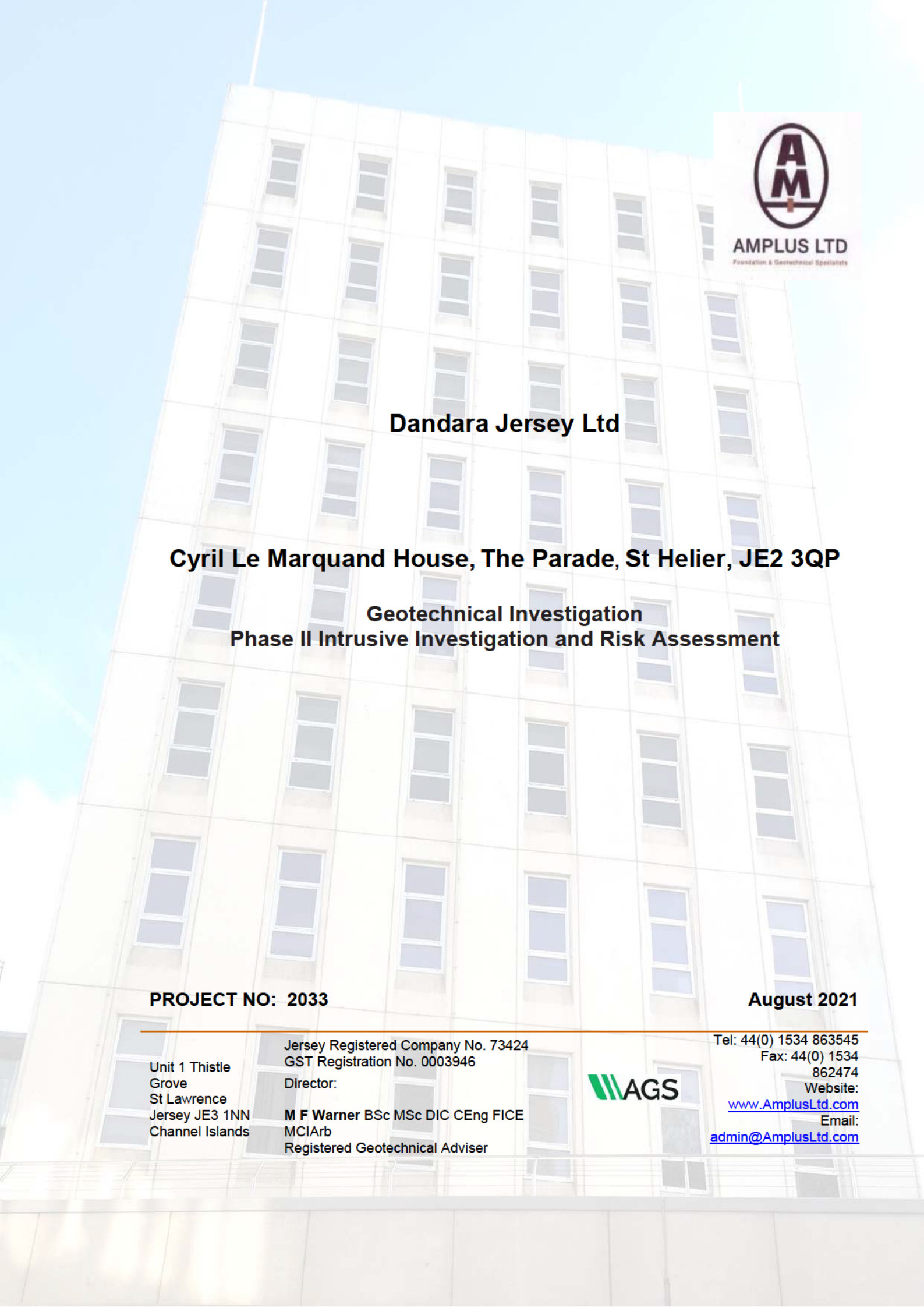

AMPLUS LTD
Foundation & Geotechnical Specialists

Dandara Jersey Ltd

Cyril Le Marquand House, The Parade, St Helier, JE2 3QP

Geotechnical Investigation
Phase II Intrusive Investigation and Risk Assessment

PROJECT NO: 2033

August 2021

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St Lawrence
Jersey JE3 1NN
Channel Islands

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Prepared by: Matthew F Warner CEng FICE

Signed: [redacted]

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Checked by: Deborah D Tett BSc

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Approved by: Matthew F Warner CEng FICE

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Cyril Le Marquand House (CLMH), The Parade, St Helier, JE2 3QP

Phase II Intrusive investigation and risk assessment Component and Objectives Relevant Information

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Cyril Le Marquand House (CLMH), The Parade, St Helier, JE2 3QP

Phase II Intrusive Investigation and Risk Assessment
Component and Objectives Relevant Information

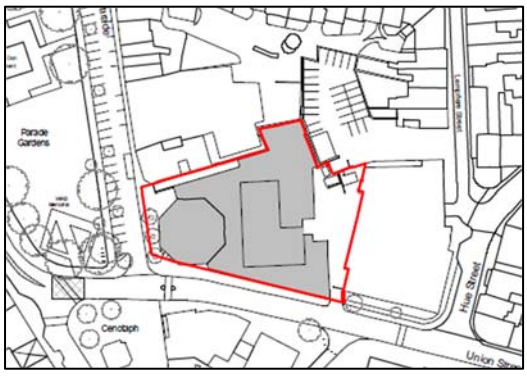
1 DESIGN OF INVESTIGATION

Objective - to ensure that sufficient information is gathered from the site or site areas identified in Phase I to carry out the risk assessment.

1.1 Background

Planning Application Number - P/2021/0669.

Application Address:
Cyril Le Marquand House, The Parade, St Helier, JE2 3QP



Extract from Location Map (Axis Mason)

Description of Work:
Demolish existing office building and associated podium car park structure. Construct 7 storey office building with associated landscaping and public realm improvements. 3D model available. AMEMDED PLAN REC'D.

Extract from Proposed Plan (Axis Mason)

Conditions relevant to this report:
Built-Up Area, Primary Route Network, Regeneration Zone, Town Centre, Town of St. Helier.

Extract from South Elevation (Axis Mason)

Extract Proposed Section B-B (Axis Mason)

1.2 Extent of proposed work

The Jersey grid reference is 564897E 4488598N. The ground level is +9.0m above local Jersey Datum.

Extract Existing Site (Axis Mason)

The scope includes to demolish the existing office building and associated podium car park structure and construct a 7-storey office building.

1.3 Details of sampling and testing programme based on findings phase I data.

Amplus carried out the following report:

> Job title: Cyril Le Marquand House (CLMH), St Helier, Job number: 2033 Document title: Geoenvironmental Site Assessment Phase I Desk study, site walkover and risk assessment, Document reference: 2033. Date: 4th August 2020

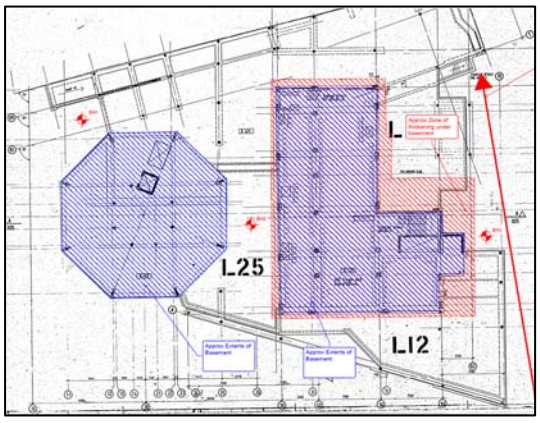
Sampling and testing programme:

The original scope of the intrusive investigation was specified by the design team and comprised:

Summary of Exploratory Holes:

Ref.	Type	Depth (m bgl)	Sampling and Testing	Instrumentation	Laboratory Testing
01	BH	16.45	Rotary coring & sampling, SPT	None	Geo & Contam
02	BH	16.80	Rotary coring & sampling, SPT	None	Geo & Contam
03	BH	16.20	Rotary coring & sampling, SPT	Piezometer (RZ: 6.0-10.0m)	Geo & Contam

BH: vertical borehole
WS: window sampling
DCP: dynamic cone penetration test
SPT: standard penetration test
Geo: Geotechnical testing
Contam: Contamination testing
RZ: Response zone



Extract form Dandara Survey

Amplus drillers, who are trained in accordance with the British Drilling Association and CITB guidelines, carried out all drilling and all recovered samples were logged by a Geotechnical Engineer.

Geotechnical and analytical testing was carried out using UKAS and MCERTS laboratories in the UK. The testing regime on samples recovered from the investigation.

1.4 Details of potential contamination migration or potential risks of performing the intrusive investigation.

Aspects to be considered during the investigation of potentially contaminated sites are given in Appendix 1.

1.5 Indication of Health and Safety implications of proposed works.

BS 5930:2015 - Code of practice for site investigations and CIRIA (Construction Industry Research and Information Association) report 132 A Guide for Safe Working on Contaminated Sites were used for technical guidance.

The implications of the works are given due consideration by the attention of the following procedures carried out during the intrusive site investigation, namely:

- Health and safety procedures
- Controlled entry
- Site zoning
- Good hygiene
- Monitoring
- Appropriate disposal of wastes
- Safe handling, storage, and transport of hazardous samples
- Control of nuisance
- Emergency procedures
- Provision of appropriate training
- Need for routine health surveillance.

Health and Safety implications of proposed works considered during the investigation of potentially contaminated sites are also given in more detail in Appendix 1.

2 INTRUSIVE INVESTIGATION

Objective - to provide high quality information for the Phase II environmental risk assessment.

2.1 Appropriate supervision by a suitably qualified engineer

Amplus is a member of the Association of Geotechnical and Geoenvironmental Specialists.

The investigation was supervised by Matthew Warner, a Chartered Engineer and UK Registered Ground Engineering Advisor.

Amplus drillers are trained in accordance with the British Drilling Association and CITB guidelines.

2.2 Measures to stop cross-contamination

Chain of custody for samples, appropriate sampling containers and storage/dispatch times.

The works were carried out in accordance with AGS Guide to Environmental Sampling, 2010, which provides practical guidance on the mechanics of the environmental sampling of soils, liquids, and gasses to improve consistency in approach across the industry and summarise current best industry practice on:

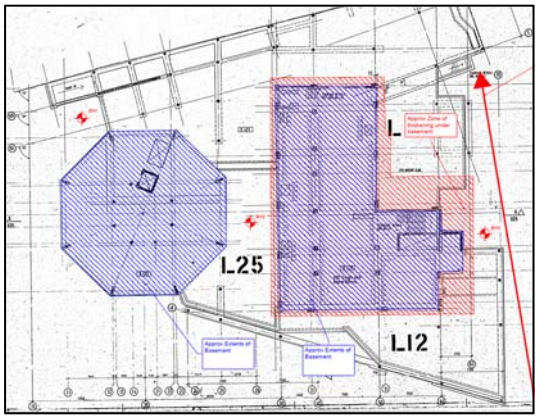
- The mechanics of sampling differing media,
- The avoidance of cross contamination,
- The use of blank, duplicate and trip samples,
- Suitability of sample containers, transport, and recording.

Laboratory involved and whether accredited, methods used:

Analytical testing was undertaken by Geotechnical Engineering Ltd and ALS; UKAS and MCERTS laboratories respectively in the UK.

Borehole logs, ground water levels, and location plan:
Borehole logs and ground water levels in Appendix 2

A site location plan and exploratory hole positions are shown below.



Extract form Dandara Survey

Site has been left in a safe and secure state:
The site was left in a safe and secure state.

3 REPORTING

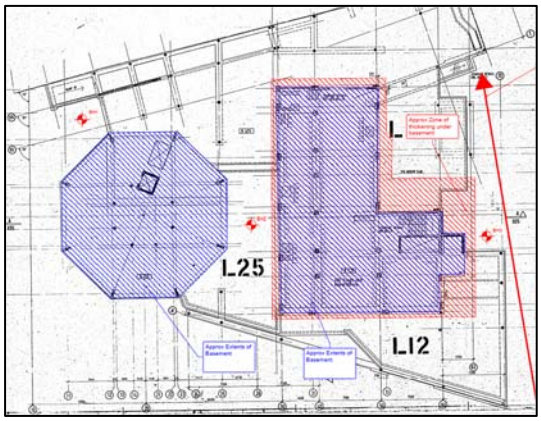
Objective - to present full and accurate information for risk assessment.

3.1 Details of all sampling points, depths, methodology and procedures.

The physical number, location and spacing of sampling and monitoring points across the site and within an exploratory hole were guided by the project specification.

The investigation was carried out with reference to BS 5930:2015 Code of practice for site investigations and BS 10175: +A1:2013 - Investigation of potentially contaminated sites. Code of practice.

A location plan is given below with exploratory hole positions.



Extract form Dandara Survey

3.2 Monitoring and all results (see Appendices for details).

Borehole logs of exploratory holes and ground water levels are in Appendix 2.

The laboratory tests are given in Appendix 3. The tests included:

- BS EN ISO 17892-1: 2014:5. Water Content
- BS EN ISO 17892-4: 2016: 5.2, Particle Size Distribution - Wet Sieve
- ISRM: 2007: Point Load Strength Test
- BS EN ISO 17892-4: 2016: 5.4, Particle Size Distribution - Pipette
- BRE SD1 Suite
- Landfill Acceptance

3.3 Reference to any earlier site investigation reports.

Reference was made to the Amplus desk Study report that did not find evidence of significant land quality impairment potential.

3.4 Long term monitoring for gases and groundwater - that may also be ongoing.

One standpipe piezometer was installed in a borehole for long-term water level monitoring.

4 ENVIRONMENTAL RISK ASSESSMENTS

Objective - to identify if any source pathway- receptor Significant Pollutant Linkages (SPL) are present on site and establish if Phase III remediation/risk management is required.

4.1 Perform site-specific risk assessment (refine the Conceptual Model).

Conceptual Site Model:

Source Pathway Receptor Risk and Comment

1 *Organics from previous car parking activities*

Pathway - Ingestion / Dermal Contact

Receptor - Human Health

Risk - Low – Made ground will be removed as part of new construction.

Pathway - Inhalation of Vapour

Receptor - Human Health

Risk - Low – Petrol vapour evaporates, diesel vapour is of low toxicity but nuisance from odour is possible.

Pathway - Vertical / lateral migration of contaminants in soils

Receptor - Controlled waters

Risk – Low to Medium – The site is protected by the low permeability concrete slab surface.

2 *Asbestos from previous building*

Pathway - Ingestion / Dermal Contact

Receptor - Human Health

Risk – Moderate to Low – made ground will be removed as part of new construction – carry out asbestos survey and monitoring (not part of this investigation).

3 *Sulphate –naturally occurring soils, made ground, or imported soils*
Pathway - Direct Contact
Receptor - Built Structures
Risk - Low –Sulphate contents not anticipated to be abnormal in natural strata.

4 *Ground Gas (Radon)*
Pathway - Emission though soils
Receptor - Human Health
Risk - Low – Naturally occurring radon might be present at the site, but residential building codes require its presence to be militated against.

CIRIA (Construction Industry Research and Information Association) report 132 A Guide for Safe Working on Contaminated Sites 2.

4.2 Detail all methods used, the assumptions made and references.

The analytical laboratory tests included Landfill Acceptance on samples of soil from each borehole at shallow depths (<1.25m) which are most likely to be excavated and removed from site during the development as there is generally no new sub-structure.

The results are intended to give baseline readings for the risk assessment.

4.3 Provide full discussion of conclusions reached referenced to the "suitable for use" approach to development and site utilisation.

Analytical testing included Landfill Acceptance. The Solid Waste Analysis included:

- ANC to pH 4 (mol/kg)
- ANC to pH 6 (mol/kg)
- pH (pH Units)
- PAH Sum of 17 (mg/kg)
- Mineral Oil (mg/kg)
- Sum of 7 PCBs (mg/kg)
- Sum of BTEX (mg/kg)
- Loss on Ignition (%)
- Total Organic Carbon (%)

The results of the samples tested classified them as all inert waste apart from loss on ignition in BH2 which may relate to the timber observed in the made ground which will no doubt be picked out before tipping at La Collette.

A BRE Suite of sample testing was carried to assess the aggressivity of the ground on buried concrete. Six soil samples were tested. The measured water-soluble sulphate level was a maximum of 340mg/l as SO4 thus classifying it in Design Sulfate Class DS-1. The results of geochemical tests carried out on samples taken during the ground investigation indicate that the site can be classified as class DS-1 and ACEC Class AC-1 in accordance with BRE Special Digest 1:2005.

A watching brief should be carried out during excavation to review these observations.

5 GEOTECHNICAL RISK ASSESSMENTS

Objective - to identify if any significant geotechnical risks likely to impact on the proposed development.

5.1 Foundation considerations

This section of the report considers the foundation design aspects in relation to the ground conditions encountered at the site and the proposed development.

Foundation considerations include a discussion of the foundation systems best suited for the project, indicate allowable bearing capacities, and anticipated settlements together with construction methods and possible construction problems.

5.2 Proposed Development

The proposed development includes to demolish the existing office building and associated podium car park structure and construct a 7-storey office building. There is a small basement.

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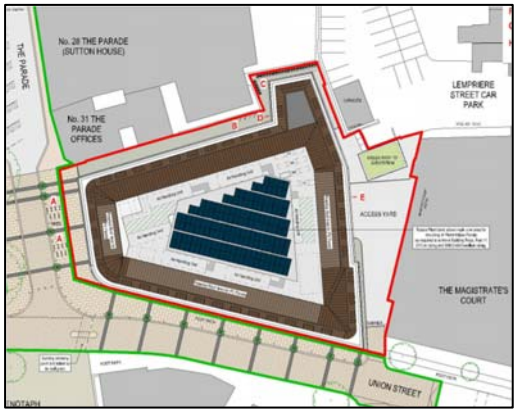
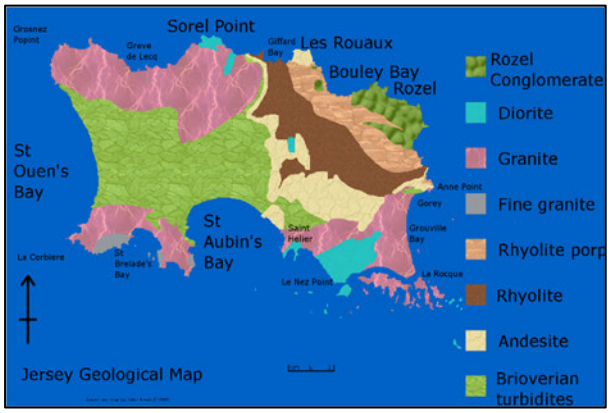


Extract from Proposed Site Plan (Axis Mason)

5.3 Ground Conditions

St Helier is located on a triangular embayment cut into the southern side of the tilted plateau of Jersey. The base of the embayment extends along the coast in a south-east to north-west direction, from the Fort Regent promontory to west Mount, with the apex about 1.2 km to the north-east (inland) at Steep Hill.

The hydrogeological map of Jersey (British Geological Survey, 1992) indicates that the bedrock beneath the greater part of the area, and specifically in the Parade area, is composed of the Brioverian Jersey Shale Formation.



Geology of Jersey

The greater part of the embayment is shown to be infilled with a variable thickness of Quaternary, alluvial deposits, brought in by the streams draining the upland areas to the north of the town. A strip extending some 300 metres inland from the line of the Esplanade (including the Castle Street/Esplanade site) is recorded as blown sand. Post-Glacial infilling of the embayment has taken place during a time of rising sea level and the alluvial materials extend seaward beneath the blown sands.

Borehole records within the town (Jones, Keen, Birnie and Waton, 1990) indicate sequences of peaty and silty clays, often overlying gravel horizons, and extending to depths of up to 7.8 metres (approximately 1 metre below Jersey datum) whilst trial borings in the area between Castle Street, Seaton Place and The Esplanade show a variable thickness of made ground, underlain by up to 4 metres thick, with underlying mixed gravel, sands and silty clays resting on bedrock at about 12 to 14 metres below ground, that is to approximately 7 metres below Jersey datum.

Under undisturbed conditions the alluvial sediments of the embayment would be expected to act as a drainage blanket for the surrounding upland areas of Jersey. Shales and volcanic bedrock, with groundwaters discharging to the sea by seepage through the beach and, possibly, by discrete spring flows. Groundwater levels would be expected to be at a relatively shallow depth (<10 metres), because of the low-lying nature of the embayment, with regular level fluctuations due to tidal influences affecting the water-table at the seaward end of the embayment.

At this site, the Made Ground relates to previous construction and particularly the existing sib-structure under the present CLMH office building.

Ground conditions are given in detail in the borehole logs in Appendix 1 and are summarised below:

Geology	**Brief description of strata**	**Depth range, m bgl**		
		BH1	BH2	BH3
MADE GROUND – granular backfill and concrete		0.60	2.65	5.52
OVERBURDEN – interbedded clays, silts, sands, and gravels		11.37	11.73	11.13
MUDSTONE (Bedrock) – Jersey Shale Formation		*16.45	*16.80	*16.20

* Final depth of borehole

The soils and rock revealed in the boreholes fit well with the known geology of the area. A plot of water content vs depth, Figure 1, shows a higher water content in the upper cohesive soils (*/-7m bgl) and a lower, more variable water content in the underlying more granular deposits.

Of note is the strong concrete sample tested, UCS 44MPa, recovered in BH3 which forms part of the reinforced concrete basement of the current building.

Water levels are given in the borehole logs in Appendix 2 and post-fieldwork levels are given below for 15th July 2021:-

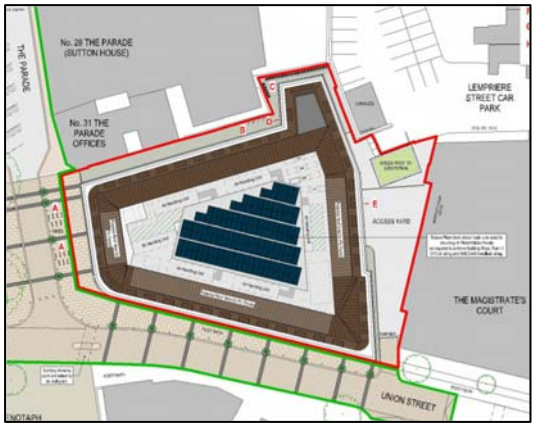
BH	Depth of water m bgl
3	1.31

As always, water levels will be subject to seasonal change and, this case, tidal conditions close to the marina.

Post-fieldwork ground gas monitoring from BH3 will be reported in an Addendum to this document.

5.4 Bearing Capacity and Settlement

We understand the proposed new development will be supported on new piles bored through or between the existing piles under the current building.



Extract Proposed Site Plan (Axis Mason)

The type of pile envisaged for the works is a bored temporarily or permanently cased cast insitu pile end-bearing on rock with little if any contribution afforded by the superficial soils.

Working loads for piles founded on the bedrock are primarily governed by the end bearing capacity considerations. 450mm dia piles could be designed and installed for design actions Ed up to 900kN and 600mm dia for Ed up to 1600kN. Larger diameter piles could be designed to carry higher loads.

Optional small diameter (+/- 200mm) load bearing piles with a minimum rock strength of 5MPa give ultimate end bearing stress 15MPa and ultimate shaft

friction 450kPa. For preliminary design, the piles could carry compression and tension of =/- 400kN nominal loads.

Predicted pile settlements for 600mm dia piles are in the region of 10mm at SWL and 20mm at 150% SWL .

6 EARTHWORKS

This section of the report considers excavations, filling, and compaction at the site.

All excavations, filling and compaction must be carried out in accordance with the current Health & Safety at Work regulations. All excavations into which personnel may enter must be supported or the sides battered back to a safe angle.

The extraction of the soils themselves should not pose any unusable mechanical problem but removing the reinforced sub-structure will require hydraulic breakers and specialist plant to undertake the work and control the environmental impact.

Careful consideration will have to be given to the effect of the excavation on the neighbouring properties, roads, and services. Careful use of hydraulic breakers or concrete sawing may be needed to excavate buried concrete.

Extract from Proposed Section A-A (Axis Mason)

There is a small basement. All excavations must be carried out in accordance with current Health and Safety at Work Legislation.

7 GROUND AGGRESSIVITY

This section considers the procedure or systems to control or circumvent the problem of corrosion of foundation elements and buried utilities.

The principal cause of concrete degradation in foundations is considered attack by sulphates present in the soil and ground water.

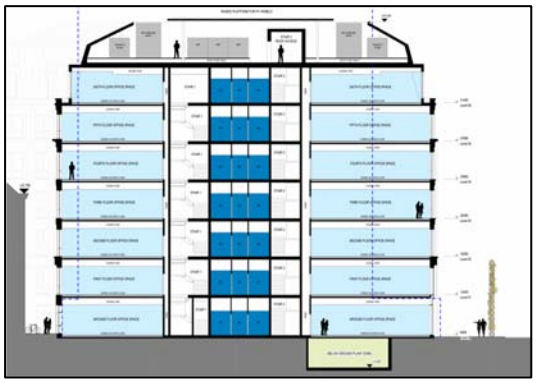
The results of geochemical tests carried out on samples taken during the ground investigation indicate that the site can be classified as class DS-1 and ACEC Class AC-1 in accordance with BRE Special Digest 1:2005.

8 BASEMENT CONSIDERATIONS

This section of the report considers factors relating to the basement wall design and hydrostatic pressures to be considered together with any special conditions affecting its design and construction, retention of the perimeter of the excavation, and method of excavation.

8.1 Basement retaining wall

The proposed basement covers only a small part of the plan area of the site. Consequently, there will be sufficient room to form the basement in an open excavation with battered sides in some areas.



Extract from Proposed Section A-A (Axis Mason)

Guidance on the design of retaining walls and groundwater control can be found in the following documents, (this list is far from exhaustive):

- BS 8002:2015, Code of practice for earth retaining structures
- BS EN 1992-1-1:2004+A1:2014 Eurocode 2: Design of concrete structures. General rules and rules for buildings

The boreholes have reported similar ground geological conditions across the site. The following parameters should be used for the retaining wall design:

Strata	Parameters	
	γ (kN/m^3)	c' (kPa) / φ' (°)
MADE GROUND	19	0 / 30
ALLUVIUM – clayey or silty	20	10 / 35
ALLUVIUM – sandy or gravelly	20	0 / 41
BEDROCK	21	40 / 40

Where:
γ= Unit weight of soil
θ = Angle of internal friction

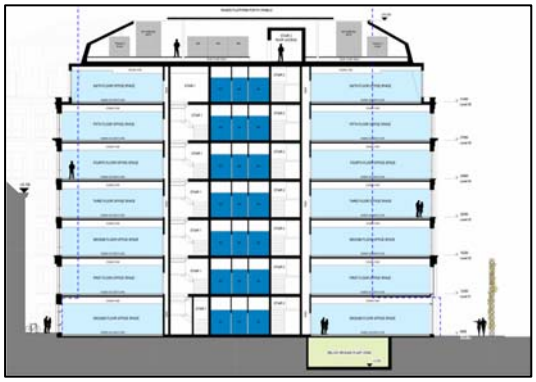
The strength values are necessarily conservative given the variable nature of the soils as evidenced by the range of SPT N values.

The general excavation level appears to be below the ground water levels shown by the monitoring records. The ground conditions at excavation level mainly comprise made ground or alluvium.

8.2 Basement Slab

The basement slab should be designed to resist uplift pressures from any rise in groundwater or these pressures must be dissipated before they become effective. Hollow floors or a granular layer beneath the basement slab can be used to collect groundwater but then permanent pumping from sumps will be required to prevent the build-up of water pressure.

The final design of the basement slab will consider the groundwater pressure. There is much merit in considering the problem of groundwater in conjunction with the basement excavation support system and optimising the retention and cut-off characteristics.



Extract from Proposed Section A-A (Axis Mason)

In any event, the basement slab should be capable of resisting the larger of the heave pressure or the bearing pressure. If the foundation piles are utilised as anchor piles, heave will be much reduced, but the basement slab will have to be designed to resist the bearing, groundwater, and heave pressures. Alternatively, temporary anchors can be installed to cope with uplift forces during construction.

Calculations can give an approximate indication of the long-term basement heave below the new basement excavation.

Timescales for consolidation are notoriously difficult to predict. The alluvial deposits, where relatively sandy in nature, will tend to reduce consolidation periods quite significantly. It therefore seems quite likely that a reasonable proportion of the calculated heave movement may occur during and immediately following excavation and before the basement slab is installed.

Calculation rarely takes account of the piling beneath the basement or of imposed loading from the new structure, whose effects will also reduce overall movements.

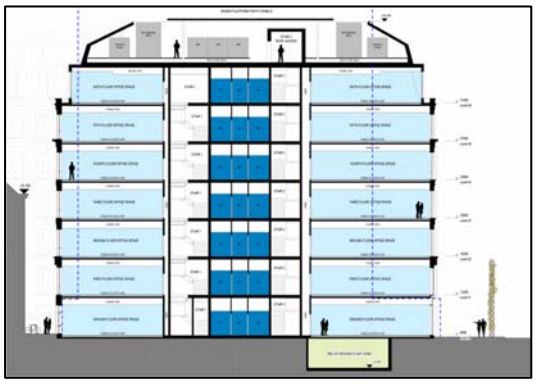
8.3 Basement excavation

Considering the geometry of the excavation cutting, the flatter the slope, the less support is required but the more excavation is needed.

Excavations will be in made ground and alluvium. Excavations in alluvium should be possible using conventional earthmoving equipment. It is anticipated that most old foundations or walls will also be able to be removed with this equipment. However,

it is possible that locally hydraulic/pneumatic breakers will be required for excavations in reinforced concrete.

Careful consideration must be given to the effect of the basement excavation on neighbouring properties, roads, and services.



Extract from Proposed Section A-A (Axis Mason)

The principal considerations are:

- The minimisation of ground movements and damage to adjacent buildings and any mains services including gas, water, electricity, and sewerage.
- The minimisation of noise pollution and vibrations to sensitive structures and services.
- The maintenance of existing water levels outside the site.
- The effect of water pressures on basement stability in the short and long term,
- Controlling run-off and potential off-site pollution.

Generally, all excavations must be carried out in accordance with the Current Health & Safety at Work Regulations and CIRIA Report '97.

Temporary works should be designed to minimise ground movements and damage to adjacent buildings and services during excavation.

The study has not revealed any significant past potentially contaminated land use at the site.

In addition, the results of the chemical testing have confirmed the soils tested are generally classed as inert waste. The concentrations fall below the trigger levels; see Appendix 4, apart from one loss on ignition in BH2 which may be related to timber found in the made ground.

Notwithstanding the above and in accordance with general good practice, a watching brief should be maintained during all excavations.

9 GROUND WATER CONSIDERATIONS

This section of the report discusses systems to control ground water both during construction and for the completed project.

The level of ground water is likely to not vary much across entire site due to change in geology and topography but may vary through seasonal variation from changes in precipitation.

Extract Proposed Section B-B (Axis Mason)

The most recent water level reading that have been taken at the site since the fieldwork was carried out is 1.31m bgl in BH3. These levels may vary according to season.

9.1 Control of groundwater

Consequently, excavations for the small basements are likely to encounter water.

Any de-watering of the basement would have to be carried out cautiously to avoid the risk of settlement arising from groundwater lowering.

The amount of groundwater likely to flow into the basement excavation will be a function of the ground permeability, the head of water and the cross-sectional area of the part of the excavation being considered.

This flow could be reduced by the cut-off effect of any retaining wall e.g., sheet piles, but not eliminated.

APPENDIX 1

ASPECTS TO BE CONSIDERED DURING THE INVESTIGATION OF POTENTIALLY CONTAMINATED SITES

- Contamination
- Geology
- Hydrology
- Pathways and targets

Examples of Phases and activities associated with site investigation

Phase of investigation	Typical activities
Preliminary Investigation	Literature review (Desk Study) Consultation (e.g., site owners, neighbours, regulatory authorities) Site visits
Exploratory investigation	Preliminary sampling (e.g., surface deposits, vegetation) Preliminary monitoring (e.g., gas composition and groundwater quality, flora, and fauna)
Detailed investigation	Comprehensive investigation of ground (e.g., using trial pits, trenches, boreholes) Monitoring (e.g., gas composition and water quality, flora, and fauna)
Supplementary investigation	Further ground investigation and monitoring Treatability testing
Investigation for compliance and performance	Post-treatment validation and monitoring as appropriate

Examples of generic reference data for assessment purposes

Medium	Dedicated	Non-dedicated
Soils	Defra Soil Guideline Values (SGV) Dutch standards Canadian guidelines Australian/New Zealand guidelines	Application of sewage sludge to land
Water	Dutch, Canadian guidelines	Drinking water standards and water quality objectives
Air Soil gas	- WMP No. 27 on landfill gas BRE guidance ICRCL guidance on the development and after-use of landfill sites CIRIA guidance on methane Institute of Petroleum guidance	Air quality standards Occupational Exposure Standards and Maximum Exposure Limits -

Typical objectives for investigation of contamination

- Contamination of soils and ground water on the site
- Contamination migrating off the site
- Other hazards and features on the site
- Potential targets and likely pathways
- Alternative remedial strategies
- Monitoring and maintenance
- Safe site working practices during remedial works
- Contingencies for any emergency action

NOTE:

Remember there may be conflict between the objective of a site investigation for foundation design and a site investigation for contamination assessment.

Health and Safety issues

Health and safety procedures
Controlled entry
Site zoning
Good hygiene
Monitoring
Appropriate disposal of wastes
Safe handling, storage, and transport of hazardous samples
Control of nuisance
Emergency procedures
Provision of appropriate training
Need for routine health surveillance

QA/QC for site investigation and risk assessment

1. Compliance with all relevant legal requirements
2. Review of documentary evidence during desk study
3. Location and recording of observations during site reconnaissance
4. Procedures used to identify potential hazard-pathway-target relationships and to
5. select "plausible" scenarios for further assessment
6. Siting and installation of exploratory excavations
7. Establishment and performance of environmental protection measures
8. Waste disposal arrangements (Duty of Care etc.)
9. Implementation of health and safety procedures

10. Collection and handling of samples
11. Storage and preparation of samples
12. Methods of analysis and testing
13. On-site recording protocols
14. Reporting of data
15. Reporting procedures used in estimation of risks
16. Input to, and use of any models to aid interpretation of the data
17. Participation by contracting parties in appropriate accreditation schemes (e.g., BS 5750 for quality management, NAMAS for analytical and testing service, CONTEST * for analytical proficiency
18. Scheme operated by the laboratory of the Government Chemist under the DTI's
19. 'Validity of Analytical Measurement' Initiative.

Objectives of risk assessment

The purpose of risk assessment is to determine:

Whether the observed levels of contamination are likely to pose unacceptable risks to defined targets now or in the future.

Whether measures should be taken to reduce risks to an acceptable level.

Hazard identification and assessment

Comparison of observed concentrations with published data

Assessment of hazard-pathway-target scenarios

Comparison of observed concentrations with reference data indicative of negli g ble risk under defined conditions of exposure

APPENDIX 2

Borehole logs and ground water levels

BH1-3

Nominal Section

BH1-2-3

SPT Summary Table

SPT vs. Depth Profile

AMPLUS LTD

Foundation & Geotechnical Specialists

Site	Borehole Number
Cyril Le Marquand House, The Parade, St Helier	BH1

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Inspection pit excavated by hand to 1 20m Fraste PL Rig - Windowless sampling to 8.10m Dry Drilling to 11.37m, Rotary Coring to 16.45m	113mm cased to 11 50m	8.30	Dandara (Jersey) Ltd	2033
	Location as per sight plan	**Dates** 13/07/2021-14/07/2021	**Engineer** Dandara (Jersey) Ltd	**Sheet** 1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					8.18	0.12	CONCRETE - Slab		
						(0.48)	MADE GROUND - cobbles and sand		
				Inspection Pit	7.70	0.60	Loose brown silty fine to coarse SAND		
						(0.40)			
1.00-1.45 1.00 1.00-2.00 1.00-2.00	SPT N=8 D1 ES2 0.15 L3 0.85		DRY	1,1/3,1,1,3	7.30	1.00	Loose brown slightly silty sandy GRAVEL		
						(1.00)			
2.00 2.00-2.45 2.00-3.00	D4 SPT N=7 L5 0.61	2.00	1.53	Water Flush Set Up 3,2/2,2,1,2	6.30	2.00	Soft to firm brown slightly sandy SILT		
						(1.00)			
3.00-3.45 3.00 3.00-4.00 3.40-4.00	SPT N=10 D6 L7 0.84 B30	3.00	1.17	2,2/3,2,2,3	5.30	3.00	Firm brown slightly sandy SILT		
						(0.40)			
					4.90	3.40	Soft to firm light brown sligh ly gravelly slightly sandy SILT		
						(0.60)			
4.00-4.45 4.00 4.00-5.00	SPT N=8 D8 L9 0.63	4.00	1.95	2,2/2,2,2,2	4.30	4.00	Soft to firm greyish brown slightly sandy SILT		
						(1.00)			
5.00-5.45 5.00 5.00-6.00	SPT N=7 D10 L11 0.55	5.00 6.00	2.21	1,1/1,2,2,2	3.30	5.00	Soft to firm greyish brown slightly sandy silty CLAY		
6.00-7.00	L12 1.0					(2.00)			
7.00-7.45 7.00 7.00-8.00	SPT N=38 D13 BNR	7.00	3.97	7,7/7,9,11,11	1.30	7.00	Very stiff brown slightly sandy gravelly silty CLAY		
						(0.50)			
7.50-8.05	B31				0.80	7.50	Dense light brown gravelly very silty SAND		
8.00-8.05 8.05-8.10 8.10-8.71	L14 1.00 L15 0.05 B16 0.61	8.00		13/07/2021:4.40m 14/07/2021:1.46m		(1.21)			
8.71-9.16 8.71 8.71-9.53	SPT N=28 D17 B18 0.82	9.00	3.34	10,8/8,6,6,8	-0.41	8.71	Medium dense brown sandy silty GRAVEL		
						(0.29)			
					-0.70	9.00	Stiff dark brown clayey sandy SILT		
9.53-10.53	B19 0.84	10.00				(1.00)			

Remarks

Scale (approx)	Logged By
1 50	MFW

Figure No. 2033.BH1

AMPLUS LTD

Foundation & Geotechnical Specialists

Site	Borehole Number
Cyril Le Marquand House, The Parade, St Helier	BH1

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Inspection pit excavated by hand to 1 20m Fraste PL Rig - Windowless sampling to 8.10m Dry Drilling to 11.37m, Rotary Coring to 16.45m	113mm cased to 11 50m	8.30	Dandara (Jersey) Ltd	2033
	Location as per sight plan	**Dates** 13/07/2021-14/07/2021	**Engineer** Dandara (Jersey) Ltd	**Sheet** 2/2

Depth (m)	Sample / Tests	TCR	SCR	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
							-1.70	10.00			
10.00-10.50	B32							(0.53)	Stiff brown mottled grey slightly sandy silty CLAY		
10.53-10.98	SPT N=34				3.52	3,5/7,8,8,11	-2.23	10.53			
10.53	D20								Very stiff greyish brown slightly sandy silty CLAY		
10.53-11.37	B21 0.84			11.00				(0.84)			
		TCR	**SCR**	**RQD**	**FI**						
11.37		100	30	10	_	C22 Casing to 11.50	-3.07	11.37			
11.69		100	20	0	_	C23			Weak sligh ly weathered MUDSTONE (Jersey Shale Formation) closely bedded, planar smooth surfaces		
12.00		100	50	30	10	C24					
12.71		100	40	15	10	C25		(3.03)			
13.25		100	30	10	10	C26					
13.63		100	80	50	8	C27 C33 14.00-14.10 C34 14.40-14.60	-6.10	14.40			
14.78		100	60	40	7	C28			Weak to medium strong slightly weathered MUDSTONE (Jersey Shale Formation) closely bedded, planar smooth surfaces		
15.58		100	80	70	5	C29 C35 16.00-16.10 C36 16.20-16.40 14/07/2021:1.67m		(2.05)			
16.45							-8.15	16.45	Complete at 16.45m		

Remarks

Scale (approx)	Logged By
1 50	MFW

Figure No. 2033.BH1

AMPLUS LTD

Foundation & Geotechnical Specialists

Site	Borehole Number
Cyril Le Marquand House, The Parade, St Helier	BH2

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Inspection pit excavated by hand Fraste PL Rig - Windowless sampling to 8.04m Dry Drilling to 11.73m, Rotary Coring to 16.80m	113mm cased to 11 50m	8.47	Dandara (Jersey) Ltd	2033
	Location as per sight plan	**Dates** 08/07/2021-12/07/2021	**Engineer** Dandara (Jersey) Ltd	**Sheet** 1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					8.39	0.08 (0.22)	CONCRETE - 1st layer		
					8.17	0.30 (0.35)	CONCRETE - 2nd reinforced layer		
				Inspection Pit			MADE GROUND - Brown silty sandy fine to medium gravel		
0.65-1.10 0.65 0.65 0.65-1.65	SPT N=21 D1 ES2 B3 0.60		DRY	6,7/3,3,9,6	7.82	0.65 (0.35)	MADE GROUND - Brown slightly silty sandy GRAVEL with some timber		
					7.47	1.00 (0.65)	MADE GROUND - Medium dense brown sandy fine to medium gravel		
1.65-2.10 1.65 1.65-2.65 2.00-2.65	SPT N=10 D4 B5 0.67 B34	1.50	DRY	2,3/3,2,2,3	6.82	1.65 (0.35)	MADE GROUND - Brown slightly clayey slightly gravelly sand		
					6.47	2.00 (0.65)	MADE GROUND - Brown silty very gravelly sand		
2.65 2.65-3.10 2.65-3.65	D6 SPT N=7 L7 0.61		1.88	Set up water flush 2,1/2,2,1,2	5.82 5.67	2.65 (0.15) 2.80 (0.85)	Soft brown sandy silty CLAY Soft brown sandy SILT		
3.65 3.65-4.65	D8 L9 0.63			08/07/2021:1.48m	4.82	3.65 (1.07)	Soft to firm brown slightly sandy SILT		
3.65-4.10	SPT N=8	3.50	1.48	09/07/2021:1.48m 1,2/3,2,1,2					
4.65-5.65 4.72-5.17 4.72	L11 0.60 SPT N=8 D10	4.50	2.12	1,2/2,2,2,2	3.75	4.72 (0.78)	Firm brown slightly sandy SILT		
5.50-5.95 5.65-6.65	B35 L13 0.57	6.50			2.97	5.50 (0.45)	Firm orangish brown and grey slightly sandy SILT		
5.95-6.40 5.95	SPT N=11 D12	5.50	2.49	3,3/2,3,3,3	2.52	5.95 (0.65)	Firm greyish brown slightly sandy silty CLAY		
6.65-7.65	L14 1.00				1.87	6.60 (1.05)	Dense grey brown very silty sandy fine to coarse angular GRAVEL		
7.65-8.10 7.65 7.65-8.04 8.04-9.04	SPT N=44 D15 L16 0.39 B17 1.00	7.50	2.73	4,8/10,10,11,13	0.82	7.65 (1.35)	Dense orangish brown slightly silty gravelly SAND		
9.00-9.50 9.04-9.49 9.04 9.04-9.62	B36 SPT N=45 D18 B19 0.58	8.50	2.94	3,5/8,10,14,13	-0.53 -0.57 -0.83	9.00 9.04 (0.26) 9.30	Very stiff greyish brown slightly gravelly slightly sandy silty CLAY Very stiff brown slightly gravelly slightly sandy silty CLAY		
9.62-10.25	B20 0.63	9.50					Very stiff grey brown sandy SILT		

Remarks

Scale (approx)	Logged By
1 50	MFW

Figure No. 2033.BH2

AMPLUS LTD

Foundation & Geotechnical Specialists

Site	Borehole Number
Cyril Le Marquand House, The Parade, St Helier	BH2

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Inspection pit excavated by hand Fraste PL Rig - Windowless sampling to 8.04m Dry Drilling to 11.73m, Rotary Coring to 16.80m	113mm cased to 11 50m	8.47	Dandara (Jersey) Ltd	2033
	Location as per sight plan	**Dates** 08/07/2021-12/07/2021	**Engineer** Dandara (Jersey) Ltd	**Sheet** 2/2

Depth (m)	Sample / Tests	TCR	SCR	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
								(1.60)	Very stiff grey brown sandy SILT		
10.25-10.90	B21 0.58										
10.90-11.73	B22 0.83			11.50	1.15	09/07/2021:2 03m	-2.43	10.90	Weak to medium strong slightly weathered MUDSTONE (Jersey Shale Formation) closely bedded, planar smooth surfaces		
10.90-11.35	SPT(C) N=38			10.50	2.03	12/07/2021:1.15m 6,10/8,7,10,13 25,0/50					
11.73-11.85		TCR	SCR	RQD	FI	SPT(C) 25*/45					
11.73		100	0	0	_	50/70 C23					
11.99		100	10	10	10	C24					
12.70		100	30	20	10	C37 12.70-12.80 C25					
13.33		0			_						
13.49		100	0	0	_	C26					
13.75		100	0	0	_	C27		(5.90)			
14.16		100	10	_	_	C28					
14.62		100	20	20	10	C38 14.62-14.70 C29					
15.17		100	10	0	_	C30					
15.40		100	10	0	_	C31					
15.92		100	10	0	_	C32					
16.31		100	5	0	_	C33 12/07/2021:1.43m					
16.80							-8.33	16.80	Complete at 16.80m		

Remarks

Scale (approx)	Logged By
1 50	MFW

Figure No. 2033.BH2

AMPLUS LTD

Foundation & Geotechnical Specialists

Site	Borehole Number
Cyril Le Marquand House, The Parade, St Helier	BH3

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Inspection pit excavated by hand to 1 20m Fraste PL Rig - Windowless sampling to 7.42m Dry Drilling to 11.13m, Rotary Coring 3.53m - 5.42m & 11.13m to 16.20m	113mm cased to 10.60m	8.35	Dandara (Jersey) Ltd	2033
Location	**Dates**	**Engineer**		**Sheet**
as per sight plan	05/07/2021-07/07/2021	Dandara (Jersey) Ltd		1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
					8.31	0.04	MADE GROUND - Tarmac			
							MADE GROUND - Loose dark brown sandy fine to coarse angular gravel and cobbles			
				Inspection Pit						
1.20-1.65 1.20 1.20-2.20	SPT N=6 ES2 L1 0.60		DRY	1,1/2,2,1,1		(3.16)				
2.20-2.65 2.20-3.20	SPT N=7 L3 0.72	1.60	DRY	1,1/2,2,1,2						
					5.15	3.20	MADE GROUND - Brown sandy gravel			
3.20-3.40 3.20 3.20-3.44 3.44-3.53 3.53-3.62 3.62-4.56 3.65-3.70	SPT 25/45 D4 B5 0.24 B6 0.09 C7 0.05 C8 0.90 C30	2.60 3.10 4.10	1.79	2,11/25 Water Flush Set Up	4.85	(0.30) 3.50	CONCRETE - Upper layer with reinforcing bars, medium strong to strong			
4.56-4.74	C9 0.18					(1.24)	Reinforcing bars up to 32mm ø at 4.74m			
4.74-4.89 4.89-5.42	C10 0.15 C11 0 53			05/07/2021:1.78m 06/07/2021:1.75m	3.61	4.74	CONCRETE - Lower layer			
						(0.68)				
5.42-5.87 5.42 5.42-6.42	SPT N=11 D12 L13 1.00	5.10	2.00	2,3/3,3,3,2	2.93	5.42	Firm greyish brown slightly sandy SILT			
						(0.45)				
					2.48	5.87	Soft to firm grey brown sandy SILT			
						(0.55)				
6.42-6.87 6.42 6.42-7.42	SPT N=7 D14 L15 0.69	6.10 7.10	2.24	1,0/1,2,2,2	1.93	6.42	Soft to firm brown slightly sandy SILT			
						(0.58)				
7.00-7.42	B31				1.35	7.00	Firm grey slightly gravelly sligh ly sandy SILT			
7.42-7.95	L16 0.53					(0.95)				
7.95-8.40 7.95 7.95-8.95	SPT N=33 D17 B18 1.00	7.60 8.60	4.24	5,7/8,8,9,8	0.40	7.95	Stiff brown mottled bluish grey sligh ly sandy gravelly silty CLAY			
						(0.45)				
					-0.05	8.40	Stiff to very stiff brown sandy SILT			
8.95-9.95	B19 1.00					(1.55)				
9.95-10.40	SPT N=18	9.60	1.50	7,5/3,4,5,6	-1.60	9.95				

Remarks
Slotted Pipe Installation, Response Zone 10.00m - 6.00m

Scale (approx)	Logged By
1 50	MFW

Figure No.
2033.BH3

AMPLUS LTD

Foundation & Geotechnical Specialists

Site	Borehole Number
Cyril Le Marquand House, The Parade, St Helier	BH3

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Inspection pit excavated by hand to 1 20m Fraste PL Rig - Windowless sampling to 7.42m Dry Drilling to 11.13m, Rotary Coring 3.53m - 5.42m & 11.13m to 16.20m	113mm cased to 10.60m	8.35	Dandara (Jersey) Ltd	2033
Location	**Dates**	**Engineer**		**Sheet**
as per sight plan	05/07/2021-07/07/2021	Dandara (Jersey) Ltd		2/2

Depth (m)	Sample / Tests	TCR	SCR	RQD	FI	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
9.95	D20										Very stiff grey slightly gravelly slightly sandy silty CLAY			
9.95-10.95	B21 1.00					10.60				(0.55)				
									-2.15	10.50				
10.50-11.00	B32							250,50/ 0/55 SPT(C) 300*/70 06/07/2021:GL			Very dense grey gravelly very silty SAND			
10.95-11.13	B22 0.18									(0.63)				
11.13-11.26									-2.78	11.13				
11.13								07/07/2021:0 92m C23			Medium strong to strong slightly weathered MUDSTONE (Jersey Shale Formation) closely bedded, planar smooth surfaces			
		100		75	10			C33 11.70-12.10						
12.70		100		50	10			C24						
12.87		100		60	10			C25						
13.45		100		40	10			C26 C34 13.65-13.75		(5.07)				
14.21		100		60	10			C27						
14.74		100		30	10			C28						
15.50		100		90	5			C29 C35 15.70-15.90 07/07/2021:1 08m						
									-7.85	16.20				
16.20											Complete at 16.20m			

Remarks
Slotted Pipe Installation, Response Zone 10.00m - 6.00m

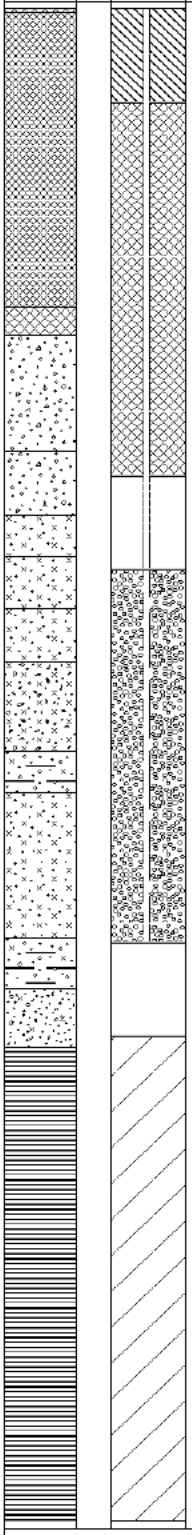
Scale (approx)	Logged By
1 50	MFW

Figure No. 2033.BH3

AMPLUS LTD

Foundation & Geotechnical Specialists

Site Cyril Le Marquand House, The Parade, St Helier			**Borehole Number** BH3
Installation Type Single Installation	**Dimensions** Internal Diameter of Tube [A] = 50 mm	**Client** Dandara (Jersey) Ltd	**Job Number** 2033
	Location as per sight plan	**Ground Level (mOD)** 8.35	**Engineer** Dandara (Jersey) Ltd	**Sheet** 1/1



Level (mOD)	Depth (m)	Description
7.35	1.00	Cement/Bentonite Seal
		General Backfill
3.35	5.00	
		Bentonite Seal
2.35	6.00	
		Slotted Standpipe
-1.65	10.00	
		Bentonite Seal
-2.65	11.00	
		Bottom Fill
-7.85	16.20	

Groundwater Strikes During Drilling

Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings 5 min	Readings 10 min	Readings 15 min	Readings 20 min	Depth Sealed (m)

Groundwater Observations During Drilling

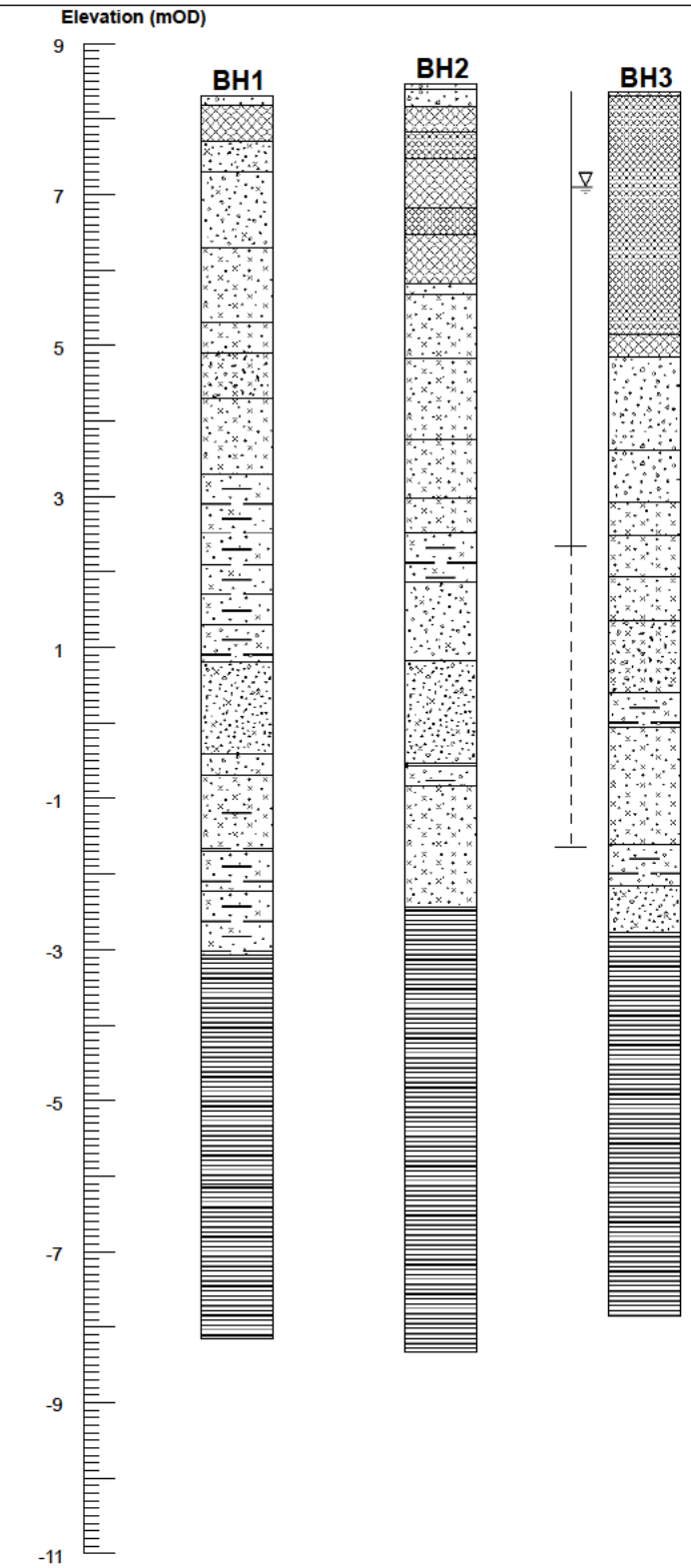
Date	Start of Shift Time	Start of Shift Depth Hole (m)	Start of Shift Casing Depth (m)	Start of Shift Water Depth (m)	Start of Shift Water Level (mOD)	End of Shift Time	End of Shift Depth Hole (m)	End of Shift Casing Depth (m)	End of Shift Water Depth (m)	End of Shift Water Level (mOD)
05/07/21						17.00	4.89	4.10	1.78	6.57
06/07/21	08.00	4.89	4.10	1.75	6.60	17.00	10.95	10.60	GL	
07/07/21	08.00	10.95	10.60	0.92	7.43	17.00	16.20		1.08	7.27

Instrument Groundwater Observations

Inst. [A] Type : Slotted Standpipe

Date	Instrument [A] Time	Instrument [A] Depth (m)	Instrument [A] Level (mOD)	Remarks
09/07/21	08:00	1.29	7.06	
09/07/21	17:00	1.29	7.06	
12/07/21	08:00	1.25	7.10	
12/07/21	17:00	1.23	7.12	
13/07/21	08:00	1.31	7.04	
13/07/21	17:00	1.32	7.03	
14/07/21	08:00	1.33	7.02	
14/07/21	17:00	1.27	7.08	
15/07/21	08:00	1.32	7.03	
15/07/21	17:00	1.31	7.04	

Remarks
Slotted Pipe with Geosock



Key

- Groundwater Strike
- Strike Rise Level
- Highest recorded piezo level
- Piezometer Tip
- Slotted Standpipe
- MADE GROUND
- MADE GROUND
- CONCRETE
- Silty sandy CLAY
- Silty sandy gravelly CLAY
- Sandy SILT
- Clayey sandy SILT
- Sandy gravelly SILT
- Silty SAND
- Silty gravelly SAND
- Silty sandy GRAVEL
- MUDSTONE

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Foundation & Geotechnical Specialists

Nominal Section

Site	Date Drawn	Date Checked	Sheet	Job Number
Cyril Le Marquand House, The Parade, St Helier	25/08/2021	25/08/21	1/1	2033
Client	**Drawn By**	**Checked By**	**Scale**	**Figure No.**
Dandara (Jersey) Ltd	DDT	MFW	1:100[V]	2033

AMPLUS LTD

Foundation & Geotechnical Specialists

Standard Penetration Test Results

Site : Cyril Le Marquand House, The Parade, St Helier

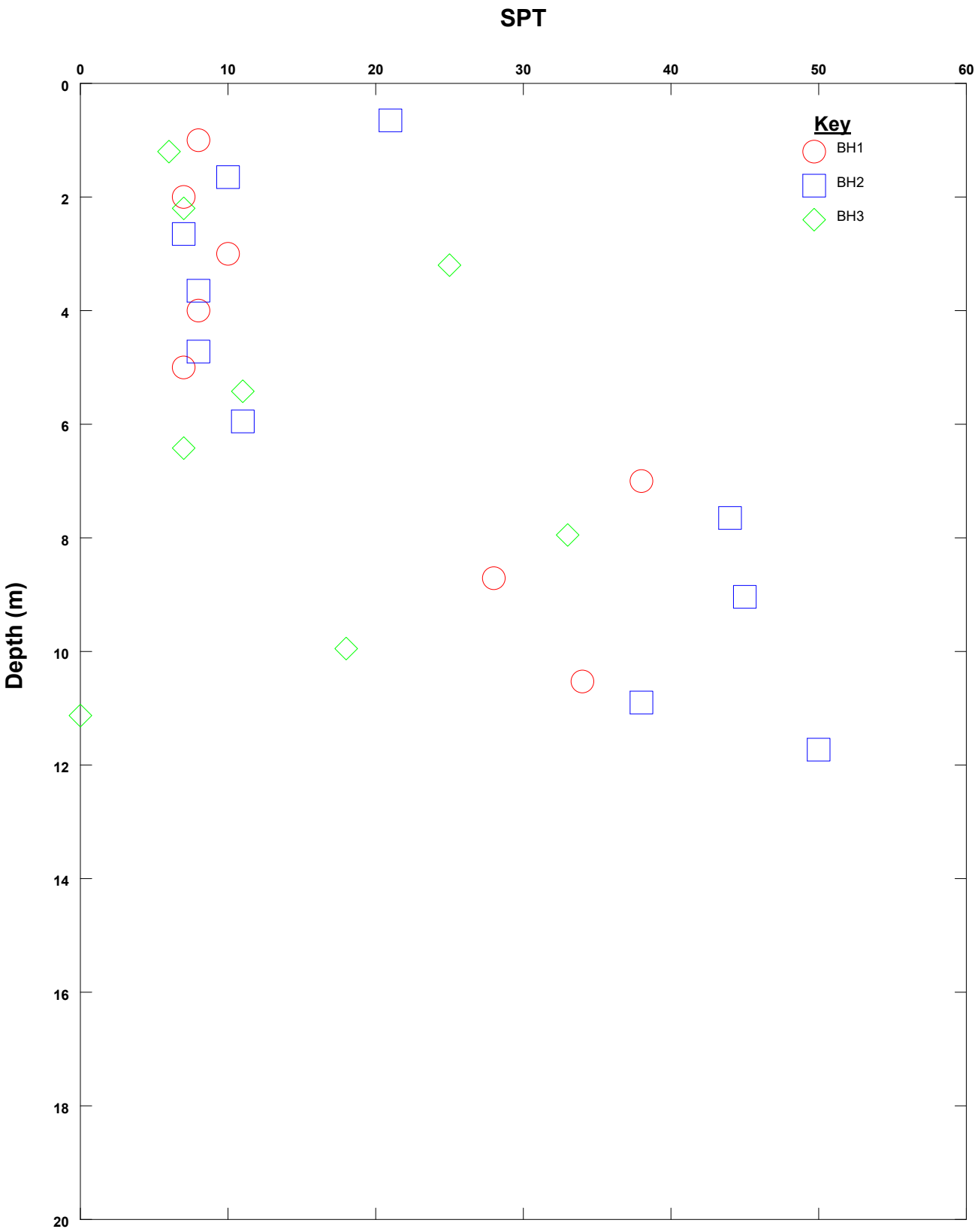
Client : Dandara (Jersey) Ltd

Engineer : Dandara (Jersey) Ltd

Job Number 2033

Sheet 1 / 1

Borehole Number	Base of Borehole (m)	End of Seating Drive (m)	End of Test Drive (m)	Test Type	Seating Blows per 75mm		Blows for each 75mm penetration				Result	Comments
					1	2	1	2	3	4		
BH1	1.00	1.15	1.45	SPT	1	1	3	1	1	3	N=8	0.21 Recovered
BH1	2.00	2.15	2.45	SPT	3	2	2	2	1	2	N=7	0.40 Recovered
BH1	3.00	3.15	3.45	SPT	2	2	3	2	2	3	N=10	0.36 Recovered
BH1	4.00	4.15	4.45	SPT	2	2	2	2	2	2	N=8	0.40 Recovered
BH1	5.00	5.15	5.45	SPT	1	1	1	2	2	2	N=7	0.38 Recovered
BH1	7.00	7.15	7.45	SPT	7	7	7	9	11	11	N=38	0.38 Recovered
BH1	8.71	8.86	9.16	SPT	10	8	8	6	6	8	N=28	0.29 Recovered
BH1	10.53	10.68	10.98	SPT	3	5	7	8	8	11	N=34	0.35 Recovered
BH2	0.65	0.80	1.10	SPT	6	7	3	3	9	6	N=21	0.36 Recovered
BH2	1.65	1.80	2.10	SPT	2	3	3	2	2	3	N=10	0.13 Recovered
BH2	2.65	2.80	3.10	SPT	2	1	2	2	1	2	N=7	0.45 Recovered
BH2	3.65	3.80	4.10	SPT	1	2	3	2	1	2	N=8	0.40 Recovered
BH2	4.72	4.87	5.17	SPT	1	2	2	2	2	2	N=8	0.45 Recovered
BH2	5.95	6.10	6.40	SPT	3	3	2	3	3	3	N=11	0.44 Recovered
BH2	7.65	7.80	8.10	SPT	4	8	10	10	11	13	N=44	0.45 Recovered
BH2	9.04	9.19	9.49	SPT	3	5	8	10	14	13	N=45	0.40 Recovered
BH2	10.90	11.05	11.35	CPT	6	10	8	7	10	13	N=38	No recovery
BH2	11.73	11.78	11.85	CPT	25	0	50				25*/45mm 50/70mm	Test terminated in hard ground
BH3	1.20	1.35	1.65	SPT	1	1	2	2	1	1	N=6	No Recovery
BH3	2.20	2.35	2.65	SPT	1	1	2	2	1	2	N=7	No Recovery
BH3	3.20	3.35	3.40	SPT	2	11	25				25/45mm	0.19 Recovered, test terminated in hard ground
BH3	5.42	5.57	5.87	SPT	2	3	3	3	3	2	N=11	0.27 Recovered
BH3	6.42	6.57	6.87	SPT	1	0	1	2	2	2	N=7	0.32 Recovered
BH3	7.95	8.10	8.40	SPT	5	7	8	8	9	8	N=33	0.29 Recovered
BH3	9.95	10.10	10.40	SPT	7	5	3	4	5	6	N=18	0.40 Recovered
BH3	11.13	11.20	11.26	CPT	250	50					300*/70mm 0/55mm	Test teminated in hard ground



AMPLUS LTD

Foundation & Geotechnical Specialists

Title SPT vs Depth (m)				
Site Cyril Le Marquand House, The Parade, St Helier	**Date Drawn** 25/08/2021	**Date Checked**	**Sheet** 1 / 1	**Job Number** 2033
Client Dandara (Jersey) Ltd	**Drawn By**	**Checked By**	**Scale** N/A	**Figure No.** 2033_01

APPENDIX 3

Laboratory Test Results

GEL:

Report No. 36638

BS EN ISO 17892-1: 2014:5. Water Content - 28
BS1377: Part 2: 1990:4.2-4.4&5.2-5.4, Liquid & Plastic Limits - 7
BS EN ISO 17892-4: 2016: 5.2, Particle Size Distribution - Wet Sieve - 8
BS ENO 17892-4: 2016: 5.4, Particle Size Distribution - Pipette - 7
ISRM: Suggested Methods: 1981: Uniaxial Compressive Strength of Rock - 2
ISRM: 2007: Point Load Strength Test - 9
BRE SD1 Suite (Subcontracted) - 6

ALS:

Report No. 210715-104

Landfill Acceptance

Report No. 210715-107

Landfill Acceptance

Report No. 210712-131

Landfill Acceptance

2718

Amplus Ltd
Unit 1, Thistle Grove
St Lawrence
Jersey
JE3 1NN

Version No. 1
For the attention of Matthew Warner

Date of Issue 20/08/2021

TEST REPORT

PROJECT/SITE	Cyril Le Marquand House, The Parade, Jersey	Samples received	26/07/2021
GEL REPORT NUMBER	36638	Schedule received	26/07/2021
Your ref/PO:	2033	Testing commenced	05/08/2021
Test report refers to	Schedule 1	Status	Final

SUMMARY OF RESULTS ATTACHED

TEST METHOD & DESCRIPTION	QUANTITY	ACCREDITED TEST
BS EN ISO 17892-1: 2014:5. Water Content	28	YES
BS1377: Part 2: 1990:4.2-4.4&5.2-5.4, Liquid & Plastic Limits	7	YES
BS EN ISO 17892-4: 2016: 5.2, Particle Size Distribution - Wet Sieve	8	YES
BS EN ISO 17892-4: 2016: 5.4, Particle Size Distribution - Pipette	7	YES
ISRM: Suggested Methods: 1981: Uniaxial Compressive Strength of Rock	2	YES
ISRM: 2007: Point Load Strength Test	9	YES
BRE SD1 Suite (Subcontracted)	6	YES/NO

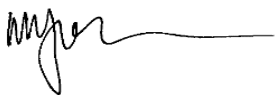
Remarks

The results reported relate to samples received in the laboratory

Approved Signatories:

W Jones (Lab Manager) T Best (Deputy Laboratory Manager)

J Hanson (Director) N Parry (Director)



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Geotechnical Engineering Limited

LIQUID AND PLASTIC LIMITS

BS.1377 : PART 2 : 1990 : 4 and 5

CLIENT AMPLUS LTD

SITE CYRIL LE MARQUAND HOUSE, THE PARADE, JERSEY

borehole /trial pit no.	sample no./type	sample dep h (m)	specimen depth (m)	natural water content (%)	specimen preparation and test method	fraction >0.425 mm (%)	liquid limit (%)	plas ic limit (%)	plasticity index (%)	description and remarks
BH1	1D	1.00	1.00	8.4	E#					Brown slightly silty sandy GRAVEL
BH1	4D	2.00	2.00	22.9	E					Brown slightly sandy SILT
BH1	6D	3.00	3.00	24.4	E					Brown slightly sandy SILT
BH1	30B	3.40	3.40	25.5	BYE	1	28	NP		Light brown slightly gravelly slightly sandy SILT
BH1	8D	4.00	4.00	25.0	E					Greyish brown slightly sandy SILT
BH1	10D	5.00	5.00	26.1	E					Greyish brown slightly sandy silty CLAY
BH1	13D	7.00	7.00	10.4	E					Brown slightly sandy gravelly silty CLAY
BH1	31B	7.50	7.50	19.2	BYE	19	22	NP		Light brown gravelly very silty SAND
BH1	17D	8.71	8.71	13.0	E					Brown sandy silty GRAVEL
BH1	32B	10.00	10.00	19.5	BXE	0	45	21	24	Brown mottled grey slightly sandy silty CLAY
BH1	20D	10.53	10.53	21.3	E					Greyish brown slightly sandy silty CLAY
BH2	1D	0.65	0.65	9.0	E					Brown slightly silty sandy GRAVEL
BH2	4D	1.65	1.65	19.9	E					Brown slightly clayey slightly gravelly SAND
BH2	6D	2.65	2.65	23.1	E					Brown sandy silty CLAY
BH2	8D	3.65	3.65	24.2	E					Brown slightly sandy SILT
BH2	10D	4.72	4.72	25.1	E					Brown slightly sandy SILT
BH2	35B	5.50	5.50	23.2	BYE	0	29	NP		Orangish brown and grey slightly sandy SILT
BH2	12D	5.95	5.95	26.0	E					Greyish brown slightly sandy silty CLAY
BH2	15D	7.65	7.65	13.3	E					Orangish brown slightly silty gravelly SAND

general remarks

natural water content determined in accordance with BS EN ISO 17892 - 1 : 2014 (unless specified)

NP denotes non plastic

# denotes sample tested is smaller than that which is recommended in accordance with BS1377 or BS EN ISO 17892

specimen preparation

A - as received
B - washed on 0.425mm sieve
C - air dried
D - oven dried (60oC)
E - oven dried (105oC)
F - not known

test method

X - cone penetrometer (test 4.3)
Y - cone penetrometer (test 4.4)
Z - casagrande apparatus (test 4.5)

CONTRACT **36638**

CHECKED **WNJ**

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LIQUID AND PLASTIC LIMITS

BS.1377 : PART 2 : 1990 : 4 and 5

CLIENT AMPLUS LTD

SITE CYRIL LE MARQUAND HOUSE, THE PARADE, JERSEY

borehole /trial pit no.	sample no./type	sample dep h (m)	specimen depth (m)	natural water content (%)	specimen preparation and test method	fraction >0.425 mm (%)	liquid limit (%)	plas ic limit (%)	plasticity index (%)	description and remarks
BH2	36B	9.00	9.00	19.4	BXE	2	43	20	23	Greyish brown slightly gravelly slightly sandy silty CLAY
BH2	18D	9.04	9.04	23.7	E					Brown slightly gravelly slightly sandy silty CLAY
BH3	4D	3.20	3.20	12.9	E					Brown sandy GRAVEL
BH3	12D	5.42	5.42	25.8	E					Greyish brown slightly sandy SILT
BH3	14D	6.42	6.42	27.0	E					Brown slightly sandy SILT
BH3	31B	7.00	7.00	24.6	BYE	13	33	NP		Grey slightly gravelly slightly sandy SILT
BH3	17D	7.95	7.95	12.7	E					Brown mottled bluish grey slightly sandy gravelly silty CLAY
BH3	20D	9.95	9.95	22.8	E					Grey slightly gravelly slightly sandy silty CLAY
BH3	32B	10.50	10.50	15.9	BYE	21	24	NP		Grey gravelly very silty SAND

general remarks

natural water content determined in accordance with BS EN ISO 17892 - 1 : 2014 (unless specified)

NP denotes non plastic

# denotes sample tested is smaller than that which is recommended in accordance with BS1377 or BS EN ISO 17892

specimen preparation

A - as received
B - washed on 0.425mm sieve
C - air dried
D - oven dried (60oC)
E - oven dried (105oC)
F - not known

test method

X - cone penetrometer (test 4.3)
Y - cone penetrometer (test 4.4)
Z - casagrande apparatus (test 4.5)

CONTRACT **36638**

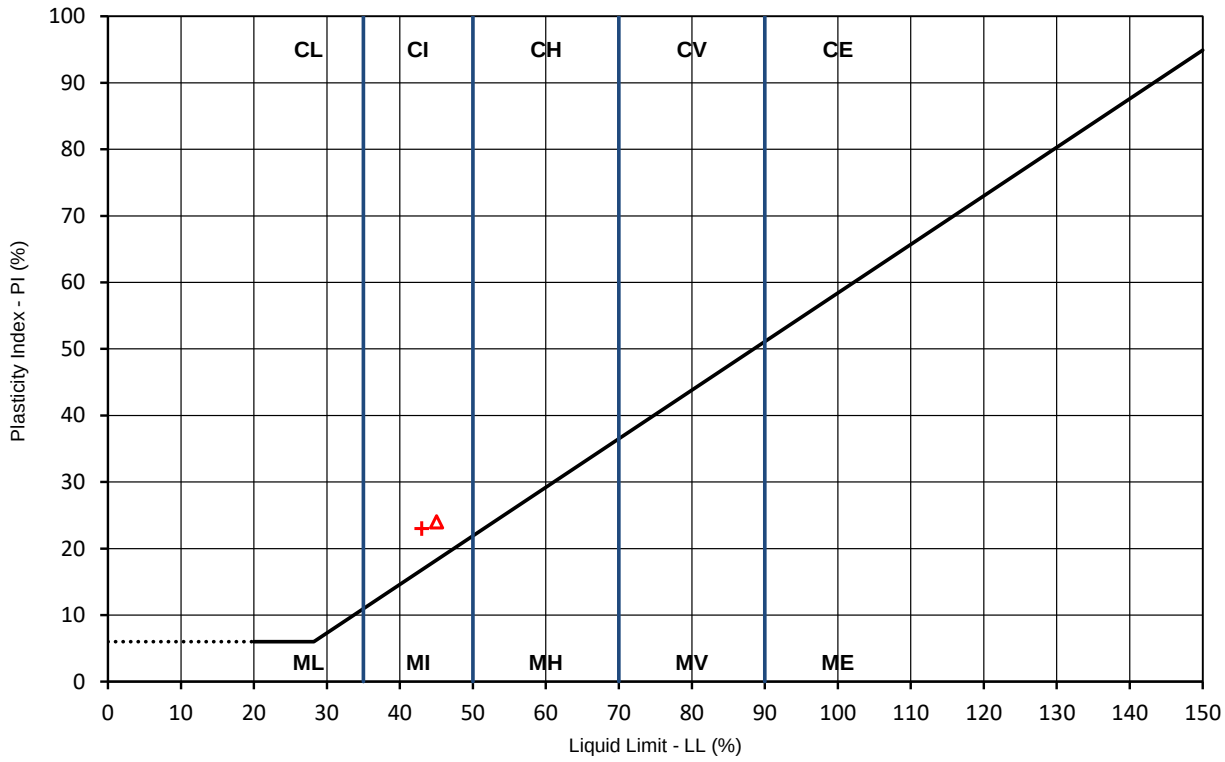
CHECKED **WNJ**

Geotechnical Engineering Limited

ATTERBERG LINE PLOT

CLIENT AMPLUS LTD

SITE CYRIL LE MARQUAND HOUSE, THE PARADE, JERSEY



	BH/TP No.	depth (m)	LL	PL	PI	remarks
	BH1	3.40	28	NP		
	BH1	7.50	22	NP		
△	BH1	10.00	45	21	24	
	BH2	5.50	29	NP		
+	BH2	9.00	43	20	23	
	BH3	7.00	33	NP		
	BH3	10.50	24	NP		

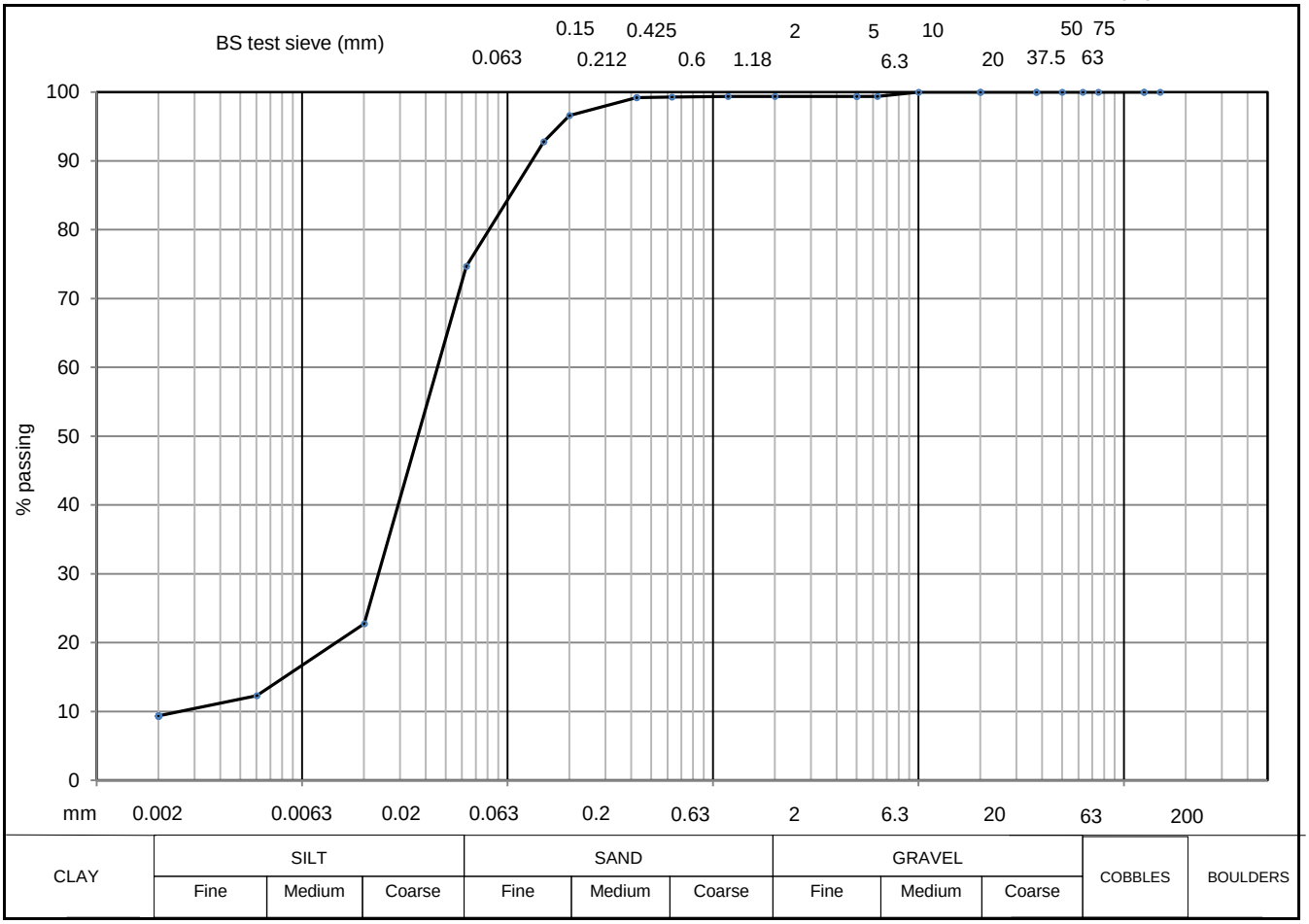
CONTRACT	CHECKED
36638	**WNJ**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	AMPLUS LTD	BH/TP No.	BH1
SITE	CYRIL LE MARQUAND HOUSE, THE PARADE, JERSEY	SAMPLE No./TYPE	30B
		SAMPLE DEPTH (m)	3.40
DESCRIPTION	Light brown slightly gravelly slightly sandy SILT	SPECIMEN TOP (m)	3.40
		SPECIMEN BASE (m)	4.00



soil type	% fraction
CLAY	9
SILT	65
SILT & CLAY	75
SAND	25
GRAVEL	1
COBBLE & BOULDER	0
test method(s)	5.2 & 5.4
test method	
5.2 - sieving	
5.3 - sedimentation by hydrometer	
5.4 - sedimentation by pipette	

BS test sieve (mm)	% passing
150	
75	
63	
50	
37.5	
20	
10	100
6.3	99

BS test sieve (mm)	% passing
5	99
2	99
1.18	99
0.63	99
0.425	99
0.2	97
0.15	93
0.063	75

BS test sieve (µm)	% finer
20	23
6	12
2	9

remarks

# denotes sample tested is smaller than that which is recommended in accordance wi h BS EN 17892

Particle density assigned an assumed value of 2.70 Mg/m3

CONTRACT	CHECKED
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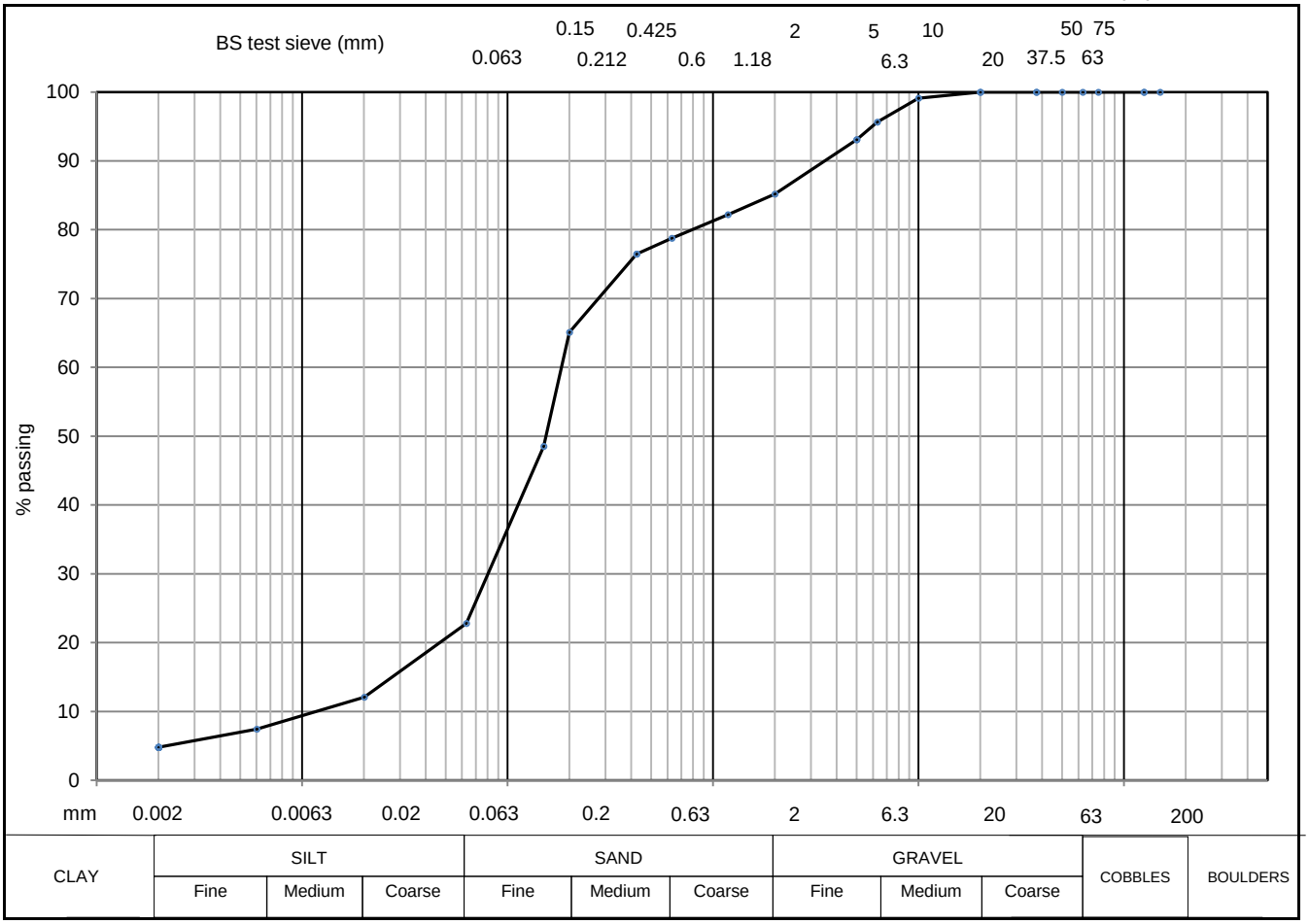
Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	AMPLUS LTD	BH/TP No.	BH1
SITE	CYRIL LE MARQUAND HOUSE, THE PARADE, JERSEY	SAMPLE No./TYPE	31B
		SAMPLE DEPTH (m)	7.50
DESCRIPTION	Light brown gravelly very silty SAND	SPECIMEN TOP (m)	7.50
		SPECIMEN BASE (m)	8.05



soil type	% fraction
CLAY	5
SILT	18
SILT & CLAY	23
SAND	62
GRAVEL	15
COBBLE & BOULDER	0
test method(s)	5.2 & 5.4
test method	
5.2 - sieving	
5.3 - sedimentation by hydrometer	
5.4 - sedimentation by pipette	

BS test sieve (mm)	% passing
150	
75	
63	
50	
37.5	
20	100
10	99
6.3	96

BS test sieve (mm)	% passing
5	93
2	85
1.18	82
0.63	79
0.425	76
0.2	65
0.15	49
0.063	23

BS test sieve (µm)	% finer
20	12
6	7
2	5

remarks

# denotes sample tested is smaller than that which is recommended in accordance wi h BS EN 17892

Particle density assigned an assumed value of 2.70 Mg/m3

CONTRACT	CHECKED
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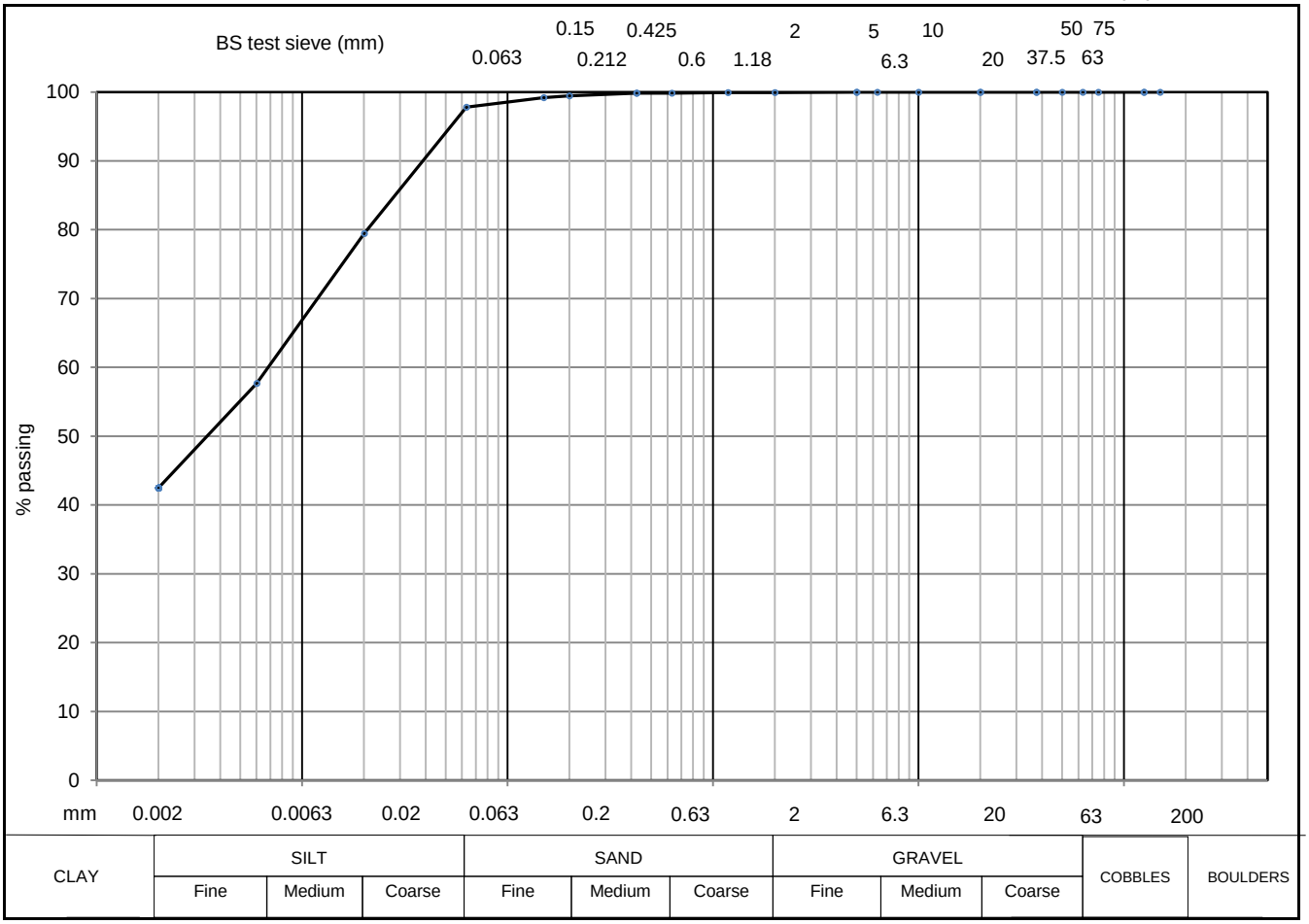
PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	AMPLUS LTD	BH/TP No.	BH1
SITE	CYRIL LE MARQUAND HOUSE, THE PARADE, JERSEY	SAMPLE No./TYPE	32B
		SAMPLE DEPTH (m)	10.00
DESCRIPTION	Brown mottled grey slightly sandy silty CLAY	SPECIMEN TOP (m)	10.00
		SPECIMEN BASE (m)	10.10



soil type	% fraction
CLAY	43
SILT	55
SILT & CLAY	98
SAND	2
GRAVEL	0
COBBLE & BOULDER	0
test method(s)	5.2 & 5.4

test method

5.2 - sieving

5.3 - sedimentation by hydrometer

5.4 - sedimentation by pipette

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	100	20	79
75		2	100	6	58
63		1.18	100	2	42
50		0.63	100		
37.5		0.425	100		
20		0.2	99		
10		0.15	99		
6.3		0.063	98		

remarks

# denotes sample tested is smaller than that which is recommended in accordance wi h BS EN 17892

Particle density assigned an assumed value of 2.70 Mg/m3

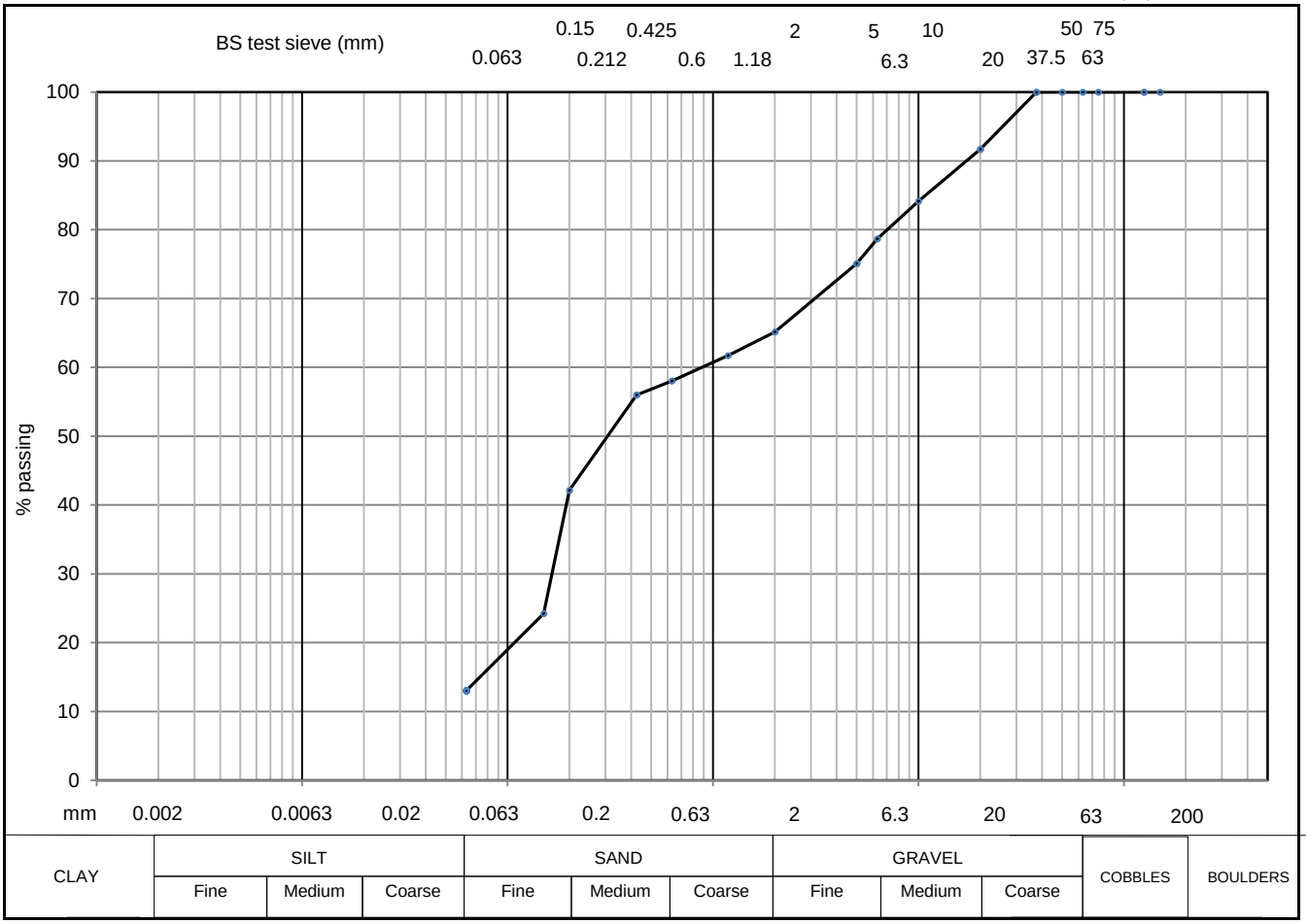
CONTRACT	CHECKED
36638	**WNJ**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	AMPLUS LTD	BH/TP No.	BH2
SITE	CYRIL LE MARQUAND HOUSE, THE PARADE, JERSEY	SAMPLE No./TYPE	34B
		SAMPLE DEPTH (m)	2.00
DESCRIPTION	Brown silty very gravelly SAND	SPECIMEN TOP (m)	2.00
		SPECIMEN BASE (m)	2.65



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	13
SAND	52
GRAVEL	35
COBBLE & BOULDER	0
test method(s)	5.2

test method

5.2 - sieving

5.3 - sedimentation by hydrometer

5.4 - sedimentation by pipette

BS test sieve (mm)	% passing
150	
75	
63	
50	
37.5	100
20	92
10	84
6.3	79

BS test sieve (mm)	% passing
5	75
2	65
1.18	62
0.63	58
0.425	56
0.2	42
0.15	24
0.063	13

BS test sieve (µm)	% finer
20	
6	
2	

remarks

# denotes sample tested is smaller than that which is recommended in accordance wi h BS EN 17892

Particle density assigned an assumed value of 2.70 Mg/m3

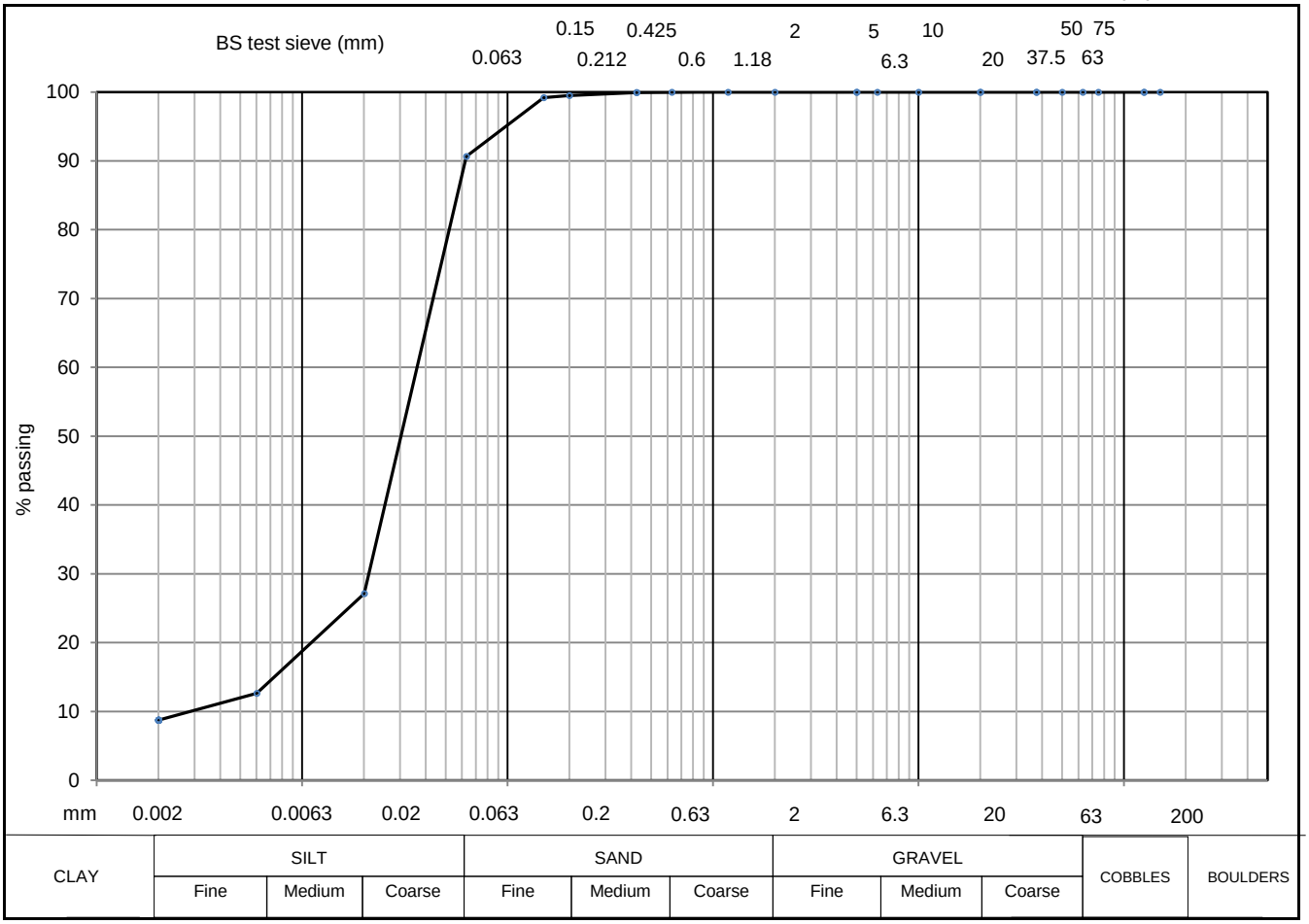
CONTRACT	CHECKED
36638	**WNJ**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	AMPLUS LTD	BH/TP No.	BH2
SITE	CYRIL LE MARQUAND HOUSE, THE PARADE, JERSEY	SAMPLE No./TYPE	35B
		SAMPLE DEPTH (m)	5.50
DESCRIPTION	Oragnish brown and grey slightly sandy SILT	SPECIMEN TOP (m)	5.50
		SPECIMEN BASE (m)	5.95



soil type	% fraction
CLAY	9
SILT	82
SILT & CLAY	91
SAND	9
GRAVEL	0
COBBLE & BOULDER	0
test method(s)	5.2 & 5.4
test method	
5.2 - sieving	
5.3 - sedimentation by hydrometer	
5.4 - sedimentation by pipette	

BS test sieve (mm)	% passing
150	
75	
63	
50	
37.5	
20	
10	
6.3	

BS test sieve (mm)	% passing
5	
2	
1.18	100
0.63	100
0.425	100
0.2	99
0.15	99
0.063	91

BS test sieve (µm)	% finer
20	27
6	13
2	9

remarks

# denotes sample tested is smaller than that which is recommended in accordance wi h BS EN 17892

Particle density assigned an assumed value of 2.70 Mg/m3

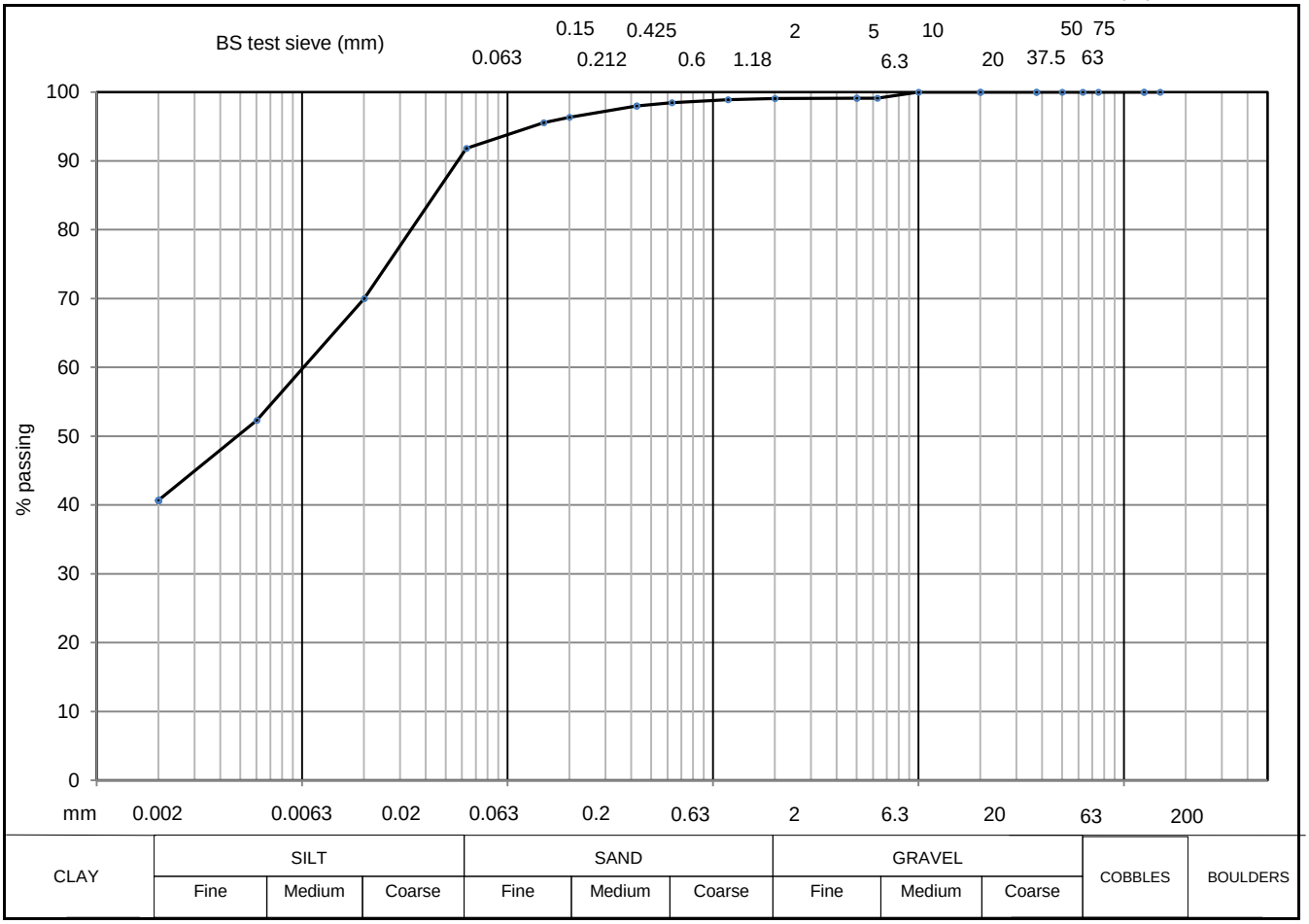
CONTRACT	CHECKED
36638	**WNJ**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	AMPLUS LTD	BH/TP No.	BH2
SITE	CYRIL LE MARQUAND HOUSE, THE PARADE, JERSEY	SAMPLE No./TYPE	36B
		SAMPLE DEPTH (m)	9.00
DESCRIPTION	Greyish brown slightly gravelly slightly sandy silty CLAY	SPECIMEN TOP (m)	9.00
		SPECIMEN BASE (m)	9.50



soil type	% fraction
CLAY	41
SILT	51
SILT & CLAY	92
SAND	7
GRAVEL	1
COBBLE & BOULDER	0
test method(s)	5.2 & 5.4
test method	
5.2 - sieving	
5.3 - sedimentation by hydrometer	
5.4 - sedimentation by pipette	

BS test sieve (mm)	% passing
150	
75	
63	
50	
37.5	
20	
10	100
6.3	99

BS test sieve (mm)	% passing
5	99
2	99
1.18	99
0.63	98
0.425	98
0.2	96
0.15	96
0.063	92

BS test sieve (µm)	% finer
20	70
6	52
2	41

remarks

# denotes sample tested is smaller than that which is recommended in accordance wi h BS EN 17892

Particle density assigned an assumed value of 2.70 Mg/m3

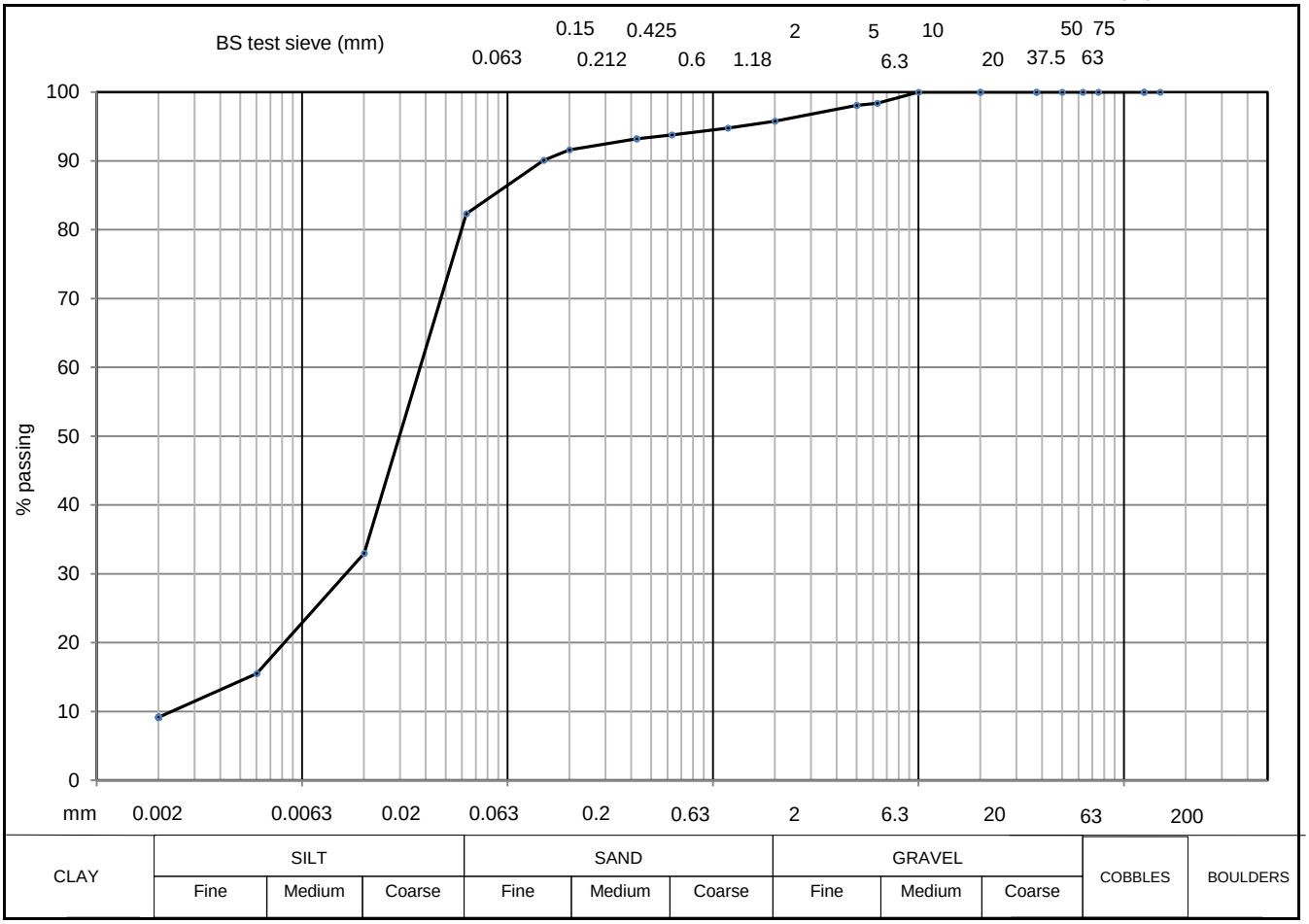
CONTRACT	CHECKED
36638	**WNJ**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	AMPLUS LTD	BH/TP No.	BH3
SITE	CYRIL LE MARQUAND HOUSE, THE PARADE, JERSEY	SAMPLE No./TYPE	31B
		SAMPLE DEPTH (m)	7.00
DESCRIPTION	Grey slightly gravelly slightly sandy SILT	SPECIMEN TOP (m)	7.00
		SPECIMEN BASE (m)	7.42



soil type	% fraction
CLAY	9
SILT	73
SILT & CLAY	82
SAND	13
GRAVEL	4
COBBLE & BOULDER	0
test method(s)	5.2 & 5.4
test method	
5.2 - sieving	
5.3 - sedimentation by hydrometer	
5.4 - sedimentation by pipette	

BS test sieve (mm)	% passing
150	
75	
63	
50	
37.5	
20	
10	100
6.3	98

BS test sieve (mm)	% passing
5	98
2	96
1.18	95
0.63	94
0.425	93
0.2	92
0.15	90
0.063	82

BS test sieve (µm)	% finer
20	33
6	16
2	9

remarks

# denotes sample tested is smaller than that which is recommended in accordance wi h BS EN 17892

Particle density assigned an assumed value of 2.70 Mg/m3

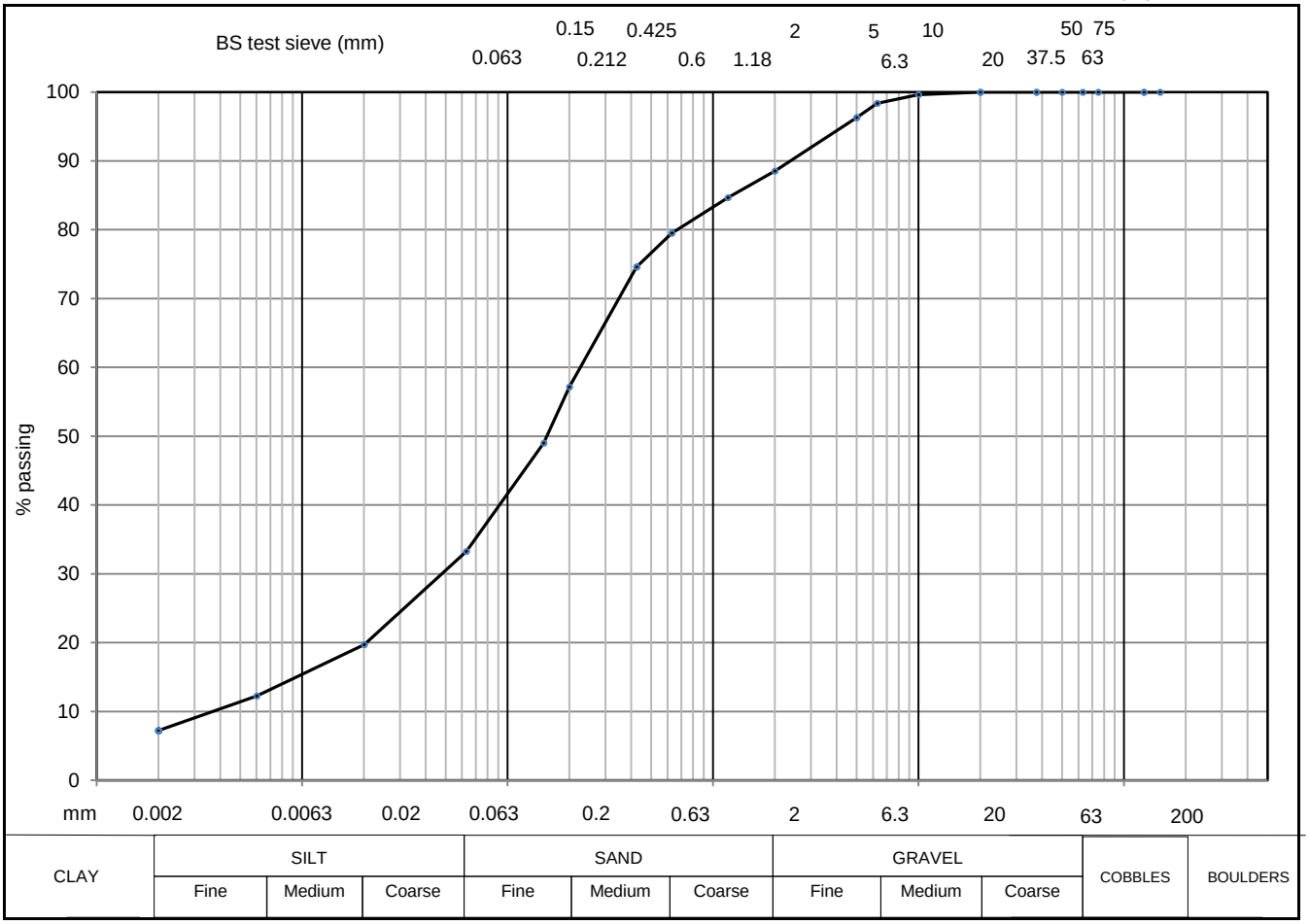
CONTRACT	CHECKED
36638	**WNJ**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	AMPLUS LTD	BH/TP No.	BH3
SITE	CYRIL LE MARQUAND HOUSE, THE PARADE, JERSEY	SAMPLE No./TYPE	32B
		SAMPLE DEPTH (m)	10.50
DESCRIPTION	Grey gravelly very silty SAND	SPECIMEN TOP (m)	10.50
		SPECIMEN BASE (m)	11.00



soil type	% fraction
CLAY	7
SILT	26
SILT & CLAY	33
SAND	55
GRAVEL	11
COBBLE & BOULDER	0
test method(s)	5.2 & 5.4
test method	
5.2 - sieving	
5.3 - sedimentation by hydrometer	
5.4 - sedimentation by pipette	

BS test sieve (mm)	% passing
150	
75	
63	
50	
37.5	
20	100
10	100
6.3	98

BS test sieve (mm)	% passing
5	96
2	89
1.18	85
0.63	80
0.425	75
0.2	57
0.15	49
0.063	33

BS test sieve (µm)	% finer
20	20
6	12
2	7

remarks

# denotes sample tested is smaller than that which is recommended in accordance wi h BS EN 17892

Particle density assigned an assumed value of 2.70 Mg/m3

CONTRACT	CHECKED
36638	**WNJ**

Geotechnical Engineering Limited

UNIAXIAL COMPRESSIVE STRENGTH OF ROCK

I.S.R.M. Suggested Methods : 2007 Edition

CLIENT AMPLUS LTD

SITE CYRIL LE MARQUAND HOUSE, THE PARADE, JERSEY

borehole /trial pit no.	sample no /type	sample depth (m)	specimen depth (m)	diameter D (mm)	height H (mm)	H/D	moisture content (%)	bulk density (Mg/m3)	loading rate (kN/min)	time to failure (min:sec)	UCS (MPa)	description, codes and remarks
BH3	30C	3.65	3.65	83.1	181.8	2.19	6	2.46	20	09:14	44.05	Grey CONGLOMERATE, P, Ax. H/D ratio falls outside ISRM specification
BH3	33C	11.13	11.70	83.2	219.2	2.63	0.3	2.67	40	08:16	68.89	Grey LIMESTONE, P, Ax.

general remarks

sample obtained from vertically drilled core (unless specified), test machine - VJT6000

coding:

moisture condition	sample storage	failure mode
N - natural moisture content	U - not wrapped	Ax - axial cleavage
F - fully saturated	F - wrapped in cling film/foil	Ca - cataclasis
S - soaked	W - waxed	Sh - shear
P - air/partially dried	G - contained in sealed Geoline	Ex - explosive
		Ot - other

CONTRACT	CHECKED
36638	**WNJ**

Geotechnical Engineering Limited

POINT LOAD STRENGTH TEST

I.S.R.M. Suggested Methods : 2007 Edition

CLIENT AMPLUS LTD

SITE CYRIL LE MARQUAND HOUSE, THE PARADE, JERSEY

borehole /trial pit no.	sample depth (m)	test type	test orien-ta ion	moisture condition	width W (mm)	length L (mm)	platen sep. D (mm)	failure load P (kN)	equiv. diam. De (mm)	Is (MPa)	size factor	Is(50) (MPa)	description and remarks
BH1	14.00	A	X		90		45	1.18	71.81	0.23	1.18	0.27	Grey SILTSTONE
BH1	14.00	D	Y	P		50	90	5.18	90.00	0.64	1.30	0.83	Grey SILTSTONE
BH1	14.40	A	X		90		45	4.61	71.81	0.89	1.18	1.05	Grey SILTSTONE
BH1	14.40	D	Y	P		50	90	10.57	90.00	1.30	1.30	1.70	Grey SILTSTONE
BH1	16.00	A	X		90		45	2.80	71.81	0.54	1.18	0.64	Grey LIMESTONE
BH1	16.00	D	Y	P		50	90	13.37	90.00	1.65	1.30	2.15	Grey LIMESTONE
BH1	16.20	D	Y	P		50	90	10.79	90.00	1.33	1.30	1.74	Grey SILTSTONE
BH2	12.70	A	X		90		50	0.67	75.69	0.12	1.21	0.14	Grey SILTSTONE
BH2	12.70	D	Y	P		60	90	0.89	90.00	0.11	1.30	0.14	Grey SILTSTONE
BH2	14.62	D	Y	P		50	90	3.32	90.00	0.41	1.30	0.53	Grey SILTSTONE
BH3	13.65	D	Y	P		60	90	25.94	90.00	3.20	1.30	4.17	Grey LIMESTONE
BH3	15.70	D	Y	P		50	90	25.23	90.00	3.11	1.30	4.06	Grey LIMESTONE
BH3	4.60	D	Y	P		50	80	15.49	80.00	2.42	1.24	2.99	Grey CONGLOMERATE
BH3	4.60	A	X	P	80		40	11.01	63.83	2.70	1.12	3.02	Grey CONGLOMERATE

general remarks

tests carried out in accordance with I.S.R.M.(2007): Suggested Methods for Determining Point Load Strength

test machine PLM02

test type	test orientation relative to discontinuities		moisture condition	CONTRACT	CHECKED
A - axial	X - perpendicular	U - unknown	N - natural moisture content		
D - diametral	Y - parallel		P - partially air dried	**36638**	**WNJ**
I - irregular lump	Z - oblique		S - soaked		

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

UKAS TESTING
2183

Final Report

Report No.:	21-27299-1
Initial Date of Issue:	12-Aug-2021
Client	Geotechnical Engineering Ltd
Client Address:	Centurion House Olympus Park Quedgeley Gloucester Gloucestershire GL2 4NF
Contact(s):	GEL Tom Best
Project	36638 Cyril Le Marquand House, The Parade, Jersey

Quotation No.:		**Date Received:**	09-Aug-2021
Order No.:	5327	**Date Instructed:**	09-Aug-2021
No. of Samples:	6		
Turnaround (Wkdays):	5	**Results Due:**	13-Aug-2021
Date Approved:	12-Aug-2021		

[redacted]

[redacted]

[redacted] Glynn Harvey, Technical Manager

Results - Soil

Project: 36638 Cyril Le Marquand House, The Parade, Jersey

Client: Geotechnical Engineering Ltd			**Chemtest Job No.:**		21-27299	21-27299	21-27299	21-27299	21-27299	21-27299
Quotation No.:			**Chemtest Sample ID.:**		1256022	1256023	1256024	1256025	1256026	1256027
Order No.: 5327			Client Sample Ref.:		30	31	32	34	35	32
			Client Sample ID.:		3.40	7.50	10.00	2.00	5.50	7.00
			Sample Location:		BH1	BH1	BH1	BH2	BH2	BH3
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		4.00	8.05	10.50	2.65	5.95	7.42
			Date Sampled:		05-Aug-2021	05-Aug-2021	05-Aug-2021	05-Aug-2021	05-Aug-2021	05-Aug-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Moisture	N	2030	%	0.020	18	16	14	6.4	16	17
pH (2.5:1)	N	2010		4.0	8.9	9.0	8.7	9.0	8.7	8.2
Magnesium (Water Soluble)	N	2120	g/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.012
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010	0.12	0.035	< 0.010	0.34
Total Sulphur	U	2175	%	0.010	0.010	< 0.010	0.090	0.050	0.010	0.20
Chloride (Water Soluble)	U	2220	g/l	0.010	< 0.010	< 0.010	0.023	< 0.010	< 0.010	0.010
Nitrate (Water Soluble)	N	2220	g/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Sulphate (Acid Soluble)	U	2430	%	0.010	< 0.010	< 0.010	0.015	0.014	< 0.010	0.051

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measuremernt by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

AMPLUS Ltd
Unit 1 Thistle Grove
St. Lawrence
Jersey
Jersey
JE3 1NN

Attention: Matthew Warner

CERTIFICATE OF ANALYSIS

Date of report Generation:	26 July 2021
Customer:	AMPLUS Ltd
Sample Delivery Group (SDG):	210715-104
Your Reference:	2033
Location:	Cyril Le Marchand House
Report No:	607111

This report has been revised and directly supersedes 606949 in its entirety.

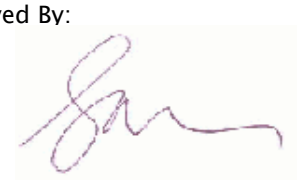
We received 1 sample on Thursday July 15, 2021 and 1 of these samples were scheduled for analysis which was completed on Sunday July 25, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

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

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.

Approved By:



Sonia McWhan
Operations Manager

SDG:	210715-104	**Client Reference:**	2033	**Report Number:**	607111
Location:	Cyril Le Marchand Hou	**Order Number:**	2033	**Superseded Report:**	606949

Received Sample Overview

Lab Sample No(s)	Cu tomer Sample Ref	AGS Ref.	Depth (m)	Sampled Date
24638237	BH3	ES2	1.20 - 1.25	05/07/2021

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

CERTIFICATE OF ANALYSIS

Validated

SDG:	210715-104	**Client Reference:**	2033	**Report Number:**	607111
Location:	Cyril Le Marchand Hor	**Order Number:**	2033	**Superseded Report:**	606949

Results Legend

X Test

N No Determination Possible

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

Lab Sample No(s)			24638237			
Customer Sample Reference			BH3			
AGS Reference			ES2			
Depth (m)			1.20 - 1.25			
Container			1kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 1		X		
Anions by Kone (w)	All	NDPs: 0 Tests: 1	X			
CEN Readings	All	NDPs: 0 Tests: 1	X			
Coronene	All	NDPs: 0 Tests: 1		X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1	X			
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1	X			
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1		X		
Fluoride	All	NDPs: 0 Tests: 1	X			
Loss on Ignition in soils	All	NDPs: 0 Tests: 1		X		
Mercury Dissolved	All	NDPs: 0 Tests: 1	X			
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1		X		
PAH by GCMS	All	NDPs: 0 Tests: 1		X		
PCBs by GCMS	All	NDPs: 0 Tests: 1		X		
pH	All	NDPs: 0 Tests: 1		X		
Phenols by HPLC (W)	All	NDPs 0 Tests: 1	X			

CERTIFICATE OF ANALYSIS

SDG:	210715-104	**Client Reference:**	2033	**Report Number:**	607111
Location:	Cyril Le Marchand Hor	**Order Number:**	2033	**Superseded Report:**	606949

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
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LE - Land Leachate
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US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
			24638237	BH3	ES2	1.20 - 1.25	1kg TUB with Handle	S
							250g Amber Jar (ALE210)	S
							60g VOC (ALE215)	S
Sample description	All	NDPs: 0 Tests: 1		X				
Total Dissolved Solids	All	NDPs: 0 Tests: 1	X					
Total Organic Carbon	All	NDPs: 0 Tests: 1		X				
VOC MS (S)	All	NDPs: 0 Tests: 1			X			

Sample Descriptions

Grain Sizes

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

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24638237	BH3	1 20 1 25	Dark Brown	Sandy Loam	Stones	None

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

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

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

CERTIFICATE OF ANALYSIS

Validated

SDG:	210715-104	**Client Reference:**	2033	**Report Number:**	607111
Location:	Cyril Le Marchand Hor	**Order Number:**	2033	**Superseded Report:**	606949

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH3
	BH3 ES2
Depth (m)	1.20 - 1.25
Sample Type	Soil/Solid (S)
Date Sampled	05/07/2021
Sampled Time	00:00
Date Received	15/07/2021
SDG Ref	210715-104
Lab Sample No.(s)	24638237
AGS Reference	ES2

Component	LOD/Units	Method	
Moisture Content Ratio (% of as received sample)	%	PM024	8.2
Loss on ignition	<0.7 %	TM018	1.68 M
Organic Carbon, Total	<0.2 %	TM132	<0.2 M
pH	1 pH Units	TM133	8.23 M
PCB congener 28	<3 µg/kg	TM168	<3 M
PCB congener 52	<3 µg/kg	TM168	<3 M
PCB congener 101	<3 µg/kg	TM168	<3 M
PCB congener 118	<3 µg/kg	TM168	<3 M
PCB congener 138	<3 µg/kg	TM168	<3 M
PCB congener 153	<3 µg/kg	TM168	<3 M
PCB congener 180	<3 µg/kg	TM168	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21
ANC @ pH 4	<0.03 mol/kg	TM182	0.0421
ANC @ pH 6	<0.03 mol/kg	TM182	<0.03
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10
Coronene	<200 µg/kg	TM410	<200
EPH Surrogate % recovery**	%	TM415	93.2
Mineral Oil >C10-C40	<5 mg/kg	TM415	<5

CERTIFICATE OF ANALYSIS

SDG:	210715-104	**Client Reference:**	2033	**Report Number:**	607111
Location:	Cyril Le Marchand Hor	**Order Number:**	2033	**Superseded Report:**	606949

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref. / Depth (m) / Sample Type / Date Sampled / Sampled Time / Date Received / SDG Ref / Lab Sample No.(s) / AGS Reference				
			BH3 BH3 ES2 1.20 - 1.25 Soil/Solid (S) 05/07/2021 00:00 15/07/2021 210715-104 24638237 ES2				
Dibromofluoromethane**	%	TM116	102				
Toluene-d8**	%	TM116	101				
4-Bromofluorobenzene**	%	TM116	100				
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10 M				
Benzene	<9 µg/kg	TM116	<9 M				
Toluene	<7 µg/kg	TM116	<7 M				
Ethylbenzene	<4 µg/kg	TM116	<4 M				
p/m-Xylene	<10 µg/kg	TM116	<10 #				
o-Xylene	<10 µg/kg	TM116	<10 M				
Sum of BTEX	<40 µg/kg	TM116	<40				

CERTIFICATE OF ANALYSIS

SDG:	210715-104	**Client Reference:**	2033	**Report Number:**	607111
Location:	Cyril Le Marchand Hou	**Order Number:**	2033	**Superseded Report:**	606949

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Cyril Le Marchand House
Mass Sample taken (kg)	0.097	**Natural Moisture Content (%)**	8.14
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	92.5
Particle Size <4mm	>95%		

Case	
SDG	210715 104
Lab Sample Number(s)	24638237
Sampled Date	05 Jul 2021
Customer Sample Ref.	BH3 ES2
Depth (m)	1 20 1 25

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	1.68	-	-	10
Sum of BTEX (mg/kg)	<0.04	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.23	-	>6	-
ANC to pH 6 (mol/kg)	<0.03	-	-	-
ANC to pH 4 (mol/kg)	0.0421	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00818	<0.0005	0.0818	<0.005	0.5	2	25
Barium	0.00257	<0.0002	0.0257	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0 04	1	5
Chromium	0 001	0 001	<0 01	0 01	0.5	10	70
Copper	0.000389	<0.0003	0.00389	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	<0.0004	<0.0004	<0.004	<0.004	0 4	10	40
Lead	0 0002	0 0002	0 002	0 002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	0 5	0 5	5	5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	27.8	<5	278	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	17-Jul-2021
pH (pH Units)	8.25
Conductivity (µS/cm)	34.60
Temperature (°C)	22.00
Volume Leachant (Litres)	0.893

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

26/07/2021 16:26:13

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	BS 1377: Part 3 1990	Determination of Loss on Ignition
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM182	CEN/TC 292 - WI 292046-chacterization of waste-leaching Behaviour Tests- Acid and Base Neutralization Capacity Test	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

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

SDG:	210715-104	**Client Reference:**	2033	**Report Number:**	607111
Location:	Cyril Le Marchand Hor	**Order Number:**	2033	**Superseded Report:**	606949

Test Completion Dates

Lab Sample No(s)	24638237
Cu tomer Sample Ref	BH3
AGS Ref.	ES2
Depth	1.20 - 1.25
Type	Soil/Solid (S)
ANC at pH4 and ANC at pH 6	19-Jul-2021
Anions by Kone (w)	21-Jul-2021
CEN 10:1 Leachate (1 Stage)	17-Jul-2021
CEN Readings	20-Jul 2021
Coronene	18-Jul-2021
Dissolved Metals by ICP-MS	20-Jul-2021
Dissolved Organic/Inorganic Carbon	25-Jul-2021
EPH by GCxGC-FID	20-Jul-2021
Fluoride	20-Jul-2021
Loss on Ignition in soils	21-Jul-2021
Mercury Dissolved	21-Jul-2021
Moisture at 105C	17-Jul-2021
PAH 16 & 17 Calc	19-Jul-2021
PAH by GCMS	19-Jul-2021
PCBs by GCMS	19-Jul-2021
pH	16-Jul-2021
Phenols by HPLC (W)	21-Jul-2021
Sample description	15-Jul-2021
Total Dissolved Solids	21-Jul-2021
Total Organic Carbon	20-Jul-2021
VOC MS (S)	18-Jul-2021

CERTIFICATE OF ANALYSIS

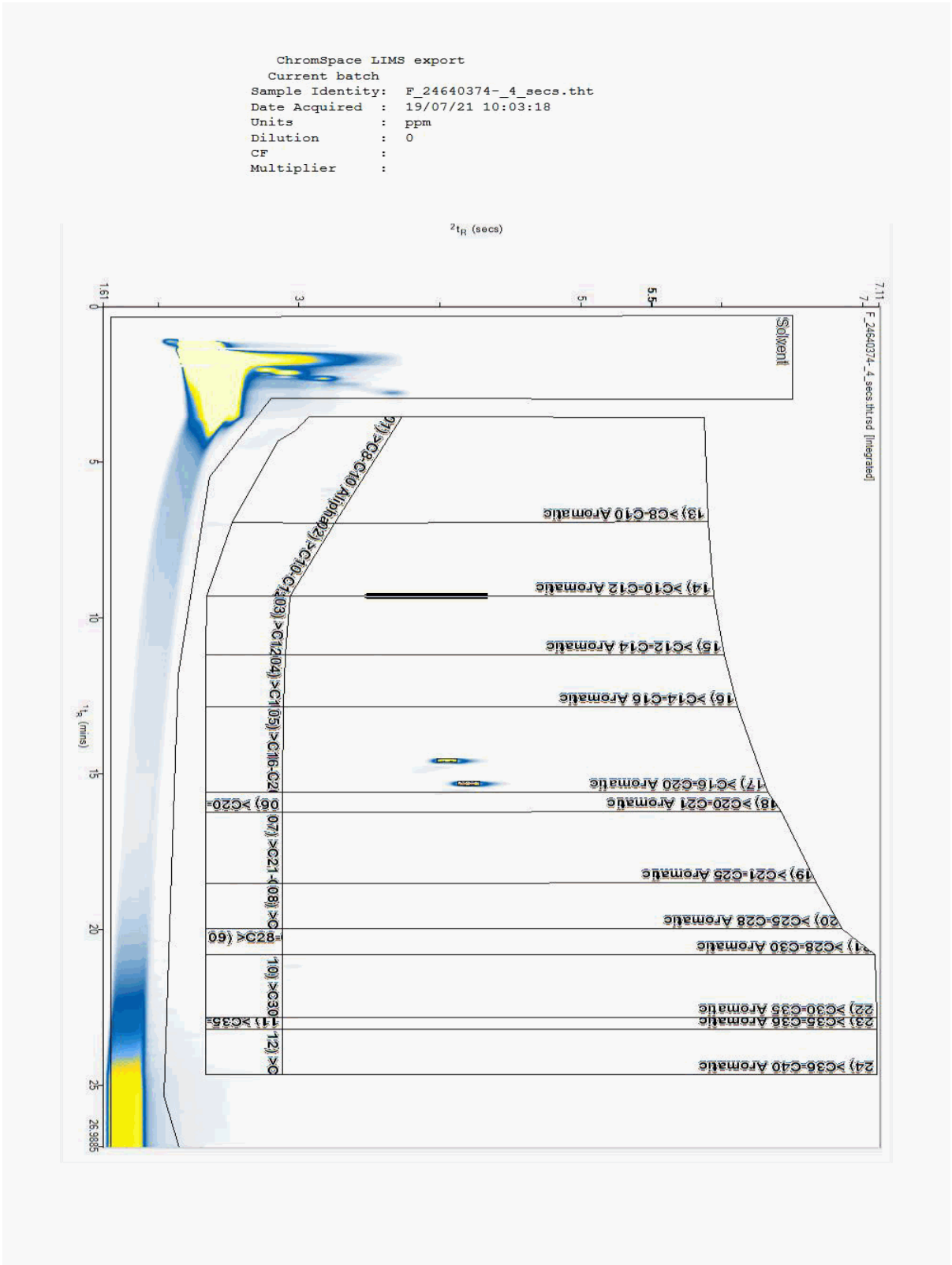
SDG:	210715-104	**Client Reference:**	2033	**Report Number:**	607111
Location:	Cyril Le Marchand Hou	**Order Number:**	2033	**Superseded Report:**	606949

Chromatogram

Analysis: EPH by GCxGC FID

Sample No : 24640374
Sample ID : BH3

Depth : 1.20 - 1.25



ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
210715-104	24638237	BH3	26/07/2021	Sample ID Change	ES 1	ES 2	606949

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part hereof un il the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remedia ion fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detec ion limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as he analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically iden ify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive iden ification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

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

18. **Sample Deviations**

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

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

19. **Asbestos**

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

Identification of Asbestos in Bulk Materials & Soils

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

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

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

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

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and wi h aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

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

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

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
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Website: www.alsenvironmental.co.uk

AMPLUS Ltd
Unit 1 Thistle Grove
St. Lawrence
Jersey
Jersey
JE3 1NN

Attention: Matthew Warner

CERTIFICATE OF ANALYSIS

Date of report Generation:	26 July 2021
Customer:	AMPLUS Ltd
Sample Delivery Group (SDG):	210715-107
Your Reference:	2033
Location:	Cyril Le Marquand House
Report No:	607105

This report has been revised and directly supersedes 606950 in its entirety.

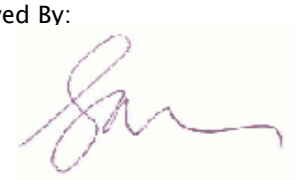
We received 1 sample on Thursday July 15, 2021 and 1 of these samples were scheduled for analysis which was completed on Sunday July 25, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

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

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.

Approved By:



Sonia McWhan
Operations Manager

SDG:	210715-107	**Client Reference:**	2033	**Report Number:**	607105
Location:	Cyril Le Marquand Ho	**Order Number:**	2033	**Superseded Report:**	606950

Received Sample Overview

Lab Sample No(s)	Cu tomer Sample Ref	AGS Ref.	Depth (m)	Sampled Date
24638277	BH2	ES2	0.65 - 0.70	08/07/2021

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

CERTIFICATE OF ANALYSIS

SDG:	210715-107	**Client Reference:**	2033	**Report Number:**	607105
Location:	Cyril Le Marquand Ho	**Order Number:**	2033	**Superseded Report:**	606950

Results Legend

X Test

N No Determination Possible

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

Lab Sample No(s)			24638277			
Customer Sample Reference			BH2			
AGS Reference			ES2			
Depth (m)			0.65 - 0.70			
Container			1kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 1		X		
Anions by Kone (w)	All	NDPs: 0 Tests: 1	X			
CEN Readings	All	NDPs: 0 Tests: 1	X			
Coronene	All	NDPs: 0 Tests: 1		X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1	X			
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1	X			
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1		X		
Fluoride	All	NDPs: 0 Tests: 1	X			
Loss on Ignition in soils	All	NDPs: 0 Tests: 1		X		
Mercury Dissolved	All	NDPs: 0 Tests: 1	X			
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1		X		
PAH by GCMS	All	NDPs: 0 Tests: 1		X		
PCBs by GCMS	All	NDPs: 0 Tests: 1		X		
pH	All	NDPs: 0 Tests: 1		X		
Phenols by HPLC (W)	All	NDPs 0 Tests: 1	X			

CERTIFICATE OF ANALYSIS

SDG:	210715-107	**Client Reference:**	2033	**Report Number:**	607105
Location:	Cyril Le Marquand Ho	**Order Number:**	2033	**Superseded Report:**	606950

Results Legend

X Test

N No Determination Possible

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

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
			24638277	BH2	ES2	0.65 - 0.70	1kg TUB with Handle	S
							250g Amber Jar (ALE210)	S
							60g VOC (ALE215)	S
Sample description	All	NDPs: 0 Tests: 1		X				
Total Dissolved Solids	All	NDPs: 0 Tests: 1	X					
Total Organic Carbon	All	NDPs: 0 Tests: 1		X				
VOC MS (S)	All	NDPs: 0 Tests: 1			X			

Sample Descriptions

Grain Sizes

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

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24638277	BH2	0 65 0 70	Dark Brown	Sandy Loam	Stones	None

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

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

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

CERTIFICATE OF ANALYSIS

SDG:	210715-107	**Client Reference:**	2033	**Report Number:**	607105
Location:	Cyril Le Marquand Ho	**Order Number:**	2033	**Superseded Report:**	606950

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref. / Depth (m) / Sample Type / Date Sampled / Sampled Time / Date Received / SDG Ref / Lab Sample No.(s) / AGS Reference					
			BH2 BH2 ES2 0.65 - 0.70 Soil/Solid (S) 08/07/2021 00:00 15/07/2021 210715-107 24638277 ES2					
Moisture Content Ratio (% of as received sample)	%	PM024	21					
Loss on ignition	<0.7 % M	TM018	38.8					
Organic Carbon, Total	<0.2 % M	TM132	<0.2					
pH	1 pH Units M	TM133	8.65					
PCB congener 28	<3 µg/kg M	TM168	<3					
PCB congener 52	<3 µg/kg M	TM168	<3					
PCB congener 101	<3 µg/kg M	TM168	<3					
PCB congener 118	<3 µg/kg M	TM168	<3					
PCB congener 138	<3 µg/kg M	TM168	<3					
PCB congener 153	<3 µg/kg M	TM168	<3					
PCB congener 180	<3 µg/kg M	TM168	<3					
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21					
ANC @ pH 4	<0.03 mol/kg	TM182	0.678					
ANC @ pH 6	<0.03 mol/kg	TM182	0.18					
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10					
Coronene	<200 µg/kg	TM410	<200					
EPH Surrogate % recovery**	%	TM415	90.6					
Mineral Oil >C10-C40	<5 mg/kg	TM415	228					

CERTIFICATE OF ANALYSIS

SDG:	210715-107	**Client Reference:**	2033	**Report Number:**	607105
Location:	Cyril Le Marquand Ho	**Order Number:**	2033	**Superseded Report:**	606950

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BH2	BH2 ES2	0.65 - 0.70	Soil/Solid (S)	08/07/2021	00:00	15/07/2021	210715-107	24638277	ES2
Dibromofluoromethane**	%	TM116	111								
Toluene-d8**	%	TM116	98.9								
4-Bromofluorobenzene**	%	TM116	91.4								
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<100 M								
Benzene	<9 µg/kg	TM116	<90 M								
Toluene	<7 µg/kg	TM116	<70 M								
Ethylbenzene	<4 µg/kg	TM116	<40 M								
p/m-Xylene	<10 µg/kg	TM116	<100 #								
o-Xylene	<10 µg/kg	TM116	<100 M								
Sum of BTEX	<40 µg/kg	TM116	<400								

CERTIFICATE OF ANALYSIS

SDG:	210715-107	**Client Reference:**	2033	**Report Number:**	607105
Location:	Cyril Le Marquand Ho	**Order Number:**	2033	**Superseded Report:**	606950

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Cyril Le Marquand House
Mass Sample taken (kg)	0.117	**Natural Moisture Content (%)**	29.9
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	77
Particle Size <4mm	>95%		

Case	
SDG	210715 107
Lab Sample Number(s)	24638277
Sampled Date	08 Jul 2021
Customer Sample Ref.	BH2 ES2
Depth (m)	0 65 0 70

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	38.8	-	-	10
Sum of BTEX (mg/kg)	<0.4	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	228	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.65	-	>6	-
ANC to pH 6 (mol/kg)	0.18	-	-	-
ANC to pH 4 (mol/kg)	0.678	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.0151	<0.0005	0.151	<0.005	0.5	2	25
Barium	0.00767	<0.0002	0.0767	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0 04	1	5
Chromium	0 001	0 001	<0 01	0 01	0.5	10	70
Copper	0.00255	<0.0003	0.0255	<0.003	2	50	100
Mercury Dissolved (CVAF)	0.000012	<0.00001	0.00012	<0.0001	0.01	0.2	2
Molybdenum	0.0188	<0.003	0.188	<0.03	0.5	10	30
Nickel	0.00136	<0.0004	0.0136	<0.004	0 4	10	40
Lead	0 00105	0 0002	0 0105	0 002	0.5	10	50
Antimony	0.00489	<0.001	0.0489	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00147	<0.001	0.0147	<0.01	4	50	200
Chloride	2.5	<2	25	<20	800	15000	25000
Fluoride	0 5	0 5	5	5	10	150	500
Sulphate (soluble)	24.8	<2	248	<20	1000	20000	50000
Total Dissolved Solids	114	<5	1140	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.35	<3	43.5	<30	500	800	1000

Leach Test Information

Date Prepared	17-Jul-2021
pH (pH Units)	8.38
Conductivity (µS/cm)	134.00
Temperature (°C)	21.90
Volume Leachant (Litres)	0.873

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

26/07/2021 16:15:54

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	BS 1377: Part 3 1990	Determination of Loss on Ignition
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM182	CEN/TC 292 - WI 292046-chacterization of waste-leaching Behaviour Tests- Acid and Base Neutralization Capacity Test	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

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

Test Completion Dates

Lab Sample No(s)	24638277
Cu tomer Sample Ref	BH2
AGS Ref.	ES2
Depth	0.65 - 0.70
Type	Soil/Solid (S)
ANC at pH4 and ANC at pH 6	19-Jul-2021
Anions by Kone (w)	21-Jul-2021
CEN 10:1 Leachate (1 Stage)	17-Jul-2021
CEN Readings	20-Jul 2021
Coronene	18-Jul-2021
Dissolved Metals by ICP-MS	20-Jul-2021
Dissolved Organic/Inorganic Carbon	25-Jul-2021
EPH by GCxGC-FID	20-Jul-2021
Fluoride	20-Jul-2021
Loss on Ignition in soils	20-Jul-2021
Mercury Dissolved	21-Jul-2021
Moisture at 105C	17-Jul-2021
PAH 16 & 17 Calc	19-Jul-2021
PAH by GCMS	19-Jul-2021
PCBs by GCMS	19-Jul-2021
pH	16-Jul-2021
Phenols by HPLC (W)	21-Jul-2021
Sample description	15-Jul-2021
Total Dissolved Solids	20-Jul-2021
Total Organic Carbon	20-Jul-2021
VOC MS (S)	19-Jul-2021

CERTIFICATE OF ANALYSIS

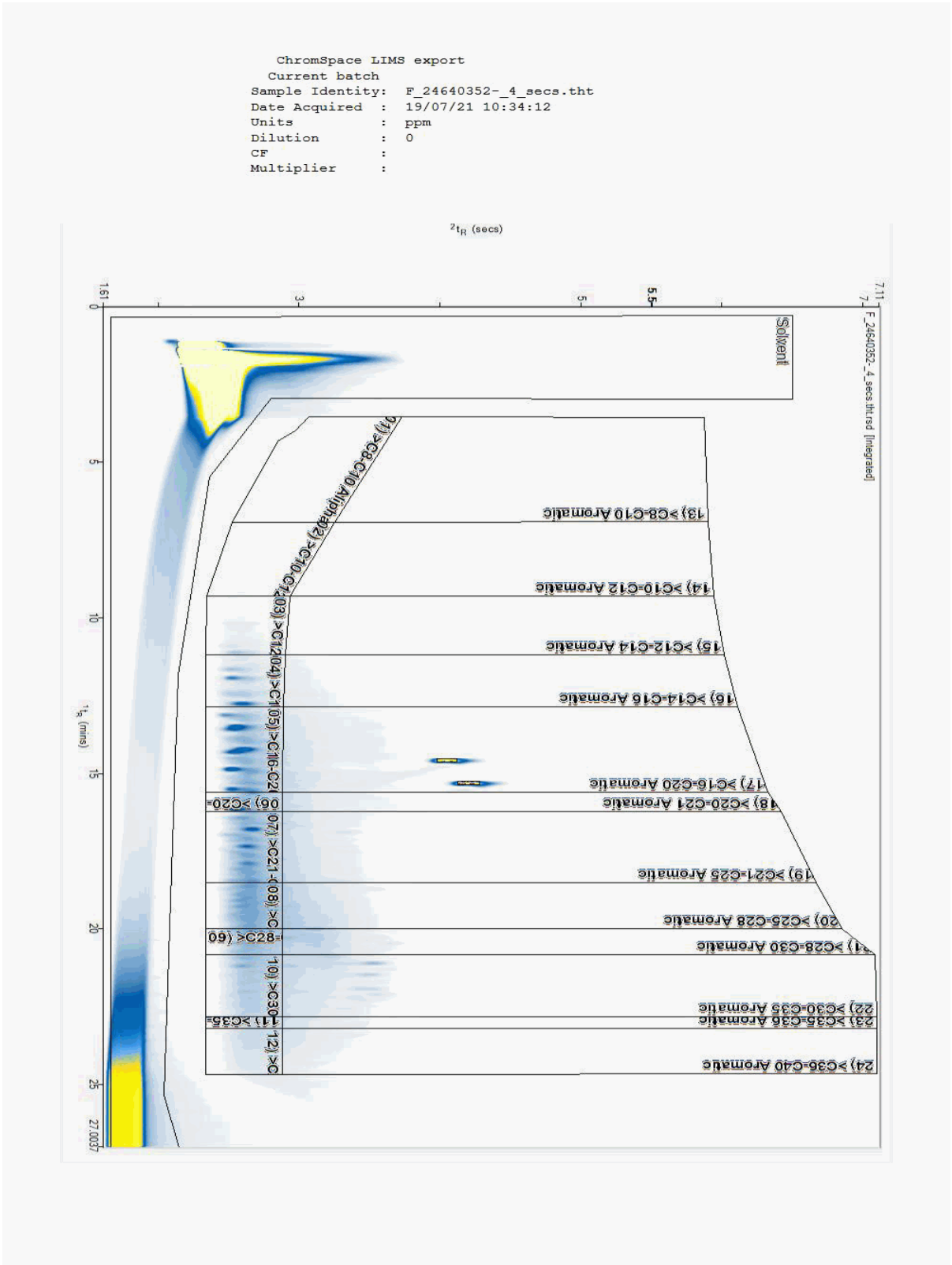
SDG:	210715-107	**Client Reference:**	2033	**Report Number:**	607105
Location:	Cyril Le Marquand Ho	**Order Number:**	2033	**Superseded Report:**	606950

Chromatogram

Analysis: EPH by GCxGC FID

Sample No : 24640352
Sample ID : BH2

Depth : 0.65 - 0.70



ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
210715-107	24638277	BH2	26/07/2021	Sample ID Change	ES 1	ES 2	606950

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part hereof un il the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remedia ion fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detec ion limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as he analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically iden ify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive iden ification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

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

18. **Sample Deviations**

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

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

19. **Asbestos**

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

Identification of Asbestos in Bulk Materials & Soils

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

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

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

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

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and wi h aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

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

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

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

AMPLUS Ltd
Unit 1 Thistle Grove
St. Lawrence
Jersey
Jersey
JE3 1NN

Attention: Matthew Warner

CERTIFICATE OF ANALYSIS

Date of report Generation:	26 July 2021
Customer:	AMPLUS Ltd
Sample Delivery Group (SDG):	210715-131
Your Reference:	2033
Location:	Cyril Le Mrquand House
Report No:	607097

This report has been revised and directly supersedes 606951 in its entirety.

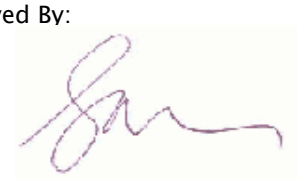
We received 1 sample on Thursday July 15, 2021 and 1 of these samples were scheduled for analysis which was completed on Sunday July 25, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

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

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.

Approved By:



Sonia McWhan
Operations Manager

SDG:	210715-131	**Client Reference:**	2033	**Report Number:**	607097
Location:	Cyril Le Mrquand Hou	**Order Number:**	2033	**Superseded Report:**	606951

Received Sample Overview

Lab Sample No(s)	Cu tomer Sample Ref	AGS Ref.	Depth (m)	Sampled Date
24639387	BH1	ES2	1.00	13/07/2021

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

CERTIFICATE OF ANALYSIS

SDG:	210715-131	**Client Reference:**	2033	**Report Number:**	607097
Location:	Cyril Le Mrquand Hou	**Order Number:**	2033	**Superseded Report:**	606951

Results Legend

X Test

N No Determination Possible

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

Lab Sample No(s)			24639387			
Customer Sample Reference			BH1			
AGS Reference			ES2			
Depth (m)			1.00			
Container			1kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 1		X		
Anions by Kone (w)	All	NDPs: 0 Tests: 1	X			
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1	X			
CEN Readings	All	NDPs: 0 Tests: 1	X			
Coronene	All	NDPs: 0 Tests: 1		X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1	X			
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1	X			
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1		X		
Fluoride	All	NDPs: 0 Tests: 1	X			
Loss on Ignition in soils	All	NDPs: 0 Tests: 1		X		
Mercury Dissolved	All	NDPs: 0 Tests: 1	X			
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1		X		
PAH by GCMS	All	NDPs: 0 Tests: 1		X		
PCBs by GCMS	All	NDPs: 0 Tests: 1		X		
pH	All	NDPs 0 Tests: 1		X		

CERTIFICATE OF ANALYSIS

Validated

SDG:	210715-131	**Client Reference:**	2033	**Report Number:**	607097
Location:	Cyril Le Mrquand Hou	**Order Number:**	2033	**Superseded Report:**	606951

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
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RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24639387			
Customer Sample Reference			BH1			
AGS Reference			ES2			
Depth (m)			1.00			
Container			1kg TUB with Handle	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1	X			
Sample description	All	NDPs: 0 Tests: 1		X		
Total Dissolved Solids	All	NDPs: 0 Tests: 1	X			
Total Organic Carbon	All	NDPs: 0 Tests: 1		X		
VOC MS (S)	All	NDPs: 0 Tests: 1			X	

Sample Descriptions

Grain Sizes

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

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24639387	BH1	1 00	Dark Brown	Sandy Loam	Stones	Brick

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

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

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

CERTIFICATE OF ANALYSIS

Validated

SDG:	210715-131	**Client Reference:**	2033	**Report Number:**	607097
Location:	Cyril Le Mrquand Hou	**Order Number:**	2033	**Superseded Report:**	606951

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH1
	BH1 ES2
Depth (m)	1.00
Sample Type	Soil/Solid (S)
Date Sampled	13/07/2021
Sampled Time	00:00
Date Received	15/07/2021
SDG Ref	210715-131
Lab Sample No.(s)	24639387
AGS Reference	ES2

Component	LOD/Units	Method	
Moisture Content Ratio (% of as received sample)	%	PM024	5.5
Loss on ignition	<0.7 %	TM018	5.71 M
Organic Carbon, Total	<0.2 %	TM132	0.582 M
pH	1 pH Units	TM133	11.9 M
PCB congener 28	<3 µg/kg	TM168	<15 M
PCB congener 52	<3 µg/kg	TM168	<15 M
PCB congener 101	<3 µg/kg	TM168	<15 M
PCB congener 118	<3 µg/kg	TM168	<15 M
PCB congener 138	<3 µg/kg	TM168	<15 M
PCB congener 153	<3 µg/kg	TM168	<15 M
PCB congener 180	<3 µg/kg	TM168	<15 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<105
ANC @ pH 4	<0.03 mol/kg	TM182	0.106
ANC @ pH 6	<0.03 mol/kg	TM182	0.0821
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10
Coronene	<200 µg/kg	TM410	<200
EPH Surrogate % recovery**	%	TM415	102
Mineral Oil >C10-C40	<5 mg/kg	TM415	8.86

CERTIFICATE OF ANALYSIS

Validated

SDG:	210715-131	**Client Reference:**	2033	**Report Number:**	607097
Location:	Cyril Le Mrquand Hou	**Order Number:**	2033	**Superseded Report:**	606951

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BH1	BH1 ES2	1.00	Soil/Solid (S)	13/07/2021	00:00	15/07/2021	210715-131	24639387	ES2
Dibromofluoromethane**	%	TM116	110								
Toluene-d8**	%	TM116	89.8								
4-Bromofluorobenzene**	%	TM116	73.4								
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10 M								
Benzene	<9 µg/kg	TM116	<9 M								
Toluene	<7 µg/kg	TM116	<7 M								
Ethylbenzene	<4 µg/kg	TM116	<4 M								
p/m-Xylene	<10 µg/kg	TM116	<10 #								
o-Xylene	<10 µg/kg	TM116	<10 M								
Sum of BTEX	<40 µg/kg	TM116	<40								

Asbestos Identification - Solid Samples

Results Legend

ISO17025 accredited.
M mCERTS accredited.
***** Subcontracted test.
(F) Trigger breach confirmed
1-5&♦$@ Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref.	BH1ES2 1 00	21.07.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	SOLID										
Sample Type	13/07/2021 00:00:00										
Date Sampled	15/07/2021 12:00:00										
Date Receieved	210715-131										
SDG	24639387										
Original Sample	TM048										
Method Number											

CERTIFICATE OF ANALYSIS

SDG:	210715-131	**Client Reference:**	2033	**Report Number:**	607097
Location:	Cyril Le Mrquand Hou	**Order Number:**	2033	**Superseded Report:**	606951

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	Cyril Le Mrquand House
Mass Sample taken (kg)	0.101	**Natural Moisture Content (%)**	12.3
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	89.1
Particle Size <4mm	>95%		

Case	
SDG	210715 131
Lab Sample Number(s)	24639387
Sampled Date	13 Jul 2021
Customer Sample Ref.	BH1 ES2
Depth (m)	1 00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.582	3	5	6
Loss on Ignition (%)	5.71	-	-	10
Sum of BTEX (mg/kg)	<0.04	6	-	-
Sum of 7 PCBs (mg/kg)	<0.105	1	-	-
Mineral Oil (mg/kg)	8.86	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	11.9	-	>6	-
ANC to pH 6 (mol/kg)	0.0821	-	-	-
ANC to pH 4 (mol/kg)	0.106	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00271	<0.0005	0.0271	<0.005	0.5	2	25
Barium	0.0114	<0.0002	0.114	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0 04	1	5
Chromium	0 0114	0 001	0 114	0 01	0.5	10	70
Copper	0.031	<0.0003	0.31	<0.003	2	50	100
Mercury Dissolved (CVAF)	0.0000311	<0.00001	0.000311	<0.0001	0.01	0.2	2
Molybdenum	0.00332	<0.003	0.0332	<0.03	0.5	10	30
Nickel	0.00106	<0.0004	0.0106	<0.004	0 4	10	40
Lead	0 0002	0 0002	0 002	0 002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	0 5	0 5	5	5	10	150	500
Sulphate (soluble)	18.2	<2	182	<20	1000	20000	50000
Total Dissolved Solids	578	<5	5780	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	6.11	<3	61.1	<30	500	800	1000

Leach Test Information

Date Prepared	16-Jul-2021
pH (pH Units)	11.51
Conductivity (µS/cm)	946.00
Temperature (°C)	21.90
Volume Leachant (Litres)	0.889

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

26/07/2021 16:02:52

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	BS 1377: Part 3 1990	Determination of Loss on Ignition
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM182	CEN/TC 292 - WI 292046-chacterization of waste-leaching Behaviour Tests- Acid and Base Neutralization Capacity Test	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

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

SDG:	210715-131	**Client Reference:**	2033	**Report Number:**	607097
Location:	Cyril Le Mrquand Hou	**Order Number:**	2033	**Superseded Report:**	606951

Test Completion Dates

Lab Sample No(s)	24639387
Cu tomer Sample Ref	BH1
AGS Ref.	ES2
Depth	1.00
Type	Soil/Solid (S)
ANC at pH4 and ANC at pH 6	19-Jul-2021
Anions by Kone (w)	21-Jul-2021
Asbestos D in Solid Samples	21-Jul-2021
CEN 10:1 Leachate (1 Stage)	16-Jul 2021
CEN Readings	20-Jul-2021
Coronene	16-Jul-2021
Dissolved Metals by ICP-MS	20-Jul-2021
Dissolved Organic/Inorganic Carbon	25-Jul-2021
EPH by GCxGC-FID	20-Jul-2021
Fluoride	19-Jul-2021
Loss on Ignition in soils	20-Jul-2021
Mercury Dissolved	20-Jul-2021
Moisture at 105C	16-Jul-2021
PAH 16 & 17 Calc	19-Jul-2021
PAH by GCMS	21-Jul-2021
PCBs by GCMS	19-Jul-2021
pH	19-Jul-2021
Phenols by HPLC (W)	20-Jul-2021
Sample description	15-Jul-2021
Total Dissolved Solids	20-Jul-2021
Total Organic Carbon	20-Jul-2021
VOC MS (S)	16-Jul-2021

CERTIFICATE OF ANALYSIS

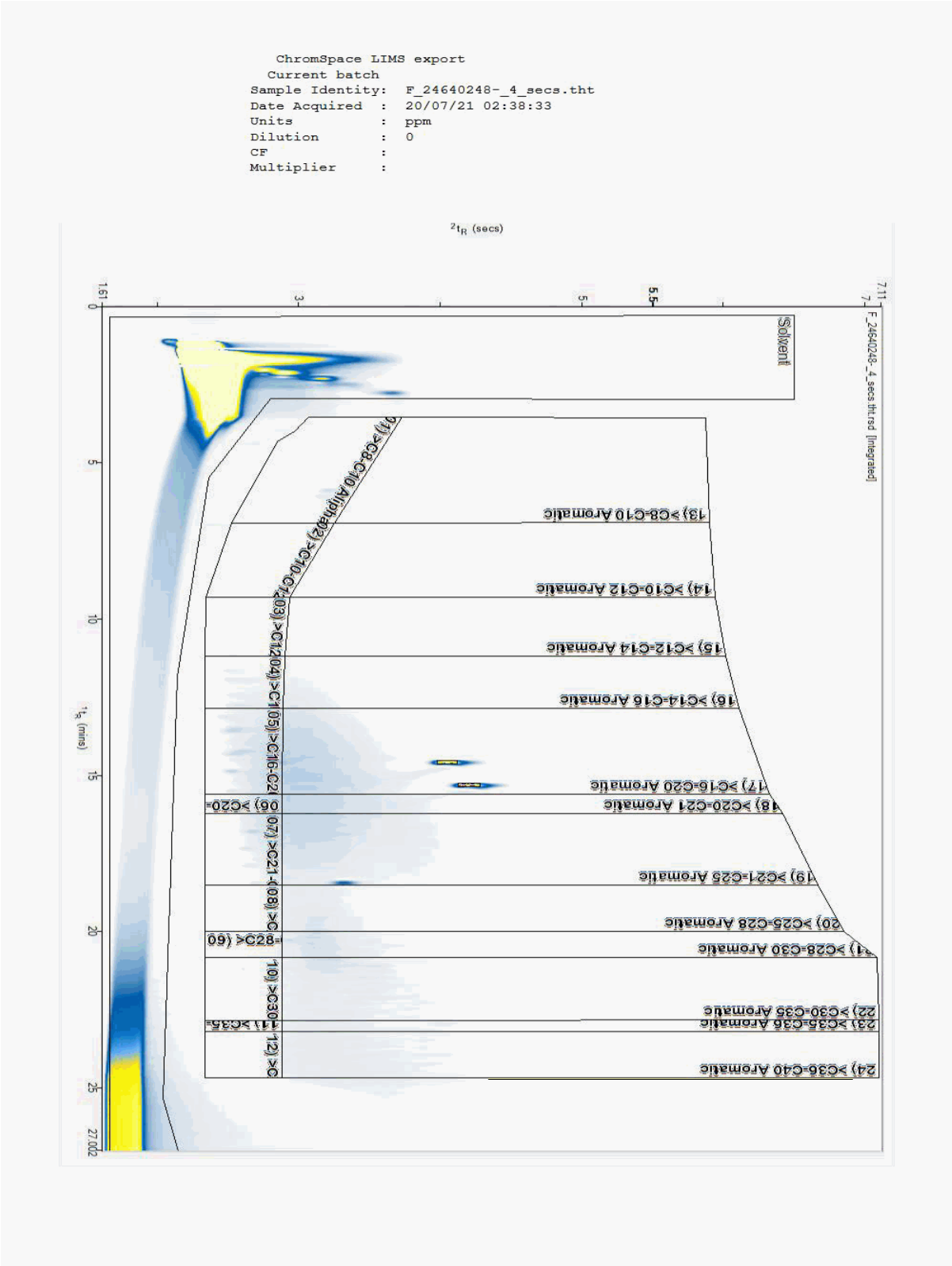
SDG:	210715-131	**Client Reference:**	2033	**Report Number:**	607097
Location:	Cyril Le Mrquand Hou	**Order Number:**	2033	**Superseded Report:**	606951

Chromatogram

Analysis: EPH by GCxGC FID

Sample No : 24640248
Sample ID : BH1

Depth : 1.00



ALS Environmental, Land	QF.7.5.1 Data Amendments Form (Issue No. 4)
	Date: 03/03/2020
	Issued and Authorised by Quality Manager

SDG	Sample Event	Sample ID	Date Amended	Amendment Reason	Previous Reference	New Reference	Supersedes Report
210715-131	24639387	BH1	26/07/2021	Sample ID Change	ES 1	ES 2	606951

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part hereof un il the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remedia ion fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detec ion limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as he analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically iden ify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive iden ification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

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

18. **Sample Deviations**

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

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

19. **Asbestos**

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

Identification of Asbestos in Bulk Materials & Soils

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

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

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

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

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and wi h aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

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

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

APPENDIX 4

Notes of Site Investigation and Limitations

INVESTIGATION TECHNIQUES

INTRODUCTION

The following brief review of Ground Investigation techniques, generally used as part of most Site Investigations in the UK, summarises their methodology, advantages, and limitations. Detailed descriptions of the techniques are available and can be provided on request. This review should be read in conjunction with the accompanying General Notes.

TRIAL PITS

The trial pit is amongst the simplest yet effective means of identifying shallow ground conditions on a site. Its advantages include simplicity, speed, potential accuracy, and cost-effectiveness. The trial pit is most formed using an excavator, which can typically determine ground conditions to some 4 metres below ground level. Hand excavation is often used to locate, expose, and detail existing foundations, features, or services. In general, it is difficult to extend pits significantly below the water table in predominantly granular soils, where flows can cause instability. Unless otherwise stated, the trial pits will not have been provided with temporary side support during their construction. Under such circumstances, ground conditions to some 1.20 metres can be closely inspected, subject to stability assessment, but below this depth, entrance into the pit is not permitted in the absence of shoring and hence observations will have been made from ground surface and samples taken from the excavator bucket. Trends in strata type, level and thickness can be determined, shear surfaces identified and the behaviour of plant, excavation sides and excavated materials can be related to the construction process. They are particularly valuable in landslip investigations. Some types of insitu test can be undertaken in such pits and large disturbed or block samples obtained.

DRY CORE DRILLING

The dry core drilling technique of soft ground boring, typically at a diameter of 100mm, is a method of rotary boring vertical holes and generally allows data to be obtained in respect of strata conditions other than rock. A core barrel is drilled into the ground using s rotary boring rig. Soil which enters the barrel is regularly removed and either sampled for subsequent examination or test or laid in a core box. Steel casing will have been used to prevent collapse of the borehole sides where necessary. A degree of disturbance of soil is inevitable and the presence of very thin layers of different soils within a stratum may not be identified. Changes in strata type can only be detected on recognition of a change in soil samples at surface, after the interface has been passed. For the foregoing reasons, depth measurements should not be considered more accurate than 0.10 metre. In cohesive soils, cylindrical samples are retrieved by driving or pushing in 70mm nominal diameter tubes. In soft soils, piston sampling or vane testing may be undertaken. In granular soils and often in cohesive materials, insitu Standard Penetration Tests (SPT's) are performed. The SPT records the number of standard blows required to drive a 50mm diameter open or cone ended probe for 300mm after an initial 150mm penetration. A modified method of recording is used in more dense strata. Small, disturbed samples are obtained throughout. The technique can determine ground conditions to depths more than 30 metres under suitable circumstances and usually causes less
surface disturbance than trial pitting.

ROTARY DRILLING

Rotary Drilling to produce cores by rotating an annular diamond-impregnated tube or barrel into the ground is the technique most appropriate to the forming of site investigation boreholes through rock or other hard strata. It has the advantage of being able to be used vertically or at an angle. Core diameters of less than 100mm are most common for site investigation purposes. Core is sometimes retrieved in plastic lining tubes. A flushing fluid such as air, water or foam is used to cool the bit and carry cuttings to the surface. Examination of cores allows detailed rock description and generally enables angled discontinuity surfaces to be observed. However, vertical holes do not necessarily reveal the presence of vertical or near-vertical fissures or joint discontinuities. Where open hole rotary drilling is employed, descriptions of strata result from examination at surface of small particles ejected from the borehole in the flushing medium. In consequence, no indication of fissuring, bedding, consistency, or degree of weathering can be obtained. Small scale plant can be used for auger drilling to be limited depths where access is constrained. Depths more than 60 metres can be achieved under suitable circumstances using rotary techniques, with minimal surface disturbance.

WINDOW SAMPLING

This technique involves the driving of an open-ended tube into the ground and retrieval of the soil, which enters the tube. The term "window sample" arose from the original device, which had a "window" or slot cut into the side of the tube through which samples were taken. This

has now been superseded using a thin-walled plastic liner within a sampler, which has a solid wall. Diameters range from 36 to 86mm. Such samples can be used for qualitative logging, selection of samples for classification and chemical analysis and for obtaining a rudimentary assessment of strength. Driving devices can be hand-held or machine mounted, and the drive tubes are typically in 1m lengths. The hole formed is not cased, however, and hence the success of this technique is limited when soils and groundwater conditions are such that the sides of the hole collapse on withdrawal of the sampler. Obstructions within the ground, the density of the material or its strength can also limit the depth and rate of penetration of this light-weight investigation technique. Nevertheless, it is a valuable tool where access is constrained such as within buildings or on embankments. Depths of up to 8m can be achieved in suitable circumstances but depths of 4m to 6m are more common.

DYNAMIC PROBING

This technique typically measures the number of blows of a standard weight falling over a standard height to advance a cone-ended rod over sequential standard distances (typically 100mm). Some devices measure the penetration of the probe per standard blow. It is essentially a profiling tool and is best used in conjunction with other investigation techniques where site-specific correlation can be used to delineate the distribution of soft or loose soils or the upper horizon of a dense or strong layer such as rock. Both machine-driven and hand-driven equipment is available, the selection depending upon access restrictions and the depth of penetration required. It is particularly useful where access for larger equipment is not available, disturbance is to be minimised or where there are cost constraints. No samples are recovered, and some techniques leave a sacrificial cone head in the ground. As with other lightweight techniques, progress is limited in strong or dense soils. The results are presented both numerically and graphically. Depths of up to 10m are commonly achieved in suitable circumstances. The hand driven DCP probing device has been calibrated by the TRL to provide a profile of CBR values over a range of depths of up to 1.50m.

INSTRUMENTATION

The most common form of instrument used in site investigation is either the standpipe or else the standpipe piezometer, which can be installed in investigation holes. They are used to facilitate monitoring of groundwater levels and water sampling over a period following site work. Normally a standpipe would be formed using rigid plastic tubing which has been perforated or slotted over much of its length whilst a standpipe piezometer would have a filter tip which would be placed at a selected level and the hole sealed above and sometimes below to isolate the zone of interest. Groundwater levels are determined using an electronic “dip meter” to measure the depth to the water surface from ground level. Piezometers can also be used to measure permeability. They are simple and inexpensive instruments for long term monitoring, but response times can limit their use in tidal areas and access to the ground surface at each instrument is necessary. Remote reading requires more sophisticated hydraulic, electronic, or pneumatic equipment. Settlement can be monitored using surface or buried target plates whilst lateral movement over a range of depths is monitored using slip indicator or inclinometer equipment.

EXPLORATORY HOLE RECORDS

The data obtained by these techniques are generally presented on Trial Pit, Borehole, Drill hole or Window Sample Records. The descriptions of strata result from information gathered from many sources, which may include published geological data, preliminary field observations and descriptions, insitu test results, laboratory test results and specimen descriptions. A key to the symbols and abbreviations used accompanies the records. The descriptions on the exploratory hole records accommodate but may not necessarily be identical to those on any preliminary records or the laboratory summaries. The records show ground conditions at the exploratory hole locations. The degree to which they can be used to represent conditions between or beyond such holes, however, is a matter for geological interpretation rather than factual reporting and the associated uncertainties must be recognised.

GENERAL NOTES

1. The report is prepared for the exclusive use of the Client named in the document and copyright subsists with Amplus Ltd. Prior written permission must be obtained to reproduce all or part of the report. It is prepared on the understanding that its contents are only disclosed to parties directly involved in the current investigation, preparation, and development of the site.

2. Further copies may be obtained with the Client's written permission, from Amplus Ltd with whom the master copy of the document will be retained.

3. The report and/or opinion are prepared for the specific purpose stated in the document and in relation to the nature and extent of proposals made available to Amplus Ltd at that time. Reconsideration will be necessary should those details change. The recommendations should not be used for other schemes on or adjacent to the site without further reference to Amplus Ltd.

4. The assessment of the significance of the factual data, where called for, is provided to assist the Client and his Engineer and/or Advisers in the preparation of their designs.

5. The report is based on the ground conditions encountered in the exploratory holes together with the results of field and laboratory testing in the context of the proposed development. The data from any commissioned desk study and site reconnaissance are also drawn upon. There may be special conditions appertaining to the site, however, which are not revealed by the investigation, and which may not be considered in the report.

6. Methods of construction and/or design other than those proposed by the designers or referred to in the report may require consideration during the evolution of the proposals and further assessment of the geotechnical and any geoenvironmental data would be required to provide discussion and evaluations appropriate to these methods.

7. The accuracy of results reported depends upon the technique of measurement, investigation and test used and these values should not be regarded necessarily as characteristics of the strata (see accompanying notes on Investigation Techniques). Where such measurements are critical, the technique of investigation will need to be reviewed and supplementary investigation undertaken in accordance with the advice of the Company where necessary.

8. The samples selected for laboratory test are prepared and tested in accordance with the relevant Clauses of BS 1377 Parts 1 to 8, in a UKAS accredited Laboratory.

10. Any unavoidable variations from specified procedures are identified in the report.

11. Specimens are cut vertically, where this is relevant and can be identified, unless otherwise stated.

12. All the data required by the test procedures are recorded on individual test sheets but the results in the report are presented in summary form to aid understanding and assimilation for design purposes. Where all details are required, these can be made available.

13. Whilst the report may express an opinion on possible configurations of strata between or beyond exploratory holes, or on the possible presence of features based on visual, verbal, written, cartographical, photographic, or published evidence, this is for guidance only and no liability can be accepted for its accuracy.

14. Classification of materials as Made Ground is based on the inspection of retrieved samples or exposed excavations. Where it is obvious that foreign matter such as paper, plastic or metal is present, classification is clear. Frequently, however, for fill materials that arise from the adjacent ground or from the backfilling of excavations, their visual characteristics can closely resemble those of undisturbed ground. Other evidence such as site history, exploratory hole location or other tests may need to be drawn upon to provide clarification. For these reasons, classification of soils on the exploratory hole records as either Made Ground or naturally occurring strata, the boundary between them and any interpretation that this gives rise to should be regarded as provisional and subject to re-evaluation in the light of further data.

15. The classification of materials as Topsoil is generally based on visual description and should not be interpreted to mean that the material so described complies with the criteria for Topsoil used in BS 3882 (1994). Specific testing would be necessary where such definition is a requirement.

16. Ground conditions should be monitored during the construction of the works and the report should be re-evaluated in the light of these data by the supervising geotechnical engineers.

17. Any comments on groundwater conditions are based on observations made at the time of the investigation, unless specifically stated otherwise. It should be noted, however, that the observations are subject to the method and speed of boring, drilling or excavation and that groundwater levels will vary due to seasonal or other effects.

18. Any bearing capacities for conventional spread foundations which are given in the report and interpreted from the investigation are for bases at a minimum depth of 1m below finished ground level in naturally occurring strata and at broadly similar levels throughout individual structures, unless otherwise stated. The foundations should be designed in accordance with the good practice embodied in current Standards and Codes. Foundation design is an iterative process and bearing pressures may need adjustment or other measures may need to be taken in the context of final layouts and levels prior to finalisation of proposals.

19. Unless specifically stated, the investigation does not take account of the possible effects of mineral extraction or of gases from fill or natural sources within, below or outside the site.

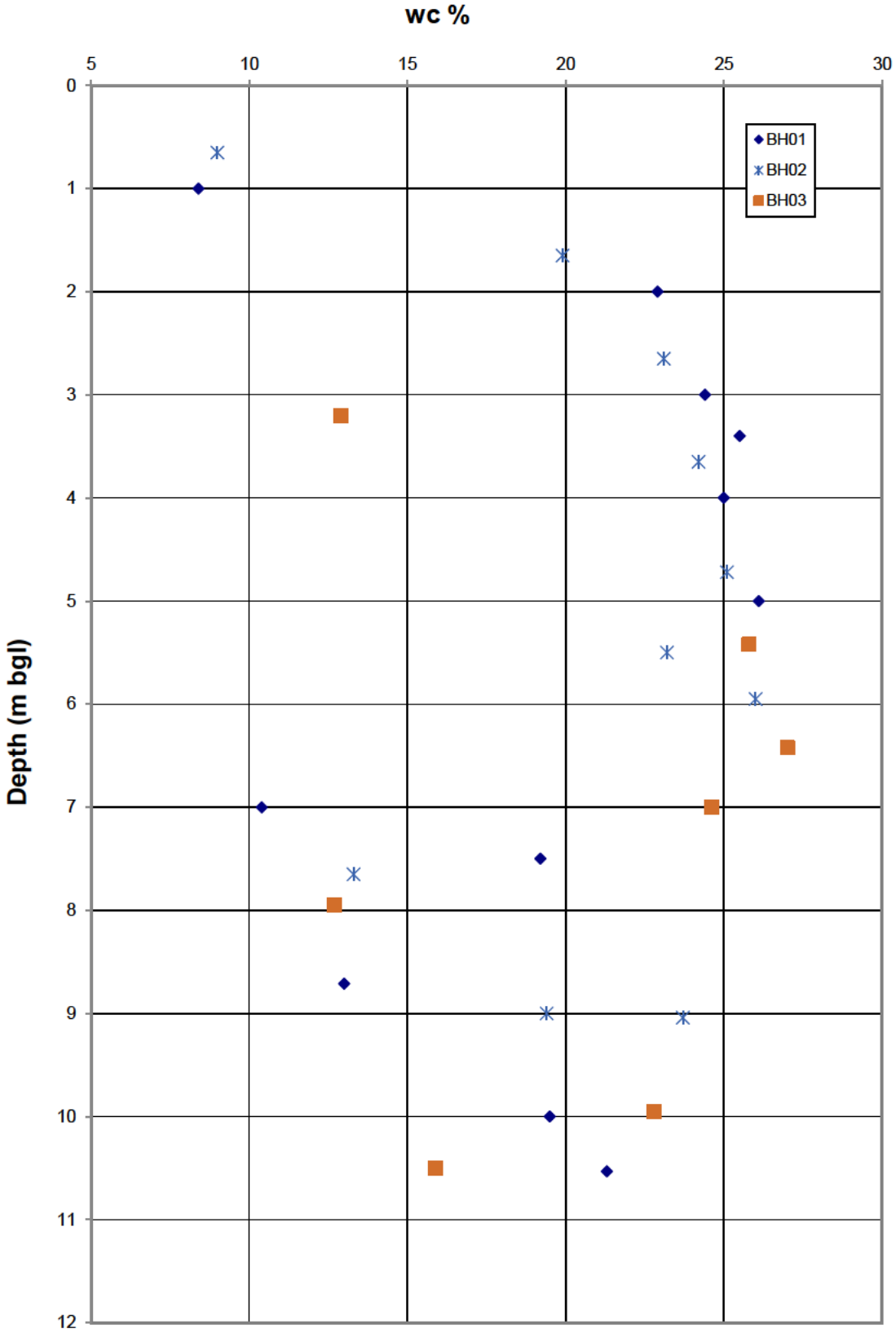
20. The costs or economic viability of the proposals referred to in the report, or of the solutions put forward to any problems encountered, will depend on very many factors in addition to geotechnical or geoenvironmental considerations and hence their evaluation is outside the scope of the report.

FIGURE

1. Water content vs Depth

FIGURE 1

Water Content vs. Depth



DRAWINGS

1 Exploratory Holes Plan (Dandara)

RAMP UP

STAIRCASE DETAILS SEE DRG. NO. L36

STAIRCASE DETAILS DRG. NO. L37

STAIRCASE DETAILS DRG. NO. L31

150 GROUND SLAB

400 Trough slab Ribs at 600 crs.

8·425

L25

L12

L11

B X06

A X05

Note : This drawing shows general arrangement only.

ISSUED
12 JUL 1979
D.P.S. & W.
JERSEY

N

STATES OFFICES JERSEY

GROUND FLOOR
GENERAL ARRANGEMENT
BLOCKS A & B

OVE ARUP & PARTNERS

Job No.	Drawing No.	Rev.
8072	L 10	

Scales 1:100
Drn. Date 7.79 Chd. Passed