S.I. Ltd Contract No: 6380

Client: Galway County Council
Engineer: SDS Design Engineers
Contractor: Site Investigations Ltd

Cullairbaun,
Athenry, Co. Galway
Site Investigation Report

Prepared by:

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Stephen Letch

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Contents:

Appendices:

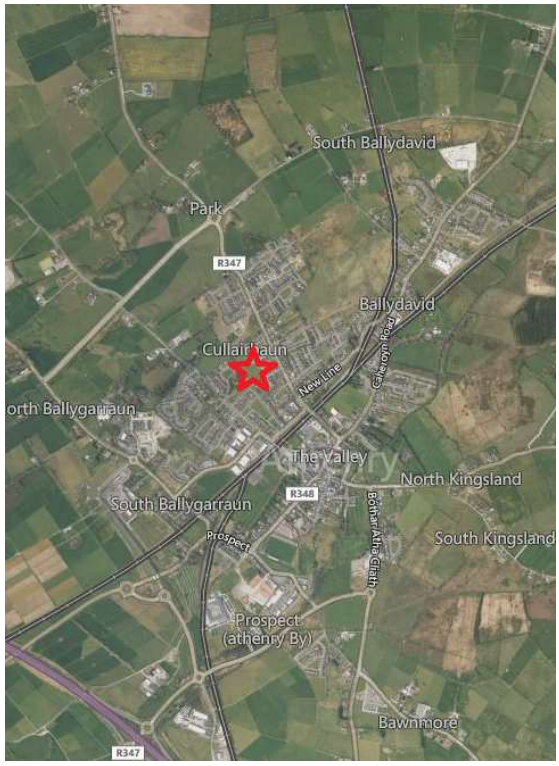
1. Introduction

On the instructions of SDS Design Engineers, Site Investigations Ltd (SIL) was appointed to complete a ground investigation at Cullairbaun, Athenry, Co. Galway. The investigation was for a residential development and was completed on behalf of the Client, Galway County Council. The fieldworks were started in October and completed in November 2024.

This report presents the factual geotechnical data obtained from the field and laboratory testing with interpretation of the ground conditions discussed.

2. Site Location

Athenry is located to the east of Galway city in the west of Ireland with Cullairbaun close to the town centre. The map on the left below shows the location of the Athenry to the east of Galway and the second map shows the location of the site in the town.



3. Fieldwork

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
- 5 No. trial pits
- 4 No. soakaway tests
- 4 No. plate tests

3.1. Cable Percussive Boreholes

Cable percussion boring was undertaken at 5 No. locations using a Dando 2000 rig and constructed 200mm diameter boreholes. The boreholes terminated at shallow depths ranging from 1.70mbgl (BH04) to 2.60mbgl (BH02) after an hour and a half chiselling was completed and no further progress was made. 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 1.00mbgl where N=13-(1,2/2,3,4,4)). Where refusal of 50 blows across the test zone was achieved during testing, the penetration depth is also reported (e.g., BH01 at 2.00mbgl where N=50-(25 for 105mm/50 for 20mm)).

The cable percussive borehole logs are presented in Appendix 1.

3.2. Trial Pits

5 No. trial pits were excavated using a tracked excavator and they were logged and photographed by SIL geotechnical engineer. 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 2.

3.3. Soakaway Tests

At 4 No. locations, soakaway tests were completed and logged by SIL geotechnical engineer. BRE Special Digest 365 stipulates that 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 soakaway test results and photographs are presented in Appendix 3.

3.4. Plate Tests

At 4 No. locations, plate tests were completed to provide a California Bearing Ratio value for pavement design. The tests were completed at 0.50mbgl, using the excavator as kentledge. Pressure is then added to a 600mm diameter plate, via a hydraulic jack, with the settlement of the plate measured using gauges. The rate of settlement is used to calculate the CBR value. After the test was completed, hand held shear vane tests were completed on the soil directly beneath the plate, with the results shown on the logs.

The plate test results are presented in Appendix 4.

3.5. Surveying

Following completion of all 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 8.

4. Laboratory Testing

Geotechnical laboratory testing was completed on representative soil samples in accordance with BS 1377 (1990). Testing included:

- 5 No. Moisture contents
- 5 No. Atterberg limits
- 5 No. Particle size gradings
- 5 No. pH, sulphate and chloride content

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

- 5 No. Suite I analysis

The geotechnical laboratory test results are presented in Appendix 5 with the environmental tests reported in Appendix 6 and a Waste Classification Report in Appendix 7.

5. Ground Conditions

5.1. Overburden

MADE GROUND was identified at 2 No. locations, TP03 and TP04, towards the centre of the site, to 0.80mbgl. This was logged as a cohesive clay soil with plastic, timber, glass and steel identified in the soil.

The natural ground conditions are generally cohesive brown (slightly) sandy (slightly) gravelly silty CLAY with cobbles overlying grey (slightly) sandy (slightly) gravelly silty CLAY with cobbles and boulders. TP04 recorded a granular GRAVEL soil from 1.00mbgl until termination of the pit at 2.20mbgl.

The SPT tests recorded values of 15 to 21 at 1.00mbgl, indicating stiff soils, and then no further full test was completed due to the boulder content and completion of the boreholes.

The laboratory tests of the cohesive soils show CLAY soils with low plasticity indexes of 9 to 14% recorded. The particle size distribution curves were poorly sorted straight-line curves with low fines content of 16% to 43% in the cohesive soils.

5.2. Groundwater

No groundwater was recorded in the boreholes or trial pits during the fieldworks.

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.

MADE GROUND was encountered at TP03 and TP04 to 0.80mbgl. SIL do not recommend that narrow shallow foundations are placed on fill material due to the unknown compaction methods used during laying of man-made material. This unknown could result in softer spots and differential settlement once construction is completed. If shallow foundations are to be used and man-made soils are encountered below foundation level, then the soil should be removed and replaced with engineered fill which is compacted to the required standard.

For cohesive soils, a correlation proposed by Stroud and Butler between SPT N-values and plasticity indices can be used to calculate the undrained shear strength. Dependent on the plasticity index at each site, the Stroud and Butler correlation is C_u=4 to 6N. With the low plasticity indexes recorded in the laboratory for the soils on this site, the correlation chosen is C_u=6N. Using the lowest value of 15, this indicates a C_u value of 90kN/m^2. This can then be used to calculate the ultimate bearing capacity, which is the total loading that the soil could withstand and this has been calculated as 478kN/m^2. Finally, a factor of safety is applied to ensure that failure of the soils does not occur and a factor of safety of 3 has been chosen for this site. This provides an allowable bearing capacity of 160kN/m^2.

It would be recommended that all founding strata be inspected by a suitably qualified Engineer prior to pouring the foundations and additional insitu testing completed if required to confirm 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.
- All man-made or filled material is to be removed prior to construction.
- The bulk unit weight of the material in this stratum has a minimum density of 19kN/m^3.
- Based on groundwater observations this analysis assumes the groundwater will not influence the construction or performance of these foundations.
- All bearing capacity calculations allow for 25mm settlement.

The trial pit walls generally remained stable during excavation but it would be recommended due to the high sand and gravel content in the soils, that all excavations should be checked immediately and battered back accordingly. 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 or any nearby construction sites.

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, no groundwater was recorded in the boreholes and trial pits during the fieldworks.

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. 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 to medium.

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 failed the specification as the water level did not fall sufficiently enough to complete the test. The BRE Digest stipulates that the pit should half empty within 24hrs, and extrapolation indicates this condition would not be satisfied. The tests were 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 cohesive soils.

6.4. Pavement Design

The plate test results in Appendix 4 recorded values of 9.7% to 13.4%.

The plate tests were completed at 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 five samples from the investigation and the results are shown in Appendix 6. 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.

Following this analysis of the solid test results, the leachate disposal suite results indicate that the soils tested would generally be able to be treated as Inert Waste.

Five 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 5 indicate a general pH value between 8.85 and 8.95, which is close to neutral and below the level of 9.

The maximum value obtained for water soluble sulphate was 126mg/l as SO_3. The BRE Special Digest 1:2005 – '*Concrete in Aggressive Ground*' guidelines require SO_4 values and after conversion ($SO_4 = SO_3 \times 1.2$), the maximum value of 151mg/l shows Class 1 conditions and no special precautions are required.

6.7. Radon Gas

The Environmental Protection Agency (EPA) has recently updated the Radon gas exposure map and this is available to view on the EPA website. This shows the possible exposure to radon gas with the bedrock geology, subsoil geology, soil permeability and aquifer type analysed to produce the map. The map below shows that the site falls within the high level of 1 in 5 homes are at risk of radon exposure. Measures should be taken in the form of radon protection barriers from radon exposure in the new structures.

EPA map identifying possible Radon exposure.
https://gis.epa.ie/EPAMaps/Radon?&lid=EPA:RadonRiskMapofIreland

Appendix 1

Cable Percussive Borehole Logs

Contract No: 6380	**Cable Percussion Borehole Log**				Borehole No: **BH01**
Contract:	Cullairbaun	Easting:	549897.532	Date Started:	08/11/2024
Location:	Athenry, Co. Galway	Northing:	728412.923	Date Completed:	08/11/2024
Client:	Galway County Council	Elevation:	48.67	Drilled By:	D. Clarke
Engineer:	SDS Design Engineers	Borehole Diameter:	200mm	Status:	FINAL

Depth (m) Scale	Depth	Stratum Description	Legend	Level (mOD) Scale	Depth	Samples and Insitu Tests Depth	Type	Result	Water Strike	Backfill
	0.10	TOPSOIL.			48.57					
		Brown slightly sandy gravelly silty CLAY with high cobble content.		48.5						
0.5										
	0.60	Stiff grey brown slightly sandy gravelly silty CLAY with high cobble content.			48.07					
				48.0						
1.0						1.00	B	DC02		
						1.00	C	N=16 (2,3/4,3,4,5)		
				47.5						
1.5										
				47.0						
2.0						2.00	B	DC03		
	2.10				46.57	2.00	C	50 (25 for 105mm/50 for 20mm)		
	2.20	Obstruction - possible boulders.		46.5	46.47	2.20	C	50 (25 for 5mm/50 for 5mm)		
2.5		End of Borehole at 2.20m								
				46.0						
3.0										
				45.5						
3.5										
				45.0						
4.0										
				44.5						
4.5										
				44.0						

Chiselling: From:	To:	Time:	Water Strikes: Strike:	Rose:	Depth Sealed	Water Details: Date:	Hole Depth:	Water Depth:	Installation: From:	To:	Pipe:	Backfill: From:	To:	Type:	Remarks:
0.50	0.60	01:00				08/11	2.20	Dry				0.00	2.20	Arisings	Borehole terminated due to obstruction.
2.10	2.20	01:30													

Legend:
B: Bulk
D: Disturbed
U: Undisturbed
ES: Environmental
W: Water
C: Cone SPT
S: Split spoon SPT

Contract No: 6380	**Cable Percussion Borehole Log**				Borehole No: **BH02**
Contract:	Cullairbaun	Easting:	549873.782	Date Started:	09/11/2024
Location:	Athenry, Co. Galway	Northing:	728421.710	Date Completed:	09/11/2024
Client:	Galway County Council	Elevation:	49.17	Drilled By:	D. Clarke
Engineer:	SDS Design Engineers	Borehole Diameter:	200mm	Status:	FINAL

Depth (m)		Stratum Description	Legend	Level (mOD)		Samples and Insitu Tests			Water Strike	Backfill
Scale	Depth			Scale	Depth	Depth	Type	Result		
		TOPSOIL.								
	0.20	Brown slightly sandy gravelly silty CLAY with high cobble content.		49.0	48.97					
0.5				48.5						
	0.80	Stiff grey brown slightly sandy gravelly silty CLAY with high cobble content.			48.37					
1.0						1.00 1.00	B C	DC04 N=20 (2,2/3,8,5,4)		
				48.0						
1.5										
				47.5						
2.0						2.00 2.00	B C	DC05 N=50 (3,4/50 for 245mm)		
				47.0						
	2.40	Obstruction - possible boulders.			46.77					
2.5	2.60	End of Borehole at 2.60m			46.57	2.60	C	50 (25 for 5mm/50 for 5mm)		
				46.5						
3.0										
				46.0						
3.5										
				45.5						
4.0										
				45.0						
4.5										
				44.5						

Chiselling:			Water Strikes:			Water Details:			Installation:			Backfill:			Remarks:
From:	To:	Time:	Strike:	Rose:	Depth Sealed	Date:	Hole Depth:	Water Depth:	From:	To:	Pipe:	From:	To:	Type:	
2.40	2.60	01:30				09/11	2.60	Dry				0.00	2.60	Arisings	Borehole terminated due to obstruction.

Legend:
B: Bulk
D: Disturbed
U: Undisturbed
ES: Environmental
W: Water
C: Cone SPT
S: Split spoon SPT

Contract No: 6380	**Cable Percussion Borehole Log**				Borehole No: **BH03**
Contract:	Cullairbaun	Easting:	549879.267	Date Started:	09/11/2024
Location:	Athenry, Co. Galway	Northing:	728454.664	Date Completed:	09/11/2024
Client:	Galway County Council	Elevation:	49.37	Drilled By:	D. Clarke
Engineer:	SDS Design Engineers	Borehole Diameter:	200mm	Status:	FINAL

Depth (m) Scale	Depth	Stratum Description	Legend	Level (mOD) Scale	Depth	Samples and Insitu Tests Depth	Type	Result	Water Strike	Backfill
		TOPSOIL.			49.17					
	0.20	Brown slightly sandy gravelly silty CLAY with high cobble content.		49.0						
0.5										
	0.90	Stiff grey brown slightly sandy gravelly silty CLAY with high cobble content.		48.5	48.47	1.00	B	DC06		
1.0						1.00	C	N=21 (2,2/3,3,6,9)		
1.5				48.0						
				47.5						
2.0						2.00	B	DC07		
	2.10	Obstruction - possible boulders.			47.27	2.00	C	50 (25 for 95mm/50 for 10mm)		
	2.30	End of Borehole at 2.30m			47.07	2.30	C	50 (25 for 5mm/50 for 5mm)		
2.5				47.0						
				46.5						
3.0										
3.5				46.0						
				45.5						
4.0										
				45.0						
4.5										
				44.5						

Chiselling: From:	To:	Time:	Water Strikes: Strike:	Rose:	Depth Sealed	Water Details: Date:	Hole Depth:	Water Depth:	Installation: From:	To:	Pipe:	Backfill: From:	To:	Type:	Remarks:
2.10	2.30	01:30				09/11	2.30	Dry				0.00	2.30	Arisings	Borehole terminated due to obstruction.

Legend:
B: Bulk
D: Disturbed
U: Undisturbed
ES: Environmental
W: Water
C: Cone SPT
S: Split spoon SPT

Contract No: 6380	**Cable Percussion Borehole Log**				Borehole No: **BH04**
Contract:	Cullairbaun	Easting:	549903.212	Date Started:	08/11/2024
Location:	Athenry, Co. Galway	Northing:	728433.463	Date Completed:	08/11/2024
Client:	Galway County Council	Elevation:	49.02	Drilled By:	D. Clarke
Engineer:	SDS Design Engineers	Borehole Diameter:	200mm	Status:	FINAL

Depth (m) Scale	Depth	Stratum Description	Legend	Level (mOD) Scale	Depth	Samples and Insitu Tests Depth	Type	Result	Water Strike	Backfill
	0.10	TOPSOIL.			48.92					
		Brown slightly sandy gravelly silty CLAY with high cobble content.								
0.5				48.5						
	0.90				48.12					
1.0		Stiff grey brown slightly sandy gravelly silty CLAY with high cobble content.		48.0		1.00 1.00	B C	DC01 N=15 (2,3/3,4,4,4)		
1.5				47.5						
	1.60	Obstruction - possible boulders.			47.42					
	1.70	End of Borehole at 1.70m			47.32	1.70	C	50 (25 for 5mm/50 for 5mm)		
2.0				47.0						
2.5				46.5						
3.0				46.0						
3.5				45.5						
4.0				45.0						
4.5				44.5						

Chiselling: From:	To:	Time:	Water Strikes: Strike:	Rose:	Depth Sealed	Water Details: Date:	Hole Depth:	Water Depth:	Installation: From:	To:	Pipe:	Backfill: From:	To:	Type:	Remarks:
0.70	0.80	01:00				08/11	1.70	Dry				0.00	1.70	Arisings	Borehole terminated due to obstruction.
1.60	1.70	01:30													

Legend:
B: Bulk
D: Disturbed
U: Undisturbed
ES: Environmental
W: Water
C: Cone SPT
S: Split spoon SPT

Contract No: 6380	**Cable Percussion Borehole Log**				Borehole No: **BH05**
Contract:	Cullairbaun	Easting:	549840.317	Date Started:	10/11/2024
Location:	Athenry, Co. Galway	Northing:	728437.364	Date Completed:	10/11/2024
Client:	Galway County Council	Elevation:	49.46	Drilled By:	D. Clarke
Engineer:	SDS Design Engineers	Borehole Diameter:	200mm	Status:	FINAL

Depth (m)		Stratum Description	Legend	Level (mOD)		Samples and Insitu Tests			Water Strike	Backfill
Scale	Depth			Scale	Depth	Depth	Type	Result		
	0.10	TOPSOIL.			49.36					
		Brown slightly sandy gravelly silty CLAY with high cobble content.		49.0						
0.5										
	0.70				48.76					
		Stiff grey brown slightly sandy gravelly silty CLAY with high cobble content.		48.5		1.00	B	DC08		
1.0						1.00	C	N=16 (3,4/4,3,4,5)		
1.5				48.0						
	1.70	Obstruction - possible boulders.			47.76					
	1.90	End of Borehole at 1.90m		47.5	47.56	1.90	C	50 (25 for 5mm/50 for 5mm)		
2.0										
2.5				47.0						
3.0				46.5						
3.5				46.0						
4.0				45.5						
4.5				45.0						
				44.5						

Chiselling:			Water Strikes:			Water Details:			Installation:			Backfill:			Remarks:
From:	To:	Time:	Strike:	Rose:	Depth Sealed	Date:	Hole Depth:	Water Depth:	From:	To:	Pipe:	From:	To:	Type:	
0.50	0.60	01:00				10/11	1.90	Dry				0.00	1.90	Arisings	Borehole terminated due to obstruction.
1.70	1.90	01:30													

Legend:
B: Bulk
D: Disturbed
U: Undisturbed
ES: Environmental
W: Water
C: Cone SPT
S: Split spoon SPT

Appendix 2

Trial Pit Logs and Photographs

Contract No: 6380	**Trial Pit Log**				Trial Pit No: **TP01**
Contract:	Cullairbaun	Easting:	549913.247	Date:	31/10/2024
Location:	Athenry, Co. Galway	Northing:	728417.282	Excavator:	6T Tracked Excavator
Client:	Galway County Council	Elevation:	48.57	Logged By:	M. Kaliski
Engineer:	SDS Design Engineers	Dimensions (LxWxD) (m):	2.70 x 0.50 x 2.50	Status:	FINAL

Level (mbgl) Scale:	Depth	Stratum Description	Legend	Level (mOD) Scale:	Depth:	Samples / Field Tests Depth	Type	Result	Water Strike
		TOPSOIL.		48.5					
	0.20	Firm brown slightly sandy slightly gravelly silty CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of limestone. Cobbles are angular to subrounded of limestone.			48.37				
0.5						0.50	ES	MK04	
	0.60	Firm light grey slightly sandy slightly gravelly silty CLAY with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of limestone. Cobbles are angular to subrounded of limestone.		48.0	47.97				
1.0						1.00	B	MK05	
				47.5					
1.5									
				47.0					
2.0									
				46.5					
	2.20	Firm becoming stiff grey slightly sandy gravelly silty CLAY with high cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of limestone. Cobbles and boulders are angular to subrounded of limestone (up to 250mm diameter).			46.37				
2.5	2.50	Obstruction - possible boulders.			46.07	2.50	B	MK06	
		Pit terminated at 2.50m		46.0					

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Obstruction - possible boulders.	Pit walls stable.	Dry	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Contract No: 6380	**Trial Pit Log**				Trial Pit No: **TP02**
Contract:	Cullairbaun	Easting:	549884.776	Date:	31/10/2024
Location:	Athenry, Co. Galway	Northing:	728406.929	Excavator:	6T Tracked Excavator
Client:	Galway County Council	Elevation:	48.93	Logged By:	M. Kaliski
Engineer:	SDS Design Engineers	Dimensions (LxWxD) (m):	2.80 x 0.50 x 2.60	Status:	FINAL

Level (mbgl) Scale:	Depth	Stratum Description	Legend	Level (mOD) Scale:	Depth:	Samples / Field Tests Depth	Type	Result	Water Strike
		TOPSOIL.							
	0.30				48.63				
0.5		Firm light brown grey slightly sandy gravelly silty CLAY with medium cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of limestone. Cobbles and boulders are angular to subrounded of limestone (up to 300mm diameter).		48.5		0.50	ES	MK07	
1.0				48.0		1.00	B	MK08	
	1.20				47.73				
1.5		Firm becoming stiff light grey slightly sandy gravelly silty CLAY with high cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of limestone. Cobbles and boulders are angular to subrounded of limestone (up to 300mm diameter).		47.5					
2.0				47.0		2.00	B	MK09	
2.5				46.5					
	2.60	Obstruction - possible boulders.			46.33				
		Pit terminated at 2.60m		46.0					

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Obstruction - possible boulders.	Pit walls stable.	Dry	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Contract No: 6380	**Trial Pit Log**				Trial Pit No: **TP03**
Contract:	Cullairbaun	Easting:	549894.623	Date:	31/10/2024
Location:	Athenry, Co. Galway	Northing:	728452.874	Excavator:	6T Tracked Excavator
Client:	Galway County Council	Elevation:	49.19	Logged By:	M. Kaliski
Engineer:	SDS Design Engineers	Dimensions (LxWxD) (m):	2.60 x 0.50 x 2.30	Status:	FINAL

Level (mbgl) Scale:	Depth	Stratum Description	Legend	Level (mOD) Scale:	Depth:	Samples / Field Tests Depth	Type	Result	Water Strike
		TOPSOIL.		49.0					
	0.30	MADE GROUND: light brown grey slightly sandy gravelly silty clay with medium cobble content and occasional plastic, timber and scrap metal fragments.			48.89				
0.5						0.50	ES	MK01	
				48.5					
	0.80	Firm grey slightly sandy gravelly silty CLAY with medium cobble and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of limestone. Cobbles and boulders are angular to subrounded of limestone (up to 350mm diameter).			48.39				
1.0						1.00	B	MK02	
				48.0					
1.5									
	1.70	Firm becoming stiff grey slightly sandy gravelly silty CLAY with high cobble and boulder content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of limestone. Cobbles and boulders are angular to subrounded of limestone (up to 450mm diameter).		47.5	47.49				
2.0						2.00	B	MK03	
				47.0					
	2.30	Obstruction - possible boulders.			46.89				
		Pit terminated at 2.30m							
2.5									
				46.5					

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Obstruction - possible boulders.	Pit walls stable.	Dry	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Contract No: 6380	**Trial Pit Log**				Trial Pit No: **TP04**
Contract:	Cullairbaun	Easting:	549869.253	Date:	31/10/2024
Location:	Athenry, Co. Galway	Northing:	728441.571	Excavator:	6T Tracked Excavator
Client:	Galway County Council	Elevation:	49.43	Logged By:	M. Kaliski
Engineer:	SDS Design Engineers	Dimensions (LxWxD) (m):	2.60 x 0.50 x 2.20	Status:	FINAL

Level (mbgl) Scale:	Depth	Stratum Description	Legend	Level (mOD) Scale:	Depth:	Samples / Field Tests Depth	Type	Result	Water Strike
		TOPSOIL.							
	0.20	MADE GROUND: brown sandy slightly gravelly silty clay with medium cobble and boulder content and occasional plastic, timber and glass fragments.			49.23				
0.5				49.0		0.50	ES	MK12	
	0.80				48.63				
		Firm light grey sandy gravelly silty CLAY with high cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of limestone. Cobbles are angular to subrounded of limestone.		48.5					
1.0	1.00	Grey silty very sandy fine to coarse, angular to subrounded GRAVEL of limestone with medium cobble content. Sand is fine to coarse. Cobbles are angular to subrounded of limestone.			48.43	1.00	B	MK13	
1.5				48.0					
				47.5					
2.0						2.00	B	MK14	
	2.20	Obstruction - possible boulders.			47.23				
		Pit terminated at 2.20m							
2.5				47.0					
				46.5					

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Obstruction - possible boulders.	Pit walls stable.	Dry	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

Contract No: 6380	**Trial Pit Log**				Trial Pit No: **TP05**
Contract:	Cullairbaun	Easting:	549846.901	Date:	31/10/2024
Location:	Athenry, Co. Galway	Northing:	728428.607	Excavator:	6T Tracked Excavator
Client:	Galway County Council	Elevation:	49.56	Logged By:	M. Kaliski
Engineer:	SDS Design Engineers	Dimensions (LxWxD) (m):	2.50 x 0.50 x 1.50	Status:	FINAL

Level (mbgl) Scale:	Depth	Stratum Description	Legend	Level (mOD) Scale:	Depth:	Samples / Field Tests Depth	Type	Result	Water Strike
		TOPSOIL.		49.5					
	0.20				49.36				
		Firm grey brown slightly sandy slightly gravelly silty CLAY with medium cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of limestone. Cobbles are angular to subrounded of limestone.							
	0.40				49.16				
0.5		Firm light grey sandy slightly gravelly silty CLAY with high cobble and low boulder content and occasional gravel laminas. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of limestone. Cobbles and boulders are angular to subrounded of limestone (up to 400mm diameter).		49.0		0.50	ES	MK10	
1.0				48.5		1.00	B	MK11	
1.5	1.50	Obstruction - possible boulders.		48.0	48.06				
		Pit terminated at 1.50m							
2.0				47.5					
2.5				47.0					

Termination:	Pit Wall Stability:	Groundwater Rate:	Remarks:	Key:
Obstruction - possible boulders.	Pit walls stable.	Dry	-	B = Bulk disturbed D = Small disturbed CBR = Undisturbed CBR ES = Environmental

TP01 Sidewall

TP01 Spoil

TP02 Sidewall

TP02 Spoil

TP03 Sidewall

TP03 Spoil

TP04 Sidewall

TP04 Spoil

TP05 Sidewall

TP05 Spoil

Appendix 3

Soakaway Test Results and Photographs

SOAKAWAY TEST

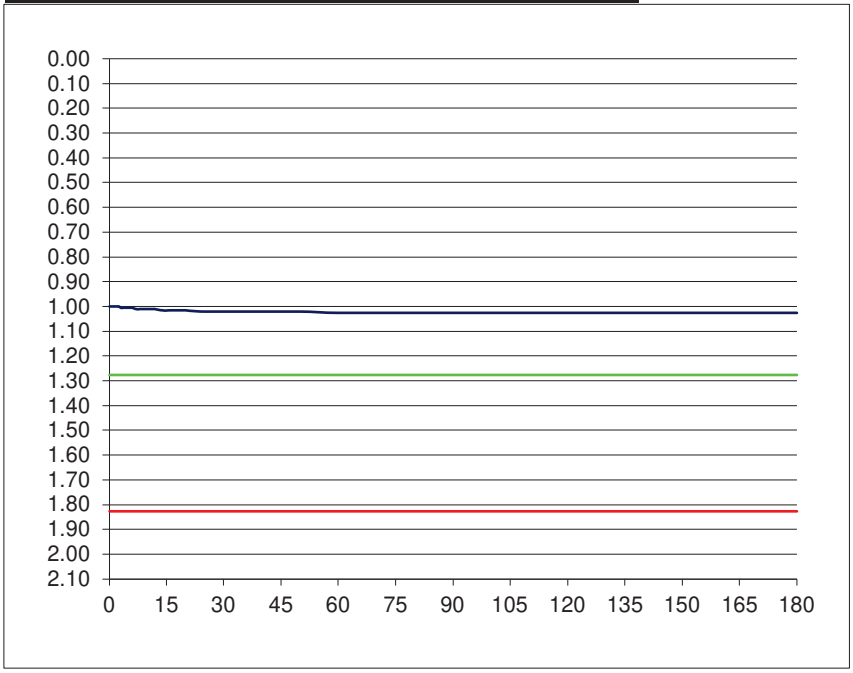
Project Reference:	6380
Contract name:	Cullairbaun
Location:	Athenry, Co. Galway
Test No:	INF01
Date:	31/10/2024

Ground Conditions

From	To	
0.00	0.30	TOPSOIL.
0.30	0.50	Firm brown slightly sandy gravelly silty CLAY with low cobble content.
0.50	2.10	Firm becoming stiff grey slightly sandy gravelly silty CLAY with high cobble and low boulder content and occasional gravel laminas.

Elapsed Time (mins)	Fall of Water (m)
0	1.00
0.5	1.00
1	1.00
1.5	1.00
2	1.00
2.5	1.00
3	1.01
3.5	1.01
4	1.01
4.5	1.01
5	1.01
6	1.01
7	1.01
8	1.01
9	1.01
10	1.01
12	1.01
14	1.02
16	1.02
18	1.02
20	1.02
25	1.02
30	1.02
40	1.02
50	1.02
60	1.03
75	1.03
90	1.03
120	1.03
180	1.03

Pit Dimensions (m)		
Length (m)	2.80	m
Width (m)	0.40	m
Depth	2.10	m
Water		
Start Depth of Water	1.00	m
Depth of Water	1.10	m
75% Full	1.28	m
25% Full	1.83	m
75%-25%	0.55	m
Volume of water (75%-25%)	**0.62**	m3
Area of Drainage	**13.44**	m2
Area of Drainage (75%-25%)	**4.64**	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** / **m/min** or **Fail** / **m/s**

SOAKAWAY TEST

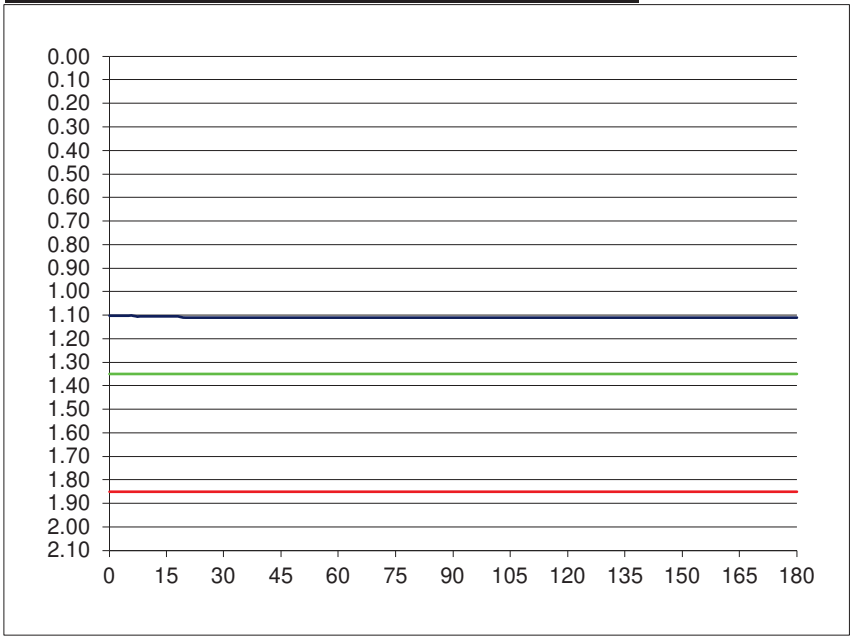
Project Reference:	6380
Contract name:	Cullairbaun
Location:	Athenry, Co. Galway
Test No:	INF02
Date:	31/10/2024

Ground Conditions

From	To	
0.00	0.20	TOPSOIL.
0.20	0.60	Firm brown slightly sandy slightly gravelly silty CLAY with low cobble and boulder content.
0.60	2.10	Firm becoming stiff grey slightly sandy gravelly silty CLAY with high cobble content.

Elapsed Time (mins)	Fall of Water (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	1.11
8	1.11
9	1.11
10	1.11
12	1.11
14	1.11
16	1.11
18	1.11
20	1.11
25	1.11
30	1.11
40	1.11
50	1.11
60	1.11
75	1.11
90	1.11
120	1.11
180	1.11

Pit Dimensions (m)		
Length (m)	2.90	m
Width (m)	0.40	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%)	**0.58**	m3
Area of Drainage	**13.86**	m2
Area of Drainage (75%-25%)	**4.46**	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** **m/min** or **Fail** **m/s**

SOAKAWAY TEST

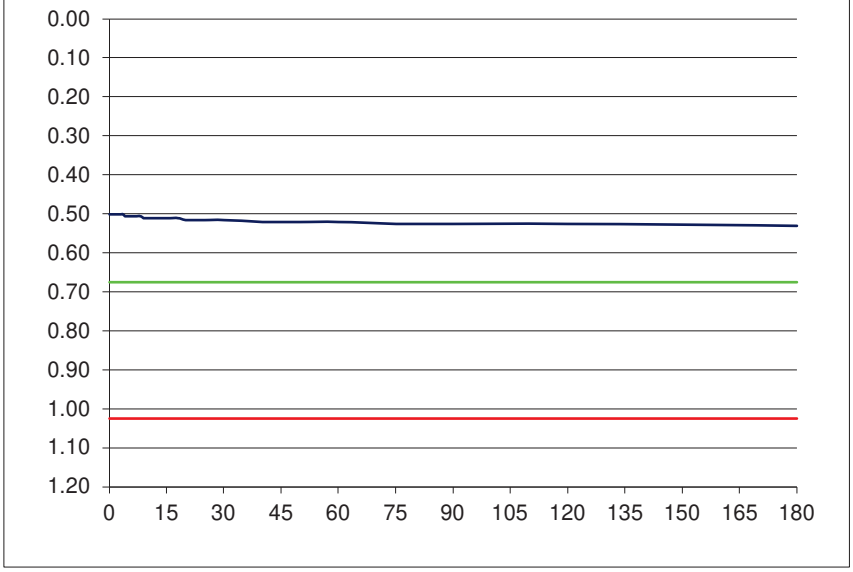
Project Reference:	6380
Contract name:	Cullairbaun
Location:	Athenry, Co. Galway
Test No:	INF03
Date:	31/10/2024

Ground Conditions

From	To	
0.00	0.10	TOPSOIL.
0.10	0.50	MADE GROUND: grey brown slightly sandy gravelly silty clay with high cobble content and some timber and scrap metal fragments.
0.50	1.20	Firm grey slightly sandy gravelly silty CLAY with high cobble and medium boulder content.
1.20		Obstruction - possible boulders.

Elapsed Time (mins)	Fall of Water (m)
0	0.50
0.5	0.50
1	0.50
1.5	0.50
2	0.50
2.5	0.50
3	0.50
3.5	0.50
4	0.51
4.5	0.51
5	0.51
6	0.51
7	0.51
8	0.51
9	0.51
10	0.51
12	0.51
14	0.51
16	0.51
18	0.51
20	0.52
25	0.52
30	0.52
40	0.52
50	0.52
60	0.52
75	0.53
90	0.53
120	0.53
180	0.53

Pit Dimensions (m)		
Length (m)	2.60	m
Width (m)	0.40	m
Depth	1.20	m
Water		
Start Depth of Water	0.50	m
Depth of Water	0.70	m
75% Full	0.68	m
25% Full	1.03	m
75%-25%	0.35	m
Volume of water (75%-25%)	**0.36**	m3
Area of Drainage	**7.20**	m2
Area of Drainage (75%-25%)	**3.14**	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** **m/min** or **Fail** **m/s**

SOAKAWAY TEST

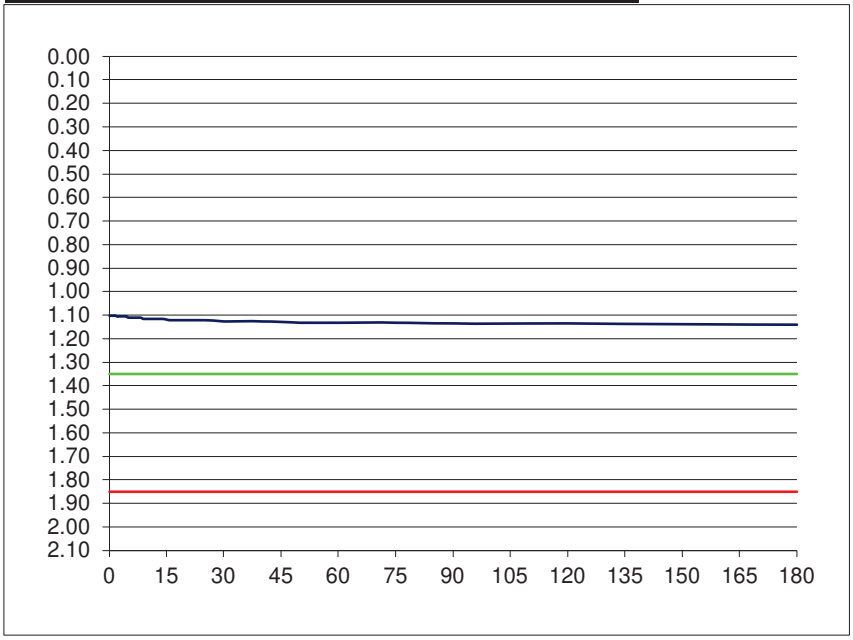
Project Reference:	6380
Contract name:	Cullairbaun
Location:	Athenry, Co. Galway
Test No:	INF04
Date:	31/10/2024

Ground Conditions

From	To	
0.00	0.20	TOPSOIL.
0.20	0.80	Firm brown grey slightly sandy gravelly silty CLAY with medium cobble content.
0.80	2.10	Firm becoming stiff grey slightly sandy gravelly silty CLAY with high cobble and low boulder content.

Elapsed Time (mins)	Fall of Water (m)
0	1.10
0.5	1.10
1	1.10
1.5	1.10
2	1.11
2.5	1.11
3	1.11
3.5	1.11
4	1.11
4.5	1.11
5	1.11
6	1.11
7	1.11
8	1.11
9	1.12
10	1.12
12	1.12
14	1.12
16	1.12
18	1.12
20	1.12
25	1.12
30	1.13
40	1.13
50	1.13
60	1.13
75	1.13
90	1.14
120	1.14
180	1.14

Pit Dimensions (m)		
Length (m)	2.60	m
Width (m)	0.40	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%)	**0.52**	m3
Area of Drainage	**12.60**	m2
Area of Drainage (75%-25%)	**4.04**	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** **m/min** or **Fail** **m/s**

INF1 Sidewall

INF1 Spoil

INF2 Sidewall

INF2 Spoil

INF3 Sidewall

INF3 Spoil

INF4 Sidewall

INF4 Spoil

Appendix 4

Plate Test Results

Plate Bearing Test in accordance with BS 1377: Part 9 and Part 2 HD 25/94

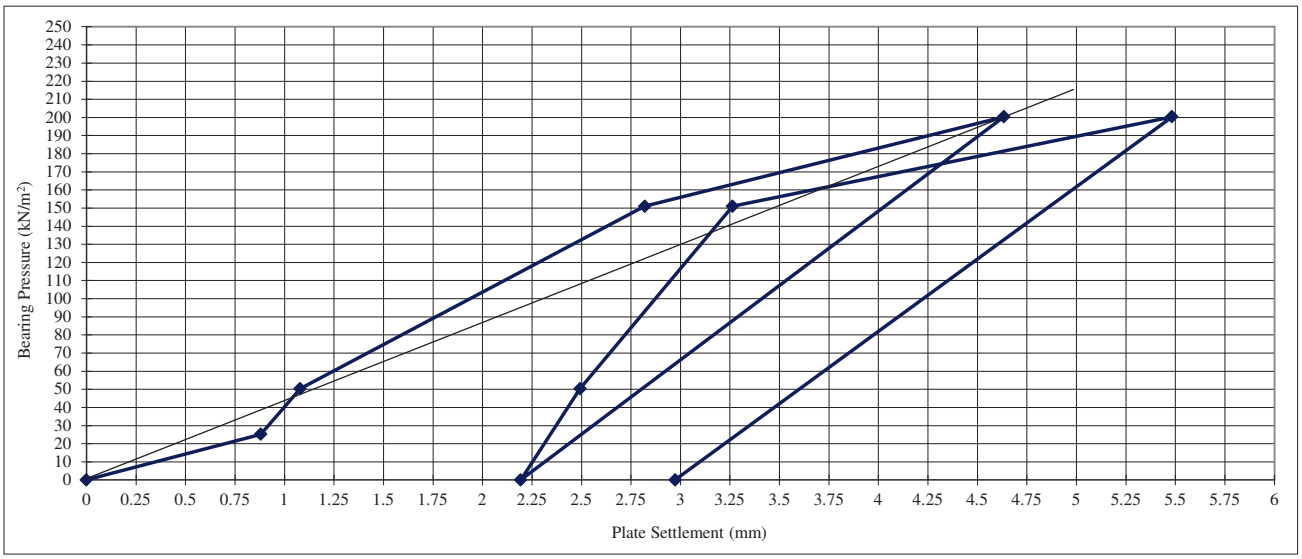
Site Investigations Ltd., Carhugar The Grange, 12th Lock Road, Lucan, Co. Dublin Tel: 01 6108768 Email:info@siteinvestigations.ie

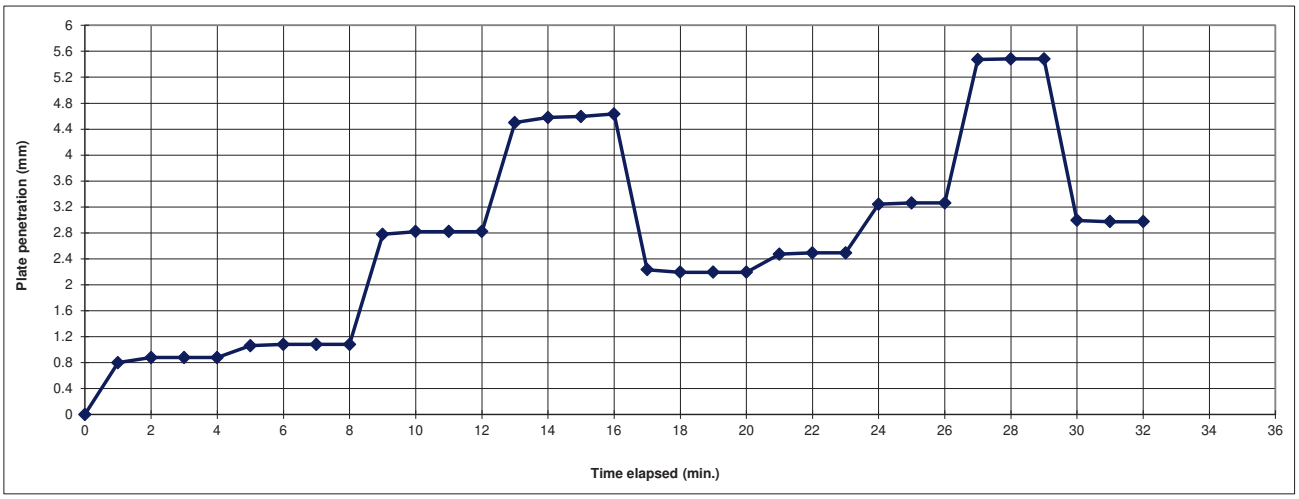
Client	Galway County Council
Site	Cullairbaun, Athenry
Test Date	07-Nov-24
Location:	PT01
Plate Diameter:	*600mm*
Type of reaction Load	*13tonne tracked excavator*
Material Type:	*slightly sandy slightly gravelly silty CLAY*
Depth test carried out:	*0.50m BGL*
CBR value is as per specification for 762mm Plate	

1.25mm settlement (graph) for 762mm Plate (kPa)	**54**
Equivalent CBR Value-Initial loading (%)	**9.7**
Mod. of subgrade Reaction k for 600mm Plate(kPa)	**46**
Correction factor for 600mm Plate	**0.85**

Pressure Stages	Bearing Pressure (kN/m^2)	Plate Settlement (mm)
Initial	0.0	0.00
	25	0.88
	50	1.08
	151	2.82
	200	4.63
	0.0	2.19
Reload	50	2.49
	151	3.26
	200	5.48
Final Condition	0.0	2.97

ITM Co-ords	Easting	Northing	Level





04/12/2024

Site Investigatins Ltd.

Plate Bearing Test in accordance with BS 1377: Part 9 and Part 2 HD 25/94

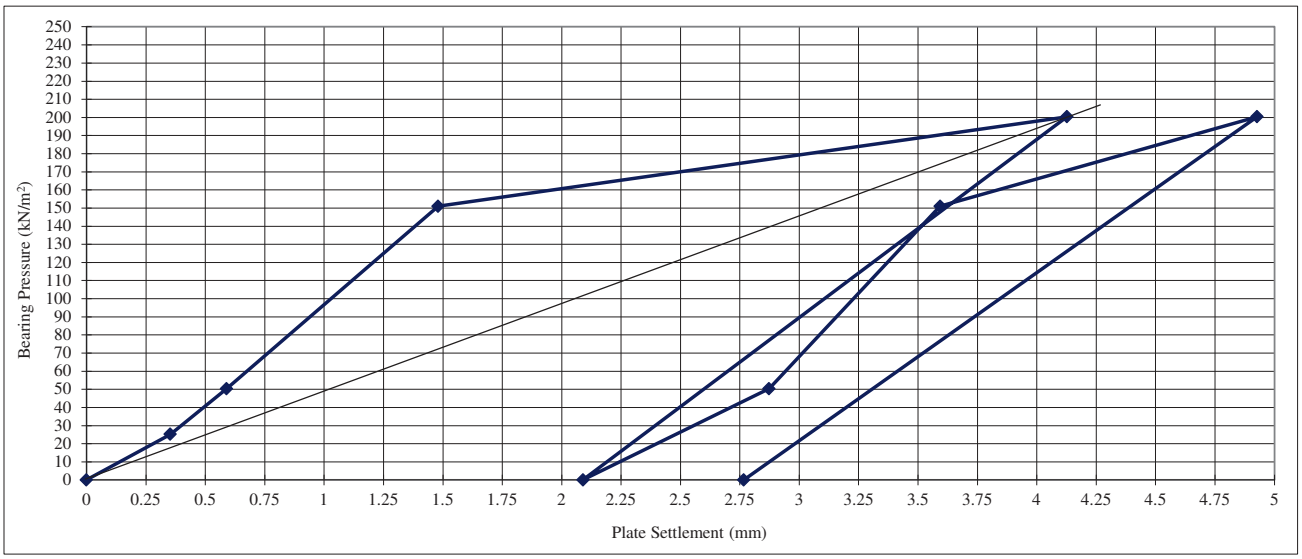
Site Investigations Ltd., Carhugar The Grange, 12th Lock Road, Lucan, Co. Dublin Tel: 01 6108768 Email:info@siteinvestigations.ie

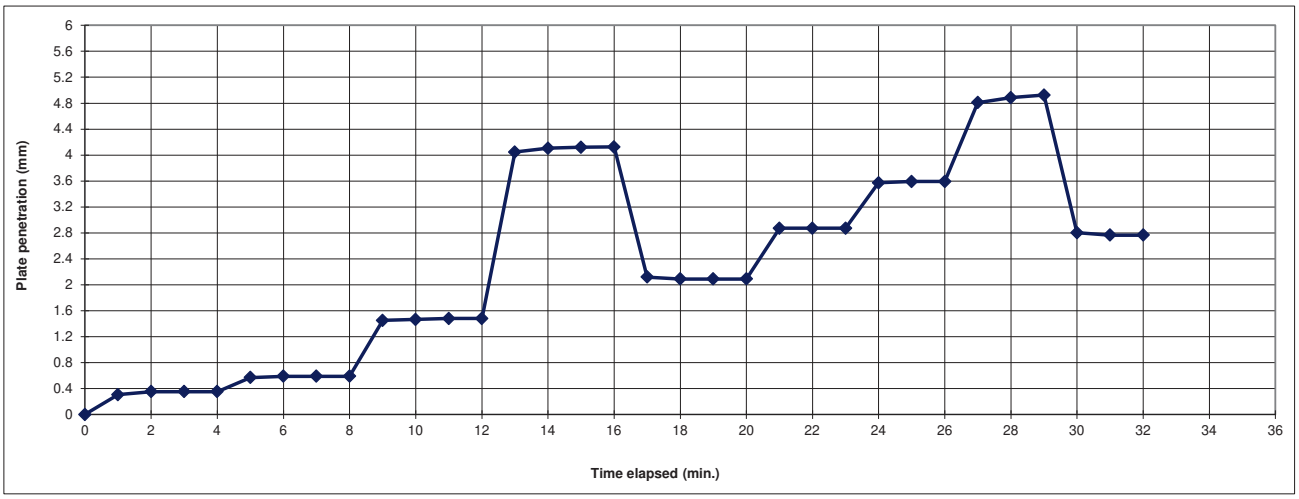
Client	Galway County Council
Site	Cullairbaun, Athenry
Test Date	07-Nov-24
Location:	PT02
Plate Diameter:	*600mm*
Type of reaction Load	*13tonne tracked excavator*
Material Type:	*slightly sandy slightly gravelly silty CLAY*
Depth test carried out:	*0.50m BGL*
CBR value is as per specification for 762mm Plate	

1.25mm settlement (graph) for 762mm Plate (kPa)	**61**
Equivalent CBR Value-Initial loading (%)	**12.0**
Mod. of subgrade Reaction k for 600mm Plate(kPa)	**52**
Correction factor for 600mm Plate	**0.85**

Pressure Stages	Bearing Pressure (kN/m^2)	Plate Settlement (mm)
Initial	0.0	0.00
	25	0.35
	50	0.59
	151	1.48
	200	4.13
	0.0	2.09
Reload	50	2.87
	151	3.59
	200	4.93
Final Condition	0.0	2.77

ITM Co-ords	Easting	Northing	Level





04/12/2024

Site Investigatins Ltd.

Plate Bearing Test in accordance with BS 1377: Part 9 and Part 2 HD 25/94

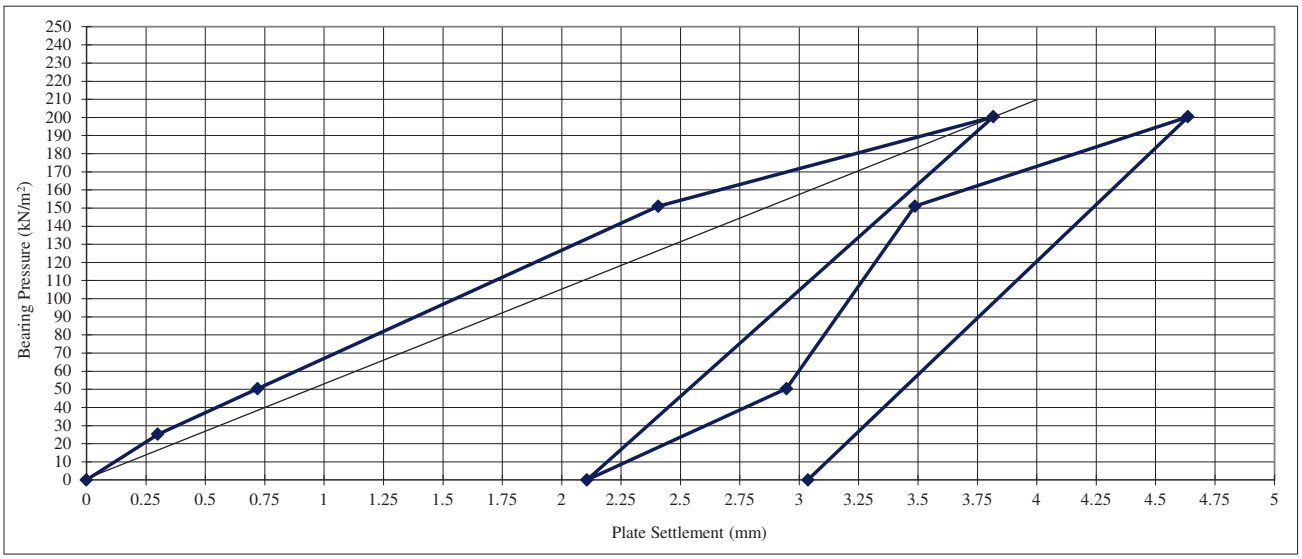
Site Investigations Ltd., Carhugar The Grange, 12th Lock Road, Lucan, Co. Dublin Tel: 01 6108768 Email:info@siteinvestigations.ie

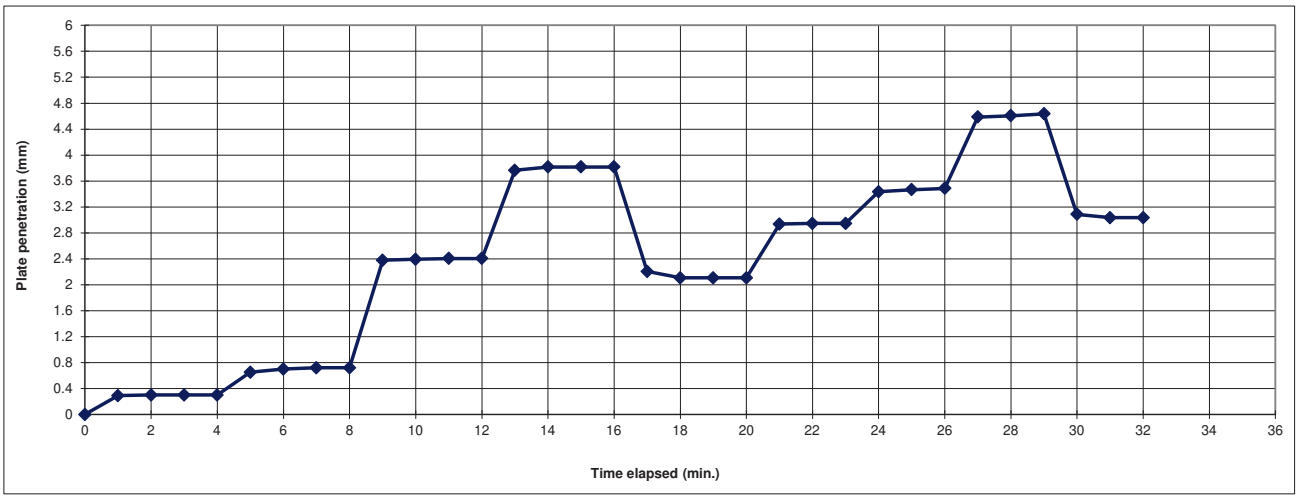
Client	Galway County Council
Site	Cullairbaun, Athenry
Test Date	07-Nov-24
Location:	PT03
Plate Diameter:	*600mm*
Type of reaction Load	*13tonne tracked excavator*
Material Type:	*slightly sandy slightly gravelly silty CLAY*
Depth test carried out:	*0.50m BGL*
CBR value is as per specification for 762mm Plate	

1.25mm settlement (graph) for 762mm Plate (kPa)	**65**
Equivalent CBR Value-Initial loading (%)	**13.4**
Mod. of subgrade Reaction k for 600mm Plate(kPa)	**55**
Correction factor for 600mm Plate	**0.85**

Pressure Stages	Bearing Pressure (kN/m^2)	Plate Settlement (mm)
Initial	0.0	0.00
	25	0.30
	50	0.72
	151	2.41
	200	3.82
	0.0	2.11
Reload	50	2.95
	151	3.49
	200	4.64
Final Condition	0.0	3.04

ITM Co-ords	Easting	Northing	Level





04/12/2024

Site Investigatins Ltd.

Plate Bearing Test in accordance with BS 1377: Part 9 and Part 2 HD 25/94

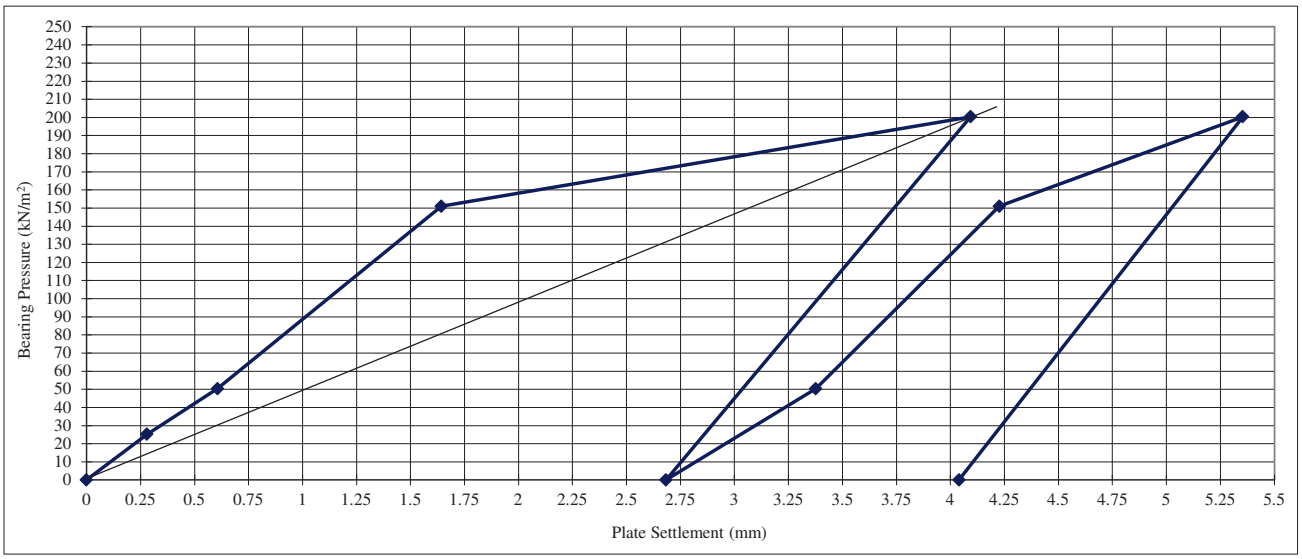
Site Investigations Ltd., Carhugar The Grange, 12th Lock Road, Lucan, Co. Dublin Tel: 01 6108768 Email:info@siteinvestigations.ie

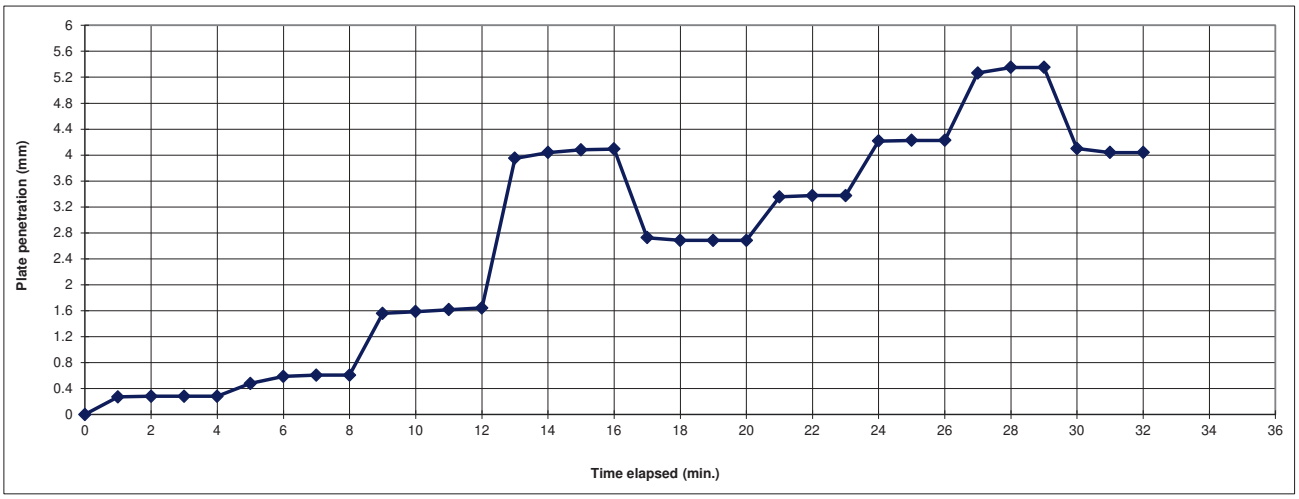
Client	Galway County Council
Site	Cullairbaun, Athenry
Test Date	07-Nov-24
Location:	PT04
Plate Diameter:	*600mm*
Type of reaction Load	*13tonne tracked excavator*
Material Type:	*slightly sandy slightly gravelly silty CLAY*
Depth test carried out:	*0.50m BGL*
CBR value is as per specification for 762mm Plate	

1.25mm settlement (graph) for 762mm Plate (kPa)	**61**
Equivalent CBR Value-Initial loading (%)	**12.0**
Mod. of subgrade Reaction k for 600mm Plate(kPa)	**52**
Correction factor for 600mm Plate	**0.85**

Pressure Stages	Bearing Pressure (kN/m^2)	Plate Settlement (mm)
Initial	0.0	0.00
	25	0.28
	50	0.61
	151	1.64
	200	4.09
	0.0	2.68
Reload	50	3.38
	151	4.23
	200	5.35
Final Condition	0.0	4.04

ITM Co-ords	Easting	Northing	Level





04/12/2024

Site Investigatins Ltd.

Appendix 5

Geotechnical Laboratory Test Results

Classification Tests
In accordance with BS 1377: Part 2

Client	Galway County Council
Site	Cullairbaun, Athenry
S.I. File No	6380 / 24
Test Lab	Site Investigations Ltd., Carhugar The Grange, 12th Lock Rd., Lucan Co. Dublin. Tel (01) 6108768 Email:info@siteinvestigations.ie
Report Date	18th November 2024

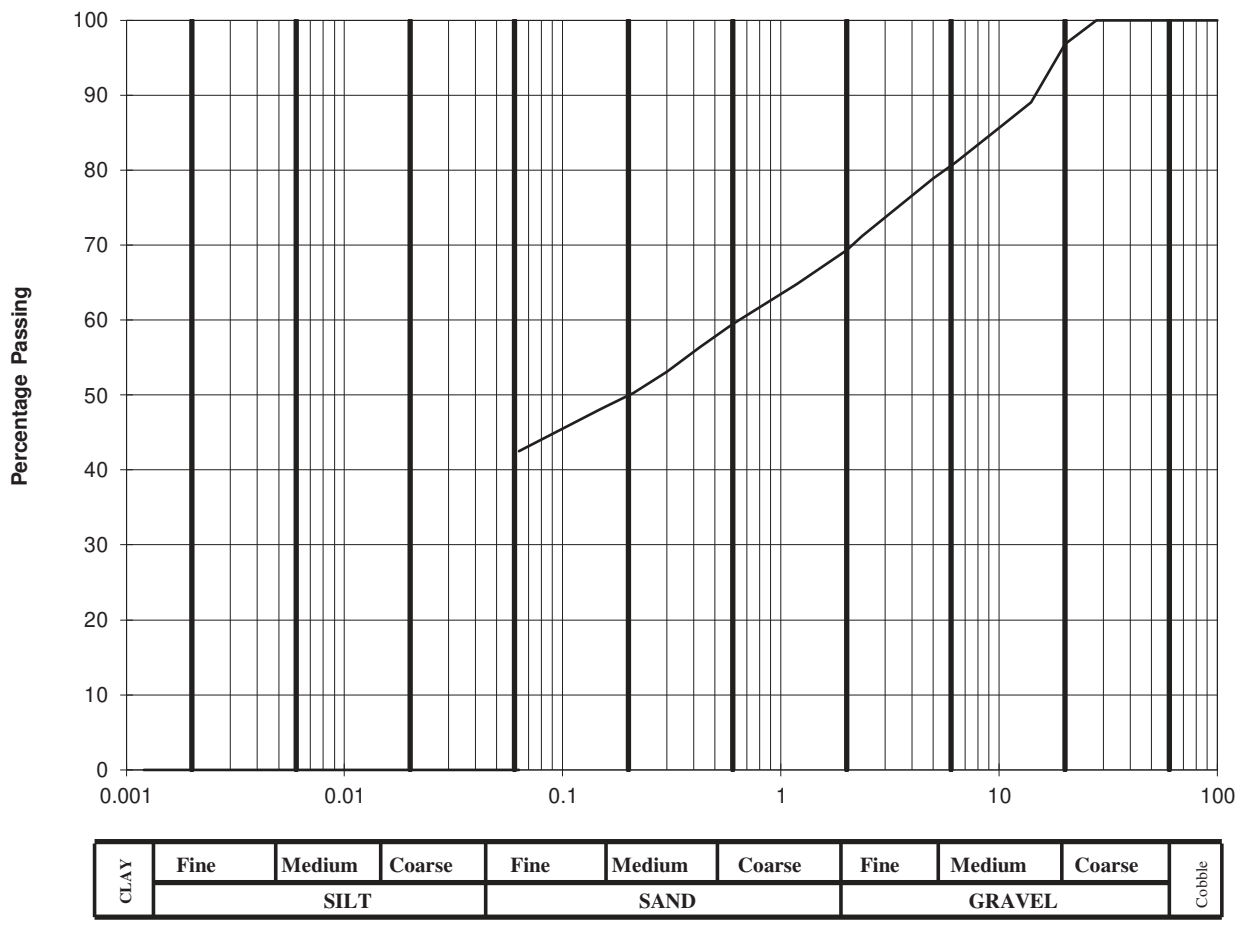
Hole ID	Depth	Sample No	Lab Ref No.	Sample Type	Natural Moisture Content %	Liquid Limit %	Plastic Limit %	Plastic Index %	Bulk Density g/cm^3	Specific gravity	% passing 425um	Comments	**Remarks** **C**=Clay; **M**=Silt **Plasticity**: **L**=Low; **I**=Intermediate; **H**=High; **V**=Very High; **E**=Extremely High
TP01	1.00	MK05	24/1684	B	10.2	33	19	14			56.3		CL
TP02	1.00	MK08	24/1685	B	9.0	32	19	13			47.0		CL
TP03	1.00	MK02	24/1686	B	8.0	29	20	9			44.1		CL
TP04	1.00	MK13	24/1687	B	8.9	30	20	10			37.4		CL
TP05	1.00	MK11	24/1688	B	9.0	32	19	13			50.0		CL

BS 1377 Particle Size Analysis

Site Investigations Limited

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		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	96.8		
14	89		
10	85.6		
6.3	81		
5.0	78.9		
2.36	71.2		
2.00	69.3		
1.18	64.8		
0.600	59.4		
0.425	56.3		
0.300	53.1		
0.212	50.3		
0.150	48.1		
0.063	43		

Cobbles, %	0
Gravel, %	31
Sand, %	26
Clay / Silt, %	43



Client :	Galway County Council
Project :	Cullairbaun, Athenry

Lab. No :	24/1684
Sample No :	MK05

Hole ID :	TP 01
Depth, m :	1.00

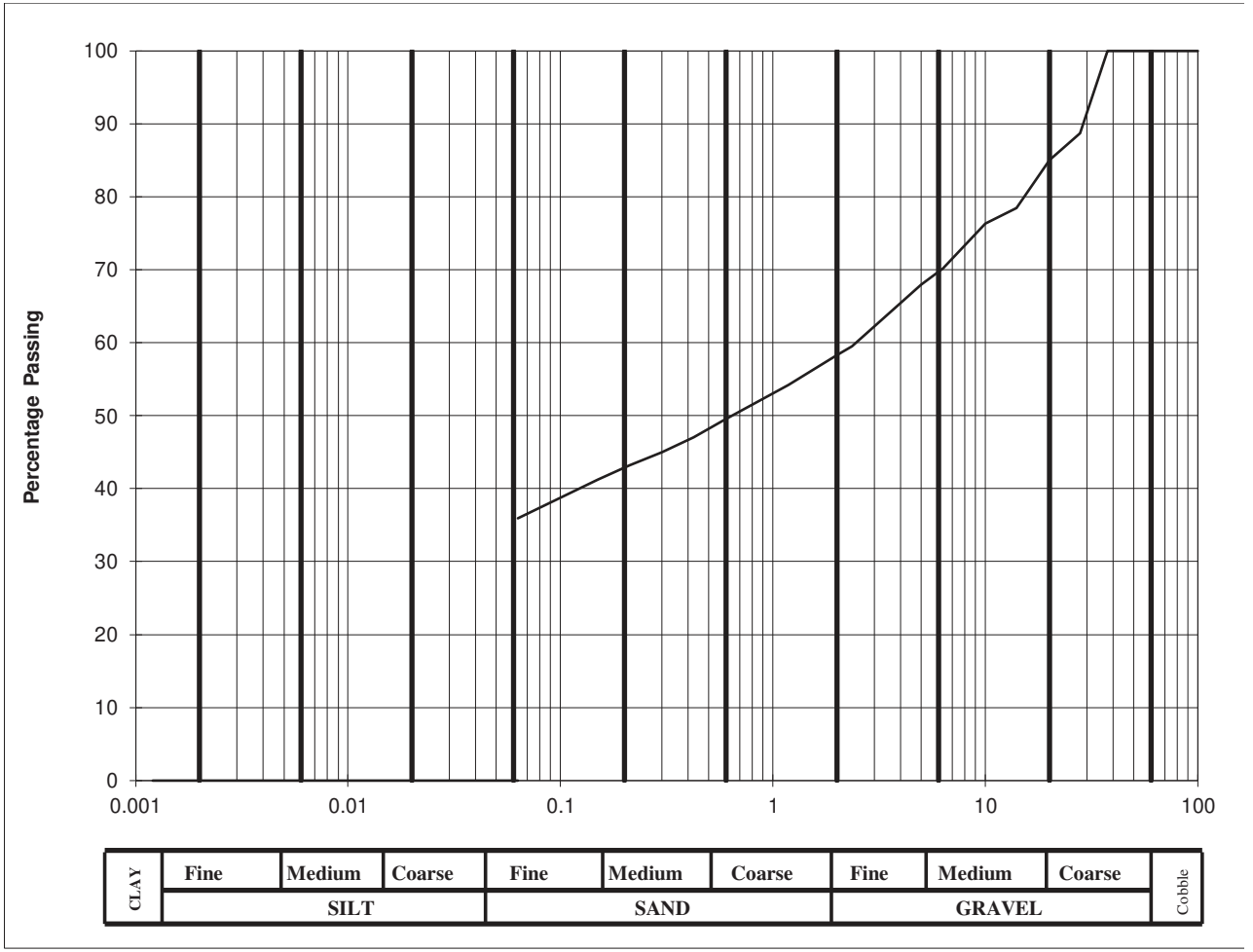
Material description :	slightly sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay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

BS 1377 Particle Size Analysis

Site Investigations Limited

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		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	88.7		
20	85		
14	78.4		
10	76.3		
6.3	70.2		
5.0	67.9		
2.36	59.5		
2.00	58.3		
1.18	54.2		
0.600	49.5		
0.425	47		
0.300	45		
0.212	43.2		
0.150	41.2		
0.063	36		

Cobbles, %	0
Gravel, %	42
Sand, %	22
Clay / Silt, %	36



Client :	Galway County Council	Lab. No :	24/1685	Hole ID :	TP 02
Project :	Cullairbaun, Athenry	Sample No :	MK08	Depth, m :	1.00

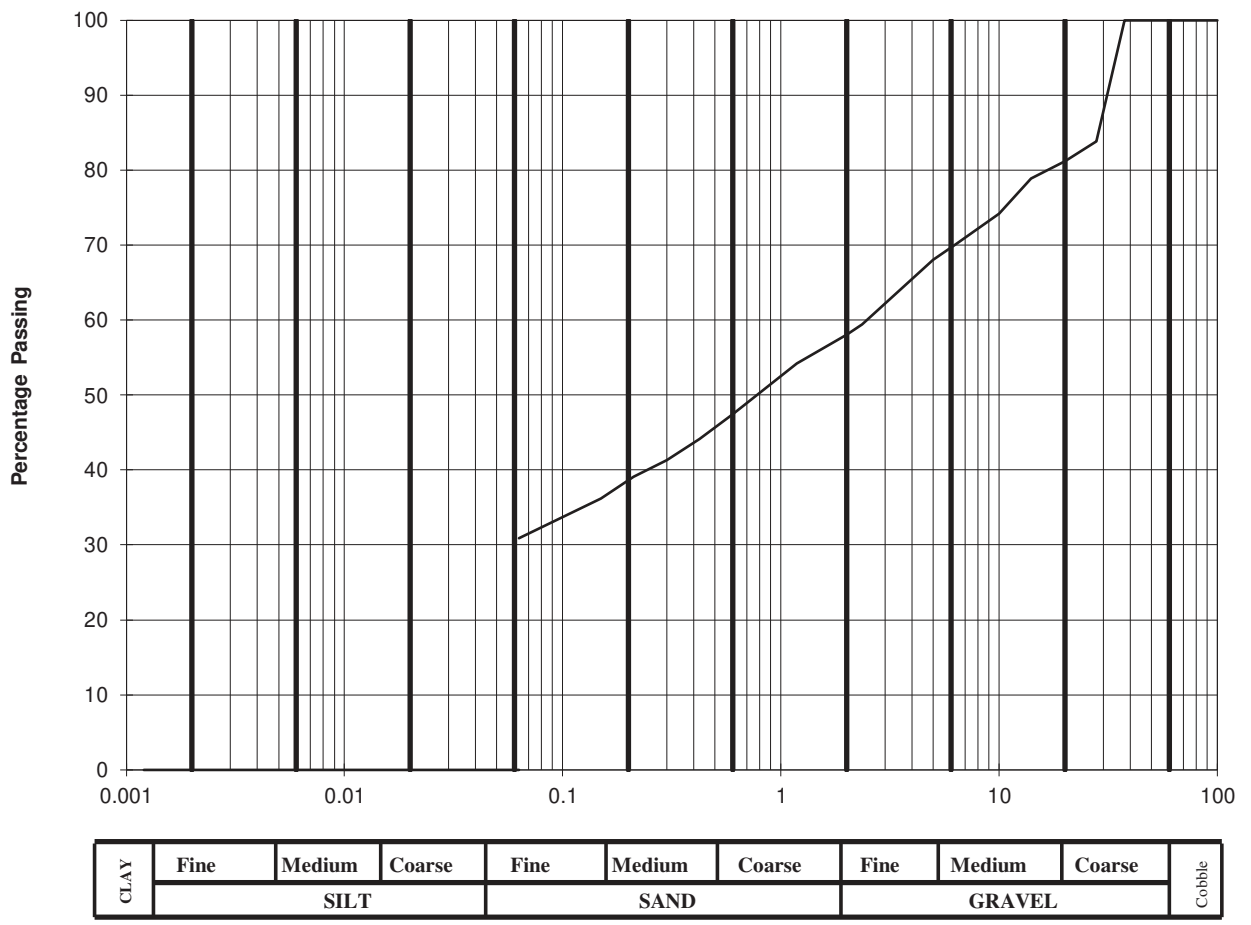
Material description :	slightly sandy gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt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

BS 1377 Particle Size Analysis

Site Investigations Limited

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		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	83.8		
20	81.2		
14	78.9		
10	74.2		
6.3	70.1		
5.0	68		
2.36	59.4		
2.00	58		
1.18	54.2		
0.600	47.4		
0.425	44.1		
0.300	41.3		
0.212	39.1		
0.150	36.2		
0.063	31		

Cobbles, %	0
Gravel, %	42
Sand, %	27
Clay / Silt, %	31



Client :	Galway County Council
Project :	Cullairbaun, Athenry

Lab. No :	24/1686
Sample No :	MK02

Hole ID :	TP 03.
Depth, m :	1.00

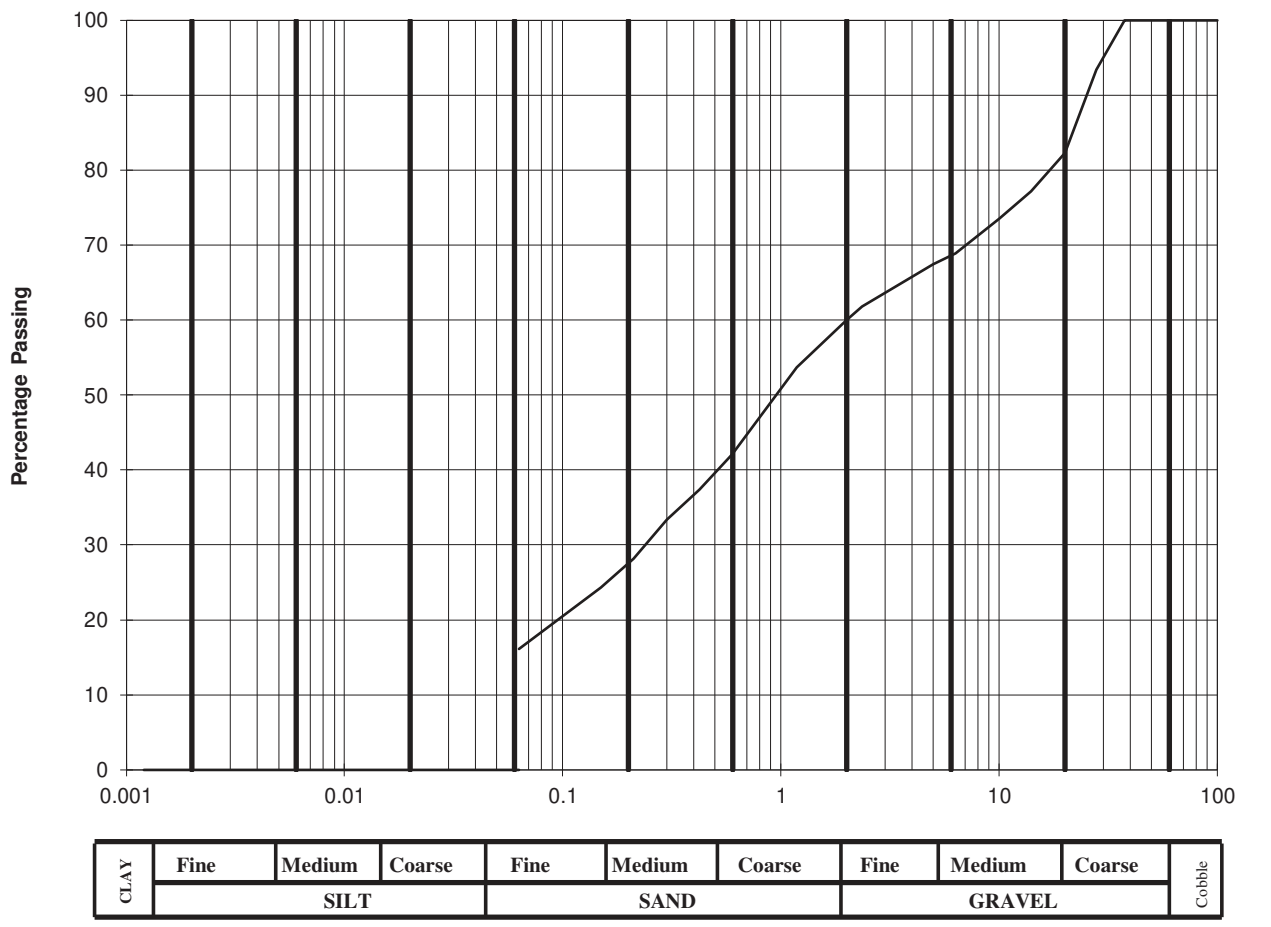
Material description :	slightly sandy gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt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

BS 1377 Particle Size Analysis

Site Investigations Limited

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		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	93.4		
20	82.3		
14	77.2		
10	73.5		
6.3	68.9		
5.0	67.4		
2.36	61.8		
2.00	60		
1.18	53.7		
0.600	42.1		
0.425	37.4		
0.300	33.4		
0.212	28.2		
0.150	24.3		
0.063	16		

Cobbles, %	0
Gravel, %	40
Sand, %	44
Clay / Silt, %	16



Client :	Galway County Council
Project :	Cullairbaun, Athenry

Lab. No :	24/1687
Sample No :	MK13

Hole ID :	TP 04
Depth, m :	1.00

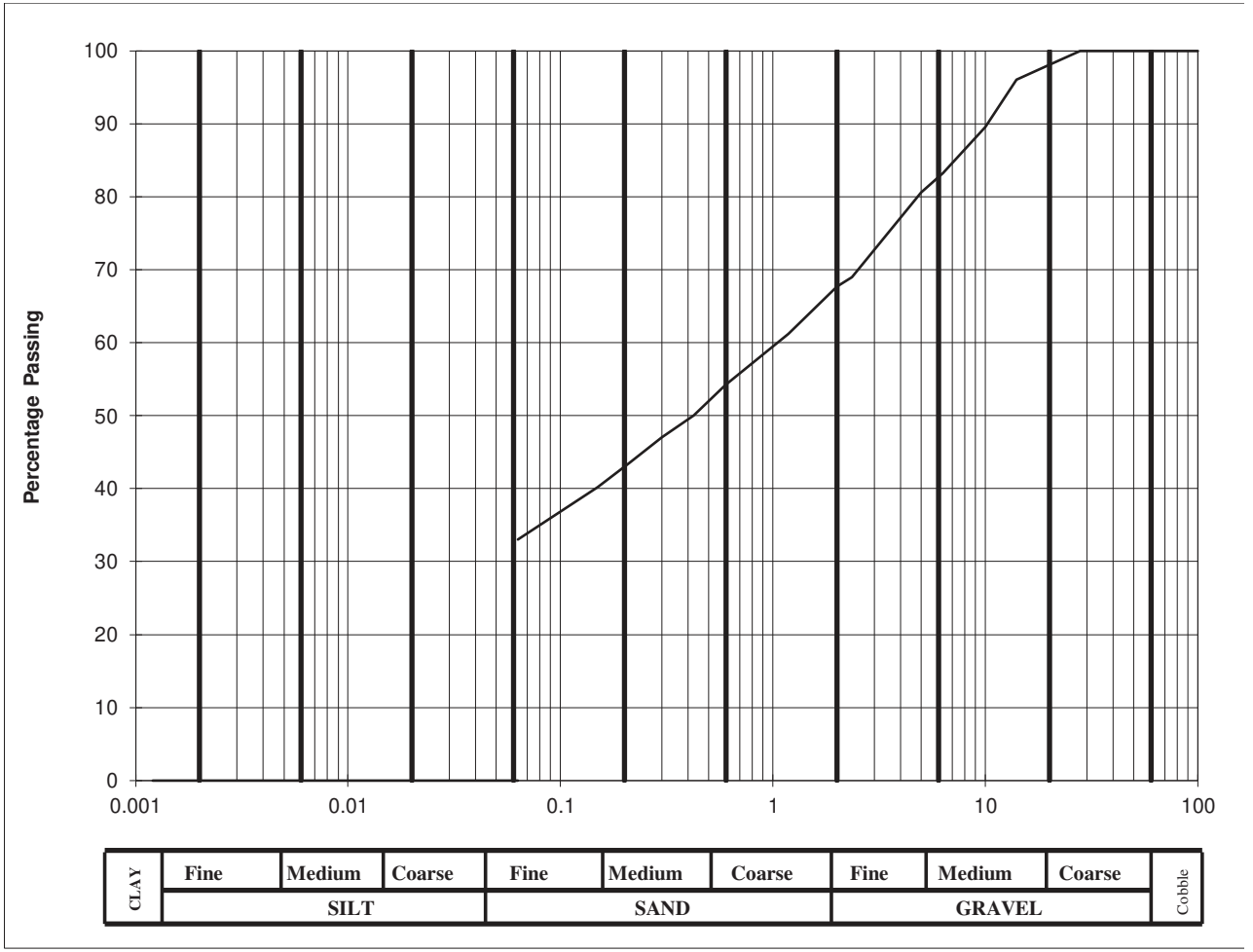
Material description :	sandy gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are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

BS 1377 Particle Size Analysis

Site Investigations Limited

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		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	98.1		
14	96		
10	89.5		
6.3	83.2		
5.0	80.6		
2.36	69		
2.00	67.7		
1.18	61.2		
0.600	54.2		
0.425	50		
0.300	47		
0.212	43.5		
0.150	40.2		
0.063	33		

Cobbles, %	0
Gravel, %	32
Sand, %	35
Clay / Silt, %	33



Client :	Galway County Council
Project :	Cullairbaun, Athenry

Lab. No :	24/1688
Sample No :	MK11

Hole ID :	TP 05
Depth, m :	1.00

Material description :	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

Chemical Testing
In accordance with BS 1377: Part 3

Client	Galway County Council
Site	Cullairbaun, Athenry
S.I. File No	6380 / 24
Test Lab	Site Investigations Ltd., Carhugar The Grange, 12th Lock Rd., Lucan Co. Dublin. Tel (01) 6108768 Email:info@siteinvestigations.ie
Report Date	18th November 2024

Hole Id	Depth (mBGL)	Sample No	Lab Ref	pH Value	Water Soluble Sulphate Content (2:1 Water-soil extract) (SO_3) g/L	Water Soluble Sulphate Content (2:1 Water-soil extract) (SO_3) %	Acid Soluble Sulphate Content (2:1 Water-soil extract) (SO_3) g/L	Acid Soluble Sulphate Content (2:1 Water-soil extract) (SO_3) %	Chloride ion Content (water:soil ratio 2:1) %	% passing 2mm
TP01	1.00	MK05	24/1684	8.94	0.126	0.087			0.25	69.3
TP02	1.00	MK08	24/1685	8.93	0.119	0.069			0.18	58.3
TP03	1.00	MK02	24/1686	8.89	0.120	0.070			0.27	58.0
TP04	1.00	MK13	24/1687	8.85	0.117	0.070			0.28	60.0
TP05	1.00	MK11	24/1688	8.95	0.124	0.084			0.21	67.7

Appendix 6

Environmental Laboratory Test Results

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@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:	15 November 2024
Customer:	Site Investigations Ltd
Sample Delivery Group (SDG):	241107-102
Your Reference:	6380
Location:	CULLAIRBAUN, ATHENRY C.GALWAY
Report No:	746801
Order Number:	40/B/24

We received 5 samples on Thursday November 07, 2024 and 5 of these samples were scheduled for analysis which was completed on Friday November 15, 2024. 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 Laboratories (UK) Limited Hawarden.

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.

Approved By:

Lauren Ellis
General Manager Western Europe Environmental

1291

CERTIFICATE OF ANALYSIS

SDG: 241107-102 **Report Number:** 746801 **Superseded Report:**
Client Ref.: 6380 **Location:** CULLAIRBAUN, ATHENRY C.GALWAY

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
30629606	TP 01		0.50 - 0.50	05/11/2024
30629608	TP 02		0.50 - 0.50	05/11/2024
30629609	TP 03		0.50 - 0.50	05/11/2024
30629610	TP 04		0.50 - 0.50	05/11/2024
30629611	TP 05		0.50 - 0.50	05/11/2024

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

Validated

CERTIFICATE OF ANALYSIS

SDG: 241107-102 **Report Number:** 746801 **Superseded Report:**
Client Ref.: 6380 **Location:** CULLAIRBAUN, ATHENRY C.GALWAY

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)														
			30629606			30629608			30629609			30629610			30629611		
			Customer Sample Reference														
			TP 01			TP 02			TP 03			TP 04			TP 05		
			AGS Reference														
			Depth (m)														
			0.50 - 0.50			0.50 - 0.50			0.50 - 0.50			0.50 - 0.50			0.50 - 0.50		
			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)
			Sample Type														
			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Anions by Kone (w)	All	NDPs: 0 Tests: 5	X			X			X			X			X		
CEN Readings	All	NDPs: 0 Tests: 5	X			X			X			X			X		
Chromium III	All	NDPs: 0 Tests: 5		X			X			X			X			X	
Coronene	All	NDPs: 0 Tests: 5		X			X			X			X			X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 5	X			X			X			X			X		
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 5	X			X			X			X			X		
EPH by GCxGC-FID	All	NDPs: 0 Tests: 5		X			X			X			X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 5		X			X			X			X			X	
Fluoride	All	NDPs: 0 Tests: 5	X			X			X			X			X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 5			X			X			X			X			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 5		X			X			X			X			X	
Loss on Ignition in soils	All	NDPs: 0 Tests: 5		X			X			X			X			X	
Mercury Dissolved	All	NDPs: 0 Tests: 5	X			X			X			X			X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 5		X			X			X			X			X	
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 5		X			X			X			X			X	

CERTIFICATE OF ANALYSIS

SDG: 241107-102 **Report Number:** 746801 **Superseded Report:**
Client Ref.: 6380 **Location:** CULLAIRBAUN, ATHENRY C.GALWAY

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)														
			30629606			30629608			30629609			30629610			30629611		
			Customer Sample Reference			TP 01			TP 02			TP 03			TP 04			TP 05		
			AGS Reference																	
			Depth (m)			0.50 - 0.50			0.50 - 0.50			0.50 - 0.50			0.50 - 0.50			0.50 - 0.50		
			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)
			Sample Type	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
PAH by GCMS	All	NDPs: 0 Tests: 5		X			X			X			X			X		
PCBs by GCMS	All	NDPs: 0 Tests: 5		X			X			X			X			X		
pH	All	NDPs: 0 Tests: 5		X			X			X			X			X		
pH Value of Filtered Water	All	NDPs: 0 Tests: 5	X			X			X			X			X				
Phenols by HPLC (W)	All	NDPs: 0 Tests: 5	X			X			X			X			X				
Sample description	All	NDPs: 0 Tests: 5		X			X			X			X			X		
Total Organic Carbon	All	NDPs: 0 Tests: 5		X			X			X			X			X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 5		X			X			X			X			X		
VOC MS (S)	All	NDPs: 0 Tests: 5			X			X			X			X				X

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
30629606	TP 01	0.50 - 0.50	Dark Brown	Sandy Loam	Stones	Vegetation
30629608	TP 02	0.50 - 0.50	Dark Brown	Loamy Sand	Stones	Vegetation
30629609	TP 03	0.50 - 0.50	Dark Brown	Loamy Sand	Stones	Vegetation
30629610	TP 04	0.50 - 0.50	Dark Brown	Silty Clay Loam	None	Vegetation
30629611	TP 05	0.50 - 0.50	Dark Brown	Loamy Sand	Stones	Vegetation

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.

CERTIFICATE OF ANALYSIS

SDG: 241107-102 **Report Number:** 746801 **Superseded Report:**
Client Ref.: 6380 **Location:** CULLAIRBAUN, ATHENRY C.GALWAY

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+$@ Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	TP 01	TP 02	TP 03	TP 04	TP 05
			Depth (m)	0.50 - 0.50	0.50 - 0.50	0.50 - 0.50	0.50 - 0.50	0.50 - 0.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	05/11/2024	05/11/2024	05/11/2024	05/11/2024	05/11/2024
			Sample Time	-	-	-	-	-
			Date Received	07/11/2024	07/11/2024	07/11/2024	07/11/2024	07/11/2024
			SDG Ref	241107-102	241107-102	241107-102	241107-102	241107-102
			Lab Sample No.(s)	30629606	30629608	30629609	30629610	30629611
			AGS Reference					
Moisture Content Ratio (% of as received sample)	%	PM024		13	9.4	16	16	11
Loss on ignition	<0.7 %	TM018		3.12 M	2.09 M	3.9 M	5.57 M	2.15 M
Organic Carbon, Total	<0.2 %	TM132		0.471 M	0.479 M	1.06 M	0.724 M	0.506 M
pH	1 pH Units	TM133		7.71 M	8.52 M	8.42 M	8.23 M	8.52 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 M	<0.6 M	<0.6 M	<0.6 M	<0.6 M
PCB congener 28	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168		<21	<21	<21	<21	<21
Chromium, Trivalent	<0.9 mg/kg	TM181		17.7	7.95	10.4	22.7	7.1
Antimony	<0.6 mg/kg	TM181		<0.6 #	0.944 #	0.749 #	<0.6 #	1.04 #
Arsenic	<0.6 mg/kg	TM181		7.16 M	3.61 M	4.46 M	12.7 M	3.03 M
Barium	<0.6 mg/kg	TM181		25.7 #	17.2 #	22.8 #	53.8 #	15.4 #
Cadmium	<0.02 mg/kg	TM181		1.27 M	0.691 M	0.795 M	1.22 M	0.785 M
Chromium	<0.9 mg/kg	TM181		17.7 M	8.28 M	10.4 M	22.7 M	7.44 M
Copper	<1.4 mg/kg	TM181		12.8 M	7 M	9.02 M	24.5 M	5.24 M
Lead	<0.7 mg/kg	TM181		12.8 M	6.18 M	8.86 M	28.6 M	5.9 M
Mercury	<0.1 mg/kg	TM181		<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M
Molybdenum	<0.1 mg/kg	TM181		1.22 #	0.604 #	0.601 #	1.86 #	0.503 #
Nickel	<0.2 mg/kg	TM181		41.5 M	14.3 M	16.9 M	51.4 M	10.9 M
Selenium	<1 mg/kg	TM181		1.6 #	<1 #	<1 #	<1 #	<1 #
Zinc	<1.9 mg/kg	TM181		49.6 M	18.9 M	29.2 M	72.8 M	18.2 M
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410		<10	<10	<10	<10	<10
Coronene	<200 µg/kg	TM410		<200	<200	<200	<200	<200
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415		<5	<5	<5	<5	<5

CERTIFICATE OF ANALYSIS

SDG: 241107-102 **Report Number:** 746801 **Superseded Report:**
Client Ref.: 6380 **Location:** CULLAIRBAUN, ATHENRY C.GALWAY

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	TP 01	TP 02	TP 03	TP 04	TP 05
			Depth (m)	0.50 - 0.50	0.50 - 0.50	0.50 - 0.50	0.50 - 0.50	0.50 - 0.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	05/11/2024	05/11/2024	05/11/2024	05/11/2024	05/11/2024
			Sample Time	-	-	-	-	-
			Date Received	07/11/2024	07/11/2024	07/11/2024	07/11/2024	07/11/2024
			SDG Ref	241107-102	241107-102	241107-102	241107-102	241107-102
			Lab Sample No.(s)	30629606	30629608	30629609	30629610	30629611
			AGS Reference					
Naphthalene	<9 µg/kg	TM218		<9 M	<9 M	<9 M	<9 M	<9 M
Acenaphthylene	<12 µg/kg	TM218		<12 M	<12 M	<12 M	<12 M	<12 M
Acenaphthene	<8 µg/kg	TM218		<8 M	<8 M	<8 M	<8 M	<8 M
Fluorene	<10 µg/kg	TM218		<10 M	<10 M	<10 M	<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218		<15 M	<15 M	<15 M	<15 M	<15 M
Anthracene	<16 µg/kg	TM218		<16 M	<16 M	<16 M	<16 M	<16 M
Fluoranthene	<17 µg/kg	TM218		<17 M	<17 M	<17 M	<17 M	<17 M
Pyrene	<15 µg/kg	TM218		<15 M	<15 M	<15 M	<15 M	<15 M
Benz(a)anthracene	<14 µg/kg	TM218		<14 M	<14 M	<14 M	<14 M	<14 M
Chrysene	<10 µg/kg	TM218		<10 M	<10 M	<10 M	<10 M	<10 M
Benzo(b)fluoranthene	<15 µg/kg	TM218		<15 M	<15 M	<15 M	<15 M	<15 M
Benzo(k)fluoranthene	<14 µg/kg	TM218		<14 M	<14 M	<14 M	<14 M	<14 M
Benzo(a)pyrene	<15 µg/kg	TM218		<15 M	<15 M	<15 M	<15 M	<15 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		<18 M	<18 M	<18 M	<18 M	<18 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		<23 M	<23 M	<23 M	<23 M	<23 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218		<24 M	<24 M	<24 M	<24 M	<24 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		<118	<118	<118	<118	<118

CERTIFICATE OF ANALYSIS

SDG: 241107-102 **Report Number:** 746801 **Superseded Report:**
Client Ref.: 6380 **Location:** CULLAIRBAUN, ATHENRY C.GALWAY

TPH CWG (S)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+$@ Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	TP 01	TP 02	TP 03	TP 04	TP 05	
			Depth (m)	0.50 - 0.50	0.50 - 0.50	0.50 - 0.50	0.50 - 0.50	0.50 - 0.50	
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	
			Date Sampled	05/11/2024	05/11/2024	05/11/2024	05/11/2024	05/11/2024	
			Sample Time	-	-	-	-	-	
			Date Received	07/11/2024	07/11/2024	07/11/2024	07/11/2024	07/11/2024	
			SDG Ref	241107-102	241107-102	241107-102	241107-102	241107-102	
			Lab Sample No.(s)	30629606	30629608	30629609	30629610	30629611	
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		128	99.1	96.8	130	106	
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089		<10	<10	<10	<10	<10	
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089		<10	<10	<10	<10	<10	
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089		<10	<10	<10	<10	<10	
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414		<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414		<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414		<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414		<1000 #	<1000 #	2260 #	<1000 #	<1000 #	
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414		<5000	<5000	<5000	<5000	<5000	
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414		<10000	<10000	<10000	<10000	<10000	
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089		<10	<10	<10	<10	<10	
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089		<10	<10	<10	<10	<10	
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089		<10	<10	<10	<10	<10	
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414		<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414		<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414		<1000 #	<1000 #	<1000 #	<1000 #	<1000 #	
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414		<1000 #	1000 #	4800 #	1250 #	1350 #	
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414		<5000	<5000	6540	<5000	<5000	
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414		<10000	<10000	<10000	<10000	<10000	
GRO >C5-C6 (HS_1D)	<20 µg/kg	TM089		<20	<20	<20	<20	<20	
GRO >C6-C7 (HS_1D)	<20 µg/kg	TM089		<20	<20	<20	<20	<20	
GRO >C7-C8 (HS_1D)	<20 µg/kg	TM089		<20	<20	<20	<20	<20	
GRO >C8-C10 (HS_1D)	<20 µg/kg	TM089		<20	<20	<20	<20	<20	
GRO >C10-C12 (HS_1D)	<20 µg/kg	TM089		<20	<20	<20	<20	<20	
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089		<50	<50	<50	<50	<50	
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089		<50	<50	<50	<50	<50	
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089		<20	<20	<20	<20	<20	

CERTIFICATE OF ANALYSIS

SDG: 241107-102 **Report Number:** 746801 **Superseded Report:**
Client Ref.: 6380 **Location:** CULLAIRBAUN, ATHENRY C.GALWAY

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	TP 01	TP 02	TP 03	TP 04	TP 05	
			Depth (m)	0.50 - 0.50	0.50 - 0.50	0.50 - 0.50	0.50 - 0.50	0.50 - 0.50	
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	
			Date Sampled	05/11/2024	05/11/2024	05/11/2024	05/11/2024	05/11/2024	
			Sample Time	-	-	-	-	-	
			Date Received	07/11/2024	07/11/2024	07/11/2024	07/11/2024	07/11/2024	
			SDG Ref	241107-102	241107-102	241107-102	241107-102	241107-102	
			Lab Sample No.(s)	30629606	30629608	30629609	30629610	30629611	
			AGS Reference						
Dibromofluoromethane**	%	TM116		127	111	112	119	122	
Toluene-d8**	%	TM116		101	102	97.9	102	101	
4-Bromofluorobenzene**	%	TM116		101	89.8	81.7	85.1	98.7	
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116		3.27 M	<0.5 M	<0.5 M	<0.5 M	<0.5 M	
Benzene	<1 µg/kg	TM116		<1 M	<1 M	<1 M	<1 M	<1 M	
Toluene	<1 µg/kg	TM116		<1 M	<2 M	<2 M	<2 M	<1 M	
Ethylbenzene	<1 µg/kg	TM116		<1 M	<1 M	<1 M	<1 M	<1 M	
p/m-Xylene	<2 µg/kg	TM116		<4 #	<2 #	<2 #	<2 #	<2 #	
o-Xylene	<2 µg/kg	TM116		<2 M	<2 M	<2 M	<2 M	<2 M	

Validated

CERTIFICATE OF ANALYSIS

SDG: 241107-102 **Report Number:** 746801 **Superseded Report:**
Client Ref.: 6380 **Location:** CULLAIRBAUN, ATHENRY C.GALWAY

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	CULLAIRBAUN, ATHENRY C.G
Mass Sample taken (kg)	0.106	**Natural Moisture Content (%)**	17.6
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	85
Particle Size <4mm	>95%		

Case	
SDG	241107-102
Lab Sample Number(s)	30629606
Sampled Date	05-Nov-2024
Customer Sample Ref.	TP 01
Depth (m)	0.50 - 0.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.471	3	5	6
Loss on Ignition (%)	3.12	-	-	10
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	7.71	-	>6	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ 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	0.00141	<0.0002	0.0141	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.0016	<0.001	0.016	<0.01	0.5	10	70
Copper	0.00201	<0.0003	0.0201	<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	0.00158	<0.0004	0.0158	<0.004	0.4	10	40
Lead	0.000366	<0.0002	0.00366	<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	0.00501	<0.001	0.0501	<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	39.7	<10	397	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.53	<3	35.3	<30	500	800	1000

Leach Test Information

Date Prepared	08-Nov-2024
pH (pH Units)	8.10
Conductivity (µS/cm)	51
Volume Leachant (Litres)	0.884

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

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Validated

CERTIFICATE OF ANALYSIS

SDG: 241107-102 **Report Number:** 746801 **Superseded Report:**
Client Ref.: 6380 **Location:** CULLAIRBAUN, ATHENRY C.GALWAY

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	CULLAIRBAUN, ATHENRY C.G
Mass Sample taken (kg)	0.107	**Natural Moisture Content (%)**	19.5
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	83.7
Particle Size <4mm	>95%		

Case	
SDG	241107-102
Lab Sample Number(s)	30629608
Sampled Date	05-Nov-2024
Customer Sample Ref.	TP 02
Depth (m)	0.50 - 0.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.479	3	5	6
Loss on Ignition (%)	2.09	-	-	10
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.52	-	>6	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ 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	0.00207	<0.0002	0.0207	<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	0.00154	<0.0003	0.0154	<0.003	2	50	100
Mercury Dissolved (CVAF)	0.0000109	<0.00001	0.000109	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000451	<0.0004	0.00451	<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	0.00288	<0.001	0.0288	<0.01	4	50	200
Chloride	2.3	<2	23	<20	800	15000	25000
Fluoride	0.51	<0.5	5.1	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	90.5	<10	905	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.88	<3	38.8	<30	500	800	1000

Leach Test Information

Date Prepared	09-Nov-2024
pH (pH Units)	8.65
Conductivity (µS/cm)	120
Volume Leachant (Litres)	0.883

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

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CERTIFICATE OF ANALYSIS

SDG: 241107-102 **Report Number:** 746801 **Superseded Report:**
Client Ref.: 6380 **Location:** CULLAIRBAUN, ATHENRY C.GALWAY

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	CULLAIRBAUN, ATHENRY C.G
Mass Sample taken (kg)	0.105	**Natural Moisture Content (%)**	15.7
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	86.5
Particle Size <4mm	>95%		

Case	
SDG	241107-102
Lab Sample Number(s)	30629609
Sampled Date	05-Nov-2024
Customer Sample Ref.	TP 03
Depth (m)	0.50 - 0.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	1.06	3	5	6
Loss on Ignition (%)	3.9	-	-	10
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.42	-	>6	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ 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	0.00369	<0.0002	0.0369	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00122	<0.001	0.0122	<0.01	0.5	10	70
Copper	0.002	<0.0003	0.02	<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	0.000946	<0.0004	0.00946	<0.004	0.4	10	40
Lead	0.000249	<0.0002	0.00249	<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	0.00182	<0.001	0.0182	<0.01	4	50	200
Chloride	5.6	<2	56	<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	98.8	<10	988	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.8	<3	38	<30	500	800	1000

Leach Test Information

Date Prepared	09-Nov-2024
pH (pH Units)	8.53
Conductivity (µS/cm)	129
Volume Leachant (Litres)	0.885

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

15/11/2024 12:33:33

12:33:25 15/11/2024

Validated

CERTIFICATE OF ANALYSIS

SDG: 241107-102 **Report Number:** 746801 **Superseded Report:**
Client Ref.: 6380 **Location:** CULLAIRBAUN, ATHENRY C.GALWAY

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	CULLAIRBAUN, ATHENRY C.G
Mass Sample taken (kg)	0.106	**Natural Moisture Content (%)**	17.4
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	85.2
Particle Size <4mm	>95%		

Case	
SDG	241107-102
Lab Sample Number(s)	30629610
Sampled Date	05-Nov-2024
Customer Sample Ref.	TP 04
Depth (m)	0.50 - 0.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.724	3	5	6
Loss on Ignition (%)	5.57	-	-	10
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.23	-	>6	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ 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	0.0018	<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	0.00172	<0.0003	0.0172	<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	0.000558	<0.0004	0.00558	<0.004	0.4	10	40
Lead	0.000221	<0.0002	0.00221	<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	0.00521	<0.001	0.0521	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	0.525	<0.5	5.25	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	94.2	<10	942	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.35	<3	33.5	<30	500	800	1000

Leach Test Information

Date Prepared	08-Nov-2024
pH (pH Units)	8.56
Conductivity (µS/cm)	123
Volume Leachant (Litres)	0.884

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

15/11/2024 12:33:33

12:33:25 15/11/2024

Validated

CERTIFICATE OF ANALYSIS

SDG: 241107-102 **Report Number:** 746801 **Superseded Report:**
Client Ref.: 6380 **Location:** CULLAIRBAUN, ATHENRY C.GALWAY

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	CULLAIRBAUN, ATHENRY C.G
Mass Sample taken (kg)	0.097	**Natural Moisture Content (%)**	7.69
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	92.9
Particle Size <4mm	>95%		

Case	
SDG	241107-102
Lab Sample Number(s)	30629611
Sampled Date	05-Nov-2024
Customer Sample Ref.	TP 05
Depth (m)	0.50 - 0.50

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.506	3	5	6
Loss on Ignition (%)	2.15	-	-	10
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.52	-	>6	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ 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	0.00754	<0.0002	0.0754	<0.002	20	100	300
Cadmium	0.000115	<0.00008	0.00115	<0.0008	0.04	1	5
Chromium	0.0034	<0.001	0.034	<0.01	0.5	10	70
Copper	0.00258	<0.0003	0.0258	<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	0.00369	<0.0004	0.0369	<0.004	0.4	10	40
Lead	0.000929	<0.0002	0.00929	<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	0.00782	<0.001	0.0782	<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	62	<10	620	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.06	<3	50.6	<30	500	800	1000

Leach Test Information

Date Prepared	09-Nov-2024
pH (pH Units)	8.93
Conductivity (µS/cm)	81
Volume Leachant (Litres)	0.893

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Leachates prepared in accordance with BS EN 12457 will be carried out at room temperature (20±5°C)
Stated limits are for guidance only and ALS Laboratories (UK) Limited cannot be held responsible for any discrepancies with current legislation

15/11/2024 12:33:33

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Table of Results - Appendix

Method No	Description
PM024	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
TM018	Determination of Loss on Ignition
TM090	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM116	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	ELTRA CS800 Operators Guide
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM410	Determination of Coronene in soils by GCMS
TM104	Determination of Fluoride using the Kone Analyser
TM183	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM414	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM089	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM151	Determination of Hexavalent Chromium using Kone analyser
TM181	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM152	Analysis of Aqueous Samples by ICP-MS
TM168	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM218	The determination of PAH in soil samples by GC-MS
TM256	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM415	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

CERTIFICATE OF ANALYSIS

SDG: 241107-102 **Report Number:** 746801 **Superseded Report:**
Client Ref.: 6380 **Location:** CULLAIRBAUN, ATHENRY C.GALWAY

Test Completion Dates

Lab Sample No(s)	30629606	30629608	30629609	30629610	30629611
Customer Sample Ref.	TP 01	TP 02	TP 03	TP 04	TP 05
AGS Ref.					
Depth	0.50 - 0.50	0.50 - 0.50	0.50 - 0.50	0.50 - 0.50	0.50 - 0.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (w)	12-Nov-2024	12-Nov-2024	12-Nov-2024	12-Nov-2024	12-Nov-2024
CEN 10:1 Leachate (1 Stage)	08-Nov-2024	09-Nov-2024	09-Nov-2024	08-Nov-2024	09-Nov-2024
CEN Readings	12-Nov-2024	12-Nov-2024	12-Nov-2024	12-Nov-2024	12-Nov-2024
Chromium III	13-Nov-2024	11-Nov-2024	13-Nov-2024	11-Nov-2024	14-Nov-2024
Coronene	15-Nov-2024	14-Nov-2024	13-Nov-2024	14-Nov-2024	14-Nov-2024
Dissolved Metals by ICP-MS	12-Nov-2024	12-Nov-2024	12-Nov-2024	12-Nov-2024	12-Nov-2024
Dissolved Organic/Inorganic Carbon	12-Nov-2024	12-Nov-2024	12-Nov-2024	12-Nov-2024	12-Nov-2024
EPH by GCxGC-FID	13-Nov-2024	14-Nov-2024	14-Nov-2024	13-Nov-2024	13-Nov-2024
EPH CWG GC (S)	12-Nov-2024	12-Nov-2024	12-Nov-2024	12-Nov-2024	12-Nov-2024
Fluoride	12-Nov-2024	12-Nov-2024	12-Nov-2024	12-Nov-2024	12-Nov-2024
GRO by GC-FID (S)	12-Nov-2024	12-Nov-2024	12-Nov-2024	12-Nov-2024	12-Nov-2024
Hexavalent Chromium (s)	08-Nov-2024	08-Nov-2024	08-Nov-2024	08-Nov-2024	14-Nov-2024
Loss on Ignition in soils	11-Nov-2024	11-Nov-2024	11-Nov-2024	11-Nov-2024	11-Nov-2024
Mercury Dissolved	13-Nov-2024	13-Nov-2024	13-Nov-2024	13-Nov-2024	13-Nov-2024
Metals in solid samples by OES	14-Nov-2024	14-Nov-2024	14-Nov-2024	14-Nov-2024	14-Nov-2024
Moisture at 105C	08-Nov-2024	09-Nov-2024	09-Nov-2024	08-Nov-2024	09-Nov-2024
PAH 16 & 17 Calc	12-Nov-2024	12-Nov-2024	13-Nov-2024	12-Nov-2024	12-Nov-2024
PAH by GCMS	12-Nov-2024	12-Nov-2024	13-Nov-2024	12-Nov-2024	12-Nov-2024
PCBs by GCMS	12-Nov-2024	12-Nov-2024	14-Nov-2024	12-Nov-2024	12-Nov-2024
pH	12-Nov-2024	12-Nov-2024	12-Nov-2024	12-Nov-2024	12-Nov-2024
pH Value of Filtered Water	14-Nov-2024	14-Nov-2024	12-Nov-2024	14-Nov-2024	12-Nov-2024
Phenols by HPLC (W)	13-Nov-2024	13-Nov-2024	12-Nov-2024	13-Nov-2024	12-Nov-2024
Sample description	07-Nov-2024	07-Nov-2024	07-Nov-2024	07-Nov-2024	07-Nov-2024
Total Organic Carbon	11-Nov-2024	11-Nov-2024	11-Nov-2024	11-Nov-2024	11-Nov-2024
TPH CWG GC (S)	12-Nov-2024	12-Nov-2024	12-Nov-2024	12-Nov-2024	12-Nov-2024
VOC MS (S)	14-Nov-2024	12-Nov-2024	12-Nov-2024	12-Nov-2024	12-Nov-2024

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) 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 15 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 15 days 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. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

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 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **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.

19. **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**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **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 (2021), 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 asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils 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 (2021).

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.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
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 µm diameter, longer than 5 µm 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.

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 7

Waste Classification Report

Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

a) understand the origin of the waste
b) select the correct List of Waste code(s)
c) confirm that the list of determinands, results and sampling plan are fit for purpose
d) select and justify the chosen metal species (Appendix B)
e) correctly apply moisture correction and other available corrections
f) add the meta data for their user-defined substances (Appendix A)
g) check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in pale yellow.

JOML9-8020H-XXEFL

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Job name

6380

Description/Comments

Client: Galway County Council
Engineer: SDS Design Engineers

Project

Cullairbaun

Site

Athenry, Co. Galway

Classified by

Name:
Stephen Letch
Date:
03 Dec 2024 10:43 GMT
Telephone:
00353 86817 9449

Company:
Site Investigations Ltd
The Grange
12th Lock Road
Lucan
K78 F598

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification: **CERTIFIED**

Course	Date
Hazardous Waste Classification	09 Oct 2019
Most recent 3 year Refresher	04 Oct 2022

Next 3 year Refresher due by Oct 2025

Purpose of classification

2 - Material Characterisation

Address of the waste

Cullairbaun, Athenry, Co. Galway **Post Code** N/A

SIC for the process giving rise to the waste

43130 Test drilling and boring

Description of industry/producer giving rise to the waste

Site Investigation

Description of the specific process, sub-process and/or activity that created the waste

Soils recovered for environmental testing

Description of the waste

Natural soils

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	WAC Results		Page
					Inert	Non Haz	
1	TP01-0.50	0.50	Non Hazardous		Pass	Pass	3
2	TP02-0.50	0.50	Non Hazardous		Pass	Pass	7
3	TP03-0.50	0.50	Non Hazardous		Pass	Pass	11
4	TP04-0.50	0.50	Non Hazardous		Pass	Pass	15
5	TP05-0.50	0.50	Non Hazardous		Pass	Pass	19

Related documents

#	Name	Description
1	241107-102.hwol	ALS Hawarden .hwol file used to populate the Job
2	Rilta Suite NEW	waste stream template used to create this Job

WAC results

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

WAC limits used to evaluate the samples in this Job: "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 report.

Report

Created by: Stephen Letch

Created date: 03 Dec 2024 10:43 GMT

Classification of sample: TP01-0.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP01-0.50
Sample Depth:
0.50 m
Moisture content:
13%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
2	confirm TPH has NOT arisen from diesel or petrol					☑					
3	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
4	arsenic { arsenic pentoxide }	033-004-00-6	215-116-9	1303-28-2		7.16 mg/kg	1.534	9.555 mg/kg	0.000955 %	✓	
5	barium { barium sulphide }	016-002-00-X	244-214-4	21109-95-5		25.7 mg/kg	1.233	27.58 mg/kg	0.00276 %	✓	
6	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		1.27 mg/kg	1.855	2.049 mg/kg	0.000205 %	✓	
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		12.8 mg/kg	1.126	12.538 mg/kg	0.00125 %	✓	
8	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	082-001-00-6			1	12.8 mg/kg		11.136 mg/kg	0.00111 %	✓	
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.22 mg/kg	1.5	1.592 mg/kg	0.000159 %	✓	
11	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		41.5 mg/kg	2.637	95.198 mg/kg	0.00952 %	✓	
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				1.6 mg/kg	1.405	1.956 mg/kg	0.000196 %	✓	
13	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		49.6 mg/kg	2.469	106.555 mg/kg	0.0107 %	✓	
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		17.7 mg/kg	1.462	22.506 mg/kg	0.00225 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.6	mg/kg	1.923	<1.154	mg/kg	<0.000115 %		<LOD
16		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.009	mg/kg		<0.009	mg/kg	<0.0000009 %		<LOD
17		acenaphthylene		205-917-1	208-96-8		<0.012	mg/kg		<0.012	mg/kg	<0.0000012 %		<LOD
18		acenaphthene		201-469-6	83-32-9		<0.008	mg/kg		<0.008	mg/kg	<0.0000008 %		<LOD
19		fluorene		201-695-5	86-73-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
20		phenanthrene		201-581-5	85-01-8		<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<LOD
21		anthracene		204-371-1	120-12-7		<0.016	mg/kg		<0.016	mg/kg	<0.0000016 %		<LOD
22		fluoranthene		205-912-4	206-44-0		<0.017	mg/kg		<0.017	mg/kg	<0.0000017 %		<LOD
23		pyrene		204-927-3	129-00-0		<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<LOD
24		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.014	mg/kg		<0.014	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
26		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<LOD
27		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.014	mg/kg		<0.014	mg/kg	<0.0000014 %		<LOD
28		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<LOD
29		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.018	mg/kg		<0.018	mg/kg	<0.0000018 %		<LOD
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
31		benzo[ghi]perylene		205-883-8	191-24-2		<0.024	mg/kg		<0.024	mg/kg	<0.0000024 %		<LOD
32		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.021	mg/kg		<0.021	mg/kg	<0.0000021 %		<LOD
33		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		0.0032	mg/kg		0.0028	mg/kg	0.000000284 %	✓	
34		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
35		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
36		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
37		coronene		205-881-7	191-07-1		<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		<LOD
38		pH			PH		7.71	pH		7.71	pH	7.71 pH		
39		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.006	mg/kg		<0.006	mg/kg	<0.0000006 %		<LOD
											Total:	0.0303 %		

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 Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
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 for cumulative determinand results below the threshold of: 1000 mg/kg (0.1%) because: HP 3 can be discounted as this is a solid waste without a free draining liquid phase.

Hazard Statements hit:

Flam. Liq. 2; H225 "Highly flammable liquid and vapour."

Because of determinand:

tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane (conc.: 2.84e-07%)

WAC results for sample: TP01-0.50

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 report.

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)	%	0.471	3	5
2	LOI (loss on ignition)	%	3.12	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.009	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	<10	100	-
7	pH	pH	7.71	-	>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	0.0141	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	0.016	0.5	10
13	copper	mg/kg	0.0201	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	0.0158	0.4	10
17	lead	mg/kg	0.0036	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	0.0501	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	35.3	500	800
26	TDS (total dissolved solids)	mg/kg	397	4,000	60,000

Key

User supplied data

Classification of sample: TP02-0.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP02-0.50
Sample Depth:
0.50 m
Moisture content:
9.4%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.4% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		**<LOD**
2	confirm TPH has NOT arisen from diesel or petrol					☑					
3	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		0.944 mg/kg	1.197	1.024 mg/kg	0.000102 %	✓	
4	arsenic { arsenic pentoxide }	033-004-00-6	215-116-9	1303-28-2		3.61 mg/kg	1.534	5.017 mg/kg	0.000502 %	✓	
5	barium { barium sulphide }	016-002-00-X	244-214-4	21109-95-5		17.2 mg/kg	1.233	19.222 mg/kg	0.00192 %	✓	
6	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.691 mg/kg	1.855	1.161 mg/kg	0.000116 %	✓	
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		7 mg/kg	1.126	7.14 mg/kg	0.000714 %	✓	
8	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	082-001-00-6			1	6.18 mg/kg		5.599 mg/kg	0.00056 %	✓	
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		**<LOD**
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		0.604 mg/kg	1.5	0.821 mg/kg	0.0000821 %	✓	
11	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		14.3 mg/kg	2.637	34.16 mg/kg	0.00342 %	✓	
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		**<LOD**
13	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		18.9 mg/kg	2.469	42.283 mg/kg	0.00423 %	✓	
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		7.95 mg/kg	1.462	10.527 mg/kg	0.00105 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.6	mg/kg	1.923	<1.154	mg/kg	<0.000115 %		<LOD
		024-001-00-0	215-607-8	1333-82-0									
16		naphthalene				<0.009	mg/kg		<0.009	mg/kg	<0.0000009 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
17		acenaphthylene				<0.012	mg/kg		<0.012	mg/kg	<0.0000012 %		<LOD
			205-917-1	208-96-8									
18		acenaphthene				<0.008	mg/kg		<0.008	mg/kg	<0.0000008 %		<LOD
			201-469-6	83-32-9									
19		fluorene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
			201-695-5	86-73-7									
20		phenanthrene				<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<LOD
			201-581-5	85-01-8									
21		anthracene				<0.016	mg/kg		<0.016	mg/kg	<0.0000016 %		<LOD
			204-371-1	120-12-7									
22		fluoranthene				<0.017	mg/kg		<0.017	mg/kg	<0.0000017 %		<LOD
			205-912-4	206-44-0									
23		pyrene				<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<LOD
			204-927-3	129-00-0									
24		benzo[a]anthracene				<0.014	mg/kg		<0.014	mg/kg	<0.0000014 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
25		chrysene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
26		benzo[b]fluoranthene				<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
27		benzo[k]fluoranthene				<0.014	mg/kg		<0.014	mg/kg	<0.0000014 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
28		benzo[a]pyrene; benzo[def]chrysene				<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
29		indeno[123-cd]pyrene				<0.018	mg/kg		<0.018	mg/kg	<0.0000018 %		<LOD
			205-893-2	193-39-5									
30		dibenz[a,h]anthracene				<0.023	mg/kg		<0.023	mg/kg	<0.0000023 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
31		benzo[ghi]perylene				<0.024	mg/kg		<0.024	mg/kg	<0.0000024 %		<LOD
			205-883-8	191-24-2									
32		polychlorobiphenyls; PCB				<0.021	mg/kg		<0.021	mg/kg	<0.0000021 %		<LOD
		602-039-00-4	215-648-1	1336-36-3									
33		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.0005	mg/kg		<0.0005	mg/kg	<0.00000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
34		benzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
35		toluene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
36		ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
37		coronene				<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		<LOD
			205-881-7	191-07-1									
38		pH				8.52	pH		8.52	pH	8.52 pH		
				PH									
39		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.014 %		

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 Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP02-0.50

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 report.

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)	%	0.479	3	5
2	LOI (loss on ignition)	%	2.09	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.008	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	<10	100	-
7	pH	pH	8.52	-	>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	0.0207	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	<0.01	0.5	10
13	copper	mg/kg	0.0154	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	0.0045	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	0.0288	4	50
21	chloride	mg/kg	23	800	15,000
22	fluoride	mg/kg	5.1	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	38.8	500	800
26	TDS (total dissolved solids)	mg/kg	905	4,000	60,000

Key

User supplied data

Classification of sample: TP03-0.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP03-0.50
Sample Depth:
0.50 m
Moisture content:
16%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
2	confirm TPH has NOT arisen from diesel or petrol					☑					
3	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		0.749 mg/kg	1.197	0.753 mg/kg	0.0000753 %	✓	
4	arsenic { arsenic pentoxide }	033-004-00-6	215-116-9	1303-28-2		4.46 mg/kg	1.534	5.747 mg/kg	0.000575 %	✓	
5	barium { barium sulphide }	016-002-00-X	244-214-4	21109-95-5		22.8 mg/kg	1.233	23.624 mg/kg	0.00236 %	✓	
6	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.795 mg/kg	1.855	1.238 mg/kg	0.000124 %	✓	
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		9.02 mg/kg	1.126	8.531 mg/kg	0.000853 %	✓	
8	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	082-001-00-6			1	8.86 mg/kg		7.442 mg/kg	0.000744 %	✓	
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		0.601 mg/kg	1.5	0.757 mg/kg	0.0000757 %	✓	
11	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		16.9 mg/kg	2.637	37.43 mg/kg	0.00374 %	✓	
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
13	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		29.2 mg/kg	2.469	60.567 mg/kg	0.00606 %	✓	
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		10.4 mg/kg	1.462	12.768 mg/kg	0.00128 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.6	mg/kg	1.923	<1.154	mg/kg	<0.000115 %		<LOD
16		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.009	mg/kg		<0.009	mg/kg	<0.0000009 %		<LOD
17		acenaphthylene		205-917-1	208-96-8		<0.012	mg/kg		<0.012	mg/kg	<0.0000012 %		<LOD
18		acenaphthene		201-469-6	83-32-9		<0.008	mg/kg		<0.008	mg/kg	<0.0000008 %		<LOD
19		fluorene		201-695-5	86-73-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
20		phenanthrene		201-581-5	85-01-8		<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<LOD
21		anthracene		204-371-1	120-12-7		<0.016	mg/kg		<0.016	mg/kg	<0.0000016 %		<LOD
22		fluoranthene		205-912-4	206-44-0		<0.017	mg/kg		<0.017	mg/kg	<0.0000017 %		<LOD
23		pyrene		204-927-3	129-00-0		<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<LOD
24		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.014	mg/kg		<0.014	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
26		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<LOD
27		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.014	mg/kg		<0.014	mg/kg	<0.0000014 %		<LOD
28		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<LOD
29		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.018	mg/kg		<0.018	mg/kg	<0.0000018 %		<LOD
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
31		benzo[ghi]perylene		205-883-8	191-24-2		<0.024	mg/kg		<0.024	mg/kg	<0.0000024 %		<LOD
32		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.021	mg/kg		<0.021	mg/kg	<0.0000021 %		<LOD
33		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.0005	mg/kg		<0.0005	mg/kg	<0.00000005 %		<LOD
34		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
35		toluene	601-021-00-3	203-625-9	108-88-3		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
36		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
37		coronene		205-881-7	191-07-1		<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		<LOD
38		pH			PH		8.42	pH		8.42	pH	8.42 pH		
39		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
											Total:	0.0172 %		

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 Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP03-0.50

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 report.

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)	%	1.06	3	5
2	LOI (loss on ignition)	%	3.9	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.008	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	<10	100	-
7	pH	pH	8.42	-	>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	0.0369	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	0.0122	0.5	10
13	copper	mg/kg	0.02	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	0.0094	0.4	10
17	lead	mg/kg	0.0024	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	0.0182	4	50
21	chloride	mg/kg	56	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	38	500	800
26	TDS (total dissolved solids)	mg/kg	988	4,000	60,000

Key

User supplied data

Classification of sample: TP04-0.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP04-0.50
Sample Depth:
0.50 m
Moisture content:
16%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
2	confirm TPH has NOT arisen from diesel or petrol					☑					
3	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
4	arsenic { arsenic pentoxide }	033-004-00-6	215-116-9	1303-28-2		12.7 mg/kg	1.534	16.363 mg/kg	0.00164 %	✓	
5	barium { barium sulphide }	016-002-00-X	244-214-4	21109-95-5		53.8 mg/kg	1.233	55.744 mg/kg	0.00557 %	✓	
6	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		1.22 mg/kg	1.855	1.901 mg/kg	0.00019 %	✓	
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		24.5 mg/kg	1.126	23.171 mg/kg	0.00232 %	✓	
8	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	082-001-00-6			1	28.6 mg/kg		24.024 mg/kg	0.0024 %	✓	
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.86 mg/kg	1.5	2.344 mg/kg	0.000234 %	✓	
11	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		51.4 mg/kg	2.637	113.842 mg/kg	0.0114 %	✓	
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
13	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		72.8 mg/kg	2.469	151.002 mg/kg	0.0151 %	✓	
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		22.7 mg/kg	1.462	27.869 mg/kg	0.00279 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.6	mg/kg	1.923	<1.154	mg/kg	<0.000115 %		<LOD
		024-001-00-0	215-607-8	1333-82-0									
16		naphthalene				<0.009	mg/kg		<0.009	mg/kg	<0.0000009 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
17		acenaphthylene				<0.012	mg/kg		<0.012	mg/kg	<0.0000012 %		<LOD
			205-917-1	208-96-8									
18		acenaphthene				<0.008	mg/kg		<0.008	mg/kg	<0.0000008 %		<LOD
			201-469-6	83-32-9									
19		fluorene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
			201-695-5	86-73-7									
20		phenanthrene				<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<LOD
			201-581-5	85-01-8									
21		anthracene				<0.016	mg/kg		<0.016	mg/kg	<0.0000016 %		<LOD
			204-371-1	120-12-7									
22		fluoranthene				<0.017	mg/kg		<0.017	mg/kg	<0.0000017 %		<LOD
			205-912-4	206-44-0									
23		pyrene				<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<LOD
			204-927-3	129-00-0									
24		benzo[a]anthracene				<0.014	mg/kg		<0.014	mg/kg	<0.0000014 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
25		chrysene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
26		benzo[b]fluoranthene				<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
27		benzo[k]fluoranthene				<0.014	mg/kg		<0.014	mg/kg	<0.0000014 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
28		benzo[a]pyrene; benzo[def]chrysene				<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
29		indeno[123-cd]pyrene				<0.018	mg/kg		<0.018	mg/kg	<0.0000018 %		<LOD
			205-893-2	193-39-5									
30		dibenz[a,h]anthracene				<0.023	mg/kg		<0.023	mg/kg	<0.0000023 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
31		benzo[ghi]perylene				<0.024	mg/kg		<0.024	mg/kg	<0.0000024 %		<LOD
			205-883-8	191-24-2									
32		polychlorobiphenyls; PCB				<0.021	mg/kg		<0.021	mg/kg	<0.0000021 %		<LOD
		602-039-00-4	215-648-1	1336-36-3									
33		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.0005	mg/kg		<0.0005	mg/kg	<0.00000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
34		benzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
35		toluene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
36		ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
37		coronene				<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		<LOD
			205-881-7	191-07-1									
38		pH				8.23	pH		8.23	pH	8.23 pH		
				PH									
39		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.043 %		

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 Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP04-0.50

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 report.

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)	%	0.724	3	5
2	LOI (loss on ignition)	%	5.57	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.008	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	<10	100	-
7	pH	pH	8.23	-	>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	0.018	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	<0.01	0.5	10
13	copper	mg/kg	0.0172	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	0.0055	0.4	10
17	lead	mg/kg	0.0022	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	0.0521	4	50
21	chloride	mg/kg	<20	800	15,000
22	fluoride	mg/kg	5.25	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	33.5	500	800
26	TDS (total dissolved solids)	mg/kg	942	4,000	60,000

Key

User supplied data

Classification of sample: TP05-0.50

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP05-0.50
Sample Depth:
0.50 m
Moisture content:
11%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 11% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		**<LOD**
2	confirm TPH has NOT arisen from diesel or petrol					☑					
3	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.04 mg/kg	1.197	1.108 mg/kg	0.000111 %	✓	
4	arsenic { arsenic pentoxide }	033-004-00-6	215-116-9	1303-28-2		3.03 mg/kg	1.534	4.136 mg/kg	0.000414 %	✓	
5	barium { barium sulphide }	016-002-00-X	244-214-4	21109-95-5		15.4 mg/kg	1.233	16.906 mg/kg	0.00169 %	✓	
6	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.785 mg/kg	1.855	1.296 mg/kg	0.00013 %	✓	
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		5.24 mg/kg	1.126	5.251 mg/kg	0.000525 %	✓	
8	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	082-001-00-6			1	5.9 mg/kg		5.251 mg/kg	0.000525 %	✓	
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		**<LOD**
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		0.503 mg/kg	1.5	0.672 mg/kg	0.0000672 %	✓	
11	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		10.9 mg/kg	2.637	25.578 mg/kg	0.00256 %	✓	
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		**<LOD**
13	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		18.2 mg/kg	2.469	39.998 mg/kg	0.004 %	✓	
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		7.1 mg/kg	1.462	9.236 mg/kg	0.000924 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.6	mg/kg	1.923	<1.154	mg/kg	<0.000115 %		<LOD
16		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.009	mg/kg		<0.009	mg/kg	<0.0000009 %		<LOD
17		acenaphthylene		205-917-1	208-96-8		<0.012	mg/kg		<0.012	mg/kg	<0.0000012 %		<LOD
18		acenaphthene		201-469-6	83-32-9		<0.008	mg/kg		<0.008	mg/kg	<0.0000008 %		<LOD
19		fluorene		201-695-5	86-73-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
20		phenanthrene		201-581-5	85-01-8		<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<LOD
21		anthracene		204-371-1	120-12-7		<0.016	mg/kg		<0.016	mg/kg	<0.0000016 %		<LOD
22		fluoranthene		205-912-4	206-44-0		<0.017	mg/kg		<0.017	mg/kg	<0.0000017 %		<LOD
23		pyrene		204-927-3	129-00-0		<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<LOD
24		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.014	mg/kg		<0.014	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
26		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<LOD
27		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.014	mg/kg		<0.014	mg/kg	<0.0000014 %		<LOD
28		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.015	mg/kg		<0.015	mg/kg	<0.0000015 %		<LOD
29		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.018	mg/kg		<0.018	mg/kg	<0.0000018 %		<LOD
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
31		benzo[ghi]perylene		205-883-8	191-24-2		<0.024	mg/kg		<0.024	mg/kg	<0.0000024 %		<LOD
32		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.021	mg/kg		<0.021	mg/kg	<0.0000021 %		<LOD
33		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.0005	mg/kg		<0.0005	mg/kg	<0.00000005 %		<LOD
34		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
35		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
36		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
37		coronene		205-881-7	191-07-1		<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		<LOD
38		pH			PH		8.52	pH		8.52	pH	8.52 pH		
39		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
											Total:	0.0123 %		

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 Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: TP05-0.50

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 report.

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)	%	0.506	3	5
2	LOI (loss on ignition)	%	2.15	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.007	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	<10	100	-
7	pH	pH	8.52	-	>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	0.0754	20	100
11	cadmium	mg/kg	0.0011	0.04	1
12	chromium	mg/kg	0.034	0.5	10
13	copper	mg/kg	0.0258	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	0.0369	0.4	10
17	lead	mg/kg	0.0092	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	0.0782	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	50.6	500	800
26	TDS (total dissolved solids)	mg/kg	620	4,000	60,000

Key

User supplied data

Appendix A: Classifier defined and non EU 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: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , STOT RE 2; H373 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 2; H361d , Aquatic Chronic 2; H411

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)

EU CLP index number: 016-002-00-X
Description/Comments:
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)

EU 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
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)

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: Acute Tox. 4; H332 , Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Resp. Sens. 1; H334 , Skin Sens. 1; H317 , Repr. 1B; H360FD , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

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

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

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 Acute 1; H400 , Aquatic Chronic 1; H410

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: Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Skin Irrit. 2; H315

- **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: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **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: Acute Tox. 4; H302 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **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: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **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 Acute 1; H400 , Aquatic Chronic 1; H410

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

EU 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.
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)

EU CLP index number: 601-023-00-4
Description/Comments:
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

- **coronene** (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=en
Data source date: 16 Jun 2014
Hazard Statements: STOT SE 2; H371

- **pH** (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

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 VI 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 VI 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 VI 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 VI 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.NI - Jan 2021
HazWasteOnline Classification Engine Version: 2024.332.6362.11667 (27 Nov 2024)
HazWasteOnline Database: 2024.331.6361.11659 (26 Nov 2024)

This classification utilises the following guidance and legislation:
WM3 v1.1.NI - Waste Classification - 1st Edition v1.1.NI - Jan 2021
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 Waste 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
15th ATP - Regulation (EU) 2020/1182 of 19 May 2020
The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020
The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1540 of 16th December 2020
17th ATP - Regulation (EU) 2021/849 of 11 March 2021
18th ATP - Regulation (EU) 2022/692 of 16 February 2022
19th ATP - Regulation (EU) 2023/1434 of 25 April 2023
20th ATP - Regulation (EU) 2023/1435 of 2 May 2023
21st ATP - Regulation (EU) 2024/197 of 19 October 2023
22nd ATP - Regulation (EU) 2024/2564 of 19th June 2024

Appendix 8

Survey Data

Survey Data

Location	Irish Transverse Mercator		Elevation	Irish National Grid	
	Easting	Northing		Easting	Northing
Cable Percussive Boreholes					
BH01	549897.532	728412.923	48.67	149935.949	228384.543
BH02	549873.782	728421.710	49.17	149912.193	228393.332
BH03	549879.267	728454.664	49.37	149917.679	228426.293
BH04	549903.212	728433.463	49.02	149941.630	228405.088
BH05	549840.317	728437.364	49.46	149878.721	228408.989
Trial Pits					
TP01	549913.247	728417.282	48.57	149951.667	228388.903
TP02	549884.776	728406.929	48.93	149923.190	228378.548
TP03	549894.623	728452.874	49.19	149933.039	228424.503
TP04	549869.253	728441.571	49.43	149907.663	228413.197
TP05	549846.901	728428.607	49.56	149885.307	228400.23
Soakaway Tests					
INF1	549900.655	728392.806	48.41	149939.072	228364.422
INF2	549867.645	728393.548	48.85	149906.055	228365.164
INF3	549861.664	728420.178	49.31	149900.073	228391.799
INF4	549889.857	728424.016	49.12	149928.272	228395.638
Plate Tests					
PLT1	549919.697	728406.093	48.25	149958.118	228377.712
PLT2	549882.849	728391.507	48.64	149921.262	228363.122
PLT3	549852.680	728446.002	49.52	149891.087	228417.629
PLT4	549877.509	728463.106	49.42	149915.921	228434.737

Legend Key

- Locations By Type - CBR
- Locations By Type - CP
- Locations By Type - IP
- Locations By Type - TP

Contract No:	6380
Contract Name:	Cullairbaun
Location:	Athenry, Co. Galway
Client:	Galway County Council
Engineer:	SDS Design Engineers
Title:	Site Plan
Scale:	1:750
Drawn By:	SL

Site Investigations Ltd
The Grange
12th Lock Road
Lucan
Co. Dublin
T: 01 6108768
e: info@siteinvestigations.ie