



FACTUAL REPORT ON GEOENVIRONMENTAL GROUND INVESTIGATION

Dakota Hotel Manchester Airport

Reference

6338-JPG-XX-XX-RP-G-0603-S2-P01

Date

May 2024

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JPG. Exploratory Hole Location Plan. Dakota Hotel, Manchester Airport. Drawing No. 6338-JPG-ZZ-ZZ-DR-G-1100 S2 P03. Dated 28 March 2024.

Appendix B Exploratory Hole Logs

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CONFIDENTIALITY STATEMENT

This report is addressed to and may be relied upon by the following:

Evans Dakota Hotels Limited
Millshaw
LEEDS
LS10 1AB

This report has been prepared for the sole use and reliance of the above-named party. This report shall not be relied upon or transferred to any other parties without the express written authorisation of JPG (Leeds) Limited. No responsibility will be accepted where this report is used, either in its entirety or in part, by any other party.

DOCUMENT HISTORY

Revision	Date	Revision Details	Status	Author(s)	Approved
P01	03.05.2024	First Issue	Information	EJS	RJM



1.0 INTRODUCTION

1.1 Instruction

JPG (Leeds) Limited (JPG) has been instructed by Evans Dakota Hotels Limited to provide a factual geoenvironmental ground investigation report for a proposed hotel development off Enterprise Way immediately north east of Manchester Airport.

1.2 Objectives

The main objective of this report is to provide all of the factual ground investigation information for the site in a single document. The information provided in this report can then be used to inform the interpretative report for the site.

1.3 Location

The site is located to the east of Junction 5 of the M56, approximately 500m to the north east of Terminal 2, Manchester Airport. The approximate centre of the site is located at NGR 381961 386038.

A site location plan is provided as Figure 1 in Appendix A.

1.4 Site Description and Topography

The site has an area of approximately 1.22 hectares (ha) and comprises an irregular shaped relatively level parcel of land. It measures approximately 110m along its north to south axis and 140m along its east to west axis. Vehicular access to the site is off Bailey Lane from the north west.

Most of the site is covered with crushed stone, with smaller areas of concrete hardstanding.

A shallow embankment, approximately 2m high, runs along the south eastern, south western and north western boundaries of the site.

Mature and semi-mature trees are located along the north eastern boundary of the site.

Most of site is bound by a wooden fence, except for the entrance off Bailey Lane which comprises herras fencing secured with a combination lock. An additional fence/gate with a combination lock is located inside the site, close to the entrance off Bailey Lane.

A water house (wooden box) and water tap (live) were noted in the northern part of the site.



Bailey Lane is located immediately beyond the north western boundary beyond which are units occupied by the Razorblue Group and Etrop Grange Hotel. Woodland and houses are located beyond the site to the north east. A roundabout is located beyond the site to the south east and Enterprise Way is beyond the site to the south west.

Land beyond Enterprise Way to the south west and to the west beyond Bailey Lane are currently under construction.

An aerial photograph of the site is included as Figure 2 in Appendix A.

1.5 Development Proposals

The proposed development comprises a seven-storey hotel building with associated car parking, electrical charging points, service yard and landscaping.

1.6 Previous Reports

A desk study report has been previously been prepared by JPG for the site, this is referenced below:

- JPG (Leeds) Limited. Geoenvironmental Desk Study Report. Dakota Hotel, Manchester Airport. Report Ref 6338-JPG-XX-XX-RP-G-0601-S2-P01. Dated February 2024.

1.7 Limitations

The general limitations to the nature of the investigation are outlined in Appendix F.



2.0 FIELDWORK

The ground investigation was carried out between 26 February and 8 March 2024.

The works undertaken are summarised in Table 2.1 below.

Table 2.1 – Summary of Ground Investigation

Investigation Method	No of Positions	Maximum Depth (m bgl)	Monitoring Wells	Monitoring
Hand Pits	2 (HP1 and HP2)	0.5	-	-
Trial Pits	9 (TP101 to TP109)	4.00	-	-
Window Sample boreholes	8 (WS101 to WS108)	4.00	4	GG, WL
Rotary Cored Boreholes	3 (BHRC101 to BHRC103)	24.00	2 x 150mm	GG, WL

bgl – below ground level.

GG – ground gas monitoring (methane, carbon dioxide, oxygen, hydrogen sulphide, gas flow and atmospheric pressure using a portable gas meter).

WL – standing groundwater level using an electric contact dipmeter.

The rationale of the works undertaken are summarised in Table 2.2 below.

Table 2.2 – Exploratory Hole Rationale

Rationale	Exploratory Holes
Hand pits in the face of the perimeter bund to obtain soil samples to submit for geotechnical testing and chemical analysis.	HP1 and HP2
Trial pits to assess near the surface ground conditions and to obtain soil samples to submit for geotechnical testing and chemical analysis.	TP101 to TP109
Window sample boreholes to assess near the surface ground conditions and obtain soil and groundwater samples to submit for geotechnical testing and chemical analysis. The boreholes were also used for the installation of shallow hazardous ground gas and groundwater monitoring wells.	WS101 to WS108
Rotary cored boreholes targeting the proposed development to assess the strength of the underlying bedrock to inform foundation design.	BHRC101 to BHRC103

Soil and groundwater samples were obtained and submitted to the laboratory for geotechnical testing and chemical analysis. Rock core samples were also submitted for strength testing.

Groundwater and hazardous ground gas monitoring wells were installed in four of the window sample boreholes and two of the rotary cored boreholes. These were monitored for groundwater, hazardous ground gases and gas flows on six occasions.

The ground investigation was undertaken in general accordance with the techniques outlined in BS5930:2015+A1:2020 *Code of Practice for Ground Investigations*.

An exploratory hole location plan is provided in Appendix A and copies of exploratory hole logs are provided in Appendix B. Photographs of the recovered rock core are provided in Appendix B.

The works were carried out under the full-time supervision of an engineer from JPG.

Exploratory locations were surveyed using Leica GPS equipment (accuracy +/- 10mm). The surveyed positions were then transferred onto the survey drawing.



3.0 LABORATORY TESTING

Soil and groundwater samples obtained during the ground investigation were submitted to the laboratory for chemical analysis and geotechnical testing.

3.1 Chemical Analysis

Chemical testing was carried out for the following determinands by i2 Analytical Testing Services Limited. Chemical analysis certificates are provided in Appendix C.

Soils – General

Selected samples of soil were analysed for the following contaminants on a total concentration basis:

Arsenic	Mercury	Copper
Cadmium	Lead	Nickel
Chromium	Zinc	Selenium
Hexavalent Chromium	Cyanide (free)	Phenol
Speciated Poly Aromatic Hydrocarbons (PAHs)		
Soil Organic Matter	Asbestos Screen	
Water Soluble Sulphate and pH	Water Soluble Chloride	
Total Sulphate	Total Sulphide	

Waters – General

Selected samples of soil leachate and groundwater were analysed for the following contaminants:

Arsenic	Mercury	Copper
Cadmium	Lead	Nickel
Chromium	Zinc	Selenium
Hexavalent Chromium	Cyanide (free)	Phenol
Speciated Poly Aromatic Hydrocarbons (PAH)		
Sulphate and pH		
Hardness		

3.2 Geotechnical Testing

In-situ standard penetration tests (SPT) were performed within the window sample and rotary cored boreholes. The results are presented on the exploratory hole logs provided in Appendix B.

Laboratory geotechnical testing was carried out by PSL in Doncaster, in order to determine the physical characteristics of the substrata and comprised the following.

- Moisture content and Atterberg Limits testing to classify the materials.
- Particle size distribution/sedimentation to confirm the field descriptions of the soils encountered.



- Compaction testing (2.5kg and 4.5kg) and particle density testing to assess the suitability of the soils for re-use on site as engineered fill.
- California Bearing Ratio (CBR) test (2.5kg unsoaked) to determine the bearing characteristics of the material.
- Rock strength testing comprising point load tests and uniaxial compressive strength (UCS) tests on rock core.
- Water-soluble sulphate, pH, total sulphate and total sulphur.

The geotechnical testing was carried out in accordance with BS1377:1990, "*Methods of Test for Soils for Civil Engineering Purposes*". The results of the geotechnical testing are provided in Appendix D.



4.0 GROUNDWATER AND GROUND GAS MONITORING

Groundwater and hazardous ground gas monitoring was undertaken on completion of the ground investigation. The wells were monitored on six occasions between 8 March and 11 April 2024.

The works were carried out using a portable gas meter in accordance with the JPG methodology and included measurements of methane, carbon dioxide, oxygen, hydrogen sulphide, carbon monoxide, gas flows and atmospheric pressure.

The results of the groundwater and hazardous ground gas monitoring are provided in Appendix E.



Appendix A Figures/Drawings



Figure 1 – Site Location Plan

Site	Dakota Hotel, Manchester Airport
Client	Evans Dakota Hotels Limited
Job Number	6338
Scale	NTS



Figure 2 – Aerial Photograph

Site	Dakota Hotel, Manchester Airport
Client	Evans Dakota Hotels Limited
Job Number	6338
Scale	NTS

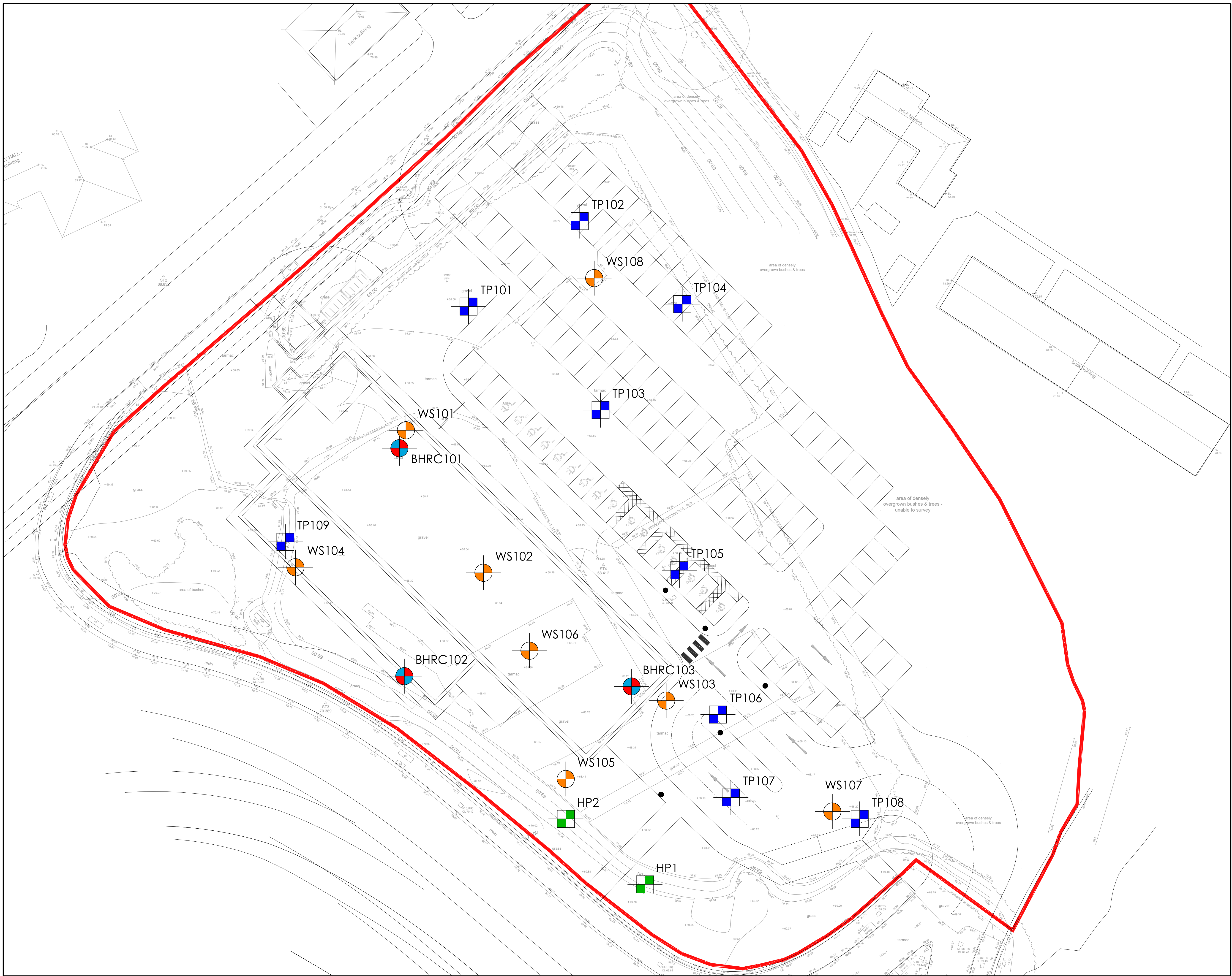
NOTES

 TP

TRIAL PIT

WS
WINDOW SAMPLE BOREHOLE

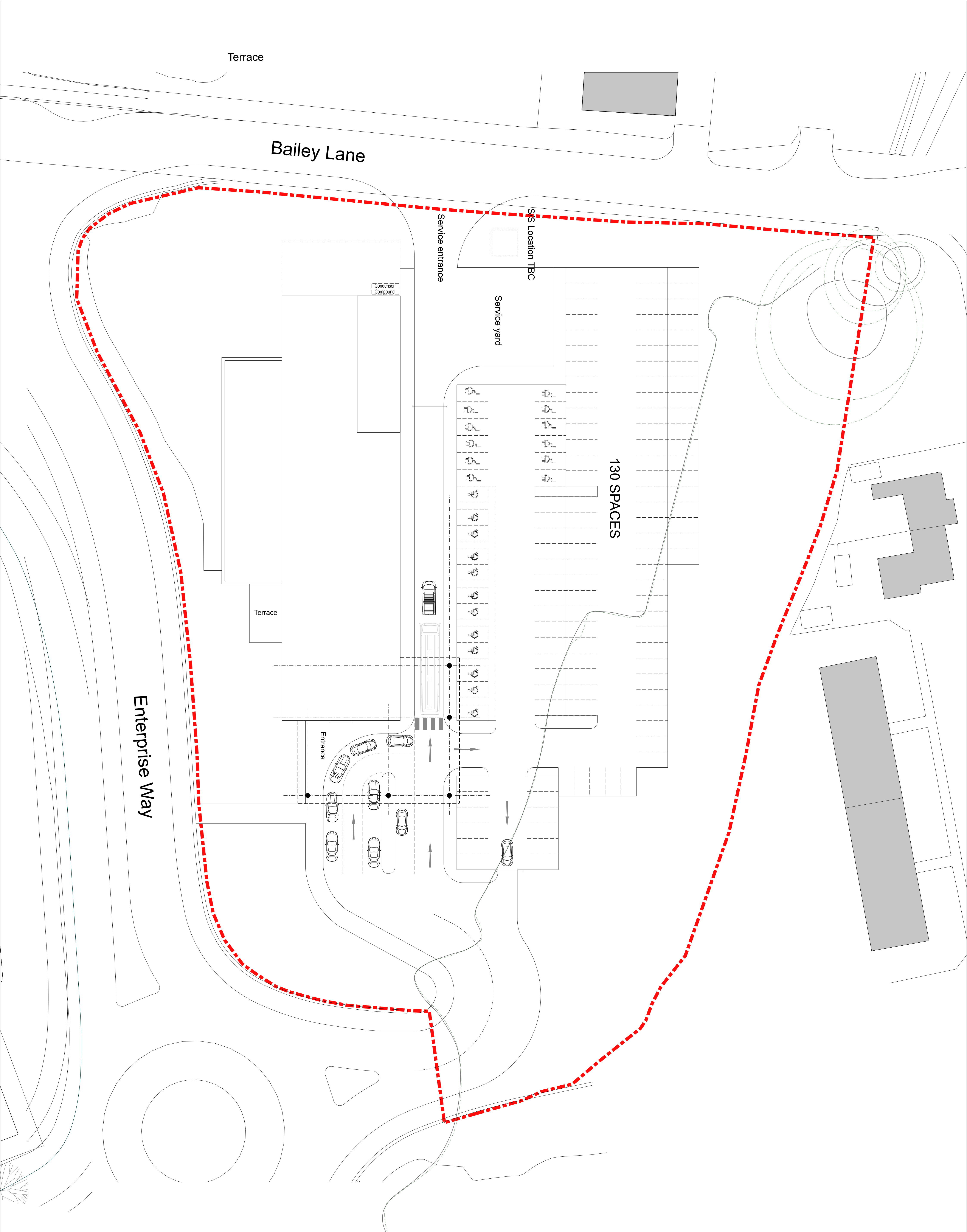
HP
HAND PIT



Project	DAKOTA HOTEL MANCHESTER AIRPORT
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Drawing Title
EXPLORATORY HOLE LOCATION PLAN

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Terrace

Bailey Lane

Service entrance

Service Location TBC

Service yard

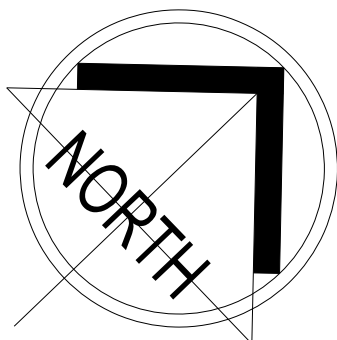
Condenser Compound

Terrace

Entrance

130 SPACES

Enterprise Way



DAKOTA MANCHESTER AIRPORT
GROUND FLOOR & CAR PARK PLAN
1:250 @ A1 APRIL 2024





Appendix B Exploratory Hole Logs



5 John Charles Way
Leeds
LS12 6QA

Trial Pit Log

Project Name: Dakota Hotel, Manchester
Airport

Client: Evans Dakota Hotels Limited

Date: 27/02/2024

Location: Manchester

Contractor:

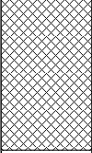
Co-ords: E381940.47 N386069.45

Project No. : 6338

Crew Name: H&C Plant Hire Ltd

Equipment: JCB 3CX

Location Number TP101	Location Type TP	Level 68.70m AoD	Logged By EJS	Scale 1:25	Page Number Sheet 1 of 1
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES					MADE GROUND: Dark greyish brown and black sandy slightly clayey GRAVEL. Gravel is fine to coarse and angular to subrounded of sandstone, limestone, concrete and bitmac.	
					0.50	68.20		At 0.50m bgl: Black plastic geotextile membrane End of Trial Pit at 0.50m	
									1
									2
									3
									4
									5

Dimensions		Trench Support and Comment				Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks		Date	Rate	Remarks
3.00	0.60	Stable						

Remarks

Backfilled with arisings on completion. No groundwater encountered. No visual or olfactory evidence of any potential hydrocarbon contamination encountered.





5 John Charles Way
Leeds
LS12 6QA

Trial Pit Log

Project Name: Dakota Hotel, Manchester
Airport

Client: Evans Dakota Hotels Limited

Date: 27/02/2002

Location: Manchester

Contractor:

Co-ords: E381956.53 N386081.81

Project No. : 6338

Crew Name: H&C Plant Hire Ltd

Equipment: JCB 3CX

Location Number	Location Type	Level	Logged By	Scale	Page Number
TP102	TP	68.77m AoD	EJS	1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.50	68.27		MADE GROUND: Dark to light brown slightly sandy slightly clayey GRAVEL. Gravel is fine to coarse and subangular to angular of mudstone, concrete, bitmac and coal. Rare pieces of wood, brick, tile and clay pipe encountered. Concrete boulder at 0.30m (600mm by 600mm by 300mm)	1
								Firm orangish reddish brown slightly gravelly sandy CLAY. Gravel is fine to coarse and subangular to rounded of limestone, mudstone, sandstone and rare coal.	
					1.30	67.47		Stiff high strength dark orangish brown and dark greyish brown slightly sandy gravelly CLAY. Gravel is fine to coarse and subangular to rounded of mudstone, sandstone, coal and limestone. Relict plant rootlets and remains encountered.	2
		1.80		HSV=86	2.00	66.77		Firm reddish brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse and subangular to angular of mudstone.	
					4.00	64.77		End of Trial Pit at 4.00m	4
									5

Dimensions		Trench Support and Comment				Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks	
3.00	0.60	Stable						

Remarks

Backfilled with arisings on completion. No groundwater encountered. No visual or olfactory evidence of any potential hydrocarbon contamination encountered.





5 John Charles Way
Leeds
LS12 6QA

Trial Pit Log

Project Name: Dakota Hotel, Manchester
Airport

Client: Evans Dakota Hotels Limited

Date: 27/02/2024

Location: Manchester

Contractor:

Co-ords: E381959.54 N386054.50

Project No. : 6338

Crew Name: H&C Plant Hire Ltd

Equipment: JCB 3CX

Location Number TP103		Location Type TP		Level 68.53m AoD		Logged By EJS		Scale 1:25		Page Number Sheet 1 of 1	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
		Depth (m)	Type	Results							
		2.20		HSV=92	0.05	68.47		MADE GROUND: Bitmac - wearing course		1	
								MADE GROUND: Bitmac - Base course - brown and black sandy gravel of bitmac.			
						0.30	68.22		MADE GROUND: Yellowish brown slightly sandy clayey GRAVEL. Gravel is fine to coarse and subangular to angular of sandstone.		
						0.60	67.92		At 0.60m bgl: Black plastic geotextile membrane		
									Firm light orangish brown and light greyish brown slightly sandy gravelly CLAY. Gravel is fine to coarse and subangular to rounded of mudstone, sandstone, coal and limestone. Relict plant rootlets encountered.		
					2.00	66.53		Stiff high strength reddish brown and mottled grey slightly sandy slightly gravelly CLAY. Gravel is fine to coarse and subangular to angular of mudstone.		2	
					3.60	64.92		Light grey and reddish brown sandy GRAVEL of mudstone (Residual soils).		3	
					4.00	64.53		End of Trial Pit at 4.00m		4	
										5	

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
3.00	0.60	Stable					

Remarks

Backfilled with arisings on completion. No groundwater encountered. No visual or olfactory evidence of any potential hydrocarbon contamination encountered.

		5 John Charles Way Leeds LS12 6QA		<h1>Trial Pit Log</h1>					
Project Name: Dakota Hotel, Manchester Airport				Client: Evans Dakota Hotels Limited			Date: 27/02/2024		
Location: Manchester				Contractor:			Co-ords: E381971.34 N386069.81		
Project No. : 6338				Crew Name: H&C Plant Hire Ltd			Equipment: JCB 3CX		
Location Number TP104		Location Type TP		Level 68.58m AoD		Logged By EJS		Scale 1:25	Page Number Sheet 1 of 1
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.40	ES		0.05	68.53		MADE GROUND: Bitmac - wearing course	
					0.30	68.28		MADE GROUND: Yellowish brown sandy GRAVEL. Gravel is fine to coarse and subangular to angular of sandstone.	
					0.55	68.03		MADE GROUND: Dark brown and black coarse sandy GRAVEL. Gravel is fine to coarse and subangular to angular of mudstone, sandstone, coal and concrete. Rare pieces of clay pipe encountered.	
		1.00		HSV=50				At 0.55m bgl: Black plastic geotextile membrane	
								Firm medium strength light orangish brown and light greyish brown slightly sandy gravelly CLAY. Gravel is fine to coarse and subangular to rounded of mudstone, sandstone, coal and limestone. Relict plant rootlets encountered.	
		2.60		HSV=63	2.90	65.68		Firm dark reddish brown sandy slightly gravelly CLAY. Gravel is fine to coarse and subangular to angular of mudstone, coal.	3
					3.50	65.08		At 3.00m bgl: Water seepage	
								End of Trial Pit at 3.50m	4
									5
Dimensions		Trench Support and Comment				Pumping Data			
Pit Length 3.00	Pit Width 0.60	Pit Stability Stable	Shoring Used	Remarks			Date	Rate	Remarks
Remarks									
Backfilled with arisings on completion. Groundwater seepage at 3.00m bgl. No visual or olfactory evidence of any potential hydrocarbon contamination encountered.									



5 John Charles Way
Leeds
LS12 6QA

Trial Pit Log

Project Name: Dakota Hotel, Manchester
Airport

Client: Evans Dakota Hotels Limited

Date: 27/02/2024

Location: Manchester

Contractor:

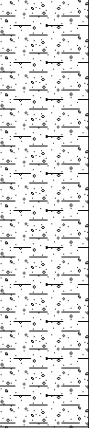
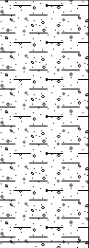
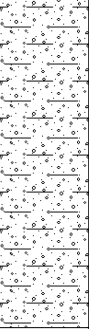
Co-ords: E381970.93 N386031.34

Project No. : 6338

Crew Name: H&C Plant Hire Ltd

Equipment: JCB 3CX

Location Number	Location Type	Level	Logged By	Scale	Page Number
TP105	TP	68.15m AoD	EJS	1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	ES		0.20	67.95		MADE GROUND: Dark grey sandy GRAVEL. Gravel is fine to coarse and subangular to angular fo mudstone, concrete, bitmac and coal.	1
					0.40	67.75		MADE GROUND: Greyish brown sandy GRAVEL. Gravel is fine to coarse and subangular to angular of limestone, brick, coal and sandstone. Rare pieces of clay pipe encountered.	
								At 0.40m bgl: Black plastic geotextile membrane	
		1.00		HSV=60				Firm medium strength reddish brown and mottled grey sandy slightly gravelly CLAY. Gravel is fine to coarse and subangular to angular of mudstone and coal. Relict rootlets encountered.	
		2.00		HSV=39	2.00	66.15		Soft low strength light grey slightly sandy gravelly CLAY. Gravel is fine to coarse and subangular to angular of mudstone. Relict rootlets throughout.	
					2.80	65.35		Reddish brown and mottled grey slightly clayey sandy GRAVEL of mudstone. Gravel is fine to coarse and angular. (Residual soil).	3
					3.90	64.25		End of Trial Pit at 3.90m	4
									5

Dimensions		Trench Support and Comment				Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks		Date	Rate	Remarks
3.00	0.60	Stable						

Remarks

Backfilled with arisings on completion. Groundwater inflow at 2.00m bgl. No visual or olfactory evidence of potnetial hydrocarbon contamination.



		5 John Charles Way Leeds LS12 6QA		<h1>Trial Pit Log</h1>					
Project Name: Dakota Hotel, Manchester Airport				Client: Evans Dakota Hotels Limited			Date: 27/02/2024		
Location: Manchester				Contractor:			Co-ords: E381976.50 N386010.48		
Project No. : 6338				Crew Name: H&C Plant Hire Ltd			Equipment: JCB 3CX		
Location Number TP106		Location Type TP		Level 68.17m AoD		Logged By EJS	Scale 1:25	Page Number Sheet 1 of 1	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.05			0.05	68.12		MADE GROUND: Bitmac - wearing course	1
								MADE GROUND: Bitmac - Base course - brown and black sandy gravel of bitmac.	
		0.30			0.30	67.87		MADE GROUND: Yellowish brown sandy GRAVEL. Gravel is fine to coarse and subangular to angular of sandstone.	1
		0.60			0.60	67.57		At 0.60m bgl: Black plastic geotextile membrane Firm medium strength light orangish brown and light greyish brown slightly gravelly sandy CLAY. Gravel is fine to coarse and subangular to rounded of mudstone, sandstone and limestone. Relict plant rootlets encountered.	1
		1.00		HSV=74	1.00	67.17		Stiff high strength reddish brown and mottled grey sandy slightly gravelly CLAY. Gravel is fine to coarse and subangular to angular of mudstone. (Residual soil).	1
		1.60		HSV=80				At 2.00m bgl: Becoming silty	2
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5 John Charles Way
Leeds
LS12 6QA

Trial Pit Log

Project Name: Dakota Hotel, Manchester
Airport

Client: Evans Dakota Hotels Limited

Date: 27/02/2024

Location: Manchester

Contractor:

Co-ords: E381978.36 N385998.49

Project No. : 6338

Crew Name: H&C Plant Hire Ltd

Equipment: JCB 3CX

Location Number TP107	Location Type TP	Level 68.19m AoD	Logged By EJS	Scale 1:25	Page Number Sheet 1 of 1
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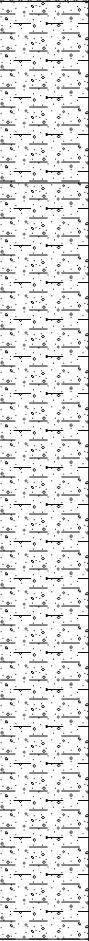
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.05	ES	HSV=83	0.05	68.14		MADE GROUND: Bitmac - wearing course	1
		0.30			0.30	67.89		MADE GROUND: Bitmac - Base course - brown and black sandy gravel of bitmac.	
		0.60			0.60	67.59		MADE GROUND: Yellowish brown sandy GRAVEL. Gravel is fine to coarse and subangular to angular of sandstone.	
		0.80			0.80	67.59		At 0.60m bgl: Black plastic geotextile membrane	
		1.00			1.00	67.59		Stiff high strength light orangish brown and light greyish brown slightly sandy gravelly CLAY. Gravel is fine to coarse and subangular to angular of mudstone, sandstone and limestone. Relict plant rootlets encountered.	
		1.80			1.80	66.39		Firm reddish brown slightly sandy silty CLAY.	2
									
									
								At 3.00m bgl: Becoming stiff	3
									
		3.80			3.80	64.39		End of Trial Pit at 3.80m	4
									
									5
									

Dimensions			Trench Support and Comment			Pumping Data		
Pit Length 3.00	Pit Width 0.60	Pit Stability Stable	Shoring Used	Remarks		Date	Rate	Remarks

Remarks

Backfilled with arisings on completion. No groundwater encountered. No visual or olfactory evidence of any potential hydrocarbon contamination encountered.



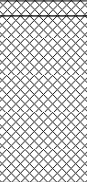
		5 John Charles Way Leeds LS12 6QA		<h1>Trial Pit Log</h1>							
Project Name: Dakota Hotel, Manchester Airport				Client: Evans Dakota Hotels Limited			Date: 27/02/2024				
Location: Manchester				Contractor:			Co-ords: E381996.97 N385995.40				
Project No. : 6338				Crew Name: H&C Plant Hire Ltd			Equipment: JCB 3CX				
Location Number TP108		Location Type TP		Level 68.22m AoD		Logged By EJS		Scale 1:25	Page Number Sheet 1 of 1		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
		Depth (m)	Type	Results							
		0.05	ES		0.05	68.17		MADE GROUND: Bitmac - wearing course	1		
		0.30			67.92	MADE GROUND: Bitmac - Base course - comprising brown and black sandy gravel of bitmac.					
		0.60			67.62	MADE GROUND: Yellowish brown sandy GRAVEL. Gravel is fine to coarse and subangular to angular of sandstone.					
		1.20	67.02		At 0.60m bgl: Black plastic geotextile membrane Firm, light becoming dark greyish brown and mottled yellow slightly sandy gravelly CLAY. Gravel is fine to coarse and subangular to rounded of mudstone. Relict plat rootlets and remains encountered.	2					
3.70	64.52	Stiff high strength reddish brown mottled grey sandy slightly gravelly CLAY. Gravel is fine to coarse and subangular to angular of mudstone and coal. Relict plant rootlets and remains encountered.									
					At 3.20m bgl: Water seepage					3	
					End of Trial Pit at 3.70m					4	
										5	
Dimensions				Trench Support and Comment				Pumping Data			
Pit Length 3.00		Pit Width 0.60		Pit Stability Stable	Shoring Used		Remarks		Date	Rate	Remarks
Remarks Backfilled with arisings on completion. Groundwater seepage at 3.20m bgl. No visual or olfactory evidence of any potential hydrocarbon contamination encountered.											



5 John Charles Way
Leeds
LS12 6QA

Trial Pit Log

Project Name: Dakota Hotel, Manchester Airport		Client: Evans Dakota Hotels Limited		Date: 27/02/2024	
Location: Manchester		Contractor:		Co-ords: E381914.01 N386035.45	
Project No. : 6338		Crew Name: H&C Plant Hire Ltd		Equipment: JCB 3CX	
Location Number TP109	Location Type TP	Level 69.10m AoD	Logged By EJS	Scale 1:25	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES	HSV=57	0.05	69.05		MADE GROUND: Light brown sandy CLAY with rootlets. (Topsoil)	
		0.30			0.60	68.50		MADE GROUND: Firm reddish brown slightly gravelly sandy CLAY. Gravel is fine to coarse and subangular to angular of mudstone, sandstone, brick and concrete.	
								End of Trial Pit at 0.60m	
									1
									2
									3
									4
									5

Dimensions		Trench Support and Comment				Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks		Date	Rate	Remarks
3.00	0.60	Stable						

Remarks
Backfilled with arisings on completion. No groundwater encountered. No visual or olfactory evidence of any potential hydrocarbon contamination encountered.





5 John Charles Way
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LS12 6QA

Window Sampler Log

Project Name: Dakota Hotel, Manchester
Airport

Client: Evans Dakota Hotels Limited

Date: 26/02/2024

Location: Manchester

Contractor:

Co-ords: E381931.42 N386051.57

Project No. : 6338

Crew Name: RP Drilling

Drilling Equipment: Window Sample Rig

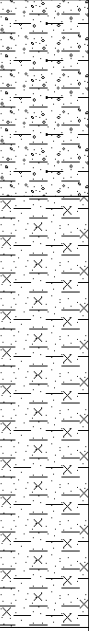
Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS101	WS	68.50m AoD	EJS	1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	ES		0.40	68.10		MADE GROUND: Dark greyish brown and black sandy slightly clayey GRAVEL. Gravel is fine to coarse and angular to subrounded of sandstone, limestone, concrete and bitmac.	
								MADE GROUND: Firm dark orangish brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse and subangular to angular of mudstone and sandstone.	
		1.00	SPT	N=14 (2,2/3,3,4,4)	0.90	67.60		Firm medium strength light grey slightly sandy slightly gravelly CLAY. Gravel is fine to coarse and subangular to angular of mudstone.	1
								At 1.50m bgl: Becoming soft low strength	2
					2.35	66.15		End of Borehole at 2.35m	3
									4
									5

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
2.35	100							0.00	2.35	90	

Remarks
Well installed to 2.00m bgl. No groundwater encountered. No visual or olfactory evidence of any potential hydrocarbon contamination encountered.



		5 John Charles Way Leeds LS12 6QA		<h1>Window Sampler Log</h1>							
Project Name: Dakota Hotel, Manchester Airport				Client: Evans Dakota Hotels Limited				Date: 26/02/2024			
Location: Manchester				Contractor:				Co-ords: E381942.63 N386030.97			
Project No. : 6338				Crew Name: RP Drilling				Drilling Equipment: Window Sample Rig			
Borehole Number WS102		Hole Type WS		Level 68.37m AoD		Logged By EJS		Scale 1:25		Page Number Sheet 1 of 1	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
		Depth (m)	Type	Results							
		0.20	ES		0.10	68.27		MADE GROUND: Dark greyish brown and black sandy slightly clayey GRAVEL. Gravel is fine to coarse and angular to subrounded of sandstone, limestone, concrete and bitmac.			
		0.35			68.02						
		1.00 1.00	SPT	HVP=86 N=16 (3,3/4,4,4,4)	1.00	67.37		MADE GROUND: Yellowish brown sandy GRAVEL. Gravel is fine to coarse and subangular to angular of sandstone. At 0.35m bgl: Black plastic geotextile membrane Firm light grey and mottled orangish brown slightly sandy gravelly CLAY. Gravel is fine to coarse and subangular to angular of mudstone and sandstone. Stiff high strength reddish brown slightly sandy silty CLAY.		1	
		2.00			SPT	N=50 (5,6/50 for 275mm)					
		2.43			65.94	End of Borehole at 2.42m		2			
								3			
									4		
									5		
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
2.42	100							0.00	2.48	90	
Remarks											
Backfilled with arisings on completion. No groundwater encountered. No visual or olfactory evidence of any potential hydrocarbon contamination encountered.											



5 John Charles Way
Leeds
LS12 6QA

Window Sampler Log

Project Name: Dakota Hotel, Manchester
Airport

Client: Evans Dakota Hotels Limited

Date: 26/02/2024

Location: Manchester

Contractor:

Co-ords: E381969.02 N386012.49

Project No. : 6338

Crew Name: RP Drilling

Drilling Equipment: Window Sample Rig

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS103	WS	68.21m AoD	EJS	1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.08			0.08	68.13		MADE GROUND: Bitmac - wearing course	1
		0.30	ES					MADE GROUND: Dark greyish brown and black sandy slightly clayey GRAVEL. Gravel is fine to coarse and angular to subrounded of sandstone, limestone, concrete and bitmac.	
		0.50			0.50	67.71		Firm medium strength dark greyish brown sandy slightly gravelly CLAY. Gravel is fine to coarse and subrounded to angular of mudstone and coal.	
		1.00	SPT	N=9 (2,2/2,2,2,3)					
		1.50			1.50	66.71		Firm medium strength reddish brown and mottled grey sandy slightly gravelly CLAY. Gravel is fine to coarse and subangular to angular of mudstone and coal. Relict plant rootlets and remains encountered.	
		1.80		HVP=55					2
		2.00	SPT	N=10 (2,2/2,2,3,3)					
		2.80			2.80	65.41		Stiff high strength dark reddish brown slightly sandy gravelly CLAY. Gravel is fine to coarse and subangular to angular of mudstone (Residual soil).	
		3.00	SPT	N=25 (6,6/6,6,6,7)					3
		4.00	SPT	50 (4,4/50 for 210mm)					
		4.36			4.36	63.85		End of Borehole at 4.36m	4
									5

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
4.36	100							0.00	4.36	90	

Remarks

Well installed to depth 4.00m bgl. No groundwater encountered. No visual or olfactory evidence of any potential hydrocarbon contamination encountered.





5 John Charles Way
Leeds
LS12 6QA

Window Sampler Log

Project Name: Dakota Hotel, Manchester
Airport

Client: Evans Dakota Hotels Limited

Date: 26/02/2024

Location: Manchester

Contractor:

Co-ords: E381915.47 N386031.78

Project No. : 6338

Crew Name: RP Drilling

Drilling Equipment: Window Sample Rig

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS104	WS	68.45m AoD	EJS	1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.05			0.05	68.40		MADE GROUND: Multicoloured, predominantly greyish brown fine to coarse GRAVEL. Gravel is fine and subangular to angular of limestone, sandstone and quartz.	
		0.35			0.35	68.10		MADE GROUND: Dark greyish brown and black sandy slightly clayey GRAVEL. Gravel is fine to coarse and angular to subrounded of sandstone, limestone, concrete and bitmac.	
		0.80			0.80	67.65		Stiff high strength dark reddish brown slightly sandy gravelly CLAY. Gravel is fine to coarse and subangular to angular of mudstone (Residual soil). Stiff high strength dark orangish reddish brown sandy CLAY.	
		2.00			2.00			At 2.00m bgl: Becoming very stiff very high strength	
		2.40			2.40	66.06		End of Borehole at 2.40m	

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
2.40	100							0.00	2.40	90	

Remarks
Well installed to 2.00m bgl. No groundwater encountered. No visual or olfactory evidence of any potential hydrocarbon contamination encountered.





5 John Charles Way
Leeds
LS12 6QA

Window Sampler Log

Project Name: Dakota Hotel, Manchester
Airport

Client: Evans Dakota Hotels Limited

Date: 26/02/2024

Location: Manchester

Contractor:

Co-ords: E381954.52 N386001.17

Project No. : 6338

Crew Name: RP Drilling

Drilling Equipment: Window Sample Rig

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS105	WS	68.41m AoD	EJS	1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30	68.11		MADE GROUND: Bitmac	
					0.45	67.96		MADE GROUND: Dark greyish brown and black sandy slightly clayey GRAVEL. Gravel is fine to coarse and angular to subrounded of sandstone, limestone, concrete and bitmac.	
		1.00	SPT	N=8 (2,1/2,2,2,2)				Firm medium strength dark greyish brown sandy slightly gravelly CLAY. Gravel is fine to coarse and subrounded to angular of mudstone and coal.	1
					1.55	66.86		Very stiff very high strength dark reddish brown slightly sandy gravelly CLAY. Gravel is fine to coarse and subangular to angular of mudstone (Residual soil).	2
		1.80	SPT	50 (10,13/50 for 200mm)					
					2.15	66.26		End of Borehole at 2.15m	3
									4
									5

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
2.15	100							0.00	2.15	90	

Remarks
Well installed to 2.00m bgl. No groundwater encountered. No visual or olfactory evidence of any potential hydrocarbon contamination encountered.





5 John Charles Way
Leeds
LS12 6QA

Window Sampler Log

Project Name: Dakota Hotel, Manchester
Airport

Client: Evans Dakota Hotels Limited

Date: 26/02/2024

Location: Manchester

Contractor:

Co-ords: E381949.28 N386019.70

Project No. : 6338

Crew Name: RP Drilling

Drilling Equipment: Window Sample Rig

Borehole Number WS106	Hole Type WS	Level 68.39m AoD	Logged By EJS	Scale 1:25	Page Number Sheet 1 of 1
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		1.00	SPT	N=12 (2,3/3,3,3,3)	0.25	68.14		MADE GROUND: Bitmac	1
					0.45	67.94		MADE GROUND: Dark greyish brown and black sandy slightly clayey GRAVEL. Gravel is fine to coarse and angular to subrounded of sandstone, limestone, concrete and bitmac. Firm medium strength reddish brown mottled grey sandy slightly gravelly CLAY. Gravel is fine to coarse and subangular to angular of mudstone and coal. Relict plant rootlets and remains encountered.	
		2.00	SPT	N=50 (6,7/50 for 275mm)	2.43	65.97		At 2.00m bgl: Becoming very stiff very high strength	2
								End of Borehole at 2.42m	3
									4
									5

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
2.42	100							0.00	2.43	90	

Remarks

Backfilled with arisings on completion. No groundwater encountered. No visual or olfactory evidence of any potential hydrocarbon contamination encountered.





5 John Charles Way
Leeds
LS12 6QA

Window Sampler Log

Project Name: Dakota Hotel, Manchester
Airport

Client: Evans Dakota Hotels Limited

Date: 26/02/2024

Location: Manchester

Contractor:

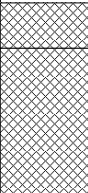
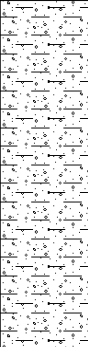
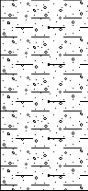
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Project No. : 6338

Crew Name: RP Drilling

Drilling Equipment: Window Sample Rig

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS107	WS	68.19m AoD	EJS	1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.15			68.04		MADE GROUND: Bitmac	1	
							MADE GROUND: Dark greyish brown and black sandy slightly clayey GRAVEL. Gravel is fine to coarse and angular to subrounded of sandstone, limestone, concrete and bitmac.		
							At 0.65m bgl: Black plastic geotextile membrane		
		0.65	SPT	N=12 (2,2/2,3,3,4) HVP=79	67.54		Firm medium strenght dark greyish brown sandy slightly gravelly CLAY. Gravel is fine to coarse and subrounded to angular of mudstone and coal.		
		1.00							
1.10									
2.00	SPT	N=50 (5,6/50 for 285mm)	66.39		Very stiff very high strength dark reddish brown slightly sandy gravelly CLAY. Gravel is fine to coarse and subangular to angular of mudstone (Residual soil).	2			
2.44			65.76		End of Borehole at 2.44m	3			
								4	
								5	

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
2.44	100							0.00	2.44	90	

Remarks

Backfilled with arisings on completion. No groundwater encountered. No visual or olfactory evidence of any potential hydrocarbon contamination encountered.





5 John Charles Way
Leeds
LS12 6QA

Window Sampler Log

Project Name: Dakota Hotel, Manchester
Airport

Client: Evans Dakota Hotels Limited

Date: 26/02/2024

Location: Manchester

Contractor:

Co-ords: E381958.62 N386073.56

Project No. : 6338

Crew Name: RP Drilling

Drilling Equipment: Window Sample Rig

Borehole Number WS108	Hole Type WS	Level 68.69m AoD	Logged By EJS	Scale 1:25	Page Number Sheet 1 of 1
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30			68.39			MADE GROUND: Dark brown and black coarse gravelly SAND. Gravel is fine to coarse and subangular to angular of mudstone, sandstone, coal and concrete. Frequent woodchips at the base of stratum.	
		0.60			68.09			MADE GROUND: Yellowish brown sandy GRAVEL. Gravel is fine to coarse and subangular to angular of sandstone.	
		1.00	SPT	N=8 (2,2/2,2,2,2)				Firm medium strength dark greyish brown sandy slightly gravelly CLAY. Gravel is fine to coarse and subrounded to angular of mudstone and coal.	1
		2.00	SPT	N=21 (3,3/4,4,6,7)	1.70	66.99		Stiff high strength reddish brown and mottled grey silty CLAY (residual soil).	2
		3.00	SPT	N=20 (4,4/4,5,5,6)					3
		4.00	SPT	N=50 (7,9/50 for 285mm)				At 4.00m bgl: Becoming very stiff very high strength	4
		4.44			64.26			End of Borehole at 4.43m	5

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
4.43	100							0.00	2.23	90	

Remarks

Backfilled with arisings on completion. No groundwater encountered. No visual or olfactory evidence of any potential hydrocarbon contamination encountered.

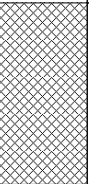
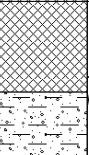
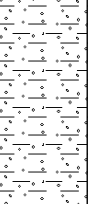
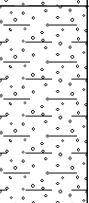
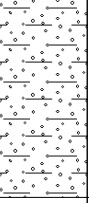




5 John Charles
Leeds
LS12 6QA

Rotary Core Log

Project Name: Dakota Hotel, Manchester Airport				Client: Evans Dakota Hotels Limited				Date: 01/03/2024			
Location: Manchester				Contractor:				Co-ords: E381931.19 N386016.02			
Project No. : 6338				Crew Name: Ace Drilling				Drilling Equipment: Beretta T46-4			
Borehole Number BHRC101		Hole Type RC		Level 68.49m AoD		Logged By EJS		Scale 1:25		Page Number Sheet 1 of 5	

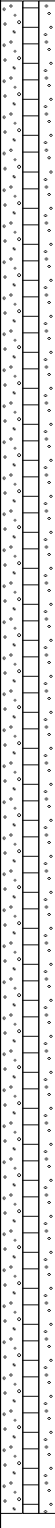
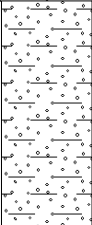
Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
			PL				50 (3.11/50 for 190mm)	0.60	67.89		MADE GROUND: Dark greyish brown and black sandy slightly clayey GRAVEL. Gravel is fine to coarse and angular to subrounded of sandstone, limestone, concrete and bitmac.	1
				0.90	67.59			MADE GROUND: Firm dark orangish brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse and subangular to angular of mudstone and sandstone. At 0.90m bgl: Black plastic geotextile membrane				
											At 2.00m bgl: Becoming very stiff very high strength	2
		3.00 - 4.00 3.63			100	60		35	3.00	65.49		Firm light greyish brown gravelly CLAY. Gravel is fine to coarse and angular of mudstone (Weathering Zone 4A)
					3.70	64.79		Extremely weathered very stiff very high strength dark reddish brown and mottled grey MUDSTONE recovered as a slightly clayey gravel. (Weathering Zone 3).	4			
		4.00 - 5.50		100	0	0	50 (9.9/50 for 155mm)					5

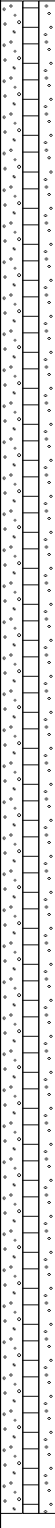
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
22.00	150	3.00	150					0.00	22.00	90							

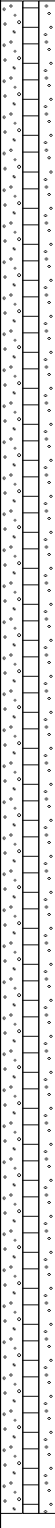
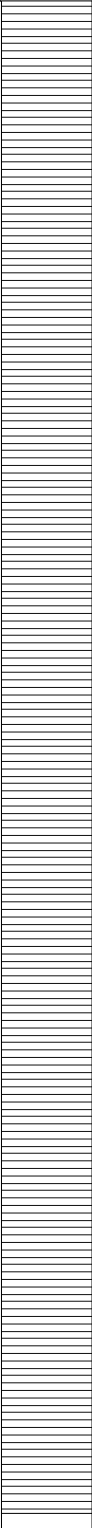
Remarks

Well installed to 22.00m bgl. No visual or olfactory evidence of any potential hydrocarbon contamination encountered. Weathering zones in accordance with Ciria 570. SPTs carried out in rock didn't undertake seating blows.



		5 John Charles Leeds LS12 6QA		Rotary Core Log														
Project Name: Dakota Hotel, Manchester Airport				Client: Evans Dakota Hotels Limited								Date: 01/03/2024						
Location: Manchester				Contractor:								Co-ords: E381931.19 N386016.02						
Project No. : 6338				Crew Name: Ace Drilling								Drilling Equipment: Beretta T46-4						
Borehole Number BHRC101		Hole Type RC		Level 68.49m AoD				Logged By EJS		Scale 1:25		Page Number Sheet 2 of 5						
Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description							
				TCR	SCR	RQD												
											Extremely weathered very stiff very high strength dark reddish brown and mottled grey MUDSTONE recovered as a slightly clayey gravel. (Weathering Zone 3).		6					
		5.50 - 6.25			100	0	0	5.75	62.74		Very weak dark reddish brown thinly laminated MUDSTONE. (Weathering Zone 1).							
		6.25 - 7.00			100	50	15				Between 5.75m and 8.00m bgl: Extremely weathered, clay infill between fractures.		7					
		7.00	PL															
		7.58	PL															
		7.00 - 8.50	PL	100	47	7												
		7.90	PL										8					
		9.00	2 4 6 PL															
		8.50 - 10.00			100	40	22							9				
													10					
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)	
22.00	150	3.00	150					0.00	22.00	90								
Remarks																		
Well installed to 22.00m bgl. No visual or olfactory evidence of any potential hydrocarbon contamination encountered. Weathering zones in accordance with Ciria 570. SPTs carried out in rock didn't undertake seating blows.																		
																		

		5 John Charles Leeds LS12 6QA		Rotary Core Log																	
Project Name: Dakota Hotel, Manchester Airport				Client: Evans Dakota Hotels Limited								Date: 01/03/2024									
Location: Manchester				Contractor:								Co-ords: E381931.19 N386016.02									
Project No. : 6338				Crew Name: Ace Drilling								Drilling Equipment: Beretta T46-4									
Borehole Number BHRC101		Hole Type RC		Level 68.49m AoD				Logged By EJS		Scale 1:25			Page Number Sheet 3 of 5								
Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description										
				TCR	SCR	RQD															
		10.40 10.50	PL PL									Very weak dark reddish brown thinly laminated MUDSTONE. (Weathering Zone 1).						11			
		10.00 - 11.50	9	100	70	50															
		12.05	PL																		
		11.50 - 13.00		100	87	30															
		12.70	PL																		
		13.62	PL									Vertical fracture between 11.50m and 11.62m bgl, clay infill.						12			
	11.50 - 13.00		100	87	30																
		12.70	PL															13			
		13.62	PL																		
		13.00 - 14.50	10	100	35	13												14			
		14.78	PL																		
																		15			
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush									
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)				
22.00	150	3.00	150					0.00	22.00	90											
Remarks																					
Well installed to 22.00m bgl. No visual or olfactory evidence of any potential hydrocarbon contamination encountered. Weathering zones in accordance with Ciria 570. SPTs carried out in rock didn't undertake seating blows.																					
																					

		5 John Charles Leeds LS12 6QA		Rotary Core Log														
Project Name: Dakota Hotel, Manchester Airport				Client: Evans Dakota Hotels Limited								Date: 01/03/2024						
Location: Manchester				Contractor:								Co-ords: E381931.19 N386016.02						
Project No. : 6338				Crew Name: Ace Drilling								Drilling Equipment: Beretta T46-4						
Borehole Number BHRC101		Hole Type RC		Level 68.49m AoD				Logged By EJS		Scale 1:25		Page Number Sheet 4 of 5						
Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description							
				TCR	SCR	RQD												
		14.50 - 16.00	PL	100	77	26						Very weak dark reddish brown thinly laminated MUDSTONE. (Weathering Zone 1). <u>Vertical fracture between 15.20m and 15.40m bgl, clay infill.</u>						
		15.82																
		16.00 - 17.50	2 2 22	100	73	47									Between 16.20m and 16.65m bgl: Partially weathered, recovered as clayey gravel of mudstone (Weathering Zone 3)			
		17.84	PL															
		17.50 - 19.00	15	100	88	47												
		19.27 19.00 - 20.50	PL													Vertical fracture between 19.10m and 19.20m bgl, clay infill.		
			14															
		19.98	PL															
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)	
22.00	150	3.00	150					0.00	22.00	90								
Remarks																		
Well installed to 22.00m bgl. No visual or olfactory evidence of any potential hydrocarbon contamination encountered. Weathering zones in accordance with Ciria 570. SPTs carried out in rock didn't undertake seating blows.																		
																		



5 John Charles
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LS12 6QA

Rotary Core Log

Project Name: Dakota Hotel, Manchester
Airport

Client: Evans Dakota Hotels Limited

Date: 01/03/2024

Location: Manchester

Contractor:

Co-ords: E381931.19 N386016.02

Project No. : 6338

Crew Name: Ace Drilling

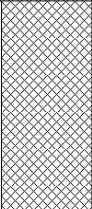
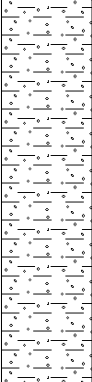
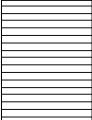
Drilling Equipment: Beretta T46-4

Borehole Number BHRC101				Hole Type RC			Level 68.49m AoD			Logged By EJS		Scale 1:25		Page Number Sheet 5 of 5			
Well	Water	Depth (m)	Type /Fl	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description						
				TCR	SCR	RQD											
											Very weak dark reddish brown thinly laminated MUDSTONE. (Weathering Zone 1).					21	
		20.97	PL														
		20.50 - 22.00	36	100	0	0											
		21.60	PL								End of Borehole at 22.00m					22	
								22.00	46.49							23	
																24	
																25	
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
22.00	150	3.00	150					0.00	22.00	90							

Remarks

Well installed to 22.00m bgl. No visual or olfactory evidence of any potential hydrocarbon contamination encountered. Weathering zones in accordance with Ciria 570. SPTs carried out in rock didn't undertake seating blows.



		5 John Charles Leeds LS12 6QA		Rotary Core Log														
Project Name: Dakota Hotel, Manchester Airport				Client: Evans Dakota Hotels Limited								Date: 05/03/2024						
Location: Manchester				Contractor:								Co-ords: E381930.49 N386048.97						
Project No. : 6338				Crew Name: Ace Drilling								Drilling Equipment: Beretta T46-4						
Borehole Number BHRC102		Hole Type RC		Level 68.44m AoD				Logged By EJS		Scale 1:25			Page Number Sheet 1 of 5					
Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description							
				TCR	SCR	RQD												
		1.50 - 3.00		100	0	0	49 (10,11/49 for 155mm)	0.70	67.74		MADE GROUND: Dark greyish brown and black slightly sandy gravelly CLAY. Gravel is fine to coarse and angular to subrounded of sandstone, limestone, concrete and bitmac.		1					
											Firm light grey and mottled orangish brown slightly sandy gravelly CLAY. Gravel is fine to coarse and subangular to angular of mudstone and sandstone.							
		3.00 - 4.50	100	5	0	50 (2,5/50 for 225mm)	1.50	66.94		Very stiff very high strength dark reddish brown and mottled grey gravelly CLAY. Gravel is fine to coarse and subangular to angular of mudstone (Residual soil). (Weathering Zone 4A).		2						
										Extremely weathered very stiff very high strength dark reddish brown and mottled grey MUDSTONE recovered as a slightly clayey gravel (Weathering Zone 3)								
		4.60	63.84		Very weak dark reddish brown thinly laminated MUDSTONE (Weathering Zone 1).		5											
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)	
21.00	150	3.00	150					0.00	21.00	90								
Remarks																		
Backfilled with bentonite on completion. Groundwater encountered at 4.50m, gradually increasing with depth. No visual or olfactory evidence of any potential hydrocarbon contamination encountered. Weathering zones in accordance with Ciria 570. SPTs carried out in rock didn't undertake seating blows.																		
																		



5 John Charles
Leeds
LS12 6QA

Rotary Core Log

Project Name: Dakota Hotel, Manchester Airport		Client: Evans Dakota Hotels Limited		Date: 05/03/2024	
Location: Manchester		Contractor:		Co-ords: E381930.49 N386048.97	
Project No. : 6338		Crew Name: Ace Drilling		Drilling Equipment: Beretta T46-4	
Borehole Number BHRC102	Hole Type RC	Level 68.44m AoD	Logged By EJS	Scale 1:25	Page Number Sheet 2 of 5

Well	Water	Depth (m)	Type /Fl	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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		4.50 - 6.00	4 6 10	87	24	13		6.80	61.64		Very weak dark reddish brown thinly laminated MUDSTONE (Weathering Zone 1).	6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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		6.38	PL	100	25	17							7.40	61.04		Extremely weak dark reddish brown slightly clayey GRAVEL of mudstone (Weathering Zone 3).	7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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		6.00 - 9.00	PL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
9.70	PL	50 (0 for 0mm/50 for 105mm)					Very weak dark reddish brown and greyish brown thinly laminated MUDSTONE (Frequently Interbedded Weathering Zones 2 and 1). <small>Light grey in colour between 7.65m and 10.40m bgl.</small>	8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
21.00	150	3.00	150					0.00	21.00	90							

Remarks

Backfilled with bentonite on completion. Groundwater encountered at 4.50m, gradually increasing with depth. No visual or olfactory evidence of any potential hydrocarbon contamination encountered. Weathering zones in accordance with Ciria 570. SPTs carried out in rock didn't undertake seating blows.





5 John Charles
Leeds
LS12 6QA

Rotary Core Log

Project Name: Dakota Hotel, Manchester
Airport

Client: Evans Dakota Hotels Limited

Date: 05/03/2024

Location: Manchester

Contractor:

Co-ords: E381930.49 N386048.97

Project No. : 6338

Crew Name: Ace Drilling

Drilling Equipment: Beretta T46-4

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
BHRC102	RC	68.44m AoD	EJS	1:25	Sheet 3 of 5

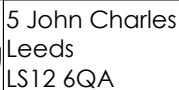
Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
		10.10	PL								Very weak dark reddish brown and greyish brown thinly laminated MUDSTONE (Frequently Interbedded Weathering Zones 2 and 1).	11
		9.00 - 12.00		100	27	20						
		11.35	PL									
		12.10	PL									
		10										
		12.00 - 15.00		100	0	0					Subvertical fracture between 11.05m and 11.15m bgl, clay infill.	12
		14.15	PL									
		5										
		14.15	PL					14.15	54.29		Weak dark reddish brown and light greyish brown thinly laminated MUDSTONE (Weathering Zone 1).	13
												14
												15

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
21.00	150	3.00	150					0.00	21.00	90							

Remarks

Backfilled with bentonite on completion. Groundwater encountered at 4.50m, gradually increasing with depth. No visual or olfactory evidence of any potential hydrocarbon contamination encountered. Weathering zones in accordance with Ciria 570. SPTs carried out in rock didn't undertake seating blows.





Project Name: Dakota Hotel, Manchester Airport		Client: Evans Dakota Hotels Limited		Date: 05/03/2024	
Location: Manchester		Contractor:		Co-ords: E381930.49 N386048.97	
Project No. : 6338		Crew Name: Ace Drilling		Drilling Equipment: Beretta T46-4	
Borehole Number BHRC102	Hole Type RC	Level 68.44m AoD	Logged By EJS	Scale 1:25	Page Number Sheet 4 of 5

[illegible]

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
21.00	150	3.00	150					0.00	21.00	90							

Remarks

Backfilled with bentonite on completion. Groundwater encountered at 4.50m, gradually increasing with depth. No visual or olfactory evidence of any potential hydrocarbon contamination encountered. Weathering zones in accordance with Ciria 570. SPTs carried out in rock didn't undertake seating blows.





5 John Charles
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LS12 6QA

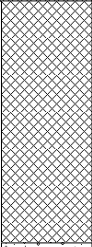
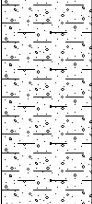
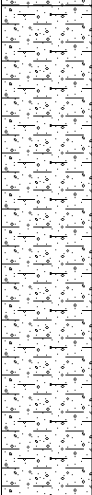
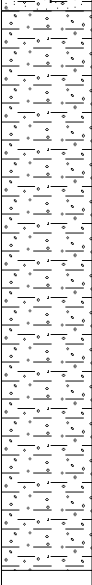
Rotary Core Log

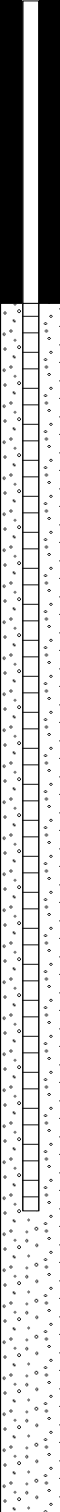
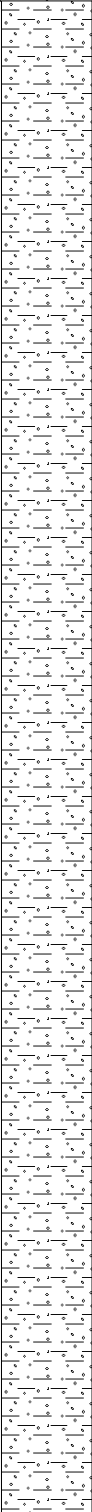
Project Name: Dakota Hotel, Manchester Airport				Client: Evans Dakota Hotels Limited				Date: 05/03/2024									
Location: Manchester				Contractor:				Co-ords: E381930.49 N386048.97									
Project No. : 6338				Crew Name: Ace Drilling				Drilling Equipment: Beretta T46-4									
Borehole Number BHRC102		Hole Type RC		Level 68.44m AoD		Logged By EJS		Scale 1:25		Page Number Sheet 5 of 5							
Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description						
				TCR	SCR	RQD											
		20.60	PL								Weak dark reddish brown and light greyish brown thinly laminated MUDSTONE (Weathering Zone 1).						
											Subvertical fracture between 20.60m and 20.90m bgl, clay infill.						
								21.00	47.44		End of Borehole at 21.00m	21					
												22					
												23					
												24					
												25					
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
21.00	150	3.00	150					0.00	21.00	90							

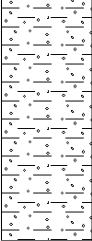
Remarks

Backfilled with bentonite on completion. Groundwater encountered at 4.50m, gradually increasing with depth. No visual or olfactory evidence of any potential hydrocarbon contamination encountered. Weathering zones in accordance with Ciria 570. SPTs carried out in rock didn't undertake seating blows.



		5 John Charles Leeds LS12 6QA		Rotary Core Log														
Project Name: Dakota Hotel, Manchester Airport				Client: Evans Dakota Hotels Limited								Date: 11/03/2024						
Location: Manchester				Contractor:								Co-ords: E381964.02 N386014.54						
Project No. : 6338				Crew Name: Ace Drilling								Drilling Equipment: Beretta T46-4						
Borehole Number BHRC103		Hole Type RC		Level 68.26m AoD				Logged By EJS		Scale 1:25		Page Number Sheet 1 of 5						
Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description							
				TCR	SCR	RQD												
								0.80	67.46		MADE GROUND: Dark greyish brown and black sandy slightly clayey GRAVEL. Gravel is fine to coarse and subrounded to angular or mudstone, sandstone, limestone and coal. Relict plant rootlets and remains encountered.		1					
								1.50	66.76		Soft low strength dark greyish brown and dark yellowish brown sandy slightly gravelly CLAY. Gravel is fine to coarse and subrounded to angular of mudstone, sandstone, limestone and coal. Relict plant rootlets and remains encountered.							
												Firm dark greyish brown and dark yellowish brown sandy slightly gravelly CLAY. Gravel is fine to coarse and subrounded to angular of mudstone, sandstone, limestone and coal. Relict plant rootlets and remains encountered.		2				
												Very stiff very high strength dark orangish brown and mottled grey gravelly CLAY. Gravel is fine to coarse and subangular to angular of mudstone. Frequently interbedded with orangish brown clayey GRAVEL of mudstone. (Weathering Zone 4A and 3).						
													At 4.00m bgl: Very wet		4			
													5					
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)	
24.00	150	3.00	150					0.00	24.00	90								
Remarks																		
Well installed to 9.00m bgl. Hole collapsed when trying to install well to 24.00m. No visual or olfactory evidence of any potential hydrocarbon contamination encountered. Weathering zones in accordance with Ciria 570. SPTs carried out in rock didn't undertake seating blows.																		
																		

		5 John Charles Leeds LS12 6QA		Rotary Core Log														
Project Name: Dakota Hotel, Manchester Airport				Client: Evans Dakota Hotels Limited								Date: 11/03/2024						
Location: Manchester				Contractor:								Co-ords: E381964.02 N386014.54						
Project No. : 6338				Crew Name: Ace Drilling								Drilling Equipment: Beretta T46-4						
Borehole Number BHRC103		Hole Type RC		Level 68.26m AoD				Logged By EJS				Scale 1:25			Page Number Sheet 2 of 5			
Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description							
				TCR	SCR	RQD												
		5.00 - 6.00		70	0	0					Very stiff very high strength dark orangish brown and mottled grey gravelly CLAY. Gravel is fine to coarse and subangular to angular of mudstone. Frequently interbedded with orangish brown clayey GRAVEL of mudstone. (Weathering Zone 4A and 3).							6
		6.00 - 7.50		80	0	0	50 (4,11/50 for 155mm)											7
		7.50 - 9.00		67	0	0	50 (7,11/50 for 164mm)											8
		9.00 - 10.50		100	0	0	50 (7,18/50 for 120mm)											9
																		10
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)	
24.00	150	3.00	150					0.00	24.00	90								
Remarks																		
Well installed to 9.00m bgl. Hole collapsed when trying to install well to 24.00m. No visual or olfactory evidence of any potential hydrocarbon contamination encountered. Weathering zones in accordance with Ciria 570. SPTs carried out in rock didn't undertake seating blows.																		
																		

		5 John Charles Leeds LS12 6QA		Rotary Core Log														
Project Name: Dakota Hotel, Manchester Airport				Client: Evans Dakota Hotels Limited								Date: 11/03/2024						
Location: Manchester				Contractor:								Co-ords: E381964.02 N386014.54						
Project No. : 6338				Crew Name: Ace Drilling								Drilling Equipment: Beretta T46-4						
Borehole Number BHRC103		Hole Type RC		Level 68.26m AoD				Logged By EJS				Scale 1:25			Page Number Sheet 3 of 5			
Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description							
				TCR	SCR	RQD												
			4 PL				50 (0 for 0mm/50 for 145mm)	10.80	57.46		Very stiff very high strength dark orangish brown and mottled grey gravelly CLAY. Gravel is fine to coarse and subangular to angular of mudstone. Frequently interbedded with orangish brown clayey GRAVEL of mudstone. (Weathering Zone 4A and 3).		11					
												Very weak dark reddish brown thinly laminated MUDSTONE. (Weathering Zone 1).						
		11.06										At 11.06m bgl: Medium strong						
		10.50 - 12.00		47	27	7												
		12.22	PL								Between 12.00m and 12.10m bgl: Very clayey, assumed to be induced by SPT at 12.00m		12					
		12.00 - 13.50	9										13					
		14.05	PL										14					
		13.50 - 15.00																
		14.62	PL								Subvertical fracture between 14.50m and 15.00m bgl, clay infill.		15					
Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)	
24.00	150	3.00	150					0.00	24.00	90								
Remarks																		
Well installed to 9.00m bgl. Hole collapsed when trying to install well to 24.00m. No visual or olfactory evidence of any potential hydrocarbon contamination encountered. Weathering zones in accordance with Ciria 570. SPTs carried out in rock didn't undertake seating blows.																		
																		



5 John Charles
Leeds
LS12 6QA

Rotary Core Log

Project Name: Dakota Hotel, Manchester Airport		Client: Evans Dakota Hotels Limited		Date: 11/03/2024	
Location: Manchester		Contractor:		Co-ords: E381964.02 N386014.54	
Project No. : 6338		Crew Name: Ace Drilling		Drilling Equipment: Beretta T46-4	
Borehole Number BHRC103	Hole Type RC	Level 68.26m AoD	Logged By EJS	Scale 1:25	Page Number Sheet 4 of 5

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
		15.20	PL				50 (0 for 0mm/50 for 115mm)				Very weak dark reddish brown thinly laminated MUDSTONE. (Weathering Zone 1). Subvertical fracture between 16.30m and 16.40m bgl, clay infill.	16
		15.00 - 16.50		100	39	16						
		16.40	PL									
		16.50 - 18.00		100	40	0						17
		17.70	3 4 7 PL									
		18.00 - 19.50		100	53	27	50 (0 for 0mm/50 for 96mm)					18
		19.30	2 3 5 PL									19
												20

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
24.00	150	3.00	150					0.00	24.00	90							

Remarks
Well installed to 9.00m bgl. Hole collapsed when trying to install well to 24.00m. No visual or olfactory evidence of any potential hydrocarbon contamination encountered. Weathering zones in accordance with Ciria 570. SPTs carried out in rock didn't undertake seating blows.





5 John Charles
Leeds
LS12 6QA

Rotary Core Log

Project Name: Dakota Hotel, Manchester Airport		Client: Evans Dakota Hotels Limited		Date: 11/03/2024	
Location: Manchester		Contractor:		Co-ords: E381964.02 N386014.54	
Project No. : 6338		Crew Name: Ace Drilling		Drilling Equipment: Beretta T46-4	
Borehole Number BHRC103		Hole Type RC		Level 68.26m AoD	Logged By EJS
				Scale 1:25	Page Number Sheet 5 of 5

Well	Water	Depth (m)	Type /FI	Coring			Diameter Recovery (SPT)	Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD						
		19.50 - 21.00	1 2 15	97	39	10					Very weak dark reddish brown thinly laminated MUDSTONE. (Weathering Zone 1).	21
		20.85	PL									
		21.30	PL									
		21.00 - 22.50		100	22	22						22
		22.50 - 24.00		100	60	49						23
								24.00	44.26		End of Borehole at 24.00m	24
												25

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
24.00	150	3.00	150					0.00	24.00	90							

Remarks

Well installed to 9.00m bgl. Hole collapsed when trying to install well to 24.00m. No visual or olfactory evidence of any potential hydrocarbon contamination encountered. Weathering zones in accordance with Ciria 570. SPTs carried out in rock didn't undertake seating blows.



ROCK CORE PHOTOGRAPHIC RECORD



Project: 6338 Dakota Hotel, Manchester Airport		BHRC101
Location: Bailey Lane, Manchester, M90 4AB		
Client: Evans Dakota Hotels Limited	Drilling date: 28.02.2024 – 29.02.2024	Sheet: 1 of 4

3.00m – 5.50m bgl



5.50m – 8.50m bgl



Project: 6338 Dakota Hotel, Manchester Airport		BHRC101
Location: Bailey Lane, Manchester, M90 4AB		
Client: Evans Dakota Hotels Limited	Drilling date: 28.02.2024 – 29.02.2024	Sheet: 2 of 4

8.50m – 11.50m bgl



11.50m – 14.50m bgl



Project: 6338 Dakota Hotel, Manchester Airport		BHRC101
Location: Bailey Lane, Manchester, M90 4AB		
Client: Evans Dakota Hotels Limited	Drilling date: 28.02.2024 – 29.02.2024	Sheet: 3 of 4

14.50m – 17.50m bgl



17.50m – 20.50m bgl



Project: 6338 Dakota Hotel, Manchester Airport		BHRC101
Location: Bailey Lane, Manchester, M90 4AB		
Client: Evans Dakota Hotels Limited	Drilling date: 28.02.2024 – 29.02.2024	Sheet: 4 of 4

20.50m – 22.00m bgl



ROCK CORE PHOTOGRAPHIC RECORD



Project: 6338 Dakota Hotel, Manchester Airport		BHRC102
Location: Bailey Lane, Manchester, M90 4AB		
Client: Evans Dakota Hotels Limited	Drilling date: 29.02.2024 – 01.03.2024	Sheet: 1 of 4

1.00m – 3.50m bgl



3.50m – 6.00m bgl



Project: 6338 Dakota Hotel, Manchester Airport		BHRC102
Location: Bailey Lane, Manchester, M90 4AB		
Client: Evans Dakota Hotels Limited	Drilling date: 29.02.2024 – 01.03.2024	Sheet: 2 of 4

6.00m – 9.00m bgl



9.00m – 12.00m bgl



Project: 6338 Dakota Hotel, Manchester Airport		BHRC102
Location: Bailey Lane, Manchester, M90 4AB		
Client: Evans Dakota Hotels Limited	Drilling date: 29.02.2024 – 01.03.2024	Sheet: 3 of 4

12.00m – 15.00m bgl



15.00m – 18.00m bgl



ROCK CORE PHOTOGRAPHIC RECORD



Project: 6338 Dakota Hotel, Manchester Airport		BHRC102
Location: Bailey Lane, Manchester, M90 4AB		
Client: Evans Dakota Hotels Limited	Drilling date: 29.02.2024 – 01.03.2024	Sheet: 4 of 4

18.0m – 21.00m bgl



Project: 6338 Dakota Hotel, Manchester Airport		BHRC103
Location: Bailey Lane, Manchester, M90 4AB		
Client: Evans Dakota Hotels Limited	Drilling date: 04.03.2024 – 06.03.2024	Sheet: 1 of 4

1.20m – 3.00m bgl



3.00m – 6.00m bgl



Project: 6338 Dakota Hotel, Manchester Airport		BHRC103
Location: Bailey Lane, Manchester, M90 4AB		
Client: Evans Dakota Hotels Limited	Drilling date: 04.03.2024 – 06.03.2024	Sheet: 2 of 4

6.00m – 9.00m bgl



9.00m – 12.00m bgl



Project: 6338 Dakota Hotel, Manchester Airport		BHRC103
Location: Bailey Lane, Manchester, M90 4AB		
Client: Evans Dakota Hotels Limited	Drilling date: 04.03.2024 – 06.03.2024	Sheet: 3 of 4

12.00m – 15.00m bgl



11.50m – 14.50m bgl



Project: 6338 Dakota Hotel, Manchester Airport		BHRC103
Location: Bailey Lane, Manchester, M90 4AB		
Client: Evans Dakota Hotels Limited	Drilling date: 04.03.2024 – 06.03.2024	Sheet: 4 of 4

18.00m – 21.00m bgl



21.00m – 24.00m bgl





Appendix C Chemical Analysis Certificates



STATISTICAL ASSESSMENT OF CHEMICAL ANALYSIS

The results of the chemical analysis have been assessed in accordance with CL:AIRE (Contaminated Land: Applications in Real Environments) 'Guidance on Comparing Soil Contamination Data with a Critical Concentration' published by the CIEH, May 2008.

This guidance provides a statistical approach to objectively evaluate the evidence for and against particular propositions/hypothesis and has the useful attribute of enabling decision makers to reach conclusions about the available evidence, with at least some understanding of the validity of the results.

The guidance approaches this in the context of assessing the results from two different perspectives, the Planning Scenario and Part 2A.

When assessing in terms of the Planning Scenario, the key question would be 'can we confidently say that the level of contamination on this land is low relative to some appropriate measure of risk?' Under Part 2A, the question would be 'can we confidently say that the level of contamination is high relative to some appropriate measure of risk?'

These questions are addressed through the use of formal hypothesis – the "Null Hypothesis" and the "Alternative Hypothesis".

This assessment will be carried out in accordance with the Planning Scenario, where the aim is to demonstrate 'suitability for use'. The Null Hypothesis is that the level of contamination is the same as, or higher than the critical concentration/GAC. The Alternative Hypothesis is that the level of contamination is lower than the critical concentration/GAC. Under Part 2A the opposite set of propositions are applicable.

By convention, the Null Hypothesis is the starting proposition against which the key question, as expressed by the Alternative Hypothesis, can be tested.

The assessment of the results relies on there being a normal distribution of results for a particular contaminant and that the data set under consideration is representative of the particular material which is being assessed. If more than one dataset is present, then the hypothesis should be applied individually for each data set.

Under the Planning Scenario, the statistical test is used to demonstrate that there is a 95% probability that the true population mean falls below the critical concentration/GAC.

Appropriate data sets must be created to enable the statistical testing to be carried out and three key elements must be considered prior to statistical analysis. These are as follows:

- Dealing with non-detects.
- Understanding the statistical distribution of data; and
- Dealing with outliers.

The results can then be assessed, and the results will be compared against the following:

- Sample Mean – if the sample mean of the data set is in excess of the GAC, then the Upper Confidence Limit of the true population mean will be higher than the critical concentration.
- 95% of the Upper Confidence Limit.
- One Sample T Test (parametric test) carried out at the 95% confidence level.

On the basis of these tests, the validity of the Null Hypothesis can be assessed.

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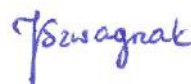
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Analytical Report Number : 24-006510

Project / Site name:	Manchester Airport	Samples received on:	28/02/2024
Your job number:	6338	Samples instructed on/ Analysis started on:	04/03/2024
Your order number:		Analysis completed by:	08/03/2024
Report Issue Number:	1	Report issued on:	10/03/2024
Samples Analysed:	11 soil samples - 4 leachate samples		



Signed:

Joanna Szwagrzak
Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 24-006510
Project / Site name: Manchester Airport

Lab Sample Number				132958	132959	132960	132961	132962
Sample Reference				WS101	WS102	WS103	WS104	TP108
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.20	0.30	0.50	0.50
Date Sampled				26/02/2024	26/02/2024	26/02/2024	26/02/2024	27/02/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status		

Stone Content	%	0.1	NONE	32.3	46.7	51.4	< 0.1	35.3
Moisture Content	%	0.01	NONE	5.6	5.5	4.2	16	5.9
Total mass of sample received	kg	0.1	NONE	0.8	0.8	0.9	0.9	0.9

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	KSZ	KSZ	KSZ	KSZ	KSZ

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	8.3	8.1	8.2	8.2	8.4
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO ₄	mg/kg	50	MCERTS	67	-	50	-	< 50
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	11	34	12	34	18
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	5.4	17.2	6.12	16.8	8.79
Sulphide	mg/kg	1	MCERTS	< 1.0	-	< 1.0	-	< 1.0
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	1.8	-	4.4	-	3.6
Organic Matter (automated)	%	0.1	MCERTS	1.3	0.7	0.6	0.4	1.1

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.07	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenzo(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80
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Analytical Report Number: 24-006510
Project / Site name: Manchester Airport

Lab Sample Number				132958	132959	132960	132961	132962
Sample Reference				WS101	WS102	WS103	WS104	TP108
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.20	0.30	0.50	0.50
Date Sampled				26/02/2024	26/02/2024	26/02/2024	26/02/2024	27/02/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	4.4	7.8	6.3	6.9	4.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	-	< 1.8	-	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	16	21	19	34	17
Copper (aqua regia extractable)	mg/kg	1	MCERTS	7.5	17	13	10	8.6
Lead (aqua regia extractable)	mg/kg	1	MCERTS	8.7	13	11	5.1	8.6
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	18	27	24	30	20
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	42	77	53	50	47

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

Analytical Report Number: 24-006510
Project / Site name: Manchester Airport

Lab Sample Number				132963	132964	132965	132966	132967
Sample Reference				TP107	TP105	TP104	TP101	HP1
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.80	0.30	0.40	0.20	0.20
Date Sampled				27/02/2024	27/02/2024	27/02/2024	27/02/2024	28/02/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	18	6.2	6.4	8	3.8
Total mass of sample received	kg	0.1	NONE	0.9	0.9	0.9	0.9	0.9

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	KSZ	KSZ	KSZ	KSZ	KSZ

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.7	8.3	8.8	8.6	8.9
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	93	-	-	350
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	49	26	7.1	140	84
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	24.3	13	3.57	69.1	42
Sulphide	mg/kg	1	MCERTS	-	< 1.0	-	-	65
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	-	8.2	-	-	5.7
Organic Matter (automated)	%	0.1	MCERTS	0.5	0.9	0.6	1.7	5.4

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.14
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.18
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	0.11	< 0.05	0.66	1.5
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.16	0.41
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.15	< 0.05	0.92	3.5
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.16	< 0.05	0.96	3.4
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.08	< 0.05	0.39	1.9
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.12	< 0.05	0.5	2.4
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.21	< 0.05	0.51	3.7
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.06	< 0.05	0.26	1.2
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.15	< 0.05	0.46	2.9
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.19	< 0.05	0.23	1.6
Dibenzo(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.21	< 0.05	0.38	2.1

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	1.44	< 0.80	5.43	25
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Analytical Report Number: 24-006510
Project / Site name: Manchester Airport

Lab Sample Number				132963	132964	132965	132966	132967
Sample Reference				TP107	TP105	TP104	TP101	HP1
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.80	0.30	0.40	0.20	0.20
Date Sampled				27/02/2024	27/02/2024	27/02/2024	27/02/2024	28/02/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	7	4.4	4.8	3.6
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.2	< 0.2	< 0.2	0.5
Chromium (hexavalent)	mg/kg	1.8	MCERTS	-	< 1.8	-	-	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	39	19	19	17	11
Copper (aqua regia extractable)	mg/kg	1	MCERTS	20	17	13	13	8.4
Lead (aqua regia extractable)	mg/kg	1	MCERTS	5.6	11	14	10	15
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	35	25	25	21	9.1
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	59	57	59	42	31

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

Analytical Report Number: 24-006510
Project / Site name: Manchester Airport

Lab Sample Number				132968
Sample Reference				TP109
Sample Number				None Supplied
Depth (m)				0.20
Date Sampled				27/02/2024
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	

Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	13
Total mass of sample received	kg	0.1	NONE	0.9

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	KSZ

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	8.5
Free Cyanide	mg/kg	1	MCERTS	< 1.0
Total Sulphate as SO ₄	mg/kg	50	MCERTS	240
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	13
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	6.28
Sulphide	mg/kg	1	MCERTS	< 1.0
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	3
Organic Matter (automated)	%	0.1	MCERTS	0.4

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.1
Pyrene	mg/kg	0.05	MCERTS	0.11
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05
Dibenzo(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80
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Analytical Report Number: 24-006510
Project / Site name: Manchester Airport

Lab Sample Number				132968
Sample Reference				TP109
Sample Number				None Supplied
Depth (m)				0.20
Date Sampled				27/02/2024
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	28
Copper (aqua regia extractable)	mg/kg	1	MCERTS	12
Lead (aqua regia extractable)	mg/kg	1	MCERTS	13
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	25
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	47

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

Analytical Report Number: 24-006510
Project / Site name: Manchester Airport

Lab Sample Number				132958	132962	132967	132968
Sample Reference				WS101	TP108	HP1	TP109
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.50	0.20	0.20
Date Sampled				26/02/2024	27/02/2024	28/02/2024	27/02/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)				Units	Limit of detection	Accreditation Status	

General Inorganics

pH (automated)	pH Units	N/A	ISO 17025	7.5	7.3	8.2	7.7
Free Cyanide (Low Level 1 µg/l)	µg/l	1	NONE	< 1	< 1	< 1	< 1
Sulphate as SO ₄	mg/l	0.045	ISO 17025	14	8.21	7.82	1.13

Total Phenols

Total Phenols (monohydric) low level	µg/l	1	NONE	2.4	2.2	1.8	3.5
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Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01
Dibenzo(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01

Total PAH

Total EPA-16 PAHs	µg/l	0.16	NONE	< 0.16	< 0.16	< 0.16	< 0.16
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Heavy Metals / Metalloids

Arsenic (dissolved)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08	< 0.08
Chromium (dissolved)	µg/l	0.4	ISO 17025	3.2	2.8	2.1	0.5
Copper (dissolved)	µg/l	0.7	ISO 17025	10	18	9.3	3.5
Lead (dissolved)	µg/l	1	ISO 17025	< 1.0	< 1.0	2.8	< 1.0
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	1.9	1.7	1.5	0.5
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	< 4.0	< 4.0
Zinc (dissolved)	µg/l	0.4	ISO 17025	12	13	16	3.1

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

Analytical Report Number : 24-006510
Project / Site name: Manchester Airport

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
132958	WS101	None Supplied	0.3	Brown sand with stones
132959	WS102	None Supplied	0.2	Brown sand with stones
132960	WS103	None Supplied	0.3	Brown sand with stones
132961	WS104	None Supplied	0.5	Brown clay
132962	TP108	None Supplied	0.5	Brown gravely sand with stones
132963	TP107	None Supplied	0.8	Brown clay
132964	TP105	None Supplied	0.3	Brown gravely sand
132965	TP104	None Supplied	0.4	Brown gravely sand
132966	TP101	None Supplied	0.2	Brown clay and gravel
132967	HP1	None Supplied	0.2	Brown gravely sand with gravel
132968	TP109	None Supplied	0.2	Brown clay with vegetation

Analytical Report Number : 24-006510
Project / Site name: Manchester Airport

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode	In-house method	L010	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Total sulphate (as SO ₄ in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES	In-house method	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	ISO 17025
Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080	W	MCERTS
Free cyanide (low level) in leachate	Determination of free cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	NONE
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	MCERTS
Monohydric phenols (low level) in leachate	Determination of phenols in leachate by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	MCERTS
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser	In-house method	L082B	D	MCERTS

Analytical Report Number : 24-006510
Project / Site name: Manchester Airport

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS
pH at 20°C in leachate (automated)	Determination of pH in leachate by electrometric measurement	In-house method	L099	W	ISO 17025
Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in leachate	SVOCs and PAHs in leachate	In-house method	L102B		ISO 17025

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30°C.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.



JPG Group
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LS12 6QA

i2 Analytical Ltd.
7 Woodshots Meadow,
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Watford,
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WD18 8YS

e: emily.sykes@jpg.group

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 24-009806

Project / Site name:	Manchester Airport	Samples received on:	19/03/2024
Your job number:	6338	Samples instructed on/ Analysis started on:	19/03/2024
Your order number:		Analysis completed by:	25/03/2024
Report Issue Number:	1	Report issued on:	25/03/2024
Samples Analysed:	2 water samples		

Signed:

Joanna Szwagrak
Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 24-009806
Project / Site name: Manchester Airport

Lab Sample Number				148880	148881
Sample Reference				BH101	BH103
Sample Number				None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied
Date Sampled				Deviating	Deviating
Time Taken				None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status		

General Inorganics

pH (L099)	pH Units	N/A	ISO 17025	7.9	7.7
Free Cyanide (Low Level 1 µg/l)	µg/l	1	NONE	< 1.0	< 1.0
Sulphate as SO ₄	mg/l	0.045	ISO 17025	31.5	54.8
Hardness - Total	mgCaCO ₃ /l	1	ISO 17025	377	569

Total Phenols

Total Phenols (Monohydric) Low Level 1ug/l	µg/l	1	NONE	< 1.0	< 1.0
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Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01

Total PAH

Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16
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Heavy Metals / Metalloids

Arsenic (dissolved)	µg/l	0.15	ISO 17025	1.71	2.24
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.02	0.03
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.6	< 0.2
Copper (dissolved)	µg/l	0.5	ISO 17025	3.2	1.3
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	1	0.6
Selenium (dissolved)	µg/l	0.6	ISO 17025	< 0.6	0.7
Zinc (dissolved)	µg/l	0.5	ISO 17025	4.8	1.2

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

Analytical Report Number : 24-009806
Project / Site name: Manchester Airport

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW	In-house method based on USEPA Method 6020 & 200.8 for the determination of trace elements in water by ICP-MS	L012B	W	ISO 17025
Total Hardness of water	Determination of hardness in waters by calculation from calcium and magnesium	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045B	W	ISO 17025
Free cyanide (low level) in water	Determination of free cyanide by distillation followed by colorimetry. Accredited matrices SW, GW, PW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	NONE
Monohydric phenols (low level) in water	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	NONE
pH at 20°C in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method	L099	W	ISO 17025
Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds (including PAH) in leachate by extraction in dichloromethane followed by GC-MS	In-house method based on USEPA 8270	L102B	W	ISO 17025
Sulphate in water	Determination of sulphate in water after filtration by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	ISO 17025

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30°C.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Sample Deviation Report



Analytical Report Number : 24-009806

Project / Site name: Manchester Airport

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

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

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
BH101	N/A	W	148880	a	Free cyanide (low level) in water	L080	a
BH101	N/A	W	148880	a	Metals in water by ICP-MS (dissolved)	L012B	a
BH101	N/A	W	148880	a	Monohydric phenols (low level) in water	L080	a
BH101	N/A	W	148880	a	Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in water	L102B	a
BH101	N/A	W	148880	a	Sulphate in water	L039B	a
BH101	N/A	W	148880	a	Total Hardness of water	L045B	a
BH101	N/A	W	148880	a	pH at 20°C in water (automated)	L099	a
BH103	N/A	W	148881	a	Free cyanide (low level) in water	L080	a
BH103	N/A	W	148881	a	Metals in water by ICP-MS (dissolved)	L012B	a
BH103	N/A	W	148881	a	Monohydric phenols (low level) in water	L080	a
BH103	N/A	W	148881	a	Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in water	L102B	a
BH103	N/A	W	148881	a	Sulphate in water	L039B	a
BH103	N/A	W	148881	a	Total Hardness of water	L045B	a
BH103	N/A	W	148881	a	pH at 20°C in water (automated)	L099	a



Appendix D Geotechnical Testing Results



LABORATORY REPORT



Contract Number: PSL24/2040

Report Date: 17 April 2024
Client's Reference: 6338/1
Client Name: JPG Leeds
5 John Charles Way
Leeds
West Yorkshire
LS12 6QD

For the attention of: Emily Sykes

Contract Title: Dakota Hotel, Manchester Airport

Date Received: 20/3/2024
Date Commenced: 20/3/2024
Date Completed: 17/4/2024

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins
(Managing Director)

R Berriman
(Associate Director)

S Royle
(Laboratory Manager)

L Knight
(Assistant Laboratory Manager) (Senior Technical Coordinator)

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Page 1 of

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

[illegible]

Dakota Hotel, Manchester Airport

Contract No:

PSL24/2040

Client Ref:

6338

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

[illegible]

SYMBOLS : NP : Non Plastic

*** : Liquid Limit and Plastic Limit Wet Sieved.**



Dakota Hotel, Manchester Airport

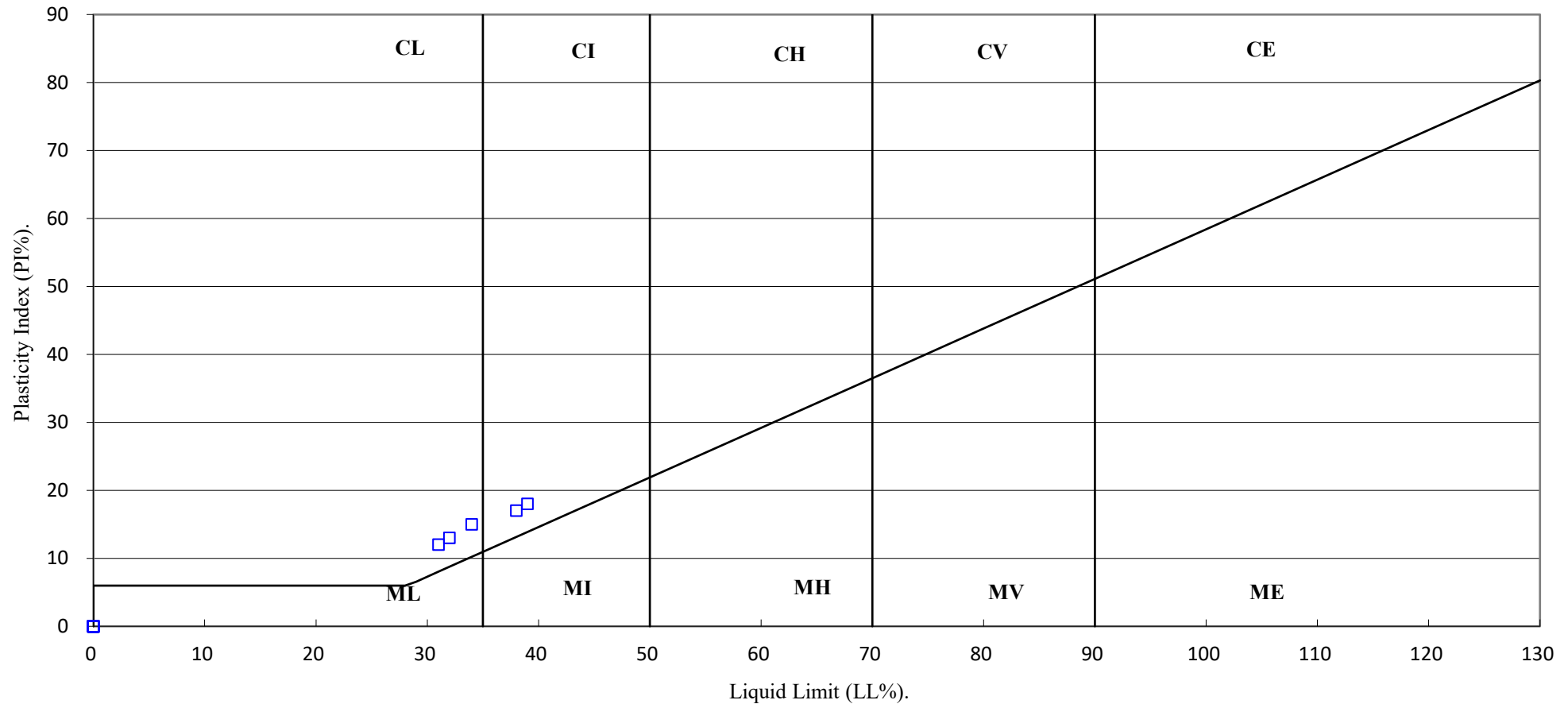
Contract No:

PSL24/2040

Client Ref:

6338

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



Dakota Hotel, Manchester Airport

Contract No:

PSL24/2040

Client Ref:

6338

PARTICLE SIZE DISTRIBUTION TEST

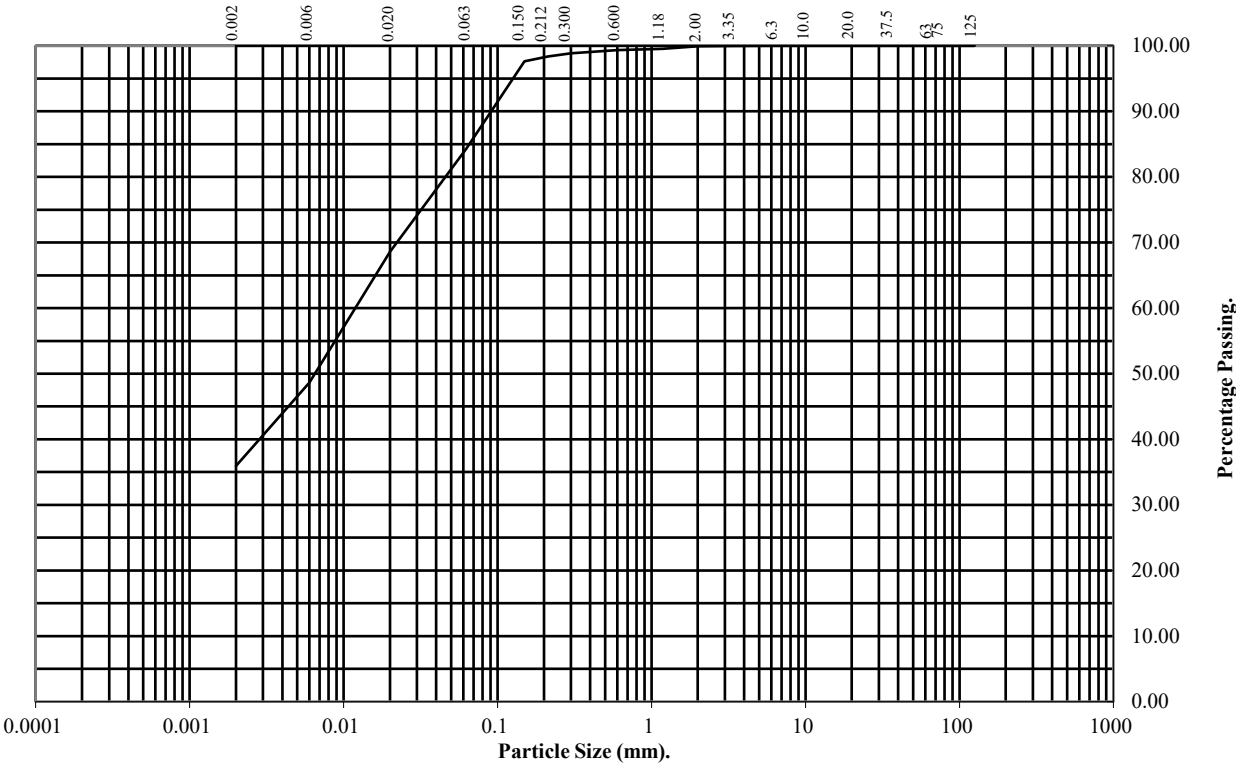
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: TP106 Top Depth (m): 0.70

Sample Number: Base Depth(m):

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	99
0.3	99
0.212	98
0.15	98
0.063	84

Particle Diameter	Percentage Passing
0.02	69
0.006	49
0.002	36

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	16
Silt	48
Clay	36

Remarks:
See Summary of Soil Descriptions



Dakota Hotel, Manchester Airport

Contract No:
PSL24/2040
Client Ref:
6338

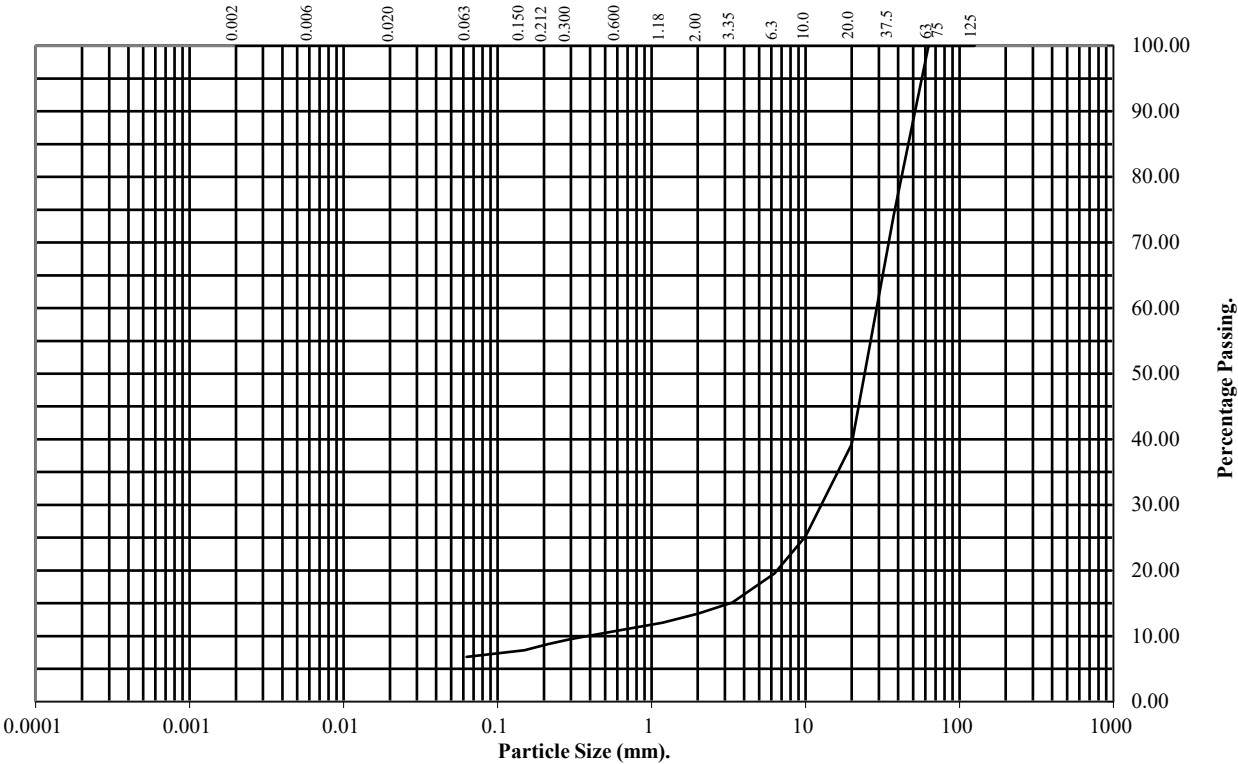
PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990
Wet Sieve, Clause 9.2

Hole Number: TP103 Top Depth (m): 0.40

Sample Number: Base Depth(m):

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	74
20	39
10	25
6.3	20
3.35	15
2	13
1.18	12
0.6	11
0.3	10
0.212	9
0.15	8
0.063	7

Soil Fraction	Total Percentage
Cobbles	0
Gravel	87
Sand	6
Silt/Clay	7

Remarks:
See Summary of Soil Descriptions



Dakota Hotel, Manchester Airport

Contract No:
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Client Ref:
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PARTICLE SIZE DISTRIBUTION TEST

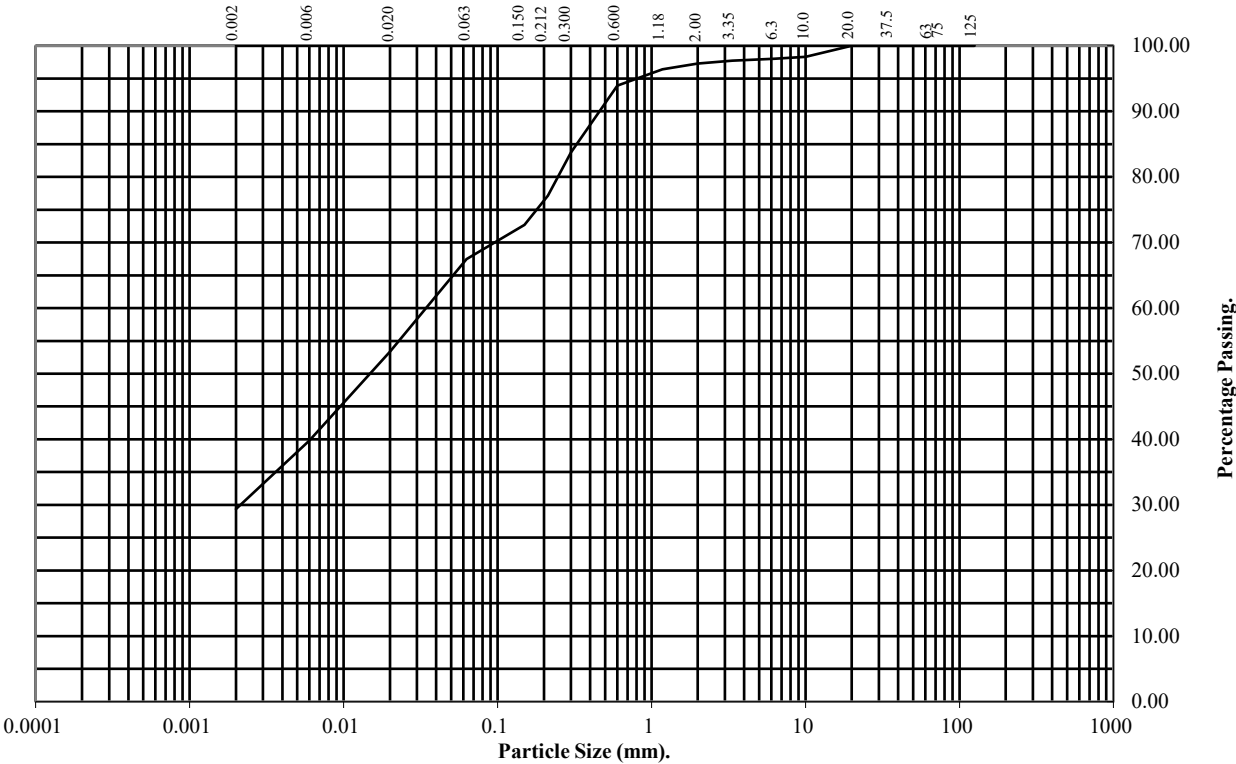
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: TP102 Top Depth (m): 1.00

Sample Number: Base Depth(m):

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	98
6.3	98
3.35	98
2	97
1.18	96
0.6	94
0.3	84
0.212	77
0.15	73
0.063	67

Particle Diameter	Percentage Passing
0.02	53
0.006	40
0.002	29

Soil Fraction	Total Percentage
Cobbles	0
Gravel	3
Sand	30
Silt	38
Clay	29

Remarks:
See Summary of Soil Descriptions



Dakota Hotel, Manchester Airport

Contract No:
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Client Ref:
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PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

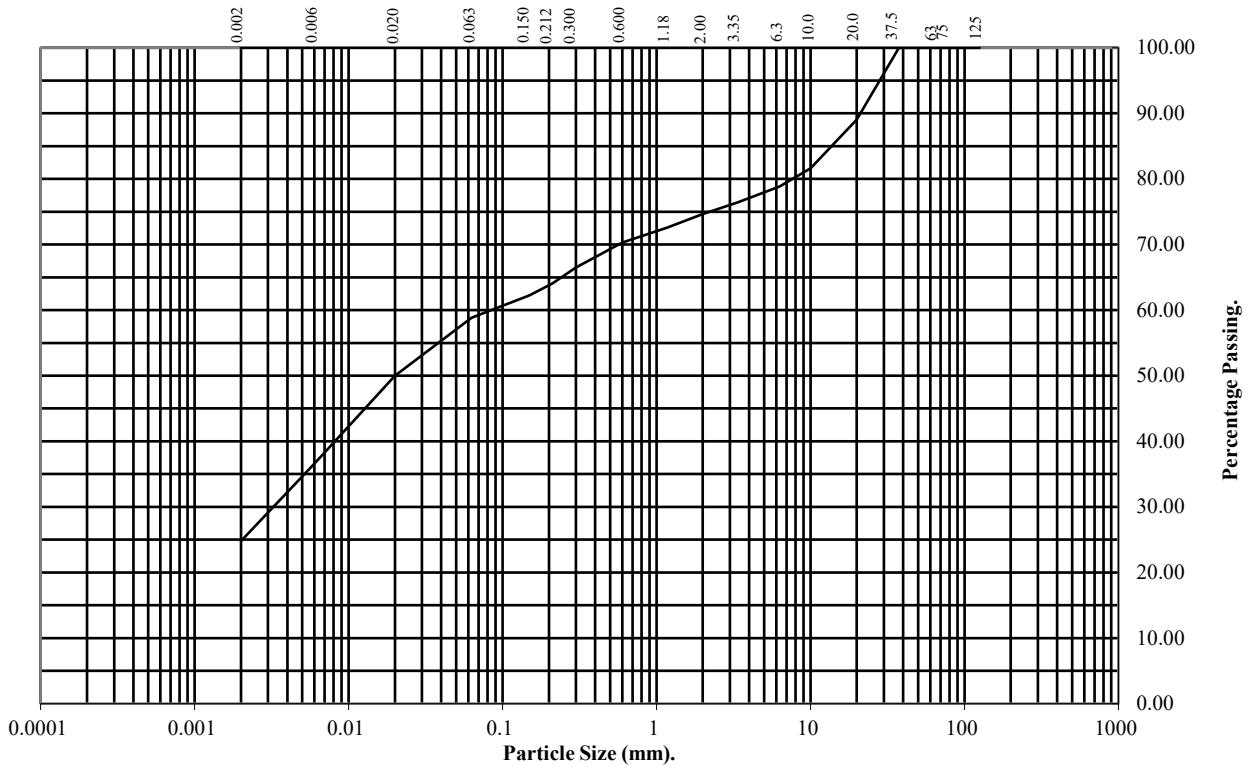
Hole Number: TP109

Top Depth (m): 0.30

Sample Number:

Base Depth(m):

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	89
10	82
6.3	79
3.35	76
2	75
1.18	73
0.6	70
0.3	67
0.212	64
0.15	62
0.063	59

Particle Diameter	Percentage Passing
0.02	50
0.006	37
0.002	25

Soil Fraction	Total Percentage
Cobbles	0
Gravel	25
Sand	16
Silt	34
Clay	25

Remarks:

See Summary of Soil Descriptions



Dakota Hotel, Manchester Airport

Contract No:
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DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

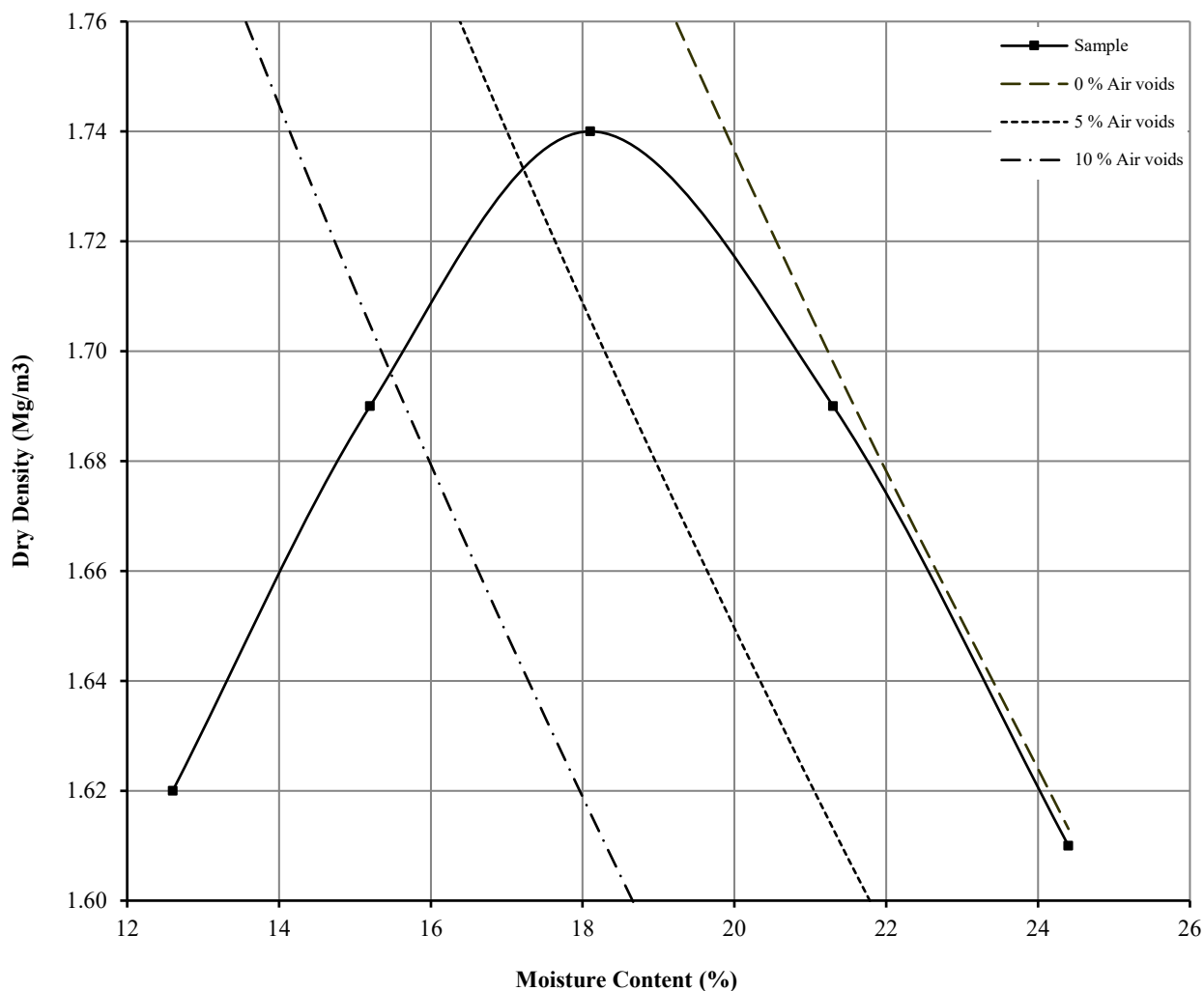
Hole Number: TP106

Top Depth (m) : 0.70

Sample Number:

Base Depth (m) :

Sample Type: B



Initial Moisture Content:	21	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.66	Measured	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (Mg/m3):	1.74		Material Retained on 20.0 mm Test Sieve (%):	0
Optimum Moisture Content (%):	18			
Remarks See summary of soil descriptions				

 4043	 A PHENNA GROUP COMPANY	Dakota Hotel, Manchester Airport	Contract
			PSL24/2040
			Client Ref
			6338

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.5 : 1990

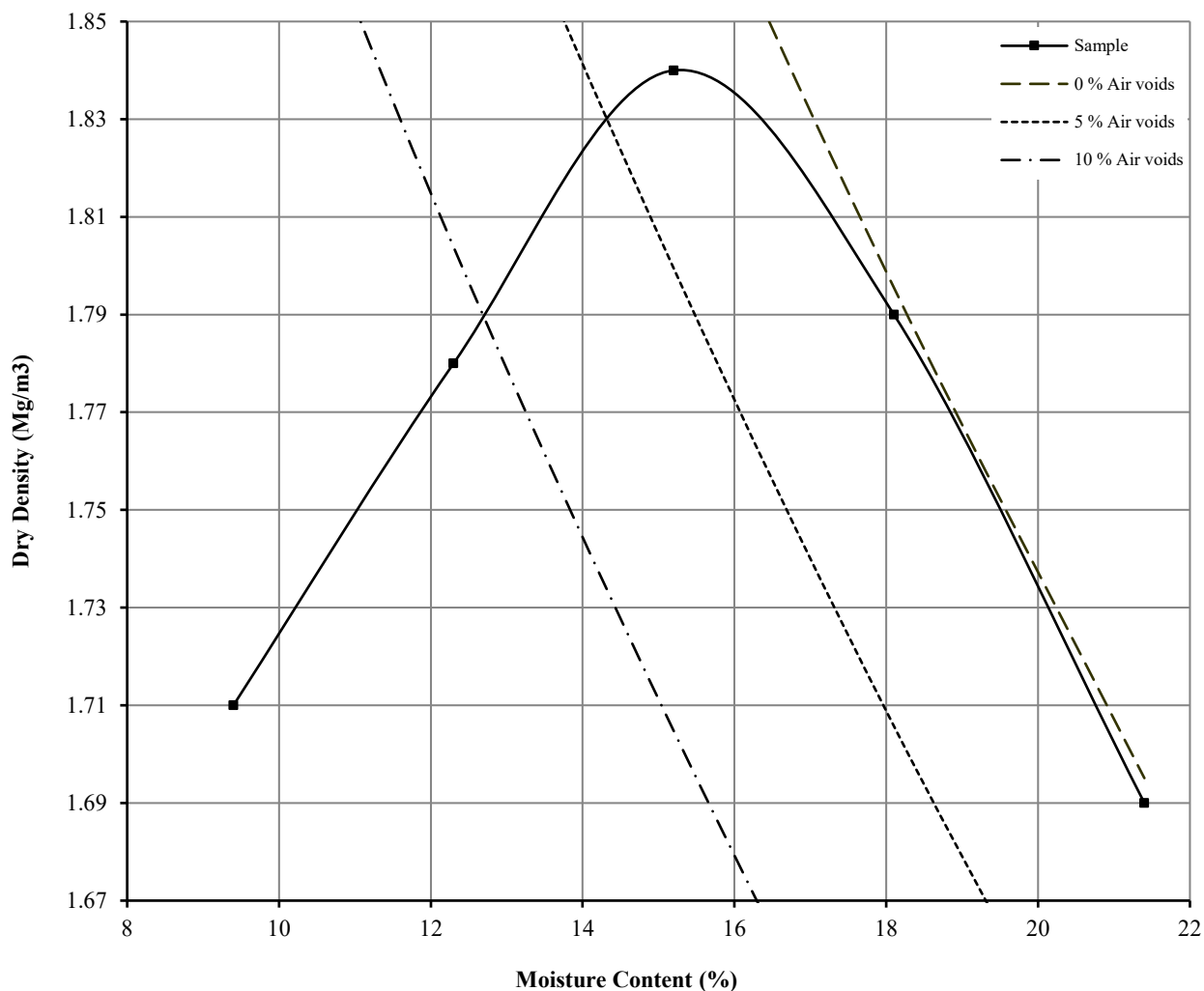
Hole Number: TP106

Top Depth (m) : 0.70

Sample Number:

Base Depth (m) :

Sample Type: B



Initial Moisture Content:	21	Method of Compaction:	4.5kg	Separate Samples
Particle Density (Mg/m ³):	2.66	Measured	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (Mg/m ³):	1.84		Material Retained on 20.0 mm Test Sieve (%):	0
Optimum Moisture Content (%):	15			
Remarks See summary of soil descriptions				

		Dakota Hotel, Manchester Airport	Contract
			PSL24/2040
			Client Ref
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DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Non compliance with BS 1377 : Part 4 : Clause 3.4 : 1990

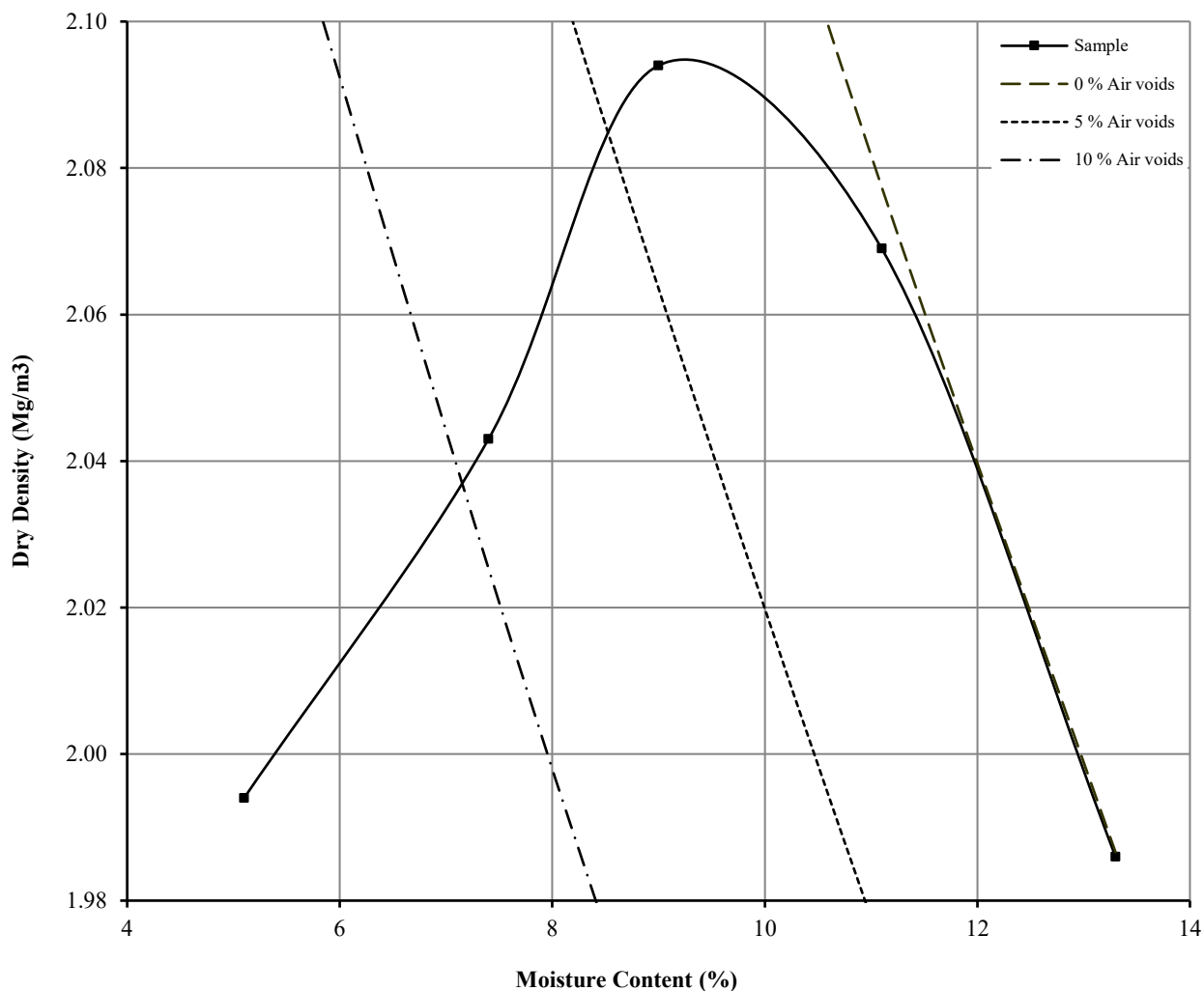
Hole Number: TP103

Top Depth (m) : 0.40

Sample Number:

Base Depth (m) :

Sample Type: B



Initial Moisture Content:	9.0	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m ³):	2.7	Measured	Material Retained on 37.5 mm Test Sieve (%):	26
Maximum Dry Density (Mg/m ³):	2.09		Material Retained on 20.0 mm Test Sieve (%):	35
Optimum Moisture Content (%):	9			
Remarks See summary of soil descriptions				

 4043	 A PHENNA GROUP COMPANY	Dakota Hotel, Manchester Airport	Contract
			PSL24/2040
			Client Ref
			6338

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Non compliance with BS 1377 : Part 4 : Clause 3.4 : 1990

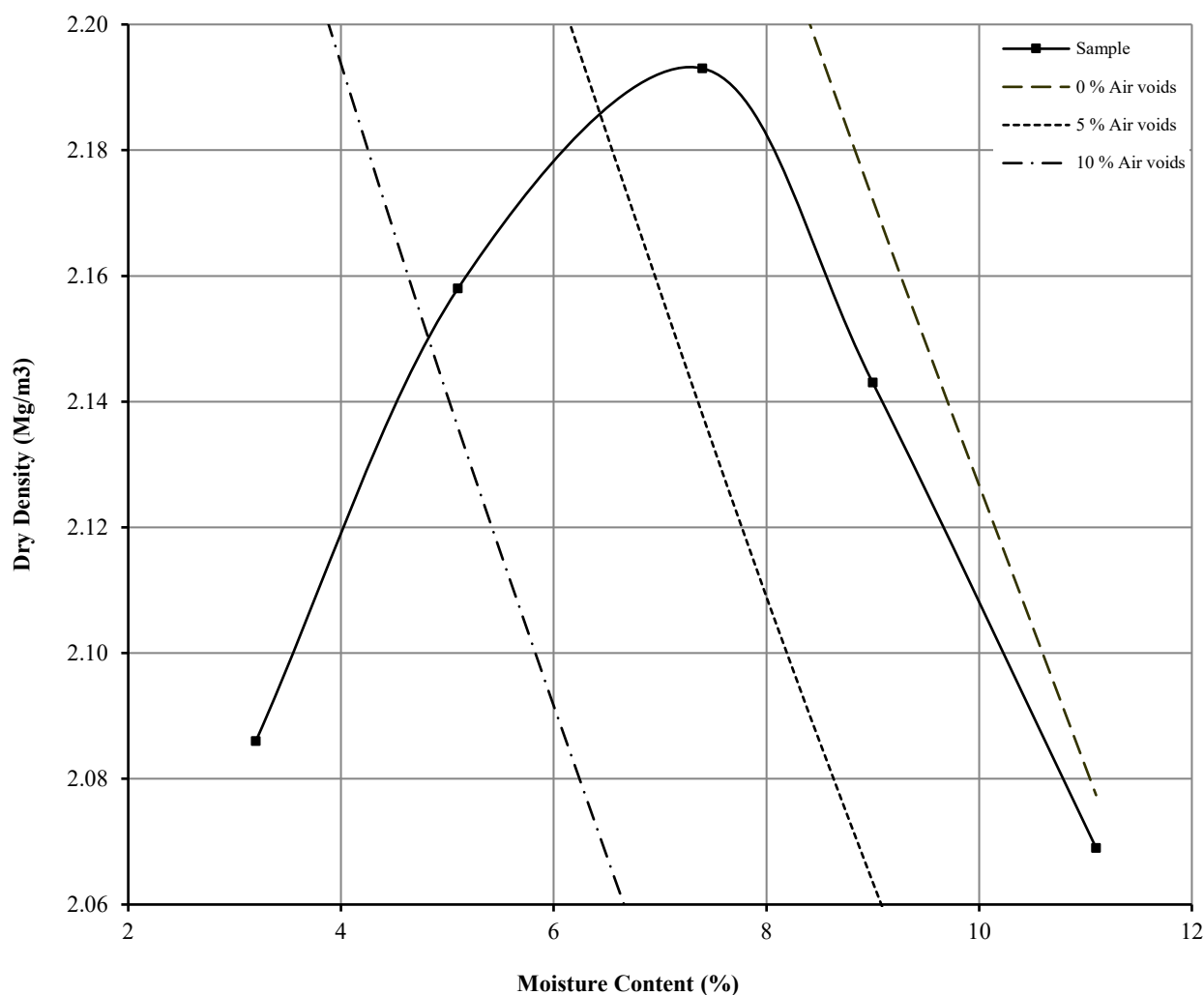
Hole Number: TP103

Top Depth (m) : 0.40

Sample Number:

Base Depth (m) :

Sample Type: B



Initial Moisture Content:	9.0	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m ³):	2.7	Measured	Material Retained on 37.5 mm Test Sieve (%):	26
Maximum Dry Density (Mg/m ³):	2.19		Material Retained on 20.0 mm Test Sieve (%):	35
Optimum Moisture Content (%):	7			
Remarks See summary of soil descriptions				



Dakota Hotel, Manchester Airport

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DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

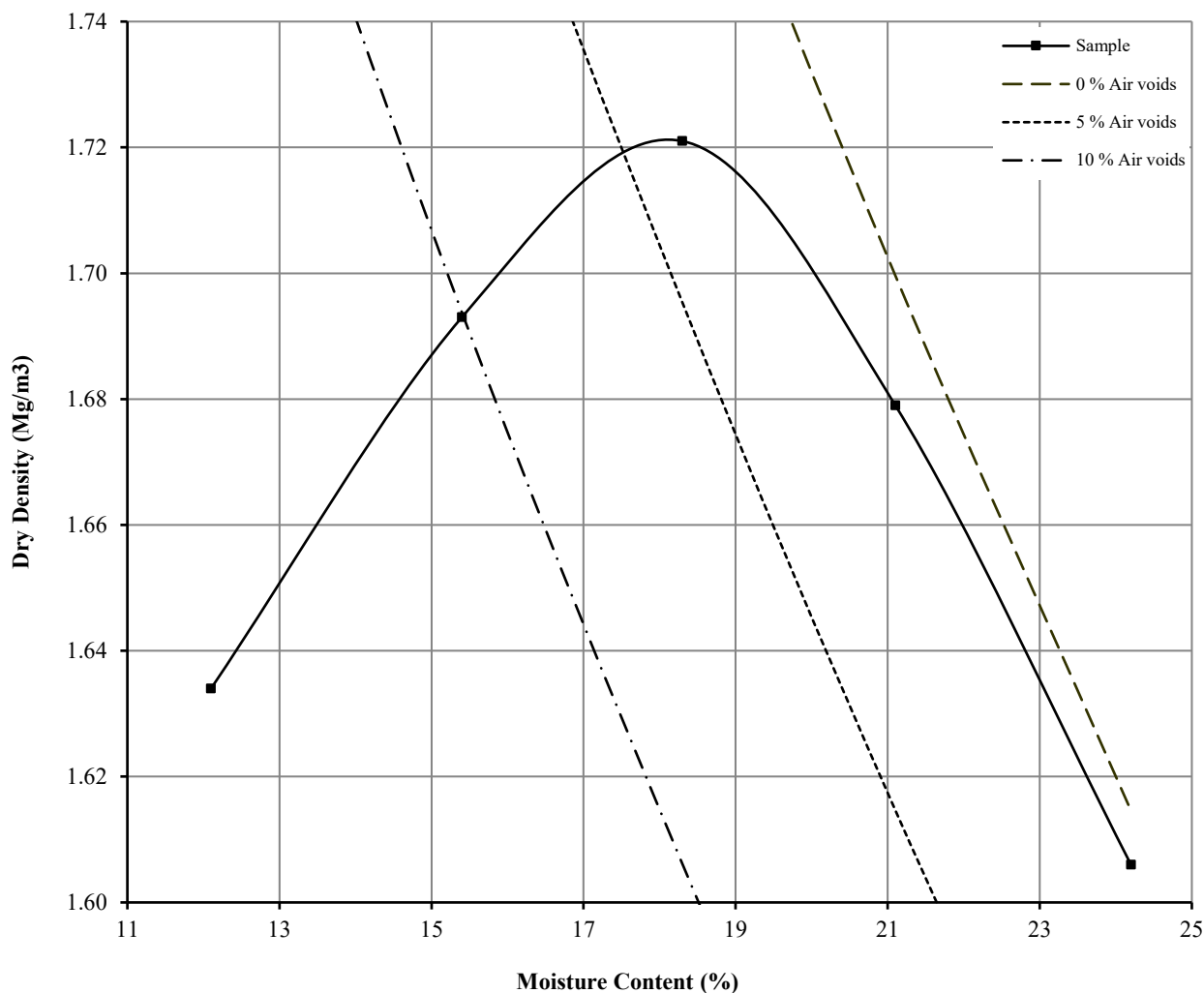
Hole Number: TP102

Top Depth (m) : 1.00

Sample Number:

Base Depth (m) :

Sample Type: B



Initial Moisture Content:	24	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m ³):	2.65	Measured	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (Mg/m ³):	1.72		Material Retained on 20.0 mm Test Sieve (%):	0
Optimum Moisture Content (%):	18			
Remarks See summary of soil descriptions				

 4043	 A PHENNA GROUP COMPANY	Dakota Hotel, Manchester Airport	Contract
			PSL24/2040
			Client Ref
			6338

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.5 : 1990

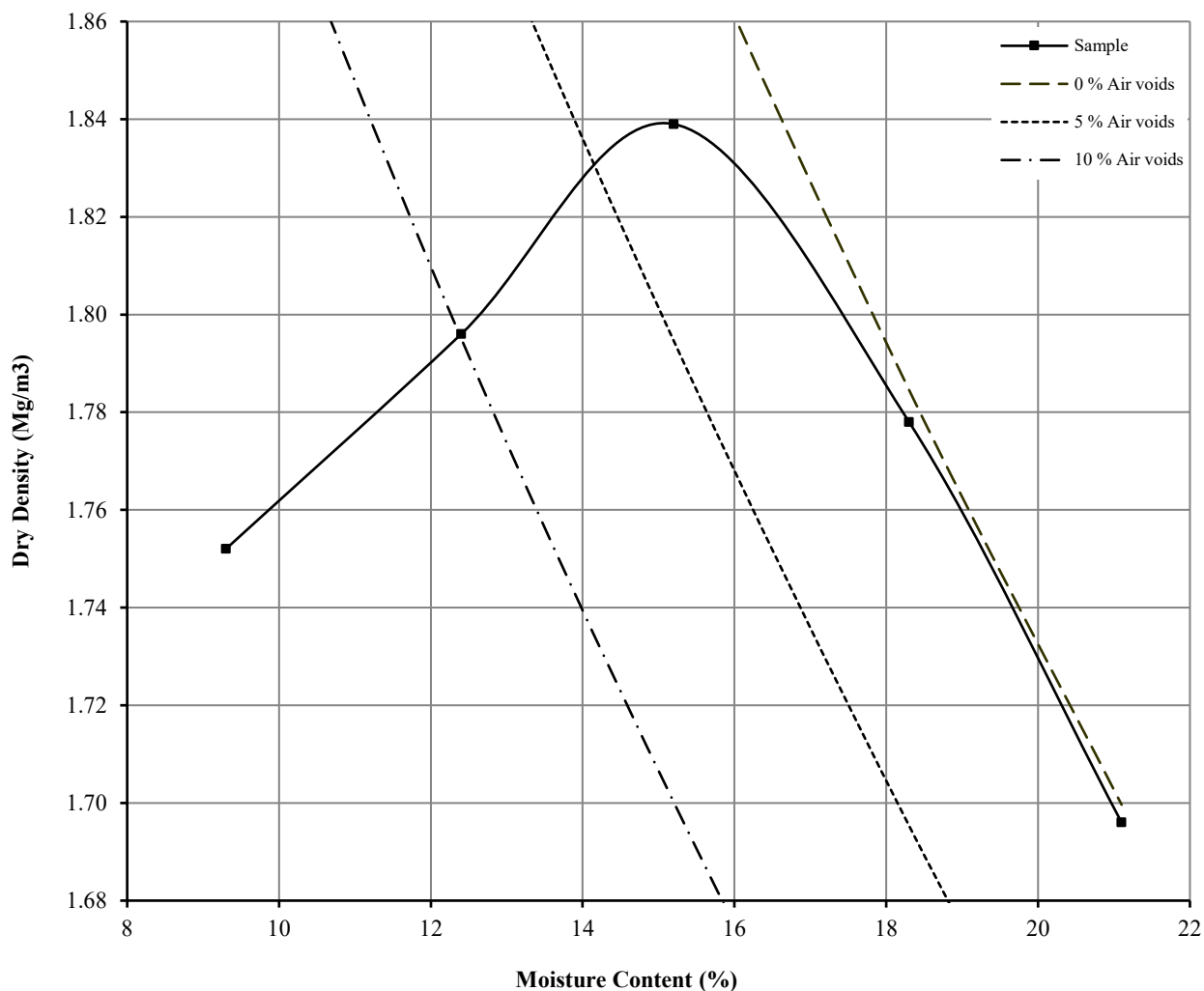
Hole Number: TP102

Top Depth (m) : 1.00

Sample Number:

Base Depth (m) :

Sample Type: B



Initial Moisture Content:	24	Method of Compaction:	4.5kg	Separate Samples
Particle Density (Mg/m ³):	2.65	Measured	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (Mg/m ³):	1.84		Material Retained on 20.0 mm Test Sieve (%):	0
Optimum Moisture Content (%):	15			
Remarks See summary of soil descriptions				

 4043	 A PHENNA GROUP COMPANY	Dakota Hotel, Manchester Airport	Contract
			PSL24/2040
			Client Ref
			6338

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.4 : 1990

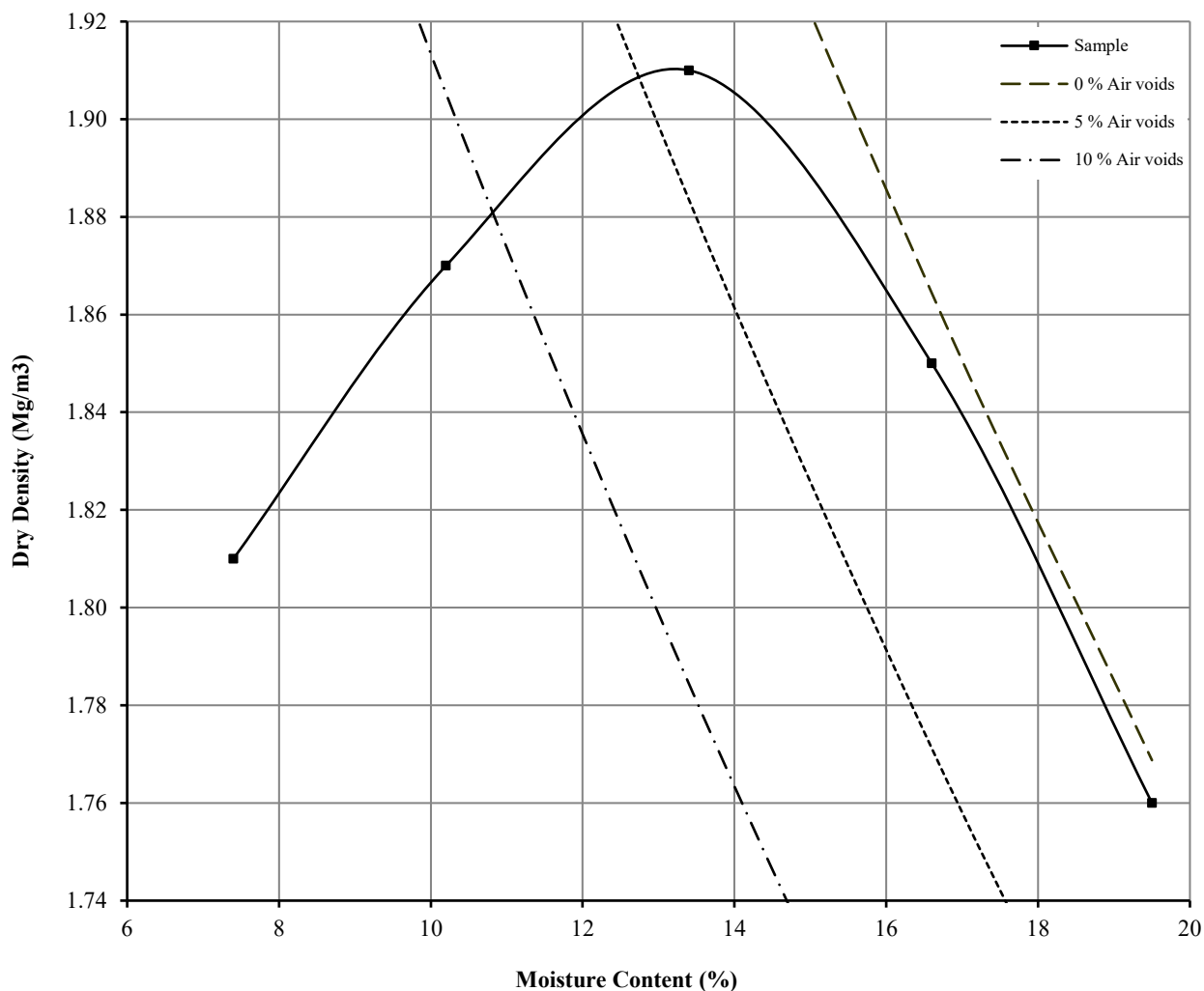
Hole Number: TP109

Top Depth (m) : 0.30

Sample Number:

Base Depth (m) :

Sample Type: B



Initial Moisture Content:	17	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m ³):	2.7	Measured	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (Mg/m ³):	1.91		Material Retained on 20.0 mm Test Sieve (%):	11
Optimum Moisture Content (%):	13			
Remarks See summary of soil descriptions				



Dakota Hotel, Manchester Airport

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DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.6 : 1990

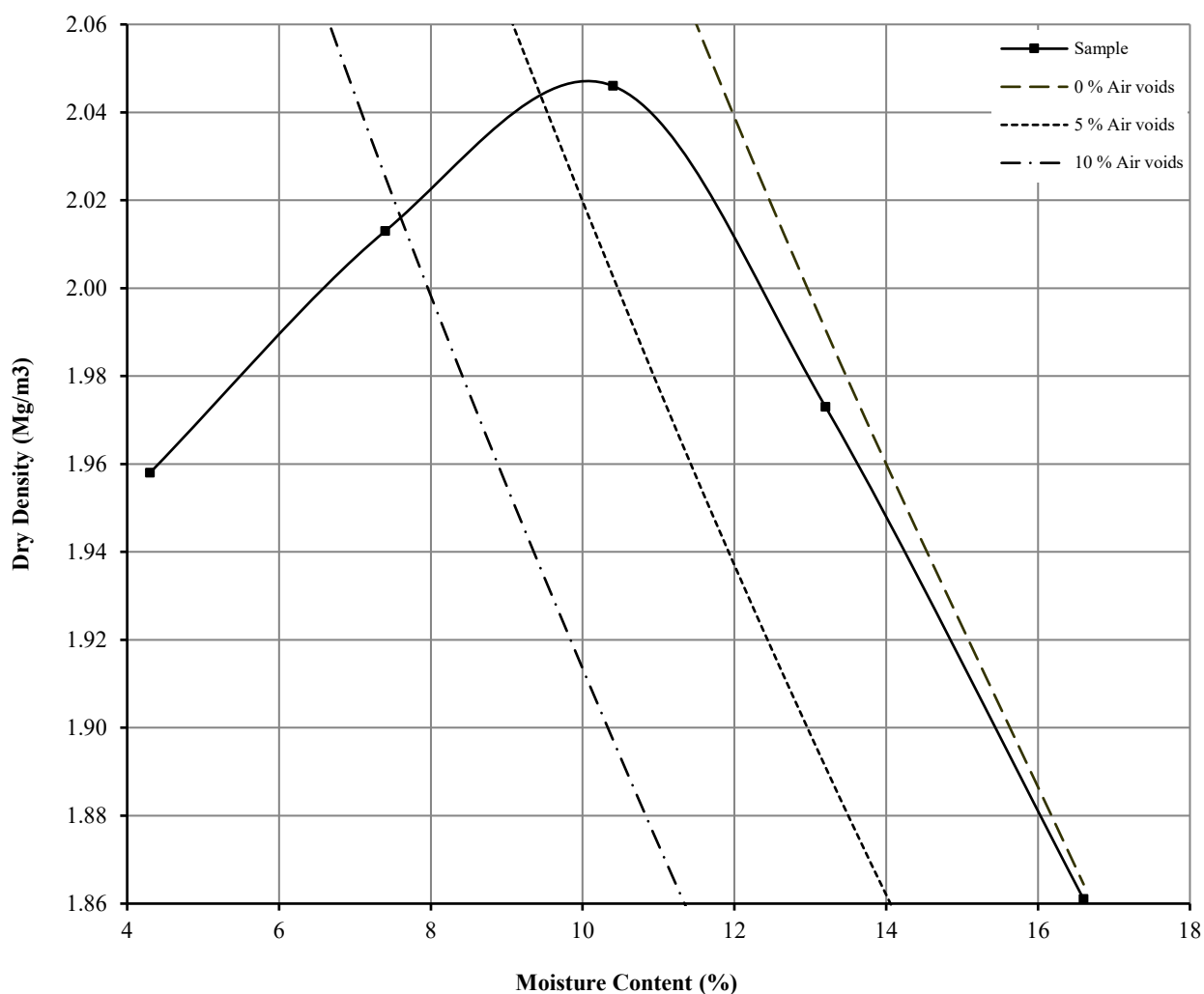
Hole Number: TP109

Top Depth (m) : 0.30

Sample Number:

Base Depth (m) :

Sample Type: B



Initial Moisture Content:	17	Method of Compaction:	4.5kg	Separate Samples
Particle Density (Mg/m ³):	2.7	Measured	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (Mg/m ³):	2.05		Material Retained on 20.0 mm Test Sieve (%):	11
Optimum Moisture Content (%):	10			
Remarks See summary of soil descriptions				

 	Dakota Hotel, Manchester Airport			Contract
				PSL24/2040
				Client Ref
				6338

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation Par / Perp	Dimensions (mm)		Area (mm ²)	D _c ²	D _c (mm)	Failure Load (P)		I _s (MPa)	Corr Fac F	I _{s50} (MPa)	Failure Type	Remarks
					W	D				(Mpa)	(kN)					
BHRC101	3.50		A	Perp	106	42	4452	5668.46	75.29	-	0.31	0.05	1.202	0.07	Valid	
BHRC101	3.63		I	Perp	106	45	4770	6073.35	77.93	-	0.56	0.09	1.221	0.11	Valid	
BHRC101	6.60		A	Perp	105	64	6720	8556.17	92.50	-	0.36	0.04	1.319	0.06	Valid	
BHRC101	7.00		A	Perp	105	62	6510	8288.79	91.04	-	0.73	0.09	1.310	0.12	Valid	
BHRC101	7.65		A	Perp	105	59	6195	7887.72	88.81	-	0.85	0.11	1.295	0.14	Valid	
BHRC101	7.90		A	Perp	106	56	5936	7557.95	86.94	-	0.61	0.08	1.283	0.10	Valid	
BHRC101	9.00		A	Perp	105	37	3885	4946.54	70.33	-	0.93	0.19	1.166	0.22	Valid	
BHRC101	10.40		A	Perp	106	43	4558	5803.43	76.18	-	1.05	0.18	1.209	0.22	Valid	
BHRC101	10.50		A	Perp	106	52	5512	7018.10	83.77	-	1.26	0.18	1.261	0.23	Valid	
BHRC101	12.05		A	Perp	106	62	6572	8367.73	91.48	-	0.34	0.04	1.312	0.05	Valid	
BHRC101	12.70		A	Perp	106	68	7208	9177.51	95.80	-	0.56	0.06	1.340	0.08	Valid	
BHRC101	13.62		A	Perp	106	66	6996	8907.58	94.38	-	1.92	0.22	1.331	0.29	Valid	
BHRC101	14.78		A	Perp	107	65	6955	8855.38	94.10	-	0.39	0.04	1.329	0.06	Valid	
BHRC101	15.82		A	Perp	106	65	6890	8772.62	93.66	-	0.96	0.11	1.326	0.15	Valid	
BHRC101	17.84		A	Perp	105	44	4620	5882.37	76.70	-	0.64	0.11	1.212	0.13	Valid	
BHRC101	19.27		A	Perp	106	63	6678	8502.69	92.21	-	0.67	0.08	1.317	0.10	Valid	
BHRC101	19.98		A	Perp	104	41	4264	5429.09	73.68	-	0.97	0.18	1.191	0.21	Valid	
BHRC101	20.97		A	Perp	104	44	4576	5826.34	76.33	-	0.92	0.16	1.210	0.19	Valid	
BHRC101	21.60		A	Perp	105	49	5145	6550.82	80.94	-	2.35	0.36	1.242	0.45	Valid	

***Note** All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular

		<p>Dakota Hotel, Manchester Airport</p>	Contract No:
			PSL24/2040
			Client Ref:
			6338

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

[illegible]

***Note** All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random



Dakota Hotel, Manchester Airport

Contract No:

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Client Ref:

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SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation Par / Perp	Dimensions (mm)		Area (mm ²)	D _c ²	D _c (mm)	Failure Load (P)		I _s (MPa)	Corr Fac F	I _{s50} (MPa)	Failure Type	Remarks
					W	D				(Mpa)	(kN)					
BHRC102	5.17		A	Perp	104	54	5616	7150.51	84.56	-	1.00	0.14	1.267	0.18	Valid	
BHRC102	6.00		A	Perp	103	68	7004	8917.77	94.43	-	2.55	0.29	1.331	0.38	Valid	
BHRC102	6.38		A	Perp	102	53	5406	6883.13	82.96	-	0.12	0.02	1.256	0.02	Valid	
BHRC102	7.40		A	Perp	106	54	5724	7288.02	85.37	-	1.45	0.20	1.272	0.25	Valid	
BHRC102	9.70		A	Perp	105	38	3990	5080.23	71.28	-	3.54	0.70	1.173	0.82	Valid	
BHRC102	10.10		A	Perp	106	56	5936	7557.95	86.94	-	1.80	0.24	1.283	0.31	Valid	
BHRC102	11.35		A	Perp	105	38	3990	5080.23	71.28	-	0.99	0.19	1.173	0.23	Valid	
BHRC102	14.15		A	Perp	106	57	6042	7692.91	87.71	-	0.46	0.06	1.288	0.08	Valid	
BHRC102	15.30		A	Perp	105	45	4725	6016.06	77.56	-	0.71	0.12	1.218	0.14	Valid	
BHRC102	15.65		A	Perp	105	40	4200	5347.61	73.13	-	0.65	0.12	1.187	0.14	Valid	
BHRC102	16.55		A	Perp	104	35	3640	4634.59	68.08	-	2.51	0.54	1.149	0.62	Valid	
BHRC102	16.85		A	Perp	105	72	7560	9625.69	98.11	-	1.01	0.10	1.354	0.14	Valid	
BHRC102	17.55		A	Perp	105	43	4515	5748.68	75.82	-	1.61	0.28	1.206	0.34	Valid	
BHRC102	18.20		A	Perp	105	51	5355	6818.20	82.57	-	5.11	0.75	1.253	0.94	Valid	
BHRC102	19.80		A	Perp	106	52	5512	7018.10	83.77	-	4.50	0.64	1.261	0.81	Valid	
BHRC102	20.60		A	Perp	106	75	7950	10122.25	100.61	-	5.68	0.56	1.370	0.77	Valid	

***Note** All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular

		<p style="text-align: center;">Dakota Hotel, Manchester Airport</p>	Contract No:
			PSL24/2040
			Client Ref:
			6338

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

[illegible]

***Note** All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random



Dakota Hotel, Manchester Airport

Contract No:

PSL24/2040

Client Ref:

6338

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

[illegible]

****Note*** All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular



Dakota Hotel, Manchester Airport

Contract No:

PSL24/2040

Client Ref:

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SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

[illegible]

***Note** All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random



Dakota Hotel, Manchester Airport

Contract No:

PSL24/2040

Client Ref:

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UNIAXIAL COMPRESSIVE STRENGTH

ISRM Suggested Methods - Rock Characterization Testing and Monitoring 1974 - 2006

Borehole Number: BHRC101 **Top Depth (m):** 9.67
Sample Number: - **Base Depth (m):** 10.00
Sample Type: C **Sample Date:** -
Storage Condition: Sealed in plastic **Date of Receipt** 20/03/2024
Sample Description: Brown MUDSTONE.

Specimen Details/Conditions	
Diameter - mm:	106.22
Height - mm:	156.37
Water Content - %:	8.8
Sample Mass - g:	3213.6
Bulk Density - Mg/m ³ :	2.32
Dry Density - Mg/m ³ :	2.13
Height Ratio: * Sample does not comply with H:D ratio	1.5
Degree of Saturation - %:	71
Assumed Specific Gravity for Degree of Saturation:	2.90

Test Result	
Load Frame/Machine:	CM1/Controls
Date of test:	08/04/2024
Test Duration - mins:	00:10
Orientation:	Unknown
Stress Rate - MPa/s:	0.28
Strain at Failure - kN:	24.60
Unconfined Compressive Strength - Mpa:	2.78
Mode of Failure:	Vertical Shear

Remarks: -

		Dakota Hotel, Manchester Airport	Contract No:
			PSL24/2040
			Client Ref:
			6338



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7 - 11 Harding Street
Leicester
LE1 4DH

Professional Soils Laboratory

5/7 Hexthorpe Road
Hexthorpe
Doncaster
DN4 0AR

Analytical Test Report: L24/03028/PSL - 24-43737

Your Project Reference:	PSL24/2040 Dakota Hotel, Manchester Airport		
Your Order Number:	PSL24/2040	Samples Received / Instructed:	09/04/2024 / 09/04/2024
Report Issue Number:	1	Sample Tested:	09/04 to 15/04/2024
Samples Analysed:	10 soil samples	Report issued:	15/04/2024

Signed

James Gane
Analytical Services Manager
CTS Group

Notes:

General

Please refer to Methodologies page for details pertaining to the analytical methods undertaken.

Samples will be retained for 14 days after issue of this report unless otherwise requested.

Moisture Content was determined in accordance with CTS method statement MS - CL - Sample Prep, oven dried at <30°C.

Moisture Content is reported as a percentage of the dry mass of soil, this calculation is in accordance with BS1377, Part 2, 1990, Clause 3.2

Where specification limits are included these are for guidance only. Where a measured value has been highlighted this is not implying acceptance or failure and certainty of measurement values have not been taken into account.

Uncertainty of measurement values are available on request.

Samples were supplied by customer, results apply to the samples as received.

Deviating Samples

On receipt samples are compared against our sample holding and handling protocols, where any deviations have been noted these are reported on our deviating sample page (if present)

Accreditation Key

UKAS = UKAS Accreditation, MCERTS = MCERTS Accreditation, u = Unaccredited, subUKAS - Subcontracted to a laboratory UKAS accredited for this test, subMCERTS - Subcontracted to a laboratory MCERTS accredited for this test

MCERTS Accreditation only covers the SAND, CLAY and LOAM matrices

Date of Issue: 08.04.2024

Issued by: J. Gane

Issue No: 4

Rev No: 6



4161



7 - 11 Harding Street
Leicester
LE1 4DH

L24/03028/PSL - 24-43737

Project Reference - PSL24/2040 Dakota Hotel,
Manchester Airport

Analytical Test Results - Chemical Analysis

Lab Reference			352083	352084	352085	352086	352087	352088	352089
Client Sample ID			-	-	-	-	-	-	-
Client Sample Location			BHRC101	BHRC101	BHRC101	BHRC102	BHRC102	BHRC102	BHRC103
Client Sample Type			-	-	-	-	-	-	-
Client Sample Number			-	-	-	-	-	-	-
Depth - Top (m)			3.50	10.40	20.97	5.17	11.35	20.60	21.30
Depth - Bottom (m)			3.63	10.50	21.05	5.25	11.45	20.70	21.35
Date of Sampling			-	-	-	-	-	-	-
Time of Sampling			-	-	-	-	-	-	-
Sample Matrix			Other	Clay	Other	Other	Other	Other	Other
Determinant	Units	Accreditation							
Water soluble sulphate (as SO ₄)	(mg/l)	u	12	21	59	15	16	< 10	18
Acid Soluble Sulphate	(%)	u	0.06	0.05	0.08	0.03	0.07	0.03	0.04
Total Sulphur	(%)	UKAS	0.03	0.02	0.05	0.02	0.03	0.01	0.02
pH Value	pH Units	MCERTS	8.9	8.8	8.7	8.8	9.1	8.7	9.0



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7 - 11 Harding Street
Leicester
LE1 4DH

L24/03028/PSL - 24-43737

Project Reference - PSL24/2040 Dakota Hotel,
Manchester Airport

Analytical Test Results - Chemical Analysis

Lab Reference			352090	352091	352092
Client Sample ID			-	-	-
Client Sample Location			TP106	TP102	BHRC103
Client Sample Type			-	-	-
Client Sample Number			-	-	-
Depth - Top (m)			0.70	1.00	3.60
Depth - Bottom (m)			0.701	1.00	3.60
Date of Sampling			-	-	-
Time of Sampling			-	-	-
Sample Matrix			Clay	Clay	Clay
Determinant	Units	Accreditation			
Water soluble sulphate (as SO ₄)	(mg/l)	u	< 10	29	26
Acid Soluble Sulphate	(%)	u	0.01	0.02	0.05
Total Sulphur	(%)	UKAS	0.01	0.01	0.02
pH Value	pH Units	MCERTS	8.4	7.7	8.6



4161



7 - 11 Harding Street
Leicester
LE1 4DH

L24/03028/PSL - 24-43737

Project Reference - PSL24/2040 Dakota Hotel, Manchester Airport

Sample Descriptions

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Description	Moisture Content (%)	Stone Content (%)	Passing 2mm test sieve (%)
352083	-	BHRC101	-	-	Greyish brown silty mudstone	-	-	100
352084	-	BHRC101	-	-	Brown silty clay	-	-	100
352085	-	BHRC101	-	-	Grey silty mudstone	-	-	100
352086	-	BHRC102	-	-	Brown silty mudstone	-	-	100
352087	-	BHRC102	-	-	Grey silty mudstone	-	-	100
352088	-	BHRC102	-	-	Grey silty mudstone	-	-	100
352089	-	BHRC103	-	-	Brown slightly clayey silty mudstone	-	-	100
352090	-	TP106	-	-	Brown silty clay	-	-	100
352091	-	TP102	-	-	Brown slightly gravelly silty clay	-	-	100
352092	-	BHRC103	-	-	Brown slightly sandy silty clay	-	-	100



4161



7 - 11 Harding Street
Leicester
LE1 4DH

L24/03028/PSL - 24-43737

Project Reference - PSL24/2040 Dakota Hotel, Manchester Airport

Sample Comments

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Comments
352083	-	BHRC101	-	-	
352084	-	BHRC101	-	-	
352085	-	BHRC101	-	-	
352086	-	BHRC102	-	-	
352087	-	BHRC102	-	-	
352088	-	BHRC102	-	-	
352089	-	BHRC103	-	-	
352090	-	TP106	-	-	
352091	-	TP102	-	-	
352092	-	BHRC103	-	-	



4161



7 - 11 Harding Street
Leicester
LE1 4DH

L24/03028/PSL - 24-43737

Project Reference - PSL24/2040 Dakota Hotel, Manchester Airport

Analysis Methodologies

Test Code	Test Name / Reference	Sample condition for analysis	Sample Preparation	Test Details
ANIONSS	MS - CL - Anions by Aquakem (2:1Extract)	Oven dried	Passing 2mm test sieve	Determination of Anions (inc Sulphate, chloride etc.) in soils by Aquakem. Analysis is based on a 2:1 water to soil extraction ratio
PHS	MS - CL - pH in Soils	As received	Passing 10mm test sieve	Determination of pH in soils using a pH probe (using a 1:3 soil to water extraction)
ASSO4S	MS - CL - Acid Soluble Sulphate	Oven Dried	Passing 2mm test sieve	Determination of total sulphate in soils by acid extraction followed by ICP analysis
SAMPLEPREP	MS - CL - Sample Preparation	-	-	Preparation of samples (including determination of moisture content) to allow for subsequent analysis
1377TS-ELT	BS1377 Total Sulphur Content by HTC	Oven dried	BS1377 : Part 1 : 2016	Total Sulphur Content testing of Soil in accordance with BS 1377 : Part 3 : 2018 + A1 : 2021 Clause 7.10 (using Eltra CS-800 Analyser)



4161



7 - 11 Harding Street
Leicester
LE1 4DH

L24/03028/PSL - 24-43737

Project Reference - PSL24/2040 Dakota Hotel, Manchester Airport

Sample Deviations

Deviations are listed below against each sample and associated test method, where deviation(s) are noted it means data may not be representative of the sample at the time of sampling and it is possible that results provided may be compromised.

Observations on receipt

A - No date of sampling provided

C - Received in inappropriate container

H - Contains headspace

T - Temperature on receipt exceeds storage temperature

R - Sample(s) received with less than 96 hours for testing to commence/complete, any result formally classed as deviating will be marked with an X against the applicable test (i.e. RX)

Observations whilst in laboratory

X - Exceeds sampling to extraction or analysis timescales

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Test	Deviations
352083	-	BHRC101	-	-		A
352084	-	BHRC101	-	-		A
352085	-	BHRC101	-	-		A
352086	-	BHRC102	-	-		A
352087	-	BHRC102	-	-		A
352088	-	BHRC102	-	-		A
352089	-	BHRC103	-	-		A
352090	-	TP106	-	-		A
352091	-	TP102	-	-		A
352092	-	BHRC103	-	-		A



LABORATORY REPORT



Contract Number: PSL24/2041

Report Date: 18 April 2024
Client's Reference: 6338/2
Client Name: JPG Leeds
5 John Charles Way
Leeds
West Yorkshire
LS12 6QD

For the attention of: Emily Sykes

Contract Title: Dakota Hotel, Manchester Airport

Date Received: 20/3/2024
Date Commenced: 20/3/2024
Date Completed: 18/4/2024

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins
(Managing Director)

R Berriman
(Associate Director)

S Royle
(Laboratory Manager)

L Knight
(Assistant Laboratory Manager)

S Eyre
(Senior Technician)


T Watkins
(Senior Technician)

5 – 7 Hexthorpe Road,
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awatkins@prosoils.co.uk

Page 1 of

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

[illegible]

Dakota Hotel, Manchester Airport

Contract No:

PSL24/2041

Client Ref:

6338

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

[illegible]

SYMBOLS : NP : Non Plastic

*** : Liquid Limit and Plastic Limit Wet Sieved.**



Dakota Hotel, Manchester Airport

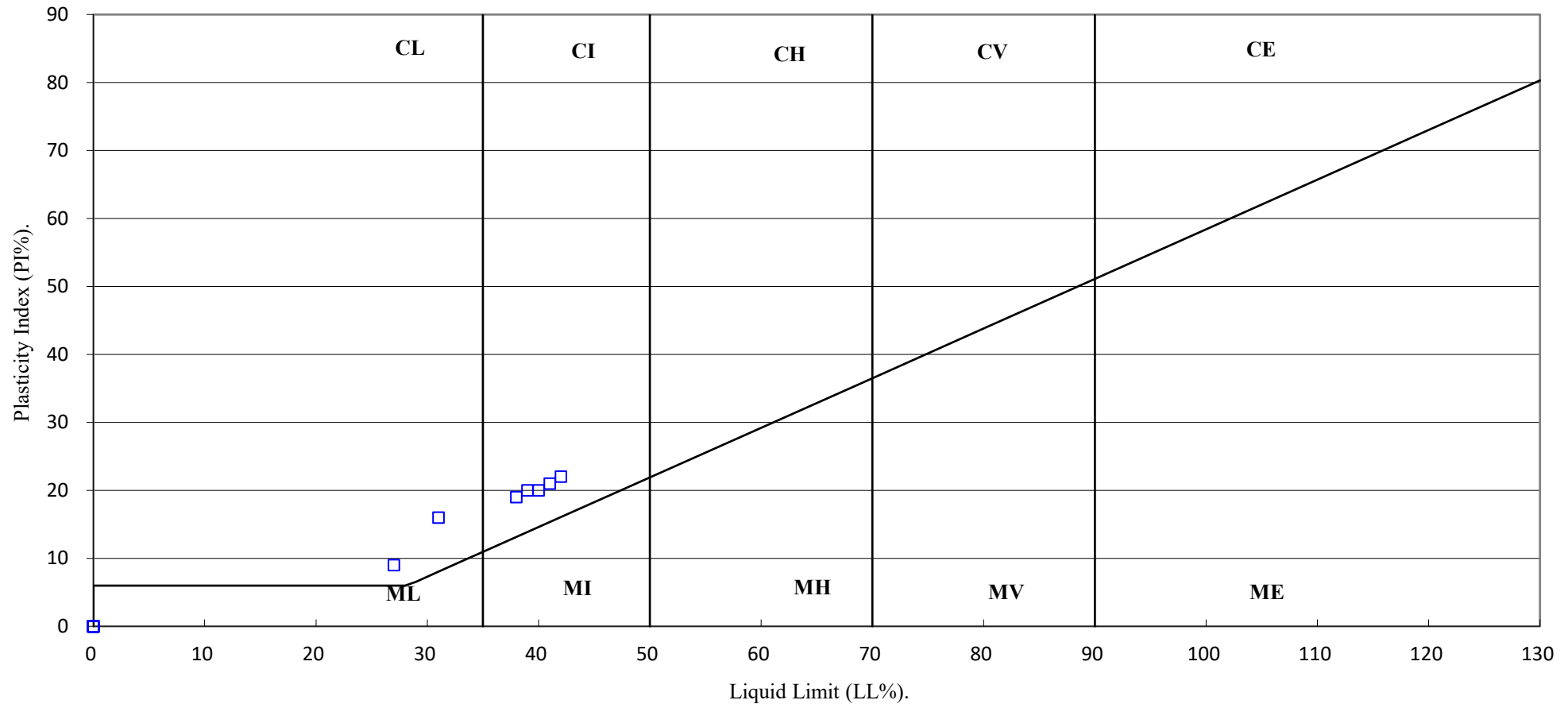
Contract No:

PSL24/2041

Client Ref:

6338

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



Dakota Hotel, Manchester Airport

Contract No:

PSL24/2041

Client Ref:

6338

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:

HP2

Top Depth (m):

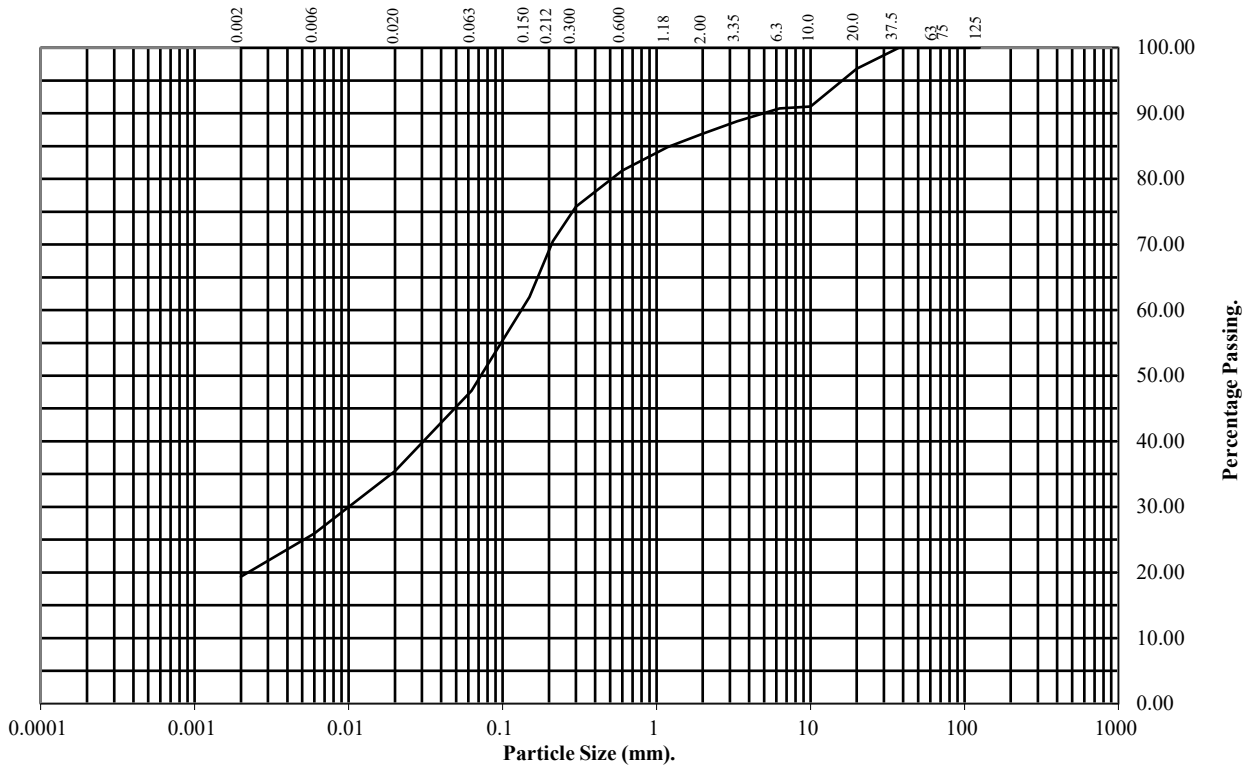
Bund

Sample Number:

Base Depth(m):

Sample Type:

B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	97
10	91
6.3	91
3.35	89
2	87
1.18	85
0.6	81
0.3	76
0.212	70
0.15	62
0.063	48

Particle Diameter	Percentage Passing
0.02	35
0.006	26
0.002	19

Soil Fraction	Total Percentage
Cobbles	0
Gravel	13
Sand	39
Silt	29
Clay	19

Remarks:

See Summary of Soil Descriptions



Dakota Hotel, Manchester Airport

Contract No:
PSL24/2041
Client Ref:
6338

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number: HP2

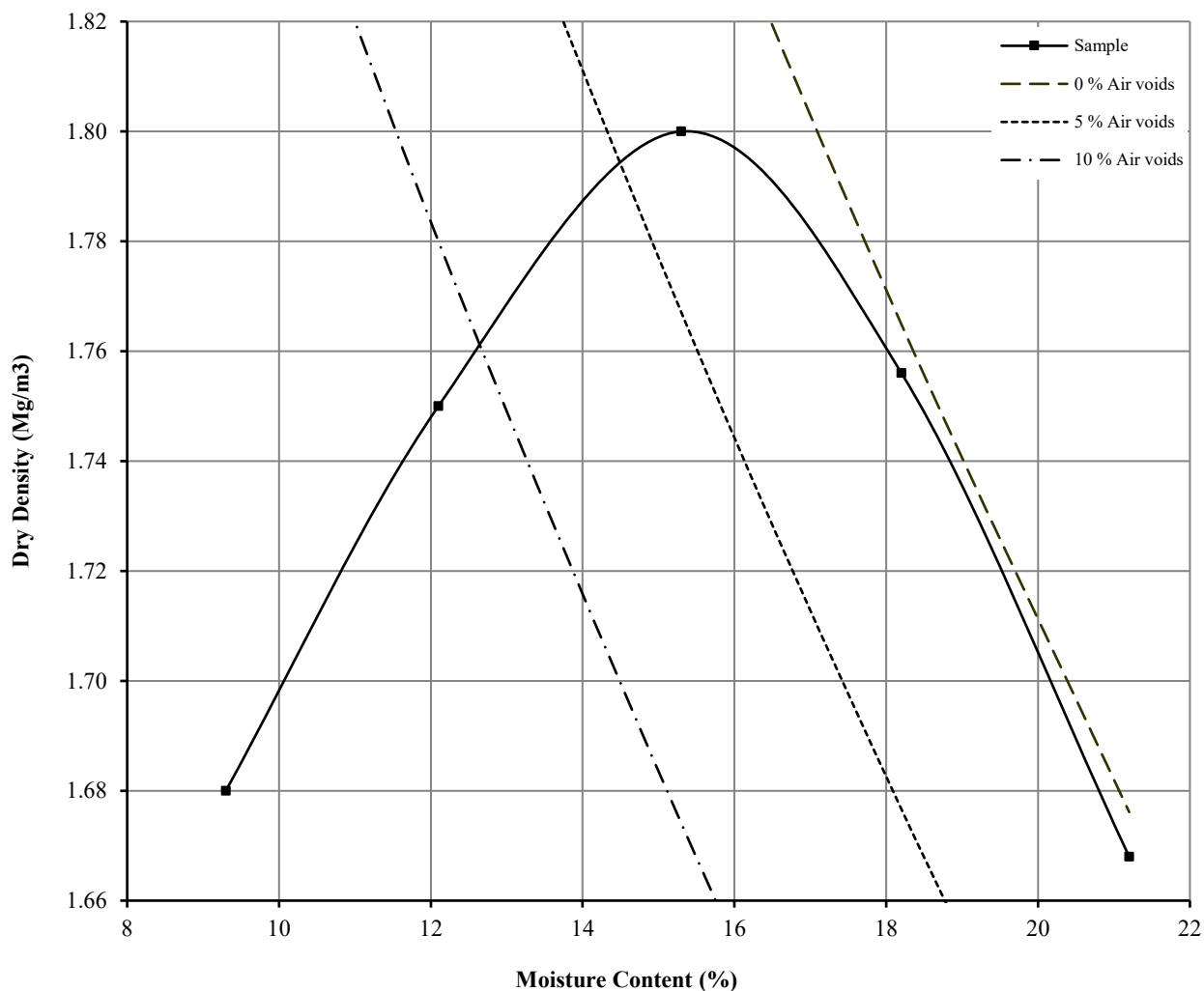
Top Depth (m) :

Bund

Sample Number:

Base Depth (m) :

Sample Type: B



Initial Moisture Content:	12	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m³):	2.60	Assumed	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (Mg/m³):	1.80		Material Retained on 20.0 mm Test Sieve (%):	3
Optimum Moisture Content (%):	15			
Remarks See summary of soil descriptions				

		Dakota Hotel, Manchester Airport	Contract
			PSL24/2041
			Client Ref
			6338

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.5 : 1990

Hole Number: HP2

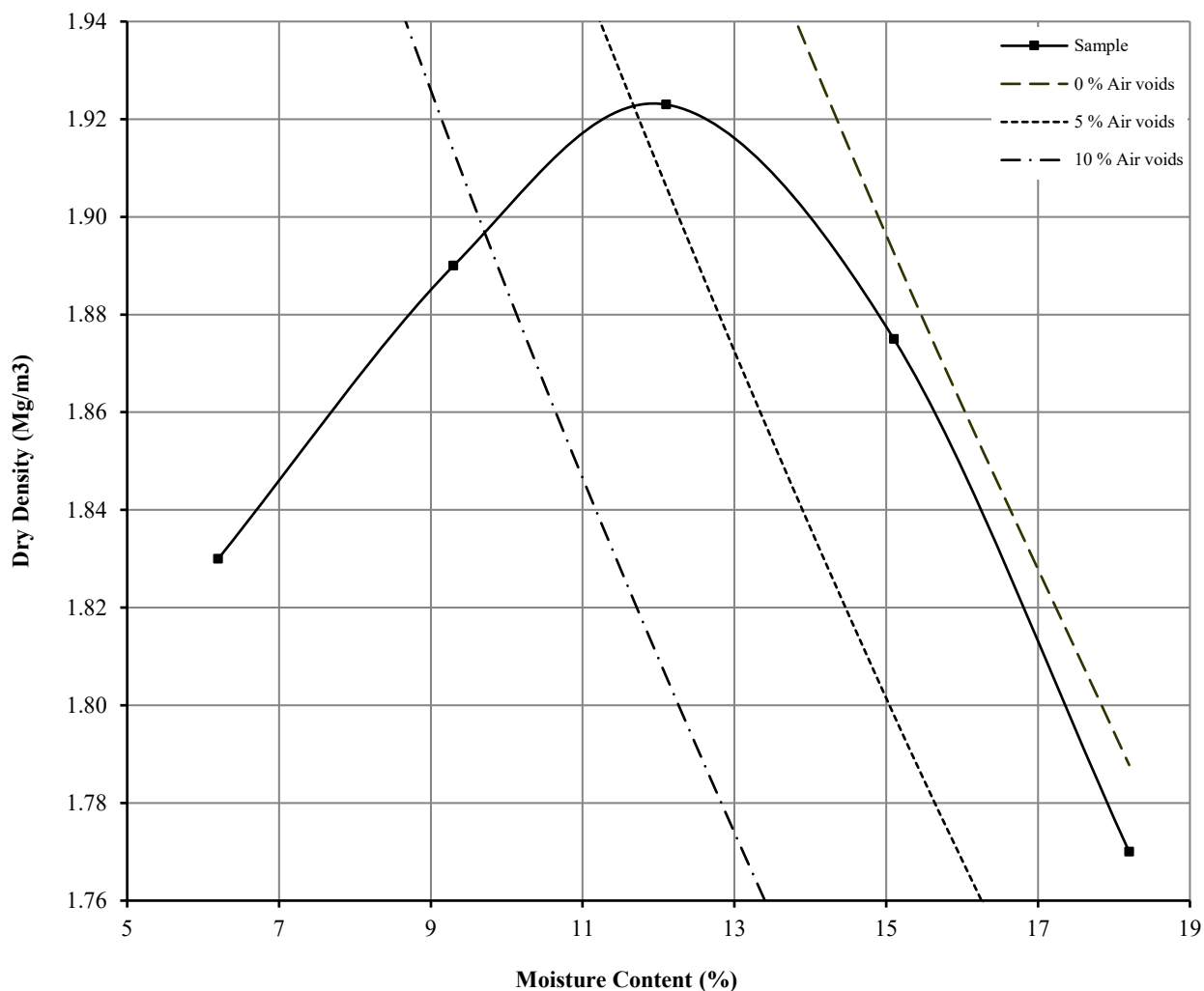
Top Depth (m) :

Bund

Sample Number:

Base Depth (m) :

Sample Type: B



Initial Moisture Content:	12	Method of Compaction:	4.5kg	Separate Samples
Particle Density (Mg/m ³):	2.65	Assumed	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (Mg/m ³):	1.92		Material Retained on 20.0 mm Test Sieve (%):	3
Optimum Moisture Content (%):	12			
Remarks See summary of soil descriptions				



Dakota Hotel, Manchester Airport

Contract
PSL24/2041
Client Ref
6338

CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

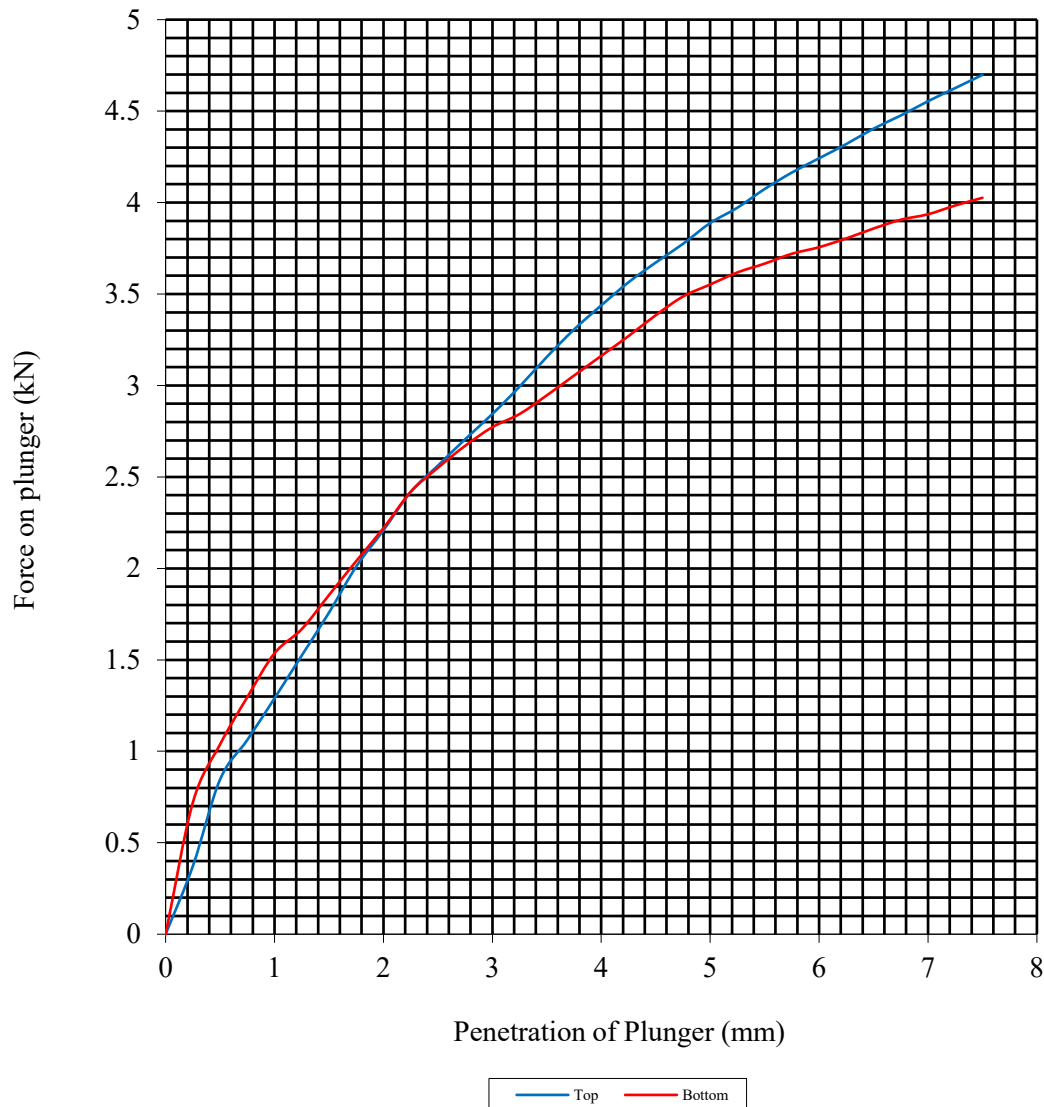
Hole Number: HP2

Top Depth (m): Bund

Sample Number:

Base Depth (m):

Sample Type: B



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	12	Surcharge Kg:	4.20	Sample Top	12	Sample Top	19.4
Bulk Density Mg/m3:	2.08	Soaking Time hrs	0	Sample Bottom	12	Sample Bottom	19.3
Dry Density Mg/m3:	1.86	Swelling mm:	0.00	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:		3					
Compaction Conditions		2.5kg					



Dakota Hotel, Manchester Airport

Contract No:
PSL24/2041
Client Ref:
6338



Appendix E Gas and Groundwater Monitoring

GAS AND GROUNDWATER MONITORING RESULTS

Site: Dakota Hotel, Manchester Airport

Job No: 6338

Visit No: 1

Client: Evans Dakota Hotels Limited

Date: 08/03/2024



Monitoring Location	Gas Concentration									Gas Emission Rate		GWL	Base of Standpipe
	Peak			Steady			Highest	Highest	Lowest				
BH	CH ₄		CO ₂	CH ₄		CO ₂	H ₂ S	CO	O ₂	Litre/Hour			
	% lcl	%v/v	%	% lcl	%v/v	%	ppm	ppm	%	Peak	Steady	(m) bgl	
WS101	0.0	0.0	1.9	0.0	0.0	1.9	0.0	0.0	19.10	0.0	0.0	1.65	1.90
WS103	0.0	0.0	1.5	0.0	0.0	1.5	0.0	0.0	21.00	0.0	0.0	1.75	2.00
WS104	2.0	0.1	0.7	2.0	0.1	0.7	0.0	0.0	21.20	0.1	0.1	1.40	1.90
WS015	0.0	0.0	1.5	0.0	0.0	1.5	0.0	0.0	20.70	0.0	0.0	1.80	4.00
BHRC101	0.0	0.0	0.3	0.0	0.0	0.3	0.0	0.0	20.90	0.0	0.0	2.00	22.00
BHRC103	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0	21.10	4.0	3.4	2.00	8.10
Ambient Concentration (% volume):				CH ₄	0.0	%v/v	CO ₂			0.2	%v/v		
				O ₂	20.8	%v/v							
Barometric Pressure:		Start	1001	Monitoring Equipment:				GA5000					
		End	1003	Serial Number of Equipment:				G505491					
Barometric Pressure Trend:			Locally steady, regionally steady				Date of Last Calibration:				12-May-23		
Weather:			Cold, dry				Operator:				EJS		
Key		Remarks											
NR - Not Recorded NA - Not Applicable													
		Checked:		RJM		Approved:	RJM						

GAS AND GROUNDWATER MONITORING RESULTS

Site: Dakota Hotel, Manchester Airport

Job No: 6338

Visit No: 2

Client: Evans Dakota Hotels Limited

Date: 14/03/2024



Monitoring Location	Gas Concentration									Gas Emission Rate		GWL	Base of Standpipe
	Peak			Steady			Highest	Highest	Lowest				
BH	CH ₄		CO ₂	CH ₄		CO ₂	H ₂ S	CO	O ₂	Litre/Hour			
	% lsl	%v/v	%	% lsl	%v/v	%	ppm	ppm	%	Peak	Steady	(m) bgl	
WS101	0.0	0.0	1.9	0.0	0.0	1.9	0.0	0.0	19.40	0.0	0.0	Dry	1.90
WS103	12.0	0.6	5.9	12.0	0.6	5.9	0.0	0.0	17.30	0.1	0.1	Dry	2.00
WS104	0.0	0.0	1.3	0.0	0.0	1.3	0.0	0.0	20.30	0.0	0.0	1.70	1.90
WS015	0.0	0.0	2.3	0.0	0.0	2.3	0.0	1.0	20.00	0.1	0.0	Dry	4.00
BHRC101	0.0	0.0	0.6	0.0	0.0	0.6	0.0	3.0	20.70	5.1	2.1	2.00	22.00
BHRC103	0.0	0.1	1.3	0.0	0.0	1.3	0.0	3.0	20.50	0.0	0.0	2.20	8.10
Ambient Concentration (% volume):				CH ₄	0.0	%v/v			CO ₂	0.2	%v/v		
				O ₂	20.8	%v/v							
Barometric Pressure:		Start	993	Monitoring Equipment:					GA5000				
		End	994	Serial Number of Equipment:					G505491				
Barometric Pressure Trend:		Locally steady, regionally steady					Date of Last Calibration:					12-May-23	
Weather:		Raining					Operator:					EJS	
Key		Remarks											
NR - Not Recorded NA - Not Applicable													
		Checked:		RJM		Approved:		RJM					

GAS AND GROUNDWATER MONITORING RESULTS

Site: Dakota Hotel, Manchester Airport

Job No: 6338

Visit No: 3

Client: Evans Dakota Hotels Limited

Date: 19/03/2024



Monitoring Location	Gas Concentration									Gas Emission Rate		GWL	Base of Standpipe
	Peak			Steady			Highest	Highest	Lowest				
BH	CH ₄		CO ₂	CH ₄		CO ₂	H ₂ S	CO	O ₂	Litre/Hour			
	% lcl	%v/v	%	% lcl	%v/v	%	ppm	ppm	%	Peak	Steady	(m) bgl	
WS101	0.0	0.0	1.8	0.0	0.0	1.8	0.0	0.0	19.70	0.0	0.0	1.50	1.90
WS103	0.0	0.0	6.4	0.0	0.0	4.5	0.0	0.0	16.40	0.2	0.2	1.60	2.00
WS104	0.0	0.1	1.5	0.0	0.1	1.5	0.0	0.0	20.20	0.4	0.2	1.50	1.90
WS015	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	20.60	-0.1	-0.1	Dry	4.00
BHRC101	0.0	0.0	0.6	0.0	0.0	0.6	5.0	0.0	20.70	1.9	0.8	2.00	22.00
BHRC103	0.0	0.2	1.5	0.0	0.2	1.5	3.0	0.0	20.40	0.1	0.1	2.10	8.10
Ambient Concentration (% volume):				CH ₄	0.0	%v/v			CO ₂	0.1	%v/v		
				O ₂	21.2	%v/v							
Barometric Pressure:		Start	1003	Monitoring Equipment:					GA5000				
		End	1004	Serial Number of Equipment:					G505491				
Barometric Pressure Trend:		Locally steady, regionally steady					Date of Last Calibration:					12-May-23	
Weather:		Sunny, mild					Operator:					EJS	
Key		Remarks											
NR - Not Recorded NA - Not Applicable													
		Checked:		RJM		Approved:		RJM					

GAS AND GROUNDWATER MONITORING RESULTS

Site: Dakota Hotel, Manchester Airport

Job No: 6338

Visit No: 4

Client: Evans Dakota Hotels Limited

Date: 28/03/2024



Monitoring Location	Gas Concentration									Gas Emission Rate		GWL	Base of Standpipe
	Peak			Steady			Highest	Highest	Lowest				
BH	CH ₄		CO ₂	CH ₄		CO ₂	H ₂ S	CO	O ₂	Litre/Hour			
	% lsl	%v/v	%	% lsl	%v/v	%	ppm	ppm	%	Peak	Steady	(m) bgl	
WS101	0.0	0.0	2.2	0.0	0.0	2.2	0.0	0.0	18.70	0.0	0.0	1.30	1.90
WS103	0.0	0.0	7.2	0.0	0.0	7.1	0.0	0.0	14.50	12.3	0.6	1.50	2.00
WS104	0.0	0.0	2.2	0.0	0.0	2.2	0.0	0.0	18.50	0.0	0.0	1.40	1.90
WS015	0.0	0.0	2.6	0.0	0.0	2.6	0.0	0.0	19.70	0.0	0.0	1.50	4.00
BHRC101	0.0	0.0	0.8	0.0	0.0	0.8	0.0	1.0	20.20	5.0	2.0	1.80	22.00
BHRC103	0.0	0.0	2.6	0.0	0.0	1.7	0.0	0.0	19.80	0.0	0.0	2.00	8.10
Ambient Concentration (% volume):				CH ₄	0.0	%v/v			CO ₂	0.2	%v/v		
				O ₂	21.2	%v/v							
Barometric Pressure:		Start	965	Monitoring Equipment:					GA5000				
		End	966	Serial Number of Equipment:					G505491				
Barometric Pressure Trend:		Locally steady, regionally steady					Date of Last Calibration:					12-May-23	
Weather:		Light rain					Operator:					EJS	
Key		Remarks											
NR - Not Recorded NA - Not Applicable													
		Checked:		RJM		Approved:		RJM					

GAS AND GROUNDWATER MONITORING RESULTS

Site: Dakota Hotel, Manchester Airport

Job No: 6338

Visit No: 5

Client: Evans Dakota Hotels Limited

Date: 03/04/2024



Monitoring Location	Gas Concentration									Gas Emission Rate		GWL	Base of Standpipe
	Peak			Steady			Highest	Highest	Lowest				
BH	CH ₄		CO ₂	CH ₄		CO ₂	H ₂ S	CO	O ₂	Litre/Hour			
	% lsl	%v/v	%	% lsl	%v/v	%	ppm	ppm	%	Peak	Steady	(m) bgl	
WS101	0.0	0.0	2.3	0.0	0.0	2.3	0.0	0.0	18.80	0.1	0.1	1.30	1.90
WS103	6.0	0.3	3.5	6.0	0.3	3.5	0.0	0.0	18.80	0.0	0.0	1.40	2.00
WS104	0.0	0.0	2.1	0.0	0.0	2.1	0.0	0.0	19.10	0.2	0.2	1.20	1.90
WS015	0.0	0.0	2.6	0.0	0.0	2.6	0.0	0.0	20.10	0.0	0.0	1.50	4.00
BHRC101	0.0	0.0	0.9	0.0	0.0	0.9	0.0	0.0	20.30	-3.7	0.0	1.80	22.00
BHRC103	6.0	0.3	1.6	6.0	0.3	1.2	0.0	0.0	20.80	0.2	0.2	1.85	8.10
Ambient Concentration (% volume):				CH ₄	0.0	%v/v	CO ₂			0.2	%v/v		
				O ₂	21.5	%v/v							
Barometric Pressure:		Start	983	Monitoring Equipment:						GA5000			
		End	984	Serial Number of Equipment:						G505491			
Barometric Pressure Trend:		Locally steady, regionally steady						Date of Last Calibration:		12-May-23			
Weather:		Light rain						Operator:		EJS			
Key		Remarks											
NR - Not Recorded NA - Not Applicable													
		Checked:		RJM		Approved:	RJM						

GAS AND GROUNDWATER MONITORING RESULTS

Site: Dakota Hotel, Manchester Airport

Job No: 6338

Visit No: 6

Client: Evans Dakota Hotels Limited

Date: 11/04/2024



Monitoring Location	Gas Concentration									Gas Emission Rate		GWL	Base of Standpipe
	Peak			Steady			Highest	Highest	Lowest				
BH	CH ₄		CO ₂	CH ₄		CO ₂	H ₂ S	CO	O ₂	Litre/Hour			
	% lsl	%v/v	%	% lsl	%v/v	%	ppm	ppm	%	Peak	Steady	(m) bgl	
WS101	4.0	0.2	2.1	4.0	0.2	0.1	0.0	0.0	19.40	0.1	0.1	1.20	1.90
WS103	2.0	0.2	3.1	2.0	0.2	3.1	0.0	0.0	18.40	0.0	0.0	1.45	2.00
WS104	4.0	0.2	2.2	4.0	0.2	2.2	0.0	0.0	19.00	-2.2	0.0	1.05	1.90
WS015	4.0	0.2	2.3	4.0	0.2	2.3	0.0	0.0	19.80	0.1	0.1	1.35	4.00
BHRC101	4.0	0.2	0.8	4.0	0.2	0.8	0.0	1.0	20.10	-5.1	-4.5	1.85	22.00
BHRC103	4.0	0.2	3.0	4.0	0.2	3.0	0.0	1.0	20.00	-2.7	-2.0	2.00	8.10
Ambient Concentration (% volume):				CH ₄	0.0	%v/v			CO ₂	0.1	%v/v		
				O ₂	20.8	%v/v							
Barometric Pressure:		Start	1016	Monitoring Equipment:					GA5000				
		End	1017	Serial Number of Equipment:					G505491				
Barometric Pressure Trend:		Locally steady, regionally steady					Date of Last Calibration:		12-May-23				
Weather:		Mild, dry					Operator:		EJS				
Key		Remarks											
NR - Not Recorded NA - Not Applicable													
		Checked:		RJM		Approved:		RJM					



Appendix F Notes on Limitations



General

JPG (Leeds) Limited have prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from JPG (Leeds) Limited; a charge may be levied against such approval.

JPG (Leeds) Limited accepts no responsibility or liability for:

- a) the consequences of this document being used for any purpose or project other than for which it was commissioned, and
- b) the use of this document by any third party with whom an agreement has not been executed.

Phase I Desk Study Reports

The work undertaken to provide the basis of this report comprised a study of available documented information from a variety of sources (including any information provided by the Client), together with (where appropriate) a brief walk over inspection of the site and meetings and discussions with relevant authorities and other interested parties where appropriate. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only for the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, JPG (Leeds) Limited reserves the right to review such information and, if warranted, to modify the opinions accordingly.

It should be noted that any risks identified in this report are perceived risks based on the information reviewed; actual risks can only be assessed following a physical investigation of the site.

Phase II Geo-Environmental Investigations

The investigation of the site has been carried out to provide sufficient information concerning the type and degree of contamination, geotechnical characteristics and ground and groundwater conditions to allow a reasonable assessment of the environmental risks together with engineering and development implications.

The objectives of the investigation have been limited to establishing the risks associated with potential human receptors, building materials, the environment (including adjacent land) and controlled waters (surface water and groundwater).

The number of sampling points and the methods of sampling and testing do not preclude the existence of localised "hotspots" of contamination where concentrations may be significantly higher than those actually encountered.

The risk assessment and opinions provided, inter alia, take into consideration currently available guidance values relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values.

The scope of the investigation was selected on the basis of the specific development proposed by the Client and may be inappropriate to another form of development or scheme.

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