief for rear gardens of plots 178 and 179.

Comments/Discussions:
Progress: 08:00 – 10:00 Plots were excavated to formation (600mm below final ground level) in a mixture of made ground and natural material. 10:30 – 17:00 A membrane was installed at formation depth and placement of sub-soil commenced.
Geological Notes: Subsoil consisted of wet, very soft to soft, dark brown, slightly sandy, slightly gravelly clayey silt. Gravel consisted of fine to coarse subrounded to angular flint. Occasional roots and rootlets. Rare gravel sized fragments of brick, tile or glass. All encountered glass fragments were removed.
Samples Taken: Rear garden subsoil samples were taken from Plot 179.

M2 Validation Watching Brief

SHEET NO: 2 of 3



Excavating to formation level in Plot 178 and 179.



Membrane at formation level in Plots 178 and 179.

M2 Validation Watching Brief

SHEET NO: 3 of 3



Placing of subsoil in layers in Plots 178 and 179.



Raked subsoil in Plots 178 and 179.

M2 Validation Watching Brief		SHEET NO: 1 of 3
Project: Princess Royal Barrack, Deepcut, Surrey		Date of Visit: 23.10.2020
Client: CALA Homes (Thames) Ltd	Weather Conditions: sunny	
Contract No.: C-02035-C		
Present: Hydrock Consultants - Mike Rudd, Cala Homes – Alastair Campbell, Houlihans – Graham Knight		

Summary of Work Activities:
M2 Rear Garden Validation Watching Brief for rear gardens of plots 178 and 179.

Comments/Discussions:
Progress: 08:00 – 13:00 Finish placing sub-soil in Plots 178 – 179 leaving 150mm space for topsoil.
Geological Notes: Subsoil consisted of wet, very soft to soft, dark brown, slightly sandy, slightly gravelly clayey silt. Gravel consisted of fine to coarse subrounded to angular flint. Occasional roots and rootlets. Rare gravel sized fragments of brick, tile or glass. All encountered glass fragments were removed.
Samples Taken: None.

M2 Validation Watching Brief

SHEET NO: 2 of 3



Raking placed topsoil with excavator bucket for picking in Plot 178.



Final sub-soil layer in Plots 178 - 179.

M2 Validation Watching Brief

SHEET NO: 3 of 3



Protection measures from follow on trades in Plot 178.



Space left for topsoil in Plots 178 and 179.

M2 Validation Watching Brief		SHEET NO: 1 of 3
Project: Princess Royal Barrack, Deepcut, Surrey		Date of Visit: 30.11.2020
Client: CALA Homes (Thames) Ltd	Weather Conditions: Cloudy with slight rain	
Contract No.: C-02035-C		
Present: Hydrock Consultants - Mike Rudd and Katie Timkey, Cala Homes – Alastair Campbell, Houlihans – Graham Knight		

Summary of Work Activities:
M2 Rear Garden Validation Watching Brief for rear gardens of plots 184 -187.

Comments/Discussions:
<p>Progress:</p> <p>08:30 – 12:00</p> <p>Logging and sampling topsoil in Plots 182 + 183.</p> <p>Placing subsoil in Plots 184 + 185 leaving 150mm space for topsoil. Clean site won sand was available that did not contain anthropogenic material.</p> <p>12:00 – 16:00</p> <p>Placing subsoil in Plots 186 + 187 leaving 150mm space for topsoil. Clean site won sand was available that did not contain anthropogenic material.</p> <p>16:00 – 16:30</p> <p>Sampling POS opposite Plot 171.</p> <p>Geological Notes:</p> <p>Plots 182 to 183</p> <p>Topsoil consisted of: 0 - 0.15 Turf over very soft (wet) brown slightly sandy, slightly gravelly CLAY with frequent roots and rootlets and organic inclusions up to 10mm across. Gravel is fine to medium subrounded flint.</p> <p>Plots 184 and 185</p> <p>Subsoil consisted of: Orange yellow and grey slightly clayey to clayey SAND with occasional roots and inclusions of dark brown silt and organic material up to 10mm across, Gravel fine to coarse subrounded flint.</p> <p>Plots 186 and 187</p> <p>Subsoil consisted of: Orange yellow and grey slightly clayey to clayey SAND with occasional roots and inclusions of dark brown silt and organic material up to 10mm across, Gravel fine to coarse subrounded flint.</p> <p>POS opposite Plot 171</p> <p>Topsoil consisted of soft, light brown, slightly gravelly, sandy clayey silt with common roots, rootlets and plant stems. The gravel was fine to coarse, rounded to angular flint.</p> <p>Samples Taken:</p> <p>Plot 182, 183 + POS Topsoil at 0.1mbgl</p> <p>Plot 185 + 187 Subsoil 0.1mbgl</p>

M2 Validation Watching Brief

SHEET NO: 2 of 3



Tracking placed topsoil in Plot 184 + 185.



Final subsoil layer in Plot 184.

M2 Validation Watching Brief

SHEET NO: 3 of 3



Membrane in Plot 184.



Space left for topsoil in Plots 184 + 185.

M2 Validation Watching Brief

SHEET NO: 3 of 4



Plots 186 (left) and 187 (right).



Membrane being laid for Plots 186 (right) and 187 (left).

Appendix C

Laboratory Result Certificates



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Mike Rudd

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

Analytical Report Number : 20-37230

Project / Site name:	Deepcut	Samples received on:	23/10/2020
Your job number:	C-02035	Samples instructed on/ Analysis started on:	23/10/2020
Your order number:	PO02854	Analysis completed by:	02/11/2020
Report Issue Number:	1	Report issued on:	02/11/2020
Samples Analysed:	2 soil samples		

Signed:

Joanna Wawrzeczko
 Technical Reviewer (Reporting 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.



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Analytical Report Number: 20-37230

Project / Site name: Deepcut

Your Order No: PO02854

Lab Sample Number		1660331	1660332
Sample Reference		Plot 182 SS	P179-SS-0.3
Sample Number		None Supplied	None Supplied
Depth (m)		0.30	0.30
Date Sampled		20/10/2020	20/10/2020
Time Taken		None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status
Stone Content	%	0.1	NONE
Moisture Content	%	N/A	NONE
Total mass of sample received	kg	0.001	NONE

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

pH - Automated	pH Units	N/A	MCERTS	8.2	8.3
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.53	0.51
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	0.011	0.012

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	0.41
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.63	1
Pyrene	mg/kg	0.05	MCERTS	0.58	0.92
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.39	0.59
Chrysene	mg/kg	0.05	MCERTS	0.3	0.5
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.49	0.68
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.18	0.34
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.3	0.57
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.2	0.31
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.25	0.39

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	3.32	5.74
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.2	7.2
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.36	0.37
Boron (water soluble)	mg/kg	0.2	MCERTS	1	0.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	16	17
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	16	17
Copper (aqua regia extractable)	mg/kg	1	MCERTS	16	18
Lead (aqua regia extractable)	mg/kg	1	MCERTS	31	29
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	7.3	7.2
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	24	26
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	77	60



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Environmental Science

Analytical Report Number: 20-37230

Project / Site name: Deepcut

Your Order No: PO02854

Lab Sample Number	1660331	1660332			
Sample Reference	Plot 182 SS	P179-SS-0.3			
Sample Number	None Supplied	None Supplied			
Depth (m)	0.30	0.30			
Date Sampled	20/10/2020	20/10/2020			
Time Taken	None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Monoaromatics & Oxygenates

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

Petroleum Hydrocarbons

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

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

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



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Environmental Science

Analytical Report Number : 20-37230

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 *
1660331	Plot 182 SS	None Supplied	0.3	Brown loam and sand with gravel.
1660332	P179-SS-0.3	None Supplied	0.3	Brown loam and sand with gravel.



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Environmental Science

Analytical Report Number : 20-37230

Project / Site name: Deepcut

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
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
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
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	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
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
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
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
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
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
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
TPH Chromatogram in Soil	TPH Chromatogram in Soil.	In-house method	L064-PL	D	NONE
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	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
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



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Environmental Science

Analytical Report Number : 20-37230

Project / Site name: Deepcut

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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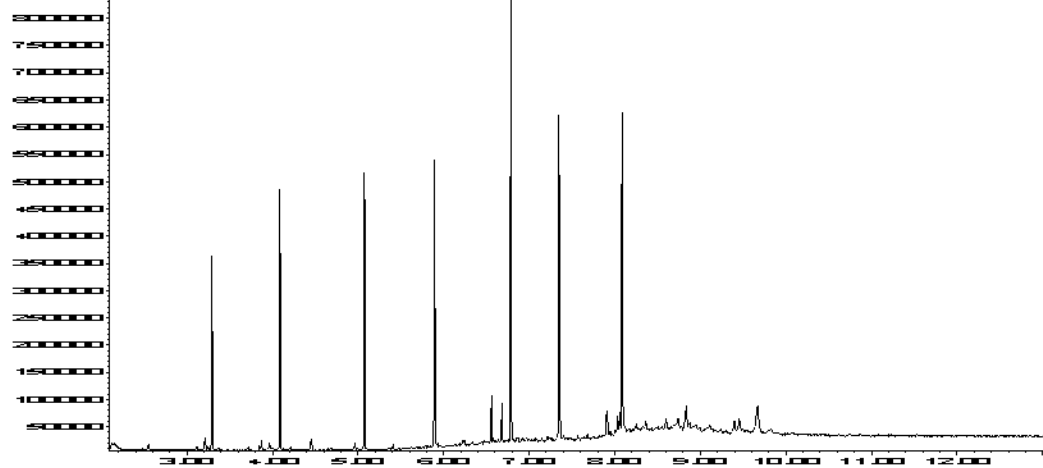
For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

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.

Abundance

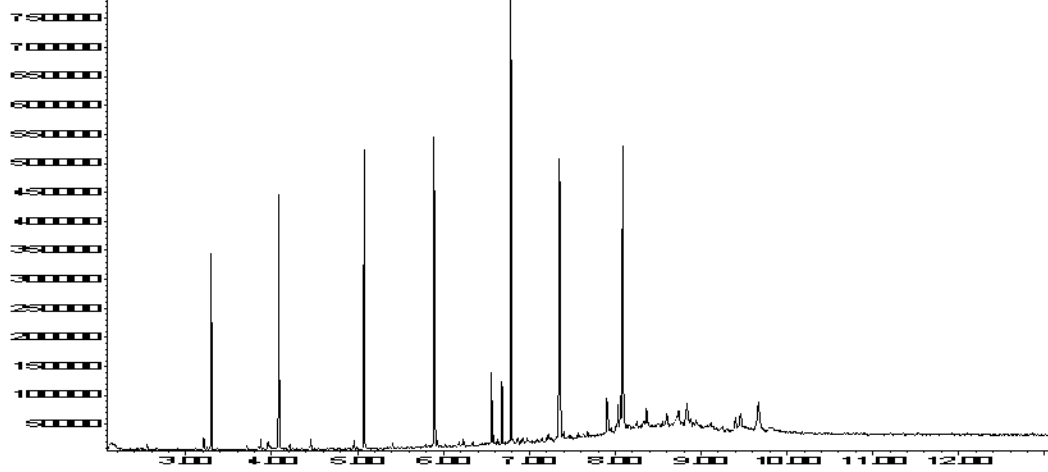
TIC: 201601190001-109-10548.M.ms.tic



Time-->

Abundance

TIC: 201811290002-UGB-10248.D\\data.ms



Time-->



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i2 Analytical Ltd.
7 Woodshots Meadow,
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WD18 8YS

Analytical Report Number : 20-44430

Project / Site name:	Deepcut	Samples received on:	01/12/2020
Your job number:	C-02035	Samples instructed on/ Analysis started on:	02/12/2020
Your order number:	PO03830	Analysis completed by:	04/12/2020
Report Issue Number:	1	Report issued on:	04/12/2020
Samples Analysed:	5 soil samples		

Signed: 

Rachel Bradley
Deputy Quality Manager
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

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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.

Analytical Report Number: 20-44430
Project / Site name: Deepcut

Lab Sample Number	1701245	1701246	1701247	1701248			
Sample Reference	P183-TS-0.1	P182-TS-0.1	P185-SS-0.1	P187-SS-0.1			
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied			
Depth (m)	0.10	0.10	0.10	0.10			
Date Sampled	30/11/2020	30/11/2020	30/11/2020	30/11/2020			
Time Taken	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	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	26	26	14	13
Total mass of sample received	kg	0.001	NONE	1.5	1.2	1	1.2

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

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.3	7.1	5.8	7.5
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	0.11	0.049	0.032	0.1
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	0.019	0.024	0.0012	0.0095

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 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
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	< 0.05	< 0.05	< 0.05	0.13
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 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
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 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
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Analytical Report Number: 20-44430
Project / Site name: Deepcut

Lab Sample Number	1701245	1701246	1701247	1701248
Sample Reference	P183-TS-0.1	P182-TS-0.1	P185-SS-0.1	P187-SS-0.1
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.10	0.10	0.10	0.10
Date Sampled	30/11/2020	30/11/2020	30/11/2020	30/11/2020
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	

Heavy Metals / Metalloids

Analytical Parameter	Units	Limit of detection	Accreditation Status	1701245	1701246	1701247	1701248
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	11	9.1	8.4
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.65	0.72	0.35	0.32
Boron (water soluble)	mg/kg	0.2	MCERTS	1.2	1	0.3	0.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 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	29	32	16	13
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	29	32	17	13
Copper (aqua regia extractable)	mg/kg	1	MCERTS	17	19	4.5	8.2
Lead (aqua regia extractable)	mg/kg	1	MCERTS	37	41	6.1	17
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	11	12	3.8	5.5
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	49	55	28	25
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	54	60	19	32

Monoaromatics & Oxygenates

Analytical Parameter	Units	Limit of detection	Accreditation Status	1701245	1701246	1701247	1701248
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 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

Petroleum Hydrocarbons

Analytical Parameter	Units	Limit of detection	Accreditation Status	1701245	1701246	1701247	1701248
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 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
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 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
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 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
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 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

Analytical Parameter	Units	Limit of detection	Accreditation Status	1701245	1701246	1701247	1701248
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 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
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 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
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4

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

Analytical Report Number: 20-44430

Project / Site name: Deepcut

Lab Sample Number				1701249
Sample Reference				POS-TS-0.1
Sample Number				None Supplied
Depth (m)				0.10
Date Sampled				30/11/2020
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	15
Total mass of sample received	kg	0.001	NONE	1.2

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

pH - Automated	pH Units	N/A	MCERTS	8.7
Free Cyanide	mg/kg	1	MCERTS	< 1
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	0.078
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	0.021

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.37
Anthracene	mg/kg	0.05	MCERTS	0.09
Fluoranthene	mg/kg	0.05	MCERTS	1.3
Pyrene	mg/kg	0.05	MCERTS	1.2
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.66
Chrysene	mg/kg	0.05	MCERTS	0.74
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.73
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.49
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.76
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.33
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.09
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.47

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	7.29
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Analytical Report Number: 20-44430
Project / Site name: Deepcut

Lab Sample Number	1701249
Sample Reference	POS-TS-0.1
Sample Number	None Supplied
Depth (m)	0.10
Date Sampled	30/11/2020
Time Taken	None Supplied

Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Heavy Metals / Metalloids				
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.2
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.34
Boron (water soluble)	mg/kg	0.2	MCERTS	0.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2
Chromium (III)	mg/kg	1	NONE	14
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	14
Copper (aqua regia extractable)	mg/kg	1	MCERTS	15
Lead (aqua regia extractable)	mg/kg	1	MCERTS	42
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	7.6
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	23
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	63

Monoaromatics & Oxygenates

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

Petroleum Hydrocarbons

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

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	13
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4

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

Analytical Report Number : 20-44430

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 *
1701245	P183-TS-0.1	None Supplied	0.1	Brown clay and loam with gravel.
1701246	P182-TS-0.1	None Supplied	0.1	Brown clay and loam with gravel.
1701247	P185-SS-0.1	None Supplied	0.1	Brown sand with gravel.
1701248	P187-SS-0.1	None Supplied	0.1	Brown loam with gravel.
1701249	POS-TS-0.1	None Supplied	0.1	Brown loam with gravel.

Analytical Report Number : 20-44430
Project / Site name: Deepcut

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
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
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
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	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
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
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
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
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
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
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
TPH Chromatogram in Soil	TPH Chromatogram in Soil.	In-house method	L064-PL	D	NONE
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	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

Analytical Report Number : 20-44430
Project / Site name: Deepcut

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Sulphate, water soluble, in soil (1hr extraction)	Sulphate, water soluble, in soil (1hr extraction)	In-house method	L038-PL	D	MCERTS

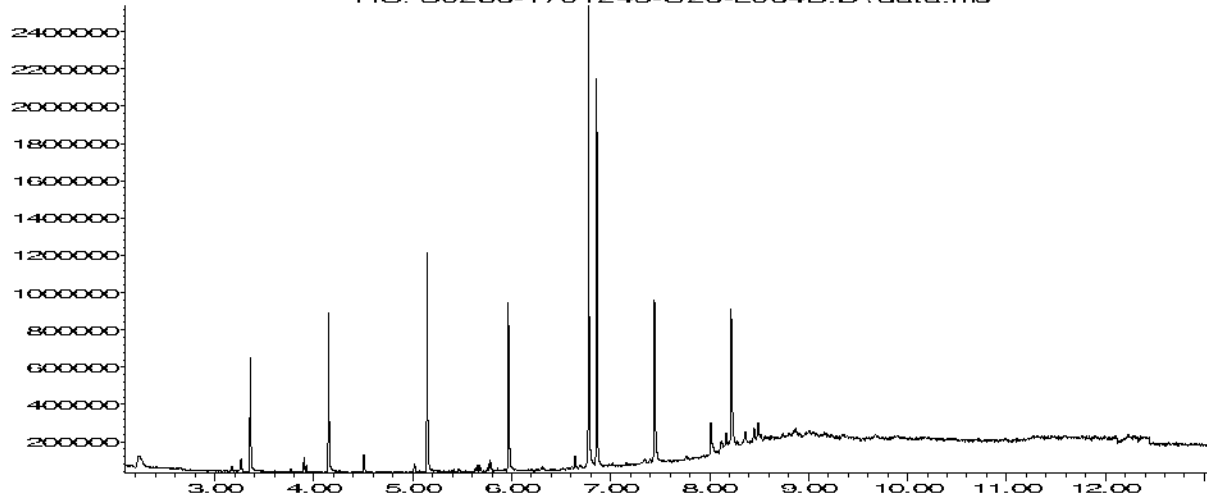
For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

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 30oC.

Abundance

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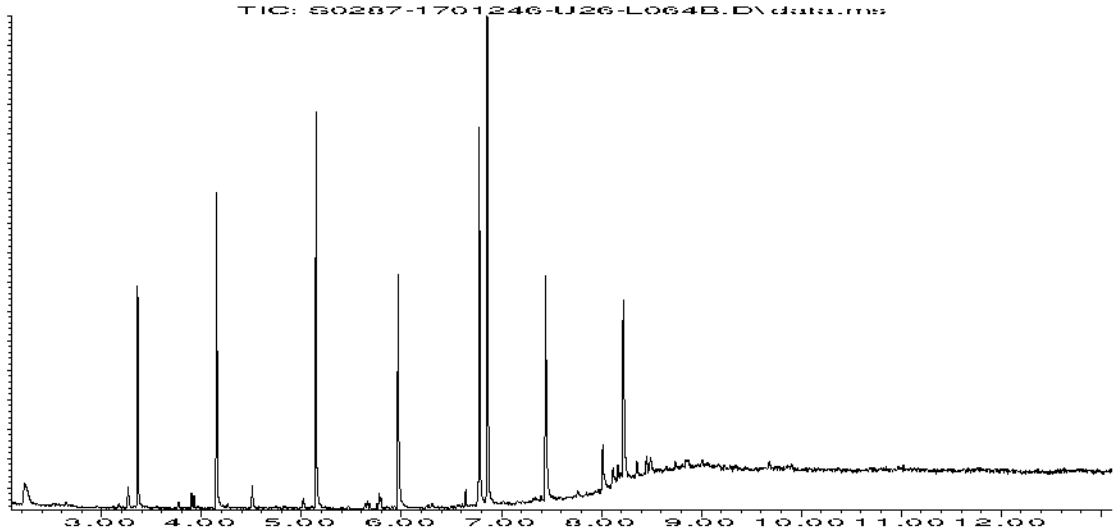


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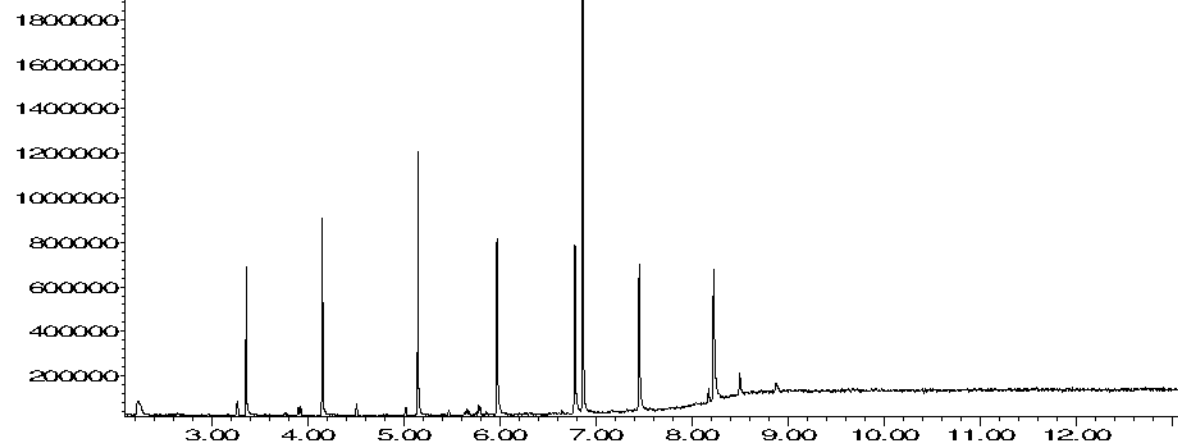
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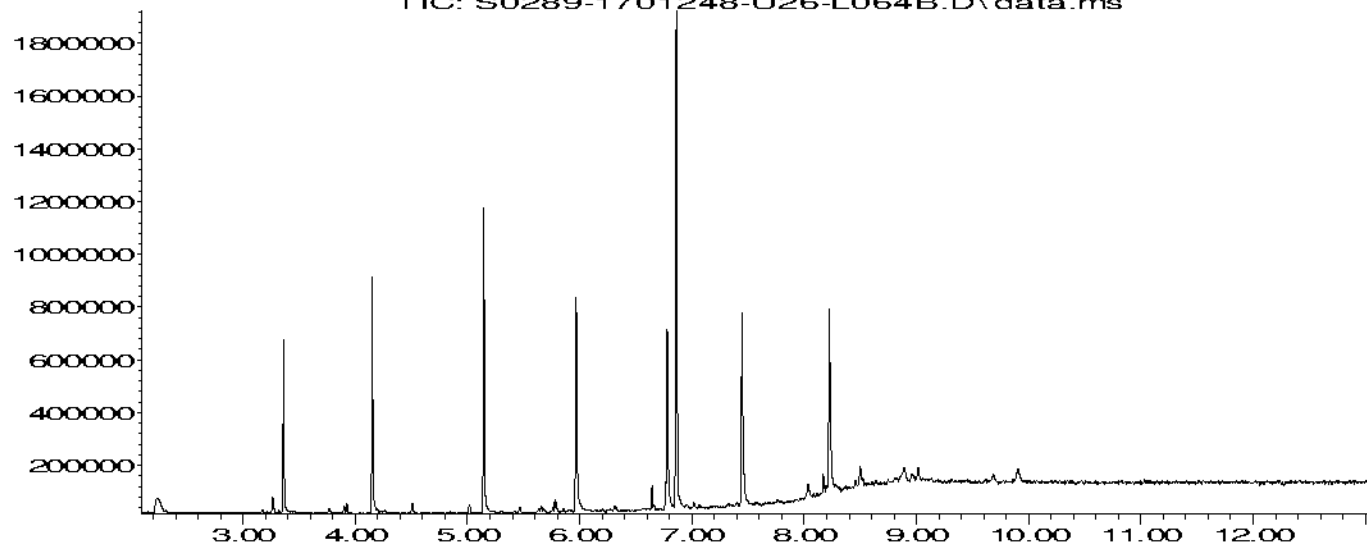
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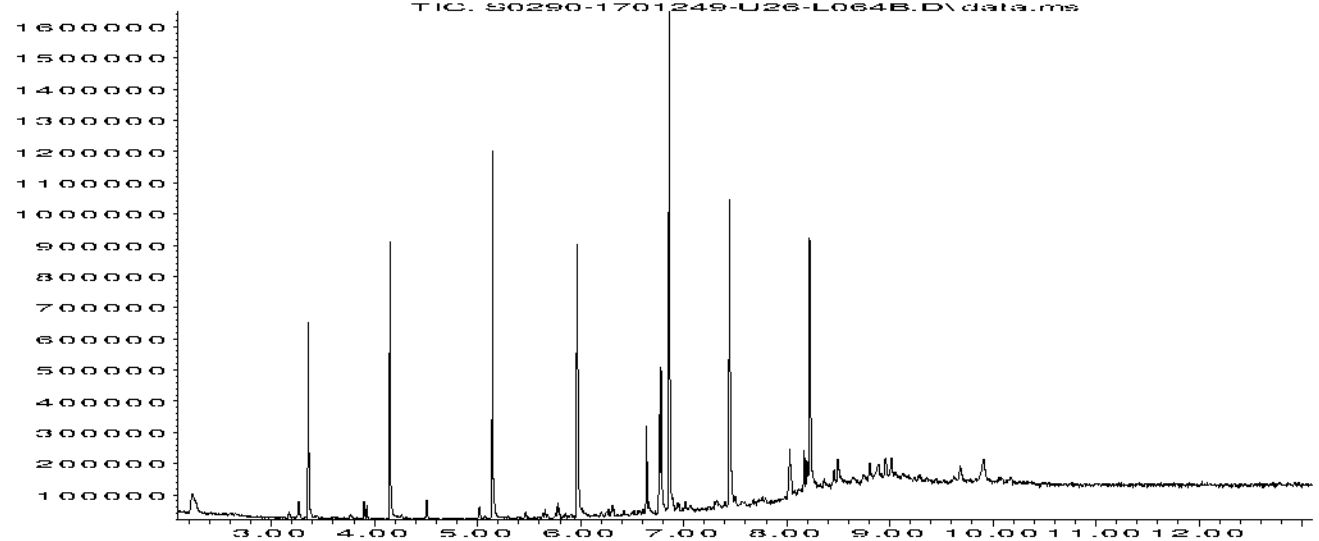
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Appendix D

Soil Assessment Tables

Assessment of Chemicals of Potential Concern to Human Health



Chemical of Potential Concern	All values in mg/kg unless otherwise stated						Soil Type		Location & Depth	
	Lab. RL	No. Samples	Min. Value	Max. Value	No. Samples > or = GAC	GAC	SS	SS	Plot 182 SS	P179-SS-0.3
							0.3m	0.3m	0.3m	0.3m
Arsenic	1	2	7.19	7.2	0	37	7.19	7.2		
Beryllium	0.06	2	0.36	0.37	0	73	0.36	0.37		
Boron	0.2	2	0.8	1	0	300	1	0.8		
Cadmium	0.2	2	0.2	0.2	0	14	0.2	0.2		
Chromium (III)	1	2	16	17	0	890	16	17		
Chromium (VI)	1.2	2	1.2	1.2	0	6.1	1.2	1.2		
Copper	1	2	16	18	0	2500	16	18		
Lead	2	2	29	31	0	200	31	29		
Mercury, inorganic	0.3	2	0.3	0.3	0	170	0.3	0.3		
Nickel	2	2	7.2	7.3	0	130	7.3	7.2		
Selenium	1	2	1	1	0	360	1	1		
Vanadium	1	2	24	26	0	410	24	26		
Zinc	2	2	60	77	0	3900	77	60		
Cyanide (free)	1	2	1	1	0	790	1	1		
Phenol (total)	1	2	1	1	0	290	1	1		
Acenaphthene	0.05	2	0.05	0.05	0	220	0.05	0.05		
Acenaphthylene	0.05	2	0.05	0.05	0	180	0.05	0.05		
Anthracene	0.05	2	0.05	0.05	0	2400	0.05	0.05		
Benz(a)anthracene	0.05	2	0.39	0.59	0	4.2	0.39	0.59		
Benzo(a)pyrene	0.05	2	0.3	0.57	0	1.5	0.3	0.57		
Benzo(b)fluoranthene	0.05	2	0.49	0.68	0	7.6	0.49	0.68		
Benzo(ghi)perylene	0.05	2	0.25	0.39	0	64	0.25	0.39		
Benzo(k)fluoranthene	0.05	2	0.18	0.34	0	12	0.18	0.34		
Chrysene	0.05	2	0.3	0.5	0	7.7	0.3	0.5		
Dibenz(a,h)anthracene	0.05	2	0.05	0.05	0	1.1	0.05	0.05		
Fluoranthene	0.05	2	0.63	1	0	290	0.63	1		
Fluorene	0.05	2	0.05	0.05	0	170	0.05	0.05		
Indeno(1,2,3,cd)pyrene	0.05	2	0.2	0.31	0	4.3	0.2	0.31		
Naphthalene	0.05	2	0.05	0.05	0	2.2	0.05	0.05		
Phenanthrene	0.05	2	0.05	0.41	0	97	0.05	0.41		
Pyrene	0.05	2	0.58	0.92	0	620	0.58	0.92		
Asbestos identified	Y/N						N	N		
FOC (dimensionless)	0.0115	(mean)					0.011	0.012		
SOM (calculated)	1.98%	(mean)					1.90%	2.07%		
pH (su)	8.3	(mean)					8.2	8.3		

Risk parameter: Human health - residential with plant uptake (1%SOM)
Data set: Subsoils
Client: CALA Homes Ltd
Site: Deepcut - Parcel M2
Job no.: C02035
Lab. report no(s): 20-37230

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).
 MG denotes Made Ground
 NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Human Health



Chemical of Potential Concern	All values in mg/kg unless otherwise stated						Soil Type	TS	TS										
	Location & Depth							P183-TS-0.1	P182-TS-0.1										
	Lab. RL	No. Samples	Min. Value	Max. Value	No. Samples > or = GAC	GAC		0.1m	0.1m										
Arsenic	1	2	11	12	0	37		12	11										
Beryllium	0.06	2	0.65	0.72	0	73		0.65	0.72										
Boron	0.2	2	1	1.2	0	300		1.2	1										
Cadmium	0.2	2	0.2	0.2	0	14		0.2	0.2										
Chromium (III)	1	2	29	32	0	890		29	32										
Chromium (VI)	1.2	2	1.2	1.2	0	6.1		1.2	1.2										
Copper	1	2	17	19	0	2500		17	19										
Lead	2	2	37	41	0	200		37	41										
Mercury, inorganic	0.3	2	0.3	0.3	0	170		0.3	0.3										
Nickel	2	2	11	12	0	130		11	12										
Selenium	1	2	1	1	0	360		1	1										
Vanadium	1	2	49	55	0	410		49	55										
Zinc	2	2	54	60	0	3900		54	60										
Cyanide (free)	1	2	1	1	0	790		1	1										
Phenol (total)	1	2	1	1	0	290		1	1										
Acenaphthene	0.05	2	0.05	0.05	0	220		0.05	0.05										
Acenaphthylene	0.05	2	0.05	0.05	0	180		0.05	0.05										
Anthracene	0.05	2	0.05	0.05	0	2400		0.05	0.05										
Benzo(a)anthracene	0.05	2	0.05	0.05	0	4.2		0.05	0.05										
Benzo(a)pyrene	0.05	2	0.05	0.05	0	1.5		0.05	0.05										
Benzo(b)fluoranthene	0.05	2	0.05	0.05	0	7.6		0.05	0.05										
Benzo(ghi)perylene	0.05	2	0.05	0.05	0	64		0.05	0.05										
Benzo(k)fluoranthene	0.05	2	0.05	0.05	0	12		0.05	0.05										
Chrysene	0.05	2	0.05	0.05	0	7.7		0.05	0.05										
Dibenz(a,h)anthracene	0.05	2	0.05	0.05	0	1.1		0.05	0.05										
Fluoranthene	0.05	2	0.05	0.05	0	290		0.05	0.05										
Fluorene	0.05	2	0.05	0.05	0	170		0.05	0.05										
Indeno(1,2,3,cd)pyrene	0.05	2	0.05	0.05	0	4.3		0.05	0.05										
Naphthalene	0.05	2	0.05	0.05	0	2.2		0.05	0.05										
Phenanthrene	0.05	2	0.05	0.05	0	97		0.05	0.05										
Pyrene	0.05	2	0.05	0.05	0	620		0.05	0.05										
Asbestos identified	Y/N							N	N										
FOC (dimensionless)	0.0215	(mean)						0.019	0.024										
SOM (calculated)	3.71%	(mean)						3.28%	4.14%										
pH (su)	7.7	(mean)						8.3	7.1										

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

Data set: Topsoils

Client: CALA Homes Ltd

Site: Deepcut - Parcel M2

Job no.: C02035

Lab. report no(s): 20-44430

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).
 MG denotes Made Ground
 NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Plant Life

Chemical of Potential Concern	All values in mg/kg unless otherwise stated						Soil Type	SS	SS									
	Lab. RL	No. Samples	Min. Value	Max. Value	No. Samples > or = GAC	GAC	Location & Depth	Plot 182 SS	P179-SS-0.3									
								0.3m	0.3m									
Arsenic	1	2	7.19	7.2	0	250		7.19	7.2									
Boron	0.2	2	0.8	1	0	3		1	0.8									
Chromium (III)	1	2	16	17	0	400		16	17									
Chromium (VI)	1.2	2	1.2	1.2	0	25		1.2	1.2									
Copper	1	2	16	18	0	200		16	18									
Nickel	2	2	7.2	7.3	0	110		7.3	7.2									
Zinc	2	2	60	77	0	300		77	60									
	Mean																	
pH (su)	8.3							8.2	8.3									

Risk parameter: Plant life pH >7

Data set: Subsoils

Client: CALA Homes Ltd

Site: Deepcut - Parcel M2

Job no.: C02035

Lab. report no(s): 20-37230

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).
 MG denotes Made Ground
 NAT denotes natural ground

Assessment of Chemicals of Potential Concern to Plant Life

Chemical of Potential Concern	All values in mg/kg unless otherwise stated						Soil Type	TS	TS								
	Lab. RL	No. Samples	Min. Value	Max. Value	No. Samples > or = GAC	GAC	Location & Depth	P183-TS-0.1	P182-TS-0.1								
								0.1m	0.1m								
Arsenic	1	2	11	12	0	250		12	11								
Boron	0.2	2	1	1.2	0	3		1.2	1								
Chromium (III)	1	2	29	32	0	400		29	32								
Chromium (VI)	1.2	2	1.2	1.2	0	25		1.2	1.2								
Copper	1	2	17	19	0	200		17	19								
Nickel	2	2	11	12	0	110		11	12								
Zinc	2	2	54	60	0	300		54	60								
	Mean																
pH (su)	7.7							8.3	7.1								

Risk parameter: Plant life pH >7

Data set: Topsoils

Client: CALA Homes Ltd

Site: Deepcut - Parcel M2

Job no.: C02035

Lab. report no(s): 20-44430

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).
 MG denotes Made Ground
 NAT denotes natural ground

Appendix E

Houlihan & Co. Method Statement



17.0	<u>Methodology:</u> Substructure to Building	<p>Foundation Excavations:</p> <p>Strip footings</p> <ul style="list-style-type: none"> Carry out CAT scan of the area. Identify the extent of the individual plots foundation by marking out with spray paint. The control of the reduced level dig will be carried out using a horizontal laser level. Excavate the foundation to the designed formation level, using a tracked 360° excavator. <p>Strip footings: Steel mesh reinforcement is required in the top & bottom of the footings; bottom layer of mesh, with chairs attached will be lowered from ground level by looping rope around the mesh and lowering it down, the rope can be withdrawn once the mesh has been placed avoiding man entry. The personnel involved in lowering in the mesh will stand on MGF trench crossing platforms placed to avoid surcharging the edge of the excavation and avoiding standing at the edge of the ends of the excavation where the trench is deeper than 1.2m.. The top layer of mesh can be carefully placed from ground level by hand and pressed in to achieve 50mm cover via a rake.</p> <ul style="list-style-type: none"> Offer excavation for inspection & approval. Bank concrete delivery lorries to a safe distance from the excavation and place concrete by either discharging directly from the lorry (using 3 chutes) or by discharging into the excavator bucket and placing by machine. Brickwork and blockwork footings will then be carried out as required to the standards and requirements contained within the contract drawings, specifications and supplier's recommendations. <p>Beam & Block Floors :</p> <ul style="list-style-type: none"> Once all the services have been installed, the internal course of blockwork will be built to the underside of the beam and block floors. Once the blockwork has cured, the precast concrete beams will be lifted into position with the 360 Tracked Excavators. Beams will be located and slung into position in preparation for the placement of the infill blockwork. Design attached along with installation guidelines.
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18.0	<u>Methodology:</u> Domestic Drainage	<p>Excavations are generally at or below 1.2m.b.g.l. and typically 100mmØ – 150mmØ plastic pipe runs are typically described below:</p> <ul style="list-style-type: none"> Set out the extent of the run/s, ideally commencing from the terminal connection or lowest point. Conduct existing survey investigations as previously described. Identify access, movement and storage areas and erect safety exclusion fencing to enclose the works. Place shingle bedding using the excavator bucket or by a site dumper being banked to the point of discharge. Note that during the placement of any material to trenches that all operatives will evacuate the excavation. Manually place pipes of 150Ø or below and align using either a string line or pipe laser, as appropriate. Test the section prior to placing shingle protection as noted above. Backfill in the appropriate layers using excavated material and compacting with a trench or standard vibrating plate compactor. Manhole excavations will be conducted and either supported via a propitiatory manhole box or stepped/battered sufficiently; the non-man entry chamber sections placed by a qualified general construction worker. On completion, the run will be marked on the as-built record drawing together with dates of test & inspections.
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19.0	<u>Methodology:</u> External Work <u>Slabs/Block Paving</u> <u>Topsoil</u>	<p>PCC Slabs & Block paviour areas</p> <ul style="list-style-type: none"> Set out Positions of Slabs& blocks to be laid. Set out any grid lines for the control of Paving Line and Level. Protection: If working adjacent to the finished units, fix Plywood protection to any finished facias, seek advice from site manager. Care to be taken to protect the slabs and edgings already placed prior to works commencing. Works area to have all debris, grass, topsoil removed and stripped down to formation. Stone will then be imported and compacted as per designed drawings (sub- base depth to be confirmed). Screed rails shall then be set to the correct level to allow sand layer. Lay the slabs & block paving by Hand onto the sand layer. All materials to be stacked at 2 m away from the leading edge to ensure that the paving is not pushed down at the leading edge. Where paviour blocks are to be used they are to be laid on bedding layer type 2/6.3 Once the paving has been laid, the area will be offered for inspection prior to sanding. Sand area and hand over. Remove all barriers and proceed to the next work area. <p>Back/front gardens landscape topsoil finish</p> <ul style="list-style-type: none"> Works for placing subsoil and topsoil on the back gardens must take place before the fences have been installed to the houses, to have clear access for excavator and dumper. Levels will be check and made sure the area in back garden or area for landscape is at least 600mm below finish level. Hydrock will be checking the formation prior subsoil placement. It will be to their discretion if there will be used a separation membrane. If need will be placing a membrane before start placing subsoil. Membrane will be overlapping at least 300mm. Hydrock will be carrying out watch and brief during all the process of placing subsoil and topsoil on the back gardens. It will start from the
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		<p>moment loading the dumpers from the spoil heaps, emptying them and while it is being placed on back gardens.</p> <ul style="list-style-type: none"> • Subsoil we will be loaded and placed on small amounts to the guidance of the Hydrock. It will be placed on layers and raked for the Hydrock representative to have a clear view. • Once the area is finished with subsoil it will be ready to place the topsoil. • Topsoil for the other plots will be imported on site. • Topsoil will be brought again using a dumper. • Excavator will start again in the far corner and work its way towards access point. • Topsoil will be placed and levelled by an excavator at height of 150mm to the required finish level. • Then an operative will make good at uniform finish level using a rake. • For the other plots we will be using subsoil stripped from M1 and placed on spoil heap on M2. This subsoil will be screened and will be place by watch and brief from Hydrock, Watch and brief will take place to eliminate presence of glasses and sharps from subsoil.
<p>20.0</p>	<p><u>Methodology:</u> Works on / near Underground Services</p>	<ul style="list-style-type: none"> • Pre-tender information and Construction Phase Plan will be used and considered in light of additional information from utilities' plan drawings, section drawings from utility companies recording depth of services and commissioned ground probing radar surveys as necessary. A full survey of the perimeter has been recommended in the Cala PCI ("It is imperative a full survey around the entire site and its perimeter for underground and overhead services is carried out prior to the start of any ground penetration works.") but this has not been seen. • Any on-site service disconnections should be confirmed by Cala prior to the commencement of construction. It is not clear if the proposed disconnections to the cottages have taken place. We will assume they have not happened until we can see proof otherwise. • The only drawings provided are for gas and water. The PCI notes "There is also an existing MOD foul rising main that crosses parcel M2, this will require diversion by Skanska prior to commencement within that parcel." We are unaware if this has happened. "The development is within the area served by Scottish and Southern Energy (SSE), and there are SSE services present both in the vicinity of the site, and within the site itself. Below ground 11kV cables are present to the south of the site, just outside the site boundary." PCI • The assumption that live working can be avoided as the default position is set out above and a full justification of any live working must be set out before this is considered. A method statement for live working will be required as live working is not considered to be properly controlled by any permit to work system. HSG47, rev. Feb.2014, states "Where new services such as electrical or gas supplies are being installed, it may be possible to reduce risks by not installing or commissioning them until other groundworks and work on the installation have been completed. This should be considered early in the design process to allow the works to be sequenced accordingly." • A cable avoidance tool in conjunction with a transmitter will be used by a competent person, prior to the commencement and during any work, to identify all services and ducts. The intention will be to bring up to date records of existing services and to supplement these records where they are deficient. Services found will be clearly identified to avoid the risk of damage and where necessary, we will hand dig around them to expose the services prior to full excavation. Hand digging will require the use of air picks to expose services, starting immediately under the hard cover. Record drawings will be red-lined to show the most up to date information, held available on site for consultation and details communicated at inductions, tool box talks and in careful briefing on site prior to excavation. • As each service is exposed, it will be photographed and sketched with off sets noted to inform future re-visits. • Back fill will be with self-compacting granular material to a level where compaction is acceptable and then in suitable material, including selected as dug, which must be possible to excavate with the air pick in future: i.e. dense cohesive material like clay must NOT be used. If suitable backfill material as described is not available, the excavation should not proceed. • Warning tape will always be placed, and if it has not been provided by the utility, we will have rolls to use. If physical protection is specified, then the backfill will not be completed until the protection is in place. • Great care will be taken to establish what is meant by "terminations" or "diversions" and any assertion that there are "no" services will be treated with caution. • Techniques using ground penetrating radar will be considered where information is clearly deficient, and services are congested. • We will comply with the Principal Contractor's Permit to Dig system.

<p>21.0</p>	<p><u>Methodology:</u> Spoil Heaps</p>	<p><u>There will be a need to stockpile separately different categories of material whether it eventually goes to landfill or can be recycled or re-used.</u></p> <ul style="list-style-type: none"> • Stockpiles will be constructed using dumpers climbing 1:5 / 20° ramps twice as wide as the dumper wheel spread (minimum 6tonne dumper) • The dumper will tip material until an excavator is required to grade off the sides to a compacted batter throwing off rainwater, and dressing the top likewise. • Dumpers must not tip on-top of a uneven heap all tipping operations must be undertaken on level firm ground. • The sides and end of the spoil heap must be bunded (at least 1.0m(H)1.0m(W)) • The stockpile will be monitored for slippage and damped down if any dust becomes airborne. • The angle of repose will be estimated for different materials, with 45° an accepted average unless there is evidence of slippage. • Stockpiles of topsoil will be no higher than 2.0m as this would prevent aerobic action in the heap and render the topsoil sterile. • Notify the H&S department to arrange inspection within 24 hours of the formed spoil heap. <p>Standard detail below:</p>
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Appendix F

Imported Soil Certifications



Certificate of Analysis

Client: LITTLE BUSHYWARREN
(J118) COMPOSTING SITE
VEOLIA ENVIRONMENTAL SERV
LITTLE BUSHYWARREN COPSE
HERRIARD
BASINGSTOKE RG25 2NS

Originator: STEVE PRITCHARD
SOIL

Lab ID: 13218 - 482674
Sample ID: 60 40 V
Sample Weight: 2669g

Date Received: 30/06/2020
Date Reported: 06/07/2020

BS 3882 : 2015 SPECIFICATION FOR TOPSOIL Multipurpose Grade

		Unit	Result	Multi-P	Compliant with range (Y/N)				
					Acid	Calc	Low-F	Low-F Acid	Low-F Calc
Texture:	Clay	% w/w	11						
	Silt	% w/w	4						
	Sand	% w/w	85						
	Textural Class		Loamy Sand	Y	Y	Y	Y	Y	Y
					<i>See area of permitted soil textural classes in Fig. 1.</i>				
Organic Matter:		% w/w	6.0	Y	Y	Y	Y	Y	Y
Coarse Fragment Content:	>2 mm	% w/w	0.1	Y	Y	Y	Y	Y	Y
	>20 mm	% w/w	0.0	Y	Y	Y	Y	Y	Y
	>50 mm	% w/w	0.0	Y	Y	Y	Y	Y	Y
Soil pH:			7.9	Y	N	Y	Y	N	Y
Carbonate:		% w/w	<1			N			N
Available Plant Nutrients:	Nitrogen	% w/w	0.235	Y	Y	Y			
	Phosphorus	mg/l	44.2 (3)*	Y	Y	Y	N	N	N
	Potassium	mg/l	815.8 (5)*	Y	Y	Y			
	Magnesium	mg/l	148.6 (3)*	Y	Y	Y			
Carbon:Nitrogen Ratio:		:1	14.8	Y	Y	Y	Y	Y	Y
Exchangeable Sodium Percentage:		%	3.3						
Phytotoxic Contaminants:	Total Zinc	mg/kg	40.0	Y	Y	Y	Y	Y	Y
	Total Copper	mg/kg	9.5	Y	Y	Y	Y	Y	Y
	Total Nickel	mg/kg	<10	Y	Y	Y	Y	Y	Y
Visible Contaminants:	> 2mm	% w/w	0.00	Y	Y	Y	Y	Y	Y
	Plastics	% w/w	0.00	Y	Y	Y	Y	Y	Y
	Number of Sharps		0	Y	Y	Y	Y	Y	Y
Additional Analysis:	Available Sodium	mg/l	66.5						
	Available Calcium	mg/l	1020.0						
	Conductivity	uS/cm	2561	Y					
Compliance:				Y	N	N	N	N	N

Results are expressed on a dry matter basis.

* Soil indices from RB209

Released by:

Darren Whitbread

Date: 06/07/2020

DECLARATION:

I certify that this sample has been analysed by NRM in accordance with BS 3882 Specification for Topsoil (2015).

NRM Coopers Bridge, Braziers Lane, Bracknell, Berkshire RG42 6NS

Tel: +44 (0) 1344 886338 **Fax:** +44 (0) 1344 890972 **Email:** enquiries@nrm.uk.com **www:** nrm.uk.com



Analytical Report

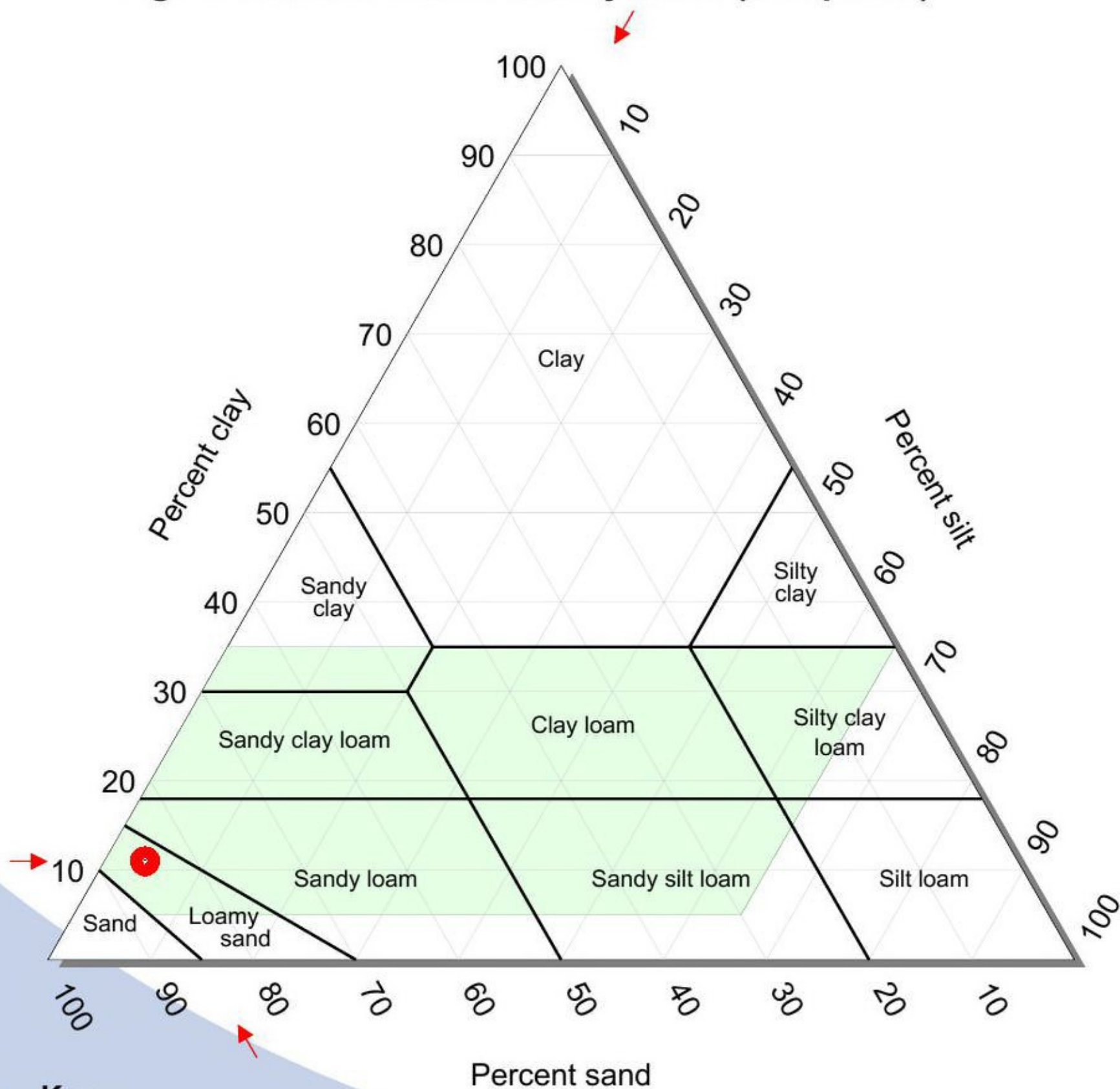
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SOIL


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Fig. 1. Textural Class: Loamy Sand (compliant)



Key

 Area within which texture of topsoil is required to fall.