S.I. Ltd Contract No: 5728

Client: Fingal County Council
Engineer: Downes Associates
Contractor: Site Investigations Ltd

Affordable Housing, Old Road, Hayestown, Rush, Co. Dublin Site Investigation Report

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<u>5728 – Affordable Housing</u> <u>Hayestown, Rush Co. Dublin</u>

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1. Introduction

On the instructions of Downes Associates, Site Investigations Ltd (SIL) was appointed to complete a ground investigation at Old Road, Hayestown, Rush, Co. Dublin. The investigation was for an affordable housing development and was completed on behalf of the Client, Fingal County Council. The investigation was completed in May 2020.

2. Site Location

The site is located to the west of Rush on the Old Road in the Hayestown townland in Co. Dublin. The first map below shows the location of Rush to the north of Dublin city and the second map shows the location of the site in the area.





3. Fieldwork

The fieldworks comprise a programme of cable percussive boreholes, rotary coreholes, trial pits, soakaway tests and California Bearing Ratio tests. All fieldwork was carried out in accordance with BS 5930:2015, Engineers Ireland GI Specification and Related Document 2nd Edition 2016 and Eurocode 7: Geotechnical Design. The fieldworks comprised of the following:

- 5 No. cable percussive boreholes with rotary coreholes
- 18 No. trial pits
- 4 No. soakaway tests
- Groundwater readings

3.1. Cable Percussive Boreholes with Rotary Coreholes

Cable percussion boring was undertaken at 5 No. locations using a Dando 150 rig and constructed 200mm diameter boreholes. Hand dug inspection pits were excavated to check for underground services after the areas had been C.A.T. scanned. The boreholes terminated at similar depths of 11.50mbgl to 12.70mbgl. It was not possible to collect undisturbed samples due to the granular soils encountered so bulk disturbed samples were recovered at regular intervals.

To test the strength of the stratum, Standard Penetration Tests (SPT's) were performed at 1.00m intervals in accordance with BS 1377 (1990). In soils with high gravel and cobble content it is appropriate to use a solid cone (60°) (CPT) instead of the split spoon and this was used throughout the testing. The test is completed over 450mm and the cone is driven 150mm into the stratum to ensure that the test is conducted over an undisturbed zone. The cone is then driven the remaining 300mm and the blows recorded to report the N-Value. The report shows the N-Value with the 75mm incremental blows listed in brackets (e.g. BH01 at 1.20mbgl where N=9-(1,1/2,2,3,2)). Where refusal of 50 blows across the test zone was encountered was achieved during testing, the penetration depth is also reported (e.g. BH01 at 5.00mbgl where N=50-(4,7/50 for 285mm)).

At three locations, groundwater monitoring standpipes were installed and these included a slotted pipe with a gravel surround pack to allow equalisation of the water level in the standpipe.

Following completion of the boreholes, rotary coreholes were completed adjacent to the cable percussive boreholes to investigate the depth and type of bedrock. The rotary drilling was carried out using a Sondeq SS71 top drive rig. Open hole drilling techniques were used to advance through the overburden and bedrock was recovered from three coreholes. The bedrock was then cored and the corehole terminated when 3m of core was recovered. At RC01 and RC03 the coreholes were terminated at 15.00mbgl at the scheduled depth.

Once the coreholes were completed, the rock cores were returned to SIL, where they were logged and photographed by a SIL geotechnical engineer. Provided on the logs are engineering geological descriptions of the rock cores with details of the bedding/discontinuities and mechanical indices for each core run, i.e. TCR, SCR, RQD and Fracture Index.

The cable percussive logs are presented in Appendix 1 with the rotary corehole logs and photographs are presented in Appendix 2.

3.2. Trial Pits

18 No. trial pits were excavated using a wheeled excavator. The strata were logged and photographed by SIL geotechnical engineer and groundwater ingresses and pit wall stability

was also recorded. Representative disturbed bulk samples were recovered as the pits were excavated, which were returned to the laboratory for geotechnical testing.

The trial pit logs and photographs are presented in Appendix 3.

3.3. Soakaway Tests

At four locations, soakaway tests were completed with the wheeled excavator. The soakaway test is used to identify possible areas for storm water drainage. The pit will be filled with water and the level of the groundwater recorded over time. As stipulated by BRE Special Digest 365, the pit should be filled three times and that the final cycle is used to provide the infiltration rate. The time taken for the water level to fall from 75% volume to 25% volume is required to calculate the rate of infiltration. However, if the water level does not fall at a steady rate then the test is deemed to have failed and the area is unsuitable for storm water drainage.

The test results and photographs are provided in Appendix 4.

3.4. Groundwater Readings

Following completion of the fieldworks, a series of groundwater readings were taken from the standpipes installed in the boreholes. The readings are presented in Appendix 5.

3.5. Surveying

Following the completion of the fieldworks, a survey of the exploratory hole locations was completed using a GeoMax GPS Rover. The data is supplied on each individual log and along with a site plan in Appendix 10.

4. Laboratory Testing

Geotechnical laboratory testing has been completed on representative soil samples in accordance with BS 1377 (1990). Testing includes:

- 18 No. Moisture contents
- 18 No. Atterberg limits
- 18 No. Particle size gradings
- 18 No. California Bearing Ratio tests
- 18 No. pH and sulphate content

Rock testing was completed on the rotary core samples and consists of the following:

9 No. Point loads

Environmental testing was completed by ALS Environmental Ltd. and consists of the following:

- 10 No. Soil Suite I analysis
- 3 No. Groundwater analysis

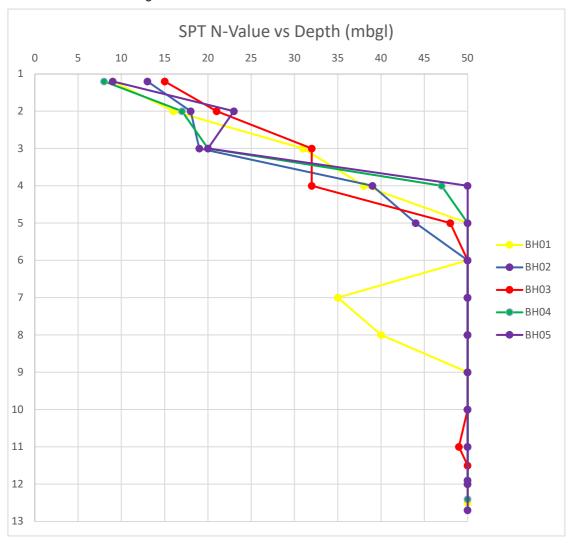
The geotechnical soil laboratory test results are presented in Appendix 6, the rock test results in Appendix 7, the environmental soil results and Waste Classification Report in Appendix 8, and the environmental groundwater analysis in Appendix 9.

5. Ground Conditions

5.1. Overburden

The site ground conditions in the boreholes are generally consistent with cohesive brown and brown grey sandy gravelly silty CLAY soils dominating the site. BH05, TP17 and TP18 to the south of the site did record a layer of SAND above the CLAY soils.

The SPT N-values vary slightly with values ranging from 8 to 15 at 1.20mbgl and this increases to 16 and 23 at 2.00mbgl.



The laboratory tests of the shallow cohesive soils confirm that CLAY soils dominate the site with low plasticity indexes of 10 to 17% recorded. The particle size distribution curves were poorly sorted straight-line curves with 20% to 47% fines content.

5.2. Bedrock

When the bedrock was encountered, it was recovered between 13.50mbgl and 14.60mbgl and consisted of strong light grey thickly bedded fine-grained muddy LIMESTONE interbedded with strong dark grey calcareous MUDSTONE with many fossils and calcite veins with a fresh to slightly weathered state. The discontinuities are generally rough to smooth, planar to slightly undulating, tight to open, sub-horizontal to sub-vertical dip, clean surfaces with occasional grey and brown staining with some clay smearing.

5.3. Groundwater

Groundwater details in the boreholes and trial pits during the fieldworks are noted on the logs in Appendix 1 and 3. Groundwater ingresses were recorded in the boreholes with shallower ingresses recorded at BH05 at 1.80mbgl, 3.50mbgl and 5.00mbgl whereas water was recorded at 7.50mbgl at the remaining boreholes. Groundwater was recorded in seven of the eighteen trial pits between 1.40mbgl to 1.90mbgl with all ingresses logged as seepages.

The groundwater readings from the standpipes showed slightly varying groundwater levels with the readings showing the levels between 16.76mOD and 17.47mOD across the course of the monitoring period.

6. Recommendations and Conclusions

Please note the following caveats:

The recommendations given, and opinions expressed in this report are based on the findings as detailed in the exploratory hole records. Where an opinion is expressed on the material between the exploratory hole locations or below the final level of excavation, this is for guidance only and no liability can be accepted for its accuracy. No responsibility can be accepted for adjacent unexpected conditions that have not been revealed by the exploratory holes. It is further recommended that all bearing surfaces when excavated should be inspected by a suitably qualified Engineer to verify the information given in this report.

Excavated surfaces in clay strata should be kept dry to avoid softening prior to foundation placement. Foundations should always be taken to a minimum depth of 0.50mBGL to avoid the effects of frost action and possible seasonal shrinkage/swelling.

If it is intended that on-site materials are to be used as fill, then the necessary laboratory testing should be specified by the Client to confirm the suitability. Also, relevant lab testing should be

specified where stability of side slopes to excavations is a concern, or where contamination may be an issue.

6.1. Shallow Foundations

Due to the unknown depth of foundation and no longer-term groundwater information, this analysis assumes the groundwater will not influence the construction or performance of these foundations.

The boreholes encountered brown sandy slightly gravelly silty CLAY at 1.20mbgl and the SPT N-values at these depths range from 8 to 15 at 1.20mbgl.

Using a correlation proposed by Stroud and Butler between SPT N-values and plasticity indices, the SPT N-value can be used to calculate the undrained shear strength (C_u). The laboratory testing confirms the soil have a low plasticity index and therefore, the correlation of C_u =6N has been chosen. Using the lower SPT N-value of 8, the undrained shear strength of $48kN/m^2$ has been calculated and this provides an ultimate bearing capacity of $270kN/m^2$. Finally, a factor of safety of 3 is applied and this then gives the allowable bearing capacity of $90kN/m^2$.

A suitably qualified Engineer should inspect the ground at each foundation and confirm that the soils are suitable for the final foundation design.

The following assumptions were made as part of these analyses. If any of these assumptions are not in accordance with detailed design or observations made during construction these recommendations should be re-evaluated.

- Foundations are to be constructed on a level formation of uniform material type (described above).
- The bulk unit weight of the material in this stratum has a minimum density of 19kN/m³.
- All bearing capacity calculations allow for a settlement of 25mm.

The trial pits indicate that excavations in the cohesive soils should be stable for a short while at least. Regular inspection of temporary excavations should be completed during construction to ensure that all slopes are stable. Temporary support should be used on any excavation that will be left open for an extended period.

6.2. Groundwater

The caveats below relating to interpretation of groundwater levels should be noted:

There is always considerable uncertainty as to the likely rates of water ingress into excavations in clayey soil sites due to the possibility of localised unforeseen sand and gravel lenses acting as permeable conduits for unknown volumes of water.

Furthermore, water levels noted on the borehole and trial pit logs do not generally give an accurate indication of the actual groundwater conditions as the borehole or trial pit is rarely left open for sufficient time for the water level to reach equilibrium.

Also, during boring procedures, a permeable stratum may have been sealed off by the borehole casing, or water may have been added to aid drilling. Therefore, an extended period of groundwater monitoring using any constructed standpipes is required to provide more accurate information regarding groundwater conditions. Finally, groundwater levels vary with time of year, rainfall, nearby construction and tides.

Pumping tests would be required to determine likely seepage rates and persistence into excavations taken below the groundwater level. Deep trial pits also aid estimation of seepage rates.

As discussed previously, groundwater was encountered in the boreholes with perched water strikes in BH05 at 1.80mbgl and 3.50mbgl with deeper water strikes in the remaining boreholes. Seepages were also recorded in seven of the eighteen trial pits between 1.40mbgl and 1.90mbgl.

There is always considerable uncertainty as to the likely rates of water ingress into excavations in cohesive soil sites due to the possibility of localised unforeseen sand and gravel lenses acting as permeable conduits for unknown volumes of water. However, based on this information at the exploratory hole locations to date, it is considered likely that any shallow ingress (less than 2.00mbgl) into excavations of the CLAY will be slow. If granular soils are encountered in shallow excavations, then the possibility of water ingressing into an excavation increase.

If groundwater is encountered during excavations then mechanical pumps will be required to remove the groundwater from sumps. Sumps should be carefully located and constructed to ensure that groundwater is efficiently removed from excavations and trenches.

6.3. Soakaway Tests

The soakaway tests recorded no infiltration and therefore, failed the specification. The BRE Digest stipulates that the pit should half empty within 24hrs, and extrapolation indicates this condition would not be satisfied. The test was terminated at the end of the first (of a possible three) fill/empty cycle since further testing would give even slower fall rates due to increased soil saturation. The unsuitability of the soils for soakaways is further suggested by the soil

descriptions of the materials in this area of the site where the soakaway was completed, i.e. well compacted clay/silt soils.

6.4. Pavement Design

The CBR test results in Appendix 6 indicate CBR values generally ranging from 5.7% to 11.7%.

The CBR samples will be recovered from 0.50mbgl and inspection of the formation strata should be completed prior to construction of the pavement. Once the exact formation levels are finalised then additional in-situ testing could be completed to assist with the detailed pavement design.

6.5. Contamination

Environmental testing was carried out on ten samples from the investigation and the results are presented in Appendix 8. For material to be removed from site, Suite I testing was carried out to determine if the material is hazardous or non-hazardous and then the leachate results were compared with the published waste acceptance limits of BS EN 12457-2 to determine whether the material on the site could be accepted as 'inert material' by an Irish landfill.

The Waste Classification report created using HazWasteOnline™ software shows that the material tested can be classified as non-hazardous material. Two of the samples did record Total Petroleum Hydrocarbons exceeding the limits of detection but HP3 can be discounted as this is solid waste without a free draining liquid phase.

Following this analysis of the solid test results, the leachate disposal suite results show that the soils can be treated at Inert facilities.

Ten samples were tested for analysis but it cannot be discounted that any localised contamination may have been missed. Any MADE GROUND excavated on site should be stockpiled separately to natural soils to avoid any potential cross contamination of the soils. Additional testing of these soils may be requested by the individual landfill before acceptance and a testing regime designed by an environmental engineer would be recommended to satisfy the landfill.

6.6. Aggressive Ground Conditions

The chemical test results in Appendix 6 indicate a general pH value between 8.10 and 8.35, which is close to neutral and below the level of 9, therefore no special precautions are required.

The maximum value obtained for water soluble sulphate was 127mg/l as SO₃. The BRE Special Digest 1:2005 – 'Concrete in Aggressive Ground' guidelines require SO₄ values and after



Appendix 1 Cable Percussive Borehole Logs

Contra 57		Cable Percussion	n Bo	orel	nole	Lo	g		В	orehole BH0	
Contrac	ct:	Affordable Housing	Easting	j:	725119	9.273		Date Started:	26/05	5/2020	
ocatio	n:	Old Road, Hayestown, Rush, Co. Dublin	Northin	g:	754263	3.194		Date Completed:	27/05/2020		
Client:		Fingal County Council	Elevation	on:	19.25			Drilled By:	J. O'	Toole	
ngine	er:	Downes Associates	Boreho Diamet		200mm	ı		Status:	FINA	L	
Depth	n (m)	Stratum Description	Legend	Level	(mOD)	Sa	mples	and Insitu Tests		Water	
Scale	Depth	TOPSOIL.	\(\lambda\)	Scale	Depth	Depth	Туре	Result		Strike	
0.5	0.20	Firm grey slightly sandy gravelly silty CLAY.	X X X X X X - X -	19.0 — - - - 18.5 —	19.05						
1.0 —	1.40	Brown sandy slightly gravelly silty CLAY.	× × · · · × · · · × · · · × · · × · · × · · × · · × · · × · · · · × · · · · · × · · · · · × · · · · · × · · · · · × ·	18.0	17.85	1.00	B C	JOT10 N=9 (1,1/2,3			
2.0 —	1.80	Stiff becoming very stiff grey slightly sandy slightly gravelly silty CLAY with low cobble content.		17.5 — - - - 17.0 —	17.45	2.00 2.00	B C	JOT11 N=16 (2,3/3,			
3.0				16.5 — - - - 16.0 —		3.00 3.00	B C	JOT12 N=31 (2,4/7,			
4.0 —				15.5		4.00 4.00	B C	JOT13 N=38 (3,4/7,9,11			
5.0 —	4.90	Very stiff grey slightly sandy slightly gravelly silty CLAY with medium cobble content.		14.5 —	14.35	5.00 5.00	B C	JOT14 N=50 (4,7/5 285mm	0 for		
6.0				13.5 — - - - 13.0 —		6.00	С	50 (10,15/5 110mm			
6.5 —				12.5 —		6.50	В	JOT15	i		
7.0 —				12.0 —		7.00	С	N=35 (3,5/7,9,9,	,10)		
8.0 -	8.50	Very stiff black slightly sandy slightly gravelly silty		11.0	10.75	8.00 8.00	B C	JOT16 N=40 (2,4/9,9,11			
9.0		CLAY with low cobble content.		10.5 -		9.00	С	50 (7,18/50 50mm)			
9.5 -				9.5 —		9.50	В	JOT17			
					<u> </u>	10.00	С				
		Chiselling: Water Strikes: Water Details: From: To: Time: Strike: Rose: Depth Sealed Date: Hole Depth: Water Details: 4.90 5.00 00:45 7.50 7.20 NS 26/05 7.00 Dry 27/05 7.00 6.10 8.50 8.60 00:45 27/05 12.50 4.70	Install From: To	o: Pipe	e: From: -	3.00 Gra	onite avel	Remarks:		Legend: B: Bulk D: Disturb U: Undist ES: Envir W: Water C: Cone S	urbed onmenta

Contra		Cable Percussion	n B	orel	nole	Lo	g	Borehole N BH01			
Contrac	ct:	Affordable Housing	Easting	g:	725119	9.273		Date Started:	26/05	/2020	
Locatio	n:	Old Road, Hayestown, Rush, Co. Dublin	Northir	ng:	754263	3.194	Date Completed:		27/05/2020		
Client:		Fingal County Council	Elevati	on:	19.25			Drilled By:	J. O'Toole		
Engine	er:	Downes Associates	Boreho		200mn	n		Status:	FINA	L	
Depti	h (m)	Stratum Description	Legend	Level	(mOD)	Sa	mples	and Insitu Tes	sts	Water	Backfill
Scale	Depth		***	Scale	Depth	Depth	Туре			Strike	
10.5		Very stiff black slightly sandy slightly gravelly silty CLAY with low cobble content.	X 0 0	9.0 —	-			50 (25 fo 125mm/50 35mm)) for		
11.0			\$ \\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	8.5 -		11.00	В	JOT18			
			\$ 0 × 0	8.0		11.00	Č	50 (23 fo	or		
11.5	11.50	Very stiff black slightly sandy slightly gravelly silty CLAY with medium cobble content.	\$ 0 X 0 X	7.5 -	7.75			30mm)			
12.0			\$ \times			12.00	С	50 (25 fo	or for		
12.5	12.30 12.50	Obstruction - boulder. End of Borehole at 12.50m		7.0 —	6.95 6.75	12.50	С	25mm) 50 (25 fc) or		
13.0				6.5				5mm/50 for	0mm)		
15.0				6.0							
13.5 —				5.5 -							
14.0				-							
14.5				5.0 —							
45.0				4.5							
15.0 —				4.0							
15.5				3.5 -							
16.0				-							
16.5				3.0 —							
				2.5 -							
17.0				2.0 —							
17.5				1.5 -							
18.0				1.5							
18.5				1.0							
				0.5							
19.0				0.0							
19.5				-							
=				-0.5 -							
		Chiselling: Water Strikes: Water Details:	Instal	lation:	1	L Backfill:		Remarks:		Legend:	<u> </u>
		From: To: Time: Strike: Rose: Depth Sealed Date: Hole Depth: Water Depth: 4.90 5.00 00:45 7.50 7.20 NS 8.50 8.60 00:45 7.20 NS 12.30 12.50 01:30 01:30	From: T	o: Pipe 50 Soli 50 Slotte	e: From: 1	To: Ty 1.00 Bent 3.00 Gra	onite avel			B: Bulk D: Disturb U: Undisto ES: Enviro W: Water C: Cone S S: Split sp	urbed onmental SPT

Contra		Cable Percussio	n Bo	orel	nole	Log	J		В	orehole BH0	
Contrac	ct:	Affordable Housing	Easting	J:	725181	1.114		Date Started:	29/05	5/2020	
Locatio	n:	Old Road, Hayestown, Rush, Co. Dublin	Northin	g:	754250).133	Date Completed:				
Client:		Fingal County Council	Elevation	on:	18.87		Drilled By:		Orilled By: J. O'Toole		
Engine	er:	Downes Associates	Boreho Diamet		200mm	1		Status:	FINA	FINAL	
Depth	n (m) Depth	Stratum Description	Legend.	Level	(mOD)		ples Type	and Insitu Tes	ts	Water Strike	Backfil
- - -	0.20	TOPSOIL. Grey slightly sandy gravelly silty CLAY.	*	- - - - 18.5 –	18.67	Берип	Турс	Result			
0.5			X - X - X - X - X - X - X - X - X - X -	- - -	-						
1.0	1.10	Firm grey slightly sandy slightly gravelly silty CLAY.		18.0 — - - -	17.77	1.00 1.00	B C	JOT28 N=13 (2,3/3,			
1.5			× × ·	17.5 — - -	-						
2.0	2.10	Stiff brown grey slightly sandy slightly gravelly silty	X X X	17.0 - - -	16.77	2.00	ВС	JOT29 N=18 (2,3/4,			
2.5		CLAY with low cobble content.	× · · · ×	16.5 — - -	1 - - -				,		
3.0			× × · · · ×	16.0		3.00 3.00	ВС	JOT30 N=19 (2,4/4,			
3.5	3.50	Very stiff grey slightly sandy slightly gravelly silty		15.5 — -	15.37	3.00	C	19 (2,4/4,	4,5,0)		
4.0		CLAY with low cobble content.	X 0 X	15.0 —		4.00	В	JOT31			
4.5			× × ×	14.5	-	4.00	С	N=39 (5,7/7,9,11	,12)		
5.0			X - 0 - X	14.0	-	5.00	В	JOT32			
5.5			X - 0 - X	13.5		5.00	С	N=44 (4,7/9,11,12			
-			x 0 x	13.0		0.00	_	50 (0 44/50	\ .		
6.0	6.40		x 0 X	12.5 —	12.47	6.00	С	50 (9,11/50 125mm)		
6.5	00	Very stiff black slightly sandy slightly gravelly silty CLAY with low cobble content.	× × ×	12.0		6.50	В	JOT33			
7.0 —			<u>x</u> x	- - - 11.5 –		7.00	С	N=50 (4,7/5 250mm			
7.5			<u>x</u> x	- - -	-						
8.0			x 0 X	11.0 — - - -		8.00 8.00	B C	JOT34 N=50 (5,6/5	0 for		
8.5 —	8.50	Very stiff black slightly sandy slightly gravelly silty CLAY with medium cobble content.	8 × 0 × 0 × 0 × 0 × 0 × 0 × 0 × 0 × 0 ×	10.5 —	10.37			290mm)		
9.0		OLAT WITH MEDIUM CODDIE COMENT.	x x o f	10.0		9.00	С	50 (25 fo	or for		
9.5 —			x x x x x x x x x x x x x x x x x x x	9.5 — - -		9.50	В	50mm) JOT35			
=			α <u>ο ×</u> ο ε	9.0 —		10.00	С				
		Chiselling: Water Strikes: Water Details:	Install	_		Backfill:	1	Remarks:		Legend: B: Bulk	I
		From: To: Time: Strike: Rose: Depth Sealed Sealed Date: Hole Depth: Water Depth: Depth:	From: To	o: Pipe	9: From: 7 0.00 1	To: Type 1.90 Arising				D: Disturb U: Undist ES: Envir W: Water C: Cone S S: Split sp	urbed onmental SPT

Contra		Cable Percussio	n Bo	orel	nole	Lo	g		В	orehole BH0	
Contrac	ct:	Affordable Housing	Easting	j :	72518	1.114		Date Started:	29/05	5/2020	
Locatio	n:	Old Road, Hayestown, Rush, Co. Dublin	Northin	ıg:	754250	0.133		Date Completed: 29/05/2020		5/2020	
Client:		Fingal County Council	Elevati	on:	18.87	.87 Drilled By:		Drilled By:	J. O'Toole		
Engine	er:	Downes Associates	Boreho		200mn	า		Status:	FINAL		
Depti		Stratum Description	Legend				and Insitu Tes		Water	Backfill	
Scale	Depth			Scale	Depth	Depth	Туре			Strike	\// <i>\</i> \\//
10.5		Very stiff black slightly sandy slightly gravelly silty CLAY with medium cobble content.		8.5 —	-			50 (7,18/50 95mm)			
11.0			X 0 X	8.0 —		11.00	В	JOT36			
11.5			× · · · ·	7.5		11.00	С	50 (25 fo 80mm/50 50mm)	for		
-	11.80 11.90	Obstruction - boulder.		7.0	7.07 6.97	11.90	С	50 (25 fc			
12.0	11.90	End of Borehole at 11.90m		6.5 —	0.97			5mm/50 for	0mm)		
12.5				0.5 - -							
13.0				6.0 —							
13.5				5.5							
14.0				5.0 —							
14.0				4.5 —							
14.5				4.5 - -							
15.0				4.0 —							
15.5				3.5 -							
=				3.0 —							
16.0				2.5 —							
16.5				2.5 -							
17.0				2.0							
17.5				1.5							
				1.0 —							
18.0				0.5 —							
18.5				0.5 <u> </u>							
19.0				0.0							
19.5				-0.5							
= = = =				-1.0 —							
		Chiselling: Water Strikes: Water Details:	Inotall	ation:	ļ ,	Backfill.		Domarka		Legend:	
		Chiselling: Water Strikes: Water Details: From: To: Time: Strike: Rose: Depth Sealed Date: Hole Depth: Water Details: 4.50 4.70 00:45 7.40 7.00 NS NS Depth: Depth:	Install From: To			Backfill: To: Tyl 1.90 Aris		Remarks:		B: Bulk D: Disturb U: Undistr ES: Envir W: Water C: Cone S S: Split sp	urbed onmental SPT

Contra		Cable Percussio	n Bo	rel	nole	Lo	g		В	orehole BH0	
Contrac	ct:	Affordable Housing	Easting	:	725294	1.231		Date Started:	30/05	5/2020	
Locatio	n:	Old Road, Hayestown, Rush, Co. Dublin	Northin	g:	754250	Date Completed:			30/05/2020		
Client:		Fingal County Council	Elevation	n:	18.32			Drilled By:	J. O'7	Toole	
Engine	er:	Downes Associates	Borehol Diamete		200mm	1		Status:	FINAL		
Deptl		Stratum Description	Legend		(mOD)		Samples and Insitu Tes			Water	Backfil
Scale	Depth	TOPSOIL		Scale	Depth	Depth	Туре	Result		Strike	
0.5	0.20	Firm grey brown slightly sandy gravelly silty CLAY.	XX	18.0	18.12						
1.0 —	1 20		XX X	17.5	17.00	1.00 1.00	B C	JOT37 N=15 (2,2/3,			
1.5	1.30	Firm brown slightly sandy gravelly silty CLAY.	X X X X X X X X X X X X X X X X X X X	17.0 — - - - 16.5 —	17.02						
2.0	1.90	Stiff becoming very stiff grey slightly sandy slightly gravelly silty CLAY with low cobble content.		16.0	16.42	2.00	B C	JOT38 N=21 (3,4/5,			
3.0				15.5 -		3.00 3.00	B C	JOT39 N=32 (6,7/7,			
3.5				14.5 — 		4.00 4.00	B C	JOT40 N=32 (4,5/7,			
4.5				14.0 — - - - 13.5 —							
5.0 —	5.00	Very stiff grey slightly sandy slightly gravelly silty CLAY with medium cobble content.	8 0 X 8 0 X 8 0 X	13.0	13.32	5.00 5.00	B C	JOT41 N=48 (6,9/11,12,1			
6.0				12.5 — - - 12.0 —		6.00	С	50 (4,10/50 125mm			
6.5			× × · · · ×	11.5		6.50	В	JOT42			
7.0	7.50			11.0	40.00	7.00	С	50 (6,10/50 165mm			
7.5 —	7.50	Very stiff black slightly sandy slightly gravelly silty CLAY with low cobble content.	0 X 0 X 0 X 0 X	10.5	10.82	8.00	В	JOT43			
8.5			0 × 0 × 0 0 ×	10.0		8.00	C	50 (10,15/5 110mm	0 for		
9.0	8.80	Very stiff black slightly sandy slightly gravelly silty CLAY with medium cobble content.	x 0 x 0 x 0 x 0 x 0 x 0 x 0 x 0 x 0 x 0	9.5 — - - - -	9.52	9.00	С	50 (7,11/50 175mm) for		
9.5 —				9.0 — - - - 8.5 —		9.50	В	JOT44	•		
-			<u> </u>			10.00	С				
		Chiselling: Water Strikes: Water Details: From: To: Time: Strike: Rose: Depth Sealed Date: Hole Depth: Water Details: 5.70 5.90 00:45 7.50 7.30 NS 30/05 11.50 4.50 8.80 8.90 00:45 7.30 NS 30/05 11.50 4.50 11.40 11.50 01:30 7.30	Installa From: To 0.00 1.5 1.50 11.5	: Pipe	: From:	Backfill: To: Typ .00 Bento 1.50 Grav	nite	Remarks:		Legend: B: Bulk D: Disturb U: Undist ES: Envir W: Water C: Cone S S: Split s	urbed onmental

Contract No: 5728	Cable Percussio	n Bo	orel	nole	Lo	g		В	orehole BH0		
Contract:	Affordable Housing	Easting	j:	725294	4.231		Date Started:	30/05	5/2020		
Location:	Old Road, Hayestown, Rush, Co. Dublin	Northin	g:	754250	0.406		Date Completed:	30/05	5/2020		
Client:	Fingal County Council	Elevation	on:	18.32		18.32 Drilled By		Drilled By:	J. O'7	Toole	
Engineer:	Downes Associates	Boreho Diamet		200mm	n		Status:	FINA	L		
Depth (m)	Stratum Description	Legend		(mOD)		Samples and Insitu To			Water Strike	Backfill	
Scale Depth	Very stiff black slightly sandy slightly gravelly silty	<u> </u>	Scale	Depth	Depth	Туре	50 (10,15/5	0 for	Otriito		
10.5	CLAY with medium cobble content.	× × · ·	8.0 —				90mm)				
		× × ×	7.5								
11.0		× × ×	-		11.00 11.00	B C	JOT45 49 (25 fc	or			
11.5 = 11.40 11.50	Obstruction - boulder. End of Borehole at 11.50m		7.0 —	6.92 6.82	11.50	С	90mm/49 100mm)			
12.0	2.00 0.2500.000 0.1100.00		6.5				50 (25 for 5mm/50 for	or 0mm)			
=			6.0 —								
12.5			-								
13.0			5.5 — -								
13.5			5.0								
13.5			4.5								
14.0			-	-							
14.5			4.0								
			3.5								
15.0											
15.5			3.0 —								
16.0			2.5								
10.0			2.0 —								
16.5			- - -								
17.0			1.5 -	-							
			1.0								
17.5			0.5								
18.0 —			0.5 —	-							
18.5			0.0								
			-0.5 —								
19.0			- - -								
19.5			-1.0 — -								
			-1.5								
	Chiselling: Water Strikes: Water Details:	Install	ation:	1	Backfill:		Remarks:		Legend:		
	From: To: Time: Strike: Rose: Depth Sealed Date: Hole Depth: Dept	From: To	o: Pipe	e: From: -	To: Typ	onite			B: Bulk D: Disturb U: Undistu	ırbed	
	8.80 8.90 00:45 11.40 11.50 01:30	1.50 11.	50 Slotte	ed 1.00 1	1.50 Gra	vel			ES: Enviro W: Water C: Cone S	SPT	
									S: Split sp	oon SPT	

Contra		Cable Percussio	n Bo	rel	nole	Lo	g		В	orehole BH0		
Contrac	ct:	Affordable Housing	Easting	:	725198	3.262		Date Started:	28/05	/2020		
Locatio	n:	Old Road, Hayestown, Rush, Co. Dublin	Northing	g:	754170	0.336		Date Completed:	28/05	/2020		
Client:		Fingal County Council	Elevation	n:	18.91			Drilled By:	J. O'T	oole		
Engine	er:	Downes Associates	Borehol Diamete		200mn	n		Status:	FINAL			
Depti		Stratum Description	Legend		(mOD)			and Insitu Tes		Water Strike	Backfi	
Scale _	Depth	TOPSOIL.		Scale	Depth	Depth	Туре	Result		Strike		
0.5	0.20	Grey slightly sandy gravelly silty CLAY.	X	18.5	18.71							
=			XX XX	- - -								
1.0	1.00		<u> </u>	18.0 —	17.71	1.00 1.00	B C	JOT19 N=8 (1,1/8				
1.5	1.20	Firm brown grey slightly sandy slightly gravelly silty CLAY.	X	17.5	17.71	1.00		90mm)				
1.5			X—X X—X	=								
2.0	1.90	Stiff grey slightly sandy slightly gravelly silty CLAY	0 X 0 X	17.0 —	17.01	2.00	В	JOT20				
=		with low cobble content.	× 0 0 ×	16.5	-	2.00	С	N=17 (5 to 5 mm/17 for				
2.5 —			\$X	=								
3.0			× × · · · ×	16.0		3.00	В	JOT21				
=			× × ×	45.5		3.00	С	N=20 (3,5/4,	5,6,5)			
3.5	3.60	Very stiff grey slightly sandy slightly gravelly silty	× 0	15.5 — - -	15.31							
4.0		CLAY with low cobble content.	× × · · · ×	15.0 —		4.00	В	JOT22				
4.0			× × × ×	=		4.00	C	N=47				
4.5			× × · · ·	14.5 —				(3,6/9,11,13	3,14)			
=			× × · ×	14.0 —								
5.0 —			X 0 X	=		5.00 5.00	B	JOT23 N=50 (4,10/				
5.5			× 0 × 0 €	13.5				275mm	1)			
=			0 × 0 ×									
6.0			0 × 0 ×	13.0 —		6.00	С	50 (9,14/50 125mm				
6.5	6 50		** ^ ^ ^ X X	12.5 —	12.41	6.50	ь	JOT24	•			
6.5	6.50	Very stiff black slightly sandy slightly gravelly silty CLAY with low cobble content.	0 - 0 - X	=	12.41	0.50	В	30124				
7.0			× × · · · ×	12.0		7.00	С	50 (4,11/50				
=			× × ×	11.5 —				175mm	1)			
7.5 —			× × · · ×	-								
8.0			× × · · · ×	11.0		8.00	В	JOT25	;			
=			× × × ×	-		8.00	С	50 (3,9/50 185mm				
8.5	8.50	Very stiff black slightly sandy slightly gravelly silty	0 × 0 F	10.5 —	10.41			10011111	')			
		CLAY with medium cobble content.	X 0 X	10.0		0.00	С	50 /7 40/5/) for			
9.0			0 × 0 €	=		9.00		50 (7,18/50 50mm))			
9.5			× × • •	9.5		9.50	В	JOT26	;			
			× × ×	9.0 —								
					<u> </u>	10.00	С					
K		Chiselling: Water Strikes: Water Details: From: To: Time: Strike: Rose: Depth: Sealed Date: Hole Depth: Dep	Installa From: To			Backfill: To: Ty	pe: -	Remarks:		Legend: B: Bulk D: Disturb	ned	
(\{ \{ \}		Column C	0.00 1.5 1.50 8.0	0 Soli	d 0.00 1	.00 Bent 3.50 Gra	onite			U: Undist ES: Envir W: Water C: Cone S S: Split sp	urbed onmental SPT	

Contra		Cable Percussion	on B	orel	nole	Lo	g		В	orehole BH0	
Contrac	ct:	Affordable Housing	Eastin	g:	725198	3.262		Date Started:	28/05	5/2020	
_ocatio	n:	Old Road, Hayestown, Rush, Co. Dublin	Northi	ng:	754170	0.336		Date Completed:	28/05/2020		
Client:		Fingal County Council	Elevat	ion:	18.91 Drilled By:		J. O'7	ГооІе			
Engine	er:	Downes Associates	Boreh		200mn	n		Status:	FINA	L	
Deptl	h (m)	Stratum Description	Legend	Level	(mOD)	Sa	mples	and Insitu Tes	sts	Water	Backfi
Scale	Depth	-	Legend	Scale	Depth	Depth	Туре			Strike	Dackii
10.5		Very stiff black slightly sandy slightly gravelly silty CLAY with medium cobble content.	X 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	8.5 —	-			50 (11,14/5 65mm)			
11.0				8.0 —		11.00 11.00	B C	JOT27 50 (25 fo	or		
11.5				7.5 -	-			110mm/50 25mm)			
12.0	12.20		× 0 0 0	7.0 —	6.71	12.00	С	50 (25 fo 50mm/50	or for		
12.5	12.40	Obstruction - boulder. End of Borehole at 12.40m	0,0	6.5	6.51	12.40	С	25mm) 50 (25 fo 5mm/50 for	or		
13.0				6.0 —	-						
13.5				5.5 -	-						
14.0				5.0 — - - 4.5 —							
14.5 —				4.0	-						
15.5				3.5 -							
16.0				3.0	-						
16.5				2.5							
17.0				2.0	-						
17.5				1.5 -							
18.0				1.0							
18.5				0.5	-						
19.0				0.0							
19.5				-0.5 — - -	-						
				-1.0 —							
		Chiselling: Water Strikes: Water Details: From: To: Time: Strike: Rose: Depth: Date: Hole Depth: Water Details: 6.60 6.80 00:45 7.50 7.40 NS Date: Hole Depth: Depth: <t< td=""><td>From: 7</td><td>llation: To: Pipe .50 Soli .00 Slotte</td><td>e: From: 1</td><td>Backfill: To: Typ 1.00 Bente 3.50 Gra 2.40 Bente</td><td>onite ivel</td><td>Remarks:</td><td></td><td>Legend: B: Bulk D: Disturb U: Undisto ES: Enviro W: Water C: Cone S S: Split sp</td><td>urbed onmental SPT</td></t<>	From: 7	llation: To: Pipe .50 Soli .00 Slotte	e: From: 1	Backfill: To: Typ 1.00 Bente 3.50 Gra 2.40 Bente	onite ivel	Remarks:		Legend: B: Bulk D: Disturb U: Undisto ES: Enviro W: Water C: Cone S S: Split sp	urbed onmental SPT

Contra		Cable Percussion	n Bo	rel	nole	Lo	g		В	orehole BH0	
Contrac	ct:	Affordable Housing	Easting	:	725217	7.771		Date Started:	22/05	5/2020	
Locatio	n:	Old Road, Hayestown, Rush, Co. Dublin	Northin	g:	754103	76/1103/607		Date Completed:	126/02/2020		
Client:		Fingal County Council	Elevation	on:	17.61	17.61 Drilled By:		Drilled By:	J. O'	Toole	
Engine	er:	Downes Associates	Boreho Diamet		200mm	า		Status:	FINAL		
Depth		Stratum Description	Legend		(mOD)			and Insitu Tes		Water Strike	Backfi
Scale -	Depth 0.20	TOPSOIL.		Scale 17.5 -	Depth 17.41	Depth	Туре	Result			
0.5	0.50	Brown sandy silty CLAY.	××	=	17.41						
0.5	0.50	Brown slightly silty SAND.	××××	17.0	17.11						
1.0			x x x x			1.00	В	JOT01			
=	1.20	Firm brown slightly sandy slightly gravelly silty CLAY.	x × × × × × ×	16.5 — - -	16.41	1.00	С	N=9 (1,1/2,2	2,2,3)		
1.5			<u> </u>	16.0 —							
=	1.80	Stiff brown grey slightly sandy slightly gravelly silty	× × ×	-	15.81						
2.0		CLAY with low cobble content.	× × ×	15.5 -	-	2.00	B C	JOT02 N=23 (4,5/5,			
2.5			× × · · ·	-		2.00	O	14-20 (4,0/0,	0,0,0)		
2.5 —			× × · ·	15.0							
3.0			× × · · ×	=		3.00	В	JOT03			
			× × · · · ×	14.5 –	-	3.00	C	N=20 (2,3/4,			
3.5	3.50	Non-califf blook all abids and all abids are all abids.	× × 0.5		14.11						
=		Very stiff black slightly sandy slightly gravelly silty CLAY with low cobble content.	x - x	14.0 —							
4.0			× × · · · ×	13.5 –		4.00	В	JOT04			
=			× × 0 ±	13.5 -		4.00	С	N=50 (3,9/11,14,1	2 13)		
4.5			× × · · ·	13.0 —				(0,3/11,14,1	2,10)		
=				-							
5.0 —			× × 0 F	12.5		5.00 5.00	В	JOT05 50 (25 fc			
=			x × · · · ×	-		3.00	C	125mm/50) for		
5.5			0 × 0 €	12.0				25mm))		
			X - X	-		6.00	С	E0 /7 10/E/) for		
6.0			× × · ·	11.5		6.00	C	50 (7,12/50 155mm			
6.5			× × • •	=		6.50	В	JOT06			
			8 × · · ×	11.0 —	-	0.00		00100			
7.0			× × · · ×			7.00	С	50 (10,14/5	0 for		
=			× × • ×	10.5 —				90mm)			
7.5			<u> </u>	10.0 —							
=			X - X	-	-						
8.0			××	9.5 -		8.00 8.00	B C	JOT07			
=			× × 0 ±	=		8.00	C	50 (12,13/5 210mm			
8.5 —			X X 0.5	9.0							
			× × ×	-			^	F0 /4 /2/=	. .		
9.0			x × 0 €	8.5		9.00	С	50 (4,10/50 105mm) for)		
9.5			x 0 ×	=		9.50	В	JOT08	-		
3.3			× - ×	8.0 —		9.50	Ь	30100			
			<u>x</u> - x			10.00	С				
		Chiselling: Water Strikes: Water Details:	Installa	ation:		Backfill:		Remarks:		Legend:	
d	1	From: To: Time: Strike: Rose: Depth Sealed Date: Hole Depth: Dept	From: To		e: From:	Го: Тур		r tomanto.		B: Bulk D: Disturt	
	b)	5.20 5.30 00:45 1.80 1.60 NS 22/05 6.00 3.50 6.40 6.50 00:30 3.50 3.00 NS 25/05 6.00 1.20			0.00 12	2.70 Arisi	ings			U: Undist ES: Envir	onmental
6		7.80 8.00 00:45 5.00 4.10 NS 25/05 12.70 4.20 12.50 12.70 01:30								W: Water C: Cone S S: Split sr	SPT

Contract No: 5728	Cable Percussion Borehole Log								orehole BH0	
Contract:	Affordable Housing	Easting	g:	725217	7.771		Date Started:	22/05	5/2020	
Location:	Old Road, Hayestown, Rush, Co. Dublin	Northir	ng:	754103	3.597		Date Completed:	25/02	2/2020	
Client:	Fingal County Council	Elevati	on:	17.61			Drilled By:	J. O'7	Toole	
Engineer:	Downes Associates	Boreho		200mn	n		Status:	FINA	L	
Depth (m)	Stratum Description	Legend	Level	(mOD)			and Insitu Tes		Water Strike	Backfill
Scale Depth	Very stiff black slightly sandy slightly gravelly silty	**************************************	Scale 7.5 -	Depth	Depth	Туре	Result 50 (6,18/50		Strike	X(\X(\)
10.5	CLAY with low cobble content.		7.0 —				(80mm)			
10.80	Very stiff black slightly sandy slightly gravelly silty CLAY with medium cobble content.	**************************************	6.5	6.81	11.00 11.00	ВС	JOT09 50 (25 fc			
11.5		× · · · ×	6.0	-			75mm/50 50mm)	for		
12.0			5.5 —		12.00	С	50 (25 fo 65mm/50	for		
12.5 — 12.50 — 12.70	Obstruction - boulder. End of Borehole at 12.70m		5.0	5.11 4.91	12.70	С	35mm) 50 (25 fc	or		
13.0			4.5 —				5mm/50 for	5mm)		
13.5			4.0							
14.0			3.5 -							
14.5			3.0							
15.0			2.5							
15.5			2.0							
16.0 —			1.5 -							
16.5			1.0 —							
17.0 —			0.5 -							
17.5 —			0.0							
18.5			-0.5 —							
19.0			-1.0 —							
19.0			-1.5 —							
-			-2.0 — -	-						
	Chiselling: Water Strikes: Water Details:		lation:		Backfill:		Remarks:		Legend: B: Bulk	
	From: To: Time: Strike: Rose: Depth Sealed Sealed Date: Hole Depth: Water Depth: 5.20 5.30 00:45 1.80 1.60 NS 6.40 6.50 00:30 3.50 3.00 NS 7.80 8.00 00:45 5.00 4.10 NS 12.50 12.70 01:30 NS NS	From: T	o: Pipe	9: From: 0.00 1:	To: Typ 2.70 Arisi				D: Disturb U: Undistr ES: Envir W: Water C: Cone S S: Split sp	urbed onmental SPT

Appendix 2 Rotary Corehole Logs and Photographs

Contract No. 5728	Rotary Core			nole No:					
Contract:	Affordable Housing	Easti	ng:	7:	25119.273	Date Star	ted:	22/05/20	20
Location:	Old Road, Hayestown, Rush, Co. Dublin	North	ing:	7		Date Complete	ed:	22/05/20	20
Client:	Fingal County Council	Eleva	ation:	19		Drilled By		MEDL	
Engineer:	Downes Associates	Rig T	уре:	s	ondeq	Status:		FINAL	
Depth (m)	Stratum Description	Legend	Leve (mOl	D)	Samples		Roc	k Indices	Backfi
Scale Depth	Cable percussive borehole completed - see CP log.	××××	Scale [Depth	ו	TCR/%	SCR	/% RQD/%	FI/m
1.5	Open hole drilling - driller reports returns of sandy gravelly clay with medium cobble and boulder content.	6 1년	6.5	6.75	50 (25 for 79mm/50 35mm)				
15.5	End of Corehole at 15.00m		4.0	0	20mm)	. 101			
6.0			3.0						
7.0			2.5						
7.5			2.0						
=	Installation Deal CII								
\$		Remar Cable		sive	borehole complete	d adjacen	t to o	corehole l	ocation.

Contract No. 5728	Rotary Core			ehole No: RC02				
Contract:	Affordable Housing	Easting	j:	725181.114	Date :	Started:	22/05/2	2020
ocation:	Old Road, Hayestown, Rush, Co. Dublin	Northin	g:	754250.133	Date	oleted:	22/05/2	2020
Client:	Fingal County Council	Elevation	on:	18.87	Drilled		MEDL	
Ingineer:	Downes Associates	Rig Typ	oe:	Sondeq	Status	s:	FINAL	
Depth (m)	Stratum Description	Legend	Level (mOD)			Rock	I Indices	Bad
Scale Depth	Cable percussive borehole completed - see CP log.		Scale De		T	CR/% SCR/	% RQD/%	FI/m
2.5 W 3.0 3.5 13.50 S 4.0 4.5 C 5.0 15.90 W	Open hole drilling - driller reports returns of sandy gravelly clay with medium cobble and boulder content. Strong to very strong light grey thickly bedded fine grained nuddy LIMESTONE interbedded with strong dark grey alcareous MUDSTONE with occasional fossils and calcite eins. Fresh to slightly weathered. Discontinuities - rough to smooth, planar to slightly undulating, tight to open, 20° to 45° dip, occasionally sub-vertical, clean with occasional grey and brown staining and some clay smearing. (ery strong light grey thickly bedded fine grained muddy IMESTONE with many fossils and some calcite veins. Fresh reathered state. Discontinuities - rough, planar to slightly undulating, tight to open, sub-horizontal and sub-vertical dip, clean with occasional grey and brown staining and some clay smearing. End of Corehole at 16.50m	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	8.5	13.50 - 14.50 14.50 - 15.50 97 15.50 - 16.5	0	96 82 94 57 95 76	0 17 30	18
		Remarks		ve borehole comple	ted adja	icent to c	orehole	location.

Contra		Rotary Core		Corehole No:							
Contrac	ct:	Affordable Housing	Easti	ng:		725294.231	Date	Started:	25/05/	2020	
Locatio	n:	Old Road, Hayestown, Rush, Co. Dublin	North	ning:		754250.406	Date	e npleted:	25/05/	2020	
Client:		Fingal County Council	Eleva	ation:		18.32	Drille	ed By:	MEDL		
Engine	er:	Downes Associates	Rig T	ype:		Sondeq	Stati	us:	FINAL		
Depth		Stratum Description	Legeno		DD)				k Indice		Backfill
Scale D		Cable percussive borehole completed - see CP log.		Scale	Dep	oth		TCR/% SCR	//% RQD/%	FI/m	
0.5				18.0							
1.0				17.0							
1.5				16.5							
2.0				16.0							
2.5				15.5							
3.0				15.0							
4.0				14.5							
4.5				14.0							
5.0				13.5							
5.5				13.0							
6.0				12.5							
6.5				12.0							
7.0				11.5							
7.5				11.0							
8.0 =				10.5							
8.5				10.0							
9.0				9.5							
9.5				8.5							
10.0				8.0							
10.5				7.5							
11.0	4.50			7.0	0.0						
11.5	1.50 V	Open hole drilling - driller reports returns of sandy gravelly clay with medium cobble and boulder content.	÷	6.5	6.8	52					
12.5				6.0							
13.0				5.5							
13.5				5.0		50 (25 for 60mm/5	50 for				
14.0				4.5		80mm)					
14.5				4.0							
15.0 = 1	5.00	End of Corehole at 15.00m	\$ ~	3.5	3.3		50 for				
15.5				3.0		25mm)					
16.0				2.5							
16.5				2.0							
17.0				1.5							
17.5				0.5							
A			Remar Cable		sive	e borehole complet	ed adi	iacent to	corebol	e locat	ion
(8		0.00 15.00 Bentonite	Janie	percus	·31V	o porenoie complet	ou auj	jaoeni io i	001611016	Jioual	IJI1.
(di											

ontract: ocation: ient:	Affordable Housing Old Road, Hayestown, Rush, Co. Dublin	Easti		Rotary Corehole Log										
ient:	Old Road Havestown Rush Co Dublin	Easting: 725198.262 Date Start						ed:	21/05/2	2020				
	Old Moda, Hayestown, Mash, Oo. Babiin	North	ing:	7	754170.336	Date	pleted	. :	21/05/2	2020				
	Fingal County Council	Eleva	ition:	1	8.91		ed By:		MEDL					
ngineer:	Downes Associates	Rig T	ype:	5	Sondeq	Statu	ıs:	-	FINAL					
epth (m)	Charles Description		Lev (mC		Camania		F	Rock	Indices		D I - f			
ale Depth	Stratum Description	Legend	Scale		Samples th		TCR/%	SCR/%	RQD/%	FI/m	Backf			
5 = C	Cable percussive borehole completed - see CP log.		18.5											
0==			18.0											
5 =			17.5											
0 =			17.0											
5 =			16.5											
0 = 0			16.0											
5 🖥			15.5											
0 =			15.0											
5 =			14.5											
0 =			14.0											
5 =			13.5											
0 =			13.0											
5 =			12.5											
0 = 0			12.0											
5 =			11.5											
0 -			11.0											
5 =			10.5											
0 =			10.0											
5 =			9.5											
0 = 0			9.0											
5 =			8.5											
0 = 0			8.0											
5 =			7.5 —											
0 12.40			6.5	6.51										
ĭ 🖠 🕷	Open hole drilling - driller reports returns of sandy gravelly clay with medium cobble and boulder content.	**************************************	6.0	0.51										
0 =			5.5		50 (05 for 50 more) 50	٠ .								
5 = 14.00			5.0 —	4.91	50 (25 for 50mm/50 10mm)	J TOF								
0 14.00 S	Strong to very strong light grey thickly bedded fine grained nuddy LIMESTONE interbedded with strong dark grey		4.5	4.91	14.00 - 15.00		95	47	28	6				
` ∃ ¢a	alcareous MUDSTONE with many fossils and calcite veins. resh to slightly weathered.		4.0		14.00 - 13.00		95	41	20	Ni 16				
5	Discontinuities - rough, planar, tight to open, sub-horizontal, occasional 40° dip, clean with occasional grey staining.		3.5		15.00 - 16.00		95	48	20	Ni 5				
	Discontinuities - non-intact section. Discontinuities - rough to smooth, planar, tight to open, 10° to 20° dip, clean		3.0		13.00 - 10.00		95	40	20	Ni				
5	with occasional grey staining. Discontinuities - non-intact section. Discontinuities - rough to smooth, planar, tight to open, sub-horizontal to 30°	跓	2.5		16.00 - 17.00		94	66	52	9				
17.00	dip, clean with occasional grey staining.	Ш	2.0	1.91			54		02	Ĭ				
5 =	End of Corehole at 17.00m		1.5											
		Remar	ks:											
	From: To: Pipe Type: From: To: Type: (Cable	percus	sive	borehole complete	d adj	acent	to co	rehole	location	on.			
	0.00 17.00 Bentonite													

Contract N 5728	Rotary Co		Corehole No: RC05							
contract:	Affordable Housing	Easti	ng:	7:	25217.771	Date S	Started	21/05	/2020	
ocation:	Old Road, Hayestown, Rush, Co. Dublin	North	ning:	7		Date Comp	leted:	21/05	/2020	
lient:	Fingal County Council	Eleva	ation:	1		Drilled		MEDL	-	
ingineer:	Downes Associates	Rig T	ype:	s	ondeq S	Status	 S:	FINAL		
Depth (m)			Lev	el		\top		k Indice		
Scale Depth	Stratum Description	Legend	Scale		Samples	TC		R/% RQD/9		Back
0.5	Cable percussive borehole completed - see CP log.		17.5							
.0.			17.0							
.5 =			16.0							
.0 =			15.5							
.5			15.0							
.0 =			14.5							
.5			14.0							
.0			13.5							
.5			13.0							
.0 = 0.			12.5							
.5 =			12.0							
.0 -			11.5							
.5 =			11.0							
.0 =			10.5							
7.5			10.0							
.0 -			9.5							
3.5			9.0							
1.5			8.5							
.0			8.0							
1.5			7.5							
.0 =			7.0							
.5			6.5							
.0			5.5							
2.5			5.0							
.0 = 12.70	Open hole drilling - driller reports returns of sandy gravelly owith medium cobble and boulder content.	lay 👸	4.5	4.91						
.5	with median cossic and sociaci content.		4.0		50 (25 for 45mm/50	for				
.0.		* <u>*</u>	3.5		40mm)					
14.60	\$trong to very strong light grey thickly bedded fine grained	<u>~~</u>	3.0	3.01						- [
.0 -	muddy LIMESTONE interbedded with strong dark grey		2.5		14.60 - 15.60	,	95 8	9 74		
	calcareous MUDSTONE with many fossils and calcite veins Fresh to slightly weathered.		2.0			_			11	
.0 =	Discontinuities - rough to smooth, planar, tight to open, 20° to 30° dip, clean with occasional brown and grey staining. Discontinuities - rough to smooth, planar to slightly undulating, tight to open,		1.5		15.60 - 16.60	1	100 9	4 64	16	
5.5	20° to 75° dip, clean with occasional brown staining.		1.0			+		+	16	
'.0 -			0.5		16.60 - 17.60	1	100 10	0 80	25	
17.60	End of Corehole at 17.60m		0.0	0.01					20	
	Installation: Backfill:	Remai	rks.							
(I)	From: To: Pipe Type: From: To: Type:	_		sive	borehole completed	d adja	cent to	coreho	e locat	ion.
()	0.00 17.60 Bentonite									

RC02 Box 1 of 1



RC04 Box 1 of 1



RC05 Box 1 of 1



Appendix 3 Trial Pit Logs and Photographs

	act No: 728		•	t Log					Trial Pit N				
Contr	act:	Affordable Housing			Easting:	725104	4.002		Date:		22/0	05/2020	
Locat	ion:	Old Road, Hayestov	wn, Rush, Co. Dublir	า	Northing:	754272	2.752		Excavat	or:	5T I	MiniDigg	er
Client	t:	Fingal County Coun	ncil		Elevation:	19.18			Logged	Ву:	М. І	Kaliski	
Engin	eer:	Downes Associates			Dimensions (LxWxD) (m): 2.50 x	0.60	× 2.70	Status:		FIN	IAL	
	(mbgl)		Stratum Descript	tion	, ,	Legend		(mOD		<u> </u>		d Tests	Water
Scale:	Depth	TOPSOIL.					Scale:	Depth	h: Depth	า Ty	ре	Result	Strike
0.5 —	0.70	Soft light brown grey low cobble content ar coarse. Gravel is fine lithologies. Cobbles a	nd occasional sand la to coarse, angular to ure angular to subrou	8-0-X6 -8-0-X6 -8-0-X6 -8-0-X6 -8-0-X6 -8-0-X6 -8-0-X6 -8-0-X6 -8-0-X6 -8-0-X6	19.0 — - - - 18.5 —	18.88	0.50	CE	₿R	MK05			
1.0 —		gravelly silty CLAY wi Gravel is fine to coars						-	1.00	E	3	MK06	
1.5 —		Firm grey brown sandy slightly gravelly silty CLAY with high cobble and low boulder content and occasional sand laminas. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles and boulders are angular to subrounded various lithologies (up to 400mm diameter).	oulder content and occasional sand laminas. Sand is fine Gravel is fine to coarse, angular to subrounded of various Cobbles and boulders are angular to subrounded				18.0 —	17.98	8				
2.0 —							17.0—	-	2.00	E	3	MK07	
- - -	2.70	Pit terminated at 2.70m					- 16.5 - - -	16.48	8				
		Termination:	Pit Wall Stability:	Groundwater	Rate: Rem	arks:			Key	/:			
		Termination: Pit Wall Stability: Groundwater Rate: Re Scheduled depth. Pit walls stable. Dry -							B = D = CBF	Bull	all dis distu	curbed sturbed rbed CBR ental	

	act No: 728		-	Log							Trial Pit		
Contr	act:	Affordable Housing		E	Easting:	72514	4.169		Date:		22/0	05/2020	
Locat	ion:	Old Road, Hayesto	wn, Rush, Co. Dublin	1 1	Northing:	754273	3.131		Excava	tor:	5T I	MiniDigg	er
Client	t:	Fingal County Cour	ncil	E	Elevation:	19.18			Logged	Ву:	M. ł	Kaliski	
Engin	eer:	Downes Associates	3		Dimensions [LxWxD) (m): 2.70 x	0.50	2.80	Status:		FIN.	AL	
	(mbgl)		Stratum Descript	ion		Legend		(mOD				d Tests	Water Strike
Scale:	Depth	TOPSOIL.					Scale:	Depth	n: Dept	h Ty	ре	Result	Strike
0.5 —	0.70	fine to coarse. Grave various lithologies. Soft becoming firm g gravelly silty CLAY w coarse. Gravel is fine	rey and brown mottle ith medium cobble coets angular to	slightly gravelly silty CLAY. Sand is coarse, angular to subrounded of prown mottled slightly sandy slightly am cobble content. Sand is fine to se, angular to subrounded of various ar to subrounded of various lithologies.				18.88	0.50 0.50			MK08 MK09	
1.0 —		cobble content. Sand angular to subrounde	y brown slightly sandy slightly gravelly silty CLAY with high ontent. Sand is fine to coarse. Gravel is fine to coarse, to subrounded of various lithologies. Cobbles are angular to ded of various lithologies.					17.88	1.00	E	3	MK10	
2.0 —							- 17.5 - - -						
2.5 —							17.0 —		2.50	E	3	MK11	
-	2.80		Pit terminated at 2.80	0m		\$ 0 - X 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	16.5 -	16.38	3				
		Termination:	Pit Wall Stability:	Groundwater	Rate: Rem	arks:			Key	y:			
		Scheduled depth.	Pit walls stable.	Dry	-	B = B D = S CBR = U				= Bulk disturbed			

	act No: 728		-	Trial Pit	Log					Trial Pit N				
Contr	act:	Affordable Housing			Easting:	72518	1.029		Date:		22/	/05/2020		
Locat	ion:	Old Road, Hayesto	wn, Rush, Co. Dublin	n	Northing:	75426	7.077		Excava	tor:	5T	MiniDigg	er	
Client	:	Fingal County Cour	ncil	I	Elevation:	19.10			Logged	Ву:	M.	Kaliski		
Engin	eer:	Downes Associates	3		Dimensions (LxWxD) (m		0.50	< 2.70	Status:		FIN	NAL		
Level	(mbgl)	-I	Stratum Descripti		(=	Legend	Level	(mOD) San	nples	/ Fie	ld Tests	Water	
Scale:	Depth	TOPSOIL.				\(\(\)\(\)\(\)	Scale:	Depth	n: Dept	h Ty	/ре	Result	Strike	
0.5 —	0.30	Light grey silty SAND Soft becoming firm lig CLAY with medium c fine to coarse, angula are angular to subrou Firm grey brown sligh cobble and low bould	ght grey brown sandy obble content. Sand ar to subrounded of v unded of various litho ntly sandy slightly gra ler content. Sand is fi	ey brown sandy slightly gravelly silty content. Sand is fine to coarse. Gravel is ubrounded of various lithologies. Cobbles of various lithologies. Independent of the coarse of the co				18.80	0.50		3R	MK12		
2.0 —		and boulders are ang 400mm diameter).	pular to subrounded o		ogies (up to		17.5 - - - 17.0 - - - 16.5 -	16.40	2.00) [3	MK14		
_		Termination:	Pit Wall Stability:	Groundwater	Rate: Rom	narks:	-	-	Ke	V.				
					nais. Nell	iai no.			B =		k die	turhed		
(Scheduled depth.	Pit walls stable.	Dry	-				D = CB	: Sm R = Ur	Bulk disturbed Small disturbed Undisturbed CBR nvironmental			

	act No: 728			t Log						Trial Pit TP0		
Contr	act:	Affordable Housing			Easting:	725226	3.017		Date:		22/05/2020	
Locat	ion:	Old Road, Hayestov	wn, Rush, Co. Dublii	n	Northing:	754264	1.129		Excavato	or:	5T MiniDigg	er
Client	::	Fingal County Coun	ncil		Elevation:	18.91			Logged E	Зу:	M. Kaliski	
Engin	eer:	Downes Associates			Dimensions (LxWxD) (m)	2.60 x	0.60 x	2.80	Status:		FINAL	
Level	(mbgl)		Stratum Descript	1	(EXVIXE) (III)	Legend	Level	(mOD) Samı	ples /	Field Tests	Water
Scale:	Depth	TOPSOIL.	- Ciratani Beesiipi			Zogona	Scale:	Depth	n: Depth	Тур	e Result	Strike
1.0 —	1.20	Light grey brown silty Firm light grey brown high cobble content. Sangular to subrounde subrounded of variou Firm becoming stiff gr CLAY with high cobbl coarse. Gravel is fine lithologies. Cobbles a various lithologies (up	slightly sandy slight Sand is fine to coars d of various lithologi s lithologies. rey brown slightly sa e and low boulder of to coarse, angular t	andy slightly gra ontent. Sand is to subrounded o	e to coarse, e angular to e ang	수제 수ፙ	18.5 — 18.0 — 17.5 — 17.0 — 16.5 —	18.5	1.00	В	MK37	
-	2.80		Pit terminated at 2.8	30m		:0.XO	_	16.11	1			
-							16.0 —	_				
		I 	D'' W '' 2' : ''''		D . T				1, -			
		Termination:	Pit Wall Stability:	Groundwater	Rate: Rema	arks:			Key:		dicturbed	
(Scheduled depth. Pit walls stable. Dry -								Sma Und=	disturbed all disturbed disturbed CBF onmental	2

	act No: 728	Tri	og					Trial Pit No: TP05			
Contr	act:	Affordable Housing	Eastin	g:	725307	'.901		Date:		22/05/2020	
Locat	ion:	Old Road, Hayestown, Rush, Co. Dublin	Northi	ng:	754264	.543		Excavato	r:	5T MiniDigg	er
Client	i:	Fingal County Council	Elevat	ion:	18.43			Logged E	Ву:	M. Kaliski	
Engin	eer:	Downes Associates	Dimen (LxWx	sions D) (m):	2.60 x	0.60 x	2.80	Status:		FINAL	
Level	(mbgl)	Stratum Description	(LXVX		Legend	Level	(mOD) Samp	oles /	Field Tests	Water
Scale:	Depth	TOPSOIL.				Scale:	Depth	n: Depth	Тур	e Result	Strike
1.5 —	1.40	Firm light grey brown sandy slightly gravelly s cobble content. Sand is fine to coarse. Gravel angular to subrounded of various lithologies. (subrounded of various lithologies.) Firm becoming stiff grey brown slightly sandy CLAY with high cobble and low boulder contectoarse. Gravel is fine to coarse, angular to su lithologies. Cobbles and boulders are angular various lithologies (up to 400mm diameter).	slightly gravelly some same to brounded of various states to brounded of various states are angular to bround the states are angular to bround the states are angular to bround the states are angular to be a states are a states ar	illar to	ᠿਗ਼ਫ਼ਫ਼ਜ਼ਫ਼	18.0 — 18.0 — 17.5 — 17.0 — 16.5 — 16.0 —	18.13	1.00	В	MK30	
-	2.80	Pit terminated at 2.80m				- 15.5 —	15.63	3			
		Termination: Pit Wall Stability: Great Gre	oundwater Rate:	Remai	rks:			Key:			
		Scheduled depth. Pit walls stable.	Dry	-				B = D = CBR	Bulk Sma = Und	disturbed Ill disturbed listurbed CBF onmental	R

Contract No: 5728		٦	Trial Pi	t Log							Trial Pit No TP06		
Contract:	Affordable Housing			Easting:		725112	2.753		Date:	:	22/05/2020		
Location:	Old Road, Hayestov	wn, Rush, Co. Dublin		Northing:		754255	5.402		Excavator	r: /	5T MiniDigg	er	
Client:	Fingal County Coun	ncil		Elevation:	:	18.89			Logged B	y:	M. Kaliski		
Engineer:	Downes Associates			Dimension (LxWxD)		2.70 x	0.60 x	2.80	Status:		FINAL		
Level (mbgl)		Stratum Description	on		L	egend	Level	` .			Field Tests	Water Strike	
Scale: Depth	TOPSOIL.						Scale:	Depth	: Depth	Тур	e Result	Cunto	
0.5 0.80	fine to coarse. Gravel various lithologies. Firm light grey brown CLAY with low cobble to coarse, angular to	m light grey brown mottled slightly sandy slightly gravelly silty. AY with low cobble content. Sand is fine to coarse. Gravel is fine coarse, angular to subrounded of various lithologies. Cobbles are gular to subrounded of various lithologies.						18.59	0.50 0.50	CBF ES			
	Firm becoming stiff dark grey slightly sandy slightly gravelly silty CLAY with high cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of various lithologies. Cobbles and boulders are angular to subrounded of various lithologies (up to 400mm diameter). Pit terminated at 2.80m					k \$1 \$1 \$2 \$2 \$2 \$2 \$2 \$2	17.0 — 17.0 — 16.5 — 16.0 —	17.19	2.00	В	MK04		
15	Termination:	Pit Wall Stability:	Groundwater	Rate: Re	emarl	ks:		I	Key:	1	I	l	
	Scheduled depth.									Smal Und =	disturbed III disturbed Iisturbed CBR onmental		

	act No: 728			Trial Pi	t Log						Т	rial Pit	
Contr	act:	Affordable Housing	I		Easting:	72514	7.280		Date:		22/05	5/2020	
Locat	tion:	Old Road, Hayesto	wn, Rush, Co. Dubli	n	Northing:	75423	4.198		Excavato	or:	5T M	iniDigge	er
Clien	t:	Fingal County Cou	ncil		Elevation:	18.52			Logged E	Ву:	M. Ka	aliski	
Engir	neer:	Downes Associates	<u> </u>		Dimensions (LxWxD) (m		(0.60)	< 2.80	Status:		FINA	L	
Level	l (mbgl)		Stratum Descrip	tion	(LXVVXD) (II	Legend	Level	(mOD)) Samı	oles /	Field	Tests	Wate
Scale:	Depth	TOPSOIL.	Ottatam Besonp			Logona	Scale:	Depth	h: Depth	Тур	pe F	Result	Strike
	1.90	Firm light grey brown low cobble content. Sangular to subrounde subrounded of various coarse. Gravel is fine lithologies. Cobbles avarious lithologies (under the coarse) was a coarse.	Band is fine to coarse d of various litholog us lithologies. Bark grey slightly san ble and low boulder o the to coarse, angular and boulders are angular	e. Gravel is fine ies. Cobbles ar ies. Cobbles	elly silty fine to of various		18.0 — 17.5 — 17.0 — 16.5 —	18.32	0.50	В	3 1	MK15 MK16	•
- - -	2.80		Pit terminated at 2.8	30m			-	_ 15.72	2				
-		Termination:	Pit Wall Stability:	Groundwater	Rate: Rem	narks:			Key:				
		Scheduled depth.	Pit walls stable.	1.90 Seepag					B = D = CBR	Bulk Sma	distur all distu disturb onmer	irbed ed CBR	

	act No: 728			Trial Pi	t Log						-	Trial Pit	
Contr	act:	Affordable Housing	l		Easting:	725178	8.534		Date:		22/0	5/2020	
Locat	ion:	Old Road, Hayesto	wn, Rush, Co. Dubli	n	Northing:	754232	2.703		Excavato	or:	5T M	liniDigge	er
Client	t:	Fingal County Cou	ncil		Elevation:	18.52			Logged I	Ву:	M. K	aliski	
Engin	neer:	Downes Associates	3		Dimensions (LxWxD) (m		(0.65)	< 2.70	Status:		FINA	۸L	
Level	(mbgl)		Stratum Descrip	tion	(LXVVXD) (II	Legend	Level	(mOD) Sam	ples /	Field	Tests	Water
Scale:	Depth	TOPSOIL.				Logona	Scale:	Depth	n: Depth	Тур	ре	Result	Strike
1.0 —	0.70	Firm grey brown sligl cobble content. Sand angular to subrounded subrounded of various of the cobble content and compared is fine to coar lithologies. Cobbles a coarse. Gravel is fine to coarse. Grave	d is fine to coarse. Goed of various lithologus lithologies. In very sandy slightly occasional sand laminate, angular to subrouare angular to subrouare angular to subrouale and low boulder ce to coarse, angular to and boulders are angular to and boulders are angular to subrouare and subrouse to coarse, angular to subrouse to coarse, angular to and boulders are angular to subrouse to coarse, angular to coarse, angula	gravelly silty Cl gravelly silty Cl nas. Sand is fir unded of variou dy slightly grav ontent. Sand is to subrounded gular to subrounder).	AY with low et to coarse is slithologies elly silty fine to of various		18.0 — 17.5 — 17.0 — 16.5 —	17.12	1.00 2.00	CB ES		MK18 MK19 MK20	•
		Termination:	Pit Wall Stability:	Groundwater	Rate: Ren	narks:	-		Key	<u> </u> 			
	§)	Scheduled depth.	Pit walls stable.	1.60 Seepa	ge -					Sma	disturb	urbed ed CBR	

	ract No: 728			Trial Pi	t Log						Trial Pit	
Contr	act:	Affordable Housing			Easting:	725225	5.736		Date:	2	22/05/2020	
Locat	ion:	Old Road, Hayestov	wn, Rush, Co. Dublir	1	Northing:	754215	5.827		Excavator	r:	5T MiniDigg	er
Client	t:	Fingal County Coun	icil		Elevation:	18.01			Logged B	y: I	M. Kaliski	
Engin	neer:	Downes Associates			Dimensions (LxWxD) (m)	2.60 x	0.55 x	2.80	Status:	ı	FINAL	
	(mbgl)		Stratum Descript	ion		Legend	Level				Field Tests	Water
Scale:	Depth	TOPSOIL.					Scale:	Depth	n: Depth	Тур	e Result	Strike
0.5 —	0.30	Light grey brown silty	slightly gravelly SAI	ND.			- - - 17.5 —	. 17.71	0.50	СВБ	R MK22	
_		Firm grey brown sand content. Sand is fine t subrounded of various subrounded of various	to coarse. Gravel is solithologies. Cobble	fine to coarse,	angular to	X X 0 1 X 0	_ _ _	17.31				
1.0 —							17.0 — - - -		1.00	В	MK23	
1.5 —		Firm becoming stiff gr with high cobble and Gravel is fine to coars lithologies. Cobbles a various lithologies (up	low boulder content. se, angular to subround boulders are ang	Sand is fine to unded of variou jular to subrour	coarse.		16.5 — - - -	16.51				•
2.0 —							16.0 — - - - - 15.5 —		2.50	В	MK24	
_	2.80		Pit terminated at 2.8	0m			-	. 15.21	I			
		Termination:	Pit Wall Stability:	Groundwater	Rate: Rema	arks:			Key:			
	§)	Scheduled depth.	Pit walls stable.	1.70 Seepag	ge -					Smal Undi=	disturbed II disturbed isturbed CBF onmental	₹

	act No: 728		-	Trial Pit	t Log							Pit No: P10
Contr	act:	Affordable Housing			Easting:	725253	3.453		Date:		22/05/202	.0
Locat	ion:	Old Road, Hayestown,	Rush, Co. Dublin	1	Northing:	75424	1.618		Excavato	r:	5T MiniDi	gger
Client	t:	Fingal County Council			Elevation:	18.19			Logged E	Ву:	M. Kaliski	
Engin	eer:	Downes Associates			Dimensions (LxWxD) (m	2.50 x	0.60 x	2.70	Status:		FINAL	
	(mbgl)		Stratum Descripti	1		Legend	Level				Field Test	O411.
Scale:	Depth	TOPSOIL.	·				Scale:	Depth	n: Depth	Тур	pe Resu	lt Strike
0.5 —	1.00	Firm light grey brown slig low cobble content. Sand angular to subrounded of subrounded of various lith Firm light grey brown san cobble content. Sand is fi angular to subrounded of subrounded of various lith	is fine to coarse various lithological nologies. Indy slightly grave the to coarse. Graverious lithological various lithological vario	es. Cobbles are	to coarse, e angular to vith high coarse,		18.0 — - 17.5 — - 17.0 — -	17.79	0.50 0.50	CB ES	S MK3	3
1.5 —		Firm becoming stiff grey I CLAY with high cobble ar coarse. Gravel is fine to d lithologies. Cobbles and I various lithologies (up to	nd low boulder co coarse, angular to coulders are ang	ontent. Sand is o subrounded o Jular to subrour	fine to of various		- 16.5 - - - - 16.0 -	16.69	2.00	В	MK3	5
2.5 —	2.70		Pit terminated at 2.70	0m			15.5 -	15.49	9			
		Termination: Pit	Wall Stability:	Groundwater	Rate: Rem	ı arks:			Key:			
	()	Scheduled depth. Pit	walls stable.	Dry	-					Sma = Und	disturbed all disturbed disturbed C onmental	

	act No: 728		•	Trial Pit	Log							Trial Pit	
Contr	act:	Affordable Housin	g	Ea	sting:	725300	0.790		Date:		22	/05/2020	
Locat	ion:	Old Road, Hayest	own, Rush, Co. Dublir	n No	orthing:	754223	3.097		Excavat	tor:	5T	MiniDigg	er
Client	t:	Fingal County Co	uncil	Ele	evation:	17.61			Logged	Ву:	M.	Kaliski	
Engin	eer:	Downes Associate	es		mensions «WxD) (m):	2.50 x	0.65 >	2.60	Status:		FII	NAL	
	(mbgl)		Stratum Descript	ion		Legend		(mOD				ld Tests	Water
Scale:	Depth	TOPSOIL.					Scale:	Deptr	n: Deptl	n Iy	/pe	Result	Otriko
1.5 —	1.20	cobble content. Sar angular to subrounded of various subrounded su	vn very sandy slightly on the dis fine to coarse. Gr ded of various lithologi	avel is fine to coales. Cobbles are a silty CLAY with high to coarse. Grave lithologies. Cobb	h cobble el is fine to les and	스레 스케스케 스케스케 스케스케 스케스케 스케스케 스케스케 스케스케 스	17.5	17.31	0.50		BR :S	MK25 MK26	•
_	2.60		Pit terminated at 2.6	0			15.0 —	15.01					
-			r n temmateu at 2.6	on!			-	-					
		Termination:	Pit Wall Stability:	Groundwater Ra	ate: Rema	rks:			Key	/:			
		Obstructions - boulders.	Pit walls stable.	1.50 Seepage	-				B = D = CBI	Bul Sm	nall d ndistu	sturbed isturbed urbed CBR nental	\ \

	act No: 728		•	Trial Pit	Log	3							Trial Pit	
Contr	act:	Affordable Housing		E	Easting:		725183	3.447		Date:		22	/05/2020	
Locat	ion:	Old Road, Hayesto	wn, Rush, Co. Dublir	ا ۱	Northing:		754202	2.832		Excava	tor:	5T	MiniDigg	er
Client	t:	Fingal County Cour	ncil	E	Elevation	1:	18.67			Logged	Ву:	M.	Kaliski	
Engin	ieer:	Downes Associates	5		Dimensio (LxWxD)		2.80 x	0.60 x	2.80	Status:		FII	NAL	
	(mbgl)		Stratum Descript	ion			Legend	Level					ld Tests	Water Strike
Scale:	Depth	TOPSOIL.						Scale:	Depth	n: Dept	h Ty	/ре	Result	Strike
0.5 —		Firm light grey brown CLAY with low cobble to coarse, angular to angular to subrounde	e content. Sand is fin subrounded of varior	e to coarse. Graus lithologies. C	avel is fir			18.5 - - - - 18.0 -	18.27	0.50 0.50		BR S	MK39 MK40	
1.0 —		Firm grey brown sand content. Sand is fine subrounded of variou subrounded of variou	to coarse. Gravel is t is lithologies. Cobble	fine to coarse, a	angular to		ે પાર્ટી પાર્ટી તેના તેના તેના તેના તેના તેના તેના તેના	17.5 —	17.27	1.50	E	3	MK41	
2.0 —	2.80	Stiff grey slightly sand and low boulder cont coarse, angular to su boulders are angular 400mm diameter).	ent. Sand is fine to cobrounded of various	oarse. Gravel is lithologies. Cob rious lithologies	s fine to obles and	30			16.07		E	3	MK42	
		Termination:	Pit Wall Stability:	Groundwater	Rate: D	emar	·ke·			Key	<i>/</i> :			
		Scheduled depth.	Pit walls stable.	Dry	-	cilial	<i>N</i> 3.			B = D = CBI	Bul Sm	ıall d ıdistı	sturbed isturbed urbed CBR nental	

	act No: 5728		٦	Γrial Pi	t Log	3						Trial Pit	
Contr	act:	Affordable Housing			Easting:		725209	9.501		Date:	2	2/05/2020	
Locat	tion:	Old Road, Hayestov	wn, Rush, Co. Dublin		Northing:		754192	2.888		Excavato	r: 5	T MiniDigge	er
Client	t:	Fingal County Coun	icil		Elevation	1:	18.42			Logged B	y: N	/l. Kaliski	
Engir	neer:	Downes Associates			Dimensio (LxWxD)		2.60 x	0.70 >	2.70	Status:	F	INAL	
Level	l (mbgl)	1	Stratum Descripti	on	,	Ī	Legend		(mOD			ield Tests	Water Strike
Scale:		TOPSOIL.						Scale:	Depth	: Depth	Туре	Result	Otrike
_								-					
-								-					
_	0.40							-	40.00				
0.5 —	0.50	Light grey silty SAND				×	× × × ×	18.0 —	18.02		CBR	MK43	
0.5 —		Soft becoming firm gr gravelly silty CLAY wi	th high cobble conter	nt. Sand is fine	e to coars	e.		-	17.92	0.50	CBR	IVIN43	
_		Gravel is fine to coars lithologies. Cobbles a	se, angular to subrou ire angular to subroui	nded of variou nded various	us lithologies	s. :		-					
_								_					
_						3		17.5 -					
1.0 —						2		_		1.00	В	MK44	
_	-					3		-	-				
_		Firm grey brown sligh				jh		-	17.22	2			
_		cobble content. Sand angular to subrounde	d of various lithologie			to		-	-				
=		subrounded of various	s lithologies.			2		17.0 —					
1.5 —						2		-					
_						2		-					
_	-					2		-	-				
_						2		-	-				
2.0 —						2		16.5 -	-	2.00	В	MK45	
						2		-		2.00		IVIIC+3	
_						3		_					
_						2		_					
_						2		16.0 —	-				
2.5 —		Stiff grey slightly sand				le 🖟		-	15.92	2			
-		and low boulder conte coarse, angular to sul	ent. Sand is fine to co brounded of various l	oarse. Gravel lithologies. Co	is fine to obbles and			-	-				
=	2.70	boulders are angular 400mm diameter).	to subrounded of var	ious lithologie				-	15.72	2			
-			Pit terminated at 2.70)m				-	-				
-								15.5 –	-				
1,1		Termination:	Pit Wall Stability:	Groundwater	r Rate: R	emai	·ks:			Key:			
	(F)	Scheduled depth.	Pit walls stable.	Dry	-					B =		listurbed	
(= Undis	disturbed sturbed CBR nmental	

	act No: 728		1	Γrial Pit	Log						-	Trial Pit	
Contr	act:	Affordable Housing		E	Easting:	725192	2.845		Date:		25/0	5/2020	
Locat	ion:	Old Road, Hayestown, Rush, O	Co. Dublin	ı	Northing:	754171	.270		Excavato	r:	5T N	1iniDigge	er
Client	t:	Fingal County Council		E	Elevation:	18.83			Logged E	3y:	M. K	aliski	
Engin	ieer:	Downes Associates			Dimensions LxWxD) (m):	2.90 x	0.60 x	2.70	Status:		FINA	AL.	
	(mbgl)	Stratum	Description	on		Legend	Level		-			Tests	Water Strike
Scale:	Depth	TOPSOIL.					Scale:	Depth	: Depth	Тур	ре	Result	Strike
0.5 —		Firm grey brown slightly sandy s cobble content. Sand is fine to c angular to subrounded of various subrounded of various lithologies	oarse. Gra s lithologie	avel is fine to co	oarse,		- 18.5 — - - - 18.0 —	18.43	0.50 0.50	CB ES		MK46 MK47	
1.0 —		Firm light grey brown slightly san nigh cobble content. Sand is fine angular to subrounded of various subrounded of various lithologies	e to coarse s lithologie	e. Gravel is fine	to coarse,		17.5 —	17.73	1.50	В		MK48	
2.0 —	2.70	Pit termi	nated at 2.70	m			16.5 —	16.13	2.50	В		MK49	
		Termination: Dis Maril Co	tobility:	Cround	Poto: Dam	urko:							
		Termination: Pit Wall Since Scheduled depth. Pit walls since Scheduled depth.		Groundwater I Dry	Rate: Rema	iiKS:			Key:		distu	rbed	
(Tit walls S	addic.	Біу					D = CBR	Sma	all dist disturt	turbed bed CBR	

	act No: 728		•	Trial Pi	t Log						Trial Pit	
Contra	act:	Affordable Housing			Easting:	72521	8.283		Date:	2	5/05/2020	
Locati	ion:	Old Road, Hayesto	wn, Rush, Co. Dublir	1	Northing:	75414	3.657		Excavato	r: 5	T MiniDigg	er
Client	:	Fingal County Cour	ncil		Elevation:	18.23			Logged B	y: M	l. Kaliski	
Engin	eer:	Downes Associates	3		Dimensions (LxWxD) (n		(0.70)	2.80	Status:	F	INAL	
Level	(mbgl)		Stratum Descript	ion	(Legend	Level	(mOD) Samp	les / Fi	eld Tests	Water
Scale:	Depth	TOPSOIL.	Otratam Descript	1011		Logona	Scale:	Depth	: Depth	Туре	Result	Strike
0.5 —	0.40 0.50	Light grey silty SANE Soft becoming firm g gravelly silty CLAY w Gravel is fine to coan lithologies. Cobbles a	rey and brown mottle ith high cobble conte se, angular to subrou	ent. Sand is fine unded of variou	e to coarse. us		- 18.0 — - - 17.5 —	17.83		CBR ES	MK50 MK51	
1.0 —		Firm grey brown sand content. Sand is fine subrounded of variou subrounded of variou	to coarse. Gravel is is lithologies. Cobble	fine to coarse,	angular to		17.0 —	16.83	1.50	В	MK52	•
2.0 —		Stiff grey slightly san and low boulder cont coarse, angular to su boulders are angular 400mm diameter).	ent. Sand is fine to o brounded of various	oarse. Gravel i lithologies. Co	is fine to bbles and		16.0 —	16.03	2.50	В	MK53	
-	2.80		Pit terminated at 2.80	0m		0,000	-	15.43	3			
		Termination:	Pit Wall Stability:	Groundwater	Rate: Ren	narks:			Key:			
		Scheduled depth.	Pit walls stable.	1.40 Seepa					B = D = CBR :	Small	isturbed disturbed turbed CBR mental	

	act No: 728		,	Trial Pi	t Log							Trial Pit	
Contr	act:	Affordable Housing			Easting:	725188	3.848		Date:		25	5/05/2020	
Locat	ion:	Old Road, Hayestov	vn, Rush, Co. Dubli	n	Northing:	754118	5.990		Excava	itor:	51	Γ MiniDigg	er
Client	:	Fingal County Coun	cil		Elevation:	18.01			Logged	d By:	М	. Kaliski	
Engin	eer:	Downes Associates			Dimensions (LxWxD) (m		0.60	< 2.80	Status:		FI	NAL	
Level	(mbgl)	1	Stratum Descrip	tion	(LXVVXD) (III	Legend	Level	(mOD) Saı	nples	s / Fie	eld Tests	Water
Scale:	Depth	TOPSOIL.	Otratam Besonp			Logoria	Scale:	Depth	n: Dep	th 1	Гуре	Result	Strike
1.0 —	ı	Soft becoming firm gr gravelly silty CLAY wi Gravel is fine to coars lithologies. Cobbles a	th high cobble conte se, angular to subro	ent. Sand is fine unded of variou	e to coarse. us		17.5 - 17.0 - 16.5 - 16.0 -	17.7	0.56 0.56 0.56		B CBR ES	MK54 MK55 MK56	
2.5 —	,	Firm grey brown sligh cobble content. Sand angular to subrounde subrounded of various	is fine to coarse. G d of various litholog	ravel is fine to dies. Cobbles ar	coarse,		15.5 -	15.7					
							-	1					
		Termination:	Pit Wall Stability:	Groundwater	Rate: Rem	arke.			Ke				
		Scheduled depth.	Pit walls stable.	Dry	nate. Rem	ains.			B =		ulk di	sturbed	
(Sonodalod dopui.	. It want stable.	Diy					D :	= S BR = L	mall o Jndist	disturbed turbed CBR mental	

	act No: 728			Trial Pit	Log						Т	rial Pit	
Contr	act:	Affordable Housing		E	asting:	725230	0.746		Date:		25/05	/2020	
Locat	ion:	Old Road, Hayesto	wn, Rush, Co. Dubli	in N	lorthing:	754103	3.119		Excavat	or:	5T Mi	niDigg	er
Client	::	Fingal County Cour	ncil	E	levation:	17.88			Logged	Ву:	M. Ka	ıliski	
Engin	eer:	Downes Associates	;		imensions xWxD) (m):	2.90 x	0.65 >	2.80	Status:		FINA	L	
	(mbgl)		Stratum Descrip			Legend		(mOD			Field		Water
Scale:	Depth	TOPSOIL.					Scale:	Depth	n: Depth	тур	pe F	Result	Strike
0.5 —	0.30	Light grey brown sligi	htly silty SAND.				17.5 -	17.58	0.50	СВ	R M	ИК58	
1.0 —								-	1.00	В	; N	ИК59	
1.5 —		Firm grey brown sligh cobble content. Sand angular to subrounde subrounded of variou	l is fine to coarse. G ed of various litholog	ravel is fine to co	arse,		16.5 - - -	16.48	3				•
2.0 —							16.0 —	_	2.00	В	; N	ИК60	
2.5 —							- 15.5 - - -	-					
_	2.80		Pit terminated at 2.8	80m			- 15.0 —	15.08	3				
		Tormination	Dit Wall Stability	Groundwata- F	Poto: Bow-	rke	_		I/a:				
		Termination: Scheduled depth.	Pit Wall Stability: Pit walls stable.	Groundwater F		IIKS:				Bulk Sma	distur all distu disturbe	ırbed ed CBR	

	act No: 728		•	Trial Pi	t Log						Trial Pit	
Contra	act:	Affordable Housing			Easting:	72520	0.693		Date:	2	5/05/2020	
Locati	ion:	Old Road, Hayesto	wn, Rush, Co. Dublir	1	Northing:	75407	4.461		Excavato	r: 5	T MiniDigg	er
Client	:	Fingal County Cour	ncil		Elevation:	17.41			Logged B	sy: N	1. Kaliski	
Engin	eer:	Downes Associates	3		Dimensions (LxWxD) (m	2.80 x	(0.60)	2.80	Status:	F	INAL	
Level	(mbgl)		Stratum Descript	ion	[(=::::=) (:::	Legend	Level	(mOD) Samp	les / F	ield Tests	Water
Scale:	Depth	TOPSOIL.	- Chatam Boompt			Logoria	Scale:	Depth	n: Depth	Туре	Result	Strike
	0.30	MADE GROUND: bla cobble content and s	ack brown silty slightl come red brick fragme	y gravelly sand ents.	d with low		- - 17.0 —	. 17.11	0.50 0.50	CBR ES	MK61 MK62	
1.0 —	1.00	Light grey brown slig	htly silty slightly grav	elly SAND.			- 16.5 - -	. 16.41	1			
1.5 —	1.70	Firm grey brown sligl	htly sandy slightly gra	avelly silty CLA	AY with high		16.0 —	15.71	1.50	В	MK63	•
2.0 —	2.20	cobble content. Sand angular to subrounded of various subrounded of various stiff grey slightly san and low boulder cont	d is fine to coarse. Gred of various lithologius lithologies. dy slightly gravelly sitent. Sand is fine to co	ravel is fine to ones. Cobbles and lity CLAY with I oarse. Gravel	coarse, re angular to high cobble is fine to		15.5 -	. 15.2	2.00	В	MK64	
2.5 —		coarse, angular to su boulders are angular 400mm diameter).		rious lithologie			15.0 —	14.67	ı			
-							14.5 -					
		I			5 . -	<u> </u>			1			
		Termination:	Pit Wall Stability:	Groundwater		arks:			Key:	Rully 4	listurbed	
(Scheduled depth.	Pit walls stable.	1.70 Seepa	ge -				D = CBR	Small = Undis	disturbed disturbed sturbed CBF nmental	₹

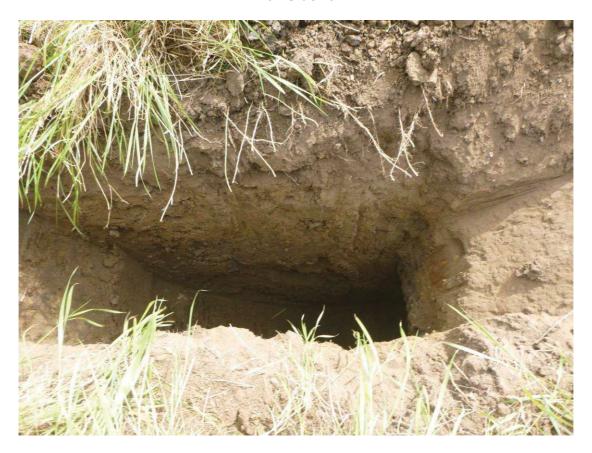
TP01 Sidewall



TP01 Spoil



TP02 Sidewall



TP02 Spoil



TP03 Sidewall



TP03 Spoil



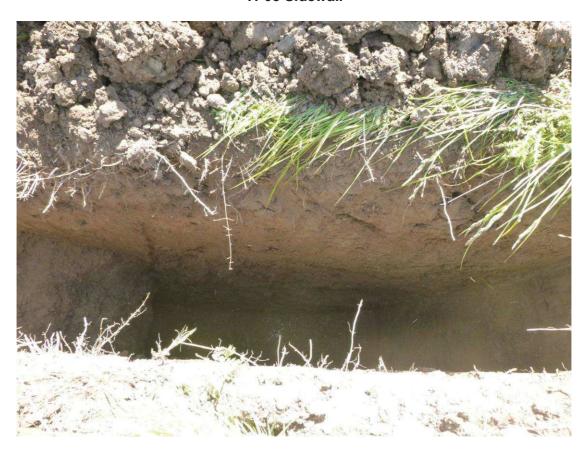
TP04 Sidewall



TP04 Spoil



TP05 Sidewall



TP05 Spoil



TP06 Sidewall



TP06 Spoil



TP07 Sidewall



TP07 Spoil



TP08 Sidewall



TP08 Spoil



TP09 Sidewall



TP09 Spoil



TP10 Sidewall



TP10 Spoil



TP11 Sidewall



TP11 Spoil



TP12 Sidewall



TP12 Spoil



TP13 Sidewall



TP13 Spoil



TP14 Sidewall



TP14 Spoil



TP15 Sidewall



TP15 Spoil



TP16 Sidewall



TP16 Spoil



TP17 Sidewall



TP17 Spoil



TP18 Sidewall



TP18 Spoil



Appendix 4 Soakaway Test Results and Photographs

Project Reference: 5728

Contract name: Affordable Housing

Location: Old Road, Hayestown, Rush, Co. Dublin

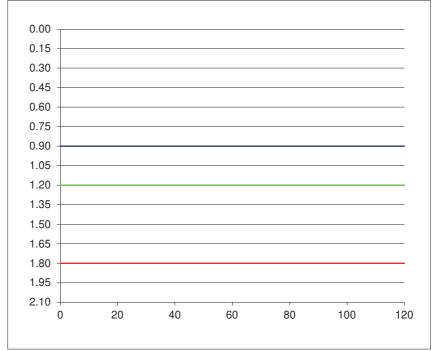
 Test No:
 SA01

 Date:
 22/05/2020

Ground Conditions		
From	То	
0.00	0.30	TOPSOIL.
0.30	1.10	Firm grey brown slightly sandy gravelly silty CLAY with low cobble content.
1 10	2 10	Firm grey brown slightly sandy grayelly silty CLAY with medium cobble content.

1.10	2.10
Elapsed Time	Fall of Water
(mins)	(m)
0	0.90
0.5	0.90
1	0.90
1.5	0.90
2	0.90
2.5	0.90
3	0.90
3.5 4	0.90
4	0.90
4.5	0.90
5	0.90
6	0.90
7	0.90
8	0.90
9	0.90
10	0.90
12	0.90
14	0.90
16	0.90
18	0.90
20	0.90
25	0.90
30	0.90
40	0.90
50	0.90
60	0.90
75	0.90
90	0.90
120	0.90

grey brown slightly sandy gravelly	SIILY OLA I	with median
Pit Dimensions (m)		
Length (m)	2.00	m
Width (m)	0.30	m
Depth	2.10	m
Water		
Start Depth of Water	0.90	m
Depth of Water	1.20	m
75% Full	1.20	m
25% Full	1.80	m
75%-25%	0.60	m
Volume of water (75%-25%)	0.36	m3
Area of Drainage	9.66	m2
Area of Drainage (75%-25%)	3.36	m2
Time		
75% Full	N/A	min
25% Full	N/A	min
Time 75% to 25%	N/A	min
Time 75% to 25% (sec)	N/A	sec



f = Fail or Fail m/min

Project Reference: 5728

Contract name: Affordable Housing

Location: Old Road, Hayestown, Rush, Co. Dublin

Test No: SA02

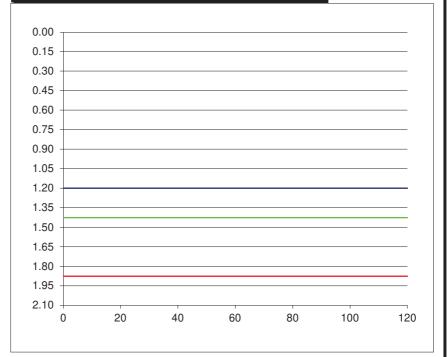
Date: 22/05/2020

Ground	Conditions

ı	Ground Conditions		
ı	From	То	
ı	0.00	0.40	TOPSOIL.
ı	0.40	0.70	Firm light grey brown slightly sandy gravelly silty CLAY with low cobble content.
ı	1.10	2.10	Firm grey brown slightly sandy gravelly silty CLAY with high cobble content.

1.10	2.10
Elapsed Time	Fall of Water
(mins)	(m)
0	1.20
0.5	1.20
1	1.20
1.5	1.20
2	1.20
2.5	1.20
3	1.20
3.5	1.20
4	1.20
4.5	1.20
5	1.20
6	1.20
/	1.20
8	1.20
9	1.20
10	1.20
12	1.20
14	1.20
16	1.20
18	1.20
20	1.20
25	1.20
30	1.20
40	1.20
50	1.20
60	1.20
75	1.20
90	1.20
120	1.20

grey brown slightly sandy gravelly slity CLAY with high cor			
Pit Dimensions (m)			
Length (m)	1.90	m	
Width (m)	0.30	m	
Depth	2.10	m	
Water			
Start Depth of Water	1.20	m	
Depth of Water	0.90	m	
75% Full	1.43	m	
25% Full	1.88	m	
75%-25%	0.45	m	
Volume of water (75%-25%)	0.26	m3	
Area of Drainage	9.24	m2	
Area of Drainage (75%-25%)	2.55	m2	
Time			
75% Full	N/A	min	
25% Full	N/A	min	
Time 75% to 25%	N/A	min	
Time 75% to 25% (sec)	N/A	sec	



f = Fail or Fail m/min

Project Reference: 5728

Contract name: Affordable Housing

Old Road, Hayestown, Rush, Co. Dublin Location:

Test No: SA03

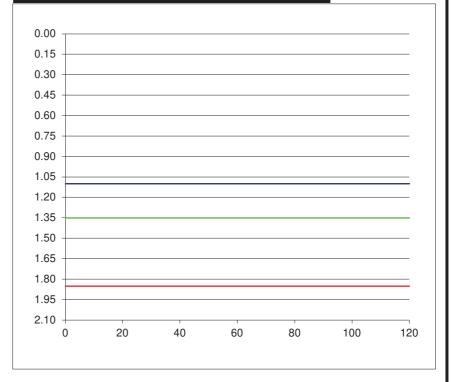
22/05/2020 Date:

Ground	Conditions

From	То	
0.00	0.30	TOPSOIL.
0.30	2.10	Firm grey brown slightly sandy gravelly silty CLAY with medium cobble content.

0.00	0.30
0.30	2.10
Elapsed Time	Fall of Water
(mins)	(m)
0	1.10
0.5	1.10
1	1.10
1.5	1.10
2	1.10
2.5	1.10
3	1.10
3.5	1.10
4	1.10
4.5	1.10
5	1.10
6	1.10
7	1.10
8	1.10
9	1.10
10	1.10
12	1.10
14	1.10
16	1.10
18	1.10
20	1.10
25	1.10
30	1.10
40	1.10
50	1.10
60	1.10
75	1.10
90	1.10

Pit Dimensions (m)		
Length (m)	2.30	m
Width (m)	0.30	m
Depth	2.10	m
Water		
Start Depth of Water	1.10	m
Depth of Water	1.00	m
75% Full	1.35	m
25% Full	1.85	m
75%-25%	0.50	m
Volume of water (75%-25%)	0.35	m3
Area of Drainage	10.92	m2
Area of Drainage (75%-25%)	3.29	m2
Time		
75% Full	N/A	min
25% Full	N/A	min
Time 75% to 25%	N/A	min
Time 75% to 25% (sec)	N/A	sec



<u>Fail</u> f = <u>Fail</u> or m/min m/s

1.10

120

Project Reference: 5728

Contract name: Affordable Housing

Location: Old Road, Hayestown, Rush, Co. Dublin

Test No: SA04

Date: 22/05/2020

Ground	Conditi	ons

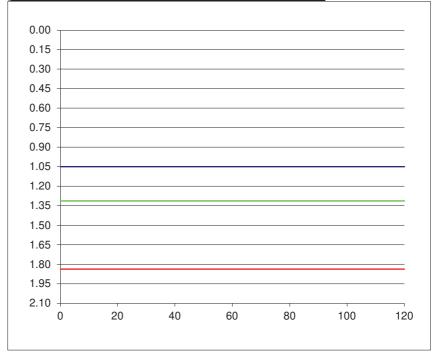
ı	From	То	
ı	0.00	0.40	TOPSOIL.
	0.40	0.70	Grey silty slightly gravelly SAND.
ı	0.70	2 10	Firm grey brown slightly sandy gravelly silty CLAY with high cobble content.

0.70	2.10	
Elapsed Time	Fall of Water	
(mins)	(m)	
0	1.05	
0.5	1.05	
1	1.05	
1.5	1.05	
2	1.05	
2.5	1.05	
3	1.05	
3.5	1.05	
4	1.05	
4.5	1.05	
5	1.05	
5 6 7	1.05	
	1.05	
8	1.05	
9	1.05	
10	1.05	
12	1.05	
14	1.05	
16	1.05	
18	1.05	
20	1.05	
25	1.05	
30	1.05	
40	1.05	
50	1.05	
60	1.05	
75	1.05	
90	1.05	

120

1.05

Pit Dimensions (m)		
Length (m)	1.70	m
Width (m)	0.30	m
Depth	2.10	m
Water		
Start Depth of Water	1.05	m
Depth of Water	1.05	m
75% Full	1.31	m
25% Full	1.84	m
75%-25%	0.53	m
Volume of water (75%-25%)	0.27	m3
Area of Drainage	8.40	m2
Area of Drainage (75%-25%)	2.61	m2
Time		
75% Full	N/A	min
25% Full	N/A	min
Time 75% to 25%	N/A	min
Time 75% to 25% (sec)	N/A	sec



f = Fail or Fail m/min

SA01 Sidewall



SA01 Spoil



SA02 Sidewall



SA02 Spoil



SA03 Sidewall



SA03 Spoil



SA04 Sidewall



SA04 Spoil



Appendix 5 Groundwater Monitoring

Groundwater Readings

BH No:	Depth to water - mbgl	Depth to water - m.O.D				
	Round 1 - 24/06/2020					
BH01	1.86	17.39				
BH03	1.05	17.27				
BH04	2.15	16.76				
	Round 2 - 30/06/2020					
BH01	1.78	17.47				
BH03	1.09	17.23				
BH04	2.08	16.83				
	Round 3 - 06/07/2020					
BH01	1.82	17.43				
BH03	1.10	17.22				
BH04	2.10	16.81				

Appendix 6 Geotechnical Soil Laboratory Test Results

Classification Tests in accordance with BS1377: Part 4

Client	Fingal County Council
Site	Hayestown Housing, Rush
S.I. File No	5728 / 20
Test Lab	Site Investigations Ltd., Carhugar The Grange, 12th Lock Rd., Lucan Co. Dublin. Tel (01) 6108768 Email info@siteinvestigations.ie
Report Date	10th June 2020

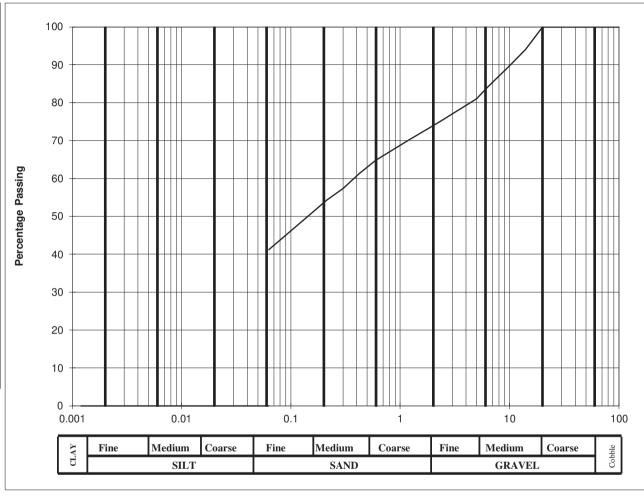
Hole ID	Depth	Sample	Lab Ref	Sample	Natural	Liquid	Plastic	Plastic	Min. Dry	Particle	%	Comments	Remarks C=Clay;
		No	No.	Type	Moisture	Limit	Limit	Index	Density	Density	passing		M=Silt Plasticity:
					Content	%	%	%	Mg/m ³	Mg/m^3	425um		L=Low; I=Intermediate;
					%								H =High; V =Very High;
													E=Extremely High
TP01	1.00	MK06	20/281	В	22.8	33	20	13			61.3		CL
TP02	1.00	MK10	20/282	В	13.8	34	21	13			61.7		CL
TP03	1.00	MK13	20/283	В	20.4	31	18	13			57.6		CL
TP04	1.00	MK37	20/284	В	14.3	32	20	12			54.7		CL
TP05	1.00	MK30	20/285	В	19.4	35	21	14			65.8		CL
TP06	1.00	MK03	20/286	В	22.7	36	21	15			63.7		CL
TP07	0.80	MK16	20/287	В	22.6	34	20	14			69.8		CL
TP08	1.00	MK20	20/288	В	24.6	32	18	14			74.7		CL
TP09	1.00	MK23	20/289	В	29.5	33	19	14			72.6		CL
TP10	1.00	MK34	20/290	В	27.9	34	20	14			55.2		CL
TP11	1.00	MK27	20/291	В	34.4	31	18	13			74.9		CL
TP12	1.50	MK41	20/292	В	14.5	34	21	13			68.3		CL
TP13	1.00	MK44	20/293	В	17.1	35	20	15			68.1		CL
TP14	1.50	MK48	20/294	В	17.6	36	19	17			66.7		CL
TP15	1.50	MK52	20/295	В	19.5	34	19	15			70.3		CL
TP16	0.50	MK56	20/296	В	17.3	30	20	10			84.0		CL
TP17	1.00	MK59	20/297	В	27.1	25	NP				97.4		
TP18	1.50	MK63	20/298	В	24.5	27	NP				95.9		

Printed 15/06/2020 _____Paddy McGonagle Sheet 1 of 1 ______Pathy McGonagle Site Investigations Ltd

BS Sieve	Percent	Hydrometer	analysis
size, mm	passing	Diameter, mm	% passing
100	100	0.0630	
90	100	0.0200	
75	100	0.0060	
63	100	0.0020	
50	100		
37.5	100		
28	100		
20	100		
14	94		
10	89.7		
6.3	84		
5.0	81		
2.36	75.2		
2.00	73.9		
1.18	70		
0.600	64.8		
0.425	61.3		
0.300	57.3		
0.212	54.2		
0.150	50.5		
0.063	41		

Cobbles, %	0
Gravel, %	26
Sand, %	33
Clay / Silt, %	41

Remarks:



Client:	Fingal County Council
Project:	Hayestown Housing, Rush

Lab. No:	20/281	
Sample No:	MK06	

Hole ID :	TP 01
Depth, m:	1.00

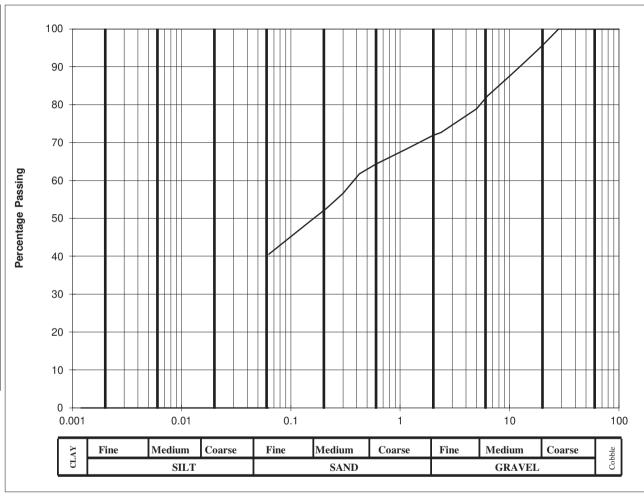
<u> </u>	0.11 11 12 2011 12 2011
Material description:	slightly sandy slightly gravelly silty CLAY

Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour.

Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve	Percent	Hydrometer	analysis
size, mm	passing	Diameter, mm	% passing
100	100	0.0630	
90	100	0.0200	
75	100	0.0060	
63	100	0.0020	
50	100		
37.5	100		
28	100		
20	95.6		
14	91.4		
10	87.5		
6.3	82.3		
5.0	78.9		
2.36	72.6		
2.00	71.9		
1.18	68.5		
0.600	64.3		
0.425	61.7		
0.300	56.6		
0.212	52.6		
0.150	49.2		
0.063	41		

Cobbles, %	0
Gravel, %	28
Sand, %	31
Clay / Silt, %	41



Client:	Fingal County Council
Project:	Hayestown Housing, Rush

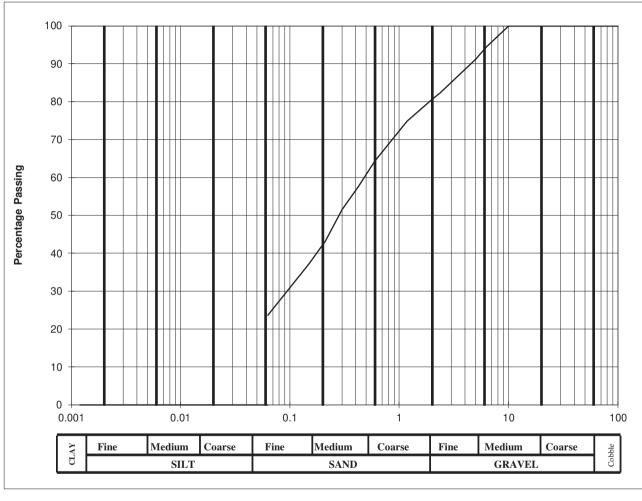
Lab. No:	20/282
Sample No:	MK10

Hole ID:	TP 02
Depth, m:	1.00

Material description:	slightly sandy slightly gravelly silty CLAY
Domontra	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour.
Remarks:	Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve	Percent	Hydrometer	analysis
size, mm	passing	Diameter, mm	% passing
100	100	0.0630	
90	100	0.0200	
75	100	0.0060	
63	100	0.0020	
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	94.4		
5.0	91.1		
2.36	82.3		
2.00	80.6		
1.18	74.8		
0.600	64.3		
0.425	57.6		·
0.300	51.5		
0.212	43.2		
0.150	37.2		
0.063	24		

Cobbles, %	0
Gravel, %	19
Sand, %	57
Clay / Silt, %	24



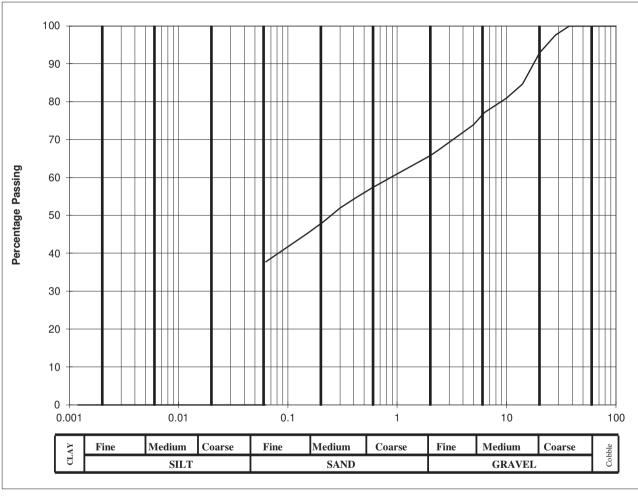
Client:	Fingal County Council	Lab. No:	20/283	
Project:	Hayestown Housing, Rush	Sample No:	MK13	

Project: Hayestown Housing, Rush Sample No: MK13 Depth, m: 1.00	Client:	Fingal County Council	Lab. No :	20/283	Hole ID:	TP 03
		Hayestown Housing, Rush	Sample No:	MK13	Depth, m:	1.00

Material description :	sandy slightly gravelly silty CLAY
	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour.
Remarks :	Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve	Percent	Hydrometer	analysis
size, mm	passing	Diameter, mm	% passing
100	100	0.0630	
90	100	0.0200	
75	100	0.0060	
63	100	0.0020	
50	100		
37.5	100		
28	97.6		
20	92.8		
14	84.6		
10	80.9		
6.3	77.1		
5.0	73.9		
2.36	67.1		
2.00	65.7		
1.18	62.1		
0.600	57.3		
0.425	54.7		
0.300	51.9		
0.212	48.3		
0.150	45.2		
0.063	38		

Cobbles, %	0
Gravel, %	34
Sand, %	28
Clay / Silt, %	38



Client:	Fingal County Council	
Project:	Hayestown Housing, Rush	

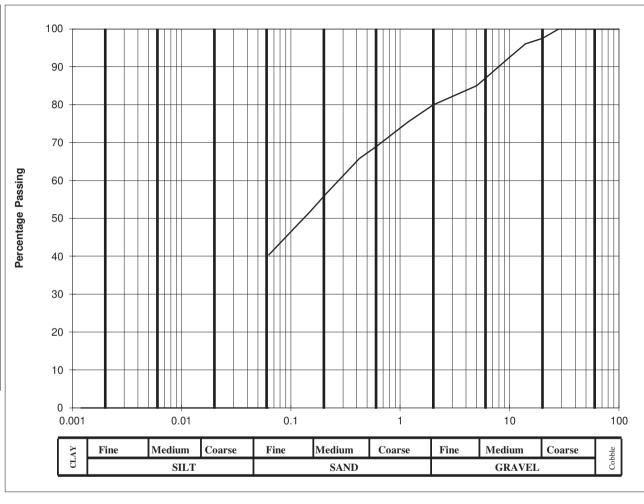
Lab. No :	20/284
Sample No:	MK37

Hole ID:	TP 04
Depth, m:	1.00

Material description:	slightly sandy slightly gravelly silty CLAY
	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour.
	Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve	Percent	Hydrometer analysis	
size, mm	passing	Diameter, mm	% passing
100	100	0.0630	
90	100	0.0200	
75	100	0.0060	
63	100	0.0020	
50	100		
37.5	100		
28	100		
20	97.5		
14	96		
10	92.5		
6.3	87.4		
5.0	85		
2.36	80.8		
2.00	79.9		
1.18	75.4		
0.600	68.8		
0.425	65.8		
0.300	61.2		
0.212	56.6		
0.150	51.8		
0.063	40		

Cobbles, %	0
Gravel, %	20
Sand, %	40
Clay / Silt, %	40



Client:	Fingal County Council
Project:	Hayestown Housing, Rush

Lab. No:	20/285
Sample No:	MK30

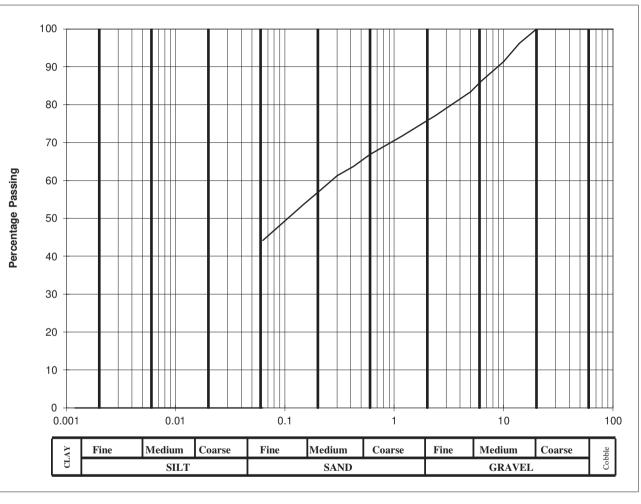
Hole ID:	TP 05
Depth, m:	1.00

Material description:	sandy slightly gravelly silty CLAY
	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour.
Remarks:	Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve	Percent	Hydrometer	analysis
size, mm	passing	Diameter, mm	% passing
100	100	0.0630	
90	100	0.0200	
75	100	0.0060	
63	100	0.0020	
50	100		
37.5	100		
28	100		
20	100		
14	96.2		
10	91.3		
6.3	86.2		
5.0	83.4		
2.36	77		
2.00	75.8		
1.18	71.7		
0.600	66.8		
0.425	63.7		
0.300	61.2		
0.212	57.4		
0.150	53.8		
0.063	44		

Cobbles, %	0
Gravel, %	24
Sand, %	32
Clay / Silt, %	44

Remarks:



Client:	Fingal County Council
Project:	Hayestown Housing, Rush

Lab. No :	20/286
Sample No:	MK03

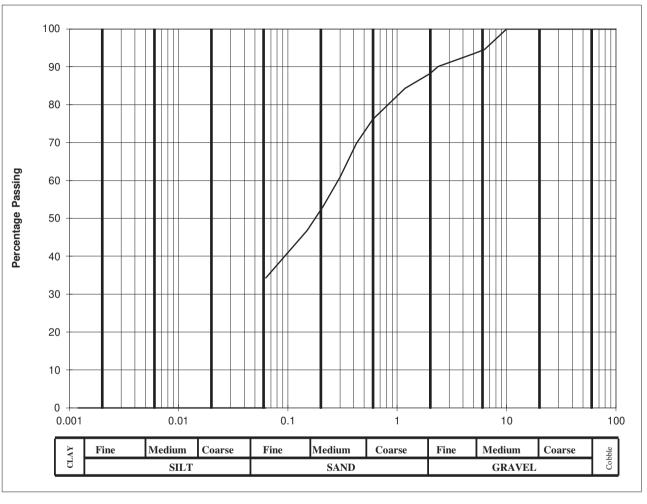
L	Hole ID:	TP 06
	Depth, m:	1.00

Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour.

Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve	Percent	Hydrometer analysis	
size, mm	passing	Diameter, mm	% passing
100	100	0.0630	
90	100	0.0200	
75	100	0.0060	
63	100	0.0020	
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	94.5		
5.0	93.4		
2.36	90		
2.00	88.2		
1.18	84.3		
0.600	76.1		
0.425	69.8		
0.300	60.9		
0.212	53.3		
0.150	46.8		
0.063	34		

Cobbles, %	0
Gravel, %	12
Sand, %	54
Clay / Silt, %	34



Client:	Fingal County Council	
Project:	Hayestown Housing, Rush	

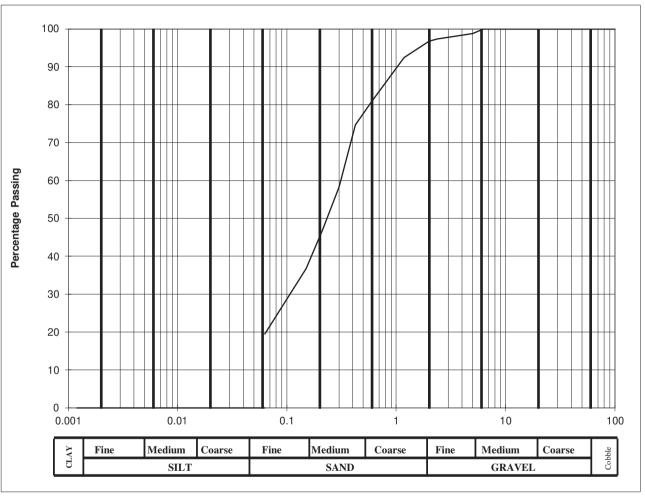
Lab. No :	20/287
Sample No:	MK16

Hole ID:	TP 07
Depth, m:	0.80

Material description:	sandy slightly gravelly silty CLAY
Domonica	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour.
Remarks:	Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve	Percent	Hydrometer analysis	
size, mm	passing	Diameter, mm	% passing
100	100	0.0630	
90	100	0.0200	
75	100	0.0060	
63	100	0.0020	
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5.0	98.7		
2.36	97.3		
2.00	96.7		
1.18	92.4		
0.600	80.8		
0.425	74.7		
0.300	58.3		
0.212	46.9		
0.150	36.7		
0.063	20		

Cobbles, %	0
Gravel, %	3
Sand, %	77
Clay / Silt, %	20



Client:	Fingal County Council
Project:	Hayestown Housing, Rush

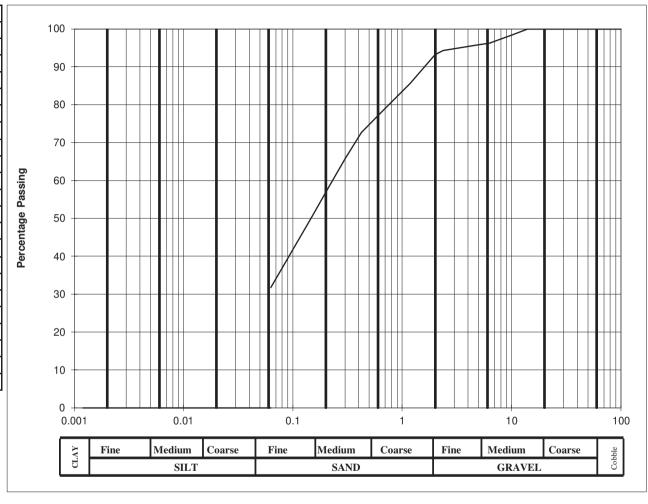
Lab. No:	20/288
Sample No:	MK20

Hole ID:	TP 08
Depth, m:	1.00

Material description:	very sandy slightly gravelly silty CLAY
Domonica	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour.
Remarks:	Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve	Percent	Hydrometer analysis	
size, mm	passing	Diameter, mm	% passing
100	100	0.0630	
90	100	0.0200	
75	100	0.0060	
63	100	0.0020	
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	98.3		
6.3	96.2		
5.0	95.8		
2.36	94.3		
2.00	93.2		
1.18	85.6		
0.600	77		
0.425	72.6		
0.300	65.7		
0.212	58.1		
0.150	50.5		
0.063	32		

Cobbles, %	0
Gravel, %	7
Sand, %	61
Clay / Silt, %	32



Client:	Fingal County Council
Project:	Hayestown Housing, Rush

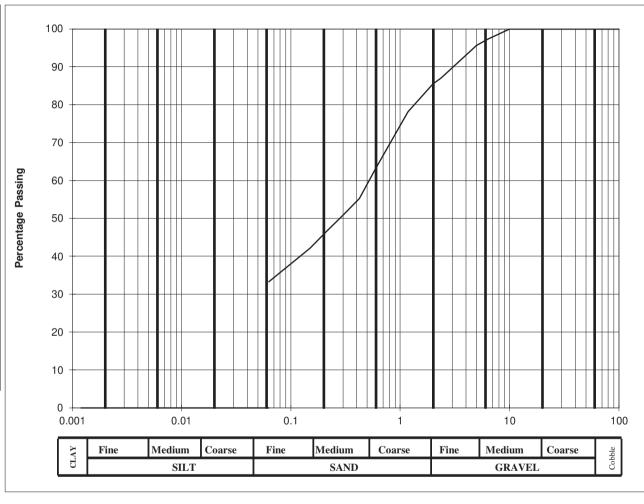
Lab. No:	20/289	Hole ID :	
Sample No:	MK23	Depth, m:	

Material description:	sandy slightly gravelly silty CLAY
	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour.
Remarks :	Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

TP 09 1.00

BS Sieve	Percent	Hydrometer analysis	
size, mm	passing	Diameter, mm	% passing
100	100	0.0630	
90	100	0.0200	
75	100	0.0060	
63	100	0.0020	
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	97.2		
5.0	95.6		
2.36	87		
2.00	85.5		
1.18	78.1		
0.600	63.2		
0.425	55.2		
0.300	50.8		
0.212	46.5		
0.150	42.1		
0.063	33		

Cobbles, %	0
Gravel, %	15
Sand, %	53
Clay / Silt, %	33



Client:	Fingal County Council
Project:	Hayestown Housing, Rush

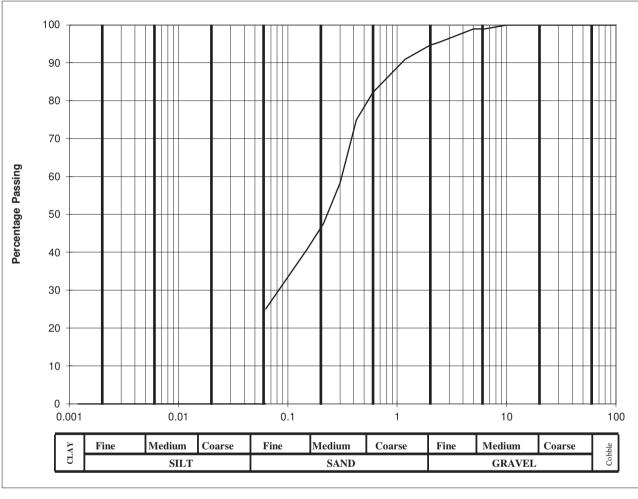
Lab. No:	20/290
Sample No:	MK34

L	Hole ID:	TP 10
	Depth, m:	1.00

Material description:	sandy slightly gravelly silty CLAY
Damanta	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour.
Remarks :	Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve	Percent	Hydrometer	analysis
size, mm	passing	Diameter, mm	% passing
100	100	0.0630	
90	100	0.0200	
75	100	0.0060	
63	100	0.0020	
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	98.9		
5.0	98.9		
2.36	95.3		
2.00	94.6		
1.18	90.9		
0.600	82.1		
0.425	74.9		
0.300	58.3		
0.212	47.5		
0.150	40.8		
0.063	25		

Cobbles, %	0
Gravel, %	5
Sand, %	70
Clay / Silt, %	25



Client:	Fingal County Council	
Project:	Hayestown Housing, Rush	

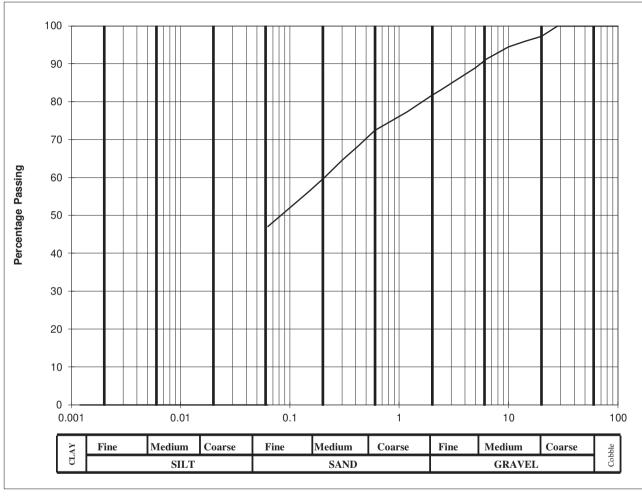
Lab. No:	20/291
Sample No:	MK27

Hole ID:	TP 11
Depth, m:	1.00

Material description:	very sandy slightly gravelly silty CLAY
Remarks:	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour.
	Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve	Percent	Hydrometer	analysis
size, mm	passing	Diameter, mm	% passing
100	100	0.0630	
90	100	0.0200	
75	100	0.0060	
63	100	0.0020	
50	100		
37.5	100		
28	100		
20	97.2		
14	95.9		
10	94.4		
6.3	91.2		
5.0	88.9		
2.36	82.9		
2.00	81.7		
1.18	77.3		
0.600	72.4		
0.425	68.3		
0.300	64.5		
0.212	60.2		
0.150	56.3		
0.063	47		

Cobbles, %	0
Gravel, %	18
Sand, %	35
Clay / Silt, %	47



Client:	Fingal County Council
Project:	Hayestown Housing, Rush

Lab. No:	20/292
Sample No:	MK41

1	Hole ID:	TP 12
ı	Depth, m:	1.50

Material description :	sandy slightly gravelly silty CLAY
	Calla anish alam an alle annesses harman 1

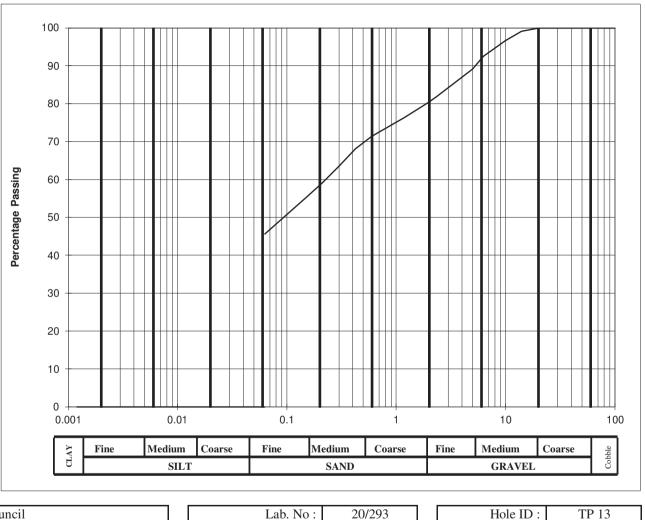
Remarks:

Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour.

Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve	Percent	Hydrometer	analysis
size, mm	passing	Diameter, mm	% passing
100	100	0.0630	
90	100	0.0200	
75	100	0.0060	
63	100	0.0020	
50	100		
37.5	100		
28	100		
20	100		
14	99.1		
10	96.6		
6.3	92.5		
5.0	89.1		
2.36	81.9		
2.00	80.4		
1.18	76.3		
0.600	71.4		
0.425	68.1		
0.300	63.5		
0.212	59.1		
0.150	55.2		
0.063	46		

Cobbles, %	0
Gravel, %	20
Sand, %	34
Clay / Silt, %	46



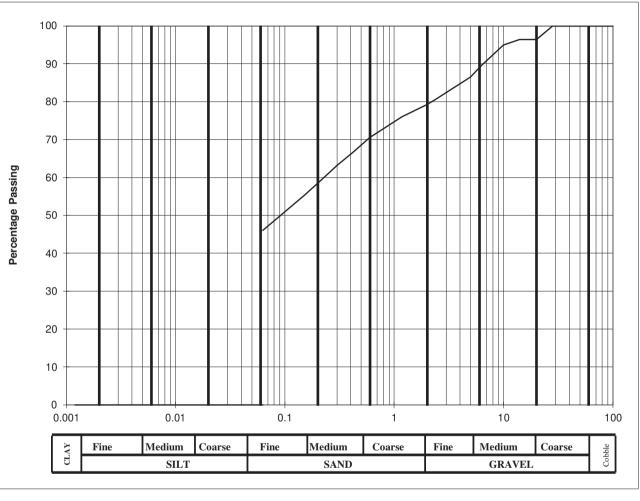
Client:	Fingal County Council	Lab. No:	20/293	Hole ID:
Project:	Hayestown Housing, Rush	Sample No:	MK44	Depth, m:

1	Material description:	slightly sandy slightly gravelly silty CLAY
ı		Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour.
Remarks:	Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt	

TP 13

BS Sieve	Percent	Hydrometer analysi	
size, mm	passing	Diameter, mm	% passing
100	100	0.0630	
90	100	0.0200	
75	100	0.0060	
63	100	0.0020	
50	100		
37.5	100		
28	100		
20	96.4		
14	96.4		
10	94.9		
6.3	89.5		
5.0	86.5		
2.36	80.5		
2.00	79.2		
1.18	76		
0.600	70.5		
0.425	66.7		
0.300	63.2		
0.212	59.1		
0.150	55.2		
0.063	46		

Cobbles, %	0
Gravel, %	21
Sand, %	33
Clay / Silt, %	46



Client:	Fingal County Council	
Project:	Hayestown Housing, Rush	Sa

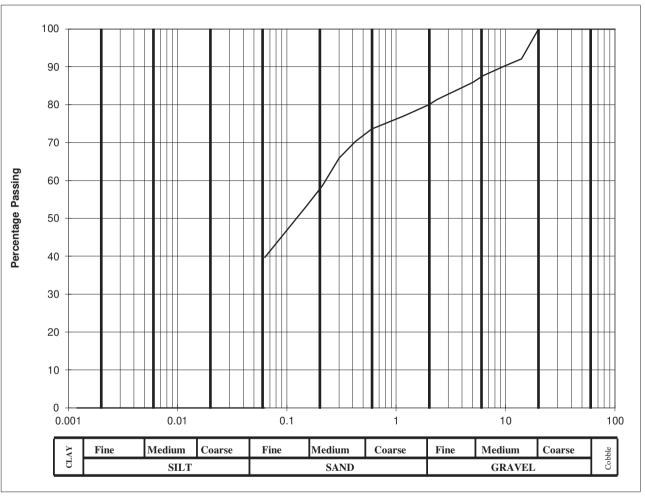
Lab. No : 20/294	Hole I
Sample No: MK48	Depth, 1

Hole ID:	TP 14
Depth, m:	1.50

Material description:	slightly sandy slightly gravelly silty CLAY
	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour.
Remarks:	Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve	Percent	Hydrometer analysis		
size, mm	passing	Diameter, mm	% passing	
100	100	0.0630		
90	100	0.0200		
75	100	0.0060		
63	100	0.0020		
50	100			
37.5	100			
28	100			
20	100			
14	92.1			
10	90.3			
6.3	87.7			
5.0	85.8			
2.36	81.3			
2.00	80			
1.18	77			
0.600	73.6			
0.425	70.3			
0.300	65.9			
0.212	58.6			
0.150	53.1			
0.063	40			

Cobbles, %	0
Gravel, %	20
Sand, %	40
Clay / Silt, %	40



Client:	Fingal County Council
Project:	Hayestown Housing, Rush

Lab. No:	20/295
Sample No:	MK52

Hole ID:	TP 15
Depth, m:	1.50

Material description:	sandy	slightly	gravelly silty CL	ΔY
	C '1	5.1 1	21 1	

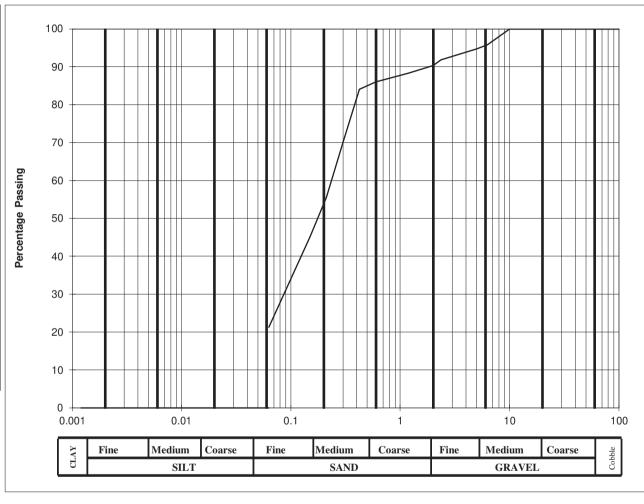
Remarks:

Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour.

Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve	Percent	Hydrometer analysis	
size, mm	passing	Diameter, mm	% passing
100	100	0.0630	
90	100	0.0200	
75	100	0.0060	
63	100	0.0020	
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	95.8		
5.0	94.7		
2.36	91.8		
2.00	90.3		
1.18	88.3		
0.600	86		
0.425	84		
0.300	70.1		
0.212	55.6		
0.150	45.2		
0.063	21		

Cobbles, %	0
Gravel, %	10
Sand, %	69
Clay / Silt, %	21



Client:	Fingal County Council	
Project:	Hayestown Housing, Rush	

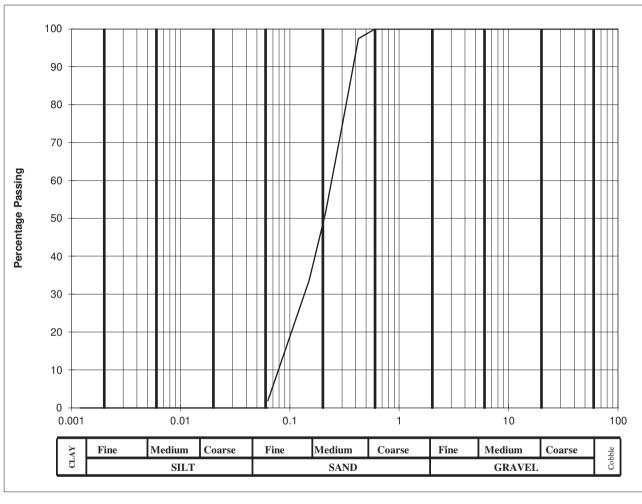
Lab. No:	20/296
Sample No:	MK56

Hole ID:	TP 16	
Depth, m:	0.50	

Material description:	very sandy slightly gravelly silty CLAY
Damanisa	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour.
Remarks:	Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve	Percent	Hydrometer analysis	
size, mm	passing	Diameter, mm	% passing
100	100	0.0630	
90	100	0.0200	
75	100	0.0060	
63	100	0.0020	
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5.0	100		
2.36	100		
2.00	100		
1.18	100		
0.600	100		
0.425	97.4		
0.300	74.3		
0.212	51.3		
0.150	33.6		
0.063	2		

Cobbles, %	0
Gravel, %	0
Sand, %	98
Clay / Silt, %	2



Client:	Fingal County Council	
Project:	Hayestown Housing, Rush	

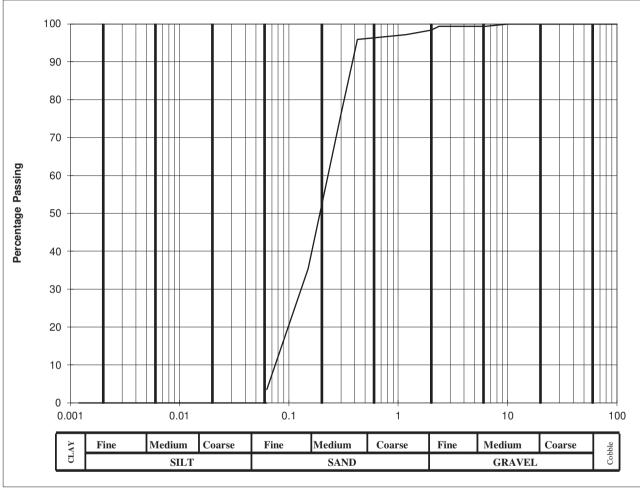
Lab. No :	20/297
Sample No:	MK59

Hole ID:	TP 17
Depth, m:	1.00

Material description:	slightly silty SAND
Remarks:	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour.
	Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

BS Sieve	Percent	Percent Hydrometer		
size, mm	passing	Diameter, mm	% passing	
100	100	0.0630		
90	100	0.0200		
75	100	0.0060		
63	100	0.0020		
50	100			
37.5	100			
28	100			
20	100			
14	100			
10	100			
6.3	99.3			
5.0	99.3			
2.36	99.3			
2.00	98.3			
1.18	97.1			
0.600	96.3			
0.425	95.9			
0.300	76.3			
0.212	55.6			
0.150	35.4			
0.063	4			

Cobbles, %	0
Gravel, %	2
Sand, %	94
Clay / Silt, %	4



Client:	Fingal County Council	Lab. No:	20/298	Hole ID :	TP 18
Project:	Hayestown Housing, Rush	Sample No:	MK63	Depth, m:	1.50

1	Material description :	slightly silty slightly gravelly SAND
ı	Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour.
ı		Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified as clay or silt

California Bearing Ratio (CBR) In accordance with BS1377: Part 4: Method 7

Client	Fingal County Council
Site	Hayestown Housing, Rush
S.I. File No	5728 / 20
Test Lab	Site Investigations Ltd., Carhugar The Grange, 12th Lock Rd., Lucan Co. Dublin. Tel (01) 6108768 Email info@siteinvestigations.ie
Report Date	10th June 2020

CBR No	Depth	Sample	Sample	Lab Ref	CBR Value Top	Moisture Content (%)	Remarks/Material Description
	(mBGL)	No	Type		(%)		
TP01	0.50	MK70	U	20/299	7.3	16.5	
TP02	0.50	MK71	U	20/300	8.9	15.5	
TP03	0.50	MK72	U	20/301	8.1	15.0	
TP04	0.50	MK73	U	20/302	8.1	16.8	
TP05	0.50	MK74	U	20/303	8.5	12.1	
TP06	0.50	MK75	U	20/304	7.3	19.1	
TP07	0.50	MK76	U	20/305	9.3	11.3	
TP08	0.50	MK77	U	20/306	11.7	12.6	
TP09	0.50	MK78	U	20/307	5.8	24.3	
TP10	0.50	MK79	U	20/308	5.8	27.9	
TP11	0.50	MK80	U	20/309	5.7	27.6	
TP12	0.50	MK81	U	20/310	6.6	15.9	
TP13	0.50	MK82	U	20/311	7.1	15.2	
TP14	0.50	MK83	U	20/312	10.0	10.5	
TP15	0.50	MK84	U	20/313	6.9	13.0	
TP16	0.50	MK85	U	20/314	6.6	20.4	
TP17	0.50	MK86	U	20/315	6.9	15.2	
TP18	0.50	MK87	U	20/316	8.5	20.0	

_____Paddy McGonagle
Site Investigations Ltd

Chemical Testing In accordance with BS 1377: Part 3

Client	Fingal County Council
Site	Hayestown Housing, Rush
S.I. File No	5728 / 20
Test Lab	Site Investigations Ltd., Carhugar The Grange, 12th Lock Rd., Lucan Co. Dublin. Tel (01) 6108768 Email:info@siteinvestigations.ie
Report Date	10th May 2020

Hole Id	Depth	Sample	Lab Ref	рН	Water Soluble	Water Soluble	Acid Soluble	Acid Soluble	Chloride ion	% passing 2mm
	(mBGL)	No		Value	Sulphate Content	Sulphate Content	Sulphate Content	Sulphate Content	Content	
					(2:1 Water-soil	(2:1 Water-soil	(2:1 Water-soil	(2:1 Water-soil	(water:soil	
					extract) (SO ₃)	ratio 2:1) %				
					g/L	%	g/L	%		
TP01	1.00	MK06	20/281	8.29	0.126	0.093			0.34	
TP02	1.00	MK10	20/282	8.19	0.124	0.089			0.33	
TP03	1.00	MK13	20/283	8.31	0.117	0.095			0.31	
TP04	1.00	MK37	20/284	8.34	0.120	0.079			0.29	
TP05	1.00	MK30	20/285	8.35	0.119	0.095			0.28	
TP06	1.00	MK03	20/286	8.26	0.123	0.093			0.28	
TP07	0.80	MK16	20/287	8.34	0.119	0.105			0.27	
TP08	1.00	MK20	20/288	8.31	0.116	0.112			0.26	
TP09	1.00	MK23	20/289	8.11	0.122	0.113			0.29	
TP10	1.00	MK34	20/290	8.23	0.120	0.103			0.34	
TP11	1.00	MK27	20/291	8.25	0.119	0.112			0.36	
TP12	1.50	MK41	20/292	8.28	0.124	0.102			0.28	
TP13	1.00	MK44	20/293	8.19	0.124	0.100			0.35	
TP14	1.50	MK48	20/294	8.19	0.126	0.100			0.34	
TP15	1.50	MK52	20/295	8.14	0.127	0.102			0.27	
TP16	0.50	MK56	20/296	8.16	0.122	0.110			0.26	
TP17	1.00	MK59	20/297	8.10	0.115	0.115			0.25	
TP18	1.50	MK63	20/298	8.28	0.116	0.114			0.30	

Paddy McGonagle
Site Investigations Ltd.

Appendix 7 Geotechnical Rock Laboratory Test Results

Point Load Test Broch,E. & Franklin,J.A.,IRSM Point Load Test Method Uniaxial Compressive Strength in accordance with BS1881

Client	Fingal County Council
Site	Hayestown Housing, Rush
S.I. File No	5670 / 19
Test Lab	Site Investigations Ltd., Carhugar The Grange, 12th Lock Rd., Lucan Co. Dublin. Tel (01) 6108768 Email:info@siteinvestigations.ie
Report Date	23rd June 2020

Hole ID	Depth (m)	Lab Ref No.	Sample Type	Diameter / Height (mm)	Test Type	Is (MN/m ²)	Compressive Strength (MPa)	Strength Designation
RC02	13.60	20/325	С	60	PL	1.67		Strong
RC02	15.20	20/326	С	60	PL	4.44		Very Strong
RC02	15.93	20/327	C	60	PL	4.72		Very Strong
RC04	14.25	20/328	C	60	PL	3.06		Strong
RC04	15.45	20/329	С	60	PL	5.00		Very Strong
RC04	16.76	20/330	С	60	PL	3.61		Strong
RC05	14.75	20/331	C	60	PL	1.67		Strong
RC05	16.00	20/332	С	60	PL	4.17		Very Strong
RC05	17.37	20/333	С	60	PL	3.06		Strong

Approx.
Equivalent
UCS Value
(MPa)
50.0
108.5
115.5
75.0
122.5
88.5
50.0
102.0
75.0

Remarks
Tested Diametrically

Appendix 8 Environmental Soil Laboratory Test Results



Unit 7-8 Hawarden Business Park Manor Road (off Manor Lane) Hawarden Deeside CH5 3US

> Tel: (01244) 528700 Fax: (01244) 528701

email: haward encustomers er vices@alsglobal.com

Website: www.alsenvironmental.co.uk

Site Investigations Ltd The Grange Carhugar 12th Lock Road Lucan Co. Dublin

Attention: Stephen Letch

CERTIFICATE OF ANALYSIS

Date of report Generation: 29 June 2020

Customer: Site Investigations Ltd

Sample Delivery Group (SDG): 200608-4

Your Reference:

Location: Rush Report No: 556995

This report has been revised and directly supersedes 556885 in its entirety.

We received 10 samples on Saturday June 06, 2020 and 10 of these samples were scheduled for analysis which was completed on Monday June 29, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager







Validated



CERTIFICATE OF ANALYSIS

 SDG:
 200608-4
 Client Reference:
 Report Number:
 556995

 Location:
 Rush
 Order Number:
 50/A/20
 Superseded Report:
 556885

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22267264	TP2		0.50	
22267265	TP6		0.50	
22267266	TP8		0.50	
22267267	TP10		0.50	
22267269	TP11		0.50	
22267270	TP12		0.50	
22267271	TP14		0.50	
22267272	TP15		0.50	
22267273	TP16		0.50	
22267274	TP18		0.50	

Maximum Sample/Coolbox Temperature (°C):

ISO5667-3 Water quality - Sampling - Part3 -

During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

10.2

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

ΔΙ	S

SDG: 200608-4 Client Reference: 556995 Report Number: Location Rush Order Number: 50/A/20 Superseded Report: 556885 Results Legend 22267267 22267264 22267266 22267269 22267271 22267265 22267270 Lab Sample No(s) X Test No Determination Possible Customer TP10 TP12 TP14 TP2 TP6 TP8 Sample Reference Sample Types -S - Soil/Solid UNS - Unspecified Solid GW - Ground Water **AGS Reference** SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water 0.50 0.50 0.50 0.50 0.50 0.50 0.50 Depth (m) TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage 1kg TUB with Handle (ALE260) 60g VOC (ALE215) RE - Recreational Water 60g VOC (ALE215) 1kg TUB with Handle (ALE260) 250g Amber Jar (ALE210) 250g Amber Jar (ALE210) 1kg TUB with Handle (ALE260) 250g Amber Jar (ALE210) 250g Amber Jar (ALE210) 250g Amber Jar (ALE210) 250g Amber Jar (ALE210) 1kg TUB with Handle (ALE260) DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge Container G - Gas OTH - Other Sample Type S S S S S Anions by Kone (w) All NDPs: 0 Tests: 10 X X X X Χ X Χ CEN Readings All NDPs: 0 Tests: 10 X X Х Χ Χ Χ Chromium III All NDPs: 0 Tests: 10 X X X X Χ X Coronene All NDPs: 0 Tests: 10 Х Х Х X Х X Dissolved Metals by ICP-MS All NDPs: 0 Tests: 10 X X X X X Χ X All Dissolved Organic/Inorganic Carbon NDPs: 0 Tests: 10 Χ X Χ X Х Х Х EPH by GCxGC-FID All NDPs: 0 Tests: 10 X Х Х Х Х X EPH CWG* All NDPs: 0 Tests: 10 Χ Χ Χ X X Χ Fluoride All NDPs: 0 Tests: 10 X Χ X X Χ Χ Х GRO by GC-FID (S) All NDPs: 0 Tests: 10 Χ X X X X Χ Hexavalent Chromium (s) All NDPs: 0 Tests: 10 X X X X Х X All Loss on Ignition in soils NDPs: 0 Tests: 10 Х Х Х Х Х X Mercury Dissolved All NDPs: 0 Tests: 10 Х Х Χ Х Х Χ All Metals in solid samples by OES NDPs: 0 Tests: 10 Χ Χ X Χ Χ Χ PAH by GCMS All NDPs: 0 Tests: 10 X Χ X X X X

	22267271			22267272			22267273			22267274				
	TP14			TP15			TP16		TP18					
	0.50			0.50			0.50			0.50				
250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215) S				
တ	S	S	S	S	S	S	S	S	S	S				
		X			Х			X						
		^			^			^						
		X			X			X						
X			Х			X			Х					
Х			Х			X			Х					
		X			X			X						
		Х			Х			Х						
		^						^						
Х			Х			X			X					
X			Х			Х			Х					
		X			X			X						
	X			X			X			X				
X			Х			Х			Х					
Х			Х			Х			Х					
		X			X			X						
X			Х			Х			Х					
X			Х			X			Х					

Validated

CERTIFICATE OF ANALYSIS

(ALS)

	CERTIFICATE OF ANALYSIS																				
SDG: Location:	200608-4 Rush			nt Ref er Nur			50/A	/20					port N				5569 556				
Results Legend X Test N No Determination	Lab Sample N	o(s)			22267264			22267265			22267266			22267267			22267269			22267270	22267271
Possible Sample Types -	Customer Sample Refere				TP2			TP6			TP8			TP10			TP11			TP12	TP14
S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate	AGS Referen	ıce																	0.		
PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage	Depth (m)				0.50			0.50			0.50			0.50			0.50			0.50	0.50
RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Container		1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)
	Sample Typ	е	တ	တ	S	S		S	S	တ	S	S	S	S	S	S	S	S	တ	S	S
PCBs by GCMS	All	NDPs: 0 Tests: 10		Х			Х			Х			Х			Х			Х		
Phenols by HPLC (W)	All	NDPs: 0 Tests: 10	Х			Х			Х			Х			Х			Х			X
Sample description	All	NDPs: 0 Tests: 10		Х			Х			X			Х			Х			Х		
Total Dissolved Solids on Leachates	All	NDPs: 0 Tests: 10	X			X			X			X			X			X			X
Total Organic Carbon	All	NDPs: 0 Tests: 10		Х			Х			Х			Х			Х			Х		
TPH CWG GC (S)	All	NDPs: 0 Tests: 10		Х			Х			Х			х			Х			Х		
VOC MS (S)	All	NDPs: 0 Tests: 10			v			v			v			v			v			V	

22267274	TP18	0.50	60g VOC (ALE215)	S							×
			250g Amber Jar (ALE210)	S	×		×		×	×	
			1kg TUB with Handle (ALE260)	S		×		×			
22267273	TP16	0.50	60g VOC (ALE215)	S							×
			250g Amber Jar (ALE210)	S	×		×		×	×	
			1kg TUB with Handle (ALE260)	S		×		×			
22267272	TP15	0.50	60g VOC (ALE215)	S							×
			250g Amber Jar (ALE210)	S	×		×		×	×	
			1kg TUB with Handle (ALE260)	S		×		×			
22267271	TP14	0.50	60g VOC (ALE215)	S							×
			250g Amber Jar (ALE210)	S	×		×		×	×	



Client Reference:

Report Number: 50/A/20 Superseded Report: 556995 556885

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	me	edium	0.1mn	n - 2mm	coars	se 2mm -	10mm	very coars	e >10mm
Lab Sample No(s	s) Custor	mer Sample R	ef. Depth (m	1)	Co	olour	Descrip	tion	Inclusions	Inclu	sions 2	
22267264		TP2	0.50		Darl	k Brown	Loamy S	and	Stones	Veg	etation	
22267265		TP6	0.50		Darl	k Brown	Loamy S	and	Stones	Veg	etation	
22267266		TP8	0.50		Darl	k Brown	Loamy S	and	Stones	Veg	etation	
22267267		TP10	0.50		Darl	k Brown	Silty Clay	Loam	Stones	Veg	etation	
22267269		TP11	0.50		Darl	k Brown	Sandy Silt	Loam	Stones	Veg	etation	
22267270		TP12	0.50		Darl	k Brown	Loamy S	and	Stones	Veg	etation	
22267271		TP14	0.50		Darl	k Brown	Sandy Lo	oam	Stones	Veg	etation	
22267272		TP15	0.50		Darl	k Brown	Sandy Lo	oam	Stones	Veg	etation	
22267273		TP16	0.50		Darl	k Brown	Sandy Lo	oam	Stones	Veg	etation	
22267274		TP18	0.50		Darl	k Brown	Sandy Lo	oam	Stones	Veg	etation	

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

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Results Legend # ISO17025 accredited. M mCERTS accredited.		Customer Sample Ref.	TP2	TP6	TP8	TP10	TP11	TP12
aq Aqueous / settled sample. diss.filt Dissolved filtered sample. tot.unfilt Total unfiltered sample. Subcontracted - refer to subcontractor report accreditation status. " % recovery of the surrogate standard to che	ck the	Depth (m) Sample Type Date Sampled Sample Time	0.50 Soil/Solid (S) -					
efficiency of the method. The results of indiv compounds within samples aren't corrected	/idual	Date Received SDG Ref	06/06/2020 200608-4	06/06/2020 200608-4	06/06/2020 200608-4	06/06/2020 200608-4	06/06/2020 200608-4	06/06/2020 200608-4
recovery (F) Trigger breach confirmed 1-3+§@ Sample deviation (see appendix)		Lab Sample No.(s) AGS Reference	22267264	22267265	22267266	22267267	22267269	22267270
Component	LOD/Units	Method						
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	SUB	<10 §	<10 §	<10 §	<10 §	<10 §	<10 §
Moisture Content Ratio (% of as received sample)	%	PM024	10 §	14 §	15 §	19 §	19 8	13
Ali >C12-C16*	<1 mg/kg	SUB	<1	<1	<1	<1	<1	<1
Ali >C16-C21*	<1 mg/kg	SUB	<1 \$	<1	<1 §	<1 <1 §	<1	<1 §
Ali >C21-C35*	<1 mg/kg	SUB	2 §	<1	2 §	<1	<1	<1
Aro >EC12-EC16*	<1 mg/kg	SUB	<1	<1	<1	<1	<1	<1
Aro >EC16-EC21*	<1 mg/kg	SUB	<1 <1 §	<1 §	<1 §	<1	<1 8	<1
Aro >EC21-EC35*	<1 mg/kg	SUB	3 §	1	4 §	<1	<1	<1 \$
Ali >C35-C44*	<1 mg/kg	SUB	<1	<1	<1	<1 §	<1 §	<1
Aro >EC35-EC44*	<1 mg/kg	SUB	<1 <1 §	<1	<1 §	<1 §	<1 §	<1 §
Total Aliphatics >C12-C44*	<4 mg/kg	SUB	5 5 §	4	5 §	4 §	4 §	4 §
Total Aromatics > EC12-EC44*	<4 mg/kg	SUB	6	4 8	7 §	4 §	4 §	4 §
Loss on ignition	<0.7 %	TM018	3.77 § N	4.81	5.43 § M	4.19 § M	3.16 § M	2.67 § M
Organic Carbon, Total	<0.2 %	TM132	0.927 § N	1.1	1.34 § M	0.464 § M	0.47 § M	0.409 § M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 § ‡	<0.6	<0.6 §#	<0.6 §#	<0.6 \$#	<0.6 §#
PCB congener 28	<3 µg/kg	TM168	<3 § N	<3	<3 § M	<3 § M	<3 § M	<3 § M
PCB congener 52	<3 µg/kg	TM168	<3 § N	<3	<3 § M	<3 § M	<3 § M	<3 § M
PCB congener 101	<3 µg/kg	TM168	<3 § N	<3	<3	<3	<3 § M	<3 § M
PCB congener 118	<3 µg/kg	TM168	<3 § N	<3	<3	<3 § M	<3 § M	<3 § M
PCB congener 138	<3 µg/kg	TM168	<3 § N	<3	<3	<3	<3 § M	<3 § M
PCB congener 153	<3 µg/kg	TM168	<3 § N	<3	<3	<3	<3 § M	<3 § M
PCB congener 180	<3 µg/kg	TM168	<3 § N	<3	<3	<3	<3 § M	<3 § M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21 §	<21	<21 §	<21 §	<21 §	<21 §
Chromium, Trivalent	<0.9 mg/kg	TM181	22.1 §	27.3	30.3 §	36.4 §	25.7 §	18.7 §
Antimony	<0.6 mg/kg	TM181	<0.6 § #	<0.6	<0.6	<0.6	<0.6 §#	<0.6 §#
Arsenic	<0.6 mg/kg	TM181	13.1 § N	13.2	13.7	13.7	8.02 § M	13.7 § M
Barium	<0.6 mg/kg	TM181	73.9 § #	98.1	127	119	103 §#	70.9 §#
Cadmium	<0.02 mg/kg	g TM181	0.689 § M	0.706	0.722	0.741	0.794 § M	0.633 § M
Chromium	<0.9 mg/kg	TM181	22.1 § N	27.3	30.3	36.4	25.7 § M	18.7 § M
Copper	<1.4 mg/kg	TM181	13.9 § M	15	16.9	14	12.5 § M	9.08 § M
Lead	<0.7 mg/kg	TM181	25.5 § M	22.2	28.5	21.2	14.8 § M	13.5 § M
Mercury	<0.14 mg/kg	g TM181	<0.14 § N	<0.14	<0.14	<0.14	<0.14 § M	<0.14 § M
Molybdenum	<0.1 mg/kg	TM181	1.15	0.99	0.842	2.17	0.639	1.31
			§ #	\$ #	§#	§#	§#	§ #

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	Results Legend IS017025 accredited.		Customer Sample Ref.	TP2		TP6		TP8		TP10	TP11		TP12	
# M aq	mCERTS accredited. Aqueous / settled sample.		·											
diss.filt tot.unfilt	Dissolved / filtered sample. Total / unfiltered sample. Subcontracted - refer to subcontractor report f accreditation status.	or	Depth (m) Sample Type Date Sampled	0.50 Soil/Solid (S)		0.50 Soil/Solid (S) -		0.50 Soil/Solid (S)		0.50 Soil/Solid (S) -	0.50 Soil/Solid (S) -		0.50 Soil/Solid (S)	
**	% recovery of the surrogate standard to check efficiency of the method. The results of individ	ual	Sample Time Date Received	. 06/06/2020		06/06/2020		06/06/2020		06/06/2020	. 06/06/2020		. 06/06/2020	
(F)	compounds within samples aren't corrected fo recovery Trigger breach confirmed	r the	SDG Ref Lab Sample No.(s)	200608-4 22267264		200608-4 22267265		200608-4 22267266		200608-4 22267267	200608-4 22267269		200608-4 22267270	
(F) 1-3+§@	Sample deviation (see appendix)	LOD/Units	AGS Reference											
Compo Nickel	nent	<0.2 mg/k		22.1		27.8		29.3		45.8	23.3		19.6	
Calaniu		<1 ma///	. TM404	-1	§ M	-1	§ M	-1	§ M	§ M	1	§ M	-1	§ M
Seleniu	π	<1 mg/kg	TM181	<1	§#	<1	§#	<1	§#	<1 §#	<1	§#	<1	§#
Zinc		<1.9 mg/k	g TM181	56.9	0.14	59		74.2		73.4	58.8		41.3	
Coroner	ne	<200 µg/k	g TM410	<200	§ M	<200	§ M	<200	§ M	§ M <200	<200	§ M	<200	§ M
14: 1	011 - 040 040			-5	§	.5	§	.5	§	§	.5	§	.5	§
Mineral	Oil >C10-C40	<5 mg/kg	TM415	<5	§	<5	§	<5	§	<5 §	<5	§	<5	§
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Results Legend # ISO17025 accredited. M mCERTS accredited.		Customer Sample Ref.	TP14	TP15	TP16	TP18	
M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample.		Depth (m)	0.50	0.50	0.50	0.50	
tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor repor	t for	Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	
accreditation status. ** % recovery of the surrogate standard to chec	ck the	Date Sampled Sample Time	-	-	-	-	
efficiency of the method. The results of indiv compounds within samples aren't corrected	idual	Date Received SDG Ref	06/06/2020 200608-4	06/06/2020 200608-4	06/06/2020 200608-4	06/06/2020 200608-4	
recovery (F) Trigger breach confirmed		Lab Sample No.(s)	22267271	22267272	22267273	22267274	
1-3+§@ Sample deviation (see appendix) Component	LOD/Units	AGS Reference Method					
Total Aliphatics & Aromatics	<10 mg/kg	SUB	<10	12.1	<10	23	
>C5-C44			§	§	§	§	
Moisture Content Ratio (% of as	%	PM024	13	12	16	15	
received sample) Ali >C12-C16*	<1 mg/kg	SUB	<1 <1	<1 <1	<1 <1	<1 <1	
MI 2012-010	1 mg/kg	300	§	§	\ \ \ \ \ \ \ \	§	
Ali >C16-C21*	<1 mg/kg	SUB	<1	<1	<1	<1	
			§	§	§	§	
Ali >C21-C35*	<1 mg/kg	SUB	<1 §	3 §	<1 §	5	
Aro >EC12-EC16*	<1 mg/kg	SUB	<1	<1	<1	\$ <1	
710 2012 2010	99	002	· §	· §	· §	· §	
Aro >EC16-EC21*	<1 mg/kg	SUB	<1	1	<1	2	
A > F004 F005*	.4 8	OUE	§	§	§	§	
Aro >EC21-EC35*	<1 mg/kg	SUB	<1 §	9	<1 §	18 §	
Ali >C35-C44*	<1 mg/kg	SUB	<1	<1	<1	1	
	55		§	§	§	§	
Aro >EC35-EC44*	<1 mg/kg	SUB	<1	<1	<1	2	
		2117	§	§	§	§	
Total Aliphatics >C12-C44*	<4 mg/kg	SUB	4 §	6 §	4 §	8 §	
Total Aromatics > EC12-EC44*	<4 mg/kg	SUB	4	12	4	23	
			§	§	§	§	
Loss on ignition	<0.7 %	TM018	2.49	3.13	2.01	3.56	
0 . 0	-0.0.0/	T14400	§ M	§ M	§ M	§ M	
Organic Carbon, Total	<0.2 %	TM132	0.234 § M	0.914 § M	0.558 § M	1.32 § M	
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6	<0.6	<0.6	<0.6	
,	0 0		§#	§#	§#	§#	
PCB congener 28	<3 µg/kg	TM168	<3	<3	<3	<3	
PCB congener 52	<2	TM168	§ M	§ M	§ M	§ M	
PGB congener 52	<3 μg/kg	1 IVI 100	\	\$ M	\sqrt{3} \sqrt{M}	\sqrt{3} \sqrt{M}	
PCB congener 101	<3 µg/kg	TM168	<3	<3	<3	<3	
			§ M	§ M	§ M	§ M	
PCB congener 118	<3 µg/kg	TM168	<3	<3	<3	<3	
PCB congener 138	<3 µg/kg	TM168	§ M	§ M	§ M	§ M	
FOB congener 130	~5 μg/kg	TIVITOO	\ \{ \} M		\sqrt{3} \{ M	\sqrt{3} \{ M	
PCB congener 153	<3 µg/kg	TM168	<3	<3	<3	<3	
			§ M	§ M	§ M	§ M	
PCB congener 180	<3 µg/kg	TM168	<3	<3	<3	<3 S.M.	
Sum of detected PCB 7	<21 µg/kg	TM168	§ M <21	§ M	§ M <21	§ M <21	
Congeners	Z i pg/ng	1111130	\21 §	§	\§	\ \ \{	
Chromium, Trivalent	<0.9 mg/kg	TM181	32.4	16.2	12.8	11.9	
A	.00 "	T11101	§	§	§	§	
Antimony	<0.6 mg/kg	TM181	<0.6 §#	<0.6 §#	<0.6 §#	<0.6 §#	
Arsenic	<0.6 mg/kg	TM181	20.6	9.85	11.1	13.6	
	5.5 mg/ng		20.0 § M	9.00 § M	§ M	10.0 § M	
Barium	<0.6 mg/kg	TM181	81.7	55.1	46	60.6	
Codmiss	<0.00 "	T14404	§#		§#	§#	
Cadmium	<0.02 mg/kg	TM181	1.82 § M	0.435 § M	0.482 § M	0.582 § M	
Chromium	<0.9 mg/kg	TM181	32.4	16.2	12.8	11.9	
			§ M	§ M	§ M	§ M	
Copper	<1.4 mg/kg	TM181	39.5	17.7	10.8	15.3	
Lood	۸7 · «ا	TM404	§ M		§ M	§ M	
Lead	<0.7 mg/kg	TM181	20.6 § M	24.5 § M	14.9 § M	24.2 § M	
Mercury	<0.14 mg/kg	TM181	<0.14	<0.14	<0.14	<0.14	
			§ M		§ M	§ M	
Molybdenum	<0.1 mg/kg	TM181	3.32	0.474	0.494	0.785	
			§#	§#	§#	§#	

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	Results Legend 017025 accredited. CERTS accredited.		Customer Sample Ref.	TP14		TP15		TP16		TP18		
aq A	queous / settled sample. issolved / filtered sample.		Depth (m)	0.50		0.50		0.50		0.50		
tot.unfilt To	otal / unfiltered sample. ubcontracted - refer to subcontractor report fo	or	Sample Type	Soil/Solid (S)		Soil/Solid (S)		Soil/Solid (S))	Soil/Solid (S)		
** %	ccreditation status. recovery of the surrogate standard to check	the	Date Sampled Sample Time	-				-		-		
co	fficiency of the method. The results of individe ompounds within samples aren't corrected for		Date Received SDG Ref	06/06/2020 200608-4		06/06/2020 200608-4		06/06/2020 200608-4		06/06/2020 200608-4		
(F) Tr	covery rigger breach confirmed		Lab Sample No.(s) AGS Reference	22267271		22267272		22267273		22267274		
1-3+§@ Sa	ample deviation (see appendix)	LOD/Units										
Nickel		<0.2 mg/kg	_	64.5		14.3		17		18.1		
Selenium		<1 mg/kg	TM181	<1	§ M	<1	§ M	<1	§ M	<1	§ M	
Ocicilium		₹1 mg/kg	TIWITOT	`1	§#	``	§#	7	§#	,1	§#	
Zinc		<1.9 mg/kg	g TM181	71.6	0.14	53.6	0.14	40.7		64.5	0.14	
Coronene		<200 µg/kg	g TM410	<200	§ M	<200	§ M	<200	§ M	<200	§ M	
				_	§		§	_	§		§	
Mineral Oi	il >C10-C40	<5 mg/kg	TM415	<5	§	5.72	§	<5	§	7.87	§	
					3		J		3		3	
			+									
			+									
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			+									

ALS

 SDG:
 200608-4
 Client Reference:
 Report Number:
 556995

 Location:
 Rush
 Order Number:
 50/A/20
 Superseded Report:
 556885

GRO by GC-FID (S)								
Results Legend # ISO17025 accredited.		Customer Sample Ref.	TP2	TP6	TP8	TP10	TP11	TP12
M mCERTS accredited. aq Aqueous / settled sample. diss.filit Dissolved / filtered sample. tot.unfilt Total / unfiltered sample.		Depth (m) Sample Type	0.50 Soil/Solid (S)	0.50 Soil/Solid (S)	0.50 Soil/Solid (S)	0.50 Soil/Solid (S)	0.50 Soil/Solid (S)	0.50 Soil/Solid (S)
 Subcontracted - refer to subcontractor report accreditation status. 		Date Sampled	-	-	-	-	-	-
** % recovery of the surrogate standard to check efficiency of the method. The results of individ	dual	Sample Time Date Received	06/06/2020	06/06/2020	06/06/2020	06/06/2020	06/06/2020	06/06/2020
compounds within samples aren't corrected for recovery	or the	SDG Ref	200608-4 22267264	200608-4 22267265	200608-4 22267266	200608-4 22267267	200608-4 22267269	200608-4 22267270
(F) Trigger breach confirmed 1-3+§@ Sample deviation (see appendix)		Lab Sample No.(s) AGS Reference						
GRO Surrogate % recovery**	LOD/Units	Method TM089	108	103	94.8	107	111	107
GIVO Surrogate // recovery	/0	110003	§	§	54.0 §	107 §	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	107 §
Aliphatics >C5-C6	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
			§	§	§	§	§	§
Aliphatics >C6-C8	<10 µg/kg	TM089	<10 §	<10 §	<10 §	<10 §	<10 §	11.5 §
Aliphatics >C8-C10	<10 µg/kg	TM089	<10	<10	<10	<10	<10	16.1
,	175.5		§	§	§	§	§	§
Aliphatics >C10-C12	<10 µg/kg	TM089	<10	<10	<10	<10	<10	25.3
Aromatics >EC5-EC7	<10 ug/kg	TM089	<10	<10	<10 §	\$ <10	<10 §	<10 §
Aromatics >EC5-EC7	<10 µg/kg	11/1009	<10 §	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	\$ S	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	\$ \\
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
			§	§	§	§	§	§
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	<10	<10	<10	<10	10.4
Aromatics >EC10-EC12	<10 µg/kg	TM089	<10	<10	<10	\$ <10	<10 §	§ 17.3
7101101100 - 2010 2012	To pg/kg	1111000	§	§	§	§	§	§ §
GRO >C5-C6	<20 µg/kg	TM089	<20	<20	<20	<20	<20	<20
			§	§	§	§	§	§
GRO >C6-C7	<20 µg/kg	TM089	<20 §	<20 §	<20 §	<20 §	<20 §	<20 §
GRO >C7-C8	<20 µg/kg	TM089	<20	<20	<20	<20	<20	<20
	== 15.15		§.	§	§ §	ş ş	ş.	§ §
GRO >C8-C10	<20 µg/kg	TM089	<20	<20	<20	<20	<20	26.5
ODO > 040 040	400//	TM000	§	§	§	§	§	§
GRO >C10-C12	<20 µg/kg	TM089	<20 §	<20 §	<20 §	<20 §	<20 §	42.6 §
Total Aliphatics >C5-C10	<50 µg/kg	TM089	<50	<50	<50	<50	<50	<50
			§	§	§	§	§	§
Total Aromatics >EC5-EC10	<50 µg/kg	TM089	<50	<50	<50	<50	<50	<50
GRO >C5-C10	<20 µg/kg	TM089	<20	<20 §	\$ <20	\$ <20	\$ <20	\$ <20
GRO - GO O IO	20 µg/ng	1111000	§	§	§	§	§	§ §
				-				
				-				
				 				

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 SDG:
 200608-4
 Client Reference:
 Report Number:
 556995

 Location:
 Rush
 Order Number:
 50/A/20
 Superseded Report:
 556885

GRO by GC-FID (S)							
Results Legend # ISO17025 accredited.		Customer Sample Ref.	TP14	TP15	TP16	TP18	
M mCERTS accredited. aq Aqueous / settled sample.							
diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample.		Depth (m) Sample Type	0.50 Soil/Solid (S)	0.50 Soil/Solid (S)	0.50 Soil/Solid (S)	0.50 Soil/Solid (S)	
* Subcontracted - refer to subcontractor report accreditation status.	for	Date Sampled	-	-	-	-	
** % recovery of the surrogate standard to check efficiency of the method. The results of individ		Sample Time Date Received	. 06/06/2020	06/06/2020	06/06/2020	06/06/2020	
compounds within samples aren't corrected for recovery	or the	SDG Ref	200608-4	200608-4	200608-4	200608-4	
(F) Trigger breach confirmed 1-3+§@ Sample deviation (see appendix)		Lab Sample No.(s) AGS Reference	22267271	22267272	22267273	22267274	
Component	LOD/Units						
GRO Surrogate % recovery**	%	TM089	111	110	105	106	
Aliphatics >C5-C6	<10 µg/kg	TM089	<10 §	<10 §	<10	<10 §	
Aliphatics 200-00	- 10 μg/kg	110009	×10 §	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	~10 §	~10 §	
Aliphatics >C6-C8	<10 µg/kg	TM089	<10	26	<10	<10	
·			§	§	§	§	
Aliphatics >C8-C10	<10 µg/kg	TM089	<10	102	<10	<10	
411.1.11040.040	40 "	T1 1000	§	§	§	§	
Aliphatics >C10-C12	<10 µg/kg	TM089	<10 §	45.2 §	<10	<10 §	
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10	<10	<10	
7.10.11.00.100 200 201	10 µg///g	165	§	§	§	§	
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10	<10	<10	
			§	§	§	§	
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	67.8	<10	<10	
Aromatics >EC10-EC12	<10 maller	TM089	<10 §	§ 29.4	<10	<10 §	
AIUIIIAIIUS /EU IU-EU IZ	<10 µg/kg	TIVIUOS	<10 §	29.4 §	<10 §	<10 §	
GRO >C5-C6	<20 µg/kg	TM089	<20	<20	<20	<20	
	175 5		§	§	§	§	
GRO >C6-C7	<20 µg/kg	TM089	<20	<20	<20	<20	
			§	§	§	§	
GRO >C7-C8	<20 µg/kg	TM089	<20	<20	<20	<20	
GRO >C8-C10	<20 ua/ka	TM089	<20	§ 170	\$ <20	\$ <20	
GRO 200-010	<20 µg/kg	1101009	\20 §	170 §	\20 §	\20 §	
GRO >C10-C12	<20 µg/kg	TM089	<20	74.6	<20	<20	
			§	§	§	§	
Total Aliphatics >C5-C10	<50 µg/kg	TM089	<50	128	<50	<50	
	"		§	§	§	§	
Total Aromatics >EC5-EC10	<50 µg/kg	TM089	<50 §	67.8 §	<50	<50 §	
GRO >C5-C10	<20 µg/kg	TM089	<20	195	<20	<20	
	20 125.13	1000	§	§	§	§ §	
					-		
		+					
		+					
		+					
							 <u> </u>

ALS

 SDG:
 200608-4
 Client Reference:
 Report Number:
 556995

 Location:
 Rush
 Order Number:
 50/A/20
 Superseded Report:
 556885

PAH by GCMS								
Results Legend # ISO17025 accredited. M mCERTS accredited.		Customer Sample Ref.	TP2	TP6	TP8	TP10	TP11	TP12
aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report	: for	Depth (m) Sample Type	0.50 Soil/Solid (S)					
accreditation status. ** % recovery of the surrogate standard to chec		Date Sampled Sample Time	-	-	-	-	-	-
efficiency of the method. The results of indivi compounds within samples aren't corrected f	dual for the	Date Received SDG Ref	06/06/2020 200608-4	06/06/2020 200608-4	06/06/2020 200608-4	06/06/2020 200608-4	06/06/2020 200608-4	06/06/2020 200608-4
recovery (F) Trigger breach confirmed 1-3+§@ Sample deviation (see appendix)		Lab Sample No.(s)	22267264	22267265	22267266	22267267	22267269	22267270
1-3+§@ Sample deviation (see appendix) Component	LOD/Units	AGS Reference Method						
Naphthalene	<9 µg/kg	TM218	<9 § M					
Acenaphthylene	<12 µg/kg	TM218	<12 § M					
Acenaphthene	<8 µg/kg	TM218	<8 § M					
Fluorene	<10 µg/kg	TM218	<10 § M					
Phenanthrene	<15 µg/kg	TM218	25.1 § M	<15 § M	20.3 § M	<15 § M	<15 § M	<15 § M
Anthracene	<16 µg/kg	TM218	<16 § M	<16 § M				
Fluoranthene	<17 µg/kg	TM218	54.4 § M	<17 § M	42.3 § M	<17 § M	<17 § M	<17 § M
Pyrene	<15 µg/kg	TM218	49.3 § M	<15 § M	39.2 § M	<15 § M	<15 § M	<15 § M
Benz(a)anthracene	<14 µg/kg	TM218	36.2 § M	<14 § M	28.2 § M	<14 § M	<14 § M	<14 § M
Chrysene	<10 µg/kg	TM218	38.2 § M	<10 § M	29.3 § M	<10 § M	<10 § M	<10 § M
Benzo(b)fluoranthene	<15 µg/kg	TM218	55.7 § M	<15 § M	47.9 § M	<15 § M	<15 § M	<15 § M
Benzo(k)fluoranthene	<14 µg/kg	TM218	18.3 § M	<14 § M	<14 § M	<14 § M	<14 § M	<14 § M
Benzo(a)pyrene	<15 µg/kg	TM218	39 § M	<15 § M	27 § M	<15 § M	<15 § M	<15 § M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	29.1 § M	<18 § M	24 § M	<18 § M	<18 § M	<18 § M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 § M					
Benzo(g,h,i)perylene	<24 µg/kg	TM218	27.9 § M	<24 § M	<24 § M	<24 § M	<24 § M	<24 § M
PAH, Total Detected USEPA 16	<118 µg/kg	g TM218	373 §	<118 §	258 §	<118 §	<118 §	<118 §
1						•		

ALS

 SDG:
 200608-4
 Client Reference:
 Report Number:
 556995

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 Rush
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 556885

PAH k	y GCMS											
#	Results Legend ISO17025 accredited.		Customer Sample Ref.	TP14	TP15		TP16		TP18			
M aq	mCERTS accredited. Aqueous / settled sample.											
diss.filt tot.unfilt	Dissolved / filtered sample. Total / unfiltered sample.		Depth (m) Sample Type	0.50 Soil/Solid (S)	0.50 Soil/Solid (S)	0.50 Soil/Solid (S))	0.50 Soil/Solid (S)			
*	Subcontracted - refer to subcontractor report for accreditation status.		Date Sampled	-	-	-,	-	<i>'</i>	-			
"	% recovery of the surrogate standard to check efficiency of the method. The results of individu		Sample Time Date Received	. 06/06/2020	06/06/202	0	06/06/2020		06/06/2020			
	compounds within samples aren't corrected for recovery		SDG Ref	200608-4	200608-4	l .	200608-4		200608-4			
(F) 1-3+§@	Trigger breach confirmed Sample deviation (see appendix)		Lab Sample No.(s) AGS Reference	22267271	2226727	2	22267273		22267274			
Compo		LOD/Units										
Naphtha	alene	<9 µg/kg	TM218	9>	<9	M 2	<9	C M	<9	C M		
Acenap	hthylene	<12 µg/kg	TM218	§ N <12	<12	§ M	<12	§ M	<12	§ M		-
	,	1-33	,	§ N	Л	§ M		§ M		§ M		
Acenap	hthene	<8 µg/kg	TM218	<8 § N	<8 //	§ M	<8	§ M	<8	§ M		
Fluoren	е	<10 µg/kg	TM218	<10 § N	<10	§ M	<10	§ M	<10	§ M		
Phenan	threne	<15 µg/kg	TM218	<15 § N	<15	§ M	<15	§ M	84.3	§ M		
Anthrac	ene	<16 µg/kg	TM218	<16	<16		<16		20.9			\neg
Fluoran	thene	<17 µg/kg	TM218	§ N <17	39.7	§ M	<17	§ M	234	§ M		\dashv
Pyrene		<15 µg/kg	TM218	§ N <15	37.4	§ M	<15	§ M	212	§ M		-
				§ N	Л	§ M		§ M		§ M		
Benz(a)	anthracene	<14 µg/kg	TM218	<14 § N	л 30	§ M	<14	§ M	168	§ M		
Chryser	ne	<10 µg/kg	TM218	<10 § N	32.1	§ M	<10	§ M	169	§ M		
Benzo(l)fluoranthene	<15 µg/kg	TM218	<15 § N	53.8	§ M	<15	§ M	200	§ M		
Benzo(l	x)fluoranthene	<14 µg/kg	TM218	<14 § N	<14	§ M	<14	§ M	70	§ M		
Benzo(a	a)pyrene	<15 µg/kg	TM218	<15	33.5		<15		162			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	\$ N <18	24.7	§ M	<18	§ M	128	§ M		\neg
Dibenzo	o(a,h)anthracene	<23 µg/kg	TM218	§ N <23	<23	§ M	<23	§ M	<23	§ M		\dashv
Benzo(g	ı,h,i)perylene	<24 µg/kg	3 TM218	§ N <24	<i>∧</i> <24	§ M	<24	§ M	117	§ M	+	\dashv
PAH, To	otal Detected USEPA 16	<118 µg/kg	g TM218	§ N <118	Д 251	§ M	<118	§ M	1560	§ M	+	\dashv
				§	}	§		§		§		\dashv
												_
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											1	\dashv
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ALS

 SDG:
 200608-4
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 556995

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 556885

VOC MS (S)								
Results Legend # ISO17025 accredited.		Customer Sample Ref.	TP2	TP6	TP8	TP10	TP11	TP12
M mCERTS accredited. aq Aqueous / settled sample. diss.filit Dissolved / filtered sample. tot.unfilt Total / unfiltered sample.		Depth (m) Sample Type	0.50 Soil/Solid (S)					
* Subcontracted - refer to subcontractor report accreditation status. ** % recovery of the surrogate standard to check		Date Sampled	-	-	-	-	-	-
efficiency of the method. The results of indivi	dual	Sample Time Date Received	06/06/2020	06/06/2020	06/06/2020	06/06/2020	06/06/2020	06/06/2020
compounds within samples aren't corrected for recovery (F) Trigger breach confirmed	or the	SDG Ref Lab Sample No.(s)	200608-4 22267264	200608-4 22267265	200608-4 22267266	200608-4 22267267	200608-4 22267269	200608-4 22267270
1-3+§@ Sample deviation (see appendix)		AGS Reference						
Component Dibromofluoromethane**	LOD/Units	Method TM116	109	112	116	117	105	110
			§	§	§	§	§	§
Toluene-d8**	%	TM116	96.5 §	95.6 §	91.3 §	98.1 §	97.2 §	97.7 §
4-Bromofluorobenzene**	%	TM116	89 §	83.6 §	72.2 §	99.1 §	89.7 §	98.1 §
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10 § M	<10 § M	<10	<10 § M	<10 § M	<10 § M
Benzene	<9 µg/kg	TM116	<9 § M	<9 § M	<9	<9 § M	<9 § M	<9 § M
Toluene	<7 µg/kg	TM116	<7	<7	<7	<7	<7	<7
Ethylbenzene	<4 µg/kg	TM116	§ M	<4	<4	§ M	§ M	§ M
p/m-Xylene	<10 µg/kg	TM116	§ M <10	§ M	<10	§ M <10	§ M	§ M <10
o-Xylene	<10 µg/kg		§ #	§ #	§# <10	§# <10	§ #	§ #
C 74,18.118	I pg///g		§ M	§ M	§ M	§ M	§ M	§ M
		+ -						

ALS

 SDG:
 200608-4
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 556995

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VOC MS (S)							
Results Legend # ISO17025 accredited.	C	Customer Sample Ref.	TP14	TP15	TP16	TP18	
M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample.		Depth (m)	0.50	0.50	0.50	0.50	
tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report	for	Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	
accreditation status. ** % recovery of the surrogate standard to check		Date Sampled Sample Time	-	-	-	-	
efficiency of the method. The results of individ compounds within samples aren't corrected for	dual	Date Received SDG Ref	06/06/2020 200608-4	06/06/2020 200608-4	06/06/2020 200608-4	06/06/2020 200608-4	
recovery (F) Trigger breach confirmed 1-3+§@ Sample deviation (see appendix)		Lab Sample No.(s) AGS Reference	22267271	22267272	22267273	22267274	
Component	LOD/Units	Method					
Dibromofluoromethane**	%	TM116	108 §	109 §	123 §	113 §	
Toluene-d8**	%	TM116	98.5	95	99.6	99.7	
4.5. 6. 4. **	0/	T1440	§	§	§	§	
4-Bromofluorobenzene**	%	TM116	99.5 §	80.1 §	95.6 §	80.2 §	
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10	<10	<10	<10	
Benzene	<9 µg/kg	TM116	§ M <9	§ M <9	§ M <9	§ M <9	
T.		T1440	§ M	§ M	§ M	§ M	
Toluene	<7 µg/kg	TM116	<7 § M	<7 § M	<7 § M	<7 § M	
Ethylbenzene	<4 µg/kg	TM116	<4	<4	<4	<4	
p/m-Xylene	<10 µg/kg	TM116	§ M <10	§ M	§ M <10	§ M <10	
			§#	§#	§#	§#	
o-Xylene	<10 µg/kg	TM116	<10 § M	<10 § M	<10 § M	<10 § M	
			J	3	J	J	
]
L							





 SDG:
 200608-4

 Location:
 Rush

Client Reference: Order Number:

50/A/20 Supersed

Report Number: Superseded Report: 556995 556885

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RES	ULTS					REF : BS	EN 12457
Client Reference			Site Location		Rush		
Mass Sample taken (kg)	0.102		Natural Moistui	re Content (%)	13.2		
Mass of dry sample (kg)	0.090		Dry Matter Con		88.3		
Particle Size <4mm	>95%		,	(,			
Case					Land	fill Waste Acce	ntance
SDG	200608-4				Land	Criteria Limits	
Lab Sample Number(s)	22267264						
	22207204					Stable	
Sampled Date	TDO				Inert Waste	Non-reactive	Hazardous
Customer Sample Ref.	TP2				Landfill	Hazardous Waste in Non-	Waste Landfil
Depth (m)	0.50					Hazardous Landfill	
Solid Waste Analysis	Result						
Total Organic Carbon (%)	0.927				3	5	6
Loss on Ignition (%)	3.77				-	-	10
Sum of BTEX (mg/kg)	-				-	-	-
Sum of 7 PCBs (mg/kg)	<0.021				1	-	-
Mineral Oil (mg/kg) PAH Sum of 17 (mg/kg)	<5 -				500	-	-
pH (pH Units)	-				-	-	-
ANC to pH 6 (mol/kg)	-				-	-	-
ANC to pH 4 (mol/kg)	-				-	-	-
Eluate Analysis	C ₂ Conc ⁿ in	10:1 eluate (mg/l)	A 2 10:1 cond	c ⁿ leached (mg/kg)		ues for compliance lea	-
= iduto / tildiyolo	Result	Limit of Detection	Result	Limit of Detection	using i	BS EN 12457-3 at L/S	10 I/Kg
Arsenic	0.00195	<0.0005	0.0195	<0.005	0.5	2	25
Barium	0.0028	<0.0002	0.028	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00489	<0.0003	0.0489	<0.003	2	50	100
Mercury Dissolved (CVAF)	0.000011	<0.00001	0.00011	<0.0001	0.01	0.2	2
Molybdenum	< 0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00113	<0.0004	0.0113	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
0-1	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Seienium		<0.001	0.0112	<0.01	4	50	200
	0.00112	<0.001					
Zinc	0.00112	<2	<20	<20	800	15000	25000
Zinc Chloride			<20 7.38	<20 <5	10	15000 150	25000 500
Zinc Chloride Fluoride	<2	<2					
Zinc Chloride Fluoride Sulphate (soluble)	<2 0.738	<2 <0.5	7.38	<5	10	150	500
Selenium Zinc Chloride Fluoride Sulphate (soluble) Total Dissolved Solids Total Monohydric Phenols (W)	<2 0.738 <2	<2 <0.5 <2	7.38 <20	<5 <20	10 1000	150 20000	500 50000

Leach Test Information

Date Prepared	08-Jun-2020
pH (pH Units)	7.75
Conductivity (µS/cm)	50.20
Temperature (°C)	20.90
Volume Leachant (Litres)	0.888

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
29/06/2020 12:45:38

ALS

 SDG:
 200608-4

 Location:
 Rush

Client Reference: Order Number:

50/A/20

Report Number: Superseded Report: 556995 556885

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RES	ULTS		REF : BS EN 12457/2
Client Reference		Site Location	Rush
Mass Sample taken (kg)	0.106	Natural Moisture Content (%)	17.9
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	84.8
Particle Size <4mm	>95%		
Case			Landfill Waste Acceptance
SDG	200608-4		Criteria Limits
Lab Sample Number(s)	22267265		

Lab Sample Number(s) 22267265

Sampled Date

Customer Sample Ref. TP6

Depth (m) 0.50

Solid Waste Analysis Result

Total Organic Carbon (%) 1.1

Inert Waste Landfill

Non-reactive Hazardous Waste in Non-Hazardous Landfill

3 5 6 - 10

Stable

Solid Waste Analysis	Result	
Total Organic Carbon (%)	1.1	
Loss on Ignition (%)	4.81	
Sum of BTEX (mg/kg)	-	
Sum of 7 PCBs (mg/kg)	<0.021	
Mineral Oil (mg/kg)	<5	
PAH Sum of 17 (mg/kg)	-	
pH (pH Units)	-	
ANC to pH 6 (mol/kg)	-	
ANC to pH 4 (mol/kg)	-	

Eluate Analysis	C ₂ Conc ⁿ in 1	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A 2 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection	_		, -	
Arsenic	0.0009	<0.0005	0.009	<0.005	0.5	2	25	
Barium	0.0739	<0.0002	0.739	<0.002	20	100	300	
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5	
Chromium	0.00142	<0.001	0.0142	<0.01	0.5	10	70	
Copper	0.00256	<0.0003	0.0256	<0.003	2	50	100	
Mercury Dissolved (CVAF)	0.0000136	<0.00001	0.000136	<0.0001	0.01	0.2	2	
Molybdenum	0.00392	< 0.003	0.0392	<0.03	0.5	10	30	
Nickel	0.000942	<0.0004	0.00942	<0.004	0.4	10	40	
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50	
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5	
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7	
Zinc	0.00257	<0.001	0.0257	<0.01	4	50	200	
Chloride	2.8	<2	28	<20	800	15000	25000	
Fluoride	0.716	<0.5	7.16	<5	10	150	500	
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000	
Total Dissolved Solids	53.4	<10	534	<100	4000	60000	100000	
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-	
Dissolved Organic Carbon	5.55	<3	55.5	<30	500	800	1000	

Leach Test Information

Date Prepared	08-Jun-2020
pH (pH Units)	8.32
Conductivity (µS/cm)	62.20
Temperature (°C)	20.70
Volume Leachant (Litres)	0.884

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
29/06/2020 12:45:38

Customer Sample Ref.

200608-4 SDG: Location: Rush

TP8

Client Reference: Order Number:

50/A/20

Report Number: Superseded Report:

Inert Waste

Landfill

556995 556885

Non-reactive

Hazardous Waste

Hazardous

Waste Landfill

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESU	JLTS		REF : BS EN 12457/2
Client Reference		Site Location	Rush
Mass Sample taken (kg)	0.115	Natural Moisture Content (%)	28.1
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	78.1
Particle Size <4mm	>95%		
Case			Landfill Waste Acceptance
SDG	200608-4		Criteria Limits
Lab Sample Number(s)	22267266		
Sampled Date			Stable Non-reactive

ustonier Sample Kei.	110
Depth (m)	0.50
Solid Waste Analysis	Result
tal Organic Carbon (%)	1.34
oss on Ignition (%)	5.43
um of BTEX (mg/kg)	_
um of 7 PCBs (mg/kg)	<0.021
lineral Oil (mg/kg)	<5
PAH Sum of 17 (mg/kg)	-
oH (pH Units)	-
NC to pH 6 (mol/kg)	-
NC to pH 4 (mol/kg)	-

C ₂ Conc ⁿ in 1	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
Result	Limit of Detection	Result	Limit of Detection			_	
0.00215	<0.0005	0.0215	<0.005	0.5	2	25	
0.18	<0.0002	1.8	<0.002	20	100	300	
<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5	
0.00139	<0.001	0.0139	<0.01	0.5	10	70	
0.00774	<0.0003	0.0774	<0.003	2	50	100	
0.0000169	<0.00001	0.000169	<0.0001	0.01	0.2	2	
0.00335	< 0.003	0.0335	<0.03	0.5	10	30	
0.000895	<0.0004	0.00895	<0.004	0.4	10	40	
<0.0002	<0.0002	<0.002	<0.002	0.5	10	50	
<0.001	<0.001	<0.01	<0.01	0.06	0.7	5	
<0.001	<0.001	<0.01	<0.01	0.1	0.5	7	
0.00221	<0.001	0.0221	<0.01	4	50	200	
<2	<2	<20	<20	800	15000	25000	
0.59	<0.5	5.9	<5	10	150	500	
<2	<2	<20	<20	1000	20000	50000	
79	<10	790	<100	4000	60000	100000	
<0.016	<0.016	<0.16	<0.16	1	-	-	
5.22	<3	52.2	<30	500	800	1000	
	Result 0.00215 0.18 <0.00008 0.00139 0.00774 0.0000169 0.00335 0.000895 <0.0002 <0.001 <0.001 0.00221 <2 0.59 <2 79 <0.016	Result Limit of Detection 0.00215 <0.0005	Result Limit of Detection Result 0.00215 <0.0005	Result Limit of Detection Result Limit of Detection 0.00215 <0.0005	Result Limit of Detection Result Limit of Detection 0.00215 <0.0005	Result Limit of Detection Result Limit of Detection 0.00215 <0.0005	

Leach Test Information

Date Prepared	09-Jun-2020
pH (pH Units)	8.64
Conductivity (µS/cm)	96.00
Temperature (°C)	19.90
Volume Leachant (Litres)	0.875

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation Mcerts Certification does not apply to leachates 29/06/2020 12:45:38

SDG: 200608-4 Location: Rush

Client Reference: Order Number:

50/A/20

Report Number: Superseded Report:

556995 556885

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESI	JLTS					REF: BS	EN 12457/2
Client Reference			Site Location		Rush		
Mass Sample taken (kg)	0.113		Natural Moistur	e Content (%)	25.3		
Mass of dry sample (kg)	0.090		Dry Matter Cont		79.8		
Particle Size <4mm	>95%		,				
Case					Landf	ill Waste Acce	otance
SDG	200608-4					Criteria Limits	
Lab Sample Number(s)	22267267						
Sampled Date	22201201					Stable	
•	TD40				Inert Waste	Non-reactive	Hazardous
Customer Sample Ref.	TP10				Landfill	Hazardous Waste in Non-	Waste Landfill
Depth (m)	0.50					Hazardous Landfill	
Solid Waste Analysis	Result						
Total Organic Carbon (%)	0.464				3	5	6
Loss on Ignition (%)	4.19				-	-	10
Sum of BTEX (mg/kg)	-				-	-	-
Sum of 7 PCBs (mg/kg)	<0.021				1	-	-
Mineral Oil (mg/kg)	<5				500	-	-
PAH Sum of 17 (mg/kg)	-				-	-	-
pH (pH Units) ANC to pH 6 (mol/kg)	-				-	-	-
ANC to pH 4 (mol/kg)	-				-	-	-
the to provide the control of the co							
Eluate Analysis	C ₂ Conc ⁿ in	10:1 eluate (mg/l)	A 2 10:1 conc	ⁿ leached (mg/kg)	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			6-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00156	<0.0002	0.0156	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00174	<0.0003	0.0174	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.0007	<0.0004	0.007	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	46.6	<10	466	<100	4000	60000	100000
	.5.5			.55			

Leach Test Information

Total Monohydric Phenols (W)

Dissolved Organic Carbon

Date Prepared	09-Jun-2020
pH (pH Units)	8.12
Conductivity (µS/cm)	89.90
Temperature (°C)	20.30
Volume Leachant (Litres)	0.878

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation Mcerts Certification does not apply to leachates 29/06/2020 12:45:38

<0.016

4.32

<10 <0.016

<3

<0.16

43.2

<0.16

<30

500

800

1000

ALS

pH (pH Units) ANC to pH 6 (mol/kg)
 SDG:
 200608-4

 Location:
 Rush

Client Reference: Order Number: Report Number: 50/A/20 Superseded Report:

556995 556885

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS REF: BS EN 12457/2 Client Reference Rush Site Location Mass Sample taken (kg) 0.122 **Natural Moisture Content (%)** 34.3 Mass of dry sample (kg) 0.090 **Dry Matter Content (%)** 74.5 Particle Size <4mm >95% Case **Landfill Waste Acceptance Criteria Limits SDG** 200608-4 Lab Sample Number(s) 22267269 Stable Sampled Date Non-reactive Inert Waste Hazardous **Customer Sample Ref.** TP11 Hazardous Waste Landfill Waste Landfill in Non-0.50 Depth (m) Hazardous Landfill Result **Solid Waste Analysis** 0.47 3 Total Organic Carbon (%) 3.16 Loss on Ignition (%) Sum of BTEX (mg/kg) Sum of 7 PCBs (mg/kg) <0.021 Mineral Oil (mg/kg) <5 500 PAH Sum of 17 (mg/kg)

Arsenic <0. Barium 0.0 Cadmium <0.0 Chromium 0.0 Copper 0.0 Mercury Dissolved (CVAF) <0.0 Molybdenum <0 Nickel 0.0	0005 0193 00008 0106 0375 00001	Limit of Detection <0.0005 <0.0002 <0.00008 <0.0001 <0.0003 <0.00001	Result <0.005 0.0193 <0.0008 0.0106 0.0375 <0.0001	 Limit of Detection <0.005 <0.002 <0.0008 <0.01 <0.003 	0.5 20 0.04 0.5	2 100 1 10	25 300 5 70
Barium 0.0 Cadmium <0.0 Chromium 0.0 Copper 0.0 Mercury Dissolved (CVAF) <0.0 Molybdenum <0 Nickel 0.0	0193 00008 0106 0375	<0.0002 <0.00008 <0.001 <0.0003	0.0193 <0.0008 0.0106 0.0375	<0.002 <0.0008 <0.01	20 0.04 0.5	100 1 10	300 5
Cadmium <0.0	00008 0106 0375 00001	<0.00008 <0.001 <0.0003	<0.0008 0.0106 0.0375	<0.0008 <0.01	0.04 0.5	1 10	5
Chromium 0.0 Copper 0.0 Mercury Dissolved (CVAF) <0.0	0106 0375 00001	<0.001 <0.0003	0.0106 0.0375	<0.01	0.5	10	
Copper 0.0 Mercury Dissolved (CVAF) <0.0	0375 00001	<0.0003	0.0375				70
Mercury Dissolved (CVAF) <0.0	00001			< 0.003	2		
Molybdenum <0 Nickel 0.0		<0.00001	<0.0001		2	50	100
Nickel 0.0	.003		<0.0001	<0.0001	0.01	0.2	2
		<0.003	<0.03	<0.03	0.5	10	30
l ead 0.00	0122	<0.0004	0.0122	<0.004	0.4	10	40
0.00	00202	<0.0002	0.00202	<0.002	0.5	10	50
Antimony <0	.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium <0	.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc <0	.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride <	0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids 4	2.2	<10	422	<100	4000	60000	100000
Total Monohydric Phenols (W) <0	.016	<0.016	<0.16	<0.16	1		-
Dissolved Organic Carbon 5	.86	<3	58.6	<30	500	800	1000

Leach Test Information

Date Prepared	09-Jun-2020
pH (pH Units)	7.75
Conductivity (µS/cm)	57.90
Temperature (°C)	20.70
Volume Leachant (Litres)	0.868

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation Mcerts Certification does not apply to leachates 29/06/2020 12:45:38



Location:

Order Number:

50/A/20

Report Number: Superseded Report:

556995 556885

CEN 10:1 SINGLE STAGE LEACHATE TEST

NAC ANALYTICAL RESU	JLTS					REF : BS	EN 12457
Client Reference			Site Location		Rush		
Mass Sample taken (kg)	0.106	Natural Moisture Content (%)			17.5		
Mass of dry sample (kg)	0.090		Dry Matter Con		85.1		
Particle Size <4mm	>95%		,	(70)			
article Size \4mm	- 33 /0						
Case					Landi	ill Waste Acce	otance
SDG	200608-4					Criteria Limits	
_ab Sample Number(s)	22267270			1			
Sampled Date						Stable	
Customer Sample Ref.	TP12				Inert Waste	Non-reactive Hazardous Waste	Hazardous
-					Landfill	in Non-	Waste Landfill
Depth (m)	0.50					Hazardous Landfill	
Solid Waste Analysis	Result						
otal Organic Carbon (%)	0.409				3	5	6
oss on Ignition (%)	2.67				-	-	10
Sum of BTEX (mg/kg)	-				-	-	-
Sum of 7 PCBs (mg/kg)	<0.021				1	-	-
Mineral Oil (mg/kg) PAH Sum of 17 (mg/kg)	<5 -				500	-	-
H (pH Units)	-				-	-	-
NC to pH 6 (mol/kg)	-				-	-	-
NC to pH 4 (mol/kg)	-				-	-	-
Eluate Analysis	C ₂ Conc ⁿ in 1	.0:1 eluate (mg/l)	A 2 10:1 cond	c ⁿ leached (mg/kg)	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		-
	Result	Limit of Detection	Result	Limit of Detection	0.5		05
Arsenic	0.00166	<0.0005	0.0166	<0.005	0.5	2	25
Barium	0.0464	<0.0002	0.464	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00146	<0.001	0.0146	<0.01	0.5	10	70
Copper Mercury Dissolved (CVAF)	0.0025	<0.0003	0.025	<0.003	0.01	50	100
Molybdenum	0.000012 0.00587	<0.00001 <0.003	0.00012 0.0587	<0.0001 <0.03	0.01	0.2	30
Nickel	0.00387	<0.003	0.00889	<0.03	0.5	10	40
.ead	0.000889	<0.0004	0.00889	<0.004	0.4	10	50
Antimony	<0.001	<0.0002	<0.01	<0.002	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.00	0.5	7
Zinc	0.00297	<0.001	0.0297	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	0.509	<0.5	5.09	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
otal Dissolved Solids	28.7	<10	287	<100	4000	60000	100000
otal Dissolved Solids otal Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.5	<3	45	<30	500	800	1000
g							

Leach Test Information

Date Prepared	09-Jun-2020
pH (pH Units)	7.94
Conductivity (µS/cm)	33.00
Temperature (°C)	20.50
Volume Leachant (Litres)	0.884

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates

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556995

556885

Landfill Waste Acceptance

Criteria Limits



200608-4

AO ANALVIIOAL DEGILI TO

Case

SDG

PAH Sum of 17 (mg/kg) pH (pH Units) ANC to pH 6 (mol/kg)

Client Reference: 200608-4 Report Number: Location: Rush Order Number: 50/A/20 Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RES		REF : BS EN 1245//2		
Client Reference		Site Location	Rush	
Mass Sample taken (kg)	0.105	Natural Moisture Content (%)	16.6	
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	85.8	
Particle Size <4mm	>95%			

Lab Sample Number(s)	22267271
Sampled Date	
Customer Sample Ref.	TP14
Depth (m)	0.50
Solid Waste Analysis	Result
Total Organic Carbon (%)	0.234
Loss on Ignition (%)	2.49
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	<0.021
Mineral Oil (mg/kg)	<5

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A 2 10:1 cond	c ⁿ leached (mg/kg)	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		-
	Result	Limit of Detection	Result Limit of Detection				
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.000832	<0.0002	0.00832	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.000742	<0.0003	0.00742	< 0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Nolybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
lickel	0.000407	<0.0004	0.00407	<0.004	0.4	10	40
ead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
otal Dissolved Solids	29.3	<10	293	<100	4000	60000	100000
otal Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.47	<3	34.7	<30	500	800	1000

Leach Test Information

Date Prepared	09-Jun-2020
pH (pH Units)	7.98
Conductivity (µS/cm)	36.10
Temperature (°C)	21.10
Volume Leachant (Litres)	0.885

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation Mcerts Certification does not apply to leachates 29/06/2020 12:45:38

ALS

Total Organic Carbon (%)
Loss on Ignition (%)

Sum of BTEX (mg/kg) Sum of 7 PCBs (mg/kg)

PAH Sum of 17 (mg/kg) pH (pH Units) ANC to pH 6 (mol/kg)

Mineral Oil (mg/kg)

 SDG:
 200608-4

 Location:
 Rush

Client Reference: Order Number:

50/A/20

Report Number: Superseded Report: 556995 556885

CEN 10:1 SINGLE STAGE LEACHATE TEST

Case			Landfill Waste Acceptance
Particle Size <4mm	>95%		
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	87.2
Mass Sample taken (kg)	0.104	Natural Moisture Content (%)	14.8
Client Reference		Site Location	Rush
WAC ANALYTICAL RES	ULTS		REF : BS EN 12457/2

Depth (m)	0.50
Sampled Date Customer Sample Ref.	TP15
Lab Sample Number(s)	22267272
SDG	200608-4
Case	

0.914

3.13

<0.021

5.72

Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10

500

Criteria Limits

ANC to pH 4 (mol/kg)				-	-	-	
Eluate Analysis	C ₂ Conc ⁿ in 1	.0:1 eluate (mg/l)	A ₂ 10:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 I/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.00324	<0.0005	0.0324	<0.005	0.5	2	25
Barium	0.0018	<0.0002	0.018	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00319	<0.0003	0.0319	<0.003	2	50	100
Mercury Dissolved (CVAF)	0.0000101	<0.00001	0.000101	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00112	<0.0004	0.0112	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	48.3	<10	483	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	_	-
Dissolved Organic Carbon	5.16	<3	51.6	<30	500	800	1000

Leach Test Information

Date Prepared	09-Jun-2020
pH (pH Units)	7.72
Conductivity (µS/cm)	62.10
Temperature (°C)	20.80
Volume Leachant (Litres)	0.887

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
29/06/2020 12:45:38

ALS

Total Organic Carbon (%)

Loss on Ignition (%) Sum of BTEX (mg/kg) Sum of 7 PCBs (mg/kg)

Mineral Oil (mg/kg)

PAH Sum of 17 (mg/kg) pH (pH Units) ANC to pH 6 (mol/kg)

 SDG:
 200608-4

 Location:
 Rush

Client Reference: Order Number:

50/A/20

Report Number: Superseded Report: 556995 556885

CEN 10:1 SINGLE STAGE LEACHATE TEST

Case			Landfill Waste Acceptance			
Particle Size <4mm	>95%					
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	83.3			
Mass Sample taken (kg)	0.108	Natural Moisture Content (%)	20.1			
Client Reference		Site Location	Rush			
WAC ANALYTICAL RES	ULTS		REF : BS EN 12457/2			

Solid Waste Analysis	Result
Depth (m)	0.50
Customer Sample Ref.	TP16
Sampled Date	
Lab Sample Number(s)	22267273
SDG	200608-4
Case	

0.558

2.01

<0.021

<5

Inert Waste Landfill	Non-reactive Hazardous Waste in Non- Hazardous Landfill	Hazardous Waste Landfill
3	5	6
-	-	10
-	-	-
1	-	-
500	-	-
-	-	-
-	-	-
I		

Criteria Limits

Stable

Eluate Analysis	C ₂ Conc ⁿ in 1	LO:1 eluate (mg/l)	A 2 10:1 cond	ⁿ leached (mg/kg)	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg			
	Result	Limit of Detection	Result	Limit of Detection				
Arsenic	0.0088	0.0088 < 0.0005		<0.005	0.5	2	25	
Barium	0.158	<0.0002	1.58	<0.002	20	100	300	
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5	
Chromium	0.00149	<0.001	0.0149	<0.01	0.5	10	70	
Copper	0.00309	<0.0003	0.0309	< 0.003	2	50	100	
Mercury Dissolved (CVAF)	0.0000119	<0.00001	0.000119	<0.0001	0.01	0.2	2	
Molybdenum	<0.003	< 0.003	<0.03	<0.03	0.5	10	30	
Nickel	0.000772	<0.0004	0.00772	<0.004	0.4	10	40	
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50	
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5	
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7	
Zinc	0.00208	<0.001	0.0208	<0.01	4	50	200	
Chloride	<2	<2	<20	<20	800	15000	25000	
Fluoride	<0.5	<0.5	<5	<5	10	150	500	
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000	
Total Dissolved Solids	50.5	<10	505	<100	4000	60000	10000	
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-	
Dissolved Organic Carbon	4.5	<3	45	<30	500	800	1000	

Leach Test Information

Date Prepared	09-Jun-2020
pH (pH Units)	8.16
Conductivity (µS/cm)	63.00
Temperature (°C)	21.00
Volume Leachant (Litres)	0.882

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation Mcerts Certification does not apply to leachates 29/06/2020 12:45:38

ALS

 SDG:
 200608-4

 Location:
 Rush

Client Reference: Order Number:

50/A/20

Report Number: Superseded Report: 556995 556885

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESU	JLTS					REF: BS	EN 12457/
Client Reference			Site Location		Rush		
Mass Sample taken (kg)	0.109		Natural Moistur	e Content (%)	20.9		
Mass of dry sample (kg)	0.090		Dry Matter Cont	ent (%)	82.7		
Particle Size <4mm	>95%		•	()			
Case					Landf	ill Waste Acce	otance
SDG	200608-4					Criteria Limits	
Lab Sample Number(s)	22267274						
Sampled Date						Stable	
Customer Sample Ref.	TP18				Inert Waste	Non-reactive Hazardous Waste	Hazardous
Depth (m)	0.50				Landfill	in Non- Hazardous	Waste Landfill
	Result					Landfill	
Solid Waste Analysis	Result						
Total Organic Carbon (%)	1.32				3	5	6
Loss on Ignition (%)	3.56				-	-	10
Sum of BTEX (mg/kg)	-				-	-	-
Sum of 7 PCBs (mg/kg)	<0.021				1	-	-
Mineral Oil (mg/kg) PAH Sum of 17 (mg/kg)	7.87				500		
pH (pH Units)	-				_	-	-
ANC to pH 6 (mol/kg)	-				-	-	-
ANC to pH 4 (mol/kg)	-				-	-	-
Eluate Analysis	C ₂ Conc ⁿ in	10:1 eluate (mg/l)	A 2 10:1 conc	ⁿ leached (mg/kg)		es for compliance lea S EN 12457-3 at L/S	-
	Result	Limit of Detection	Result	Limit of Detection		<u>-</u>	
Arsenic	0.00678	<0.0005	0.0678	<0.005	0.5	2	25
Barium	0.214	<0.0002	2.14	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.006	<0.0003	0.06	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	< 0.00001	<0.0001	<0.0001	0.01	0.2	2
iviercury Dissolveu (CVAF)							
· · · · · ·	0.00488	<0.003	0.0488	<0.03	0.5	10	30
Molybdenum		<0.003 <0.0004	0.0488 0.0191	<0.03 <0.004	0.5 0.4	10 10	30 40
Molybdenum Nickel	0.00488						
Molybdenum Nickel	0.00488 0.00191	<0.0004	0.0191	<0.004	0.4	10	40
Molybdenum Nickel Lead	0.00488 0.00191 0.000354	<0.0004 <0.0002	0.0191 0.00354	<0.004 <0.002	0.4 0.5	10 10	40 50
Molybdenum Nickel Lead Antimony	0.00488 0.00191 0.000354 0.00133	<0.0004 <0.0002 <0.001	0.0191 0.00354 0.0133	<0.004 <0.002 <0.01	0.4 0.5 0.06	10 10 0.7	40 50 5
Molybdenum Nickel Lead Antimony Selenium	0.00488 0.00191 0.000354 0.00133 0.00132	<0.0004 <0.0002 <0.001 <0.001	0.0191 0.00354 0.0133 0.0132	<0.004 <0.002 <0.01 <0.01	0.4 0.5 0.06 0.1	10 10 0.7 0.5	40 50 5 7

Leach Test Information

Sulphate (soluble)

Total Dissolved Solids

Total Monohydric Phenols (W)

Dissolved Organic Carbon

Date Prepared	09-Jun-2020
pH (pH Units)	8.05
Conductivity (µS/cm)	99.80
Temperature (°C)	20.80
Volume Leachant (Litres)	0.882

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
29/06/2020 12:45:38

2.1

78.4

<0.016

6.73

<2

<10

<0.016

<3

21

784

<0.16

67.3

<20

<100

<0.16

<30

1000

4000

1

500

20000

60000

800

50000

100000

1000

Validated

CERTIFICATE OF ANALYSIS



 SDG:
 200608-4
 Client Reference:
 Report Number:
 556995

 Location:
 Rush
 Order Number:
 50/A/20
 Superseded Report:
 556885

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TM018	BS 1377: Part 3 1990	Determination of Loss on Ignition
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

Validated

CERTIFICATE OF ANALYSIS

ALS

 SDG:
 200608-4

 Location:
 Rush

Client Reference: Order Number:

50/A/20

Report Number: Superseded Report: 556995 556885

Test Completion Dates

Lab Sample No(s)	22267264	22267265	22267266	22267267	22267269	22267270	22267271	22267272	22267273	22267274
	TP2	TP6	TP8	TP10	TP11	TP12	TP14	TP15	TP16	TP18
Customer Sample Ref.										
AGS Ref.										
Depth	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Туре	Soil/Solid (S)									
Anions by Kone (w)	15-Jun-2020									
CEN 10:1 Leachate (1 Stage)	11-Jun-2020									
CEN Readings	16-Jun-2020	16-Jun-2020	13-Jun-2020	16-Jun-2020						
Chromium III	16-Jun-2020	17-Jun-2020	17-Jun-2020	17-Jun-2020	17-Jun-2020	16-Jun-2020	16-Jun-2020	16-Jun-2020	17-Jun-2020	16-Jun-2020
Coronene	12-Jun-2020	12-Jun-2020	12-Jun-2020	12-Jun-2020	12-Jun-2020	12-Jun-2020	11-Jun-2020	11-Jun-2020	11-Jun-2020	11-Jun-2020
Dissolved Metals by ICP-MS	16-Jun-2020									
Dissolved Organic/Inorganic Carbon	18-Jun-2020									
EPH by GCxGC-FID	29-Jun-2020									
EPH CWG*	24-Jun-2020	28-Jun-2020								
Fluoride	15-Jun-2020	15-Jun-2020	16-Jun-2020	16-Jun-2020	16-Jun-2020	16-Jun-2020	15-Jun-2020	15-Jun-2020	15-Jun-2020	15-Jun-2020
GRO by GC-FID (S)	15-Jun-2020	16-Jun-2020	15-Jun-2020	15-Jun-2020	15-Jun-2020	16-Jun-2020	15-Jun-2020	15-Jun-2020	15-Jun-2020	15-Jun-2020
Hexavalent Chromium (s)	15-Jun-2020	15-Jun-2020	15-Jun-2020	15-Jun-2020	15-Jun-2020	15-Jun-2020	11-Jun-2020	11-Jun-2020	15-Jun-2020	15-Jun-2020
Loss on Ignition in soils	15-Jun-2020	16-Jun-2020	16-Jun-2020	16-Jun-2020	16-Jun-2020	16-Jun-2020	15-Jun-2020	15-Jun-2020	15-Jun-2020	15-Jun-2020
Mercury Dissolved	15-Jun-2020									
Metals in solid samples by OES	16-Jun-2020	17-Jun-2020	17-Jun-2020	17-Jun-2020	17-Jun-2020	16-Jun-2020	16-Jun-2020	16-Jun-2020	18-Jun-2020	16-Jun-2020
Moisture at 105C	08-Jun-2020	08-Jun-2020	09-Jun-2020							
PAH by GCMS	12-Jun-2020	12-Jun-2020	12-Jun-2020	12-Jun-2020	12-Jun-2020	12-Jun-2020	17-Jun-2020	17-Jun-2020	17-Jun-2020	13-Jun-2020
PCBs by GCMS	15-Jun-2020	12-Jun-2020	12-Jun-2020	12-Jun-2020	12-Jun-2020	12-Jun-2020	11-Jun-2020	11-Jun-2020	11-Jun-2020	11-Jun-2020
Phenols by HPLC (W)	16-Jun-2020									
Sample description	08-Jun-2020	08-Jun-2020	08-Jun-2020	08-Jun-2020	08-Jun-2020	08-Jun-2020	09-Jun-2020	09-Jun-2020	09-Jun-2020	09-Jun-2020
Total Dissolved Solids on Leachates	15-Jun-2020									
Total Organic Carbon	15-Jun-2020	17-Jun-2020	17-Jun-2020	17-Jun-2020	17-Jun-2020	15-Jun-2020	16-Jun-2020	16-Jun-2020	15-Jun-2020	16-Jun-2020
TPH CWG GC (S)	28-Jun-2020									
VOC MS (S)	15-Jun-2020									



FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 20/04843

Issue Number: s6 **Date:** 23 June, 2020

Client: ALS Life Sciences Ltd

Units 7&8 Hawarden Business Park

Manor Road Hawarden Flintshire CH5 3US

Project Manager: Hawarden Subcontracting

Project Name: Not specified

Project Ref: Various

Order No: 200606-4, -37,38,40,200605-127

Date Samples Received: 16/06/20
Date Instructions Received: 17/06/20
Date Analysis Completed: 22/06/20

Prepared by: Approved by:

Sophie France John Gustafson

Client Service Manager Managing Director







Envirolab Job Number: 20/04843 Client Project Name: Not specified

Client Project Ref: Various

					-					
Lab Sample ID	20/04843/26	20/04843/27	20/04843/28	20/04843/29	20/04843/30	20/04843/31	20/04843/32			
Client Sample No	22304908	22304922	22304874	22302287	22302322	22302261	22302240			
Client Sample ID	TP10	TP11	TP12	TP14	TP15	TP16	TP18			
Depth to Top	0.50	0.50	0.50	0.50	0.50	0.50	0.50			
Depth To Bottom									ion	
Date Sampled									etect	J
Sample Type	Soil	,	Limit of Detection	Method ref						
Sample Matrix Code	5AE	5A	6A	5A	6A	4A	4A	Units	Limit	Meth
% Stones >10mm _A	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	% w/w	0.1	A-T-044
Ali >C12-C16 _A M#	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Ali >C16-C21AM#	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Ali >C21-C35 _A	<1	<1	<1	<1	3	<1	5	mg/kg	1	A-T-055s
Ali >C35-C44 _A	<1	<1	<1	<1	<1	<1	1	mg/kg	1	A-T-055s
Aro >C12-C16 _A	<1	<1	<1	<1	<1	<1	<1	mg/kg	1	A-T-055s
Aro >C16-C21 _A M#	<1	<1	<1	<1	1	<1	2	mg/kg	1	A-T-055s
Aro >C21-C35 _A ^{M#}	<1	<1	<1	<1	9	<1	18	mg/kg	1	A-T-055s
Aro >C35-C44 _A	<1	<1	<1	<1	<1	<1	2	mg/kg	1	A-T-055s



Envirolab Job Number: 20/04843 Client Project Name: Not specified

Client Project Ref: Various

					,			
Lab Sample ID	20/04843/33	20/04843/34	20/04843/35					
Client Sample No	22302118	22302159	22305232					
Client Sample ID	TP2	TP6	TP8					
Depth to Top	0.50	0.50	0.50					
Depth To Bottom							ion	
Date Sampled							Limit of Detection	J.
Sample Type	Soil	Soil	Soil				t of D	Method ref
Sample Matrix Code	6AE	6AE	6AE			Units	Limi	Meth
% Stones >10mm _A	<0.1	<0.1	<0.1			% w/w	0.1	A-T-044
Ali >C12-C16 _A M#	<1	<1	<1			mg/kg	1	A-T-055s
Ali >C16-C21A ^{M#}	<1	<1	<1			mg/kg	1	A-T-055s
Ali >C21-C35 _A	2	<1	2			mg/kg	1	A-T-055s
Ali >C35-C44 _A	<1	<1	<1			mg/kg	1	A-T-055s
Aro >C12-C16 _A	<1	<1	<1			mg/kg	1	A-T-055s
Aro >C16-C21 _A M#	<1	<1	<1			mg/kg	1	A-T-055s
Aro >C21-C35 _A ^{M#}	3	1	4			mg/kg	1	A-T-055s
Aro >C35-C44 _A	<1	<1	<1			 mg/kg	1	A-T-055s



REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.

The results reported herein relate only to the material supplied to the laboratory.

The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.

Analytical results reflect the quality of the sample at the time of analysis only.

Opinions and interpretations expressed are outside the scope of our accreditation.

If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:

Results greater than 12900μS/cm @ 25°C / 11550μS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.

Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample. Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Κev·

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Superscript "M" indicates method accredited to MCERTS.

Subscript "A" indicates analysis performed on the sample as received.

Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.



Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: ALS Life Sciences Ltd, Units 7&8 Hawarden Business Park, Manor Road,

Project No: 20/04843

17/06/2020 (am)

Hawarden, Flintshire, CH5 3US

Date Received: Cool Box Temperatures (°C): 9.6

Project: Clients Project No: Various

Lab Sample ID	20/04843/26	20/04843/27	20/04843/28	20/04843/29	20/04843/30	20/04843/31	20/04843/32	20/04843/33	20/04843/34	20/04843/35
Client Sample No	22304908	22304922	22304874	22302287	22302322	22302261	22302240	22302118	22302159	22305232
Client Sample ID/Depth	TP10 0.50m	TP11 0.50m	TP12 0.50m	TP14 0.50m	TP15 0.50m	TP16 0.50m	TP18 0.50m	TP2 0.50m	TP6 0.50m	TP8 0.50m
Date Sampled										
Deviation Code										
E (no date)	√	✓	✓	✓	√	√	✓	✓	✓	✓

Kev

E (no date) No sampling date provided (all results affected if not provided)

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3. ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.



 SDG:
 200608-4
 Client Reference:
 Report Number:
 556995

 Location:
 Rush
 Order Number:
 50/A/20
 Superseded Report:
 556885

Appendix

General

- 1. Results are expressed on a dry weight basis (dried at 35° C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.
- 2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.
- 3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.
- 4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.
- 5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.
- 6. NDP No determination possible due to insufficient/unsuitable sample.
- 7. Results relate only to the items tested.
- 8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content
- 9. Surrogate recoveries Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.
- 10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
- 11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.
- 12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.
- 13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.
- 14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.
- 15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.
- 16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
§	Sampled on date not provided
•	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbe stos Type	Common Name
Chrysofile	White Asbesbs
Amosite	Brown Asbestos
Cro d dolite	Blue Asbe stos
Fibrous Actinolite	-
Fib to us Anthop hyll ite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 μ m diameter, longer than 5 μ m and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Standing Committee of Analysts, The Quantification of Asbestos in Soil (2017).

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Waste Classification Report



Job name

5728

Description/Comments

Client: Fingal County Council Engineer: Downes Associates

Project

Affordable Housing

Site

Hayestown, Rush, Co. Dublin

Related Documents

# Name	Description
1 200608-4.hwol	.hwol file used to create the Job

Waste Stream Template

Rilta Suite NEW

WAC Results

WAC Settings: samples in this job constitute a single population.

WAC limits used to evaluate the samples in this job: "Ireland"

Dublin

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

Classified by

Name: Company: HazWasteOnline™ Training Record:

Stephen Letch Site Investigations Ltd Date Course Date: Carhugar, The Grange 09 Apr 2019 Hazardous Waste Classification 30 Jun 2020 11:49 GMT 12th Lock Road, Lucan Advanced Hazardous Waste Classification 09 Oct 2019

Telephone:

353 1 6108 768

Report

Created by: Stephen Letch

Created date: 30 Jun 2020 11:49 GMT

Job summary

1	Sample Name	Depth [m]	Classification Result Hazard properties	WAC I	_Page	
7	- Cample Name	Deptil [iii]	Classification Result Trazard properties	Inert	Non Haz	-ı aye
•	TP10-0000000.50	0.50	Non Hazardous	Pass	Pass	3
2	TP11-0000000.50	0.50	Non Hazardous	Pass	Pass	7



HazWasteOnline[™] Report created by Stephen Letch on 30 Jun 2020

#	Sample Name	Name Depth [m] Classification Result Hazard properties		WAC Results		Page	
#	Sample Name	Debui [iii]	Classification Result Trazard properties	Inert	Non Haz	— гауе	
3	TP12-0000000.50	0.50	Non Hazardous	Pass	Pass	11	
4	TP14-0000000.50	0.50	Non Hazardous	Pass	Pass	15	
5	TP15-0000000.50	0.50	Non Hazardous	Pass	Pass	19	
6	TP16-0000000.50	0.50	Non Hazardous	Pass	Pass	23	
7	TP18-0000000.50	0.50	Non Hazardous	Pass	Pass	27	
8	TP02-0000000.50	0.50	Non Hazardous	Pass	Pass	31	
9	TP06-0000000.50	0.50	Non Hazardous	Pass	Pass	35	
10	TP08-0000000.50	0.50	Non Hazardous	Pass	Pass	39	

Appendices	Page
Appendix A: Classifier defined and non CLP determinands	43
Appendix B: Rationale for selection of metal species	45
Appendix C: Version	45

Page 2 of 46 FWXBM-GJY6N-84VPG www.hazwasteonline.com



Classification of sample: TP10-000000--0.50

Sample details

Sample Name: LoW Code: TP10-000000--0.50 Chapter: Sample Depth: 0.50 m Entry: Moisture content:

from contaminated sites)

17 05 04 (Soil and stones other than those mentioned in 17 05

17: Construction and Demolition Wastes (including excavated soil

19%

(wet weight correction)

Hazard properties

None identified

Determinands

Moisture content: 19% Wet Weight Moisture Correction applied (MC)

#		Determinand CLP index number	CLP Note	User entered	data	Conv. Factor	Compound cond	-	Classification value	MC Applied	Conc. Not Used
1	0	TPH (C6 to C40) petroleum group		<10	mg/kg		<10 mg	/kg	<0.001 %		<lod< th=""></lod<>
2	0	confirm TPH has NOT arisen from diesel or petrol		Ø							
3	æ å	antimony { antimony trioxide } 051-005-00-X		<0.6	mg/kg	1.197	<0.718 mg	/kg	<0.0000718 %		<lod< th=""></lod<>
4	4	arsenic { arsenic pentoxide } 033-004-00-6 215-116-9 1303-28-2		13.7	mg/kg	1.534	17.021 mg	/kg	0.0017 %	✓	
5	æ			119	mg/kg	1.233	118.896 mg	/kg	0.0119 %	✓	
6	æ	cadmium { cadmium sulfate } 019-002-00-A		0.741	mg/kg	1.855	1.113 mg	/kg	0.000111 %	✓	
7	æ å	copper { dicopper oxide; copper (I) oxide } 029-002-00-X 215-270-7		14	mg/kg	1.126	12.768 mg	/kg	0.00128 %	✓	
8	æ		1	21.2	mg/kg		17.172 mg	/kg	0.00172 %	✓	
9	æ	mercury { mercury dichloride } 080-010-00-X 231-299-8 7487-94-7		<0.14	mg/kg	1.353	<0.189 mg	/kg	<0.0000189 %		<lod< th=""></lod<>
10	4	molybdenum { molybdenum(VI) oxide } 042-001-00-9 215-204-7 1313-27-5		2.17	mg/kg	1.5	2.637 mg	/kg	0.000264 %	✓	
11	4	nickel { nickel sulfate } 028-009-00-5 232-104-9 7786-81-4		45.8	mg/kg	2.637	97.816 mg	/kg	0.00978 %	✓	
12		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }		<1	mg/kg	2.554	<2.554 mg	ı/kg	<0.000255 %		<lod< th=""></lod<>
13	4			73.4	mg/kg	2.469	146.81 mg	/kg	0.0147 %	✓	



HazWasteOnline[™] Report created by Stephen Letch on 30 Jun 2020

	_				_								
#			Determinand		CLP Note	User entere	d data	Conv. Factor	Compound of	conc.	Classification value	Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number	SLP							MC,	
14	4	chromium in chromoxide (worst case)		. ,		36.4	mg/kg	1.462	43.093	mg/kg	0.00431 %	✓	
	_			1308-38-9									
15		chromium in chromioxide }	. , .			<0.6	mg/kg	1.923	<1.154	mg/kg	<0.000115 %		<lod< td=""></lod<>
			215-607-8	1333-82-0	_								
16		naphthalene 601-052-00-2	202-049-5	91-20-3		<0.009	mg/kg		<0.009	mg/kg	<0.0000009 %		<lod< td=""></lod<>
17	0	acenaphthylene				<0.012	mg/kg		<0.012	mg/kg	<0.0000012 %		<lod< td=""></lod<>
_			205-917-1	208-96-8	┢								
18	0	acenaphthene	201-469-6	83-32-9		<0.008	mg/kg		<0.008	mg/kg	<0.0000008 %		<lod< td=""></lod<>
19	0	fluorene				<0.01	ma/ka		<0.01	ma/ka	<0.000001 %		<lod< td=""></lod<>
19			201-695-5	86-73-7		<0.01	mg/kg 		<0.01	mg/kg	<0.000001 %		\LOD
20	0	phenanthrene	201-581-5	85-01-8		<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<lod< td=""></lod<>
21	0	anthracene				<0.016	mg/kg		<0.016	mg/kg	<0.0000016 %		<lod< td=""></lod<>
	0	fluoranthene	204-371-1	120-12-7									
22			205-912-4	206-44-0		<0.017	mg/kg		<0.017	mg/kg	<0.0000017 %		<lod< td=""></lod<>
23	0	pyrene	204-927-3	129-00-0		<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<lod< td=""></lod<>
24		benzo[a]anthracene				-0.014	no ar/1 car		z0.014	no ar/lear	<0.0000014 %		<lod< td=""></lod<>
24		601-033-00-9	200-280-6	56-55-3		<0.014	mg/kg		<0.014	mg/kg	<0.0000014 %		<lod< td=""></lod<>
25		chrysene 601-048-00-0	205-923-4	218-01-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<lod< td=""></lod<>
26		benzo[b]fluoranther		210-01-9		<0.015	mg/kg		<0.015	ma/ka	<0.0000015 %		<lod< td=""></lod<>
				205-99-2						55			
27		benzo[k]fluoranther 601-036-00-5		207-08-9		<0.014	mg/kg		<0.014	mg/kg	<0.0000014 %		<lod< td=""></lod<>
		benzo[a]pyrene; be		207-00-3									
28				50-32-8		<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<lod< td=""></lod<>
29	0	indeno[123-cd]pyre		100.00.5		<0.018	mg/kg		<0.018	mg/kg	<0.0000018 %		<lod< td=""></lod<>
		dibenz[a,h]anthrace		193-39-5	\vdash								
30				53-70-3		<0.023	mg/kg		<0.023	mg/kg	<0.0000023 %		<lod< td=""></lod<>
31	0	benzo[ghi]perylene		191-24-2		<0.024	mg/kg		<0.024	mg/kg	<0.0000024 %		<lod< td=""></lod<>
	_	polychlorobiphenyls		191-24-2									
32	0			1336-36-3		<0.021	mg/kg		<0.021	mg/kg	<0.0000021 %		<lod< td=""></lod<>
33		tert-butyl methyl eth 2-methoxy-2-methy 603-181-00-X	Ipropane	1634-04-4		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<lod< td=""></lod<>
24		benzene	£ 10-000-1	1007-07-4		70.000	m = //-		-0.000	pr =/1-	<0.0000000.0/		-1 OD
34		601-020-00-8	200-753-7	71-43-2		<0.009	mg/kg		<0.009	mg/kg	<0.0000009 %		<lod< td=""></lod<>
35		toluene 601-021-00-3	203-625-9	108-88-3		<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<lod< td=""></lod<>
36	0	ethylbenzene		100-41.4		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<lod< td=""></lod<>
37	0	coronene	202-849-4	100-41-4		<0.2	ma/ke		-0. 2	malka	<0.00002.0/		<lod< td=""></lod<>
31			205-881-7	191-07-1		<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		~LUD
		o-xylene; [1] p-xyler		xylene [4]									
38			203-396-5 [2] 203-576-3 [3]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3]		<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<lod< td=""></lod<>
		<u> </u>	215-535-7 [4]	1330-20-7 [4]	_					Total:	0.0472 %		
											,		

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Key

User supplied data

Determinand values ignored for classification, see column 'Conc. Not Used' for reason

Determinand defined or amended by HazWasteOnline (see Appendix A)

Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound

concentration

<LOD Below limit of detection

ND Not detected

CLP: Note 1 $\,$ Only the metal concentration has been used for classification





WAC Results for sample: TP10-000000--0.50

WAC Settings: samples in this job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

	Solid Waste Analysis		Landfill Waste Acceptance Criteria				
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill		
1	TOC (total organic carbon)	%	0.464	3	5		
2	LOI (loss on ignition)	%	4.19	-	-		
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.04	6	-		
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-		
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-		
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<0.118	100	-		
7	рН	рН	8.12	-	>6		
8	ANC (acid neutralisation capacity)	mol/kg		-	-		
	Eluate Analysis 10:1						
9	arsenic	mg/kg	<0.005	0.5	2		
10	barium	mg/kg	0.0156	20	100		
11	cadmium	mg/kg	<0.0008	0.04	1		
12	chromium	mg/kg	<0.01	0.5	10		
13	copper	mg/kg	0.0174	2	50		
14	mercury	mg/kg	<0.0001	0.01	0.2		
15	molybdenum	mg/kg	<0.03	0.5	10		
16	nickel	mg/kg	0.007	0.4	10		
17	lead	mg/kg	<0.002	0.5	10		
18	antimony	mg/kg	<0.01	0.06	0.7		
19	selenium	mg/kg	<0.01	0.1	0.5		
20	zinc	mg/kg	<0.01	4	50		
21	chloride	mg/kg	<20	800	15,000		
22	fluoride	mg/kg	<5	10	150		
23	sulphate	mg/kg	<20	1,000	20,000		
24	phenol index	mg/kg	<0.16	1	-		
25	DOC (dissolved organic carbon)	mg/kg	43.2	500	800		
26	TDS (total dissolved solids)	mg/kg	466	4,000	60,000		

Key

User supplied data

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Classification of sample: TP11-000000--0.50

Non Hazardous Waste
Classified as 17 05 04

Sample details

Sample Name: LoW Code:
TP11-000000--0.50 Chapter:
Sample Depth:
0.50 m Entry:

Moisture content:

(wet weight correction)

17: Construction and Demolition Wastes (including excavated soil from contaminated sites)

17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 19% Wet Weight Moisture Correction applied (MC)

#		Determinand CLP index number	CLP Note	User entered	d data	Conv. Factor	Compound (conc.	Classification value	MC Applied	Conc. Not Used
1	0	TPH (C6 to C40) petroleum group		<10	mg/kg		<10	mg/kg	<0.001 %		<lod< th=""></lod<>
2	0	confirm TPH has NOT arisen from diesel or petrol		☑							
3	æ å	antimony { antimony trioxide } 051-005-00-X		<0.6	mg/kg	1.197	<0.718	mg/kg	<0.0000718 %		<lod< td=""></lod<>
4	-	arsenic { arsenic pentoxide } 033-004-00-6 215-116-9 1303-28-2		8.02	mg/kg	1.534	9.964	mg/kg	0.000996 %	✓	
5	4	barium {		103	mg/kg	1.233	102.91	mg/kg	0.0103 %	√	
6	4	cadmium { cadmium sulfate } 048-009-00-9		0.794	mg/kg	1.855	1.193	mg/kg	0.000119 %	✓	
7	4	copper { dicopper oxide; copper (I) oxide } 029-002-00-X 215-270-7 1317-39-1		12.5	mg/kg	1.126	11.4	mg/kg	0.00114 %	√	
8	4	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	1	14.8	mg/kg		11.988	mg/kg	0.0012 %	√	
9	4	mercury { mercury dichloride } 080-010-00-X 231-299-8 7487-94-7		<0.14	mg/kg	1.353	<0.189	mg/kg	<0.0000189 %		<lod< td=""></lod<>
10	4	molybdenum { molybdenum(VI) oxide } 042-001-00-9		0.639	mg/kg	1.5	0.776	mg/kg	0.0000776 %	√	
11	-	nickel { nickel sulfate } 028-009-00-5 232-104-9 7786-81-4		23.3	mg/kg	2.637	49.762	mg/kg	0.00498 %	√	
12	4	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<lod< td=""></lod<>
13	æ s	034-002-00-8 zinc { zinc sulphate } 030-006-00-9 231-793-3 [1] 7446-19-7 [1] 231-793-3 [2] 7733-02-0 [2]		58.8	mg/kg	2.469	117.608	mg/kg	0.0118 %	√	



_					_	· · · · · · · · · · · · · · · · · · ·						_	
#			Determinand		CLP Note	User entere	d data	Conv. Factor	Compound	conc.	Classification value	Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number	SEP							MC	
14	4	chromium in chromoxide (worst case)				25.7	mg/kg	1.462	30.425	mg/kg	0.00304 %	√	
_	_			1308-38-9	┝								
15	æ	chromium in chromioxide }	ium(VI) compounds	{ chromium(VI)		<0.6	ma/ka	1.923	<1.154	ma/ka	<0.000115 %		<lod< td=""></lod<>
		•	215-607-8	1333-82-0	1	10.0	mg/ng	1.020	11.101	mg/ng	10.000110 70		-202
16		naphthalene 601-052-00-2	202-049-5	91-20-3		<0.009	mg/kg		<0.009	mg/kg	<0.0000009 %		<lod< td=""></lod<>
17		acenaphthylene				<0.012	mg/kg		<0.012	ma/ka	<0.0000012 %		<lod< td=""></lod<>
Ľ.,			205-917-1	208-96-8		-0.012			-0.012	mg/ng	10.0000012 70		
18	0	acenaphthene				<0.008	mg/kg		<0.008	mg/kg	<0.0000008 %		<lod< td=""></lod<>
			201-469-6	83-32-9	⊢								
19	0	fluorene	201-695-5	86-73-7	-	<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<lod< td=""></lod<>
_	0	phenanthrene	201-030-0	00-70-7		0.045			0.045		0.000045.0/		
20		·	201-581-5	85-01-8		<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<lod< td=""></lod<>
21	0	anthracene	204-371-1	120-12-7		<0.016	mg/kg		<0.016	mg/kg	<0.0000016 %		<lod< td=""></lod<>
22	0	fluoranthene		206-44-0		<0.017	mg/kg		<0.017	mg/kg	<0.0000017 %		<lod< td=""></lod<>
23	0	pyrene		129-00-0		<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<lod< td=""></lod<>
_		benzo[a]anthracene		120 00 0		0.044			0.044		0.00001101		
24				56-55-3		<0.014	mg/kg		<0.014	mg/kg	<0.0000014 %		<lod< td=""></lod<>
25		chrysene 601-048-00-0	205-923-4	218-01-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<lod< td=""></lod<>
26		benzo[b]fluoranther	ne	205-99-2		<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<lod< td=""></lod<>
		benzo[k]fluoranther		200 00 2	H	0.044			0.044		0.000044.0/		
27		601-036-00-5	205-916-6	207-08-9		<0.014	mg/kg		<0.014	mg/kg	<0.0000014 %		<lod< td=""></lod<>
28		benzo[a]pyrene; be				<0.015	mg/kg		<0.015	ma/ka	<0.0000015 %		<lod< td=""></lod<>
				50-32-8						3 3			
29	0	indeno[123-cd]pyre		193-39-5		<0.018	mg/kg		<0.018	mg/kg	<0.0000018 %		<lod< td=""></lod<>
30		dibenz[a,h]anthrace		53-70-3		<0.023	mg/kg		<0.023	mg/kg	<0.0000023 %		<lod< td=""></lod<>
31	0	benzo[ghi]perylene		191-24-2		<0.024	mg/kg		<0.024	mg/kg	<0.0000024 %		<lod< td=""></lod<>
32	_	polychlorobiphenyls		1336-36-3		<0.021	mg/kg		<0.021	mg/kg	<0.0000021 %		<lod< td=""></lod<>
33		tert-butyl methyl eth 2-methoxy-2-methy	ner; MTBE; Ipropane	1634-04-4		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<lod< td=""></lod<>
34		benzene				<0.009	mg/kg		<0.009	mg/kg	<0.0000009 %		<lod< td=""></lod<>
35		toluene		71-43-2		<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<lod< td=""></lod<>
36	0	ethylbenzene		108-88-3		<0.004	mg/kg		<0.004	mg/ka	<0.0000004 %		<lod< td=""></lod<>
_			202-849-4	100-41-4	_					J 5			
37	0			191-07-1		<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		<lod< td=""></lod<>
		o-xylene; [1] p-xylei											
38			203-396-5 [2] 203-576-3 [3]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<lod< td=""></lod<>
		ıt	_ 10-000-7 [-]	1000-20-7 [4]						Total:	0.0351 %		

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Key

User supplied data

Determinand values ignored for classification, see column 'Conc. Not Used' for reason

Determinand defined or amended by HazWasteOnline (see Appendix A)

Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound

concentration

<LOD Below limit of detection

ND Not detected

CLP: Note 1 Only the metal concentration has been used for classification





WAC Results for sample: TP11-000000--0.50

WAC Settings: samples in this job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

	Solid Waste Analysis			Landfill Waste Accep	otance Criteria Limits
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.47	3	5
2	LOI (loss on ignition)	%	3.16	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.04	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<0.118	100	-
7	рН	рН	7.75	-	>6
8	ANC (acid neutralisation capacity)	mol/kg		-	-
	Eluate Analysis 10:1				
9	arsenic	mg/kg	<0.005	0.5	2
10	barium	mg/kg	0.0193	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	0.0106	0.5	10
13	copper	mg/kg	0.0375	2	50
14	mercury	mg/kg	<0.0001	0.01	0.2
15	molybdenum	mg/kg	<0.03	0.5	10
16	nickel	mg/kg	0.0122	0.4	10
17	lead	mg/kg	0.002	0.5	10
18	antimony	mg/kg	<0.01	0.06	0.7
19	selenium	mg/kg	<0.01	0.1	0.5
20	zinc	mg/kg	<0.01	4	50
21	chloride	mg/kg	<20	800	15,000
22	fluoride	mg/kg	<5	10	150
23	sulphate	mg/kg	<20	1,000	20,000
24	phenol index	mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg	58.6	500	800
26	TDS (total dissolved solids)	mg/kg	422	4,000	60,000

User supplied data

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Classification of sample: TP12-000000--0.50

Non Hazardous Waste
Classified as 17 05 04

Sample details

Sample Name: LoW Code:
TP12-000000--0.50 Chapter:
Sample Depth:
0.50 m Entry:
Moisture content:

17: Construction and Demolition Wastes (including excavated soil from contaminated sites)17 05 04 (Soil and stones other than those mentioned in 17 05

03)

Hazard properties

(wet weight correction)

None identified

13%

Determinands

Moisture content: 13% Wet Weight Moisture Correction applied (MC)

#		Determinand CLP index number	CLP Note	User entered	l data	Conv. Factor	Compound o	onc.	Classification value	MC Applied	Conc. Not Used
1	0	TPH (C6 to C40) petroleum group		<10	mg/kg		<10	mg/kg	<0.001 %		<lod< td=""></lod<>
2	0	confirm TPH has NOT arisen from diesel or petrol		☑							
3	æ å	antimony { antimony trioxide } 051-005-00-X		<0.6	mg/kg	1.197	<0.718	mg/kg	<0.0000718 %		<lod< td=""></lod<>
4	4	arsenic { arsenic pentoxide } 033-004-00-6 215-116-9 1303-28-2		13.7	mg/kg	1.534	18.282	mg/kg	0.00183 %	✓	
5		barium {		70.9	mg/kg	1.233	76.086	mg/kg	0.00761 %	✓	
6	æ s	cadmium { cadmium sulfate } 048-009-00-9 233-331-6 10124-36-4	+	0.633	mg/kg	1.855	1.021	mg/kg	0.000102 %	✓	
7	4	copper { dicopper oxide; copper (I) oxide } 029-002-00-X	T	9.08	mg/kg	1.126	8.894	mg/kg	0.000889 %	✓	
8	4	lead { • lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	1	13.5	mg/kg		11.745	mg/kg	0.00117 %	✓	
9	4	mercury { mercury dichloride } 080-010-00-X 231-299-8 7487-94-7		<0.14	mg/kg	1.353	<0.189	mg/kg	<0.0000189 %		<lod< td=""></lod<>
10	4	molybdenum { molybdenum(VI) oxide } 042-001-00-9 215-204-7 1313-27-5		1.31	mg/kg	1.5	1.71	mg/kg	0.000171 %	✓	
11	4	nickel { nickel sulfate } 028-009-00-5 232-104-9 7786-81-4	\blacksquare	19.6	mg/kg	2.637	44.961	mg/kg	0.0045 %	✓	
12	4	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<lod< td=""></lod<>
13	4	zinc { zinc sulphate } 030-006-00-9		41.3	mg/kg	2.469	88.724	mg/kg	0.00887 %	✓	



=	_				_							_	
#			Determinand		CLP Note	User entere	d data	Conv. Factor	Compound of	conc.	Classification value	Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number	SLP							MC,	
14	4	chromium in chromi oxide (worst case) }				18.7	mg/kg	1.462	23.778	mg/kg	0.00238 %	√	
	_			1308-38-9	\vdash								
15		chromium in chromioxide } 024-001-00-0	. , .	1333-82-0		<0.6	mg/kg	1.923	<1.154	mg/kg	<0.000115 %		<lod< td=""></lod<>
16		naphthalene 601-052-00-2	202-049-5	91-20-3		<0.009	mg/kg		<0.009	mg/kg	<0.0000009 %		<lod< td=""></lod<>
17	0	acenaphthylene		208-96-8		<0.012	mg/kg		<0.012	mg/kg	<0.0000012 %		<lod< td=""></lod<>
18	0	acenaphthene		83-32-9		<0.008	mg/kg		<0.008	mg/kg	<0.0000008 %		<lod< td=""></lod<>
19	0	fluorene		86-73-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<lod< td=""></lod<>
20	0	phenanthrene		85-01-8		<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<lod< td=""></lod<>
21	0	anthracene		120-12-7		<0.016	mg/kg		<0.016	mg/kg	<0.0000016 %		<lod< td=""></lod<>
22	0	fluoranthene		206-44-0		<0.017	mg/kg		<0.017	mg/kg	<0.0000017 %		<lod< td=""></lod<>
23	0	pyrene		129-00-0		<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<lod< td=""></lod<>
24		benzo[a]anthracene)	56-55-3		<0.014	mg/kg		<0.014	mg/kg	<0.0000014 %		<lod< td=""></lod<>
25		chrysene		218-01-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<lod< td=""></lod<>
26		benzo[b]fluoranther	пе	205-99-2	_	<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<lod< td=""></lod<>
27		benzo[k]fluoranthen	ie	207-08-9		<0.014	mg/kg		<0.014	mg/kg	<0.0000014 %		<lod< td=""></lod<>
28		benzo[a]pyrene; be	nzo[def]chrysene	50-32-8		<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<lod< td=""></lod<>
29		indeno[123-cd]pyre	ne	193-39-5		<0.018	mg/kg		<0.018	mg/kg	<0.0000018 %		<lod< td=""></lod<>
30		dibenz[a,h]anthrace	ene	53-70-3		<0.023	mg/kg		<0.023	mg/kg	<0.0000023 %		<lod< td=""></lod<>
31	0	benzo[ghi]perylene		191-24-2		<0.024	mg/kg		<0.024	mg/kg	<0.0000024 %		<lod< td=""></lod<>
32	0	polychlorobiphenyls	s; PCB	1336-36-3		<0.021	mg/kg		<0.021	mg/kg	<0.0000021 %		<lod< td=""></lod<>
33		tert-butyl methyl eth 2-methoxy-2-methy 603-181-00-X	ner; MTBE; Ipropane	1634-04-4		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<lod< td=""></lod<>
34		benzene		71-43-2		<0.009	mg/kg		<0.009	mg/kg	<0.0000009 %		<lod< td=""></lod<>
35		toluene		108-88-3		<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<lod< td=""></lod<>
36	0	ethylbenzene		100-41-4		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<lod< td=""></lod<>
37	0	coronene		191-07-1		<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		<lod< td=""></lod<>
		o-xylene; [1] p-xyler			\vdash								
38		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3]		<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<lod< td=""></lod<>
\vdash		[215-535-7 [4]	1330-20-7 [4]	_					Total:	0.029 %		
					_					iotai:	U.U29 %		

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Key

User supplied data

Determinand values ignored for classification, see column 'Conc. Not Used' for reason

Determinand defined or amended by HazWasteOnline (see Appendix A)

Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound

concentration

<LOD Below limit of detection

ND Not detected

CLP: Note 1 Only the metal concentration has been used for classification





WAC Results for sample: TP12-000000--0.50

WAC Settings: samples in this job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

	Solid Waste Analysis			Landfill Waste Acce	otance Criteria Limits
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.409	3	5
2	LOI (loss on ignition)	%	2.67	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.04	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<0.118	100	-
7	рН	рН	7.94	-	>6
8	ANC (acid neutralisation capacity)	mol/kg		-	-
	Eluate Analysis 10:1				
9	arsenic	mg/kg	0.0166	0.5	2
10	barium	mg/kg	0.464	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	0.0146	0.5	10
13	copper	mg/kg	0.025	2	50
14	mercury	mg/kg	0.0001	0.01	0.2
15	molybdenum	mg/kg	0.0587	0.5	10
16	nickel	mg/kg	0.0088	0.4	10
17	lead	mg/kg	0.0033	0.5	10
18	antimony	mg/kg	<0.01	0.06	0.7
19	selenium	mg/kg	<0.01	0.1	0.5
20	zinc	mg/kg	0.0297	4	50
21	chloride	mg/kg	<20	800	15,000
22	fluoride	mg/kg	5.09	10	150
23	sulphate	mg/kg	<20	1,000	20,000
24	phenol index	mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg	45	500	800
26	TDS (total dissolved solids)	mg/kg	287	4,000	60,000

User supplied data

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Classification of sample: TP14-000000--0.50

Sample details

Sample Name: LoW Code: TP14-000000--0.50 Chapter: Sample Depth: 0.50 m Entry: Moisture content:

17: Construction and Demolition Wastes (including excavated soil from contaminated sites) 17 05 04 (Soil and stones other than those mentioned in 17 05

13%

(wet weight correction)

Hazard properties

None identified

Determinands

Moisture content: 13% Wet Weight Moisture Correction applied (MC)

#		Determinand CLP index number	CLP Note	User entered dat	а	Conv. Factor	Compound co	nc.	Classification value	MC Applied	Conc. Not Used
1	0	TPH (C6 to C40) petroleum group		<10 mg	/kg		<10 r	ng/kg	<0.001 %		<lod< td=""></lod<>
2	0	confirm TPH has NOT arisen from diesel or petrol		✓							
3	4	antimony { antimony trioxide } 051-005-00-X		<0.6 mg	/kg	1.197	<0.718 r	ng/kg	<0.0000718 %		<lod< td=""></lod<>
4	4	arsenic { arsenic pentoxide } 033-004-00-6		20.6 mg	/kg	1.534	27.49 r	ng/kg	0.00275 %	✓	
5	4	barium {		81.7 mg	/kg	1.233	87.676 r	ng/kg	0.00877 %	✓	
6	æ	cadmium { cadmium sulfate } 048-009-00-9 233-331-6 10124-36-4		1.82 mg	/kg	1.855	2.937 r	ng/kg	0.000294 %	✓	
7	4	copper { dicopper oxide; copper (I) oxide } 029-002-00-X		39.5 mg	/kg	1.126	38.691 r	ng/kg	0.00387 %	✓	
8	4	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	1	20.6 mg	/kg		17.922 r	mg/kg	0.00179 %	✓	
9	4	mercury { mercury dichloride } 080-010-00-X		<0.14 mg	/kg	1.353	<0.189 r	ng/kg	<0.0000189 %		<lod< td=""></lod<>
10	4	molybdenum { molybdenum(VI) oxide } 042-001-00-9		3.32 mg	/kg	1.5	4.333 r	ng/kg	0.000433 %	✓	
11	4	nickel { nickel sulfate } 028-009-00-5 232-104-9 7786-81-4		64.5 mg	/kg	2.637	147.958 r	ng/kg	0.0148 %	✓	
12	4	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }		<1 mg	/kg	2.554	<2.554 r	ng/kg	<0.000255 %		<lod< td=""></lod<>
13	_	zinc { zinc sulphate } 030-006-00-9		71.6 mg	/kg	2.469	153.817 r	mg/kg	0.0154 %	√	



_					_								
#			Determinand		CLP Note	User entere	d data	Conv. Factor	Compound of	conc.	Classification value	Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number	SLP							MC	
14	4	chromium in chromi oxide (worst case) }				32.4	mg/kg	1.462	41.198	mg/kg	0.00412 %	√	
	_			1308-38-9									
15	4	chromium in chromioxide } 024-001-00-0	. , .	1333-82-0	-	<0.6	mg/kg	1.923	<1.154	mg/kg	<0.000115 %		<lod< td=""></lod<>
16		naphthalene		91-20-3		<0.009	mg/kg		<0.009	mg/kg	<0.0000009 %		<lod< td=""></lod<>
4-		acenaphthylene	202-049-3	91-20-3	H	0.040			0.040		0.000010.01		
17		. ,	205-917-1	208-96-8		<0.012	mg/kg		<0.012	mg/kg	<0.0000012 %		<lod< td=""></lod<>
18	0	acenaphthene	201-469-6	83-32-9		<0.008	mg/kg		<0.008	mg/kg	<0.0000008 %		<lod< td=""></lod<>
19	0	fluorene				<0.01	ma/ka		<0.01	ma/ka	<0.000001 %		<lod< td=""></lod<>
19		Í	201-695-5	86-73-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		\LUD
20	0	phenanthrene	201-581-5	85-01-8		<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<lod< td=""></lod<>
21	0	anthracene	204-371-1	120-12-7		<0.016	mg/kg		<0.016	mg/kg	<0.0000016 %		<lod< td=""></lod<>
22	0	fluoranthene	205-912-4	206-44-0		<0.017	mg/kg		<0.017	mg/kg	<0.0000017 %		<lod< td=""></lod<>
23	0	pyrene	204-927-3	129-00-0		<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<lod< td=""></lod<>
24		benzo[a]anthracene	•			<0.014	mg/kg		<0.014	ma/ka	<0.0000014 %		<lod< td=""></lod<>
		601-033-00-9	200-280-6	56-55-3		10.014			10.014	mg/kg	-0.0000014 70		100
25		chrysene 601-048-00-0	205-923-4	218-01-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<lod< td=""></lod<>
26		benzo[b]fluoranther		205-99-2		<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<lod< td=""></lod<>
27		benzo[k]fluoranthen		207-08-9		<0.014	mg/kg		<0.014	mg/kg	<0.0000014 %		<lod< td=""></lod<>
28		benzo[a]pyrene; be				<0.015	mg/kg		<0.015	ma/ka	<0.0000015 %		<lod< td=""></lod<>
20		601-032-00-3	200-028-5	50-32-8		VO.013	mg/kg		VO.010	mg/kg	-0.0000013 70		LOD
29	0	indeno[123-cd]pyre		193-39-5		<0.018	mg/kg		<0.018	mg/kg	<0.0000018 %		<lod< td=""></lod<>
30		dibenz[a,h]anthrace		53-70-3		<0.023	mg/kg		<0.023	mg/kg	<0.0000023 %		<lod< td=""></lod<>
31	0	benzo[ghi]perylene		191-24-2		<0.024	mg/kg		<0.024	mg/kg	<0.0000024 %		<lod< td=""></lod<>
32	_	polychlorobiphenyls		1336-36-3		<0.021	mg/kg		<0.021	mg/kg	<0.0000021 %		<lod< td=""></lod<>
33		tert-butyl methyl eth 2-methoxy-2-methy 603-181-00-X	Ipropane	1634-04-4		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<lod< td=""></lod<>
34		benzene		71-43-2		<0.009	mg/kg		<0.009	mg/kg	<0.0000009 %		<lod< td=""></lod<>
35		toluene		108-88-3		<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<lod< td=""></lod<>
36	0	ethylbenzene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<lod< td=""></lod<>
37	0	coronene		100-41-4		<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		<lod< td=""></lod<>
		o-xylene; [1] p-xyler		191-07-1 xvlene [4]	\vdash								
38		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3]		<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<lod< td=""></lod<>
	Ш	4	215-535-7 [4]	1330-20-7 [4]	_					Total:	0.0537 %	۲	
										lotai:	0.0537 %	\perp	

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Key

User supplied data

Determinand values ignored for classification, see column 'Conc. Not Used' for reason

Determinand defined or amended by HazWasteOnline (see Appendix A)

Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound

concentration

<LOD Below limit of detection

ND Not detected

CLP: Note 1 Only the metal concentration has been used for classification





WAC Results for sample: TP14-000000--0.50

WAC Settings: samples in this job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

	Solid Waste Analysis			Landfill Waste Acce	ptance Criteria Limits
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.234	3	5
2	LOI (loss on ignition)	%	2.49	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.04	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<0.118	100	-
7	рН	рН	7.98	-	>6
8	ANC (acid neutralisation capacity)	mol/kg		-	-
	Eluate Analysis 10:1				
9	arsenic	mg/kg	<0.005	0.5	2
10	barium	mg/kg	0.0083	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	<0.01	0.5	10
13	copper	mg/kg	0.0074	2	50
14	mercury	mg/kg	<0.0001	0.01	0.2
15	molybdenum	mg/kg	<0.03	0.5	10
16	nickel	mg/kg	0.004	0.4	10
17	lead	mg/kg	<0.002	0.5	10
18	antimony	mg/kg	<0.01	0.06	0.7
19	selenium	mg/kg	<0.01	0.1	0.5
20	zinc	mg/kg	<0.01	4	50
21	chloride	mg/kg	<20	800	15,000
22	fluoride	mg/kg	<5	10	150
23	sulphate	mg/kg	<20	1,000	20,000
24	phenol index	mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg	34.7	500	800
26	TDS (total dissolved solids)	mg/kg	293	4,000	60,000

Key

User supplied data

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Classification of sample: TP15-000000--0.50

Sample details

Sample Name: LoW Code: TP15-000000--0.50 Chapter: Sample Depth: 0.50 m Entry: Moisture content:

17: Construction and Demolition Wastes (including excavated soil from contaminated sites)

17 05 04 (Soil and stones other than those mentioned in 17 05

12%

(wet weight correction)

Hazard properties

None identified

Determinands

Moisture content: 12% Wet Weight Moisture Correction applied (MC)

#		Determinand CLP index number	CLP Note	User entere	d data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	0	TPH (C6 to C40) petroleum group		12.1	mg/kg		10.648 mg/kg	0.00106 %	✓	
2	9	confirm TPH has NOT arisen from diesel or petrol		☑						
3	æ	antimony { antimony trioxide } 051-005-00-X		<0.6	mg/kg	1.197	<0.718 mg/kg	<0.0000718 %		<lod< td=""></lod<>
4	4	arsenic { arsenic pentoxide } 033-004-00-6 215-116-9 1303-28-2		9.85	mg/kg	1.534	13.296 mg/kg	0.00133 %	✓	
5	4	barium {		55.1	mg/kg	1.233	59.81 mg/kg	0.00598 %	✓	
6	-	cadmium { cadmium sulfate } 048-009-00-9		0.435	mg/kg	1.855	0.71 mg/kg	0.000071 %	✓	
7	4	copper { dicopper oxide; copper (I) oxide } 029-002-00-X 215-270-7 1317-39-1		17.7	mg/kg	1.126	17.537 mg/kg	0.00175 %	✓	
8	4	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	1	24.5	mg/kg		21.56 mg/kg	0.00216 %	✓	
9	4	mercury { mercury dichloride } 080-010-00-X 231-299-8 7487-94-7		<0.14	mg/kg	1.353	<0.189 mg/kg	<0.0000189 %		<lod< td=""></lod<>
10	4	molybdenum { molybdenum(VI) oxide } 042-001-00-9 215-204-7 1313-27-5		0.474	mg/kg	1.5	0.626 mg/kg	0.0000626 %	✓	
11	-	nickel { nickel sulfate } 028-009-00-5 232-104-9 7786-81-4		14.3	mg/kg	2.637	33.18 mg/kg	0.00332 %	✓	
12	4	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewher in this Annex }	е	<1	mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<lod< td=""></lod<>
13	4	034-002-00-8 zinc { zinc sulphate } 030-006-00-9		53.6	mg/kg	2.469	116.472 mg/kg	0.0116 %	√	



_	_				1							1	
#			Determinand		CLP Note	User entered	l data	Conv. Factor	Compound of	conc.	Classification value	Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number	SIP							MC	
14	4	chromium in chromoxide (worst case)				16.2	mg/kg	1.462	20.836	mg/kg	0.00208 %	√	
	_			1308-38-9	\vdash								
15		chromium in chromoxide } 024-001-00-0	. , .	1333-82-0	_	<0.6	mg/kg	1.923	<1.154	mg/kg	<0.000115 %		<lod< td=""></lod<>
16		naphthalene		91-20-3	-	<0.009	mg/kg		<0.009	mg/kg	<0.0000009 %		<lod< td=""></lod<>
17	0	acenaphthylene		208-96-8		<0.012	mg/kg		<0.012	mg/kg	<0.0000012 %		<lod< td=""></lod<>
18	0	acenaphthene		83-32-9		<0.008	mg/kg		<0.008	mg/kg	<0.0000008 %		<lod< td=""></lod<>
19	0	fluorene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<lod< td=""></lod<>
20	0	phenanthrene		86-73-7		<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<lod< td=""></lod<>
21	9	anthracene		85-01-8		<0.016	mg/kg		<0.016	mg/kg	<0.0000016 %		<lod< td=""></lod<>
22	0	fluoranthene		120-12-7		0.0397	mg/kg		0.0349	mg/kg	0.00000349 %	√	
23	0	pyrene		206-44-0		0.0374	mg/kg		0.0329	mg/kg	0.00000329 %	√	
24		benzo[a]anthracene)	129-00-0		0.03	mg/kg		0.0264	mg/kg	0.00000264 %	√	
25		chrysene		56-55-3		0.0321	mg/kg		0.0282	mg/kg	0.00000282 %	√	
26		benzo[b]fluoranther	пе	218-01-9		0.0538	mg/kg		0.0473	mg/kg	0.00000473 %	√	
27		601-034-00-4 benzo[k]fluoranther		205-99-2		<0.014	mg/kg		<0.014	ma/ka	<0.000014 %		<lod< td=""></lod<>
		601-036-00-5 benzo[a]pyrene; be		207-08-9	-								
28		601-032-00-3	200-028-5	50-32-8		0.0335	mg/kg		0.0295	mg/kg	0.00000295 %	✓	
29	0		205-893-2	193-39-5		0.0247	mg/kg		0.0217	mg/kg	0.00000217 %	✓	
30		l.	200-181-8	53-70-3		<0.023	mg/kg		<0.023	mg/kg	<0.0000023 %		<lod< td=""></lod<>
31	0		205-883-8	191-24-2		<0.024	mg/kg		<0.024	mg/kg	<0.0000024 %		<lod< td=""></lod<>
32	0	polychlorobiphenyls 602-039-00-4		1336-36-3		<0.021	mg/kg		<0.021	mg/kg	<0.0000021 %		<lod< td=""></lod<>
33		tert-butyl methyl eth 2-methoxy-2-methy 603-181-00-X	Ipropane	1634-04-4		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<lod< td=""></lod<>
34		benzene		71-43-2		<0.009	mg/kg		<0.009	mg/kg	<0.0000009 %		<lod< td=""></lod<>
35		toluene		108-88-3		<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<lod< td=""></lod<>
36	0	ethylbenzene		100-41-4		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<lod< td=""></lod<>
37	0	coronene		191-07-1		<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		<lod< td=""></lod<>
		o-xylene; [1] p-xylei			H							\vdash	
38		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3]		<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<lod< td=""></lod<>
H			215-535-7 [4]	1330-20-7 [4]	_					Total:	0.03 %	H	
										iotai.	0.03 %	<u></u>	

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Key

User supplied data

Determinand values ignored for classification, see column 'Conc. Not Used' for reason

Determinand defined or amended by HazWasteOnline (see Appendix A)

Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound

concentration

<LOD Below limit of detection

ND Not detected

CLP: Note 1 Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because HP 3 can be discounted as this is a solid waste without a free draining liquid phase.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00106%)





WAC Results for sample: TP15-000000--0.50

WAC Settings: samples in this job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

	Solid Waste Analysis			Landfill Waste Acce	ptance Criteria Limits
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.914	3	5
2	LOI (loss on ignition)	%	3.13	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.04	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-
5	Mineral oil (C10 to C40)	mg/kg	5.72	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	0.251	100	-
7	pH	pН	7.72	-	>6
8	ANC (acid neutralisation capacity)	mol/kg		-	-
	Eluate Analysis 10:1	,			
9	arsenic	mg/kg	0.0324	0.5	2
10	barium	mg/kg	0.018	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	<0.01	0.5	10
13	copper	mg/kg	0.0319	2	50
14	mercury	mg/kg	0.0001	0.01	0.2
15	molybdenum	mg/kg	<0.03	0.5	10
16	nickel	mg/kg	0.0112	0.4	10
17	lead	mg/kg	<0.002	0.5	10
18	antimony	mg/kg	<0.01	0.06	0.7
19	selenium	mg/kg	<0.01	0.1	0.5
20	zinc	mg/kg	<0.01	4	50
21	chloride	mg/kg	<20	800	15,000
22	fluoride	mg/kg	<5	10	150
23	sulphate	mg/kg	<20	1,000	20,000
24	phenol index	mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg	51.6	500	800
26	TDS (total dissolved solids)	mg/kg	483	4,000	60,000

User supplied data

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Classification of sample: TP16-000000--0.50

Sample details

Sample Name: LoW Code: TP16-000000--0.50 Chapter: Sample Depth: 0.50 m Entry:

from contaminated sites) 17 05 04 (Soil and stones other than those mentioned in 17 05

17: Construction and Demolition Wastes (including excavated soil

Moisture content:

16%

(wet weight correction)

Hazard properties

None identified

Determinands

Moisture content: 16% Wet Weight Moisture Correction applied (MC)

#		Determinand CLP index number	mber 0	CLP Note	User entered	l data	Conv. Factor	Compound co	onc.	Classification value	MC Applied	Conc. Not Used
1	0	TPH (C6 to C40) petroleum group			<10	mg/kg		<10	mg/kg	<0.001 %		<lod< td=""></lod<>
2	0	confirm TPH has NOT arisen from diesel or petrol			☑							
3	4	antimony { antimony trioxide } 051-005-00-X 215-175-0 1309-64-4			<0.6	mg/kg	1.197	<0.718	mg/kg	<0.0000718 %		<lod< td=""></lod<>
4	4	arsenic { arsenic pentoxide } 033-004-00-6			11.1	mg/kg	1.534	14.302	mg/kg	0.00143 %	✓	
5	4	barium { barium sulphide }	5		46	mg/kg	1.233	47.662	mg/kg	0.00477 %	~	
6	-	cadmium { cadmium sulfate } 048-009-00-9 233-331-6 10124-36-4			0.482	mg/kg	1.855	0.751	mg/kg	0.0000751 %	✓	
7	4	copper { dicopper oxide; copper (I) oxide } 029-002-00-X			10.8	mg/kg	1.126	10.214	mg/kg	0.00102 %	✓	
8	4	lead { lead compounds with the exception of the specified elsewhere in this Annex (worst case) }		1	14.9	mg/kg		12.516	mg/kg	0.00125 %	√	
9	æ\$	mercury { mercury dichloride } 080-010-00-X 231-299-8 7487-94-7			<0.14	mg/kg	1.353	<0.189	mg/kg	<0.0000189 %		<lod< td=""></lod<>
10	4	molybdenum { molybdenum(VI) oxide } 042-001-00-9 215-204-7 1313-27-5			0.494	mg/kg	1.5	0.623	mg/kg	0.0000623 %	✓	
11	_	nickel { nickel sulfate } 028-009-00-5 232-104-9 7786-81-4			17	mg/kg	2.637	37.652	mg/kg	0.00377 %	✓	
12	4	selenium { selenium compounds with the exceptio cadmium sulphoselenide and those specified elser in this Annex }			<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<lod< td=""></lod<>
13	æ s	034-002-00-8 zinc { zinc sulphate } 030-006-00-9 231-793-3 [1] 7446-19-7 231-793-3 [2] 7733-02-0			40.7	mg/kg	2.469	84.42	mg/kg	0.00844 %	✓	



_													
#			Determinand		CLP Note	User entere	d data	Conv. Factor	Compound of	onc.	Classification value	Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number	SLP							MC	
14	4	chromium in chromi oxide (worst case) }				12.8	mg/kg	1.462	15.715	mg/kg	0.00157 %	✓	
				1308-38-9	-								
15	æ	chromium in chromioxide }	ium(VI) compounds	{ chromium(VI)		<0.6	ma/ka	1.923	<1.154	ma/ka	<0.000115 %		<lod< td=""></lod<>
		•	215-607-8	1333-82-0	1	0.0	9,9			99	0.0001.07		
16		naphthalene 601-052-00-2	202-049-5	91-20-3		<0.009	mg/kg		<0.009	mg/kg	<0.0000009 %		<lod< td=""></lod<>
17	0	acenaphthylene				<0.012	mg/kg		<0.012	ma/ka	<0.0000012 %		<lod< td=""></lod<>
			205-917-1	208-96-8									
18	0	acenaphthene	201-469-6	83-32-9	-	<0.008	mg/kg		<0.008	mg/kg	<0.0000008 %		<lod< td=""></lod<>
	0	fluorene	201-469-6	03-32-9	┢								
19			201-695-5	86-73-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<lod< td=""></lod<>
20	0	phenanthrene				<0.015	mg/kg		<0.015	ma/ka	<0.0000015 %		<lod< td=""></lod<>
20		É	201-581-5	85-01-8		40.013			VO.010	mg/kg			LOD
21	0	anthracene	204-371-1	120-12-7		<0.016	mg/kg		<0.016	mg/kg	<0.0000016 %		<lod< td=""></lod<>
22	0	fluoranthene	205-912-4	206-44-0		<0.017	mg/kg		<0.017	mg/kg	<0.0000017 %		<lod< td=""></lod<>
23	0	pyrene	204-927-3	129-00-0		<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<lod< td=""></lod<>
24		benzo[a]anthracene	•			<0.014	mg/kg		<0.014	ma/ka	<0.0000014 %		<lod< td=""></lod<>
24		601-033-00-9	200-280-6	56-55-3		VO.014			VO.014	mg/kg			LOD
25		chrysene 601-048-00-0	205-923-4	218-01-9	-	<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<lod< td=""></lod<>
26		benzo[b]fluoranther		205-99-2		<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<lod< td=""></lod<>
27		benzo[k]fluoranthen				<0.014	mg/kg		<0.014	ma/ka	<0.0000014 %		<lod< td=""></lod<>
21		601-036-00-5	205-916-6	207-08-9		VO.014			\0.01 4	mg/kg			LOD
28		benzo[a]pyrene; be				<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<lod< td=""></lod<>
				50-32-8	┢							Н	
29	0	indeno[123-cd]pyre		193-39-5	1	<0.018	mg/kg		<0.018	mg/kg	<0.0000018 %		<lod< td=""></lod<>
30		dibenz[a,h]anthrace				<0.023	mg/kg		<0.023	ma/ka	<0.0000023 %		<lod< td=""></lod<>
				53-70-3									
31	0	benzo[ghi]perylene		404.04.0		<0.024	mg/kg		<0.024	mg/kg	<0.0000024 %		<lod< td=""></lod<>
		polychlorobiphenyls		191-24-2	-								
32	_			1336-36-3	-	<0.021	mg/kg		<0.021	mg/kg	<0.0000021 %		<lod< td=""></lod<>
33		tert-butyl methyl eth 2-methoxy-2-methyl	Ipropane			<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<lod< td=""></lod<>
			216-653-1	1634-04-4	1								
34		benzene 601-020-00-8	200-753-7	71-43-2	-	<0.009	mg/kg		<0.009	mg/kg	<0.0000009 %		<lod< td=""></lod<>
35		toluene				<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<lod< td=""></lod<>
36	0	ethylbenzene	203-625-9	108-88-3		<0.004	mg/kg		<0.004	ma/ka	<0.0000004 %		<lod< td=""></lod<>
<u> </u>		· · · · · · · · · · · · · · · · · · ·	202-849-4	100-41-4	_		J9			59			
37	0	coronene	205-881-7	191-07-1		<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		<lod< td=""></lod<>
		o-xylene; [1] p-xyler		xylene [4]									
38			203-396-5 [2] 203-576-3 [3]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<lod< td=""></lod<>
				[1]	_					Total:	0.0239 %	П	
	_											_	

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Key

User supplied data

Determinand values ignored for classification, see column 'Conc. Not Used' for reason

Determinand defined or amended by HazWasteOnline (see Appendix A)

Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound

concentration

<LOD Below limit of detection

ND Not detected

CLP: Note 1 Only the metal concentration has been used for classification





WAC Results for sample: TP16-000000--0.50

WAC Settings: samples in this job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

	Solid Waste Analysis			Landfill Waste Acce	ptance Criteria Limits
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.558	3	5
2	LOI (loss on ignition)	%	2.01	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.04	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<0.118	100	-
7	рН	рН	8.16	-	>6
8	ANC (acid neutralisation capacity)	mol/kg		-	-
	Eluate Analysis 10:1				
9	arsenic	mg/kg	0.088	0.5	2
10	barium	mg/kg	1.58	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	0.0149	0.5	10
13	copper	mg/kg	0.0309	2	50
14	mercury	mg/kg	0.0001	0.01	0.2
15	molybdenum	mg/kg	<0.03	0.5	10
16	nickel	mg/kg	0.0077	0.4	10
17	lead	mg/kg	<0.002	0.5	10
18	antimony	mg/kg	<0.01	0.06	0.7
19	selenium	mg/kg	<0.01	0.1	0.5
20	zinc	mg/kg	0.0208	4	50
21	chloride	mg/kg	<20	800	15,000
22	fluoride	mg/kg	<5	10	150
23	sulphate	mg/kg	<20	1,000	20,000
24	phenol index	mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg	45	500	800
26	TDS (total dissolved solids)	mg/kg	505	4,000	60,000

User supplied data

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Classification of sample: TP18-000000--0.50

Sample details

Sample Name: LoW Code: TP18-000000--0.50 Chapter: Sample Depth: 0.50 m Entry: Moisture content:

(wet weight correction)

17: Construction and Demolition Wastes (including excavated soil from contaminated sites)

17 05 04 (Soil and stones other than those mentioned in 17 05

Hazard properties

None identified

15%

Determinands

Moisture content: 15% Wet Weight Moisture Correction applied (MC)

#		Determinand CLP index number	CLP Note	User entered	d data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	0	TPH (C6 to C40) petroleum group		23	mg/kg		19.55 mg/kg	0.00196 %	√	
2	0	confirm TPH has NOT arisen from diesel or petrol	\blacksquare	✓						
3	4	antimony { antimony trioxide } 051-005-00-X	+	<0.6	mg/kg	1.197	<0.718 mg/kg	g <0.0000718 %		<lod< td=""></lod<>
4	-	arsenic { arsenic pentoxide } 033-004-00-6 215-116-9 1303-28-2		13.6	mg/kg	1.534	17.732 mg/kg	0.00177 %	√	
5	4	barium { • barium sulphide }		60.6	mg/kg	1.233	63.537 mg/k	0.00635 %	√	
6	4	cadmium { cadmium sulfate } 048-009-00-9 233-331-6 10124-36-4		0.582	mg/kg	1.855	0.917 mg/kg	0.0000917 %	√	
7	4	copper { dicopper oxide; copper (I) oxide } 029-002-00-X	1	15.3	mg/kg	1.126	14.642 mg/kg	0.00146 %	√	
8	4	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	1	24.2	mg/kg		20.57 mg/kg	0.00206 %	√	
9	æ\$	mercury { mercury dichloride } 080-010-00-X 231-299-8 7487-94-7		<0.14	mg/kg	1.353	<0.189 mg/kg	<0.0000189 %		<lod< td=""></lod<>
10	4	molybdenum { molybdenum(VI) oxide } 042-001-00-9	\perp	0.785	mg/kg	1.5	1.001 mg/kg	0.0001 %	✓	
11	-	nickel { nickel sulfate } 028-009-00-5 232-104-9 7786-81-4		18.1	mg/kg	2.637	40.565 mg/kg	0.00406 %	√	
12	4	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }		<1	mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<lod< th=""></lod<>
13	æ s	zinc { zinc sulphate } 030-006-00-9		64.5	mg/kg	2.469	135.379 mg/k	0.0135 %	√	



$\overline{}$				-	_								
#			Determinand		CLP Note	User entered	l data	Conv. Factor	Compound of	conc.	Classification value	Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number	SLP							MC	
14	4	chromium in chromoxide (worst case)	}	{ • chromium(III)		11.9	mg/kg	1.462	14.784	mg/kg	0.00148 %	√	
	æ	chromium in chrom											
15	-	oxide }	. , .	1333-82-0		<0.6	mg/kg	1.923	<1.154	mg/kg	<0.000115 %		<lod< td=""></lod<>
16		naphthalene 601-052-00-2	202-049-5	91-20-3		<0.009	mg/kg		<0.009	mg/kg	<0.0000009 %		<lod< td=""></lod<>
17	0	acenaphthylene	205-917-1	208-96-8		<0.012	mg/kg		<0.012	mg/kg	<0.0000012 %		<lod< td=""></lod<>
18	0	acenaphthene	201-469-6	83-32-9		<0.008	mg/kg		<0.008	mg/kg	<0.0000008 %		<lod< td=""></lod<>
19	0	fluorene	201-695-5	86-73-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<lod< td=""></lod<>
20	0	phenanthrene	201-581-5	85-01-8		0.0843	mg/kg		0.0717	mg/kg	0.00000717 %	✓	
21	0	anthracene	204-371-1	120-12-7		0.0209	mg/kg		0.0178	mg/kg	0.00000178 %	✓	
22	0	fluoranthene	205-912-4	206-44-0		0.234	mg/kg		0.199	mg/kg	0.0000199 %	✓	
23	0	pyrene	204-927-3	129-00-0		0.212	mg/kg		0.18	mg/kg	0.000018 %	✓	
24		benzo[a]anthracene				0.168	mg/kg		0.143	mg/kg	0.0000143 %	√	
		\\	200-280-6	56-55-3	-							-	
25				218-01-9		0.169	mg/kg		0.144	mg/kg	0.0000144 %	✓	
26			205-911-9	205-99-2		0.2	mg/kg		0.17	mg/kg	0.000017 %	✓	
27			205-916-6	207-08-9		0.07	mg/kg		0.0595	mg/kg	0.00000595 %	✓	
28			200-028-5	50-32-8		0.162	mg/kg		0.138	mg/kg	0.0000138 %	✓	
29	0		205-893-2	193-39-5		0.128	mg/kg		0.109	mg/kg	0.0000109 %	✓	
30			200-181-8	53-70-3		<0.023	mg/kg		<0.023	mg/kg	<0.0000023 %		<lod< td=""></lod<>
31	0		205-883-8	191-24-2		0.117	mg/kg		0.0994	mg/kg	0.00000994 %	✓	
32	0		215-648-1	1336-36-3		<0.021	mg/kg		<0.021	mg/kg	<0.0000021 %		<lod< td=""></lod<>
33		tert-butyl methyl eth 2-methoxy-2-methy 603-181-00-X	Ipropane	1634-04-4		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<lod< td=""></lod<>
34		benzene		71-43-2		<0.009	mg/kg		<0.009	mg/kg	<0.0000009 %		<lod< td=""></lod<>
35		toluene		108-88-3		<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<lod< td=""></lod<>
36	0	ethylbenzene		100-41-4		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<lod< td=""></lod<>
37	0	coronene		191-07-1		<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		<lod< td=""></lod<>
		o-xylene; [1] p-xylei	ne; [2] m-xylene; [3]	xylene [4]									
38		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<lod< td=""></lod<>
		<u> </u>	210-000-1 [4]	1000-20-1 [4]						Total:	0.0335 %	Н	
										.o.ui.	0.0000 /0		

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Key

User supplied data

Determinand values ignored for classification, see column 'Conc. Not Used' for reason

Determinand defined or amended by HazWasteOnline (see Appendix A)

Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound

concentration

<LOD Below limit of detection

ND Not detected

CLP: Note 1 Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because HP 3 can be discounted as this is a solid waste without a free draining liquid phase.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00196%)





WAC Results for sample: TP18-000000--0.50

WAC Settings: samples in this job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

Solid Waste Analysis			Landfill Waste Acce	ptance Criteria Limits
Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
TOC (total organic carbon)	%	1.32	3	5
LOI (loss on ignition)	%	3.56	-	-
BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.04	6	-
PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-
Mineral oil (C10 to C40)	mg/kg	7.87	500	-
PAHs (polycyclic aromatic hydrocarbons)	mg/kg	1.56	100	-
рН	pН	8.05	-	>6
ANC (acid neutralisation capacity)	mol/kg		-	-
Eluate Analysis 10:1	•			
arsenic	mg/kg	0.0678	0.5	2
barium	mg/kg	2.14	20	100
cadmium	mg/kg	<0.0008	0.04	1
chromium	mg/kg	<0.01	0.5	10
copper	mg/kg	0.06	2	50
mercury	mg/kg	<0.0001	0.01	0.2
molybdenum	mg/kg	0.0488	0.5	10
nickel	mg/kg	0.0191	0.4	10
lead	mg/kg	0.0035	0.5	10
antimony	mg/kg	0.0133	0.06	0.7
selenium	mg/kg	0.0132	0.1	0.5
zinc	mg/kg	0.0699	4	50
chloride	mg/kg	<20	800	15,000
fluoride	mg/kg	<5	10	150
sulphate	mg/kg	21	1,000	20,000
phenol index	mg/kg	<0.16	1	-
DOC (dissolved organic carbon)	mg/kg	67.3	500	800
TDS (total dissolved solids)	mg/kg	784	4,000	60,000
	Determinand TOC (total organic carbon) LOI (loss on ignition) BTEX (benzene, toluene, ethylbenzene and xylenes) PCBs (polychlorinated biphenyls, 7 congeners) Mineral oil (C10 to C40) PAHs (polycyclic aromatic hydrocarbons) pH ANC (acid neutralisation capacity) Eluate Analysis 10:1 arsenic barium cadmium chromium copper mercury molybdenum nickel lead antimony selenium zinc chloride fluoride sulphate phenol index DOC (dissolved organic carbon)	Determinand TOC (total organic carbon)	Determinand	Determinand User entered data Inert waste landfill

User supplied data

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Classification of sample: TP02-000000--0.50

Sample details

Sample Name: LoW Code: TP02-000000--0.50 Chapter: Sample Depth: 0.50 m Entry:

17: Construction and Demolition Wastes (including excavated soil from contaminated sites) 17 05 04 (Soil and stones other than those mentioned in 17 05

Moisture content:

10%

(wet weight correction)

Hazard properties

None identified

Determinands

Moisture content: 10% Wet Weight Moisture Correction applied (MC)

#		Determinand CLP index number	Number	CLP Note	User entered	l data	Conv. Factor	Compound or	onc.	Classification value	MC Applied	Conc. Not Used
1	0	TPH (C6 to C40) petroleum group			<10	mg/kg		<10	mg/kg	<0.001 %		<lod< th=""></lod<>
2	0	confirm TPH has NOT arisen from diesel or pe	trol		☑							
3	4	antimony { antimony trioxide } 051-005-00-X	1-4		<0.6	mg/kg	1.197	<0.718	mg/kg	<0.0000718 %		<lod< td=""></lod<>
4	_	arsenic { arsenic pentoxide } 033-004-00-6 215-116-9 1303-28	3-2		13.1	mg/kg	1.534	18.084	mg/kg	0.00181 %	✓	
5	4	barium {	95-5		73.9	mg/kg	1.233	82.04	mg/kg	0.0082 %	✓	
6	æ\$				0.689	mg/kg	1.855	1.15	mg/kg	0.000115 %	√	
7	4	copper { dicopper oxide; copper (I) oxide } 029-002-00-X			13.9	mg/kg	1.126	14.085	mg/kg	0.00141 %	✓	
8	4		f those	1	25.5	mg/kg		22.95	mg/kg	0.00229 %	√	
9	4	mercury { mercury dichloride } 080-010-00-X	1-7		<0.14	mg/kg	1.353	<0.189	mg/kg	<0.0000189 %		<lod< td=""></lod<>
10	4	molybdenum { molybdenum(VI) oxide } 042-001-00-9	7-5		1.15	mg/kg	1.5	1.553	mg/kg	0.000155 %	✓	
11	_	nickel { nickel sulfate } 028-009-00-5 232-104-9 7786-81	1-4		22.1	mg/kg	2.637	52.444	mg/kg	0.00524 %	✓	
12	4	selenium { selenium compounds with the exceled and those specified and those specified and those specified are in this Annex }			<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<lod< td=""></lod<>
13	_	034-002-00-8 zinc { zinc sulphate }			56.9	mg/kg	2.469	126.453	mg/kg	0.0126 %	√	



_	$\overline{}$				_			_				1	
#			Determinand		CLP Note	User entered	l data	Conv. Factor	Compound of	conc.	Classification value	Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number	SLP							MC	
14	4	chromium in chromoxide (worst case)	}			22.1	mg/kg	1.462	29.07	mg/kg	0.00291 %	✓	
				1308-38-9	-								
15	4	chromium in chromoxide } 024-001-00-0	. , .	{ chromium(VI)		<0.6	mg/kg	1.923	<1.154	mg/kg	<0.000115 %		<lod< td=""></lod<>
16		naphthalene	213-007-0	1333-02-0	H	<0.009	mg/kg		<0.009	ma/ka	<0.0000009 %		<lod< td=""></lod<>
		601-052-00-2	202-049-5	91-20-3						J J		Ш	
17	0	acenaphthylene	205-917-1	208-96-8		<0.012	mg/kg		<0.012	mg/kg	<0.0000012 %		<lod< td=""></lod<>
40	0	acenaphthene				10,000			40,000		*0.0000000.0/		4LOD
18			201-469-6	83-32-9		<0.008	mg/kg		<0.008	mg/kg	<0.0000008 %		<lod< td=""></lod<>
19	0	fluorene				<0.01	mg/kg		<0.01	ma/ka	<0.000001 %		<lod< td=""></lod<>
			201-695-5	86-73-7		40.01			-0.01	mg/kg	-0.000001 70		
20	0	phenanthrene	201-581-5	85-01-8		0.0251	mg/kg		0.0226	mg/kg	0.00000226 %	✓	
21	0	anthracene	204-371-1	120-12-7		<0.016	mg/kg		<0.016	mg/kg	<0.0000016 %		<lod< td=""></lod<>
22	0	fluoranthene	205-912-4	206-44-0		0.0544	mg/kg		0.049	mg/kg	0.0000049 %	✓	
23	9	pyrene		129-00-0		0.0493	mg/kg		0.0444	mg/kg	0.00000444 %	✓	
		benzo[a]anthracene		123-00-0									
24				56-55-3	-	0.0362	mg/kg		0.0326	mg/kg	0.00000326 %	✓	
25		chrysene				0.0382	mg/kg		0.0344	mg/kg	0.00000344 %	√	
				218-01-9	-								
26		benzo[b]fluoranther		225 22 2		0.0557	mg/kg		0.0501	mg/kg	0.00000501 %	✓	
				205-99-2	\vdash							\vdash	
27		benzo[k]fluoranther 601-036-00-5		207.00.0		0.0183	mg/kg		0.0165	mg/kg	0.00000165 %	✓	
		benzo[a]pyrene; be		207-08-9	\vdash								
28				50-32-8	-	0.039	mg/kg		0.0351	mg/kg	0.00000351 %	✓	
29	-	indeno[123-cd]pyre	ne			0.0291	mg/kg		0.0262	mg/kg	0.00000262 %	√	
				193-39-5								Ľ	
30		dibenz[a,h]anthrace		53-70-3		<0.023	mg/kg		<0.023	mg/kg	<0.0000023 %		<lod< td=""></lod<>
31	0	benzo[ghi]perylene		191-24-2		0.0279	mg/kg		0.0251	mg/kg	0.00000251 %	✓	
20	0	polychlorobiphenyls			T	-0.004	mr = /1		-0.004	ma =: //	<0.0000004.0/	П	41.00
32		602-039-00-4	215-648-1	1336-36-3		<0.021	mg/kg		<0.021	mg/kg	<0.0000021 %		<lod< td=""></lod<>
33		tert-butyl methyl eth 2-methoxy-2-methy	Ipropane			<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<lod< td=""></lod<>
	Н		216-653-1	1634-04-4	_							Н	
34		benzene	200 752 7	71 42 2		<0.009	mg/kg		<0.009	mg/kg	<0.0000009 %		<lod< td=""></lod<>
35		toluene		71-43-2	\vdash	<0.007	mg/kg		<0.007	mg/ka	<0.0000007 %		<lod< td=""></lod<>
36	9	601-021-00-3 ethylbenzene	203-625-9	108-88-3		<0.004			<0.004		<0.0000004 %		<lod< td=""></lod<>
		601-023-00-4 coronene	202-849-4	100-41-4	1		mg/kg		<0.004				
37	0		205-881-7	191-07-1	-	<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		<lod< td=""></lod<>
		o-xylene; [1] p-xylei	ne; [2] m-xylene; [3]	xylene [4]									
38		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3]		<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<lod< td=""></lod<>
			215-535-7 [4]	1330-20-7 [4]						Total:	0.0363 %	Н	
										.o.ui.	0.0000 /0		

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Key

User supplied data

Determinand values ignored for classification, see column 'Conc. Not Used' for reason

Determinand defined or amended by HazWasteOnline (see Appendix A)

Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound

concentration

<LOD Below limit of detection

ND Not detected

CLP: Note 1 Only the metal concentration has been used for classification





WAC Results for sample: TP02-000000--0.50

WAC Settings: samples in this job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

	Solid Waste Analysis			Landfill Waste Acce	otance Criteria Limits
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	0.927	3	5
2	LOI (loss on ignition)	%	3.77	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.04	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	0.373	100	-
7	рН	рН	7.75	-	>6
8	ANC (acid neutralisation capacity)	mol/kg		-	-
	Eluate Analysis 10:1				
9	arsenic	mg/kg	0.0195	0.5	2
10	barium	mg/kg	0.028	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	<0.01	0.5	10
13	copper	mg/kg	0.0489	2	50
14	mercury	mg/kg	0.0001	0.01	0.2
15	molybdenum	mg/kg	<0.03	0.5	10
16	nickel	mg/kg	0.0113	0.4	10
17	lead	mg/kg	<0.002	0.5	10
18	antimony	mg/kg	<0.01	0.06	0.7
19	selenium	mg/kg	<0.01	0.1	0.5
20	zinc	mg/kg	0.0112	4	50
21	chloride	mg/kg	<20	800	15,000
22	fluoride	mg/kg	7.38	10	150
23	sulphate	mg/kg	<20	1,000	20,000
24	phenol index	mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg	53.1	500	800
26	TDS (total dissolved solids)	mg/kg	408	4,000	60,000

Key

User supplied data

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Classification of sample: TP06-000000--0.50

Non Hazardous Waste
Classified as 17 05 04

Sample details

Sample Name: LoW Code:
TP06-00000-0.50 Chapter:
Sample Depth:
0.50 m Entry:
Moisture content:

17: Construction and Demolition Wastes (including excavated soil from contaminated sites)17 05 04 (Soil and stones other than those mentioned in 17 05

3)

14%

(wet weight correction)

Hazard properties

None identified

Determinands

Moisture content: 14% Wet Weight Moisture Correction applied (MC)

#		Determinand CLP index number	per D	User ent	ered data	Conv. Factor	Compound co	onc.	Classification value	MC Applied	Conc. Not Used
1	0	TPH (C6 to C40) petroleum group		<10	mg/kg		<10	mg/kg	<0.001 %		<lod< td=""></lod<>
2	0	confirm TPH has NOT arisen from diesel or petrol		✓							
3	4	antimony { antimony trioxide } 051-005-00-X		<0.6	mg/kg	1.197	<0.718	mg/kg	<0.0000718 %		<lod< td=""></lod<>
4	4	arsenic { arsenic pentoxide } 033-004-00-6 215-116-9 1303-28-2		13.2	mg/kg	1.534	17.413	mg/kg	0.00174 %	✓	
5	4	barium { • barium sulphide }		98.1	mg/kg	1.233	104.065	mg/kg	0.0104 %	✓	
6	æ\$			0.70	06 mg/kg	1.855	1.126	mg/kg	0.000113 %	√	
7	4	copper { dicopper oxide; copper (I) oxide } 029-002-00-X		15	mg/kg	1.126	14.524	mg/kg	0.00145 %	✓	
8	4	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	1	22.2	mg/kg		19.092	mg/kg	0.00191 %	√	
9	4	mercury { mercury dichloride } 080-010-00-X		<0.14	1 mg/kg	1.353	<0.189	mg/kg	<0.0000189 %		<lod< td=""></lod<>
10	4	molybdenum { molybdenum(VI) oxide } 042-001-00-9		0.99	9 mg/kg	1.5	1.277	mg/kg	0.000128 %	√	
11	-	nickel { nickel sulfate } 028-009-00-5 232-104-9 7786-81-4		27.8	mg/kg	2.637	63.038	mg/kg	0.0063 %	✓	
12	4	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhim this Annex }		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<lod< td=""></lod<>
13	4	034-002-00-8 zinc { zinc sulphate }		59	mg/kg	2.469	125.292	mg/kg	0.0125 %	√	



=													
#			Determinand		CLP Note	User entere	d data	Conv. Factor	Compound of	conc.	Classification value	Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number	SLP							MC	
14	4	chromium in chromoxide (worst case)				27.3	mg/kg	1.462	34.314	mg/kg	0.00343 %	√	
				1308-38-9	-								
15	4	chromium in chromioxide }	ium(VI) compounds	{ chromium(VI)		<0.6	ma/ka	1.923	<1.154	ma/ka	<0.000115 %		<lod< td=""></lod<>
		•	215-607-8	1333-82-0		0.0	9,9			9/9	0.0001.07		
16		naphthalene 601-052-00-2	202-049-5	91-20-3		<0.009	mg/kg		<0.009	mg/kg	<0.0000009 %		<lod< td=""></lod<>
		acenaphthylene	202-043-3	91-20-0									
17	Ĭ		205-917-1	208-96-8	1	<0.012	mg/kg		<0.012	mg/kg	<0.0000012 %		<lod< td=""></lod<>
18	0	acenaphthene				~0 000	malka		~0 00°	malka	<0.0000008 %		<lod< td=""></lod<>
10			201-469-6	83-32-9		<0.008	mg/kg		<0.008	mg/kg	<0.0000006 %		<lod< td=""></lod<>
19	0	fluorene				<0.01	mg/kg		<0.01	ma/ka	<0.000001 %		<lod< td=""></lod<>
			201-695-5	86-73-7		0.01			0.01	9/9			
20	0	phenanthrene	201-581-5	85-01-8		<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<lod< td=""></lod<>
21	0	anthracene	204-371-1	120-12-7		<0.016	mg/kg		<0.016	mg/kg	<0.0000016 %		<lod< td=""></lod<>
22	0	fluoranthene				<0.017	mg/kg		<0.017	mg/kg	<0.0000017 %		<lod< td=""></lod<>
		pyrene	205-912-4	206-44-0									
23	0	· ·	204-927-3	129-00-0	-	<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<lod< td=""></lod<>
24		benzo[a]anthracene)			<0.014	mg/kg		<0.014	malka	<0.0000014 %		<lod< td=""></lod<>
24		601-033-00-9	200-280-6	56-55-3		<0.014	mg/kg		V0.014	mg/kg	<0.0000014 %		\LOD
25		chrysene 601-048-00-0	205-923-4	218-01-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<lod< td=""></lod<>
26		benzo[b]fluoranther	ne			<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<lod< td=""></lod<>
				205-99-2	\vdash								
27		benzo[k]fluoranther 601-036-00-5		207-08-9		<0.014	mg/kg		<0.014	mg/kg	<0.0000014 %		<lod< td=""></lod<>
		benzo[a]pyrene; be		201-00-3									
28				50-32-8		<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<lod< td=""></lod<>
29	0	indeno[123-cd]pyre		400.00.5	T	<0.018	mg/kg		<0.018	mg/kg	<0.0000018 %		<lod< td=""></lod<>
				193-39-5	-								
30		dibenz[a,h]anthrace		53-70-3	-	<0.023	mg/kg		<0.023	mg/kg	<0.0000023 %		<lod< td=""></lod<>
<u>.</u>		benzo[ghi]perylene				2			0.65		.0.000005		
31				191-24-2	-	<0.024	mg/kg		<0.024	mg/kg	<0.0000024 %		<lod< td=""></lod<>
32	0	polychlorobiphenyls				<0.021	mg/kg		<0.021	mg/ka	<0.0000021 %		<lod< td=""></lod<>
				1336-36-3	-					3 3			
33		tert-butyl methyl eth 2-methoxy-2-methy	Ipropane	4004.04.4		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<lod< td=""></lod<>
			216-653-1	1634-04-4	-								
34		benzene 601-020-00-8	200-753-7	71-43-2	-	<0.009	mg/kg		<0.009	mg/kg	<0.0000009 %		<lod< td=""></lod<>
35		toluene			T	<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<lod< td=""></lod<>
	0	601-021-00-3 ethylbenzene	203-625-9	108-88-3	\vdash								
36		601-023-00-4	202-849-4	100-41-4		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<lod< td=""></lod<>
37	0	coronene	205-881-7	191-07-1	-	<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		<lod< td=""></lod<>
		o-xylene; [1] p-xylei			\vdash								
38		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3]		<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<lod< td=""></lod<>
			215-535-7 [4]	1330-20-7 [4]						Total:	0.0395 %		
										iotal.	3.0000 /0		

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Key

User supplied data

Determinand values ignored for classification, see column 'Conc. Not Used' for reason

Determinand defined or amended by HazWasteOnline (see Appendix A)

Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound

concentration

<LOD Below limit of detection

ND Not detected

CLP: Note 1 Only the metal concentration has been used for classification





WAC Results for sample: TP06-000000--0.50

WAC Settings: samples in this job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

	Solid Waste Analysis			Landfill Waste Acce	ptance Criteria Limits
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill
1	TOC (total organic carbon)	%	1.1	3	5
2	LOI (loss on ignition)	%	4.81	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.04	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-
5	Mineral oil (C10 to C40)	mg/kg	<5	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<0.118	100	-
7	pH	рН	8.32	-	>6
8	ANC (acid neutralisation capacity)	mol/kg		-	-
	Eluate Analysis 10:1				
9	arsenic	mg/kg	0.009	0.5	2
10	barium	mg/kg	0.739	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	0.0142	0.5	10
13	copper	mg/kg	0.0256	2	50
14	mercury	mg/kg	0.0001	0.01	0.2
15	molybdenum	mg/kg	0.0392	0.5	10
16	nickel	mg/kg	0.0094	0.4	10
17	lead	mg/kg	<0.002	0.5	10
18	antimony	mg/kg	<0.01	0.06	0.7
19	selenium	mg/kg	<0.01	0.1	0.5
20	zinc	mg/kg	0.0257	4	50
21	chloride	mg/kg	28	800	15,000
22	fluoride	mg/kg	7.16	10	150
23	sulphate	mg/kg	<20	1,000	20,000
24	phenol index	mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg	55.5	500	800
26	TDS (total dissolved solids)	mg/kg	534	4,000	60,000

Key

User supplied data

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Classification of sample: TP08-000000--0.50

Non Hazardous Waste
Classified as 17 05 04

Sample details

Sample Name: LoW Code:
TP08-00000-0.50 Chapter:
Sample Depth:
0.50 m Entry:
Moisture content:

17: Construction and Demolition Wastes (including excavated soil from contaminated sites)

17 05 04 (Soil and stones other than those mentioned in 17 05 03)

15%

(wet weight correction)

Hazard properties

None identified

Determinands

Moisture content: 15% Wet Weight Moisture Correction applied (MC)

#		Determinand CLP index number	CLP Note	User entered	d data	Conv. Factor	Compound (conc.	Classification value	MC Applied	Conc. Not Used
1	0	TPH (C6 to C40) petroleum group		<10	mg/kg		<10	mg/kg	<0.001 %		<lod< td=""></lod<>
2	0	confirm TPH has NOT arisen from diesel or petrol		Ø							
3	4	antimony { antimony trioxide } 051-005-00-X	+	<0.6	mg/kg	1.197	<0.718	mg/kg	<0.0000718 %		<lod< td=""></lod<>
4	4	arsenic { arsenic pentoxide } 033-004-00-6 215-116-9 1303-28-2		13.7	mg/kg	1.534	17.862	mg/kg	0.00179 %	✓	
5		barium {		127	mg/kg	1.233	133.156	mg/kg	0.0133 %	✓	
6	æ s	cadmium { cadmium sulfate } 048-009-00-9		0.722	mg/kg	1.855	1.138	mg/kg	0.000114 %	√	
7	4	copper { dicopper oxide; copper (I) oxide } 029-002-00-X		16.9	mg/kg	1.126	16.173	mg/kg	0.00162 %	✓	
8	4	lead { • lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	1	28.5	mg/kg		24.225	mg/kg	0.00242 %	✓	
9	4	mercury { mercury dichloride } 080-010-00-X 231-299-8 7487-94-7		<0.14	mg/kg	1.353	<0.189	mg/kg	<0.0000189 %		<lod< td=""></lod<>
10	4	molybdenum { molybdenum(VI) oxide } 042-001-00-9		0.842	mg/kg	1.5	1.074	mg/kg	0.000107 %	✓	
11	4	nickel { nickel sulfate } 028-009-00-5 232-104-9 7786-81-4		29.3	mg/kg	2.637	65.667	mg/kg	0.00657 %	✓	
12	4	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }		<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<lod< td=""></lod<>
13	4	zinc { zinc sulphate } 030-006-00-9		74.2	mg/kg	2.469	155.739	mg/kg	0.0156 %	✓	



$\overline{}$					1							1	
#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	Api	Conc. Not Used
		CLP index number	EC Number	CAS Number	SIP							MC	
14	4	chromium in chromoxide (worst case)	}			30.3	mg/kg	1.462	37.642	mg/kg	0.00376 %	✓	
	_			1308-38-9	\vdash								
15	4	chromium in chromioxide }	ium(vi) compounas	{ cnromium(VI)		<0.6	mg/kg	1.923	<1.154	mg/kg	<0.000115 %		<lod< td=""></lod<>
		024-001-00-0 215-607-8 1333-82-0			1								
16		naphthalene 601-052-00-2	202-049-5	91-20-3	-	<0.009	mg/kg		<0.009	mg/kg	<0.0000009 %		<lod< td=""></lod<>
17	0	acenaphthylene			<0.012	mg/kg		<0.012	mg/kg	<0.0000012 %		<lod< td=""></lod<>	
		205-917-1 208-96-8			_		J. J					Н	
18	0	acenaphthene	201-469-6	83-32-9		<0.008	mg/kg		<0.008	mg/kg	<0.0000008 %		<lod< td=""></lod<>
40	0	fluorene			T	-0.04			-0.04	,,	-0.000004.0/		.1.00
19			201-695-5	86-73-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<lod< td=""></lod<>
20	0	phenanthrene	201-581-5	85-01-8		0.0203	mg/kg		0.0173	mg/kg	0.00000173 %	√	
		anthracene	201-301-3	03-01-0									
21			204-371-1	120-12-7		<0.016	mg/kg		<0.016	mg/kg	<0.0000016 %		<lod< td=""></lod<>
22	0	fluoranthene	205-912-4	206-44-0	-	0.0423	mg/kg		0.036	mg/kg	0.0000036 %	✓	
23	0	pyrene				0.0392	mg/kg		0.0333	mg/kg	0.00000333 %	√	
		204-927-3 129-00-0											
24		benzo[a]anthracene 501-033-00-9 200-280-6 56-55-3			-	0.0282	mg/kg		0.024	mg/kg	0.0000024 %	✓	
		chrysene	200-280-6	56-55-3	\vdash								
25			205-923-4	218-01-9		0.0293	mg/kg		0.0249	mg/kg	0.00000249 %	√	
26		benzo[b]fluoranthene			0.0479	mg/kg		0.0407	mg/kg	0.00000407 %	✓		
				205-99-2	H								
27		benzo[k]fluoranther 601-036-00-5		207-08-9	-	<0.014	mg/kg		<0.014	mg/kg	<0.0000014 %		<lod< td=""></lod<>
		benzo[a]pyrene; be		207-00-9	┢								
28				50-32-8	1	0.027	mg/kg		0.0229	mg/kg	0.00000229 %	✓	
29	0		indeno[123-cd]pyrene			0.024	mg/kg		0.0204	mg/kg	0.00000204 %	√	
		205-893-2 193-39-5				0.024			0.020 ·g,g	0.00000201 70	*		
30			dibenz[a,h]anthracene 601-041-00-2 200-181-8 53-70-3			<0.023	mg/kg		<0.023	mg/kg	<0.0000023 %		<lod< td=""></lod<>
0.1		benzo[ghi]perylene			H	.0.004			.0.004		-0.0000001.00	Н	.1.05
31	_			191-24-2		<0.024	mg/kg		<0.024	mg/kg	<0.0000024 %		<lod< td=""></lod<>
32	0	polychlorobiphenyls		1336-36-3		<0.021	mg/kg		<0.021	mg/kg	<0.0000021 %		<lod< td=""></lod<>
		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane			\vdash		mg/kg		<0.01	mg/kg	<0.000001 %		
33						<0.01							<lod< td=""></lod<>
		603-181-00-X 216-653-1 1634-04-4		\vdash		Н							
34		benzene 601-020-00-8	200-753-7	71-43-2		<0.009	mg/kg		<0.009	mg/kg	<0.0000009 %		<lod< td=""></lod<>
35		toluene				<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<lod< td=""></lod<>
20	0	601-021-00-3 ethylbenzene	203-625-9	108-88-3		-0.004	m = //.		-0.004	m ~ /!	<0.0000004.0/		<1.05
36		601-023-00-4	202-849-4	100-41-4		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<lod< td=""></lod<>
37	0	coronene 205-881-7 191-07-1			<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		<lod< td=""></lod<>	
		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]			H								
38		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3]		<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<lod< td=""></lod<>
			215-535-7 [4]	1330-20-7 [4]						Total:	0.0468 %	Н	
										iotal.	3.0 100 /0		

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Key

User supplied data

Determinand values ignored for classification, see column 'Conc. Not Used' for reason

Determinand defined or amended by HazWasteOnline (see Appendix A)

Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound

concentration

<LOD Below limit of detection

ND Not detected

CLP: Note 1 Only the metal concentration has been used for classification





WAC Results for sample: TP08-000000--0.50

WAC Settings: samples in this job constitute a single population.

WAC limits used to evaluate this sample: "Ireland"

The WAC used in this report are the WAC defined for the inert and non-hazardous classes of landfill in the Republic of Ireland. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the Non Haz (Non hazardous waste landfill) criteria.

WAC Determinands

	Solid Waste Analysis	Landfill Waste Acceptance Criteria Limits				
#	Determinand		User entered data	Inert waste landfill	Non hazardous waste landfill	
1	TOC (total organic carbon)	%	1.34	3	5	
2	LOI (loss on ignition)		5.43	-	-	
3	BTEX (benzene, toluene, ethylbenzene and xylenes)		<0.04	6	-	
4	PCBs (polychlorinated biphenyls, 7 congeners)		<0.021	1	-	
5	Mineral oil (C10 to C40)		<5	500	-	
6	PAHs (polycyclic aromatic hydrocarbons)		0.258	100	-	
7	рН		8.64	-	>6	
8	ANC (acid neutralisation capacity)			-	-	
	Eluate Analysis 10:1					
9	arsenic		0.0215	0.5	2	
10	barium	mg/kg	1.8	20	100	
11	cadmium	mg/kg	<0.0008	0.04	1	
12	chromium	mg/kg	0.0139	0.5	10	
13	copper	mg/kg	0.0774	2	50	
14	mercury	mg/kg	0.0001	0.01	0.2	
15	molybdenum	mg/kg	0.0335	0.5	10	
16	nickel	mg/kg	0.0089	0.4	10	
17	lead	mg/kg	<0.002	0.5	10	
18	antimony	mg/kg	<0.01	0.06	0.7	
19	selenium	mg/kg	<0.01	0.1	0.5	
20	zinc	mg/kg	0.0221	4	50	
21	chloride	mg/kg	<20	800	15,000	
22	fluoride	mg/kg	5.9	10	150	
23	sulphate	mg/kg	<20	1,000	20,000	
24	phenol index	mg/kg	<0.16	1	-	
25	DOC (dissolved organic carbon)		52.2	500	800	
26	TDS (total dissolved solids)	mg/kg	790	4,000	60,000	

Key

User supplied data

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Appendix A: Classifier defined and non CLP determinands

• TPH (C6 to C40) petroleum group (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013

Data source: WM3 1st Edition 2015 Data source date: 25 May 2015

Hazard Statements: Aquatic Chronic 2 H411, Repr. 2 H361d, Carc. 1B H350, Muta. 1B H340, STOT RE 2 H373, Asp. Tox. 1 H304,

Flam. Liq. 3 H226

confirm TPH has NOT arisen from diesel or petrol

Description/Comments: Chapter 3, section 4b requires a positive confirmation for benzo[a]pyrene to be used as a marker in evaluating

Carc. 1B; H350 (HP 7) and Muta. 1B; H340 (HP 11)

Data source: WM3 1st Edition 2015 Data source date: 25 May 2015 Hazard Statements: None.

barium sulphide (EC Number: 244-214-4, CAS Number: 21109-95-5)

CLP index number: 016-002-00-X

Description/Comments:

Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)

Additional Hazard Statement(s): EUH031 >= 0.8 % Reason for additional Hazards Statement(s):

14 Dec 2015 - EUH031 >= 0.8 % hazard statement sourced from: WM3, Table C12.2

lead compounds with the exception of those specified elsewhere in this Annex (worst case)

CLP index number: 082-001-00-6

Description/Comments: Worst Case: IARC considers lead compounds Group 2A; Probably carcinogenic to humans; Lead REACH Consortium, following CLP protocols, considers lead compounds from smelting industries, flue dust and similar to be Carcinogenic category 1A

Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)

Additional Hazard Statement(s): Carc. 1A H350 Reason for additional Hazards Statement(s):

03 Jun 2015 - Carc. 1A H350 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium

www.reach-lead.eu/substanceinformation.html (worst case lead compounds). Review date 29/09/2015

chromium(III) oxide (worst case) (EC Number: 215-160-9, CAS Number: 1308-38-9)

Conversion factor: 1.462

Description/Comments: Data from C&L Inventory Database

Data source: https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806

Data source date: 17 Jul 2015

Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Repr. 1B H360FD , Skin Sens. 1 H317 , Resp. Sens. 1 H334 ,

Skin Irrit. 2 H315, STOT SE 3 H335, Eye Irrit. 2 H319, Acute Tox. 4 H302, Acute Tox. 4 H332

acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database

Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database

Data source date: 17 Jul 2015

Hazard Statements: Skin Irrit. 2 H315, STOT SE 3 H335, Eye Irrit. 2 H319, Acute Tox. 1 H310, Acute Tox. 1 H330, Acute Tox. 4 H302

acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database

Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database

Data source date: 17 Jul 2015

Hazard Statements: Aquatic Chronic 2 H411 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

• fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database

Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database

Data source date: 06 Aug 2015

Hazard Statements: Aquatic Chronic 1 H410, Aquatic Acute 1 H400



phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database

Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database

Data source date: 06 Aug 2015

Hazard Statements: Skin Irrit. 2 H315, Aquatic Chronic 1 H410, Aquatic Acute 1 H400, Skin Sens. 1 H317, Carc. 2 H351, STOT SE 3

H335, Eye Irrit. 2 H319, Acute Tox. 4 H302

anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database

Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database

Data source date: 17 Jul 2015

Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye

Irrit. 2 H319

• fluoranthene (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database

Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database

Data source date: 21 Aug 2015

Hazard Statements: Aquatic Chronic 1 H410, Aquatic Acute 1 H400, Acute Tox. 4 H302

pyrene (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014

Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database

Data source date: 21 Aug 2015

Hazard Statements: Aquatic Chronic 1 H410, Aquatic Acute 1 H400, STOT SE 3 H335, Eye Irrit. 2 H319, Skin Irrit. 2 H315

• indeno[123-cd]pyrene (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database

Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database

Data source date: 06 Aug 2015 Hazard Statements: Carc. 2 H351

• benzo[ghi]perylene (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015 Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database

Data source date: 23 Jul 2015

Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

polychlorobiphenyls; PCB (EC Number: 215-648-1, CAS Number: 1336-36-3)

CLP index number: 602-039-00-4

Description/Comments: Worst Case: IARC considers PCB Group 1; Carcinogenic to humans; POP specific threshold from ATP1 (Regulation 756/2010/EU) to POPs Regulation (Regulation 850/2004/EC). Where applicable, the calculation method laid down in

European standards EN 12766-1 and EN 12766-2 shall be applied.

Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)

Additional Hazard Statement(s): Carc. 1A H350 Reason for additional Hazards Statement(s):

29 Sep 2015 - Carc. 1A H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

• ethylbenzene (EC Number: 202-849-4, CAS Number: 100-41-4)

CLP index number: 601-023-00-4

Description/Comments:

Data source: Commission Regulation (EU) No 605/2014 - 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008.

(ATP6)

Additional Hazard Statement(s): Carc. 2 H351 Reason for additional Hazards Statement(s):

03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2B (77) 2000

oronene (EC Number: 205-881-7, CAS Number: 191-07-1)

Description/Comments: Data from C&L Inventory Database; no entries in Registered Substances or Pesticides Properties databases; SDS: Sigma Aldrich, 1907/2006 compliant, dated 2012 - no entries; IARC – Group 3, not carcinogenic. Data source:

http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx? SubstanceID=17010& HarmOnly=no? fc=true& lang=ender approximation of the control of t

Data source date: 16 Jun 2014 Hazard Statements: STOT SE 2 H371

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HazWasteOnline[™]
Report created by Stephen Letch on 30 Jun 2020

Appendix B: Rationale for selection of metal species

antimony {antimony trioxide}

Worst case scenario.

arsenic {arsenic pentoxide}

Arsenic pentoxide used as most hazardous species.

barium {barium sulphide}

Chromium VII at limits of detection. Barium sulphide used as the next most hazardous species. No chromate present.

cadmium {cadmium sulfate}

Cadmium sulphate used as the most hazardous species.

copper {dicopper oxide; copper (I) oxide}

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Worse case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected.

lead {lead compounds with the exception of those specified elsewhere in this Annex (worst case)}

Chromium VII at limits of detection. Lead compounds used as the next most hazardous species. No chromate present.

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight

molybdenum {molybdenum(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight.

nickel {nickel sulfate}

Chromium VII at limits of detection. Nickel sulphate used as the next most hazardous species. No chromate present.

selenium (selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex)

Harmonised group entry used as most reasonable case. Pigment cadmium sulphoselenide not likely to be present in this soil. No evidence for the other CLP entries: sodium selenite, nickel II selenite and nickel selenide, to be present in this soil.

zinc {zinc sulphate}

Chromium VII at limits of detection. Zinc sulphate used as the next most hazardous species. No chromate present.

chromium in chromium(III) compounds {chromium(III) oxide (worst case)}

Reasonable case species based on hazard statements/molecular weight. Industrial sources include: tanning, pigment in paint, inks and glass

chromium in chromium(VI) compounds {chromium(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight. Industrial sources include: production stainless steel, electroplating, wood preservation, anti-corrosion agents or coatings, pigments.

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.1, May 2018

HazWasteOnline Classification Engine Version: 2020.181.4392.8609 (29 Jun 2020)

HazWasteOnline Database: 2020.181.4392.8609 (29 Jun 2020)





Report created by Stephen Letch on 30 Jun 2020

This classification utilises the following guidance and legislation:

WM3 v1.1 - Waste Classification - 1st Edition v1.1 - May 2018

CLP Regulation - Regulation 1272/2008/EC of 16 December 2008

1st ATP - Regulation 790/2009/EC of 10 August 2009

2nd ATP - Regulation 286/2011/EC of 10 March 2011

3rd ATP - Regulation 618/2012/EU of 10 July 2012

4th ATP - Regulation 487/2013/EU of 8 May 2013

Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013

5th ATP - Regulation 944/2013/EU of 2 October 2013

6th ATP - Regulation 605/2014/EU of 5 June 2014

WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014

Revised List of Wastes 2014 - Decision 2014/955/EU of 18 December 2014

7th ATP - Regulation 2015/1221/EU of 24 July 2015

8th ATP - Regulation (EU) 2016/918 of 19 May 2016

9th ATP - Regulation (EU) 2016/1179 of 19 July 2016

10th ATP - Regulation (EU) 2017/776 of 4 May 2017

HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017

13th ATP - Regulation (EU) 2018/1480 of 4 October 2018

14th ATP - Regulation (EU) 2020/217 of 4 October 2019

POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004

1st ATP to POPs Regulation - Regulation 756/2010/EU of 24 August 2010

2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010

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Appendix 9 Environmental Groundwater Laboratory Test Results



Unit 7-8 Hawarden Business Park Manor Road (off Manor Lane) Hawarden Deeside CH5 3US

> Tel: (01244) 528700 Fax: (01244) 528701

email: haward encustomers er vices@alsglobal.com

Website: www.alsenvironmental.co.uk

Site Investigations Ltd The Grange Carhugar 12th Lock Road Lucan Co. Dublin

Attention: Stephen Letch

CERTIFICATE OF ANALYSIS

Date of report Generation: 07 July 2020

Customer: Site Investigations Ltd

Sample Delivery Group (SDG): 200627-39
Your Reference: 5728

Location: Haystown, Rush

Report No: 557996

We received 3 samples on Saturday June 27, 2020 and 3 of these samples were scheduled for analysis which was completed on Tuesday July 07, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

<u>Sonia McWhan</u> Operations Manager





557996



Report Number: Superseded Report: SDG: 200627-39 Client Reference: 5728 Location: Haystown, Rush Order Number: 59/A/20

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
22385775	BH 01		7.00 - 7.00	25/06/2020
22385776	BH 03		7.50 - 7.50	27/06/2020
22385778	BH 05		5.00 - 5.00	22/06/2020

Maximum Sample/Coolbox Temperature (°C):

20.2

ISO5667-3 Water quality - Sampling - Part3 -

During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

Only received samples which have had analysis scheduled will be shown on the following pages.

557996

Report Number:

Superseded Report:

CERTIFICATE OF ANALYSIS

5728

Client Reference:

ALS

SDG:

200627-39

Haystown, Rush Location: Order Number: 59/A/20 Results Legend 22385778 22385775 22385776 Lab Sample No(s) X Test No Determination Possible Customer BH 01 BH 03 뫄 Sample Reference 95 Sample Types -S - Soil/Solid UNS - Unspecified Solid GW - Ground Water **AGS Reference** SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water 5.00 -7.00 - 7.00 7.50 SA - Saline Water Depth (m) - 7.50 - 5.00 TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water 0.5l glass bottle
(ALE227)
500ml Plastic
(ALE208)
0.5l glass bottle
(ALE227)
500ml Plastic
(ALE227)
500ml Plastic
(ALE208)
0.5l glass bottle
(ALE227) DW - Drinking Water Non-regulatory 500ml Plastic UNL - Unspecified Liquid SL - Sludge Container G - Gas OTH - Other Sample Type GW GW GW GW GW GW Ammoniacal Nitrogen All NDPs: 0 Tests: 3 Χ X X Anions by Kone (w) All NDPs: 0 Tests: 3 Χ X Χ Conductivity (at 20 deg.C) All NDPs: 0 Tests: 3 X X X Cyanide Comp/Free/Total/Thiocyanate All NDPs: 0 Х Χ Х Dissolved Metals by ICP-MS All NDPs: 0 Tests: 3 X X X EPH CWG (Aliphatic) Aqueous GC (W) All NDPs: 0 Tests: 3 Χ Χ Х EPH CWG (Aromatic) Aqueous GC (W) All NDPs: 0 Tests: 3 X Х Χ GRO by GC-FID (W) All NDPs: 0 Tests: 3 Χ X Χ Mercury Dissolved All NDPs: 0 Tests: 3 X Χ Χ Nitrite by Kone (w) All NDPs: 0 Tests: 3 X X X PAH Spec MS - Aqueous (W) All NDPs: 0 Tests: 3 X Χ Х pH Value All NDPs: 0 Tests: 3 Х Χ X Phenols by HPLC (W) All NDPs: 0 Tests: 3 Χ Χ Х TPH CWG (W) All NDPs: 0 Tests: 3 X Χ Χ

ALS

SDG: 200627-39 Location: Haystown, Rush

Client Reference: Order Number: 5728 59/A/20 Report Number: Superseded Report: 557996

_							
# ISO17025 accredited. # mCERTS accredited. aq Aqueous / settled sample. diss.filit Dissolved / filtered sample.	С	ustomer Sample Ref. Depth (m)	BH 01	BH 03	BH 05		
tot.unfit Total / unfiltered sample. Subcontracted - refer to subcontractor report accreditation status. * % recovery of the surrogate standard to check		Sample Type Date Sampled Sample Time	Ground Water (GW) 25/06/2020	Ground Water (GW) 27/06/2020	Ground Water (GW) 22/06/2020		
efficiency of the method. The results of indivi	dual	Date Received	27/06/2020	27/06/2020	27/06/2020		
recovery (F) Trigger breach confirmed		SDG Ref Lab Sample No.(s)	200627-39 22385775	200627-39 22385776	200627-39 22385778		
1-3+§@ Sample deviation (see appendix)	100#1	AGS Reference					
Ammoniacal Nitrogen as N	<0.2 mg/l	Method TM099	<0.2	<0.2	<0.2		
Conductivity @ 20 deg.C	<0.02 mS/cm	TM120	0.277	0.29	0.763		
Arsenic (diss.filt)	<0.5 µg/l	TM152	1.46 2#	1.33 2#	0.953 2#		
Boron (diss.filt)	<10 µg/l	TM152	17 2#	21.4 2#	128 2 #		
Cadmium (diss.filt)	<0.08 µg/l	TM152	<0.08 2#	<0.08 2#	<0.08 2#		
Chromium (diss.filt)	<1 µg/l	TM152	<1 2#	<1 2#	<1 2#		
Copper (diss.filt)	<0.3 µg/l	TM152	0.557 2 #	0.758 2#	<0.3 2#		
Lead (diss.filt)	<0.2 µg/l	TM152	<0.2 2#	<0.2 2#	<0.2 2#		
Manganese (diss.filt)	<3 µg/l	TM152	36.3 2 #	67.9 2#	2730 2 #		
Nickel (diss.filt)	<0.4 µg/l	TM152	0.59 2#	0.737 2#	16.7 2#		
Zinc (diss.filt)	<1 µg/l	TM152	<1 2#	<1 2#	2.94 2#		
Potassium (Dis.Filt)	<0.2 mg/l	TM152	2.59 2#	2.75 2#	2.61 2#		
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01	<0.01	<0.01		
Nitrite as NO2	<0.05 mg/l	TM184	<0.05 2#	0.059 2#	<0.05 2 #		
Sulphate	<2 mg/l	TM184	41.7	40.6	86.8		
Chloride	<2 mg/l	TM184	16.1	15.7 #	36.8		
Nitrate as NO3	<0.3 mg/l	TM184	<0.3	0.442	<0.3		
Cyanide, Total	<0.05 mg/l	TM227	<0.05		<0.05 2 # 7.51		
pH	<0.002 mg/l	TM256 TM259	8.23 # <0.002	8.02 # <0.002	<0.002 #		
Phenol	<0.002 mg/l	TM259	2#	<0.002	2#		
Cresols Xylenols	<0.006 mg/l	TM259	<0.006 2 # <0.008	<0.006 2 # <0.008	<0.006 2 #		
Phenols, Total Detected	<0.006 mg/l	TM259	<0.006	<0.006	0.05		
monohydric	-0.0 10 Hig/l	1101200	2#	2#	2#		

ALS

SDG: 200627-39 Location: Haystown, Rush

Client Reference: Order Number: 5728 59/A/20 Report Number: Superseded Report: 557996

(ALS)		,						
PAH Spec MS - Aqueous Results Legend	s (W)	0 1 5 6						
# ISO17025 accredited.	C	ustomer Sample Ref.	BH 01	BH 03	BH 05			
M mCERTS accredited.								
aq Aqueous / settled sample. diss.filt Dissolved / filtered sample.		Depth (m)	7.00 - 7.00	7.50 - 7.50	5.00 - 5.00			
tot.unfilt Total / unfiltered sample.	for	Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)			
 * Subcontracted - refer to subcontractor report accreditation status. 	101	Date Sampled	25/06/2020	27/06/2020	22/06/2020			
** % recovery of the surrogate standard to check efficiency of the method. The results of indivi-	k the	Sample Time						
compounds within samples aren't corrected fi		Date Received	27/06/2020 200627-39	27/06/2020 200627-39	27/06/2020 200627-39			
recovery		SDG Ref	22385775	22385776	22385778			
(F) Trigger breach confirmed 1-3+§@ Sample deviation (see appendix)		Lab Sample No.(s) AGS Reference	22000110	22000110	22000110			
Component	LOD/Units	Method						
Naphthalene (aq)	<0.01 µg/l	TM178	<0.2	0.784	0.214			
Napritrialerie (aq)	₹0.01 μg/I	1101170	4					
				#	#			
Acenaphthene (aq)	<0.005 µg/l	TM178	<0.1	<0.1	<0.1			
			#	#	#			
Acenaphthylene (aq)	<0.005 µg/l	TM178	<0.1	<0.1	<0.1			
			#	#	#			
Fluoranthene (aq)	<0.005 µg/l	TM178	0.153	0.154	2.19			
r lastariations (aq)	-0.000 руп	1111110	#	#	#			
A II ()	-0.005 //	T14470						
Anthracene (aq)	<0.005 µg/l	TM178	<0.1	<0.1	0.178			
			#	#	#			
Phenanthrene (aq)	<0.005 µg/l	TM178	0.293	0.303	1.28			
			#	#	#			
Fluorene (aq)	<0.005 µg/l	TM178	<0.1	0.105	<0.1			
()	2.000 Mg/1		#	#	#			
Chrysons (as)	<0.00E · · · · //	TM470						
Chrysene (aq)	<0.005 µg/l	TM178	<0.1	<0.1	1.57			
	-		#	#	#			
Pyrene (aq)	<0.005 µg/l	TM178	0.34	0.32	2.76			
			#	#	#			
Benzo(a)anthracene (aq)	<0.005 µg/l	TM178	<0.1	<0.1	1.21			
(-/			#	#	#			
D(h)fith()	40.005//	TM4470						
Benzo(b)fluoranthene (aq)	<0.005 µg/l	TM178	<0.1	<0.1	<0.1			
			#	#	#			
Benzo(k)fluoranthene (aq)	<0.005 µg/l	TM178	<0.1	<0.1	<0.1			
			#	#	#			
Benzo(a)pyrene (aq)	<0.002 µg/l	TM178	<0.04	<0.04	<0.04			
(-) (#	#	#			
Dihanna(a h)anthraaana (as)	<0.00E/I	TM178	<0.1	<0.1	<0.1			
Dibenzo(a,h)anthracene (aq)	<0.005 µg/l	11/11/0						
			#	#	#			
Benzo(g,h,i)perylene (aq)	<0.005 µg/l	TM178	0.545	0.319	6.31			
			#	#	#			
Indeno(1,2,3-cd)pyrene (aq)	<0.005 µg/l	TM178	<0.1	<0.1	2.29			
			#	#	#			
PAH, Total Detected USEPA 16	<0.082 µg/l	TM178	<1.64	1.98	18			
(aq)	10.002 µg/1	1111110	#	#	#			
(44)			π	π	π			
		1			I	I	l .	1

ALS

SDG: 200627-39 Location: Haystown, Rush

27-39 Client Reference: order Number:

5728 59/A/20 Report Number: Superseded Report: 557996

(ALS) Location.	<u> </u>	laystown, rtus	or o	i Nulliber. 53/	7/20	Ouporocada Roport.	
TPH CWG (W)							
Results Legend # ISO17025 accredited.	С	ustomer Sample Ref.	BH 01	BH 03	BH 05		
M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor repr	ort for	Depth (m) Sample Type	7.00 - 7.00 Ground Water (GW)	7.50 - 7.50 Ground Water (GW)	5.00 - 5.00 Ground Water (GW)		
accreditation status. ** * recovery of the surrogate standard to che efficiency of the method. The results of ind compounds within samples aren't correcter	eck the ividual	Date Sampled Sample Time Date Received	25/06/2020 27/06/2020	27/06/2020 27/06/2020	22/06/2020 27/06/2020		
recovery (F) Trigger breach confirmed 1-3+§@ Sample deviation (see appendix) Component	LOD/Units	SDG Ref Lab Sample No.(s) AGS Reference Method	200627-39 22385775	200627-39 22385776	200627-39 22385778		
GRO Surrogate % recovery**	%	TM245	100	87	72		
GRO >C5-C12	<50 μg/l	TM245	<50 2 #	<50 2 #	2 <50 2 #		
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245	<3 2#	<3 2#	<3 2#		
Benzene	<7 µg/l	TM245	<7 2#	<7 2#	<7 2#		
Toluene	<4 µg/l	TM245	<4 2#	<4 2#	<4 2#		
Ethylbenzene	<5 µg/l	TM245	<5	<5	<5		
m,p-Xylene	<8 µg/l	TM245	<8	<8	<8		
o-Xylene	<3 μg/l	TM245	<3	<3	<3		
Sum of detected Xylenes	<11 µg/l	TM245	<11	<11	<11		
Sum of detected BTEX	<28 µg/l	TM245	<28	<28	<28		
Aliphatics >C5-C6	<10 µg/l	TM245	<10	<10	<10		
Aliphatics >C6-C8	<10 µg/l	TM245	<10	<10	<10 2		
Aliphatics >C8-C10	<10 µg/l	TM245	<10	<10	<10		
Aliphatics >C10-C12	<10 µg/l	TM245	<10	2 <10	2 <10		
Aliphatics >C12-C16 (aq)	<10 μg/l	TM174	354	14	586		
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174	400	<10	856		
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174	4390	227	79600		
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174	5140	241	81100		
Aromatics >EC5-EC7	<10 µg/l	TM245	<10 2	<10 2	<10 2		
Aromatics >EC7-EC8	<10 µg/l	TM245	<10 2	<10 2	<10 2		
Aromatics >EC8-EC10	<10 µg/l	TM245	<10 2	<10 2	<10 2		
Aromatics >EC10-EC12	<10 µg/l	TM245	<10	<10 2	<10 2		
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174	<200	<200	<200		
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174	<200	<200	<200		
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174	<200	<200	333		
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174	<200	<200	333		
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174	5140	241	81400		
Aliphatics >C16-C35 Aqueous	<10 µg/l	TM174	4790	227	80500		



CERTIFICATE OF ANALYSIS

SDG:200627-39Client Reference:5728Report Number:557996Location:Haystown, RushOrder Number:59/A/20Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

ALS

SDG: 200627-39 Location: Haystown, Rush

Client Reference: Order Number: 5728 59/A/20 Report Number: Superseded Report: 557996

Test Completion Dates

Lab Sample No(s)	22385775	22385776	22385778
Customer Sample Ref.	BH 01	BH 03	BH 05
AGS Ref.			
Depth	7.00 - 7.00	7.50 - 7.50	5.00 - 5.00
Туре	Ground Water	Ground Water	Ground Water
Ammoniacal Nitrogen	02-Jul-2020	02-Jul-2020	02-Jul-2020
Anions by Kone (w)	03-Jul-2020	03-Jul-2020	03-Jul-2020
Conductivity (at 20 deg.C)	03-Jul-2020	03-Jul-2020	03-Jul-2020
Cyanide Comp/Free/Total/Thiocyanate	06-Jul-2020	06-Jul-2020	06-Jul-2020
Dissolved Metals by ICP-MS	03-Jul-2020	03-Jul-2020	03-Jul-2020
EPH CWG (Aliphatic) Aqueous GC (W)	06-Jul-2020	06-Jul-2020	06-Jul-2020
EPH CWG (Aromatic) Aqueous GC (W)	06-Jul-2020	06-Jul-2020	06-Jul-2020
GRO by GC-FID (W)	04-Jul-2020	04-Jul-2020	06-Jul-2020
Mercury Dissolved	01-Jul-2020	01-Jul-2020	01-Jul-2020
Nitrite by Kone (w)	03-Jul-2020	03-Jul-2020	03-Jul-2020
PAH Spec MS - Aqueous (W)	06-Jul-2020	06-Jul-2020	06-Jul-2020
pH Value	02-Jul-2020	02-Jul-2020	02-Jul-2020
Phenols by HPLC (W)	06-Jul-2020	06-Jul-2020	06-Jul-2020
TPH CWG (W)	07-Jul-2020	07-Jul-2020	07-Jul-2020



 SDG:
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 Report Number:
 557996

 Location:
 Haystown, Rush
 Order Number:
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Appendix

General

- 1. Results are expressed on a dry weight basis (dried at 35° C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.
- 2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.
- 3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.
- 4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.
- 5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.
- 6. NDP No determination possible due to insufficient/unsuitable sample.
- 7. Results relate only to the items tested.
- 8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content
- 9. Surrogate recoveries Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.
- 10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
- 11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.
- 12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.
- 13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss
- 14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.
- 15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.
- 16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. Tentatively Identified Compounds (TICs) are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "nixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
§	Sampled on date not provided
•	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or
@	samples

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbe stos Type	Common Name
Chrysofile	White Asbesbs
Amosite	Brow n Asbestos
Cro d dolite	Blue Asbe stos
Fibrous Actinolite	-
Fib to us Anthop hyll ite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 μ m diameter, longer than 5 μ m and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Standing Committee of Analysts, The Quantification of Asbestos in Soil (2017).

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Appendix 10 Survey Data

Survey Data

Location	Irish Transve	erse Mercator	Elevation	Irish National Grid			
Location	Easting	Northing	Elevation	Easting	Northing		
	Boreholes and Coreholes						
BH01	725119.273	754263.194	19.25	325195.423	254241.336		
BH02	725181.114	754250.133	18.87	325257.277	254228.272		
BH03	725294.231	754250.406	18.32	325370.418	254228.546		
BH04	725198.262	754170.336	18.91	325274.430	254148.458		
BH05	725217.771	754103.597	17.61	325293.943	254081.705		
		Tria	Pits				
TP01	725104.002	754272.752	19.18	325180.148	254250.896		
TP02	725144.169	754273.131	19.18	325220.324	254251.275		
TP03	725181.029	754267.077	19.10	325257.192	254245.220		
TP04	725226.017	754264.129	18.91	325302.189	254242.271		
TP05	725307.901	754264.543	18.43	325384.091	254242.686		
TP06	725112.753	754255.402	18.89	325188.902	254233.542		
TP07	725147.280	754234.198	18.52	325223.436	254212.334		
TP08	725178.534	754232.703	18.52	325254.697	254210.838		
TP09	725225.736	754215.827	18.01	325301.909	254193.959		
TP10	725253.453	754241.618	18.19	325329.631	254219.756		
TP11	725300.790	754223.097	17.61	325376.979	254201.231		
TP12	725183.447	754202.832	18.67	325259.611	254180.961		
TP13	725209.501	754192.888	18.42	325285.671	254171.015		
TP14	725192.845	754171.270	18.83	325269.011	254149.392		
TP15	725218.283	754143.657	18.23	325294.455	254121.773		
TP16	725188.848	754115.990	18.01	325265.014	254094.100		
TP17	725230.746	754103.119	17.88	325306.921	254081.227		
TP18	725200.693	754074.461	17.41	325276.862	254052.562		
	Soakaway Tests						
SA01	725144.240	754252.351	19.00	325220.395	254230.490		
SA02	725223.648	754240.929	18.47	325299.820	254219.066		
SA03	725201.610	754157.317	18.68	325277.778	254135.436		
SA04	725211.262	754124.608	18.10	325287.433	254102.720		



Locations By Type - CP

Locations By Type - IP

Locations By Type - TP

Contract No:	5728
Contract Name:	Affordable Housing
Location:	Old Road, Hayestown, Rush, Co. Dublin
Client:	Fingal County Council
Engineer:	Downes Associates
Title:	Site Plan
Scale:	1:1500
Drawn By:	SI



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