

12457/LW

18 May 2021

J G Hale Construction Ltd
Unit 2
Milland Road Industrial Estate
Neath SA11 1NJ

For the attention of Emma McGinley

Dear Sirs,

County Flats, Sandfields, Aberavon – Supplementary Site Investigation Report

We have now completed the supplemental site investigation works at the above site and can report as follows.

The site has been previously investigated by Intégral Géotechnique and the following reports are available:

- Sandfields, Aberavon, Site Investigation Report, Report No. 12457/RAH/19/SI dated September 2019
- Sandfields County Flats, Sandfields, Port Talbot, Soil Infiltration Testing, Report No. 12457/DPD dated 31 May 2019.

This report should be read in conjunction with the above reports.

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Introduction

The site is located in Aberavon sands, approximately 2km west-south-west of Port Talbot, at a National Grid Reference of 274650, 189780, see Figure 1.

The site is divided into two phases (Phase 1 and 2). Phase 1 comprises the north-western parcel of land containing six existing blocks of flats and the Phase 2 area comprises the south eastern parcel of land containing 4 larger blocks of flats.

It should be noted that Phase 2 site area was not investigated as part of this report.

The proposed development of Phase 1 consists of the refurbishment of all six blocks and the construction of an additional fourth story to each block. An additional link of up to four storeys is to be constructed between each pair of blocks, joining each pair. The buildings will be surrounded by parking areas and areas of soft landscaping, with a play area in the south of the westernmost grassed area.

During the 2019 Site Investigation, the results of the laboratory chemical testing indicated elevated concentrations of several PAH compounds within the made ground at one location, WS01 only. Asbestos containing material (ACM) was also encountered in the made ground at one location, HD2, in the form of asbestos (chrysotile) cement tile. The previous exploratory locations are shown on Figure 2.

The results of the laboratory chemical testing on samples of topsoil from areas of existing public open space (POS) indicated that the contaminant levels within the topsoil in these areas do not pose a risk to end users.

We were instructed by our client, J G Hale Construction, to attend site to obtain a number of supplemental made ground samples from across the site to further inform the contamination risk assessment for the development.

Supplementary Site Works

We attended site on the 22nd and 23rd April 2021 to carry out the supplementary site investigation works consisting the additional sampling of made ground.

A total of seven windowless sample boreholes (WS101 to WS107) were drilled on site, along with the excavation of three hand dug pits (HP101 to HP103). Hand dug pits were used at three locations due the close proximity of buried services.

The windowless sample borehole logs and hand dug pit logs are presented in Appendices A and B, respectively and their approximate locations are shown on Figure 2.

A sample of made ground was obtained from each exploratory location and were tested for a range of contaminants, including asbestos at the UKAS and MCERTS accredited laboratories of i2 Analytical. Where made ground was not encountered (HP101 and HP102), the natural subsoil was sampled. A copy of the results of the laboratory testing is presented in Appendix C.

The sampling works were carried out by a qualified Geotechnical Engineer from Intégral Géotechnique (Wales) Limited.

The results of the chemical testing, along with the results from the 2019 Site Investigation, have been summarised and compared against the appropriate soil screening values for public open space (POS) near residential housing end use. A copy of the summary is presented in Appendix D.

Chemical Assessment

The results of the supplementary laboratory chemical testing of the made ground and subsoil indicate that the analysed chemical elements and compounds are present at concentrations below the appropriate POS thresholds.

Asbestos was not detected within the screened samples.

Revised Human Health Assessment

Future Site Users

The contamination test results and investigation observations from both the 2019 site investigation and the recent supplementary site investigation indicate that elevated concentrations of several PAH compounds was detected within the made ground at one location, WS01, only. Asbestos containing material (ACM) was also encountered in the made ground at one location, HD2, in the form of asbestos (chrysotile) cement tile.

The elevated concentrations of several PAH compounds at WS01 is considered to be a potential hotspot. It is therefore recommended that following site clearance, further samples are taken from the area around WS01 to assess and delineate the extent of the PAH hotspot.

Recommended Remedial Mitigation Measures

Within the developed state, the majority of the site would be covered either by a building footprint or hardstanding and therefore eliminating the pathway between the future site users and the made ground.

Based on the current proposed development layout, as shown on the Dennis Hellyer Architects drawing titled 'Masterplan-Site', drawing No. 175-DHA-ZZ-00-DR-A-0002, revision 08 dated 26/10/2020, WS01 is located below a proposed new building, surrounded by areas of hardstanding.

It is therefore recommended that following the delineation of the PAH hotspot at WS01, that the PAH impacted made ground is either retained on site under areas of hardstanding or alternatively disposed off site at an appropriate facility.

Following the removal of the PAH impacted made ground, validation samples of the underlying strata should be obtained and tested for any residual contamination.

Elsewhere on site, the results of the laboratory testing on samples of topsoil, subsoil and made ground from the existing areas of POS indicate that the contaminant levels do not pose a risk to end users.

During the 2019 site investigation, a fragment of ACM was encountered in foundation inspection pit HD2 within the backfilled materials overlying the existing foundation/footing. If these areas are proposed to be disturbed/exposed during construction, any identified ACM should be handpicked by an asbestos awareness trained contractor. Elevated contaminant concentrations were not identified in a sample of made ground collected from this location, therefore, the risks to end users is considered to be low.

It should be noted that no further ACMs were identified within the exploratory locations and no asbestos fibres were identified in the screened samples during both the 2019 and 2021 site investigations.

Construction Workers

With future site development works involving the excavation and removal of the made ground, there would be a risk to workers from the contaminants in the soils. Whilst loose asbestos was not encountered in the made ground soils or topsoil/subsoils, appropriate measures are recommended for works involving the made ground materials which are known to be present beneath the site and have been found to contain, a fragment of ACM, and localised exceedances of PAHs.

The following practical measures are required:

- During site stripping, all exposed formations should be visually inspected by asbestos awareness trained contractors and handpicked of any identified ACM. Additionally, any excavated made ground materials, any encountered buried foundations, service runs/ducts, pipework etc. should be visually inspected and handpicked of any identified ACM. These works should be carried out by a suitably licenced contractor in accordance with an appropriate risk assessment and managed in accordance with the requirements of the Control of Asbestos Regulations (2012),
- Any handpicked ACM should be disposed off site at a suitable licensed facility as hazardous waste. Daily records and waste transfer notes should be kept in order to document the identification and subsequent removal of any ACM. These records and waste transfer notes should be made available for review as they will be required for potential remediation verification,
- Excavations will need to be regularly damped down to prevent any dust that may contain asbestos becoming airborne,
- Any excavated materials should be quarantined and regularly dampened down to prevent any dust that may contain asbestos becoming airborne,
- Appropriate PPE/RPE to be worn by all workers,
- Asbestos/dust/air monitoring may be required during early site establishment.

All works to be carried out in accordance with an appropriate risk assessment and managed in accordance with the requirements of Control of Asbestos Regulations 2012.

Normal good hygiene practices should also be adopted to protect the health and safety of redevelopment workers/site users from the localised PAH exceedances in the made ground and should include:

- Minimum handling of materials,
- Washing of hands prior to all meal breaks, which should be taken in a designated clean area,
- The used of standard protective clothing such a boots and overalls and gloves, where considered relevant.

In dry weather, inhalation of dust and gases should be avoided preferably by use of dust suppression techniques to minimise fugitive emissions and minimisation of exposed materials at any particular time.

Additionally, a system should be established by which any ‘unusual’ material that may be encountered are reported rapidly to the site management so that appropriate action may be taken, following specialist advice if necessary. Any unusual material may be identified on site by colour, odour or physical nature. Routine visual checks should also be made for any occurrences of asbestos containing materials and for the hand picking of any occurrences.

Reference should be made to the Health and Safety document ‘Protection of workers and the general public during the development of contaminated land’ for detailed guidance on these matters.

The Site Investigation Report, Report No. 12457/RAH/19/SI dated September 2019 should be referred to for the full geoenvironmental and geotechnical recommendations.

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

Yours faithfully,



Lowri Williams
For
Intégral Géotechnique (Wales) Limited

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APPENDIX A

WINDOWLESS SAMPLE BOREHOLE LOGS

		Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com		Project Name: County Flats, Sandfields		Project No.: 12457		Borehole No.: WS101 Sheet 1 of 1	
Location: Aberavon				Client: Hale Construction		Coordinates:		Hole Type: WLS	
Equipment: GEO 32				Diameter of Casing:		Level:		Scale 1:25	
Diameter of Boring: 101mm				Depth of Casing:		Dates 23/04/2021 -		Logged By: JJ	

Well	Water Strikes	Samples & In situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.05			0.05		Tarmac.		
		0.15			0.15		MADE GROUND: (Dense) light grey slightly sandy fine to coarse GRAVEL of angular limestone (sub-base).		
		0.50			0.50		MADE GROUND: (Dense) brown and grey fine to coarse SAND and GRAVEL of sub-angular and angular limestone. With rare brick and ash fragments.		
		1.00	C	N=33 (6,6/7,8,9,9)			(Loose) yellow brown fine to coarse SAND.	1	
		2.00	C	N=24 (3,4/5,5,7,7)	2.00		End of Borehole at 2.00 m	2	
								3	
								4	
								5	

Remarks: 1). Window sample from GL to 2.0m bgl. 2). Groundwater not encountered.		Key: D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample SPT - Standard Penetration Test (split spoon) CPT - Standard Penetration Test (solid cone)		W - Water sample U - Undisturbed sample TCR - Total Core Recovery SCR - Solid Core Recovery RQD - Rock Quality Designation		
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		Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com		Project Name: County Flats, Sandfields		Project No.: 12457		Borehole No.: WS102 Sheet 1 of 1	
Location: Aberavon				Client: Hale Construction		Coordinates:		Hole Type: WLS	
Equipment: GEO 32				Diameter of Casing:		Level:		Scale 1:25	
Diameter of Boring: 101mm				Depth of Casing:		Dates 23/04/2021 -		Logged By: JJ	

Well	Water Strikes	Samples & In situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.05			0.05		Tarmac.		
		0.15			0.15		MADE GROUND: (Dense) light grey slightly sandy fine to coarse GRAVEL of angular limestone (sub-base).		
		0.25	ES		0.40		MADE GROUND: (Loose) brown and grey gravelly fine to coarse SAND. Gravel is fine to coarse sub-angular and angular limestone. With rare brick and ash fragments.		
							(Loose) yellow brown fine to coarse SAND.		
		1.00	C	N=18 (3,3/4,4,5,5)				1	
		2.00	C	N=27 (3,4/4,7,8,8)	2.00			2	
								End of Borehole at 2.00 m	
								3	
								4	
								5	

Remarks: 1). Window sample from GL to 2.0m bgl. 2). Groundwater not encountered.				Key: D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample SPT - Standard Penetration Test (split spoon) CPT - Standard Penetration Test (solid cone)				W - Water sample U - Undisturbed sample TCR - Total Core Recovery SCR - Solid Core Recovery RQD - Rock Quality Designation			
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		Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com		Project Name: County Flats, Sandfields		Project No.: 12457		Borehole No.: WS103 Sheet 1 of 1	
Location: Aberavon				Client: Hale Construction		Coordinates:		Hole Type: WLS	
Equipment: GEO 32				Diameter of Casing:		Level:		Scale 1:25	
Diameter of Boring: 101mm				Depth of Casing:		Dates 23/04/2021 -		Logged By: JJ	

Well	Water Strikes	Samples & In situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	ES		0.20		TOPSOIL: Grass over soft brown silty CLAY.		
					0.50		MADE GROUND: (Loose) light brown slightly gravelly fine to coarse SAND. Gravel is fine to coarse sub-angular and angular of sandstone and quartzite. With rare brick fragments.		
							(Loose) yellow brown fine to coarse SAND.		
		1.00	C	N=11 (3,3/2,3,3,3)				1	
		2.00	C	N=31 (6,8/8,8,8,7)	2.00			2	
								End of Borehole at 2.00 m	
								3	
								4	
								5	

Remarks: 1). Window sample from GL to 2.0m bgl. 2). Groundwater not encountered.		Key: D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample SPT - Standard Penetration Test (split spoon) CPT - Standard Penetration Test (solid cone)		W - Water sample U - Undisturbed sample TCR - Total Core Recovery SCR - Solid Core Recovery RQD - Rock Quality Designation		
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		Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com		Project Name: County Flats, Sandfields		Project No.: 12457		Borehole No.: WS104 Sheet 1 of 1	
Location: Aberavon				Client: Hale Construction		Coordinates:		Hole Type: WLS	
Equipment: GEO 32				Diameter of Casing:		Level:		Scale 1:25	
Diameter of Boring: 101mm				Depth of Casing:		Dates 23/04/2021 -		Logged By: JJ	

Well	Water Strikes	Samples & In situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	ES		0.20		TOPSOIL: Grass over soft brown silty CLAY.		
					0.50		MADE GROUND: (Loose) light brown slightly gravelly fine to coarse SAND. Gravel is fine to coarse sub-angular and angular of sandstone and quartzite. With rare brick fragments.		
							(Loose) yellow brown fine to coarse SAND.		
		1.00	C	N=12 (5,5/4,3,2,3)				1	
		2.00	C	N=11 (2,2/2,3,3,3)	2.00			2	
								End of Borehole at 2.00 m	
								3	
								4	
								5	

Remarks: 1). Window sample from GL to 2.0m bgl. 2). Groundwater not encountered.				Key: D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample SPT - Standard Penetration Test (split spoon) CPT - Standard Penetration Test (solid cone)				W - Water sample U - Undisturbed sample TCR - Total Core Recovery SCR - Solid Core Recovery RQD - Rock Quality Designation			
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 Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com		Project Name:		Project No.:		Borehole No.:	
		County Flats, Sandfields		12457		WS105	
Location:		Client:		Coordinates:		Sheet 1 of 1	
Aberavon		Hale Construction				Hole Type:	
Equipment: GEO 32		Diameter of Casing:		Level:		Scale	
						1:25	
Diameter of Boring: 101mm		Depth of Casing:		Dates		Logged By:	
				23/04/2021 -		JJ	

Well	Water Strikes	Samples & In situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30	ES		0.10		TOPSOIL: Grass over soft brown silty CLAY.	
					0.40		MADE GROUND: (Loose) light brown slightly gravelly fine to coarse SAND. Gravel is fine to coarse sub-angular and angular of sandstone and quartzite. With rare brick fragments.	
							(Loose) yellow brown fine to coarse SAND.	
					2.00		End of Borehole at 2.00 m	

Remarks: 1). Window sample from GL to 2.0m bgl. 2). Groundwater not encountered.				Key: D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample SPT - Standard Penetration Test (split spoon) CPT - Standard Penetration Test (solid cone)				W - Water sample U - Undisturbed sample TCR - Total Core Recovery SCR - Solid Core Recovery RQD - Rock Quality Designation			
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 Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com		Project Name:		Project No.:		Borehole No.:	
		County Flats, Sandfields		12457		WS106	
Location:		Client:		Coordinates:		Sheet 1 of 1	
Aberavon		Hale Construction				Hole Type:	
Equipment: GEO 32		Diameter of Casing:		Level:		Scale	
						1:25	
Diameter of Boring: 101mm		Depth of Casing:		Dates		Logged By:	
				23/04/2021 -		JJ	

Well	Water Strikes	Samples & In situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.10		TOPSOIL: Grass over soft brown silty CLAY. MADE GROUND: (Loose) light brown slightly gravelly fine to coarse SAND. Gravel is fine to coarse sub-angular and angular of sandstone and quartzite. With rare brick fragments.	
		0.40	ES		0.50		(Loose) yellow brown fine to coarse SAND.	
					2.00		End of Borehole at 2.00 m	

Remarks: 1). Window sample from GL to 2.0m bgl. 2). Groundwater not encountered.		Key: D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample SPT - Standard Penetration Test (split spoon) CPT - Standard Penetration Test (solid cone)		W - Water sample U - Undisturbed sample TCR - Total Core Recovery SCR - Solid Core Recovery RQD - Rock Quality Designation	
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		Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com		Project Name: County Flats, Sandfields		Project No.: 12457		Borehole No.: WS107 Sheet 1 of 1	
Location: Aberavon				Client: Hale Construction		Coordinates:		Hole Type: WLS	
Equipment: GEO 32				Diameter of Casing:		Level:		Scale 1:25	
Diameter of Boring: 101mm				Depth of Casing:		Dates 23/04/2021 -		Logged By: JJ	

Well	Water Strikes	Samples & In situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.08		Tarmac.	
					0.30		MADE GROUND: (Dense) light grey slightly sandy fine to coarse GRAVEL of angular limestone [sub-base].	
		0.40	ES		0.50		MADE GROUND: (Dense) brown and grey fine to coarse SAND and GRAVEL of sub-angular and angular limestone. With rare brick and ash fragments.	
							(Loose) yellow brown fine to coarse SAND.	
					2.00		End of Borehole at 2.00 m	

Remarks: 1). Window sample from GL to 2.0m bgl. 2). Groundwater not encountered.				Key: D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample SPT - Standard Penetration Test (split spoon) CPT - Standard Penetration Test (solid cone)				W - Water sample U - Undisturbed sample TCR - Total Core Recovery SCR - Solid Core Recovery RQD - Rock Quality Designation			
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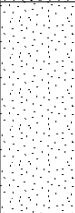
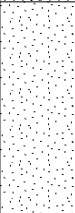


APPENDIX B

HAND DUG PIT LOGS

 Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com			Project Name: County Flats, Sandfields			Project No.: 12457		Trial Pit No.: HP101 Sheet 1 of 1	
Location: Aberavon			Client: Hale Construction			Logged By: JJ		Scale 1:25	
Equipment: Hand Tools.			Coordinates:			Dimensions 0.40m			
Date Excavated: 22/04/2021			Level:			Depth : 0.70m 0.40m			
Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description			
Depth (m)	Type	Results							
0.30	ES		0.20			TOPSOIL: Grass over soft brown SILT/CLAY with rootlets.			
			0.70			(Loose) yellow brown fine to coarse SAND.			
						End of Trialpit at 0.70 m			
						1			
						2			
						3			
						4			
						5			
Remarks: 1). Hand dug pit GL to 0.7m bgl.			Groundwater: 1). Groundwater not encountered.			Key: D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample W - Water sample			
			Stability: Stable.						

			Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com			Project Name: County Flats, Sandfields			Project No.: 12457		Trial Pit No.: HP102 Sheet 1 of 1		
Location: Aberavon						Client: Hale Construction				Logged By: JJ		Scale 1:25	
Equipment: Hand Tools.						Coordinates:				Dimensions Depth : 0.70m			
Date Excavated: 22/04/2021						Level:							
Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description							
Depth (m)	Type	Results											
0.40	ES		0.20			TOPSOIL: Grass over soft brown SILT/CLAY with rootlets.							
			0.70			(Loose) yellow brown fine to coarse SAND.							
						End of Trialpit at 0.70 m							
								1					
								2					
								3					
								4					
								5					
Remarks: 1). Hand dug pit GL to 0.7m bgl.				Groundwater: 1). Groundwater not encountered.				Key: D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample W - Water sample					
				Stability: Stable.									

Intégral Géotechnique Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com			Project Name: County Flats, Sandfields			Project No.: 12457		Trial Pit No.: HP103 Sheet 1 of 1	
Location: Aberavon			Client: Hale Construction			Logged By: JJ		Scale 1:25	
Equipment: Hand Tools			Coordinates:			Dimensions 0.40m			
Date Excavated: 23/04/2021			Level:			Depth : 1.00m 0.40m			
Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description			
Depth (m)	Type	Results							
0.20	ES		0.10			TOPSOIL: Grass over soft brown SILT/CLAY with rootlets.			
						MADE GROUND: Soft to firm brown slightly sandy silty CLAY with rare brick.			
						(Loose) yellow brown fine to coarse SAND.			
1.00			1.00			End of Trialpit at 1.00 m			
Remarks:			Groundwater:			Key:			
1). Hand dug pit GL to 1.0m bgl.			1). Groundwater not encountered.			D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample W - Water sample			
			Stability: Stable						

APPENDIX C

LABORATORY CHEMICAL TEST RESULTS

Jack Jones

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

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f: 02920862176
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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 : 21-71385

Project / Site name:	Sandfields	Samples received on:	28/04/2021
Your job number:	12457 JJ	Samples instructed on/ Analysis started on:	28/04/2021
Your order number:		Analysis completed by:	07/05/2021
Report Issue Number:	1	Report issued on:	07/05/2021
Samples Analysed:	10 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

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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: 21-71385
Project / Site name: Sandfields

Lab Sample Number				1851935	1851936	1851937	1851938	1851939
Sample Reference				HP101	HP102	HP103	WS101	WS102
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.40	0.20	0.20	0.25
Date Sampled				23/04/2021	23/04/2021	23/04/2021	23/04/2021	23/04/2021
Time Taken				0845	0910	0930	1015	1045
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	3.8	3.0	13	2.3	7.5
Total mass of sample received	kg	0.001	NONE	0.60	0.60	0.60	0.60	0.60

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

pH - Automated	pH Units	N/A	MCERTS	7.7	8.7	6.9	8.4	8.6
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	280	340	200	660	690
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0094	0.0055	0.062	0.23	0.16
Sulphide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	32	2.2
Total Sulphur	mg/kg	50	MCERTS	230	150	210	370	490
Total Organic Carbon (TOC)	%	0.1	MCERTS	< 0.1	< 0.1	0.8	0.1	0.3
Loss on Ignition @ 450oC	%	0.2	MCERTS	0.3	< 0.2	2.7	0.5	1.7

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
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	0.22	< 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	0.38	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.28	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.23	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.19	< 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	1.30	< 0.80	< 0.80	< 0.80
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Analytical Report Number: 21-71385
Project / Site name: Sandfields

Lab Sample Number				1851935	1851936	1851937	1851938	1851939
Sample Reference				HP101	HP102	HP103	WS101	WS102
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.40	0.20	0.20	0.25
Date Sampled				23/04/2021	23/04/2021	23/04/2021	23/04/2021	23/04/2021
Time Taken				0845	0910	0930	1015	1045
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status		
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	11	29	6.4	13
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.22	0.19	0.89	0.17	0.40
Boron (water soluble)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	0.3	< 0.2	0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	0.3	0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	6.7	4.3	19	5.1	9.9
Copper (aqua regia extractable)	mg/kg	1	MCERTS	7.2	11	19	6.8	23
Lead (aqua regia extractable)	mg/kg	1	MCERTS	14	11	110	10	14
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	6.3	5.0	19	3.9	12
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	15	12	27	8.9	28
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	35	37	90	18	39

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

Analytical Report Number: 21-71385
Project / Site name: Sandfields

Lab Sample Number				1851940	1851941	1851942	1851943	1851944
Sample Reference				WS103	WS104	WS105	WS106	WS107
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.30	0.30	0.40	0.40
Date Sampled				23/04/2021	23/04/2021	23/04/2021	23/04/2021	23/04/2021
Time Taken				1115	1145	1245	1330	1430
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	2.5	11	8.8	11	3.1
Total mass of sample received	kg	0.001	NONE	0.60	0.60	0.60	0.60	0.60

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

pH - Automated	pH Units	N/A	MCERTS	8.7	8.2	9.0	12.3	11.2
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	200	670	510	1800	1700
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0059	0.12	0.19	0.0094	0.32
Sulphide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	3.1	4.0
Total Sulphur	mg/kg	50	MCERTS	180	520	450	910	1000
Total Organic Carbon (TOC)	%	0.1	MCERTS	< 0.1	1.0	1.3	0.7	0.1
Loss on Ignition @ 450oC	%	0.2	MCERTS	0.3	3.5	5.2	1.5	0.7

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.24	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.5	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.39	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	2.7	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	2.5	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.9	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.7	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	2.7	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.1	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	2.2	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.94	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.28	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.1	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	19.2	< 0.80	< 0.80
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Analytical Report Number: 21-71385
Project / Site name: Sandfields

Lab Sample Number				1851940	1851941	1851942	1851943	1851944
Sample Reference				WS103	WS104	WS105	WS106	WS107
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.30	0.30	0.40	0.40
Date Sampled				23/04/2021	23/04/2021	23/04/2021	23/04/2021	23/04/2021
Time Taken				1115	1145	1245	1330	1430
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	15	17	13	10
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.19	0.69	0.78	0.52	0.20
Boron (water soluble)	mg/kg	0.2	MCERTS	< 0.2	0.2	0.3	< 0.2	0.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	1.1	0.8	0.6	0.6
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	4.3	19	17	13	5.4
Copper (aqua regia extractable)	mg/kg	1	MCERTS	9.2	18	39	12	10
Lead (aqua regia extractable)	mg/kg	1	MCERTS	7.7	83	120	120	8.0
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	5.6	17	22	12	5.4
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	11	28	29	24	15
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	30	73	130	58	31

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

Analytical Report Number : 21-71385

Project / Site name: Sandfields

* 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 *
1851935	HP101	None Supplied	0.3	Brown sand with gravel.
1851936	HP102	None Supplied	0.4	Brown sand with gravel.
1851937	HP103	None Supplied	0.2	Brown loam and sand with gravel and vegetation.
1851938	WS101	None Supplied	0.2	Brown loam and sand with gravel.
1851939	WS102	None Supplied	0.25	Brown loam and sand with gravel.
1851940	WS103	None Supplied	0.3	Brown sand with gravel.
1851941	WS104	None Supplied	0.3	Brown loam and sand with gravel and vegetation.
1851942	WS105	None Supplied	0.3	Brown loam and sand with gravel and vegetation.
1851943	WS106	None Supplied	0.4	Brown loam and sand with gravel and vegetation.
1851944	WS107	None Supplied	0.4	Brown sand with gravel.

Analytical Report Number : 21-71385
Project / Site name: Sandfields

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	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
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

Analytical Report Number : 21-71385
Project / Site name: Sandfields

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.

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.

APPENDIX D

SUMMARY OF CHEMICAL TEST RESULTS

SUMMARY OF LABORATORY SOIL TEST RESULTS

METALS AND SEMI-METALS

Job No.: 12457
 Site: Sandfields, Aberavon
 Soil Type: Made Ground
 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)
1	WS01	0.04-0.20	4.2	0.3	0.18	2.0	13	< 4.0	17	46	< 0.3	5.4	< 1.0	11	68
2	WS01	0.26-0.36	16	1.0	1.1	2.7	19	< 4.0	49	93	< 0.3	21	< 1.0	14	110
3	WS05	0.40-0.60	16	0.2	0.43	< 0.2	7.5	< 4.0	19	14	< 0.3	12	< 1.0	16	29
4	HD2	0.20-0.80	6.4	0.7	0.18	< 0.2	7.5	< 4.0	11	9.7	< 0.3	6.0	< 1.0	15	32
5	HP103	0.20	29	0.3	0.89	< 0.2	19	< 4.0	19	110	< 0.3	19	< 1.0	27	90
6	WS101	0.20	6.4	< 0.2	0.17	0.3	5.1	< 4.0	6.8	10	< 0.3	3.9	< 1.0	8.9	18
7	WS102	0.25	13	0.2	0.40	0.2	9.9	< 4.0	23	14	< 0.3	12	< 1.0	28	39
8	WS103	0.30	12	< 0.2	0.19	< 0.2	4.3	< 4.0	9.2	7.7	< 0.3	5.6	< 1.0	11	30
9	WS104	0.30	15	0.2	0.69	1.1	19	< 4.0	18	83	< 0.3	17	< 1.0	28	73
10	WS105	0.30	17	0.3	0.78	0.8	17	< 4.0	39	120	< 0.3	22	< 1.0	29	130
11	WS106	0.40	13	< 0.2	0.52	0.6	13	< 4.0	12	120	< 0.3	12	< 1.0	24	58
12	WS107	0.40	10	0.5	0.20	0.6	5.4	< 4.0	10	8.0	< 0.3	5.4	< 1.0	15	31
Screening Criteria Value			79.0	21000.0	2.2	85.0	1500.0	7.7	12000.0	630.0	16.0	230.0	1100.0	2000.0	81000.0
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.: 12457
 Site: Sandfields, Aberavon
 Soil Type: Made Ground
 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 (%)
1	WS01	0.04-0.20	< 1	2.1	3.3	< 1.0	8.9	0.022	320	31	220	0.9	1.55	Not-detected	#N/A
2	WS01	0.26-0.36	< 1	14.9	5.1	< 1.0	8.3	0.075	450	5.4	3200	2.0	3.44	Not-detected	#N/A
3	WS05	0.40-0.60	< 1	5.6	3.7	< 1.0	9.3	0.044	390	3.5	510	1.2	2.06	Not-detected	#N/A
4	HD2	0.20-0.80	< 1	0.8	3.3	< 1.0	11.4	0.10	810	3.4	330	0.2	0.34	Not-detected	#N/A
5	HP103	0.20	< 1.0	2.7	13	< 1.0	6.9	0.062	200	< 1.0	210	0.8	1.38	Not-detected	#N/A
6	WS101	0.20	< 1.0	0.5	2.3	< 1.0	8.4	0.23	660	32	370	0.1	0.17	Not-detected	#N/A
7	WS102	0.25	< 1.0	1.7	7.5	< 1.0	8.6	0.16	690	2.2	490	0.3	0.52	Not-detected	#N/A
8	WS103	0.30	< 1.0	0.3	2.5	< 1.0	8.7	0.0059	200	< 1.0	180	< 0.1	<0.1	Not-detected	#N/A
9	WS104	0.30	< 1.0	3.5	11	< 1.0	8.2	0.12	670	< 1.0	520	1.0	1.72	Not-detected	#N/A
10	WS105	0.30	< 1.0	5.2	8.8	< 1.0	9.0	0.19	510	< 1.0	450	1.3	2.24	Not-detected	#N/A
11	WS106	0.40	< 1.0	1.5	11	< 1.0	12.3	0.0094	1800	3.1	910	0.7	1.20	Not-detected	#N/A
12	WS107	0.40	< 1.0	0.7	3.1	< 1.0	11.2	0.32	1700	4.0	1000	0.1	0.17	Not-detected	#N/A
Screening Criteria Value			34.0	-	-	760.0	-	-	-	-	-	-	-	-	0.001
Source of Screening Criteria Value			ATRISK	-	-	S4UL	-	-	-	-	-	-	-	-	IOM

SUMMARY OF LABORATORY SOIL TEST RESULTS

POLYAROMATIC HYDROCARBONS (PAH)

Job No.: 12457
 Site: Sandfields, Aberavon
 Soil Type: Made Ground
 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)	Pyrene (mg/kg)
1	WS01	0.04-0.20	0.51	0.49	2.7	20	16	25	7.6	7.7	17	3.5	19	1.3	7.7	0.25	15
2	WS01	0.26-0.36	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.45	< 0.05	1.6	< 0.05
3	WS05	0.40-0.60	< 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	0.75	< 0.05
4	HD2	0.20-0.80	< 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
5	HP103	0.20	< 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	WS101	0.20	< 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
7	WS102	0.25	< 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	WS103	0.30	< 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
9	WS104	0.30	< 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
10	WS105	0.30	0.24	< 0.05	0.39	1.9	2.2	2.7	1.1	1.1	1.7	0.28	2.7	< 0.05	0.94	< 0.05	2.5
11	WS106	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
12	WS107	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
Screening Criteria Value			15000.0	15000.0	74000.0	29.0	5.7	7.1	640.0	190.0	57.0	0.6	3100.0	9900.0	82.0	4900.0	7400.0
Source of Screening Criteria Value			S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL

SUMMARY OF LABORATORY SOIL TEST RESULTS

METALS AND SEMI-METALS

Job No.: 12457
 Site: Sandfields, Aberavon
 Soil Type: Topsoil
 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)
1	WS02	0.00-0.15	12	0.8	0.91	2.8	35	< 4.0	18	140	< 0.3	23	< 1.0	38	130
2	WS04	0.10-0.30	16	0.6	1.2	7.5	63	< 4.0	23	460	< 0.3	24	< 1.0	43	270
Screening Criteria Value			79.0	21000.0	2.2	85.0	1500.0	7.7	12000.0	630.0	16.0	230.0	1100.0	2000.0	81000.0
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.: 12457
 Site: Sandfields, Aberavon
 Soil Type: Topsoil
 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 (%)
1	WS02	0.00-0.15	< 1	4.9	11	< 1.0	7.7	0.018	670	1.1	340	2.1	3.61	Not-detected	#N/A
2	WS04	0.10-0.30	< 1	4.8	12	< 1.0	8.0	0.027	880	7.5	410	1.9	3.27	Not-detected	#N/A
Screening Criteria Value			34.0	-	-	760.0	-	-	-	-	-	-	-	-	0.001
Source of Screening Criteria Value			ATRISK	-	-	S4UL	-	-	-	-	-	-	-	-	IOM

SUMMARY OF LABORATORY SOIL TEST RESULTS

POLYAROMATIC HYDROCARBONS (PAH)

Job No.: 12457
 Site: Sandfields, Aberavon
 Soil Type: Topsoil
 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)	Pyrene (mg/kg)
1	WS02	0.00-0.15	< 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	0.52	< 0.05
2	WS04	0.10-0.30	< 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			15000.0	15000.0	74000.0	29.0	5.7	7.1	640.0	190.0	57.0	0.6	3100.0	9900.0	82.0	4900.0	7400.0
Source of Screening Criteria Value			S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL

SUMMARY OF LABORATORY SOIL TEST RESULTS

METALS AND SEMI-METALS

Job No.: 12457
 Site: Sandfields, Aberavon
 Soil Type: Subsoil
 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)
1	HP101	0.30	13	< 0.2	0.22	< 0.2	6.7	< 4.0	7.2	14	< 0.3	6.3	< 1.0	15	35
2	HP102	0.40	11	< 0.2	0.19	< 0.2	4.3	< 4.0	11	11	< 0.3	5.0	< 1.0	12	37
Screening Criteria Value			79.0	21000.0	2.2	85.0	1500.0	7.7	12000.0	630.0	16.0	230.0	1100.0	2000.0	81000.0
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.: 12457
 Site: Sandfields, Aberavon
 Soil Type: Subsoil
 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 (%)
1	HP101	0.30	< 1.0	0.3	3.8	< 1.0	7.7	0.0094	280	< 1.0	230	< 0.1	<0.1	Not-detected	#N/A
2	HP102	0.40	< 1.0	< 0.2	3.0	< 1.0	8.7	0.0055	340	< 1.0	150	< 0.1	<0.1	Not-detected	#N/A
Screening Criteria Value			34.0	-	-	760.0	-	-	-	-	-	-	-	-	0.001
Source of Screening Criteria Value			ATRISK	-	-	S4UL	-	-	-	-	-	-	-	-	IOM

SUMMARY OF LABORATORY SOIL TEST RESULTS

POLYAROMATIC HYDROCARBONS (PAH)

Job No.: 12457
 Site: Sandfields, Aberavon
 Soil Type: Subsoil
 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)	Pyrene (mg/kg)
1	HP101	0.30	< 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
2	HP102	0.40	< 0.05	< 0.05	< 0.05	0.23	< 0.05	< 0.05	< 0.05	< 0.05	0.19	< 0.05	0.38	< 0.05	< 0.05	< 0.05	0.28
Screening Criteria Value			15000.0	15000.0	74000.0	29.0	5.7	7.1	640.0	190.0	57.0	0.6	3100.0	9900.0	82.0	4900.0	7400.0
Source of Screening Criteria Value			S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL	S4UL

FIGURES

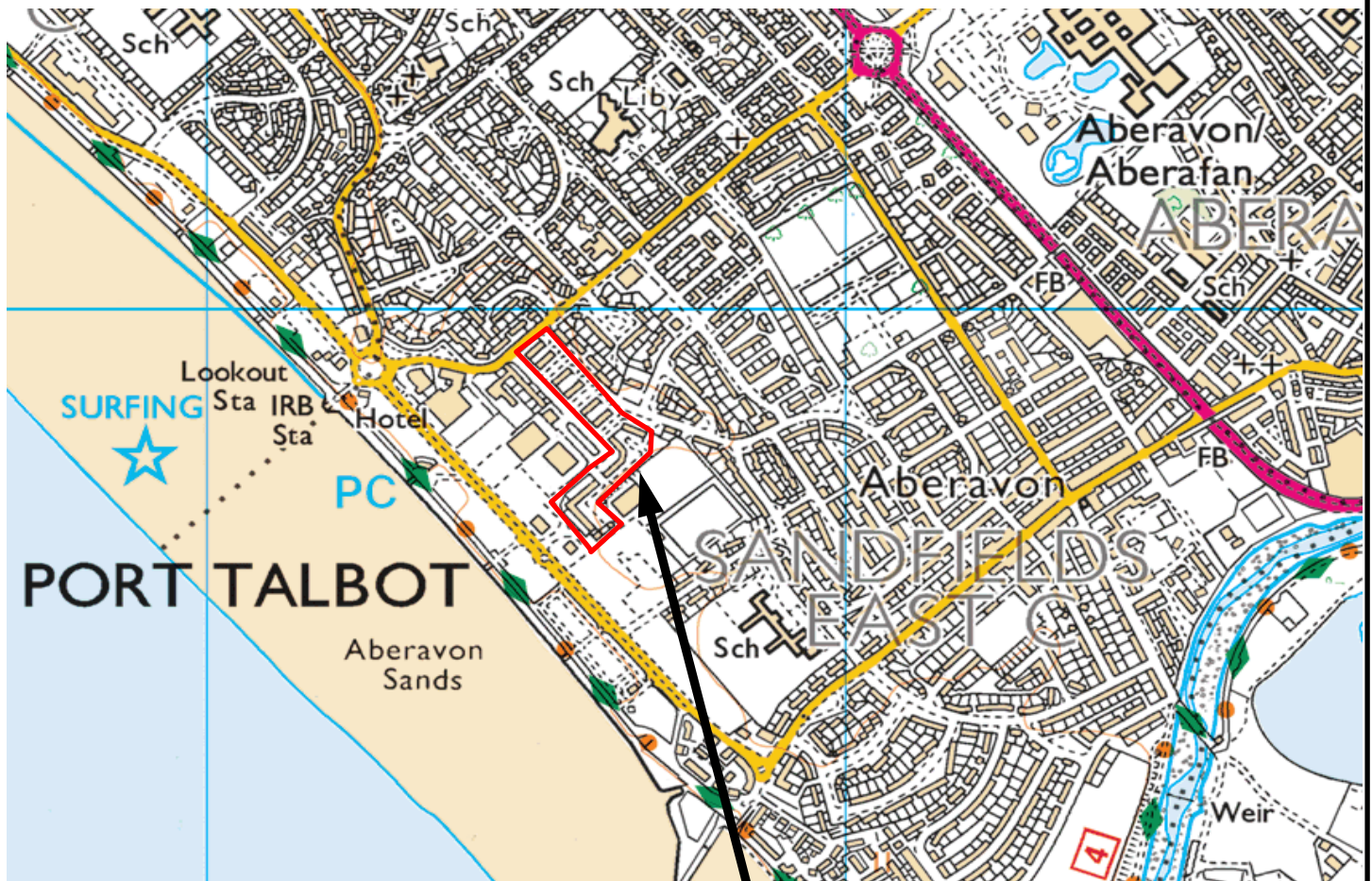
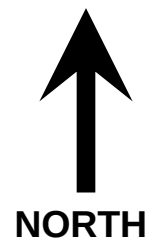


FIGURE 1: Site Location Plan

County Flats, Sandfields, Aberavon

Intégral
Géotechnique

Intégral House
7 Beddau Way
Castlegate Business Park
Caerphilly
CF83 2AX
Tel: 029 2080 7991



Figure 2: Exploratory Hole Location Plan

Project: County Flats, Sandfields, Aberavon

Client: Hale Construction

Job No.: 12457

Scale: NTS