

14092/RH

28 October 2022

Lovell Partnerships Ltd
Greenmeadow Business Park
Unit 5
Cae Gwyrdd
Cardiff
CF15 7AB

For the attention of Mr Neil Thomas

Dear Sirs,

Former Whiteheads Steelworks, Mendalgief Road, Newport, NP20 2HY
NHBC Outstanding Land Quality Conditions, Ref: 216335 LQ conditions LQ5 & LQ6.
Planning Permission Number RM1-18/1039, RM2-18/1142 and RM3-21/0464
Validation of Imported Clean Cover Plots 96 to 102 and 110 to 113

Intégral Géotechnique were appointed by the Lovell Partnerships Limited to carry out the clean cover validation inspections to soft landscaped and garden areas within the above development as the site build program progresses. We can report the clean cover soil validation works within the above development site as follows.

This report (including all appendices to it and any subsequent addendums or correspondence) has been prepared for the sole benefit, use and information of the Lovell Partnerships Limited and no third party is entitled to rely on it. This report may not be used, reproduced or circulated (in whole or part) for any purpose without the written consent of Intégral Géotechnique (Wales) Limited. Intégral Géotechnique (Wales) Limited shall not be liable to any third party who does not have such written permission to rely on the report for any losses they may suffer.

This information is submitted in support of the discharge of conditions of the following consents and/or warranties.

Regulator	Reference
Local Authority Planning Permission Number	RM1-18/1039, RM2-18/1142 and RM3-21/0464
NHBC outstanding Land Quality Conditions Ref	216335 LQ conditions LQ5 & LQ6

The required remedial measures regarding the requirement to mitigate land contamination risks at the above site comprise the placement of a clean 600mm capping layer to be incorporated within the soft landscaped and garden areas of the new development. This capping layer is to be underlaid by a Hi-Visibility Geotextile Membrane.

Remedial Strategy Requirements (Clean Capping Layer)

1. The upper 600 mm of fill used in the clean capping layer in all garden and soft finished areas are to be chemically tested and UKAS accredited laboratory analysis certificates supplied. The capping system is to comprise of imported clean inert materials conforming to the Requirements for the Chemical Testing of Imported Materials for Various End Uses and Validation of Cover Systems prepared by Welsh Land Contamination Working Group and to satisfy appropriate soil guideline values for residential developments with gardens. Samples of the topsoil and subsoil will be taken for laboratory analysis, at a frequency of 1 in every 4 gardens.
2. Topsoil brought to the site will require a laboratory analysis certificate confirming its suitability for use and sampling prior to placement to confirm its chemical suitability (minimum of three samples per source).
3. Subsoil will require a laboratory analysis certificate confirming its suitability for use and sampling prior to placement to confirm its chemical suitability (minimum of three samples per source).
4. Following placement of the imported topsoil and subsoil within garden areas, a validation trial pit excavation depth check will be undertaken at a frequency of 1 in 4 plots, so as to confirm the sufficient depth of the clean capping layer, along with observation of a Hi-Visibility Geotextile Membrane placed at the base of the capping soils. An additional sample of topsoil and subsoil will also be taken from each trial pit excavated to further confirm the chemical quality of the topsoil and subsoil on an ongoing basis.

Validation of Clean Capping Layer to Plots 96 to 102 and 110 to 113

An engineer from Intégral Géotechnique attended site on 6th October 2022 and instructed hand/machine dug trial pits for validation purposes, 3 No. trial pits within the above garden areas were examined at plots 98, 110 and 113. These trial pits were found to exhibit the required total of a minimum 600mm of clean cover soil material placed in the garden areas along with observation of the Hi-Visibility Geotextile Membrane placed at the base of the capping soils.

Various photographs of capping depths and infilled constructed gardens are shown in Figures.

Representative samples of the 'as placed' topsoil and subsoil soil materials in the above garden areas inspected have been further sampled and sent to the accredited laboratories of i2 Analytical for chemical analysis.

In-situ chemical soil test reports are attached in Appendix A.

The results of the topsoil and subsoil sampled from within plot 106 above have been summarised and compared to the appropriate screening criteria for a residential end use. The results have been compared to appropriate Suitable 4 Use Levels (S4ULs) derived by LQM, in the first instance. In their absence, the results will have been compared to the Category 4 Screening Levels (C4SL) and the Soil Guideline Values (SGVs) and Soil Screening Values (SSVs) derived by Atkins ATRISKsoil for residential with the consumption of home grown produce end use, to assess the potential risk to human health.

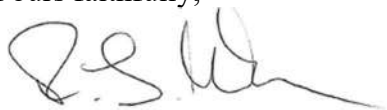
Summary of the in-situ chemical testing results are attached in Appendix B.

Conclusion

This report based on the above information, therefore confirms that the final remediation works regarding the clean capping layer required for plots 96 to 102 and 110 to 113 is complete and the garden capping soils that have been inspected and tested within this report are deemed suitable for their intended end use with respect to the protection of human health. Provision of clean cover to the remaining plots at site and at the required inspection frequency will be provided in due course.

We trust that the above is to your satisfaction. However, if you have any queries or require any further information, please do not hesitate to contact us.

Yours faithfully,



Roger J Hawkins

For

Intégral Géotechnique (Wales) Limited

c.c. Neil Thomas, Lovell Partnerships Ltd
Inc.

APPENDIX A

IN-SITU CHEMICAL SOIL TEST REPORTS



Roger Hawkins
Integral Geotechnique
Integral House
7 Beddau Way
Castlegate Business Park
CF83 2AX

t: 02920807991
f: 02920862176
e: roger@integralgeotec.com

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

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

Analytical Report Number : 22-89161

Project / Site name:	Whiteheads Newport	Samples received on:	11/10/2022
Your job number:	14092 RJH	Samples instructed on/ Analysis started on:	11/10/2022
Your order number:		Analysis completed by:	19/10/2022
Report Issue Number:	1	Report issued on:	19/10/2022
Samples Analysed:	6 soil samples		

Signed:

Elżbieta Suchy
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

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

Analytical Report Number: 22-89161
Project / Site name: Whiteheads Newport

Lab Sample Number				2454821	2454822	2454823	2454824	2454825
Sample Reference				Plot 98 T/S	Plot 98 S/S	Plot 110 T/S	Plot 110 S/S	Plot 113 T/S
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.40	0.10	0.40	0.10
Date Sampled				06/10/2022	06/10/2022	06/10/2022	06/10/2022	06/10/2022
Time Taken				1235	1245	1305	1315	1325
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	20	11	19	12	17
Total mass of sample received	kg	0.001	NONE	0.4	0.4	0.4	0.4	0.4

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

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7	7.6	7.2	8.3	7.4
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO ₄	mg/kg	50	MCERTS	600	810	560	1500	620
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.038	0.14	0.028	0.26	0.036
Sulphide	mg/kg	1	MCERTS	1.1	2.4	1.4	13	1
Total Sulphur	mg/kg	50	MCERTS	290	350	260	580	290
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.5	0.5	1.5	1.1	1.4
Loss on Ignition @ 450oC	%	0.2	MCERTS	4	2	3.6	2.6	3.2

Total Phenols

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

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.31	< 0.05	0.32	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.32	< 0.05	0.27	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

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

Analytical Report Number: 22-89161
Project / Site name: Whiteheads Newport

Lab Sample Number				2454821	2454822	2454823	2454824	2454825
Sample Reference				Plot 98 T/S	Plot 98 S/S	Plot 110 T/S	Plot 110 S/S	Plot 113 T/S
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.40	0.10	0.40	0.10
Date Sampled				06/10/2022	06/10/2022	06/10/2022	06/10/2022	06/10/2022
Time Taken				1235	1245	1305	1315	1325
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status		

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.9	8.8	7.3	8.5	7.4
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.56	0.98	0.48	0.63	0.51
Boron (water soluble)	mg/kg	0.2	MCERTS	0.5	0.6	< 0.2	1.6	0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.5	< 0.2	0.6	0.4
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	25	24	23	57	24
Copper (aqua regia extractable)	mg/kg	1	MCERTS	16	42	12	33	13
Lead (aqua regia extractable)	mg/kg	1	MCERTS	30	32	27	42	32
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	20	23	17	20	18
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	36	33	32	36	33
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	73	110	64	110	76

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 HS_1D_AL	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 HS_1D_AL	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 EH_CU_1D_AL	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC16 - EC35 EH_CU_1D_AL	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic > EC35 - EC44 EH_CU_1D_AL	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35) EH_CU+HS_1D_AL	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (EC5 - EC44) EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10

TPH-CWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC35 - EC40 EH_CU_1D_AR	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic > EC35 - EC44 EH_CU_1D_AR	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aromatic (EC5 - EC35) EH_CU+HS_1D_AR	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC44) EH_CU+HS_1D_AR	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10

TPH Total C5 - C44 EH_CU+HS_1D_TOTAL	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
--------------------------------------	-------	----	------	------	------	------	------	------

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

Analytical Report Number: 22-89161
Project / Site name: Whiteheads Newport

Lab Sample Number				2454826
Sample Reference				Plot 113 S/S
Sample Number				None Supplied
Depth (m)				0.40
Date Sampled				06/10/2022
Time Taken				1335
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	13
Total mass of sample received	kg	0.001	NONE	0.4

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

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.7
Total Cyanide	mg/kg	1	MCERTS	< 1.0
Total Sulphate as SO ₄	mg/kg	50	MCERTS	1300
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.23
Sulphide	mg/kg	1	MCERTS	< 1.0
Total Sulphur	mg/kg	50	MCERTS	510
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.9
Loss on Ignition @ 450oC	%	0.2	MCERTS	2.2

Total Phenols

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

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

Total PAH

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

Analytical Report Number: 22-89161
Project / Site name: Whiteheads Newport

Lab Sample Number				2454826
Sample Reference				Plot 113 S/S
Sample Number				None Supplied
Depth (m)				0.40
Date Sampled				06/10/2022
Time Taken				1335
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Heavy Metals / Metalloids				
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.2
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.72
Boron (water soluble)	mg/kg	0.2	MCERTS	0.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	29
Copper (aqua regia extractable)	mg/kg	1	MCERTS	40
Lead (aqua regia extractable)	mg/kg	1	MCERTS	55
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	21
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	32
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110

Petroleum Hydrocarbons

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

TPH-CWG - Aromatic >EC5 - EC7 _{HS_ID_AR}	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 _{HS_ID_AR}	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 _{HS_ID_AR}	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU_ID_AR}	mg/kg	1	MCERTS	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU_ID_AR}	mg/kg	2	MCERTS	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU_ID_AR}	mg/kg	10	MCERTS	< 10
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_ID_AR}	mg/kg	10	MCERTS	< 10
TPH-CWG - Aromatic >EC35 - EC40 _{EH_CU_ID_AR}	mg/kg	10	NONE	< 10
TPH-CWG - Aromatic > EC35 - EC44 _{EH_CU_ID_AR}	mg/kg	8.4	NONE	< 8.4
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_ID_AR}	mg/kg	10	MCERTS	< 10
TPH-CWG - Aromatic (EC5 - EC44) _{EH_CU+HS_ID_AR}	mg/kg	10	NONE	< 10

TPH Total C5 - C44 _{EH_CU+HS_ID_TOTAL}	mg/kg	10	NONE	< 10
---	-------	----	------	------

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

Analytical Report Number : 22-89161

Project / Site name: Whiteheads Newport

* 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 *
2454821	Plot 98 T/S	None Supplied	0.1	Brown clay and loam with vegetation.
2454822	Plot 98 S/S	None Supplied	0.4	Brown clay and loam with gravel and vegetation.
2454823	Plot 110 T/S	None Supplied	0.1	Brown clay and loam with gravel and vegetation.
2454824	Plot 110 S/S	None Supplied	0.4	Brown clay and loam with gravel and vegetation.
2454825	Plot 113 T/S	None Supplied	0.1	Brown clay and loam with vegetation.
2454826	Plot 113 S/S	None Supplied	0.4	Brown clay and loam with vegetation.

Analytical Report Number : 22-89161

Project / Site name: Whiteheads Newport

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

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 dispersion 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
Loss on ignition of soil @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace.	In house method.	L047-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
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-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
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
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	MCERTS

Analytical Report Number : 22-89161

Project / Site name: Whiteheads Newport

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL or B' 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. Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

APPENDIX B

IN-SITU SUMMARY OF CHEMICAL TEST RESULTS

SUMMARY OF LABORATORY SOIL TEST RESULTS

METALS AND SEMI-METALS

Job No.: 14092
 Site: Whiteheads Newport
 Soil Type: Capping Fill Soils
 Soil Organic Matter: 1%

No.	Location	Depth (m)	Arsenic (mg/kg)	Boron (mg/kg)	Beryllium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Chromium (VI) (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (Elemental) (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Vanadium (mg/kg)	Zinc (mg/kg)
3	Plot 98 T/S	0.10	7.9	0.5	0.56	< 0.2	25	< 1.8	16	30	< 0.3	20	< 1.0	36	73
4	Plot 98 S/S	0.40	8.8	0.6	0.98	0.5	24	< 1.8	42	32	< 0.3	23	< 1.0	33	110
5	Plot 110 T/S	0.10	7.3	< 0.2	0.48	< 0.2	23	< 1.8	12	27	< 0.3	17	< 1.0	32	64
6	Plot 110 S/S	0.40	8.5	1.6	0.63	0.6	57	< 1.8	33	42	< 0.3	20	< 1.0	36	110
7	Plot 113 T/S	0.10	7.4	0.2	0.51	0.4	24	< 1.8	13	32	< 0.3	18	< 1.0	33	76
8	Plot 113 S/S	0.40	8.2	0.9	0.72	< 0.2	29	< 1.8	40	55	< 0.3	21	< 1.0	32	110
Screening Criteria Value			37.0	290.0	1.7	11.0	-	6.0	2400.0	200.0	1.2	130.0	250.0	410.0	3700.0
Source of Screening Criteria Value			S4UL	S4UL	S4UL	S4UL	-	S4UL	S4UL	C4SL	S4UL	S4UL	S4UL	S4UL	S4UL

SUMMARY OF LABORATORY SOIL TEST RESULTS

INORGANIC CHEMICALS & OTHERS

Job No.: 14092
 Site: Whiteheads Newport
 Soil Type: Capping Fill Soils
 Soil Organic Matter: 1%

No.	Location	Depth (m)	Cyanide (mg/kg)	Loss on Ignition, dried solids (%)	Moisture content at 30 C (%)	Phenol (mg/kg)	pH (pH units)	Water Soluble Sulphate (g/l)	Sulphate Total as SO4 (mg/kg)	Sulphide (mg/kg)	Total Sulphur (mg/kg)	TOC by Ignition in O2 (%)	Equivalent SOM (%)	Asbestos in Soil	Asbestos Quantification (%)
3	Plot 98 T/S	0.10	< 1.0	4.00	20.00	< 1.0	7.00	0.04	600.00	1.10	290.00	1.50	2.58	Not-detected	#N/A
4	Plot 98 S/S	0.40	< 1.0	2.00	11.00	< 1.0	7.60	0.14	810.00	2.40	350.00	0.50	0.86	Not-detected	#N/A
5	Plot 110 T/S	0.10	< 1.0	3.60	19.00	< 1.0	7.20	0.03	560.00	1.40	260.00	1.50	2.58	Not-detected	#N/A
6	Plot 110 S/S	0.40	< 1.0	2.60	12.00	< 1.0	8.30	0.26	1500.00	13.00	580.00	1.10	1.89	Not-detected	#N/A
7	Plot 113 T/S	0.10	< 1.0	3.20	17.00	< 1.0	7.40	0.04	620.00	1.00	290.00	1.40	2.41	Not-detected	#N/A
8	Plot 113 S/S	0.40	< 1.0	2.20	13.00	< 1.0	7.70	0.23	1300.00	< 1.0	510.00	0.90	1.55	Not-detected	#N/A
Screening Criteria Value			34.0	-	-	120.0	-	-	-	-	-	-	-	-	0.001
Source of Screening Criteria Value			ATRISK	-	-	S4UL	-	-	-	-	-	-	-	-	IOM

SUMMARY OF LABORATORY SOIL TEST RESULTS

POLYAROMATIC HYDROCARBONS (PAH)

Job No.: 14092
 Site: Whiteheads Newport
 Soil Type: Capping Fill Soils
 Soil Organic Matter: 1%

No.	Location	Depth (m)	Acenaphthene (mg/kg)	Acenaphthylene (mg/kg)	Anthracene (mg/kg)	Benzo(a)anthracene (mg/kg)	Benzo(a)pyrene (mg/kg)	Benzo(b)fluoranthene (mg/kg)	Benzo(ghi)perylene (mg/kg)	Benzo(k)fluoranthene (mg/kg)	Chrysene (mg/kg)	Dibenzo(ah)anthracene (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Indeno(123cd)pyrene (mg/kg)	Naphthalene (mg/kg)	Phenanthrene (mg/kg)	Pyrene (mg/kg)
3	Plot 98 T/S	0.10	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4	Plot 98 S/S	0.40	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.31	< 0.05	< 0.05	< 0.05	< 0.05	0.32
5	Plot 110 T/S	0.10	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
6	Plot 110 S/S	0.40	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.32	< 0.05	< 0.05	< 0.05	< 0.05	0.27
7	Plot 113 T/S	0.10	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
8	Plot 113 S/S	0.40	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Screening Criteria Value			210.0	170.0	2400.0	7.2	2.2	2.6	320.0	77.0	15.0	0.24	280.0	170.0	27.0	2.3	95.0	620.0
Source of Screening Criteria Value			S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL

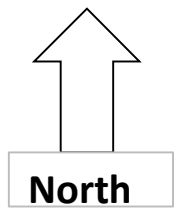
SUMMARY OF LABORATORY SOIL TEST RESULTS

PETROLEUM HYDROCARBONS

Job No.: 14092
 Site: Whiteheads Newport
 Soil Type: Capping Fill Soils
 Soil Organic Matter: 1%

No.	Location	Depth (m)	Aliphatic C5-C6 (mg/kg)	Aliphatic C6-C8 (mg/kg)	Aliphatic C8-C10 (mg/kg)	Aliphatic C10- C12 EPH (mg/kg)	Aliphatic C12- C16 EPH (mg/kg)	Aliphatic C16-C35 EPH (mg/kg)	Aliphatic C35- C44 EPH (mg/kg)	Aromatic C5-C7 (mg/kg)	Aromatic C7-C8 (mg/kg)	Aromatic C8-C10 (mg/kg)	Aromatic C10- C12 EPH (mg/kg)	Aromatic C12- C16 EPH (mg/kg)	Aromatic C16- C21 EPH (mg/kg)	Aromatic C21- C35 EPH (mg/kg)	Aromatic C35- C40 EPH (mg/kg)
3	Plot 98 T/S	0.10	< 0.001	< 0.001	< 0.001	< 1.0	< 2.0	< 10	< 8.4	< 0.001	< 0.001	< 0.001	< 1.0	< 2.0	< 10	< 10	< 10
4	Plot 98 S/S	0.40	< 0.001	< 0.001	< 0.001	< 1.0	< 2.0	< 10	< 8.4	< 0.001	< 0.001	< 0.001	< 1.0	< 2.0	< 10	< 10	< 10
5	Plot 110 T/S	0.10	< 0.001	< 0.001	< 0.001	< 1.0	< 2.0	< 10	< 8.4	< 0.001	< 0.001	< 0.001	< 1.0	< 2.0	< 10	< 10	< 10
6	Plot 110 S/S	0.40	< 0.001	< 0.001	< 0.001	< 1.0	< 2.0	< 10	< 8.4	< 0.001	< 0.001	< 0.001	< 1.0	< 2.0	< 10	< 10	< 10
7	Plot 113 T/S	0.10	< 0.001	< 0.001	< 0.001	< 1.0	< 2.0	< 10	< 8.4	< 0.001	< 0.001	< 0.001	< 1.0	< 2.0	< 10	< 10	< 10
8	Plot 113 S/S	0.40	< 0.001	< 0.001	< 0.001	< 1.0	< 2.0	< 10	< 8.4	< 0.001	< 0.001	< 0.001	< 1.0	< 2.0	< 10	< 10	< 10
Screening Criteria Value			42.0	100.0	27.0	130.0	1100.0	65000.0	65000.0	0.1	130.0	34.0	74.0	140.0	260.0	1100.0	1100.0
Source of Screening Criteria Value			S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL

FIGURES



NTS

14092: Current Phase of Works

Former Whiteheads Steelworks, Mendalgief Road,
Newport.

Intégral
Géotechnique

Integral House
Castlegate Business Park
Caerphilly
CF83 2AX
Tel: 029 20807991
Fax: 029 20862176



Plot 98 Depth Check



Plot 98 Trial Pit Profile

**14092: Remedial Capping Works to Gardens and
Landscape Areas**

**Former Whiteheads Steelworks, Mendalgief Road,
Newport.**

Intégral
Géotechnique

Integral House
Castlegate Business Park
Caerphilly
CF83 2AX
Tel: 029 20807991
Fax: 029 20862176



Plot 98 Membrane Placement



Plot 110 Depth Check

14092: Remedial Capping Works to Gardens and Landscape Areas

Former Whiteheads Steelworks, Mendalgief Road, Newport.

Intégral
Géotechnique

Integral House
Castlegate Business Park
Caerphilly
CF83 2AX
Tel: 029 20807991
Fax: 029 20862176



Plot 110 Trial Pit Profile



Plot 107 Infilled Garden

14092: Remedial Capping Works to Gardens and Landscape Areas

Former Whiteheads Steelworks, Mendalgief Road, Newport.

Intégral
Géotechnique

Integral House
Castlegate Business Park
Caerphilly
CF83 2AX
Tel: 029 20807991
Fax: 029 20862176



Plot 113 Depth Check



Plot 113 Trial Pit Profile

14092: Remedial Capping Works to Gardens and Landscape Areas

Former Whiteheads Steelworks, Mendalgief Road, Newport.

Intégral
Géotechnique

Integral House
Castlegate Business Park
Caerphilly
CF83 2AX
Tel: 029 20807991
Fax: 029 20862176



Plot 110 Membrane Placement



Plot 110 to 113 Infilled Gardens

**14092: Remedial Capping Works to Gardens and
Landscape Areas**

**Former Whiteheads Steelworks, Mendalgief Road,
Newport.**

Intégral
Géotechnique

Integral House
Castlegate Business Park
Caerphilly
CF83 2AX
Tel: 029 20807991
Fax: 029 20862176