APPENDIX A
GSI MAPS AND GROUND INVESTIGATION DETAILS

S.I. Ltd Contract No: 6332

Client:	Watfore Limited
Engineer:	Roughan & O'Donovan
Contractor:	Site Investigations Ltd

Parkmore Industrial Estate, Long Mile Road, Dublin 12 Site Investigation

Prepared by:

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Stephen Letch

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Revision	0

Contents:

Appendices:

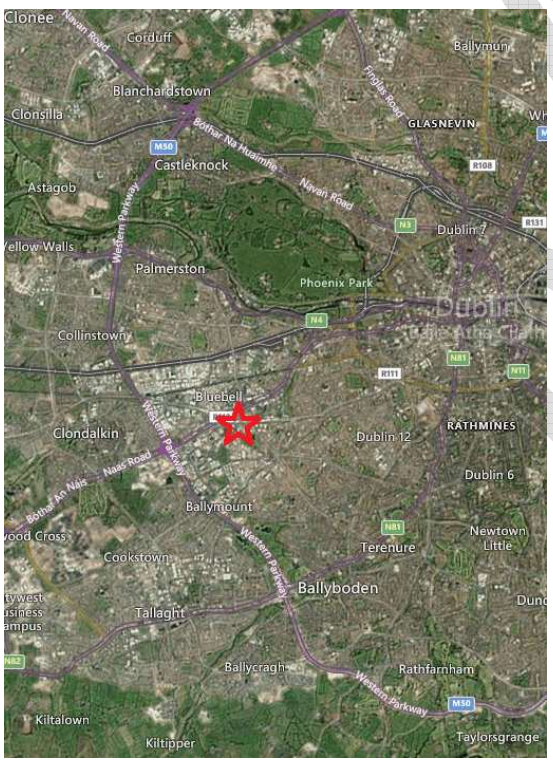
1. Introduction

On the instructions of Roughan & O'Donovan, Site Investigations Ltd (SIL) were appointed to complete a site investigation at Parkmore Industrial Estate, Long Mile Road, Dublin 12. The investigation was for a residential development with basement and was completed on behalf of the Client, Watfore Limited. The investigation was started in July and completed in August 2024.

This draft report presents the factual geotechnical data obtained from the field and laboratory testing with interpretation of the ground conditions discussed. The report may be used for reference only with no permission for the report to be used in planning permission submissions. The final report will be issued on receipt of payment and at that time, the report may be used for design purposes and planning permission submissions.

2. Site Location

Parkmore Industrial Estate is located off the Long Mile Road, in Walkinstown, Dublin 12, to the south west of Dublin city centre. The map on the left shows the location of the site in Dublin and the second map shows the site location in the local area.



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 the following:

- 6 No. cable percussive boreholes
- 2 No. trial pits
- 2 No. foundation pits

3.1. Cable Percussive Boreholes

Cable percussion boring was completed at 6 No. locations using a Dando 2000 rig and constructed 200mm diameter boreholes. The boreholes terminated at depths of 4.90mbgl to 5.80mbgl 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=14-(3,3/3,3,4,4)). Where refusal of 50 blows across the test zone was encountered was achieved during testing, the penetration depth is also reported (e.g., BH01 at 5.00mbgl where N=50-(25 for 110mm/50 for 40mm)).

The cable percussive borehole logs are presented in Appendix 1.

3.2. Trial Pits

2 No. trial pits were excavated using a wheeled excavator. The strata were logged and photographed by SIL geotechnical engineer and groundwater ingresses and pit wall stability was also recorded. Representative disturbed bulk samples were recovered as the pits were excavated, which were returned to the laboratory for geotechnical testing.

The trial pit logs and photographs are presented in Appendix 2.

3.3. Foundation Pits

Adjacent to the existing structures, 2 No. foundation pits were excavated to investigate the depths of the wall foundations. This included hand excavating around the foundation to measure the depth to the top, extension out from the wall and the thickness of the foundation. The pit was then photographed, backfilled with arisings and reinstated.

The foundation pit logs with photographs are presented in Appendix 3.

3.4. 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 7.

4. Laboratory Testing

4.1. Geotechnical Testing

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

- 20 No. Moisture contents
- 20 No. Atterberg limits
- 26 No. Particle size gradings with 21 No. hydrometers
- 6 No. Laboratory shear vane tests
- 10 No. Moisture Condition Value (MCV) tests
- 10 No. Compaction – MCV Calibrations
- 16 No. pH, acid and water-soluble sulphate and chloride content

The geotechnical laboratory test results are presented in Appendix 4.

4.2. Environmental Testing

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

- 4 No. Suite I analysis
- 16 No. Total organic carbon
- 9 No. Total sulphate
- 7 No. Total sulphur

The environmental results are presented in Appendix 5 and a Waste Classification Report in Appendix 6.

5. Ground Conditions

5.1. MADE GROUND

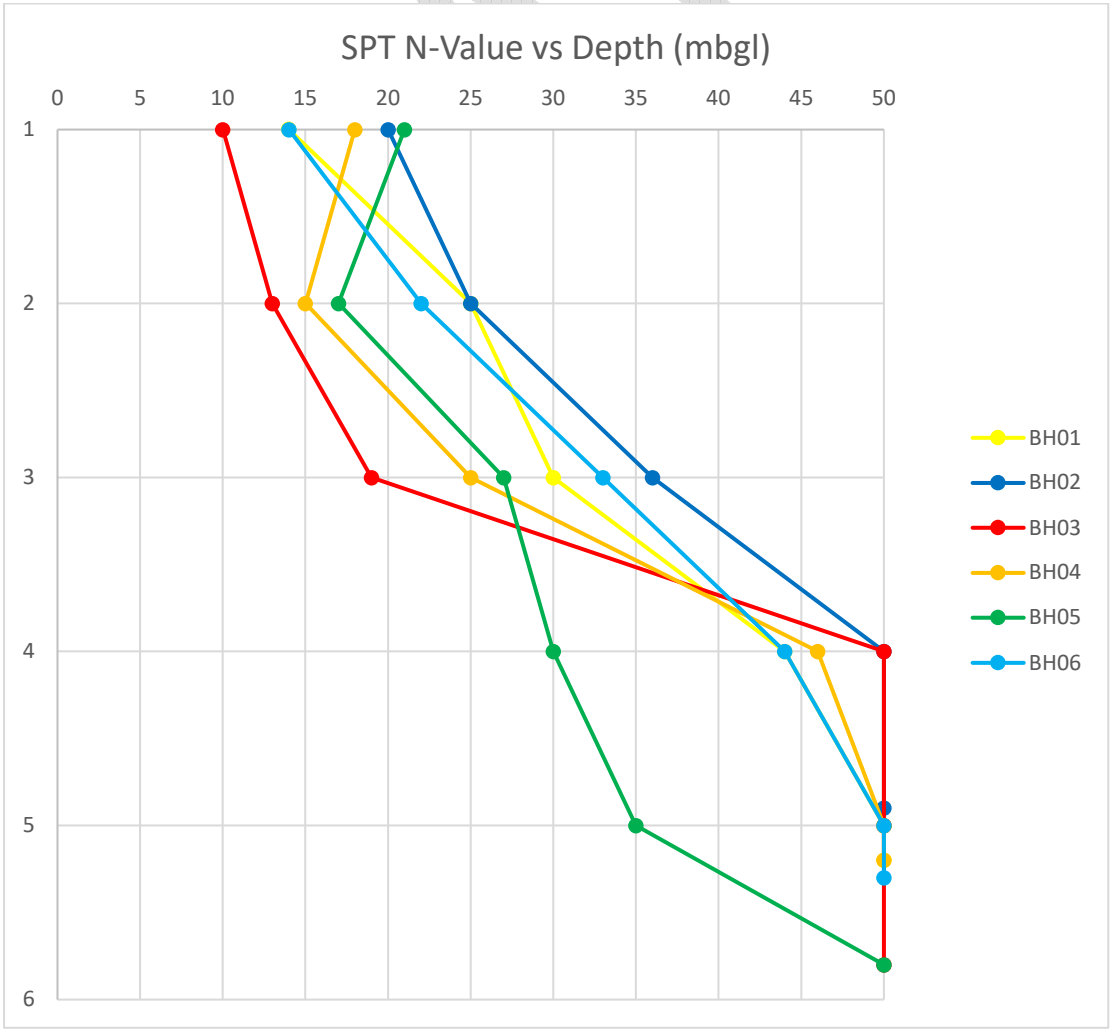
MADE GROUND was encountered across the site at depths ranging from 0.60mbgl to 0.90mbgl. The material was generally recorded as granular gravel dominant soils with a thin layer of sand recorded in BH05 and cohesive brown sandy slightly gravelly silty clay at BH06.

5.2. Overburden

The natural ground conditions vary beneath the fill material with granular GRAVEL soils recorded at shallow depths at BH01, BH03 and BH06 across the south of the site. BH01 then encountered a layer of SAND from 2.50mbgl to 3.90mbgl and then cohesive CLAY soils. BH03 recorded CLAY from 2.30mbgl until termination of the hole at 5.70mbgl and BH06 recorded a thin band of SAND from 3.70mbgl to 4.00mbgl, underlain by CLAY to 4.90mbgl and then a thin layer of GRAVEL to 5.30mbgl when the borehole terminated.

BH02 to the north west corner of the site recorded a thin layer of CLAY to 1.50mbgl before SAND was encountered to 2.850mbgl when CLAY was once again encountered. Finally, BH04 and BH05 were dominated by CLAY with only a thin band of SAND recorded in BH05 at 3.00mbgl to 4.30mbgl.

The boreholes recorded slightly different values with values ranging from 10 to 21 at 1.00mbgl, 13 to 25 at 2.00mbgl, 19 to 36 at 3.00mbgl. BH05 remained lower at 30 at 4.00mbgl and 35 at 5.00mbgl whereas the remaining boreholes were 44 or greater at 4.00mbgl and then all refused. The graph below shows the SPT N-values vs depth.



The laboratory tests of the shallow samples from the boreholes show CLAY soils with low to intermediate plasticity indexes of 8 to 16%. The particle size distribution curves of the cohesive soils were poorly sorted straight-line curves with 19% to 80% fines content.

5.3. Groundwater

Groundwater was recorded in the five of the six boreholes during the fieldworks from 2.10mbgl in BH03 to 3.70mbgl in BH01 whilst BH02 remained dry throughout. The trial pits remained dry during excavations.

6. Recommendations and Conclusions

Please note the following caveats:

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

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

If it is intended that on-site materials are to be used as fill, then the necessary laboratory testing should be specified by the Client to confirm the suitability. Also, relevant lab testing should be specified where stability of side slopes to excavations is a concern, or where contamination may be an issue.

6.1. Shallow Foundations

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

The plan for the site is a 7-10 storey residential apartment scheme with basement car park. Therefore, for the development, analysis of the ground conditions at 3.00mbgl and 4.00mbgl is provided below.

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. The C_u value can then be used to calculate the ultimate bearing capacity, which is the total loading that the soil could withstand but then a factor of safety is used to ensure that failure of the soils does not occur. A factor of safety of 3 has been chosen for this site.

In granular soils, the SPT N-value can then be used to calculate the allowable bearing capacity, as per Terzaghi and Peck, using the correlation of SPT N-value x 10 = ABC.

The table below shows the SPT N-value, C_u, the ultimate bearing capacity and finally, the allowable bearing capacities at 3.00mbgl and 4.00mbgl. For the refusals, no bearing capacity is calculated. The C_u, ultimate bearing capacity and allowable bearing capacities are in kN/m^2.

Depth	BH01				BH02				BH03			
	N-Value	Cu	UBC	ABC	N-Value	Cu	UBC	ABC	N-Value	Cu	UBC	ABC
3.00	30	-	-	**300**	36	216	1120	**375**	19	114	599	**200**
4.00	44	264	1365	**455**	-	**-**	-	**-**	-	-	-	**-**
Depth	BH04				BH05				BH06			
	N-Value	Cu	UBC	ABC	N-Value	Cu	UBC	ABC	N-Value	Cu	UBC	ABC
3.00	25	150	783	**260**	27	**-**	-	**270**	33	-	-	**330**
4.00	46	276	1426	**475**	30	**-**	-	**300**	44	264	1365	**455**

The remaining options for founding structures on site are raft or piled foundations. The raft foundations spread the loads over large areas and the soils are levelled and compacted at the formation level. This can help to identify any local soft spots that should be removed and replaced with engineered fill. Stone is then placed onto the founding soil in 200mm layers and compacted by a suitable roller and the process repeated until the level for the concrete is achieved. Further insitu testing in the form of CBR may be completed at this point to ensure that the gravel is compacted.

Alternatively, piled foundations may be considered and a specialist pile designer should be consulted to provide the most cost-effective method of founding the structures according to the proposed design. Rotary core drilling may be required for the design of the piles as the boreholes terminated at similar levels but this cannot be assumed to be bedrock.

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

- Foundations are to be constructed on a level formation of uniform material type (described above).
- 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.
- All bearing capacity calculations allow for a settlement of 25mm.
- Based on groundwater observations this analysis assumes the groundwater will not influence the construction or performance of these foundations.

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 and possible 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, groundwater was recorded in five of the boreholes at 2.10mbgl or deeper during the fieldworks.

Due to the varied nature of the soils encountered with cohesive and granular soils encountered at shallow depths then the possibility of water ingressing into the basement excavation should be anticipated.

Mechanical pumps will be required to remove the groundwater from sumps and these should be carefully located and constructed to ensure that groundwater is efficiently removed from excavations.

6.3. Contamination

Environmental testing was carried out on four samples from the investigation and the results are shown in Appendix 5. 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. The total organic carbon from BH01 did record an elevated level but this could be from natural sources so can be discounted.

Four 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.

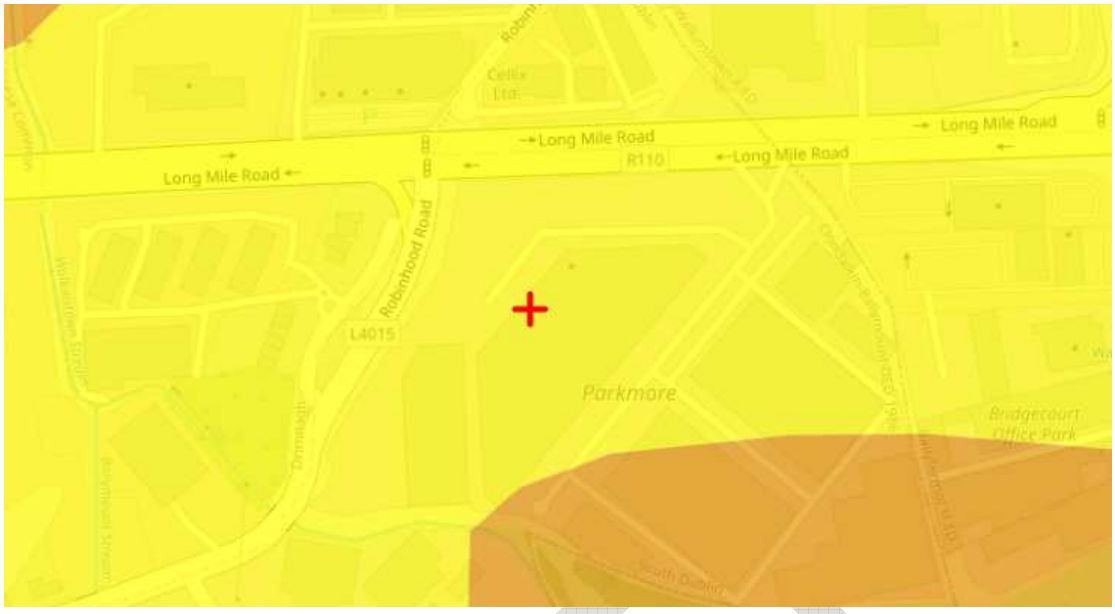
6.4. Aggressive Ground Conditions

The chemical test results in Appendix 6 indicate a general pH value between 8.36 and 8.86, which is close to neutral, therefore no special precautions are required.

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.

6.5. 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 is shows that the site falls within the lowest level of 1 in 20 homes have a possibility of high radon exposure. Measures should be taken in the form of radon protection barriers to protect from radon exposure in the new structure.



EPA map identifying possible Radon exposure.

https://gis.epa.ie/EPAMaps/Radon?&lid=EPA:RadonRiskMapofIreland

Appendix 1

Cable Percussive Borehole Logs

Contract No: 6332	**Cable Percussion Borehole Log**				Borehole No: **BH01**
Contract:	Parkmore Industrial Estate	Easting:	710194.879	Date Started:	30/07/2024
Location:	Long Mile Road, Dublin 12	Northing:	731585.298	Date Completed:	30/07/2024
Client:	Watfore Limited	Elevation:	47.37	Drilled By:	D. Clarke
Engineer:	Roughan & O'Donovan	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	MADE GROUND: tarmacadam.			47.27					
		MADE GROUND: grey silty sandy gravel with high cobble content.		47.0						
0.5	0.60	Medium dense brown clayey very sandy GRAVEL with high cobble content.			46.77					
1.0				46.5		1.00	B	DC01		
						1.00	C	N=14 (3,3/3,3,4,4)		
1.5				46.0						
2.0				45.5		2.00	B	DC02		
						2.00	C	N=25 (2,3/5,6,7,7)		
2.5	2.50	Medium dense brown clayey very gravelly SAND with low cobble content.		45.0	44.87					
3.0				44.5		3.00	B	DC03		
						3.00	C	N=30 (2,8/8,7,8,7)		
3.5				44.0						
4.0	3.90	Very stiff black slightly sandy slightly gravelly silty CLAY with high cobble content.		43.5	43.47	4.00	B	DC04		
						4.00	C	N=44 (7,8/10,11,13,10)		
4.5				43.0						
5.0				42.5		5.00	B	DC05		
	5.10	Obstruction - possible boulders.			42.27	5.00	C	50 (25 for 110mm/50 for 40mm)		
	5.20	End of Borehole at 5.20m			42.17	5.20	C	50 (25 for 5mm/50 for 5mm)		
5.5				42.0						
6.0				41.5						
6.5				41.0						
7.0				40.5						
7.5				40.0						
				39.5						

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	3.70	2.80	NS	30/07	5.20	5.00				0.00	5.20	Arisings	Borehole terminated due to obstruction.
5.10	5.20	01:30													

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

Contract No: 6332	**Cable Percussion Borehole Log**				Borehole No: **BH02**
Contract:	Parkmore Industrial Estate	Easting:	710220.670	Date Started:	31/07/2024
Location:	Long Mile Road, Dublin 12	Northing:	731608.127	Date Completed:	31/07/2024
Client:	Watfore Limited	Elevation:	47.34	Drilled By:	D. Clarke
Engineer:	Roughan & O'Donovan	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
		MADE GROUND: tarmacadam.								
	0.30	MADE GROUND: grey black silty sandy gravel with high cobble content.		47.0	47.04					
0.5	0.60	Stiff brown sandy slightly gravelly silty CLAY with low cobble content.			46.74					
1.0				46.5		1.00	B	DC06		
						1.00	C	N=20 (2,3/5,5,5,5)		
1.5	1.50	Medium dense brown very clayey gravelly SAND.		46.0	45.84					
2.0				45.5		2.00	B	DC07		
						2.00	C	N=25 (4,6/6,6,6,7)		
2.5	2.50			45.0	44.84					
	2.80	Medium dense brown slightly silty gravelly SAND with low cobble content.			44.54					
3.0		Very stiff black slightly sandy slightly gravelly silty CLAY with high cobble content.		44.5		3.00	B	DC08		
						3.00	C	N=36 (8,9/10,9,9,8)		
3.5				44.0						
4.0				43.5		4.00	B	DC09		
						4.00	C	50 (9,9/50 for 200mm)		
4.5				43.0						
	4.80			42.5	42.54					
	4.90	Obstruction - possible boulders.			42.44	4.90	C	50 (25 for 5mm/50 for 5mm)		
5.0		End of Borehole at 4.90m								
5.5				42.0						
6.0				41.5						
6.5				41.0						
7.0				40.5						
7.5				40.0						
				39.5						

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:
0.60	0.80	01:00				31/07	4.90	Dry				0.00	4.90	Arisings	Borehole terminated due to obstruction.
4.80	4.90	01:30													

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

Contract No: 6332	**Cable Percussion Borehole Log**	Borehole No: **BH03**

Contract:	Parkmore Industrial Estate	Easting:	710230.808	Date Started:	07/08/2024
Location:	Long Mile Road, Dublin 12	Northing:	731487.565	Date Completed:	07/08/2024
Client:	Watfore Limited	Elevation:	47.35	Drilled By:	D. Clarke
Engineer:	Roughan & O'Donovan	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	MADE GROUND: tarmacadam.			47.25					
		MADE GROUND: grey silty sandy gravel with high cobble content.		47.0						
0.5	0.60	MADE GROUND: brown silty sandy gravel.			46.75					
	0.90			46.5	46.45					
1.0		Medium dense brown clayey very sandy GRAVEL with low cobble content.				1.00	B	DC25		
						1.00	C	N=10 (2,2/2,2,3,3)		
1.5				46.0						
				45.5						
2.0						2.00	B	DC26		
						2.00	C	N=13 (3,3/3,3,3,4)		
	2.30			45.0	45.05					
2.5		Firm becoming stiff grey slightly sandy slightly gravelly clayey SILT.								
3.0				44.5		3.00	B	DC27		
						3.00	C	N=19 (3,4/4,5,5,5)		
3.5				44.0						
				43.5						
4.0						4.00	B	DC28		
	4.20					4.00	C	50 (5,7/50 for 180mm)		
		Very stiff black slightly sandy slightly gravelly silty CLAY with high cobble content.			43.15					
4.5				43.0						
				42.5						
5.0						5.00	B	DC29		
						5.00	C	50 (9,10/50 for 200mm)		
5.5				42.0						
	5.60				41.75					
	5.70	Obstruction - possible boulders.			41.65					
		End of Borehole at 5.70m		41.5		5.80	C	50 (25 for 5mm/50 for 5mm)		
6.0										
				41.0						
6.5										
				40.5						
7.0										
				40.0						
7.5										
				39.5						

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:
0.50	0.70	01:00	2.10	1.90	NS	07/08	5.70	2.20				0.00	5.70	Arisings	Borehole terminated due to obstruction.
5.60	5.70	01:30													

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

Contract No: 6332	**Cable Percussion Borehole Log**				Borehole No: **BH04**
Contract:	Parkmore Industrial Estate	Easting:	710309.169	Date Started:	01/08/2024
Location:	Long Mile Road, Dublin 12	Northing:	731627.521	Date Completed:	01/08/2024
Client:	Watfore Limited	Elevation:	46.81	Drilled By:	D. Clarke
Engineer:	Roughan & O'Donovan	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
0.5	0.20	MADE GROUND: tarmacadam.		46.5	46.61					
		MADE GROUND: grey silty sandy gravel with high cobble content.								
1.0	0.80	Stiff brown sandy slightly gravelly silty CLAY.		46.0	46.01	1.00	B	DC10		
						1.00	C	N=18 (2,4/4,4,5,5)		
1.5				45.5						
2.0	1.80	Stiff brown sandy slightly gravelly silty CLAY with low cobble content.		45.0	45.01	2.00	B	DC11	▼	
						2.00	C	N=15 (2,2/3,4,4,4)	▽	
2.5				44.5						
3.0	2.90	Stiff grey sandy slightly gravelly silty CLAY with low cobble content.		44.0	43.91	3.00	B	DC12		
						3.00	C	N=25 (2,2/3,5,8,9)		
3.5				43.5						
4.0	4.10	Very stiff black slightly sandy gravelly silty CLAY with high cobble content.		43.0	42.71	4.00	B	DC13		
						4.00	C	N=46 (8,10/9,11,12,14)		
4.5				42.5						
5.0	5.10	Obstruction - possible boulders.		42.0	41.71	5.00	B	DC14		
	5.20	End of Borehole at 5.20m			41.61	5.00	C	50 (25 for 95mm/50 for 30mm)		
5.5				41.5		5.20	C	50 (25 for 5mm/50 for 5mm)		
6.0				41.0						
6.5				40.5						
7.0				40.0						
7.5				39.5						
				39.0						

Chiselling:

From:	To:	Time:
0.50	0.60	01:00
5.10	5.20	01:30

Water Strikes:

Strike:	Rose:	Depth Sealed
2.20	1.90	NS

Water Details:

Date:	Hole Depth:	Water Depth:
01/08	5.20	2.50

Installation:

From:	To:	Pipe:

Backfill:

From:	To:	Type:
0.00	5.20	Arisings

Remarks:

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: 6332	**Cable Percussion Borehole Log**				Borehole No: **BH05**
Contract:	Parkmore Industrial Estate	Easting:	710306.612	Date Started:	06/08/2024
Location:	Long Mile Road, Dublin 12	Northing:	731586.961	Date Completed:	06/08/2024
Client:	Watfore Limited	Elevation:	47.36	Drilled By:	D. Clarke
Engineer:	Roughan & O'Donovan	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
		MADE GROUND: tarmacadam.			47.16					
	0.20	MADE GROUND: grey silty sandy gravel with high cobble content.		47.0	46.96					
0.5	0.40	MADE GROUND: brown silty gravelly sand.								
	0.80	Stiff grey brown sandy slightly gravelly silty CLAY with low cobble content.		46.5	46.56	1.00	B	DC20		
1.0						1.00	C	N=21 (4,4/5,5,5,6)		
				46.0						
1.5	1.50	Stiff brown sandy slightly gravelly silty CLAY with low cobble content.			45.86					
				45.5		2.00	B	DC21		
2.0						2.00	C	N=17 (2,4/4,3,5,5)		
2.5				45.0						
				44.5						
3.0	3.00	Medium dense becoming dense brown clayey very gravelly SAND with high cobble content.			44.36	3.00	B	DC22		
						3.00	C	N=27 (3,5/7,6,6,8)		
3.5				44.0						
				43.5						
4.0						4.00	B	DC23		
						4.00	C	N=30 (4,5/8,7,8,7)		
	4.30	Very stiff black slightly sandy gravelly silty CLAY with high cobble content.		43.0	43.06					
4.5										
				42.5		5.00	B	DC24		
5.0						5.00	C	N=35 (7,8/8,9,9,9)		
5.5				42.0						
	5.70				41.66					
	5.80	Obstruction - possible boulders.		41.5	41.56	5.80	C	50 (25 for 5mm/50 for 5mm)		
6.0		End of Borehole at 5.80m								
6.5				41.0						
				40.5						
7.0										
7.5				40.0						
				39.5						

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:
0.50	0.60	01:00	3.30	3.10	4.40	06/08	5.80	Dry				0.00	5.80	Arisings	Borehole terminated due to obstruction.
5.70	5.80	01:30													

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

Contract No: 6332	**Cable Percussion Borehole Log**				Borehole No: **BH06**
Contract:	Parkmore Industrial Estate	Easting:	710266.783	Date Started:	02/08/2024
Location:	Long Mile Road, Dublin 12	Northing:	731533.342	Date Completed:	02/08/2024
Client:	Watfore Limited	Elevation:	47.24	Drilled By:	D. Clarke
Engineer:	Roughan & O'Donovan	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	MADE GROUND: tarmacadam.			47.14					
		MADE GROUND: brown sandy slightly gravelly silty clay with high cobble content.		47.0						
0.5				46.5						
	0.90	Medium dense brown clayey very sandy GRAVEL with high cobble content.			46.34	1.00	B	DC15		
1.0						1.00	C	N=14 (2,3/3,3,4,4)		
1.5				46.0						
				45.5						
2.0						2.00	B	DC16		
				45.0		2.00	C	N=22 (5,5/5,6,6,5)		
2.5										
				44.5						
3.0						3.00	B	DC17		
				44.0		3.00	C	N=33 (3,5/8,8,8,9)		
3.5										
	3.70	Brown slightly silty gravelly SAND.		43.5	43.54					
4.0	4.00	Very stiff black slightly sandy slightly gravelly silty CLAY with high cobble content.			43.24	4.00	B	DC18		
						4.00	C	N=44 (8,9/9,10,11,14)		
4.5				43.0						
				42.5						
	4.90	Dense brown clayey sandy GRAVEL.			42.34	5.00	B	DC19		
5.0						5.00	C	50 (9,11/50 for 30mm)		
	5.20	Obstruction - possible boulders.		42.0	42.04					
	5.30	End of Borehole at 5.30m			41.94	5.30	C	50 (25 for 5mm/50 for 5mm)		
5.5				41.5						
6.0				41.0						
6.5				40.5						
7.0				40.0						
7.5				39.5						

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:
0.40	0.70	01:00	2.80	2.00	NS	02/08	5.30	1.30				0.00	5.30	Arisings	Borehole terminated due to obstruction.
5.20	5.30	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: 6332	**Trial Pit Log**				Trial Pit No: **TP01**
Contract:	Parkmore Industrial Estate	Easting:	710193.652	Date:	29/08/2024
Location:	Long Mile Road, Dublin 12	Northing:	731587.051	Excavator:	JCB 3CX
Client:	Watfore Limited	Elevation:	47.35	Logged By:	D. Monaghan
Engineer:	Roughan & O'Donovan	Dimensions (LxWxD) (m):	3.00 x 0.60 x 2.60	Status:	FINAL

Level (mbgl) Scale:	Depth	Stratum Description	Legend	Level (mOD) Scale:	Depth:	Samples / Field Tests Depth	Type	Result	Water Strike
		MADE GROUND: tarmacadam.							
	0.30	MADE GROUND: brown grey silty sandy gravel.		47.0	47.05	0.50	B	DM01	
0.5	0.60	Brown clayey very sandy fine to coarse, angular to subrounded GRAVEL of limestone. Sand is fine to coarse.			46.75				
				46.5		1.00	B	DM02	
1.0									
				46.0					
1.5									
				45.5		2.00	B	DM03	
2.0									
				45.0		2.50	B	DM04	
2.5	2.60	Obstruction - boulders.			44.75				
		Pit terminated at 2.60m		44.5					

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

Contract No: 6332	**Trial Pit Log**				Trial Pit No: **TP02**
Contract:	Parkmore Industrial Estate	Easting:	710324.201	Date:	29/08/2024
Location:	Long Mile Road, Dublin 12	Northing:	731630.615	Excavator:	JCB 3CX
Client:	Watfore Limited	Elevation:	46.61	Logged By:	D. Monaghan
Engineer:	Roughan & O'Donovan	Dimensions (LxWxD) (m):	3.00 x 0.60 x 2.50	Status:	FINAL

Level (mbgl) Scale:	Depth	Stratum Description	Legend	Level (mOD) Scale:	Depth:	Samples / Field Tests Depth	Type	Result	Water Strike
		MADE GROUND: tarmacadam.		46.5					
	0.15	MADE GROUND: grey silty sandy gravel.			46.46				
0.5						0.50	B	DM05	
				46.0					
	0.70	Firm brown sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of limestone.			45.91				
1.0						1.00	B	DM06	
				45.5					
1.5									
				45.0					
2.0						2.00	B	DM07	
				44.5					
2.5	2.50	Obstruction - boulders.			44.11	2.50	B	DM08	
		Pit terminated at 2.50m		44.0					

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

TP01 Sidewall

TP01 Spoil

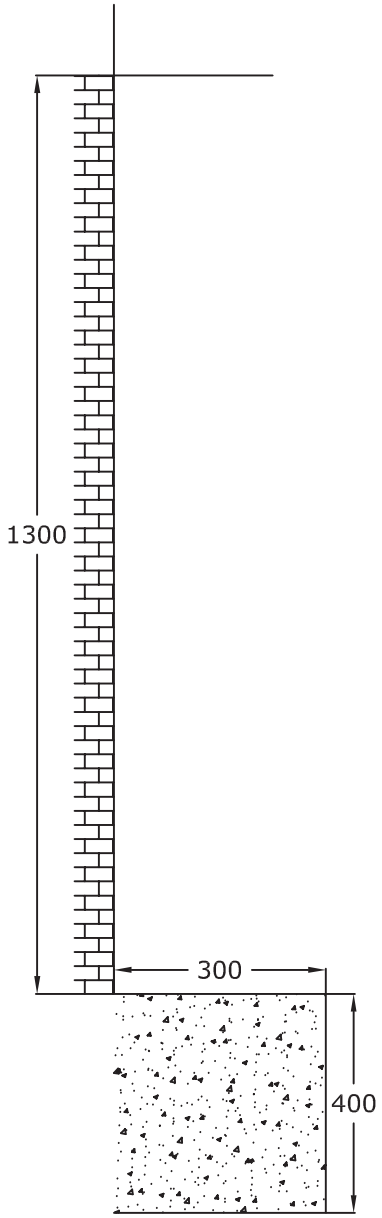
TP02 Sidewall

TP02 Spoil

Appendix 3
Foundation Pit Logs

Foundation Pits

FP01



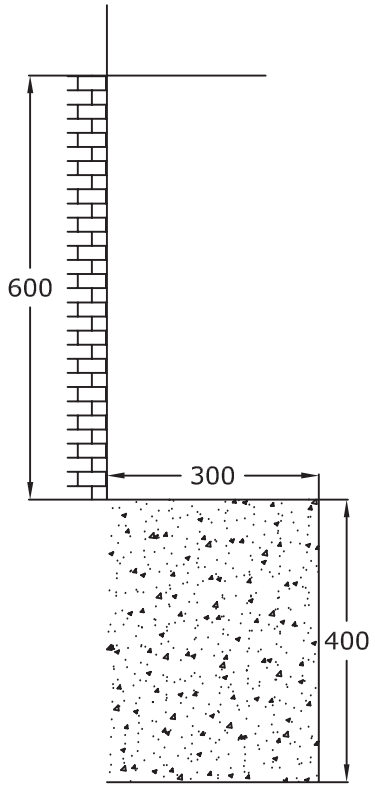
Foundation Details:
Wall to 1300mm below ground level, foundation extends 300mm from wall and 400mm thick.

Ground Conditions:
0.00m: MADE GROUND: tarmacadam.
0.30m: Firm brown slightly sandy slightly gravelly silty CLAY with low cobble content.
1.70m: Pit terminated.

SITE INVESTIGATIONS LTD	Project:	Parkmore Industrial Estate	Logged by: D. Monaghan	Excavation Started: 28/08/2024	Excavation Finished: 28/08/2024	CONTRACT NUMBER
	Client:	Watfore Limited	Scale: NOT TO SCALE, ALL DISTANCES IN mm			6332
	Consultant:	Roughan & O'Donovan	DEPTH ARE TO THE TOP OF SERVICES			

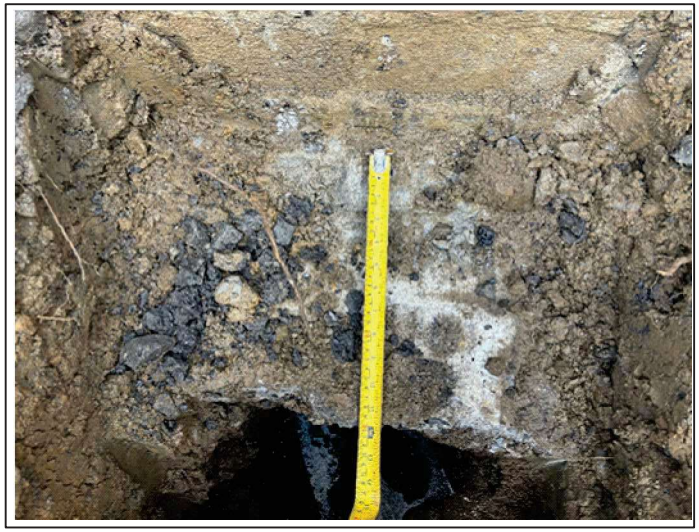
Foundation Pits

FP02



Foundation Details:
Wall to 600mm below ground level, foundation extends 300mm from wall and 400mm thick.

Ground Conditions:
0.00m: MADE GROUND: tarmacadam.
0.10m: MADE GROUND: grey silty sandy gravel.
0.40m: Firm brown slightly sandy slightly gravelly silty CLAY.
1.00m: Pit terminated.



SITE INVESTIGATIONS LTD	Project: Parkmore Industrial Estate	Logged by: D. Monaghan	Excavation Started: 28/08/2024	Excavation Finished: 28/08/2024	CONTRACT NUMBER
	Client: Watfore Limited	Scale: NOT TO SCALE, ALL DISTANCES IN mm			6332
	Consultant: Roughan & O'Donovan	DEPTH ARE TO THE TOP OF SERVICES			

Appendix 4

Geotechnical Laboratory Test Results

Classification Tests in accordance with BS1377: Part 4

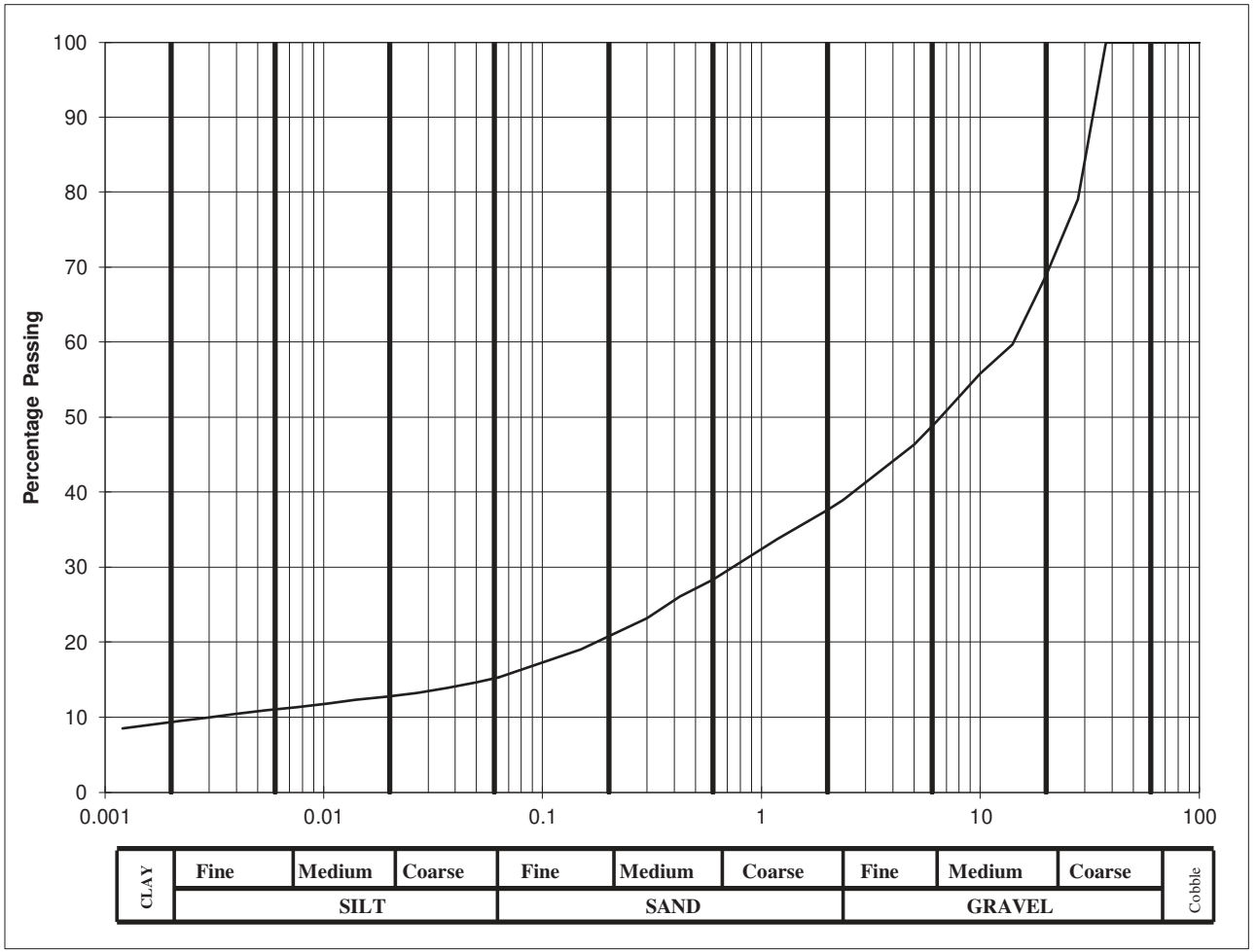
Client	Watfore Ltd.
Site	Parkmore Industrial Estate, Long Mile Road, Co. Dublin
S.I. File No	6332 / 24
Test Lab	Site Investigations Ltd., Carhugar The Grange, 12th Lock Rd., Lucan Co. Dublin. Tel (01) 6108768 Email info@siteinvestigations.ie
Report Date	30th September 2024

Hole ID	Depth	Sample No	Lab Ref No.	Sample Type	Natural Moisture Content %	Liquid Limit %	Plastic Limit %	Plastic Index %	Min. Dry Density Mg/m^3	Particle Density Mg/m^3	% passing 425um	Comments	**Remarks** **C**=Clay; **M**=Silt **Plasticity**: **L**=Low; **I**=Intermediate; **H**=High; **V**=Very High; **E**=Extremely High
BH01	2.00	DC02	24/1176	B	5.4	28	19	9			23.6		CL
BH01	4.00	DC04	24/1178	B	11.9	34	19	15			53.5		CL
BH02	1.00	DC06	24/1179	B	18.1	32	18	14			59.5		CL
BH02	3.00	DC08	24/1181	B	11.0	32	19	13			56.0		CL
BH03	1.00	DC25	24/1182	B	9.8	26	19	7			20.3		CL
BH03	3.00	DC27	24/1183	B	23.2	44	34	10			81.9		MI
BH03	5.00	DC29	24/1184	B	12.3	34	20	14			58.5		CL
BH04	1.00	DC10	24/1185	B	6.1	35	19	16			63.1		CL/CI
BH04	2.00	DC11	24/1186	B	10.2	29	20	9			51.0		CL
BH04	3.00	DC12	24/1187	B	16.8	31	18	13			62.4		CL
BH04	5.00	DC14	24/1188	B	9.7	33	18	15			52.7		CL
BH05	1.00	DC20	24/1189	B	20.9	28	20	8			52.8		CL
BH05	2.00	DC21	24/1190	B	12.3	30	20	10			59.4		CL
BH05	5.00	DC24	24/1192	B	7.5	36	21	15			48.2		CI
BH06	2.00	DC16	24/1194	B	6.4	28	20	8			24.5		CL
BH06	4.00	DC18	24/1195	B	10.8	39	20	19			83.5		CI
TP01	1.00	DM02	24/1197	B	8.8	27	19	8			26.0		CL
TP01	2.50	DM04	24/1198	B	7.7	27	19	8			26.6		CL
TP02	1.00	DM06	24/1199	B	21.4	30	19	11			40.8		CL
TP02	2.50	DM08	24/1200	B	17.0	36	21	15			70.3		CI

BS 1377 Particle Size Analysis

Site Investigations Limited

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	**0.0630**	15
90	100	**0.0200**	13
75	100	**0.0060**	11
63	100	**0.0020**	9
50	100		
37.5	100		
28	79		
20	68.9		
14	59.7		
10	55.8		
6.3	49.4		
5.0	46.3		
2.36	38.9		
2.00	37.6		
1.18	33.7		
0.600	28.3		
0.425	26.1		
0.300	23.2		
0.212	21.1		
0.150	19		
0.063	15		



Cobbles, %	0
Gravel, %	62
Sand, %	23
Silt, %	6
Clay, %	9

Client :	Watfore Ltd.
Project :	Parkmore Industrial Estate, Long Mile Road, Co. Dublin

Lab. No :	24/1175
Sample No :	DC01

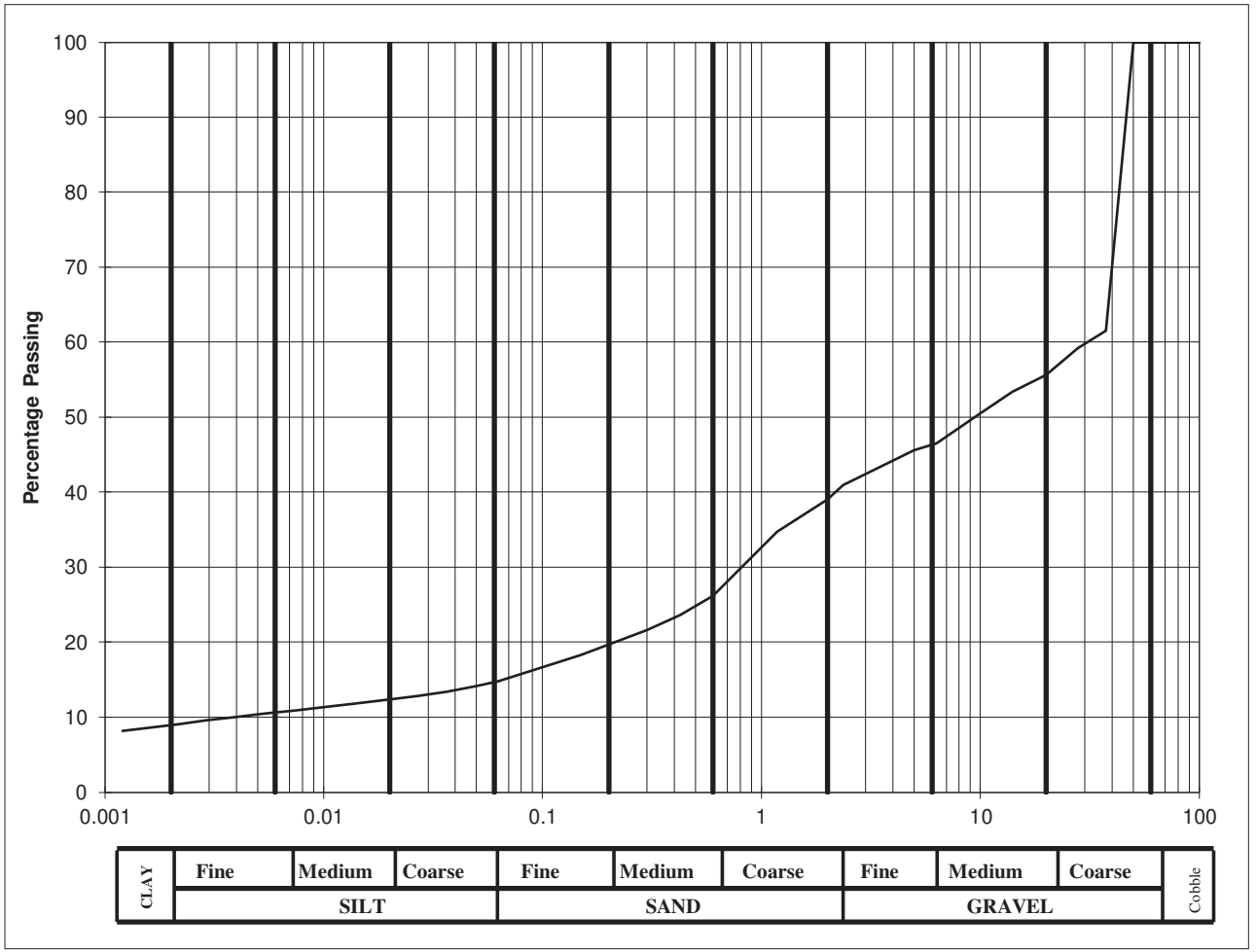
Hole ID :	BH 01
Depth, m :	1.00

Material description :	clayey very sandy GRAVEL
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**	15
90	100	**0.0200**	13
75	100	**0.0060**	11
63	100	**0.0020**	9
50	100		
37.5	61.5		
28	59.2		
20	55.6		
14	53.4		
10	50.5		
6.3	46.5		
5.0	45.6		
2.36	40.9		
2.00	39		
1.18	34.7		
0.600	26.2		
0.425	23.6		
0.300	21.6		
0.212	19.9		
0.150	18.3		
0.063	15		



Cobbles, %	0
Gravel, %	61
Sand, %	24
Silt, %	6
Clay, %	9

Client :	Watfore Ltd.
Project :	Parkmore Industrial Estate, Long Mile Road, Co. Dublin

Lab. No :	24/1176
Sample No :	DC02

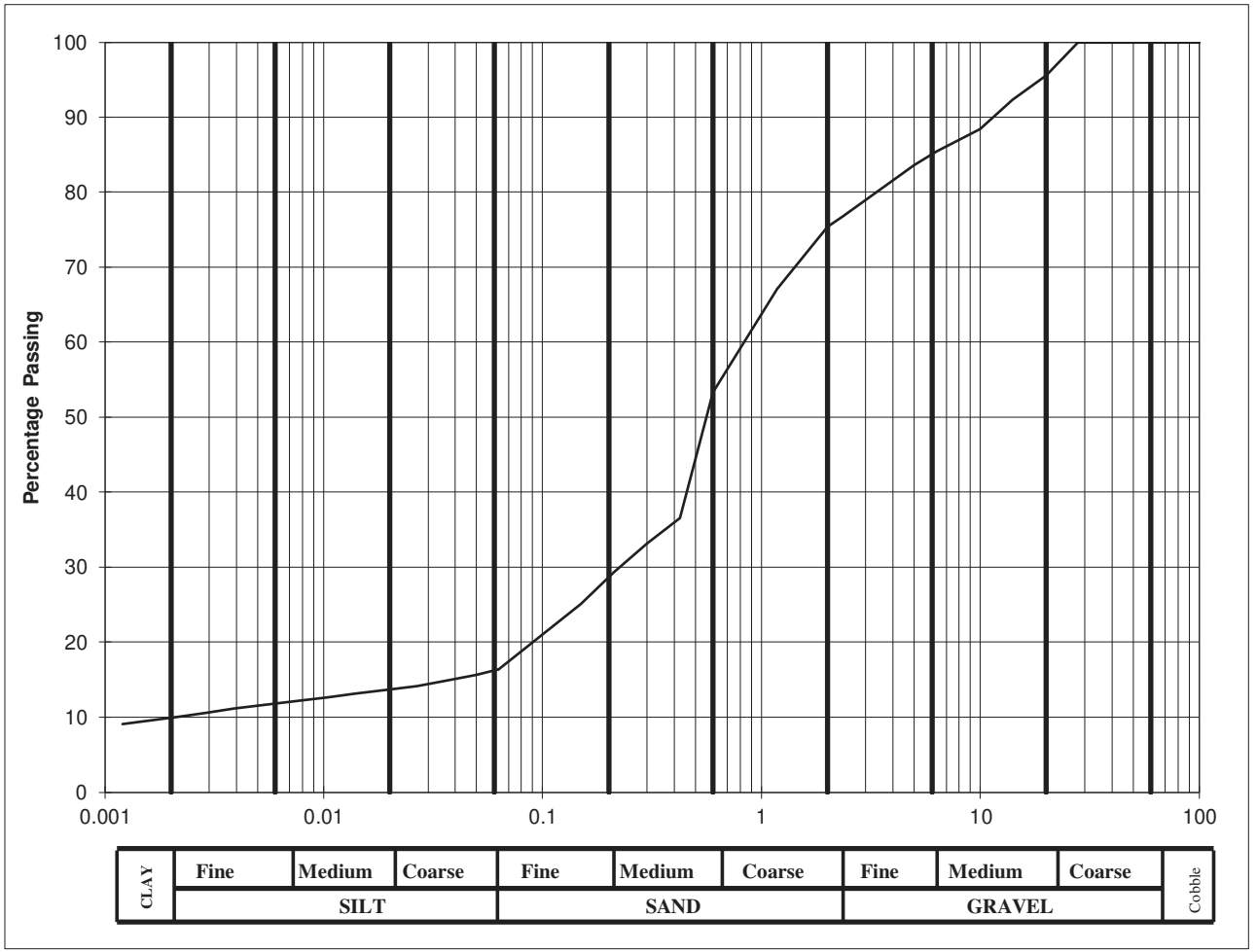
Hole ID :	BH 01
Depth, m :	2.00

Material description :	clayey very sandy GRAVEL
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**	16
90	100	**0.0200**	14
75	100	**0.0060**	12
63	100	**0.0020**	10
50	100		
37.5	100		
28	100		
20	95.5		
14	92.3		
10	88.4		
6.3	85.4		
5.0	83.6		
2.36	76.8		
2.00	75.4		
1.18	67.1		
0.600	53.3		
0.425	36.5		
0.300	33.1		
0.212	29.3		
0.150	25.1		
0.063	16		



Cobbles, %	0
Gravel, %	25
Sand, %	59
Silt, %	6
Clay, %	10

Client :	Watfore Ltd.
Project :	Parkmore Industrial Estate, Long Mile Road, Co. Dublin

Lab. No :	24/1177
Sample No :	DC03

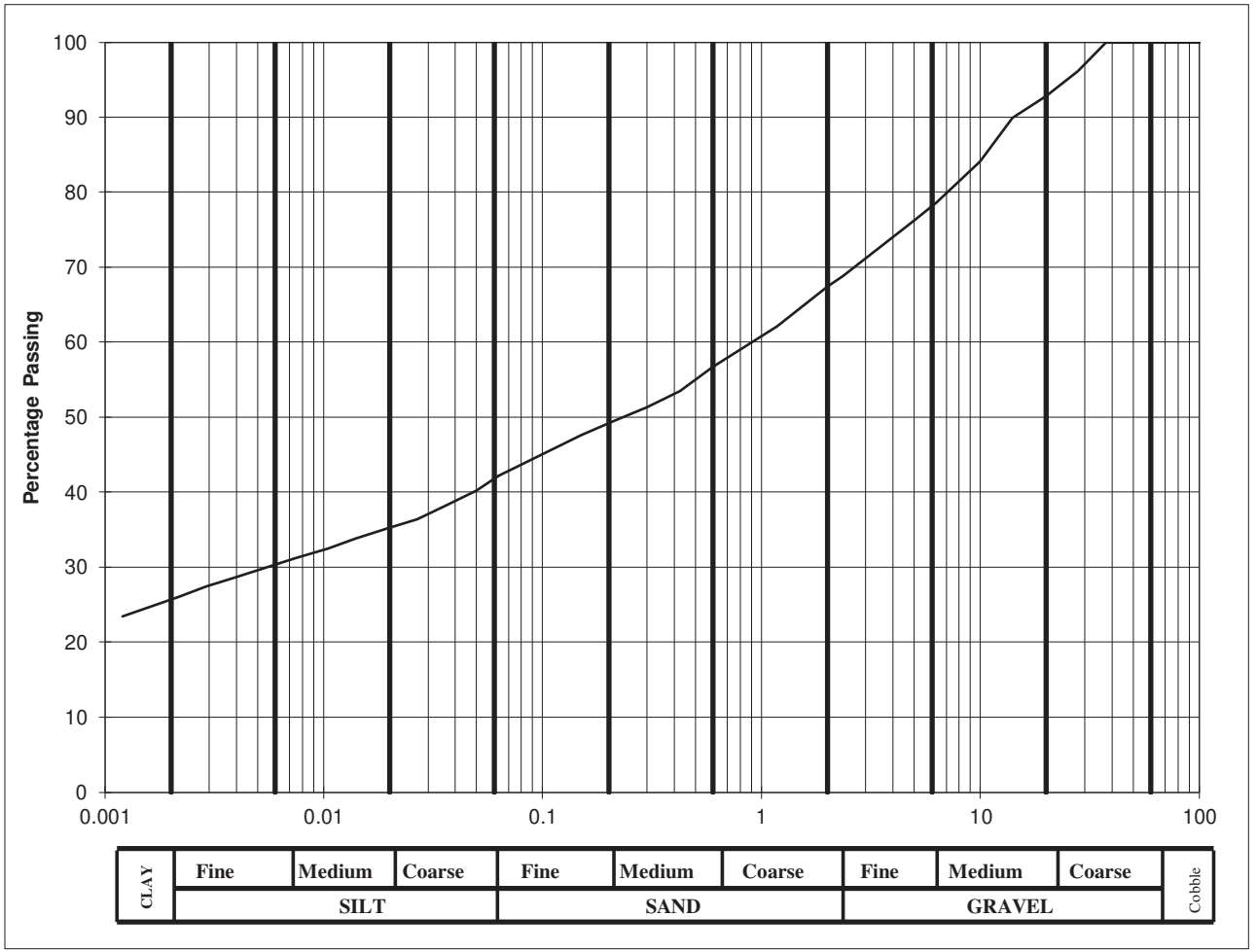
Hole ID :	BH 01
Depth, m :	3.00

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

BS 1377 Particle Size Analysis

Site Investigations Limited

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	**0.0630**	42
90	100	**0.0200**	35
75	100	**0.0060**	31
63	100	**0.0020**	26
50	100		
37.5	100		
28	96.1		
20	92.8		
14	89.9		
10	84.1		
6.3	78.6		
5.0	76.2		
2.36	68.8		
2.00	67.4		
1.18	62.1		
0.600	56.7		
0.425	53.5		
0.300	51.3		
0.212	49.5		
0.150	47.6		
0.063	42		



Cobbles, %	0
Gravel, %	33
Sand, %	25
Silt, %	16
Clay, %	26

Client :	Watfore Ltd.
Project :	Parkmore Industrial Estate, Long Mile Road, Co. Dublin

Lab. No :	24/1178
Sample No :	DC04

Hole ID :	BH 01
Depth, m :	4.00

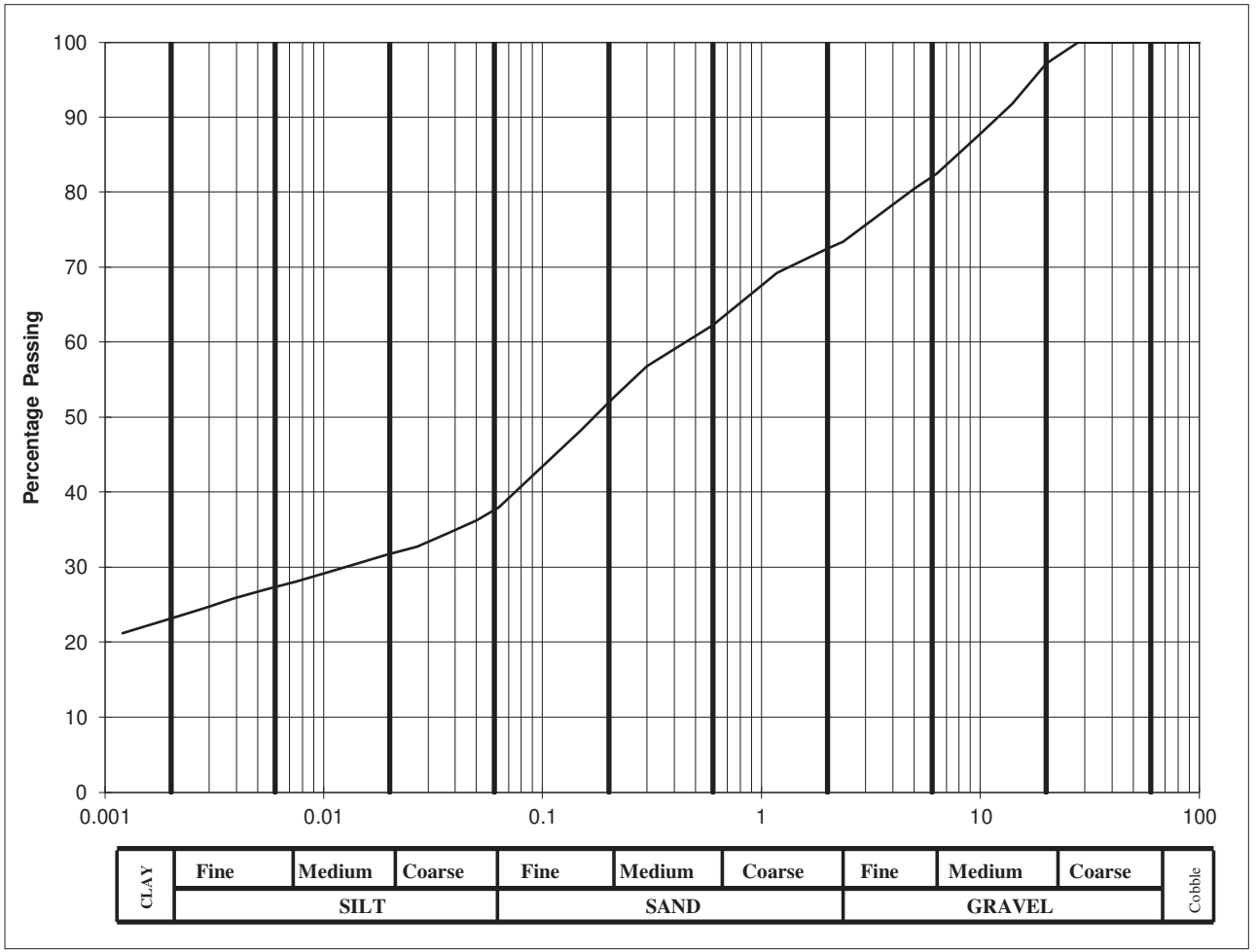
Material description :	slightly sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay 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**	38
90	100	**0.0200**	32
75	100	**0.0060**	27
63	100	**0.0020**	23
50	100		
37.5	100		
28	100		
20	97.1		
14	91.8		
10	87.7		
6.3	82.4		
5.0	80.4		
2.36	73.4		
2.00	72.5		
1.18	69.2		
0.600	62.3		
0.425	59.5		
0.300	56.8		
0.212	52.6		
0.150	48.2		
0.063	38		

Cobbles, %	0
Gravel, %	28
Sand, %	35
Silt, %	15
Clay, %	23



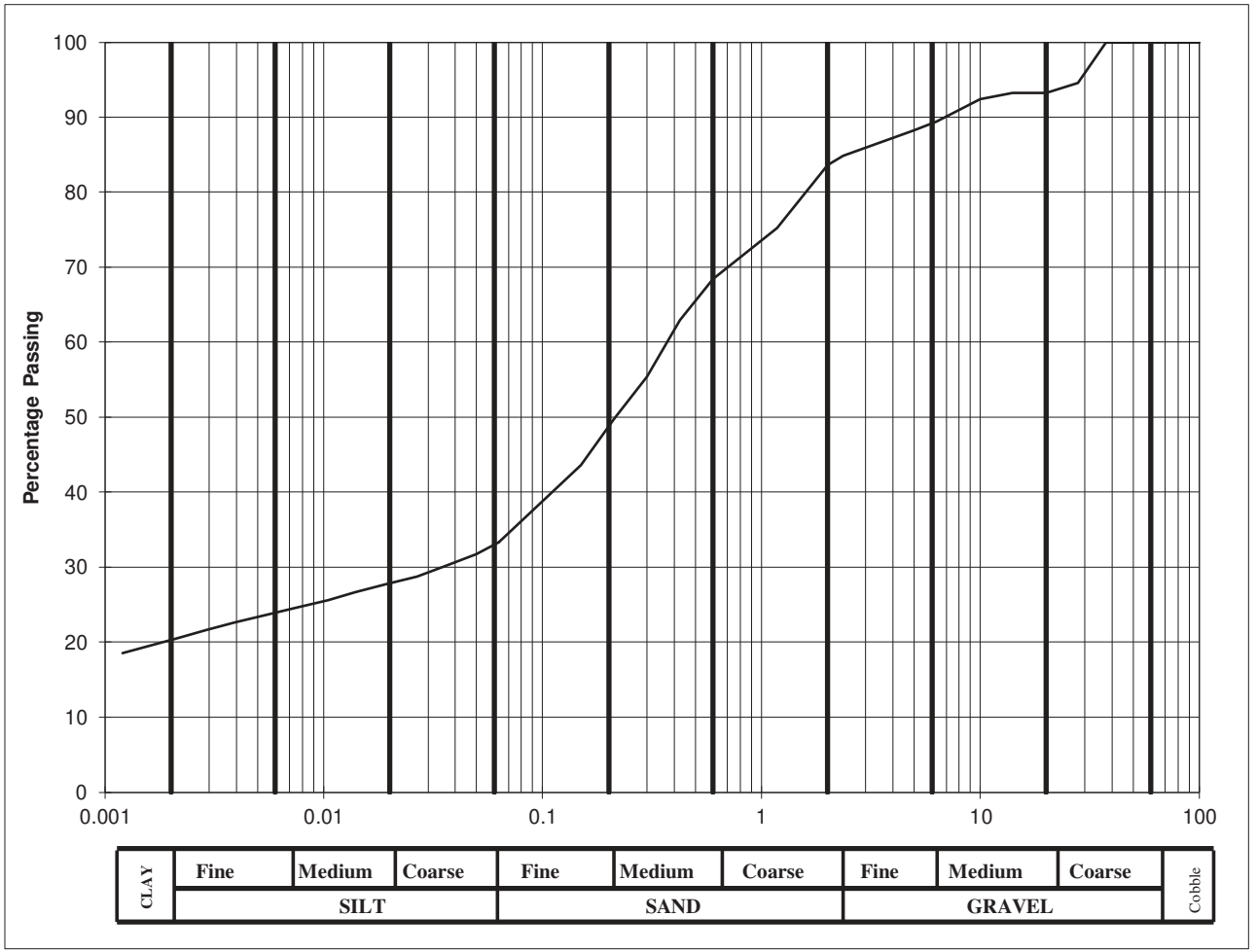
Client :	Watfore Ltd.		Lab. No :	24/1179	Hole ID :	BH 02
Project :	Parkmore Industrial Estate, Long Mile Road, Co. Dublin		Sample No :	DC06	Depth, m :	1.00

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

BS 1377 Particle Size Analysis

Site Investigations Limited

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	**0.0630**	33
90	100	**0.0200**	27
75	100	**0.0060**	24
63	100	**0.0020**	21
50	100		
37.5	100		
28	94.5		
20	93.2		
14	93.2		
10	92.4		
6.3	89.4		
5.0	88.2		
2.36	84.8		
2.00	83.6		
1.18	75.2		
0.600	68.4		
0.425	62.9		
0.300	55.4		
0.212	49.7		
0.150	43.6		
0.063	33		



Cobbles, %	0
Gravel, %	16
Sand, %	51
Silt, %	12
Clay, %	21

Client :	Watfore Ltd.
Project :	Parkmore Industrial Estate, Long Mile Road, Co. Dublin

Lab. No :	24/1180
Sample No :	DC07

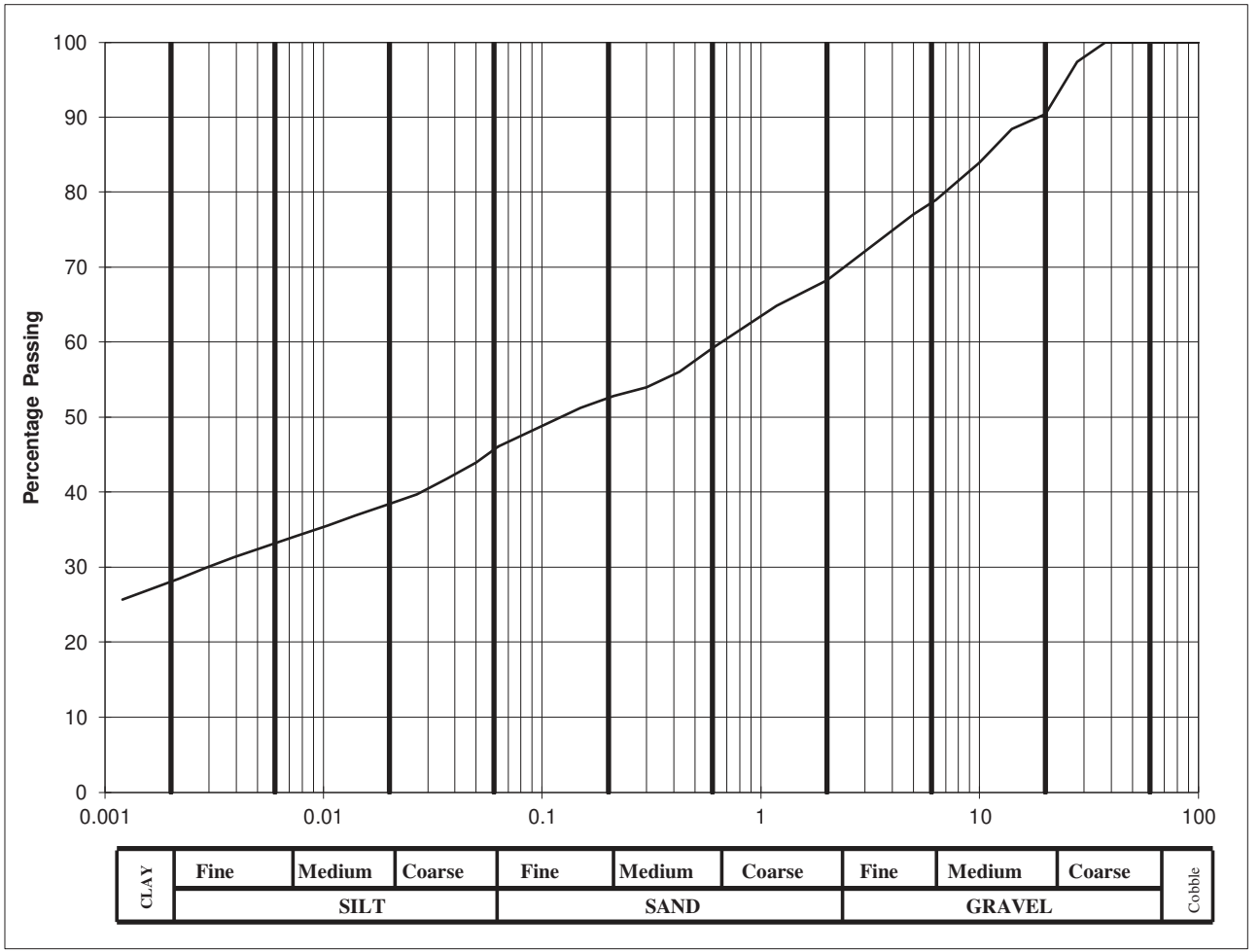
Hole ID :	BH 02
Depth, m :	2.00

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

BS 1377 Particle Size Analysis

Site Investigations Limited

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	**0.0630**	46
90	100	**0.0200**	38
75	100	**0.0060**	33
63	100	**0.0020**	27
50	100		
37.5	100		
28	97.4		
20	90.4		
14	88.4		
10	83.9		
6.3	78.9		
5.0	77		
2.36	69.8		
2.00	68.2		
1.18	64.8		
0.600	59.2		
0.425	56		
0.300	54		
0.212	52.8		
0.150	51.2		
0.063	46		



Cobbles, %	0
Gravel, %	32
Sand, %	22
Silt, %	19
Clay, %	27

Client :	Watfore Ltd.
Project :	Parkmore Industrial Estate, Long Mile Road, Co. Dublin

Lab. No :	24/1181
Sample No :	DC08

Hole ID :	BH 02
Depth, m :	3.00

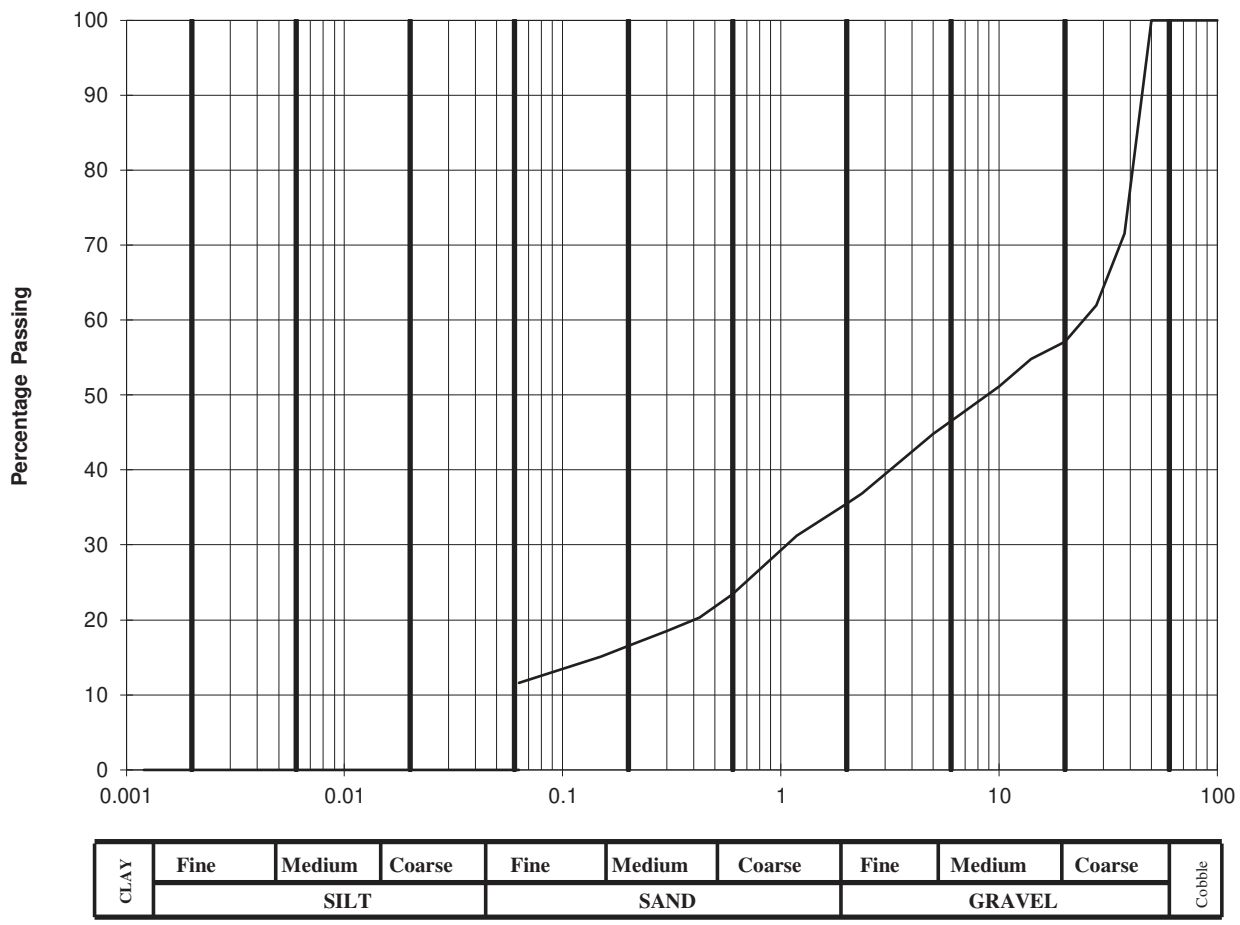
Material description :	slightly sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay 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	71.5		
28	62		
20	57.1		
14	54.8		
10	51.1		
6.3	46.9		
5.0	44.8		
2.36	36.9		
2.00	35.5		
1.18	31.2		
0.600	23.4		
0.425	20.3		
0.300	18.5		
0.212	16.8		
0.150	15.1		
0.063	12		

Cobbles, %	0
Gravel, %	65
Sand, %	24
Clay / Silt, %	12



Client :	Watfore Ltd.
Project :	Parkmore Industrial Estate, Long Mile Road, Co. Dublin

Lab. No :	24/1182
Sample No :	DC25

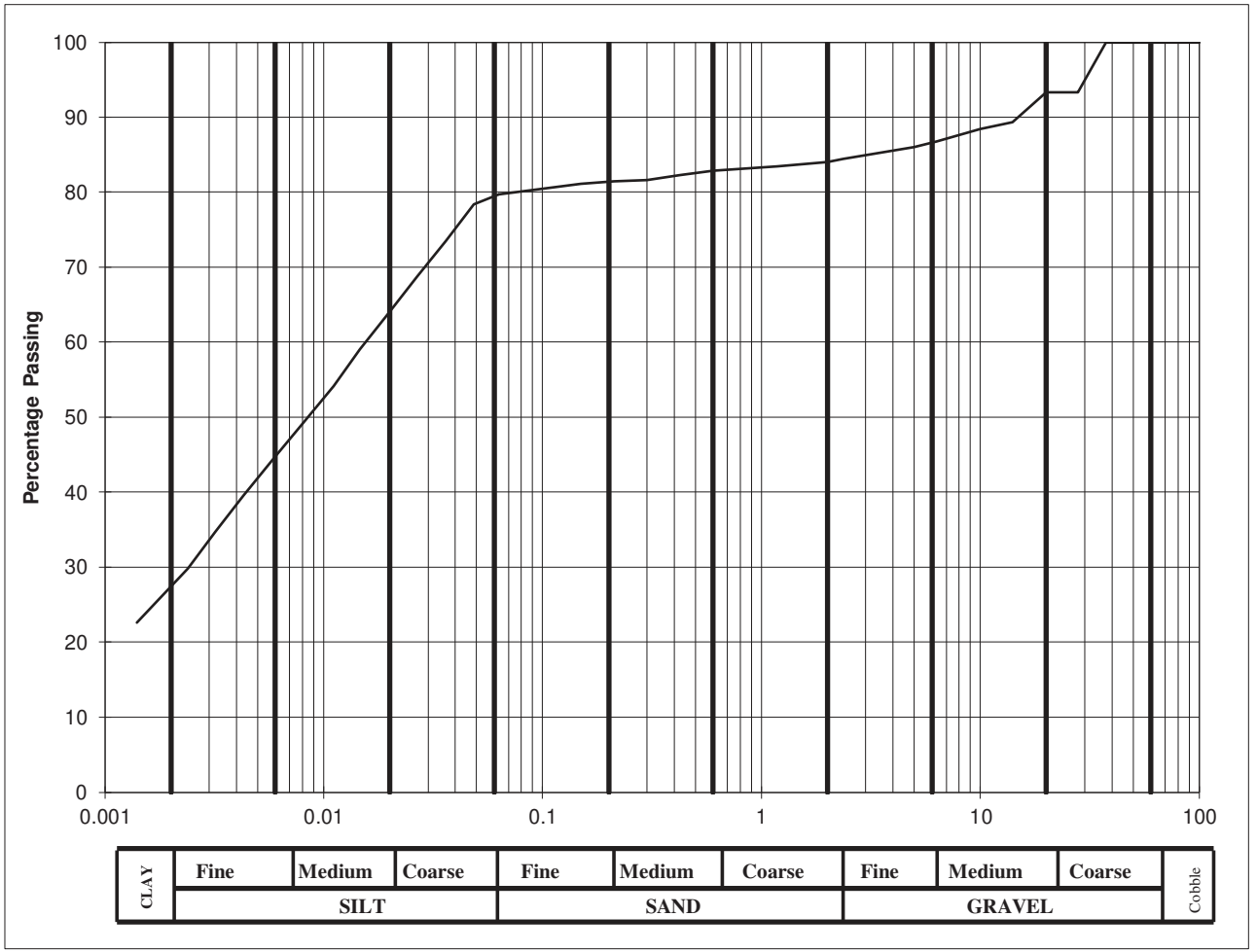
Hole ID :	BH 03
Depth, m :	1.00

Material description :	clayey very sandy GRAVEL
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**	80
90	100	**0.0200**	64
75	100	**0.0060**	45
63	100	**0.0020**	26
50	100		
37.5	100		
28	93.3		
20	93.3		
14	89.3		
10	88.4		
6.3	86.7		
5.0	86		
2.36	84.4		
2.00	84		
1.18	83.4		
0.600	82.8		
0.425	82.3		
0.300	81.6		
0.212	81.4		
0.150	81.1		
0.063	80		



Cobbles, %	0
Gravel, %	16
Sand, %	4
Silt, %	54
Clay, %	26

Client :	Watfore Ltd.
Project :	Parkmore Industrial Estate, Long Mile Road, Co. Dublin

Lab. No :	24/1183
Sample No :	DC27

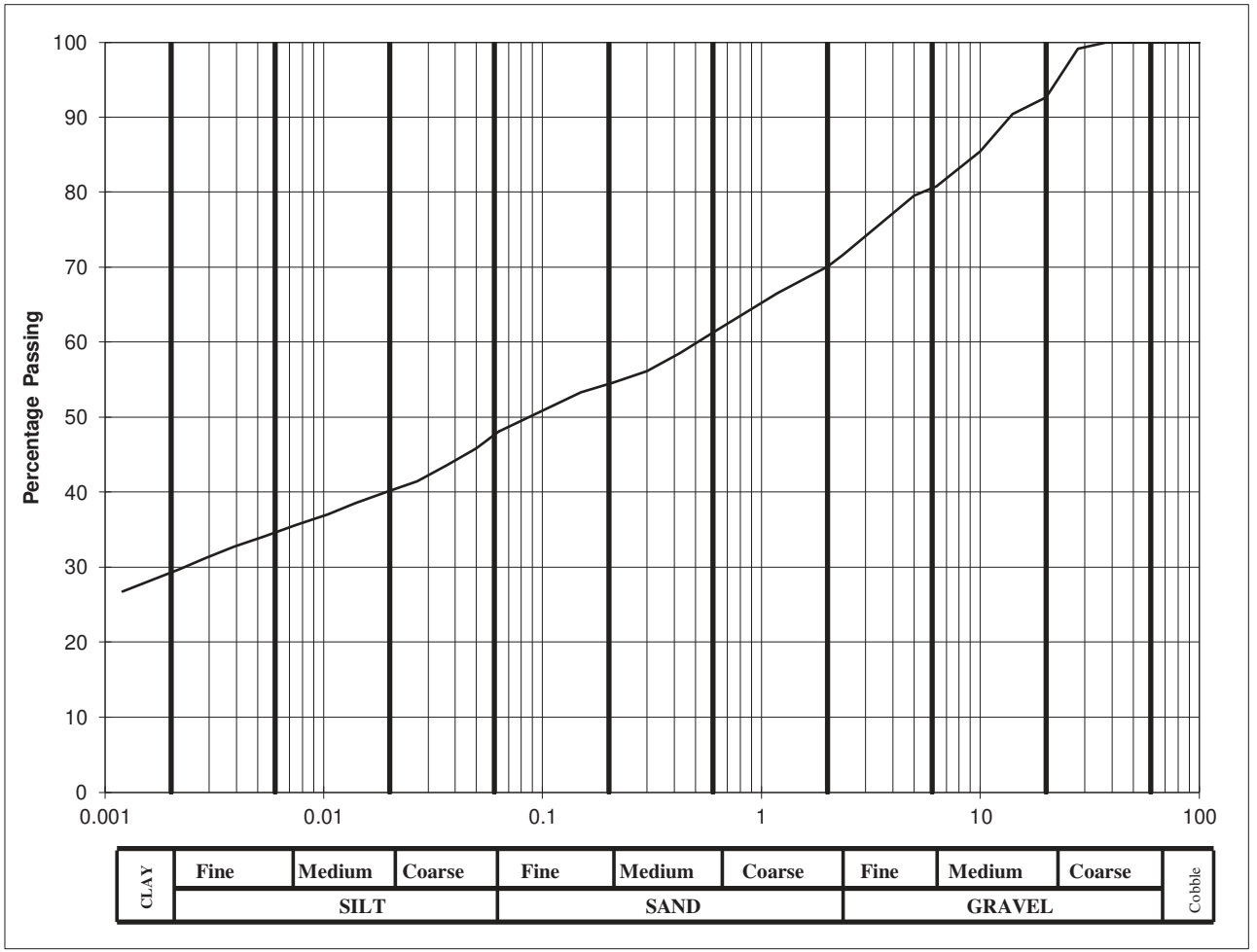
Hole ID :	BH 03
Depth, m :	3.00

Material description :	slightly sandy slightly gravelly clayey SILT
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**	48
90	100	**0.0200**	40
75	100	**0.0060**	34
63	100	**0.0020**	29
50	100		
37.5	100		
28	99.1		
20	92.6		
14	90.4		
10	85.4		
6.3	80.8		
5.0	79.5		
2.36	71.6		
2.00	70.1		
1.18	66.5		
0.600	61.3		
0.425	58.5		
0.300	56.1		
0.212	54.6		
0.150	53.3		
0.063	48		



Cobbles, %	0
Gravel, %	30
Sand, %	22
Silt, %	19
Clay, %	29

Client :	Watfore Ltd.
Project :	Parkmore Industrial Estate, Long Mile Road, Co. Dublin

Lab. No :	24/1184
Sample No :	DC08

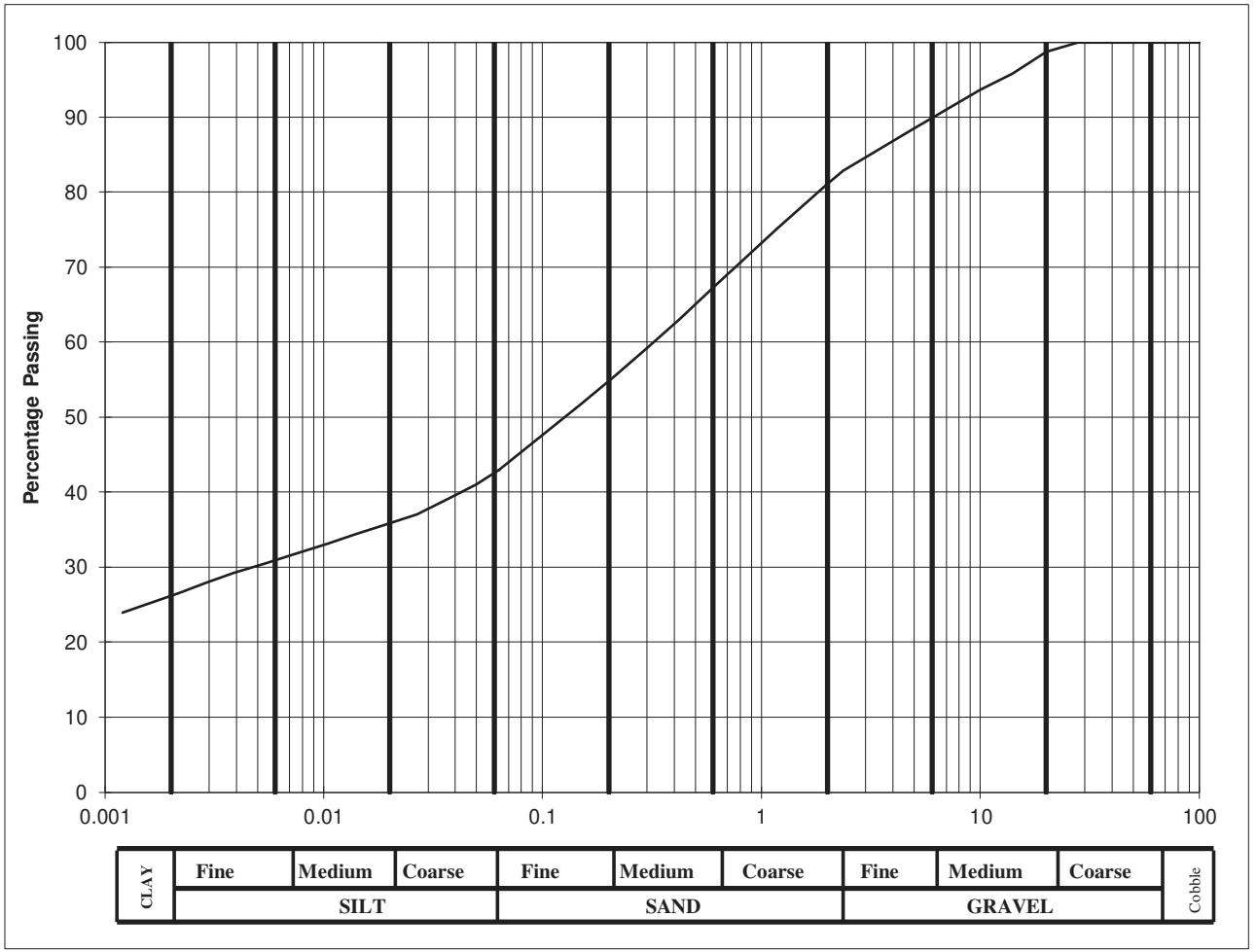
Hole ID :	BH 03
Depth, m :	5.00

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**	43
90	100	**0.0200**	36
75	100	**0.0060**	31
63	100	**0.0020**	26
50	100		
37.5	100		
28	100		
20	98.7		
14	95.8		
10	93.6		
6.3	90.2		
5.0	88.5		
2.36	82.8		
2.00	81.1		
1.18	75.1		
0.600	67.2		
0.425	63.1		
0.300	59.2		
0.212	55.4		
0.150	51.7		
0.063	43		



Cobbles, %	0
Gravel, %	19
Sand, %	38
Silt, %	17
Clay, %	26

Client :	Watfore Ltd.
Project :	Parkmore Industrial Estate, Long Mile Road, Co. Dublin

Lab. No :	24/1185
Sample No :	DC10

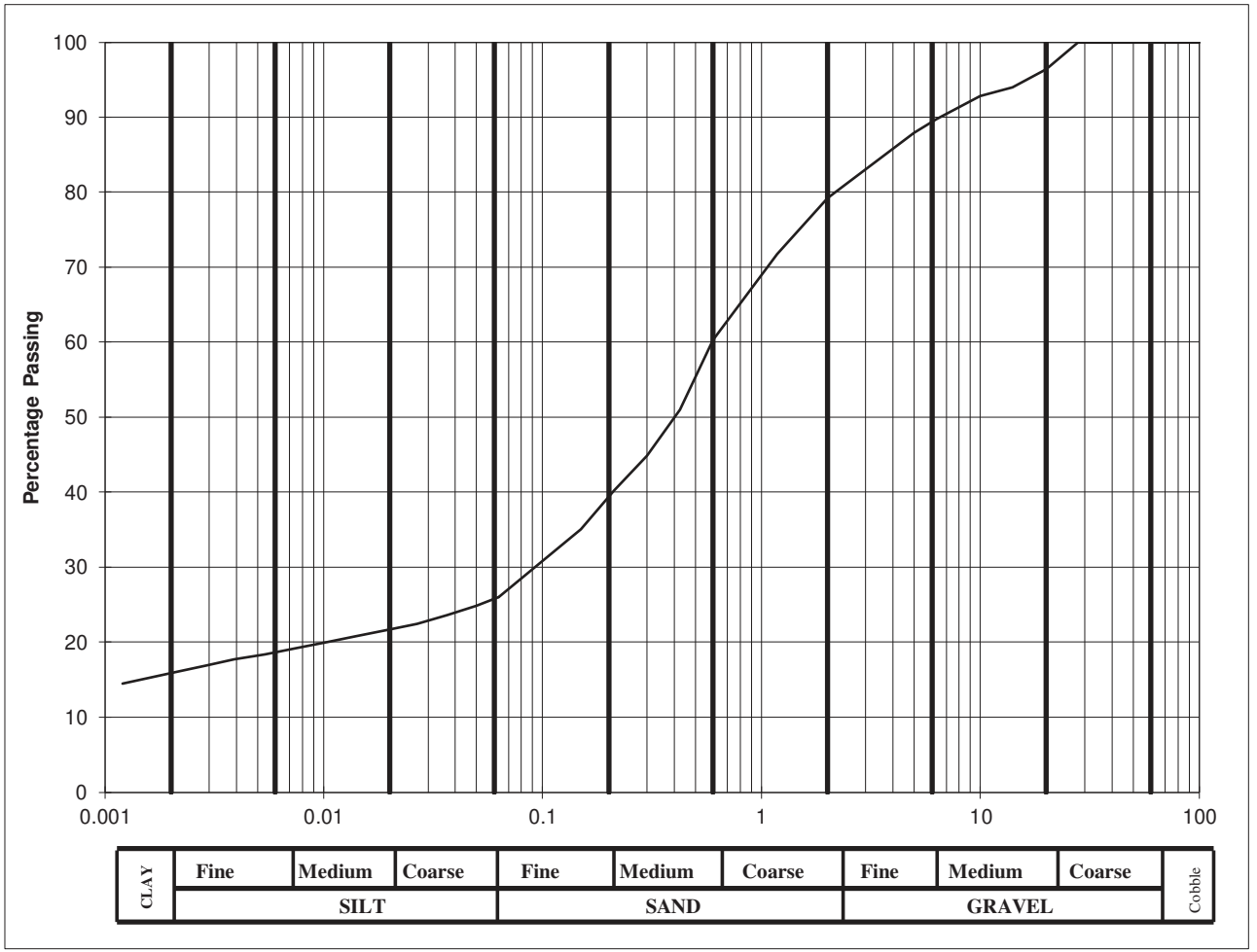
Hole ID :	BH 04
Depth, m :	1.00

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

BS 1377 Particle Size Analysis

Site Investigations Limited

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	**0.0630**	26
90	100	**0.0200**	22
75	100	**0.0060**	18
63	100	**0.0020**	16
50	100		
37.5	100		
28	100		
20	96.4		
14	94		
10	92.8		
6.3	89.7		
5.0	87.9		
2.36	80.8		
2.00	79.2		
1.18	71.7		
0.600	60.3		
0.425	51		
0.300	44.8		
0.212	40.2		
0.150	35		
0.063	26		



Cobbles, %	0
Gravel, %	21
Sand, %	53
Silt, %	10
Clay, %	16

Client :	Watfore Ltd.
Project :	Parkmore Industrial Estate, Long Mile Road, Co. Dublin

Lab. No :	24/1186
Sample No :	DC11

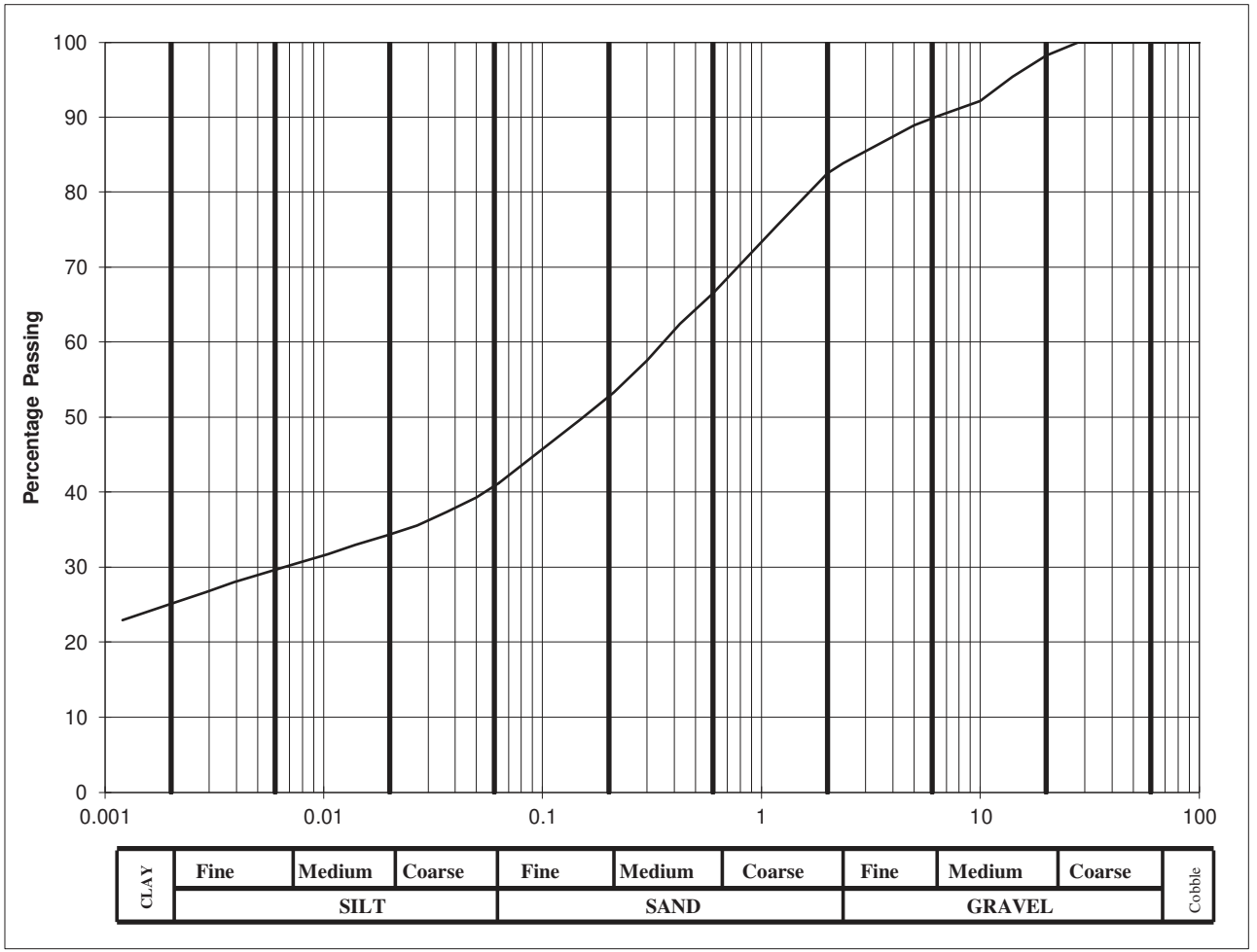
Hole ID :	BH 04
Depth, m :	2.00

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

BS 1377 Particle Size Analysis

Site Investigations Limited

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	**0.0630**	41
90	100	**0.0200**	35
75	100	**0.0060**	29
63	100	**0.0020**	25
50	100		
37.5	100		
28	100		
20	98.2		
14	95.4		
10	92.1		
6.3	90.1		
5.0	88.9		
2.36	83.8		
2.00	82.5		
1.18	75.5		
0.600	66.5		
0.425	62.4		
0.300	57.5		
0.212	53.3		
0.150	49.7		
0.063	41		



Cobbles, %	0
Gravel, %	18
Sand, %	42
Silt, %	16
Clay, %	25

Client :	Watfore Ltd.
Project :	Parkmore Industrial Estate, Long Mile Road, Co. Dublin

Lab. No :	24/1187
Sample No :	DC12

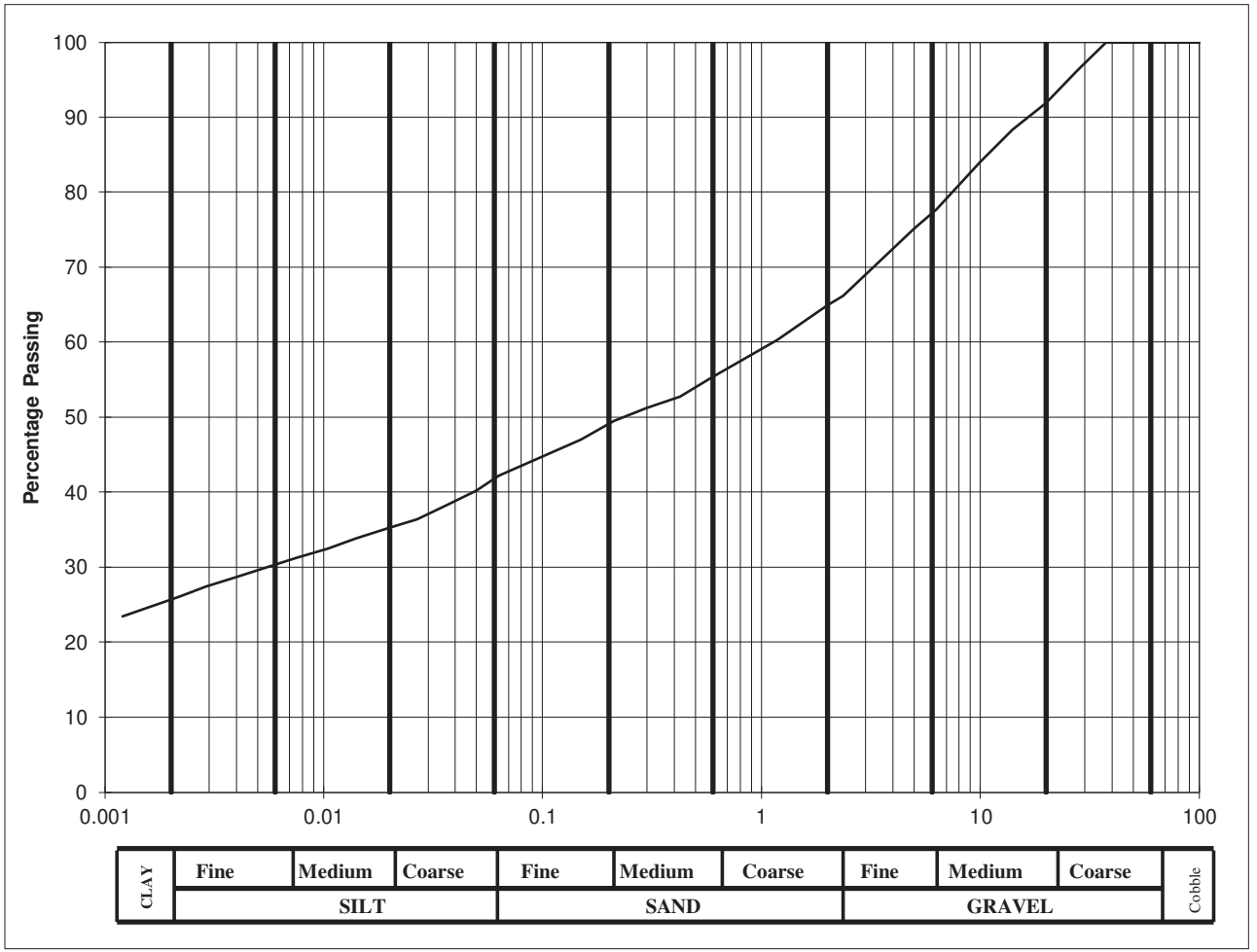
Hole ID :	BH 04
Depth, m :	3.00

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

BS 1377 Particle Size Analysis

Site Investigations Limited

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	**0.0630**	42
90	100	**0.0200**	35
75	100	**0.0060**	31
63	100	**0.0020**	26
50	100		
37.5	100		
28	96.3		
20	91.9		
14	88.3		
10	84		
6.3	77.7		
5.0	75.1		
2.36	66.2		
2.00	64.9		
1.18	60.3		
0.600	55.4		
0.425	52.7		
0.300	51.2		
0.212	49.5		
0.150	47		
0.063	42		



Cobbles, %	0
Gravel, %	35
Sand, %	23
Silt, %	16
Clay, %	26

Client :	Watfore Ltd.
Project :	Parkmore Industrial Estate, Long Mile Road, Co. Dublin

Lab. No :	24/1188
Sample No :	DC14

Hole ID :	BH 04
Depth, m :	5.00

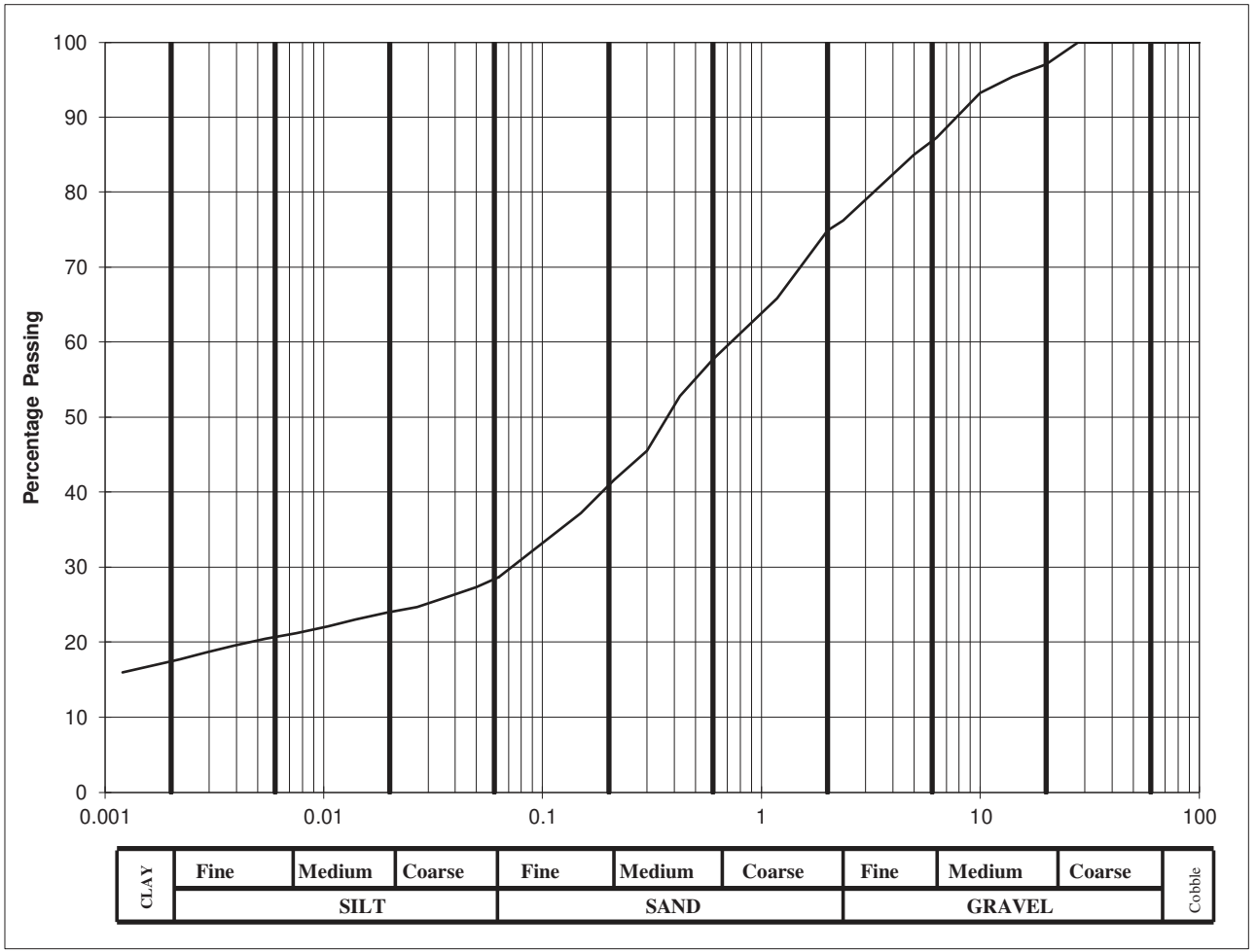
Material description :	slightly sandy gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >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**	29
90	100	**0.0200**	24
75	100	**0.0060**	21
63	100	**0.0020**	17
50	100		
37.5	100		
28	100		
20	97		
14	95.4		
10	93.2		
6.3	87.2		
5.0	85		
2.36	76.2		
2.00	74.9		
1.18	65.8		
0.600	57.7		
0.425	52.8		
0.300	45.5		
0.212	41.6		
0.150	37.2		
0.063	29		

Cobbles, %	0
Gravel, %	25
Sand, %	46
Silt, %	12
Clay, %	17



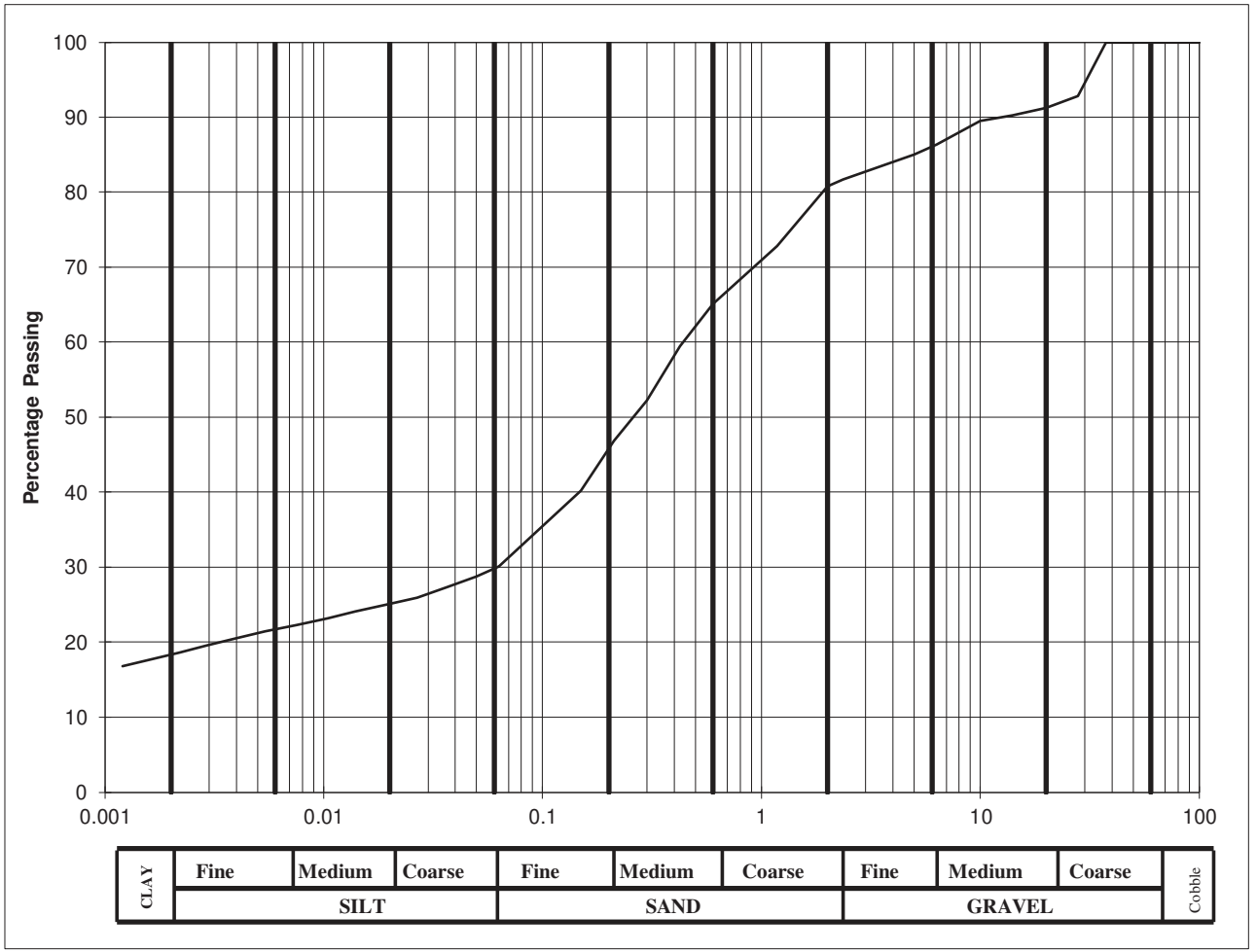
Client :	Watfore Ltd.		Lab. No :	24/1189	Hole ID :	BH 05
Project :	Parkmore Industrial Estate, Long Mile Road, Co. Dublin		Sample No :	DC20	Depth, m :	1.00

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

BS 1377 Particle Size Analysis

Site Investigations Limited

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	**0.0630**	30
90	100	**0.0200**	25
75	100	**0.0060**	22
63	100	**0.0020**	18
50	100		
37.5	100		
28	92.8		
20	91.2		
14	90.2		
10	89.5		
6.3	86.3		
5.0	85		
2.36	81.7		
2.00	80.8		
1.18	72.8		
0.600	65.1		
0.425	59.4		
0.300	52.2		
0.212	46.8		
0.150	40.2		
0.063	30		



Cobbles, %	0
Gravel, %	19
Sand, %	51
Silt, %	12
Clay, %	18

Client :	Watfore Ltd.
Project :	Parkmore Industrial Estate, Long Mile Road, Co. Dublin

Lab. No :	24/1190
Sample No :	DC21

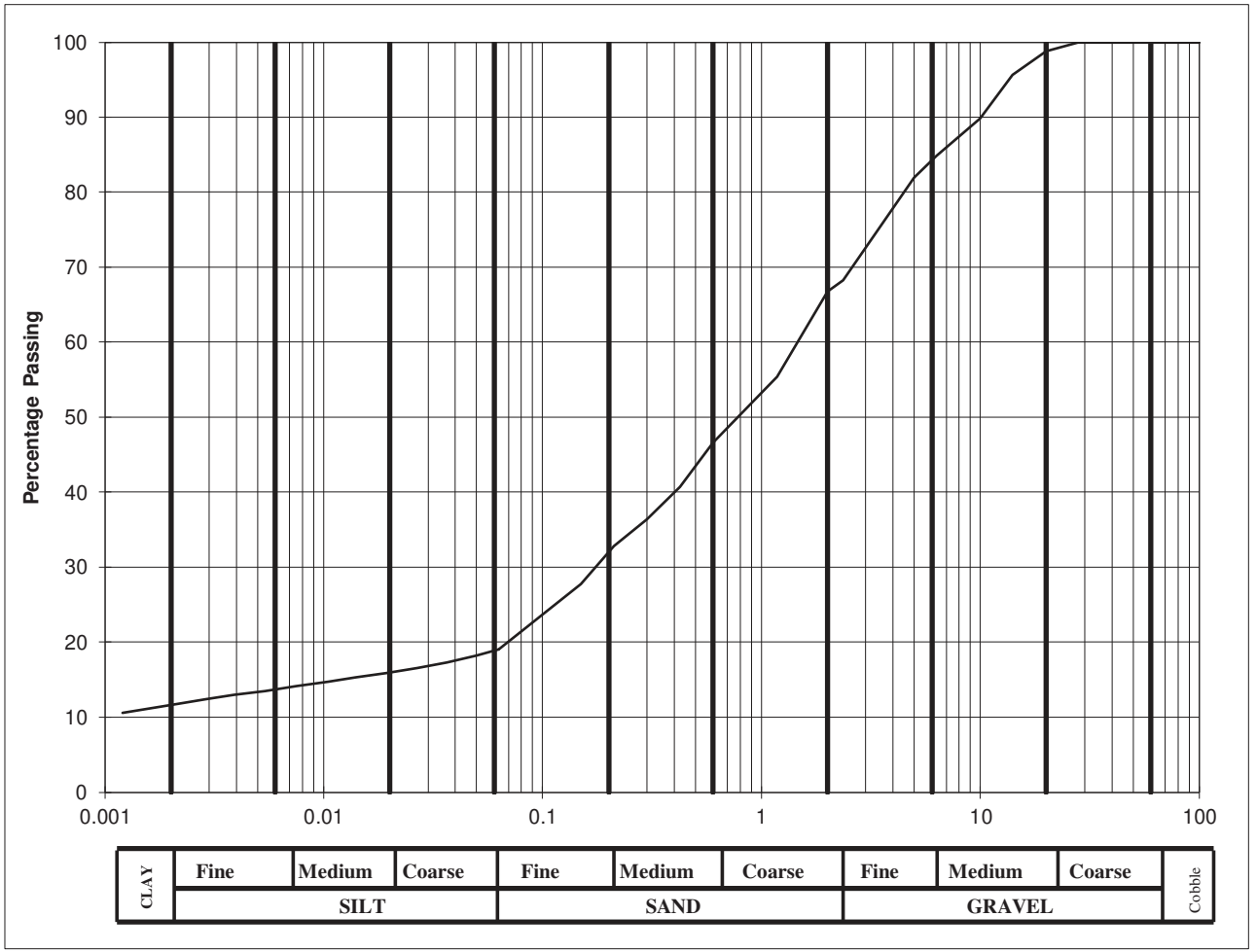
Hole ID :	BH 05
Depth, m :	2.00

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

BS 1377 Particle Size Analysis

Site Investigations Limited

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	**0.0630**	19
90	100	**0.0200**	16
75	100	**0.0060**	14
63	100	**0.0020**	12
50	100		
37.5	100		
28	100		
20	98.8		
14	95.6		
10	89.8		
6.3	84.8		
5.0	81.9		
2.36	68.2		
2.00	66.7		
1.18	55.4		
0.600	46.6		
0.425	40.7		
0.300	36.4		
0.212	32.8		
0.150	27.7		
0.063	19		



Cobbles, %	0
Gravel, %	33
Sand, %	48
Silt, %	7
Clay, %	12

Client :	Watfore Ltd.
Project :	Parkmore Industrial Estate, Long Mile Road, Co. Dublin

Lab. No :	24/1191
Sample No :	DC23

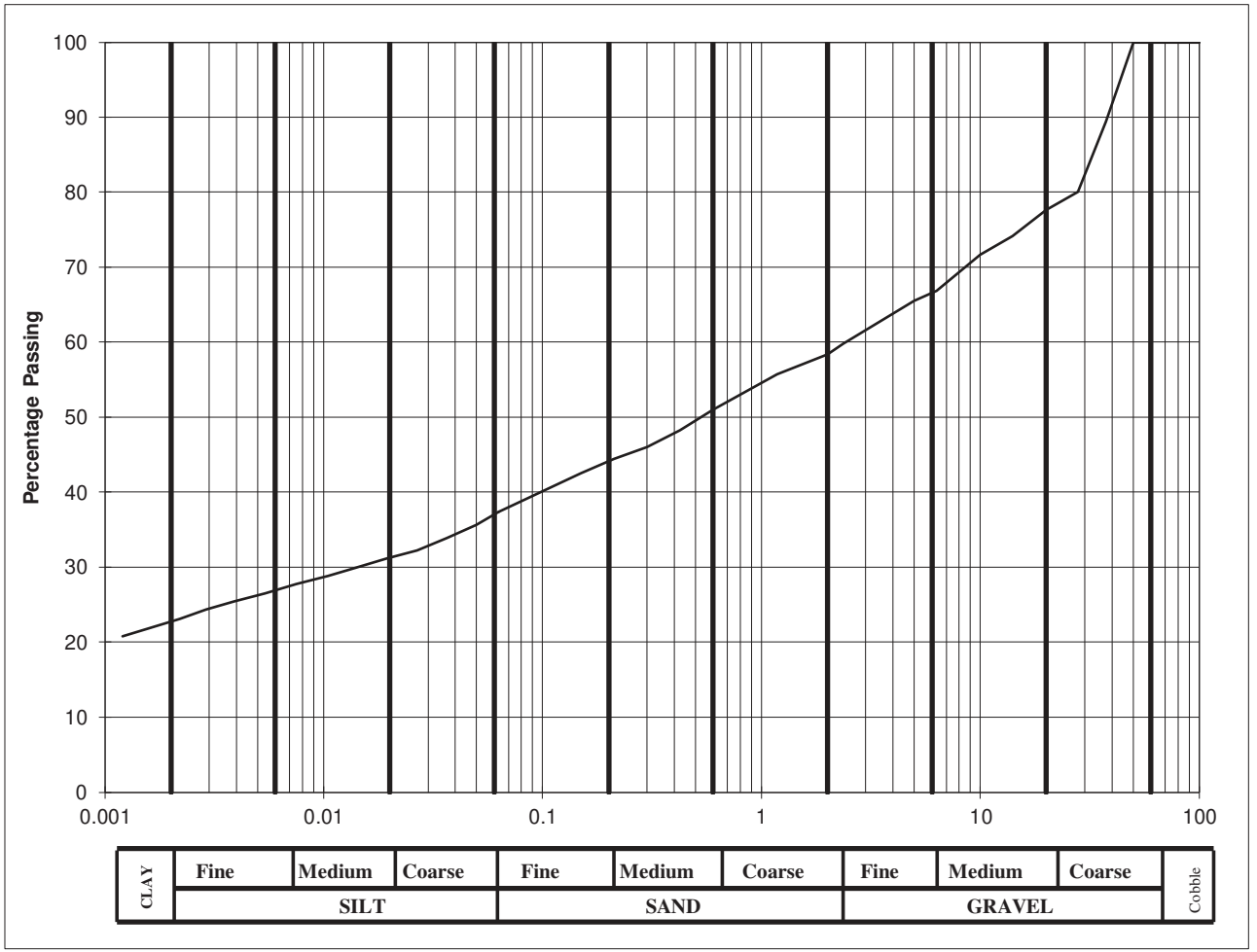
Hole ID :	BH 05
Depth, m :	4.00

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

BS 1377 Particle Size Analysis

Site Investigations Limited

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	**0.0630**	37
90	100	**0.0200**	32
75	100	**0.0060**	27
63	100	**0.0020**	23
50	100		
37.5	89.4		
28	80		
20	77.6		
14	74.1		
10	71.6		
6.3	66.8		
5.0	65.5		
2.36	59.8		
2.00	58.4		
1.18	55.7		
0.600	51		
0.425	48.2		
0.300	46		
0.212	44.4		
0.150	42.5		
0.063	37		



Cobbles, %	0
Gravel, %	42
Sand, %	21
Silt, %	14
Clay, %	23

Client :	Watfore Ltd.
Project :	Parkmore Industrial Estate, Long Mile Road, Co. Dublin

Lab. No :	24/1192
Sample No :	DC24

Hole ID :	BH 05
Depth, m :	5.00

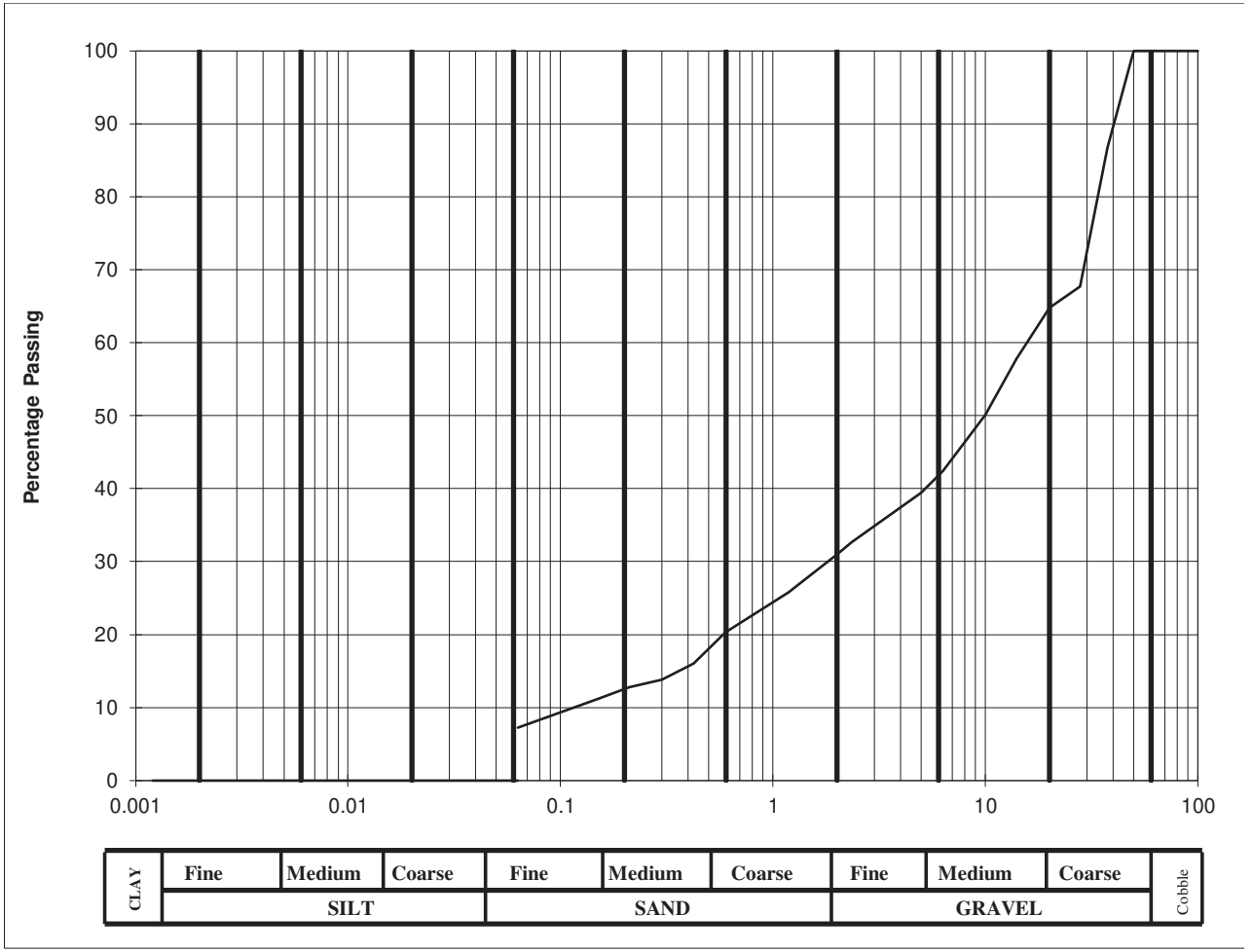
Material description :	slightly sandy gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >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	86.7		
28	67.7		
20	64.8		
14	57.8		
10	50.1		
6.3	42.4		
5.0	39.4		
2.36	32.7		
2.00	31		
1.18	25.8		
0.600	20.3		
0.425	16		
0.300	13.8		
0.212	12.8		
0.150	11.2		
0.063	7		

Cobbles, %	0
Gravel, %	69
Sand, %	24
Clay / Silt, %	7



Client :	Watfore Ltd.
Project :	Parkmore Industrial Estate, Long Mile Road, Co. Dublin

Lab. No :	24/1193
Sample No :	DC15

Hole ID :	BH 06
Depth, m :	1.00

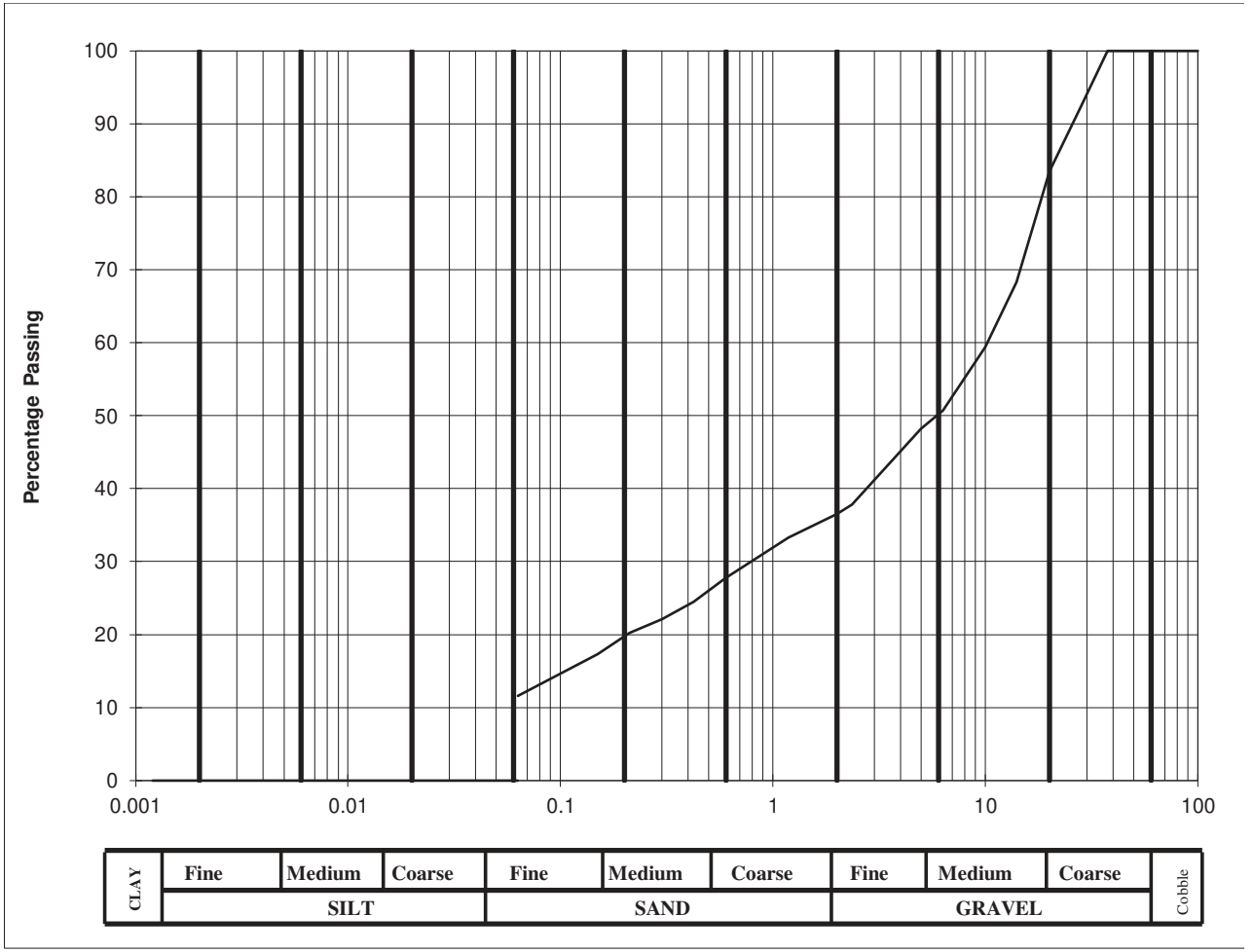
Material description :	clayey very sandy GRAVEL
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified 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	92.1		
20	83.5		
14	68.3		
10	59.4		
6.3	50.7		
5.0	48.2		
2.36	37.8		
2.00	36.5		
1.18	33.3		
0.600	27.7		
0.425	24.5		
0.300	22.1		
0.212	20.2		
0.150	17.3		
0.063	12		

Cobbles, %	0
Gravel, %	64
Sand, %	25
Clay / Silt, %	12



Client :	Watfore Ltd.
Project :	Parkmore Industrial Estate, Long Mile Road, Co. Dublin

Lab. No :	24/1194
Sample No :	DC16

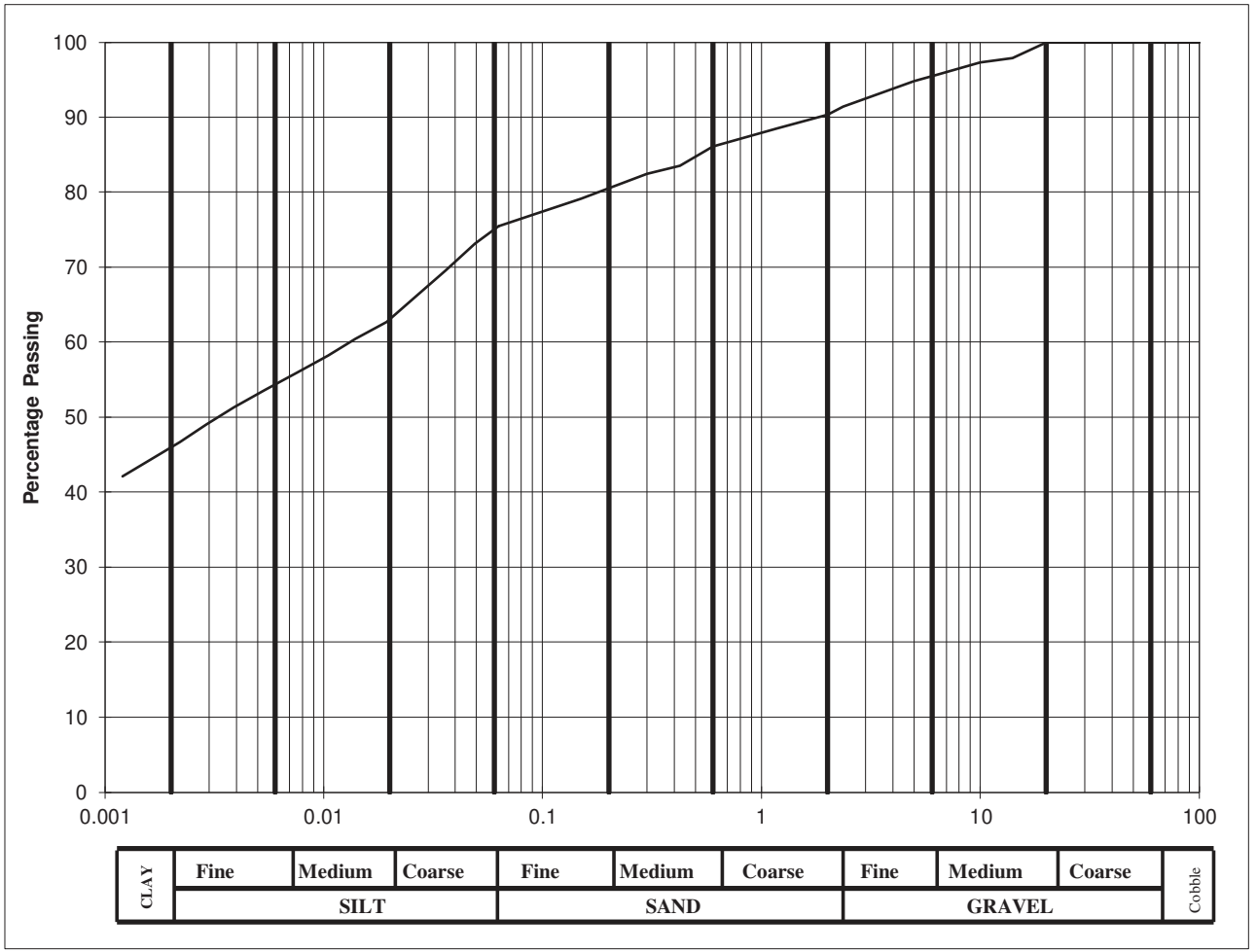
Hole ID :	BH 06
Depth, m :	2.00

Material description :	clayey very sandy GRAVEL
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**	76
90	100	**0.0200**	63
75	100	**0.0060**	54
63	100	**0.0020**	46
50	100		
37.5	100		
28	100		
20	100		
14	97.9		
10	97.3		
6.3	95.6		
5.0	94.8		
2.36	91.4		
2.00	90.3		
1.18	88.5		
0.600	86.1		
0.425	83.5		
0.300	82.4		
0.212	80.8		
0.150	79.1		
0.063	76		



Cobbles, %	0
Gravel, %	10
Sand, %	14
Silt, %	30
Clay, %	46

Client :	Watfore Ltd.
Project :	Parkmore Industrial Estate, Long Mile Road, Co. Dublin

Lab. No :	24/1195
Sample No :	DC18

Hole ID :	BH 06
Depth, m :	4.00

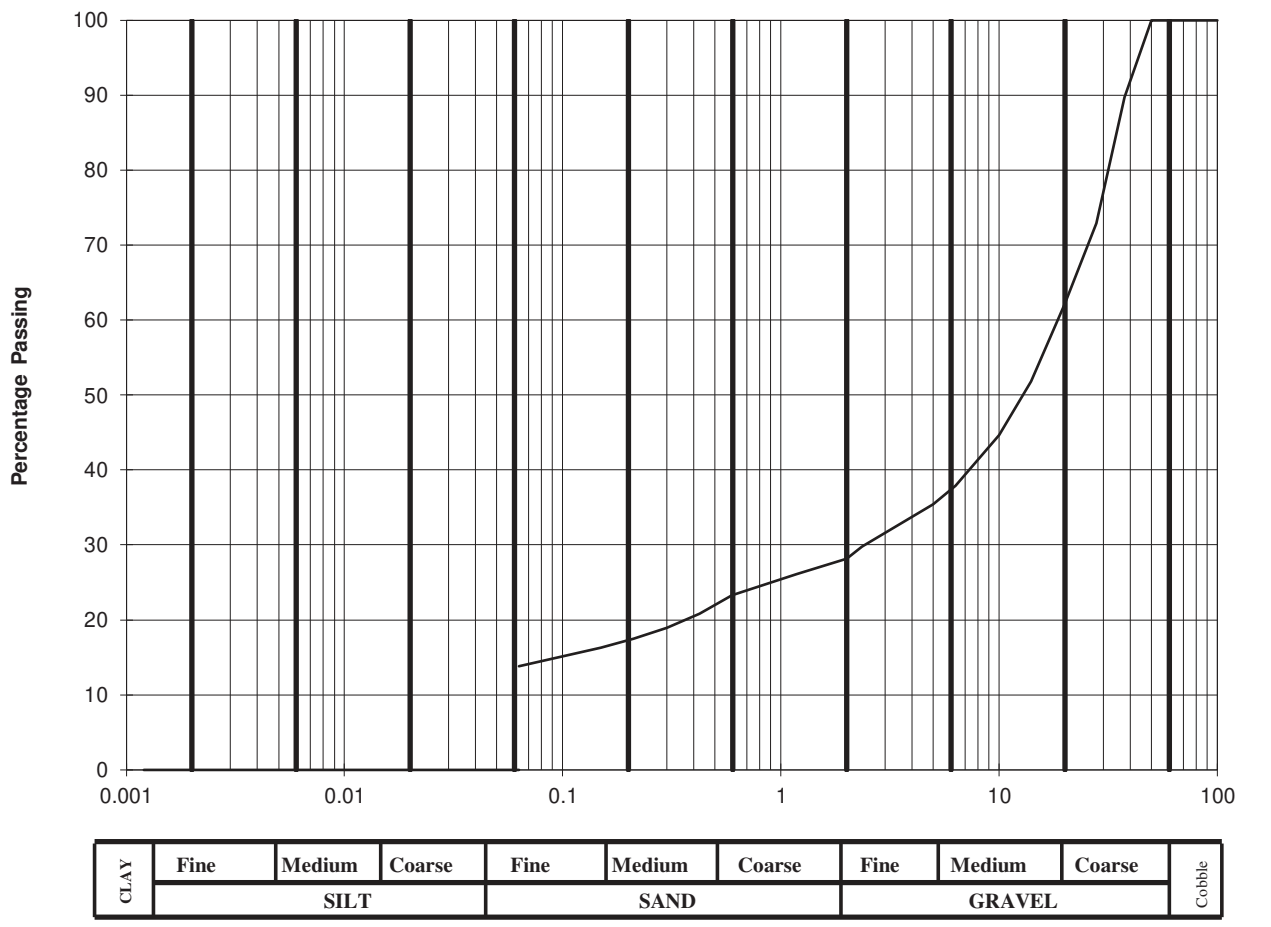
Material description :	slightly sandy slightly gravelly silty CLAY
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay 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	89.7		
28	72.9		
20	62.2		
14	51.8		
10	44.6		
6.3	37.9		
5.0	35.4		
2.36	29.8		
2.00	28.2		
1.18	26.1		
0.600	23.3		
0.425	20.8		
0.300	18.9		
0.212	17.5		
0.150	16.3		
0.063	14		

Cobbles, %	0
Gravel, %	72
Sand, %	14
Clay / Silt, %	14



Client :	Watfore Ltd.
Project :	Parkmore Industrial Estate, Long Mile Road, Co. Dublin

Lab. No :	24/1196
Sample No :	DC19

Hole ID :	BH 06
Depth, m :	5.00

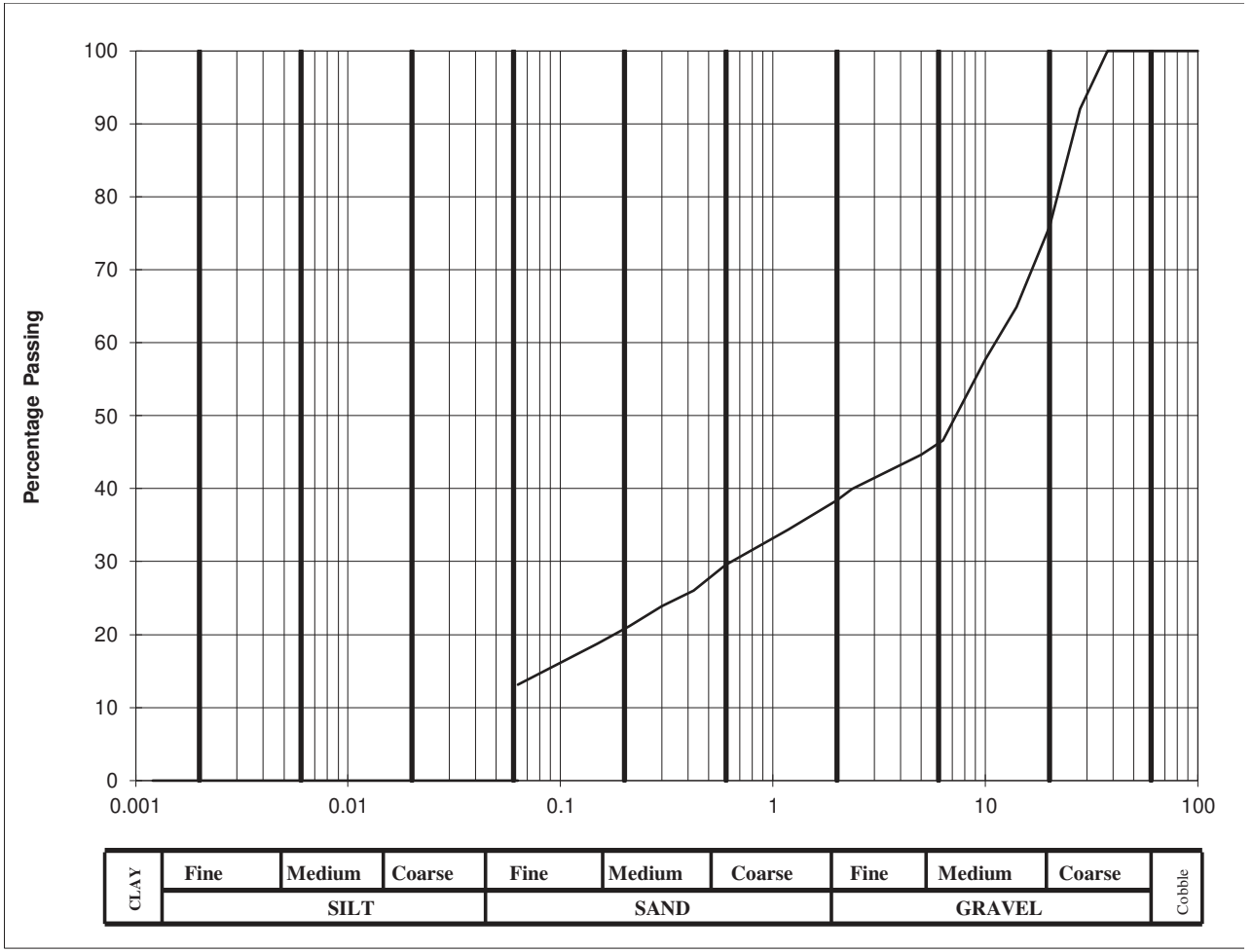
Material description :	clayey sandy GRAVEL
Remarks :	Soils with clay or silt content between 15% - 35% can be classified as clay or silt depending on the field Engineers assessment of in-situ behaviour. Where material is for re-use and therefore disturbed, only soils with clay or silt >35% are classified 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	92		
20	75.9		
14	64.9		
10	57.7		
6.3	46.6		
5.0	44.6		
2.36	39.9		
2.00	38.4		
1.18	34.4		
0.600	29.5		
0.425	26		
0.300	23.9		
0.212	21.2		
0.150	18.8		
0.063	13		

Cobbles, %	0
Gravel, %	62
Sand, %	25
Clay / Silt, %	13



Client :	Watfore Ltd.
Project :	Parkmore Industrial Estate, Long Mile Road, Co. Dublin

Lab. No :	24/1197
Sample No :	DM02

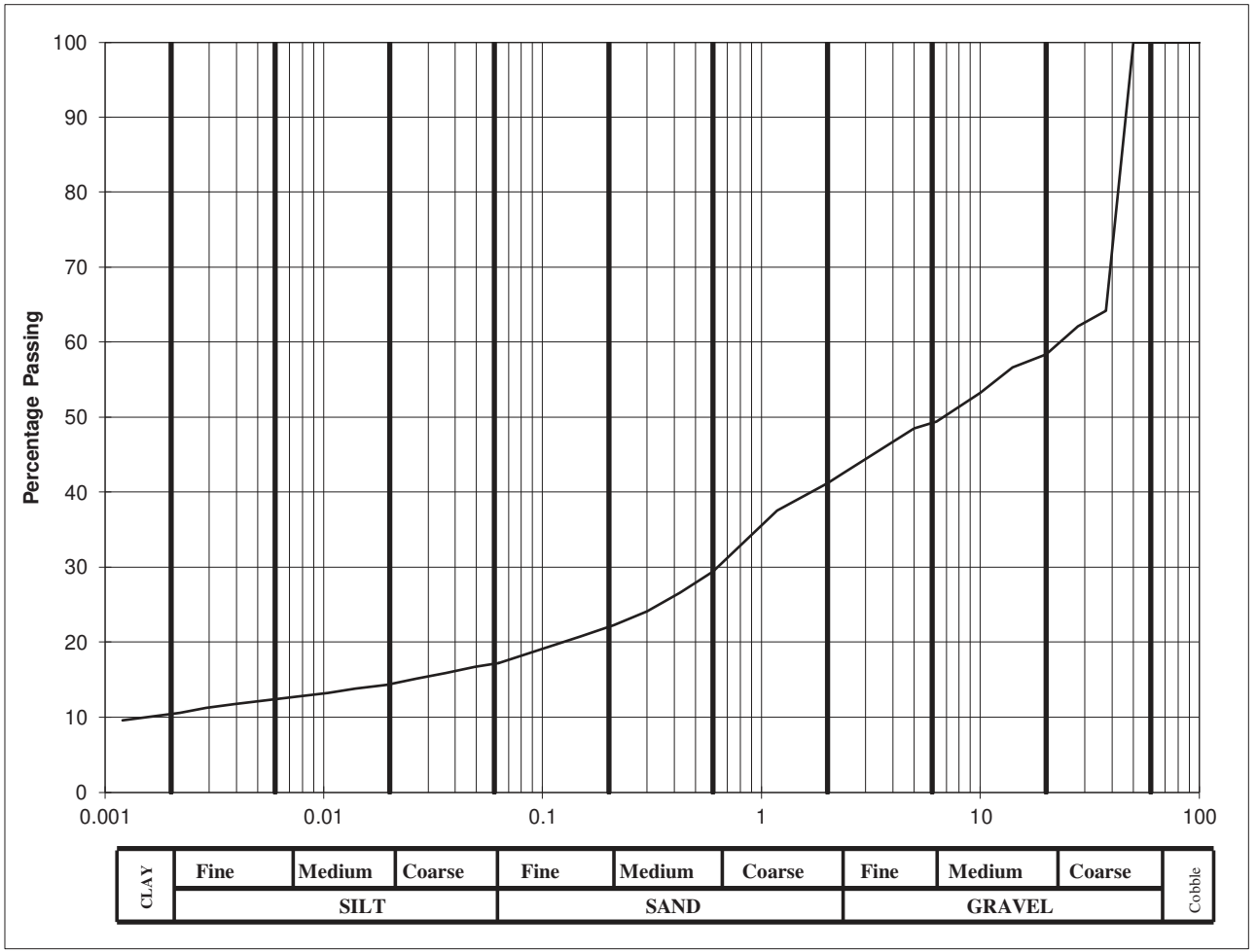
Hole ID :	TP 01
Depth, m :	1.00

Material description :	clayey very sandy GRAVEL
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**	17
90	100	**0.0200**	15
75	100	**0.0060**	13
63	100	**0.0020**	11
50	100		
37.5	64.2		
28	62.1		
20	58.4		
14	56.6		
10	53.2		
6.3	49.4		
5.0	48.5		
2.36	42.5		
2.00	41.2		
1.18	37.5		
0.600	29.4		
0.425	26.6		
0.300	24.1		
0.212	22.3		
0.150	20.8		
0.063	17		



Cobbles, %	0
Gravel, %	59
Sand, %	24
Silt, %	6
Clay, %	11

Client :	Watfore Ltd.
Project :	Parkmore Industrial Estate, Long Mile Road, Co. Dublin

Lab. No :	24/1198
Sample No :	DM04

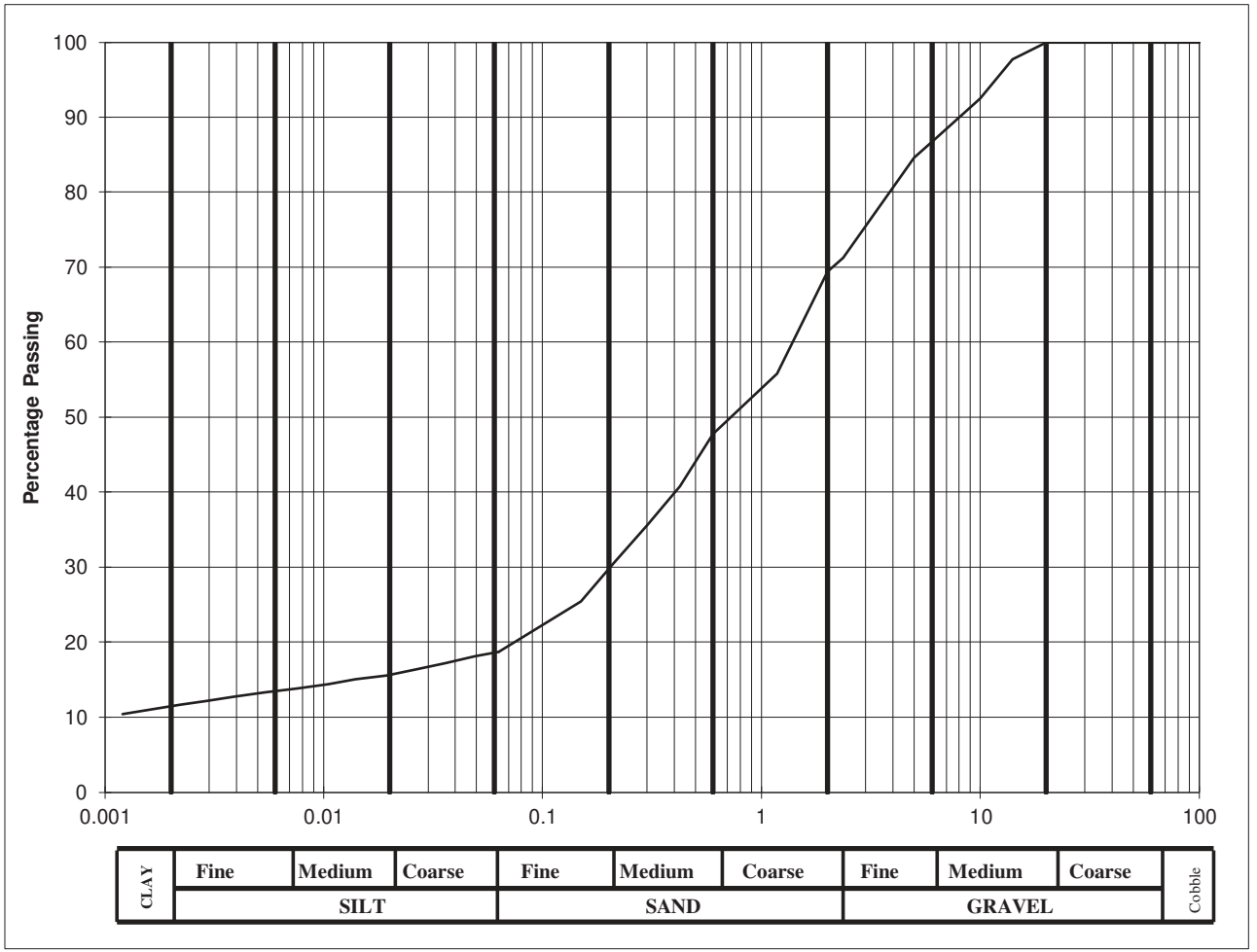
Hole ID :	TP 01
Depth, m :	2.50

Material description :	clayey very sandy GRAVEL
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**	19
90	100	**0.0200**	16
75	100	**0.0060**	13
63	100	**0.0020**	12
50	100		
37.5	100		
28	100		
20	100		
14	97.7		
10	92.5		
6.3	87.2		
5.0	84.6		
2.36	71.2		
2.00	69.4		
1.18	55.8		
0.600	47.7		
0.425	40.8		
0.300	35.5		
0.212	30.6		
0.150	25.4		
0.063	19		



Cobbles, %	0
Gravel, %	31
Sand, %	50
Silt, %	7
Clay, %	12

Client :	Watfore Ltd.
Project :	Parkmore Industrial Estate, Long Mile Road, Co. Dublin

Lab. No :	24/1199
Sample No :	DM06

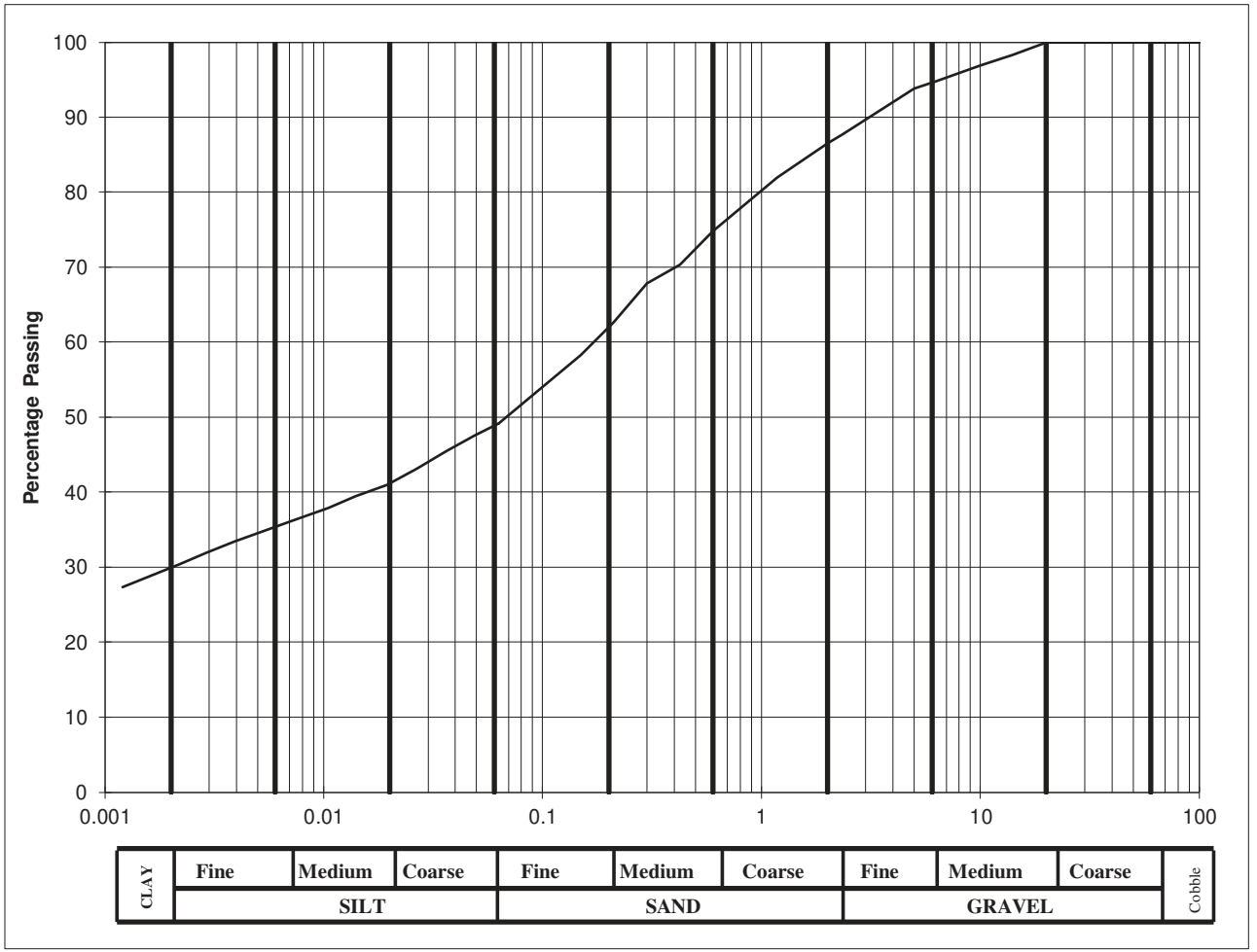
Hole ID :	TP 02
Depth, m :	1.00

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

BS 1377 Particle Size Analysis

Site Investigations Limited

BS Sieve size, mm	Percent passing	Hydrometer analysis	
		Diameter, mm	% passing
100	100	**0.0630**	49
90	100	**0.0200**	41
75	100	**0.0060**	35
63	100	**0.0020**	30
50	100		
37.5	100		
28	100		
20	100		
14	98.3		
10	96.9		
6.3	94.8		
5.0	93.8		
2.36	87.7		
2.00	86.5		
1.18	81.9		
0.600	74.8		
0.425	70.3		
0.300	67.8		
0.212	62.7		
0.150	58.3		
0.063	49		



Cobbles, %	0
Gravel, %	14
Sand, %	38
Silt, %	19
Clay, %	30

Client :	Watfore Ltd.
Project :	Parkmore Industrial Estate, Long Mile Road, Co. Dublin

Lab. No :	24/1200
Sample No :	DM08

Hole ID :	TP 02
Depth, m :	2.50

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

Determination of Shear Strength by Laboratory Vane Method BS:1377:Part 7:Method 3

Client	Watfore Ltd.
Site	Parkmore Industrial Estate, Long Mile Road, Co. Dublin
S.I.File No	6332 / 24
Test Lab	Site Investigations Ltd., Carhugar The Grange, 12th Lock Rd., Lucan Co. Dublin. Tel (01) 6108768 Email:info@siteinvestigations.ie
Report date	30th September 2024

Hole Id	Depth	Sample No.	Lab Ref No.	Sample Type	Vane Used	Moisture Content at test horizon %	Vane Sheer Strength (Kpa) **KN/m^2**	Soil Description at Horizon	Comments
BH01	2.00	DC02	24/1176	B	19mm	5.4	14.00		
BH02	1.00	DC06	24/1179	B	19mm	18.1	22.00		
BH03	1.00	DC25	24/1182	B	19mm	9.8	10.00		
BH04	1.00	DC10	24/1185	B	19mm	6.1	26.00		
BH05	1.00	DC20	24/1189	B	19mm	20.9	19.00		
BH06	2.00	DC16	24/1194	B	19mm	6.4	11.00		

Determination of Moisture Content BS 1377: Part 2: Method 3
Determination of Moisture Condition Value BS 1377: Part 4

Client	Watfore Ltd.
Site	Parkmore Industrial Estate, Long Mile Road, Co. Dublin
S.I.File No	6332 / 24
Test Lab	Site Investigations Ltd., Carhugar The Grange, 12th Lock Rd., Lucan Co. Dublin. Email info@siteinvestigations.ie
Report date	25th September 2024

Hole ID	Depth (m)	Sample No.	Lab Ref No.	Sample Type	Natural Moisture Content %	Moisture Condition Value	Remarks
BH01	2.00	DC02	24/1176	B	5.4	12.9	
BH01	4.00	DC04	24/1178	B	11.9	6.2	
BH02	1.00	DC06	24/1179	B	18.1	4.0	
BH03	1.00	DC25	24/1182	B	9.8	9.2	
BH04	1.00	DC10	24/1185	B	6.1	10.3	
BH04	3.00	DC12	24/1187	B	16.8	3.3	
BH05	1.00	DC20	24/1189	B	20.9	3.9	
BH06	2.00	DC16	24/1194	B	6.4	11.3	
TP01	1.00	DM02	24/1197	B	8.8	10.5	
TP02	1.00	DM06	24/1199	B	21.4	3.2	

Moisture condition Value / Dry Density / Moiture Content relationship in accordance with BS 1377 : Part 4

Client	Watfore Ltd.
Site	Parkmore Industrial Estate, Long Mile Road, Co. Dublin
S.I.File No	6332 / 24
Test Lab	Site Investigations Ltd., Carhugar, The Grange, 12th Lock Rd., Lucan, Co. Dublin Tel 01 6108768
Report Date	30th September 2024

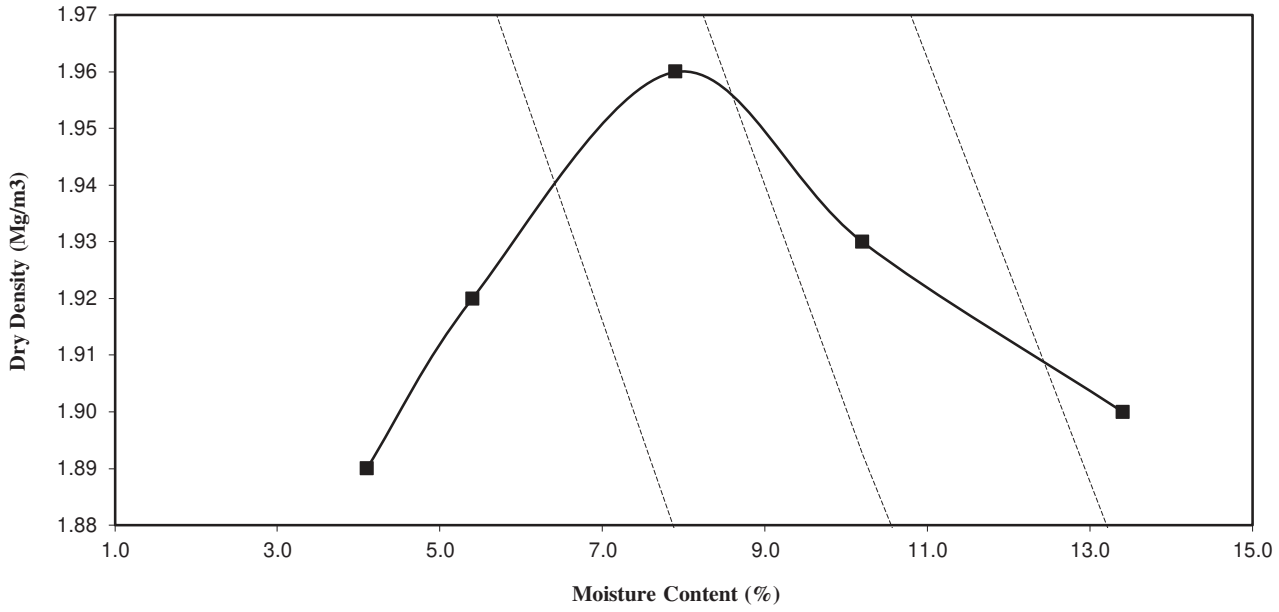
Hole Id:	BH01
Depth (mBGL):	2.00
Lab Ref:	24/1176
Sample No	DC02

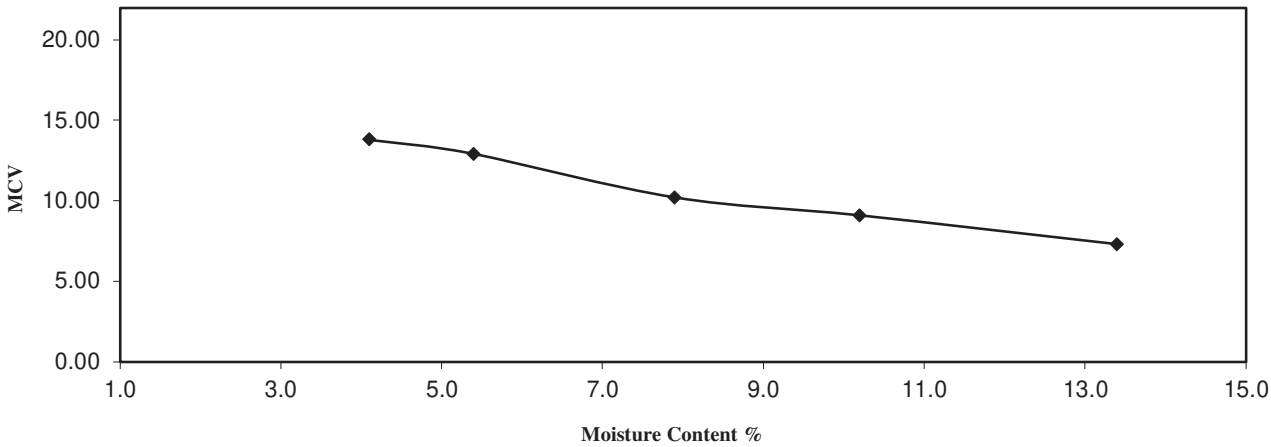
Particle Density
2.5
Assumed

Natural Moisture Content (%)	5.4
Rammer Used	4.5Kg
Maximum Dry Density (Mg/m^3)	1.96
Optimum Moisture Content (%)	7.9

Point Number	**1**	**2**	**3**	**4**	**5**
Moisture content	4.1	5.4	7.9	10.2	13.4
Dry Density (Mg/m3)	1.89	1.92	1.96	1.93	1.90
MCV	13.80	12.90	10.20	9.10	7.30

Material Description
clayey very sandy GRAVEL





Moisture condition Value / Dry Density / Moiture Content relationship in accordance with BS 1377 : Part 4

Client	Watfore Ltd.
Site	Parkmore Industrial Estate, Long Mile Road, Co. Dublin
S.I.File No	6332 / 24
Test Lab	Site Investigations Ltd., Carhugar, The Grange, 12th Lock Rd., Lucan, Co. Dublin Tel 01 6108768
Report Date	30th September 2024

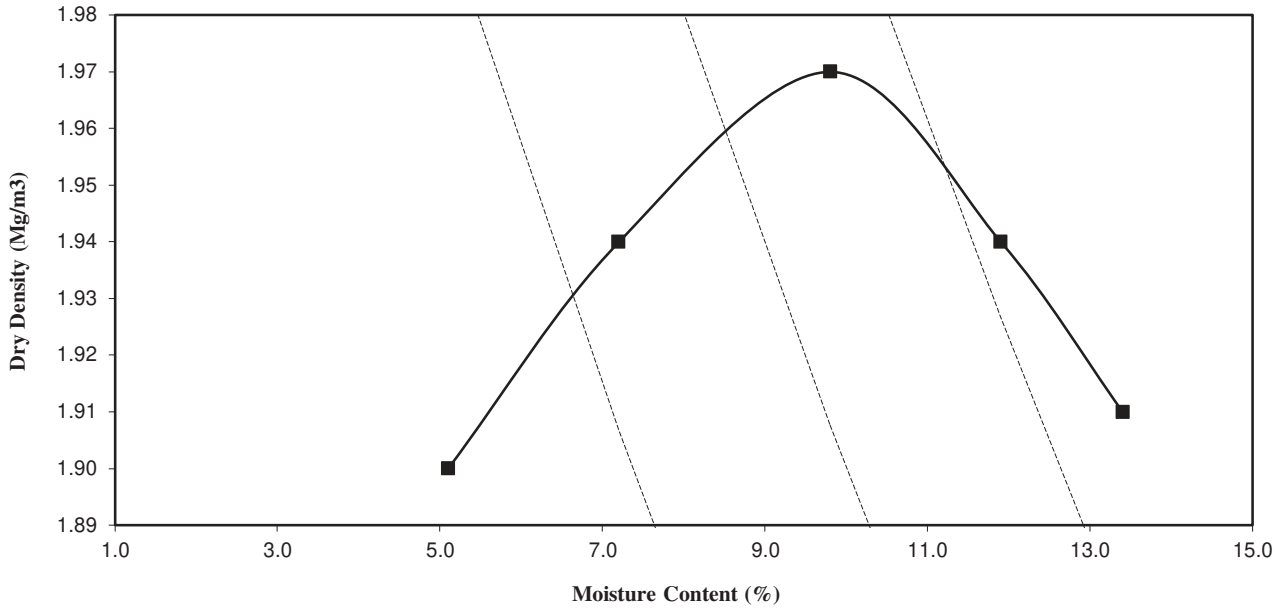
Hole Id:	BH01
Depth (mBGL):	4.00
Lab Ref:	24/1178
Sample No	DC04

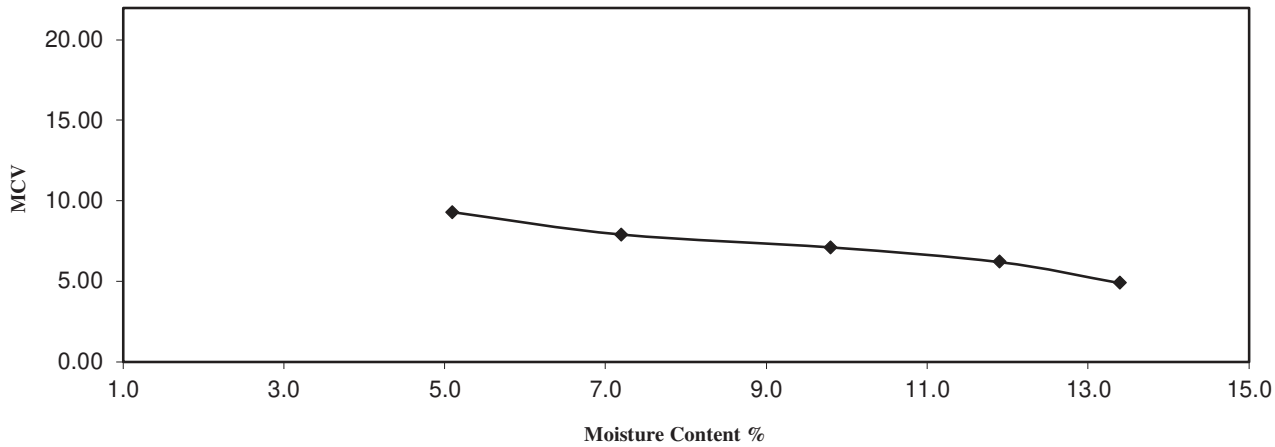
Particle Density
2.5
Assumed

Natural Moisture Content (%)	11.9
Rammer Used	4.5Kg
Maximum Dry Density (Mg/m^3)	1.97
Optimum Moisture Content (%)	9.8

Point Number	**1**	**2**	**3**	**4**	**5**
Moisture content	5.1	7.2	9.8	11.9	13.4
Dry Density (Mg/m3)	1.90	1.94	1.97	1.94	1.91
MCV	9.30	7.90	7.10	6.20	4.90

Material Description
slightly sandy slightly gravelly silty CLAY





Moisture condition Value / Dry Density / Moiture Content relationship in accordance with BS 1377 : Part 4

Client	Watfore Ltd.
Site	Parkmore Industrial Estate, Long Mile Road, Co. Dublin
S.I.File No	6332 / 24
Test Lab	Site Investigations Ltd., Carhugar, The Grange, 12th Lock Rd., Lucan, Co. Dublin Tel 01 6108768
Report Date	30th September 2024

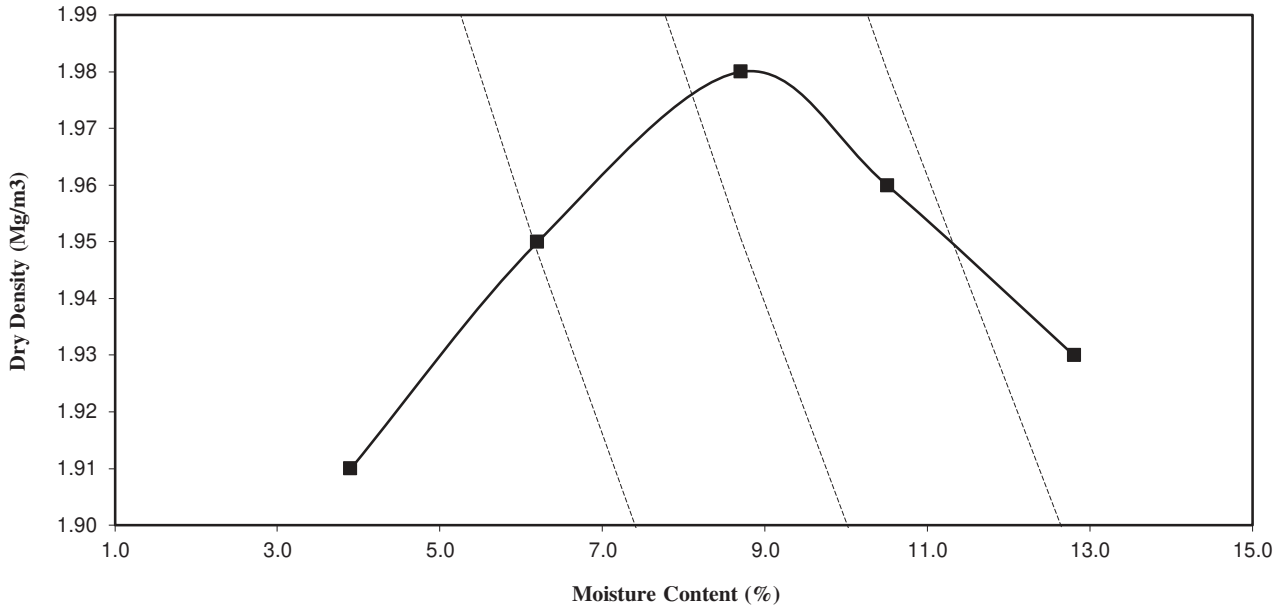
Hole Id:	BH02
Depth (mBGL):	1.00
Lab Ref:	24/1179
Sample No	DC06

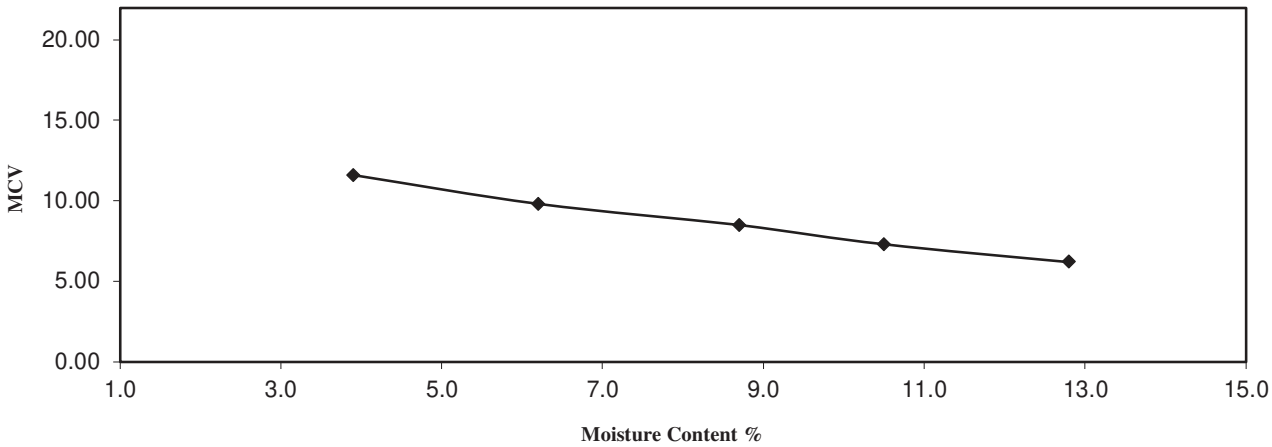
Particle Density
2.5
Assumed

Natural Moisture Content (%)	18.1
Rammer Used	4.5Kg
Maximum Dry Density (Mg/m^3)	1.98
Optimum Moisture Content (%)	8.9

Point Number	**1**	**2**	**3**	**4**	**5**
Moisture content	3.9	6.2	8.7	10.5	12.8
Dry Density (Mg/m3)	1.91	1.95	1.98	1.96	1.93
MCV	11.60	9.80	8.50	7.30	6.20

Material Description
sandy slightly gravelly silty CLAY





Moisture condition Value / Dry Density / Moiture Content relationship in accordance with BS 1377 : Part 4

Client	Watfore Ltd.
Site	Parkmore Industrial Estate, Long Mile Road, Co. Dublin
S.I.File No	6332 / 24
Test Lab	Site Investigations Ltd., Carhugar, The Grange, 12th Lock Rd., Lucan, Co. Dublin Tel 01 6108768
Report Date	30th September 2024

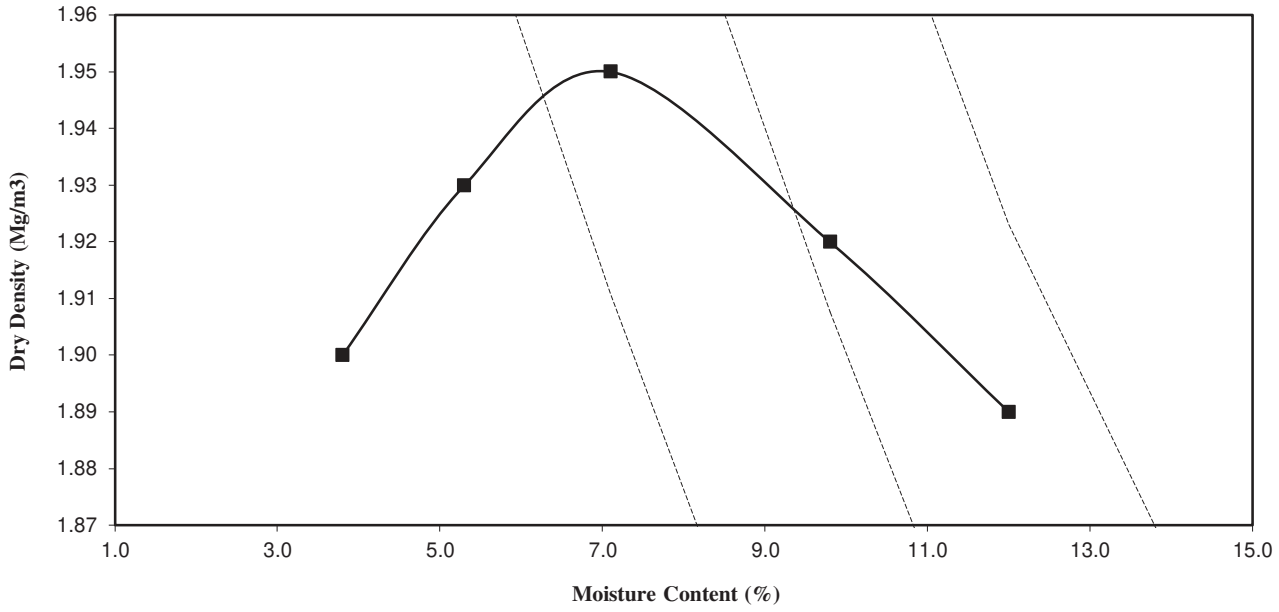
Hole Id:	BH03
Depth (mBGL):	1.00
Lab Ref:	24/1182
Sample No	DC25

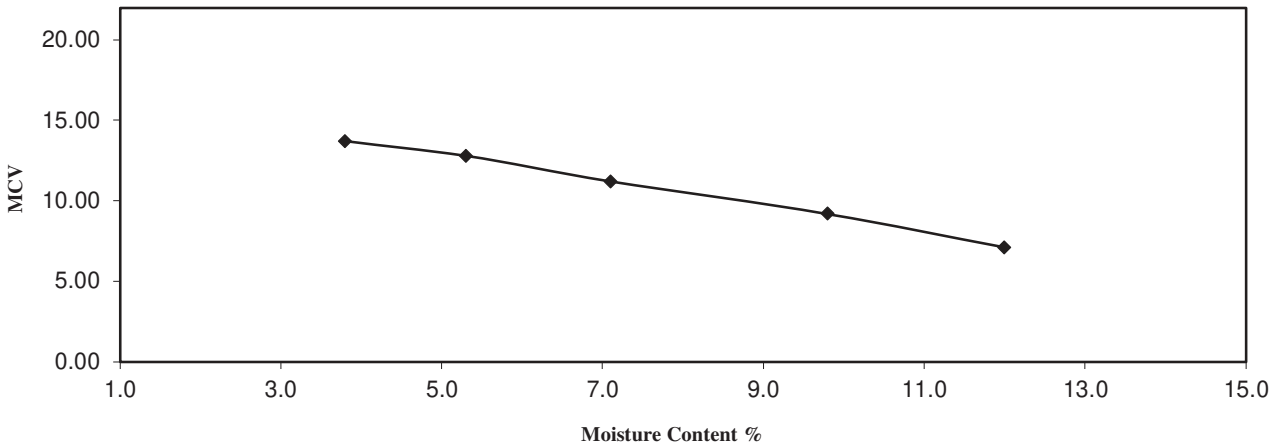
Particle Density
2.5
Assumed

Natural Moisture Content (%)	9.8
Rammer Used	4.5Kg
Maximum Dry Density (Mg/m^3)	1.95
Optimum Moisture Content (%)	7.0

Point Number	**1**	**2**	**3**	**4**	**5**
Moisture content	3.8	5.3	7.1	9.8	12.0
Dry Density (Mg/m3)	1.90	1.93	1.95	1.92	1.89
MCV	13.70	12.80	11.20	9.20	7.10

Material Description
clayey very sandy GRAVEL





Moisture condition Value / Dry Density / Moiture Content relationship in accordance with BS 1377 : Part 4

Client	Watfore Ltd.
Site	Parkmore Industrial Estate, Long Mile Road, Co. Dublin
S.I.File No	6332 / 24
Test Lab	Site Investigations Ltd., Carhugar, The Grange, 12th Lock Rd., Lucan, Co. Dublin Tel 01 6108768
Report Date	30th September 2024

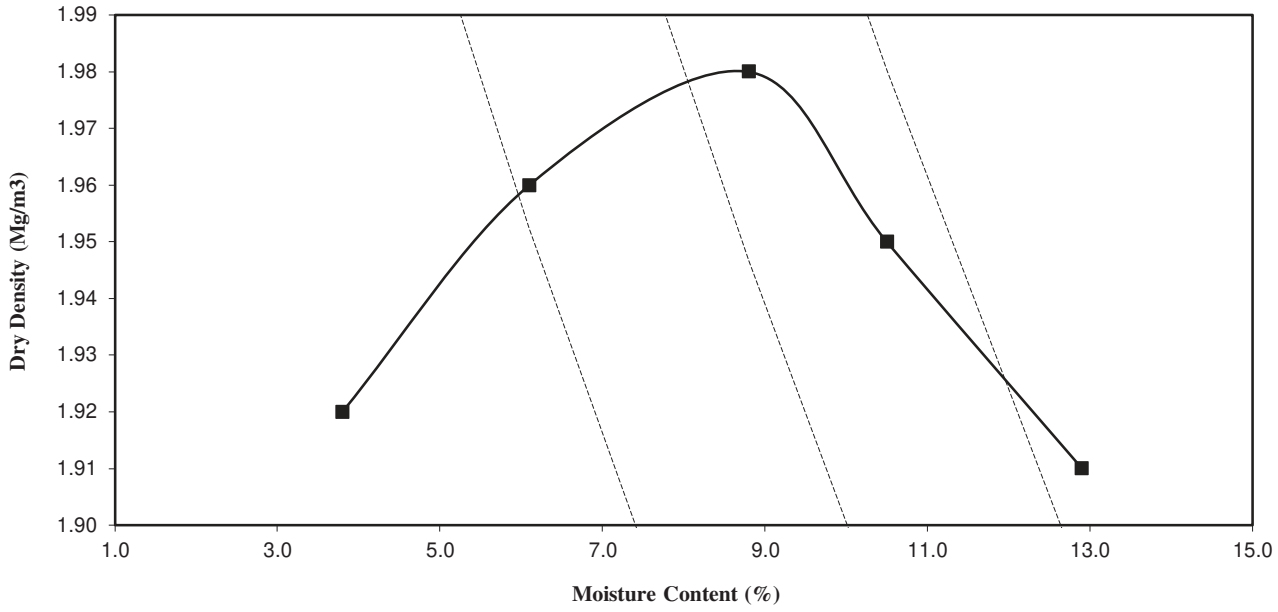
Hole Id:	BH04
Depth (mBGL):	1.00
Lab Ref:	24/1185
Sample No	DC10

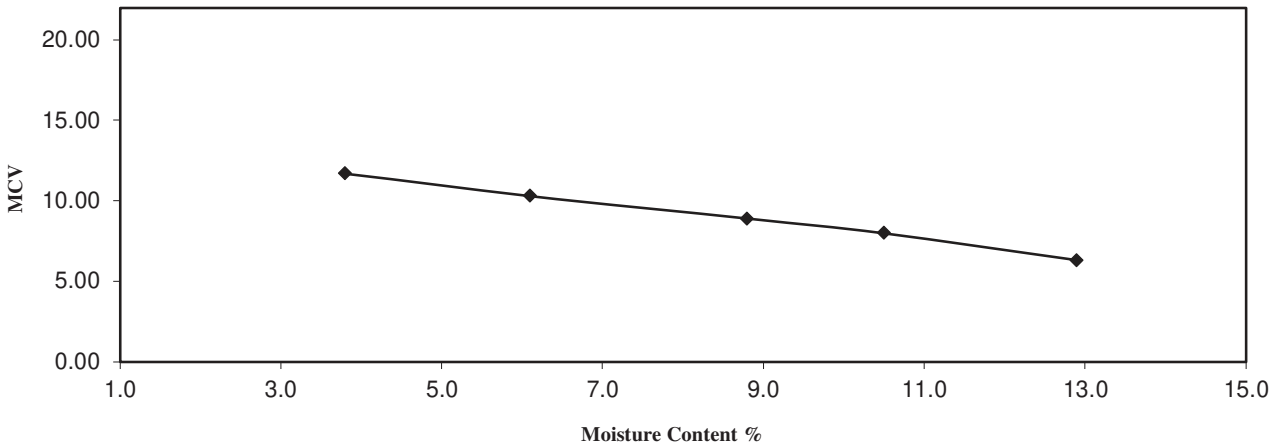
Particle Density
2.5
Assumed

Natural Moisture Content (%)	6.1
Rammer Used	4.5Kg
Maximum Dry Density (Mg/m^3)	1.98
Optimum Moisture Content (%)	8.6

Point Number	**1**	**2**	**3**	**4**	**5**
Moisture content	3.8	6.1	8.8	10.5	12.9
Dry Density (Mg/m3)	1.92	1.96	1.98	1.95	1.91
MCV	11.70	10.30	8.90	8.00	6.30

Material Description
sandy slightly gravelly silty CLAY





Moisture condition Value / Dry Density / Moiture Content relationship in accordance with BS 1377 : Part 4

Client	Watfore Ltd.
Site	Parkmore Industrial Estate, Long Mile Road, Co. Dublin
S.I.File No	6332 / 24
Test Lab	Site Investigations Ltd., Carhugar, The Grange, 12th Lock Rd., Lucan, Co. Dublin Tel 01 6108768
Report Date	30th September 2024

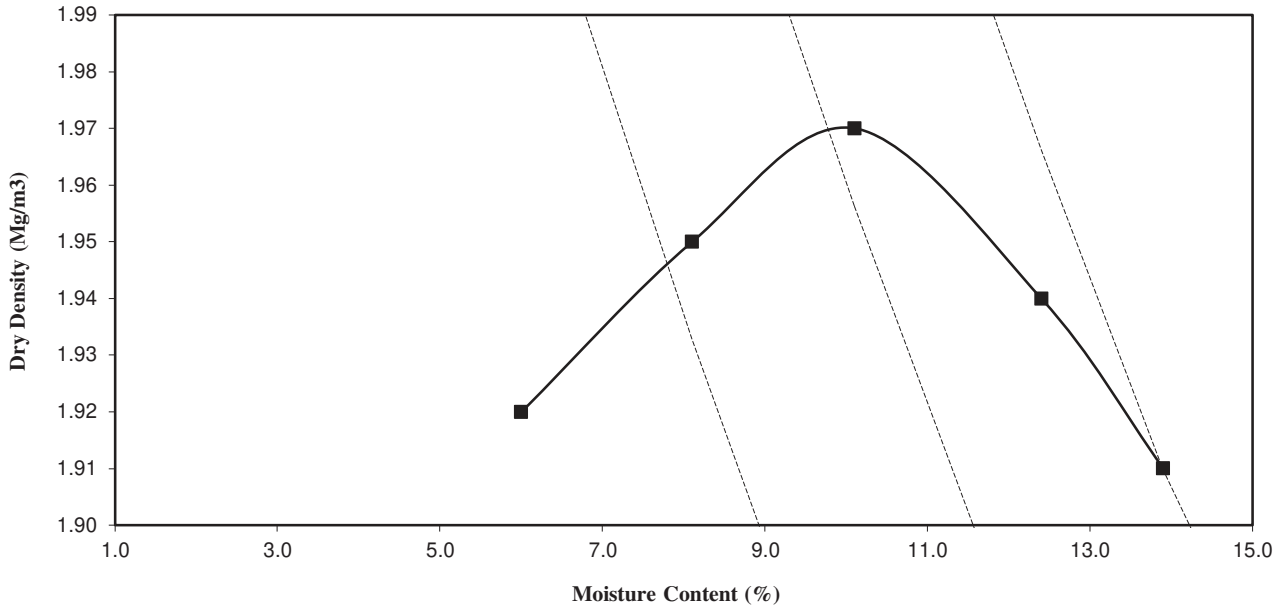
Hole Id:	BH04
Depth (mBGL):	3.00
Lab Ref:	24/1187
Sample No	DC12

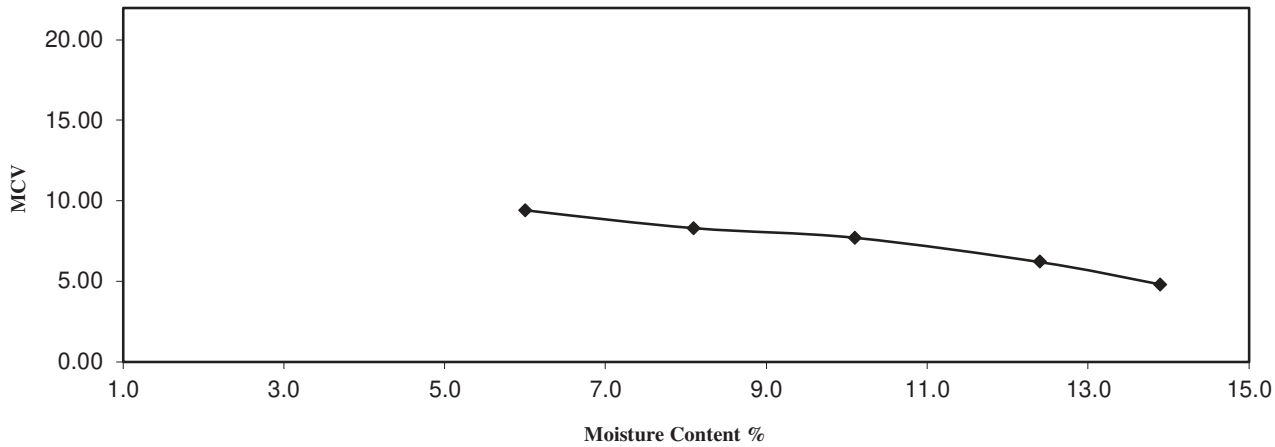
Particle Density
2.6
Assumed

Natural Moisture Content (%)	16.8
Rammer Used	4.5Kg
Maximum Dry Density (Mg/m^3)	1.97
Optimum Moisture Content (%)	9.9

Point Number	**1**	**2**	**3**	**4**	**5**
Moisture content	6.0	8.1	10.1	12.4	13.9
Dry Density (Mg/m3)	1.92	1.95	1.97	1.94	1.91
MCV	9.40	8.30	7.70	6.20	4.80

Material Description
sandy slightly gravelly silty CLAY





Moisture condition Value / Dry Density / Moiture Content relationship in accordance with BS 1377 : Part 4

Client	Watfore Ltd.
Site	Parkmore Industrial Estate, Long Mile Road, Co. Dublin
S.I.File No	6332 / 24
Test Lab	Site Investigations Ltd., Carhugar, The Grange, 12th Lock Rd., Lucan, Co. Dublin Tel 01 6108768
Report Date	30th September 2024

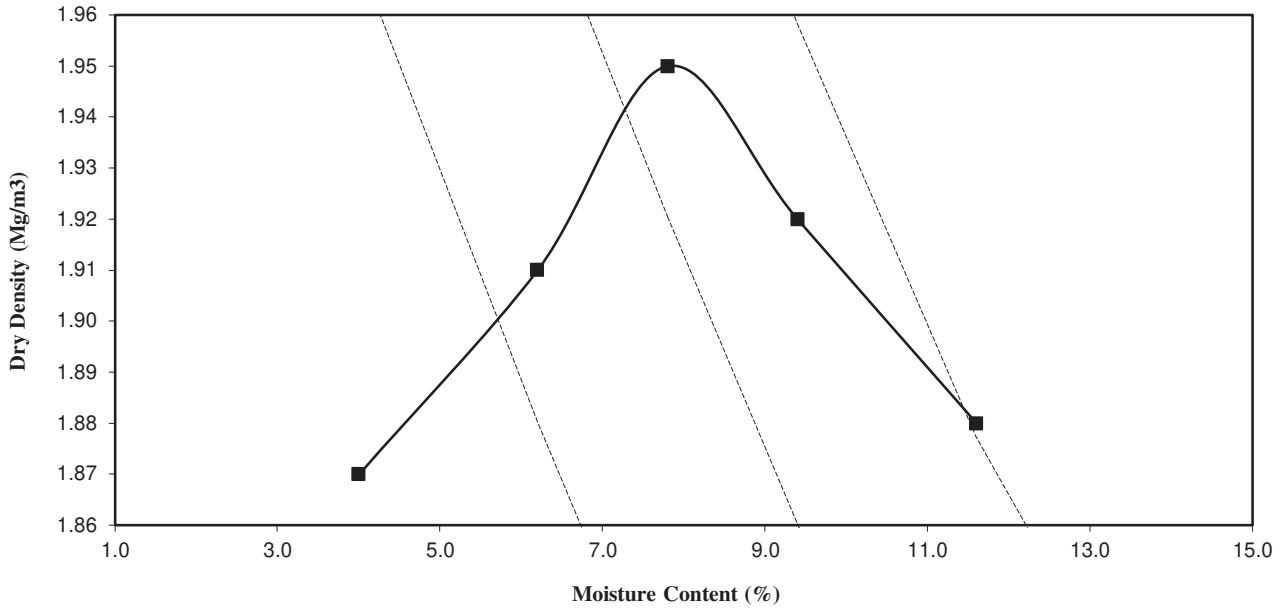
Hole Id:	BH05
Depth (mBGL):	1.00
Lab Ref:	24/1189
Sample No	DC20

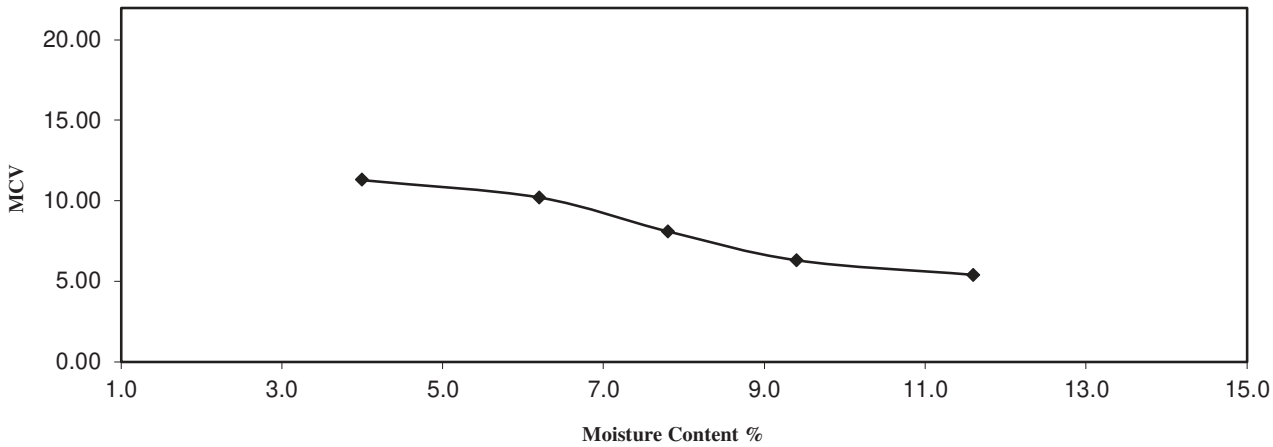
Particle Density
2.4
Assumed

Natural Moisture Content (%)	20.9
Rammer Used	4.5Kg
Maximum Dry Density (Mg/m^3)	1.95
Optimum Moisture Content (%)	7.9

Point Number	**1**	**2**	**3**	**4**	**5**
Moisture content	4.0	6.2	7.8	9.4	11.6
Dry Density (Mg/m3)	1.87	1.91	1.95	1.92	1.88
MCV	11.30	10.20	8.10	6.30	5.40

Material Description
sandy slightly gravelly silty CLAY





Moisture condition Value / Dry Density / Moiture Content relationship in accordance with BS 1377 : Part 4

Client	Watfore Ltd.
Site	Parkmore Industrial Estate, Long Mile Road, Co. Dublin
S.I.File No	6332 / 24
Test Lab	Site Investigations Ltd., Carhugar, The Grange, 12th Lock Rd., Lucan, Co. Dublin Tel 01 6108768
Report Date	30th September 2024

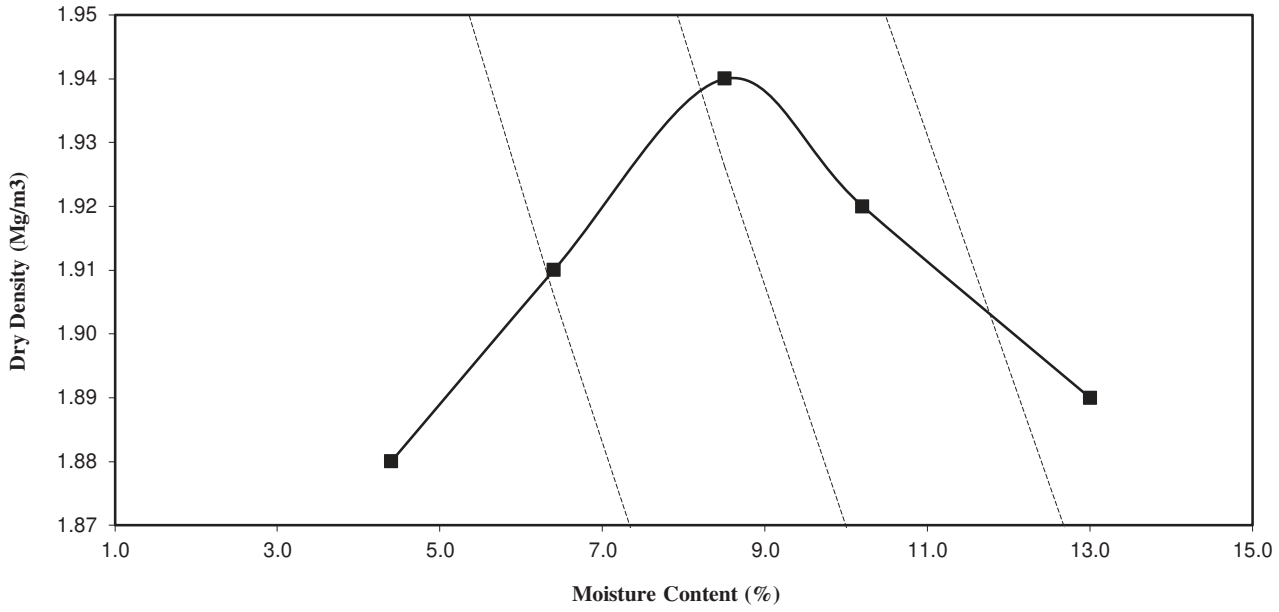
Hole Id:	BH06
Depth (mBGL):	2.00
Lab Ref:	24/1194
Sample No	DC16

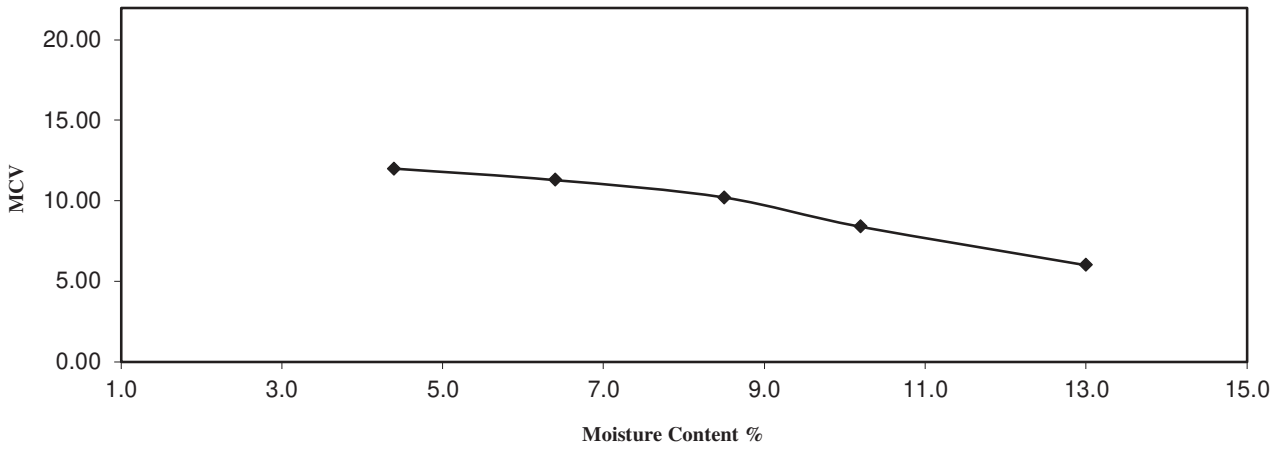
Particle Density
2.45
Assumed

Natural Moisture Content (%)	6.4
Rammer Used	4.5Kg
Maximum Dry Density (Mg/m^3)	1.94
Optimum Moisture Content (%)	8.6

Point Number	**1**	**2**	**3**	**4**	**5**
Moisture content	4.4	6.4	8.5	10.2	13.0
Dry Density (Mg/m3)	1.88	1.91	1.94	1.92	1.89
MCV	12.00	11.30	10.20	8.40	6.00

Material Description
clayey very sandy GRAVEL





Moisture condition Value / Dry Density / Moiture Content relationship in accordance with BS 1377 : Part 4

Client	Watfore Ltd.
Site	Parkmore Industrial Estate, Long Mile Road, Co. Dublin
S.I.File No	6332 / 24
Test Lab	Site Investigations Ltd., Carhugar, The Grange, 12th Lock Rd., Lucan, Co. Dublin Tel 01 6108768
Report Date	30th September 2024

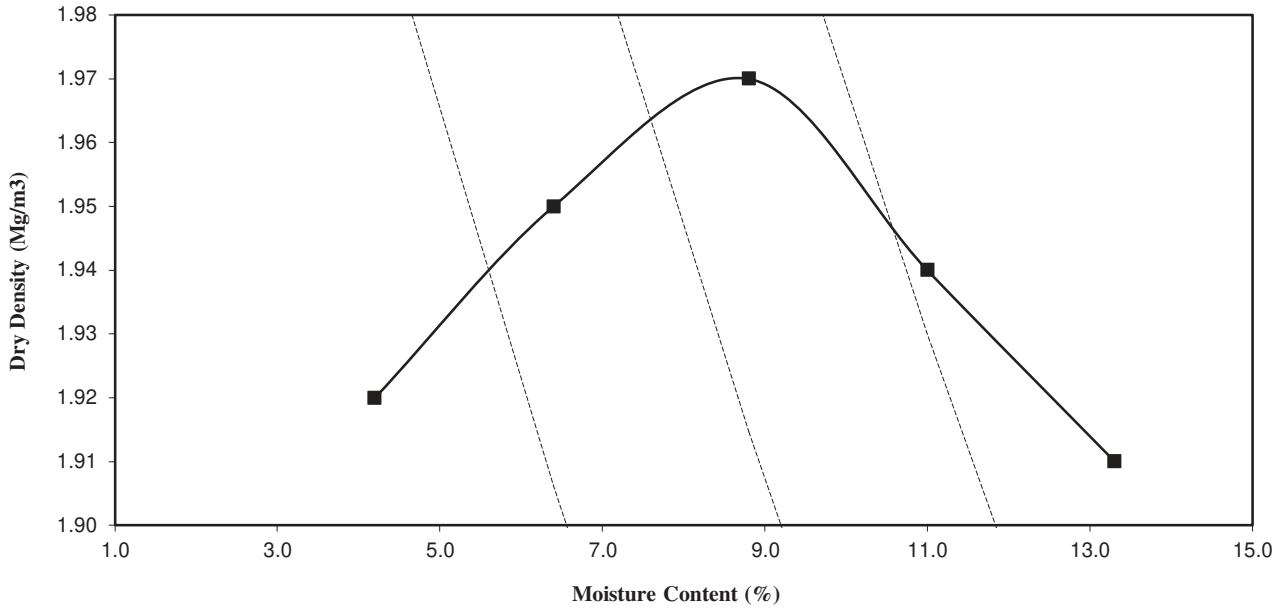
Hole Id:	TP01
Depth (mBGL):	1.00
Lab Ref:	24/1197
Sample No	DM02

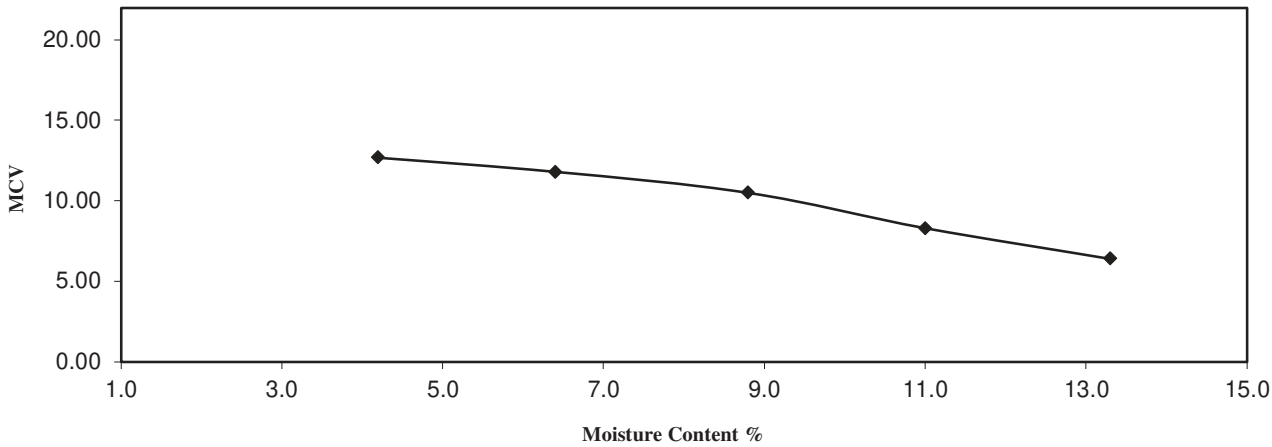
Particle Density
2.45
Assumed

Natural Moisture Content (%)	8.8
Rammer Used	4.5Kg
Maximum Dry Density (Mg/m^3)	1.97
Optimum Moisture Content (%)	8.6

Point Number	**1**	**2**	**3**	**4**	**5**
Moisture content	4.2	6.4	8.8	11.0	13.3
Dry Density (Mg/m3)	1.92	1.95	1.97	1.94	1.91
MCV	12.70	11.80	10.50	8.30	6.40

Material Description
clayey very sandy GRAVEL





Moisture condition Value / Dry Density / Moiture Content relationship in accordance with BS 1377 : Part 4

Client	Watfore Ltd.
Site	Parkmore Industrial Estate, Long Mile Road, Co. Dublin
S.I.File No	6332 / 24
Test Lab	Site Investigations Ltd., Carhugar, The Grange, 12th Lock Rd., Lucan, Co. Dublin Tel 01 6108768
Report Date	30th September 2024

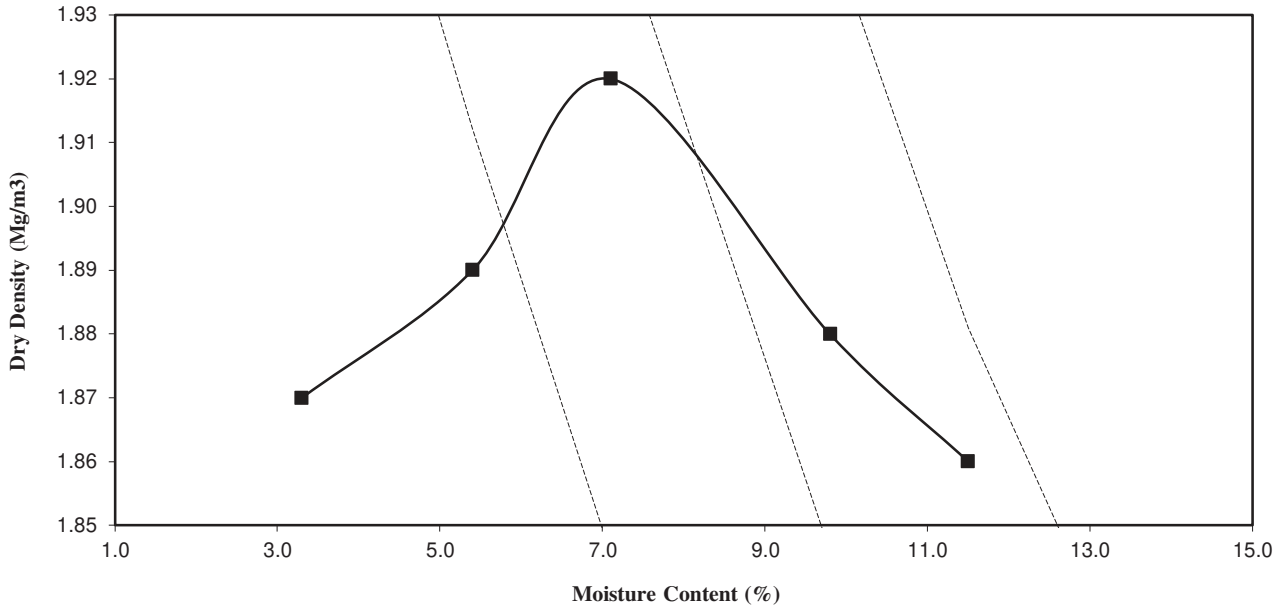
Hole Id:	TP02
Depth (mBGL):	1.00
Lab Ref:	24/1199
Sample No	DM06

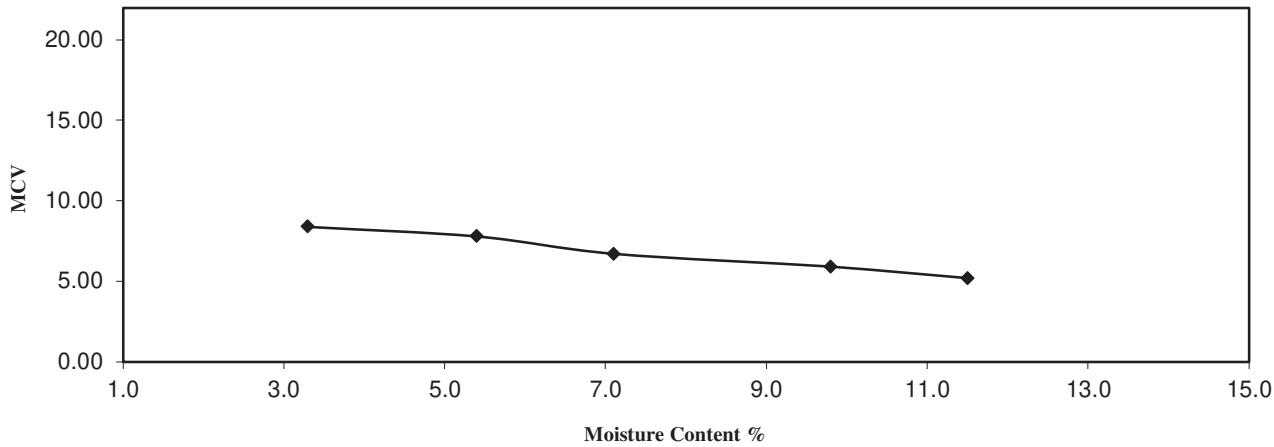
Particle Density
2.4
Assumed

Natural Moisture Content (%)	21.4
Rammer Used	4.5Kg
Maximum Dry Density (Mg/m^3)	1.92
Optimum Moisture Content (%)	7.0

Point Number	**1**	**2**	**3**	**4**	**5**
Moisture content	3.3	5.4	7.1	9.8	11.5
Dry Density (Mg/m3)	1.87	1.89	1.92	1.88	1.86
MCV	8.40	7.80	6.70	5.90	5.20

Material Description
sandy slightly gravelly silty CLAY





Chemical Testing
In accordance with BS 1377: Part 3

Client	Watfore Ltd.
Site	Parkmore Industrial Estate, Long Mile Road, Co. Dublin
S.I. File No	6332 / 24
Test Lab	Site Investigations Ltd., Carhugar The Grange, 12th Lock Rd., Lucan Co. Dublin. Tel (01) 6108768 Email:info@siteinvestigations.ie
Report Date	30th September 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
BH01	2.00	DC02	24/1176	8.80	0.117	0.046	0.146	0.057	0.18	39.0
BH01	4.00	DC04	24/1178	8.61	0.124	0.084	0.155	0.105	0.21	67.4
BH02	1.00	DC06	24/1179	8.70	0.126	0.091	0.157	0.114	0.15	72.5
BH02	3.00	DC08	24/1181	8.71	0.126	0.086	0.157	0.107	0.15	68.2
BH03	1.00	DC25	24/1182	8.59	0.116	0.041	0.145	0.051	0.14	35.5
BH03	3.00	DC27	24/1183	8.36	0.123	0.101	0.154	0.126	0.16	81.9
BH04	1.00	DC10	24/1185	8.69	0.124	0.101	0.155	0.126	0.21	81.1
BH04	2.00	DC11	24/1186	8.52	0.120	0.095	0.150	0.119	0.17	79.2
BH05	1.00	DC20	24/1189	8.49	0.122	0.091	0.152	0.114	0.12	74.9
BH05	2.00	DC21	24/1190	8.47	0.120	0.097	0.150	0.121	0.17	80.8
BH06	2.00	DC16	24/1194	8.60	0.117	0.043	0.146	0.053	0.18	36.5
BH06	4.00	DC18	24/1195	8.69	0.122	0.110	0.152	0.137	0.12	90.3
TP01	1.00	DM02	24/1197	8.53	0.115	0.044	0.143	0.055	0.19	38.4
TP01	2.50	DM04	24/1198	8.63	0.119	0.049	0.148	0.061	0.13	41.2
TP02	1.00	DM06	24/1199	8.79	0.119	0.082	0.148	0.103	0.13	69.4
TP02	2.50	DM08	24/1200	8.86	0.124	0.108	0.155	0.134	0.11	86.5

Appendix 5
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:	25 September 2024
Customer:	Site Investigations Ltd
Sample Delivery Group (SDG):	240909-50
Your Reference:	6332
Location:	Parkmore Industrial Estate
Report No:	741744
Order Number:	34/B/24

We received 20 samples on Monday September 09, 2024 and 19 of these samples were scheduled for analysis which was completed on Wednesday September 25, 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.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Lauren Ellis
General Manager Western Europe Environmental

1291

CERTIFICATE OF ANALYSIS

SDG: 240909-50 **Report Number:** 741744 **Superseded Report:**
Client Ref.: 6332 **Location:** Parkmore Industrial Estate

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
30336789	BH 01		1.00 - 1.00	04/09/2024
30336791	BH 01		2.00 - 2.00	04/09/2024
30336792	BH 01		4.00 - 4.00	04/09/2024
30336794	BH 02		1.00 - 1.00	04/09/2024
30336795	BH 02		3.00 - 3.00	04/09/2024
30336796	BH 03		1.00 - 1.00	04/09/2024
30336797	BH 03		3.00 - 3.00	04/09/2024
30336545	BH 04		1.00	04/09/2024
30336546	BH 04		2.00	04/09/2024
30336547	BH 05		1.00	04/09/2024
30336548	BH 05		2.00	04/09/2024
30336790	BH 06		1.00 - 1.00	04/09/2024
30336549	BH 06		2.00	04/09/2024
30336550	BH 06		4.00	04/09/2024
30336787	TP 01		0.50 - 0.50	04/09/2024
30336551	TP 01		1.00	04/09/2024
30336552	TP 01		2.50	04/09/2024
30336788	TP 02		0.50 - 0.50	04/09/2024
30336553	TP 02		1.00	04/09/2024
30336554	TP 02		2.50	04/09/2024

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

Validated

CERTIFICATE OF ANALYSIS

SDG: 240909-50 **Report Number:** 741744 **Superseded Report:**
Client Ref.: 6332 **Location:** Parkmore Industrial Estate

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)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
			30336789	BH 01		1.00 - 1.00	1kg TUB with Handle (ALE260)	S
			30336789	BH 01		1.00 - 1.00	250g Amber Jar (ALE210)	S
			30336791	BH 01		2.00 - 2.00	60g VOC (ALE215)	S
			30336792	BH 01		4.00 - 4.00	250g Amber Jar (ALE210)	S
			30336794	BH 02		1.00 - 1.00	250g Amber Jar (ALE210)	S
			30336795	BH 02		3.00 - 3.00	250g Amber Jar (ALE210)	S
			30336796	BH 03		1.00 - 1.00	250g Amber Jar (ALE210)	S
			30336797	BH 03		3.00 - 3.00	250g Amber Jar (ALE210)	S
			30336545	BH 04		1.00	250g Amber Jar (ALE210)	S
			30336546	BH 04		2.00	250g Amber Jar (ALE210)	S
			30336547	BH 05		1.00	250g Amber Jar (ALE210)	S
			30336548	BH 05		2.00	250g Amber Jar (ALE210)	S
			30336790	BH 06		1.00 - 1.00	1kg TUB with Handle (ALE260)	S
			30336790	BH 06		1.00 - 1.00	250g Amber Jar (ALE210)	S
			30336790	BH 06		1.00 - 1.00	60g VOC (ALE215)	S
			30336550	BH 06		4.00	250g Amber Jar (ALE210)	S
			30336787	TP 01		0.50 - 0.50	1kg TUB with Handle (ALE260)	S
			30336787	TP 01		0.50 - 0.50	250g Amber Jar (ALE210)	S
Anions by Kone (w)	All	NDPs: 0 Tests: 4	X					
CEN Readings	All	NDPs: 0 Tests: 4	X					
Chromium III	All	NDPs: 0 Tests: 4		X				
Coronene	All	NDPs: 0 Tests: 4		X				
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 4	X					
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 4	X					
EPH by GCxGC-FID	All	NDPs: 0 Tests: 3		X				
EPH CWG GC (S)	All	NDPs: 0 Tests: 4		X				
Fluoride	All	NDPs: 0 Tests: 4	X					
GRO by GC-FID (S)	All	NDPs: 0 Tests: 4			X			
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 4		X				
Loss on Ignition in soils	All	NDPs: 0 Tests: 4		X				
Mercury Dissolved	All	NDPs: 0 Tests: 4	X					
Metals in solid samples by OES	All	NDPs: 0 Tests: 4		X				
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 4		X				

30336554	TP 02		2.50	250g Amber Jar (ALE210)	S																	
30336553	TP 02		1.00	250g Amber Jar (ALE210)	S																	
30336788	TP 02		0.50 - 0.50	60g VOC (ALE215)	S													X				
				250g Amber Jar (ALE210)	S			X	X			X	X			X	X		X	X	X	X
				1kg TUB with Handle (ALE260)	S	X	X			X	X			X				X				
30336552	TP 01		2.50	250g Amber Jar (ALE210)	S																	
30336551	TP 01		1.00	250g Amber Jar (ALE210)	S																	
30336787	TP 01		0.50 - 0.50	60g VOC (ALE215)	S													X				

CERTIFICATE OF ANALYSIS

SDG: 240909-50 **Report Number:** 741744 **Superseded Report:**
Client Ref.: 6332 **Location:** Parkmore Industrial Estate

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)	30336789	30336791	30336792	30336794	30336795	30336796	30336797	30336545	30336546	30336547	30336548	30336790	30336550	30336787
			Customer Sample Reference	BH 01	BH 01	BH 01	BH 02	BH 02	BH 03	BH 03	BH 04	BH 04	BH 05	BH 05	BH 06	BH 06	TP 01
			AGS Reference														
			Depth (m)	1.00 - 1.00	2.00 - 2.00	4.00 - 4.00	1.00 - 1.00	3.00 - 3.00	1.00 - 1.00	3.00 - 3.00	1.00	2.00	1.00	2.00	1.00 - 1.00	4.00	0.50 - 0.50
			Container	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)
			Sample Type	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
PAH by GCMS	All	NDPs: 0 Tests: 4			X											X				X
PCBs by GCMS	All	NDPs: 0 Tests: 4			X											X				X
pH	All	NDPs: 0 Tests: 4			X											X				X
pH Value of Filtered Water	All	NDPs: 0 Tests: 4	X												X				X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 4	X												X				X	
Sample description	All	NDPs: 0 Tests: 19		X		X	X	X	X	X	X	X	X	X	X	X		X		X
Total Organic Carbon	All	NDPs: 0 Tests: 19		X		X	X	X	X	X	X	X	X	X	X	X		X		X
Total Sulphate	All	NDPs: 0 Tests: 9									X	X	X	X				X		
Total Sulphur	All	NDPs: 0 Tests: 6				X	X	X	X	X	X									
TPH CWG GC (S)	All	NDPs: 0 Tests: 4		X												X				X
VOC MS (S)	All	NDPs: 0 Tests: 4			X												X			

30336554	TP 02		2.50	250g Amber Jar (ALE210)	S												X		X		X						
30336553	TP 02		1.00	250g Amber Jar (ALE210)	S												X		X		X						
30336788	TP 02		0.50 - 0.50	60g VOC (ALE215)	S																						X
				250g Amber Jar (ALE210)	S		X		X		X						X		X						X		
				1kg TUB with Handle (ALE260)	S								X		X												
30336552	TP 01		2.50	250g Amber Jar (ALE210)	S												X		X		X						
30336551	TP 01		1.00	250g Amber Jar (ALE210)	S												X		X		X						
30336787	TP 01		0.50 - 0.50	60g VOC (ALE215)	S																						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
30336789	BH 01	1.00 - 1.00	Dark Brown	Loamy Sand	Stones	None
30336791	BH 01	2.00 - 2.00	Light Brown	Loamy Sand	Stones	None
30336792	BH 01	4.00 - 4.00	Dark Brown	Sandy Clay Loam	Stones	None
30336794	BH 02	1.00 - 1.00	Dark Brown	Sandy Clay Loam	Stones	None
30336795	BH 02	3.00 - 3.00	Grey	Sandy Clay Loam	Stones	None
30336796	BH 03	1.00 - 1.00	Dark Brown	Loamy Sand	Stones	None
30336797	BH 03	3.00 - 3.00	Grey	Silt Loam	Stones	None
30336545	BH 04	1.00	Dark Brown	Loamy Sand	Stones	Vegetation
30336546	BH 04	2.00	Dark Brown	Loamy Sand	Stones	None
30336547	BH 05	1.00	Dark Brown	Loamy Sand	Stones	Vegetation
30336548	BH 05	2.00	Dark Brown	Sand	Stones	Vegetation
30336550	BH 06	4.00	Dark Brown	Silt Loam	Stones	None
30336790	BH 06	1.00 - 1.00	Dark Brown	Loamy Sand	Stones	None
30336551	TP 01	1.00	Dark Brown	Sand	Stones	None
30336552	TP 01	2.50	Dark Brown	Sandy Clay	None	None
30336787	TP 01	0.50 - 0.50	Grey	Stone/Soil	Stones	None
30336553	TP 02	1.00	Dark Brown	Sand	Stones	Vegetation
30336554	TP 02	2.50	Light Brown	Loamy Sand	Stones	None
30336788	TP 02	0.50 - 0.50	Black	Stone/Soil	Stones	Stones

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.

Validated

CERTIFICATE OF ANALYSIS

SDG: 240909-50 **Report Number:** 741744 **Superseded Report:**
Client Ref.: 6332 **Location:** Parkmore Industrial Estate

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.	BH 01	BH 01	BH 01	BH 02	BH 02	BH 03
			Depth (m)	1.00 - 1.00	2.00 - 2.00	4.00 - 4.00	1.00 - 1.00	3.00 - 3.00	1.00 - 1.00
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	04/09/2024	04/09/2024	04/09/2024	04/09/2024	04/09/2024	04/09/2024
			Sample Time	-	-	-	-	-	-
			Date Received	09/09/2024	09/09/2024	09/09/2024	09/09/2024	09/09/2024	09/09/2024
			SDG Ref	240909-50	240909-50	240909-50	240909-50	240909-50	240909-50
			Lab Sample No.(s)	30336789	30336791	30336792	30336794	30336795	30336796
			AGS Reference						
Moisture Content Ratio (% of as received sample)	%	PM024		8.2	10	12	17	9.1	14
Loss on ignition	<0.7 %	TM018		1.51 M					
Organic Carbon, Total	<0.2 %	TM132		5.57 M					
Sulphur, Total	<0.02 %	TM132			<0.02 #	<0.02 #	<0.02 #	0.196 #	0.0212 #
Organic Matter, Total	<0.35 %	TM132			0.486 #	0.819 #	0.724 #	0.826 #	1.31 #
pH	1 pH Units	TM133		8.17 M					
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 M					
PCB congener 28	<3 µg/kg	TM168		<3 M					
PCB congener 52	<3 µg/kg	TM168		<3 M					
PCB congener 101	<3 µg/kg	TM168		<3 M					
PCB congener 118	<3 µg/kg	TM168		<3 M					
PCB congener 138	<3 µg/kg	TM168		<3 M					
PCB congener 153	<3 µg/kg	TM168		<3 M					
PCB congener 180	<3 µg/kg	TM168		<3 M					
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168		<21					
Chromium, Trivalent	<0.9 mg/kg	TM181		6.55					
Antimony	<0.6 mg/kg	TM181		<0.6 #					
Arsenic	<0.6 mg/kg	TM181		12.6 M					
Barium	<0.6 mg/kg	TM181		82.5 #					
Cadmium	<0.02 mg/kg	TM181		0.509 M					
Chromium	<0.9 mg/kg	TM181		6.55 M					
Copper	<1.4 mg/kg	TM181		10.3 M					
Lead	<0.7 mg/kg	TM181		10.8 M					
Mercury	<0.1 mg/kg	TM181		<0.1 M					
Molybdenum	<0.1 mg/kg	TM181		0.914 #					
Nickel	<0.2 mg/kg	TM181		15.2 M					
Selenium	<1 mg/kg	TM181		1.65 #					
Zinc	<1.9 mg/kg	TM181		39.3 M					
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410		<10					
Coronene	<200 µg/kg	TM410		<200					
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415		<5					

CERTIFICATE OF ANALYSIS

SDG: 240909-50 **Report Number:** 741744 **Superseded Report:**
Client Ref.: 6332 **Location:** Parkmore Industrial Estate

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.	BH 03	BH 04	BH 04	BH 05	BH 05	BH 06
			Depth (m)	3.00 - 3.00	1.00	2.00	1.00	2.00	1.00 - 1.00
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	04/09/2024	04/09/2024	04/09/2024	04/09/2024	04/09/2024	04/09/2024
			Sample Time	-	-	-	-	-	-
			Date Received	09/09/2024	09/09/2024	09/09/2024	09/09/2024	09/09/2024	09/09/2024
			SDG Ref	240909-50	240909-50	240909-50	240909-50	240909-50	240909-50
			Lab Sample No.(s)	30336797	30336545	30336546	30336547	30336548	30336790
			AGS Reference						
Moisture Content Ratio (% of as received sample)	%	PM024		18	16	23	18	12	24
Loss on ignition	<0.7 %	TM018							7.59 M
Organic Carbon, Total	<0.2 %	TM132							2.96 M
Sulphur, Total	<0.02 %	TM132		0.612 #					
Organic Matter, Total	<0.35 %	TM132		1.52 #	1.09 #	2.28 #	3.05 #	0.61 #	
pH	1 pH Units	TM133							7.67 M
Chromium, Hexavalent	<0.6 mg/kg	TM151							<0.6 M
PCB congener 28	<3 µg/kg	TM168							<3 M
PCB congener 52	<3 µg/kg	TM168							<3 M
PCB congener 101	<3 µg/kg	TM168							<3 M
PCB congener 118	<3 µg/kg	TM168							<3 M
PCB congener 138	<3 µg/kg	TM168							<3 M
PCB congener 153	<3 µg/kg	TM168							<3 M
PCB congener 180	<3 µg/kg	TM168							<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168							<21
Chromium, Trivalent	<0.9 mg/kg	TM181							5.32
Antimony	<0.6 mg/kg	TM181							<0.6 #
Arsenic	<0.6 mg/kg	TM181							9.39 M
Barium	<0.6 mg/kg	TM181							52.1 #
Cadmium	<0.02 mg/kg	TM181							1.32 M
Chromium	<0.9 mg/kg	TM181							5.32 M
Copper	<1.4 mg/kg	TM181							16.3 M
Lead	<0.7 mg/kg	TM181							20.2 M
Mercury	<0.1 mg/kg	TM181							<0.1 M
Molybdenum	<0.1 mg/kg	TM181							1.82 #
Nickel	<0.2 mg/kg	TM181							22.4 M
Selenium	<1 mg/kg	TM181							2.35 #
Zinc	<1.9 mg/kg	TM181							76.8 M
Total Sulphur (ASB)	<0.0016 %	TM221			0.00677	0.0219	0.0196	0.0217	
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410							<10
Coronene	<200 µg/kg	TM410							<200

Validated

CERTIFICATE OF ANALYSIS

SDG: 240909-50 **Report Number:** 741744 **Superseded Report:**
Client Ref.: 6332 **Location:** Parkmore Industrial Estate

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.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BH 06	4.00	Soil/Solid (S)	04/09/2024	-	09/09/2024	240909-50	30336550	
			TP 01	0.50 - 0.50	Soil/Solid (S)	04/09/2024	-	09/09/2024	240909-50	30336787	
			TP 01	1.00	Soil/Solid (S)	04/09/2024	-	09/09/2024	240909-50	30336551	
			TP 01	2.50	Soil/Solid (S)	04/09/2024	-	09/09/2024	240909-50	30336552	
			TP 02	0.50 - 0.50	Soil/Solid (S)	04/09/2024	-	09/09/2024	240909-50	30336788	
			TP 02	1.00	Soil/Solid (S)	04/09/2024	-	09/09/2024	240909-50	30336553	
Moisture Content Ratio (% of as received sample)	%	PM024	15	8.2							
Loss on ignition	<0.7 %	TM018		1.3 #							
Organic Carbon, Total	<0.2 %	TM132		0.468 #							
Organic Matter, Total	<0.35 %	TM132	1.36 #					0.8 #	1.03 #		3.45 #
pH	1 pH Units	TM133		8.48 #							
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #							
PCB congener 28	<3 µg/kg	TM168		<3 #							
PCB congener 52	<3 µg/kg	TM168		<3 #							
PCB congener 101	<3 µg/kg	TM168		<3 #							
PCB congener 118	<3 µg/kg	TM168		<3 #							
PCB congener 138	<3 µg/kg	TM168		<3 #							
PCB congener 153	<3 µg/kg	TM168		<3 #							
PCB congener 180	<3 µg/kg	TM168		<3 #							
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168		<21							
Chromium, Trivalent	<0.9 mg/kg	TM181		20							
Antimony	<0.6 mg/kg	TM181		<0.6 #							
Arsenic	<0.6 mg/kg	TM181		50 #							
Barium	<0.6 mg/kg	TM181		330 #							
Cadmium	<0.02 mg/kg	TM181		0.521 #							
Chromium	<0.9 mg/kg	TM181		20 #							
Copper	<1.4 mg/kg	TM181		28.5 #							
Lead	<0.7 mg/kg	TM181		50.2 #							
Mercury	<0.1 mg/kg	TM181		<0.1 #							
Molybdenum	<0.1 mg/kg	TM181		0.808 #							
Nickel	<0.2 mg/kg	TM181		36.3 #							
Selenium	<1 mg/kg	TM181		1.6 #							
Zinc	<1.9 mg/kg	TM181		147 #							
Total Sulphur (ASB)	<0.0016 %	TM221	0.0873					0.0124	0.00547		0.0148
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410		<10							
Coronene	<200 µg/kg	TM410		<200							
Mineral Oil >C10-C40 (EH_2D_AL)	<5 mg/kg	TM415		18.6							

CERTIFICATE OF ANALYSIS

SDG: 240909-50 **Report Number:** 741744 **Superseded Report:**
Client Ref.: 6332 **Location:** Parkmore Industrial Estate

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)

			Customer Sample Ref.					
			TP 02					
			Depth (m)	2.50				
			Sample Type	Soil/Solid (S)				
			Date Sampled	04/09/2024				
			Sample Time	-				
			Date Received	09/09/2024				
			SDG Ref	240909-50				
			Lab Sample No.(s)	30336554				
			AGS Reference					
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	15					
Organic Matter, Total	<0.35 %	TM132	0.728 #					
Total Sulphur (ASB)	<0.0016 %	TM221	0.0104					

CERTIFICATE OF ANALYSIS

SDG: 240909-50 **Report Number:** 741744 **Superseded Report:**
Client Ref.: 6332 **Location:** Parkmore Industrial Estate

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.	BH 01	BH 06	TP 01	TP 02		
			Depth (m)	1.00 - 1.00	1.00 - 1.00	0.50 - 0.50	0.50 - 0.50		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	04/09/2024	04/09/2024	04/09/2024	04/09/2024		
			Sample Time	-	-	-	-		
			Date Received	09/09/2024	09/09/2024	09/09/2024	09/09/2024		
			SDG Ref	240909-50	240909-50	240909-50	240909-50		
			Lab Sample No.(s)	30336789	30336790	30336787	30336788		
			AGS Reference						
Naphthalene	<9 µg/kg	TM218		<9 M	<9 M	<9 @ #	<180 @ #		
Acenaphthylene	<12 µg/kg	TM218		<12 M	<12 M	<12 @ #	<240 @ #		
Acenaphthene	<8 µg/kg	TM218		<8 M	<8 M	<8 @ #	<160 @ #		
Fluorene	<10 µg/kg	TM218		<10 M	<10 M	<10 @ #	<200 @ #		
Phenanthrene	<15 µg/kg	TM218		<15 M	34.8 M	<15 @ #	<300 @ #		
Anthracene	<16 µg/kg	TM218		<16 M	<16 M	<16 @ #	<320 @ #		
Fluoranthene	<17 µg/kg	TM218		<17 M	98.4 M	<17 @ #	<340 @ #		
Pyrene	<15 µg/kg	TM218		16.5 M	93.7 M	<15 @ #	<300 @ #		
Benz(a)anthracene	<14 µg/kg	TM218		<14 M	55.8 M	<14 @ #	<280 @ #		
Chrysene	<10 µg/kg	TM218		<10 M	59.4 M	<10 @ #	<200 @ #		
Benzo(b)fluoranthene	<15 µg/kg	TM218		16.7 M	102 M	<15 @ #	<300 @ #		
Benzo(k)fluoranthene	<14 µg/kg	TM218		<14 M	30 M	<14 @ #	<280 @ #		
Benzo(a)pyrene	<15 µg/kg	TM218		<15 M	65.2 M	<15 @ #	<300 @ #		
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		<18 M	43.3 M	<18 @ #	<360 @ #		
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		<23 M	<23 M	<23 @ #	<460 @ #		
Benzo(g,h,i)perylene	<24 µg/kg	TM218		<24 M	61.9 M	<24 @ #	<480 @ #		
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		<118	644	<118	<2360		

CERTIFICATE OF ANALYSIS

SDG: 240909-50 **Report Number:** 741744 **Superseded Report:**
Client Ref.: 6332 **Location:** Parkmore Industrial Estate

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.	BH 01	BH 06	TP 01	TP 02		
			Depth (m)	1.00 - 1.00	1.00 - 1.00	0.50 - 0.50	0.50 - 0.50		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	04/09/2024	04/09/2024	04/09/2024	04/09/2024		
			Sample Time	-	-	-	-		
			Date Received	09/09/2024	09/09/2024	09/09/2024	09/09/2024		
			SDG Ref	240909-50	240909-50	240909-50	240909-50		
			Lab Sample No.(s)	30336789	30336790	30336787	30336788		
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		95.6	91.2	85	45.3 4		
Aliphatics >C5-C6 (HS_1D_AL)	<10 µg/kg	TM089		<10	<10	<10	<10 4		
Aliphatics >C6-C8 (HS_1D_AL)	<10 µg/kg	TM089		<10	<10	<10	<10 4		
Aliphatics >C8-C10 (HS_1D_AL)	<10 µg/kg	TM089		<10	<10	<10	<10 4		
Aliphatics >C10-C12 (EH_2D_AL_#1)	<1000 µg/kg	TM414		<1000 #	<1000 #	<1000 #	<1000 #		
Aliphatics >C12-C16 (EH_2D_AL_#1)	<1000 µg/kg	TM414		<1000 #	<1000 #	<1000 #	<1000 #		
Aliphatics >C16-C21 (EH_2D_AL_#1)	<1000 µg/kg	TM414		<1000 #	<1000 #	3490 #	<1000 #		
Aliphatics >C21-C35 (EH_2D_AL_#1)	<1000 µg/kg	TM414		11300 #	13700 #	15000 #	2380 #		
Aliphatics >C35-C44 (EH_2D_AL_#1)	<1000 µg/kg	TM414		<1000	<1000	<1000	3010		
Total Aliphatics >C10-C44 (EH_2D_AR_#1)	<5000 µg/kg	TM414		11300	14300	18400	6370		
Total Aliphatics & Aromatics >C10-C44 (EH_2D_Total_#1)	<10000 µg/kg	TM414		15800	33100	27400	25100		
Aromatics >EC5-EC7 (HS_1D_AR)	<10 µg/kg	TM089		<10	<10	<10	<10 4		
Aromatics >EC7-EC8 (HS_1D_AR)	<10 µg/kg	TM089		<10	<10	<10	<10 4		
Aromatics >EC8-EC10 (HS_1D_AR)	<10 µg/kg	TM089		<10	<10	<10	<10 4		
Aromatics > EC10-EC12 (EH_2D_AR_#1)	<1000 µg/kg	TM414		<1000 #	<1000 #	<1000 #	<1000 #		
Aromatics > EC12-EC16 (EH_2D_AR_#1)	<1000 µg/kg	TM414		<1000 #	<1000 #	<1000 #	<1000 #		
Aromatics > EC16-EC21 (EH_2D_AR_#1)	<1000 µg/kg	TM414		<1000 #	1010 #	<1000 #	<1000 #		
Aromatics > EC21-EC35 (EH_2D_AR_#1)	<1000 µg/kg	TM414		3050 #	14800 #	7320 #	8510 #		
Aromatics >EC35-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414		<1000	2970	<1000	10100		
Aromatics > EC40-EC44 (EH_2D_AR_#1)	<1000 µg/kg	TM414		<1000	<1000	<1000	2780		
Total Aromatics > EC10-EC44 (EH_2D_AR_#1)	<5000 µg/kg	TM414		<5000	18800	8980	18700		
Total Aliphatics & Aromatics >C5-C44 (EH_2D_Total_#1+HS_1D_Total)	<10000 µg/kg	TM414		11300	33100	27400	25100		
GRO >C5-C6 (HS_1D)	<20 µg/kg	TM089		<20	<20	<20	<20 4		
GRO >C6-C7 (HS_1D)	<20 µg/kg	TM089		<20	<20	<20	<20 4		
GRO >C7-C8 (HS_1D)	<20 µg/kg	TM089		<20	<20	<20	<20 4		
GRO >C8-C10 (HS_1D)	<20 µg/kg	TM089		<20	<20	<20	<20 4		
GRO >C10-C12 (HS_1D)	<20 µg/kg	TM089		<20	<20	<20	<20 4		
Total Aliphatics >C5-C10 (HS_1D_AL_TOTAL)	<50 µg/kg	TM089		<50	<50	<50	<50 4		
Total Aromatics >EC5-EC10 (HS_1D_AR_TOTAL)	<50 µg/kg	TM089		<50	<50	<50	<50 4		
GRO >C5-C10 (HS_1D_TOTAL)	<20 µg/kg	TM089		<20	<20	<20	<20 4		

CERTIFICATE OF ANALYSIS

SDG: 240909-50 **Report Number:** 741744 **Superseded Report:**
Client Ref.: 6332 **Location:** Parkmore Industrial Estate

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.	BH 01	BH 06	TP 01	TP 02		
			Depth (m)	1.00 - 1.00	1.00 - 1.00	0.50 - 0.50	0.50 - 0.50		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	04/09/2024	04/09/2024	04/09/2024	04/09/2024		
			Sample Time	-	-	-	-		
			Date Received	09/09/2024	09/09/2024	09/09/2024	09/09/2024		
			SDG Ref	240909-50	240909-50	240909-50	240909-50		
			Lab Sample No.(s)	30336789	30336790	30336787	30336788		
			AGS Reference						
Dibromofluoromethane**	%	TM116		111	108	108	116		
Toluene-d8**	%	TM116		99.8	98.9	99.3	94.6		
4-Bromofluorobenzene**	%	TM116		89.8	87.7	88.2	86.3		
Methyl Tertiary Butyl Ether	<0.5 µg/kg	TM116		<10 M	<10 M	<10 #	<10 #		
Benzene	<1 µg/kg	TM116		<20 M	<20 M	<20 #	<20 #		
Toluene	<1 µg/kg	TM116		22.2 M	<20 M	<20 #	<20 #		
Ethylbenzene	<1 µg/kg	TM116		<20 M	<20 M	<20 #	<20 #		
p/m-Xylene	<2 µg/kg	TM116		<40 #	<40 #	<40 #	<40 #		
o-Xylene	<2 µg/kg	TM116		<40 M	<40 M	<40 #	<40 #		

Validated

CERTIFICATE OF ANALYSIS

SDG: 240909-50 Report Number: 741744 Superseded Report:
Client Ref.: 6332 Location: Parkmore Industrial Estate

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Parkmore Industrial Estate
Mass Sample taken (kg)	0.096	**Natural Moisture Content (%)**	6.73
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	93.7
Particle Size <4mm	>95%		

Case	
SDG	240909-50
Lab Sample Number(s)	30336787
Sampled Date	04-Sep-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 (%)	0.468	3	5	6
Loss on Ignition (%)	1.3	-	-	10
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	18.6	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.48	-	>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	0.0089	<0.0005	0.089	<0.005	0.5	2	25
Barium	0.0355	<0.0002	0.355	<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	0.00157	<0.0003	0.0157	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00582	<0.003	0.0582	<0.03	0.5	10	30
Nickel	0.000506	<0.0004	0.00506	<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	0.00149	<0.001	0.0149	<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)	79.5	<2	795	<20	1000	20000	50000
Total Dissolved Solids	172	<10	1720	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	10-Sep-2024
pH (pH Units)	8.88
Conductivity (µS/cm)	224
Volume Leachant (Litres)	0.894

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

25/09/2024 11:32:01

11:31:51 25/09/2024

Validated

CERTIFICATE OF ANALYSIS

SDG: 240909-50 Report Number: 741744 Superseded Report:
Client Ref.: 6332 Location: Parkmore Industrial Estate

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Parkmore Industrial Estate
Mass Sample taken (kg)	0.095	**Natural Moisture Content (%)**	5.1
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	95.2
Particle Size <4mm	>95%		

Case	
SDG	240909-50
Lab Sample Number(s)	30336788
Sampled Date	04-Sep-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 (%)	0.634	3	5	6
Loss on Ignition (%)	1.03	-	-	10
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.21	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	18.5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	9.06	-	>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	0.000656	<0.0005	0.00656	<0.005	0.5	2	25
Barium	0.0314	<0.0002	0.314	<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	0.00101	<0.0003	0.0101	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.00575	<0.003	0.0575	<0.03	0.5	10	30
Nickel	<0.0004	<0.0004	<0.004	<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	0.00138	<0.001	0.0138	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	0.602	<0.5	6.02	<5	10	150	500
Sulphate (soluble)	2	<2	20	<20	1000	20000	50000
Total Dissolved Solids	45.4	<10	454	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	10-Sep-2024
pH (pH Units)	9.41
Conductivity (µS/cm)	59
Volume Leachant (Litres)	0.895

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

25/09/2024 11:32:01

11:31:51 25/09/2024

Validated

CERTIFICATE OF ANALYSIS

SDG: 240909-50 **Report Number:** 741744 **Superseded Report:**
Client Ref.: 6332 **Location:** Parkmore Industrial Estate

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Parkmore Industrial Estate
Mass Sample taken (kg)	0.100	**Natural Moisture Content (%)**	11.7
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	89.6
Particle Size <4mm	>95%		

Case	
SDG	240909-50
Lab Sample Number(s)	30336789
Sampled Date	04-Sep-2024
Customer Sample Ref.	BH 01
Depth (m)	1.00 - 1.00

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 (%)	5.57	3	5	6
Loss on Ignition (%)	1.51	-	-	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)	8.17	-	>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	0.00131	<0.0005	0.0131	<0.005	0.5	2	25
Barium	0.0268	<0.0002	0.268	<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	0.00258	<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	0.00725	<0.003	0.0725	<0.03	0.5	10	30
Nickel	0.00094	<0.0004	0.0094	<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	0.00422	<0.001	0.0422	<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)	20.8	<2	208	<20	1000	20000	50000
Total Dissolved Solids	120	<10	1200	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	10-Sep-2024
pH (pH Units)	8.76
Conductivity (µS/cm)	157
Volume Leachant (Litres)	0.890

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)
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Validated

CERTIFICATE OF ANALYSIS

SDG: 240909-50 Report Number: 741744 Superseded Report:
Client Ref.: 6332 Location: Parkmore Industrial Estate

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Parkmore Industrial Estate
Mass Sample taken (kg)	0.123	**Natural Moisture Content (%)**	36.9
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	73.1
Particle Size <4mm	>95%		

Case	
SDG	240909-59
Lab Sample Number(s)	30336790
Sampled Date	04-Sep-2024
Customer Sample Ref.	BH 06
Depth (m)	1.00 - 1.00

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 (%)	2.96	3	5	6
Loss on Ignition (%)	7.59	-	-	10
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg) (EH_2D_AL)	17.9	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	7.67	-	>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	0.00171	<0.0005	0.0171	<0.005	0.5	2	25
Barium	0.0135	<0.0002	0.135	<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	0.00334	<0.0003	0.0334	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.0156	<0.003	0.156	<0.03	0.5	10	30
Nickel	0.00218	<0.0004	0.0218	<0.004	0.4	10	40
Lead	0.000377	<0.0002	0.00377	<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	0.00179	<0.001	0.0179	<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)	44.7	<2	447	<20	1000	20000	50000
Total Dissolved Solids	174	<10	1740	<100	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.84	<3	48.4	<30	500	800	1000

Leach Test Information

Date Prepared	10-Sep-2024
pH (pH Units)	8.51
Conductivity (µS/cm)	226
Volume Leachant (Litres)	0.867

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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Table of Results - Appendix

Method No	Description
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
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
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
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
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM259	Determination of Phenols in Waters and Leachates by HPLC
TM410	Determination of Coronene in soils by GCMS

NA = not applicable.

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

Test Completion Dates

Lab Sample No(s)	30336789	30336791	30336792	30336794	30336795	30336796	30336797	30336545	30336546	30336547
Customer Sample Ref.	BH 01	BH 01	BH 01	BH 02	BH 02	BH 03	BH 03	BH 04	BH 04	BH 05
AGS Ref.										
Depth	1.00 - 1.00	2.00 - 2.00	4.00 - 4.00	1.00 - 1.00	3.00 - 3.00	1.00 - 1.00	3.00 - 3.00	1.00	2.00	1.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (w)	12-Sep-2024									
CEN 10:1 Leachate (1 Stage)	11-Sep-2024									
CEN Readings	13-Sep-2024									
Chromium III	15-Sep-2024									
Coronene	16-Sep-2024									
Dissolved Metals by ICP-MS	13-Sep-2024									
Dissolved Organic/Inorganic Carbon	13-Sep-2024									
EPH by GCxGC-FID	13-Sep-2024									
EPH CWG GC (S)	12-Sep-2024									
Fluoride	12-Sep-2024									
GRO by GC-FID (S)	11-Sep-2024									
Hexavalent Chromium (s)	11-Sep-2024									
Loss on Ignition in soils	12-Sep-2024									
Mercury Dissolved	13-Sep-2024									
Metals in solid samples by OES	23-Sep-2024									
Moisture at 105C	10-Sep-2024									
PAH 16 & 17 Calc	16-Sep-2024									
PAH by GCMS	16-Sep-2024									
PCBs by GCMS	16-Sep-2024									
pH	13-Sep-2024									
pH Value of Filtered Water	13-Sep-2024									
Phenols by HPLC (W)	13-Sep-2024									
Sample description	10-Sep-2024	10-Sep-2024	10-Sep-2024	10-Sep-2024	10-Sep-2024	10-Sep-2024	10-Sep-2024	10-Sep-2024	10-Sep-2024	10-Sep-2024
Total Organic Carbon	16-Sep-2024	16-Sep-2024	13-Sep-2024	16-Sep-2024	16-Sep-2024	16-Sep-2024	13-Sep-2024	16-Sep-2024	13-Sep-2024	13-Sep-2024
Total Sulphate								12-Sep-2024	12-Sep-2024	12-Sep-2024
Total Sulphur		16-Sep-2024	12-Sep-2024	12-Sep-2024	16-Sep-2024	12-Sep-2024	12-Sep-2024			
TPH CWG GC (S)	12-Sep-2024									
VOC MS (S)	11-Sep-2024									

Lab Sample No(s)	30336548	30336550	30336790	30336551	30336552	30336787	30336553	30336554	30336788
Customer Sample Ref.	BH 05	BH 06	BH 06	TP 01	TP 01	TP 01	TP 02	TP 02	TP 02
AGS Ref.									
Depth	2.00	4.00	1.00 - 1.00	1.00	2.50	0.50 - 0.50	1.00	2.50	0.50 - 0.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (w)			12-Sep-2024			12-Sep-2024			12-Sep-2024
CEN 10:1 Leachate (1 Stage)			11-Sep-2024			11-Sep-2024			11-Sep-2024
CEN Readings			13-Sep-2024			13-Sep-2024			13-Sep-2024
Chromium III			15-Sep-2024			15-Sep-2024			15-Sep-2024
Coronene			16-Sep-2024			13-Sep-2024			13-Sep-2024
Dissolved Metals by ICP-MS			13-Sep-2024			13-Sep-2024			13-Sep-2024
Dissolved Organic/Inorganic Carbon			13-Sep-2024			13-Sep-2024			13-Sep-2024
EPH by GCxGC-FID						13-Sep-2024			13-Sep-2024
EPH CWG GC (S)			12-Sep-2024			12-Sep-2024			12-Sep-2024
Fluoride			12-Sep-2024			12-Sep-2024			12-Sep-2024
GRO by GC-FID (S)			11-Sep-2024			11-Sep-2024			12-Sep-2024
Hexavalent Chromium (s)			11-Sep-2024			11-Sep-2024			11-Sep-2024
Loss on Ignition in soils			12-Sep-2024			12-Sep-2024			12-Sep-2024
Mercury Dissolved			13-Sep-2024			13-Sep-2024			13-Sep-2024
Metals in solid samples by OES			23-Sep-2024			25-Sep-2024			23-Sep-2024
Moisture at 105C			10-Sep-2024			10-Sep-2024			10-Sep-2024
PAH 16 & 17 Calc			16-Sep-2024			18-Sep-2024			18-Sep-2024
PAH by GCMS			16-Sep-2024			18-Sep-2024			18-Sep-2024
PCBs by GCMS			16-Sep-2024			12-Sep-2024			12-Sep-2024
pH			13-Sep-2024			13-Sep-2024			13-Sep-2024
pH Value of Filtered Water			13-Sep-2024			13-Sep-2024			13-Sep-2024
Phenols by HPLC (W)			13-Sep-2024			13-Sep-2024			13-Sep-2024
Sample description	10-Sep-2024	10-Sep-2024	10-Sep-2024	10-Sep-2024	10-Sep-2024	10-Sep-2024	10-Sep-2024	10-Sep-2024	10-Sep-2024
Total Organic Carbon	16-Sep-2024	13-Sep-2024	16-Sep-2024	16-Sep-2024	13-Sep-2024	16-Sep-2024	13-Sep-2024	16-Sep-2024	16-Sep-2024
Total Sulphate	16-Sep-2024	12-Sep-2024		12-Sep-2024	12-Sep-2024		12-Sep-2024	12-Sep-2024	
TPH CWG GC (S)			12-Sep-2024			12-Sep-2024			12-Sep-2024
VOC MS (S)			11-Sep-2024			11-Sep-2024			11-Sep-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.

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

Attention: Stephen Letch

CERTIFICATE OF ANALYSIS

Date of report Generation:	20 September 2024
Customer:	Site Investigations Ltd
Sample Delivery Group (SDG):	240916-44
Your Reference:	6332
Location:	Parkmore Ind. Estate
Report No:	741275
Order Number:	35/B/24

We received 1 sample on Monday September 16, 2024 and 1 of these samples were scheduled for analysis which was completed on Friday September 20, 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.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Lauren Ellis
General Manager Western Europe Environmental

1291

CERTIFICATE OF ANALYSIS

SDG: 240916-44 **Report Number:** 741275 **Superseded Report:**
Client Ref.: 6332 **Location:** Parkmore Ind. Estate

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
30368466	BH06		2.00 - 2.00	12/09/2024

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

CERTIFICATE OF ANALYSIS

SDG: 240916-44 **Report Number:** 741275 **Superseded Report:**
Client Ref.: 6332 **Location:** Parkmore Ind. Estate

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)		30368466
	Customer Sample Reference		BH06
	AGS Reference		
	Depth (m)		2.00 - 2.00
	Container		250g Amber Jar (ALE210)
	Sample Type		S
Sample description	All	NDPs: 0 Tests: 1	X
Total Organic Carbon	All	NDPs: 0 Tests: 1	X
Total Sulphur	All	NDPs: 0 Tests: 1	X

CERTIFICATE OF ANALYSIS

SDG: 240916-44 Report Number: 741275 Superseded Report:
Client Ref.: 6332 Location: Parkmore Ind. Estate

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
30368466	BH06	2.00 - 2.00	Dark Brown	Sandy Clay Loam	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: 240916-44 **Report Number:** 741275 **Superseded Report:**
Client Ref.: 6332 **Location:** Parkmore Ind. Estate

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)		
		Customer Sample Ref.	BH06
		Depth (m)	2.00 - 2.00
		Sample Type	Soil/Solid (S)
		Date Sampled	12/09/2024
		Sample Time	-
		Date Received	16/09/2024
		SDG Ref	240916-44
		Lab Sample No.(s)	30368466
		AGS Reference	

Component	LOD/Units	Method					
Moisture Content Ratio (% of as received sample)	%	PM024	8.1				
Sulphur, Total	<0.02 %	TM132	0.427 #				
Organic Matter, Total	<0.35 %	TM132	1.05 #				

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture, screens of soils for Asbestos Containing Material
TM132	ELTRA CS800 Operators Guide

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

Test Completion Dates

Lab Sample No(s)	30368466
Customer Sample Ref.	BH06
AGS Ref.	
Depth	2.00 - 2.00
Type	Soil/Solid (S)
Sample description	17-Sep-2024
Total Organic Carbon	20-Sep-2024
Total Sulphur	19-Sep-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 6

Waste Classification Report

HazWasteOnline™

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.

7UJ01-U4L93-AJPCF

Job name

6332

Description/Comments

Client: Watfore Limited
Engineer: Roughan & O'Donovan

Project

Parkmore Industrial Estate

Site

Long Mile Road, Dublin 12

Classified by

Name:
Stephen Letch
Date:
01 Oct 2024 09:47 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

Parkmore Industrial Estate, Long Mile Road, Dublin 12 **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	BH01-1.00	1.00	Non Hazardous		Fail	Fail	3
2	BH06-1.00	1.00	Non Hazardous		Pass	Pass	7
3	TP01-0.50	0.50	Non Hazardous		Pass	Pass	11
4	TP02-0.50	0.50	Non Hazardous		Pass	Pass	15

Related documents

#	Name	Description
1	240909-50.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: 01 Oct 2024 09:47 GMT

Classification of sample: BH01-1.00

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

Sample details

Sample name:
BH01-1.00
Sample Depth:
1.00 m
Moisture content:
8.2%
(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: 8.2% 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		11.3 mg/kg		10.373 mg/kg	0.00104 %	✓	
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		12.6 mg/kg	1.534	17.742 mg/kg	0.00177 %	✓	
5	barium { barium sulphide }	016-002-00-X	244-214-4	21109-95-5		82.5 mg/kg	1.233	93.419 mg/kg	0.00934 %	✓	
6	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.509 mg/kg	1.855	0.867 mg/kg	0.0000867 %	✓	
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		10.3 mg/kg	1.126	10.646 mg/kg	0.00106 %	✓	
8	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	082-001-00-6			1	10.8 mg/kg		9.914 mg/kg	0.000991 %	✓	
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		0.914 mg/kg	1.5	1.259 mg/kg	0.000126 %	✓	
11	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		15.2 mg/kg	2.637	36.791 mg/kg	0.00368 %	✓	
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				1.65 mg/kg	1.405	2.128 mg/kg	0.000213 %	✓	
13	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		39.3 mg/kg	2.469	89.086 mg/kg	0.00891 %	✓	
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		6.55 mg/kg	1.462	8.788 mg/kg	0.000879 %	✓	

#		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		0.0165	mg/kg		0.0151	mg/kg	0.00000151 %	✓	
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		0.0167	mg/kg		0.0153	mg/kg	0.00000153 %	✓	
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		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
34		benzene	601-020-00-8	200-753-7	71-43-2		<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
35		toluene	601-021-00-3	203-625-9	108-88-3		0.0222	mg/kg		0.0204	mg/kg	0.00000204 %	✓	
36		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
37		coronene		205-881-7	191-07-1		<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		<LOD
38		pH			PH		8.17	pH		8.17	pH	8.17 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]		<0.08	mg/kg		<0.08	mg/kg	<0.000008 %		<LOD
											Total:	0.0284 %		

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:

toluene: (conc.: 2.04e-06%)

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00104%)

WAC results for sample: BH01-1.00

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 FAILS the Inert (Inert waste landfill) criteria.

The sample FAILS 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)	%	5.57	3	5
2	LOI (loss on ignition)	%	1.51	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	0.0222	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	8.17	-	>6
8	ANC (acid neutralisation capacity)	mol/kg		-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.0131	0.5	2
10	barium	mg/kg	0.268	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	<0.01	0.5	10
13	copper	mg/kg	0.0258	2	50
14	mercury	mg/kg	<0.0001	0.01	0.2
15	molybdenum	mg/kg	0.0725	0.5	10
16	nickel	mg/kg	0.0094	0.4	10
17	lead	mg/kg	<0.002	0.5	10
18	antimony	mg/kg	<0.01	0.06	0.7
19	selenium	mg/kg	<0.01	0.1	0.5
20	zinc	mg/kg	0.0422	4	50
21	chloride	mg/kg	<20	800	15,000
22	fluoride	mg/kg	<5	10	150
23	sulphate	mg/kg	208	1,000	20,000
24	phenol index	mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg	<30	500	800
26	TDS (total dissolved solids)	mg/kg	1200	4,000	60,000

Key

User supplied data
Inert WAC criteria fail
Non Hazardous WAC criteria fail

Classification of sample: BH06-1.00

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

Sample details

Sample name:
BH06-1.00
Sample Depth:
1.00 m
Moisture content:
24%
(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: 24% 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		33.1 mg/kg		25.156 mg/kg	0.00252 %	✓	
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		9.39 mg/kg	1.534	10.946 mg/kg	0.00109 %	✓	
5	barium { barium sulphide }	016-002-00-X	244-214-4	21109-95-5		52.1 mg/kg	1.233	48.841 mg/kg	0.00488 %	✓	
6	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		1.32 mg/kg	1.855	1.861 mg/kg	0.000186 %	✓	
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		16.3 mg/kg	1.126	13.948 mg/kg	0.00139 %	✓	
8	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	082-001-00-6			1	20.2 mg/kg		15.352 mg/kg	0.00154 %	✓	
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		1.82 mg/kg	1.5	2.075 mg/kg	0.000208 %	✓	
11	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		22.4 mg/kg	2.637	44.887 mg/kg	0.00449 %	✓	
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				2.35 mg/kg	1.405	2.509 mg/kg	0.000251 %	✓	
13	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		76.8 mg/kg	2.469	144.128 mg/kg	0.0144 %	✓	
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		5.32 mg/kg	1.462	5.909 mg/kg	0.000591 %	✓	

#		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		0.0348	mg/kg		0.0264	mg/kg	0.00000264 %	✓	
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		0.0984	mg/kg		0.0748	mg/kg	0.00000748 %	✓	
23		pyrene		204-927-3	129-00-0		0.0937	mg/kg		0.0712	mg/kg	0.00000712 %	✓	
24		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.0558	mg/kg		0.0424	mg/kg	0.00000424 %	✓	
25		chrysene	601-048-00-0	205-923-4	218-01-9		0.0594	mg/kg		0.0451	mg/kg	0.00000451 %	✓	
26		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.102	mg/kg		0.0775	mg/kg	0.00000775 %	✓	
27		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.03	mg/kg		0.0228	mg/kg	0.00000228 %	✓	
28		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.0652	mg/kg		0.0496	mg/kg	0.00000496 %	✓	
29		indeno[123-cd]pyrene		205-893-2	193-39-5		0.0433	mg/kg		0.0329	mg/kg	0.00000329 %	✓	
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		0.0619	mg/kg		0.047	mg/kg	0.0000047 %	✓	
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		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
34		benzene	601-020-00-8	200-753-7	71-43-2		<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
35		toluene	601-021-00-3	203-625-9	108-88-3		<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
36		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
37		coronene		205-881-7	191-07-1		<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		<LOD
38		pH			PH		7.67	pH		7.67	pH	7.67 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]		<0.08	mg/kg		<0.08	mg/kg	<0.000008 %		<LOD
											Total:	0.0319 %		

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. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00252%)

WAC results for sample: BH06-1.00

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)	%	2.96	3	5
2	LOI (loss on ignition)	%	7.59	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.14	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-
5	Mineral oil (C10 to C40)	mg/kg	17.9	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-
7	pH	pH	7.67	-	>6
8	ANC (acid neutralisation capacity)	mol/kg		-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.0171	0.5	2
10	barium	mg/kg	0.135	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	<0.01	0.5	10
13	copper	mg/kg	0.0334	2	50
14	mercury	mg/kg	<0.0001	0.01	0.2
15	molybdenum	mg/kg	0.156	0.5	10
16	nickel	mg/kg	0.0218	0.4	10
17	lead	mg/kg	0.0037	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	0.0179	4	50
21	chloride	mg/kg	<20	800	15,000
22	fluoride	mg/kg	<5	10	150
23	sulphate	mg/kg	447	1,000	20,000
24	phenol index	mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg	48.4	500	800
26	TDS (total dissolved solids)	mg/kg	1740	4,000	60,000

Key

User supplied data

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:
8.2%
(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: 8.2% 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		27.4 mg/kg		25.153 mg/kg	0.00252 %	✓	
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		50 mg/kg	1.534	70.405 mg/kg	0.00704 %	✓	
5	barium { barium sulphide }	016-002-00-X	244-214-4	21109-95-5		330 mg/kg	1.233	373.675 mg/kg	0.0374 %	✓	
6	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.521 mg/kg	1.855	0.887 mg/kg	0.0000887 %	✓	
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		28.5 mg/kg	1.126	29.457 mg/kg	0.00295 %	✓	
8	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	082-001-00-6			1	50.2 mg/kg		46.084 mg/kg	0.00461 %	✓	
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		0.808 mg/kg	1.5	1.113 mg/kg	0.000111 %	✓	
11	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		36.3 mg/kg	2.637	87.863 mg/kg	0.00879 %	✓	
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	2.064 mg/kg	0.000206 %	✓	
13	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		147 mg/kg	2.469	333.222 mg/kg	0.0333 %	✓	
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		20 mg/kg	1.462	26.834 mg/kg	0.00268 %	✓	

#		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		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
34		benzene	601-020-00-8	200-753-7	71-43-2		<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
35		toluene	601-021-00-3	203-625-9	108-88-3		<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
36		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
37		coronene		205-881-7	191-07-1		<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		<LOD
38		pH			PH		8.48	pH		8.48	pH	8.48 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]		<0.08	mg/kg		<0.08	mg/kg	<0.000008 %		<LOD
											Total:	0.0999 %		

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. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00252%)

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)	%	0.468	3	5
2	LOI (loss on ignition)	%	1.3	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.14	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.021	1	-
5	Mineral oil (C10 to C40)	mg/kg	18.6	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-
7	pH	pH	8.48	-	>6
8	ANC (acid neutralisation capacity)	mol/kg		-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.089	0.5	2
10	barium	mg/kg	0.355	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	<0.01	0.5	10
13	copper	mg/kg	0.0157	2	50
14	mercury	mg/kg	<0.0001	0.01	0.2
15	molybdenum	mg/kg	0.0582	0.5	10
16	nickel	mg/kg	0.005	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	0.0149	4	50
21	chloride	mg/kg	<20	800	15,000
22	fluoride	mg/kg	<5	10	150
23	sulphate	mg/kg	795	1,000	20,000
24	phenol index	mg/kg	<0.16	1	-
25	DOC (dissolved organic carbon)	mg/kg	<30	500	800
26	TDS (total dissolved solids)	mg/kg	1720	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:
4.6%
(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: 4.6% 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		25.1 mg/kg		23.945 mg/kg	0.00239 %	✓	
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		5.89 mg/kg	1.534	8.619 mg/kg	0.000862 %	✓	
5	barium { barium sulphide }	016-002-00-X	244-214-4	21109-95-5		41.7 mg/kg	1.233	49.071 mg/kg	0.00491 %	✓	
6	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.26 mg/kg	1.855	0.46 mg/kg	0.000046 %	✓	
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		7.37 mg/kg	1.126	7.916 mg/kg	0.000792 %	✓	
8	lead { lead compounds with the exception of those specified elsewhere in this Annex (worst case) }	082-001-00-6			1	2.73 mg/kg		2.604 mg/kg	0.00026 %	✓	
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		1.09 mg/kg	1.5	1.56 mg/kg	0.000156 %	✓	
11	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		12 mg/kg	2.637	30.185 mg/kg	0.00302 %	✓	
12	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				1.81 mg/kg	1.405	2.426 mg/kg	0.000243 %	✓	
13	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		23.8 mg/kg	2.469	56.066 mg/kg	0.00561 %	✓	
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		7.44 mg/kg	1.462	10.374 mg/kg	0.00104 %	✓	

#		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				<0.18	mg/kg		<0.18	mg/kg	<0.000018 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
17		acenaphthylene				<0.24	mg/kg		<0.24	mg/kg	<0.000024 %		<LOD
			205-917-1	208-96-8									
18		acenaphthene				<0.16	mg/kg		<0.16	mg/kg	<0.000016 %		<LOD
			201-469-6	83-32-9									
19		fluorene				<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		<LOD
			201-695-5	86-73-7									
20		phenanthrene				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<LOD
			201-581-5	85-01-8									
21		anthracene				<0.32	mg/kg		<0.32	mg/kg	<0.000032 %		<LOD
			204-371-1	120-12-7									
22		fluoranthene				<0.34	mg/kg		<0.34	mg/kg	<0.000034 %		<LOD
			205-912-4	206-44-0									
23		pyrene				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<LOD
			204-927-3	129-00-0									
24		benzo[a]anthracene				<0.28	mg/kg		<0.28	mg/kg	<0.000028 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
25		chrysene				<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
26		benzo[b]fluoranthene				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
27		benzo[k]fluoranthene				<0.28	mg/kg		<0.28	mg/kg	<0.000028 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
28		benzo[a]pyrene; benzo[def]chrysene				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
29		indeno[123-cd]pyrene				<0.36	mg/kg		<0.36	mg/kg	<0.000036 %		<LOD
			205-893-2	193-39-5									
30		dibenz[a,h]anthracene				<0.46	mg/kg		<0.46	mg/kg	<0.000046 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
31		benzo[ghi]perylene				<0.48	mg/kg		<0.48	mg/kg	<0.000048 %		<LOD
			205-883-8	191-24-2									
32		polychlorobiphenyls; PCB				<0.21	mg/kg		<0.21	mg/kg	<0.000021 %		<LOD
		602-039-00-4	215-648-1	1336-36-3									
33		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
34		benzene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
35		toluene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
36		ethylbenzene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<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				9.06	pH		9.06	pH	9.06 pH		
				PH									
39		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]				<0.08	mg/kg		<0.08	mg/kg	<0.000008 %		<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:	0.02 %		

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. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00239%)

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)	%	0.634	3	5
2	LOI (loss on ignition)	%	1.03	-	-
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.14	6	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.21	1	-
5	Mineral oil (C10 to C40)	mg/kg	18.5	500	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<10	100	-
7	pH	pH	9.06	-	>6
8	ANC (acid neutralisation capacity)	mol/kg		-	-
Eluate Analysis 10:1					
9	arsenic	mg/kg	0.0065	0.5	2
10	barium	mg/kg	0.314	20	100
11	cadmium	mg/kg	<0.0008	0.04	1
12	chromium	mg/kg	<0.01	0.5	10
13	copper	mg/kg	0.0101	2	50
14	mercury	mg/kg	<0.0001	0.01	0.2
15	molybdenum	mg/kg	0.0575	0.5	10
16	nickel	mg/kg	<0.004	0.4	10
17	lead	mg/kg	<0.002	0.5	10
18	antimony	mg/kg	<0.01	0.06	0.7
19	selenium	mg/kg	0.0138	0.1	0.5
20	zinc	mg/kg	<0.01	4	50
21	chloride	mg/kg	<20	800	15,000
22	fluoride	mg/kg	6.02	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	<30	500	800
26	TDS (total dissolved solids)	mg/kg	454	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: 2024.271.6257.11459 (29 Sep 2024)
HazWasteOnline Database: 2024.271.6257.11459 (29 Sep 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

Appendix 7

Survey Data

Survey Data

Location	Irish Transverse Mercator		Elevation	Irish National Grid	
	Easting	Northing		Easting	Northing
Cable Percussive Boreholes					
BH01	710194.879	731585.298	47.37	310268.071	231558.432
BH02	710220.670	731608.127	47.34	310293.867	231581.266
BH03	710230.808	731487.565	47.35	310304.008	231460.678
BH04	710309.169	731627.521	46.81	310382.385	231600.664
BH05	710306.612	731586.961	47.36	310379.828	231560.096
BH06	710266.783	731533.342	47.24	310339.991	231506.465
Trial Pits					
TP01	710193.652	731587.051	47.35	310266.844	231560.185
TP02	710324.201	731630.615	46.61	310397.420	231603.759
Foundation Pits					
FP01	710230.721	731588.574	47.52	310303.920	231561.708
FP02	710262.984	731535.834	47.40	310336.191	231508.957

Legend Key

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

Contract No:	6332
Contract Name:	Parkmore Industrial Estate
Location:	Long Mile Road, Dublin 12
Client:	Watfore Limited
Engineer:	Roughan & O'Donovan
Title:	Site Plan
Scale:	1:1000
Drawn By:	SL

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

ROBINHOOD IND. ESTATE
ON BEHALF OF
O'REILLY STUART & ASSOC.

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APPENDICES :

FOREWORD

Notes on Site Investigation Procedures

The following notes should be read in conjunction with the report . Any modification to the procedures outlined below are indicated in the main text .

GENERAL

The recommendations made and opinions expressed in the Report are based on the Boring Records , an examination of samples and the results of the site and laboratory tests . No responsibility can be held for conditions which have not been revealed by boreholes , for example , between borehole positions . Whilst the report may express an opinion on a possible configuration of strata both between borehole positions and below the maximum depth of the investigation , this is for guidance only and no liability can be accepted for its accuracy .

BORING TECHNIQUE

Unless otherwise stated , the ' Shell and Auger ' techniques of soft ground boring has been employed . Whilst this techniques allows the maximum data to be obtained on strata conditions , a degree of mixing of some layered soils (e.g. thin layers of coarse and fine granular material) is inevitable . Specific attention is drawn to this factor where evidence of such a condition is available .

GROUND WATER

The ground water conditions entered on the Boring Records are those appertaining at the time of the investigation . The normal rate of boring does not usually permit the recording of an equilibrium water level for any one water strike . Moreover , ground water levels are subject to variations caused by seasonal effects or changes in local drainage conditions . The table of each shows the ground water level at the quoted borehole and casing depths , usually at the start of the day's work . The word ' none ' indicates that ground water was sealed off by the borehole casing .

ROUTINE SAMPLING

Undisturbed samples of predominately cohesive soils are obtained in a 102mm diameter open - drive sampler , complying with the requirements of the British Standard Code of Practice B.S.5930 . Large disturbed samples of granular soils , or of soils in which undisturbed sampling is not possible or appropriate , are taken from the boring tools and sealed into polythene bags . Small disturbed samples are taken at frequent intervals of depth and sealed into 0.5kg glass jars or polythene bags for subsequent visual classification. Where encountered in sufficient quantity , samples of ground water are taken .

Unless otherwise stated in the main text , disturbed soil samples may not be at their natural water content .

REPORT ON A SITE INVESTIGATION AT ROBIN HOOD INDUSTRIAL ESTATE ON BEHALF OF O'REILLY STUART AND ASSOCIATES CONSULTING ENGINEERS

REPORT NO. 3293 **FEBRUARY 1996**

I. INTRODUCTION

A site at Robin Hood Road is to be developed for warehousing. On the instructions of O'Reilly Stuart & Associates, Consulting Engineers, and their client, an investigation of subsoil conditions has been carried out.

Trial pits were excavated by JCB in a total of six locations, pits were logged by our engineer and samples recovered for laboratory examination and analysis.

This report discusses the findings of the investigation relative to foundation design and construction.

II. FIELDWORK

Pits were opened in locations indicated on the site plan enclosed in Appendix III. The site was generally level, some delays in gaining access were recorded.

Pits 1 to 4 were located at the corners of the proposed warehouse. Varying thicknesses of surface filling or topsoil (up to 1.50 metres) overlies a firmish somewhat damp gravelly clay.

At depths varying from 1.50 to 1.90 metres below ground level, a very stiff grey-black gravelly clay is found. This is the typical black lodgement till (or boulder clay) of the Dublin area. Pits were terminated in this stratum, which typically contained cobble and boulder sized particles. Slight water seepages were recorded in Pits 2 and 3.

Pits 5 and 6 were located in proposed paved areas and were excavated to recover large samples for laboratory CBR tests.

Full details of stratification at each trial pit is given on the individual trial pit records contained in Appendix I. Records also note samples taken and indicate pit stability during excavation.

III. TESTING

Samples were returned to the laboratory for visual examination. Two samples of fill were analysed for sulphate content and pH. Low sulphate concentrations indicate that no special precautions need be taken to protect foundation concrete.

Two CBR tests were performed and results of 4.7 and 4.8% obtained.

All test data is enclosed in Appendix II to this report.

IV. DISCUSSION

The proposed development will include construction of a warehouse with a modern high racking system.

(a) Main Foundations :

Structural foundations should be taken to the black boulder clay stratum at depths between 1.50 and 2.00 metres. An allowable bearing pressure of 200 kN/m^2 can be taken for pad or wide strip footings. Footings can be placed directly on the black boulder clay or the excavation filled with low-grade concrete up to formation level. Inspection of foundation excavations is advised to ensure uniformity of founding medium and consistency of boulder clay between trial pit positions.

(b) Floors :

It is understood that floor levels will be critical. We would suggest that 1.0 metres of the surface fill, topsoils and organic materials be removed and be replaced by well-compacted selected filling (Clause 804 or similar). Loadings of the order of 50 kN/m^2 can be taken on this and no difficulties are anticipated with differential settlements or overall settlements under this load.

(c) Paved Areas :

CBR values of 4.7% (average) have been obtained in the laboratory and this should be quite satisfactory for road or parking requirements for light industrial development .

GENERAL

The foregoing recommendations are based on the findings of the trial pits. No responsibility can be taken for variations across the site (between pit locations) or for any deterioration in soil conditions below the depths excavated.

APPENDIX I. TRIAL PIT RECORDS

APPENDIX II TEST RESULTS

3293	CALIFORNIA BEARING RATIO	I.G.S.L.

Contract:

ROBINHOOD INDUSTRIAL ESTATE

Locaton	Sample No.	Depth of Sample	Sample Description	Water Content %	Test Code	Water Content		C.B.R.		
						Top %	Bottom %	Top %	Base %	Average %
Pit 5	1018	0.60	Firm brown silty sandy gravelly CLAY with root fibres	25.7	98% St. H			5.4	4.4	4.8
Pit 6	1020	0.60	Grey-brown sandy silty CLAY with root hairs and some gravel	25.4	98% St. H			5.0	4.4	4.7

Test Code:

U.-Undisturbed Sample
D.-Dynamic Compaction
St.-Static compaction
L.-2.5Kg. Rammer
H.-4.5Kg. Rammer
A/5.-5% Air Voids Ratio
A10.-10% Air Voids Ratio
RN29.- Road Note 29 (St. 95% H.)
V.- Vibrating Hammer
M.- Method Number

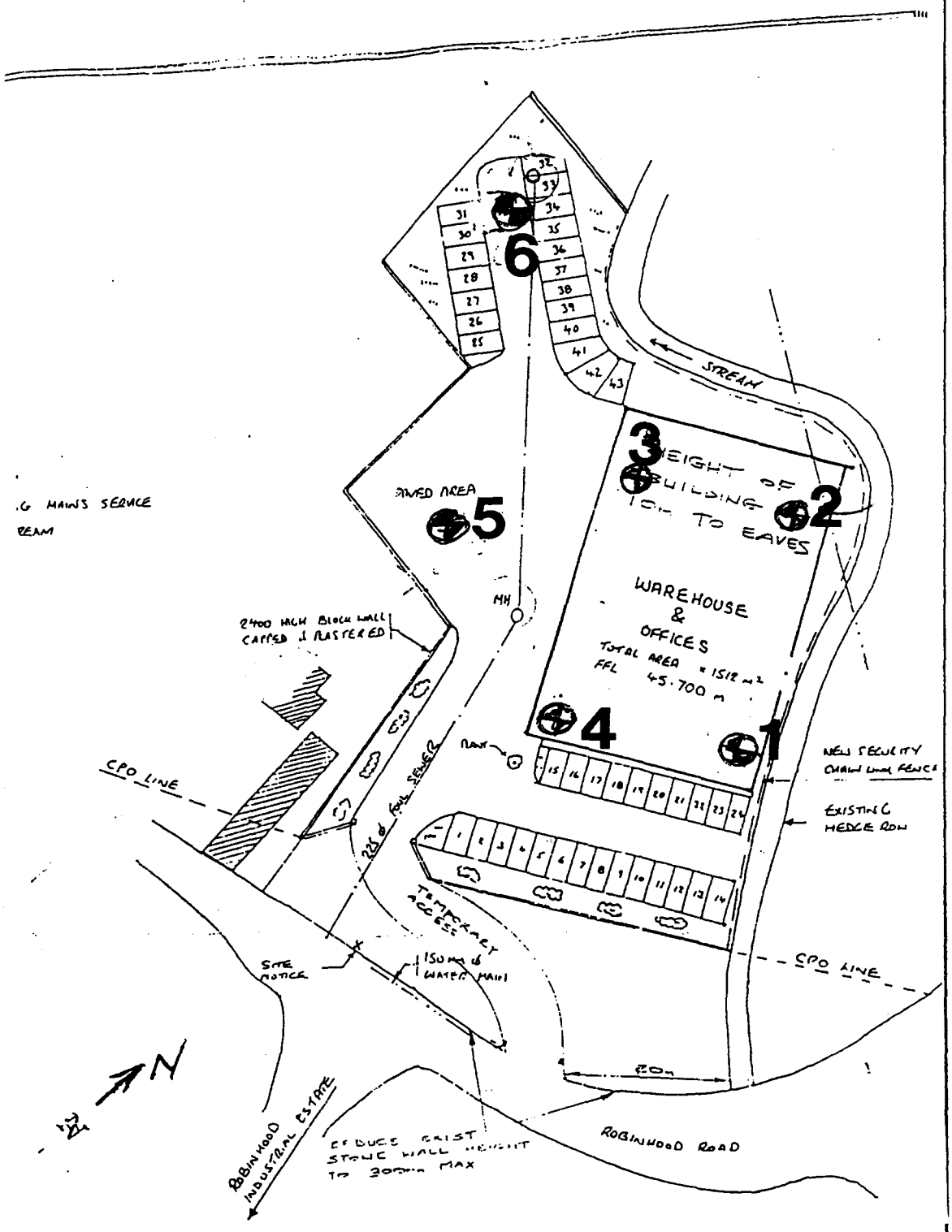
REPORT NO. 3293	CHEMICAL ANALYSIS	IGSL

CONTRACT: ROBINHOOD INDUSTRIAL ESTATE

BOREHOLE NO.	SAMPLE NO.	DEPTH (METRES)	SAMPLE TYPE	TEST CODE	SULPHUR TRIOXIDE		pH VALUE
					PARTS S03 PER 100,000 WATER	PER CENT SO3 SOIL	
Pit.1	1013	1.0	CLAY	S		0.09	7.6
Pit.3	1016	1.5	CLAY	S		0.11	7.7

TEST CODE: W = WATER S = SOIL A = AQUEOUS SOIL EXTRACT

APPENDIX III ... SITE PLAN



IGSL IRISH GEOTECHNICAL SERVICES LTD.

DRAWN BY		ROBINHOOD ROAD DUBLIN	SCALE NTS
CHECKED BY		LOCATION OF TRIAL PITS	DRAWING NO. 3293
DATE	F+396		

TRIAL PIT RECORD

I.G.S.L.

Contract:	ROBINHOOD INDUSTRIAL ESTATE
No.	3293
Location:	ROBINHOOD ROAD
Client:	O'REILLY STUART AND ASSOCIATES
Dates:	21.2.96

93788

Pit No.	6
Sheet No.	1 of 1
Method	JCB
Ground Level m.O.D	

	Description	Red. Level	Legend	Depth m	samples Ref. No.	samples Type	samples Depth	Field Tests
	MADE GROUND : Black grey silty CLAY with roots			0.80	1020	D	0.60	
1	Stiff brown sandy gravelly CLAY			1.20				
2								
3								
4								
5								
6								
7								
8								
9								

Remarks

Dry

Sample taken for C.B.R. test

Driller:

Water level observations

Date	Hole Depth	Cased Depth	Water Depth	Remarks

Sample/Test Key : U - tube sample. D - disturbed sample. W - water sample. S - SPT. C - CPT. R - Refusal. V- vane.

TRIAL PIT RECORD

I.G.S.L.

Contract:	ROBINHOOD INDUSTRIAL ESTATE	Pit No.	5
No.	3293	Sheet No.	1 of 1
Location:	ROBINHOOD ROAD	Method	JCB
Client:	O'REILLY STUART AND ASSOCIATES		
Dates:	21.2.96	Ground Level m.O.D	

93787

	Description	Red. Level	Legend	Depth m	samples Ref. No.	samples Type	samples Depth	Field Tests
	TOPSOIL			0.40				
	Firm brown sandy stony CLAY with occasional roots			0.80	1018	D	0.60	
1	Stiff grey stony CLAY with cobbles			1.50	1019	D	1.00	
2								
3								
4								
5								
6								
7								
8								
9								

Remarks

Dry

Samples recovered for C.B.R. test

Driller:

Water level observations

Date	Hole Depth	Cased Depth	Water Depth	Remarks

Sample/Test Key : U - tube sample. D - disturbed sample. W - water sample. S - SPT. C - CPT. R - Refusal. V- vane.

TRIAL PIT RECORD

I.G.S.L.

Contract:	ROBINHOOD INDUSTRIAL ESTATE	Pit No.	3
No.	3293	Sheet No.	1 of 1
Location:	ROBINHOOD ROAD	Method	JCB
Client:	O'REILLY STUART AND ASSOCIATES		
Dates:	21.2.96	Ground Level m.O.D	

93785

Description	Red. Level	Legend	Depth m	samples Ref. No.	samples Type	samples Depth	Field Tests
MADE GROUND : Clay and gravel with brick, timber and plastic			1.10				
Firm grey-brown sandy gravelly CLAY			1.80	1016	D	1.50	
Very stiff grey-black silty sandy gravelly CLAY with cobbles			2.50				

Remarks

Water ingress (slight) at 1.50

Pit stable during excavation

Water level observations

Date	Hole Depth	Cased Depth	Water Depth	Remarks

Driller:

Sample/Test Key : U - tube sample. D - disturbed sample. W - water sample. S - SPT. C - CPT. R - Refusal. V- vane.

TRIAL PIT RECORD

I.G.S.L.

Contract:	ROBINHOOD INDUSTRIAL ESTATE	Pit No.	2
No.	3293	Sheet No.	1 of 1
Location:	ROBINHOOD ROAD	Method	JCB
Client:	O'REILLY STUART AND ASSOCIATES		
Dates:	21.2.96	Ground Level m.O.D	

93784

	Description	Red. Level	Legend	Depth m	samples Ref. No.	samples Type	samples Depth	Field Tests
1	MADE GROUND : Black and brown CLAY with fragments of brick and rubble			1.50				
2	Firm grey black very gravelly CLAY (damp)			1.90				
3	Very stiff grey-black silty sandy gravelly CLAY with boulders			2.70	1015	D	2.00	
4								
5								
6								
7								
8								
9								

Remarks

Seepage at 2.00m

Stable Excavation

Water level observations

Date	Hole Depth	Cased Depth	Water Depth	Remarks

Driller:

Sample/Test Key : U - tube sample. D - disturbed sample. W - water sample. S - SPT. C - CPT. R - Refusal. V- vane.

TRIAL PIT RECORD

I.G.S.I

Contract:	ROBINHOOD INDUSTRIAL ESTATE	Pit No.	1
No.	3293	Sheet No.	1 of
Location:	ROBINHOOD ROAD	Method	JCB
Client:	O'REILLY STUART AND ASSOCIATES		
Dates:	21.2.96	Ground Level m.O.D	

3783

	Description	Red. Level	Legend	Depth m	samples Ref. No.	Type	Depth	Field Tes
	TOPSOIL			0.30				
1	Firm brown silty sandy CLAY with fine root fibres			0.80				
	Firm brown sandy gravelly CLAY (dampish)				1013	D	1.00	
				1.50				
2	Very stiff grey-black silty sandy gravelly CLAY with cobbles				1014	D	2.00	
				2.50				
3								
4								
5								
6								
7								
8								
9								

Remarks

No free water

Stable Excavation.

Water level observations

Date	Hole Depth	Cased Depth	Water Depth	Remark

Driller:

Sample/Test Key : U - tube sample. D - disturbed sample. W - water sample. S - SPT. C - CPT. R - Refusal. V- vane.

TRIAL PIT RECORD

I.G.S.L.

Contract:	ROBINHOOD INDUSTRIAL ESTATE	Pit No.	4
No.	3293	Sheet No.	1 of 1
Location:	ROBINHOOD ROAD	Method	JCB
Client:	O'REILLY STUART AND ASSOCIATES		
Dates:	21.2.96	Ground Level m.O.D	

93786

	Description	Red. Level	Legend	Depth m	samples Ref. No.	samples Type	samples Depth	Field Tests
1	MADE GROUND : Hardcore (300mm) over black gravelly CLAY with brick, glass and root fibres			0.90				
	Firm brown silty sandy gravelly CLAY with fine root hairs			1.50				
2	Very stiff black silty sandy gravelly CLAY with cobbles				1017	D	1.60	
3				2.75				
4								
5								
6								
7								
8								
9								

Remarks

Dry

Pit stable

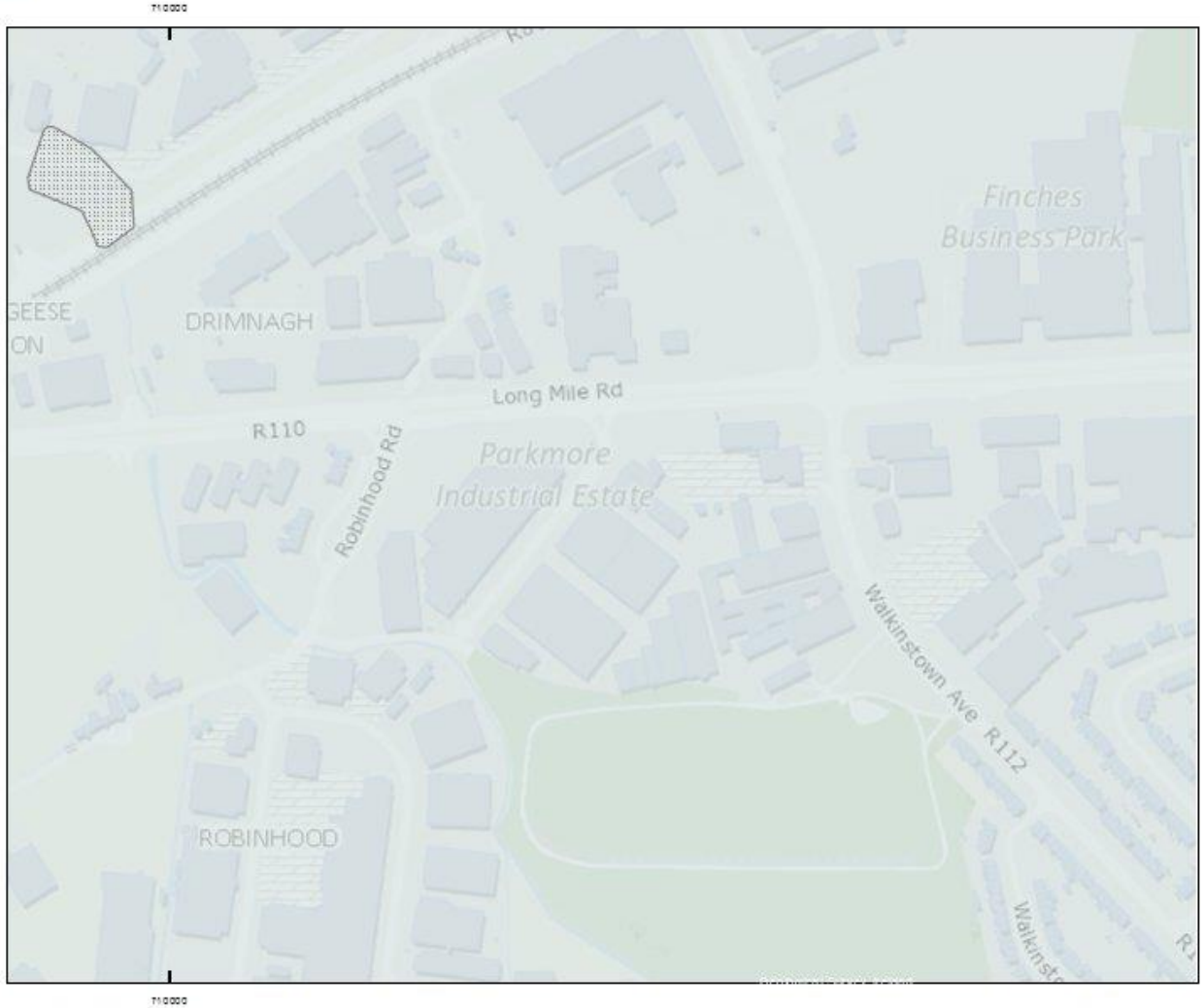
Water level observations

Date	Hole Depth	Cased Depth	Water Depth	Remarks

Driller:

Sample/Test Key : U - tube sample. D - disturbed sample. W - water sample. S - SPT. C - CPT. R - Refusal. V- vane.

Geological Survey Ireland Public Data



Legend

- Lucan Formation
- Bedrock Outcrops

Scale: 1:5,000

Geological Survey Ireland

0 0.035 0.07 0.14 mi

0 0.05 0.1 0.2 km

Map Centre Coordinates (ITM) 710,339 731,570

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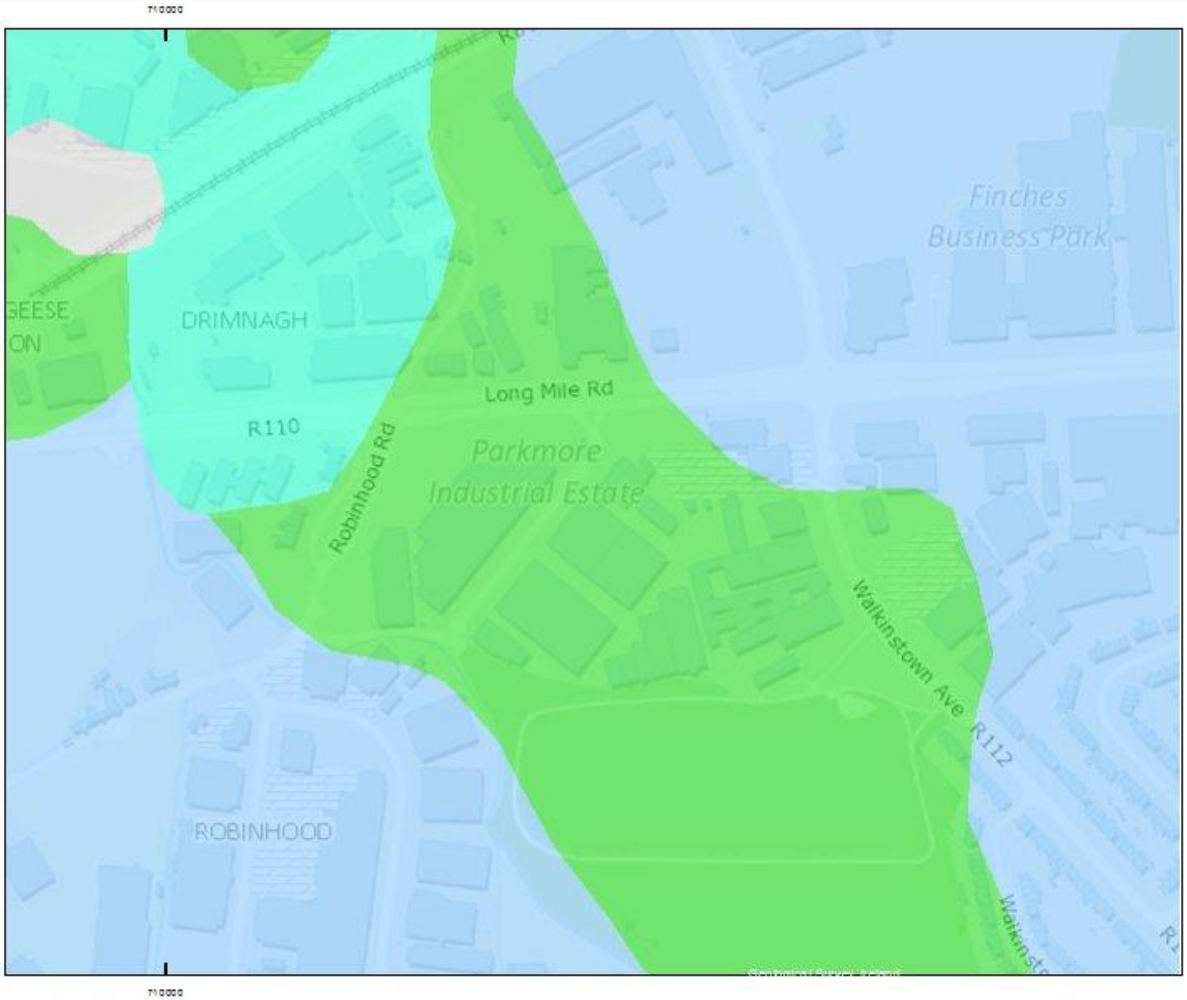
Geological Survey Ireland Public Data



Legend

- GLs, Gravels derived from Limestones
- TLs, Till derived from limestones
- Urban

Scale: 1:5,000

Geological Survey Ireland

0 0.035 0.07 0.14 mi

0 0.05 0.1 0.2 km

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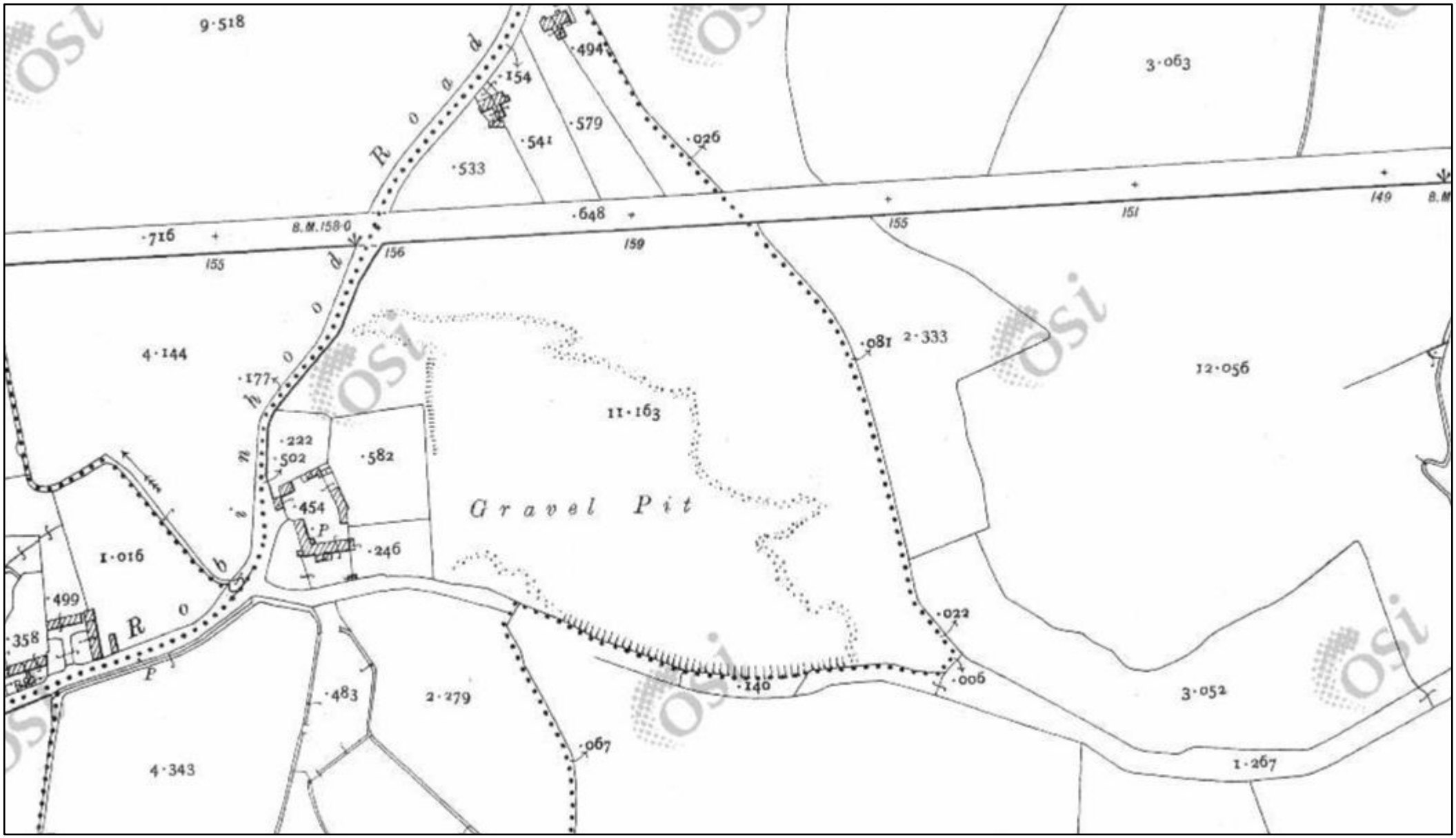
GeoHive Map



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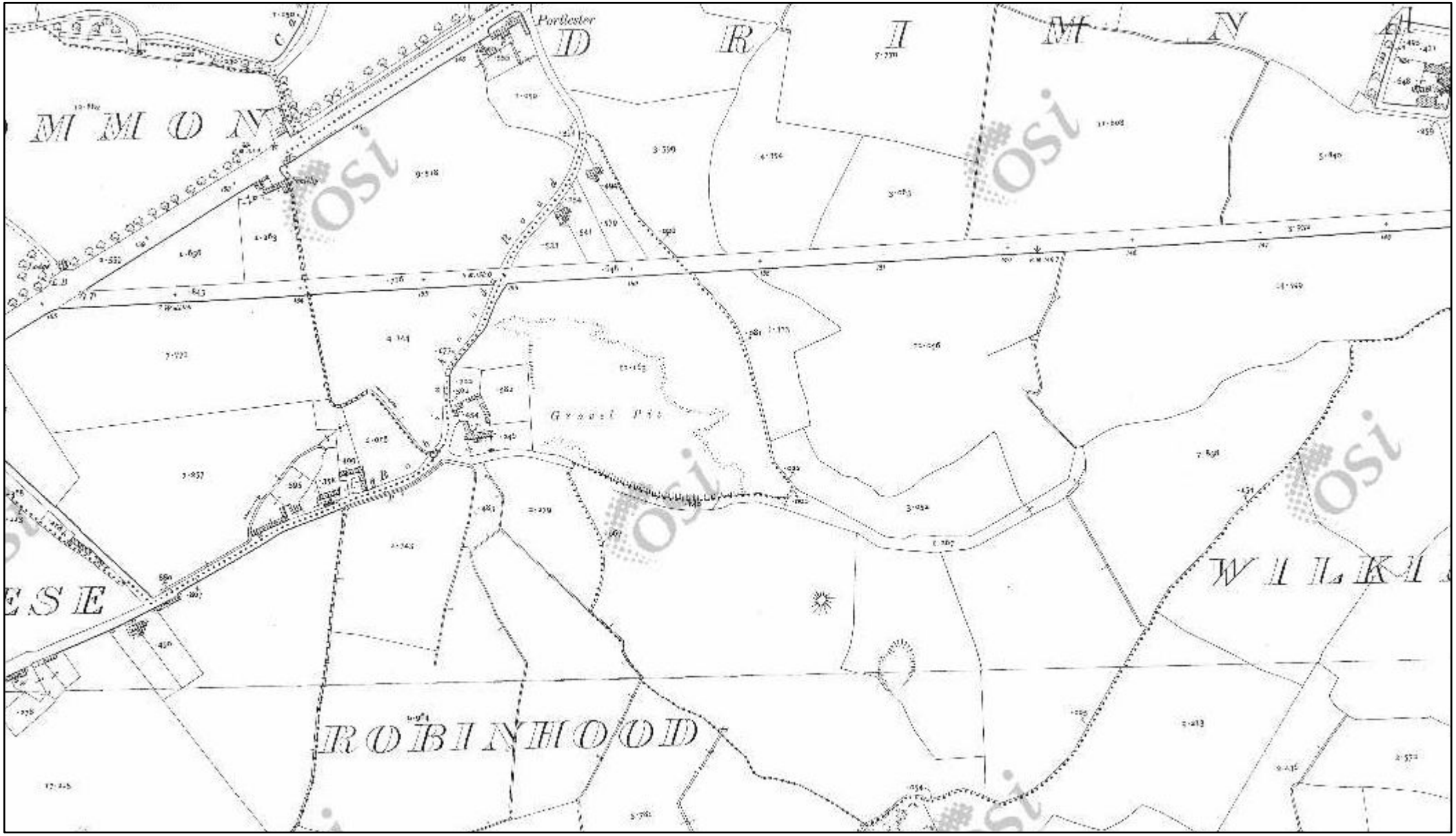
0 0.03 0.07 0.13 km

GeoHive

GeoHive Map



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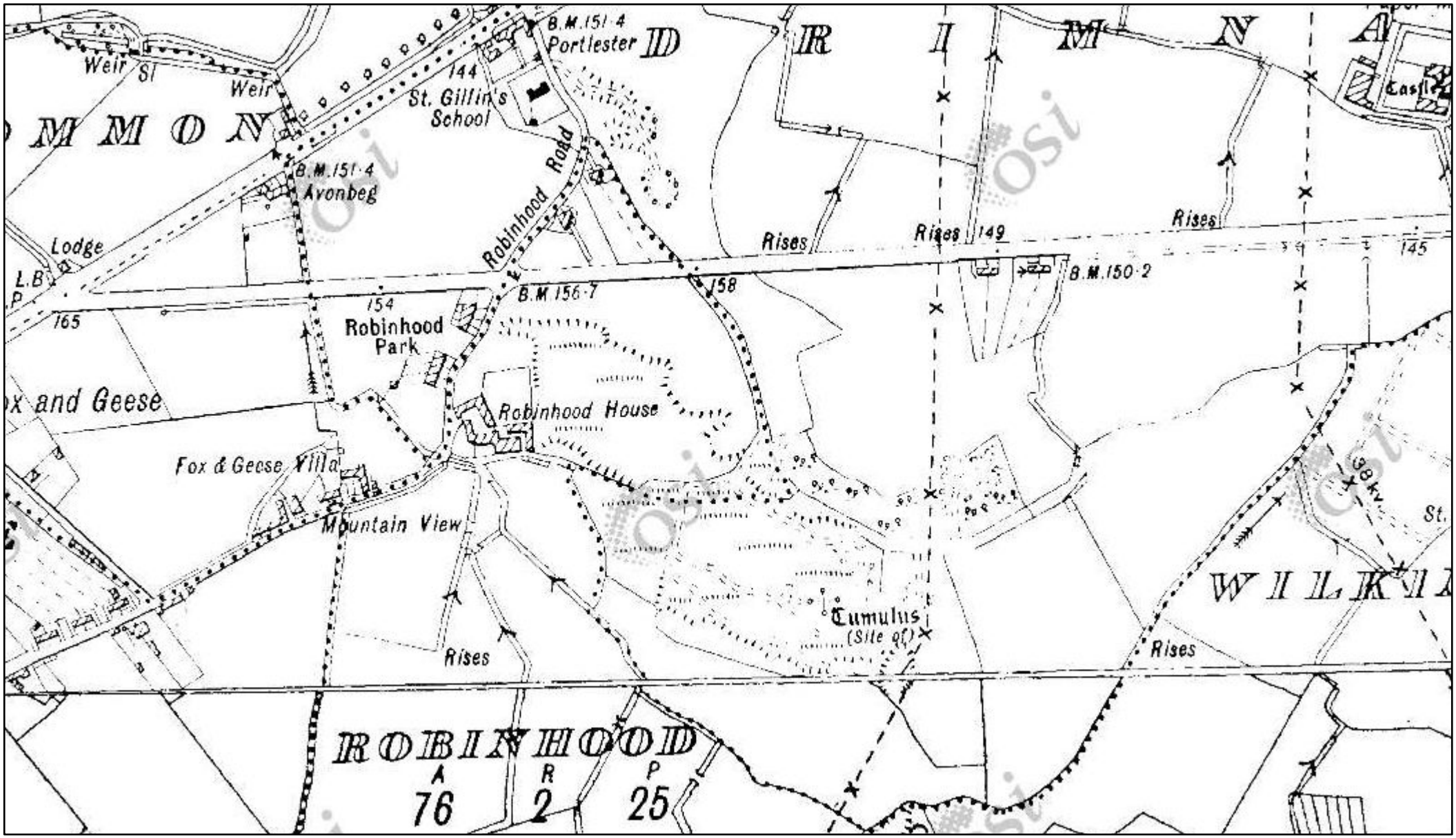
0 0.05 0.1 0.2 km

GeoHive

GeoHive Map



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0 0.04 0.09 0.17 mi

0 0.05 0.1 0.2 km

GeoHive

GeoHive Map

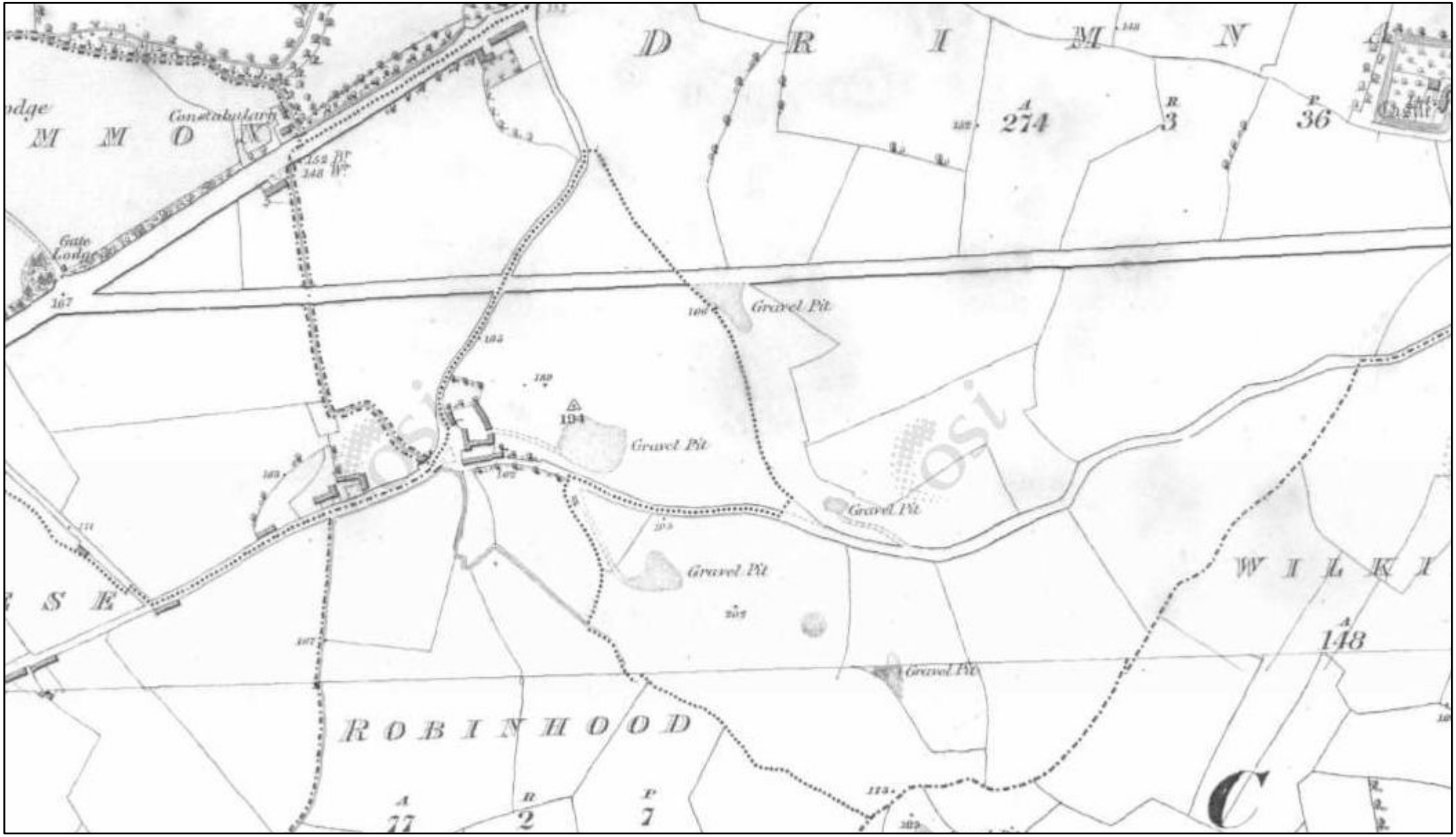
31/01/2023, 17:03:34

1:5,000

0 0.04 0.09 0.17 mi

0 0.05 0.1 0.2 km

GeoHive Map



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0 0.04 0.09 0.17 mi

0 0.05 0.1 0.2 km

GeoHive

APPENDIX B
EXISTING DRAINAGE AND WATERMAIN RECORDS

UISCE ÉIREANN : IRISH WATER

Legend

Sewer Manholes

Manhole Type

- Standard
- Other; Unknown
- Sewer Chambers
- Gravity - Combined
- Gravity - Foul
- Gravity - Overflow
- Gravity - Foul
- Surface Gravity Mains

Storm Manholes

Manhole Type

- Standard
- Other; Unknown

Storm Inlets

Inlet Type

- Standard

Surface Fittings

Fitting Type

- Other; Unknown

Storm Discharge Points

Discharge Type

- Outfall
- Boundary Meter
- Unknown Meter ; Other Meter
- Sluice Valve Open
- Sluice Valve Closed
- Sluice Valve Closed
- Double Air Control Valve

Water Hydrants

Hydrant Function

- Fire Hydrant
- Water Kiosk
- Cap
- Other Fittings

Water Distribution Mains

Owned By

- Irish Water
- Irish Water
- Water Distribution Chambers
- Surface Gravity Mains Private

1:1,00

Print Date: 30/01/2023

UISCE ÉIREANN : IRISH WATER

Legend

Sewer Manholes

Manhole Type

- Standard
- Other; Unknown
- Gravity - Combined
- Gravity - Foul
- Gravity - Overflow
- Gravity - Foul
- Surface Gravity Mains

Storm Manholes

Manhole Type

- Standard
- Other; Unknown

Surface Fittings

Fitting Type

- Other; Unknown

Storm Discharge Points

Discharge Type

- Outfall
- Boundary Meter
- Unknown Meter ; Other Meter
- Sluice Valve Open
- Sluice Valve Closed
- Sluice Valve Closed
- Double Air Control Valve

Water Hydrants

Hydrant Function

- Fire Hydrant
- Water Kiosk
- Cap
- Other Fittings

Water Distribution Mains

Owned By

- Irish Water
- Irish Water
- Irish Water
- Water Distribution Chambers
- Pressure Monitoring Point

1:1,00

Print Date: 30/01/2023