



Phase II Geo-Environmental Site Assessment

**Land south of Nine Mile Ride, Finchampstead, Reading,
Berkshire, RG40 3QD**

*Prepared for:
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March 2025

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QUALITY ASSURANCE

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Executive Summary				
Site Address	Land south of Nine Mile Ride, Finchampstead, Reading, RG40 3QD			
National Grid Reference	480159, 164793			
Site Area	Approximately 1.9ha			
Current Site Use	The site consists of two (2no.) residential houses with associated parking and private gardens within the northern extent of the site. The central and southern extents of the site are configured as mature woodland.			
Revised Conceptual Site Model				
Elevated concentrations of Arsenic, Benzo(b)Fluoranthene, and Benzo(a)Pyrene, have been identified within the north-eastern extent of the site. As soft landscaping is proposed on-site, an active pollution pathway remains. Further works are required to investigate the lateral extent of the identified contaminants.				
Ground Gas Classification				
The site is provisionally classified as CS-1 under BS 8485(2015)+A1(2019). It is considered that ground gas protection measures are not required on the site.				
Concrete Classification				
Formation	Characteristic pH	Characteristic SO ₄	Design Sulphate Class	ACEC Class
Camberley Sand Formation	4.60	14.0	DS-1	AC3-z
Windlesham Formation	4.32	61.4	DS-1	AC4-z
Geotechnical Assessment				
Foundation design – A minimum allowable bearing capacity of 210kN/m2 is considered appropriate for a shallow foundation bearing into the Camberley Sand Formation.				
A minimum allowable bearing capacity of 180kN/m2 is considered appropriate for a shallow foundation bearing into the Windlesham Formation.				
VCP/NHBC Chapter 4.2 – Shallow granular soils of the Windlesham Formation are conservatively considered to be of High Volume Change Potential. Minimum foundation depths in accordance with NHBC should be applied.				
Groundwater – Groundwater was encountered between 0.58m bgl and 4.95m bgl during the site investigations across the site. Resting groundwater between 0.65m bgl and 1.96m bgl was encountered during subsequent monitoring of water levels. Given the shallow depth of the groundwater encountered, consideration should be given to shallow groundwater when designing foundations.				
Lateral Pressure and Heave – Foundations more than 1.50m deep and subject to heave should be protected by voids, void formers or compressible materials as per NHBC guidance.				
Ground Floor Slabs – Given the High Volume Change Potential of the shallow cohesive soils on site, a suspended floor slab is considered the most appropriate option.				
Soakaway Viability – Soakaway drainage would likely work in principle in the vicinity of locations SA201, SA202, SA301 and SA302B. Low permeability soils with borderline poor to good drainage conditions were identified which are likely to prove suitable for conventional soakaway design.				
In the vicinity of locations SA101, SA102 and SA303 practically impermeable to very low permeability soils with poor drainage conditions were identified and therefore the area is not likely to prove suitable for conventional soakaway design.				
Recommendations				
Environmental				

Following the Tier 1 Human Health Risk assessment, elevated concentrations of Arsenic and PAH have been identified in the vicinity of locations within the north-eastern extent of the site. An active pollution pathway is considered to have the potential to remain active within areas of proposed soft landscaping and private gardens. It is therefore recommended that a delineation exercise be undertaken post demolition in the vicinity of locations WS104 and WS105 to investigate the lateral extent of elevated concentrations of Arsenic and PAHs, to determine the requirement for, and extent of, remedial works.

Should any additional significant visual or olfactory evidence of unexpected contamination be identified during the development then works should be halted in the affected area and contact made with a suitably qualified and experienced Environmental Consultant to determine an appropriate course of action, which may include additional investigation, and as necessary, a Remediation Method Statement.

Contact should be made with the regulator to confirm the proposed scope of works.

The following list is not exhaustive, but should be used as guidance with regards to what should be considered indicative of soil contamination that may require remedial works:

- Free-phase contamination (liquid oils or fuels);
- Loose fibrous materials or cement bound materials (PACM);
- Visually significant staining of soils;
- Evidence of invasive plants such as Japanese Knotweed, Himalayan Balsam, Marestalk or Giant Hogweed; and,
- Olfactory evidence of hydrocarbon contamination.

Geotechnical

It is recommended that the following is completed:

- A Tree influence plan is produced for the site in line with NHBC guidance once a detailed design has been finalised.
- Geotechnical Design Report (GDR) with bearing calculations in line with EC7 is produced for the site once detailed design has been finalised and detailed loadings are known.
- The results of the soakaway testing and shallow percolation testing are provided to a suitably qualified drainage engineer.

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1 INTRODUCTION

1.1 Background

Omnia have been commissioned by Elivia Homes to undertake a Supplementary Phase II Geo-Environmental Investigation at the site of Land south of Nine Mile Ride, Finchampstead, Reading, RG40 3QD, in order to obtain further geotechnical information to assist with the planning application for the above referenced site.

The site has been subject to four (4no.) phases of intrusive works by Omnia in April and May 2023 and in February 2025. Three (2no.) investigations (April 2023 and May 2023) were completed under the instruction of Kingacre Estates Limited which Eliva Homes are understood to have full reliance on this data and therefore have included this within the supplementary report. These are summarised below:

First Phase under Fee Proposal Ref: A12057/230405/L1 dated 7th April 2023

Initial intrusive works comprising five (5no.) window sample boreholes, nine (9no.) shallow hand pits and two (2no.) soakaway test pits were undertaken on the 13th - 14th and 19th – 21st April 2023.

Second Phase under Fee Proposal Ref: A12057-1/230418/L1 dated 19th April 2023

Two (2no.) deeper boreholes were advanced within the rear gardens of the properties on site, with the aim of providing further geotechnical information to assist with potential piling on the site. This phase of works was undertaken on 2nd – 5th May 2023.

Third Phase under Fee Proposal Ref: A12057/230405/L1 dated 10th May 2023

Additional infiltration testing was required on site. The works comprised falling head tests within installed window sample boreholes, and two (2no.) further soakaway test pits undertaken as far south as possible. This phase of works was undertaken on the 15th and 17th – 19th May 2023.

Fourth Phase under Fee Proposal Ref: A12057-5/250109/L2 dated 15th January 2025

The supplementary intrusive works comprised five (5no.) trial pits with the installation of three (3no.) gravel cell soakaways and two (2no.) cable percussion boreholes to allow for additional in-situ and laboratory geotechnical testing. This phase of works was undertaken between 4th and 7th February 2025.

A site location plan is presented as Figure 1.0 within Appendix III.

1.2 Proposed Development

It is understood that the proposed development is for the construction of twenty-eight (28no.) residential units and a block of four (4no.) flats, all with associated private gardens, areas of public open space and infrastructure.

The outline proposed site layout is presented as Figure 2.0 (Appendix III).

1.3 Objectives

The objectives of the Phase II Geo-Environmental Site Assessment are to:

- Undertake an assessment of the near surface through intrusive site investigation;
- Assess the implications of any potential environmental risks, liabilities and development constraints associated with the site in relation to the future use of the site and in relation to off-site receptors;
- Provide a factual and interpretative report relating to the site and provide recommendations on any potential development issues with consideration of residential and environmental receptors;
- Provide general geotechnical characterisation, including outline recommendations for foundation options and engineering parameters; and,
- Provide soil infiltration certificates and soil design infiltration rates (if applicable).

1.4 Sources of Information

Background information was sought from the following sources:

- The British Geological Survey (BGS) map for the site (Reading, Sheet 268, Solid and drift Edition at a scale of 1:50,000, 2000);
- BRE DG365 (2016). *Soakaway Design*;
- BRE Special Digest 1 (2005). *Concrete in Aggressive Ground*;
- British Standard BS5930:2015+A1:2020 – *Code of Practice for Ground Investigations*;
- British Standard BS1377-9:1990 Incorporating Amendment No. 1 – *Methods of Test for Soils for Civil Engineering Purposes – Part 9: In-situ Tests*;
- British Standard BS8004:2015 - *Code of Practice for Foundations*.
- British Standard BS8485:2015+A1:2019 – *Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings*;
- British Standard BS10175:2011+A2:2017 – *Investigation of Potentially Contaminated Sites – Code of Practice*;
- CIRIA Publication C665 (2007). *Assessing Risks Posed by Hazardous Ground Gases to Buildings*;
- NHBC Standards (2024). Chapter 4.2 – *Building Near Trees*;
- NHBC Foundation NF94 (2023) – *Hazardous Ground Gas – an essential guide for housebuilders*; and,
- Tomlinson, M.J. (2001). *Foundation Design and Construction*. 7th Edition. Pearson Prentice;

1.5 Limitations

The limitations of this report are presented in Appendix I.

1.6 Confidentiality

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

2 SITE SETTING

2.1 Site Details

Table 2-1 Site Details

Site Address	Land south of Nine Mile Ride, Finchampstead, Reading, Berkshire, RG40 3QD
National Grid Reference	480159, 164793
Site Area	Approximately 1.9ha

All acronyms used within this report are defined in the Glossary presented in Appendix II.

A site location plan is presented as Figure 1.0 (Appendix III).

2.2 Current Site Use

2.2.1 Site Description

The area of investigation is located approximately 1.6km northwest of Finchampstead Village Centre and was irregular in shape, covering an area of approximately 1.9ha. The site was accessed via two (2no.) separate access routes from the northern edge of site, which connects to Nine Mile Ride (B3430). The northern extent of the site consists of two (2no.) residential dwellings with associated driveways situated to the north of the properties, and associated gardens surrounding the houses. The remainder of the site (central and southern extents) comprised a dense area of woodland, which was accessed via the gardens of the two (2no.) properties.

House 1 (238 Nine Mile Ride)

Accessed via a gated driveway off of Nine Mile Ride, was a two (2no.) storey brick-built residential dwelling, with a single-storey garage on the eastern side of the house. The roof tiles were identified on both the garage and the house as ceramic, and timber framed porch was noted.

A gravel driveway/parking area was situated north of the property, and the gardens surrounded the property to the south and west. Centrally located within the garden was a pond approximately 1.00 x 1.00m (LxW).

One access route which led to the rear garden was through a narrow-paved passage (1.77m wide), which ran along the eastern side of the garage. There was a change in elevation of approximately 1.50m from the house to the rear garden. The western garden area was accessed via a paved footpath off the driveway to the west.

Boundaries to this property consisted of mature deciduous trees in all compass directions, with the addition of dense hedgerows on the eastern boundary between the two (2no.) properties.

House 2 (240 Nine Mile Ride)

Accessed via a private driveway off of Nine Mile Ride was a second brick-built two (2no.) storey residential dwelling with a slate roof. A detached single-storey garage was located to the northwest of the house. The driveway/parking area consisted of a tarmacadam surface, which was noted to be in good visual condition.

To the south of the property was a private garden, which was accessed via a passageway to the east of the house.

Boundaries to this property consisted of mature deciduous trees in all compass directions, with the addition of dense hedgerows on the western boundary between the two (2no.) properties.

Internal access into the two residential dwellings was not possible as they were occupied during the site investigation works.

Woodland Area

The remainder of the site boundary (central and southern extents) consisted of dense woodland. Trees typically comprised semi-mature to mature deciduous and coniferous trees ranging between 4-10m tall. The trees were mostly deciduous, however several pine trees were noted. The woodland areas were accessible from both the rear gardens of the properties.

2.2.2 Hazardous Materials Storage

None observed on site.

2.2.3 Potential Asbestos Containing Materials (PACM)

Whilst there were no obvious signs of PACM noted during the site walkover, the exact ages of the buildings are unknown, and could pre-date the year 2000. They are therefore considered to have the potential to contain Asbestos Containing Materials (ACMs) within the building fabric. It is recommended that an asbestos survey is undertaken in accordance with the Control of Asbestos Regulations (2012) prior to the commencement of any refurbishment or demolition works.

2.2.4 Waste Storage

No waste storage was noted during the site walkover or site investigations, but it is assumed that the properties are serviced by the local authority domestic waste collection service.

2.2.5 Tree Species

Deciduous trees, with few coniferous, were identified around the boundaries of the houses and within the woodland area. These were noted as being semi-mature to mature ranging between 4-10m tall.

2.2.6 Potential Invasive Species

During the site walkover and subsequent site investigations no obvious signs of potential invasive species were identified. However, it is recommended that a further inspection is undertaken by a trained Ecologist during the growing season.

2.3 Surrounding Area

The site is situated within a predominately residential area. The surrounding land uses are summarised in Table 2-2 below:

Table 2-2 Land Use

Direction	Land Use
North	Nine Mile Ride (B3430), residential housing beyond
East	Residential housing
South	Woodland with sparse residential housing and open fields beyond
West	Woodland with residential housing beyond

3 SITE INVESTIGATION

3.1 General

A ground investigation was designed based on the clients' requirements as set out in the fee proposals listed within Section 1.1 and the proposed site development as shown in Figure 2.0 (Appendix III).

The initial phases of exploratory fieldworks between April and May 2023 were conducted over thirteen (13no.) working days, initially commencing on 13th April 2023. The most recent intrusive investigation undertaken in February 2025 and was conducted over four (4no.) working days, commencing on 4th February 2025. All phases of the site investigation comprised the following:

Table 3-1 Site Investigation Summary

Proposal Reference	Potential Source/Rationale	Location Hole	Type	Maximum Depth (m bgl)	Borehole Response Zone (m bgl)
A12057/230405/L1 dated 7th April 2023 (Works undertaken 13-14th and 19-21st April 2023)	To collect shallow soil samples within the dense woodland for chemical analysis.	HP101	Hand Pitting	0.60	N/A
		HP102		0.60	
		HP103		0.30	
		HP104		0.60	
		HP105		0.60	
		HP106		0.61	
		HP107		0.60	
		HP108		0.60	
		HP109		0.70	
	To investigate the geology on site, undertake in-situ SPT testing for geotechnical data, and for the collection of chemical and geotechnical samples for subsequent analysis.	WS101	Windowless Sample Drilling	2.20	
		WS104		2.50	
	To investigate the geology on site, undertake in-situ SPT testing for geotechnical data, and for the collection of chemical and geotechnical samples for subsequent analysis.	WS102		3.00	0.60-2.60
		WS103		3.00	1.60-3.00
	To install monitoring wells to facilitate follow on ground gas monitoring in order to undertake a ground gas assessment of the site.	WS105		1.80	0.60-1.80
	To facilitate soakaway testing in order to provide design soil infiltration rates (if possible), and provide commentary on the feasibility of shallow soakaways on site.	SA101	Trial Pitting	1.60	N/A
		SA102		2.00	
A12057-	To undertake deeper	BH101	Cable	10.00	N/A

Proposal Reference	Potential Source/Rationale	Location Hole	Type	Maximum Depth (m bgl)	Borehole Response Zone (m bgl)
1/230418/L1 dated 19 th April 2023 (Works undertaken 2-5 th May 2023)	boreholes on site in order to investigate the geology, carry out in-situ SPT testing and to collect geotechnical samples in order to undertake a geotechnical assessment of the site.	BH102	Percussive Drilling	9.00	
A12057/230405/L1 dated 10 th May 2023 (Works undertaken 15 th and 17-19 th May 2023)	To facilitate additional soakaway testing as far south as practicable, with the aim of targeting the Camberley Sand Formation to assess the feasibility of shallow soakaways within this section of the site.	SA201	Machine Excavator	1.40	N/A
		SA202		1.20	
A12057-5/250109/L2 dated 15 th January 2025 (Works undertaken 4-7 th February 2025)	To facilitate the collection of shallow soil samples within the northwest of the site to allow for additional geotechnical analysis	TP301	Machine Excavator	3.00	N/A
		TP302		3.00	
	To facilitate the collection of shallow soils samples to the north of property 238 and to the south of property 240 to allow for additional geotechnical analysis and to facilitate additional soakaway testing	SA301		1.10	
		SA302		2.20	
		SA302B		1.10	
	Cable Percussion boreholes to allow for the collection of shallow and deeper soil samples for geotechnical analysis and to allow for in-situ SPT testing	SA303	Cable Percussive Drilling	2.50	N/A
		CP301		20.00	
		CP302		20.00	

The exploratory hole locations are illustrated on Figure 3.0 (Appendix III). The ground conditions encountered are indicated on the exploratory hole logs, which are provided in Appendix V.

3.2 Scope adjustments

- Locations SA101 and SA102 were undertaken within the northwest extent of the site due to access constraints;
- The target depth for WS101-WS105 was 5.00m bgl, however these were all terminated <5.00m bgl due to SPT refusals whilst drilling;
- The target depth for BH101 and BH102 was 15.00m bgl, however, due to dense ground the boreholes were terminated at 10.00 and 9.00m bgl respectively; and,
- Soakaway locations SA301 and SA302B were terminated at 1.10m bgl due to an observed water level of 2.10m bgl within location SA302 in order for the soakaways to be located at least 1.00m above groundwater level.

3.3 Laboratory Analysis

Selected soil samples were submitted for a range of chemical analysis, with the number of samples from each strata tested indicated within Table 3-2 below.

Table 3-2 Summary of chemical analysis testing

Determinant	Topsoil	Camberley Sand Formation	Windlesham Formation
Asbestos Fibre Screen	4	3	1
CLEA Metals	4	3	1
Phenol	4	3	1
Total Cyanide	4	3	1
Speciated Polycyclic Aromatic Hydrocarbons (PAH)	4	3	1
Banded Total Petroleum Hydrocarbons (EPH and GRO)	4	3	1
pH and Sulphate	4	3	1
Total Organic Carbon	1	1	1

Element Materials Technology of Deeside undertook the analytical work in accordance with UKAS accreditation where applicable and the laboratory analysis certificates are presented as Appendix VI and discussed in Section 5.

Selected soil samples were submitted to I2 Analytical in April and May 2023 and GSTL in February 2025 for a range of geotechnical testing, with the number of samples from each strata tested indicated within Table 3-3 below.

Table 3-3 Summary of geotechnical analysis testing

Analysis	Camberley Sand Formation	Windlesham Formation
Moisture Content	0	12
Plasticity Index	0	12
Particle Size Distribution	9	32
pH and Sulphate	10	33
Determination of Bulk and Dry Density	1	2

I2 Analytical/GSTL undertook the analytical work in accordance with UKAS accreditation where applicable and the laboratory analysis certificates are presented as Appendix VIII, summarised in Appendix IX and discussed in Section 7.

3.4 Ground Gas and Groundwater Monitoring

Concentrations of methane (CH₄), carbon dioxide (CO₂) and oxygen (O₂) were measured using an infrared gas analyser (GA5000), calibrated to a reference standard (before and after each survey) and gas flow rates were measured using an internal flow pod.

Gas concentrations were recorded at thirty second intervals until gas concentrations stabilised for three (3no.) consecutive readings (a minimum of ninety seconds) at each location, at which point the maximum concentrations of CH₄ and CO₂, together with the lowest concentration of O₂ were recorded.

Groundwater monitoring was undertaken using an electronic dip tape to record the depth to groundwater. Ground gas and groundwater results are presented in Section 4.3.4 and discussed in Section 5.3.

4 GROUND AND GROUNDWATER CONDITIONS

4.1 Summary of Ground Conditions

British Geological Survey (BGS) map for the site (Reading, Sheet 268, Solid and drift Edition at a scale of 1:50,000, 2000) indicates that there are no superficial deposits on site. The bedrock geology consists of the Camberley Sand Formation (Sand) across the majority of the site (central and south), overlying the Windlesham Formation (Sand, Silt and Clay), which is site wide. This is shown within Figure 4.0 presented in Appendix III.

The geology encountered on-site generally corresponds with that highlighted within BGS Mapping.

4.1.1 Topsoil

Topsoil was identified from the ground surface within all intrusive locations across the site, with the exception of SA303. Topsoil was encountered to a maximum observed depth of 0.40mbgl (CP301) and typically comprised brown and grey clayey/slightly silty fine to coarse SAND with occasional roots and rootlets. Within locations WS103, WS104 and BH101 the Topsoil was described as slightly gravelly. Gravel was fine and medium sub-angular to rounded flint.

4.1.2 Made Ground

Made Ground was encountered within one (1no.) intrusive location (SA303, located in the driveway of property 238) from ground level to a maximum depth of 1.10m bgl. The Made Ground comprised:

- Reddish brown sub-angular to sub-rounded medium to coarse flint GRAVEL;
- Reddish brown gravelly fine to coarse SAND. Gravel was angular to sub-rounded fine to coarse flint;
- Orangeish brown mottled light greenish grey sandy silty CLAY. Sand was fine to coarse; and,
- Soft black sandy CLAY with rare fragments of wood and macadam. Sand was fine to coarse.

4.1.3 Bedrock Deposits

4.1.3.1 Camberley Sand Formation

Deposits attributed to the locally mapped Camberley Sand Formation were encountered within nineteen (19no.) positions (HP101-HP109, WS105, BH102, SA201-SA202, CP302, SA301, SA302, SA302B, TP301 and TP302). The Camberley Sand Formation was encountered directly below Topsoil, to a maximum depth of 4.95mbgl (BH102). The base of the Camberley Sand Formation was proven within seven (7no.) intrusive locations (BH102, CP302, SA301, SA302, SA302B, TP301, TP302) at thickness between 0.25m (SA302B) and 4.65m (BH102) with an average thickness of 1.24m. The deposits generally comprised:

- Light brown silty fine to coarse SAND;
- Light greyish brown slightly gravelly silty fine and medium SAND. Gravel was sub-rounded fine to coarse flint;
- Greyish brown slightly silty fine to coarse SAND;
- Orangish brown and dark brown silty fine to coarse SAND.

Locations HP102 and HP104 identified dark brown staining within the recovery.

4.1.3.2 Windlesham Formation

Deposits attributed to the Windlesham Formation were encountered within sixteen (16no.) positions (WS101-WS104, SA101-SA102, BH101-BH102, CP301-CP302, SA301-SA303 and TP301-TP302).

The Windlesham Formation was encountered directly beneath Topsoil or Made Ground and beneath the Camberley Sand Formation at locations BH102, CP302, SA301, SA302, SA302B and TP301-TP302. The formation was encountered at a minimum depth of 0.15mbgl (WS101) and up to 20.00mbgl (CP301 and CP302). The base of the Windlesham Formation was not proven during any of the investigations to date.

Deposits generally comprised:

- Bluish green clayey fine to coarse SAND;
- Orangish brown silty clayey fine to coarse SAND;
- Firm grey CLAY;
- Firm to stiff orangish brown sandy CLAY;
- Soft to firm orangeish brown mottled dark green sandy silty CLAY. Sand was fine to coarse;
- Dark green and occasionally mottled orangeish brown silty clayey fine to coarse SAND;
- Soft light brown sandy silty CLAY. Sand was fine to coarse;
- Light brown silty fine to coarse SAND; and,
- Orangeish brown mottled brown and yellowish brown slightly gravelly fine to coarse SAND. Gravel was sub-angular to sub-rounded fine to coarse flint.

4.1.4 Groundwater Conditions

Groundwater strikes and seepages were encountered during the investigation as summarised in Table 4-1.

Table 4-1 Summary of Groundwater Conditions

Location	Depth (m bgl)	Strata	Type of Water Strike
HP102	0.58 rising to 0.50 after 20 minutes	Camberley Sand Formation	Strike – slow inflow
HP104	0.60	Camberley Sand Formation	Seepage
HP106	0.60 rising to 0.58 after 20 minutes	Camberley Sand Formation	Strike – slow inflow
WS101	1.40	Windlesham Formation	Seepage – slow inflow
WS102	1.40	Windlesham Formation	Seepage – slow inflow
WS103	1.40	Windlesham Formation	Seepage – slow inflow
WS104	1.50 rising to 1.20 after 20 minutes	Windlesham Formation	Strike – slow to medium inflow
SA102	2.00m rising to 1.85 after 20 minutes	Windlesham Formation	Strike – slow inflow

BH102	3.00	Camberley Sand Formation	Seepage
	4.95		Wet recovery – assumed locally perched water above clay
CP301	2.50 rising to 1.60m after 20 minutes	Windlesham Formation	Strike
SA302	2.10	Windlesham Formation	Seepage – slow inflow

4.2 Laboratory Classification Analysis

Soil classification testing, including Atterberg Limits, Moisture Content, Particle Size Distribution and pH and Sulphate results are summarised in Appendix IX with analysis certificates presented in Appendix VIII.

4.2.1 pH and Sulphate

Chemical analysis for pH and soluble sulphate content are summarised in Appendix IX with analysis certificates presented as Appendix VI and VIII.

The characteristic pH and SO₄ values were calculated in accordance with BRE Special Digest (2005) and the Design Sulphate Class and ACEC class for each formation is provided within Table 4-2 below.

Table 4-2 Summary of Design Sulphate Class and ACEC Class

Formation	Characteristic pH	Characteristic SO ₄	Design Sulphate Class	ACEC Class
Camberley Sand Formation	4.60	14.0	DS-1	AC3-z
Windlesham Formation	4.32	61.4	DS-1	AC4-z

4.3 In-Situ Testing

4.3.1 Standard Penetration Tests (SPT)

Standard Penetration Tests (SPT) were carried out in all windowless sampling and cable percussive boreholes in accordance with techniques outlined in BS1377-9:1990, to assess the strength/density of the underlying strata. The 'N' value (number of blows per 300mm penetration) was recorded for each test. The results of these in-situ tests, including full blow counts, are presented on the borehole logs within Appendix V.

4.3.2 Soil Infiltration Testing – BRE DG365 Soakaway Testing

In-situ soil infiltration testing was undertaken in general accordance with BRE DG365 – *Soakaway Design* within the near surface at locations SA101 and SA102 within the first phase of intrusive works, within locations SA201 and SA202 during the third phase of intrusive works and within locations SA301, SA302B and SA303 during the fourth phase of the intrusive works. Soil Infiltration test certificates are presented as Appendix X and summarised in Table 4-3 below.

Table 4-3 Summary of Soil Infiltration Testing

Location	Test Number	Formation	Soil Infiltrations Rate (m/s)
SA101	1	Camberley Sand Formation	N/A
SA102*	1	Camberley Sand Formation	2.54×10^{-7}
SA201	1	Camberley Sand Formation	2.48×10^{-6}
	2		2.29×10^{-6}
	3		N/A
SA202	1	Camberley Sand Formation	2.96×10^{-6}
	2		6.17×10^{-6}
	3		5.35×10^{-6}
SA301	1	Windlesham Formation	1.28×10^{-5}
	2		6.52×10^{-6}
	3		5.75×10^{-6}
SA302B	1	Windlesham Formation	7.96×10^{-6}
	2		1.18×10^{-5}
	3		7.35×10^{-6}
SA303	1	Windlesham Formation	N/A

*Data from Test 1 of SA102 has been extrapolated to provide an indicative infiltration rate due to the test reaching the 75% effective storage depth intercept and proximity to reaching the 25% effective storage depth intercept.

Testing was undertaken at SA101 over a duration of 49hrs, 2 minutes and SA102 over a duration of 49hrs, 52 minutes. During these periods, the required 75% effective storage depth was not reached such that the tests were considered to be unsuccessful. For SA102, due to the proximity of the test reaching its 25% effective storage depth, the data was extrapolated using a line of best fit for the linear part of the graph to provide an indicative soil infiltration rate. Extrapolation indicates that the 25% depth intercept would have been reached after 134 hours, 55minuets.

Testing was undertaken at SA303 over a duration of 24hrs. During this period, the required 75% effective storage depth was not reached such that the test was considered to be unsuccessful.

4.3.3 Permeability Testing – Falling Head Tests within Installed Boreholes

In order to provide further permeability data, falling head tests were undertaken in general accordance with BS 5930:1999+A1:2010 Para 25.4. Testing was undertaken on Monday 15th May 2023 in locations WS102, WS103 and WS105.

The permeability test certificates, including full time and depth data, are included within Appendix XI.

Table 4-4 Falling Head Permeability Rate Summary

Omnia Location Ref:	Test No.	Test Interval (m bgl)	Geological Formation	Permeability Rate (k)
				m/s
WS102	Test 1	0.60-2.60	Windlesham Formation	5.43×10^{-6}
WS103	Test 1	1.60-3.00	Windlesham Formation	N/A

Omnia Location Ref:	Test No.	Test Interval (m bgl)	Geological Formation	Permeability Rate (k)
				m/s
WS105	Test 1	0.60-1.80	Camberley Sand Formation	5.17×10^{-6}
	Test 2			4.23×10^{-6}
	Test 3			3.04×10^{-6}

4.3.4 Ground Gas

Six (6no.) ground gas and groundwater monitoring visits have been undertaken across three (3no.) monitoring wells at the site between 24/04/2023 and 19/06/2024. The results of the gas and groundwater monitoring are presented in Appendix XII and discussed in Section 5.3.

5 TIER 1 QUANTITATIVE CONTAMINATED LAND RISK ASSESSMENT

Omnia has undertaken a Tier 1 qualitative risk assessment to determine if any potential contaminants within the underlying soils pose an unacceptable level of risk to the identified receptors.

5.1 Human Health Risk Assessment

At a Tier 1 stage the long term (chronic) human health toxicity of the soil has been assessed by comparing the on-site concentrations of organic and inorganic compounds with Suitable for Use Levels (S4UL) 2015 published by the LQM/CIEH and LCRM C4SL values and where absent, EA (Contaminated Land Exposure Assessment (CLEA) Soil Guideline Values (SGV)).

Omnia has adopted screening values for a residential end use with home grown produce given the proposed residential development. The origin of the GAC values is presented within Appendix VII.

The average Total Organic Carbon for the site is 0.95% which, based on $SOM = TOC \times 1.72$, gives an average SOM for the site of 1.63%. Therefore, screening values based on 1% SOM have been adopted.

The results of this comparison have been summarised within Appendix XIII, with a summary of the identified exceedances presented within Table 5-1.

Table 5-1 Summary of Inorganic and Hydrocarbon Toxicity Assessment for a Residential End Use with Home Grown Produce

Determinant	Units	GAC	n	EC	Loc. of Ex	Pathway	Assessment
Metals							
Arsenic	mg/kg	37	8	39.5	WS105 (0.60-1.20)	1	Further Assessment Required
PAHs							
Benzo(b)Fluoranthene	mg/kg	2.6	8	3.07	WS104 (0.00-0.22)	1	Further Assessment Required
Benzo(a)Pyrene	mg/kg	2.2	8	2.44	WS104 (0.00-0.22)	1	
Notes Main Exposure Pathways: 1 = Ingestion of Soil & Indoor Dust, 2 = Consumption of Homegrown Produce & Attached Soil; 3 = Dermal Contact (Indoor & Outdoor); 4 = Inhalation of Vapour (Indoor & Outdoor); 5 = Inhalation of Dust (Indoor & Outdoor), 6 = Inhalation of Fibres Abbreviations: GAC = General Assessment Criteria, n = number of samples, EC = Exceedance Concentration; Loc of Ex = Location of Exceedance. Total cyanide Tier 1 GAC is taken from the Dutch Intervention Value (2010) for complex cyanide. ** The Tier 1 GAC for the banded hydrocarbon fraction is derived from the CIEH/S4UL assessment for petroleum hydrocarbons Criteria Working Group (CWG) for both aliphatic and aromatic compounds. Omnia has utilised the lowest of the aliphatic and aromatic chain lengths in order to adopt a conservative approach, which is considered satisfactory for the protection of human health. (sol) – GAC presented exceeds the solubility saturation limit. (vap) – GAC presented exceeds the vapour saturation limit.							

Referring to Table 5-1 above, the result of this direct comparison indicates that there have been exceedances of the following determinants above the adopted Tier 1 screen criteria within two (2no.) of locations:

- Arsenic – WS105 @ 0.60-1.20m bgl;
- Benzo(b)Fluoranthene – WS104 @ 0.00-0.22m bgl; and,
- Benzo(a)Pyrene – WS104 @ 0.00-0.22m bgl.

The exceedances of the Tier 1 risk assessment are shown on Figure 5.0 (Appendix III).

5.1.1 Heavy Metals

5.1.1.1 Arsenic

Concentrations of Arsenic marginally exceeded the adopted Tier 1 screening criteria of 37mg/kg have been identified within one (1no.) location, WS105 at depth of 0.60-1.20m bgl, where a concentration of 39.5mg/kg was identified within the natural soils of the Camberley Sand Formation.

The main exposure pathway for Arsenic is via the ingestion of soil and indoor dust.

A review of the proposed layout suggests that this location is beneath a proposed building footprint, but in close proximity to an area of proposed soft landscaping. At this stage, Omnia have not been provided with proposed finished Ground Levels and as such, it is considered that the identified concentrations have the potential to present a significant risk to human health within proposed areas of soft landscaping and private gardens; where an active exposure pathway is considered likely to remain present post-development.

5.1.2 PAH

5.1.2.1 Benzo(b)Fluoranthene

Concentrations of Benzo(b)Fluoranthene exceeding the adopted Tier 1 screening criteria of 2.6mg/kg have been identified within one (1no.) location at WS104 at a depth of 0.00-0.22m bgl where a concentration of 3.07mg/kg was identified within the Topsoil.

5.1.2.2 Benzo(a)Pyrene

Concentrations of Benzo(a)Pyrene marginally exceeding the adopted Tier 1 screening criteria of 2.2mg/kg have been identified within one (1no.) location at WS104 at a depth of 0.00-0.22m bgl where a concentration of 2.44mg/kg was identified within the Topsoil.

The main exposure pathway for Benzo(b)Fluoranthene and Benzo(a)Pyrene is via the ingestion of soil and indoor dust. A review of the proposed site layout indicates that location WS104 was located within a proposed private garden. As set out above, Omnia have not been provided with proposed finished Ground Levels and as such the identified concentrations are considered to have the potential to present a significant risk to human health within proposed areas of soft landscaping and private gardens; where an active exposure pathway is considered likely to remain present post-development.

5.1.3 Tier 1 Discussion

Location WS104 was advanced adjacent to the driveway of 240 Nine Mile Ride, between the detached garage and the house. As such it is considered that the elevated PAH concentrations within the Topsoil (0.00 – 0.22m bgl) are likely associated with historical and current vehicle use on and around this section of the site.

Location WS105 was advanced within the rear garden of 240 Nine Mile Ride. The elevated Arsenic within the natural soils of WS105 (0.60 – 1.20m bgl) may be attributed to locally naturally elevated Arsenic concentrations within the soils of this area. However, further soil sampling of Camberley Sand Soils would be required to investigate this further.

At this stage, it is recommended that further investigation is undertaken within these areas (WS104 and WS105) to determine the lateral extent of shallow soils impacted by the elevated concentrations.

Once this has been completed and subject to the findings of the additional works remedial works may be required within areas of proposed soft landscaping. Any remedial works, which would likely be restricted to the implementation of a clean cover system within the affected areas, should be detailed within a standalone Remediation Method Statement (RMS), which should be submitted to and agreed by the local authority prior to commencement of works.

5.2 Controlled Waters Assessment

The site is considered to present a low-moderate risk to controlled waters for the following reasons:

- Shallow groundwater strikes were encountered during site works within a number of locations, with the shallowest at 0.58m bgl within HP102 in the south of the site;
- Both bedrock geologies (Camberley Sand Formation and Windlesham Formation) are classified as Secondary A Aquifers;
- Bedrock deposits typically comprised granular soils;
- No superficial cover on-site;
- Elevated concentrations of Arsenic, Benzo(b)Fluoranthene, and Benzo(a)Pyrene are considered to present a low mobility risk and are localised to the northwest; and,
- No significant concentrations of mobile contaminants have been identified within shallow soils beneath the site.

5.3 Ground Gas Assessment

The potential impact on the development from ground gases has been assessed with reference to standards and guidelines published in CIRIA Report C665 (Assessing risks posed by hazardous ground gases to buildings, 2007). However, it is recommended that the full ground gas assessment and any recommended protection measures are agreed with the local authority prior to the adoption of any protection measures on-site. Furthermore, the installation of any gas protection measures should be validated by a suitably qualified engineer.

The results of the ground gas monitoring and calculated Gas Screening Values (GSVs) are presented in Appendix XII.

Six (6no.) ground gas monitoring visits have been undertaken at locations WS102, WS103 and WS105. CH₄ concentrations were recorded to a maximum concentration of 0.4% v/v at locations

WS102 and WS103. CO₂ concentrations were recorded to a maximum of 5.6% v/v at location WS103. Ground gas flow rates were recorded across the site, with a maximum flow rate of 0.3l/hr recorded at location WS102.

In accordance with the methodology outlined within the CIRIA publication C665, Omnia have utilised the results of the ground gas monitoring surveys to calculate a tentative Gas Screening Value (GSV). The maximum GSV calculated for methane was 0.0006l/hr whilst the maximum GSV for carbon dioxide was 0.0126l/hr.

It is understood that the proposed development is for the construction of twenty-eight (28no.) residential units and a block of four (4no.) flats, all with associated private gardens, areas of public open space and infrastructure.

Therefore, the proposed development is composed of low-rise residential dwellings assessed under BS8485(2015)+A1(2019) classed as a **Type A** building, and a managed apartment building with central building management assessed under BS8485(2015)+A1(2019) classed as a **Type B** building.

A preliminary Ground Gas Assessment was completed over three (3no.) gas monitoring visits in each location from the 21/04/2023 to the 19/05/2023. It was determined that the site had an overall **CS-1 classification** and therefore no gas protection measures are required on the site.

However, during this monitoring period high groundwater levels resulted in sealed borehole response zones and a requirement for locations to be purged of water prior to the commencement of ground gas monitoring. It was recommended that the ground gas assessment was considered as preliminary only and that additional ground gas monitoring was undertaken during the summer months when it was anticipated that groundwater levels would be lower and ground gas monitoring could be completed without a sealed response zone.

Three (3no.) further visits were completed in each location between the 05/06/2024 to the 19/06/2024 and the results of this as well as the results the previous monitoring period has given the proceeding ground gas Assessment. It is noted groundwater within WS102 remained high such that the response zone was still sealed prior to bailing.

5.3.1 BS 8485(2015)+A1(2019) – Type A Building – Private Ownership with no Building Management Controls

Guidance set out in BS 8485(2015)+A1(2019), which is equivalent to the Characteristic Situations of the modified Wilson & Card classification established in CIRIA Publication C665, stipulates a site characteristic GSV of <0.07 l/hr, with typical permissible concentrations of 1%v/v (CH₄) and 5% v/v (CO₂), for classification as Characteristic Situation 1 (CS-1); a very low hazard potential.

The maximum concentration of CH₄ was 0.4% with a GSV of 0.0006l/hr and for CO₂ a maximum concentration of 5.6% v/v and a GSV of 0.0126l/hr. Both GSVs therefore fall below the maximum permissible GSV of 0.16l/hr (CH₄) and 0.78l/hr (CO₂) for a Characteristic Situation 1 (CS-1) classification.

5.3.2 BS 8485(2015)+A1(2019) – Type B Building – Private Ownership with Central Building Management

Guidance set out in BS 8485(2015)+A1(2019), which is equivalent to the Characteristic Situations of the modified Wilson & Card classification established in CIRIA Publication C665, stipulates a

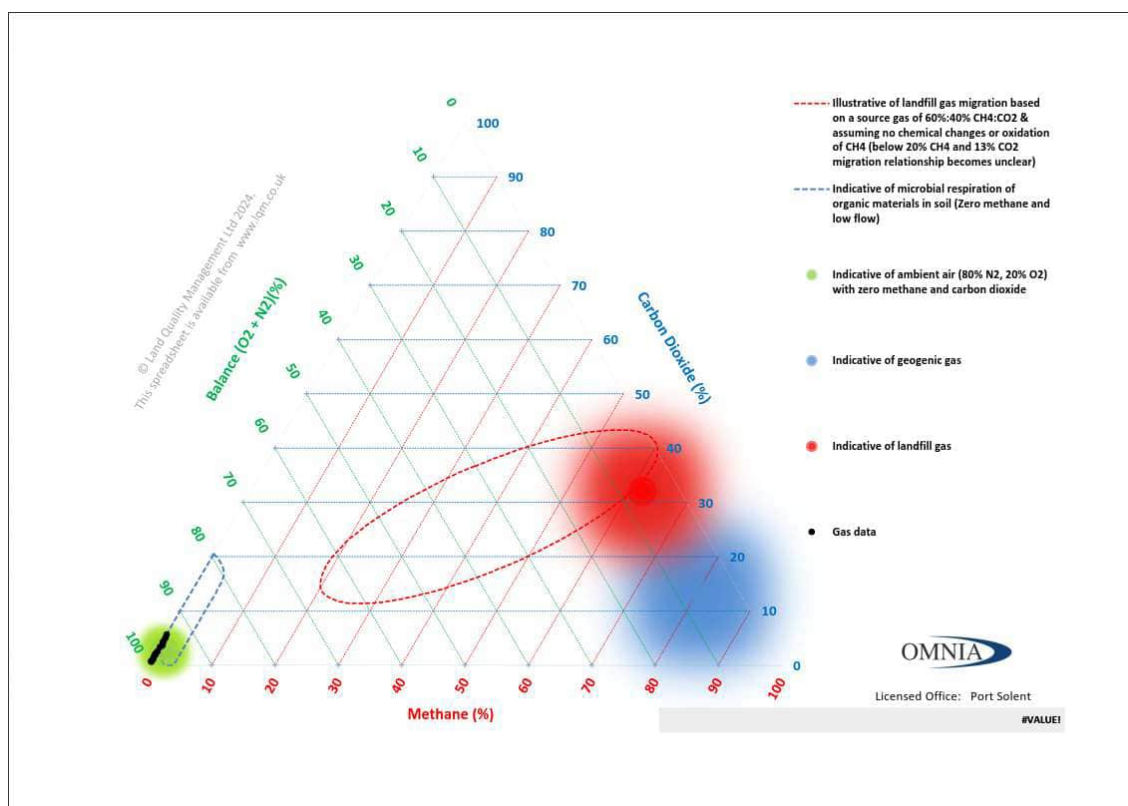
site characteristic GSV of <0.07 l/hr, with typical permissible concentrations of 1%v/v (CH_4) and 5% v/v (CO_2), for classification as Characteristic Situation 1 (CS-1); a very low hazard potential.

The maximum concentration of CH_4 was 0.4% with a GSV of 0.0006l/hr and for CO_2 a maximum concentration of 5.6% v/v and a GSV of 0.0126l/hr. Both GSVs therefore fall below the maximum permissible GSV of 0.16l/hr (CH_4) and 0.78l/hr (CO_2) for a Characteristic Situation 1 (CS-1) classification.

When monitoring wells are installed into soils containing low concentrations of organic carbon these small volumes of organic material are exposed to oxygen which can result in biological respiration or oxidation of the organic matter resulting in the production of CO_2 . However, the CO_2 is generated so slowly that it will not be emitted from the ground surface in quantities or at a rate that is sufficient to pose a risk to overlying development.

The results of ground gas monitoring were used to create a Ternary Plot as set out in Wilson, et. al. (2018). A review of this plot indicates that all monitoring results plot in the bottom left corner of the ternary plot, an area of the plot which is indicated by Figure 5-1 of Wilson et. al. (2018) (Appendix XII) as being indicative of microbial respiration of organic material within soil.

Figure 5-1 Gas Assessment Ternary Plot



Given the above, it is not considered that the two elevated concentrations of CO_2 warrant the ground gas classification being increased to CS-2 and therefore we consider that a CS-1 classification will prove suitably protective for the site.

Given the identified **CS-1 classification**, no gas protection measures are required on the site. It is recommended this assessment is provided to the LPA.

6 REVISED CONCEPTUAL SITE MODEL

Following completion of the Tier 1 risk assessment active pollution pathways have been identified based on a residential end use with homegrown produce.

Table 6-1 Revised Conceptual Site Model

Source	Potential Migration Pathway	Potential Receptors	Discussion of Pollutant Linkage
Elevated concentration of Arsenic within WS105 @ 0.60-1.20m bgl	Ingestion of Soil & Indoor Dust	Future Site Users	Shallow soils from the Camberley Sand Formation are considered to have the potential to pose a significant risk to human health within areas of proposed soft landscaping and private gardens where an exposure pathway is considered likely to remain active post-development. At this stage it is recommended that further investigation is undertaken in areas where elevated concentrations have been identified (WS105) to determine the lateral extent of shallow soils impacted by elevated concentrations of Arsenic. Once this has been completed remediation may be required within the areas of future soft landscaping. Remedial works should be detailed within a standalone Remediation Method Statement (RMS) which should be submitted to and agreed by the local authority prior to commencement of works.
Elevated concentrations of PAH within WS104 @ 0.00-0.22m bgl	Ingestion of Soil & Indoor Dust	Future Site Users	Near surface soils from the Topsoil are considered to have the potential to pose a significant risk to human health within areas of proposed soft landscaping and private gardens where an exposure pathway is considered likely to remain active post-development. At this stage it is recommended that further investigation is undertaken in areas where elevated concentrations have been identified (WS104) to determine the lateral extent of shallow soils impacted by elevated concentrations of PAH. Once this has been completed remediation may be required within the areas of future soft landscaping. Remedial works should be detailed within a standalone Remediation Method Statement (RMS) which should be submitted to and agreed by the local authority prior to commencement of works.

7 GEOTECHNICAL ASSESSMENT

7.1 Proposed Development

It is understood that the proposed development is for the construction of twenty-eight (28no.) residential units and a block of four (4no.) flats, all with associated private gardens, areas of public open space and infrastructure.

7.2 Site Preparation

The site should be cleared of any vegetation below the areas of proposed development and stripped in accordance with [Series 200 of Specification of Highway Works](#).

Any roots present below the footprint of proposed structures and infrastructure should be grubbed out and the resulting voids in-filled with suitable compacted material. This should also be undertaken for any redundant or re-routed services.

7.3 Ground Profile

Based on the findings on the current ground investigations, ground conditions at the site comprise Topsoil/Made Ground overlying bedrock deposits of the Camberley Sand Formation and the Windlesham Formation to the full depth of the ground investigation, discussed in 4.1. Site ground conditions are summarised in Table 7-1.

Table 7-1 Summary of site ground conditions

Borehole	Topsoil Thickness (m)	Made Ground Thickness (m)	Bedrock		Groundwater (m bgl)
			Camberley Sand Formation Thickness (m)	Windlesham Formation Thickness (m)	
HP101	0.20	-	>0.40	-	-
HP102	0.10	-	>0.50	-	0.58
HP103	0.12	-	>0.18	-	-
HP104	0.12	-	>0.48	-	0.60
HP105	0.10	-	>0.50	-	-
HP106	0.10	-	>0.51	-	0.60
HP107	0.10	-	>0.50	-	-
HP108	0.10	-	>0.50	-	-
HP109	0.20	-	>0.50	-	-
WS101	0.15	-	-	>1.85	1.40
WS102	0.20	-	-	>2.80	1.40
WS103	0.20	-	-	>2.80	1.40
WS104	0.22	-	-	>2.28	1.50
WS105	0.10	-	>1.70	-	-
SA101	0.20	-	-	>1.40	-
SA102	0.30	-	-	>1.70	2.00
BH101	0.30	-	-	>9.70	-
BH102	0.30	-	4.65	>4.05	3.00 and 4.95
SA201	0.05	-	>1.35	-	-
SA202	0.20	-	>1.00	-	-
CP301	0.40	-	-	>19.60	2.50
CP302	0.20	-	1.45	>19.00	-

Borehole	Topsoil Thickness (m)	Made Ground Thickness (m)	Bedrock		Groundwater (m bgl)
			Camberley Sand Formation Thickness (m)	Windlesham Formation Thickness (m)	
SA301	0.10	-	0.60	>0.40	-
SA302	0.10	-	0.40	>1.70	2.10
SA302B	0.10	-	0.25	>0.75	-
SA303	-	1.10	-	>1.40	-
TP301	0.10	-	0.80	>2.10	-
TP302	0.10	-	0.50	>2.40	-

7.4 Shallow Foundations

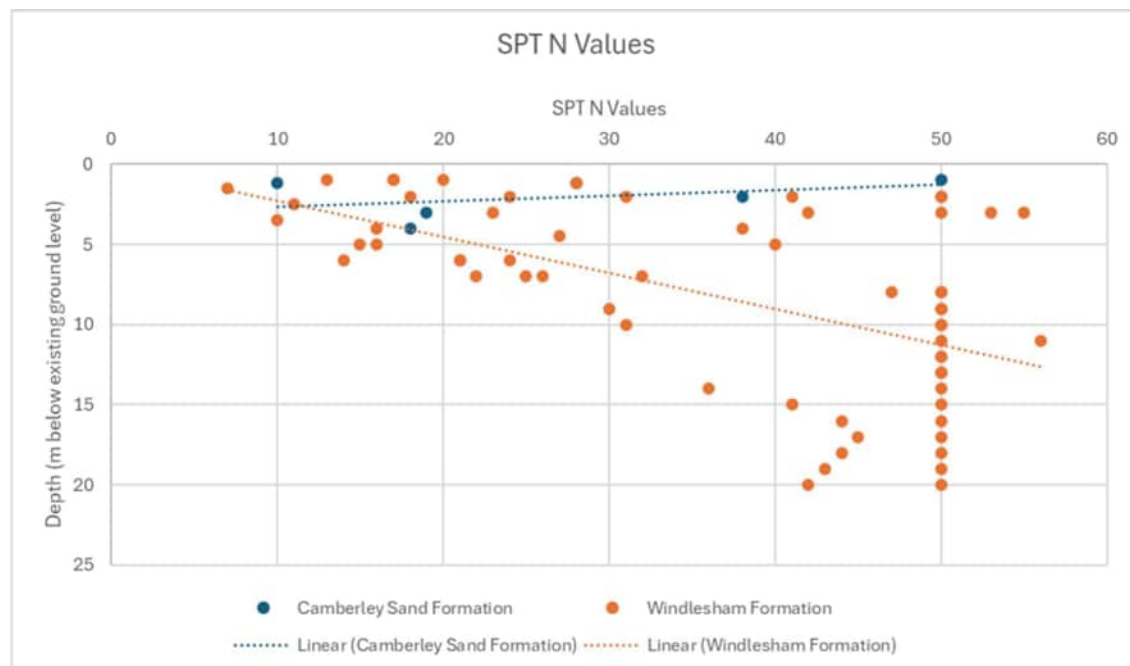
The following geotechnical assessment has been undertaken based on in-situ testing, laboratory analysis, and descriptions on the underlying geology. Foundation depths presented are indicative only based on a minimum presumed bearing value for a particular foundation type. Line loadings have not been made available such that the final depth and type of foundation required following design could vary.

It is considered that Topsoil and Made Ground would not form a suitable founding stratum due to characteristic variability and the associated potential for differential settlement. As such it is recommended that loads are transferred through the Topsoil and Made Ground to a depth at which competent geology, sufficient to support the proposed load, is encountered.

7.4.1 In Situ-Testing

Standard Penetration Testing was undertaken throughout the fine-grained and coarse-grained Camberley Sand Formation and Windlesham Formation. The results are presented in Graph 7-1 below:

Graph 7-1 SPT vs Depth



The SPT data shows an increase in N-value with depth from N=7 at 1.50m bgl to N>50 between 2.00m bgl and 20.00m bgl.

The Camberley Sand Formation shows a general decrease in N-value with depth from N>50 at 1.00m bgl to N=18 at 4.00m bgl.

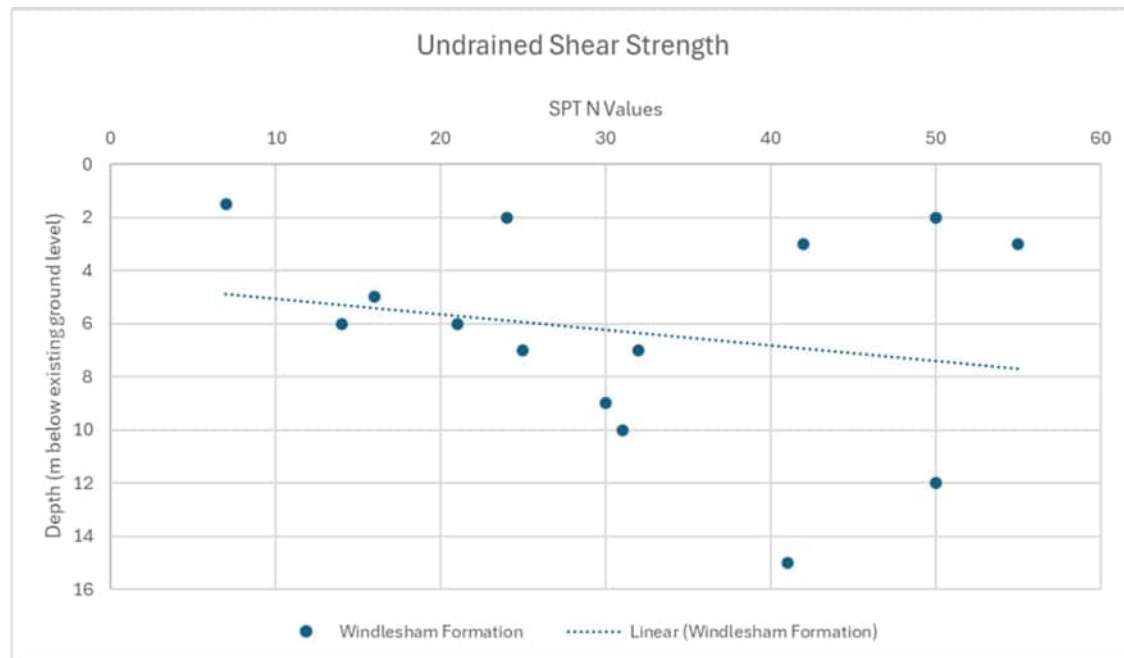
7.4.2 Shear Strength

The undrained Shear Strength of the fine-grained strata within the Windlesham Formation have been determined by using the widely accepted empirical relationship, where f_1 is based on the correlation factor based on the plasticity index of the soil (Stroud, 1974):

$$C_u = f_1 \times SPTN$$

Using a correlation factor of 4.5 gives characteristic undrained shear strengths (C_u) of between 31.5kN/m² (2.00m bgl) and 247.5 kN/m² (3.00m bgl) as represented in Graph 7-2 below.

Graph 7-2 Shear Strength vs Depth



7.4.3 Shallow Foundation Bearing Capacities

7.4.3.1 Windlesham Formation

The shallow natural strata of the Windlesham Formation was found to the north of the site, the strata comprised both cohesive and granular deposits, with positions WS101, WS103, BH101 and BH102 with recording cohesive deposits from a minimum depth of 2.00mbgl.

The indicative assessment below has differentiated between cohesive and granular soils for each depth due to the differing assessment methods, however it is recommended for the purposes of preliminary design that the most conservative bearing capacity for a given foundation depth is adopted due to the variability at the site.

It is recommended that a detailed foundation design report is produced for the site once the proposed development plan and structural loadings are confirmed.

Indicative Bearing Capacity at 1.00m bgl – 1.20m bgl

At a depth of 1.00 – 1.20m bgl SPT N values within granular soils of the Windlesham Formation were recorded ranging from N=13 (WS102) to N=28 (BH101), indicating medium-dense materials.

Adopting a conservative N=13 value, the granular soils of the Windlesham Formation is considered to provide a presumed bearing value of 150-500kN/m² for a traditional strip foundation of 1.00m width.

Indicative Bearing Capacity at 2.00m bgl

At a depth of 2.00m bgl within the granular soils of the Windlesham Formation SPT N values were recorded between N=18 (WS104) and N=50 (BH101), indicating medium-dense material.

Adopting a conservative N=18 value, the granular soils of the Windlesham Formation are expected to provide a presumed bearing value of 150-500kN/m² for a traditional strip foundation of 1.00m width.

For the cohesive Windlesham deposits, SPT results ranged from N=24 (WS103) to N=50 (WS101) corresponding to undrained shear strengths of 108kN/m² to 225kN/m², indicating medium to high strength material respectively.

Based on an undrained shear strength of 108kN/m², the cohesive Windlesham deposits is expected to provide a presumed bearing value of 200-400kN/m² for a traditional strip foundation of 1.00m.

Should deeper traditional foundations be required, Omnia recommend that in accordance with *NHBC Standards (2021) 4.3 – Strip and trench fill foundations*, if trench fill foundations are deeper than 2.50mbgl, the foundation will require to be designed by an engineer in accordance with Technical Requirement R5.

7.4.3.2 Camberley Sand Formation

Indicative Bearing Capacity at 1.00m bgl – 1.20m bgl

At a depth of 1.00 – 1.20m bgl SPT N values within granular soils of the Camberley Sand Formation were recorded ranging from N=28 (BH102) to N=50 (WS105), indicating medium-dense to dense materials respectively.

Adopting a conservative N=28 value, the granular soils of the Camberley Sand Formation is considered to provide a presumed bearing value of 150-500kN/m² for a traditional strip foundation of 1.00m width.

Indicative Bearing Capacity at 2.00m bgl

At a depth of 2.00m bgl, an SPT N value of N=38 (BH102) was recorded within the granular soils of the Camberley Sand Formation indicating dense materials. Adopting this N=38 value, is considered to provide a presumed bearing value of 500-800kN/m² for a traditional strip foundation of 1.00m width.

7.5 Deep Foundation Assessment

Where near surface bearing capacities are considered insufficient for the anticipated structural loads, piled foundations should be considered. Depending on foundation column load requirements, a choice of pile lengths and diameters can be designed to bear into the Windlesham Formation. The proven ground conditions would indicate that continuous flight auger (CFA) piles could be employed to provide a suitable foundation solution, although this is for discussion purposes only. Where groundwater and/or unstable ground conditions are encountered, casing should be considered for CFA piles.

Given the properties of the strata beneath the site, indicative values for single axially loaded piles have been determined using the relationships presented in BS EN 1997-2.

Although higher carrying capacities are often achieved by driven piles, the use of driven piles can cause environmental issues (noise and vibration). Therefore, the initial axial resistance calculations have been carried out on augered piles.

The ULS axial resistances of 0.30, 0.45 and 0.60m diameter augered piles of varying lengths have been determined for the ground model presented in Table 7-2.

The ground model is based on the observations of the deep boreholes (BH101 and BH102) in which granular deposits of the Camberley Sand Formation overlie cohesive deposits of the Windlesham Formation, further underlain by granular deposits of the Windlesham Formation.

For the purposes of the below indicative pile calculations the soils have been assessed as granular throughout which is considered to be a conservative case whereby the shaft resistance is reduced. The shaft resistance for the upper 3m has been ignored for the purposes of preliminary design.

Table 7-2. Pile Resistances bearing– Augered Pile

Pile Diameter (m)	Pile Length (m)	Pile Resistance (kN)			
		MG	Shaft Resistance (Qs)	Base Resistance (Qb)	Total Axial Resistance (kN)
0.30	10.00	No input in Axial Resistance	170	200	370
	15.00		460	300	760
	19.00		790	390	1180
0.45	10.00	No input to Axial Resistance	255	450	705
	15.00		690	690	1380
	19.00		1185	875	2060
0.60	10.00	No input to Axial Resistance	345	800	1145
	15.00		920	1220	2140
	19.00		1580	1560	3140

The above pile axial resistances are indicative only and are subject to design. A detailed piled

foundation design will be required once the pile layout is finalised by a piling contractor and structural engineer.

It is recommended that early discussions with an experienced piling contractor is undertaken to clarify the pile diameters. Once the pile cap, positions and diameters are known further pile group analysis may be required.

Subject to NHBC, regulatory and/or design requirements, the potential may exist to calculate bearing capacities and settlement for foundations in accordance with EC7 through production of a Geotechnical Design Report (GDR).

7.6 Groundwater Levels

Consideration should also be given to shallow groundwater encountered across the site. Groundwater was encountered between 0.58m bgl and 4.95m bgl during the site investigations across the site. Resting groundwater between 0.65m bgl (WS102) and 1.96m bgl (WS103) was encountered during subsequent monitoring of water levels. If groundwater is below the base of the foundation at a depth of less than the width of the proposed foundation, then groundwater can significantly reduce the bearing capacity of fine-grained soils.

As this is a Ground Investigation Report (GIR) the effects of groundwater on the bearing capacity of shallow foundations have not been taken into account. Should design values be required, this may be provided by production of a Geotechnical Design Report (GDR).

7.7 Building Near Trees

7.7.1 NHBC Minimum Depth to Foundations

The shallow fine-grained soils of the Windlesham Formation on-site have been shown via laboratory analysis to generally be of medium to high plasticity and medium volume change potential, however very high plasticity soils and high-volume change soils were encountered within BH101 (5.90-6.00m bgl). Modified plasticity indices range from 22% to 53% which was predominantly medium volume change potential. Therefore, the cohesive soils of the Windlesham Formation have been assessed as Medium Volume Change Potential.

NHBC guidance offers two foundation depth scenarios dependant on future planting regimes for Medium Volume Change Soils which utilises Tables 4 and 5 of NHBC Chapter 4.2 – Building Near Trees, summarised in Table 7-3 and Table 7-4 below.

Table 7-3 Minimum depth of foundations (after NHBC 2021)

Volume change potential	(A) Minimum foundation depth (m) (allowing for restricted new planting)	(B) Minimum foundation depth (m) (where planting is outside the zone of influence of trees)
High	1.50	1.00
Medium	1.25	0.90
Low	1.00	0.75

Table 7-4 New tree planting (after NHBC 2021)

Water demand	No tree planting zone for column A in Table 7-3	No tree planting zone / zone of influence for column B in Table 7-3
High	1.0 x mature height	1.25 x mature height
Moderate	0.5 x mature height	0.75 x mature height
Low	0.2 x mature height	0.50 x mature height

NHBC guidance indicates a minimum foundation depth of 0.90m bgl for medium volume change soils outside of the zone of tree influence (Column B, Table 7-3), which is dependent on the tree species but may be up to 0.75 x mature tree height (Table 7-4). Foundation depths will need to be increased within the zones of influence of existing or recently removed trees, as set out by NHBC Guidance (Chapter 4.2 – Building near Trees).

7.7.2 Lateral pressure and heave

Where foundations are more than 1.5m deep, within the influence of trees which are to remain or be removed, and may be subject to heave, they should be protected by voids, void formers or compressible materials to be take into account the effects of lateral swelling of soils. Minimum thicknesses of voids are set out in Table 7 of NHBC Chapter 4.2 – Building Near Trees.

Guidance is set out in NHBC the basic requirement is that compressible material or void former should be installed on the inside faces of external foundation walls. With piled foundation additional voids are required below ring beams. Position of heave precautions are set out in Table 8 of NHBC Chapter 4.2 – Building Near Trees.

7.8 Shallow Excavations

Particular consideration should be made when excavating due to high groundwater being encountered during site works and follow-on monitoring visits, which may cause pit instability within granular deposits. Where sand deposits are encountered with high groundwater, running sands may be encountered, which may require the local deepening of foundations. It is recommended that special construction techniques are utilised, when necessary, when excavating foundations, such as dewatering and pit stabilisation.

7.9 Ground Floor Slabs

Due to the Medium to High Volume Change Potential of the cohesive soils on site, it is considered that ground floor slabs are not suitable for adoption and therefore a suspended floor slab should be adopted in accordance with NHBC Chapter 5.2 to mitigate against the effects of differential settlement.

If levels were to be changed on-site requiring steps in the substructure, further consideration should be given to the adoption of floor slabs, with reference to NHBC Standards (2011) 5.1 – *Substructure and ground bearing floors*.

7.10 Concrete Durability

As set out in Section 4.2.1, the Camberley Sand Formation has been classified as DS-1, AC-3z and the Windlesham Formation has been classified as DS-1 AC-4z under the BRE Special Digest (2005) thresholds.

As stated in BRE Special Digest (2005), concrete placed in ACEC classes that include the suffix 'z' primarily have to resist acid conditions and may be made with any of the cements or combinations listed in Table D2 of BRE SD1.

7.11 Soakaway Testing

Soakaway testing was undertaken in general accordance with BRE 365. The test results are summarised in Table 4-3.

Testing was undertaken within SA101 and SA102 over a duration of 49:02:00 – 49:52:00 (hours: minutes: seconds). During these periods, the required 75% intercepts were not reached within any of the tests conducted and therefore the tests were considered unsuccessful. Soil infiltration rate could not be calculated in SA101 indicating practically impermeable to very poor drainage conditions.

For SA102, due to the proximity of the test reaching its 25% effective storage depth, the data was extrapolated using a line of best fit for the linear part of the graph to provide an indicative soil infiltration rate. Extrapolation indicates that the 25% depth intercept would have been reached within 8,095 minutes (134 hours, 55minutes).

The third test at location SA201 was undertaken over a duration of 06:38:00 (hours: minutes: seconds). During this period the required 75% intercept was not reached and therefore a soil infiltration rate could not be calculated for this test.

Testing was undertaken within SA303 over a duration of 24:00:00 (hours: minutes: seconds). During this period, the required 75% intercept was not reached within the test conducted and therefore the tests were considered unsuccessful indicating practically impermeable to very poor drainage conditions.

Given the practically impermeable to very poor drainage conditions, these locations are not likely to prove suitable for conventional soakaway design.

Testing was undertaken within SA201, SA202, SA301 and SA302B over a duration of 01:00:00 – 24:05:00 (hours: minutes: seconds). During these periods, the required 25% and 75% effective

storage depth intercepts were reached within all locations therefore the tests were considered to be successful, providing soil infiltration rates ranging from 2.48×10^{-6} m/s (SA201 Test 1) to 51.28×10^{-5} m/s (SA301 Test 1) indicating low to medium permeability soil with borderline poor to good drainage conditions, consistent with sand and granular soil types.

Given the 'borderline poor to good' infiltration rates within the near surface granular deposits the areas of these tests are likely to prove suitable for conventional soakaway design within all locations.

It is recommended that the calculated infiltration rates are provided to a suitability qualified drainage engineer. The application of soakaway drainage will ultimately be dependent on the specific requirements of the development. All soakaways should be designed in accordance with BRE Special Digest 365-Soakaway Design.

7.12 Permeability Testing within Installed Boreholes

Falling head permeability tests were undertaken in general accordance with BS 5930:1999+A1:2010 Para 25.4. The test results are summarised in Table 4-4.

The results of the falling head permeability tests yielded permeability rates ranging from 3.04×10^{-6} to 5.17×10^{-6} m/s for the Camberley Sand Formation (WS105).

The results of the falling head permeability tests yielded permeability rates of 5.43×10^{-6} m/s for the Windlesham Formation (WS102). A rate was not calculated for WS103 due to slow drainage during the testing period.

It is recommended that the calculated permeability rates are provided to a suitability qualified drainage engineer. The application of soakaway drainage will ultimately be dependent on the specific requirements of the development. All soakaways should be designed in accordance with BRE Special Digest 365-Soakaway Design.

7.13 Discussion

It is considered that bearing capacities at a depth of 1.00m bgl are, subject to acceptable line loadings, potentially suitable for shallow foundations for standard low-rise housing units. These should bear into the shallow Camberley Sand Formation or Windlesham Formation, providing a minimum allowable bearing capacity of 210 kN/m^2 and 180 kN/m^2 respectively in granular soils.

A minimum foundation depth of 0.90m bgl is anticipated for a Medium Change Volume soil within the Windlesham Formation outside of the zone of tree influence, in accordance with NHBC. Where foundations are likely to be within the influence of trees foundation depths will require locally deepening. The extent to which they should be deepened should be in accordance with NHBC guidance, Chapter 4.2 – Building Near Trees (Tables 4 and 5).

Should loadings exceed those set out above then alternative founding solutions will need to be explored. Preliminary piling information is set out above should deep foundations be required.

Subject to regulatory requirements, the potential requirement exists to calculate bearing capacities and undertaken settlement analysis for foundations through production of a Geotechnical Design Report (GDR) which would provide calculations to current guidance, UK National Annex to EC7. Foundation design should be completed by a suitably qualified Structural Engineer, with specific consideration given to the variability in soil strengths.

8 CONCLUSIONS AND RECOMMENDATIONS

Revised Conceptual Site Model

Elevated concentrations of Arsenic, Benzo(b)Fluoranthene, and Benzo(a)Pyrene, have been identified within the northeastern extent of the site. As proposed soft landscaping is proposed on-site, an active pollution pathway remains. Further works are required to investigate the lateral extent of the identified contaminants.

Ground Gas Classification

The site is classified as **CS-1** under BS 8485(2015)+A1(2019). It is considered that ground gas protection measures are not required on the site.

Concrete Classification

Formation	Characteristic pH	Characteristic SO ₄	Design Sulphate Class	ACEC Class
Camberley Sand Formation	4.60	14.0	DS-1	AC3-z
Windlesham Formation	4.32	61.4	DS-1	AC4-z

Geotechnical Assessment

Foundation design – A minimum allowable bearing capacity of 210kN/m² is considered appropriate for a shallow foundation bearing into the Camberley Sand Formation.

A minimum allowable bearing capacity of 180kN/m² is considered appropriate for a shallow foundation bearing into the Windlesham Formation.

Preliminary Pile Capacities were calculated and are presented in section 7.5.

VCP/NHBC Chapter 4.2 – Shallow granular soils of the Windlesham Formation are predominantly considered to be of Medium Volume Change Potential. Minimum foundation depths in accordance with NHBC should be applied.

Groundwater – Groundwater was encountered between 0.58m bgl and 4.95m bgl during the site investigations across the site. Resting groundwater between 0.65m bgl and 1.96m bgl was encountered during subsequent monitoring of water levels. Given the shallow depth of the groundwater encountered, consideration should be given to shallow groundwater when designing foundations.

Lateral Pressure and Heave – Foundations more than 1.50m deep and subject to heave should be protected by voids, void formers or compressible materials as per NHBC guidance.

Ground Floor Slabs – Given the Medium to High Volume Change Potential of the shallow cohesive soils on site, a suspended floor slab is considered the most appropriate option.

Soakaway Viability – Soakaway drainage would likely work in principle in the vicinity of locations SA201, SA202, SA301 and SA302B. Low permeability soils with borderline poor to good drainage conditions were identified which are likely to prove suitable for conventional soakaway design.

In the vicinity of locations SA101, SA102 and SA303 practically impermeable to very low permeability soils with poor drainage conditions were identified and therefore the area is not likely to prove suitable for conventional soakaway design.

Recommendations

Environmental

Following the Tier 1 Human Health Risk assessment, elevated concentrations of Arsenic and PAH have been identified in the vicinity of locations within the northeastern extent of the site. An active pollution pathway is considered to have the potential to remain active within areas of proposed soft landscaping and private gardens. It is therefore recommended that a delineation exercise be undertaken post demolition in the vicinity of locations WS104 and WS105 to investigate the lateral extent of elevated concentrations of

Arsenic and PAHs, to determine the requirement for, and extent of, remedial works.

Should any additional significant visual or olfactory evidence of unexpected contamination be identified during the development then works should be halted in the affected area and contact made with a suitably qualified and experienced Environmental Consultant to determine an appropriate course of action, which may include additional investigation, and as necessary, a Remediation Method Statement.

Contact should be made with the regulator to confirm the proposed scope of works.

The following list is not exhaustive, but should be used as guidance with regards to what should be considered indicative of soil contamination that may require remedial works:

- Free-phase contamination (liquid oils or fuels);
- Loose fibrous materials or cement bound materials (PACM);
- Visually significant staining of soils;
- Evidence of invasive plants such as Japanese Knotweed, Himalayan Balsam, Marestalk or Giant Hogweed; and,
- Olfactory evidence of hydrocarbon contamination.

Geotechnical

It is recommended that the following is completed:

- A Tree influence plan is produced for the site in line with NHBC guidance once a detailed design has been finalised.
- Geotechnical Design Report (GDR) with bearing calculations in line with EC7 is produced for the site once detailed design has been finalised and detailed loadings are known.
- The results of the soakaway testing and shallow percolation testing are provided to a suitably qualified drainage engineer.

APPENDIX I - LIMITATIONS

1. This report and its findings should be considered in relation to the terms of reference and objectives agreed between Omnia and the Client as indicated in Section 1.2.
2. For the work, reliance has been placed on publicly available data obtained from the sources identified. The information is not necessarily exhaustive and further information relevant to the site may be available from other sources. When using the information, it has been assumed it is correct. No attempt has been made to verify the information.
3. This report has been produced in accordance with current UK policy and legislative requirements for land and groundwater contamination, which are enforced, by the local authority and the Environment Agency. Liabilities associated with land contamination are complex and requires advice from legal professionals.
4. During the site walkover reasonable effort has been made to obtain an overview of the site conditions. However, during the site walkover no attempt has been made to enter areas of the site that are unsafe or present a risk to health and safety, are locked, barricaded, overgrown, or the location of the area has not been made known or accessible.
5. Access considerations, the presence of services and the activities being carried out on the site limited the locations where sampling locations could be installed and the techniques that could be used.
6. Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities.
7. Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials this is for indicative purposes only and do not constitute or replace full and proper surveys.
8. The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.
9. Omnia cannot be held responsible for any use of the report or its contents for any purpose other than that for which it was prepared. The copyright in this report and other plans and documents prepared by Omnia is owned by them, and no such plans or documents may be reproduced, published or adapted without written consent. Complete copies of this may, however, be made and distributed by the client as is expected in dealing with matters related to its commission. Should the client pass copies of the report to other parties for information, the whole report should be copied, but no professional liability or warranties shall be extended to other parties by Omnia in this connection without their explicit written agreement there to by Omnia.
10. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.

APPENDIX II – GLOSSARY

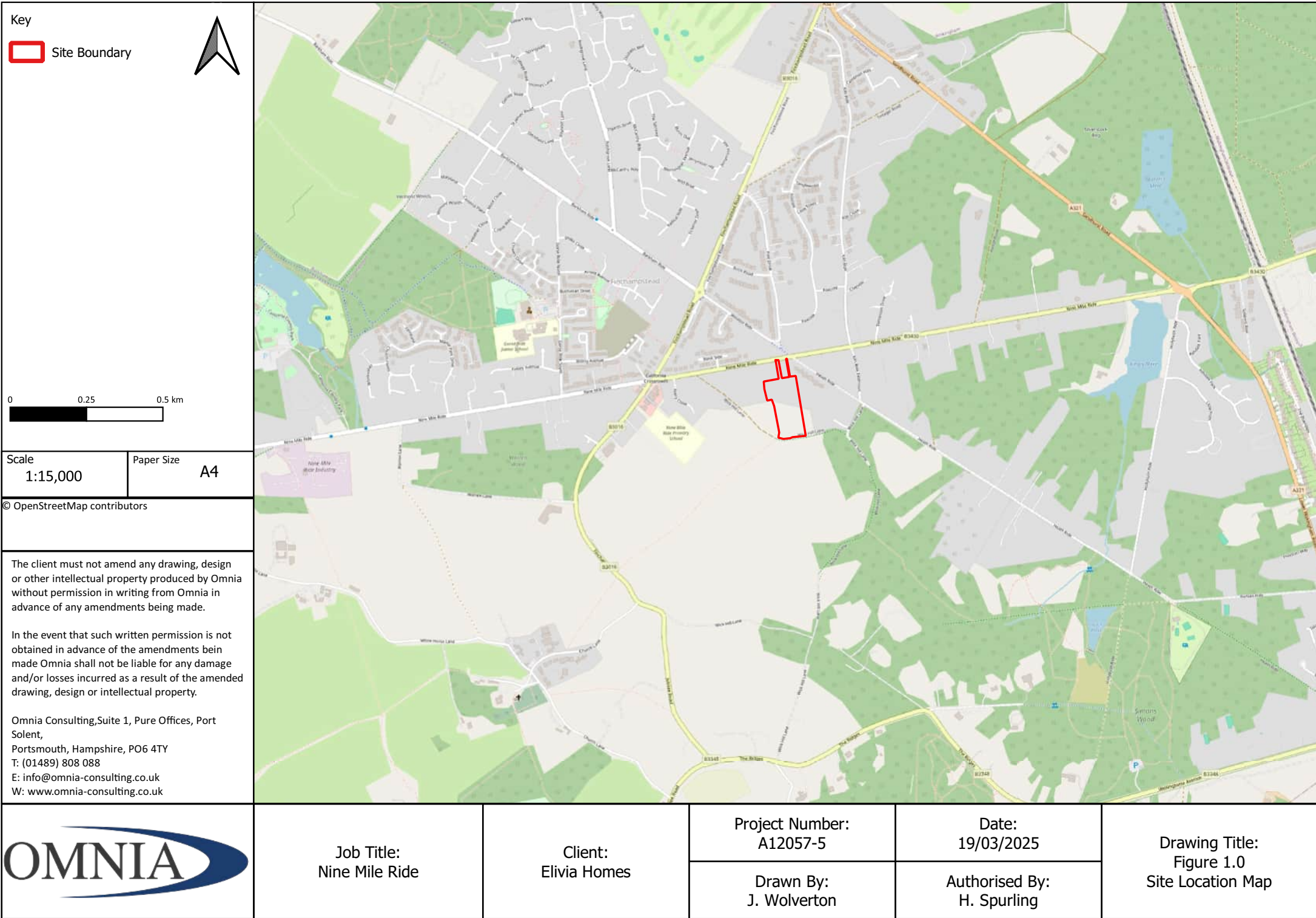
AST	Above Ground Storage Tank
BGS	British Geological Survey
BSI	British Standards Institute
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CIEH	Chartered Institute of Environmental Health
CIRIA	Construction Industry Research Association
CLEA	Contaminated Land Exposure Assessment
CSM	Conceptual Site Model
DNAPL	Dense Non-Aqueous Phase Liquid (Chlorinated Solvents, PCB)
DWS	Drinking Water Standard
EA	Environment Agency
EQS	Environmental Quality Standard
GAC	General Assessment Criteria
GL	Ground Level
GSV	Gas Screening Value
HCV	Health Criteria Value
ICSM	Initial Conceptual Site Model
LNAPL	Light Non-Aqueous Phase Liquid (Petrol, Diesel, Kerosene)
ND	Not Detected
LMRL	Lower Method Reporting Limit
NR	Not Recorded
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Poly-Chlorinated Biphenyl
PID	Photo-Ionisation Detector
QA	Quality Assurance
SGV	Soil Guideline Value
SPH	Separate Phase Hydrocarbon
TPH (CWG)	Total Petroleum Hydrocarbon (Criteria Working Group)
SPT	Standard Penetration Test
SVOC	Semi Volatile Organic Compound
UST	Underground Storage Tank
VCCS	Vibro Concrete Columns
VOC	Volatile Organic Compound
WTE	Water Table Elevation

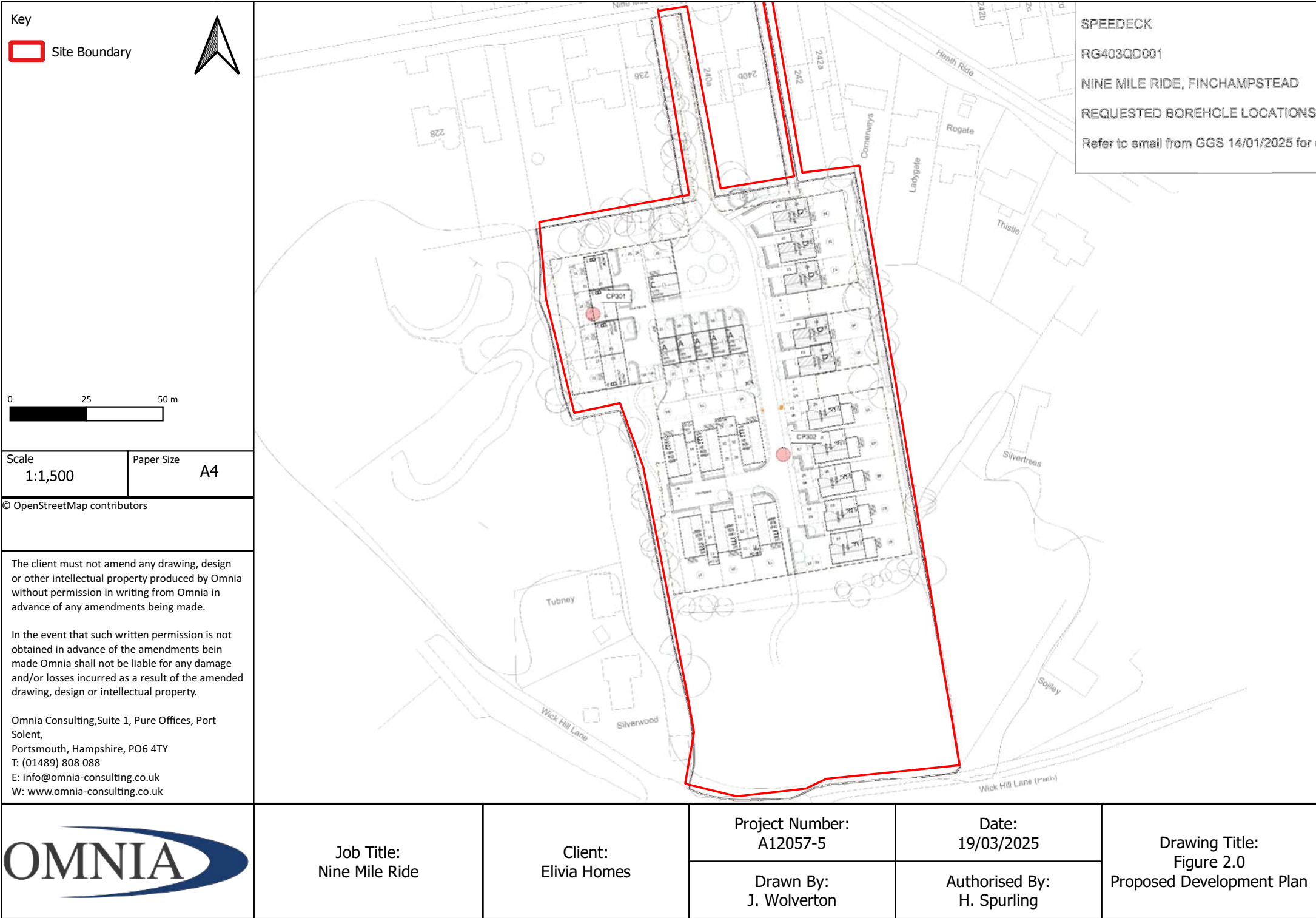
UNITS

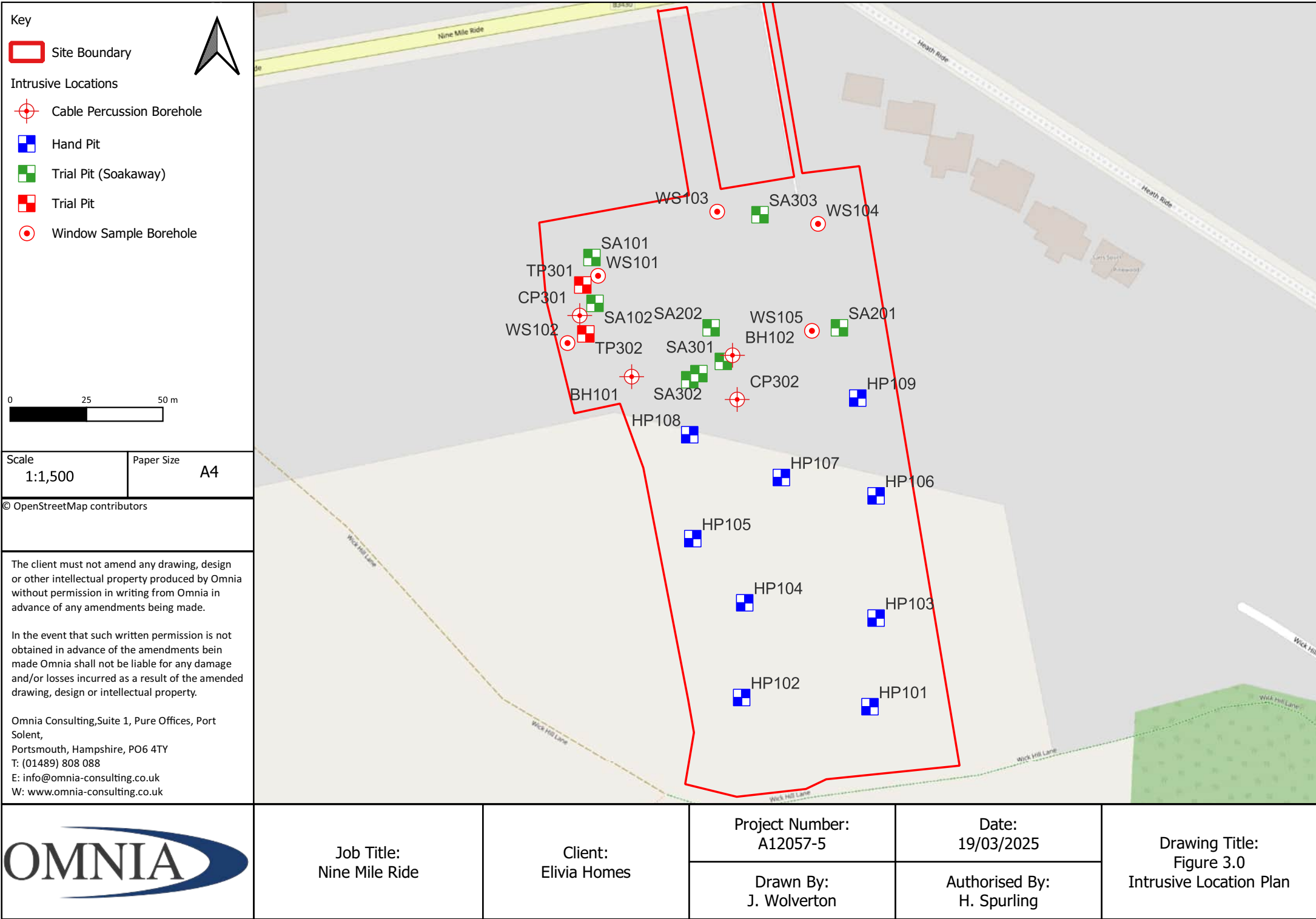
M	Metres
KM	Kilometres
%	Percent
%V/V	Percent Volume in Air
MB	Milli Bars (Atmospheric Pressure)
L/HR	Litres Per Hour
µG/L	Micrograms Per Litre (Parts Per Billion)
PPB	Parts Per Billion
MG/KG	Milligrams Per Kilogram (Parts Per Million)
PPM	Parts Per Million
MG/M ³	Milligram Per Metre Cubed
M BGL	Metres Below Ground Level
M BCL	Metres Below Cover Level
MAOD	Metres Above Ordnance Datum (Sea Level)

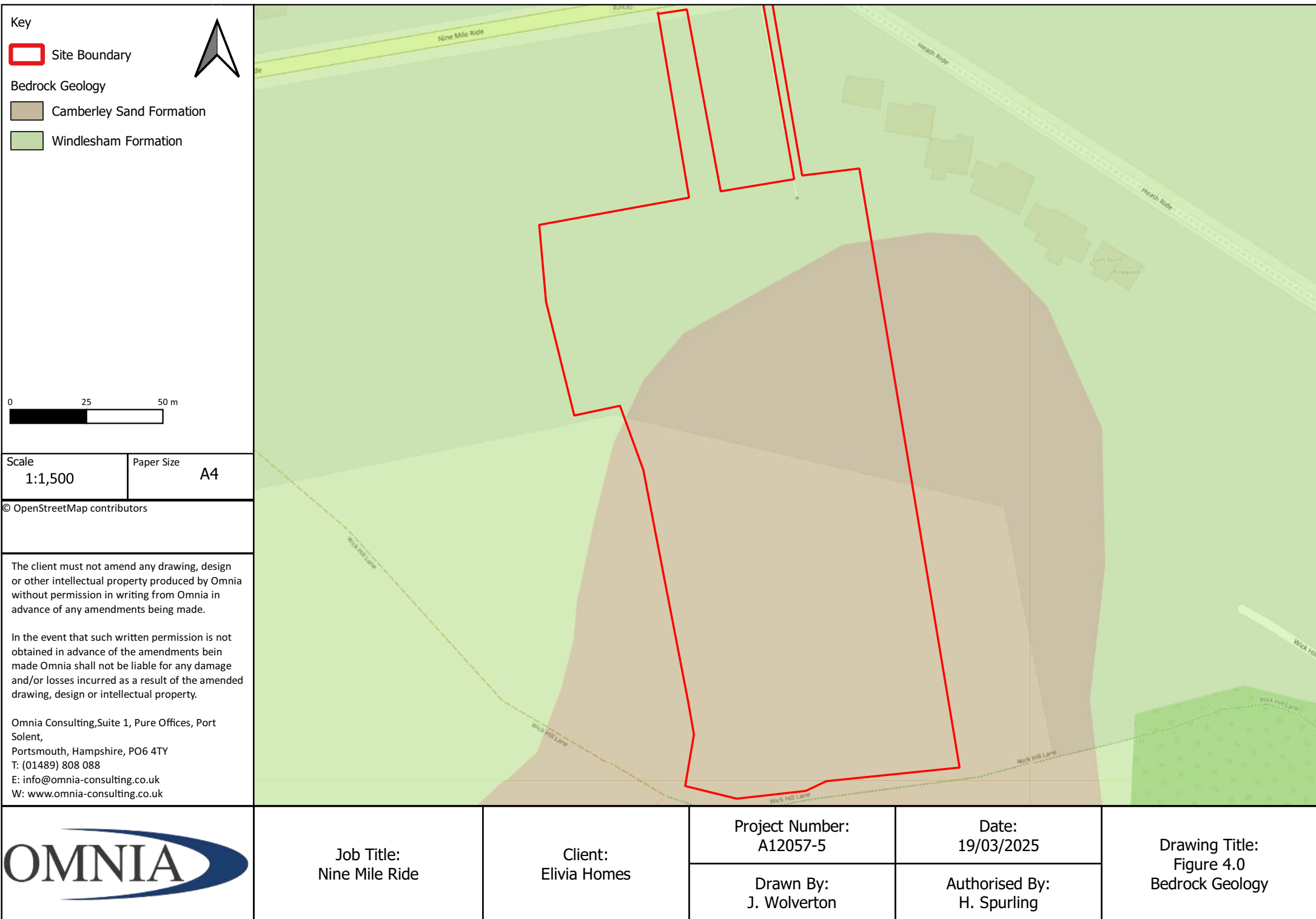
KN/M ²	Kilo Newtons Per Metre Squared
µM	Micrometre

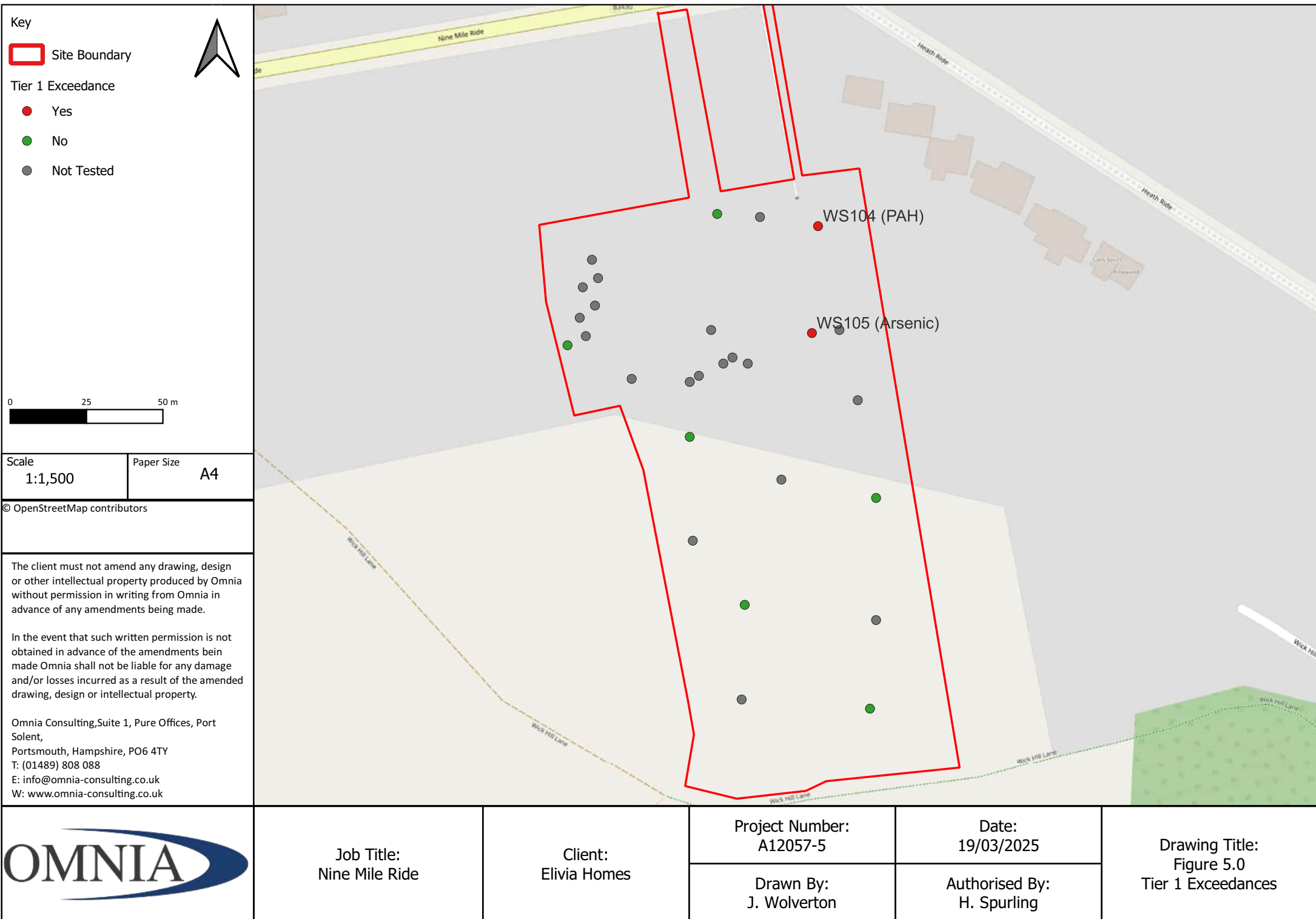
APPENDIX III - DRAWINGS











APPENDIX IV - PHOTOGRAPHS



Photograph 1 – View southwest House 1



Photograph 2 – Facing northwest House 2



Photograph 3 – Facing south into deciduous woodland in the southern extent of the site



Photograph 4 – SA102 Trial pit, Windlesham Formation at the base.



Photograph 5 – HP109 recovery, Topsoil left of hole and Camberley Sand Formation to the right of the Hand pit.

APPENDIX V - EXPLORATORY HOLE LOGS

				Trial Pit Log			Trialpit No HP101 Sheet 1 of 1		
Project Name: Nine Mile Ride				Project No. A12057		Co-ords: 480206.00 - 164678.00 Level:		Date 13/04/2023	
Location: Nine Mile Ride, Finchampstead, Wokingham, RG40 3QD				Dimensions (m):		0.25 		Scale 1:20	
Client: Kingacre Estates Limited				Depth 0.60		0.25 		Logged JR	

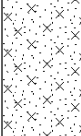
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.00 - 0.20	ES				Brown slightly silty fine to coarse SAND with frequent tree roots and rootlets. [TOPSOIL]	
				0.20		Light brown slightly silty fine to coarse SAND with occasional angular fine flint gravel and black fine to coarse sand bands. [CAMBERLEY SAND FORMATION]	
				0.60		End of pit at 0.60 m	

Remarks: 1. Position scanned with calibrated CAT & 'Genny' prior to excavation.
2. No groundwater encountered.

Stability: STABLE



				Trial Pit Log			Trialpit No HP102 Sheet 1 of 1		
Project Name: Nine Mile Ride				Project No. A12057		Co-ords: 480158.00 - 164686.00 Level:		Date 13/04/2023	
Location: Nine Mile Ride, Finchampstead, Wokingham, RG40 3QD				Dimensions (m):		0.26		Scale 1:20	
Client: Kingacre Estates Limited				Depth 0.60				Logged JR	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.10 - 0.50	ES		0.10			Brown slightly silty fine to coarse SAND with frequent roots and rootlets. [TOPSOIL]
							Greyish brown slightly silty fine to coarse SAND with occasional rootlets. [CAMBERLEY SAND FORMATION]
				0.50			<i>Between 0.45m and 0.50m dark grey silty fine to coarse SAND.</i>
	0.60						Orangeish brown and dark brown staining silty fine to coarse SAND. [CAMBERLEY SAND FORMATION]
						End of pit at 0.60 m	

Remarks:		1. Position scanned with calibrated CAT & 'Genny' prior to excavation. 2. Groundwater encountered at 0.58m after 20 minutes rose to 0.50m bgl.	
Stability:		STABLE	







				Trial Pit Log			Trialpit No HP105 Sheet 1 of 1		
Project Name: Nine Mile Ride				Project No. A12057		Co-ords: 480142.00 - 164740.00 Level:		Date 13/04/2023	
Location: Nine Mile Ride, Finchampstead, Wokingham, RG40 3QD				Dimensions (m):		0.25 		Scale 1:20	
Client: Kingacre Estates Limited				Depth 0.60		0.25 		Logged JR	

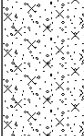
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.10 - 0.60	ES		0.10		 Brown slightly silty fine to coarse SAND with frequent roots and rootlets. [TOPSOIL]	
				0.60		 Light brownish grey and orangeish brown very clayey fine to coarse SAND with rare rounded medium flint gravel. [CAMBERLEY SAND FORMATION]	
							End of pit at 0.60 m
							1
							2
							3
							4

Remarks:

1. Position scanned with calibrated CAT & 'Genny' prior to excavation.
 2. No groundwater encountered.

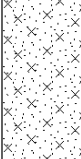


Stability: STABLE

				Trial Pit Log			Trialpit No HP106 Sheet 1 of 1		
Project Name: Nine Mile Ride				Project No. A12057		Co-ords: 480202.00 - 164756.00 Level:		Date 13/04/2023	
Location: Nine Mile Ride, Finchampstead, Wokingham, RG40 3QD				Dimensions (m):		0.25		Scale 1:20	
Client: Kingacre Estates Limited				Depth 0.61				Logged JR	
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
				0.10			Brown slightly silty fine to coarse SAND with frequent roots and rootlets. [TOPSOIL]		
	0.50 - 0.61	ES		0.50			Light grey slightly silty gravelly SAND. Gravel is subangular to rounded fine to coarse flint. [CAMBERLEY SAND FORMATION]		
				0.61			Orange and light brown silty gravelly fine to coarse SAND with rare clay pockets. Gravel is subangular to rounded fine to medium flint. [CAMBERLEY SAND FORMATION]		
							End of pit at 0.61 m		
1 2 3 4									
Remarks: - Position scanned with calibrated CAT & 'Genny' prior to excavation. - Groundwater encountered at 0.60m after 20 minutes rose to 0.58m bgl.									
Stability: STABLE									



				Trial Pit Log			Trialpit No HP107 Sheet 1 of 1		
Project Name: Nine Mile Ride				Project No. A12057		Co-ords: 480169.00 - 164761.00 Level:		Date 13/04/2023	
Location: Nine Mile Ride, Finchampstead, Wokingham, RG40 3QD				Dimensions (m):		0.25 		Scale 1:20	
Client: Kingacre Estates Limited				Depth 0.60		0.25 		Logged JR	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.10 - 0.60	ES		0.10		 Brown slightly silty fine to coarse SAND with frequent roots and rootlets. [TOPSOIL]	
				0.60	 Grey and light brown slightly silty fine to coarse SAND with occasional rootlets. [CAMBERLEY SAND FORMATION]		
							End of pit at 0.60 m
							1
							2
							3
							4

Remarks: 1. Position scanned with calibrated CAT & 'Genny' prior to excavation. 2. No groundwater encountered.		
Stability: STABLE		

				Trial Pit Log			Trialpit No HP109 Sheet 1 of 1		
Project Name: Nine Mile Ride				Project No. A12057		Co-ords: 480195.00 - 164785.00 Level:		Date 13/04/2023	
Location: Nine Mile Ride, Finchampstead, Wokingham, RG40 3QD				Dimensions (m):		0.25		Scale 1:20	
Client: Kingacre Estates Limited				Depth 0.70				Logged JR	
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.00 - 0.20	ES					Brown slightly silty slightly gravelly fine to coarse SAND with frequent tree roots and rootlets. [TOPSOIL]		
				0.20			Orangeish brown and slightly grey silty fine to coarse SAND with occasional rootlets and rare angular fine flint gravel. [CAMBERLEY SAND FORMATION]		
				0.70			End of pit at 0.70 m		
									1
									2
									3
									4
Remarks: 1. Position scanned with calibrated CAT & 'Genny' prior to excavation. 2. No groundwater encountered.									
Stability: STABLE									

				Borehole Log			Borehole No. WS101 Sheet 1 of 1	
Project Name: Nine Mile Ride				Project No. A12057		Co-ords: 480110.58 - 164827.33		Hole Type WS
Location: Nine Mile Ride, Finchampstead, Wokingham, RG40 3QD				Level: 78.22		Scale 1:25		
Client: Kingacre Estates Limited				Dates: 14/04/2023 - 14/04/2023		Logged By JR		

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.00 - 0.40	ES		0.15	78.07	 Brown slightly silty fine to coarse SAND with frequent roots and rootlets. [TOPSOIL]	 Brownish grey silty fine to coarse SAND. [WINDLESHAM FORMATION]	
		0.60 - 1.20	ES		0.52	77.70	 Orangeish brown and greenish brown clayey fine to coarse SAND with rare subangular to subrounded fine flint gravel and rootlets. [WINDLESHAM FORMATION]		
		1.00		N=17 (2,3/3,4,5,5)					
		1.30 - 1.50	B		1.30	76.92	 Green clayey fine to coarse SAND. [WINDLESHAM FORMATION]		
		1.90 - 2.00 2.00	D	N=50 (2,2/6,8,17,19)	1.80 2.00	76.42 76.22	 Orangeish brown mottled grey lightly sandy CLAY. [WINDLESHAM FORMATION] End of borehole at 2.00 m		

1
2
3
4
5

Remarks 1. Position scanned with calibrated CAT & 'Genny' prior to excavation. 2. Water seepage at 1.40m bgl, after 20 minutes water level at 1.80m bgl. 3. Location terminated at 2.00m bgl after SPT refusal.								
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Borehole Log

Borehole No.

WS103

Sheet 1 of 1

Project Name: Nine Mile Ride

Project No.
A12057

Co-ords: 480143.68 - 164842.39

Hole Type
WS

Location: Nine Mile Ride, Finchampstead, Wokingham, RG40 3QD

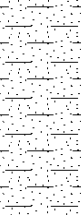
Level: 83.63

Scale
1:25

Client: Kingacre Estates Limited

Dates: 14/04/2023 - 14/04/2023

Logged By
JR

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.00 - 0.20	ES		0.20	83.43		Greyish brown slightly silty fine to coarse SAND with occasional angular to rounded fine gravel of flint. [TOPSOIL]	
		0.50 - 1.20	ES					Orangeish brown clayey fine to coarse SAND. [WINDLESHAM FORMATION]	
		1.00		N=17 (2,3/3,4,5,5)					1
								Between 1.10m and 1.60m bgl SAND becomes greenish brown.	
		1.70 - 1.80	D		1.60	82.03			
		1.80 - 2.00	D		1.70	81.93		Firm orangeish brown mottled grey slightly sandy CLAY. Sand is fine to coarse. [WINDLESHAM FORMATION]	
		2.00		N=24 (2,3/6,5,6,7)				Firm dark brownish red mottled brown slightly sandy CLAY. Sand is fine to medium. [WINDLESHAM FORMATION]	2
		2.20 - 2.30	D					Firm orangeish brown mottled brownish grey slightly sandy CLAY. Sand is fine to medium. [WINDLESHAM FORMATION]	
		2.90 - 3.00	D						
		3.00		N=55 (7,11/12,16,15,12)	3.00	80.63		End of borehole at 3.00 m	3

Remarks

- Position scanned with calibrated CAT & 'Genny' prior to excavation.
- Water seepage at 1.40m bgl, after 20 minutes water level at 1.50m bgl.
- Location terminated at 3.00m bgl due to SPT refusal.



				Borehole Log			Borehole No. WS104 Sheet 1 of 1	
Project Name: Nine Mile Ride				Project No. A12057		Co-ords: 480180.37 - 164840.95		Hole Type WS
Location: Nine Mile Ride, Finchampstead, Wokingham, RG40 3QD				Level: 79.19		Scale 1:25		
Client: Kingacre Estates Limited				Dates: 14/04/2023 - 14/04/2023		Logged By JR		

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.00 - 0.22	ES		0.22	78.97	 Brown and grey slightly silty slightly gravelly fine to coarse SAND. Gravel is subangular to rounded fine to medium flint. [TOPSOIL]  Grey silty fine to coarse SAND with occasional rootlets. [WINDLESHAM FORMATION]		
		0.80 - 1.20	ES		0.80	78.39	 Orangeish brown and grey silty fine to coarse SAND with occasional pockets of brown clay. [WINDLESHAM FORMATION] <u>SPT refusal at 1.00m bgl.</u> Poor recovery between 1.00m and 2.00m bgl, 65% recovered as orangish brown slightly silty slightly clayey fine to coarse SAND.	1	
		1.00		N=20 (2,3/4,5,5,6)					
		1.50 - 2.00	B					<u>Barrel refusal at 1.80m bgl.</u>	
		2.00 2.00 - 2.50	B	N=18 (4,3/4,5,5,4)				Poor recovery between 2.00m and 2.50m bgl, 50% recovered as orangeish brown and green silty slightly clayey fine to coarse SAND.	2
	2.50		50 (12,15/50 for 225mm)	2.50	76.69		<u>Barrel refusal at 2.50m bgl.</u> End of borehole at 2.50 m	3	
								4	
								5	

Remarks

- Position scanned with calibrated CAT & 'Genny' prior to excavation.
- Water strike at 1.50m bgl, after 20 minutes water level at 1.20m bgl.
- Location terminated at 2.50m bgl due to SPT refusal.





Borehole Log

Borehole No.

WS105

Sheet 1 of 1

Project Name: Nine Mile Ride

Project No.
A12057

Co-ords: 480178.88 - 164807.54

Hole Type
WS

Location: Nine Mile Ride, Finchampstead, Wokingham, RG40 3QD

Level: 81.76

Scale
1:25

Client: Kingacre Estates Limited

Dates: 14/04/2023 - 14/04/2023

Logged By
JR

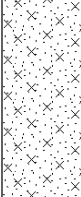
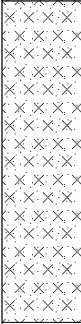
Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10 - 0.60	ES	50 (5,6/50 for 225mm)	0.10	81.66		Brown slightly silty fine to coarse SAND with frequent roots and rootlets. [TOPSOIL]	
		0.60 - 1.20	ES		0.60	81.16		Greyish brown slightly silty fine to coarse SAND with occasional rootlets. [CAMBERLEY SAND FORMATION]	
		1.00						Orangeish brown and grey slightly silty fine to coarse SAND with occasional clay pockets. [CAMBERLEY SAND FORMATION]	
		1.50 - 1.80	B		1.44	80.32		Yellowish orange and light brown slightly silty fine to coarse SAND. [CAMBERLEY SAND FORMATION]	
					1.80	79.96		 Barrel refusal at 1.80m bgl. End of borehole at 1.80 m	

Remarks

- Position scanned with calibrated CAT & 'Genny' prior to excavation.
- No groundwater encountered.
- Location terminated at 1.80m bgl due to barrel refusal and subsequent SPT refusal (N=70 over 300mm).

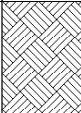
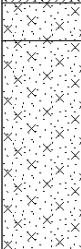


				Trial Pit Log			Trialpit No SA101 Sheet 1 of 1		
Project Name: Nine Mile Ride				Project No. A12057		Co-ords: 480107.00 - 164832.00 Level:		Date 18/04/2023	
Location: Nine Mile Ride, Finchampstead, Wokingham, RG40 3QD				Dimensions (m):		2.4 		Scale 1:20	
Client: Kingacre Estates Limited				Depth 1.60		0.35 		Logged JR	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.20			Brown slightly silty fine to coarse SAND with frequent roots and rootlets. [TOPSOIL]	
	0.50 - 0.70	B					Grey slightly silty fine to coarse SAND. [WINDLESHAM FORMATION]	
	0.80 - 1.50	B		0.75			Green mottled yellowish orange very sandy SILT. Sand is fine to coarse. [WINDLESHAM FORMATION]	1
	1.50 - 1.60	B		1.60			End of pit at 1.60 m	2
								3
								4

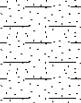
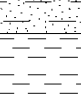
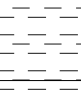
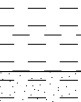
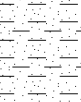
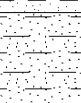
Remarks: 1. Position scanned with calibrated CAT & 'Genny' prior to excavation. 2. No groundwater encountered.		
Stability: Stable		

				Trial Pit Log			Trialpit No SA102 Sheet 1 of 1		
Project Name: Nine Mile Ride				Project No. A12057		Co-ords: 480108.00 - 164817.00 Level:		Date 18/04/2023	
Location: Nine Mile Ride, Finchampstead, Wokingham, RG40 3QD				Dimensions (m):		2.2 		Scale 1:20	
Client: Kingacre Estates Limited				Depth 2.00		0.35 		Logged JR	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
▼	0.50 - 0.90	B		0.30			Brown and grey slightly silty fine to coarse SAND with occasional roots and rootlets. [TOPSOIL]	1	
				0.40			Orangeish brown slightly silty fine to coarse SAND with occasional rootlets. [WINDLESHAM FORMATION] Grey silty fine to coarse SAND. [WINDLESHAM FORMATION]		
	0.90 - 1.30	B		0.97		Soft green mottled orangeish brown very sandy SILT. Sand is fine to coarse. [WINDLESHAM FORMATION]			
	1.50 - 2.00	B		2.00			2		
							End of pit at 2.00 m		3
									4

Remarks: 1. Position scanned with calibrated CAT & 'Genny' prior to excavation. 2. Groundwater encountered at 2.00m after 20 minutes rose to 1.85m bgl.		
Stability: Stable		

					Borehole Log			Borehole No. BH101 Sheet 1 of 2		
Project Name: Nine Mile Ride					Project No. A12057-1		Co-ords: 480120.00 - 164793.00		Hole Type BH	
Location: Land at and to the rear of Nine Mile Ride, Finchampstead, RG40 3QD					Level:		Scale 1:26			
Client: Kingacre Estates					Dates: 02/05/2023 - 03/05/2023		Logged By JR			
Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					0.30		 Grey slightly silty fine to coarse SAND with occasional rounded fine gravel of flint. [TOPSOIL]	1		
		0.52 - 0.62	D		0.52		 Orangeish brown and light brown fine to coarse SAND. [WINDLESHAM FORMATION]			
		1.20		N=28 (2,4/6,6,8,8)		 Light brown and brownish orange fine to coarse SAND with occasional pockets of coarse orange sand. [WINDLESHAM FORMATION]				
		1.70 - 2.00	B			<i>Between 1.10m and 1.70m bgl SAND becomes light brown and slightly silty.</i>				
		2.00		N=50 (9,11/50 for 260mm)	2.00	 Between 1.70m and 2.00m bgl SAND is orangish brown and greenish grey.				
		2.70 - 3.00	B			 Orangeish brown slightly silty fine to coarse SAND with occasional orange fine to coarse sand bands. [WINDLESHAM FORMATION]				
		3.00		N=23 (4,5/6,7,6,4)						
		3.60 - 4.00	B		3.58	 Bluish green silty fine to coarse SAND with frequent clay laminations. [WINDLESHAM FORMATION]				
		4.00		N=16 (2,2/3,3,4,5)	4.12	 Light grey fine to coarse SAND. [WINDLESHAM FORMATION]				
		5.00		N=15 (2,3/3,3,4,5)	4.56	 Green and orangeish brown silty fine to coarse SAND with grey clay laminations. [WINDLESHAM FORMATION]				
					<i>Between 4.95m and 5.40m bgl SAND is green, orangeish</i>	5				
Continued on next sheet										
Remarks 1. Position scanned with calibrated CAT & 'Genny' prior to excavation. 2. No Groundwater encountered. 3. Borehole terminated at 10.00m bgl due to three repeated SPT refusals and a barrel refusal.										
										

					Borehole Log			Borehole No. BH101 Sheet 2 of 2		
Project Name: Nine Mile Ride					Project No. A12057-1		Co-ords: 480120.00 - 164793.00		Hole Type BH	
Location: Land at and to the rear of Nine Mile Ride, Finchampstead, RG40 3QD					Level:		Scale 1:26		Logged By JR	
Client: Kingacre Estates					Dates: 02/05/2023 - 03/05/2023					
Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		5.40 - 5.90	B		5.40		 brown and bluish red. No recovery between 5.00m and 5.21m bgl.			
		5.90 - 6.00	D	N=14 (2,2/2,3,5,4) HVP=88 HVR=31	5.90		 Bluish green clayey fine to coarse SAND. [WINDLESHAM FORMATION]			
		6.00					 Firm grey CLAY. [WINDLESHAM FORMATION] Between 6.10m and 6.20m bgl CLAY is soft to firm Between 6.20m and 6.43m bgl CLAY is firm to stiff.	6		
		6.60 - 6.70	D	HVP=93 HVR=31	6.43		 Firm to stiff brownish orange mottled reddish grey CLAY with occasional bands of fine to medium orange SAND. [WINDLESHAM FORMATION] Between 6.58m and 7.15m bgl CLAY becomes very stiff.			
		7.00		N=25 (7,5/6,6,6,7) HVP=36 HVR=8	7.15		 Firm greyish brown mottled brownish orange sandy CLAY. Sand is fine to medium. [WINDLESHAM FORMATION]	7		
		7.30 - 7.40	D				 Brownish orange clayey fine to coarse SAND with frequent interbedded clay bands. [WINDLESHAM FORMATION]			
		8.00		N=50 (8,10/50 for 285mm)	7.70		 Between 8.00m and 10.00m bgl slightly clayey SAND.	8		
		8.50 - 9.00	B				 Between 9.00m and 10.00m bgl occasional interbedded clay bands.	9		
		9.00		N=50 (6,10/50 for 275mm)						
		9.50 - 9.70	B							
		10.00		N=50 (9,10/50 for 230mm)	10.00		End of borehole at 10.00 m	10		
Remarks 1. Position scanned with calibrated CAT & 'Genny' prior to excavation. 2. No Groundwater encountered. 3. Borehole terminated at 10.00m bgl due to three repeated SPT refusals and a barrel refusal.										



				Borehole Log			Borehole No. BH102 Sheet 1 of 2	
Project Name: Nine Mile Ride				Project No. A12057-1		Co-ords: 480153.00 - 164800.00		Hole Type BH
Location: Land at and to the rear of Nine Mile Ride, Finchampstead, RG40 3QD				Level:		Scale 1:25		
Client: Kingacre Estates				Dates: 04/05/2023 - 04/05/2023		Logged By JR		

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30		 Brown and grey slightly silty fine to coarse SAND with frequent rootlets. [TOPSOIL]	1	
		0.60 - 1.20	B				 Light brown and orangeish brown slightly silty fine to medium SAND. [CAMBERLEY FORMATION]		
		1.20			N=28 (3,4/5,7,8,8)			2	
		1.60 - 2.00	B						
		2.00			N=38 (5,8/10,9,10,9)	2.30		3	
		2.50 - 2.90	B				 Grey fine to coarse SAND with occasional reddish grey colouring. [CAMBERLEY FORMATION]		
		3.00			N=19 (2,4/4,4,5,6)			4	
		3.00 - 3.80	B						
4.00			N=18 (2,2/4,3,5,6)			5			
4.60 - 4.90	B			4.65			 Yellowish orange and green fine to coarse SAND. [CAMBERLEY FORMATION]		
		5.00		N=16 (2,2/3,3,5,5)	4.95		Continued on next sheet		

Remarks
 1. Position scanned with calibrated CAT & 'Genny' prior to excavation.
 2. Ground water encountered at 3.00m bgl as very slow seepage and didn't rise. Lots of water came out the barrel at 4.95m which is potentially perched water above the clay.
 3. Hole terminated at 9.00m bgl due to SPT refusal and barrel refusal.



				Borehole Log			Borehole No. BH102 Sheet 2 of 2	
Project Name: Nine Mile Ride				Project No. A12057-1		Co-ords: 480153.00 - 164800.00		Hole Type BH
Location: Land at and to the rear of Nine Mile Ride, Finchampstead, RG40 3QD				Level:		Scale 1:25		
Client: Kingacre Estates				Dates: 04/05/2023 - 04/05/2023		Logged By JR		

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
				HVP=54 HVR=23	5.20		Firm grey CLAY. [WINDLESHAM FORMATION]		
				HVP=54 HVR=21			Dark bluish green clayey fine to coarse SAND interbedded with occasional grey clay. [WINDLESHAM FORMATION]		
	5.40 - 5.60	D							
	5.80 - 5.90	D			5.80				
	6.00			N=21 (2,2/5,5,5,6)			Firm to stiff grey CLAY. [WINDLESHAM FORMATION]	6	
	6.40 - 6.50	D							
	6.90 - 7.00	D			6.73				
	7.00			N=32 (6,5/5,7,9,11)			Stiff orangeish brown mottled grey CLAY with occasional reddish brown mottling. [WINDLESHAM FORMATION] <i>6.80m to 7.60m bgl CLAY is interbedded with reddish orange mudstone.</i>	7	
					7.60		Yellowish orange slightly clayey fine to coarse SAND. [WINDLESHAM FORMATION]	8	
							<i>8.40m to 8.60m bgl SAND is orange and light grey.</i>		
					9.00		End of borehole at 9.00 m	9	
								10	

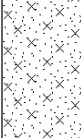
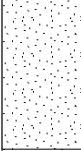
Remarks

- Position scanned with calibrated CAT & 'Genny' prior to excavation.
- Ground water encountered at 3.00m bgl as very slow seepage and didn't rise. Lots of water came out the barrel at 4.95m which is potentially perched water above the clay.
- Hole terminated at 9.00m bgl due to SPT refusal and barrel refusal.





				Trial Pit Log			Trialpit No SA202 Sheet 1 of 1		
Project Name: Nine Mile Ride				Project No. A12057-2		Co-ords: 480147.00 - 164791.00 Level:		Date 17/05/2023	
Location: Nine Mile Ride, Finchampstead						Dimensions (m):		Scale 1:20	
Client: Kingacre Estates Limited						Depth 1.20		Logged HS	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.20			Brownish grey fine to medium SAND with frequent roots. [TOPSOIL]	1
				0.40			Orangeish brown slightly silty fine to coarse SAND with frequent roots. [CAMBERLEY SAND FORMATION]	
				0.80			Brown and orange silty fine to coarse SAND. [CAMBERLEY SAND FORMATION]	
				1.20			Orangeish yellow fine to coarse SAND. [CAMBERLEY SAND FORMATION]	
						End of pit at 1.20 m		2
								3
								4

Remarks: 1. Cleared by calibrated Cable Avoidance Tool. 2. No Groundwater encountered.

Stability: Stable





Borehole Log

Borehole No.

CP301

Sheet 1 of 2

Project Name: Nine Mile Ride

Project No.
A12057-5

Co-ords: 480107.00 - 164814.00

Hole Type
CPLocation: Land south of Nine Mile Ride, Finchampstead, Reading,
RG40 3QD

Level:

Scale
1:50

Client: Elivia Homes

Dates: 04/02/2025 - 05/02/2025

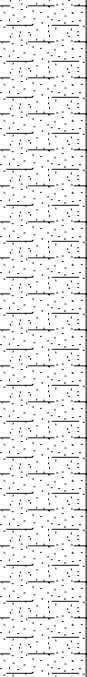
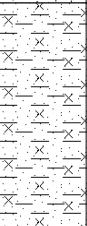
Logged By
JW

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20 - 0.40	B		0.40			Grass over dark brown clayey fine to coarse SAND with rootlets. [TOPSOIL]	1
		0.40 - 1.00	B					Soft orangeish brown mottled dark green very sandy silty CLAY. Sand is fine to coarse. [WINDLESHAM FORMATION]	
		1.00 - 1.50	B		2.00			Dark green and occasionally mottled orangeish brown silty clayey fine to coarse SAND. [WINDLESHAM FORMATION]	2
		1.50		N=7 (1,1/2,2,1,2)					
		2.00 - 2.50	B						
		2.50		N=11 (3,2/3,3,2,3)					
		3.00 - 3.50	B		4.00			Soft light brown very sandy silty CLAY. Sand is fine to coarse. [WINDLESHAM FORMATION]	4
		3.50		N=10 (1,2/2,2,3,3)					
		4.00 - 4.50	B						
		4.50		N=27 (3,4/6,8,7,6)					
		5.00 - 5.50	B		8.50			Light brown silty clayey fine to coarse SAND. [WINDLESHAM FORMATION]	5
		6.00		N=24 (5,4/4,6,7,7)					
		7.00		N=26 (7,7/6,5,7,8)					
		7.50 - 8.00	B						
		8.00		N=47 (6,6/13,13,14,7)	10.00			Orangeish brown silty fine to coarse SAND. [WINDLESHAM FORMATION]	9
		9.00		50 (5,6/50 for 200mm)					
								Continued on next sheet	10

Remarks

1. Position scanned with calibrated CAT & 'Genny' prior to excavation. 2. Groundwater encountered at 2.50m bgl.



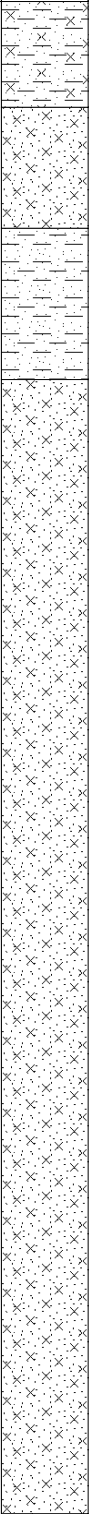
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Project Name: Nine Mile Ride				Project No. A12057-5		Co-ords: 480107.00 - 164814.00		Hole Type CP		
Location: Land south of Nine Mile Ride, Finchampstead, Reading, RG40 3QD				Level:			Scale 1:50			
Client: Elivia Homes				Dates: 04/02/2025 - 05/02/2025			Logged By JW			
Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		10.00		50 (7,10/50 for 140mm)				Light brown silty clayey fine to coarse SAND with occasional clay lenses. [WINDLESHAM FORMATION]		
		11.00		50 (6,9/50 for 125mm)						11
		12.00		50 (5,14/50 for 100mm)						12
		13.00		50 (8,13/50 for 94mm)						13
		14.00		N=36 (5,7/7,10,9,10)	14.50					14
		15.00		N=41 (6,5/7,12,9,13)				Soft to firm light brown sandy silty CLAY. Sand is fine to coarse. [WINDLESHAM FORMATION]	15	
		16.00		N=44 (6,6/9,11,12,12)	16.00					16
		17.00		N=45 (4,8/6,8,14,17)				Light brown silty clayey fine to coarse SAND with occasional clay lenses. [WINDLESHAM FORMATION]	17	
		17.50 - 18.00	B							
		18.00		N=44 (4,9/9,10,12,13)						18
		19.00		N=43 (5,8/10,10,11,12)						19
		20.00		N=42 (5,8/9,11,11,11)	20.00			End of borehole at 20.00 m	20	
Remarks 1. Position scanned with calibrated CAT & 'Genny' prior to excavation. 2. Groundwater encountered at 2.50m bgl.										

					Borehole Log			Borehole No. CP302 Sheet 1 of 3		
Project Name: Nine Mile Ride					Project No. A12057-5		Co-ords: 480170.00 - 164768.00		Hole Type CP	
Location: Land south of Nine Mile Ride, Finchampstead, Reading, RG40 3QD					Level:			Scale 1:50		
Client: Elivia Homes					Dates: 06/02/2025 - 07/02/2025			Logged By JW		

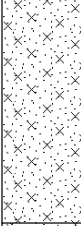
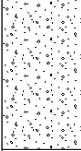
Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20 - 0.50	B		0.20		Grass over dark brown silty clayey fine to coarse SAND with rootlets. [TOPSOIL]		
		0.50 - 1.00	B		Light brown silty fine to coarse SAND. [CAMBERLEY SAND FORMATION]				
		1.10 - 1.50	B	N=10 (1,2/2,3,2,3)	1.00		Brown silty clayey fine to coarse SAND. [CAMBERLEY SAND FORMATION]	1	
		1.20							
		2.00		N=41 (5,4/11,9,11,10)	1.65		Dark green silty clayey fine to coarse SAND. [WINDLESHAM FORMATION]	2	
		2.00 - 2.50	B						
		3.00		N=42 (5,5/10,11,10,11)	3.00		Soft brown slightly sandy silty CLAY. Sand is fine to coarse. [WINDLESHAM FORMATION]	3	
		3.00 - 3.50	B						
		4.00		N=38 (8,6/8,8,12,10)	3.50		Light brown silty fine to coarse SAND. [WINDLESHAM FORMATION]	4	
		4.00 - 4.50	B						
		5.00		N=40 (7,5/8,9,12,11)				5	
		5.00 - 5.50	B						
		6.00		N=21 (2,4/5,5,5,6)	6.00		Dark green silty fine to coarse SAND. [WINDLESHAM FORMATION]	6	
		6.00 - 6.50	B						
7.00		N=22 (3,4/5,6,5,6)				7			
7.00 - 7.50	B								
8.00 - 8.50	B					8			
8.70 - 9.00	B								
9.00		N=30 (5,4/5,6,9,10)	8.70		Soft to firm orangeish brown mottled dark green and grey slightly sandy silty CLAY. Sand is fine to coarse. [WINDLESHAM FORMATION]	9			
		10.00					10		

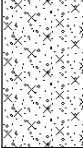
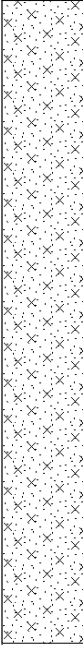
Continued on next sheet

Remarks 1. Position scanned with calibrated CAT & 'Genny' prior to excavation. 2. No groundwater encountered.		
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					Borehole Log			Borehole No. CP302 Sheet 2 of 3		
Project Name: Nine Mile Ride					Project No. A12057-5		Co-ords: 480170.00 - 164768.00		Hole Type CP	
Location: Land south of Nine Mile Ride, Finchampstead, Reading, RG40 3QD					Level:			Scale 1:50		
Client: Elivia Homes					Dates: 06/02/2025 - 07/02/2025			Logged By JW		
Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		10.70 - 11.00	B		10.70			Orangeish brown silty clayey fine to coarse SAND. [WINDLESHAM FORMATION]	11	
		11.00		56 (9,9/56 for 220mm)	11.50					12
		12.00		50 (7,10/50 for 200mm)	12.50					13
		13.00		50 (10,12/50 for 195mm)					14	
		14.00		50 (9,11/50 for 160mm)					15	
		15.00		50 (10,12/50 for 150mm)					16	
		16.00		50 (11,13/50 for 155mm)					17	
		17.00		50 (7,11/50 for 175mm)					18	
		18.00		50 (10,12/50 for 210mm)					19	
		19.00		50 (9,12/50 for 175mm)					20	
				20.00			Continued on next sheet			
Remarks 1. Position scanned with calibrated CAT & 'Genny' prior to excavation. 2. No groundwater encountered.										

					Borehole Log				Borehole No. CP302		
Project Name: Nine Mile Ride					Project No. A12057-5		Co-ords: 480170.00 - 164768.00		Sheet 3 of 3		
Location: Land south of Nine Mile Ride, Finchampstead, Reading, RG40 3QD					Level:				Hole Type CP		
Client: Elivia Homes					Dates: 06/02/2025 - 07/02/2025				Scale 1:50		
Logged By JW											
Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
		Depth (m)	Type	Results							
		20.00		50 (11,12/50 for 155mm)				End of borehole at 20.00 m			
									21		
									22		
									23		
									24		
									25		
									26		
									27		
									28		
									29		
									30		
Remarks 1. Position scanned with calibrated CAT & 'Genny' prior to excavation. 2. No groundwater encountered.											

				Trial Pit Log				Trialpit No SA301 Sheet 1 of 1	
Project Name: Nine Mile Ride				Project No. A12057-5		Co-ords: 480154.00 - 164791.00 Level:		Date 04/02/2025	
Location: Land south of Nine Mile Ride, Finchampstead, Reading, RG40 3QD				Dimensions (m): Depth 1.10		1.6		Scale 1:20	
Client: Elivia Homes						0.35		Logged JW	
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.10 - 0.50	B		0.10			Grass over dark greyish brown silty fine to coarse SAND with rootlets. [TOPSOIL]		
							Light greyish brown silty fine and medium SAND. [CAMBERLEY SAND FORMATION]		
	0.70 - 1.10	B		0.70			Orangeish brown mottled brown and yellowish brown slightly gravelly fine to coarse SAND. Gravel is sub-angular to sub-rounded fine to coarse flint. [WINDLESHAM FORMATION]		
				1.10		End of pit at 1.10 m			1
									2
									3
									4
Remarks: 1. Position scanned with calibrated CAT & 'Genny' prior to excavation. 2. No groundwater encountered.									
Stability: STABLE									
									

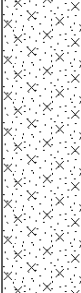
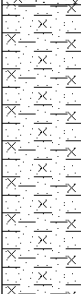
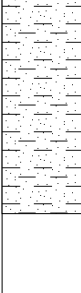
				Trial Pit Log			Trialpit No SA302 Sheet 1 of 1			
Project Name: Nine Mile Ride				Project No. A12057-5		Co-ords: 480139.00 - 164797.00 Level:		Date 04/02/2025		
Location: Land south of Nine Mile Ride, Finchampstead, Reading, RG40 3QD				Dimensions (m):		2.3		Scale 1:20		
Client: Elivia Homes				Depth 2.20		0.35		Logged JW		
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
	Depth	Type	Results							
▼	0.10 - 0.50	B		0.10			Grass over dark greyish brown silty clayey fine to coarse SAND with rootlets. [TOPSOIL]			
				0.50			Light greyish brown slightly gravelly silty fine and medium SAND. Gravel is sub-rounded fine to coarse flint. [CAMBERLEY SAND FORMATION]			
	1.00 - 1.50	B					Orangeish brown mottled light greenish grey silty fine to coarse SAND. [WINDLESHAM FORMATION]			
					2.20			End of pit at 2.20 m		
Remarks: 1. Position scanned with calibrated CAT & 'Genny' prior to excavation. 2. Groundwater encountered at 2.10m bgl.										
Stability: STABLE										

				Trial Pit Log				Trialpit No SA303 Sheet 1 of 1	
Project Name: Nine Mile Ride				Project No. A12057-5		Co-ords: 480162.00 - 164849.00 Level:		Date 04/02/2025	
Location: Land south of Nine Mile Ride, Finchampstead, Reading, RG40 3QD				Dimensions (m): 2.4				Scale 1:20	
Client: Elivia Homes				Depth 2.50				Logged JW	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.05			Reddish brown sub-angular to sub-rounded medium and coarse flint GRAVEL. [MADE GROUND] Reddish brown gravelly fine to coarse SAND. Gravel is angular to sub-rounded fine to coarse flint. [MADE GROUND]	
				0.30			Orangeish brown mottled light greenish grey sandy silty CLAY. Sand is fine to coarse. [REWORKED NATURAL]	
				0.60			Soft black sandy CLAY with rare fragments of wood and macadam. Sand is fine to coarse. [MADE GROUND]	
	1.10 - 1.50	B		1.10			Orangeish brown silty fine to coarse SAND. [WINDLESHAM FORMATION] <i>From 1.50m bgl becoming orangeish brown mottled light brown.</i>	1
	1.70 - 2.00	B		1.70			Soft to firm light greenish grey mottled orange very sandy silty CLAY. Sand is fine to coarse. [WINDLESHAM FORMATION]	2
	2.40 - 2.50	B		2.40 2.50			Dark green silty fine to coarse SAND. [WINDLESHAM FORMATION] End of pit at 2.50 m	3
								4

Remarks: 1. Position scanned with calibrated CAT & 'Genny' prior to excavation. 2. No groundwater encountered.		
Stability: STABLE		

				Trial Pit Log				Trialpit No TP301 Sheet 1 of 1	
Project Name: Nine Mile Ride				Project No. A12057-5		Co-ords: 480105.00 - 164826.00 Level:		Date 04/02/2025	
Location: Land south of Nine Mile Ride, Finchampstead, Reading, RG40 3QD				Dimensions (m): 3 Depth				Scale 1:20	
Client: Elivia Homes				Depth 3.00				Logged JW	

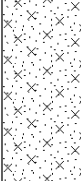
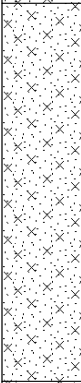
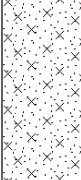
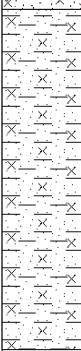
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10 - 0.50	B		0.10		 Grass over dark orangeish brown silty fine to coarse SAND with rootlets. [TOPSOIL]  Light greyish brown silty fine and medium SAND. [CAMBERLEY SAND FORMATION]		
	1.00 - 1.50	B		0.90		 Soft dark green mottled orangeish brown sandy silty CLAY. Sand is fine to coarse. [WINDLESHAM FORMATION]	1	
	1.70 - 2.30	B		1.70		 Dark green silty clayey fine to coarse SAND. [WINDLESHAM FORMATION]	2	
	2.50 - 3.00	B		2.30		 Firm light grey mottled orange slightly sandy CLAY. Sand is fine to coarse. [WINDLESHAM FORMATION]		
				3.00		End of pit at 3.00 m	3	
							4	

Remarks: 1. Position scanned with calibrated CAT & 'Genny' prior to excavation. 2. No groundwater encountered.

Stability: **STABLE**



				Trial Pit Log				Trialpit No TP302 Sheet 1 of 1	
Project Name: Nine Mile Ride				Project No. A12057-5		Co-ords: 480109.00 - 164803.00 Level:		Date 04/02/2025	
Location: Land south of Nine Mile Ride, Finchampstead, Reading, RG40 3QD				Dimensions (m): 3				Scale 1:20	
Client: Elivia Homes				Depth 3.00				Logged JW	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.10 - 0.50	B		0.10		 Grass over dark blackish brown silty clayey fine to coarse SAND with rootlets. [TOPSOIL]	1
	0.60 - 1.00	B		0.60		 Light greyish brown silty fine and medium SAND with rare sub-rounded fine to coarse flint gravel. [CAMBERLEY SAND FORMATION]	
	1.60 - 2.00	B		1.60		 Orangeish brown mottled light greyish green silty clayey fine to coarse SAND with rare sub-angular to sub-rounded fine to coarse flint gravel. [WINDLESHAM FORMATION]	
	2.50 - 3.00	B		2.10		 Dark greenish brown silty clayey fine to coarse SAND. [CAMBERLEY FORMATION]	
				3.00		 Firm dark brown mottled orange and dark green very sandy silty CLAY. Sand is fine to coarse. [WINDLESHAM FORMATION]	2
						End of pit at 3.00 m	3
							4

Remarks: 1. Position scanned with calibrated CAT & 'Genny' prior to excavation. 2. No groundwater encountered.		
Stability: STABLE		

APPENDIX VI - CHEMICAL ANALYSIS CERTIFICATES

Omnia
3-6 The Quarterdeck
Port Solent
Portsmouth
United Kingdom
PO6 4TP



Attention : Lauren Burnett
Date : 26th April, 2023
Your reference : A12057
Our reference : Test Report 23/5954 Batch 1
Location : Nine Mile Ride
Date samples received : 15th April, 2023
Status : Final Report
Issue : 1

Eight samples were received for analysis on 15th April, 2023 of which eight were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Phil Sommerton BSc
Senior Project Manager

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: Omnia
Reference: A12057
Location: Nine Mile Ride
Contact: Lauren Burnett
EMT Job No: 23/5954

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24			Please see attached notes for all abbreviations and acronyms		
Sample ID	HP101	HP104	HP106	HP108	WS102	WS103	WS104	WS105					
Depth	0.00-0.20	0.12-0.55	0.50-0.61	0.00-0.10	0.30-0.60	0.00-0.20	0.00-0.22	0.60-1.20					
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T					
Sample Date	13/04/2023	13/04/2023	13/04/2023	13/04/2023	14/04/2023	14/04/2023	14/04/2023	14/04/2023					
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	15/04/2023	15/04/2023	15/04/2023	15/04/2023	15/04/2023	15/04/2023	15/04/2023	15/04/2023			LOD/LOR	Units	Method No.
Arsenic #	3.1	0.7	12.2	1.3	1.9	4.8	8.6	39.5			<0.5	mg/kg	TM30/PM15
Barium #	14	8	8	13	12	19	58	12			<1	mg/kg	TM30/PM15
Beryllium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5			<0.5	mg/kg	TM30/PM15
Cadmium #	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	<0.1			<0.1	mg/kg	TM30/PM15
Chromium #	69.9	58.2	123.4	41.8	43.2	34.6	58.0	58.1			<0.5	mg/kg	TM30/PM15
Copper #	6	1	2	6	3	19	13	7			<1	mg/kg	TM30/PM15
Lead #	15	5	8	22	9	20	25	7			<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1			<0.1	mg/kg	TM30/PM15
Nickel #	3.1	1.6	3.0	2.9	1.5	4.6	6.3	4.5			<0.7	mg/kg	TM30/PM15
Selenium #	<1	<1	<1	<1	<1	<1	<1	<1			<1	mg/kg	TM30/PM15
Vanadium	14	5	33	5	7	17	27	43			<1	mg/kg	TM30/PM15
Water Soluble Boron #	1.2	0.1	<0.1	1.0	0.1	0.4	0.4	0.2			<0.1	mg/kg	TM74/PM32
Zinc #	21	<5	6	72	<5	293	57	31			<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.17	<0.03			<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05			<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
Phenanthrene #	0.05	<0.03	<0.03	0.13	<0.03	<0.03	0.46	<0.03			<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.25	<0.04			<0.04	mg/kg	TM4/PM8
Fluoranthene #	0.11	<0.03	<0.03	0.22	0.06	<0.03	3.15	<0.03			<0.03	mg/kg	TM4/PM8
Pyrene #	0.09	<0.03	<0.03	0.18	0.05	<0.03	2.92	<0.03			<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	0.14	<0.06	<0.06	0.12	<0.06	<0.06	2.04	<0.06			<0.06	mg/kg	TM4/PM8
Chrysene #	0.09	<0.02	<0.02	0.14	<0.02	<0.02	2.12	<0.02			<0.02	mg/kg	TM4/PM8
Benzo(b)fluoranthene #	0.18	<0.07	<0.07	0.21	<0.07	<0.07	4.27	<0.07			<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	2.44	<0.04			<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	1.32	<0.04			<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04			<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	1.18	<0.04			<0.04	mg/kg	TM4/PM8
PAH 16 Total	0.7	<0.6	<0.6	1.0	<0.6	<0.6	20.3	<0.6			<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.13	<0.05	<0.05	0.15	<0.05	<0.05	3.07	<0.05			<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.05	<0.02	<0.02	0.06	<0.02	<0.02	1.20	<0.02			<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	98	90	93	95	94	94	93	98			<0	%	TM4/PM8
EPH >C8-C10 (EH_1D_Total) #	<5	<5	<5	<5	<5	<5	<5	<5			<5	mg/kg	TM5/PM8
EPH >C10-C12 (EH_1D_Total) #	<10	<10	<10	<10	<10	<10	<10	<10			<10	mg/kg	TM5/PM8
EPH >C12-C16 (EH_1D_Total) #	<10	<10	<10	<10	<10	<10	<10	<10			<10	mg/kg	TM5/PM8
EPH >C16-C21 (EH_1D_Total) #	23	<10	<10	35	19	<10	22	<10			<10	mg/kg	TM5/PM8
EPH >C21-C35 (EH_1D_Total) #	443	133	21	810	314	194	282	17			<10	mg/kg	TM5/PM8
EPH >C35-C44 (EH_1D_Total)	123	48	<10	51	31	15	14	<10			<10	mg/kg	TM5/PM8
EPH >C8-C44 (EH_1D_Total)	589	181	<30	896	364	209	318	<30			<30	mg/kg	TM5/PM8
GRO (>C4-C6)	<0.1 ^{SV}	<0.1 ^{SV}	<0.1	<0.1 ^{SV}	<0.1	<0.1	<0.1	<0.1			<0.1	mg/kg	TM36/PM12

Client Name: Omnia
Reference: A12057
Location: Nine Mile Ride
Contact: Lauren Burnett

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Asbestos sub-samples are retained for not less than 6 months from the date of analysis unless specifically requested.

The LOQ of the Asbestos Quantification is 0.001% dry fibre of dry mass of sample.

Where the sample is not taken by a Element Materials Technology consultant, Element Materials Technology cannot be responsible for inaccurate or unrepresentative sampling.

Where trace asbestos is reported the amount of asbestos will be <0.1%.

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analyst Name	Date Of Analysis	Analysis	Result
23/5954	1	HP101	0.00-0.20	3	Remigiusz Blichowski	21/04/2023	General Description (Bulk Analysis)	Brown loose sand with rock
					Remigiusz Blichowski	21/04/2023	Asbestos Fibres	NAD
					Remigiusz Blichowski	21/04/2023	Asbestos ACM	NAD
					Remigiusz Blichowski	21/04/2023	Asbestos Type	NAD
23/5954	1	HP104	0.12-0.55	6	Remigiusz Blichowski	21/04/2023	General Description (Bulk Analysis)	Brown sand with rock
					Remigiusz Blichowski	21/04/2023	Asbestos Fibres	NAD
					Remigiusz Blichowski	21/04/2023	Asbestos ACM	NAD
					Remigiusz Blichowski	21/04/2023	Asbestos Type	NAD
23/5954	1	HP106	0.50-0.61	9	Bart Kuznicki	21/04/2023	General Description (Bulk Analysis)	Brown Soil/ Stones
					Bart Kuznicki	21/04/2023	Asbestos Fibres	NAD
					Bart Kuznicki	21/04/2023	Asbestos ACM	NAD
					Bart Kuznicki	21/04/2023	Asbestos Type	NAD
23/5954	1	HP108	0.00-0.10	12	Bart Kuznicki	21/04/2023	General Description (Bulk Analysis)	Brown Soil/ Stones
					Bart Kuznicki	21/04/2023	Asbestos Fibres	NAD
					Bart Kuznicki	21/04/2023	Asbestos ACM	NAD
					Bart Kuznicki	21/04/2023	Asbestos Type	NAD
23/5954	1	WS102	0.30-0.60	15	Bart Kuznicki	21/04/2023	General Description (Bulk Analysis)	Black Soil/ Stone/ Roots
					Bart Kuznicki	21/04/2023	Asbestos Fibres	NAD
					Bart Kuznicki	21/04/2023	Asbestos ACM	NAD
					Bart Kuznicki	21/04/2023	Asbestos Type	NAD
23/5954	1	WS103	0.00-0.20	18	Remigiusz Blichowski	21/04/2023	General Description (Bulk Analysis)	Brown loose sand
					Remigiusz Blichowski	21/04/2023	Asbestos Fibres	NAD
					Remigiusz Blichowski	21/04/2023	Asbestos ACM	NAD
					Remigiusz Blichowski	21/04/2023	Asbestos Type	NAD
23/5954	1	WS104	0.00-0.22	21	Remigiusz Blichowski	21/04/2023	General Description (Bulk Analysis)	Brown loose sand with rock
					Remigiusz Blichowski	21/04/2023	Asbestos Fibres	NAD
					Remigiusz Blichowski	21/04/2023	Asbestos ACM	NAD
					Remigiusz Blichowski	21/04/2023	Asbestos Type	NAD
23/5954	1	WS105	0.60-1.20	24	Remigiusz Blichowski	21/04/2023	General Description (Bulk Analysis)	Brown loose sand
					Remigiusz Blichowski	21/04/2023	Asbestos Fibres	NAD
					Remigiusz Blichowski	21/04/2023	Asbestos ACM	NAD
					Remigiusz Blichowski	21/04/2023	Asbestos Type	NAD

[illegible]

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NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 23/5954

SOILS and ASH

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 37°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above quantitative calibration range. The result should be considered the minimum value and is indicative only. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x5 Dilution

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 23/5954

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GC/FID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GC/FID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Preparation of Soil and Marine Sediment Samples for Total Organic Carbon.	Yes		AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21B	As Received samples are extracted in Methanol: Water (60:40) by reciprocal shaker.			AR	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes

EMT Job No: 23/5954

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248 Second edition (2021)	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes		AD	Yes
TM89	Modified USEPA method OIA-1667 (1999). Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide, Sulphide and Thiocyanate analysis.	Yes		AR	Yes
NONE	No Method Code	NONE	No Method Code			AD	Yes

APPENDIX VII - ORIGIN OF GAC VALUES

Determinant	Unit	GAC	Exposure Pathway	Origin of Risk Assessment Value
Metals				
Arsenic	mg/kg	37	1	LQM CIEH Suitable for Use Levels (S4UL) 2015- Inorganic Arsenic
Beryllium	mg/kg	1.7	1	LQM CIEH Suitable for Use Levels (S4UL) 2015
Boron	mg/kg	290	1	
Cadmium	mg/kg	11	2	
Chromium (III)	mg/kg	910	1	
Chromium (VI)	mg/kg	6	2	
Copper	mg/kg	2,400	2	
Lead	mg/kg	200	1	Category 4 Screening Level (C4SL) utilising exposure parameters from CLEA SR3 report.
Mercury	mg/kg	40	1	LQM CIEH Suitable for Use Levels (S4UL) 2015- Inorganic Mercury
Nickel	mg/kg	180	1,2	LQM CIEH Suitable for Use Levels (S4UL) 2015
Selenium	mg/kg	250	1,2	
Vanadium	mg/kg	410	2	
Zinc	mg/kg	3,700	2	
General Inorganics				
Total Cyanide*	mg/kg	50	1	Dutch Intervention Values 2010
Asbestos	%	0.001%	6	OEC Derived Value based on ICRL
General Organics				
Phenol	mg/kg	280	2	LQM CIEH Suitable for Use Levels (S4UL) 2015 1%SOM
PAHs				
Naphthalene	mg/kg	2.3	2	LQM CIEH Suitable for Use Levels (S4UL) 2015 based on a sandy loam as defined in SR3 (EA 2009) 1% SOM
Acenaphthylene	mg/kg	170	2	
Acenaphthene	mg/kg	210	2	
Fluorene	mg/kg	170	2	
Phenanthrene	mg/kg	95	2	
Anthracene	mg/kg	2,400	2	
Fluoranthene	mg/kg	280	1,2	
Pyrene	mg/kg	620	1,2	
Benzo(a)Anthracene ^l	mg/kg	7.2	1	
Chrysene	mg/kg	15	1	
Benzo(b)Fluoranthene	mg/kg	2.6	1	
Benzo(k)Fluoranthene	mg/kg	77	1	
Benzo(a)Pyrene	mg/kg	2.2	1	
Indeno(123-cd)Pyrene	mg/kg	27	1	
Dibenzo(a,h)Anthracene	mg/kg	0.24	1	

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ENVIRONMENTAL
CONSULTING

DOC REF

TECH11101

DOCUMENT NAME

Residential End Use with Homegrown Produce

Determinant	Unit	GAC	Exposure Pathway	Origin of Risk Assessment Value
Benzo(ghi)Perylene	mg/kg	320	1	
BTEX & MTBE				
Benzene	mg/kg	0.087	4	LQM CIEH Suitable for Use Levels (S4UL) 2015 1%SOM
Toluene	mg/kg	130	2,4	
Ethylbenzene	mg/kg	47	2,4	
Xylenes	mg/kg	56	2,4	LQM CIEH Suitable for Use Levels (S4UL) 2015 1% SOM o-Xylene
MTBE	mg/kg	49	4	Soil Generic Assessment Criteria for Human Health Risk Assessment (2010)
TPH-CWG				
Aliphatic				
Aliphatic EC 5-6	mg/kg	42	4	LQM CIEH Suitable for Use Levels (S4UL) 2015 based on a sandy loam as defined in SR3 (EA 2009) 1% SOM
Aliphatic EC >6-8	mg/kg	100	4	
Aliphatic EC >8-10	mg/kg	27	4	
Aliphatic EC >10-12	mg/kg	130 ^(vap)	4	
Aliphatic EC > 12-16	mg/kg	1,100 ^(sol)	4	
Aliphatic EC > 16-35	mg/kg	65,000 ^(sol)	1	
Aliphatic EC >35-44	mg/kg	65,000 ^(sol)	1	
Aromatic				
Aromatic EC 5-7	mg/kg	70	4	LQM CIEH Suitable for Use Levels (S4UL) 2015 based on a sandy loam as defined in SR3 (EA 2009) 1% SOM
Aromatic EC>7-8	mg/kg	130	4	
Aromatic EC> 8-10	mg/kg	34	4	
Aromatic EC> 10-12	mg/kg	74	2	
Aromatic EC> 12-16	mg/kg	140	2	
Aromatic EC> 16-21	mg/kg	260	2	
Aromatic EC> 21-35	mg/kg	1,100	1	
Aromatic EC> 35-44	mg/kg	1,100	1	
Banded TPH				
TPH EC 5-6**	mg/kg	42	4	LQM CIEH Suitable for Use Levels (S4UL) 2015 based on a sandy loam as defined in SR3 (EA 2009) 1% SOM, utilising the most conservative of the Ali/Aro chain lengths.
TPH EC >6-8**	mg/kg	100	4	
TPH EC >8-10**	mg/kg	27	4	
TPH EC> 10-12**	mg/kg	74	2	
TPH EC> 12-16**	mg/kg	140	2	
TPH EC> 16-21**	mg/kg	260	1	
TPH EC> 21-35**	mg/kg	1,100	1	

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	DOC REF	DOCUMENT NAME
	TECH11101	Residential End Use with Homegrown Produce

Determinant	Unit	GAC	Exposure Pathway	Origin of Risk Assessment Value
TPH EC> 35-44**	mg/kg	1,100	1	

Notes

Abbreviations: GAC = General Assessment Criteria, n = number of samples, MC = Maximum Concentration; Loc of Ex = Location of Exceedance.

Main Exposure Pathways: 1 = Ingestion of Soil & Indoor Dust, 2 = Consumption of Homegrown Produce & Attached Soil; 3 = Dermal Contact (Indoor & Outdoor); 4 = Inhalation of Vapour (Indoor & Outdoor); 5 = Inhalation of Dust (Indoor & Outdoor), 6 = Inhalation of Fibres

* Total cyanide Tier 1 GAC is taken from the Dutch Intervention Value (2010) for complex cyanide.

** The Tier 1 GAC for the banded hydrocarbon fraction is derived from the CIEH/S4UL assessment for petroleum hydrocarbons Criteria Working Group (CWG) for both aliphatic and aromatic compounds. OEC has utilised the lowest of the aliphatic and aromatic chain lengths in order to adopt a conservative approach, which is considered satisfactory for the protection of human health.

(sol) – GAC presented exceeds the solubility saturation limit.

(vap) – GAC presented exceeds the vapour saturation limit.

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APPENDIX VIII - GEOTECHNICAL ANALYSIS CERTIFICATES

Lauren Burnett

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PO6 4TP

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e: reception@i2analytical.com

e: samples@omnia-consulting.co.uk

Analytical Report Number : 23-30538

Project / Site name:	Nine Mile Ride	Samples received on:	25/04/2023
Your job number:	A12057	Samples instructed on/ Analysis started on:	26/04/2023
Your order number:	PO-2244	Analysis completed by:	08/05/2023
Report Issue Number:	1	Report issued on:	09/05/2023
Samples Analysed:	4 soil samples		

Signed:

Elżbieta Suchy
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

Analytical Report Number: 23-30538

Project / Site name: Nine Mile Ride

Your Order No: PO-2244

Lab Sample Number				2660411	2660412	2660413	2660414
Sample Reference				WS101	WS103	WS105	SA101
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.90-2.00	1.70-1.80	1.50-1.80	0.80-1.50
Date Sampled				Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	22	21	11	19
Total mass of sample received	kg	0.001	NONE	0.5	0.5	0.5	0.5

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	4.1	4.5	4.6	4
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.015	0.031	0.0074	0.02
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	14.7	31.4	7.4	19.5

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

Analytical Report Number : 23-30538

Project / Site name: Nine Mile Ride

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2660411	WS101	None Supplied	1.90-2.00	Light brown clay and sand.
2660412	WS103	None Supplied	1.70-1.80	Light brown clay and sand.
2660413	WS105	None Supplied	1.50-1.80	Light brown sand with vegetation.
2660414	SA101	None Supplied	0.80-1.50	Light brown clay and sand.

Analytical Report Number : 23-30538

Project / Site name: Nine Mile Ride

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

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

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

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

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

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

Sample Deviation Report



Analytical Report Number : 23-30538

Project / Site name: Nine Mile Ride

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

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

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
SA101	None Supplied	S	2660414	a	None Supplied	None Supplied	None Supplied
WS101	None Supplied	S	2660411	a	None Supplied	None Supplied	None Supplied
WS103	None Supplied	S	2660412	a	None Supplied	None Supplied	None Supplied
WS105	None Supplied	S	2660413	a	None Supplied	None Supplied	None Supplied

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS 1377-2:1990: Clause 4.4 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: Omnia Environmental Consulting
Client Address: 3-6 The Quarterdeck, Port Solent,
Portsmouth, PO6 4TP

Contact: Lauren Burnett
Site Address: Nine Mile Ride

Client Reference: A12057
Job Number: 23-30540-2
Date Sampled: Not Given
Date Received: 25/04/2023
Date Tested: 05/05/2023
Sampled By: Client - JR

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

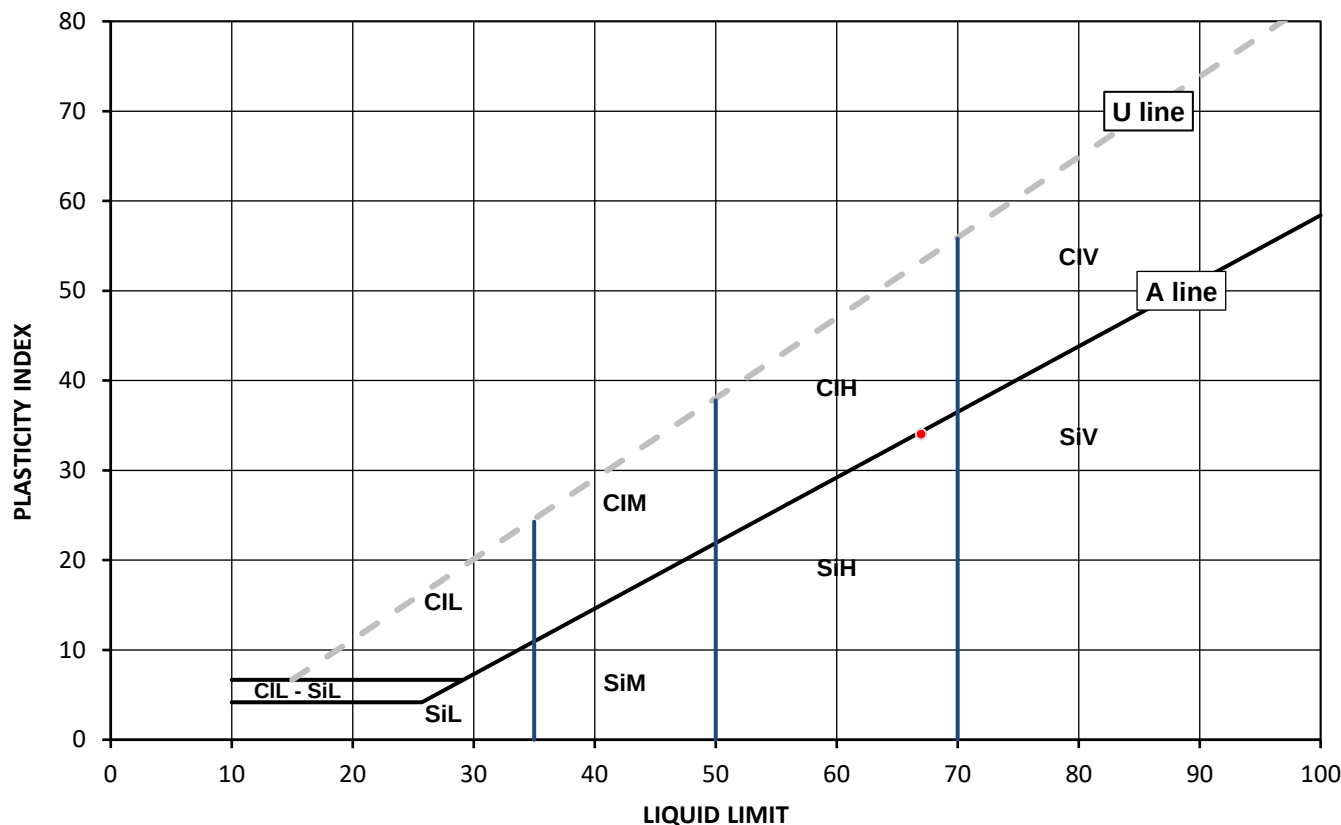
Test Results:

Laboratory Reference: 2660448
Hole No.: WS101
Sample Reference: Not Given
Sample Description: Brownish grey silty CLAY

Depth Top [m]: 1.90
Depth Base [m]: 2.00
Sample Type: D

Sample Preparation: Tested in natural condition

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
32	67	33	34	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L	Low
	M	Medium
	H	High
	V	Very high
	O	Organic
		append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS 1377-2:1990: Clause 4.4 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: Omnia Environmental Consulting
Client Address: 3-6 The Quarterdeck, Port Solent,
Portsmouth, PO6 4TP

Contact: Lauren Burnett
Site Address: Nine Mile Ride

Client Reference: A12057
Job Number: 23-30540-2
Date Sampled: Not Given
Date Received: 25/04/2023
Date Tested: 05/05/2023
Sampled By: Client - JR

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

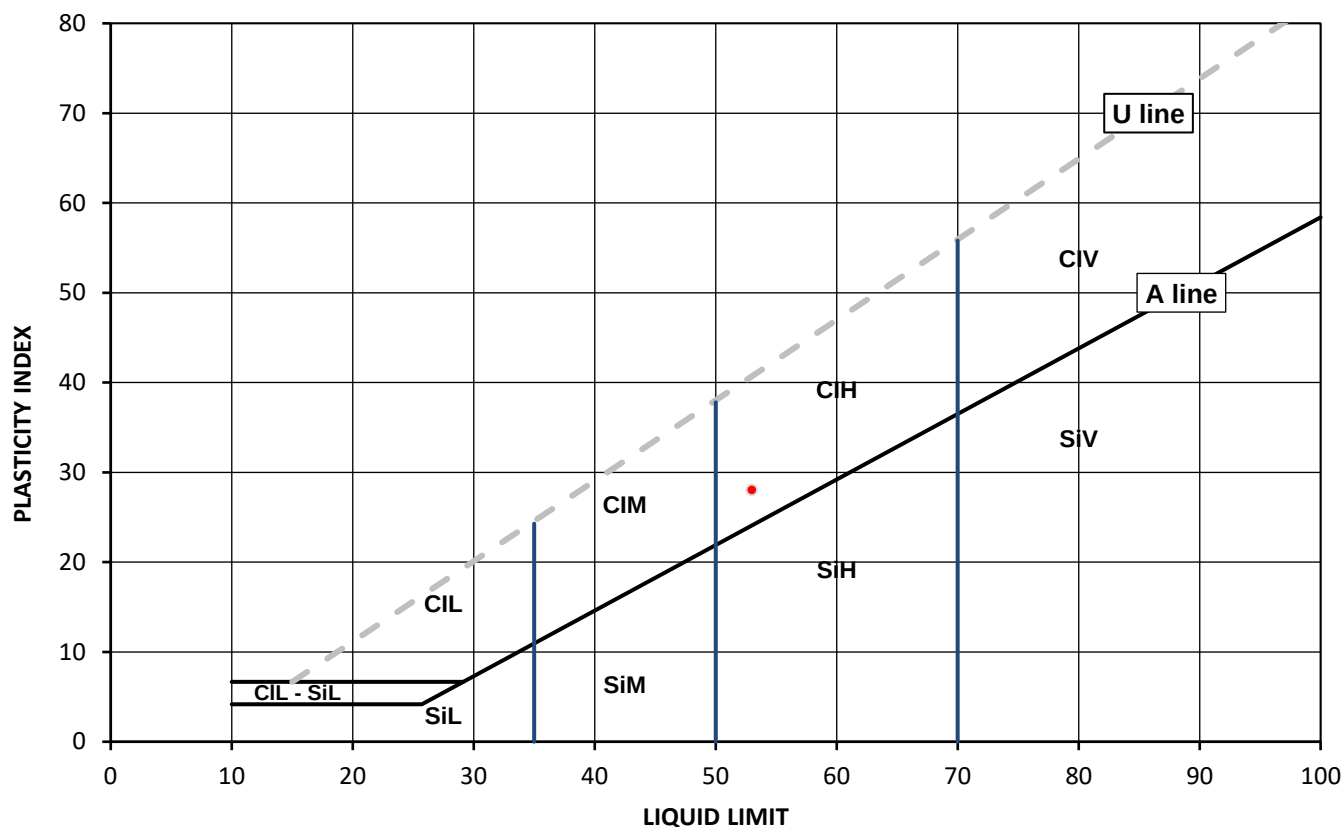
Test Results:

Laboratory Reference: 2660449
Hole No.: WS103
Sample Reference: Not Given
Sample Description: Multicolour slightly sandy CLAY

Depth Top [m]: 1.70
Depth Base [m]: 1.80
Sample Type: D

Sample Preparation: Tested in natural condition

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
29	53	25	28	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L Low	50 to 70
	M Medium	exceeding 70
	H High	
	V Very high	
	O Organic	append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks: Replaces Analytical Report Number 23-30540, issue no. 1; Moisture Content for sample 2660449 retested

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Signed:

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS 1377-2:1990: Clause 4.4 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: Omnia Environmental Consulting
Client Address: 3-6 The Quarterdeck, Port Solent,
Portsmouth, PO6 4TP

Contact: Lauren Burnett
Site Address: Nine Mile Ride

Client Reference: A12057
Job Number: 23-30540-2
Date Sampled: Not Given
Date Received: 25/04/2023
Date Tested: 08/05/2023
Sampled By: Client - JR

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

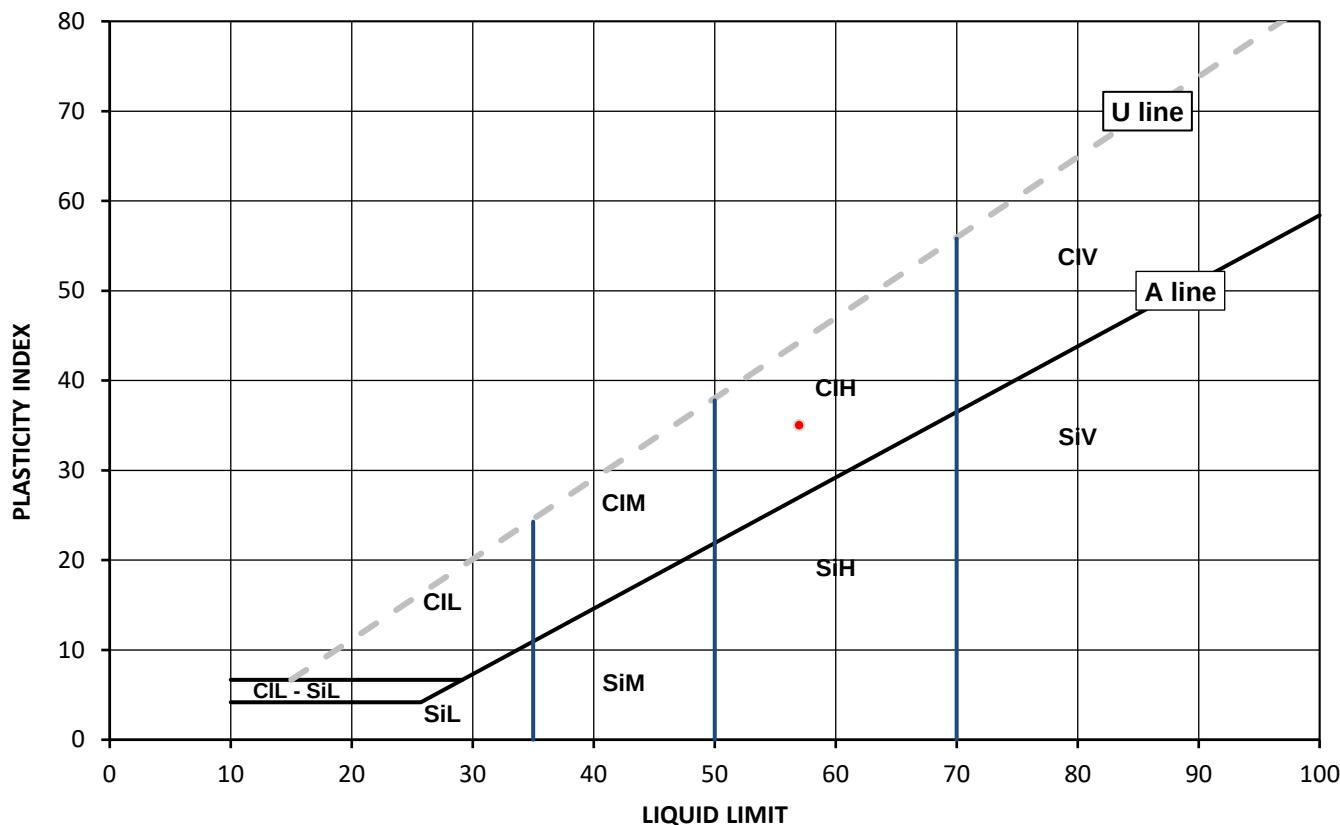
Test Results:

Laboratory Reference: 2660451
Hole No.: SA101
Sample Reference: Not Given
Sample Description: Greenish grey clayey SAND

Depth Top [m]: 0.80
Depth Base [m]: 1.50
Sample Type: B

Sample Preparation: Tested in natural condition

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
26	57	22	35	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl Clay	L Low	below 35
Si Silt	M Medium	35 to 50
	H High	50 to 70
	V Very high	exceeding 70
	O Organic	append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

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Client: Omnia Environmental Consulting

Client Address: 3-6 The Quarterdeck, Port Solent,
Portsmouth, PO6 4TP

Contact: Lauren Burnett

Site Address: Nine Mile Ride

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Client Reference: A12057

Job Number: 23-30540-2

Date Sampled: Not Given

Date Received: 25/04/2023

Date Tested: 08/05/2023

Sampled By: Client - JR

Test Results:

Laboratory Reference: 2660452

Hole No.: SA102

Sample Reference: Not Given

Sample Description: Greenish grey slightly sandy CLAY

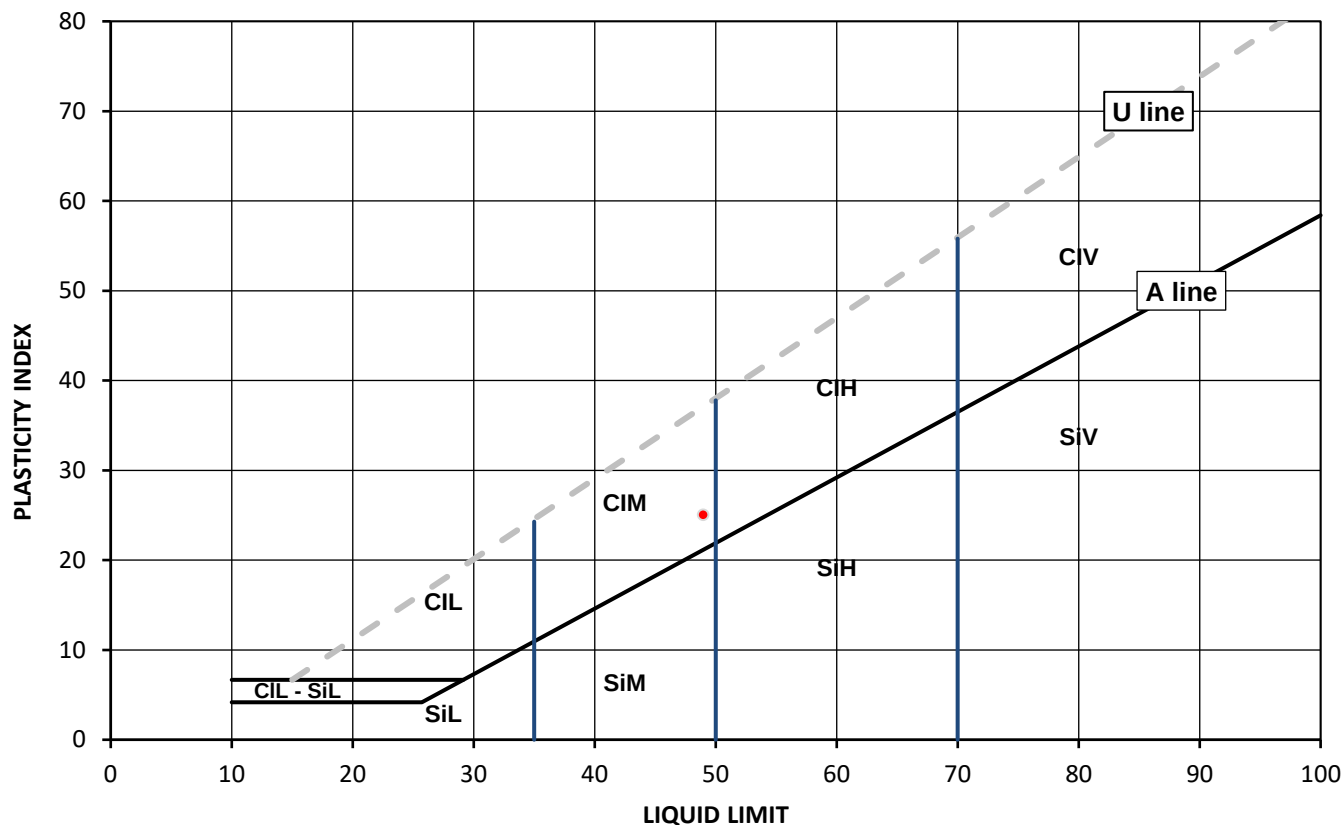
Depth Top [m]: 1.50

Depth Base [m]: 2.00

Sample Type: B

Sample Preparation: Tested in natural condition

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
30	49	24	25	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L	Low
	M	Medium
	H	High
	V	Very high
	O	Organic
		append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

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SUMMARY REPORT
SUMMARY OF CLASSIFICATION TEST RESULTS

Tested in Accordance with:

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Client: Omnia Environmental Consulting

Water Content by BS 1377-2:1990: Clause 3.2
Atterberg by BS 1377-2: 1990:
Clause 4.3 (4 Point Test), Clause 4.4 (1 Point Test) and 5

Client Reference: A12057

Client Address: 3-6 The Quarterdeck, Port Solent,
Portsmouth, PO6 4TP

Job Number: 23-30540-2

Contact: Lauren Burnett

Date Sampled: Not Given

Site Address: Nine Mile Ride

Date Received: 25/04/2023

Date Tested: 05/05 - 08/05/2023

Sampled By: Client - JR

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

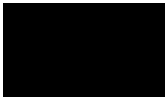
Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Water Content BS 1377-2 [W] %	Water Content BS EN ISO 17892-1 [W] %	Atterberg				Density			Total Porosity# %		
		Reference	Depth Top	Depth Base	Type					% Passing 425um	WL	Wp	Ip	bulk	dry	PD			
			m	m						%	%	%	%	Mg/m3	Mg/m3	Mg/m3			
2660448	WS101	Not Given	1.90	2.00	D	Brownish grey silty CLAY	Atterberg 1 Point	32		100	67	33	34						
2660449	WS103	Not Given	1.70	1.80	D	Multicolour slightly sandy CLAY	Atterberg 1 Point	29		100	53	25	28						
2660451	SA101	Not Given	0.80	1.50	B	Greenish grey clayey SAND	Atterberg 1 Point	26		100	57	22	35						
2660452	SA102	Not Given	1.50	2.00	B	Greenish grey slightly sandy CLAY	Atterberg 1 Point	30		100	49	24	25						

Note: # Non accredited; NP - Non plastic

Comments: Replaces Analytical Report Number 23-30540, issue no. 1; Moisture Content for sample 2660449 retested

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Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd



4041

Client: Omnia Environmental Consulting

Client Address: 3-6 The Quarterdeck, Port Solent,
Portsmouth, PO6 4TP

Contact: Lauren Burnett

Site Address: Nine Mile Ride

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

SUMMARY REPORT

DETERMINATION OF WATER CONTENT

Tested in Accordance with: BS 1377-2: 1990: Clause 3.2

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

Client Reference: A12057

Job Number: 23-30540-2

Date Sampled: Not Given

Date Received: 25/04/2023

Date Tested: 05/05 - 08/05/2023

Sampled By: Client - JR

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	WC	Sample preparation / Oven temperature at the time of testing			
		Reference	Depth Top m	Depth Base m	Type							
2660448	WS101	Not Given	1.90	2.00	D	Brownish grey silty CLAY		32	Sample was quartered, oven dried at 106.4 °C			
2660449	WS103	Not Given	1.70	1.80	D	Multicolour slightly sandy CLAY		29	Sample was quartered, oven dried at 106.4 °C			
2660451	SA101	Not Given	0.80	1.50	B	Greenish grey clayey SAND		26	Sample was quartered, oven dried at 106 °C			
2660452	SA102	Not Given	1.50	2.00	B	Greenish grey slightly sandy CLAY		30	Sample was quartered, oven dried at 106 °C			

Comments: Replaces Analytical Report Number 23-30540, issue no. 1; Moisture Content for sample 2660449 retested

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Signed:



Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Client: Omnia Environmental Consulting
Client Address: 3-6 The Quarterdeck, Port Solent,
Portsmouth, PO6 4TP

Contact: Lauren Burnett
Site Address: Nine Mile Ride

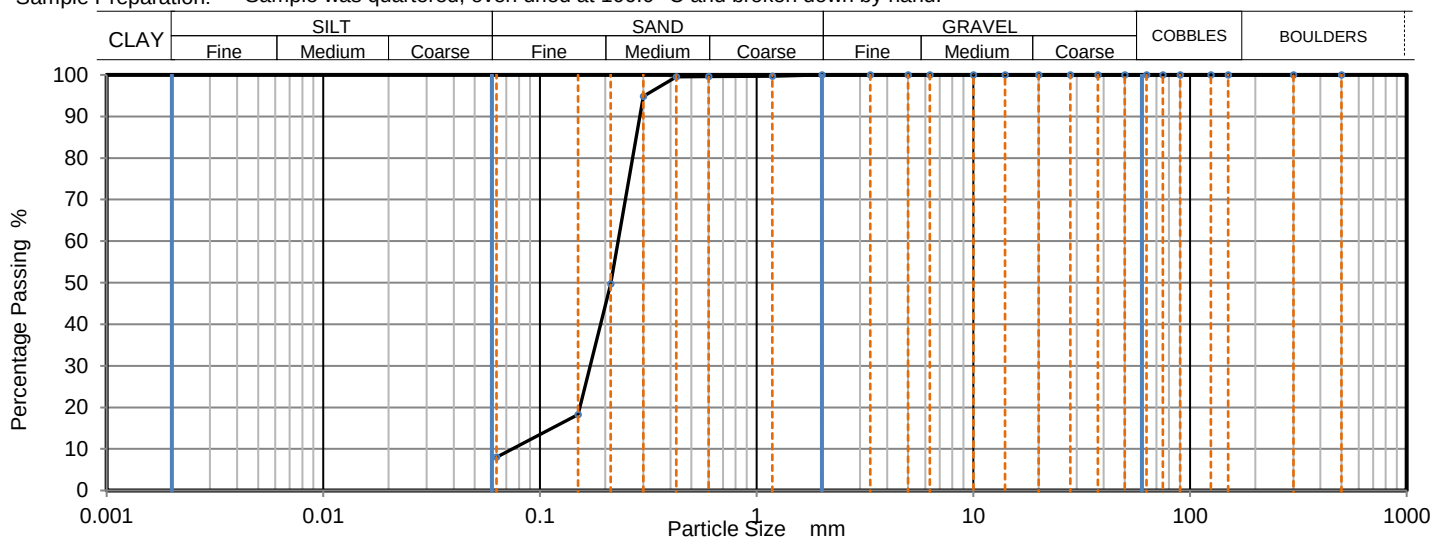
Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Client Reference: A12057
Job Number: 23-30540-2
Date Sampled: Not Given
Date Received: 25/04/2023
Date Tested: 05/05/2023
Sampled By: Client - JR

Test Results:

Laboratory Reference: 2660450
Hole No.: WS105
Sample Reference: Not Given
Sample Description: Yellowish brown SAND
Sample Preparation: Sample was quartered, oven dried at 106.0 °C and broken down by hand.

Depth Top [m]: 1.50
Depth Base [m]: 1.80
Sample Type: B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	95		
0.212	50		
0.15	18		
0.063	9		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	91
Fines <0.063mm	9

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Signed:

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

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Client: Omnia Environmental Consulting
Client Address: 3-6 The Quarterdeck, Port Solent,
Portsmouth, PO6 4TP

Contact: Lauren Burnett
Site Address: Nine Mile Ride

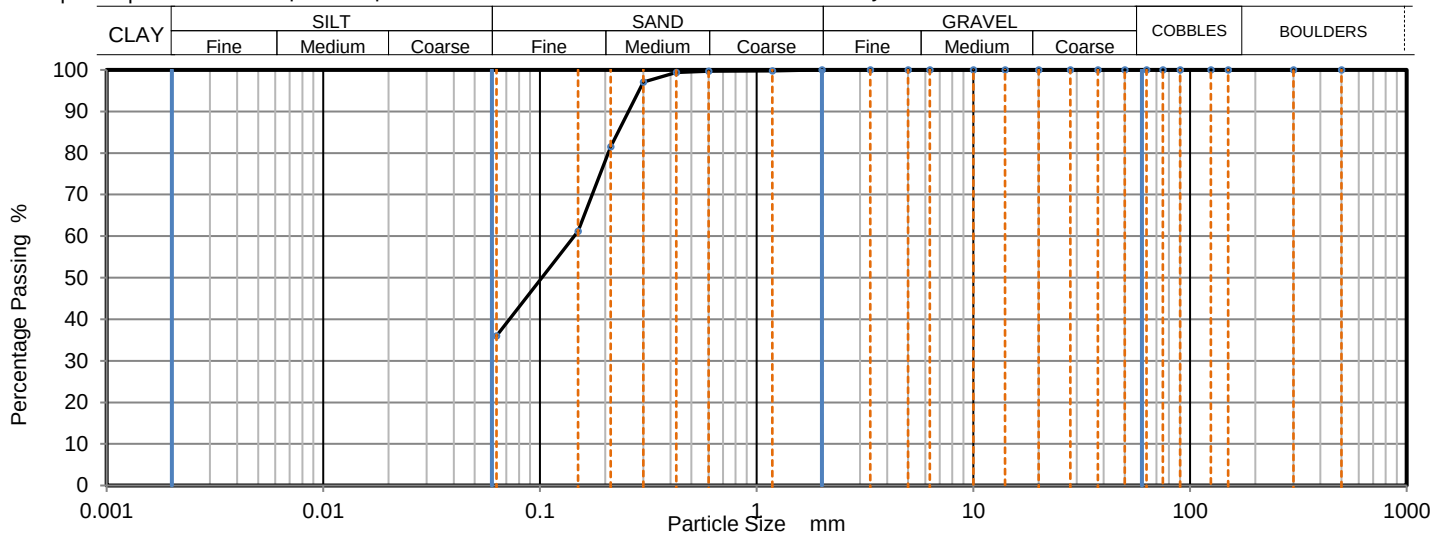
Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Client Reference: A12057
Job Number: 23-30540-2
Date Sampled: Not Given
Date Received: 25/04/2023
Date Tested: 08/05/2023
Sampled By: Client - JR

Test Results:

Laboratory Reference: 2660451
Hole No.: SA101
Sample Reference: Not Given
Sample Description: Greenish grey clayey SAND
Sample Preparation: Sample was quartered, oven dried at 106.0 °C and broken down by hand.

Depth Top [m]: 0.80
Depth Base [m]: 1.50
Sample Type: B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	99		
0.3	97		
0.212	82		
0.15	61		
0.063	37		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	63
Fines <0.063mm	37

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	> 2.3
Curvature Coefficient	

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Signed:



Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS 1377-2:1990: Clause 4.4 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: Omnia Environmental Consulting

Client Address: 3-6 The Quarterdeck, Port Solent,
Portsmouth, PO6 4TP

Contact: Georgia Wass

Site Address: Nine Mile Ride CP Works

Client Reference: A12057-1

Job Number: 23-33141-1

Date Sampled: 02/05/2023

Date Received: 10/05/2023

Date Tested: 16/05/2023

Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference: 2675367

Hole No.: BH101

Sample Reference: Not Given

Sample Description: Brownish grey CLAY

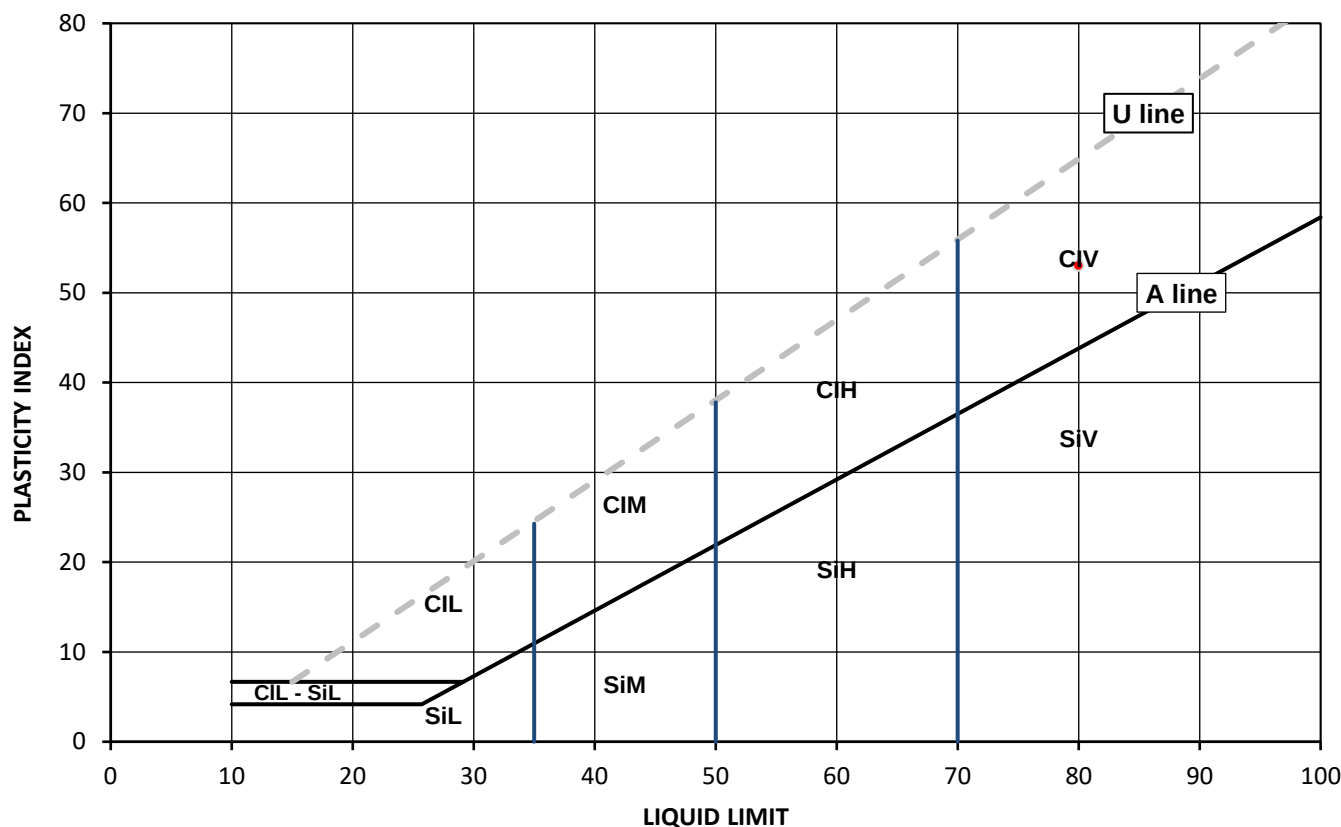
Depth Top [m]: 5.90

Depth Base [m]: 6.00

Sample Type: D

Sample Preparation: Tested in natural condition

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
33	80	27	53	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L	Low
	M	Medium
	H	High
	V	Very high
	O	Organic
		append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Katarzyna Koziel
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS 1377-2:1990: Clause 4.4 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: Omnia Environmental Consulting

Client Address: 3-6 The Quarterdeck, Port Solent,
Portsmouth, PO6 4TP

Contact: Georgia Wass

Site Address: Nine Mile Ride CP Works

Client Reference: A12057-1

Job Number: 23-33141-1

Date Sampled: 03/05/2023

Date Received: 10/05/2023

Date Tested: 16/05/2023

Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference: 2675368

Hole No.: BH101

Sample Reference: Not Given

Sample Description: Brown sandy CLAY

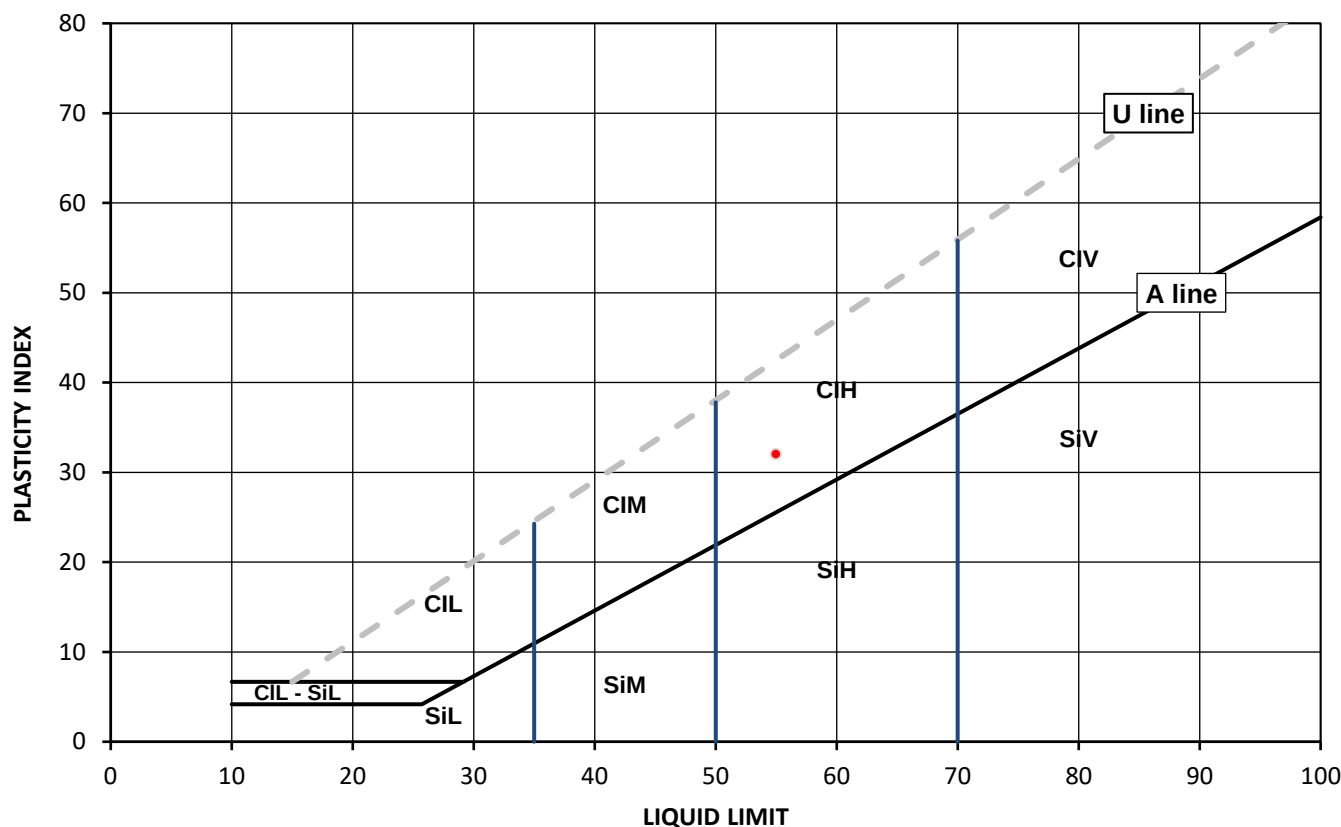
Depth Top [m]: 6.60

Depth Base [m]: 6.70

Sample Type: D

Sample Preparation: Tested after >425um removed by hand

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
18	55	23	32	82



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L	Low
	M	Medium
	H	High
	V	Very high
	O	Organic
		append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Katarzyna Koziel
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS 1377-2:1990: Clause 4.4 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: Omnia Environmental Consulting

Client Address: 3-6 The Quarterdeck, Port Solent,
Portsmouth, PO6 4TP

Contact: Georgia Wass

Site Address: Nine Mile Ride CP Works

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Client Reference: A12057-1

Job Number: 23-33141-1

Date Sampled: 03/05/2023

Date Received: 10/05/2023

Date Tested: 16/05/2023

Sampled By: Not Given

Test Results:

Laboratory Reference: 2675369

Hole No.: BH101

Sample Reference: Not Given

Sample Description: Brown sandy CLAY

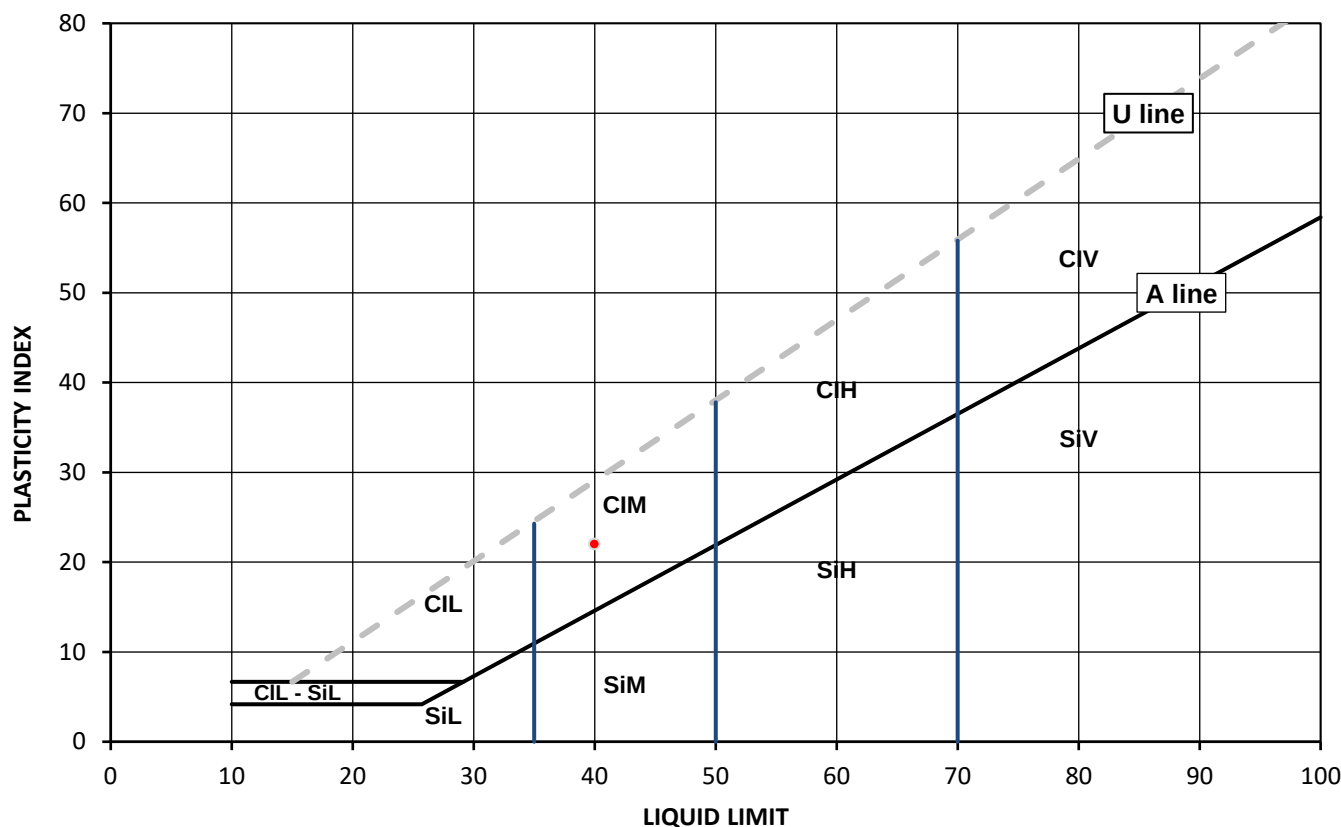
Depth Top [m]: 7.30

Depth Base [m]: 7.40

Sample Type: D

Sample Preparation: Tested in natural condition

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
20	40	18	22	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl Clay	L Low	below 35
Si Silt	M Medium	35 to 50
	H High	50 to 70
	V Very high	exceeding 70
	O Organic	append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Katarzyna Koziel
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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Client: Omnia Environmental Consulting

Client Address: 3-6 The Quarterdeck, Port Solent,
Portsmouth, PO6 4TP

Contact: Georgia Wass

Site Address: Nine Mile Ride CP Works

Client Reference: A12057-1

Job Number: 23-33141-1

Date Sampled: 04/05/2023

Date Received: 10/05/2023

Date Tested: 16/05/2023

Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference: 2675375

Hole No.: BH102

Sample Reference: Not Given

Sample Description: Brown slightly sandy CLAY

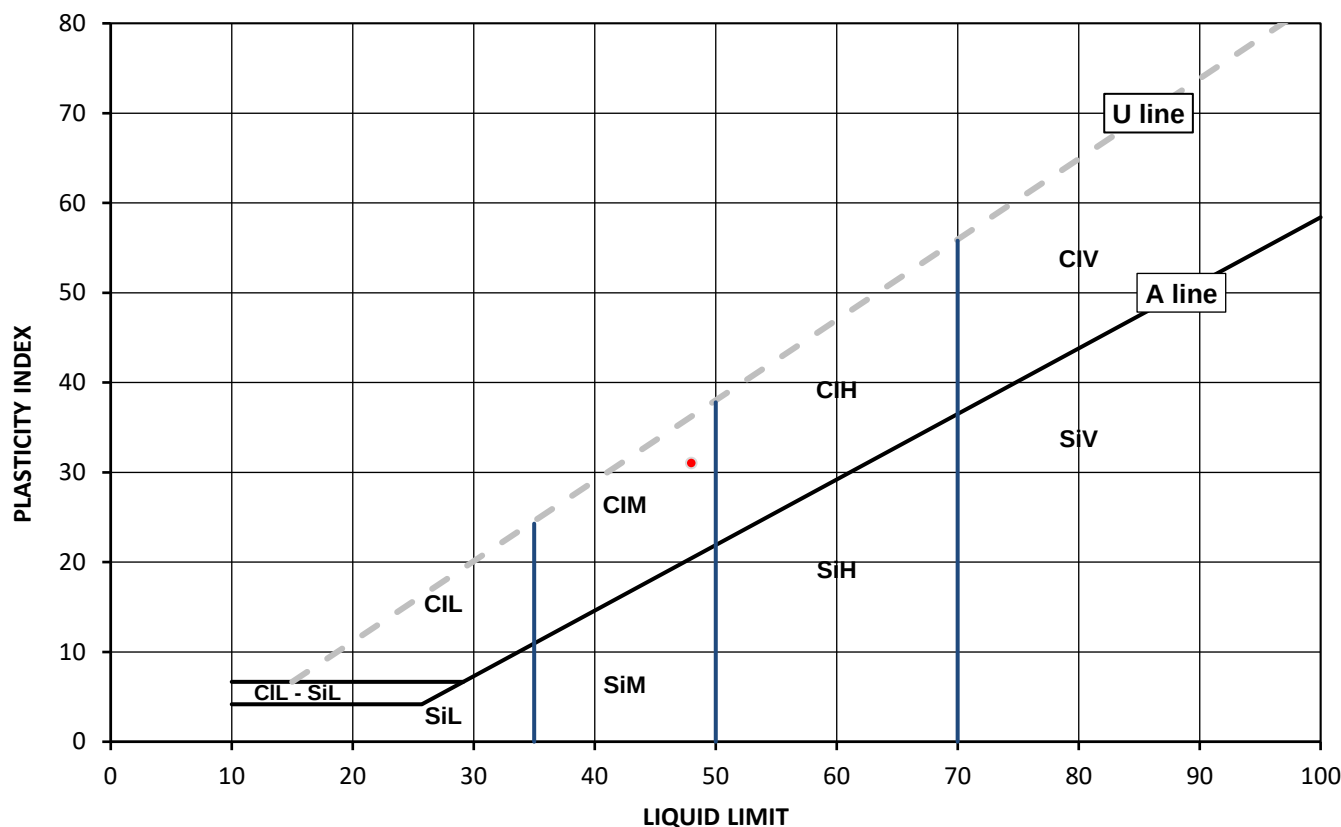
Depth Top [m]: 6.90

Depth Base [m]: 7.00

Sample Type: D

Sample Preparation: Tested in natural condition

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
20	48	17	31	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

Cl	Clay	Plasticity	L	Low	Liquid Limit	below 35
Si	Silt		M	Medium		35 to 50
			H	High		50 to 70
			V	Very high		exceeding 70
			O	Organic		append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Katarzyna Koziel
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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4041

Client: Omnia Environmental Consulting

Client Address: 3-6 The Quarterdeck, Port Solent,
Portsmouth, PO6 4TP

Contact: Georgia Wass

Site Address: Nine Mile Ride CP Works

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

SUMMARY REPORT

SUMMARY OF CLASSIFICATION TEST RESULTS

Tested in Accordance with:

Water Content by BS 1377-2:1990: Clause 3.2
Atterberg by BS 1377-2: 1990:
Clause 4.3 (4 Point Test), Clause 4.4 (1 Point Test) and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

Client Reference: A12057-1

Job Number: 23-33141-1

Date Sampled: 02/05 - 04/05/2023

Date Received: 10/05/2023

Date Tested: 16/05/2023

Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Water Content BS 1377-2 [W] %	Water Content BS EN ISO 17892-1 [W] %	Atterberg				Density			Total Porosity# %		
		Reference	Depth Top	Depth Base	Type					% Passing 425um	WL	Wp	Ip	bulk	dry	PD			
			m	m						%	%	%	%	Mg/m3	Mg/m3	Mg/m3			
2675367	BH101	Not Given	5.90	6.00	D	Brownish grey CLAY	Atterberg 1 Point	33		100	80	27	53						
2675368	BH101	Not Given	6.60	6.70	D	Brown sandy CLAY	Atterberg 1 Point	18		82	55	23	32						
2675369	BH101	Not Given	7.30	7.40	D	Brown sandy CLAY	Atterberg 1 Point	20		100	40	18	22						
2675371	BH102	Not Given	1.60	2.00	B	Yellowish brown mottled grey SAND		18											
2675374	BH102	Not Given	5.40	5.60	D	Greenish grey clayey SAND		25											
2675375	BH102	Not Given	6.90	7.00	D	Brown slightly sandy CLAY	Atterberg 1 Point	20		100	48	17	31						
2675377	BH102	Not Given	8.50	8.70	D	Yellowish brown clayey SAND		12											

Note: # Non accredited; NP - Non plastic

Comments:

Signed:



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Reporting Specialist
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4041

Client: Omnia Environmental Consulting

Client Address: 3-6 The Quarterdeck, Port Solent,
Portsmouth, PO6 4TP

Contact: Georgia Wass

Site Address: Nine Mile Ride CP Works

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

SUMMARY REPORT

DETERMINATION OF WATER CONTENT

Tested in Accordance with: BS 1377-2: 1990: Clause 3.2

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

Client Reference: A12057-1

Job Number: 23-33141-1

Date Sampled: 02/05 - 04/05/2023

Date Received: 10/05/2023

Date Tested: 16/05 - 18/05/2023

Sampled By: Not Given

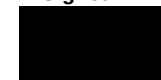
Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	WC	Sample preparation / Oven temperature at the time of testing			
		Reference	Depth Top m	Depth Base m	Type							
2675367	BH101	Not Given	5.90	6.00	D	Brownish grey CLAY		33	Sample was quartered, oven dried at 106.3 °C			
2675368	BH101	Not Given	6.60	6.70	D	Brown sandy CLAY		18	Sample was quartered, oven dried at 106.3 °C			
2675369	BH101	Not Given	7.30	7.40	D	Brown sandy CLAY		20	Sample was quartered, oven dried at 106.3 °C			
2675371	BH102	Not Given	1.60	2.00	B	Yellowish brown mottled grey SAND		18	Sample was quartered, oven dried at 106.3 °C			
2675374	BH102	Not Given	5.40	5.60	D	Greenish grey clayey SAND		25	Sample was quartered, oven dried at 106.3 °C			
2675375	BH102	Not Given	6.90	7.00	D	Brown slightly sandy CLAY		20	Sample was quartered, oven dried at 106.3 °C			
2675377	BH102	Not Given	8.50	8.70	D	Yellowish brown clayey SAND		12	Sample was quartered, oven dried at 106.3 °C			

Comments:

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Signed:



Katarzyna Koziel
Reporting Specialist
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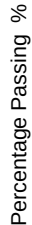
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Sampled By: Not Given

Sample Type: B



Uniformity and Curvature Coefficient calculated in accordance
with BS EN ISO 14688-2:2018

GF 100.22

Client: Omnia Environmental Consulting
Client Address: 3-6 The Quarterdeck, Port Solent,
Portsmouth, PO6 4TP

Contact: Georgia Wass
Site Address: Nine Mile Ride CP Works

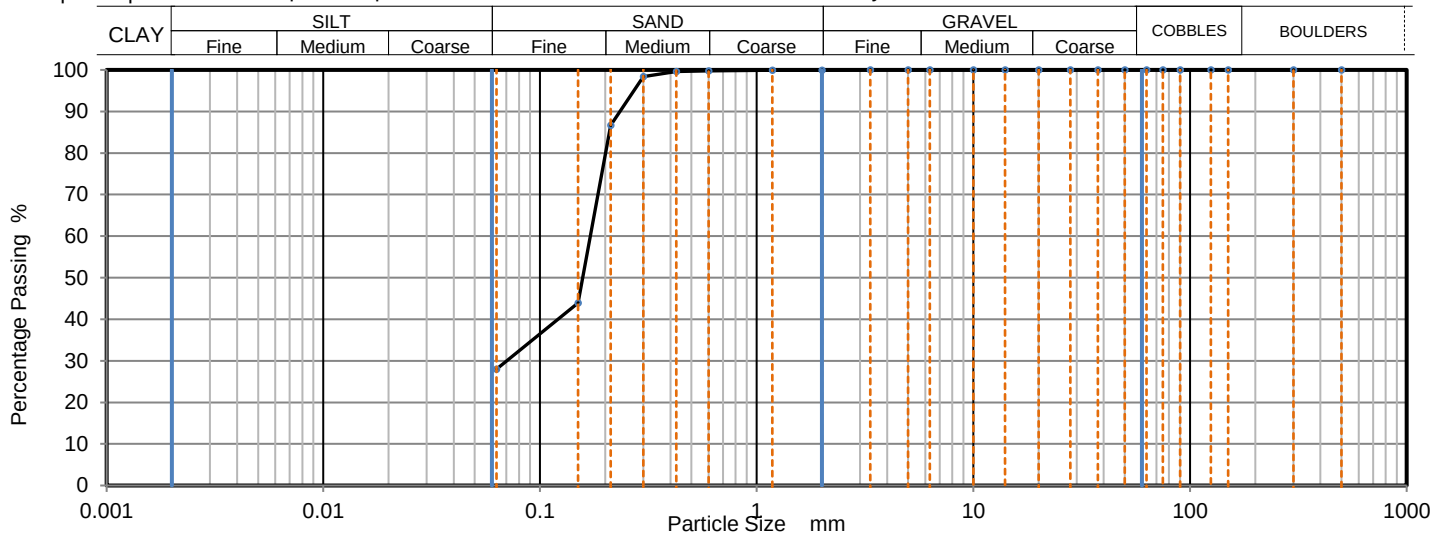
Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Client Reference: A12057-1
Job Number: 23-33141-1
Date Sampled: 03/05/2023
Date Received: 10/05/2023
Date Tested: 18/05/2023
Sampled By: Not Given

Test Results:

Laboratory Reference: 2675366
Hole No.: BH101
Sample Reference: Not Given
Sample Description: Yellowish brown clayey SAND
Sample Preparation: Sample was quartered, oven dried at 106.3 °C and broken down by hand.

Depth Top [m]: 8.50
Depth Base [m]: 9.00
Sample Type: B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	98		
0.212	87		
0.15	44		
0.063	28		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	72
Fines <0.063mm	28

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	> 2.7
Curvature Coefficient	

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Signed:

Katarzyna Koziel
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: Omnia Environmental Consulting
Client Address: 3-6 The Quarterdeck, Port Solent,
Portsmouth, PO6 4TP

Contact: Georgia Wass
Site Address: Nine Mile Ride CP Works

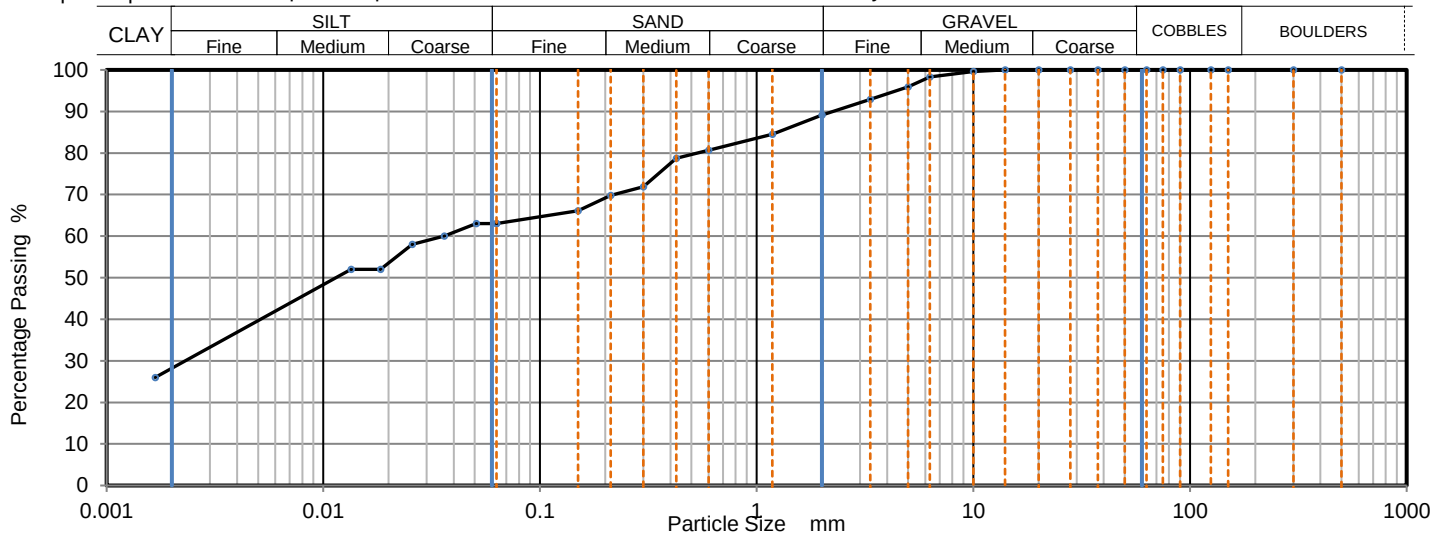
Client Reference: A12057-1
Job Number: 23-33141-1
Date Sampled: 03/05/2023
Date Received: 10/05/2023
Date Tested: 16/05/2023
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference: 2675368
Hole No.: BH101
Sample Reference: Not Given
Sample Description: Brown sandy CLAY
Sample Preparation: Sample was quartered, oven dried at 106.3 °C and broken down by hand.

Depth Top [m]: 6.60
Depth Base [m]: 6.70
Sample Type: D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100	0.0630	63
300	100	0.0508	63
150	100	0.0361	60
125	100	0.0257	58
90	100	0.0184	52
75	100	0.0134	52
63	100	0.0017	26
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	98		
5	96		
3.35	93	Particle density (assumed) 2.65 Mg/m3	
2	89		
1.18	85		
0.6	81		
0.425	79		
0.3	72		
0.212	70		
0.15	66		
0.063	63		

Sample Proportions	% dry mass
Very coarse	0
Gravel	11
Sand	26
Silt	35
Clay	28

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	> 21
Curvature Coefficient	

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

Remarks:

Signed:

Katarzyna Koziel
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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Client: Omnia Environmental Consulting
Client Address: 3-6 The Quarterdeck, Port Solent,
Portsmouth, PO6 4TP

Contact: Georgia Wass
Site Address: Nine Mile Ride CP Works

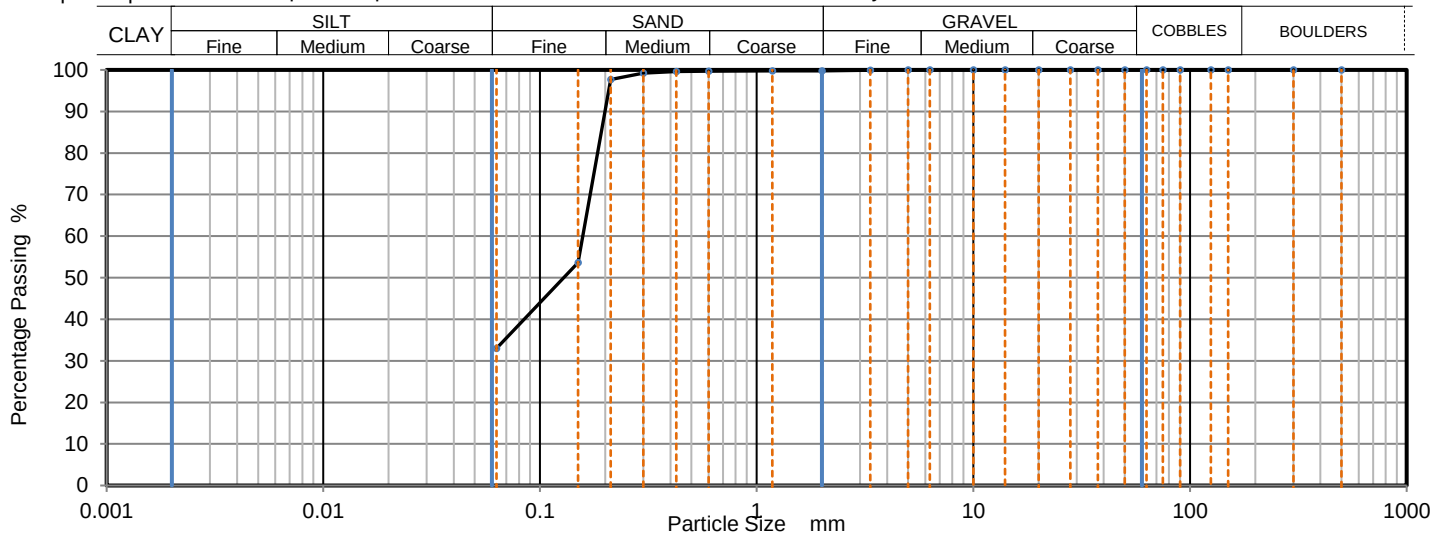
Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Client Reference: A12057-1
Job Number: 23-33141-1
Date Sampled: 03/05/2023
Date Received: 10/05/2023
Date Tested: 18/05/2023
Sampled By: Not Given

Test Results:

Laboratory Reference: 2675370
Hole No.: BH101
Sample Reference: Not Given
Sample Description: Yellowish brown clayey SAND
Sample Preparation: Sample was quartered, oven dried at 106.3 °C and broken down by hand.

Depth Top [m]: 9.50
Depth Base [m]: 9.70
Sample Type: B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	99		
0.212	98		
0.15	54		
0.063	33		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	67
Fines <0.063mm	33

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	> 2.5
Curvature Coefficient	

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Signed:



Katarzyna Koziel
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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Client: Omnia Environmental Consulting
Client Address: 3-6 The Quarterdeck, Port Solent,
Portsmouth, PO6 4TP

Contact: Georgia Wass
Site Address: Nine Mile Ride CP Works

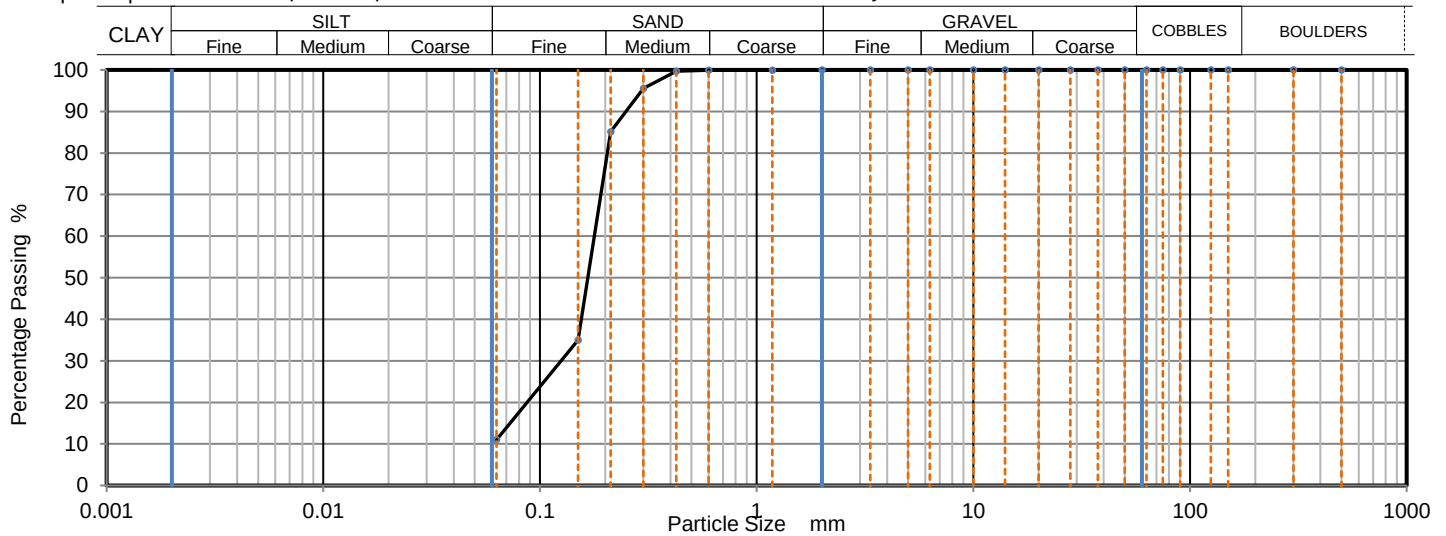
Client Reference: A12057-1
Job Number: 23-33141-1
Date Sampled: 04/05/2023
Date Received: 10/05/2023
Date Tested: 18/05/2023
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference: 2675371
Hole No.: BH102
Sample Reference: Not Given
Sample Description: Yellowish brown mottled grey SAND
Sample Preparation: Sample was quartered, oven dried at 106.3 °C and broken down by hand.

Depth Top [m]: 1.60
Depth Base [m]: 2.00
Sample Type: B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	96		
0.212	85		
0.15	35		
0.063	12		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	88
Fines <0.063mm	12

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	> 2.8
Curvature Coefficient	

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Signed:

Katarzyna Koziel
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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4041

TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Client: Omnia Environmental Consulting
Client Address: 3-6 The Quarterdeck, Port Solent,
Portsmouth, PO6 4TP

Contact: Georgia Wass
Site Address: Nine Mile Ride CP Works

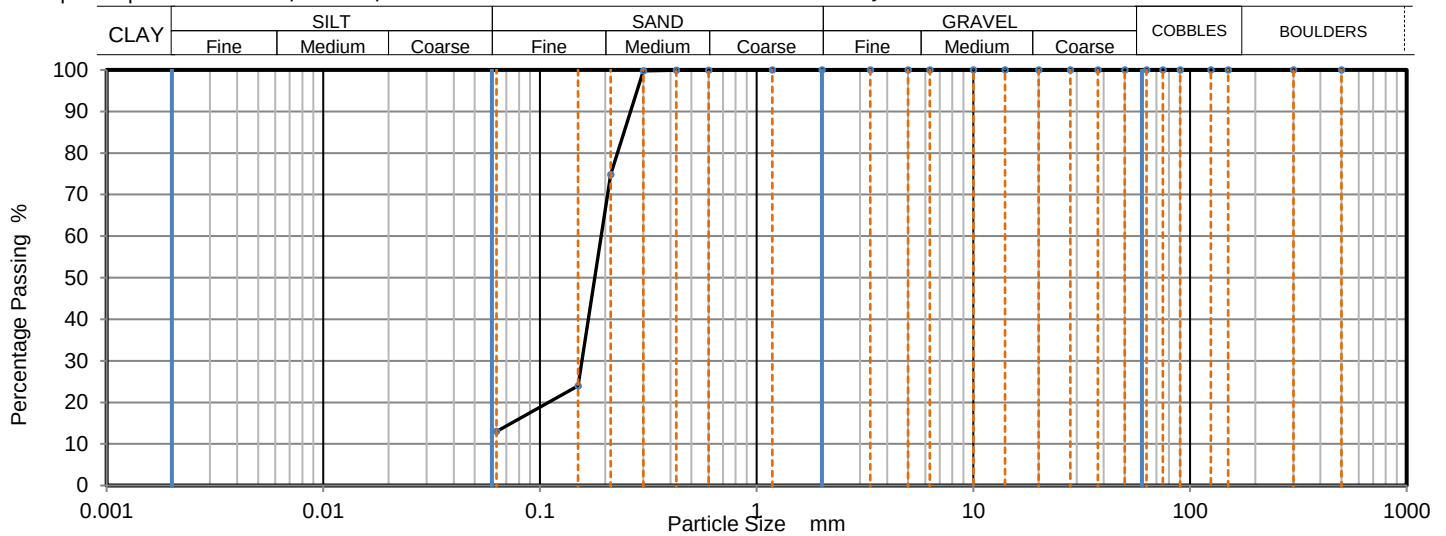
Client Reference: A12057-1
Job Number: 23-33141-1
Date Sampled: 04/05/2023
Date Received: 10/05/2023
Date Tested: 18/05/2023
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference: 2675372
Hole No.: BH102
Sample Reference: Not Given
Sample Description: Brownish grey SAND
Sample Preparation: Sample was quartered, oven dried at 106.3 °C and broken down by hand.

Depth Top [m]: 2.50
Depth Base [m]: 2.90
Sample Type: B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	100		
0.212	75		
0.15	24		
0.063	13		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	87
Fines <0.063mm	13

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	> 3
Curvature Coefficient	

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Signed:



Katarzyna Koziel
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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Client: Omnia Environmental Consulting
Client Address: 3-6 The Quarterdeck, Port Solent,
Portsmouth, PO6 4TP

Contact: Georgia Wass
Site Address: Nine Mile Ride CP Works

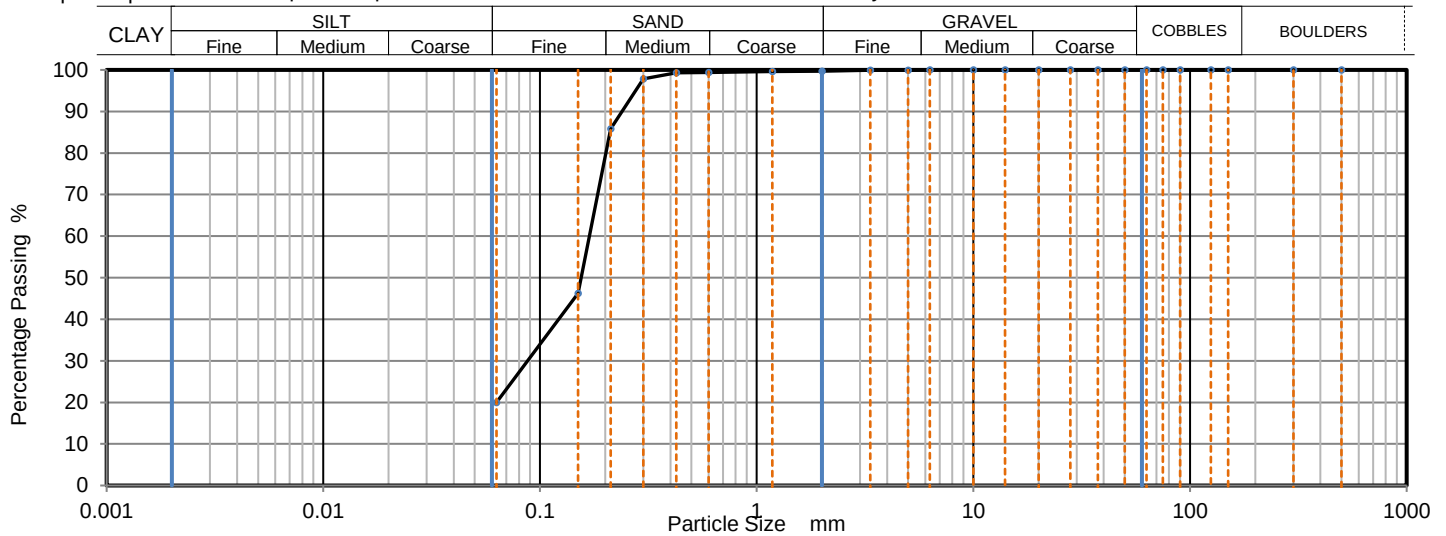
Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Client Reference: A12057-1
Job Number: 23-33141-1
Date Sampled: 04/05/2023
Date Received: 10/05/2023
Date Tested: 18/05/2023
Sampled By: Not Given

Test Results:

Laboratory Reference: 2675373
Hole No.: BH102
Sample Reference: Not Given
Sample Description: Greyish brown clayey SAND
Sample Preparation: Sample was quartered, oven dried at 106.3 °C and broken down by hand.

Depth Top [m]: 4.60
Depth Base [m]: 4.90
Sample Type: B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	98		
0.212	86		
0.15	46		
0.063	21		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	79
Fines <0.063mm	21

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	> 2.7
Curvature Coefficient	

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Signed:

Katarzyna Koziel
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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4041

TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Client: Omnia Environmental Consulting
Client Address: 3-6 The Quarterdeck, Port Solent,
Portsmouth, PO6 4TP

Contact: Georgia Wass
Site Address: Nine Mile Ride CP Works

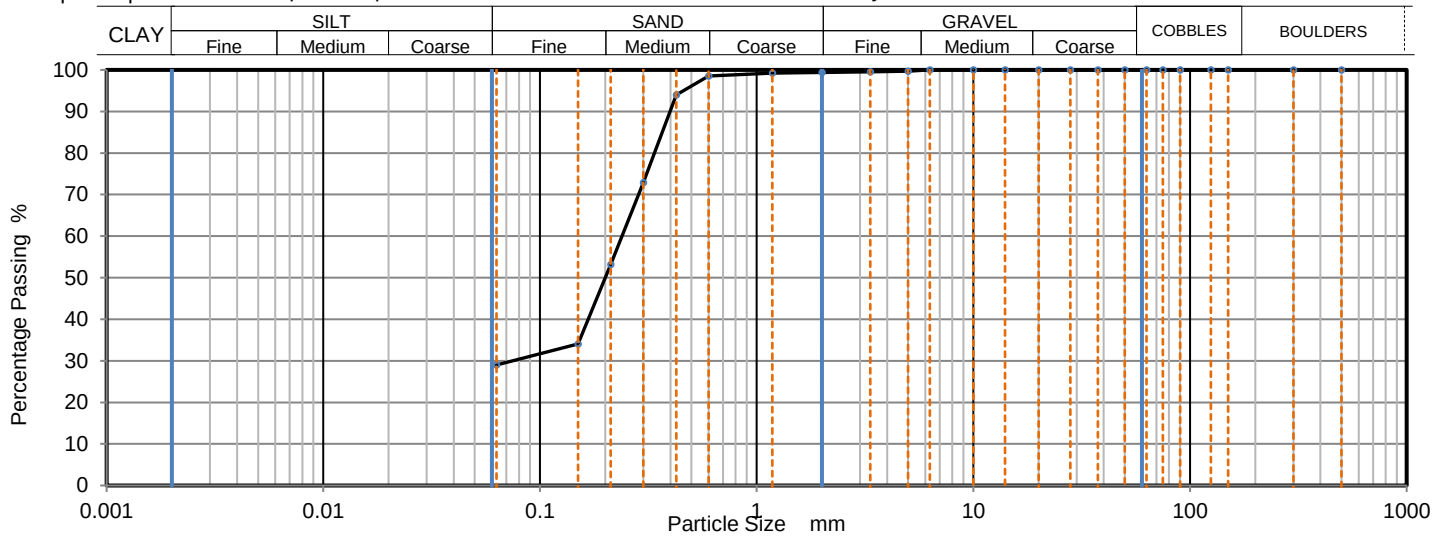
Client Reference: A12057-1
Job Number: 23-33141-1
Date Sampled: 04/05/2023
Date Received: 10/05/2023
Date Tested: 16/05/2023
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference: 2675374
Hole No.: BH102
Sample Reference: Not Given
Sample Description: Greenish grey clayey SAND
Sample Preparation: Sample was quartered, oven dried at 106.3 °C and broken down by hand.

Depth Top [m]: 5.40
Depth Base [m]: 5.60
Sample Type: D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	99		
0.6	99		
0.425	94		
0.3	73		
0.212	53		
0.15	34		
0.063	30		

Sample Proportions	% dry mass
Very coarse	0
Gravel	1
Sand	70
Fines <0.063mm	30

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	> 3.8
Curvature Coefficient	

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Signed:

Katarzyna Koziel
Reporting Specialist
for and on behalf of i2 Analytical Ltd

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.

Client: Omnia Environmental Consulting
Client Address: 3-6 The Quarterdeck, Port Solent,
Portsmouth, PO6 4TP

Contact: Georgia Wass
Site Address: Nine Mile Ride CP Works

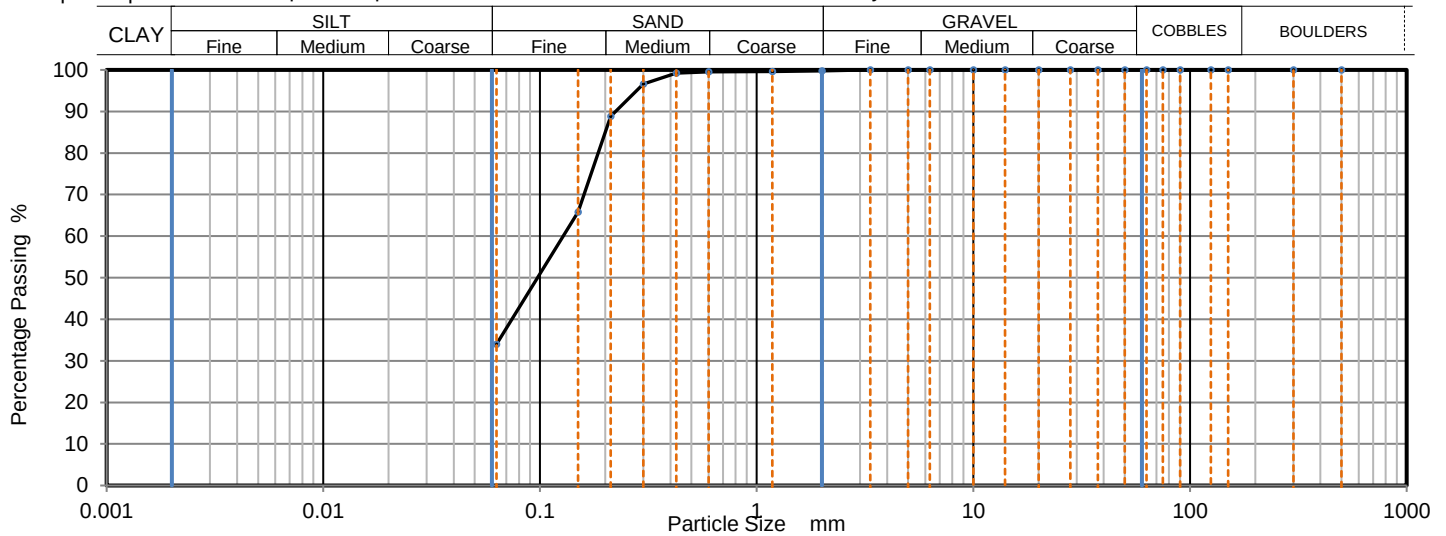
Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Client Reference: A12057-1
Job Number: 23-33141-1
Date Sampled: 04/05/2023
Date Received: 10/05/2023
Date Tested: 16/05/2023
Sampled By: Not Given

Test Results:

Laboratory Reference: 2675376
Hole No.: BH102
Sample Reference: Not Given
Sample Description: Yellowish brown clayey SAND
Sample Preparation: Sample was quartered, oven dried at 106.3 °C and broken down by hand.

Depth Top [m]: 7.80
Depth Base [m]: 7.90
Sample Type: D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	99		
0.3	97		
0.212	89		
0.15	66		
0.063	35		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	65
Fines <0.063mm	34

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	> 2
Curvature Coefficient	

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Signed:

Katarzyna Koziel
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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4041

TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Client: Omnia Environmental Consulting
Client Address: 3-6 The Quarterdeck, Port Solent,
Portsmouth, PO6 4TP

Contact: Georgia Wass
Site Address: Nine Mile Ride CP Works

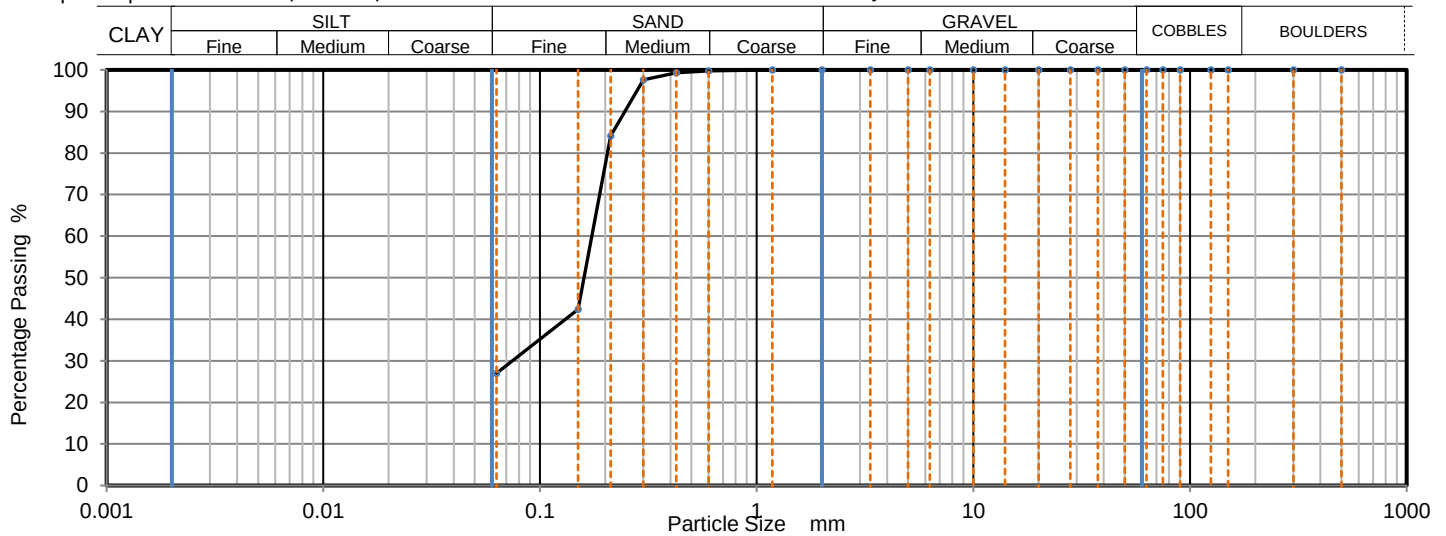
Client Reference: A12057-1
Job Number: 23-33141-1
Date Sampled: 04/05/2023
Date Received: 10/05/2023
Date Tested: 16/05/2023
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference: 2675377
Hole No.: BH102
Sample Reference: Not Given
Sample Description: Yellowish brown clayey SAND
Sample Preparation: Sample was quartered, oven dried at 106.3 °C and broken down by hand.

Depth Top [m]: 8.50
Depth Base [m]: 8.70
Sample Type: D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	99		
0.3	98		
0.212	84		
0.15	42		
0.063	27		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	73
Fines <0.063mm	27

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	> 2.8
Curvature Coefficient	

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Signed:



Katarzyna Koziel
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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4041

Client: Omnia Environmental Consulting

Client Address: 3-6 The Quarterdeck, Port Solent,
Portsmouth, PO6 4TP

Contact: Georgia Wass

Site Address: Nine Mile Ride CP Works

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

SUMMARY REPORT

DETERMINATION OF BULK DENSITY - IMMERSION IN FLUID METHOD

Tested in Accordance with: BS EN ISO 17892-2: 2014: Clause 5.2

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

Client Reference: A12057-1

Job Number: 23-33141-1

Date Sampled: 04/05/2023

Date Received: 10/05/2023

Date Tested: 16/05/2023

Sampled By: Not Given

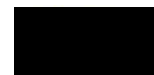
Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Bulk density	Dry density	WC	Preparation		
		Reference	Depth Top	Depth Base	Type								
			m	m				Mg/m3	Mg/m3	%			
2675374	BH102	Not Given	5.40	5.60	D	Greenish grey clayey SAND		2.01	1.57	28.0			

Note: WC - Water Content

Comments:

Signed:



Katarzyna Koziel
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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SUMMARY REPORT
DETERMINATION OF BULK DENSITY - LINEAR MEASUREMENT METHOD

Tested in Accordance with: BS EN ISO 17892-2: 2014: Clause 5.1

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041
Client: Omnia Environmental Consulting
Client Address: 3-6 The Quarterdeck, Port Solent,
Portsmouth, PO6 4TP

Contact: Georgia Wass
Site Address: Nine Mile Ride CP Works

Client Reference: A12057-1
Job Number: 23-33141-1
Date Sampled: 02/05 - 04/05/2023
Date Received: 10/05/2023
Date Tested: 16/05/2023
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test results

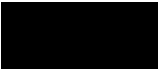
Laboratory Reference	Hole No.	Sample				Description	Remarks	Bulk density	Dry density	WC	Preparation		
		Reference	Depth Top	Depth Base	Type								
			m	m				Mg/m3	Mg/m3	%			
2675365	BH101	Not Given	2.70	3.00	B	Yellowish brown SAND		1.67	1.36	22.5			
2675373	BH102	Not Given	4.60	4.90	B	Greyish brown clayey SAND		1.70	1.36	25.1			

Note: WC - Water Content

Comments:

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Signed:



Katarzyna Koziel
Reporting Specialist
for and on behalf of i2 Analytical Ltd

Georgia Wass

Omnia Environmental Consulting
3-6 The Quarterdeck
Port Solent
Portsmouth
PO6 4TP

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404

f: 01923 237404

e: reception@i2analytical.com

e: samples@omnia-consulting.co.uk

Analytical Report Number : 23-33142

Project / Site name:	Nine Mile Ride CP Works	Samples received on:	10/05/2023
Your job number:	A12057-1	Samples instructed on/ Analysis started on:	11/05/2023
Your order number:	PO002285	Analysis completed by:	18/05/2023
Report Issue Number:	1	Report issued on:	23/05/2023
Samples Analysed:	7 soil samples		

Signed:

Adam Fenwick
Technical Reviewer
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

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

Analytical Report Number: 23-33142
 Project / Site name: Nine Mile Ride CP Works
 Your Order No: PO002285

Lab Sample Number				2675378	2675379	2675380	2675381	2675382
Sample Reference				CP101	CP101	CP101	CP102	CP102
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.70-3.00	7.30-7.40	9.50-9.70	1.60-2.00	2.50-2.90
Date Sampled				02/05/2023	03/05/2023	03/05/2023	04/05/2023	04/05/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	18	16	12	14	19
Total mass of sample received	kg	0.001	NONE	0.5	0.5	0.5	0.5	0.5

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	5.6	5.1	4.8	5.2	5.3
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	< 0.0013	0.009	0.0076	< 0.0013	< 0.0013
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	< 1.3	9	7.6	< 1.3	< 1.3
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	0.7	4.5	3.6	< 0.5	< 0.5
Water Soluble Nitrate (2:1) as N (leachate equivalent)	mg/l	2	NONE	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0

Heavy Metals / Metalloids

Magnesium (water soluble)	mg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Magnesium (leachate equivalent)	mg/l	2.5	NONE	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5

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

Analytical Report Number: 23-33142
 Project / Site name: Nine Mile Ride CP Works
 Your Order No: P0002285

Lab Sample Number				2675383	2675384
Sample Reference				CP102	CP102
Sample Number				None Supplied	None Supplied
Depth (m)				4.60-4.90	6.90-7.00
Date Sampled				04/05/2023	04/05/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	19	14
Total mass of sample received	kg	0.001	NONE	0.5	0.5

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	5.3	4.7
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0033	0.016
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	3.3	15.5
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	5.1	5.1
Water Soluble Nitrate (2:1) as N (leachate equivalent)	mg/l	2	NONE	< 2.0	< 2.0

Heavy Metals / Metalloids

Magnesium (water soluble)	mg/kg	5	NONE	< 5.0	< 5.0
Magnesium (leachate equivalent)	mg/l	2.5	NONE	< 2.5	< 2.5

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

Analytical Report Number : 23-33142

Project / Site name: Nine Mile Ride CP Works

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2675378	CP101	None Supplied	2.70-3.00	Light brown sand.
2675379	CP101	None Supplied	7.30-7.40	Brown clay.
2675380	CP101	None Supplied	9.50-9.70	Brown clay and sand.
2675381	CP102	None Supplied	1.60-2.00	Brown sand.
2675382	CP102	None Supplied	2.50-2.90	Brown sand.
2675383	CP102	None Supplied	4.60-4.90	Brown sand.
2675384	CP102	None Supplied	6.90-7.00	Brown clay and sand.

Analytical Report Number : 23-33142

Project / Site name: Nine Mile Ride CP Works

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES.	In-house method based on TRL 447	L038-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Water Soluble Nitrate (2:1) as N in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	W	NONE
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In house method.	L082-PL	D	MCERTS
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

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

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

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

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

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



Laboratory Report



Contract Number: 77200

Client Ref: **A12057-5**

Client PO: **PO4076**

Date Received: **17-02-2025**

Date Completed: **13-03-2025**

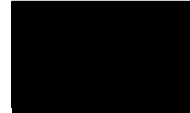
Report Date: **13-03-2025**

Client: **Omnia Consulting**

This report has been checked and approved by:

Contract Title: **Nine Mile Ride**

For the attention of: **Samples**



Brendan Evans
Office Administrator

Description	Qty
Moisture Content BS 1377:1990 - Part 2 : 3.2 - * UKAS	6
4 Point Liquid & Plastic Limit BS 1377:1990 - Part 2 : 4.3 & 5.3 - * UKAS	6
Particle Size Distribution BS EN ISO 17892-4 : 5.1 - * UKAS	32
Water Soluble Sulphate 2:1 extract Sub-contracted Test In-house method	32
pH value of soil Sub-contracted Test - In-house method	32

Notes: Observations and Interpretations are outside the UKAS Accreditation

* - denotes test included in laboratory scope of accreditation

- denotes test carried out by approved contractor

@ - denotes non accredited tests

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This test report/certificate shall not be reproduced except in full, without the approval of GEO Site & Testing Services Ltd. Any opinions or interpretations stated - within this report/certificate are excluded from the laboratories UKAS accreditation.

Approved Signatories:

Brendan Evans (Office Administrator) - Darren Bourne (Quality Senior Technician) - Paul Evans (Director)

Richard John (Quality/Technical Manager) - Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager)

Wayne Honey (HR & HSE Manager)

GEO Site & Testing Services Ltd

Unit 3-4 Heol Aur, Dafen Ind Est, Llanelli, Carmarthenshire SA14 8QN

Tel: 01554 784 040 Fax: 01554 784 040 info@gstl.co.uk https://gstl.co.uk



**NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND
PLASTICITY INDEX
(BS 1377:1990 - Part 2 : 4.3 & 5.3)**

Contract Number	77200	
Project Name	Nine Mile Ride	
Date Tested	24/02/2025	
	DESCRIPTIONS	

[illegible]

Operator

Aaron. H



PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

CP601

Project Name

Nine Mile Ride

Sample No.

Sample Description

Brown fine to coarse sandy SILT/ CLAY

Depth Top

0.40

Depth Base

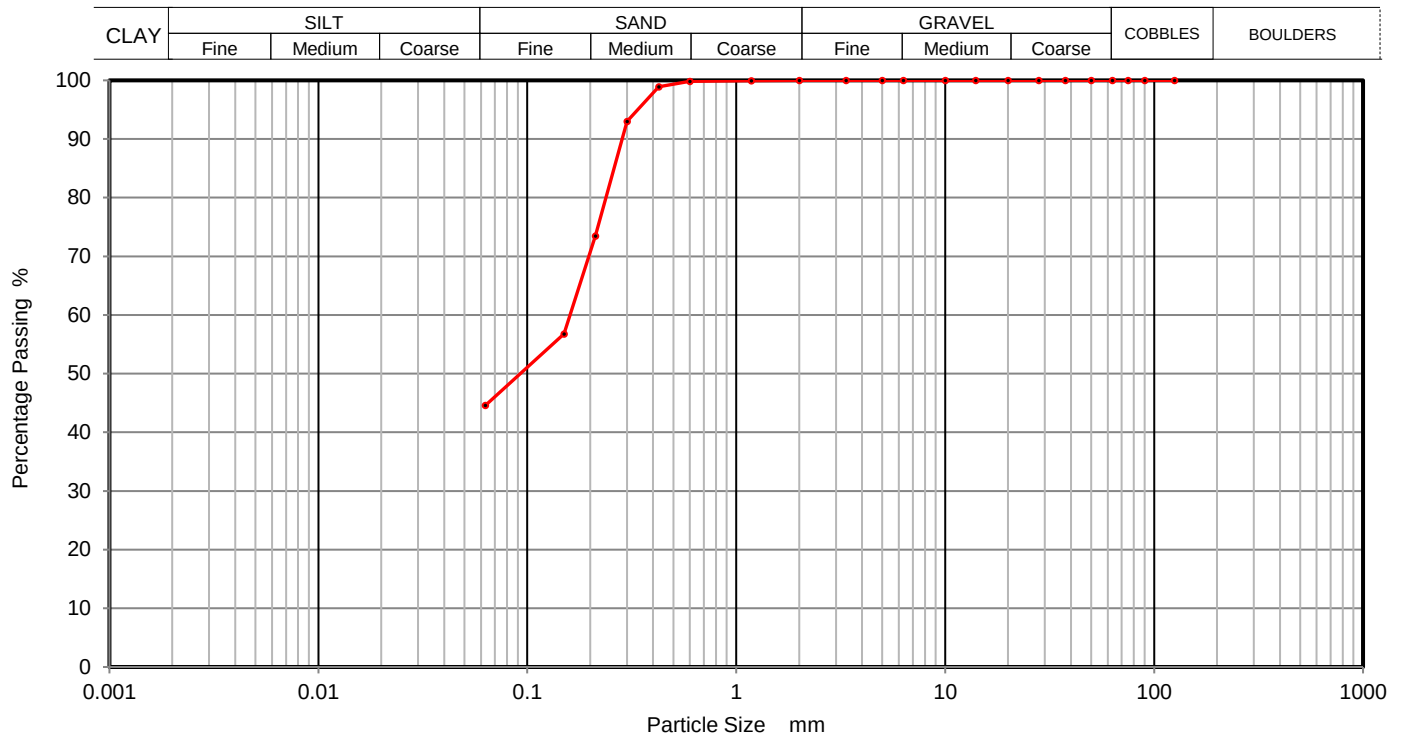
1.00

Date Tested

27/02/2025

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.63	100		
0.425	99		
0.30	93		
0.20	73		
0.15	57		
0.063	45		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	55
Silt and Clay	45

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T



PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

CP601

Project Name

Nine Mile Ride

Sample No.

Sample Description

Brown slightly gravelly fine to coarse sandy SILT/ CLAY

Depth Top

1.00

Depth Base

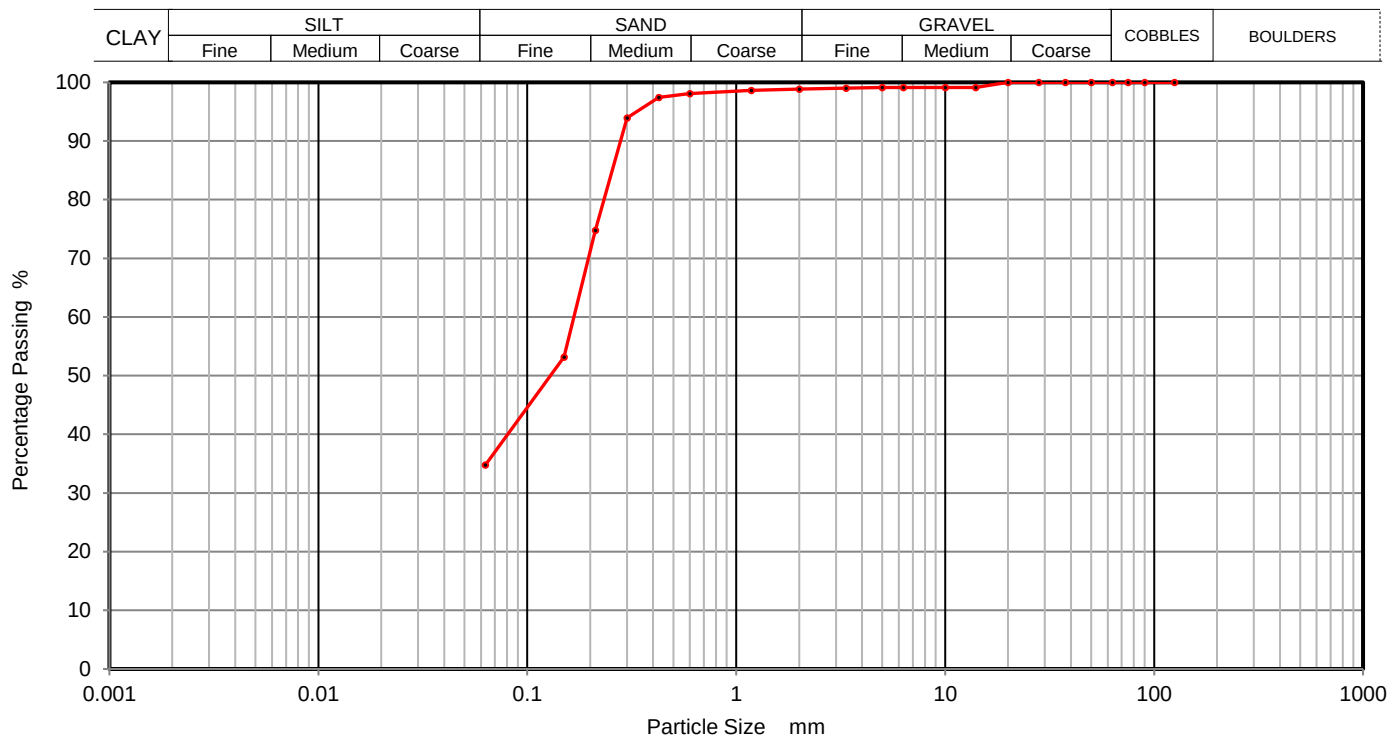
1.50

Date Tested

27/02/2025

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	99		
6.3	99		
5	99		
3.35	99		
2	99		
1.18	99		
0.63	98		
0.425	97		
0.30	94		
0.20	75		
0.15	53		
0.063	35		

Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	64
Silt and Clay	35

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T



PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

CP601

Project Name

Nine Mile Ride

Sample No.

Sample Description

Brown fine to coarse sandy SILT/ CLAY

Depth Top

2.00

Depth Base

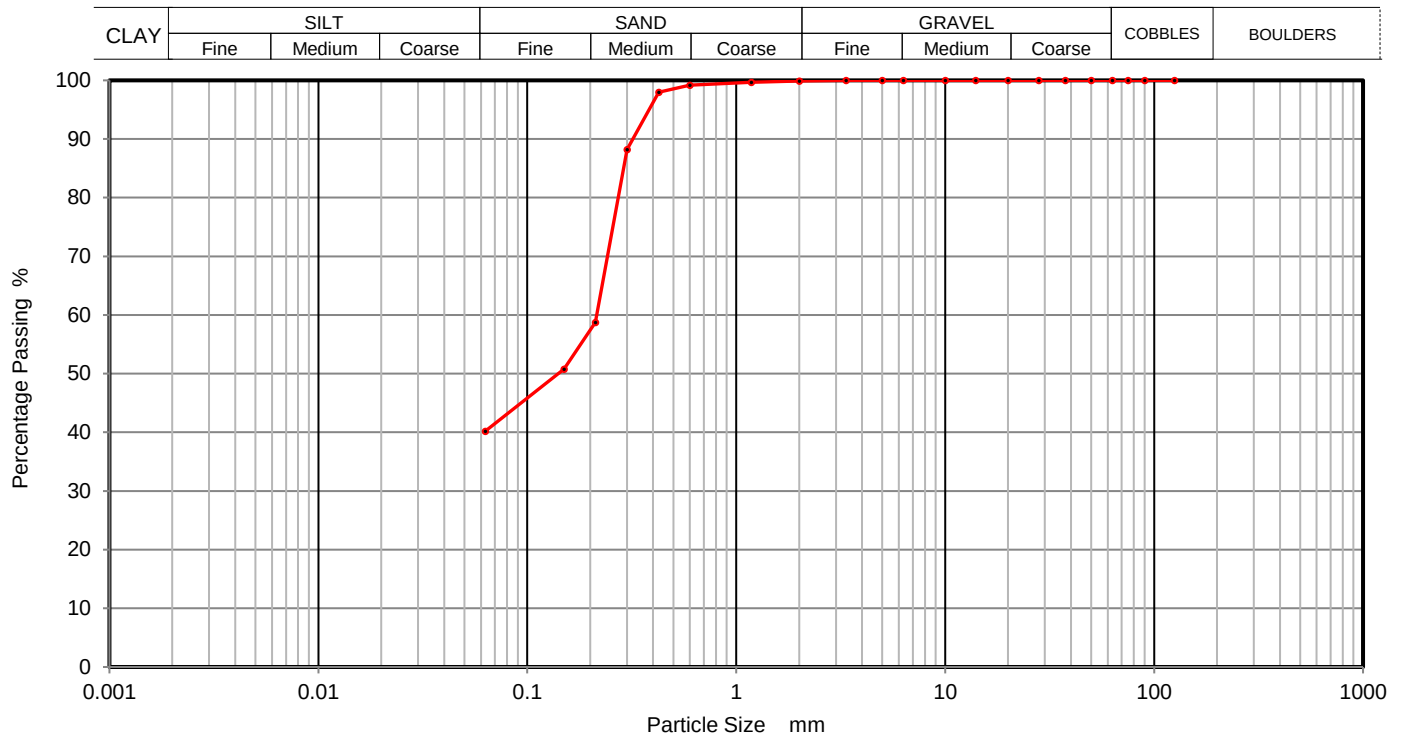
2.50

Date Tested

27/02/2025

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.63	99		
0.425	98		
0.30	88		
0.20	59		
0.15	51		
0.063	40		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	60
Silt and Clay	40

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T



PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

CP601

Project Name

Nine Mile Ride

Sample No.

Sample Description

Brown silty/ clayey fine to coarse SAND

Depth Top

5.00

Depth Base

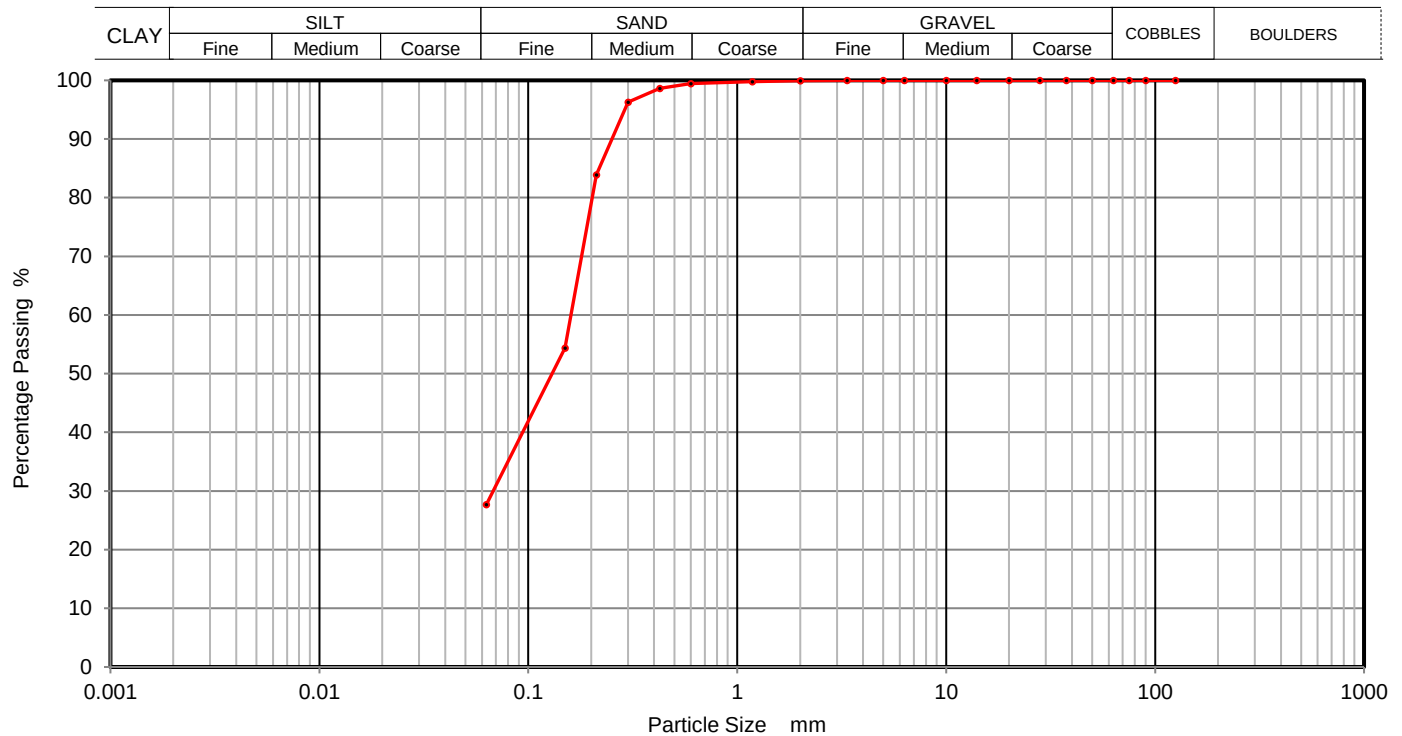
5.50

Date Tested

27/02/2025

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.63	99		
0.425	99		
0.30	96		
0.20	84		
0.15	54		
0.063	28		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	72
Silt and Clay	28

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T



PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

CP601

Project Name

Nine Mile Ride

Sample No.

Sample Description

Brown slightly gravelly fine to coarse sandy SILT/ CLAY

Depth Top

7.50

Depth Base

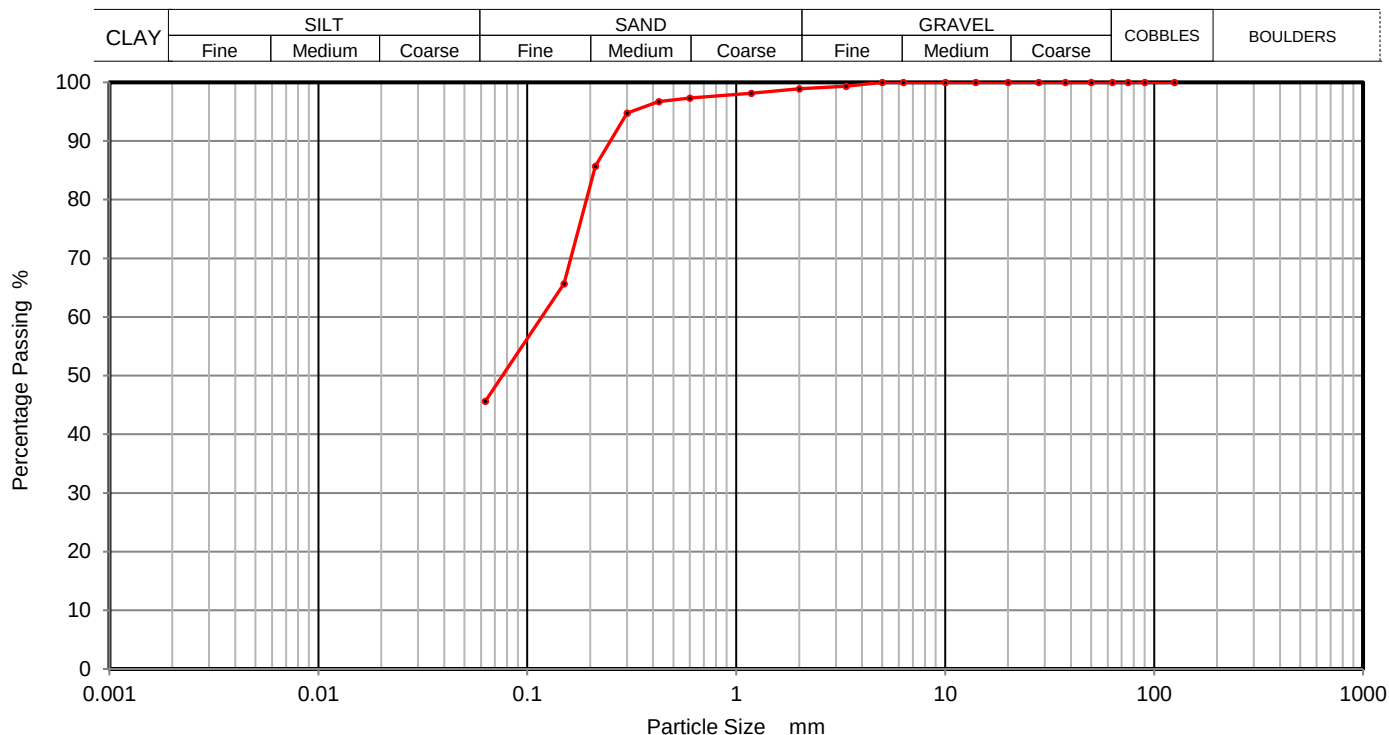
8.00

Date Tested

27/02/2025

Sample Type

D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	99		
2	99		
1.18	98		
0.63	97		
0.425	97		
0.30	95		
0.20	86		
0.15	66		
0.063	46		

Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	53
Silt and Clay	46

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T



PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

CP601

Project Name

Nine Mile Ride

Sample No.

Sample Description

Brown silty/ clayey fine to coarse SAND

Depth Top

10.50

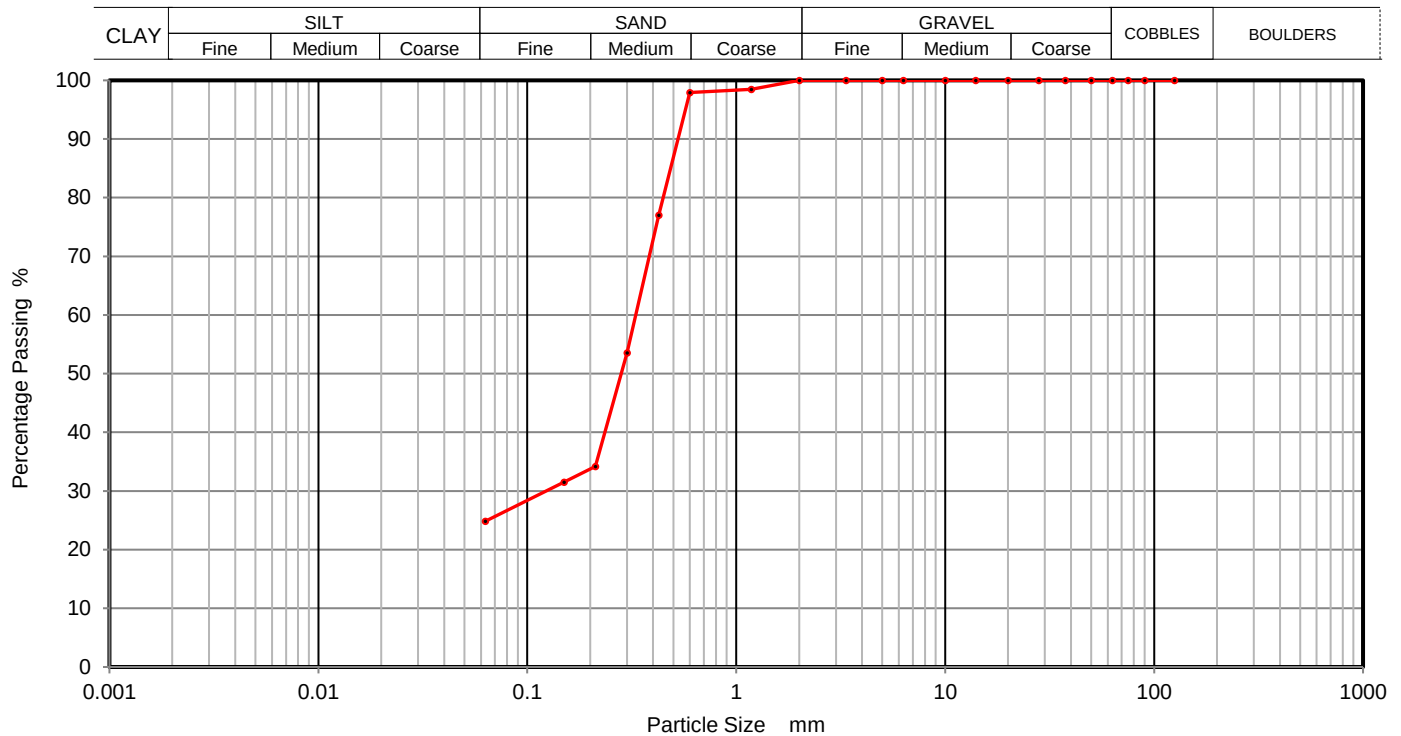
Depth Base

Date Tested

27/02/2025

Sample Type

D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	98		
0.63	98		
0.425	77		
0.30	54		
0.20	34		
0.15	31		
0.063	25		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	75
Silt and Clay	25

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T



PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

CP601

Project Name

Nine Mile Ride

Sample No.

Sample Description

Brown/ orange fine to coarse sandy SILT/ CLAY

Depth Top

15.50

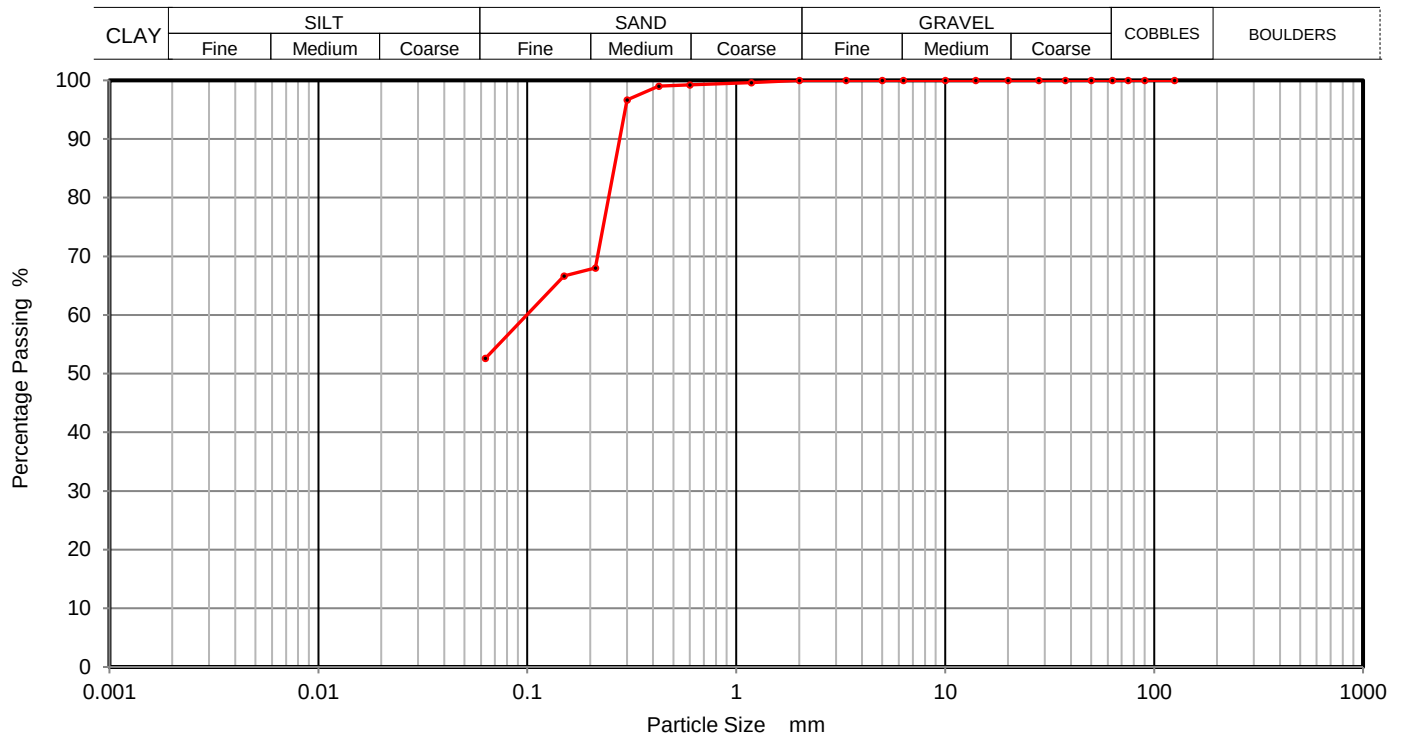
Depth Base

Date Tested

27/02/2025

Sample Type

D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.63	99		
0.425	99		
0.30	97		
0.20	68		
0.15	67		
0.063	53		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	47
Silt and Clay	53

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T



PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

CP601

Project Name

Nine Mile Ride

Sample No.

Sample Description

Brown/ grey silty/ clayey fine to coarse SAND

Depth Top

19.50

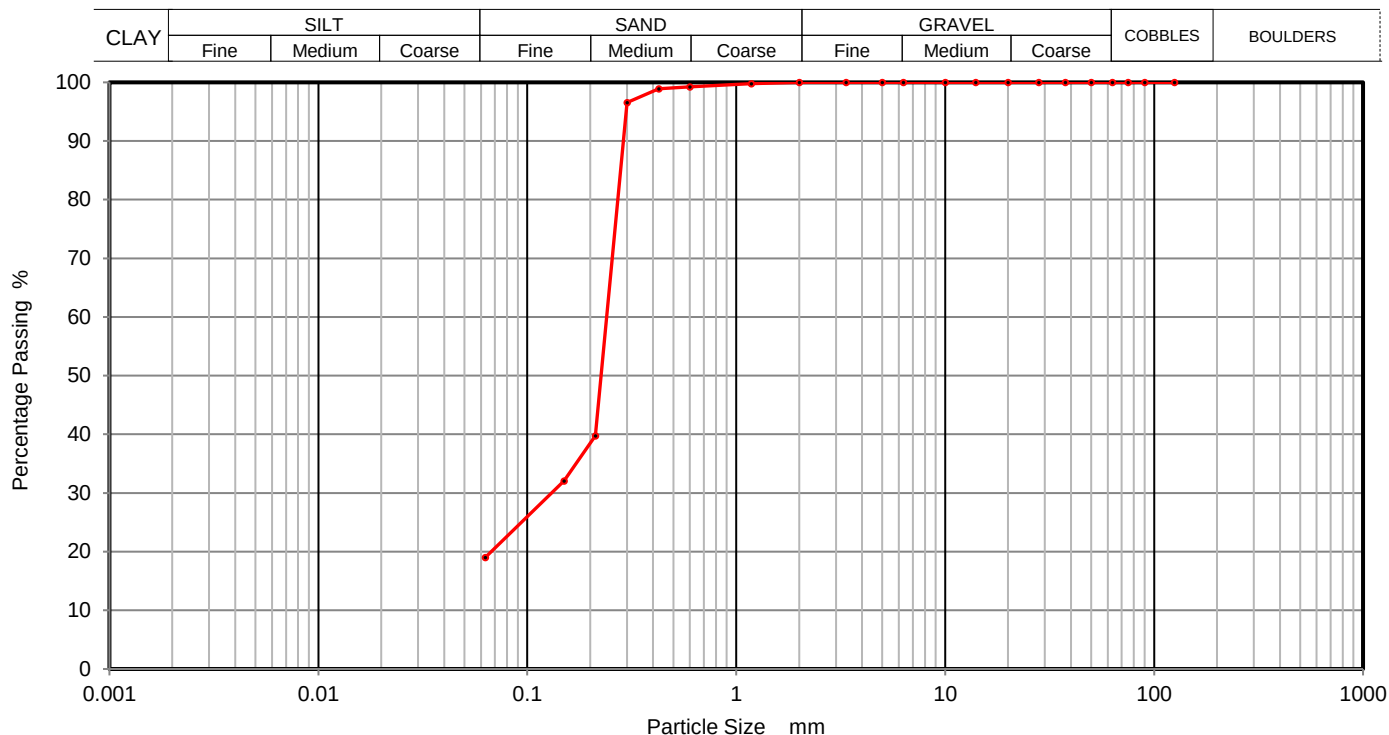
Depth Base

Date Tested

27/02/2025

Sample Type

D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.63	99		
0.425	99		
0.30	97		
0.20	40		
0.15	32		
0.063	19		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	81
Silt and Clay	19

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T



PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

CP602

Project Name

Nine Mile Ride

Sample No.

Sample Description

Brown fine to coarse gravelly silty/ clayey fine to oarse SAND

Depth Top

0.20

Depth Base

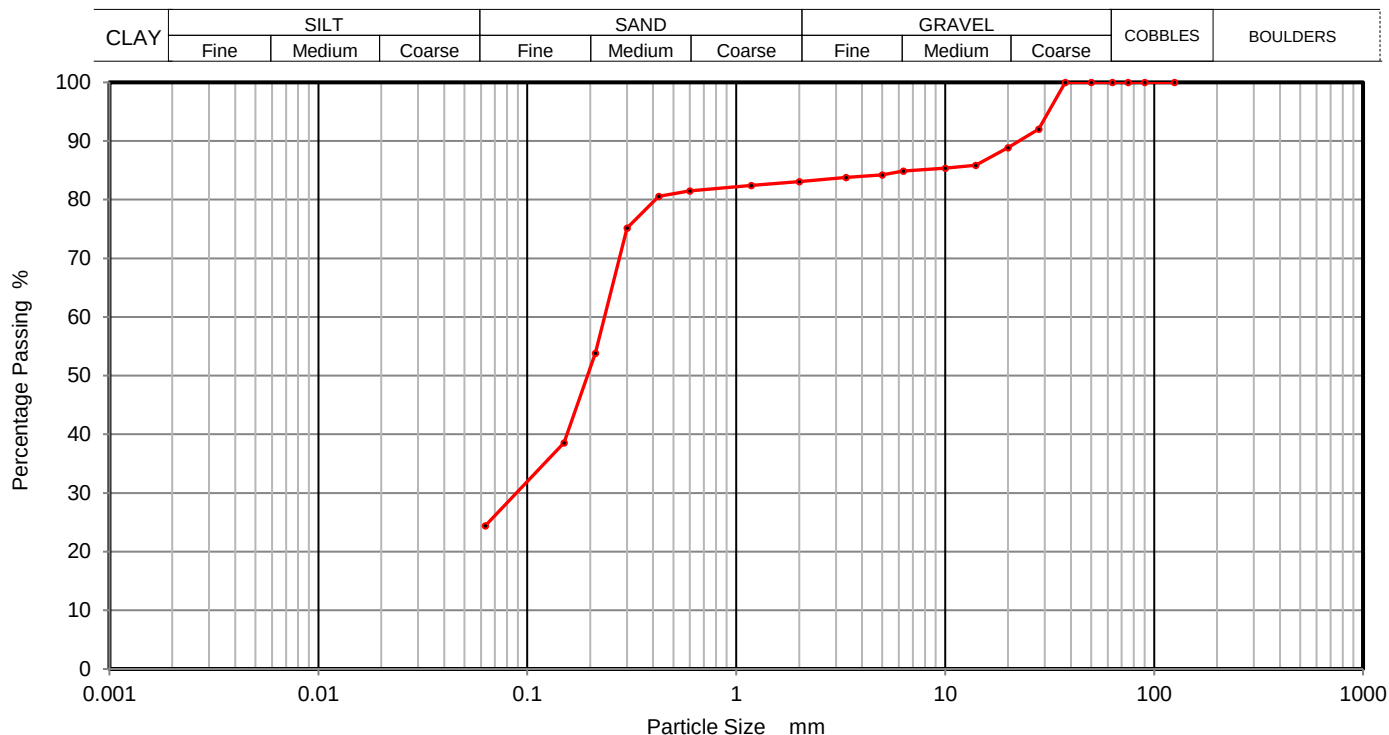
0.50

Date Tested

27/02/2025

Sample Type

D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	92		
20	89		
14	86		
10	85		
6.3	85		
5	84		
3.35	84		
2	83		
1.18	82		
0.63	81		
0.425	81		
0.30	75		
0.20	54		
0.15	39		
0.063	24		

Sample Proportions	% dry mass
Cobbles	0
Gravel	17
Sand	59
Silt and Clay	24

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T



PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

CP602

Project Name

Nine Mile Ride

Sample No.

Sample Description

Brown/ grey slightly gravelly silty/ clayey fine to coarse SAND

Depth Top

0.50

Depth Base

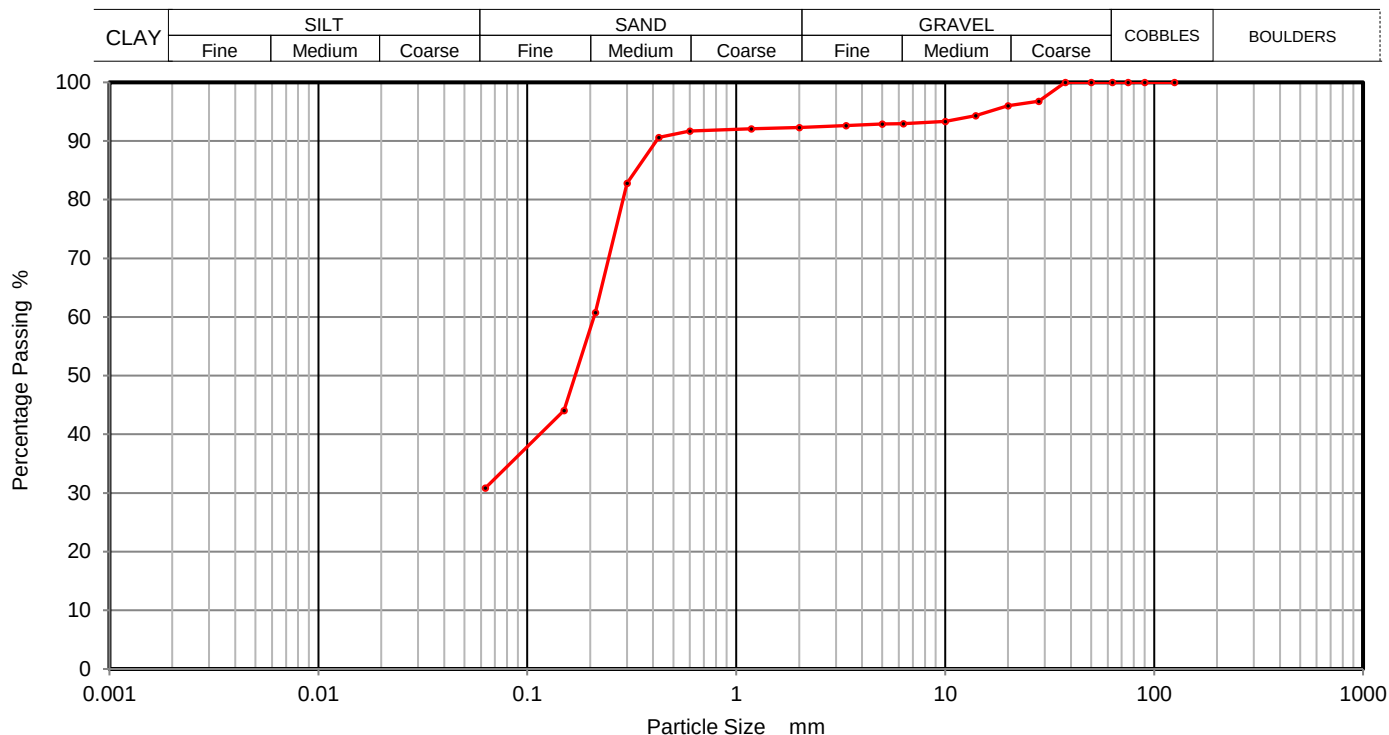
1.00

Date Tested

27/02/2025

Sample Type

D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	97		
20	96		
14	94		
10	93		
6.3	93		
5	93		
3.35	93		
2	92		
1.18	92		
0.63	92		
0.425	91		
0.30	83		
0.20	61		
0.15	44		
0.063	31		

Sample Proportions	% dry mass
Cobbles	0
Gravel	8
Sand	61
Silt and Clay	31

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T



PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

CP602

Project Name

Nine Mile Ride

Sample No.

Sample Description

Brown fine to coarse sandy SILT/ CLAY

Depth Top

1.10

Depth Base

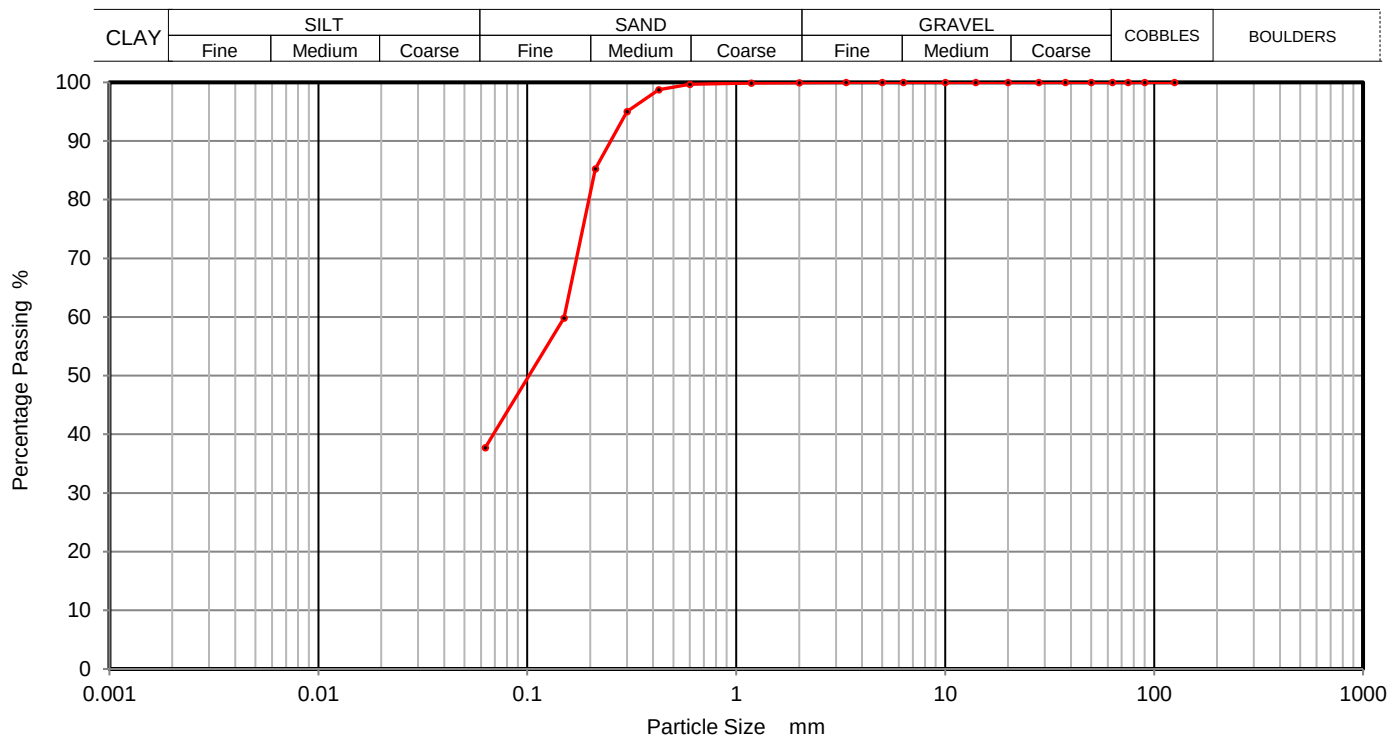
1.50

Date Tested

27/02/2025

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.63	100		
0.425	99		
0.30	95		
0.20	85		
0.15	60		
0.063	38		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	62
Silt and Clay	38

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T



PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

CP602

Project Name

Nine Mile Ride

Sample No.

Sample Description

Brown/ green slightly gravelly silty/ clayey fine to coarse SAND

Depth Top

2.00

Depth Base

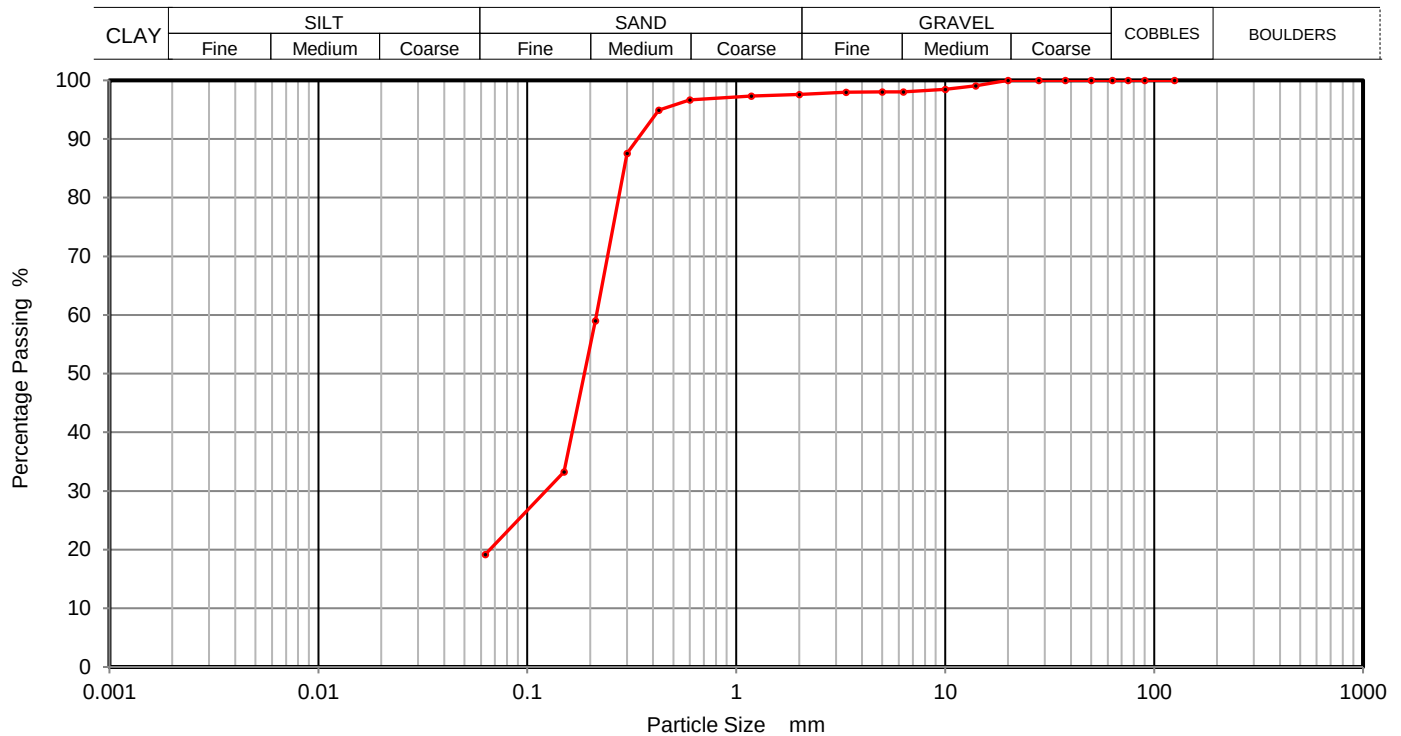
2.50

Date Tested

27/02/2025

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	98		
6.3	98		
5	98		
3.35	98		
2	98		
1.18	97		
0.63	97		
0.425	95		
0.30	88		
0.20	59		
0.15	33		
0.063	19		

Sample Proportions	% dry mass
Cobbles	0
Gravel	2
Sand	79
Silt and Clay	19

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T

PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

CP602

Project Name

Nine Mile Ride

Sample No.

Sample Description

Brown/ grey slightly gravelly slightly silty/ clayey fine to coarse SAND

Depth Top

3.00

Depth Base

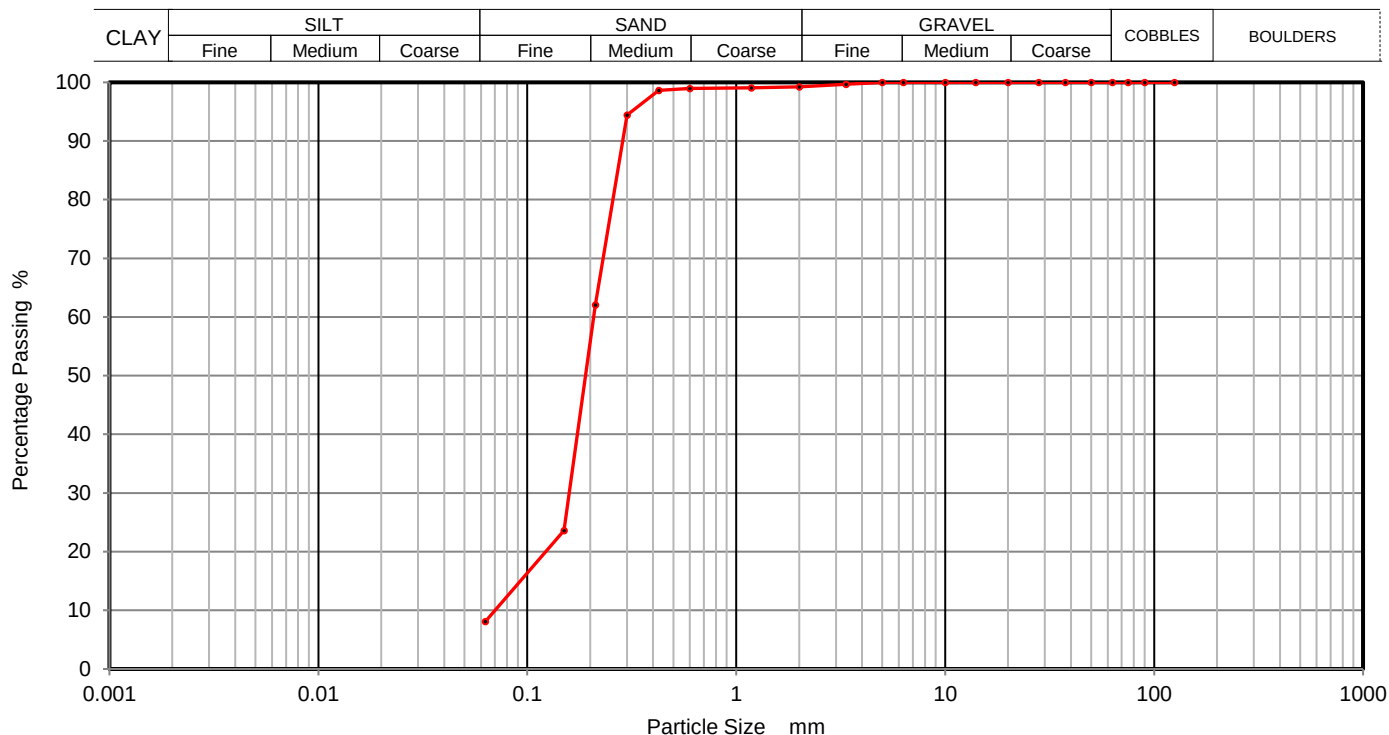
3.50

Date Tested

27/02/2025

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	99		
0.63	99		
0.425	99		
0.30	94		
0.20	62		
0.15	24		
0.063	8		

Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	91
Silt and Clay	8

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T



PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

CP602

Project Name

Nine Mile Ride

Sample No.

Sample Description

Brown slightly gravelly silty/ clayey fine to coarse SAND

Depth Top

5.00

Depth Base

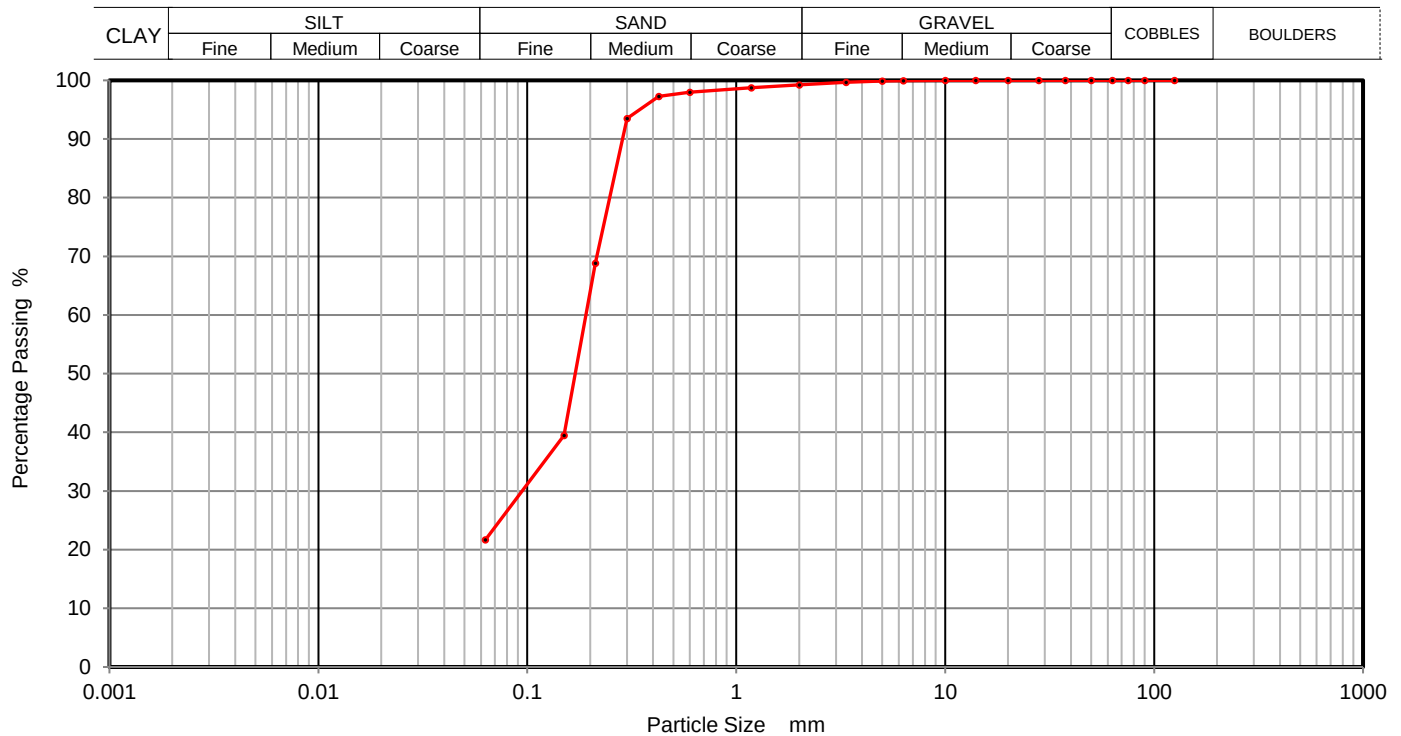
5.50

Date Tested

27/02/2025

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	99		
0.63	98		
0.425	97		
0.30	93		
0.20	69		
0.15	39		
0.063	22		

Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	77
Silt and Clay	22

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T



PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

CP602

Project Name

Nine Mile Ride

Sample No.

Sample Description

Brown slightly gravelly fine to coarse sandy SILT/ CLAY

Depth Top

10.70

Depth Base

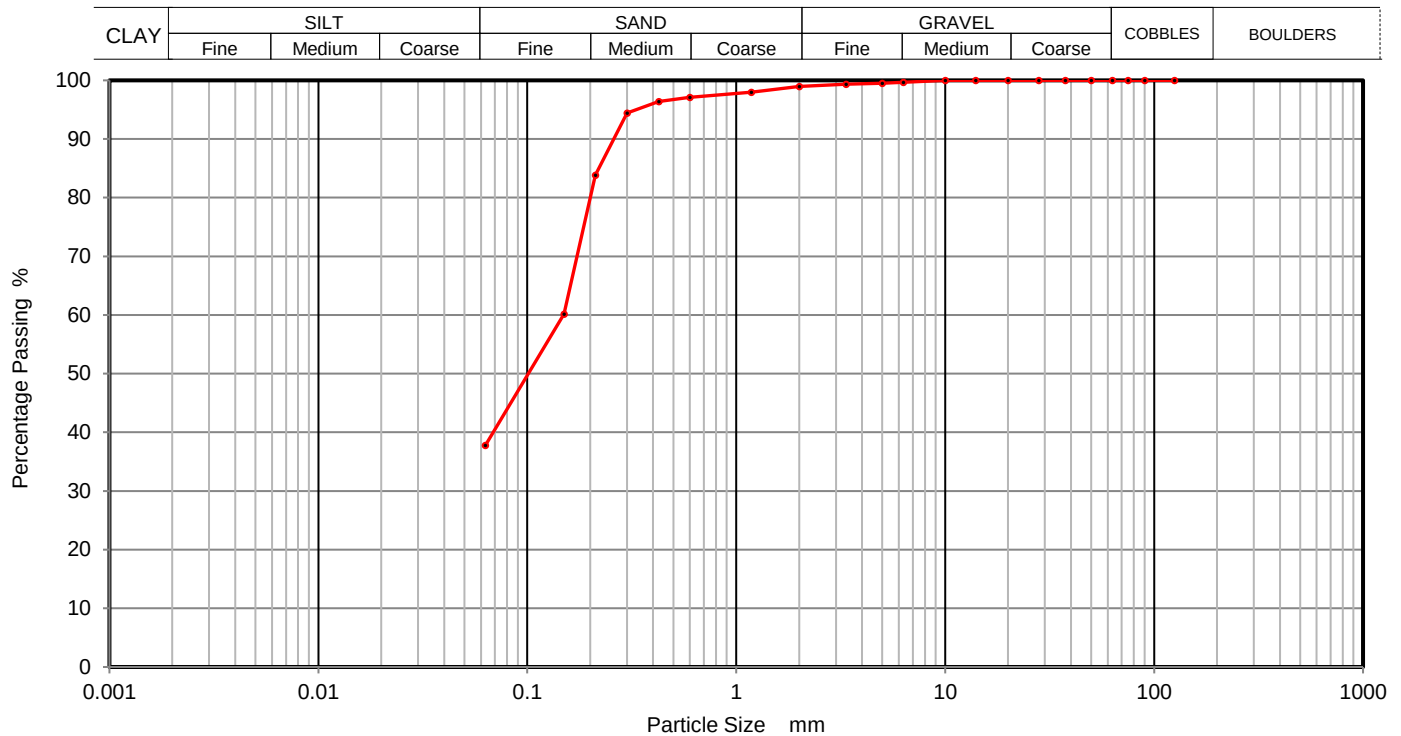
11.00

Date Tested

27/02/2025

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	99		
2	99		
1.18	98		
0.63	97		
0.425	96		
0.30	94		
0.20	84		
0.15	60		
0.063	38		

Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	61
Silt and Clay	38

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T



PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

CP602

Project Name

Nine Mile Ride

Sample No.

Sample Description

Brown silty/ clayey fine to coarse SAND

Depth Top

14.50

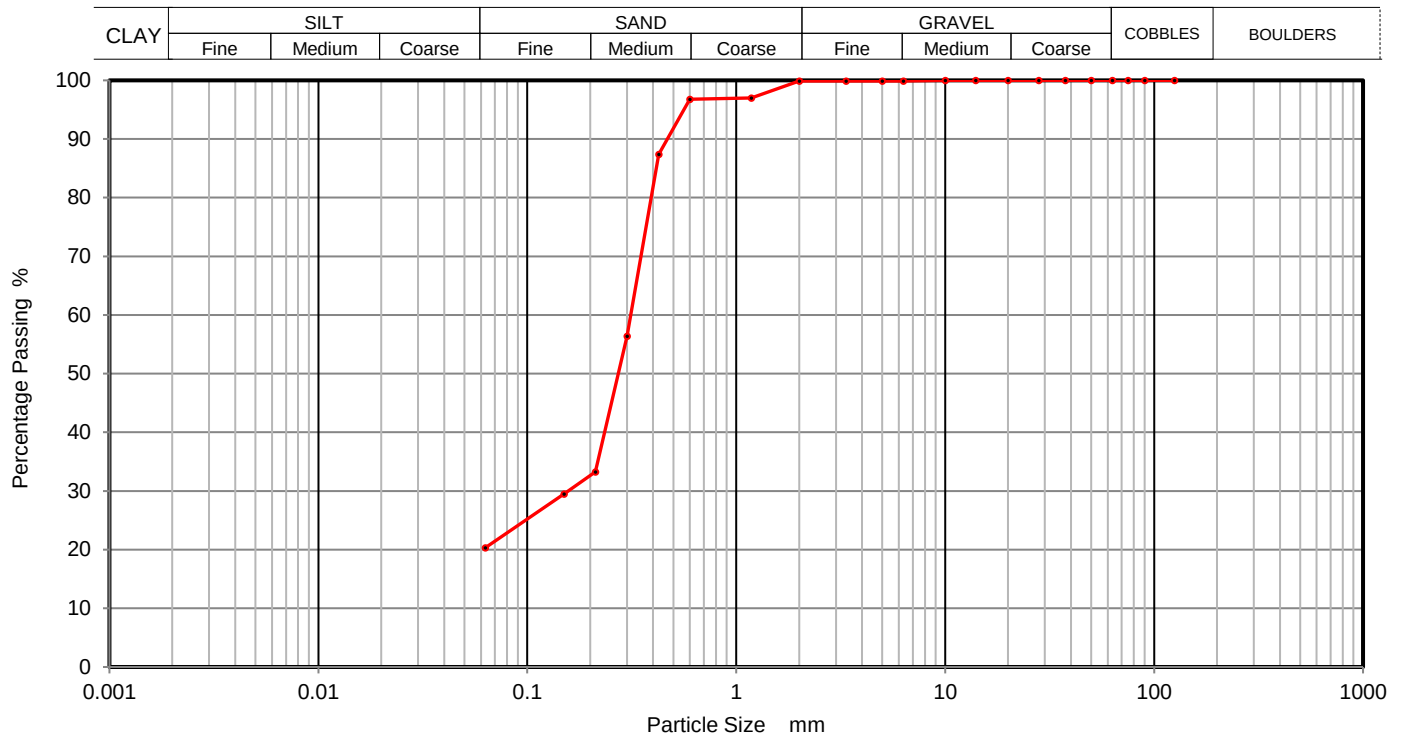
Depth Base

Date Tested

27/02/2025

Sample Type

D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	97		
0.63	97		
0.425	87		
0.30	56		
0.20	33		
0.15	30		
0.063	20		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	80
Silt and Clay	20

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T



PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

CP602

Project Name

Nine Mile Ride

Sample No.

Sample Description

Brown slightly gravelly silty/ clayey fine to coarse SAND

Depth Top

19.50

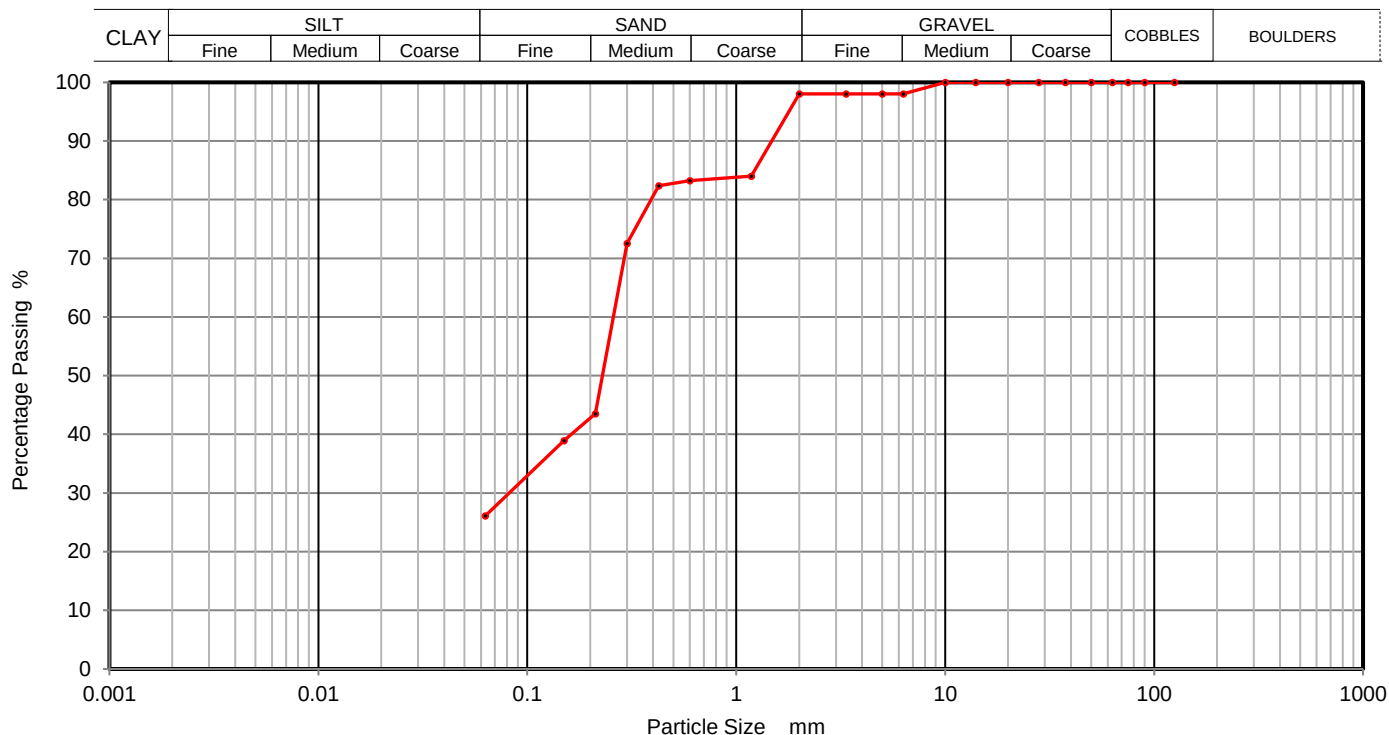
Depth Base

Date Tested

27/02/2025

Sample Type

D



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	98		
5	98		
3.35	98		
2	98		
1.18	84		
0.63	83		
0.425	82		
0.30	73		
0.20	44		
0.15	39		
0.063	26		

Sample Proportions	% dry mass
Cobbles	0
Gravel	2
Sand	72
Silt and Clay	26

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T



PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

SA301

Project Name

Nine Mile Ride

Sample No.

Sample Description

Brown slightly sandy SILT/ CLAY

Depth Top

0.10

Depth Base

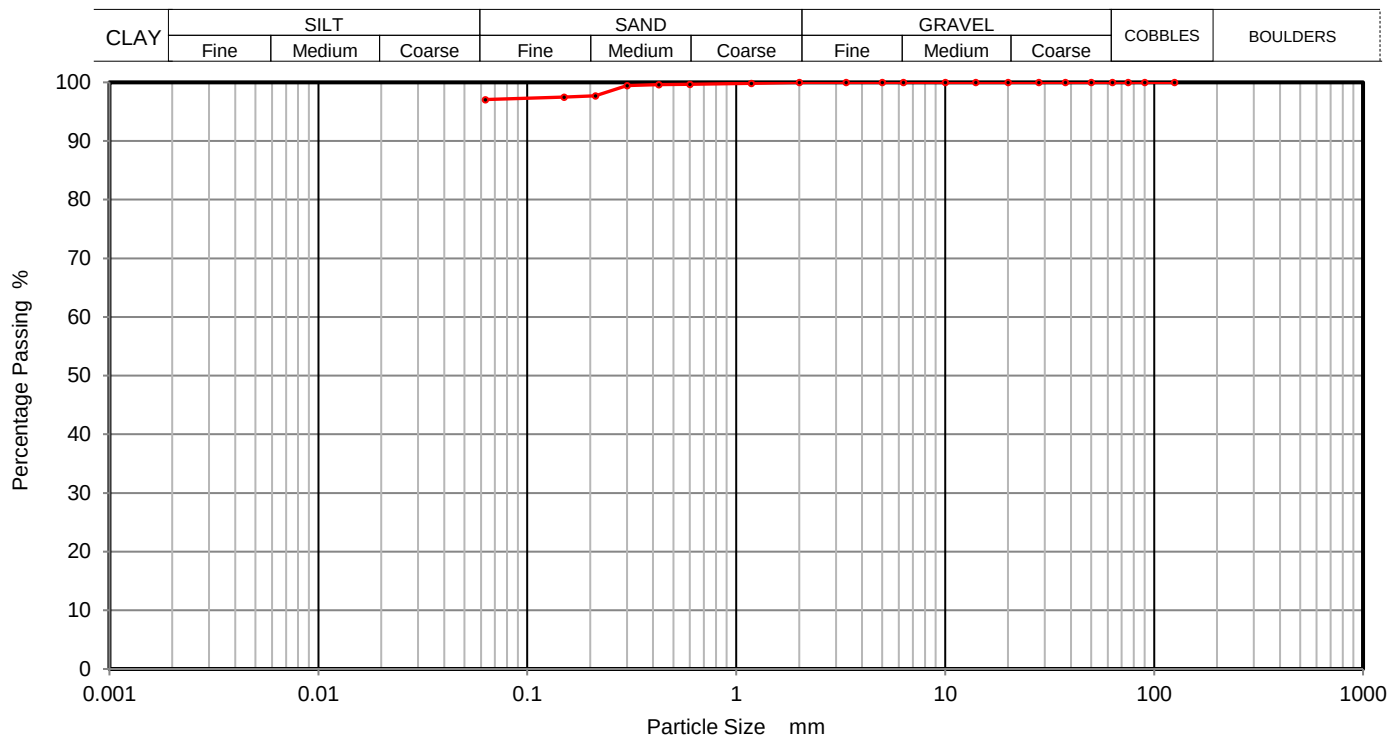
0.50

Date Tested

27/02/2025

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.63	100		
0.425	100		
0.30	99		
0.20	98		
0.15	97		
0.063	97		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	3
Silt and Clay	97

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T



PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

SA301

Project Name

Nine Mile Ride

Sample No.

Sample Description

Brown slightly gravelly slightly silty/ clayey fine to coarse SAND

Depth Top

0.70

Depth Base

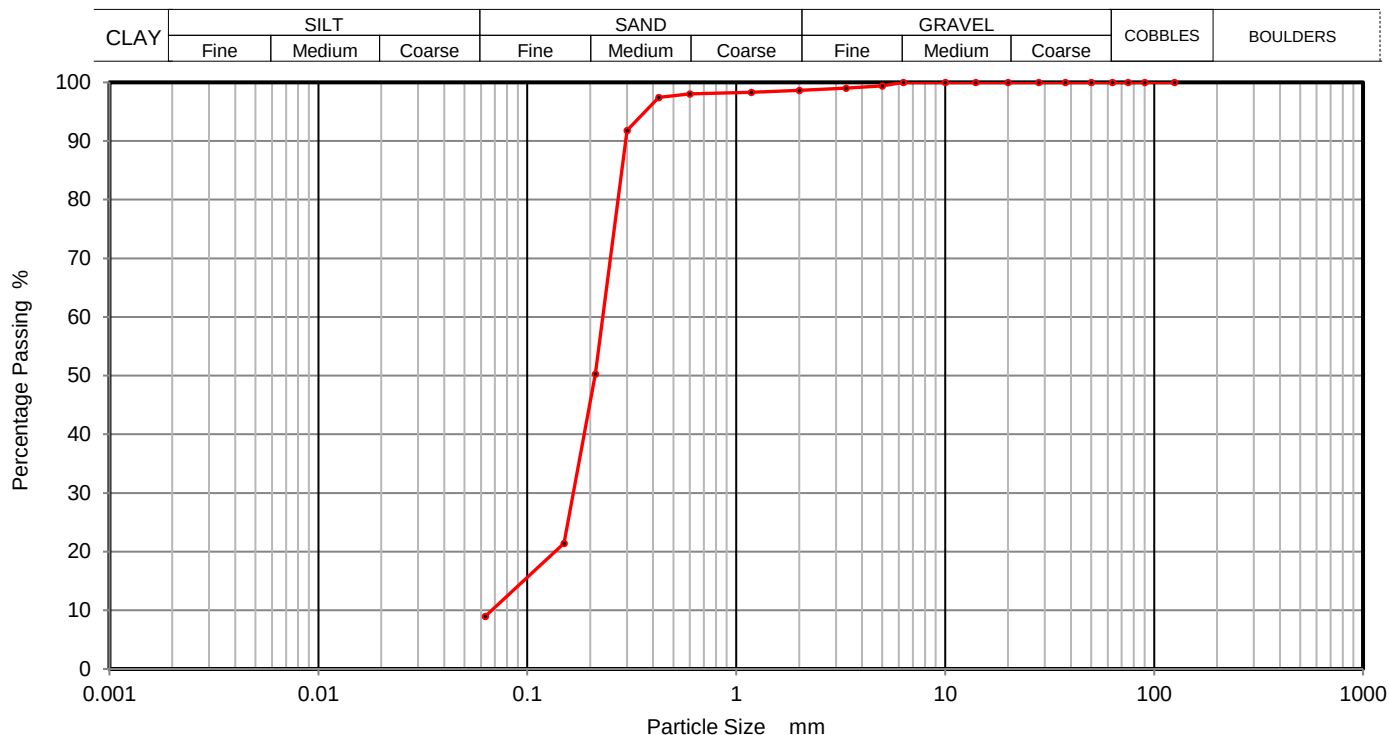
1.10

Date Tested

27/02/2025

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	99		
3.35	99		
2	99		
1.18	98		
0.63	98		
0.425	97		
0.30	92		
0.20	50		
0.15	21		
0.063	9		

Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	90
Silt and Clay	9

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T

PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

SA302

Project Name

Nine Mile Ride

Sample No.

Sample Description

Grey slightly gravelly slightly silty/ clayey fine to coarse SAND

Depth Top

0.10

Depth Base

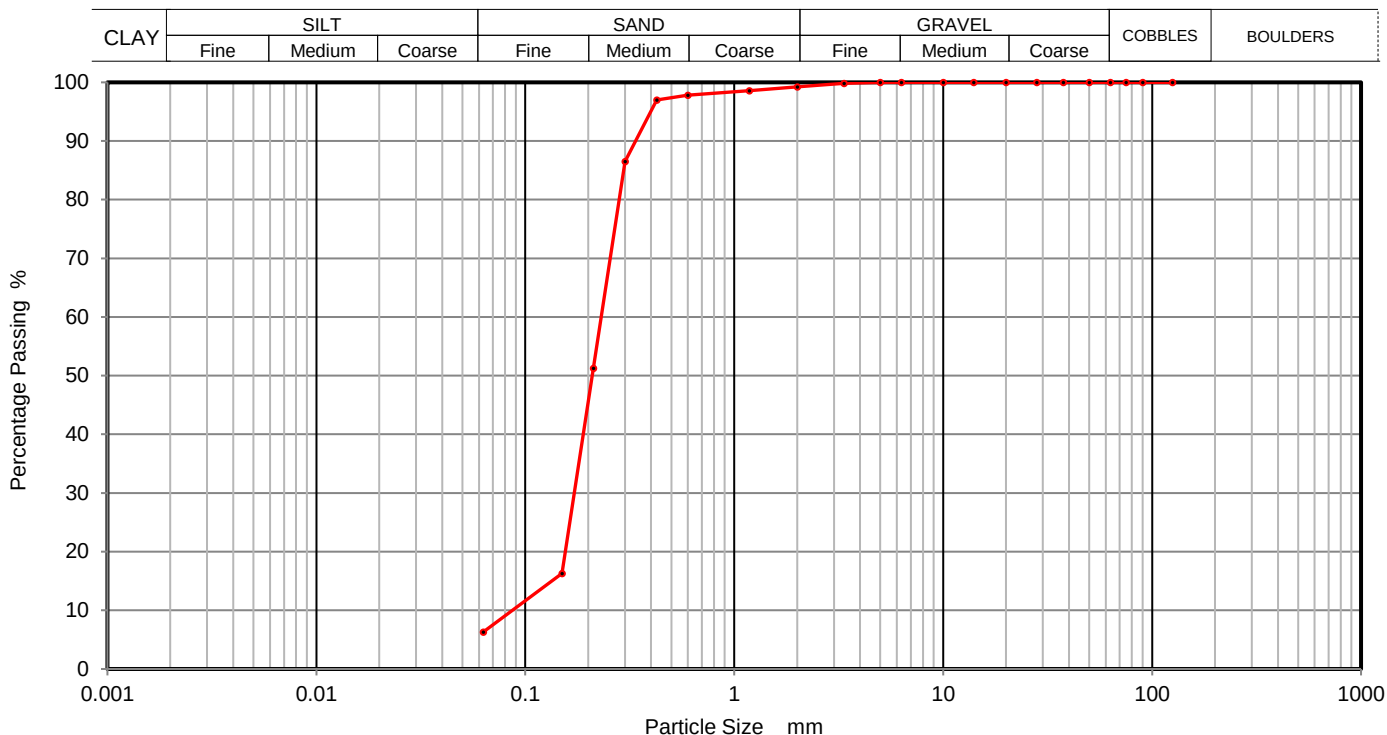
0.50

Date Tested

27/02/2025

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	99		
0.63	98		
0.425	97		
0.30	87		
0.20	51		
0.15	16		
0.063	6		

Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	93
Silt and Clay	6

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T



PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

SA302

Project Name

Nine Mile Ride

Sample No.

Sample Description

Grey slightly gravelly slightly silty/ clayey fine to coarse SAND

Depth Top

1.00

Depth Base

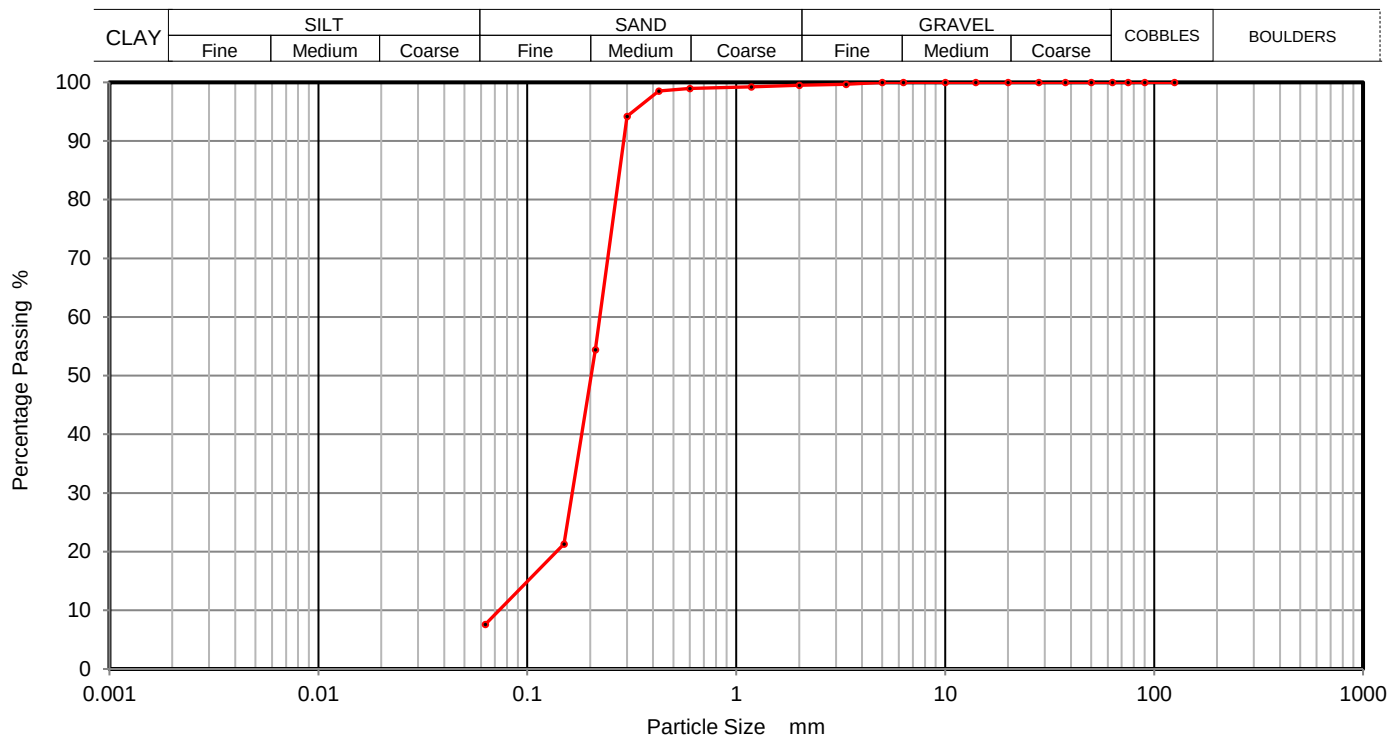
1.50

Date Tested

27/02/2025

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	99		
0.63	99		
0.425	99		
0.30	94		
0.20	54		
0.15	21		
0.063	8		

Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	91
Silt and Clay	8

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T



PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

SA303

Project Name

Nine Mile Ride

Sample No.

Sample Description

Brown silty/ clayey fine to coarse gravelly fine to coarse SAND

Depth Top

1.10

Depth Base

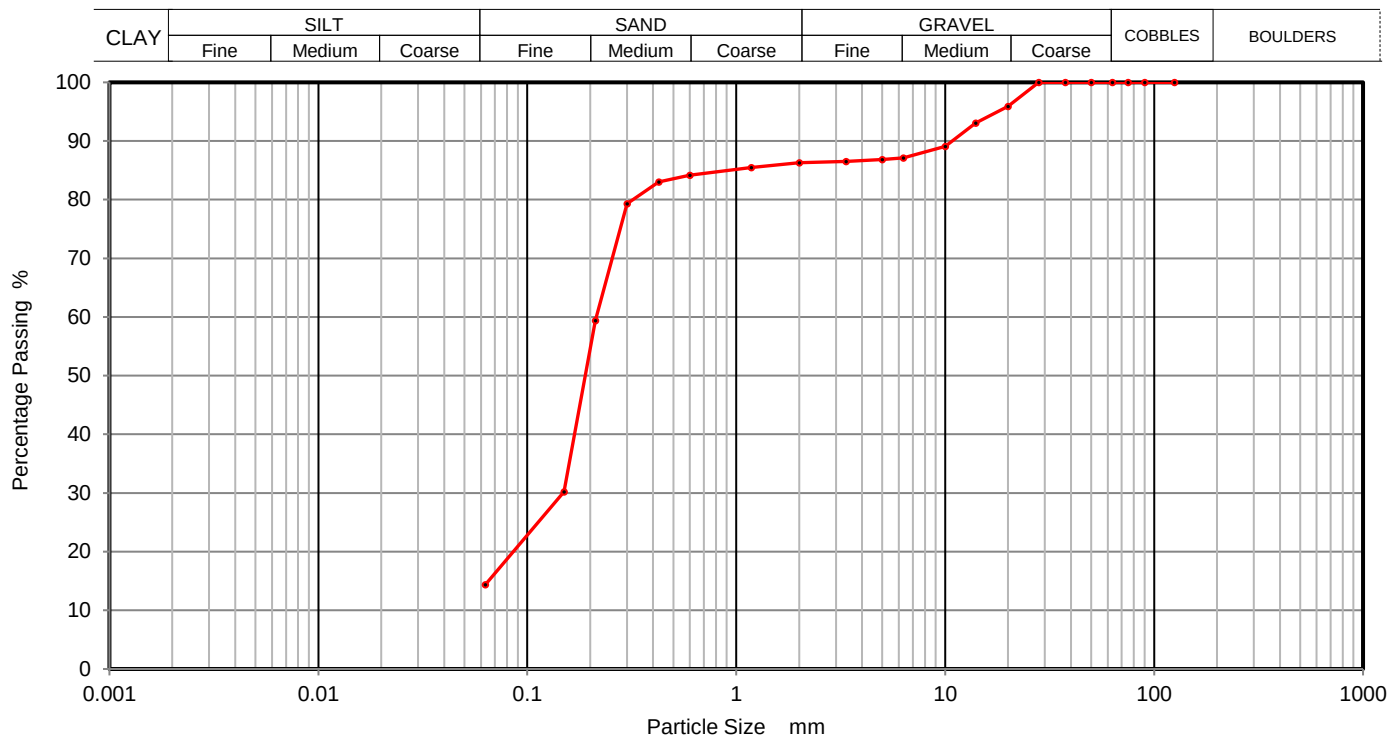
1.50

Date Tested

27/02/2025

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	96		
14	93		
10	89		
6.3	87		
5	87		
3.35	86		
2	86		
1.18	85		
0.63	84		
0.425	83		
0.30	79		
0.20	59		
0.15	30		
0.063	14		

Sample Proportions	% dry mass
Cobbles	0
Gravel	14
Sand	72
Silt and Clay	14

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T



PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

SA303

Project Name

Nine Mile Ride

Sample No.

Sample Description

Brown/ orange fine to coarse gravelly silty/ clayey fine to coarse
SAND

Depth Top

1.70

Depth Base

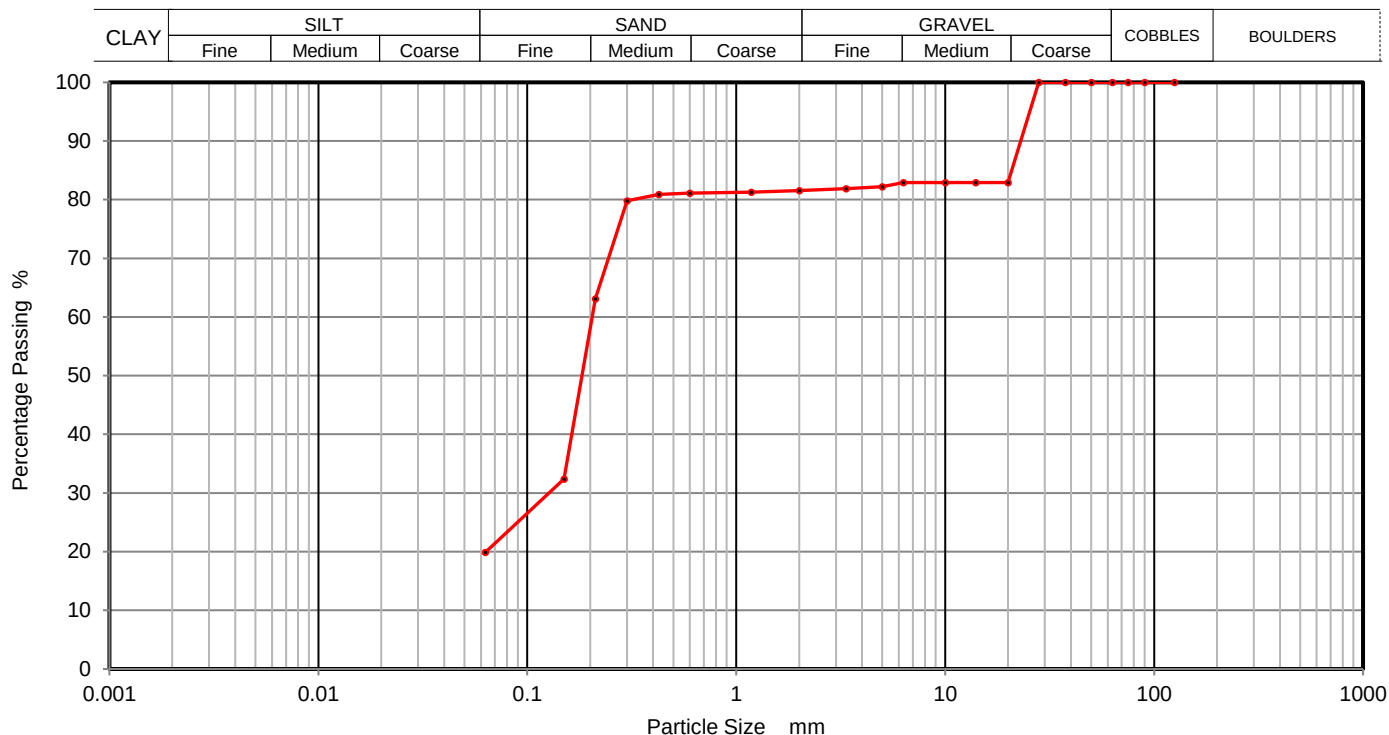
2.00

Date Tested

27/02/2025

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	83		
14	83		
10	83		
6.3	83		
5	82		
3.35	82		
2	82		
1.18	81		
0.63	81		
0.425	81		
0.30	80		
0.20	63		
0.15	32		
0.063	20		

Sample Proportions	% dry mass
Cobbles	0
Gravel	18
Sand	62
Silt and Clay	20

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T



PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

SA303

Project Name

Nine Mile Ride

Sample No.

Sample Description

Brown slightly silty/ clayey fine to coarse SAND

Depth Top

2.40

Depth Base

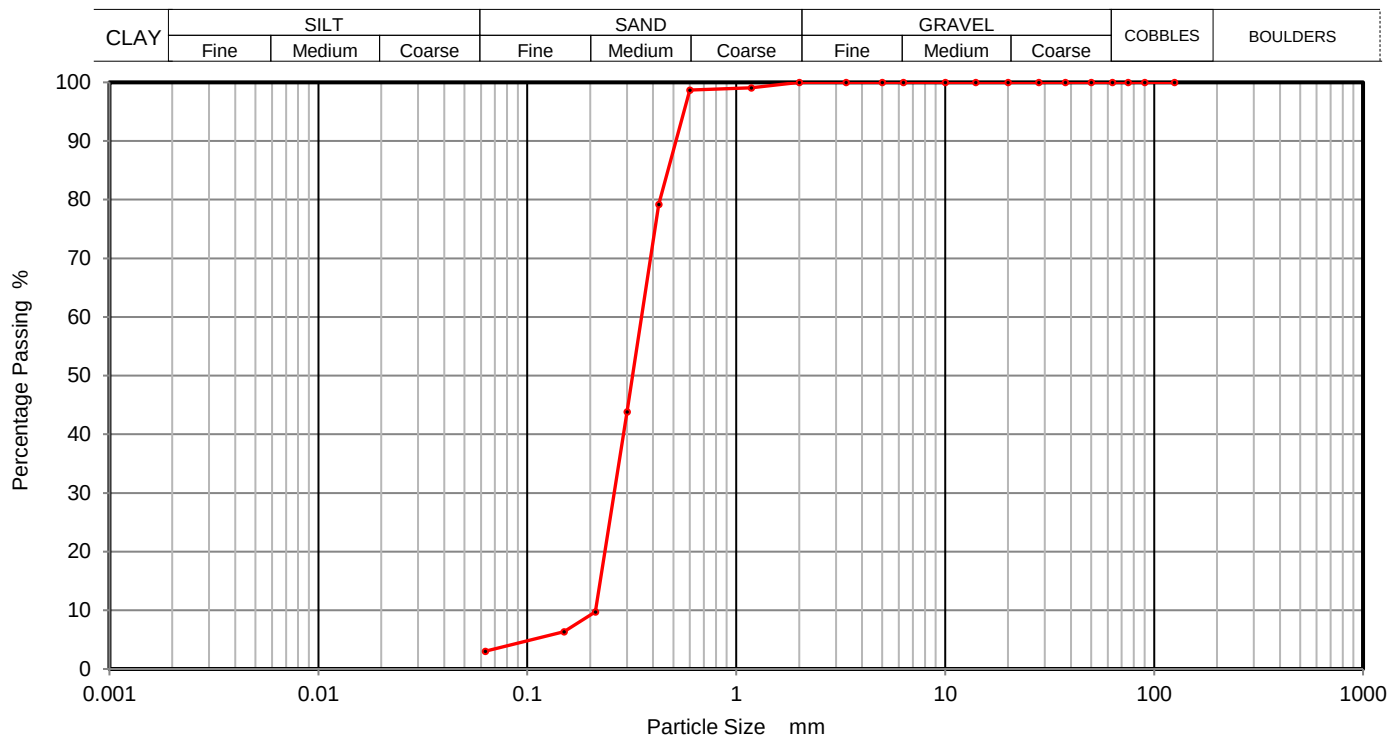
2.50

Date Tested

27/02/2025

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.63	99		
0.425	79		
0.30	44		
0.20	10		
0.15	6		
0.063	3		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	97
Silt and Clay	3

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T



PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

TP301

Project Name

Nine Mile Ride

Sample No.

Sample Description

Green slightly gravelly fine to coarse sandy SILT/ CLAY

Depth Top

0.10

Depth Base

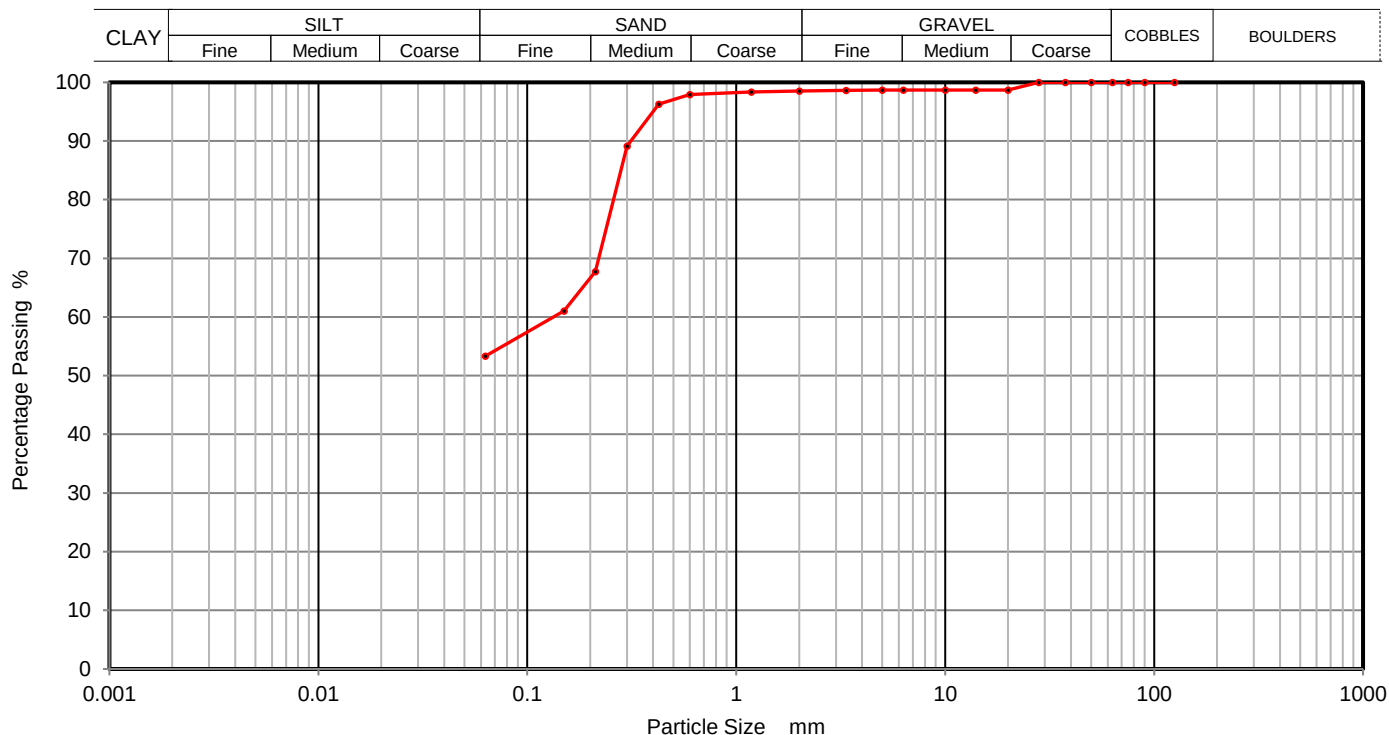
0.50

Date Tested

27/02/2025

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	99		
14	99		
10	99		
6.3	99		
5	99		
3.35	99		
2	99		
1.18	98		
0.63	98		
0.425	96		
0.30	89		
0.20	68		
0.15	61		
0.063	53		

Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	46
Silt and Clay	53

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T



PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

TP301

Project Name

Nine Mile Ride

Sample No.

Sample Description

Brown silty/ clayey fine to coarse gravelly fine to coarse SAND

Depth Top

1.00

Depth Base

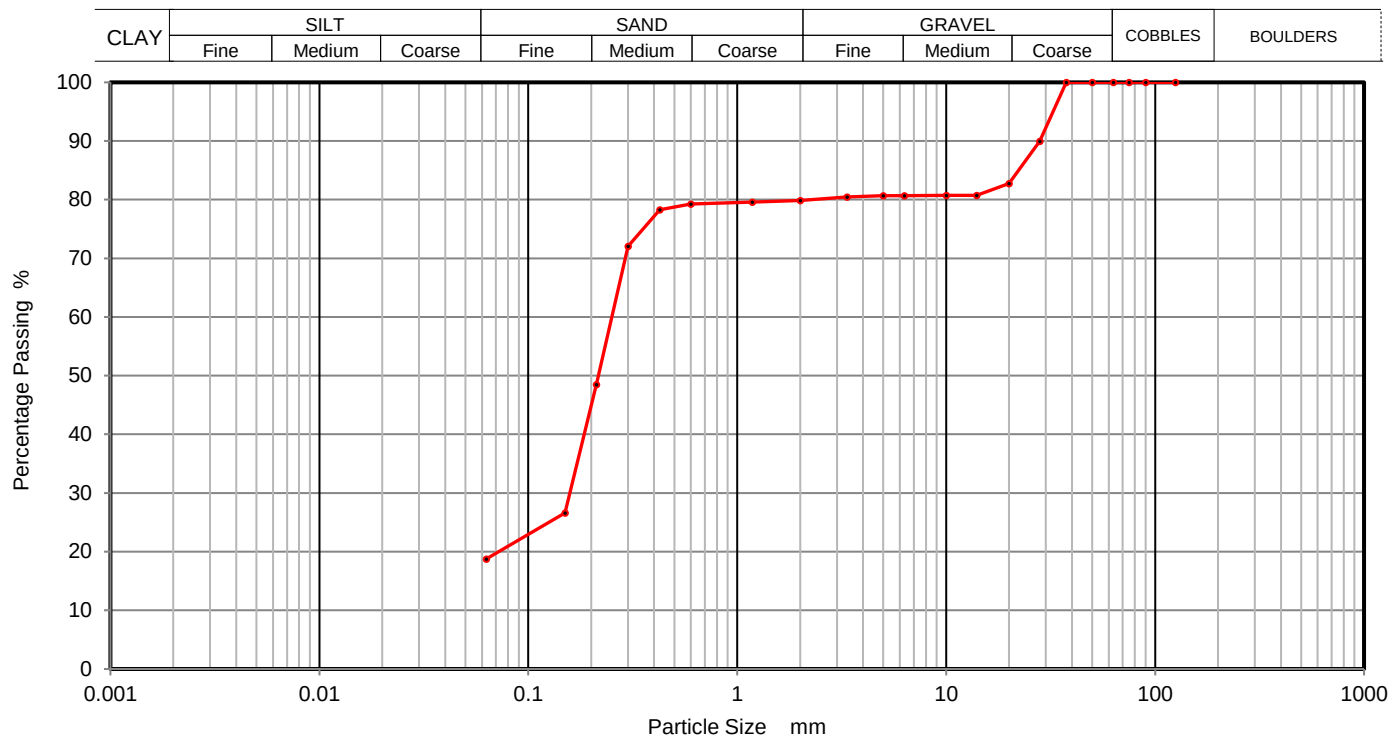
1.50

Date Tested

27/02/2025

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	90		
20	83		
14	81		
10	81		
6.3	81		
5	81		
3.35	80		
2	80		
1.18	80		
0.63	79		
0.425	78		
0.30	72		
0.20	48		
0.15	27		
0.063	19		

Sample Proportions	% dry mass
Cobbles	0
Gravel	20
Sand	61
Silt and Clay	19

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T



PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

TP301

Project Name

Nine Mile Ride

Sample No.

Sample Description

Green/ brown slightly gravelly silty/ clayey fine to coarse SAND

Depth Top

1.70

Depth Base

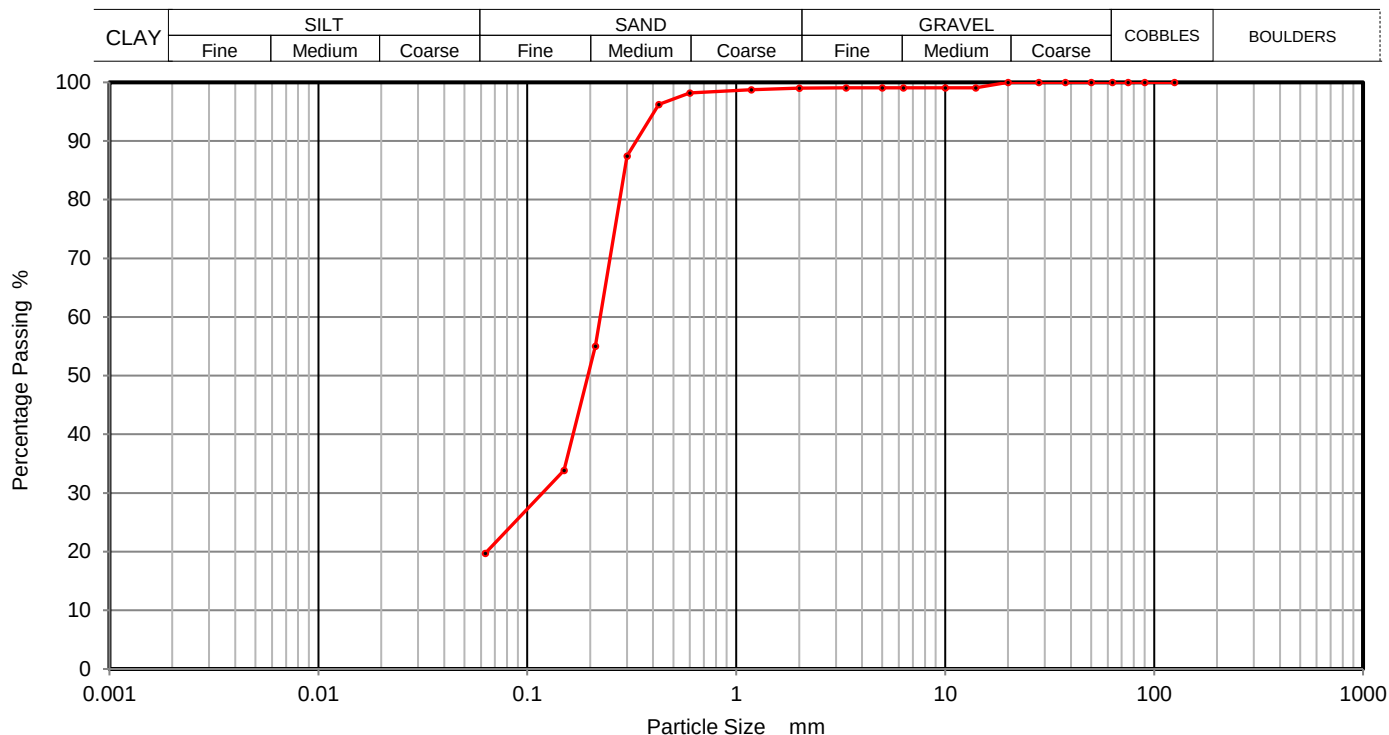
2.30

Date Tested

27/02/2025

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	99		
6.3	99		
5	99		
3.35	99		
2	99		
1.18	99		
0.63	98		
0.425	96		
0.30	87		
0.20	55		
0.15	34		
0.063	20		

Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	79
Silt and Clay	20

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T



PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

TP301

Project Name

Nine Mile Ride

Sample No.

Sample Description

Green/ brown slightly gravelly silty/ clayey fine to coarse SAND

Depth Top

2.50

Depth Base

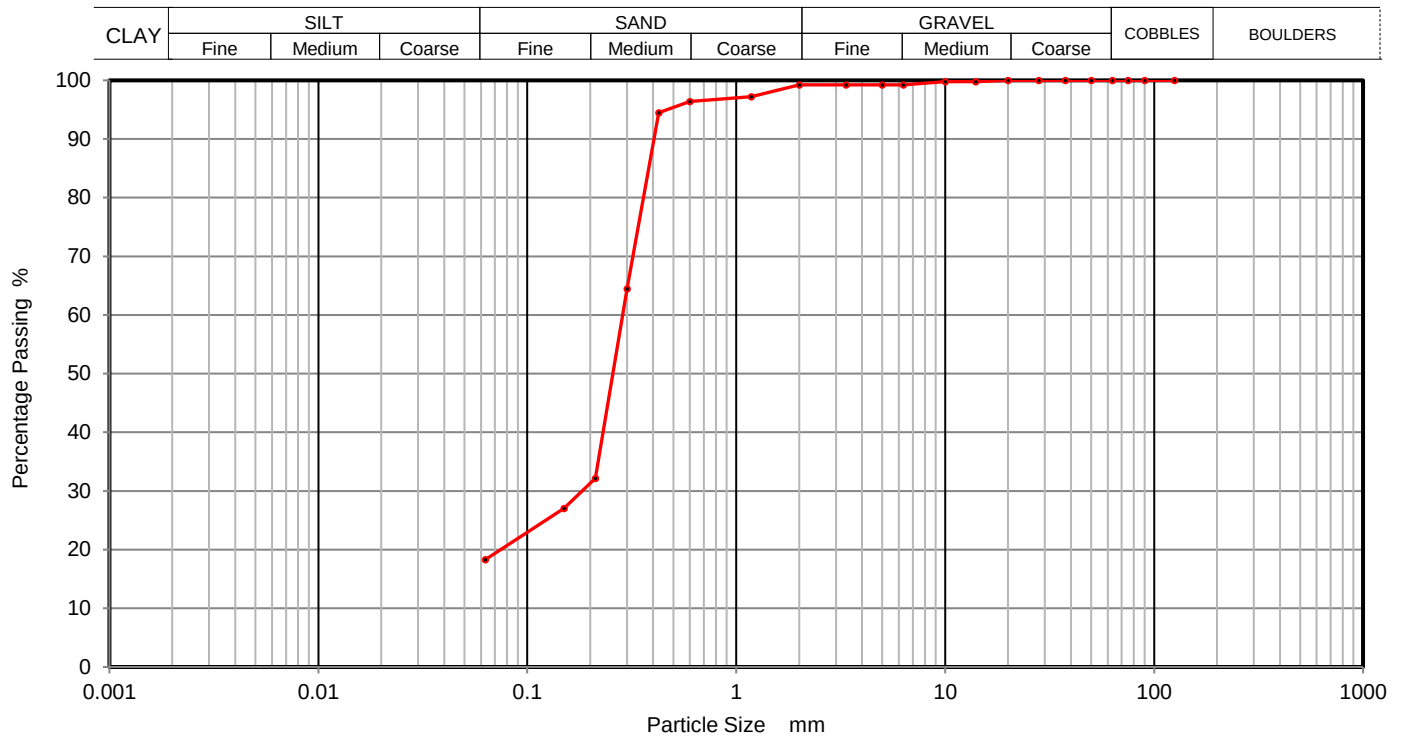
3.00

Date Tested

27/02/2025

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	99		
3.35	99		
2	99		
1.18	97		
0.63	96		
0.425	95		
0.30	64		
0.20	32		
0.15	27		
0.063	18		

Sample Proportions	% dry mass
Cobbles	0
Gravel	1
Sand	81
Silt and Clay	18

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T



PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

TP302

Project Name

Nine Mile Ride

Sample No.

Sample Description

Grey slightly gravelly slightly silty/ clayey fine to coarse SAND

Depth Top

0.10

Depth Base

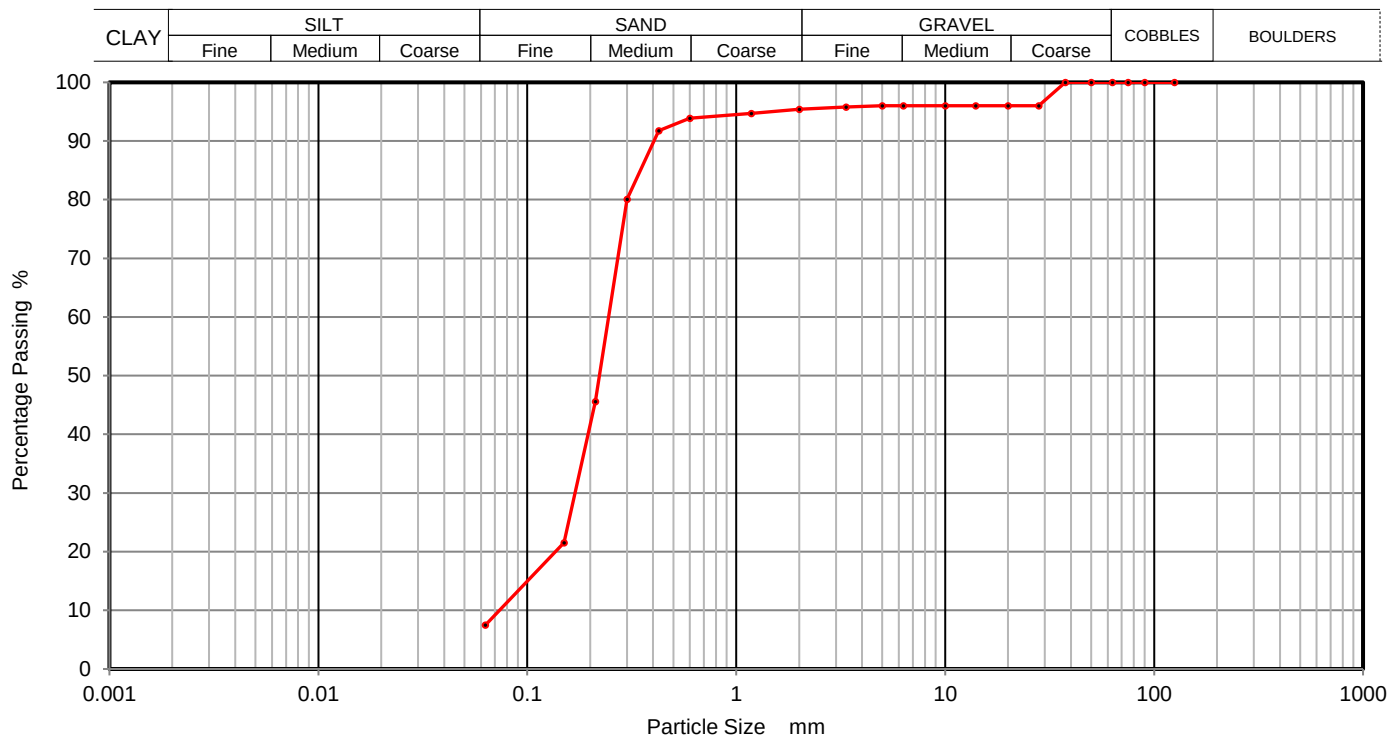
0.50

Date Tested

27/02/2025

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	96		
20	96		
14	96		
10	96		
6.3	96		
5	96		
3.35	96		
2	95		
1.18	95		
0.63	94		
0.425	92		
0.30	80		
0.20	46		
0.15	22		
0.063	7		

Sample Proportions	% dry mass
Cobbles	0
Gravel	5
Sand	88
Silt and Clay	7

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T



PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

TP302

Project Name

Nine Mile Ride

Sample No.

Sample Description

Brown slightly gravelly slightly silty/ clayey fine to coarse SAND

Depth Top

0.60

Depth Base

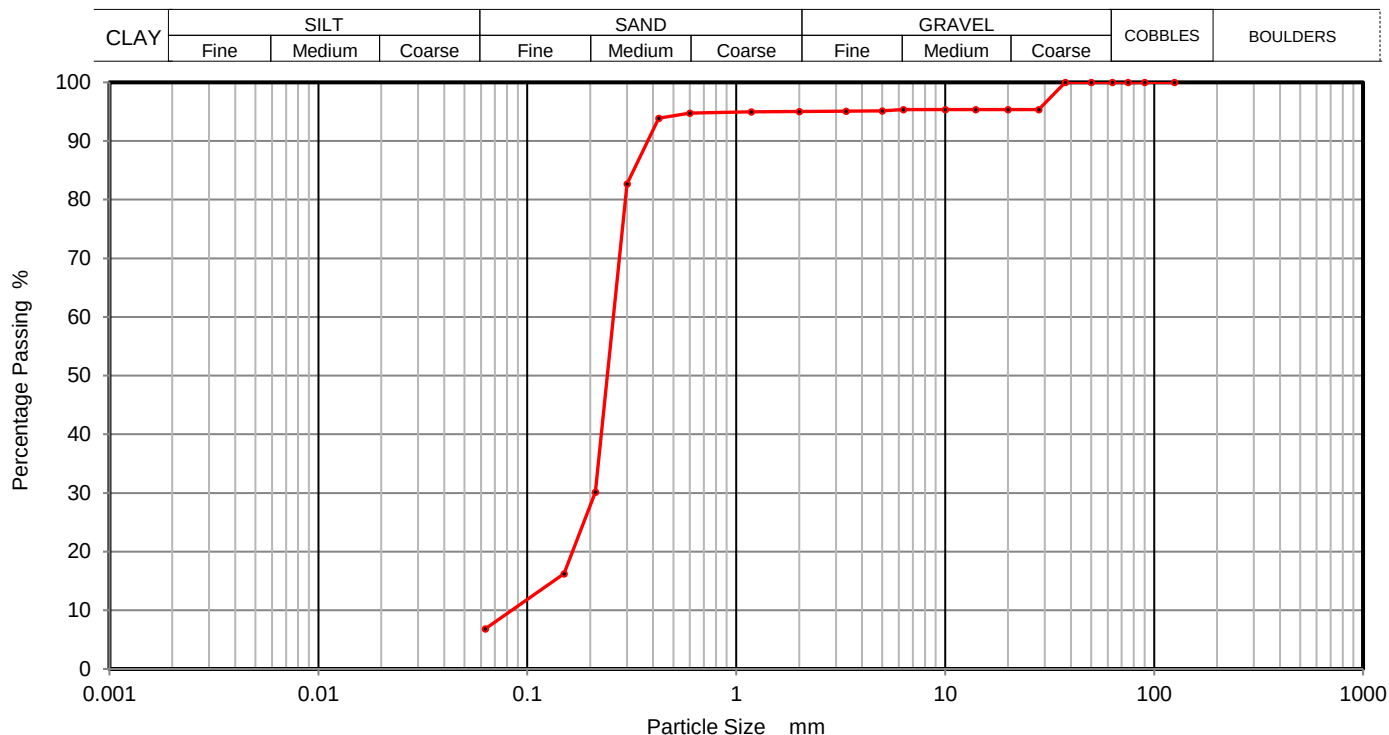
1.00

Date Tested

27/02/2025

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	95		
20	95		
14	95		
10	95		
6.3	95		
5	95		
3.35	95		
2	95		
1.18	95		
0.63	95		
0.425	94		
0.30	83		
0.20	30		
0.15	16		
0.063	7		

Sample Proportions	% dry mass
Cobbles	0
Gravel	5
Sand	88
Silt and Clay	7

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T



PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

TP302

Project Name

Nine Mile Ride

Sample No.

Sample Description

Brown slightly gravelly slightly silty/ clayey fine to coarse SAND

Depth Top

1.60

Depth Base

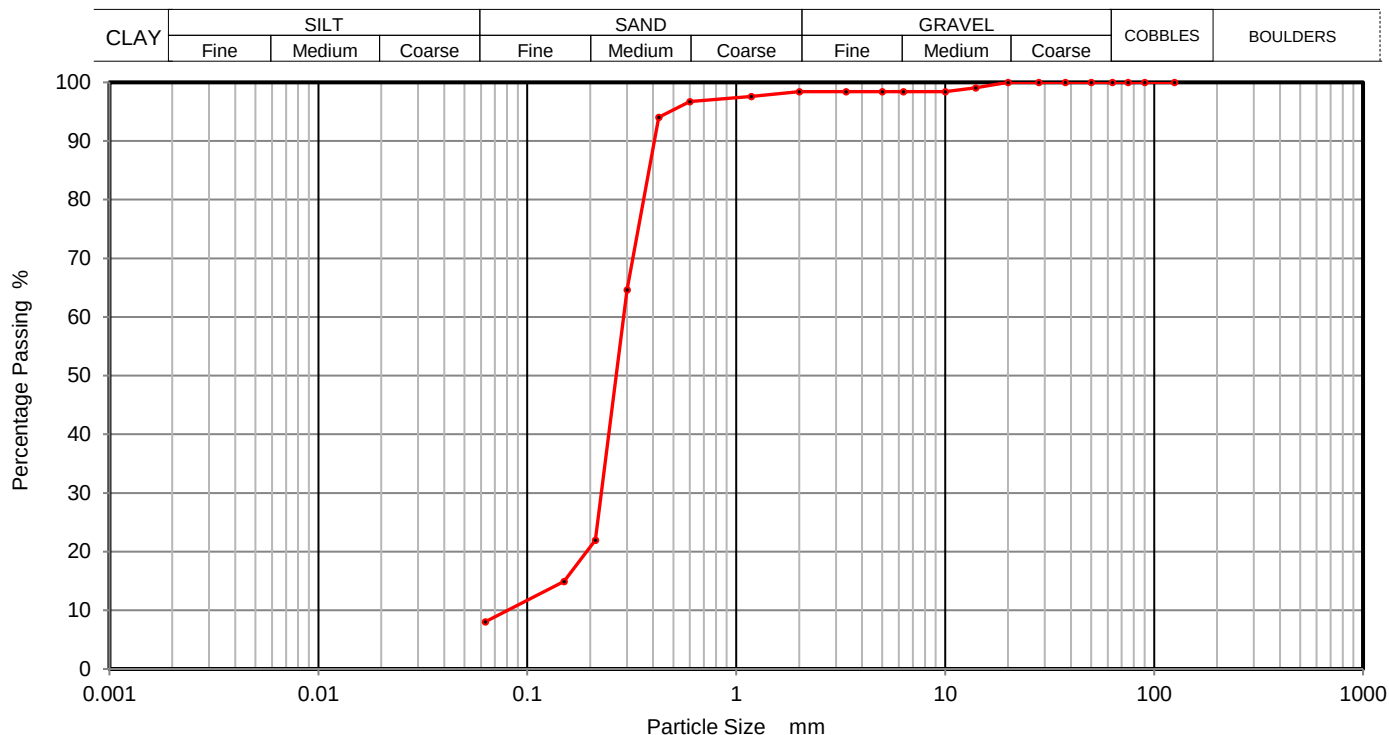
2.00

Date Tested

27/02/2025

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	98		
6.3	98		
5	98		
3.35	98		
2	98		
1.18	98		
0.63	97		
0.425	94		
0.30	65		
0.20	22		
0.15	15		
0.063	8		

Sample Proportions	% dry mass
Cobbles	0
Gravel	2
Sand	90
Silt and Clay	8

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T



PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

77200

Borehole/Pit No.

TP302

Project Name

Nine Mile Ride

Sample No.

Sample Description

Brown silty/ clayey fine to coarse SAND

Depth Top

2.50

Depth Base

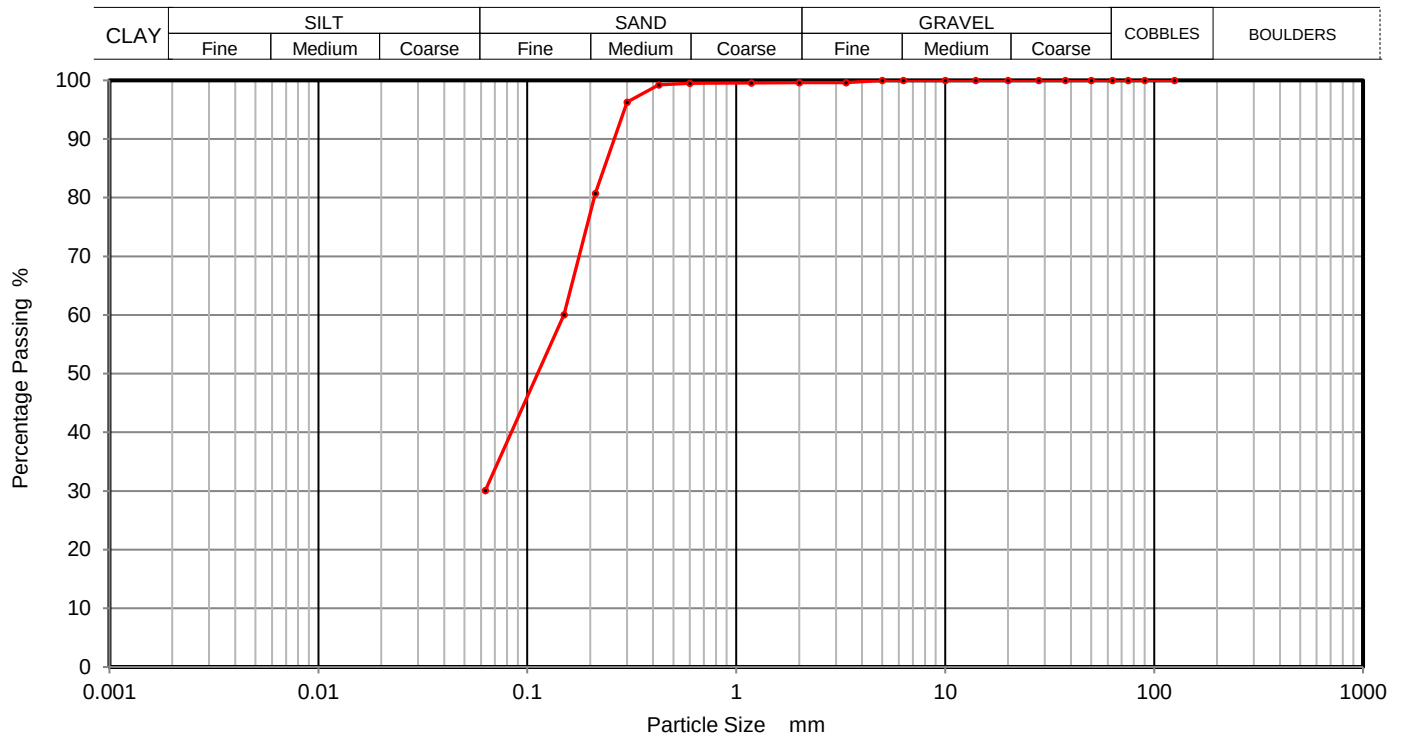
3.00

Date Tested

27/02/2025

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.63	100		
0.425	99		
0.30	96		
0.20	81		
0.15	60		
0.063	30		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	70
Silt and Clay	30

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. T

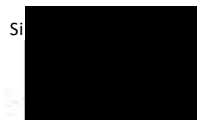
**GSTL**

Unit 3-4 Heol Aur
Dafen Ind Estate
Dafen
SA14 8QN

7 - 11 Harding Street
Leicester
LE1 4DH

Analytical Test Report: L25/02329/GSL - 25-58850

Your Project Reference:	Nine Mile Ride A12057-5		
Your Order Number:	77200	Samples Received / Instructed:	28/02/2025 / 28/02/2025
Report Issue Number:	1	Sample Tested:	28/02 to 12/03/2025
Samples Analysed:	32 sample(s)	Report issued:	12/03/2025



James Gane
Analytical Services Manager
CTS

Notes:**General**

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

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

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

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

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

Uncertainty of measurement values are available on request.

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

Deviating Samples

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

Accreditation Key

This report shall not be reproduce except in full

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

MCERTS Accreditation only covers the SAND, CLAY and LOAM matrices

UKAS accreditation on waters only covers the Ground water and Surface water matrices

Date of Issue: 12.03.25

Issued by: J. Gane

Issue No: 4

Rev No: 26



L25/02329/GSL - 25-58850

Project Reference - Nine Mile Ride A12057-5

7 - 11 Harding Street
Leicester
LE1 4DH

Analytical Test Results - Chemical Analysis

Lab Reference	461841	461842	461843	461844	461845	461846
Client Sample ID	-	-	-	-	-	-
Client Sample Location	TP301	TP301	TP301	TP301	TP302	TP302
Client Sample Type	B	B	B	B	B	B
Client Sample Number	-	-	-	-	-	-
Depth - Top (m)	0.10	1.00	1.70	2.50	0.10	0.60
Depth - Bottom (m)	0.50	1.50	2.30	3.00	0.50	1.00
Date of Sampling	-	-	-	-	-	-
Time of Sampling	-	-	-	-	-	-
Sample Matrix	Sand	Sand	Clay	Clay	Sand	Sand
Determinant	Units	Accreditation				
Water soluble sulphate (as SO ₄)	(mg/l)	u	< 10	< 10	< 10	< 10
pH Value	pH Units	MCERTS	4.6	5.0	4.4	4.9



L25/02329/GSL - 25-58850

Project Reference - Nine Mile Ride A12057-5

7 - 11 Harding Street
Leicester
LE1 4DH

Analytical Test Results - Chemical Analysis

Lab Reference	461847	461848	461849	461850	461851	461852
Client Sample ID	-	-	-	-	-	-
Client Sample Location	TP302	TP302	SA301	SA301	SA302	SA302
Client Sample Type	B	B	B	B	B	B
Client Sample Number	-	-	-	-	-	-
Depth - Top (m)	1.60	2.50	0.10	0.70	0.10	1.00
Depth - Bottom (m)	2.00	3.00	0.50	1.10	0.50	1.50
Date of Sampling	-	-	-	-	-	-
Time of Sampling	-	-	-	-	-	-
Sample Matrix	Clay	Clay	Clay	Clay	Clay	Clay
Determinant	Units	Accreditation				
Water soluble sulphate (as SO ₄)	(mg/l)	u	< 10	< 10	< 10	< 10
pH Value	pH Units	MCERTS	5.3	4.8	4.7	6.2
			5.3	4.9	5.3	



L25/02329/GSL - 25-58850

Project Reference - Nine Mile Ride A12057-5

7 - 11 Harding Street
Leicester
LE1 4DH

Analytical Test Results - Chemical Analysis

Lab Reference			461853	461854	461855	461856	461857	461858
Client Sample ID			-	-	-	-	-	-
Client Sample Location			SA303	SA303	SA303	CP601	CP601	CP601
Client Sample Type			B	B	B	B	B	B
Client Sample Number			-	-	-	-	-	-
Depth - Top (m)			1.10	1.70	2.40	0.20	0.40	1.00
Depth - Bottom (m)			1.50	2.00	2.50	0.40	1.00	1.50
Date of Sampling			-	-	-	-	-	-
Time of Sampling			-	-	-	-	-	-
Sample Matrix			Clay	Clay	Clay	Clay	Clay	Clay
Determinant	Units	Accreditation						
Water soluble sulphate (as SO ₄)	(mg/l)	u	150	< 10	90	11	< 10	19
pH Value	pH Units	MCERTS	6.8	7.1	5.3	5.2	5.0	4.7



L25/02329/GSL - 25-58850

Project Reference - Nine Mile Ride A12057-5

7 - 11 Harding Street
Leicester
LE1 4DH

Analytical Test Results - Chemical Analysis

Lab Reference			461859	461860	461861	461862	461863	461864
Client Sample ID			-	-	-	-	-	-
Client Sample Location			CP601	CP601	CP601	CP601	CP601	CP601
Client Sample Type			B	B	B	D	D	D
Client Sample Number			-	-	-	-	-	-
Depth - Top (m)			2.00	5.00	7.50	10.50	15.50	19.50
Depth - Bottom (m)			2.50	5.50	8.00	10.50	15.50	19.50
Date of Sampling			-	-	-	-	-	-
Time of Sampling			-	-	-	-	-	-
Sample Matrix			Clay	Clay	Clay	Clay	Clay	Sand
Determinant	Units	Accreditation						
Water soluble sulphate (as SO ₄)	(mg/l)	u	< 10	< 10	< 10	21	35	36
pH Value	pH Units	MCERTS	4.9	5.0	5.1	4.8	4.6	4.6



L25/02329/GSL - 25-58850

Project Reference - Nine Mile Ride A12057-5

7 - 11 Harding Street
Leicester
LE1 4DH

Analytical Test Results - Chemical Analysis

Lab Reference			461865	461866	461867	461868	461869	461870
Client Sample ID			-	-	-	-	-	-
Client Sample Location			CP602	CP602	CP602	CP602	CP602	CP602
Client Sample Type			B	B	B	B	B	B
Client Sample Number			-	-	-	-	-	-
Depth - Top (m)			0.20	0.50	1.10	2.00	3.00	5.00
Depth - Bottom (m)			0.50	1.00	1.50	2.50	3.50	5.50
Date of Sampling			-	-	-	-	-	-
Time of Sampling			-	-	-	-	-	-
Sample Matrix			Clay	Clay	Clay	Clay	Sand	Clay
Determinant	Units	Accreditation						
Water soluble sulphate (as SO ₄)	(mg/l)	u	13	11	12	19	26	< 10
pH Value	pH Units	MCERTS	5.1	5.5	4.9	4.7	6.4	6.5



L25/02329/GSL - 25-58850

Project Reference - Nine Mile Ride A12057-5

Analytical Test Results - Chemical Analysis

7 - 11 Harding Street
Leicester
LE1 4DH

Lab Reference			461871	461872
Client Sample ID			-	-
Client Sample Location			CP602	CP602
Client Sample Type			B	D
Client Sample Number			-	-
Depth - Top (m)			10.70	14.50
Depth - Bottom (m)			11.00	19.50
Date of Sampling			-	-
Time of Sampling			-	-
Sample Matrix			Sand	Clay
Determinant	Units	Accreditation		
Water soluble sulphate (as SO ₄)	(mg/l)	u	21	14
pH Value	pH Units	MCERTS	4.7	4.3

L25/02329/GSL - 25-58850

7 - 11 Harding Street
Leicester
LE1 4DH

Project Reference - Nine Mile Ride A12057-5

Sample Descriptions

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Description	Moisture Content (%)	Stone Content (%)	Passing 2mm test sieve (%)
461841	-	TP301	B	-	Brown sand	-	-	100
461842	-	TP301	B	-	Light brown sand	-	-	100
461843	-	TP301	B	-	Green sandy clay with rare organic matter	-	-	100
461844	-	TP301	B	-	Brown sandy clay	-	-	100
461845	-	TP302	B	-	Dark brown sand	-	-	100
461846	-	TP302	B	-	Light brown sand	-	-	100
461847	-	TP302	B	-	Green sandy clay	-	-	100
461848	-	TP302	B	-	Mottled orangish green silty clay	-	-	100
461849	-	SA301	B	-	Light brown slightly silty silty clay	-	-	100
461850	-	SA301	B	-	Brown silty sandy clay	-	-	100
461851	-	SA302	B	-	Light brown silty sandy clay	-	-	100
461852	-	SA302	B	-	Dark brown silty sandy clay	-	-	100
461853	-	SA303	B	-	Orangish brown silty sandy clay	-	-	100
461854	-	SA303	B	-	Mottled orangish brown very sandy silty clay with rare organic matter	-	-	100
461855	-	SA303	B	-	Brownish green silty sandy clay with rare organic matter	-	-	100
461856	-	CP601	B	-	Dark brown silty sandy clay with rare organic matter	-	-	96
461857	-	CP601	B	-	Mottled greenish brown silty clay	-	-	100
461858	-	CP601	B	-	Dark brown silty clay	-	-	100
461859	-	CP601	B	-	Brownish brownish green silty clay	-	-	100
461860	-	CP601	B	-	Light orangish brown silty sandy clay with rare organic matter	-	-	100
461861	-	CP601	B	-	Light brown silty sandy clay	-	-	100
461862	-	CP601	D	-	Orangish brown silty sandy clay	-	-	100
461863	-	CP601	D	-	Orangish brown slightly sandy silty clay	-	-	100
461864	-	CP601	D	-	Light grey silty sand	-	-	100
461865	-	CP602	B	-	Dark brown silty sandy clay	-	-	100



L25/02329/GSL - 25-58850

Project Reference - Nine Mile Ride A12057-5

Sample Descriptions

7 - 11 Harding Street
Leicester
LE1 4DH

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Description	Moisture Content (%)	Stone Content (%)	Passing 2mm test sieve (%)
461866	-	CP602	B	-	Mottled brown silty sandy clay	-	-	100
461867	-	CP602	B	-	Mottled orangish brown slightly sandy silty clay	-	-	100
461868	-	CP602	B	-	Greenish brown silty sandy clay	-	-	100
461869	-	CP602	B	-	Light brown silty sand	-	-	100
461870	-	CP602	B	-	Grey slightly sandy silty clay	-	-	100
461871	-	CP602	B	-	Orangish brown silty sand	-	-	100
461872	-	CP602	D	-	Light brown silty sandy clay	-	-	100



L25/02329/GSL - 25-58850

Project Reference - Nine Mile Ride A12057-5

Sample Comments

7 - 11 Harding Street
Leicester
LE1 4DH

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Comments
461841	-	TP301	B	-	
461842	-	TP301	B	-	
461843	-	TP301	B	-	
461844	-	TP301	B	-	
461845	-	TP302	B	-	
461846	-	TP302	B	-	
461847	-	TP302	B	-	
461848	-	TP302	B	-	
461849	-	SA301	B	-	
461850	-	SA301	B	-	
461851	-	SA302	B	-	
461852	-	SA302	B	-	
461853	-	SA303	B	-	
461854	-	SA303	B	-	
461855	-	SA303	B	-	
461856	-	CP601	B	-	
461857	-	CP601	B	-	
461858	-	CP601	B	-	
461859	-	CP601	B	-	
461860	-	CP601	B	-	
461861	-	CP601	B	-	
461862	-	CP601	D	-	
461863	-	CP601	D	-	
461864	-	CP601	D	-	
461865	-	CP602	B	-	
461866	-	CP602	B	-	



L25/02329/GSL - 25-58850

Project Reference - Nine Mile Ride A12057-5

7 - 11 Harding Street
Leicester
LE1 4DH

Sample Comments

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Comments
461867	-	CP602	B	-	
461868	-	CP602	B	-	
461869	-	CP602	B	-	
461870	-	CP602	B	-	
461871	-	CP602	B	-	
461872	-	CP602	D	-	



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Project Reference - Nine Mile Ride A12057-5

Analysis Methodologies

Test Code	Test Name / Reference	Sample condition for analysis	Sample Preparation	Test Details
ANIONSS	MS - CL - Anions by Aquakem (2:1Extract)	Oven dried	Passing 2mm test sieve	Determination of Anions (inc Sulphate, chloride etc.) in soils by Aquakem. Analysis is based on a 2:1 water to soil extraction ratio
PHS	MS - CL - pH in Soils	As received	Passing 10mm test sieve	Determination of pH in soils using a pH probe (using a 1:3 soil to water extraction)
SAMPLEPREP	MS - CL - Sample Preparation	-	-	Preparation of samples (including determination of moisture content) to allow for subsequent analysis

L25/02329/GSL - 25-58850

Project Reference - Nine Mile Ride A12057-5

Sample Deviations

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

Observations on receipt

A - No date of sampling provided

W - No time of sampling provided for water sample

C - Received in inappropriate container

H - Contains headspace

T - Temperature on receipt exceeds storage temperature

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

Observations whilst in laboratory

X - Exceeds sampling to extraction or analysis timescales

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Test	Deviations
461841	-	TP301	B	-		A
461842	-	TP301	B	-		A
461843	-	TP301	B	-		A
461844	-	TP301	B	-		A
461845	-	TP302	B	-		A
461846	-	TP302	B	-		A
461847	-	TP302	B	-		A
461848	-	TP302	B	-		A
461849	-	SA301	B	-		A
461850	-	SA301	B	-		A
461851	-	SA302	B	-		A
461852	-	SA302	B	-		A
461853	-	SA303	B	-		A
461854	-	SA303	B	-		A
461855	-	SA303	B	-		A
461856	-	CP601	B	-		A
461857	-	CP601	B	-		A
461858	-	CP601	B	-		A
461859	-	CP601	B	-		A
461860	-	CP601	B	-		A
461861	-	CP601	B	-		A
461862	-	CP601	D	-		A
461863	-	CP601	D	-		A
461864	-	CP601	D	-		A
461865	-	CP602	B	-		A
461866	-	CP602	B	-		A
461867	-	CP602	B	-		A
461868	-	CP602	B	-		A
461869	-	CP602	B	-		A
461870	-	CP602	B	-		A



L25/02329/GSL - 25-58850

Project Reference - Nine Mile Ride A12057-5

Sample Deviations

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

Observations on receipt

A - No date of sampling provided

W - No time of sampling provided for water sample

C - Received in inappropriate container

H - Contains headspace

T - Temperature on receipt exceeds storage temperature

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

Observations whilst in laboratory

X - Exceeds sampling to extraction or analysis timescales

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Test	Deviations
461871	-	CP602	B	-		A
461872	-	CP602	D	-		A

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APPENDIX IX – GEOTECHNICAL LABORATORY CLASSIFICATION SUMMARY

Table 8-1 Summary of Plasticity Assessment in the Windlesham Formation

Location	Depth (m bgl)	Plasticity Index (%)	Percentage passing 425µm sieve(%)	Modified Plasticity Index	Plasticity	Volume Change Potential
WS101	1.90-2.00	34	100	34	High	Medium
WS103	1.70-1.80	28	100	28	High	Medium
SA101	0.80-1.50	35	100	35	High	Medium
SA102	1.50-2.00	25	100	25	Medium	Medium
BH101	5.90-6.00	53	100	53	Very High	High
BH101	6.60-6.70	32	82	26.24	High	Medium
BH101	7.30-7.40	22	100	22	Medium	Medium
BH102	6.90-7.00	31	100	31	Medium	Medium
TP302	2.50-3.00	35	99	34.65	High	Medium
SA303	1.70-2.00	36	81	29.16	High	Medium
CP301	0.40-1.00	34	99	33.66	High	Medium
CP302	1.10-1.50	30	99	29.7	Intermediate	Medium

Table 8-2 Summary of Particle Size Distribution Assessment in the Camberley Sand Formation

Location	Depth (m bgl)	Laboratory Description	Granulometric Composition (%)			
			Fines	Sand	Gravel	Cobbles
			(<0.063mm)			
WS105	1.50-1.80	Yellowish Brown SAND	9	91	0	0
BH102	2.50-2.90	Brownish grey SAND	13	87	0	0
BH102	4.60-4.90	Greyish brown clayey SAND	21	79	0	0
CP302	0.20-0.50	Brown fine to coarse gravelly silty/ clayey fine to coarse SAND	24	59	17	0
CP302	0.50-1.00	Brown/ grey slightly gravelly silty/ clayey fine to coarse SAND	31	61	8	0
SA301	0.10-0.50	Brown slightly sandy SILT/ CLAY	97	3	0	0
SA302	0.10-0.50	Grey slightly gravelly slightly silty/ clayey fine to coarse SAND	6	93	1	0
TP301	0.10-0.50	Green slightly gravelly fine to coarse sandy SILT/ CLAY	53	46	1	0
TP302	0.10-0.50	Grey slightly gravelly slightly silty/ clayey fine to coarse SAND	7	88	5	0

Table 8-3 Summary of Particle Size Distribution Assessment in the Windlesham Formation

Location	Depth (m bgl)	Laboratory Description	Granulometric Composition (%)				
			Fines (<0.063mm)		Sand	Gravel	Cobbles
			Clay	Silt			
SA101	0.80-1.50	Greenish grey clayey SAND	37		63	0	0
BH101	2.70-3.00	Yellowish brown SAND	7		93	0	0
BH101	6.60-6.70	Brown sandy CLAY	28	35	26	11	0
BH101	8.50-9.00	Yellowish brown clayey SAND	28		72	0	0
BH101	9.50-9.70	Yellowish brown clayey SAND	33		67	0	0
BH102	5.40-5.60	Greenish grey clayey SAND	30		70	0	0
CP301	0.40-1.00	Brown fine to coarse sandy SILT/ CLAY	45		55	0	0
CP301	1.00-1.50	Brown slightly gravelly fine to coarse sandy SILT/ CLAY	35		64	1	0
CP301	2.00-2.50	Brown fine to coarse sandy SILT/ CLAY	40		60	0	0
CP301	5.00-5.50	Brown silty/ clayey fine to coarse SAND	28		72	0	0
CP301	7.50-8.00	Brown slightly gravelly fine to coarse sandy SILT/ CLAY	46		53	1	0
CP301	10.50	Brown silty/ clayey fine to coarse SAND	25		75	0	0
CP301	15.50	Brown/ orange fine to coarse sandy SILT/ CLAY	53		47	0	0
CP301	19.50	Brown/ grey silty/ clayey fine to coarse SAND	19		81	0	0
CP302	1.10-1.50	Brown fine to coarse sandy SILT/ CLAY	38		62	0	0
CP302	2.00-2.50	Brown/ green slightly gravelly silty/ clayey fine to coarse SAND	19		79	2	0
CP302	3.00-3.50	Brown/ grey slightly gravelly slightly silty/ clayey fine to coarse SAND	8		91	1	0
CP302	5.00-5.50	Brown slightly gravelly silty/ clayey fine to coarse SAND	22		77	1	0
CP302	10.70-11.00	Brown slightly gravelly fine to coarse sandy SILT/ CLAY	38		61	1	0
CP302	14.50	Brown silty/ clayey fine to coarse SAND	20		80	0	0
CP302	19.50	Brown slightly gravelly silty/ clayey fine to coarse SAND	26		72	2	0

Location	Depth (m bgl)	Laboratory Description	Granulometric Composition (%)				
			Fines (<0.063mm)		Sand	Gravel	Cobbles
			Clay	Silt			
SA301	0.70-1.10	Brown slightly gravelly slightly silty/ clayey fine to coarse SAND	9		90	1	0
SA302	1.00-1.50	Grey slightly gravelly slightly silty/ clayey fine to coarse SAND	8		91	1	0
SA303	1.10-1.50	Brown silty/ clayey fine to coarse gravelly fine to coarse SAND	14		72	14	0
SA303	1.70-2.00	Brown/ orange fine to coarse gravelly silty/ clayey fine to coarse SAND	20		62	18	0
SA303	2.40-2.50	Brown slightly silty/ clayey fine to coarse SAND	3		97	0	0
TP301	1.00-1.50	Brown silty/ clayey fine to coarse gravelly fine to coarse SAND	19		61	20	0
TP301	1.70-2.30	Green/ brown slightly gravelly silty/ clayey fine to coarse SAND	20		79	1	0
TP301	2.50-3.00	Green/ brown slightly gravelly silty/ clayey fine to coarse SAND	18		81	1	0
TP302	0.60-1.00	Brown slightly gravelly slightly silty/ clayey fine to coarse SAND	7		88	5	0
TP302	1.60-2.00	Brown slightly gravelly slightly silty/ clayey fine to coarse SAND	8		90	2	0
TP302	2.50-3.00	Brown slity/ clayey fine to coarse SAND	30		70	0	0

Table 8-4 Summary of Density Assessment in the Camberley Sand Formation

Location	Depth (m bgl)	Lab Description	SMC (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	MC (%)
BH102	4.60-4.90	lab data	lab data	1.7	1.36	25.1

Table 8-5 Summary of Density Assessment in the Windlesham Formation

Location	Depth (m bgl)	Lab Description	SMC (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	MC (%)
BH101	2.70-3.00	lab data	lab data	1.67	1.36	22.5
BH102	5.40-5.60	lab data	lab data	2.01	1.57	28.0

Table 8-6 Summary of pH and Sulphate Assessment in the Camberley Sand Formation

Location	Depth (m bgl)	SO ₄ in 2:1 water / soil (mg/l)	pH Value
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WS105	1.50-1.80	7.4	4.6
BH102	1.60-2.00	<1.3	5.2
BH102	2.50-2.90	<1.3	5.3
BH102	4.60-4.90	3.3	5.3
TP301	0.10-0.50	<10	4.6
TP302	0.10-0.50	<10	5.2
SA301	0.10-0.50	17	4.7
SA302	0.10-0.50	<10	4.9
CP602	0.20-0.50	11	5.1
CP602	0.50-1.00	11	5.5
Formation Site characteristic value		14	4.6

Table 8-7 Summary of pH and Sulphate Assessment in the Windlesham Formation

Location	Depth (m bgl)	SO ₄ in 2:1 water / soil (mg/l)	pH Value
WS101	1.90-2.00	14.7	4.1
WS103	1.70-1.80	31.4	4.5
SA101	0.80-1.50	19.5	4
BH101	2.70-3.00	<1.3	5.6
BH101	7.30-7.40	9	5.1
BH101	9.50-9.70	7.6	4.8
BH102	6.90-7.00	15.5	4.7
TP301	1.00-1.50	<10	5
TP301	1.70-2.30	11	4.4
TP301	2.50-3.00	<10	4.9
TP302	0.60-1.00	<10	5.9
TP302	1.60-2.00	<10	5.3
TP302	2.50-3.00	<10	4.8
SA301	0.70-1.10	<10	6.2
SA302	1.00-1.50	<10	5.3
SA303	1.10-1.50	150	6.8
SA303	1.70-2.00	<10	7.1
SA303	2.40-2.50	90	5.3
CP301	0.20-0.40	11	5.2
CP301	0.40-1.00	<10	5
CP301	1.00-1.50	19	4.7
CP301	2.00-2.50	<10	4.9
CP301	5.00-5.50	<10	5
CP301	7.50-8.00	<10	5.1
CP301	10.50	21	4.8
CP301	15.50	35	4.6
CP301	19.50	36	4.6
CP302	1.10-1.50	12	4.9
CP302	2.00-2.50	19	4.7
CP302	3.00-3.50	26	6.4
CP302	5.00-5.50	<10	6.5

Location	Depth (m bgl)	SO ₄ in 2:1 water / soil (mg/l)	pH Value
CP302	10.70-11.00	21	4.7
CP302	14.50-19.50	14	4.3
Formation Site characteristic value		61.4	4.32

APPENDIX X - BRE DG365 SOAKAWAY TEST CERTIFICATES