

GROUND INVESTIGATION REPORT

Fives Court, Mere, Wiltshire

Prepared for: Wiltshire Council

Date: January 2026

Report No: PO-22-039



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02	03/02/2025	Revised with additional investigations	JT	PS	SH
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EXECUTIVE SUMMARY

Proposals	Wiltshire Council is proposing the construction of a new residential development within land at Fives Court, Mere, Wiltshire. The proposed development will consist of a two-story building comprising of 1 and 2 bed flats with communal areas, for people aged 60 and above, and all associated infrastructure. Terra Firma has been commissioned to carry out additional Ground Investigation of the site to improve the ground model and firm up recommendations.
Geology	The Geological Map of the area shows the site to be underlain by the West Melbury Marly Chalk Formation, which the BGS describes as buff, grey and off-white, soft, marly chalk and hard grey limestone arranged in couplets. No Superficial Deposits are shown to overlie the bedrock geology of the area.
Field Investigation	The site works were scoped by Skeletal Consulting Engineers and comprised 14No. mini percussive boreholes and 11No. hand excavated trial pits. The site works were carried out at the site between the 6th of January 2025 and the 14th January 2025. Additional investigations comprising 8No hand excavated inspection pits (IP101 to IP108) was carried out in November 2025 to assess the risk of discharging storm waters via permeable paving. During the Ground Investigation no perched or deep groundwater was encountered.
Contamination Risk Assessment	No further contamination was noted within this investigation. The recommendations given in the previous Terra Firma Ground Investigation Report from November 2022 (PO-22-039/GIR) should be adhered to. Leachate testing and Risk Assessment has confirmed a low risk to the aquatic environs from discharging storm waters via permeable paving through the Made Ground based on low recorded concentrations and the effects of dilution, dispersion, and natural attenuation.
Engineering Recommendations	Foundation Correlation It is determined a traditional strip/trench fill foundation design was used throughout the building. Based on the centric foundations observed based on HP25/HP05, HP29/HP09, HP30/HP10 it is expected the remaining foundations across the site follow the same principle. The outside inspection pits determined the foundations are founded on the West Melbury Marly Chalk Formation. The founding material internally was not confirmed but assumed to be the Melbury Marly Chalk Formation. For hand dug trial pits inside the building which are situated across the cavity wall, the top of the foundation is aligned with the top of the foundations observed from the corresponding outside inspection pits, with minor differences for the internal floor elevations compared to outside. As a result, it is assumed the foundation founding depths are aligned.

		With the additional information gathered from this investigation, it is recommended that an allowable bearing capacity of 150kN/m² can be used for the foundations founded within the West Melbury Marly Chalk Formation. However, the western elevation of the northern arm of the building covered by WS02 of this report, should have a reduced bearing resistance of 100 kN/m² due to softer upper horizons encountered within the West Melbury Marly Chalk Formation in this area. Within HP02 it was noted that an unmapped drainage pipe was present and therefore it may be prudent to undertake a further drainage survey along this run to confirm it is not leaking and causing the ground to soften.
	Storm Drainage	Four in-situ permeability/soakaway tests were undertaken at four locations in accordance with the requirements of BS 5930:2015+A1:2020 (Section 7). The tests did not drain sufficiently to give an infiltration rate. Therefore, it is unlikely soakaways will be viable at the site. In June 2025, further investigation was undertaken to investigate the existing soakaways onsite and confirm their suitability for use. The existing soakaways are shown in the Drainage and Connectivity Drawing produced by Adler and Allan in June 2024. A copy of the drawing is given in Annex B. Of the existing soakaways investigated and tested, only one, SK4 was found to be operational. The results of the testing revealed 3rd cycle infiltration rate of 1.57×10^{-05} m/s. An additional pit, SA01 adjacent existing soakaway SK1 was excavated and tested but did not drain sufficiently in accordance with BRE 365.

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SECTION 1 Introduction and Proposed Development

Wiltshire Council is proposing the construction of a new residential development within land at Fives Court, Mere, Wiltshire. The proposed development will consist of a two-story building comprising of 1 and 2 bed flats with communal areas, for people aged 60 and above, and all associated infrastructure.

Skeletal Consulting Engineers are the consulting structural engineers for the development.

Terra Firma has been commissioned as Geotechnical and Geo-Environmental Engineers to carry out additional Ground Investigation of the site in order to improve the ground model and firm up recommendations.

The main objectives of the geo-technical ground investigation were to:

- Determine the type, strength and bearing characteristics of the near surface soils and underlying bedrock geology.
- Confirm recommendations for a suitable and economic foundation/floor slab solution for the development.
- Provide recommendations with regard to any other geo-technical aspects pertaining to the development such as soakaway design.

The main objectives of the geo-environmental assessment programme were to:

- Identify the potential environmental liabilities at the site associated with any soil and groundwater contamination from past site uses.
- Provide a summary of the environmental conditions at the site, together with any necessary remediation works to render the site fit for its intended use.
- Provide recommendations with regard to any other geo-environmental aspects pertaining to the development.

The Ground Investigation has been undertaken in accordance with the following advisory guidance:

- Code of Practice for Site Investigations - (BS 5930): 2015 + A1:2020
- Investigation of Potentially Contaminated Sites - CoP (BS 10175): 2011 + A2:2017
- Land Contamination Risk Management (LCRM):2020
 - Stage 1 Risk Assessment (Generic/Detailed)
- Methods of test for soils for civil engineering purposes - In-situ tests (BS 1377-9):1999

In order to achieve the above objectives, Terra Firma carried out an assessment programme including a review of existing data, followed by a field investigation to determine the prevailing ground conditions and also to collect and analyse soil samples from selected locations around the site.

1.1 Limitations and Exceptions of Investigation

Wiltshire Council has requested that a Ground Investigation Report (GIR) be performed in order to establish the ground conditions at the site and collect representative samples for laboratory analysis.

The Ground Investigation was conducted and this report has been prepared for the sole internal reliance of Wiltshire Council and their design and construction team. This report shall not be relied upon or transferred to any other parties without the express written authorisation of Terra Firma. If an unauthorised third party comes into possession of this report they rely on it at their peril and the authors owe them no duty of care and skill.

The report represents the findings and opinions of experienced geo-environmental and geo-technical consultants. Terra Firma does not provide legal advice and the advice of lawyers may also be required.

The subsurface geological profiles, any contamination and other plots are generalised by necessity and have been based on the information found at the locations of the exploratory holes and depths sampled and tested.

The ground investigation was limited by the following site constraints:

- The presence of underground services and utilities,
- The presence of existing buildings, structures and/or hard standing,
- The presence of access restrictions to the required locations,
- The presence of underground obstructions, structures and/or unexpected ground conditions,

The hand pit at location HP21 was not excavated due to the numerous pipes expected under the surface and also the hanging gas pipes from the ceiling.

The location of HP26 was moved to a different room along the same wall due to shattered glass on the floor.

SECTION 2 Site Setting

2.1 Physical Setting

The proposed development is to be located within property boundaries of Fives Court, Mere, Wiltshire, BA12 6DH.

The site is centred approximately on National Grid Reference (NGR) ST 81304, 32282. The site location is presented in **Drawing 2.1** below.



Drawing 2.1: Site Location Plan

The site is irregular in shape with a plan area of approximately 0.36 hectares and sits between approximately 105 and 106 m above ordnance datum (aod).

The topography of the site is typically flat. The topography of the surrounding area typically slopes towards the South/ South-West.

To the north, north west, east and south, the site is typically bound by residential properties. The main road running through the town of Mere is situated to the north of site. Along this main road, a series of town amenities can be found such as a post office, fish and chip shop, pharmacy/ doctors' surgery, pub/hotels and a Co-op. Located to the West is St Michael's church with an associated graveyard. To the south of site an additional cemetery is also present. Extending further south a series of farmland/ open fields is present.

2.1.1 Current Use and Site Conditions

A walk-over survey was undertaken on the 15th of September 2022 by a Terra Firma Engineer. The site is accessed via Angel Street.

At the time of the walk-over survey the site currently comprises of an empty care home building (ready for demolition), with a hard standing car park area situated to the north and soft landscaped garden areas surrounding the building.

2.2 Phase 1 Risk Assessment

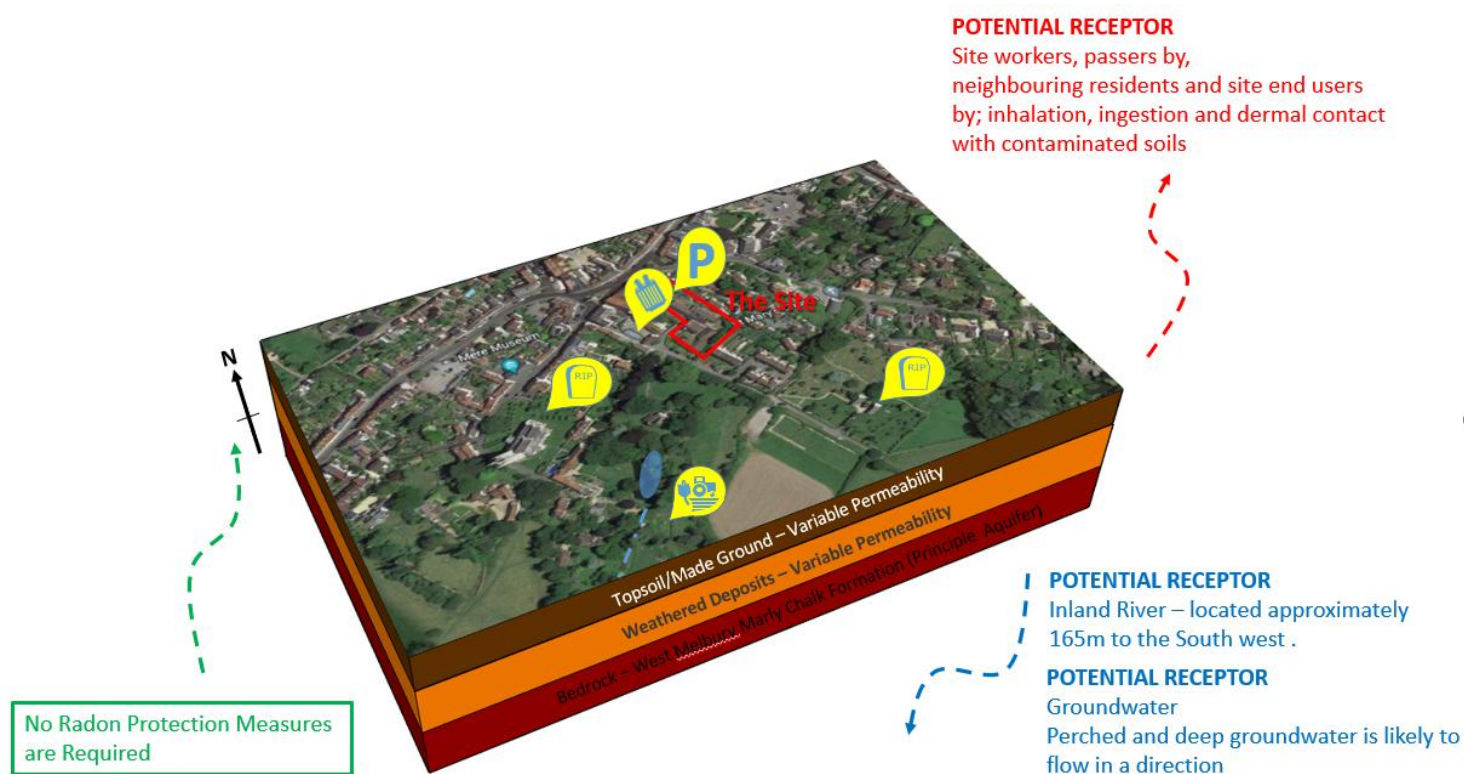
A Phase 1 Contaminated Land Risk Assessment was undertaken by Terra Firma in November 2022 (Report number PO-22-039/P1) and should be read in conjunction with this report. A summary of the report is detailed below:

Geology		The Geological Map of the area shows the site to be underlain by the West Melbury Marly Chalk Formation, which the BGS describes as buff, grey and off-white, soft, marly chalk and hard grey limestone arranged in couplets. Immediately south of the site is the Kimmeridge Clay Formation which the BGS describes as mudstones and thin siltstone and cementstone beds; locally sands and silts. No Superficial Deposits are shown to overlie the bedrock geology of the site with Alluvium recorded 100 m to the southwest.
Mining		The risk from underground and/or surface mining activity is likely to be Low .
Preliminary Geotechnical Risk Assessment		The preliminary geotechnical risk assessment has revealed that a Low to Moderate risk is present from geotechnical aspects, with particular risk specifically associated with the potential from swelling, sulphates within the Kimmeridge Clay located 25 m south of the site and groundwater flooding.
Recommendations		In order to confirm the above preliminary geotechnical risk assessment, it is recommended that a Phase 2 Intrusive Site Investigation is undertaken in order to determine the ground conditions and confirm relevant geotechnical aspects.
Potential Sources of Contamination	On-site	Historically, the site has typically comprised of an open field. During 1901, the site was occupied by a rectangular building along the north west boundary of site. During the mid to late 1920s, this building was extended eastwards with an additional small shed/ outbuilding located within the south eastern corner of site. During the late 1970's/early 1980's, these buildings were demolished with the construction of the purpose-built care home which has remained unchanged to present day. Present day and historical uses of the site have a number of potential contamination sources including Potential Made Ground and Car Parking Areas.
	Off-site	Historically, from the earliest map edition (1886), the surrounding area (<250m) has typically comprised of the main town 'Mere' situated to the north of site with residential buildings and town amenities. To the west and south approx. 100m/150m is a cemetery and graveyard. The area south of site largely comprises of fields/ arable farmland. In the 1940s through to 1950s, some residential expansion of the town Mere has occurred with associated infrastructure such as an electrical substation situated northwest of site approximately 20m. Present day and historical uses of the surrounding area have a number of potential contamination sources. However, given their distance, they are not considered to be influencing the site and risk from off site contamination sources is considered to be low.
	Gas Migration	Due to the absence of any influencing active or historic landfills, underlying organic material (e.g. peat) limited thickness of Made Ground, the presence of ground gas is unlikely.

Preliminary Human Health & Environmental Risk Assessment	The preliminary human health and environmental risk assessment has revealed that due to the sites and surrounding areas current and past land uses that a Low to Moderate risk is present from contamination present beneath the site, with particular risk specifically associated with Potential Made Ground and the car parking areas on site. In addition, a Low risk is present from the migration of radon gas, a Low risk from the migration of landfill gas and a Low risk from the migration of ground gas.
Recommendations	Based on a Low to Moderate overall risk rating, in order to confirm the above preliminary human health and environmental risk assessment it is recommended that a Phase 2 Ground Investigation is undertaken comprising site specific soil chemical testing in order to determine the ground conditions, soil chemistry and any environmental liability associated with the site.

2.2.1 Preliminary Illustrative Site Conceptual Model

The following illustration represents a theorised model through the site. The drawing is generalised and not to scale.



Drawing 2.2: Preliminary Site Conceptual Model

2.3 Previous Investigations

There have been three previous investigations at the site, as summarised below:

1. Terra Firma, PO-22-039/GIR, November 2022.

Geology		The Geological Map of the area shows the site to be underlain by the West Melbury Marly Chalk Formation, which the BGS describes as buff, grey and off-white, soft, marly chalk and hard grey limestone arranged in couplets. No Superficial Deposits are shown to overlie the bedrock geology of the area.				
Field Investigation		The site works were undertaken during September 2022 and comprised 4No. machine excavated trial pits, 3No. in-situ soakaway tests, 4No. in-situ CBR tests and 3No. Inspection pits. The ground conditions can be summarised as below:				
		Made Ground		0.00	0.20 / 1.00	- Concrete and subbase (<i>internal cores only</i>) - Dark brown slightly gravelly slightly sandy silty CLAY - Grey slightly sandy clayey GRAVEL with low cobble content
		Residual Soils	Cohesive	0.20 / 1.00	0.90 / 1.50	- Firm dark grey / grey mottled yellow brown slightly sandy to sandy slightly gravelly to gravelly CLAY
			Granular	0.90 / 1.50	> 2.10	- Medium dense light grey clayey GRAVEL with low to medium cobble content
		During the Ground Investigation no perched/deep groundwater was encountered.				
Contamination Risk Assessment	Chemical Evaluation	The results of the chemical testing have revealed elevations of Lead and Dibenzo(a,h)anthracene above the relevant soil guidance values. Therefore, remediation will be required across the site to render the site fit for use.				
	Human Health	A cover system will likely be the most appropriate form of remediation, comprising capping of the site with the building footprint, areas of hard standing and 600mm of inert suitable materials within proposed soft-landscaped areas. Alternatively, the made ground material can be removed to an appropriate landfill facility.				
	Aquatic Environment	Risk Assessment has confirmed low risk to the aquatic environs based on the chemical evaluation and environmental setting.				
	Gas Migration	There is a low risk to the site end users from ground/landfill gas and a low risk from radon gas where no radon protection measures are likely to be required.				
Engineering Recommendations	Foundation and Floor Slab Solution	Traditional strip/trench fill foundations should be founded within the granular Residual Soils comprising medium dense light grey clayey GRAVEL, with an allowable bearing capacity of 100kN/m ² at depths of typically between 0.90m and 1.50m bgl. Based on plasticity testing, to avoid damage from frost heave and thermal shrinkage, the base of the foundations should lie at least 0.90m below final ground level. Due to the plastic nature of the underlying deposits, floor slabs should be designed as suspended.				
	Storm Drainage	3No. in-situ permeability/soakaway test were undertaken at TP01, TP02 and TP03 locations in accordance with the requirements of BRE 365. The tests did not sufficiently drain to 75% to give an infiltration rate. Therefore, it is unlikely soakaways will be viable at the site.				
	Highways	It is recommended a CBR value of 4% is adopted for the natural cohesive soils at the site. Any new roads constructed upon on the existing Made Ground at the site should use a conservative CBR value of 1%.				

	Buried Concrete	Using guidance within BRE SD1 (2005) it is recommended that any buried concrete within the site conforms to Design Class DS-1 and ACEC Class AC-1s.
	Further Works	Due to access restrictions at the time of the ground investigation we were not able to access the southern parts of the site. As the geological map indicates that ground conditions may change close to the southern boundary it is recommendation that further investigation should be completed in this area in order to de-risk the site.

2. Terra Firma, PO-22-039/TN01, May 2023

An additional investigation was instructed to determine existing building foundations via no.10 hand dug inspection pits along the outside perimeter of the building.

A summary of the foundation depths (top and base where encountered) and the step out is presented below.

Hand Pit	Depth to Foundation [Base if located] (m bgl)	Step out from brick wall (m)	Founding Material
HP01	1.20 [N/A *]	0.35	N/A*
HP02	0.45 [0.65]	0.10	WMMCF
HP03	0.45 [N/A**]	0.10	WMMCF
HP04	0.70 [0.85]	0.10	WMMCF
HP05	0.60 [0.80]	0.25	WMMCF
HP06	0.45 [0.60]	0.15	WMMCF
HP07	0.50 [0.70]	0.25	WMMCF
HP08	0.20 [0.30]	0.20	WMMCF
HP09	0.70 [0.80]	0.15	WMMCF
HP10	0.50 [0.60]	0.15	WMMCF

Notes:

- * - The base of the foundation of founding material of HP01 was not located due to the depth being >1.20 m bgl and beyond reach with hand tools
- ** - The base of the foundation could not be proven due to a secondary layer of concrete at 1.00m bgl.
- WMMCF (West Melbury Marly Chalk Formation)

SECTION 3 Field Investigation

3.1 General

The site works were scoped by Skeletal Consulting Engineers and comprised the following:

- 14 No. mini percussive boreholes (WS01-WS14)
 - WS01-WS10 to determine parameters for foundation design
 - WS11-WS14 to undertake permeability tests
- 11 No. hand excavated trial pits (HDTP21-HDTP32)
 - To confirm details of existing foundations

The hand pit at location HP21 was not excavated due to the numerous pipes expected under the surface and also the hanging gas pipes from the ceiling.

The site works were carried out at the site between the 6th of January 2025 and the 14th of January 2025.

An additional phase of investigation was undertaken on the 18th November 2025 and comprised the following:

- 8 No. Hand excavated inspection pits (IP101 – IP108)

The purpose of this investigation was to obtain shallow soil samples for leachate testing to confirm the suitability for the use of permeable paving at the site.

Prior to the site works, the following Health and Safety measures were undertaken:

- Risk Assessment & Method Statement (RAMS) was issued and approved beforehand,
- Underground Utility Plans were obtained from the relevant Statutory Undertakers,
- Before any excavation, all exploratory hole locations were scanned using a Cable Avoidance Tool (CAT), and
- Before any drilling, a 1.20m deep inspection pit was excavated at each borehole location.

The exploratory holes were set out at locations provided by Skeletal Consulting Engineers and adjusted where necessary to take account of the site constraints detailed in Section 1.1.

Approximate exploratory hole co-ordinates and levels were picked up post-investigation using a hand-held Global Positioning System (GPS) receiver and presented in the table below:

Table 3.1: Exploratory Hole Co-ordinates		
Exploratory Hole	Easting	Northing
HP22	381297	132304
HP23	381296	132315
HP24	381312	132293
HP25	381302	132274
HP26	381294	132263
HP27	381271	132266
HP28	381273	132275
HP29	381282	132266
HP30	381290	132276
HP31	381303	132309
HP32	381304	132309

Table 3.1: Exploratory Hole Co-ordinates

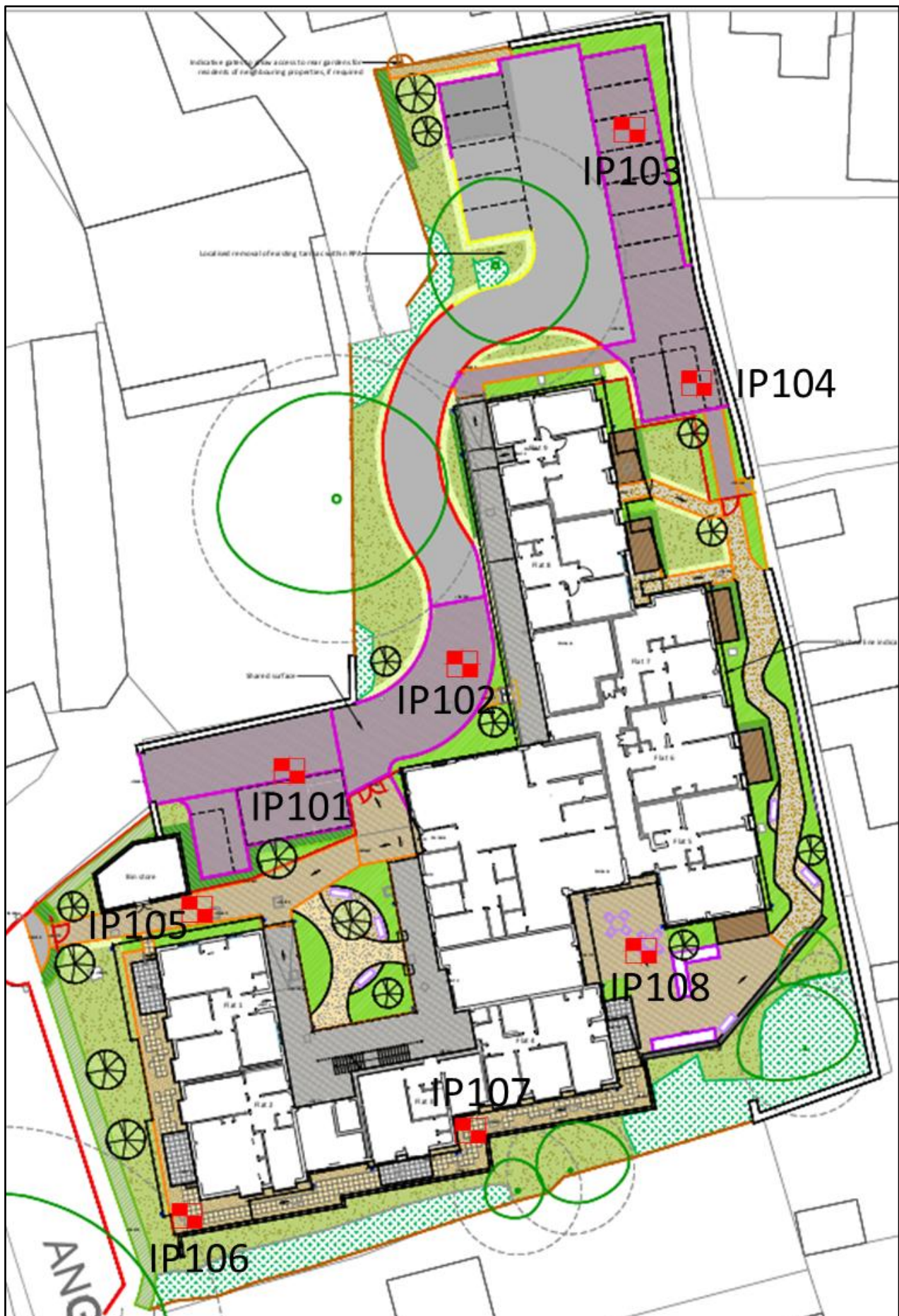
Exploratory Hole	Easting	Northing
WS01	381293	132290
WS02	381295	132304
WS03	381297	132317
WS04	381314	132293
WS05	381304	132273
WS06	381298	132263
WS07	381269	132265
WS08	381271	132275
WS09	381283	132267
WS10	381289	132276
WS11	381289	132328
WS12	381313	132308
WS13	381316	132270
WS14	381287	132302
IP101	381279	132289
IP102	381292	132298
IP103	381306	132339
IP104	381309	132317
IP105	381268	132276
IP106	381270	132255
IP107	381294	132260
IP108	381304	132276

The site works were supervised by Terra Firma, who also logged the exploratory holes to the requirements of BS5930:2015 + A1:2020.

The exploratory hole logs are presented in **Annex A** respectively, and their locations shown on **Drawing 3.1 and 3.2** below.



Drawing 3.1: Exploratory Hole Location Plan – January 2025



Drawing 3.2: Exploratory Hole Location Plan – November 2025

3.2 Exploratory Holes

3.2.1 Mini Percussive Boreholes

The windowless sampling boreholes were bored using a Competitor Dart drilling rig.

Due to the presence of surface hard standing a concrete corer attachment or hydraulic breaker was used where necessary to progress drilling.

The windowless boreholes were used to recover soil samples. Standard Penetration Tests using either a split spoon or solid cone (SPT(S/C)) were undertaken at regular depths during the drilling in accordance with BS EN ISO 22476-3. Typically, tests were undertaken at the base of an inspection pit and every metre, a final test was undertaken at the base of each borehole.

All boreholes were backfilled and reinstated using arisings.

3.2.2 Hand Excavated Trial Pits

The hand excavated trial pits were sunk using conventional digging tools, limited to a maximum investigated depth of 1.20m and used to obtain shallow soil samples, and identify and log the buildings foundations.

HDTP22 to HDTP32 were used to expose existing foundations. Schematic drawings of these pits are given in **Annex D**.

IP01 to IP08 were excavated to obtain shallow soil samples from beneath the proposed permeable paving areas for leachate testing of the underlying contaminants.

Following completion of soil logging, in-situ testing and sampling, the hand excavated trial pits were backfilled using arisings and re-compacted as best as practicably possible using hand tools. In addition, matt line marking spray paint was used to highlight the areas around the holes.

3.3 In-situ Testing

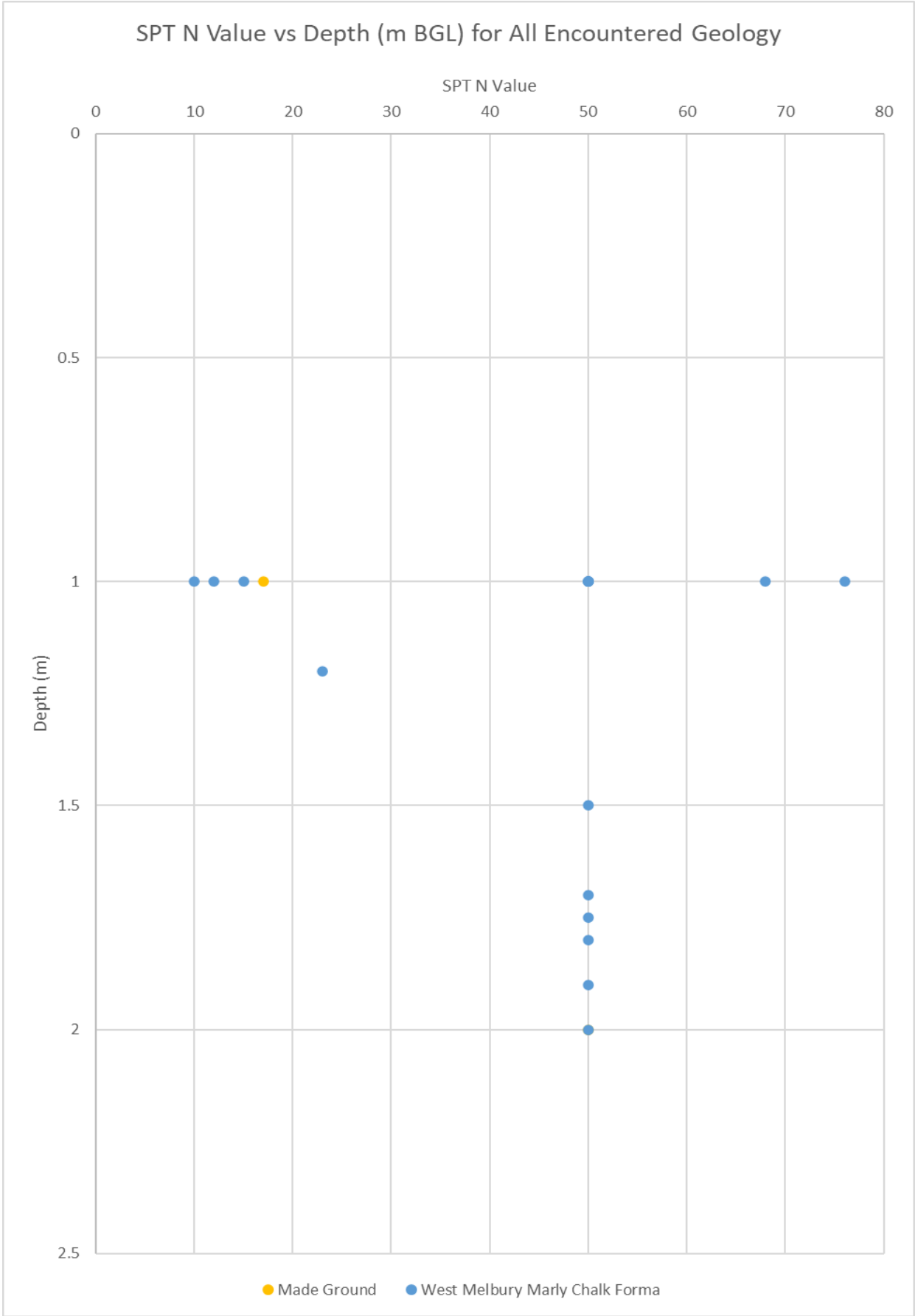
3.3.1 Strength Testing

Standard Penetration Tests (SPT)

SPT N Values taken within the Made Ground revealed an average N value of 33.5 (Range 17 to 50).

SPT N Values taken within the West Melbury Marly Chalk Formation revealed an average N value of 42 (Range 10 to 76).

Drawing 3.3 below presents the distribution of SPT N values against depth (mbgl).



Drawing 3.3: SPT vs Depth

The in-situ strength tests were carried out in accordance with ‘Methods of test for soils for civil engineering purposes – Part 9 (BS 1377): 1999’.

3.3.2 Permeability Testing

The in-situ permeability tests were undertaken within the boreholes, using large 25 litre jerry cans to rapidly fill the holes with water.

During the site investigation, in-situ permeability tests were undertaken within WS11, WS12, WS13, WS14 and where possible were carried out to the requirements of BS 5930:2015+A1:2020 (Section 7).

The appropriate calculation sheets are presented in **Annex B** and the results given in the table below.

Table 3.2: Infiltration Test Results				
Soak away Test	Depth (m)	Type	Soil Type	Infiltration Rate (m/s)
WS11	1.90	Storm Drainage	WWMCH	*
WS12	1.90		WWMCH	*
WS13	2.00		WWMCH	*
WS14	1.60		WWMCH	*

Notes:

- WWMCF (West Melbury Marly Chalk Formation)
- * The test did not drain sufficiently (75% effective depth) to give an infiltration rate

In June 2025, further investigation was undertaken to investigate the existing soakaways onsite and confirm their suitability for use. The existing soakaways are shown in the Drainage and Connectivity Drawing produced by Adler and Allan in June 2024. A copy of the drawing is given in **Annex B**.

Of the existing soakways investigated and tested, only one, SK4 was found to be operational. The results of the testing revealed 3rd cycle infiltration rate of 1.57×10^{-05} m/s.

An additional pit, SA01 adjacent existing soakaway SK1 was excavated and tested but did not drain sufficiently in accordance with BRE 365.

A copy of the above testing results from June 2025 are given in **Annex B**.

3.4 Sampling

3.4.1 Sampling Quality Assurance

Care was taken to ensure that sampling quality assurance occurred during site works. This included the following measures:

- The use of nitrile gloves at each sampling point.
- Stainless steel shovels were used to collect soil samples. The tool was cleaned with distilled water between each sample point.
- Soil samples were stored at a temperature below 4 degrees.
- Soil samples were stored within sample containers according to the chemical testing required.
- No head space was left in sample containers.

3.4.2 Soil Chemical Test Sampling Regime

During the intrusive investigation small disturbed soil samples were collected for chemical testing.

The sample locations and depths are illustrated in the table below:

Table 3.3: Chemical Test Sample Descriptions

Sample No.		Sample Type	Description
HP24	0.40	MG	Reddish brown clayey sandy GRAVEL of mixed lithologies
WS04	0.40	MG	Dark brown sandy slightly gravelly CLAY. Gravels is of mixed lithology.
WS06	0.10	MG	Multicoloured slightly clayey sandy GRAVEL. Gravel is of mixed lithology.
WS13	0.10	MG	Dark brown slightly gravelly slightly sandy silty CLAY with occasional rootlets. Gravel is of mixed lithology.
IP101	0.30	MG	Brown slightly gravelly, sandy CLAY
IP102	0.30	MG	Dark brown, slightly gravelly, sandy and CLAY
IP103	0.55	MG	Dark brown, slightly gravelly, sandy and CLAY
IP104	0.45	MG	Dark brown, slightly gravelly, sandy and CLAY
IP105	0.25	MG	Dark brown, slightly gravelly, sandy and CLAY
IP106	0.30	MG	Dark brown, slightly gravelly, sandy and CLAY
IP107	0.25	MG	Dark brown, slightly gravelly, sandy and CLAY
IP108	0.30	MG	Brown clayey, very gravelly SAND

Notes

- Sample Type: MG (Made Ground)

3.5 Existing Foundations

During the investigation 11No. hand dug trial pits were completed inside the existing Fives Court building. Hand pits were positioned, where possible, opposite the previous investigations outside inspection pits. Foundation sketch drawings are presented in **Annex D**.

A summary table showing the foundation depths and the step out is presented below:

Table 3.4: Summary of Foundation Depths

Hand Pit	Depth to Foundation [Base if located] (m bgl)	Step out from wall / window (m)
HP22	0.50	>0.33 (window)+
HP23	0.52	>0.34 (window)+
HP24	0.74	>0.33 (window)+
HP25	0.75	0.30 (wall)
HP26	0.42	>0.32 (window)+
HP27	0.45	>0.35 (window)+
HP28	++	++
HP29	0.78	0.30 (wall)
HP30	0.77	0.06 (wall)
HP31	0.75	>0.34 (window)+
HP32	0.40 [0.50]	0.20 (wall)

Notes:

- + Step out undetermined due to internal cavity wall restricting further excavation.
- ++ Foundation undetermined due to difficulty of excavation or lack of presence

SECTION 4 Ground Conditions

4.1 Summary

The ground conditions encountered by the exploratory holes were variable across the site and but can in general be summarised as shown in the following table:

Table 4.1: Summary of Ground Conditions					
Depth (mbgl)		Thickness (m)		Stratum	
From	To	Min	Max		
0.00	0.08 / 0.40	0.08	0.40	Grass over firm dark brown (mottled black) and light brown (slightly) sandy (slightly) gravelly CLAY	Topsoil
0.00 / 0.40	0.20 / 2.00	0.20	>2.00	Hard standing comprising CONCRETE underlain by dense reddish brown clayey sandy GRAVEL Firm (to stiff) dark (greyish) brown (mottled black) (mottled orange) and light brown (slightly) sandy (slightly) gravelly silty CLAY Loose (to medium dense) multicolored slightly clayey sandy GRAVEL	Made Ground
0.20 / 1.15	1.00 / 2.00	Unproven		Firm to very stiff light grey (slightly) sandy (slightly) gravelly CLAY Medium dense to very dense light brown slightly clayey sandy GRAVEL	West Melbury Marly Chalk Formation

Within trial pits, the estimated strength of granular deposits was determined from visual assessment only (ease/difficulty of excavation and pit stability).

4.2 Stability

The sides of the excavations were typically found to be stable.

Due to the hole stability casing was not needed to advance the boreholes.

4.3 Strata Details

4.3.1 Topsoil

The Topsoil layer was encountered within HP32, WS02, WS03, WS07, WS08, WS09, WS11, WS12, and WS14, although was absent within HP22 – HP31, WS01, WS04, WS05, WS06, WS10, and WS13.

4.3.2 Made Ground

The Made Ground was encountered within HP22 – HP32, WS01 – WS08, and WS10 – WS14 and all inspection pit locations IP101-IP108, although was absent within WS09 and WS12.

WS13 is situated on a mound within the southeastern portion of the site. The material visually appears as reworked natural material likely excavated from other sections of the site and stockpiled here.

Inside the building the stratum comprises a concrete floor slab varying in thickness followed by insulation foam.

The Made Ground within the external window sampling boreholes around the site comprised of varying portions sand and gravel within the CLAY including brick fragments. It is likely the majority of this is reworked material disturbed onsite during the construction of the building.

At HP22, HP23, HP24, HP26, HP27, and HP31 the holes drilled comprise of a concrete floor slab of varying thickness followed by a series of concrete and insulation foam layers which rested on top of a compacted granular subbase. Below the subbase, the cavity wall was exposed at several locations. The cavity wall comprised two walls of breeze blocks with subbase material between them. The founding depth along these walls is expected at the base of the cavity wall where a concrete hard standing was located terminating the excavation.

HP25, HP28, HP29, and HP30 did not show a cavity wall. These excavations comprised a concrete floor slab (0.25m – 0.35m thick) followed by compacted subbase comprising medium dense to dense reddish brown clayey sandy GRAVEL with occasional cobbles. Within these exploratory holes the foundations were visible and recorded.

In HP25 beneath the reddish-brown GRAVEL a stiff greyish brown mottled reddish brown sandy gravelly CLAY was found to a depth of 0.75 m bgl where the hole was terminated.

4.3.3 West Melbury Marly Chalk Formation

The West Melbury Marly Chalk Formation were encountered within WS01, WS12 and WS14, although was absent within HP22 – HP32 and WS13.

The underlying bedrock geology was recovered as stiff to very stiff light grey sandy gravelly CLAY that graded into a medium dense to very dense light brown slightly clayey sandy GRAVEL. Most window sampling boreholes had refusals (N value >50) at ~1.00 m bgl as well as observable difficulty to drill through the granular natural material.

4.4 Water Strikes

No groundwater was encountered within any of the exploratory hole locations.

SECTION 5 Laboratory Chemical Testing

5.1 General

During the recent site works, four soil samples were taken and dispatched to the laboratories of Chemtest for laboratory chemical testing.

The following chemical testing was undertaken:

Table 5.1: Summary of Chemical Testing Suites		
Inorganics	Metals	Arsenic (As), Cadmium (Cd), Chromium (Cr), Hexavalent Chromium (CrVI), Copper (Cu), Lead (Pb), Mercury (Hg), Nickel (Ni), Selenium (Se), Zinc (Zn)
	General	pH (acidity), Cyanide (CN ⁻), Sulphate (SO ⁴), Organic Matter (OM)
Organics		Phenol Poly-Aromatic Hydrocarbons (PAH) Petroleum Hydrocarbons (PH): CWG
Miscellaneous		Asbestos ID / Quantification

The results of the above chemical tests are presented in **Annex C** and evaluated below.

5.2 Evaluation of Analytical Results

5.2.1 Soils

A summary of the Inorganic (Metals) soil chemical test results is shown in the table below.

Table 5.2: Soil Chemical Test Results – Inorganics (Metals)					
Substance	Land Use / Guideline Values (mg/kg)	Measured Levels of Substances (mg/kg)		Number of exceedances	95% UCL
	R wo HP	Min	Max		
Arsenic	40	4.1	28	0	-
Cadmium	150	0.2	7.2	0	-
Chromium	910	7.1	27	0	-
Chromium III	910	7.1	27	0	-
Chromium VI	21	<0.5	0.54	0	-
Copper	7100	4.5	93	0	-
Lead	310	12	310	0	-
Mercury (Total)	56	<0.05	0.37	0	-
Nickel	180	5.0	26	0	-
Selenium	430	0.32	0.69	0	-
Zinc	40000	30	1000	0	-

Notes

- C4SL - Provisional Category 4 Screening Levels
- S4UL - Suitable for Use Levels
- RwoHP (Residential without Home-grown Produce)
- A total of 12 representative soil samples were tested for these substances

A summary of the Inorganic (General) soil chemical test results is shown in the table below.

Table 5.3: Soil Chemical Test Results – Inorganics (General)

Substance	Land Use / Guideline Values (mg/kg)	Measured Levels of Substances (mg/kg)		Number of exceedances	95% UCL
	R wo HP	Min	Max		
pH (pH Units)	Considered in BRE SD1, BS3882, BS8601 and/or UKWIR	8.1	12	0	-
Cyanide (Total)	8	<0.1	<0.5	0	-
Organic Matter	Considered in Organic Contaminant Guideline Value Assessment, BS3882 and/or BS8601	0.7	7	0	-
Sulphate (Total) (%)	Considered in BRE SD1	<0.01	0.16	0	-

Notes

- **SGV** - Soil Guideline Value
- BRE SD1: 2005 - Concrete in Aggressive Ground
- BS 3882: 2015 - Specification for Topsoil
- BS 8601: 2013 - Specification for Subsoil and requirements for use
- UKWIR – Guidance for the Selection of Water Supply Pipe to be used in Brownfield Sites: 2010
- RwoHP (Residential without Home-grown Produce)
- A total of 12 representative soil samples were tested for these substances

A summary of the Organic (General) soil chemical test results is shown in the table below.

Table 5.4: Soil Chemical Test Results – Organics (General)

Substance		Land Use / Guideline Values (mg/kg)	Measured Levels of Substances (mg/kg)		Number of exceedances	95% UCL
		R wo HP	Min	Max		
SOM						
Total Phenol	1	440	<0.1	1.5	0	-
	2.5	690			0	
	6	1200			0	
Total PAH*		-	<2	9.5	-	-
Total EPH _(C10-C40) **	1	130++	<10	130	0	-
	2.5	330++			0	
	6	770++			0	

Notes

- **S4UL** - Suitable for Use Levels
- RwoHP (Residential without Home-grown Produce)
- SOM - Soil Organic Matter
- * Total PAH - Poly-Aromatic Hydrocarbons, EPA 16 (See Speciated PAH Results Table)
- ** Total EPH – Extractable Petroleum Hydrocarbons, Ali/Aro
- - No comparable Guideline Value
- A total of 12 representative soil samples were tested for these substances

In order to accurately assess the risk from Total PAH, speciation was undertaken, which splits the total PAH concentration into its sixteen components.

A summary of the Organic (Speciated PAH) soil chemical test results is shown in the table below.

Table 5.5: Soil Chemical Test Results – Organics (Speciated PAH)

Substance	SOM	Land Use / Guideline Values (mg/kg)	Measured Levels of Substances (mg/kg)		Number of exceedances	95% UCL
		R wo HP	Min	Max		
Naphthalene	1	2.3	<0.1	<0.1	0	-
	2.5	5.6			0	
	6	13			0	
Acenaphthylene	1	2900	<0.1	<0.1	0	-
	2.5	4600			0	
	6	6000			0	
Acenaphthene	1	3000	<0.1	<0.1	0	-
	2.5	4700			0	
	6	6000			0	
Fluorene	1	2800	<0.1	<0.1	0	-
	2.5	3800			0	
	6	4500			0	
Phenanthrene	1	1300	<0.1	1.4	0	-
	2.5	1500			0	
	6	1500			0	
Anthracene	1	31000	<0.1	0.33	0	-
	2.5	35000			0	
	6	37000			0	
Fluoranthene	1	1500	<0.1	1.5	0	-
	2.5	1600			0	
	6	1600			0	
Pyrene	1	3700	<0.1	1.4	0	-
	2.5	3800			0	
	6	3800			0	
Benzo(a)anthracene	1	11	<0.1	0.81	0	-
	2.5	14			0	
	6	15			0	
Chrysene	1	30	<0.1	2.3	0	-
	2.5	31			0	
	6	32			0	
Benzo(b)fluoranthene	1	3.9	<0.1	0.74	0	-
	2.5	4			0	
	6	4			0	
Benzo(k)fluoranthene	1	110	<0.1	0.19	0	-
	2.5	110			0	
	6	110			0	
Benzo(a)pyrene		5.3	<0.1	0.84	0	-
Indeno(1,2,3-cd)pyrene	1	45	<0.1	0.06	0	-
	2.5	46			0	
	6	46			0	
Dibenzo(a,h)anthracene	1	0.31	<0.1	<0.1	0	-
	2.5	0.32			0	
	6	0.32			0	
Benzo(g,h,i)perylene	1	360	<0.1	0.06	0	-

Table 5.5: Soil Chemical Test Results – Organics (Speciated PAH)

Substance	Land Use / Guideline Values (mg/kg)		Measured Levels of Substances (mg/kg)		Number of exceedances	95% UCL
	SOM	R wo HP	Min	Max		
	2.5	360			0	
	6	360			0	

Notes

- C4SL - Provisional Category 4 Screening Levels
- S4UL - Suitable for Use Levels
- RwoHP (Residential without Home-grown Produce)
- SOM - Soil Organic Matter
- A total of 12 representative soil samples were tested for these substances

A summary of the Miscellaneous (Asbestos) soil chemical test results is shown in the table below.

Table 5.6: Soil Chemical Test Results – Miscellaneous (Asbestos)

Sample No.		ID Result
HP24	0.40	No Asbestos Detected
WS04	0.40	No Asbestos Detected
WS13	0.10	No Asbestos Detected
WS06	0.10	No Asbestos Detected

5.2.2 Leachate

A summary of the Inorganic (Metals) leachate chemical test results is shown in the table below.

Table 5.7: Leachate Chemical Test Results – Inorganics (Metals)

Substance	Guideline Values (ug/l)	Measured Levels of Substances (ug/l)		Number of exceedances
		Min	Max	
Arsenic	50 (AA)	0.66	4.7	0
Cadmium	0.08 - 0.25 (AA)	<0.03	<0.03	BDL
Chromium III	4.7 (AA)	<0.25	3.2	0
Chromium VI	3.4 (AA)	<7	<7	BDL
Copper	1 (bioavailable)	1	3.3	7
Lead	1.2 (AA bioavailable) – 14 (MA)	0.22	4.9	5
Mercury (Total)	0.07 (MA)	<0.01	0.02	0
Nickel	4 (AA bioavailable) – 34 (MA)	<0.5	0.8	0
Selenium	10	<0.25	1.3	0
Zinc	10.9 (bioavailable)	1.6	12	3

Notes

- EQS – Environmental Quality Standards for Freshwater: AA (Annual Average) / MA (Maximum Allowable)
- DWS – UK Drinking Water Standards
- BDL – Below Detection Limits
- A total of 8 representative soil samples were tested for these substances

A summary of the Inorganic (General) leachate chemical test results is shown in the table below.

Table 5.8: Leachate Chemical Test Results – Inorganics (General)

Substance	Guideline Values (ug/l)	Measured Levels of Substances (ug/l)		Number of exceedances
		Min	Max	
pH (pH Units)	-	7.9	9.2	-
Cyanide (Total)	1 (AA) – 5 (MA)	<40	<40	BDL
Dissolved Organic Carbon	-	5.2	11	-
Sulphate (Total) (mg/l)	400	3.1	7.8	0
Water Hardness (mg/l)	-	5.28	111	-

Notes

- EQS – Environmental Quality Standards for Freshwater: AA (Annual Average) / MA (Maximum Allowable)
- BDL – Below Detection Limits
- - No comparable Guideline Value
- A total of 8 representative soil samples were tested for these substances

A summary of the Organic (General) leachate chemical test results is shown in the table below.

Table 5.9: Leachate Chemical Test Results – Organics (General)				
Substance	Guideline Values (ug/l)	Measured Levels of Substances (ug/l)		Number of exceedances
		Min	Max	
Total Phenol	7.7 (AA) – 46 (MA)	<100	<100	BDL
Total PAH*	-	<0.2	0.39	-
Total EPH (C10-C40)	10 (LoD)	<10	<10	0

Notes

- * Total PAH - Poly-Aromatic Hydrocarbons, EPA 16 (See Speciated PAH Results Table)
- BDL – Below Detection Limits
- LoD – Limit of Detection
- - No comparable Guideline Value
- A total of 8 representative soil samples were tested for these substances

In order to accurately assess the risk from Total PAH, speciation was undertaken, which splits the total PAH concentration into its sixteen components.

A summary of the Organic (Speciated PAH) leachate chemical test results is shown in the table below.

Table 5.10: Leachate Chemical Test Results – Organics (Speciated PAH)				
Substance	Guideline Values (ug/l)	Measured Levels of Substances (ug/l)		Number of exceedances
		Min	Max	
Naphthalene	2 (AA)	<0.05	0.22	0
Acenaphthylene	*	<0.01	<0.01	BDL
Acenaphthene	*	<0.01	0.06	-
Fluorene	*	<0.01	0.04	-
Phenanthrene	*	0.01	0.04	-
Anthracene	0.1 (AA)	<0.01	0.02	0
Fluoranthene	*	0.01	0.05	-
Pyrene	*	0.01	0.04	-
Benzo(a)anthracene	*	<0.01	0.02	-

Table 5.10: Leachate Chemical Test Results – Organics (Speciated PAH)

Substance	Guideline Values (ug/l)	Measured Levels of Substances (ug/l)		Number of exceedances
		Min	Max	
Chrysene	*	<0.01	0.03	-
Benzo(b)fluoranthene	0.00017 (AA) * / 0.017 (MA)	<0.01	0.05	All
Benzo(k)fluoranthene	0.00017 (AA) * / 0.017 (MA)	<0.01	0.02	All
Benzo(a)pyrene	0.00017 (AA) * / 0.27 (MA)	<0.01	0.04	All
Indeno(1,2,3-cd)pyrene	*	<0.01	0.03	-
Dibenzo(a,h)anthracene	*	<0.01	<0.01	BDL
Benzo(g,h,i)perylene	0.00017 (AA) / 0.0082 (MA)	<0.01	0.04	All

Notes

- EQS – Environmental Quality Standards for Freshwater: AA (Annual Average) / MA (Maximum Allowable)
- * Benzo(a)pyrene considered as a marker
- BDL – Below Detection Limits
- A total of 8 representative soil samples were tested for these substances

5.4 Contaminants of Concern in Soils

5.4.1 Soils

Contaminants of concern are those where the measured concentrations and 95% Upper Confidence Limit exceeds the relevant Tier 1 CLEA Soil Guideline Value or CIEH Generic Assessment Criteria.

It can be seen from Tables 5.2 to 5.6 that no additional contaminants were encountered within this investigation and the recommendations for contamination outlined within the previous Ground Investigation Report by Terra Firma (PO-22-039/GIR) in November 2022 should be adhered to.

5.4.2 Leachate

It can be seen from Tables 5.7 to 5.10 that Copper, Lead, Zinc, and PAHs are all potentially elevated above the regulatory guidelines for surface water concentrations. Further evaluation and risk assessment of these contaminants is discussed in Section 6.

SECTION 6 Qualitative Risk Assessment/Mitigation Measures

This investigation found no further elevated soil contaminants across the site and therefore, the recommendations for contamination outlined in the previous Ground Investigation Report by Terra Firma (PO-22-039/GIR) in November 2022 should be adhered to. Recorded leachable concentrations that exceeded Environmental Quality Standards for surface water are addressed separately in Section 6.2. A summary of soil recommendations is given below.

6.1 Human Health Risks

A Qualitative Risk Assessment on the potential human health effects is detailed in Table 6.1 below:

Table 6.1: Human Health Risk Assessment				
Source	Pathway	Target	Risk Assessment	Mitigation Measures
Made Ground	Dermal contact with soil/dust. Inhalation and ingestion of soil/soil dust	Construction workers	Low Risk with protection measures	COSHH assessment and good level of PPE/ hygiene by site workers/ staff; dust suppression measures if required
Made Ground	Dermal contact with soil/dust. Inhalation and ingestion of soil/soil dust	Neighbouring site occupants, Passers-by	Low Risk during excavation phase of development and on completion	Site screening and dust suppression measures if required
Made Ground	Dermal contact with soil/dust. Inhalation and ingestion of soil/soil dust	Site end users	Low Risk with remediation	Capping of the site with the building footprint, areas of hardstanding and 600mm of clean inert material in soft landscaped areas is required
Landfill and Ground Gas	Inhalation	Site end users	Low Risk	No historic or active landfills within 250m of the site.
Radon Gas	Inhalation	Site end users	Low Risk	No Radon protective measures are required.
Made Ground	Permeation of water pipes	Site end users	Low Risk	All chemical lab results to be forwarded to the water provider to assess pipe specification. Made Ground within service trenches should be removed and replaced with clean fill.

6.2 Risks to the Aquatic Environment

Surface water run-off/leaching into the groundwater/groundwater transport

1. Short-term

In respect of physical effects of the site works during the construction period, there is a very low risk to the environment/adjacent land and water bodies from digging foundations, moving contaminated soil, runoff from construction materials and/or exposed ground, wheel washings and oil or chemical spills.

All adverse effects should however be preventable by due diligence to good construction practice and housekeeping in preventing surface runoff and the spillage of materials. The basic measures that should be taken are as follows:

- Prepare a drainage plan
- Carry out any activities that could cause pollution in a designated, bunded area, away from rivers or boreholes
- Use settlement ponds to remove silty water;
- Store all oils and chemicals in a fully bunded area to prevent leaks or spills

It should be noted that the appointed contractor should provide Method Statements and Risk Assessments to deal with these matters.

2. Long-term

The chemical analysis of soil beneath the site constitutes a Level 2 assessment in terms of Remedial Targets Methodology, where the primary receptor/compliance point is the groundwater.

Leachate chemical testing has been undertaken revealing marginally elevated concentrations of certain bioavailable heavy metals and PAHs in the areas proposed for permeable paving when compared to EQS values.

There is not a direct correlation between soil leachate contaminant concentrations and EQS value concentration thresholds in surface water due to the following:

- 1) Leachable concentrations in a laboratory environment are not duplicated by rainwater infiltration
- 2) Dilution of leachable concentrations will result when rainwater mobilises leachable contaminants into soil pore space, and eventually into groundwater
- 3) Dispersion of leachable contaminants is likely to occur during normal wetting and drying periods
- 4) Attenuation will occur over time where soil concentrations will decrease as leaching occurs

In addition, EQS values for bioavailable heavy metals concentrations are based on a range of values dependent upon water hardness. Water hardness testing has, as a majority, shown the values across the site to be 'High' as expected given the underlying geology of the West Melbury Marly Chalk Formation. On that basis, the "worst case" value for metals is not applicable. For example, given the highest recorded concentration of copper is 3.3 ug/l which is only marginally above the EQS value and given the water hardness as high, it is very unlikely that following dilution, dispersion, and attenuation the groundwater receptor will be adversely affected.

Similarly for PAHs, maximum recorded concentrations were between 0.02 ug/l and 0.06 ug/l. Given the levels encountered are only marginally elevated when compared to EQS values, when considering the effects of dilution, dispersion, and attenuation, it is considered the risk from PAHs on groundwater is also very low.

With respect to the underlying Principal Aquifer as the receptor of concern, the following factors should also be considered:

1. Concentrations of contaminants of concern when reaching groundwater are likely to be significantly below the relevant EQS values following dilution, dispersion, and natural attenuation
2. Distance to the nearest surface water body (inland river, 165m SW).
3. There are no groundwater, surface water or potable water abstraction licenses within 250m of the site.

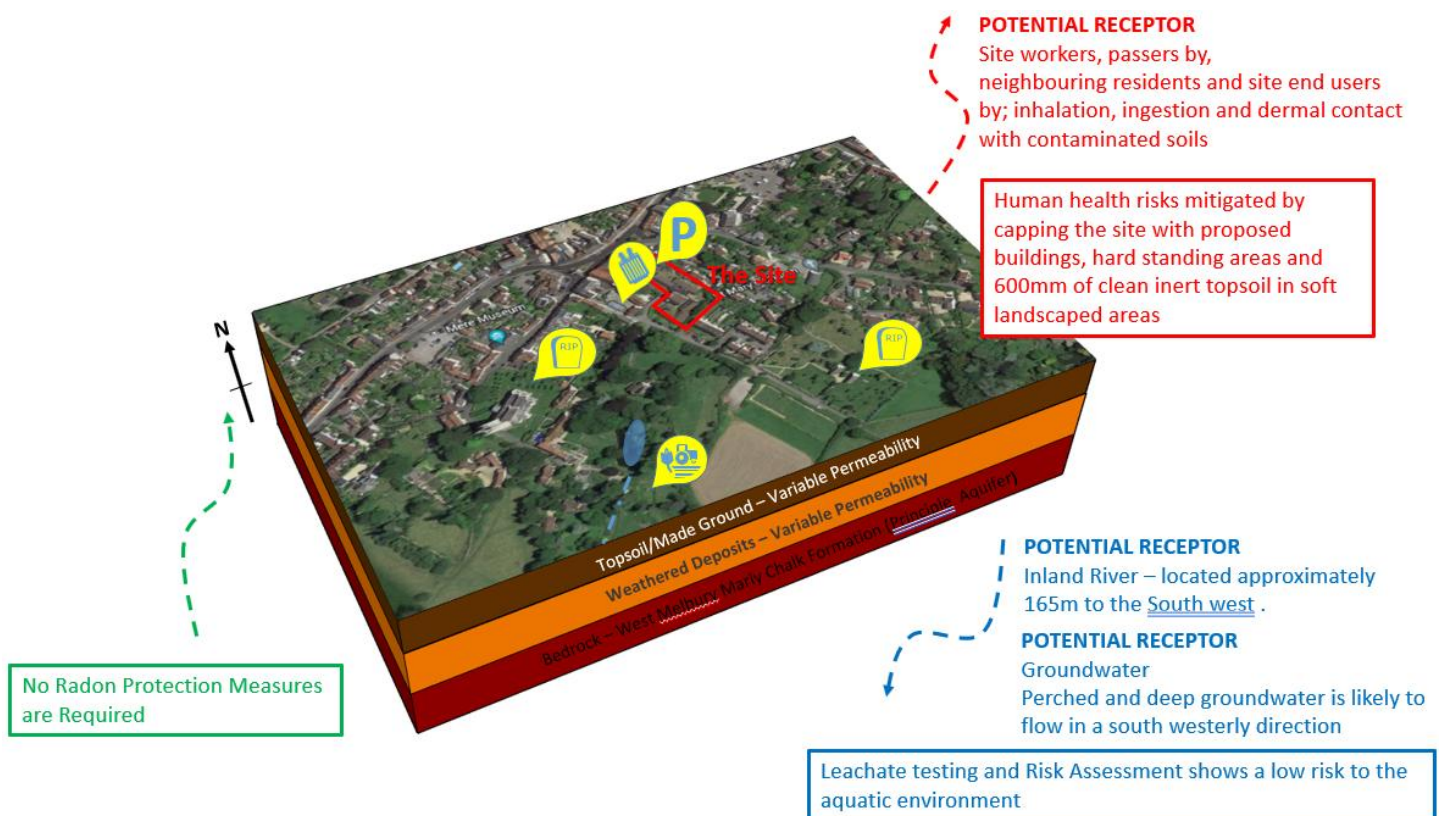
It is therefore considered that there is likely to be a low risk to the aquatic environment and that the next level of assessment (Level 3) is not required, given the environmental setting detailed above.

A Qualitative Risk Assessment on the potential effects to the aquatic environment is detailed in Table 6.2 below:

Table 6.2: Risks to the Aquatic Environment				
Source	Pathway	Target	Risk Assessment	Mitigation Measures
Made Ground	Surface water run-off	Surface Water	Low Risk due to the environmental setting and low concentrations identified.	Not Applicable
	Leaching into Groundwater	Groundwater	Reduced risk of contaminant migration and deep transmission is due to the installation of drainage systems and the effect of natural dilution and attenuation.	
Made Ground	Leaching into Groundwater	Groundwater	Low Risk during construction and excavation phase of development	Measures to avoid accidental spillage of materials during earthmoving activities, and to control surface run off

6.3 Site Conceptual Model

A schematic cross-section of the site is presented below. The cross section is based on the information available from the recent desk study and site investigation. The model is schematic and not to scale.



Drawing 6.1: Revised Site Conceptual Model

6.4 Limitations of the Site Conceptual Model

The areas of uncertainty within the conceptual site model are:

- Presence of and composition of the groundwater within the bedrock
- Direction of groundwater flow

SECTION 7 Engineering Recommendations

Engineering recommendations have been outlined in the previous Ground Investigation Report by Terra Firma (PO-22-039/GIR) in November 2022 should be adhered to with the below additions.

7.1 Correlation of Foundations

An assessment between the foundation depths and dimensions from the previous investigation in November 2022 and their corresponding inside foundation was requested to confirm the structural engineering requirements of the new development.

A table summarising the foundation details is presented below:

Table 7.1 Correlation of Founding Depths						
Current Investigation			Previous Investigation (November 2022)			
Hand Pit	Depth to Foundation [Base if located] (m bgl)	Step out from wall / window (m)	Hand Pit	Depth to Foundation [Base if located] (m bgl)	Step out from brick wall (m)	Founding Material
HP21	*	*	HP01	>1.20 **	0.35	**
HP22	0.50	>0.33 (window)+	HP02	0.45 [0.65]	0.10	WMMCF
HP23	0.52	>0.34 (window)+	HP03	0.45 [>1.00] ***	0.10	WMMCF
HP24	0.74	>0.33 (window)+	HP04	0.70 [0.85]	0.10	WMMCF
HP25	0.75	0.30 (wall)	HP05	0.60 [0.80]	0.25	WMMCF
HP26	0.42	>0.32 (window)+	HP06	0.45 [0.60]	0.15	WMMCF
HP27	0.45	>0.35 (window)+	HP07	0.50 [0.70]	0.25	WMMCF
HP28	++	++	HP08	0.20 [0.30]	0.20	WMMCF
HP29	0.78	0.30 (wall)	HP09	0.70 [0.80]	0.15	WMMCF
HP30	0.77	0.06 (wall)	HP10	0.50 [0.60]	0.15	WMMCF
HP31	0.75	>0.34 (window)+				
HP32	0.40 [0.50]	0.20 (wall)				

Notes:

- + Step out undetermined due to internal cavity wall
- ++Foundation undetermined due to difficulty of excavation or lack of presence
- * Unable to excavate due to presence of electric and gas utilities
- ** - The base of the foundation of founding material of HP01 was not located due to the depth being >1.20 m bgl and beyond reach with hand tools
- *** - The base of the foundation could not be proven due to a secondary layer of concrete at 1.00m bgl.
- WMMCF (West Melbury Marly Chalk Formation)

Current design proposals are to add an additional storey to the exiting building utilising existing foundations.

It is determined a traditional strip/trench fill foundation design was used throughout the existing building. Based on the near centric foundations observed in HP25/HP05, HP29/HP09, HP30/HP10. It is expected the remaining foundations across the site follow the same principle.

The outside inspection pits determined the foundations are founded on the West Melbury Marly Chalk Formation.

For hand dug trial pits inside the building which are situated across the cavity wall, the top of the foundation is aligned with the top of the foundations observed from the corresponding outside inspection pits, with minor differences for the internal floor elevations compared to outside. As a result, it is assumed the foundation founding depths are aligned.

With the additional information gathered from this investigation, it is recommended that an allowable bearing capacity of **150kN/m²** can be used for the foundations founded within the West Melbury Marly Chalk Formation for the majority of the existing building and any new foundations proposed.

However, the western elevation of the northern arm of the building covered by WS02 of this report, should have a reduced bearing resistance of 100 kN/m² due to softer upper horizons encountered within the West Melbury Marly Chalk Formation in this area. Within HP02 it was noted that an unmapped drainage pipe was present and therefore it may be prudent to undertake a further drainage survey along this run to confirm it is not leaking and causing the ground to soften.

7.2 Storm Drainage

Four in-situ permeability/soakaway tests were undertaken at four locations in accordance with the requirements of BS 5930:2015+A1:2020 (Section 7).

The tests did not drain sufficiently to give an infiltration rate. Therefore, it is unlikely soakaways will be viable at the site.

This coincides with the previous findings in November 2022 where testing in accordance with BRE 365 was undertaken.

Annex A: Exploratory Hole Logs

 Consulting Geo-Technical & Geo-Environmental Engineers Site Investigation Contractors				The Slate Barn, Lower Lowley, Dunsford, Exeter, EX6 7BP 01647 252414 www.terrafirmasouth.co.uk				Borehole No. C02 Sheet 1 of 1			
Project Name Fives Court, Mere				Project No. PO-22-039		Date 15/09/2022 to 15/09/2022		Hole Type WLS			
Client Wiltshire County Council				Co-ords E: 381306.00 N: 132297.00 L:		Water Strike Details Depth StrikeTime ElapsedRose To			Logged By		
Contractor Portsmouth Diamond Drilling			Plant Used					Approved By			
								Scale 1:50			
Samples and Results			Depth, (Thickness)		Level		Stratum Description			LegendWell	
ResultsTypeDepth			(0.23) 0.23 (0.02) 0.25				MADE GROUND: Concrete. Layer one 70mm. Layer two - 160mm. 0 MADE GROUND: subbase - greyish brown slightly sandy clayey GRAVEL. Gravel is subangular fine to coarse of limestone. 0 End of Borehole at 0.25m				
			1								
			2								
			3								
			4								
			5								
			6								

Remarks	Borehole Diameter	
	Base Depth	Diameter

Notes: For all symbols and abbreviations please see key sheet. All depths and measurements in metres. Stratum thicknesses given in brackets.

Samples and Results			Depth, (Thickness)	Level	Stratum Description	Legend	Well
Results	Type	Depth					
			(0.24) 0.24 (0.02) 0.26		MADE GROUND: Concrete. Layer one 60mm unbound from layer below. Layer two - 180mm. MADE GROUND: subbase - greyish brown slightly sandy clayey GRAVEL. Gravel is subangular fine to coarse of limestone.		
			1				
			2				
			3				
			4				
			5				
			6				

Remarks	Borehole Diameter	
	Base Depth	Diameter
Notes: For all symbols and abbreviations please see key sheet. All depths and measurements in metres. Stratum thicknesses given in brackets.		

 Consulting Geo-Technical & Geo-Environmental Engineers Site Investigation Contractors					The Slate Barn, Lower Lowley, Dunsford, Exeter, EX6 7BP 01647 252414 www.terrafirmasouth.co.uk					Borehole No. C04 Sheet 1 of 1	
Project Name Fives Court, Mere				Project No. PO-22-039		Date 15/09/2022 to 15/09/2022			Hole Type WLS		
Client Wiltshire County Council				Co-ords E: 381297.00 N: 132280.00 L:		Water Strike Details Depth StrikeTime ElapsedRose To			Logged By		
Contractor Portsmouth Diamond Drilling			Plant Used					Approved By			
								Scale 1:50			
Samples and Results			Depth, (Thickness)		Level		Stratum Description			LegendWell	
Results			Type		Depth						
			(0.26) 0.26 (0.02) 0.28				MADE GROUND: Concrete. Layer one 65mm unbound from layer below. Layer two - 190mm. MADE GROUND: subbase - greyish brown slightly sandy clayey GRAVEL. Gravel is subangular fine to coarse of limestone. End of Borehole at 0.28m				
			1								
			2								
			3								
			4								
			5								
			6								

Remarks		Borehole Diameter	
		Base Depth	Diameter

Notes: For all symbols and abbreviations please see key sheet. All depths and measurements in metres. Stratum thicknesses given in brackets.

Samples and Results			Depth, (Thickness)	Level	Stratum Description	Legend	Well
Results	Type	Depth					
			(0.23) 0.23 (0.02) 0.25		MADE GROUND: Concrete. Layer one 60mm unbound from layer below. Layer two - 180mm. MADE GROUND: subbase - greyish brown slightly sandy clayey GRAVEL. Gravel is subangular fine to coarse of limestone. End of Borehole at 0.25m		
			1				
			2				
			3				
			4				
			5				
			6				

Project Name Fives Court, Mere		Project No. PO-22-039	Date 15/09/2022 to 15/09/2022		Hole Type TP
Client Wiltshire County Council		Co-ords E: 381314.00 N: 132302.00 L:	Water Strike Details		Logged By AS
			Depth Strike	Remarks	
Contractor SW-Hire	Plant Used Tracked 5T excavator				Approved By PS
					Scale 1:50

Samples and Results			Depth, (Thickness)	Level	Stratum Description	Legend
Results	Type	Depth				
	D B ES	0.30 0.40 - 0.50 0.40 - 0.50	(0.50) 0.50 (0.30)		MADE GROUND: Grass over dark brown slightly gravelly slightly sandy silty CLAY with occasional roots (max diameter 6cm). (Made Ground)	
	B	0.80	0.80 (0.20) 1.00	1	Dark grey slightly gravelly slightly sandy silty CLAY. Gravel is angular to subrounded fine to coarse of limestone/ mudstone. (Residual Soils) Firm to stiff grey mottled orange brown slightly sandy CLAY with fine gravel sized organic inclusions. (Residual Soils)	
	B	1.40	(1.10) 2.10	2	Medium dense light grey clayey GRAVEL with low to medium cobble content. Gravel is subangular to subrounded fine to coarse of limestone. (Residual Soils)	
					End of Trial Pit at 2.10m	
				3		
				4		

Remarks Trial pit refused on limestone at 2.10m	0.50m 2.00m Final Depth 2.10m
Pit Stability: STABLE	
Notes: For all symbols and abbreviations please see key sheet. All depths and measurements in metres. Stratum thicknesses given in brackets.	

Project Name Fives Court, Mere		Project No. PO-22-039	Date 15/09/2022 to 15/09/2022		Hole Type TP
Client Wiltshire County Council		Co-ords E: 381298.00 N: 132318.00 L:	Water Strike Details		Logged By AS
			Depth Strike	Remarks	
Contractor SW-Hire	Plant Used Tracked 5T excavator				Approved By PS
					Scale 1:50

[illegible]

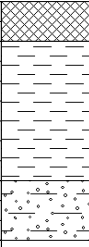
Remarks

Trial pit refused on limestone at 1.80m

Pit Stability:	STABLE
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Notes: For all symbols and abbreviations please see key sheet. All depths and measurements in metres. Stratum thicknesses given in brackets.

Diagram showing a rectangular area with dimensions 2.00m (width) and 0.60m (height). The width is labeled "Final Depth" and "1.80m" below it.

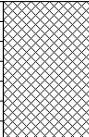
 Consulting Geo-Technical & Geo-Environmental Engineers Site Investigation Contractors				The Slate Barn, Lower Lowley, Dunsford, Exeter, EX6 7BP 01647 252414 www.terrafirmasouth.co.uk				Borehole No. TP03 Sheet 1 of 1	
Project Name Fives Court, Mere				Project No. PO-22-039		Date 15/09/2022 to 15/09/2022		Hole Type TP	
Client Wiltshire County Council				Co-ords E: 381281.00 N: 132275.00 L:		Water Strike Details Depth Strike Remarks		Logged By AS	
Contractor SW-Hire				Plant Used Tracked 5T excavator				Approved By PS	
								Scale 1:50	
Samples and Results			Depth, (Thickness)	Level	Stratum Description	Legend			
Results	Type	Depth							
	B ES B	0.40 0.40 - 0.60 0.80	(0.20)	1	MADE GROUND: Grass over dark brown slightly gravelly slightly sandy silty CLAY(Made Ground)				
			0.20		Firm grey and cream slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of limestone. (Residual Soils)				
			(0.70)						
			0.90		Medium dense light grey clayey GRAVEL with low to medium cobble content. Gravel is subangular to subrounded fine to coarse of limestone. (Residual Soils)				
			(0.30)		End of Trial Pit at 1.20m				
			1.20						
Remarks Trial pit refused on limestone at 1.20m									
Pit Stability: STABLE									
Notes: For all symbols and abbreviations please see key sheet. All depths and measurements in metres. Stratum thicknesses given in brackets.									

0.50m

1.90m

Final Depth 1.20m

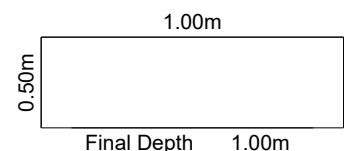
Project Name Fives Court, Mere		Project No. PO-22-039	Date 15/09/2022 to 15/09/2022		Hole Type TP
Client Wiltshire County Council		Co-ords E: 381293.00 N: 132308.00 L:	Water Strike Details		Logged By AS
			Depth Strike	Remarks	
Contractor SW-Hire	Plant Used Tracked 5T excavator				Approved By PS
					Scale 1:50

Samples and Results			Depth, (Thickness)	Level	Stratum Description	Legend
Results	Type	Depth				
	ES	0.50	(0.70)		MADE GROUND: Grass over dark brown slightly gravelly slightly sandy silty CLAY. Gravel is subangular to subrounded fine to coarse of brick, pottery and limestone. (Made Ground)	
	B	1.00	(0.30)		Firm light grey and light brown slightly sandy to sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of limestone. (Residual Soils)	
			1 1.00		End of Trial Pit at 1.00m	
			2			
			3			
			4			

Remarks

Pit Stability:	STABLE
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Notes: For all symbols and abbreviations please see key sheet. All depths and measurements in metres. Stratum thicknesses given in brackets.



Project Name Fives Court, Mere		Project No. PO-22-039	Date 15/09/2022 to 15/09/2022		Hole Type TP
Client Wiltshire County Council		Co-ords E: 381314.00 N: 132302.00 L:	Water Strike Details		Logged By AS
			Depth Strike	Remarks	
Contractor SW-Hire	Plant Used Tracked 5T excavator				
					Scale 1:50

Samples and Results			Depth, (Thickness)	Level	Stratum Description	Legend
Results	Type	Depth				
	D B ES	0.30 0.40 - 0.50 0.40 - 0.50	(0.50) 0.50 (0.30)		MADE GROUND: Grass over dark brown slightly gravelly slightly sandy silty CLAY with occasional roots (max diameter 6cm). (Made Ground)	
	B	0.80	0.80 (0.20) 1.00	1	Dark grey slightly gravelly slightly sandy silty CLAY. Gravel is angular to subrounded fine to coarse of limestone/ mudstone. (Residual Soils) Firm to stiff grey mottled orange brown slightly sandy CLAY with fine gravel sized organic inclusions. (Residual Soils)	
	B	1.40	(1.10) 2.10	2	Medium dense light grey clayey GRAVEL with low to medium cobble content. Gravel is subangular to subrounded fine to coarse of limestone. (Residual Soils)	
					End of Trial Pit at 2.10m	
				3		
				4		

Remarks

Trial pit refused on limestone at 2.10m

Pit Stability:	STABLE
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Notes: For all symbols and abbreviations please see key sheet. All depths and measurements in metres. Stratum thicknesses given in brackets.

2.00m

0.50m

Final Depth	2.10m
-------------	-------

Project Name Fives Court, Mere		Project No. PO-22-039	Date 15/09/2022 to 15/09/2022		Hole Type TP
Client Wiltshire County Council		Co-ords E: 381298.00 N: 132318.00 L:	Water Strike Details		Logged By AS
			Depth Strike	Remarks	
Contractor SW-Hire	Plant Used Tracked 5T excavator				Approved By PS
				Scale 1:50	

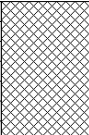
[illegible]

Remarks Trial pit refused on limestone at 1.80m Pit Stability: STABLE Notes: For all symbols and abbreviations please see key sheet. All depths and measurements in metres. Stratum thicknesses given in brackets.	

Project Name Fives Court, Mere		Project No. PO-22-039	Date 15/09/2022 to 15/09/2022		Hole Type TP
Client Wiltshire County Council		Co-ords E: 381281.00 N: 132275.00 L:	Water Strike Details		Logged By AS
			Depth Strike	Remarks	
Contractor SW-Hire	Plant Used Tracked 5T excavator				Approved By PS
					Scale 1:50

Samples and Results			Depth, (Thickness)	Level	Stratum Description	Legend
Results	Type	Depth				
	B ES	0.40 0.40 - 0.60	(0.20) 0.20		MADE GROUND: Grass over dark brown slightly gravelly slightly sandy silty CLAY (Made Ground)	
	B	0.80	(0.70)		Firm grey and cream slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of limestone. (Residual Soils)	
			0.90 (0.30)	1	Medium dense light grey clayey GRAVEL with low to medium cobble content. Gravel is subangular to subrounded fine to coarse of limestone. (Residual Soils)	
			1.20		End of Trial Pit at 1.20m	
				2		
				3		
				4		

Remarks Trial pit refused on limestone at 1.20m	1.90m 0.50m Final Depth 1.20m
Pit Stability: STABLE	
Notes: For all symbols and abbreviations please see key sheet. All depths and measurements in metres. Stratum thicknesses given in brackets.	

 Consulting Geo-Technical & Geo-Environmental Engineers Site Investigation Contractors				The Slate Barn, Lower Lowley, Dunsford, Exeter, EX6 7BP 01647 252414 www.terrafirmasouth.co.uk				Borehole No. TP04 Sheet 1 of 1	
Project Name Fives Court, Mere				Project No. PO-22-039		Date 15/09/2022 to 15/09/2022		Hole Type TP	
Client Wiltshire County Council				Co-ords E: 381293.00 N: 132308.00 L:		Water Strike Details Depth Strike Remarks		Logged By AS	
Contractor SW-Hire			Plant Used Tracked 5T excavator					Approved By PS	
								Scale 1:50	
Samples and Results			Depth, (Thickness)	Level	Stratum Description	Legend			
Results	Type	Depth							
	ES	0.50	(0.70)		MADE GROUND: Grass over dark brown slightly gravelly slightly sandy silty CLAY. Gravel is subangular to subrounded fine to coarse of brick, pottery and limestone. (Made Ground)				
	B	1.00	0.70 (0.30)	1 1.00	Firm light grey and light brown slightly sandy to sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of limestone. (Residual Soils)				
					End of Trial Pit at 1.00m				
Remarks									
Pit Stability: STABLE						1.00m 0.50m Final Depth 1.00m			
Notes: For all symbols and abbreviations please see key sheet. All depths and measurements in metres. Stratum thicknesses given in brackets.									

Annex B: In-situ Test Results

Site Name: Fives Court, Mere
Trial Pit No.: TP01

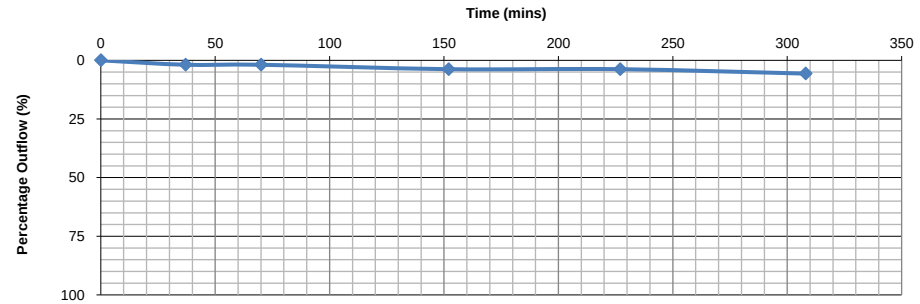
Job No.: PO-22-039
Engineer: AS

Date Undertaken: 15/09/2022

TEST NUMBER: T1
 VP25 (mBGL): 1.7025
 VP75 (mBGL): 1.9675
 VP25 (Mins): #DIV/0!
 VP27 (Mins): #DIV/0!

INFILTRATION RATE (m/s): #DIV/0!

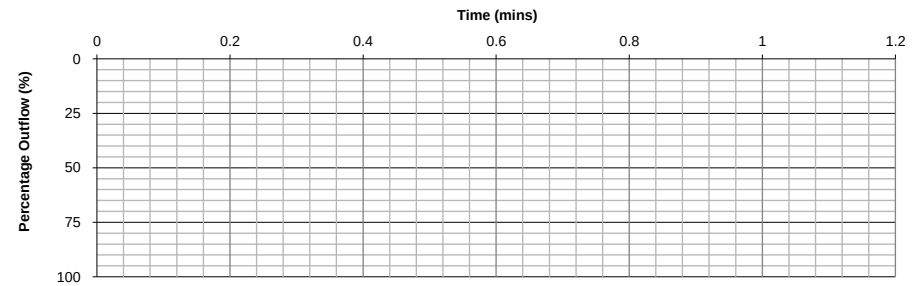
Drainage Field VP: #DIV/0!



TEST NUMBER: T2
 VP25: 0
 VP75: 0
 VP25 (Mins): #NUM!
 VP27 (Mins): #NUM!

INFILTRATION RATE (m/s): #NUM!

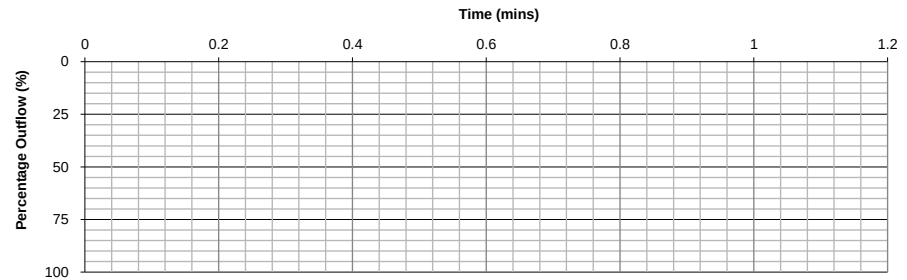
Drainage Field VP: #NUM!



TEST NUMBER: T3
 VP25: 0
 VP75: 0
 VP25 (Mins): #NUM!
 VP27 (Mins): #NUM!

INFILTRATION RATE (m/s): #NUM!

Drainage Field VP: #NUM!



REMARKS: Test carried out in accordance with BRE Digest 365 (2016)

Site Name: Fives Court, Mere
Trial Pit No.: TP02

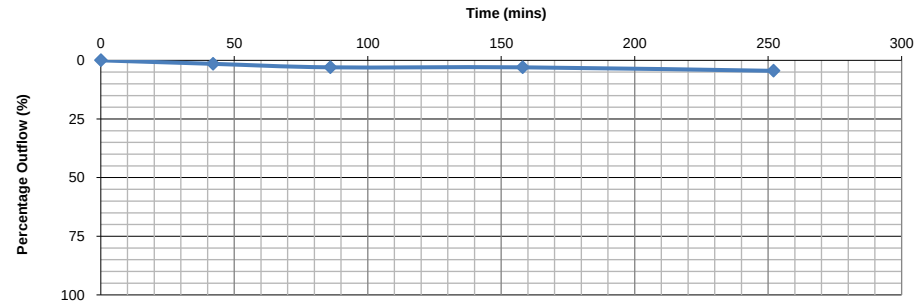
Job No.: PO-22-039
Engineer: AS

Date Undertaken: 15/09/2022

TEST NUMBER: T1
 VP25 (mBGL) : 1.2975
 VP75 (mBGL) 1.6325
 VP25 (Mins) #DIV/0!
 VP27 (Mins) #DIV/0!

INFILTRATION RATE (m/s): #DIV/0!

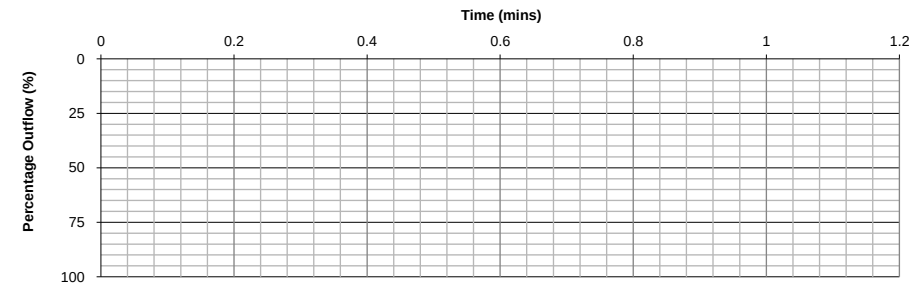
Drainage Field VP: #DIV/0!



TEST NUMBER: T2
 VP25: 0
 VP75: 0
 VP25 (Mins) #NUM!
 VP27 (Mins) #NUM!

INFILTRATION RATE (m/s): #NUM!

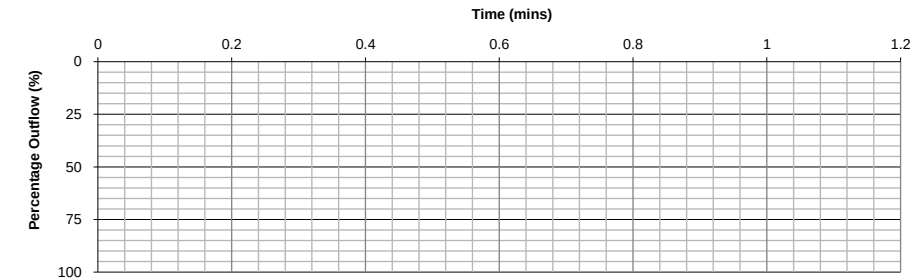
Drainage Field VP: #NUM!



TEST NUMBER: T3
 VP25: 0
 VP75: 0
 VP25 (Mins) #NUM!
 VP27 (Mins) #NUM!

INFILTRATION RATE (m/s): #NUM!

Drainage Field VP: #NUM!



REMARKS: Test carried out in accordance with BRE Digest 365 (2016)

Site Name: Fives court, Mere
Trial Pit No.: TP03

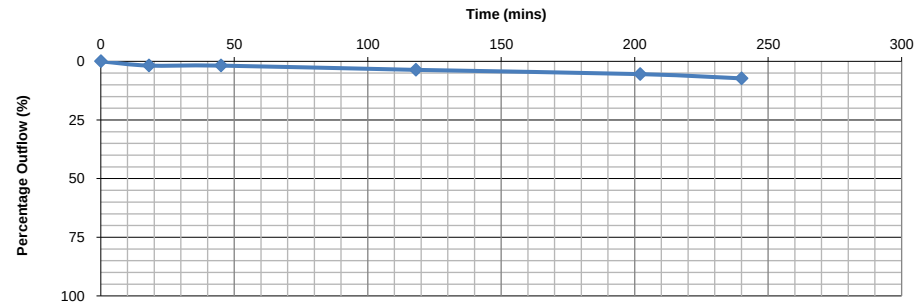
Job No.: PO-22-039
Engineer: AS

Date Undertaken: 15/09/2022

TEST NUMBER: T1
 VP25 (mBGL) : 0.9375
 VP75 (mBGL) 1.2125
 VP25 (Mins) #DIV/0!
 VP27 (Mins) #DIV/0!

INFILTRATION RATE (m/s): #DIV/0!

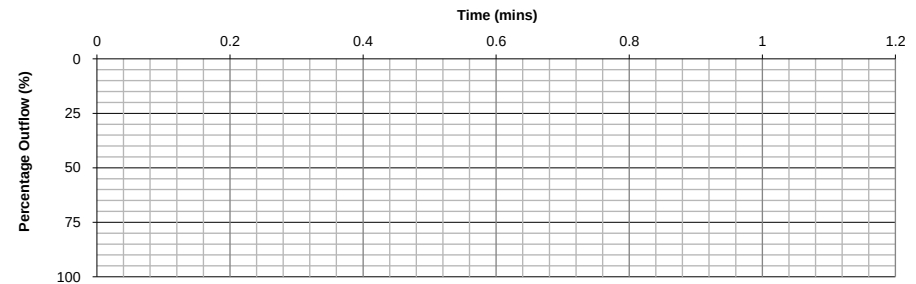
Drainage Field VP: #DIV/0!



TEST NUMBER: T2
 VP25: 0
 VP75: 0
 VP25 (Mins) #NUM!
 VP27 (Mins) #NUM!

INFILTRATION RATE (m/s): #NUM!

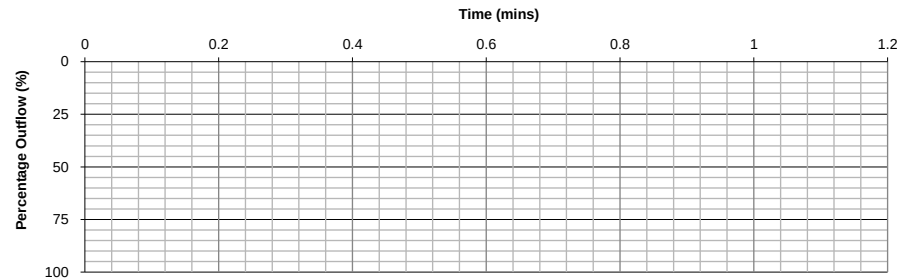
Drainage Field VP: #NUM!



TEST NUMBER: T3
 VP25: 0
 VP75: 0
 VP25 (Mins) #NUM!
 VP27 (Mins) #NUM!

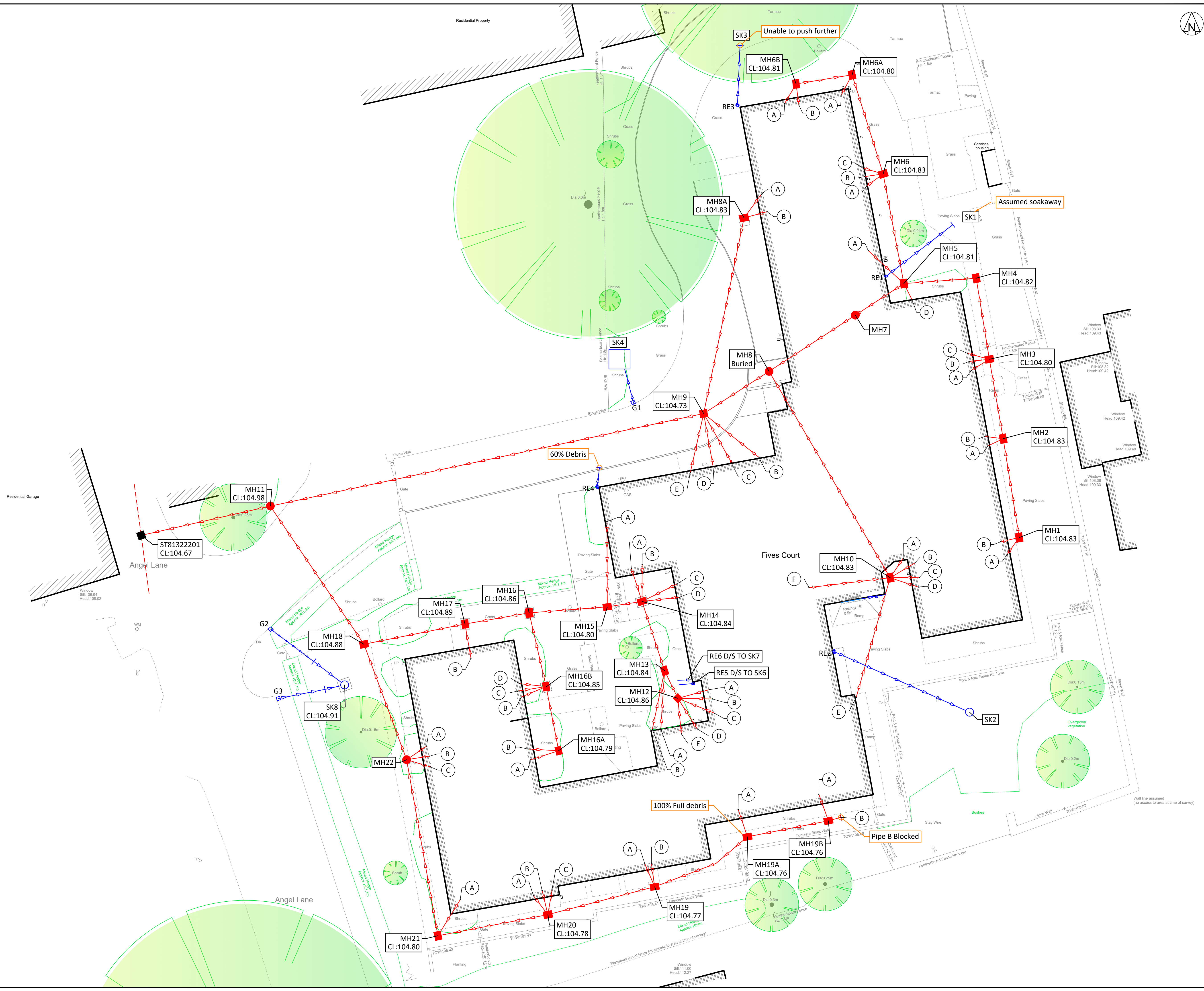
INFILTRATION RATE (m/s): #NUM!

Drainage Field VP: #NUM!



REMARKS: Test carried out in accordance with BRE Digest 365 (2016)

File name: A&A-ONE_FJ27612 Fives Court Angel Lane Mere 01.f1 Drainage & Connectivity.dwg
Paper Size: ANSI A (8.5" x 11.0") inches



LEGEND

Approx. Boundary Line

Private

- :Foul MH
- :Combined MH
- :Surface Water MH
- ⊕ :Interceptor
- :Foul Drain
- :Combined Drain
- :Surface Water Drain
- ACO :ACO Drain

Public

- :Manhole Foul
- :Manhole Surface
- :Foul Drain
- :Combined Drain
- :Surface Water Drain

ABBREVIATIONS

AR	Assumed Route	RG	Road Gully
CP	Catch Pit	S/A	Soakaway
D/C	Drainage Channel	SP	Soil Pipe
DP	Down Pipe	SVP	Soil Vent Pipe
G	Gully	UTL	Unable to Locate
G/R	Gully Run	UTR	Unable to Raise
IC	Inspection Cover	UTS	Unable to Survey
INT	Interceptor	UTT	Unable to Trace
MH	Manhole Cover	VR	Vapour Recovery
NRV	Non Return Valve	VP	Vent Pipe
NPV	No Pipes Visible	WP	Waste Pipe
RWP	Rain Water Pipe	YG	Yard Gully
RE	Rodding Eye	Ø	Pipe Diameter

Project:
FIVES COURT ANGEL LANE MERE

Drawing Title:
DRAINAGE & CONNECTIVITY

Job Number:
FJ_347612

Scale:	Drawn by:	Date:	Consultant:	Phase:	Revision:
NTS	AMP	12/06/2024		n/a	1

Oneline
Adler & Allan
ENVIRONMENTAL RISK REDUCTION

Adler & Allan
16 Victoria Avenue, Harrogate
North Yorkshire HG1 1ED

0800 592 827
www.adlerandallan.co.uk

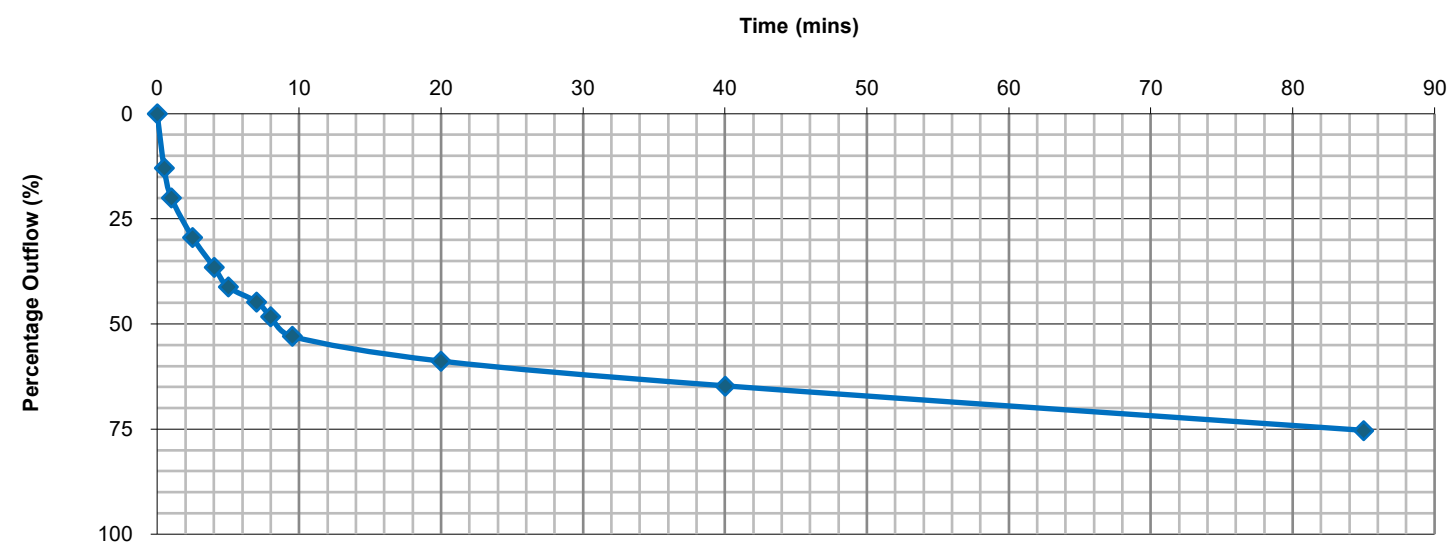
Site Name: Five Courts, Mere
Trial Pit No.: SK4

Job No.: PO-22-039
Engineer: MB

Date Undertaken: 17/06/2025

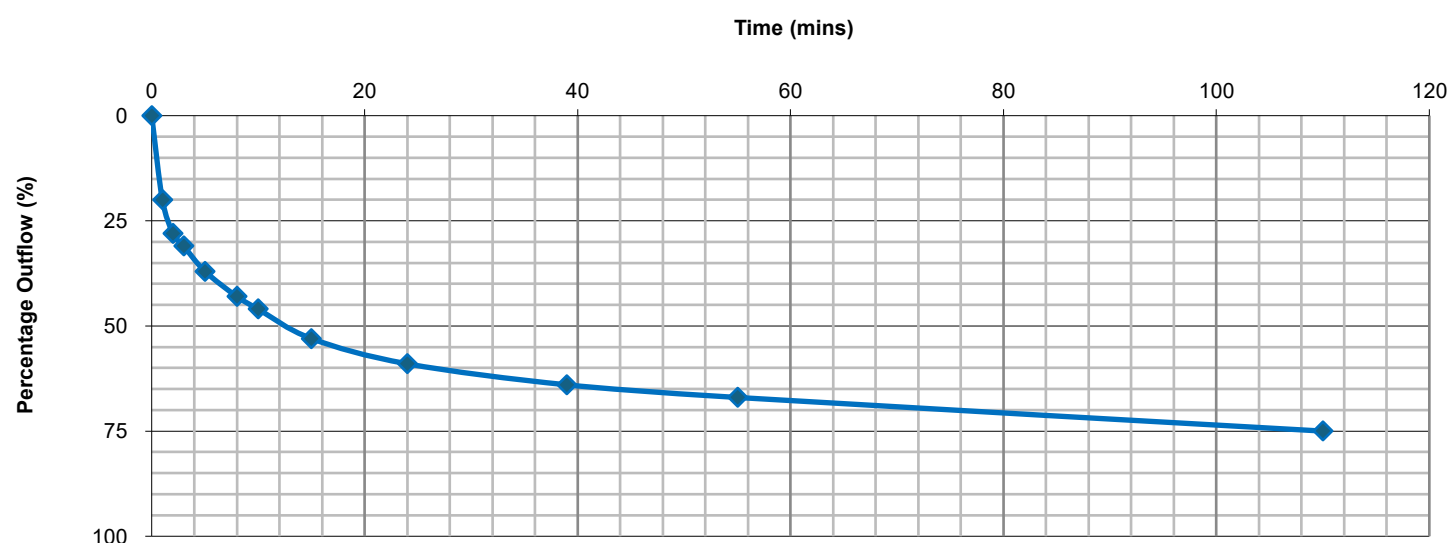
TEST NUMBER: 1.00
Length of Trial Pit (m) 0.80
Width of Trial Pit (m) 1.00
Depth of Trial Pit (m) 1.00
Top of Water 0.15
Porosity of Infill (0.3 for Gravel) 1.00
VP25 (mBGL) : 0.3625
VP75 (mBGL) 0.7875
VP25 (Mins) 1.80
VP75 (Mins) 83.75

INFILTRATION RATE (m/s): 2.97×10^{-5}
Drainage Field VP: -



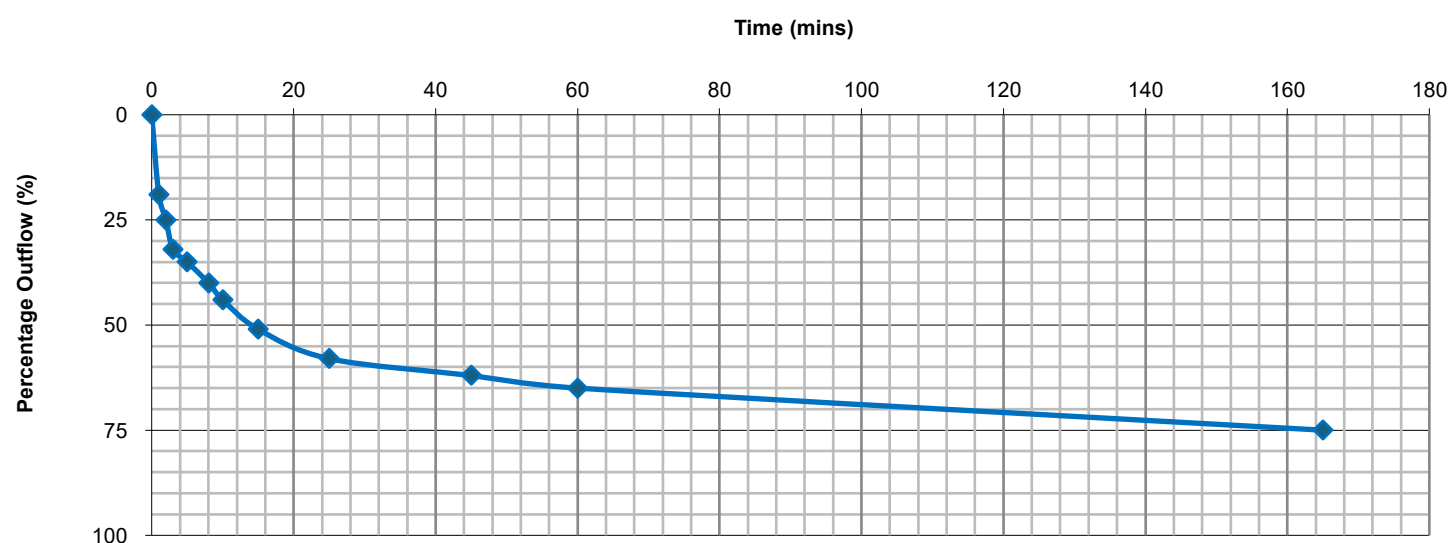
TEST NUMBER: Test 2
Length of Trial Pit (m) 0.80
Width of Trial Pit (m) 1.00
Depth of Trial Pit (m) 1.00
Top of Water 0.00
Porosity of Infill (0.3 for Gravel) 1.00
VP25 (mBGL) : 0.2500
VP75 (mBGL) 0.7500
VP25 (Mins) 1.63
VP75 (Mins) 110.00

INFILTRATION RATE (m/s): 2.37×10^{-5}
Drainage Field VP: -



TEST NUMBER: Test 3
Length of Trial Pit (m) 0.80
Width of Trial Pit (m) 1.00
Depth of Trial Pit (m) 1.00
Top of Water 0.00
Porosity of Infill (0.3 for Gravel) 1.00
VP25 (mBGL) : 0.2500
VP75 (mBGL) 0.7500
VP25 (Mins) 2.00
VP75 (Mins) 165.00

INFILTRATION RATE (m/s): 1.57×10^{-5}
Drainage Field VP: -



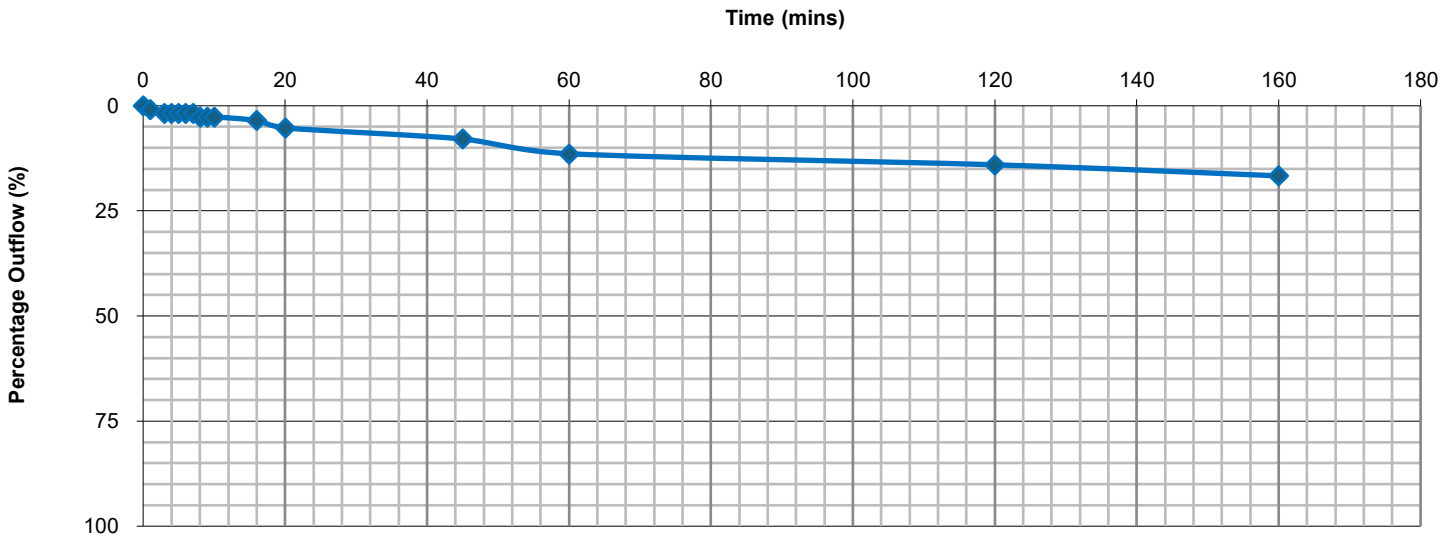
REMARKS: Test carried out in general accordance with BRE Digest 365 (2016) or The Building Regulations 2010, Drainage and waste disposal: Approved Document H.



Site Name:	Five Courts, Mere	Job No.:	PO-22-039	Date Undertaken:	16/06/2025
Trial Pit No.:	SA01 (Adjacent rubble filled pit at SK1)	Engineer:	MB		

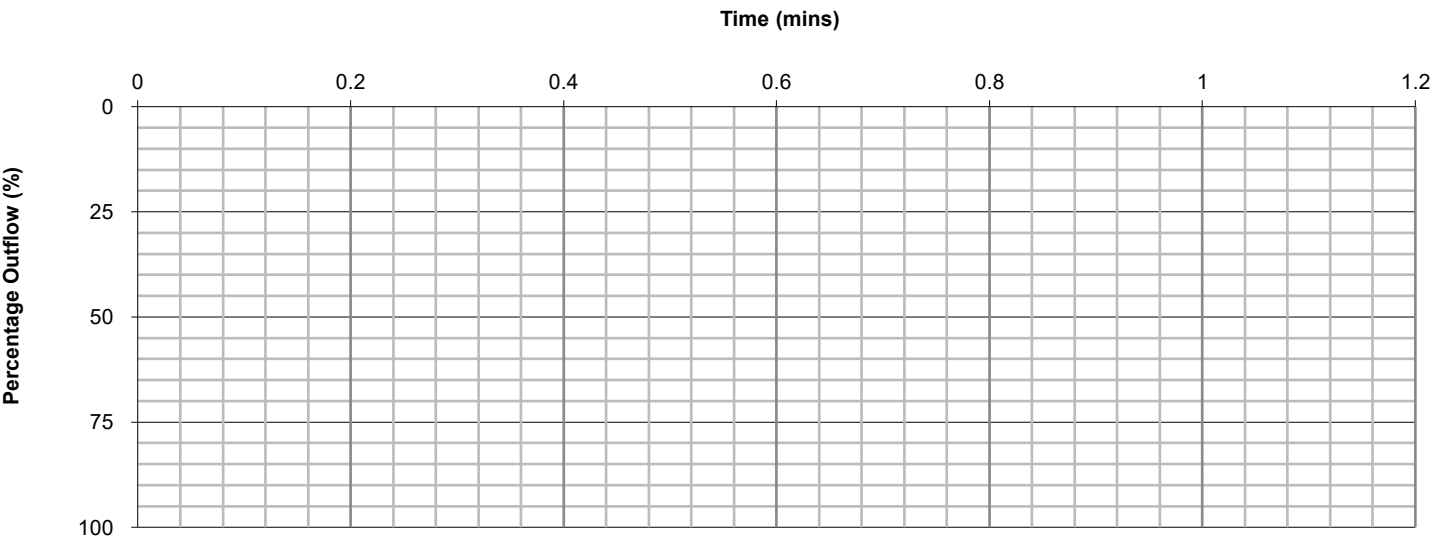
TEST NUMBER:	Test 1
Length of Trial Pit (m)	1.70
Width of Trial Pit (m)	1.00
Depth of Trial Pit (m)	1.60
Top of Water	0.46
Porosity of Infill (0.3 for Gravel)	1.00
VP25 (mBGL) :	0.7450
VP75 (mBGL)	1.3150
VP25 (Mins)	#VALUE!
VP75 (Mins)	#VALUE!

INFILTRATION RATE (m/s):	-
Drainage Field VP:	-



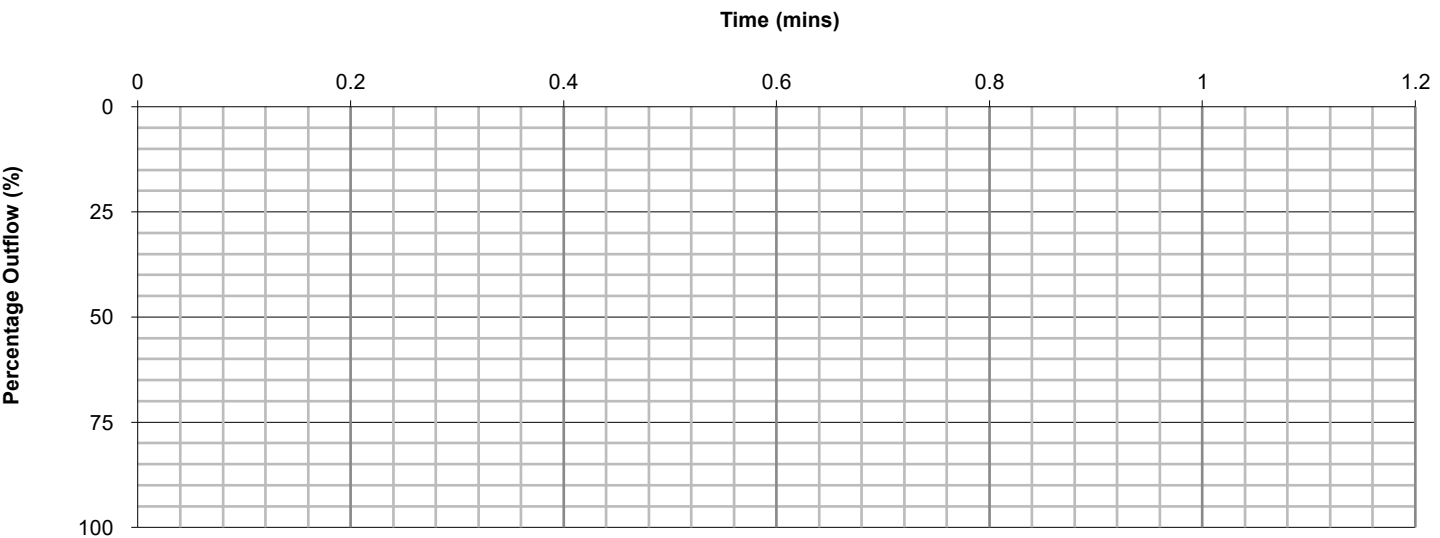
TEST NUMBER:	Test 2
Length of Trial Pit (m)	1.70
Width of Trial Pit (m)	1.00
Depth of Trial Pit (m)	1.60
Top of Water	0.46
Porosity of Infill (0.3 for Gravel)	1.00
VP25 (mBGL) :	0.4000
VP75 (mBGL)	1.2000
VP25 (Mins)	#NUM!
VP75 (Mins)	#NUM!

INFILTRATION RATE (m/s):	-
Drainage Field VP:	-



TEST NUMBER:	Test 3
Length of Trial Pit (m)	1.70
Width of Trial Pit (m)	1.00
Depth of Trial Pit (m)	1.60
Top of Water	0.46
Porosity of Infill (0.3 for Gravel)	1.00
VP25 (mBGL) :	0.4000
VP75 (mBGL)	1.2000
VP25 (Mins)	#NUM!
VP75 (Mins)	#NUM!

INFILTRATION RATE (m/s):	-
Drainage Field VP:	-



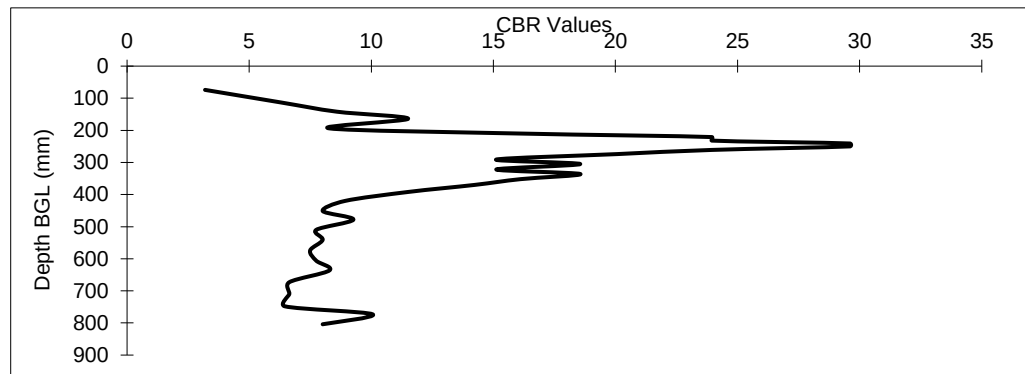
REMARKS: Test carried out in general accordance with BRE Digest 365 (2016) or The Building Regulations 2010, Drainage and waste disposal: Approved Document H.

In-situ CBR by TRL DCP

TRRL Road Transport, Note 8

Project Name	Fives Court, Mere	Date	15/09/2022	Soil	
Project No.	PO-22-039	Location/ Test No.	CBR01	Description	

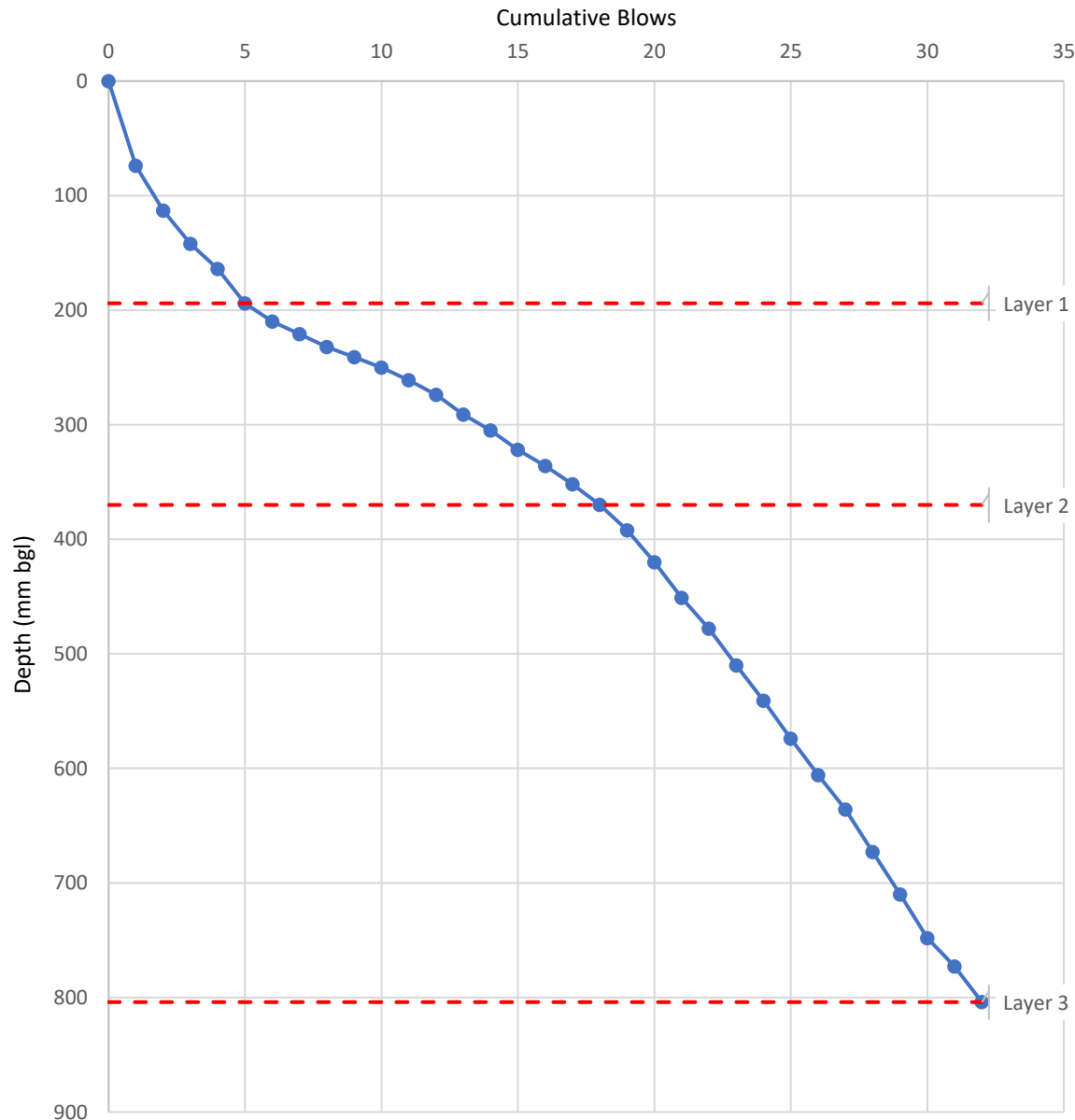
Depth of Test below ground level (mm): 0														
CBR Value %	Depth Below Ground Level (mm)	mm per blow	Blows	Reading on Scale (mm)	CBR Value %	Depth Below Ground Level (mm)	mm per blow	Blows	Reading on Scale (mm)	CBR Value %	Depth Below Ground Level (mm)	mm per blow	Blows	Reading on Scale (mm)
3.2	0		0	130	14.2	370	18.0	1	500					
6.3	74	74.0	1	204	11.5	392	22.0	1	522					
8.6	113	39.0	1	243	8.9	420	28.0	1	550					
11.5	142	29.0	1	272	8.0	451	31.0	1	581					
8.3	164	22.0	1	294	9.3	478	27.0	1	608					
16.1	194	30.0	1	324	7.7	510	32.0	1	640					
23.9	210	16.0	1	340	8.0	541	31.0	1	671					
23.9	221	11.0	1	351	7.5	574	33.0	1	704					
29.6	232	11.0	1	362	7.7	606	32.0	1	736					
29.6	241	9.0	1	371	8.3	636	30.0	1	766					
23.9	250	9.0	1	380	6.6	673	37.0	1	803					
20.1	261	11.0	1	391	6.6	710	37.0	1	840					
15.1	274	13.0	1	404	6.5	748	38.0	1	878					
18.6	291	17.0	1	421	10.1	773	25.0	1	903					
15.1	305	14.0	1	435	8.0	804	31.0	1	934					
18.6	322	17.0	1	452										
16.1	336	14.0	1	466										
	352	16.0	1	482										



In-situ CBR by TRL DCP

TRRL Road Transport, Note 8

Blows vs Depth



Layer Depth (mm bgl)	CBR Value
Layer 1 Base: 194	6.32
Layer 2 Base: 370	19.23
Layer 3 Base: 804	8.01

CBR value calculated from layers identified in cumulative blows per depth graph in accordance with CS229

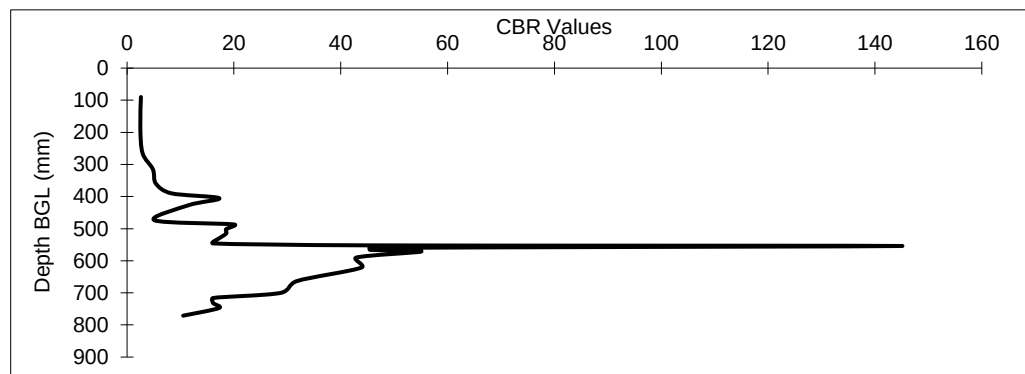


In-situ CBR by TRL DCP

TRRL Road Transport, Note 8

Project Name	Fives Court, Mere	Date	15/09/2022	Soil	
Project No.	PO-22-039	Location/ Test No.	CBR02	Description	

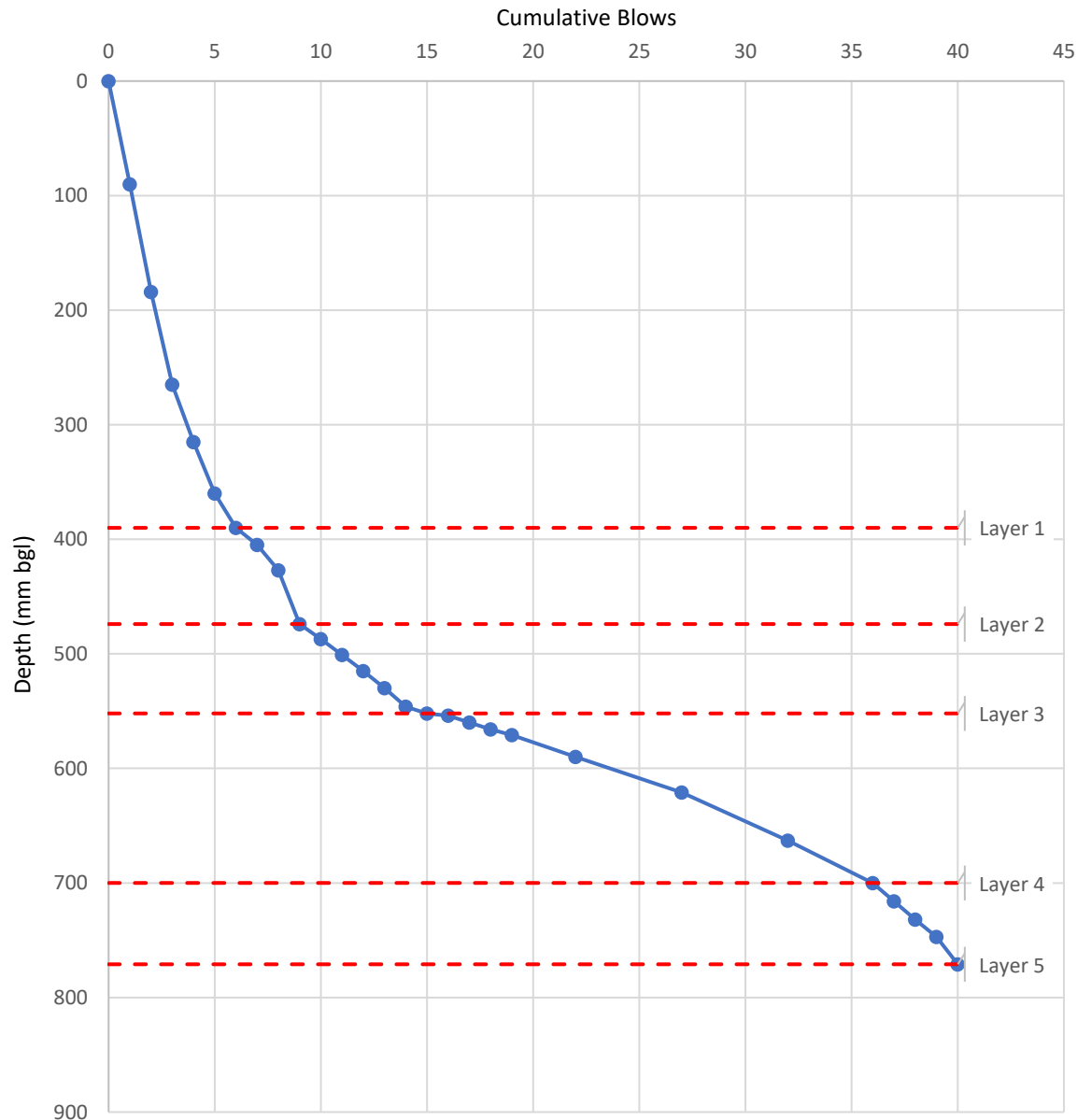
Depth of Test below ground level (mm): 0															
CBR Value %	Depth Below Ground Level (mm)	mm per blow	Blows	Reading on Scale (mm)	CBR Value %	Depth Below Ground Level (mm)	mm per blow	Blows	Reading on Scale (mm)	CBR Value %	Depth Below Ground Level (mm)	mm per blow	Blows	Reading on Scale (mm)	
	0		0	120	45.4	566	6.0	1	686						
2.6	90	90.0	1	210	55.1	571	5.0	1	691						
2.5	184	94.0	1	304	42.9	590	6.3	3	710						
2.9	265	81.0	1	385	43.9	621	6.2	5	741						
4.8	315	50.0	1	435	31.8	663	8.4	5	783						
5.4	360	45.0	1	480	28.8	700	9.3	4	820						
8.3	390	30.0	1	510	16.1	716	16.0	1	836						
17.3	405	15.0	1	525	16.1	732	16.0	1	852						
11.5	427	22.0	1	547	17.3	747	15.0	1	867						
5.2	474	47.0	1	594	10.5	771	24.0	1	891						
20.1	487	13.0	1	607											
18.6	501	14.0	1	621											
18.6	515	14.0	1	635											
17.3	530	15.0	1	650											
16.1	546	16.0	1	666											
45.4	552	6.0	1	672											
145.1	554	2.0	1	674											
45.4	560	6.0	1	680											



In-situ CBR by TRL DCP

TRRL Road Transport, Note 8

Blows vs Depth



Layer Depth (mm bgl)	CBR Value
Layer 1 Base: 390	3.66
Layer 2 Base: 474	8.92
Layer 3 Base: 552	20.07
Layer 4 Base: 700	38.34
Layer 5 Base: 771	14.44

CBR value calculated from layers identified in cumulative blows per depth graph in accordance with CS229

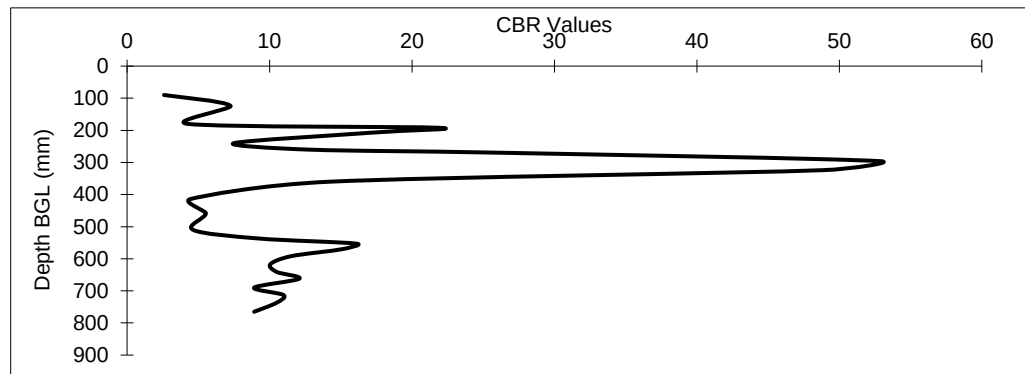


In-situ CBR by TRL DCP

TRRL Road Transport, Note 8

Project Name	Fives Court, Mere	Date	15/09/2022	Soil	
Project No.	PO-22-039	Location/ Test No.	CBR03	Description	

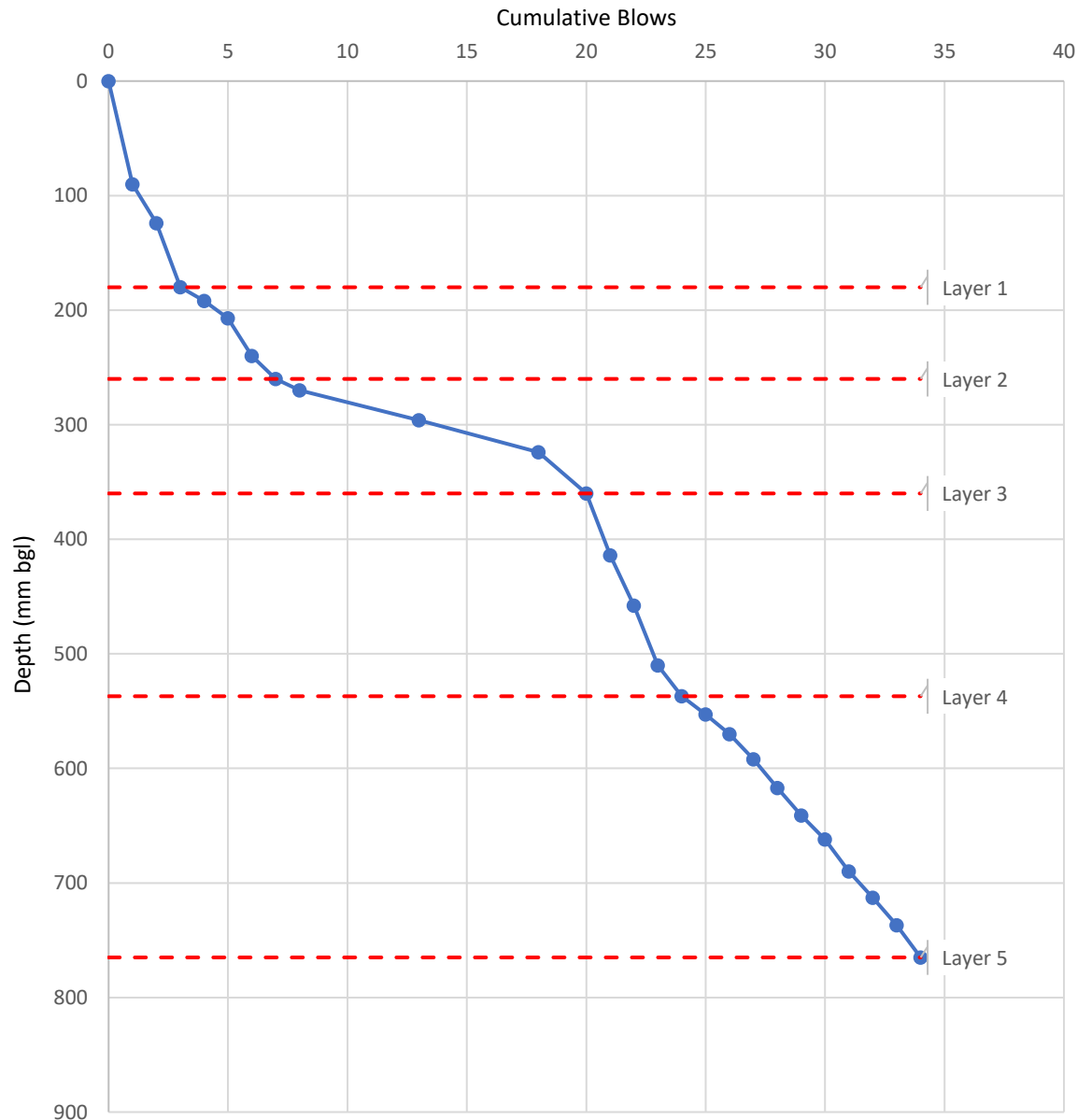
Depth of Test below ground level (mm): 0															
CBR Value %	Depth Below Ground Level (mm)	mm per blow	Blows	Reading on Scale (mm)	CBR Value %	Depth Below Ground Level (mm)	mm per blow	Blows	Reading on Scale (mm)	CBR Value %	Depth Below Ground Level (mm)	mm per blow	Blows	Reading on Scale (mm)	
	0		0	150	11.5	592	22.0	1	742						
2.6	90	90.0	1	240	10.1	617	25.0	1	767						
7.3	124	34.0	1	274	10.5	641	24.0	1	791						
4.3	180	56.0	1	330	12.1	662	21.0	1	812						
21.8	192	12.0	1	342	8.9	690	28.0	1	840						
17.3	207	15.0	1	357	11.0	713	23.0	1	863						
7.5	240	33.0	1	390	10.5	737	24.0	1	887						
12.7	260	20.0	1	410	8.9	765	28.0	1	915						
26.5	270	10.0	1	420											
52.9	296	5.2	5	446											
48.9	324	5.6	5	474											
14.2	360	18.0	2	510											
4.5	414	54.0	1	564											
5.5	458	44.0	1	608											
4.6	510	52.0	1	660											
9.3	537	27.0	1	687											
16.1	553	16.0	1	703											
15.1	570	17.0	1	720											



In-situ CBR by TRL DCP

TRRL Road Transport, Note 8

Blows vs Depth



Layer Depth (mm bgl)	CBR Value
Layer 1 Base: 180	3.99
Layer 2 Base: 260	12.73
Layer 3 Base: 360	34.95
Layer 4 Base: 537	5.50
Layer 5 Base: 765	11.08

CBR value calculated from layers identified in cumulative blows per depth graph in accordance with CS229

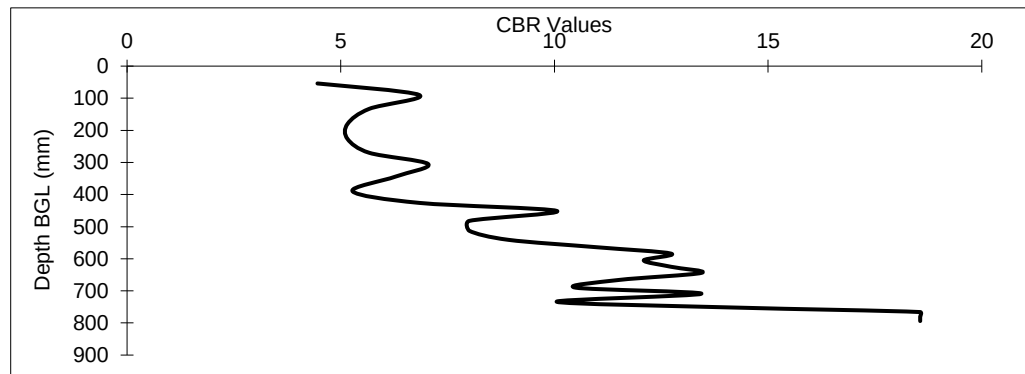


In-situ CBR by TRL DCP

TRRL Road Transport, Note 8

Project Name	Fives Court, Mere	Date	15/09/2022	Soil	
Project No.	PO-22-039	Location/ Test No.	CBR04	Description	

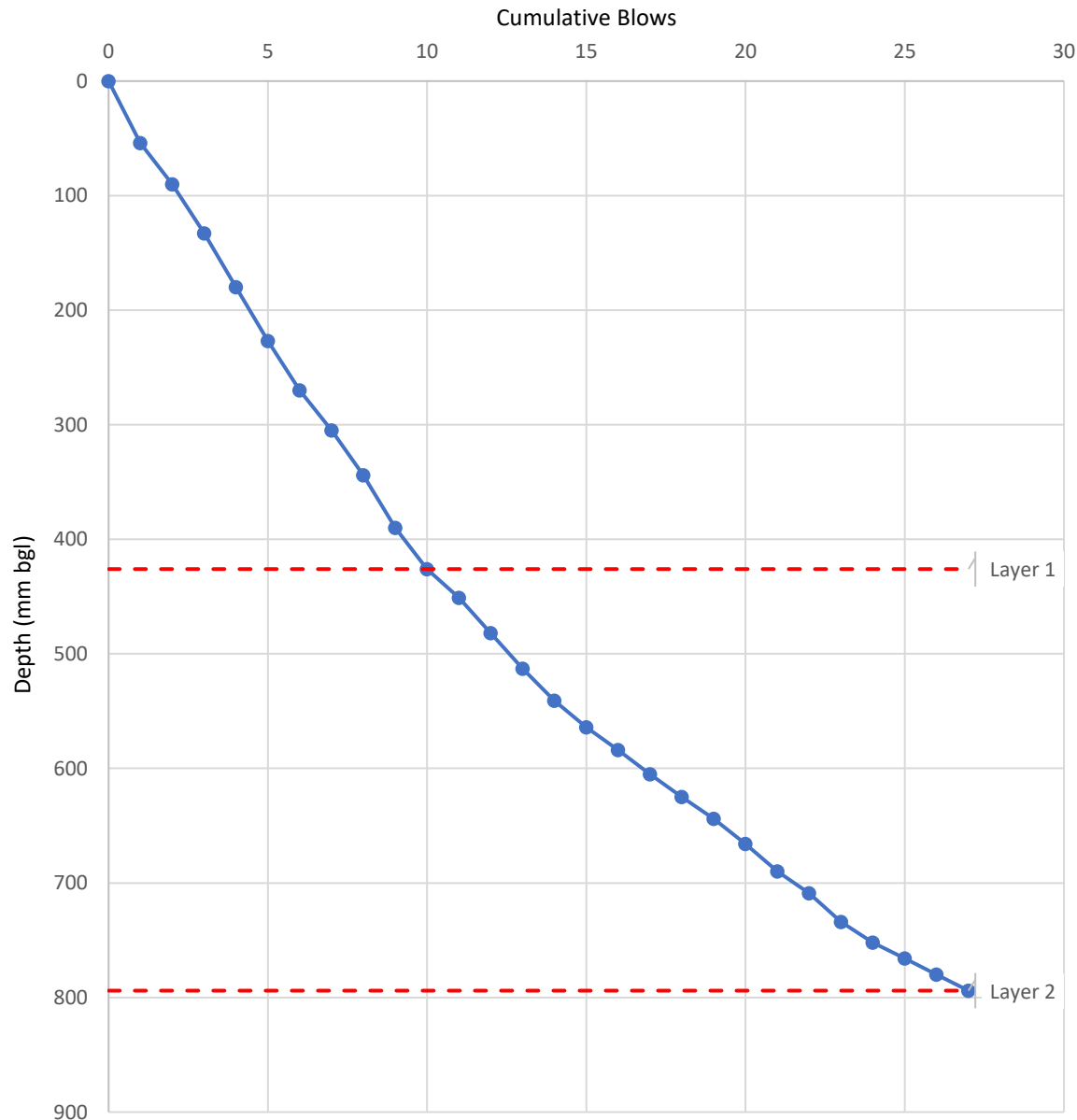
Depth of Test below ground level (mm): 0														
CBR Value %	Depth Below Ground Level (mm)	mm per blow	Blows	Reading on Scale (mm)	CBR Value %	Depth Below Ground Level (mm)	mm per blow	Blows	Reading on Scale (mm)	CBR Value %	Depth Below Ground Level (mm)	mm per blow	Blows	Reading on Scale (mm)
	0		0	130	12.7	625	20.0	1	755					
4.5	54	54.0	1	184	13.4	644	19.0	1	774					
6.8	90	36.0	1	220	11.5	666	22.0	1	796					
5.7	133	43.0	1	263	10.5	690	24.0	1	820					
5.2	180	47.0	1	310	13.4	709	19.0	1	839					
5.2	227	47.0	1	357	10.1	734	25.0	1	864					
5.7	270	43.0	1	400	14.2	752	18.0	1	882					
7.0	305	35.0	1	435	18.6	766	14.0	1	896					
6.3	344	39.0	1	474	18.6	780	14.0	1	910					
5.3	390	46.0	1	520	18.6	794	14.0	1	924					
6.8	426	36.0	1	556										
10.1	451	25.0	1	581										
8.0	482	31.0	1	612										
8.0	513	31.0	1	643										
8.9	541	28.0	1	671										
11.0	564	23.0	1	694										
12.7	584	20.0	1	714										
12.1	605	21.0	1	735										



In-situ CBR by TRL DCP

TRRL Road Transport, Note 8

Blows vs Depth



Layer Depth (mm bgl)		CBR Value
Layer 1 Base:		5.72
Layer 2 Base:		11.71

CBR value calculated from layers identified in cumulative blows per depth graph in accordance with CS229



Annex C: Chemical Test Results



2183

Amended Report

Report No.:	22-36235-2		
Initial Date of Issue:	30-Sep-2022	Date of Re-Issue:	07-Nov-2022
Client	Terra Firma		
Client Address:	t/a Terra Firma The Slate Barn Lower Lowley Dunsford Devon EX6 7BP		
Contact(s):	Info		
Project	PO-22-039 Fives Court, Mere		
Quotation No.:		Date Received:	22-Sep-2022
Order No.:	PO-22-039	Date Instructed:	22-Sep-2022
No. of Samples:	7		
Turnaround (Wkdays):	37	Results Due:	11-Nov-2022
Date Approved:	07-Nov-2022		
Approved By:			



Details: Stuart Henderson, Technical Manager

Results - Soil

Project: PO-22-039 Fives Court, Mere

Client: Terra Firma	Chemtest Job No.:				22-36235	22-36235	22-36235	22-36235	22-36235	22-36235	22-36235
Quotation No.:	Chemtest Sample ID.:				1511051	1511052	1511053	1511054	1511055	1511056	1511057
	Sample Location:				TP01	TP02	TP03	TP04	Core 2	Core 5	Core 6
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.40	0.30	0.40	0.50	0.25	0.25	0.23
	Bottom Depth (m):				0.50						
Determinand	Accred.	SOP	Units	LOD							
Moisture	N	2030	%	0.020	1.4	17	17	17	4.6	4.7	5.0
pH	U	2010		4.0	[A] 9.1	[A] 8.9	[A] 8.7	[A] 8.6	[A] 10.4	[A] 9.7	[A] 10.5
Cyanide (Total)	U	2300	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Sulphate (Total)	U	2430	%	0.010	[A] 0.11	[A] 0.14	[A] 0.082	[A] 0.10	[A] 0.090	[A] 0.053	[A] 0.087
Arsenic	U	2455	mg/kg	0.5	10	11	16	8.9	16	3.3	12
Cadmium	U	2455	mg/kg	0.10	0.66	0.72	3.8	0.54	1.9	0.57	1.8
Chromium	U	2455	mg/kg	0.5	15	20	30	19	6.6	5.2	8.8
Copper	U	2455	mg/kg	0.50	73	56	26	57	14	5.8	9.4
Mercury	U	2455	mg/kg	0.05	0.56	0.46	0.15	0.46	0.06	0.05	0.09
Nickel	U	2455	mg/kg	0.50	16	19	27	17	6.1	4.0	5.2
Lead	U	2455	mg/kg	0.50	700	230	62	190	170	39	340
Selenium	U	2455	mg/kg	0.25	0.63	0.63	1.3	1.1	< 0.25	0.46	< 0.25
Zinc	U	2455	mg/kg	0.50	340	250	83	190	140	62	99
Chromium (Trivalent)	N	2490	mg/kg	1.0	15	20	30	19	6.4	5.2	8.6
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	[A] 8.2	[A] 6.7	[A] 4.5	[A] 10	[A] 0.62	[A] < 0.40	[A] < 0.40
Total TPH >C6-C40	U	2670	mg/kg	10	[A] < 10	[A] 280	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10
Naphthalene	U	2700	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] 0.75	[A] < 0.10	[A] < 0.10	[A] < 0.10
Acenaphthylene	U	2700	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] 2.3	[A] < 0.10	[A] < 0.10	[A] < 0.10
Acenaphthene	U	2700	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] 0.47	[A] < 0.10	[A] < 0.10	[A] < 0.10
Fluorene	U	2700	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] 0.30	[A] < 0.10	[A] < 0.10	[A] < 0.10
Phenanthrene	U	2700	mg/kg	0.10	[A] < 0.10	[A] 0.42	[A] < 0.10	[A] 0.75	[A] 1.2	[A] < 0.10	[A] < 0.10
Anthracene	U	2700	mg/kg	0.10	[A] < 0.10	[A] 0.14	[A] < 0.10	[A] 0.20	[A] 0.15	[A] < 0.10	[A] < 0.10
Fluoranthene	U	2700	mg/kg	0.10	[A] 1.1	[A] 1.6	[A] 0.32	[A] 2.5	[A] 2.4	[A] 0.23	[A] 0.90
Pyrene	U	2700	mg/kg	0.10	[A] 1.1	[A] 1.5	[A] 0.35	[A] 2.2	[A] 2.2	[A] 0.24	[A] 0.75
Benzo[a]anthracene	U	2700	mg/kg	0.10	[A] 0.51	[A] 1.3	[A] 0.30	[A] 2.1	[A] 1.6	[A] < 0.10	[A] 0.55
Chrysene	U	2700	mg/kg	0.10	[A] 0.91	[A] 1.0	[A] 0.20	[A] 1.6	[A] 1.7	[A] < 0.10	[A] 0.56
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	[A] < 0.10	[A] 1.9	[A] < 0.10	[A] 3.0	[A] 2.2	[A] < 0.10	[A] < 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	[A] < 0.10	[A] 0.60	[A] < 0.10	[A] 1.1	[A] 0.70	[A] < 0.10	[A] < 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	[A] < 0.10	[A] 1.3	[A] < 0.10	[A] 2.2	[A] 1.4	[A] < 0.10	[A] < 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] 1.8	[A] < 0.10	[A] < 0.10	[A] < 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] 1.1	[A] < 0.10	[A] < 0.10	[A] < 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] 1.2	[A] < 0.10	[A] < 0.10	[A] < 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	[A] 3.6	[A] 9.7	[A] < 2.0	[A] 24	[A] 14	[A] < 2.0	[A] 2.8
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1511051			TP01		A	Amber Glass 250ml
1511051			TP01		A	Amber Glass 60ml
1511051			TP01		A	Plastic Tub 500g
1511052			TP02		A	Amber Glass 250ml
1511052			TP02		A	Amber Glass 60ml
1511052			TP02		A	Plastic Tub 500g
1511053			TP03		A	Amber Glass 250ml
1511053			TP03		A	Amber Glass 60ml
1511053			TP03		A	Plastic Tub 500g
1511054			TP04		A	Amber Glass 250ml
1511054			TP04		A	Amber Glass 60ml
1511054			TP04		A	Plastic Tub 500g
1511055			Core 2		A	Amber Glass 250ml
1511055			Core 2		A	Amber Glass 60ml
1511055			Core 2		A	Plastic Tub 500g
1511056			Core 5		A	Amber Glass 250ml
1511056			Core 5		A	Amber Glass 60ml
1511056			Core 5		A	Plastic Tub 500g
1511057			Core 6		A	Amber Glass 250ml
1511057			Core 6		A	Amber Glass 60ml
1511057			Core 6		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenzo[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

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

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

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

For all other tests the samples were dried at < 37°C prior to analysis

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Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

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

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

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Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com



2183

Final Report

Report No.:	22-42781-1		
Initial Date of Issue:	18-Nov-2022		
Client	Terra Firma		
Client Address:	t/a Terra Firma The Slate Barn Lower Lowley Dunsford Devon EX6 7BP		
Contact(s):	Dexter Williamson Info James Coley Kevin Scanlon Paul Standish Perry Smith		
Project	PO-22-039 Fivers Court, Mere		
Quotation No.:	Q18-13119	Date Received:	08-Nov-2022
Order No.:	PO-22-039	Date Instructed:	08-Nov-2022
No. of Samples:	3		
Turnaround (Wkdays):	10	Results Due:	21-Nov-2022
Date Approved:	18-Nov-2022		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - Soil

Project: PO-22-039 Fivers Court, Mere

Client: Terra Firma	Chemtest Job No.:				22-42781	22-42781	22-42781
Quotation No.: Q18-13119	Chemtest Sample ID.:				1540950	1540951	1540952
	Sample Location:				Core 1	Core 3	Core 4
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				0.25	0.26	0.28
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	9.5	3.3	4.7
pH	U	2010		4.0	[A] 9.3	[A] 9.5	[A] 10.1
Cyanide (Total)	U	2300	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Sulphate (Total)	U	2430	%	0.010	[A] 0.15	[A] 0.097	[A] 0.14
Arsenic	U	2455	mg/kg	0.5	32	11	3.8
Cadmium	U	2455	mg/kg	0.10	1.8	1.5	1.3
Chromium	U	2455	mg/kg	0.5	9.4	6.1	5.2
Copper	U	2455	mg/kg	0.50	29	5.6	3.2
Mercury	U	2455	mg/kg	0.05	0.10	0.06	< 0.05
Nickel	U	2455	mg/kg	0.50	14	3.7	2.7
Lead	U	2455	mg/kg	0.50	320	150	27
Selenium	U	2455	mg/kg	0.25	0.29	0.37	< 0.25
Zinc	U	2455	mg/kg	0.50	250	96	48
Chromium (Trivalent)	N	2490	mg/kg	1.0	9.4	6.1	5.2
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	[A] 13	[A] 21	[A] 12
Total TPH >C6-C40	U	2670	mg/kg	10	[AC] 210	[AC] < 10	[AC] < 10
Naphthalene	U	2700	mg/kg	0.10	[A] 1.0	[A] < 0.10	[A] < 0.10
Acenaphthylene	U	2700	mg/kg	0.10	[A] 0.26	[A] < 0.10	[A] < 0.10
Acenaphthene	U	2700	mg/kg	0.10	[A] 0.79	[A] < 0.10	[A] < 0.10
Fluorene	U	2700	mg/kg	0.10	[A] 0.75	[A] < 0.10	[A] < 0.10
Phenanthrene	U	2700	mg/kg	0.10	[A] 5.6	[A] 0.76	[A] < 0.10
Anthracene	U	2700	mg/kg	0.10	[A] 1.4	[A] 0.21	[A] < 0.10
Fluoranthene	U	2700	mg/kg	0.10	[A] 6.0	[A] 1.1	[A] 0.18
Pyrene	U	2700	mg/kg	0.10	[A] 5.9	[A] 0.99	[A] 0.34
Benzo[a]anthracene	U	2700	mg/kg	0.10	[A] 2.8	[A] 0.62	[A] 0.14
Chrysene	U	2700	mg/kg	0.10	[A] 3.7	[A] 0.87	[A] 0.39
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	[A] 3.6	[A] 1.0	[A] < 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	[A] 1.6	[A] 0.38	[A] < 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	[A] 3.0	[A] 0.64	[A] < 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	[A] 1.8	[A] < 0.10	[A] < 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	[A] 0.64	[A] < 0.10	[A] < 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	[A] 1.8	[A] < 0.10	[A] < 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	[A] 41	[A] 6.6	[A] < 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1540950			Core 1		AC	Plastic Tub 500g
1540951			Core 3		AC	Plastic Tub 500g
1540952			Core 4		AC	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

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2183

Final Report

Report No.:	22-43465-1		
Initial Date of Issue:	24-Nov-2022		
Client	Terra Firma		
Client Address:	t/a Terra Firma The Slate Barn Lower Lowley Dunsford Devon EX6 7BP		
Contact(s):	Info		
Project	Fives Court Mere		
Quotation No.:	Q18-13119	Date Received:	11-Nov-2022
Order No.:	PO-22-039	Date Instructed:	11-Nov-2022
No. of Samples:	4		
Turnaround (Wkdays):	10	Results Due:	24-Nov-2022
Date Approved:	24-Nov-2022		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - Soil

Project: Fives Court Mere

Client: Terra Firma	Chemtest Job No.:				22-43465	22-43465	22-43465	22-43465
Quotation No.: Q18-13119	Chemtest Sample ID.:				1543925	1543926	1543927	1543928
	Sample Location:				IP1	IP2	IP3	IP3
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.35	0.35	0.30	0.50
	Asbestos Lab:						COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD				
ACM Type	U	2192		N/A			-	-
Asbestos Identification	U	2192		N/A			No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	26	25	23	25
pH	U	2010		4.0	[A] 7.4	[A] 7.6	[A] 7.7	[A] 7.6
Cyanide (Total)	U	2300	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Sulphate (Total)	U	2430	%	0.010	[A] 0.084	[A] 0.070	[A] 0.054	[A] 0.10
Arsenic	U	2455	mg/kg	0.5	8.6	9.9	7.6	11
Cadmium	U	2455	mg/kg	0.10	0.62	0.43	0.16	0.75
Chromium	U	2455	mg/kg	0.5	16	24	16	21
Copper	U	2455	mg/kg	0.50	43	44	19	66
Mercury	U	2455	mg/kg	0.05	0.35	0.27	0.09	0.37
Nickel	U	2455	mg/kg	0.50	14	21	15	20
Lead	U	2455	mg/kg	0.50	190	120	52	280
Selenium	U	2455	mg/kg	0.25	0.65	0.92	0.58	0.85
Zinc	U	2455	mg/kg	0.50	170	260	73	330
Chromium (Trivalent)	N	2490	mg/kg	1.0	16	24	16	21
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	[A] 10	[A] 4.5	[A] 4.7	[A] 9.8
Total TPH >C6-C40	U	2670	mg/kg	10	[A] < 10	[A] < 10	[A] < 10	[A] < 10
Naphthalene	U	2700	mg/kg	0.10	[A] 0.61	[A] 0.41	[A] < 0.10	[A] 0.83
Acenaphthylene	U	2700	mg/kg	0.10	[A] 0.50	[A] 0.24	[A] < 0.10	[A] 0.45
Acenaphthene	U	2700	mg/kg	0.10	[A] 0.29	[A] 0.17	[A] < 0.10	[A] 0.37
Fluorene	U	2700	mg/kg	0.10	[A] 0.21	[A] < 0.10	[A] < 0.10	[A] 0.38
Phenanthrene	U	2700	mg/kg	0.10	[A] 2.0	[A] 0.20	[A] < 0.10	[A] 0.51
Anthracene	U	2700	mg/kg	0.10	[A] 0.73	[A] < 0.10	[A] < 0.10	[A] 0.22
Fluoranthene	U	2700	mg/kg	0.10	[A] 3.1	[A] 0.39	[A] < 0.10	[A] 1.2
Pyrene	U	2700	mg/kg	0.10	[A] 3.9	[A] 0.58	[A] < 0.10	[A] 1.6
Benzo[a]anthracene	U	2700	mg/kg	0.10	[A] 1.5	[A] 0.17	[A] < 0.10	[A] 0.96
Chrysene	U	2700	mg/kg	0.10	[A] 2.0	[A] 0.27	[A] < 0.10	[A] 1.1
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	[A] 1.0	[A] < 0.10	[A] < 0.10	[A] 0.22
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	[A] 1.2	[A] < 0.10	[A] < 0.10	[A] 0.58
Benzo[a]pyrene	U	2700	mg/kg	0.10	[A] 2.2	[A] < 0.10	[A] < 0.10	[A] 1.2
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	[A] 2.8	[A] < 0.10	[A] < 0.10	[A] 0.78
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	[A] 0.47	[A] < 0.10	[A] < 0.10	[A] 0.40
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	[A] 0.98	[A] < 0.10	[A] < 0.10	[A] 0.45
Total Of 16 PAH's	U	2700	mg/kg	2.0	[A] 24	[A] 2.4	[A] < 2.0	[A] 11
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1543925			IP1		A	Amber Glass 60ml
1543925			IP1		A	Plastic Tub 500g
1543926			IP2		A	Amber Glass 60ml
1543926			IP2		A	Plastic Tub 500g
1543927			IP3		A	Amber Glass 60ml
1543927			IP3		A	Plastic Tub 500g
1543928			IP3		A	Amber Glass 60ml
1543928			IP3		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

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Certificate of Analysis

Certificate Number 25-27103

Issued: 01-Dec-25

Client Terra Firma Group
The Sustainability Hub
Culver
Longdown
Exeter
Devon
EX6 7BE

Our Reference 25-27103

Client Reference ~ PO-22-039

Order No ~ PO-22-039

Contract Title ~ Fives Court, Mere

Description 8 Soil samples, 8 Leachate prepared by DETS samples.

Date Received 24-Nov-25

Date Started 24-Nov-25

Date Completed 01-Dec-25

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Louise Cook
Contracts Manager



Normec DETS Limited

Unit 2, Park Road Industrial Estate South, Consett, Co Durham, DH8 5PY
Tel: 01207 582333 • email: info-dets@normecgroup.com • normecdets.com

Summary of Chemical Analysis

Matrix Descriptions

Our Ref 25-27103

Client Ref ~ PO-22-039

Contract Title ~ Fives Court, Mere

Sample ID	Depth	Lab No	Completed	Matrix Description
IP101	0.3	2603110	01/12/2025	Brown slightly gravelly, sandy CLAY
IP102	0.3	2603111	01/12/2025	Dark brown, slightly gravelly, sandy and CLAY
IP103	0.55	2603112	01/12/2025	Dark brown, slightly gravelly, sandy and CLAY
IP104	0.45	2603113	01/12/2025	Dark brown, slightly gravelly, sandy and CLAY
IP105	0.25	2603114	01/12/2025	Dark brown, slightly gravelly, sandy and CLAY
IP106	0.3	2603115	01/12/2025	Dark brown, slightly gravelly, sandy and CLAY
IP107	0.25	2603116	01/12/2025	Dark brown, slightly gravelly, sandy and CLAY
IP108	0.3	2603117	01/12/2025	Brown clayey, very gravelly SAND

Summary of Chemical Analysis

Soil Samples

Our Ref 25-27103

Client Ref ~ PO-22-039

Contract Title ~ Fives Court, Mere

Lab No	2603110	2603111	2603112	2603113	2603114	2603115
Sample ID ~	IP101	IP102	IP103	IP104	IP105	IP106
Depth ~	0.30	0.30	0.55	0.45	0.25	0.30
Other ID ~						
Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date ~	18/11/2025	18/11/2025	18/11/2025	18/11/2025	18/11/2025	18/11/2025
Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg	8.0	4.1	12	5.9	15	8.6
Cadmium	DETSC 2301#	0.1	mg/kg	0.4	0.3	0.6	0.4	7.2	0.4
Chromium	DETSC 2301#	0.15	mg/kg	15	13	14	13	7.1	11
Chromium III	DETSC 2301*	0.15	mg/kg	15	13	14	13	7.1	11
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	17	18	69	34	27	20
Lead	DETSC 2301#	0.3	mg/kg	46	18	310	88	99	89
Mercury	DETSC 2325#	0.05	mg/kg	0.08	< 0.05	0.75	0.11	0.33	0.15
Nickel	DETSC 2301#	1	mg/kg	13	14	15	13	9.3	11
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	66	61	190	87	1000	110
Inorganics									
pH	DETSC 2008#		pH	9.1	8.6	8.3	8.1	8.5	8.5
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	0.1	0.2	< 0.1	< 0.1	< 0.1
Organic matter	DETSC 2002#	0.1	%	1.2	1.7	4.7	2.5	2.2	1.4
Sulphate as SO ₄ , Total	DETSC 2321#	100	mg/kg	745	485	1080	609	809	583
Petroleum Hydrocarbons									
EPH (C10-C40): EH_1D_Total	DETSC 3311#	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
PAHs									
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	0.10	< 0.03	< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.75	< 0.03	< 0.03	0.03
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	0.19	< 0.03	< 0.03	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	1.1	< 0.03	0.04	0.11
Pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.77	< 0.03	< 0.03	0.09
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.33	< 0.03	< 0.03	0.05
Chrysene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	0.27	< 0.03	< 0.03	0.05
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.24	< 0.03	< 0.03	0.06
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.09	< 0.03	< 0.03	< 0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.15	< 0.03	< 0.03	0.04
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.06	< 0.03	< 0.03	< 0.03
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.06	< 0.03	< 0.03	< 0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	< 0.10	< 0.10	4.1	< 0.10	< 0.10	0.40
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	1.5

Summary of Chemical Analysis

Soil Samples

Our Ref 25-27103

Client Ref ~ PO-22-039

Contract Title ~ Fives Court, Mere

Lab No	2603116	2603117
Sample ID ~	IP107	IP108
Depth ~	0.25	0.30
Other ID ~		
Sample Type ~	SOIL	SOIL
Sampling Date ~	18/11/2025	18/11/2025
Sampling Time ~	n/s	n/s

Test	Method	LOD	Units		
Metals					
Arsenic	DETSC 2301#	0.2	mg/kg	9.7	3.6
Cadmium	DETSC 2301#	0.1	mg/kg	0.8	0.2
Chromium	DETSC 2301#	0.15	mg/kg	16	7.2
Chromium III	DETSC 2301*	0.15	mg/kg	16	7.2
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	93	4.5
Lead	DETSC 2301#	0.3	mg/kg	240	12
Mercury	DETSC 2325#	0.05	mg/kg	0.37	< 0.05
Nickel	DETSC 2301#	1	mg/kg	16	5.0
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	230	30
Inorganics					
pH	DETSC 2008#		pH	8.1	11.2
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.1	< 0.1
Organic matter	DETSC 2002#	0.1	%	5.8	0.7
Sulphate as SO ₄ , Total	DETSC 2321#	100	mg/kg	890	987
Petroleum Hydrocarbons					
EPH (C10-C40): EH_1D_Total	DETSC 3311#	10	mg/kg	< 10	< 10
PAHs					
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.07	< 0.03
Pyrene	DETSC 3303#	0.03	mg/kg	0.06	< 0.03
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.03	< 0.03
Chrysene	DETSC 3303	0.03	mg/kg	0.04	< 0.03
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.03	< 0.03
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	0.14	< 0.10
Phenols					
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	0.5	< 0.3

Summary of Chemical Analysis

Leachate Samples

Our Ref 25-27103

Client Ref ~ PO-22-039

Contract Title ~ Fives Court, Mere

Lab No	2603118	2603119	2603120	2603121	2603122	2603123
Sample ID ~	IP101	IP102	IP103	IP104	IP105	IP106
Depth ~	0.30	0.30	0.55	0.45	0.25	0.30
Other ID ~						
Sample Type ~	LEACHATE	LEACHATE	LEACHATE	LEACHATE	LEACHATE	LEACHATE
Sampling Date ~	18/11/2025	18/11/2025	18/11/2025	18/11/2025	18/11/2025	18/11/2025
Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Preparation									
BS EN 12457 10:1	DETS 1009*			Y	Y	Y	Y	Y	Y
Metals									
Arsenic, Dissolved	DETS 2306	0.16	ug/l	1.6	1.3	4.7	3.5	1.5	1.9
Cadmium, Dissolved	DETS 2306	0.03	ug/l	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Chromium, Dissolved	DETS 2306	0.25	ug/l	2.4	< 0.25	< 0.25	0.35	0.45	< 0.25
Chromium III, Dissolved	DETS 2306*	1	ug/l	2.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chromium, Hexavalent	DETS 2203	7	ug/l	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0
Copper, Dissolved	DETS 2306	0.4	ug/l	3.3	1.1	2.6	1.4	1.0	1.2
Lead, Dissolved	DETS 2306	0.09	ug/l	4.2	0.22	2.0	1.1	2.1	1.2
Mercury, Dissolved	DETS 2306	0.01	ug/l	< 0.01	< 0.01	< 0.01	0.02	0.01	< 0.01
Nickel, Dissolved	DETS 2306	0.5	ug/l	0.8	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Selenium, Dissolved	DETS 2306	0.25	ug/l	< 0.25	< 0.25	< 0.25	1.3	0.51	0.33
Zinc, Dissolved	DETS 2306	1.3	ug/l	11	1.9	3.1	1.6	11	3.7
Inorganics									
pH	DETS 2008		pH	8.9	8.2	8.2	7.9	8.5	8.5
Cyanide, Total	DETS 2130	40	ug/l	< 40	< 40	< 40	< 40	< 40	< 40
Dissolved Organic Carbon	DETS 2085	2	mg/l	11	5.8	8.3	9.3	5.4	5.5
Sulphate as SO4	DETS 2055	0.1	mg/l	5.0	4.4	7.8	7.8	3.6	3.2
Petroleum Hydrocarbons									
EPH (C10-C40): EH_1D_Total	DETS 3311	10	ug/l	< 10	< 10	< 10	< 10	< 10	< 10
PAHs									
Naphthalene	DETS 3304	0.05	ug/l	0.08	0.08	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	DETS 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01
Acenaphthene	DETS 3304	0.01	ug/l	< 0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	DETS 3304	0.01	ug/l	< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	DETS 3304	0.01	ug/l	0.01	0.02	0.04	0.01	0.02	0.02
Anthracene	DETS 3304	0.01	ug/l	< 0.01	< 0.01	0.01	< 0.01	< 0.01	0.01
Fluoranthene	DETS 3304	0.01	ug/l	0.01	0.01	0.05	0.01	0.03	0.03
Pyrene	DETS 3304	0.01	ug/l	0.01	0.01	0.04	0.01	0.03	0.03
Benzo(a)anthracene	DETS 3304	0.01	ug/l	< 0.01	< 0.01	0.02	< 0.01	0.02	0.02
Chrysene	DETS 3304	0.01	ug/l	< 0.01	< 0.01	0.03	< 0.01	0.03	0.02
Benzo(b)fluoranthene	DETS 3304	0.01	ug/l	< 0.01	< 0.01	0.04	< 0.01	0.04	0.05
Benzo(k)fluoranthene	DETS 3304	0.01	ug/l	< 0.01	< 0.01	0.02	< 0.01	0.01	0.02
Benzo(a)pyrene	DETS 3304	0.01	ug/l	< 0.01	< 0.01	0.03	< 0.01	0.03	0.04
Indeno(1,2,3-c,d)pyrene	DETS 3304	0.01	ug/l	< 0.01	< 0.01	0.02	< 0.01	0.03	0.03
Dibenzo(a,h)anthracene	DETS 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(g,h,i)perylene	DETS 3304	0.01	ug/l	< 0.01	< 0.01	0.02	< 0.01	0.03	0.04
PAH Total	DETS 3304	0.2	ug/l	< 0.20	< 0.20	0.33	< 0.20	0.25	0.30
Phenols									
Phenol - Monohydric	DETS 2130	100	ug/l	< 100	< 100	< 100	< 100	< 100	< 100

Summary of Chemical Analysis

Leachate Samples

Our Ref 25-27103

Client Ref ~ PO-22-039

Contract Title ~ Fives Court, Mere

Lab No	2603124	2603125
Sample ID ~	IP107	IP108
Depth ~	0.25	0.30
Other ID ~		
Sample Type ~	LEACHATE	LEACHATE
Sampling Date ~	18/11/2025	18/11/2025
Sampling Time ~	n/s	n/s

Test	Method	LOD	Units		
Preparation					
BS EN 12457 10:1	DETSC 1009*			Y	Y
Metals					
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	0.66	0.81
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	1.2	3.2
Chromium III, Dissolved	DETSC 2306*	1	ug/l	1.2	3.2
Chromium, Hexavalent	DETSC 2203	7	ug/l	< 7.0	< 7.0
Copper, Dissolved	DETSC 2306	0.4	ug/l	3.0	1.5
Lead, Dissolved	DETSC 2306	0.09	ug/l	4.9	1.3
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	< 0.25	< 0.25
Zinc, Dissolved	DETSC 2306	1.3	ug/l	12	4.4
Inorganics					
pH	DETSC 2008		pH	7.9	9.2
Cyanide, Total	DETSC 2130	40	ug/l	< 40	< 40
Dissolved Organic Carbon	DETSC 2085	2	mg/l	5.2	6.1
Sulphate as SO4	DETSC 2055	0.1	mg/l	3.1	4.8
Petroleum Hydrocarbons					
EPH (C10-C40): EH_1D_Total	DETSC 3311	10	ug/l	< 10	< 10
PAHs					
Naphthalene	DETSC 3304	0.05	ug/l	0.10	0.22
Acenaphthylene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Acenaphthene	DETSC 3304	0.01	ug/l	0.06	0.04
Fluorene	DETSC 3304	0.01	ug/l	0.04	0.03
Phenanthrene	DETSC 3304	0.01	ug/l	0.04	0.02
Anthracene	DETSC 3304	0.01	ug/l	0.02	0.01
Fluoranthene	DETSC 3304	0.01	ug/l	0.04	0.02
Pyrene	DETSC 3304	0.01	ug/l	0.02	0.02
Benzo(a)anthracene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Chrysene	DETSC 3304	0.01	ug/l	0.01	< 0.01
Benzo(b)fluoranthene	DETSC 3304	0.01	ug/l	0.02	< 0.01
Benzo(k)fluoranthene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Benzo(a)pyrene	DETSC 3304	0.01	ug/l	0.01	< 0.01
Indeno(1,2,3-c,d)pyrene	DETSC 3304	0.01	ug/l	0.01	< 0.01
Dibenzo(a,h)anthracene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Benzo(g,h,i)perylene	DETSC 3304	0.01	ug/l	0.01	< 0.01
PAH Total	DETSC 3304	0.2	ug/l	0.39	0.36
Phenols					
Phenol - Monohydric	DETSC 2130	100	ug/l	< 100	< 100

Information in Support of the Analytical Results

Our Ref 25-27103
 Client Ref ~ PO-22-039
 Contract ~ Fives Court, Mere

Containers Received & Deviating Samples

Lab No	Sample ID ~	Date Sampled ~	Containers Received	Holding time exceeded for tests	Incorrect container for tests
2603110	IP101 0.30 SOIL	18/11/25	GJ 250ml, GJ 60ml, PT 1L		
2603111	IP102 0.30 SOIL	18/11/25	GJ 250ml, GJ 60ml, PT 1L		
2603112	IP103 0.55 SOIL	18/11/25	GJ 250ml, GJ 60ml, PT 1L		
2603113	IP104 0.45 SOIL	18/11/25	GJ 250ml, GJ 60ml, PT 1L		
2603114	IP105 0.25 SOIL	18/11/25	GJ 250ml, GJ 60ml, PT 1L		
2603115	IP106 0.30 SOIL	18/11/25	GJ 250ml, GJ 60ml, PT 1L		
2603116	IP107 0.25 SOIL	18/11/25	GJ 250ml, GJ 60ml, PT 1L		
2603117	IP108 0.30 SOIL	18/11/25	GJ 250ml, GJ 60ml, PT 1L		
2603118	IP101 0.30 LEACHATE	18/11/25	GJ 250ml, GJ 60ml, PT 1L		
2603119	IP102 0.30 LEACHATE	18/11/25	GJ 250ml, GJ 60ml, PT 1L		
2603120	IP103 0.55 LEACHATE	18/11/25	GJ 250ml, GJ 60ml, PT 1L		
2603121	IP104 0.45 LEACHATE	18/11/25	GJ 250ml, GJ 60ml, PT 1L		
2603122	IP105 0.25 LEACHATE	18/11/25	GJ 250ml, GJ 60ml, PT 1L		
2603123	IP106 0.30 LEACHATE	18/11/25	GJ 250ml, GJ 60ml, PT 1L		
2603124	IP107 0.25 LEACHATE	18/11/25	GJ 250ml, GJ 60ml, PT 1L		
2603125	IP108 0.30 LEACHATE	18/11/25	GJ 250ml, GJ 60ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

Normec DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 250µm sieve

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Information in Support of the Analytical Results

List of HWOL Acronyms and Operators

Acronym	Description
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
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total

Det

EPH (C10-C40)

Acronym

EH_1D_Total

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETS 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETS 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETS 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETS 2076	Sulphate Aqueous Extract as SO ₄	mg/l	10	Air Dried	No	Yes	Yes
DETS 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETS 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETS 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETS 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETS 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETS 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETS 2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETS 2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETS 2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETS 2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETS 2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETS 2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETS 2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETS 2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETS 2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETS 2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETS 2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETS 2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETS 2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETS 2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETS 2311	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETS 2321	Total Sulphate as SO ₄	%	0.01	Air Dried	No	Yes	Yes
DETS 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETS 3049	Sulphur (free)	mg/kg	0.75	As Received	No	Yes	Yes
DETS 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETS 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETS 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETS 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETS 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETS 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETS 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETS 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETS 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETS 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETS 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETS 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3321	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3521	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3521	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3521	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3521	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3521	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
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Key:

~ Sample details are provided by the client and can affect the validity of the results

* -not accredited.

-MCERTS (accreditation only applies if report carries the MCERTS logo).

\$ -subcontracted.

n/s -not supplied.

I/S -insufficient sample.

U/S -unsuitable sample.

t/f -to follow.

nd -not detected.

End of Report

Certificate of Analysis

Certificate Number 25-28526

Issued: 22-Dec-25

Client Terra Firma Group
The Sustainability Hub
Culver
Longdown
Exeter
Devon
EX6 7BE

Our Reference 25-28526

Client Reference ~ PO-22-039

Order No ~ PO-22-039

Contract Title ~ Fives Court, Mere

Description 8 Leachate prepared by DETS samples.

Date Received 24-Nov-25

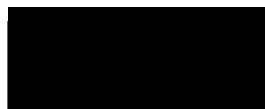
Date Started 05-Dec-25

Date Completed 22-Dec-25

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Louise Cook
Contracts Manager



2139

Summary of Chemical Analysis

Leachate Samples

Our Ref 25-28526

Client Ref ~ PO-22-039

Contract Title ~ Fives Court, Mere

Lab No	2611023	2611024	2611025	2611026	2611027	2611028	2611029	2611030
Sample ID ~	IP101	IP102	IP103	IP104	IP105	IP106	IP107	IP108
Depth ~	0.30	0.30	0.55	0.45	0.25	0.30	0.25	0.30
Other ID ~								
Sample Type ~	LEACHATE	LEACHATE	LEACHATE	LEACHATE	LEACHATE	LEACHATE	LEACHATE	LEACHATE
Sampling Date ~	18/11/2025	18/11/2025	18/11/2025	18/11/2025	18/11/2025	18/11/2025	18/11/2025	18/11/2025
Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units								
Inorganics											
Total Hardness as CaCO3	DETSC 2303	0.1	mg/l	5.28	26.1	45.3	100	106	103	111	33.5

Information in Support of the Analytical Results

Our Ref 25-28526
 Client Ref ~ PO-22-039
 Contract ~ Fives Court, Mere

Containers Received & Deviating Samples

Lab No	Sample ID ~	Date Sampled ~	Containers Received	Holding time exceeded for tests	Incorrect container for tests
2611023	IP101 0.30 LEACHATE	18/11/25	GJ 250ml, GJ 60ml, PT 1L		
2611024	IP102 0.30 LEACHATE	18/11/25	GJ 250ml, GJ 60ml, PT 1L		
2611025	IP103 0.55 LEACHATE	18/11/25	GJ 250ml, GJ 60ml, PT 1L		
2611026	IP104 0.45 LEACHATE	18/11/25	GJ 250ml, GJ 60ml, PT 1L		
2611027	IP105 0.25 LEACHATE	18/11/25	GJ 250ml, GJ 60ml, PT 1L		
2611028	IP106 0.30 LEACHATE	18/11/25	GJ 250ml, GJ 60ml, PT 1L		
2611029	IP107 0.25 LEACHATE	18/11/25	GJ 250ml, GJ 60ml, PT 1L		
2611030	IP108 0.30 LEACHATE	18/11/25	GJ 250ml, GJ 60ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

Normec DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
 Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Key:

~ Sample details are provided by the client and can affect the validity of the results
 * -not accredited.
 # -MCERTS (accreditation only applies if report carries the MCERTS logo).
 \$ -subcontracted.
 n/s -not supplied.
 I/S -insufficient sample.
 U/S -unsuitable sample.
 t/f -to follow.
 nd -not detected.

End of Report Ver 25.10.03

Annex D: Soil Property Test Results

GEOLABS Limited
Bucknalls Lane
Garston
Watford
Hertfordshire
WD25 9XX

Tel: +44(0) 1923 892 190
Fax: +44(0) 1923 892 191
email: admin@geolabs.co.uk
web: www.geolabs.co.uk

Terra Firma (South)
The Slate Barn
Lower Lowley
Dunsford
Devon
EX6 7BP

24 October 2022

Report No : GEO/36529/01

Page 1 of 1

For the attention of Terra Firma (South) / Ms A Samuel

Our ref **GEO / 36529**

Date samples received 27/09/2022
Date written instructions received 27/09/2022
Date testing commenced 28/09/2022
Date of sample disposal 21/11/2022

Project **FIVES COURT, MERE**

Further to your instructions we have pleasure in enclosing the results of the tests you requested in the attached figures.

LABORATORY TEST REPORT

Item No	Test Quantity	Description
1	~	Liquid & Plastic Limits Summary
~	8	Water Content
~	6	Liquid & Plastic Limits
2	2	Particle Size Distribution
3	~	Geochemical Test Summary
~	8	BRE SD1 Suite B - Natural ground + pyrite

Any opinions or interpretations expressed herein are outside the scope of UKAS accreditation. All results contained in this report are provisional unless signed by an approved signatory. The results contained in this report relate only to samples received in the laboratory and are tested 'as received' unless otherwise stated. This report should not be reproduced, except in full, without the written approval of the laboratory. The results reported are applicable only to the test items received by the laboratory.

All the necessary data required by the documented test procedures has been recorded and will be stored for a period of not less than 6 years. This data will be issued to yourselves at your request. All samples will be disposed of after the date shown above. Written confirmation will be required to retain the samples beyond this period and a storage charge may be applied.

We trust that the above meets your requirements and should you require any further information or assistance, please do not hesitate to contact us.

Yours faithfully
on behalf of **GEOLABS Limited**

S Burke
Senior Technician

eurolab



BGA

AGS



BS EN ISO 17892-12 : 2018

SUMMARY OF LIQUID AND PLASTIC LIMIT TESTS

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 %	Liquid Limit %	Plastic Limit %	Plasticity Index %	Percentage Passing 425µm %	Atterberg Classification	Test Type	Sample Condition
TP01	0.40-0.50		B	Dark brown slightly sandy gravelly clayey SILT. Sand is fine. Gravel is fine to medium.	21.3	49	32	17	59	MI	2	3
TP01	0.80		B	Multi-coloured slightly sandy CLAY with rare fine gravel. Sand is fine.	35.7	64	31	33	98	CH	2	3
TP01	1.40		B	Light grey slightly sandy gravelly clayey SILT with abundant cobbles and rare roots.	16.3	~	~	~	~	~	~	~
TP02	1.10		B	Grey mottled brown slightly gravelly slightly sandy CLAY. Gravel is mudstone.	34.1	50	27	23	67	CI	2	3
TP02	1.60		B	Light grey clayey GRAVEL with abundant cobbles.	19.5	~	~	~	~	~	~	~
TP03	0.40		B	Light brown and dark brown mottled slightly gravelly silty CLAY. Gravel is mudstone.	22.6	47	22	25	82	CI	2	3
TP03	0.80		B	Light brown gravelly CLAY. Gravel is mudstone.	21.0	53	26	27	56	CH	2	3
TP04	1.00		B	Grey and brown mottled slightly gravelly slightly sandy CLAY with rare rootlets. Sand is fine. Gravel is fine to medium.	31.8	59	23	36	93	CH	2	3

Test Type:

1 - 1 point 80g / 30° fall cone method.
 2 - 4 point 80g / 30° fall cone method.
 3 - Non plastic determination.

Sample condition:

1 - As Received
 2 - Air Dried
 3 - Washed & Air Dried

Checked and Approved by:



S Burke - Senior Technician
 24/10/2022

Project Number:

GEO / 36529

Project Name:

FIVES COURT, MERE

SUMMARY OF CHEMICAL TESTS ON SOIL

Location	Depth m	Sample Ref	Sample Type	pH Value	Total Acid Soluble Sulphate as SO ₄ %	Water Soluble Sulphate as SO ₄ 2:1 Water:Soil Extract g/l	Total Sulphur %	Water Soluble Chloride g/l	Water Soluble Nitrate g/l	Magnesium g/l	Organic Content %	Mass Loss on Ignition %	Carbonate Content %
TP01	0.40-0.50		B	8.5	0.052	< 0.010	0.16	-	-	-	-	-	-
TP01	0.80		B	8.7	0.041	< 0.010	0.052	-	-	-	-	-	-
TP01	1.40		B	9.1	0.020	< 0.010	0.042	-	-	-	-	-	-
TP02	1.10		B	8.6	0.022	< 0.010	0.043	-	-	-	-	-	-
TP02	1.60		B	9.1	0.024	< 0.010	0.033	-	-	-	-	-	-
TP03	0.40		B	8.5	0.034	< 0.010	0.052	-	-	-	-	-	-
TP03	0.80		B	9.3	0.031	< 0.010	0.043	-	-	-	-	-	-
TP04	1.00		B	8.8	0.020	< 0.010	0.026	-	-	-	-	-	-

Tested by Chemtest Ltd : MCERTS / UKAS No 2183

Checked and Approved by:

Project Number:

GEO / 36529

Project Name:

FIVES COURT, MERE

S Burke - Senior Technician
24/10/2022

GEOLABS®

PARTICLE SIZE DISTRIBUTION

Location TP01
Depth (m) 1.40
Sample Type B

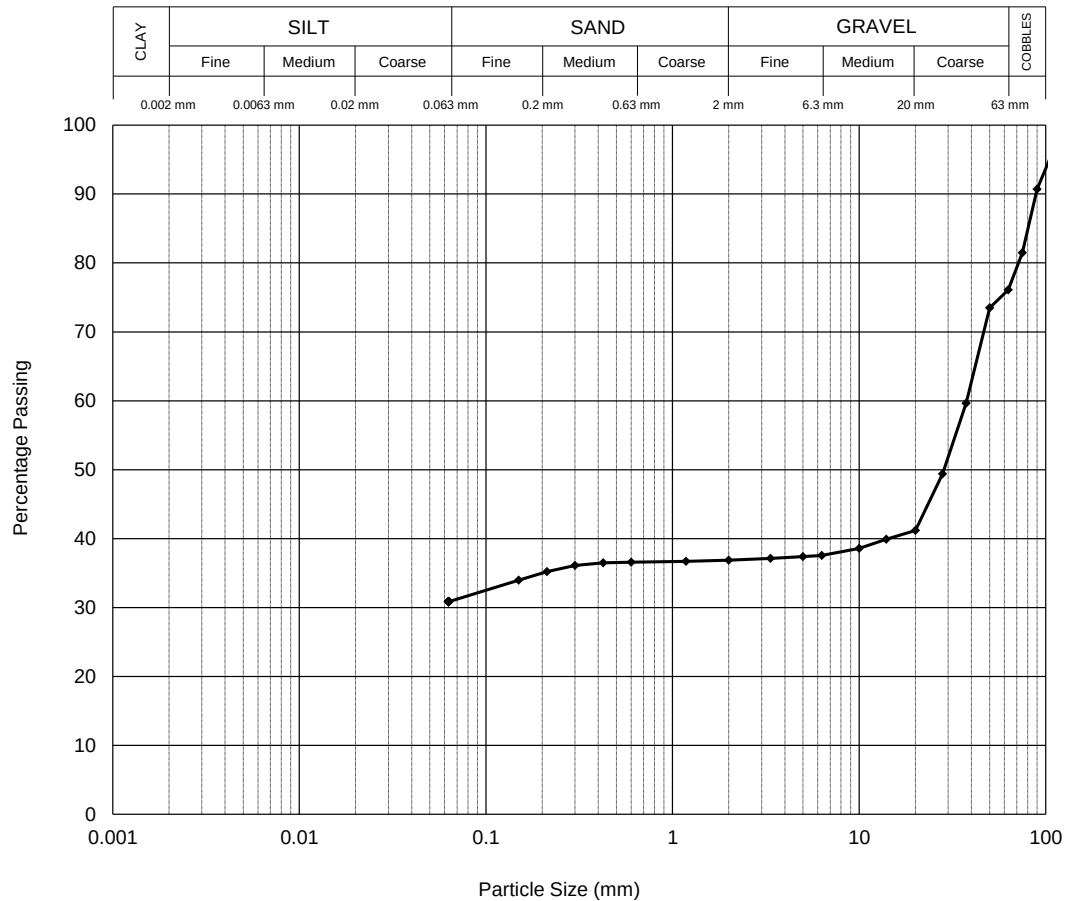
Description

Light grey slightly sandy gravelly clayey SILT with abundant cobbles and rare roots.

Remarks Insufficient sample supplied to comply with BS EN ISO 17892-4 : 2016 minimum mass requirements

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve

Sieve	
Size	% Pass
200.0 mm	100
125.0 mm	100
90.0 mm	91
75.0 mm	81
63.0 mm	76
50.0 mm	73
37.5 mm	60
28.0 mm	49
20.0 mm	41
14.0 mm	40
10.0 mm	39
6.30 mm	38
5.00 mm	37
3.35 mm	37
2.00 mm	37
1.18 mm	37
600 µm	37
425 µm	36
300 µm	36
212 µm	35
150 µm	34
63 µm	31



Particle Proportions	
Cobbles	23.9
Gravel	39.2
Sand	6.0
Silt & Clay	30.9

Tested by AW
Checked and Approved by

Project Number:

GEO / 36529

Project Name:

FIVES COURT, MERE

S Burke - Senior Technician
24/10/2022



PARTICLE SIZE DISTRIBUTION

Location TP02
 Depth (m) 1.60
 Sample Type B

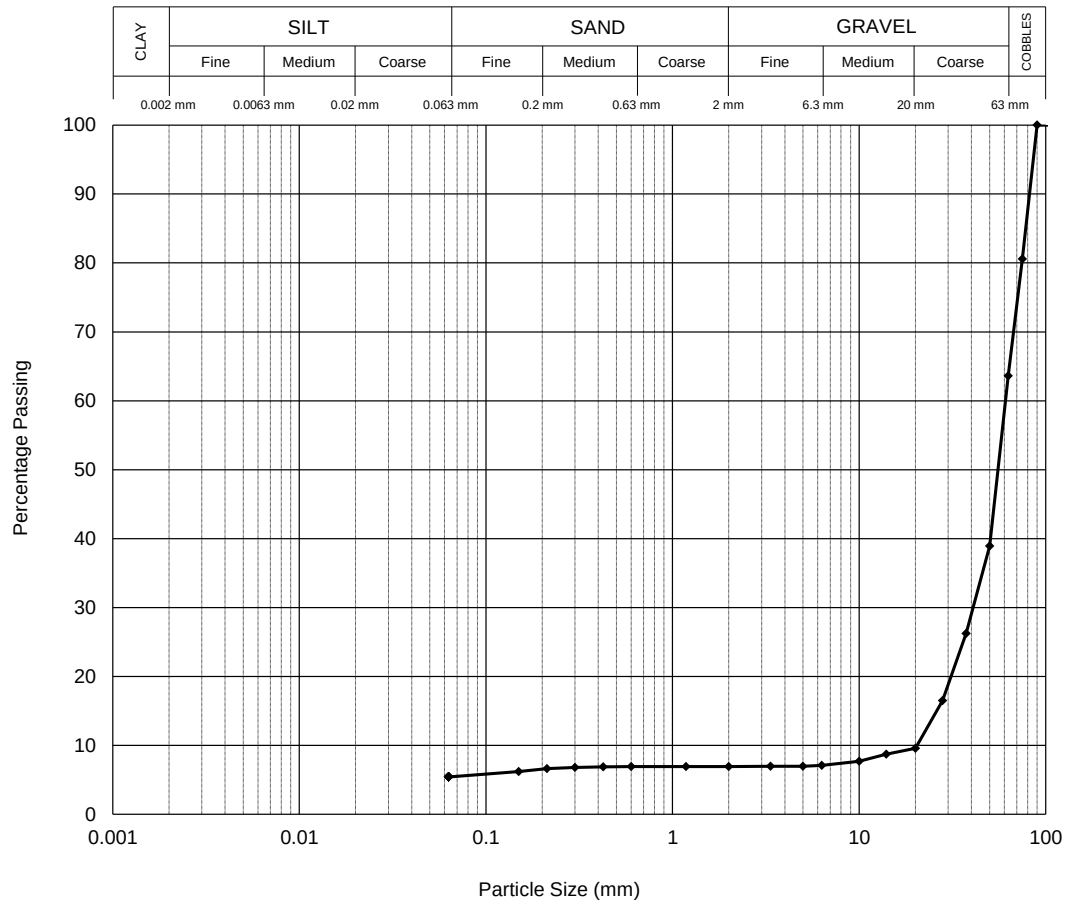
Description

Light grey clayey GRAVEL with abundant cobbles.

Remarks Insufficient sample supplied to comply with BS EN ISO 17892-4 : 2016 minimum mass requirements

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve

Sieve	
Size	% Pass
200.0 mm	100
125.0 mm	100
90.0 mm	100
75.0 mm	81
63.0 mm	64
50.0 mm	39
37.5 mm	26
28.0 mm	16
20.0 mm	10
14.0 mm	9
10.0 mm	8
6.30 mm	7
5.00 mm	7
3.35 mm	7
2.00 mm	7
1.18 mm	7
600 µm	7
425 µm	7
300 µm	7
212 µm	7
150 µm	6
63 µm	5



Particle Proportions	
Cobbles	36.4
Gravel	56.7
Sand	1.5
Silt & Clay	5.4

Tested by AW
 Checked and Approved by

Project Number:

GEO / 36529

Project Name:

FIVES COURT, MERE

