

14043/LP/Rev A

27th November 2024

Valley Wholesale Carpets Limited
Turpin Lane
Enrith
Kent
DA8 2AT

For the attention of Tony Brewer,

Unit 10, Maesglas Retail Park, Newport

We have now completed the supplementary intrusive ground investigation works, comprising the drilling of three cable percussion boreholes, at the above site and report as follows.

The site was previously investigated by Intégral Géotechnique (Wales) Limited in 2022, with the findings presented within Site Investigation Report Ref: 14043/OTJ/22/SI, dated July 2022.

In order to refine and provide additional information for the detailed pile design, Intégral Géotechnique (Wales) Limited were instructed by Valley Wholesale Carpets Limited to investigate the deeper ground conditions within the vicinity of proposed extension and provide a report detailing the findings. The original Site Investigation Report also recommended a programme of gas monitoring as part of the supplementary works.

This report (including all appendices to it and any subsequent addendums or correspondence) has been prepared for the sole benefit, use and information of Valley Wholesale Carpets Limited and no third party is entitled or permitted 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 express written permission to rely on the report for any losses they may suffer.

Introduction

The site is located at Unit 10, Maesglas Retail Park, approximately 1.6km southwest of the city centre at a National Grid Reference of 330760, 186380, see Figure 1.

The site investigation plan, which includes each exploratory hole position, is presented in Figure 2, with the boundary of the site highlighted in red.

The site is roughly square in shape and occupies an area of approximately 1.05 hectares. The boundaries of the site are defined by Port Road immediately to the south of the site, with home furniture and flooring shops to the east and west. The northern boundary of the site is marked by east-west trending railway lines.

Final proposed development layout plans for the site have not yet been provided but it is intended to include an extension to the existing warehouse, and an associated dock leveller loading facility. This loading facility will likely include three bays and will be set below existing ground levels.

As part of the original site investigation, twelve windowless sample boreholes were drilled across the site to a maximum depth of 5.0m

Scope of Works

In order to further inform pile design and to address the recommendations for further works, the scope of works comprised the drilling of three additional cable percussion boreholes to extend into the mudstone bedrock. Gas monitoring standpipes were installed within two of the boreholes.

Site Works

Site works commenced on 8th August 2024 and comprised of the drilling of three cable percussive boreholes.

The site investigation was designed in accordance with BS 5930:2015+A1:2020, the Code of Practice for Site Investigations, BS10175:2011+A2:2017, the Code of Practice for Investigation of Potentially Contaminated Sites, and ‘Development of Land Affected by Contamination: A Guide for Developers’ prepared by Welsh Local Government Association (WLGA)/Natural Resources Wales (NRW) Land Contamination Working Group, 2017.

The shell and auger boreholes (referenced BH01, BH02 and BH03) were positioned within the area of the proposed extension and drilled to a maximum depth of 18.0m bgl. In-situ strength testing (SPT) was carried out at regular depth intervals within the boreholes. Ground gas monitoring standpipes were installed within boreholes BH01 and BH03.

Representative samples of soils were taken throughout the full depth of the boreholes for laboratory chemical testing.

A programme of gas monitoring commenced on 22nd August 2024.

The site works were supervised by a qualified geotechnical engineer from Intégral Géotechnique (Wales) Ltd, who also logged the boreholes and prepared the detailed engineering borehole logs.

The locations of the boreholes are shown in Figure 2 and the borehole logs are presented in Appendix A.

Laboratory Chemical Testing

Representative soil samples were taken from the boreholes and dispatched to the laboratories of i2 Analytical for laboratory chemical testing. The samples were all tested for pH and water-soluble sulphate.

The laboratory chemical test results are present in Appendix B.

Ground Gas Monitoring

Ground gas monitoring standpipes were installed within boreholes BH01 and BH03 and gas monitoring commenced on 22nd August 2024.

During each monitoring visit, the groundwater levels were dipped and the concentration levels of methane, carbon dioxide and oxygen were measured in the standpipes using a GA5000 Landfill Gas Analyser. In addition, gas flow rate and the atmospheric pressure at the time of the field measurements were also recorded.

Gas monitoring was carried out over a range of atmospheric pressures to include at least one reading in low and/or falling pressure, in accordance with the recommendations made in CIRIA Report C665. The results of the ground gas monitoring are presented in Appendix C.

Ground Conditions

Geologically the ground conditions comprised Tidal Flat Deposits underlain by Mercia Mudstone. Due to the past developments within the site the superficial soils would be anticipated to be overlain by a layer of made ground. The current site surface comprises reinforced concrete hardstanding.

A summary of the ground conditions encountered within the proposed extension area is presented in Table 1.

Table 1: Summary of Ground Conditions		
Depth (m) From To		Stratum
GL	0.2	REINFORCED CONCRETE
0.2	1.1/1.2	MADE GROUND: Loose black ashy gravelly SAND or loose brown and greyish brown gravelly SAND. Gravel is fine to coarse angular to sub-rounded of sandstone, ash, brick and crushed concrete in areas with inclusions of rubber and reinforcement bar and/or very soft grey and brown slightly silty slightly sandy slightly gravelly CLAY. Gravel is fine to coarse sub-angular to rounded of mudstone and sandstone with rare brick, crushed stone and ash
1.1/1.2	14.5/14.6	Very soft and soft brown grey silty CLAY with pockets of organic clay and layers of firm brownish grey and black fibrous clayey PEAT with frequent decaying organic material and pockets of cobble sized grey clay (TIDAL FLAT DEPOSITS)
14.5/14.6	15.4/15.5	Soft rapidly becoming firm and stiff reddish brown and grey sandy slightly gravelly CLAY. Gravel is fine to coarse sub-angular to rounded mudstone and sandstone
15.4/15.5	>17.5/18.0	Weak reddish brown weathered MUDSTONE (Recovered as sandy very clayey gravels)

Made Ground

The made ground was found to comprise typically cohesive materials to 1.1/1.2, depth. Within boreholes BH02 and BH03 the upper layer of made ground to 0.6m and 0.5m depth respectively, comprised a layer of granular materials overlying the typical cohesive made ground.

Tidal Flat Deposits

The made ground was found to be directly underlain by a thick layer of tidal flat deposits. The tidal flat deposits typically comprised very soft and soft silty clay with pockets of fibrous organic peat.

SPT N values in the tidal flat deposits typically ranged from 2 to 11, occasional SPT N values of 0 and up to 26 were recorded.

Weathered Mudstone

The Mercia Mudstone bedrock was highly weathered directly beneath the superficial soils and was typically recovered as soft becoming firm and stiff reddish brown silty sandy gravelly clay. The mudstone became less weathered with depth and was recovered as very clayey gravels.

SPT N values within the weathered mudstone ranged from typically 23 to 50, and >50 at the base of the borehole.

Groundwater

Perched groundwater was encountered at 1.2m depth with borehole BH01, rising to 0.8m after 20 minutes. The borehole remained dry during the drilling.

No groundwater was encountered within borehole BH02.

Perched groundwater was encountered at 1.0m depth with borehole BH03, rising to 0.85m after 20 minutes. Groundwater was also struck at 15.5m with the water standing at 8.6m depth.

Concrete Classification

Evidence to date does not indicate any specifically aggressive conditions, but it would be reasonable to expect a degree of sulphate and acidic aggressiveness from the made ground and/or in-situ soils.

Made Ground

In accordance with BRE Digest SD1:2005 and adopting the assessment procedure specified therein for brownfield sites, the laboratory chemical test results indicate a characteristic value (taking the highest test result) for water soluble sulphate within the made ground of 320mg/l.

Using Table C2 of BRE Digest SD1:2005, this characteristic value corresponds to Design Sulphate Class DS-1.

The groundwater regime of the site has been assessed as ‘mobile’ and a characteristic pH value within the made ground of 8.1 has been determined (adopting the lowest test result). The Design Sulphate Class has been modified to give a site ACEC class of AC-1 for concrete structures constructed within the made ground.

Superficial Deposits

In accordance with BRE Digest SD1:2005 and adopting the assessment procedure specified therein for brownfield sites, the laboratory chemical test results indicate a characteristic value (taking the highest test result) for water soluble sulphate within the superficial deposits of 1,360mg/l.

Using Table C2 of BRE Digest SD1:2005, this characteristic value corresponds to Design Sulphate Class DS-2.

The groundwater regime of the site has been assessed as ‘mobile’ and a characteristic pH value within the superficial deposits of 7.4 has been determined (adopting the lowest test result). The Design Sulphate Class has been modified to give a site ACEC class of AC-2 for concrete structures constructed within the superficial deposits.

Ground Gas Risk Assessment

Ground gas was monitored on a fortnightly basis using a GA 5000 Gas Analyser. The results of the gas monitoring are included in Appendix C.

A summary of the results is given in the following Table 2.

Table 2: Summary of Ground Gas Results				
Borehole	Maximum Methane Concentration (%)	Maximum Carbon Dioxide Concentration (%)	Minimum Oxygen Concentration (%)	Gas Flow Rate (l/hr)
BH01	23.2	0.2	9.5	<0.5
BH03	0.3	0.1	18.4	<0.3

The results show a maximum methane concentration of 23.2% and a maximum carbon dioxide concentration of 0.1%. A maximum gas flow rate of <0.5 l/hr was measured during the gas monitoring programme.

In accordance with CIRIA Report C665 a Gas Screening Value (GSV) of <0.116 l/hour has been calculated.

This GSV corresponds to Gas Characteristic Situation 2. Gas Characteristic Situation 2 is also recommended due to the elevated methane concentrations. The borehole air flow rate does not exceed 70 l/hr and therefore it would not be a requirement to increase the classification further to Characteristic Situation 3. These results would be typical of soils with a high peat/organic content.

It is therefore considered that gas protection measures are required within the proposed extension.

Reference should also be made to BS8485:2015 +A1:2019. In accordance with BS8485:2015 +A1:2019 and based on the results of the gas monitoring programme with the site being classified as Characteristic Situation 2 (CS2), for Development Type C (Commercial/public), the minimum gas protection score required is 2.5.

In accordance with BS8485:2015 +A1:2019 a protection score of 2.5 for commercial development can be achieved through a combination of the floor slab design, ventilation measures and incorporation of an appropriate gas resistant membrane. Reference should be made to BS8485:2015 +A1:2019 during the detailed design in order to ensure adequate design measures are incorporated to provide a sufficient gas protection score.

The gas membrane should be fitted and verified by a specialist contractor, in accordance with CIRIA C735.

Maximum carbon monoxide concentrations of 5ppm were detected during the gas monitoring programme with BH01. The HSE Workplace Exposure Limit for carbon monoxide is 20ppm for long term exposure (8-hour time weighted average period), which is not exceeded by the maximum recorded concentration. It is therefore considered that the potential risk from carbon monoxide within the proposed extension is considered to be low.

Foundation Recommendations

The ground conditions beneath the site are characterised by made ground overlying a thick layer of soft highly compressible tidal flat deposits. Therefore, the use of conventional shallow foundations is not considered feasible due to the potential for unacceptable total and differential settlements.

It is therefore recommended that piled foundations are used for the proposed extension.

Subject to vibration and noise, driven pre-cast concrete piles, driven to an appropriate set within the weathered mudstone bedrock deposits encountered from typically 15.4/15.5m depth, should be feasible. Based on the results of the intrusive site investigation, pile lengths are anticipated to be approximately around 20m, although variation should be expected. Pile capacity would be generated from a combination of friction and end bearing resistance, subject to the advice of a specialist piling contractor.

Variations in pile lengths should be limited to avoid over-stressing adjacent piles of different lengths.

Piles will need to be designed to ignore load contribution from the made ground and soft and very soft underlying clay strata.

If finished ground levels are to be raised above existing site levels, consideration will need to be given to the effects of negative skin friction.

Any piles that are driven to a premature set should be investigated and allowances made for re-driving, digging out any encountered shallow obstructions, or pile replacement.

Subject to the advice of a specialist piling contractor, the use of alternative piling techniques may be required.

Note that the adopted piling system will need to consider any potential vibration and noise issues in relation to the adjacent building. If noise and/or vibration issues preclude the use of driven piles then a bored/augured pile or drilled piling system deriving load capacity in the form of a suitably designed and constructed socket within competent mudstone bedrock, could be considered.

If an augured piling system is adopted, it will be necessary to segregate the made ground arisings from the natural soil arisings for appropriate off-site disposal.

It is recommended that the advice of a specialist piling contractor is sought in order to confirm the most appropriate piling technique and for the detailed pile design.

Floor slabs should be designed and constructed as suspended, and allowances made for the incorporation of appropriate gas protection measures.

This report should be forwarded to a specialist piling contractor for the detailed pile design.

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,



Laura Pullin

**For
Intégral Géotechnique (Wales) Limited**

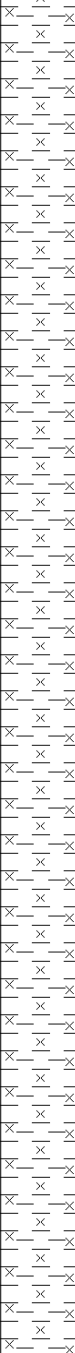
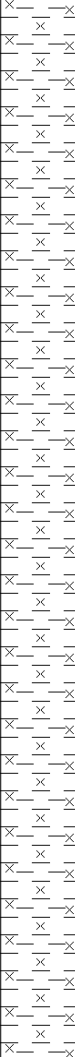
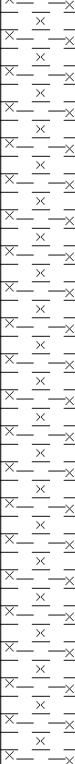
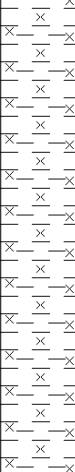
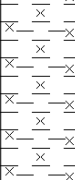
Encl.

Appendix A – Cable Percussion Borehole Logs
Appendix B – Laboratory Chemical Test Results
Appendix C – Ground Gas Monitoring Results
Figures

APPENDIX A

CABLE PERCUSSION BOREHOLE LOGS

Intégral Géotechnique		Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com		Project Name: Unit 10, Maesglas Retail Park			Project No.: 14043		Borehole No.: BH01 Sheet 1 of 4			
Location: Newport				Client: Valley Wholesale Carpets Ltd			Coordinates:		Hole Type: CP			
Equipment: Cable Percussion Drilling Rig				Diameter of Casing: 200mm			Level:		Scale 1:25			
Diameter of Boring: 200mm				Depth of Casing: 17.00m			Dates 08/08/2024 - 12/08/2024		Logged By: FG			
Well	Water Strikes	Samples & In situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description				
		Depth (m)	Type	Results								
		0.20 - 0.60	B		0.20		REINFORCED CONCRETE			1		
							MADE GROUND: Very soft grey and brown slightly silty slightly sandy slightly gravelly CLAY. Gravel is fine to coarse sub-angular to rounded of mudstone and sandstone with rare brick and crushed stone					
		1.20	S	N=2 (0,1/0,1,0,1)	1.20		Very soft becoming soft brownish grey silty CLAY with local coarse gravel sized pockets of organic clay				2	
		1.50 - 2.00	B									
		2.00	S	N=2 (0,1/0,1,0,1)								
		2.50 - 3.00	B									
		3.00	S	N=4 (0,1/0,1,1,2)								
		3.50 - 4.00	B									
		4.00	S	N=5 (0,1/1,1,1,2)								
		4.50 - 5.00	B									
		5.00	S	N=5 (1,1/1,1,1,2)								
		Remarks:										5
1. Refusal at 17.5m depth 2. Perched groundwater struck at 1.2m depth rising to 0.8m after 20 minutes 3. Borehole dry during drilling												
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												

Intégral Géotechnique Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com		Project Name: Unit 10, Maesglas Retail Park		Project No.: 14043		Borehole No.: BH01 Sheet 2 of 4			
Location: Newport		Client: Valley Wholesale Carpets Ltd		Coordinates:		Hole Type: CP			
Equipment: Cable Percussion Drilling Rig		Diameter of Casing: 200mm		Level:		Scale 1:25			
Diameter of Boring: 200mm		Depth of Casing: 17.00m		Dates 08/08/2024 - 12/08/2024		Logged By: FG			
Well	Water Strikes	Samples & In situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		5.50 - 6.00	B	N=1 (0,0/0,0,0,1)				...becoming very soft at 6.0m	6
		6.00	S	N=15 (1,1/2,3,5,5)					7
		6.50 - 7.00	B	N=16 (2,2/3,3,5,5)					8
		7.00	S	N=18 (2,3/4,4,5,5)					9
		7.50 - 8.00	B						10
		8.00	S						
		8.50 - 9.00	B						
		9.50 - 10.00	B						
		10.00	S						

Remarks:

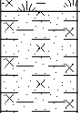
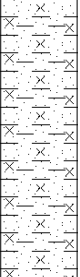
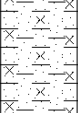
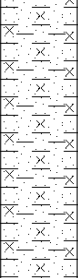
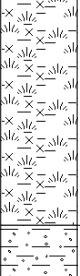
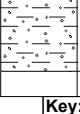
1. Refusal at 17.5m depth
2. Perched groundwater struck at 1.2m depth rising to 0.8m after 20 minutes
3. Borehole dry during drilling

Key:

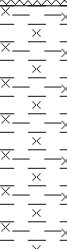
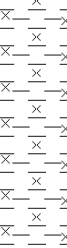
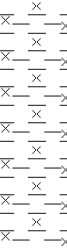
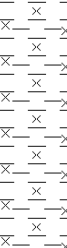
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)

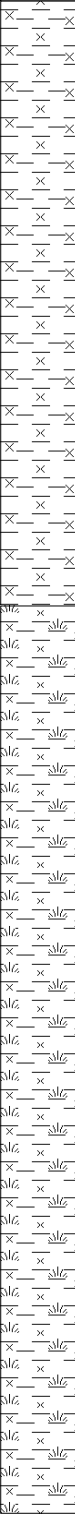
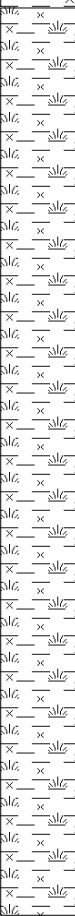
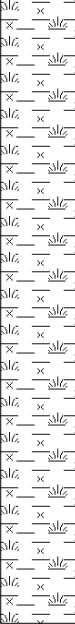
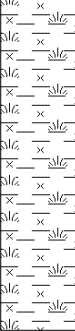
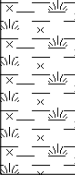
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

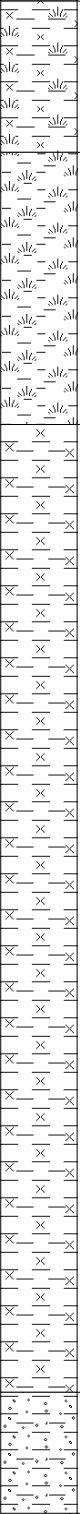


Intégral Géotechnique Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com		Project Name: Unit 10, Maesglas Retail Park		Project No.: 14043		Borehole No.: BH01 Sheet 3 of 4				
Location: Newport		Client: Valley Wholesale Carpets Ltd		Coordinates:		Hole Type: CP				
Equipment: Cable Percussion Drilling Rig		Diameter of Casing: 200mm		Level:		Scale 1:25				
Diameter of Boring: 200mm		Depth of Casing: 17.00m		Dates 08/08/2024 - 12/08/2024		Logged By: FG				
Well	Water Strikes	Samples & In situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		10.50 - 10.95	B	N=9 (1,1/1,1,3,4)	10.95			Firm becoming soft sandy silty CLAY	11	
		10.95 - 11.00	D							
		11.00	S							
		11.50 - 12.00	B	N=4 (2,1/1,1,1,1)	13.50			Firm brownish grey and black fibrous clayey PEAT with frequent decaying organic material and pockets of cobble sized firm grey clay	13	
		12.50 - 13.00	B							
		13.00	S							
		13.50 - 14.00	B	N=11 (1,1/2,2,4,3)	14.60			Firm becoming stiff reddish brown and grey sandy slightly gravelly CLAY. Gravel is fine to coarse sub-angular to rounded of mudstone and sandstone	14	
		14.00	S							
		14.60 - 15.00	B							
				15.00	S	N=26 (3,4/4,7,5,10)				
Remarks: 1. Refusal at 17.5m depth 2. Perched groundwater struck at 1.2m depth rising to 0.8m after 20 minutes 3. Borehole dry during drilling						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				

[illegible]

Intégral Géotechnique Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com		Project Name: Unit 10, Maesglas Retail Park		Project No.: 14043		Borehole No.: BH02 Sheet 1 of 4				
Location: Newport		Client: Valley Wholesale Carpets Ltd		Coordinates:		Hole Type: CP				
Equipment: Cable Percussion Drilling Rig		Diameter of Casing: 200mm		Level:		Scale 1:25				
Diameter of Boring: 200mm		Depth of Casing: 17.50m		Dates 13/08/2024 - 14/08/2024		Logged By: FG				
Well	Water Strikes	Samples & In situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		0.20 - 0.60	B		0.20			REINFORCED CONCRETE		
		0.60 - 1.20	B		0.60			MADE GROUND: Loose brown and greyish brown gravelly SAND. Gravel is fine to coarse angular to sub-rounded of predominantly crushed concrete with sandstone and mudstone, inclusions of reinforcement bar, rubber and wire		
			1.20		S			1.10		MADE GROUND: Very soft grey and brown sandy gravelly CLAY. Gravel is fine to coarse of predominantly sandstone and mudstone with ash (reworked material)
		1.50 - 2.00			B			N=2 (0,1/0,1,0,1)		
			2.00		S					
		2.50 - 3.00			B			N=4 (0,0/1,1,1,1)		
			3.00		S					
		3.50 - 4.00			B			N=4 (0,0/1,1,1,1)		
			4.00		S					
		4.50 - 5.00			B			N=3 (0,0/1,0,1,1)		
5.00	S		N=3 (0,0/1,0,1,1)							
Remarks: 1. Refusal at 18m depth 2. No groundwater 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					

Intégral Géotechnique Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com		Project Name: Unit 10, Maesglas Retail Park		Project No.: 14043		Borehole No.: BH02 Sheet 2 of 4						
Location: Newport		Client: Valley Wholesale Carpets Ltd		Coordinates:		Hole Type: CP						
Equipment: Cable Percussion Drilling Rig		Diameter of Casing: 200mm		Level:		Scale 1:25						
Diameter of Boring: 200mm		Depth of Casing: 17.50m		Dates 13/08/2024 - 14/08/2024		Logged By: FG						
Well	Water Strikes	Samples & In situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description				
		Depth (m)	Type	Results								
		5.50 - 6.00	B	N=4 (0,1/1,1,1,1)	7.00				6			
6.00	S	N=11 (1,1/2,3,3,3)	7.00			Firm becoming soft grey locally black silty CLAY with coarse gravel and cobble sized pockets of black fibrous peat with occasional decaying organic matter	7					
6.50 - 7.00	B	N=22 (3,4/5,5,6,6)	7.00				8					
7.00	S	N=7 (1,1/1,2,2,2)	7.00				9					
7.50 - 8.00	B	N=4 (1,1/1,1,1,1)	7.00				10					
8.00	S											
8.50 - 9.00	B											
9.00	S											
9.50 - 10.00	B											
10.00	S											
Remarks:							Key:					
1. Refusal at 18m depth							D - Small disturbed sample			W - Water sample		
2. No groundwater encountered							B - Bulk disturbed sample			U - Undisturbed sample		
							ES - Environmental soil sample			TCR - Total Core Recovery		
							SPT - Standard Penetration Test (split spoon)			SCR - Solid Core Recovery		
							CPT - Standard Penetration Test (solid cone)			RQD - Rock Quality Designation		
												

Intégral Géotechnique Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com		Project Name: Unit 10, Maesglas Retail Park		Project No.: 14043		Borehole No.: BH02 Sheet 3 of 4					
Location: Newport		Client: Valley Wholesale Carpets Ltd		Coordinates:		Hole Type: CP					
Equipment: Cable Percussion Drilling Rig		Diameter of Casing: 200mm		Level:		Scale 1:25					
Diameter of Boring: 200mm		Depth of Casing: 17.50m		Dates 13/08/2024 - 14/08/2024		Logged By: FG					
Well	Water Strikes	Samples & In situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description			
		Depth (m)	Type	Results							
		10.50 - 11.00	B	N=9 (1,2/3,2,2,2)	10.50			Firm brownish grey and black fibrous clayey PEAT with frequent decaying organic material and pockets of cobble sized firm grey clay	11		
		11.00	S								
		11.50 - 12.00	B	N=4 (1,1/1,1,1,1)	11.40			Firm becoming very soft to soft grey silty CLAY	12		
		12.00	S								
		12.50 - 13.00	B	N=4 (1,1/1,1,1,1)	13			Very soft becoming stiff red gravelly CLAY. Gravel is fine to coarse sub-angular to rounded sandstone and mudstone	14		
		13.00	S								
		13.50 - 14.00	B	N=4 (1,1/1,1,1,1)	14.60						
		14.00	S								
		15.00	S	N=28 (5,6/7,8,6,7)							15
		Remarks: 1. Refusal at 18m depth 2. No groundwater 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		

Intégral Géotechnique Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com		Project Name: Unit 10, Maesglas Retail Park		Project No.: 14043		Borehole No.: BH02 Sheet 4 of 4				
Location: Newport		Client: Valley Wholesale Carpets Ltd		Coordinates:		Hole Type: CP				
Equipment: Cable Percussion Drilling Rig		Diameter of Casing: 200mm		Level:		Scale 1:25				
Diameter of Boring: 200mm		Depth of Casing: 17.50m		Dates 13/08/2024 - 14/08/2024		Logged By: FG				
Well	Water Strikes	Samples & In situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		15.50 - 16.00	B		15.50			Weak reddish brown weathered MUDSTONE (Recovered as sandy very clayey gravel)		
		16.00	S	N=23 (2,2/3,5,5,10)					16	
		16.50 - 17.00	B							
		17.00	S	N=50 (8,8/10,15,15,10)					17	
		17.50 - 18.00	B							
		18.00	S	50 (10,12/50 for 150mm)	18.00			End of Borehole at 18.00 m	18	
									19	
									20	
Remarks: 1. Refusal at 18m depth 2. No groundwater 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			

Intégral Géotechnique Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com		Project Name: Unit 10, Maesglas Retail Park		Project No.: 14043		Borehole No.: BH03 Sheet 1 of 4					
Location: Newport		Client: Valley Wholesale Carpets Ltd		Coordinates:		Hole Type: CP					
Equipment: Cable Percussion Drilling Rig		Diameter of Casing: 200mm		Level:		Scale 1:25					
Diameter of Boring: 200mm		Depth of Casing: 18.00m		Dates 15/08/2024 - 19/08/2024		Logged By: FG					
Well	Water Strikes	Samples & In situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description			
		Depth (m)	Type	Results							
		0.20 - 0.50	B		0.20			REINFORCED CONCRETE			
		0.50 - 1.00	B		0.50				MADE GROUND: Loose black ashy gravelly SAND. Gravel is fine to coarse angular to sub rounded of sandstone, ash, brick and crushed concrete		
		1.00	S	N=1 (0,0/0,0,0,1)	1.20					MADE GROUND: Very soft grey silty slightly gravelly sandy CLAY. Gravel is fine to coarse mudstone and rare brick	1
		1.50 - 2.00	B					Very soft and soft becoming firm grey silty CLAY with occasional roots			
		2.00	S	N=0 (0,0/0,0,0,0)						2	
		2.50 - 3.00	B								
		3.00	S	N=3 (0,1/0,1,1,1)						3	
		3.50 - 4.00	B								
		4.00	S	N=6 (1,1/1,1,2,2)						4	
		4.50 - 5.00	B								
		5.00	S	N=7 (0,1/1,2,2,2)						5	
	Remarks:										
	1. Refusal at 18.0m										
	2. Perched groundwater at 1.0m depth rising to 0.85m after 20 minutes										
	3. At 15.5m borehole depth groundwater was standing at 8.6m depth										
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											

Intégral Géotechnique Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com		Project Name: Unit 10, Maesglas Retail Park		Project No.: 14043		Borehole No.: BH03 Sheet 2 of 4			
Location: Newport		Client: Valley Wholesale Carpets Ltd		Coordinates:		Hole Type: CP			
Equipment: Cable Percussion Drilling Rig		Diameter of Casing: 200mm		Level:		Scale 1:25			
Diameter of Boring: 200mm		Depth of Casing: 18.00m		Dates 15/08/2024 - 19/08/2024		Logged By: FG			
Well	Water Strikes	Samples & In situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		5.50 - 6.00	B	N=6 (0,1/1,2,1,2)					6
6.00	S	N=13 (1,1/2,2,4,5)					7		
6.50 - 7.00	B	N=12 (1,2/2,3,3,4)					8		
7.00	S	N=9 (0,1/1,2,3,3)					9		
7.50 - 8.00	B	N=17 (1,2/4,4,5,4)					10		
8.00	S								
8.50 - 9.00	B								
9.00	S								
9.50 - 10.00	B								
10.00	S								

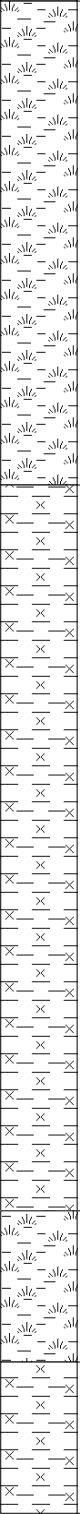
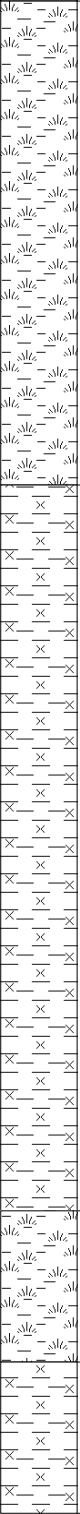
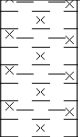
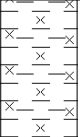
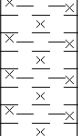
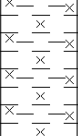
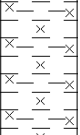
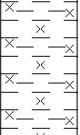
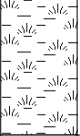
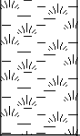
Remarks:

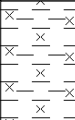
1. Refusal at 18.0m
2. Perched groundwater at 1.0m depth rising to 0.85m after 20 minutes
3. At 15.5m borehole depth groundwater was standing at 8.6m depth

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

Intégral Géotechnique Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com		Project Name: Unit 10, Maesglas Retail Park		Project No.: 14043		Borehole No.: BH03 Sheet 3 of 4						
Location: Newport		Client: Valley Wholesale Carpets Ltd		Coordinates:		Hole Type: CP						
Equipment: Cable Percussion Drilling Rig		Diameter of Casing: 200mm		Level:		Scale 1:25						
Diameter of Boring: 200mm		Depth of Casing: 18.00m		Dates 15/08/2024 - 19/08/2024		Logged By: FG						
Well	Water Strikes	Samples & In situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description				
		Depth (m)	Type	Results								
		10.50 - 11.00	B	N=6 (0,1/0,1,1,4)	11.60			Firm brownish grey and black fibrous clayey PEAT with frequent decaying organic material and pockets of cobble sized firm grey clay	11			
		11.00	S									
		11.50 - 12.00	B	N=10 (0,0/1,2,3,4)				12.00			Very soft and soft becoming firm grey silty CLAY with occasional roots	12
		12.00	S									
		12.50 - 13.00	B	N=7 (2,1/2,1,2,2)				13.00				13
		13.00	S									
		13.50 - 14.00	B	N=15 (4,4/3,4,4,4)				14.00			Firm brownish grey and black fibrous clayey PEAT with frequent decaying organic material and pockets of cobble sized firm grey clay	14
		14.00	S									
		14.50 - 15.00	B	N=4 (1,1/1,1,1,1)				14.50			Firm grey silty CLAY	
		15.00	S									
Remarks: 1. Refusal at 18.0m 2. Perched groundwater at 1.0m depth rising to 0.85m after 20 minutes 3. At 15.5m borehole depth groundwater was standing at 8.6m depth							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					

Intégral Géotechnique Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com		Project Name: Unit 10, Maesglas Retail Park		Project No.: 14043		Borehole No.: BH03 Sheet 4 of 4			
Location: Newport		Client: Valley Wholesale Carpets Ltd		Coordinates:		Hole Type: CP			
Equipment: Cable Percussion Drilling Rig		Diameter of Casing: 200mm		Level:		Scale 1:25			
Diameter of Boring: 200mm		Depth of Casing: 18.00m		Dates 15/08/2024 - 19/08/2024		Logged By: FG			
Well	Water Strikes	Samples & In situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		15.50 - 16.00	B		15.40			Weak reddish brown weathered MUDSTONE (Recovered as sandy very clayey gravel)	
		16.00	S	N=26 (3,3/4,6,8,8)					16
		16.50 - 17.00	B						
		17.00	S	N=27 (3,4/4,5,8,10)					17
		17.50 - 18.00	B						
		18.00	S	N=50 (3,6/11,11,11,17)	18.00				18
							End of Borehole at 18.00 m		
Remarks:		Key:							
1. Refusal at 18.0m		D - Small disturbed sample		W - Water sample					
2. Perched groundwater at 1.0m depth rising to 0.85m after 20 minutes		B - Bulk disturbed sample		U - Undisturbed sample					
3. At 15.5m borehole depth groundwater was standing at 8.6m depth		ES - Environmental soil sample		TCR - Total Core Recovery					
		SPT - Standard Penetration Test (split spoon)		SCR - Solid Core Recovery					
		CPT - Standard Penetration Test (solid cone)		RQD - Rock Quality Designation					

APPENDIX B

LABORATORY CHEMICAL TEST RESULTS

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

t: 02920807991

e: finn@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 : 24-039109

Project / Site name:	Maesglas Retail Park	Samples received on:	30/08/2024
Your job number:	14043	Samples instructed on/ Analysis started on:	30/08/2024
Your order number:	14043-FG	Analysis completed by:	04/09/2024
Report Issue Number:	1	Report issued on:	04/09/2024
Samples Analysed:	14 soil samples		



Signed: _____

Anna Goc
PL Head of 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.

Analytical Report Number: 24-039109
 Project / Site name: Maesglas Retail Park
 Your Order No: 14043-FG

Lab Sample Number				300894	300895	300896	300897	300898
Sample Reference				BH01	BH01	BH01	BH01	BH02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00	5.00	9.50	14.00	0.50
Date Sampled				28/06/2024	28/06/2024	28/06/2024	28/06/2024	28/06/2024
Time Taken				1100	1105	1110	1115	1120
Analytical Parameter (Soil Analysis)				Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	52.4
Moisture Content	%	0.01	NONE	22	25	38	14	10
Total mass of sample received	kg	0.1	NONE	0.8	0.8	0.8	0.8	0.8

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	8.2	8.7	7.7	9.3	11.3
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	640	410	2000	560	460
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.32	0.206	1.01	0.278	0.228
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	320	206	1010	278	228

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 24-039109
 Project / Site name: Maesglas Retail Park
 Your Order No: 14043-FG

Lab Sample Number				300899	300900	300901	300902	300903
Sample Reference				BH03	BH02	BH03	BH03	BH02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				4.00	11.00	17.00	0.50	1.00
Date Sampled				28/06/2024	28/06/2024	28/06/2024	28/06/2024	28/06/2024
Time Taken				1125	1130	1135	1140	1145
Analytical Parameter (Soil Analysis)				Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	46.5	< 0.1
Moisture Content	%	0.01	NONE	25	42	17	12	23
Total mass of sample received	kg	0.1	NONE	0.5	0.8	0.8	0.8	0.7

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	8.2	7.7	8.9	10.4	8.1
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	170	2700	88	430	500
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0848	1.36	0.044	0.216	0.251
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	84.8	1360	44	216	251

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 24-039109
 Project / Site name: Maesglas Retail Park
 Your Order No: 14043-FG

Lab Sample Number	300904	300905	300906	300907
Sample Reference	BH02	BH02	BH03	BH03
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	6.00	9.00	11.00	15.00
Date Sampled	28/06/2024	28/06/2024	28/06/2024	28/06/2024
Time Taken	1150	1155	1200	1205
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	11.6
Moisture Content	%	0.01	NONE	27	26	53	15
Total mass of sample received	kg	0.1	NONE	0.8	0.7	0.7	0.7

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	8.7	8.2	7.4	9.3
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	250	1000	1900	99
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.124	0.512	0.932	0.0493
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	124	512	932	49.3

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 24-039109
Project / Site name: Maesglas Retail Park

* 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 *
300894	BH01	None Supplied	1	Brown clay and sand with gravel
300895	BH01	None Supplied	5	Brown clay and sand with gravel
300896	BH01	None Supplied	9.5	Brown clay
300897	BH01	None Supplied	14	Brown clay and sand with gravel
300898	BH02	None Supplied	0.5	Brown gravelly clay with stones
300899	BH03	None Supplied	4	Light grey clay and sand with gravel
300900	BH02	None Supplied	11	Light grey clay and sand with peat and vegetation
300901	BH03	None Supplied	17	Brown clay and sand with gravel
300902	BH03	None Supplied	0.5	Brown gravelly loam with concrete and stones
300903	BH02	None Supplied	1	Brown clay and sand
300904	BH02	None Supplied	6	Light grey clay and sand
300905	BH02	None Supplied	9	Light grey clay and sand
300906	BH03	None Supplied	11	Light grey clay and sand with peat and vegetation
300907	BH03	None Supplied	15	Brown gravelly clay with stones

Analytical Report Number : 24-039109
Project / Site name: Maesglas Retail Park

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
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
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.	L019B	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	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

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 30°C.

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.

Quality control parameter failure associated with individual result applies to calculated sum of individuals.

The result for sum should be interpreted with caution

Analytical Report Number : 24-039109

Project / Site name: Maesglas Retail Park

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
BH01	N/A	S	300894	c	pH in soil (automated)	L099-PL	c
BH01	N/A	S	300895	c	pH in soil (automated)	L099-PL	c
BH01	N/A	S	300896	c	pH in soil (automated)	L099-PL	c
BH01	N/A	S	300897	c	pH in soil (automated)	L099-PL	c
BH02	N/A	S	300898	c	pH in soil (automated)	L099-PL	c
BH02	N/A	S	300900	c	pH in soil (automated)	L099-PL	c
BH02	N/A	S	300903	c	pH in soil (automated)	L099-PL	c
BH02	N/A	S	300904	c	pH in soil (automated)	L099-PL	c
BH02	N/A	S	300905	c	pH in soil (automated)	L099-PL	c
BH03	N/A	S	300899	c	pH in soil (automated)	L099-PL	c
BH03	N/A	S	300901	c	pH in soil (automated)	L099-PL	c
BH03	N/A	S	300902	c	pH in soil (automated)	L099-PL	c
BH03	N/A	S	300906	c	pH in soil (automated)	L099-PL	c
BH03	N/A	S	300907	c	pH in soil (automated)	L099-PL	c

APPENDIX C

GROUND GAS MONITORING RESULTS

FIELD GAS MONITORING RESULTS - SUMMARY

Job No.: 14043
 Site: Unit 10, Maesglas Retail Park

Maximum Methane Concentration (%v/v)	Maximum Carbon Dioxide Concentration (%v/v)	Maximum Gas Concentration (%v/v)	Maximum Gas Flow Rate (l/hr)	GSV (l/hr)
23.20	0.20	23.20	<0.5	<0.116

Methane							
Location	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	Maximum
BH01	23.20	18.10	16.20	16.20	15.80	16.10	23.20
BH03	0.30	0.20	0.10	0.10	0.10	0.10	0.30

Carbon Dioxide							
Location	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	Maximum
BH01	0.10	0.20	0.10	0.10	0.10	0.10	0.20
BH03	0.10	0.10	0.10	0.10	0.10	0.10	0.10

Oxygen							
Location	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	Minimum
BH01	9.50	10.50	11.20	11.20	10.20	12.20	9.50
BH03	19.70	18.40	19.10	19.10	18.70	19.50	18.40

Gas Flow Rate							
Location	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	Maximum
BH01	0.10	0.10	0.10	0.10	0.10	<0.5	<0.50
BH03	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.30

FIELD GAS MONITORING RESULTS

Job No.: 14043
 Site: Unit 10, Maesglas Retail Park
 Monitoring Date: 22.08.24
 Monitoring Round: 1

Monitoring Conditions

Weather: Cloudy
 Ambient Temp: 18 °C
 Instrument: GA5000

Barometric Pressure (mb)

On Arrival: 1004
 During Monitoring: 1004
 End of Monitoring: 1004

Location	Well Base Level (mbgl)	Water Level (mbgl)	Methane (CH4) %v/v		Methane % LEL		Oxygen (O2) %v/v		Carbon Dioxide (CO2) %v/v		Carbon Monoxide (CO) (ppm)	Hydrogen Sulphide (H2S) (ppm)	Peak Gas Flow (l/hr)	VOC Vapours (ppm>background)
			Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady				
BH01	3.04	2.97	23.20	21.10	>100	>100	9.50	9.30	0.10	0.10	5.00	<1	0.10	0.10
BH03	2.56	0.61	0.30	0.30	6.00	6.00	19.70	19.80	0.10	0.10	<1	<1	<0.3	0.10

Typical Instrument Accuracy:

%CH ₄	0-70% +/- 0.5%	CO	0-500ppm +/- 2% FS	LEL = Lower Explosive Limit
%CO ₂	0-60% +/- 0.5%	H ₂ S	0-5000ppm +/- 2.0% FS	N/R = No Reading Taken
%O ₂	0-25% +/- 1.0%	Flow from borehole	+/- 0.3l/h	FS = Full Scale

Notes:

FIELD GAS MONITORING RESULTS

Job No.: 14043
 Site: Unit 10, Maesglas Retail Park
 Monitoring Date: 06.09.24
 Monitoring Round: 2

Monitoring Conditions

Weather: Cloudy
 Ambient Temp: 19 °C
 Instrument: GA5000

Barometric Pressure (mb)

On Arrival: 994
 During Monitoring: 994
 End of Monitoring: 994

Location	Well Base Level (mbgl)	Water Level (mbgl)	Methane (CH4) %v/v		Methane % LEL		Oxygen (O2) %v/v		Carbon Dioxide (CO2) %v/v		Carbon Monoxide (CO) (ppm)	Hydrogen Sulphide (H2S) (ppm)	Peak Gas Flow (l/hr)	VOC Vapours (ppm>background)
			Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady				
BH01	3.04	2.92	18.10	18.10	>100	>100	10.50	10.50	0.20	0.10	4.00	<1	0.10	0.10
BH03	2.56	0.64	0.20	0.20	4.00	4.00	18.40	18.40	0.10	0.10	<1	<1	<0.3	0.10

Typical Instrument Accuracy:

%CH ₄	0-70% +/- 0.5%	CO	0-500ppm +/- 2% FS	LEL = Lower Explosive Limit
%CO ₂	0-60% +/- 0.5%	H ₂ S	0-5000ppm +/- 2.0% FS	N/R = No Reading Taken
%O ₂	0-25% +/- 1.0%	Flow from borehole	+/- 0.3l/h	FS = Full Scale

Notes:

FIELD GAS MONITORING RESULTS

Job No.: 14043
 Site: Unit 10, Maesglas Retail Park
 Monitoring Date: 03.10.24
 Monitoring Round: 3

Monitoring Conditions

Weather: Sunny
 Ambient Temp: 14 °C
 Instrument: GA5000

Barometric Pressure (mb)

On Arrival: 1002
 During Monitoring: 1002
 End of Monitoring: 1002

Location	Well Base Level (mbgl)	Water Level (mbgl)	Methane (CH4) %v/v		Methane % LEL		Oxygen (O2) %v/v		Carbon Dioxide (CO2) %v/v		Carbon Monoxide (CO) (ppm)	Hydrogen Sulphide (H2S) (ppm)	Peak Gas Flow (l/hr)	VOC Vapours (ppm>background)
			Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady				
BH01	3.04	Dry	16.20	16.30	>100	>100	11.20	11.20	0.10	0.10	2.00	<1	0.10	0.20
BH03	2.56	0.72	0.10	0.10	2.00	2.00	19.10	19.10	0.10	0.10	1.00	<1	<0.3	0.10

Typical Instrument Accuracy:

%CH ₄	0-70% +/- 0.5%	CO	0-500ppm +/- 2% FS	LEL = Lower Explosive Limit
%CO ₂	0-60% +/- 0.5%	H ₂ S	0-5000ppm +/- 2.0% FS	N/R = No Reading Taken
%O ₂	0-25% +/- 1.0%	Flow from borehole	+/- 0.3l/h	FS = Full Scale

Notes:

FIELD GAS MONITORING RESULTS

Job No.: 14043
 Site: Unit 10, Maesglas Retail Park
 Monitoring Date: 21.10.24
 Monitoring Round: 4

Monitoring Conditions

Weather: Cloudy
 Ambient Temp: 14 °C
 Instrument: GA5000

Barometric Pressure (mb)

On Arrival: 997
 During Monitoring: 997
 End of Monitoring: 997

Location	Well Base Level (mbgl)	Water Level (mbgl)	Methane (CH4) %v/v		Methane % LEL		Oxygen (O2) %v/v		Carbon Dioxide (CO2) %v/v		Carbon Monoxide (CO) (ppm)	Hydrogen Sulphide (H2S) (ppm)	Peak Gas Flow (l/hr)	VOC Vapours (ppm>background)
			Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady				
BH01	3.04	Dry	16.20	16.30	>100	>100	11.20	11.20	0.10	0.10	2.00	<1	0.10	0.20
BH03	2.56	0.72	0.10	0.10	2.00	2.00	19.10	19.10	0.10	0.10	1.00	<1	<0.3	0.10

Typical Instrument Accuracy:

%CH ₄	0-70% +/- 0.5%	CO	0-500ppm +/- 2% FS	LEL = Lower Explosive Limit
%CO ₂	0-60% +/- 0.5%	H ₂ S	0-5000ppm +/- 2.0% FS	N/R = No Reading Taken
%O ₂	0-25% +/- 1.0%	Flow from borehole	+/- 0.3l/h	FS = Full Scale

Notes:

FIELD GAS MONITORING RESULTS

Job No.: 14043
 Site: Unit 10, Maesglas Retail Park
 Monitoring Date: 28.10.24
 Monitoring Round: 5

Monitoring Conditions

Weather: Light Rain
 Ambient Temp: 15 °C
 Instrument: GA5000

Barometric Pressure (mb)

On Arrival: 1002
 During Monitoring: 1002
 End of Monitoring: 1002

Location	Well Base Level (mbgl)	Water Level (mbgl)	Methane (CH4) %v/v		Methane % LEL		Oxygen (O2) %v/v		Carbon Dioxide (CO2) %v/v		Carbon Monoxide (CO) (ppm)	Hydrogen Sulphide (H2S) (ppm)	Peak Gas Flow (l/hr)	VOC Vapours (ppm>background)
			Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady				
BH01	3.04	Dry	15.80	15.40	>100	>100	10.20	10.20	0.10	0.10	3.00	<1	0.10	0.10
BH03	2.56	0.75	0.10	0.10	2.00	2.00	18.70	18.70	0.10	0.10	2.00	<1	<0.3	0.10

Typical Instrument Accuracy:

%CH ₄	0-70% +/- 0.5%	CO	0-500ppm +/- 2% FS	LEL = Lower Explosive Limit
%CO ₂	0-60% +/- 0.5%	H ₂ S	0-5000ppm +/- 2.0% FS	N/R = No Reading Taken
%O ₂	0-25% +/- 1.0%	Flow from borehole	+/- 0.3l/h	FS = Full Scale

Notes:

FIELD GAS MONITORING RESULTS

Job No.: 14043
 Site: Unit 10, Maesglas Retail Park
 Monitoring Date: 15.11.24
 Monitoring Round: 6

Monitoring Conditions

Weather: Cloudy
 Ambient Temp: 12 °C
 Instrument: GA5000

Barometric Pressure (mb)

On Arrival: 1011
 During Monitoring: 1011
 End of Monitoring: 1011

Location	Well Base Level (mbgl)	Water Level (mbgl)	Methane (CH4) %v/v		Methane % LEL		Oxygen (O2) %v/v		Carbon Dioxide (CO2) %v/v		Carbon Monoxide (CO) (ppm)	Hydrogen Sulphide (H2S) (ppm)	Peak Gas Flow (l/hr)	VOC Vapours (ppm>background)
			Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady				
BH01	3.04	Dry	16.10	16.00	>100	>100	12.20	12.20	0.10	0.10	1.00	<1	<0.5	0.10
BH03	2.56	0.74	0.10	0.10	2.00	2.00	19.50	19.50	0.10	0.10	1.00	<1	<0.3	0.20

Typical Instrument Accuracy:

%CH ₄	0-70% +/- 0.5%	CO	0-500ppm +/- 2% FS	LEL = Lower Explosive Limit
%CO ₂	0-60% +/- 0.5%	H ₂ S	0-5000ppm +/- 2.0% FS	N/R = No Reading Taken
%O ₂	0-25% +/- 1.0%	Flow from borehole	+/- 0.3l/h	FS = Full Scale

Notes:

FIGURES

Site Location

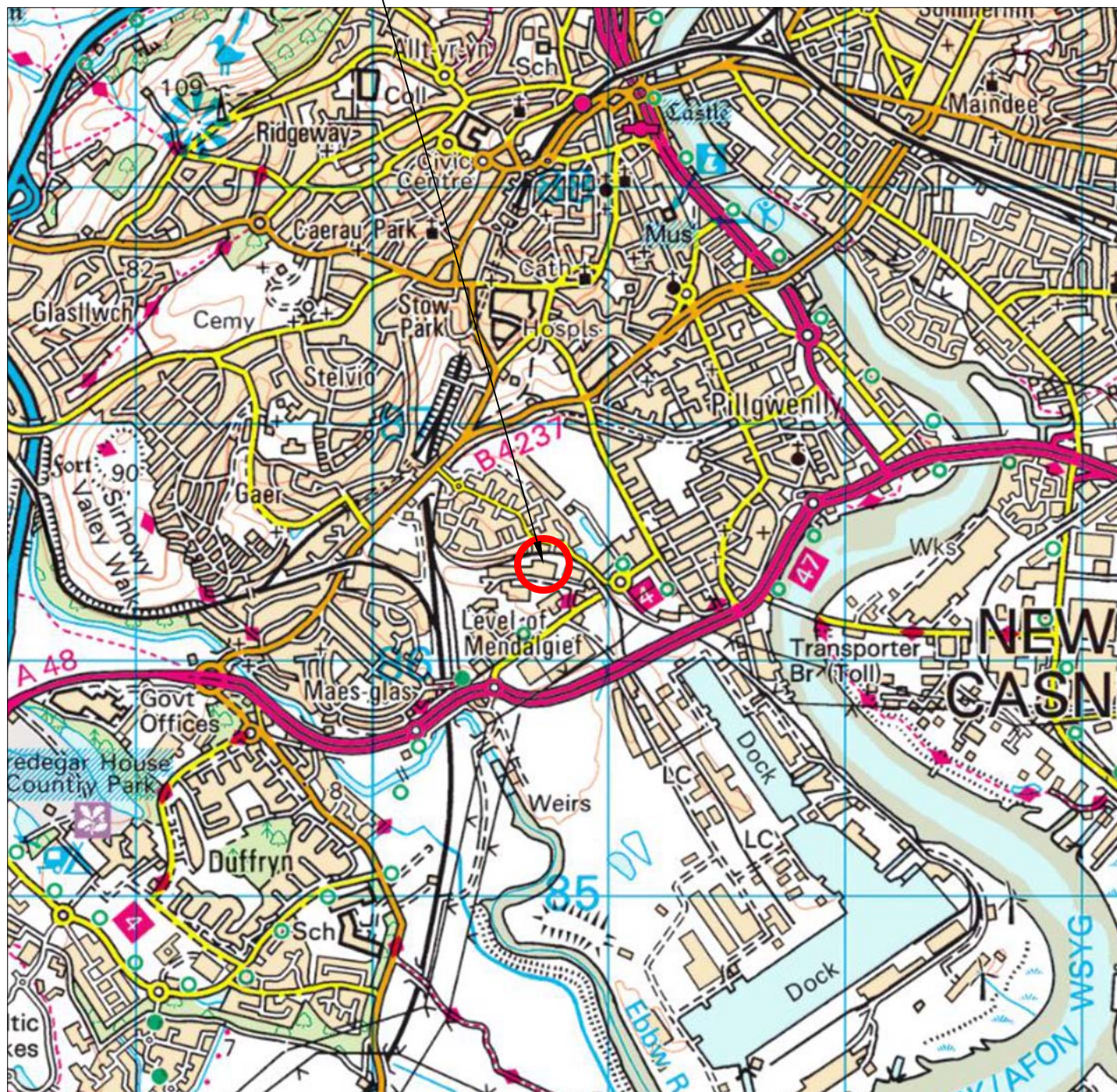


Figure 1: Site Location Map

Project: Unit 10, Maesglas Retail Park

Job no.: 14043

Client: Valley Wholesale Carpets Ltd

Scale: 1:25,000 at A4

Intégral
Géotechnique

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

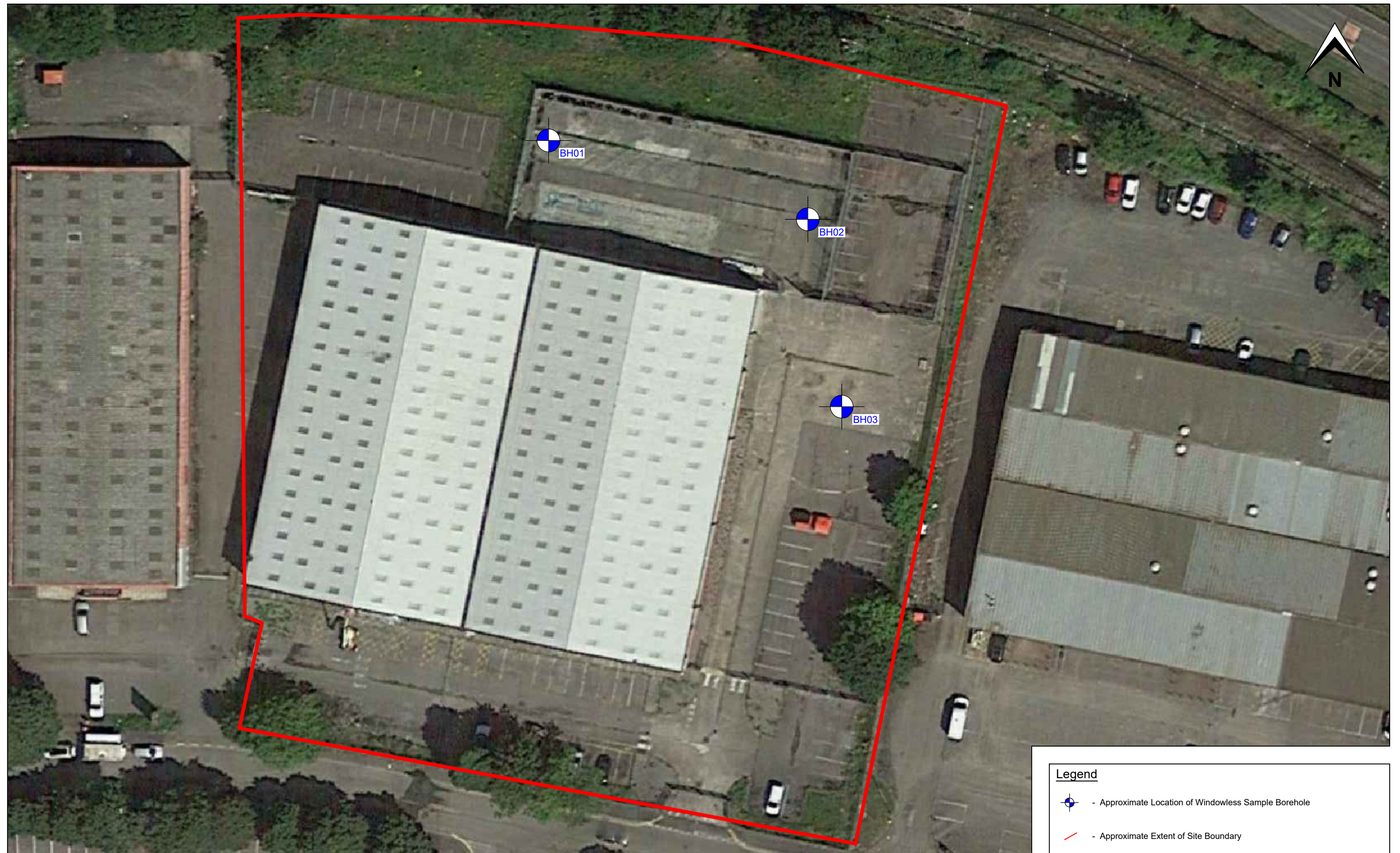


Figure 2: Exploratory Hole Location Plan

Project: Unit 10, Maesglas Retail Park

Client: Valley Wholesale Carpets Ltd

Job No.: 14043

Scale: 1:500 at A3

Intégral
Géotechnique

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