

This report only relates to the advertising of the Hatch Court Light Industrial Area, all references contained in this report to the Stirling Crescent Precinct should therefore be disregarded.



Report on:

**GENERAL SITE AND SOIL EVALUATION
HATCH COURT LIGHT INDUSTRIAL AREA AND
STIRLING CRESCENT PRECINCT
HATCH COURT AND STIRLING CRESCENT,
HIGH WYCOMBE, WA**

WAG250138-01 001 R Rev1

Submitted to:

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Understanding your Report

1. INTRODUCTION

This revised report presents the outcomes of Galt Geotechnics' (Galt's) general site and soil evaluation (SSE) for the proposed Hatch Court Light Industrial Area (HCLIA) and Stirling Crescent Precinct (SCP), at Hatch Court and Stirling Crescent, High Wycombe ("the site"). This revision addresses client queries.

This report is to be read in conjunction with the appended "Requirements and Limitations" found at the back of this report.

2. DEFINITIONS

Site and Soil Evaluation (SSE): an assessment of all relevant constraints and the risks to public health and the environment in accordance with AS1547-2012 "On-site domestic wastewater management". This SSE is a general assessment SSE, with the purpose being to undertake a site suitability assessment for onsite wastewater management and to recommend the type of onsite wastewater system for the proposed development.

A specific assessment is required to support an "application to install" an onsite wastewater system. This is for when a particular type of system/model is proposed, and a detailed design, including management recommendations and operation requirements. This document is not a specific assessment.

Land Application Area (LAA): The unencumbered plan area to which treated sewage from an on-site sewage system is distributed for further in-soil treatment and absorption or evaporation. This area is restricted to the distribution of treated sewage and may not be developed for other purposes.

Land Application System (LAS): The system used to apply effluent from a wastewater treatment unit into or onto the soil for further in-soil treatment and absorption or evaporation.

Effluent: The liquid discharged from a wastewater treatment unit.

Primary Treatment: The separation of suspended material from sewage in septic tanks, primary settling chambers or other structures before discharge to either a LAS or secondary treatment process.

Secondary Treatment: Microbiological digestions and physical settling and filtering processes and decomposition of sewage constituents following primary treatment.

Sewage: Any kind of sewage, faecal matter or urine, and any waste composed wholly or in part of liquid.

Infiltrative Area: Is the area within an LAA that has treated effluent directly discharged onto, and does not include setback areas. I.e., the base of leach drains, evapotranspiration beds etc.

3. GOVERNING STANDARDS, REGULATIONS AND POLICIES

SSEs are governed by various National and State Standards, Regulations and Policies, including:

- AS/NZS 1547:2012, On-site domestic wastewater management.
- Western Australia Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations (1974)
- Western Australia State Planning Policy 2.9, Water Resources (2025)
- Western Australia Environmental Protection Act 1986 Part V (prescribed premises)
- Western Australia Contaminated Sites Act (2003)
- Department of Water and Environmental Regulation (DWER) acid sulfate soils guidance and risk mapping
- City of Kalamunda Design Guidelines for sewage only on site systems and water sensitive urban design

Other regulatory requirements may become relevant depending on the outcomes of any SSE.

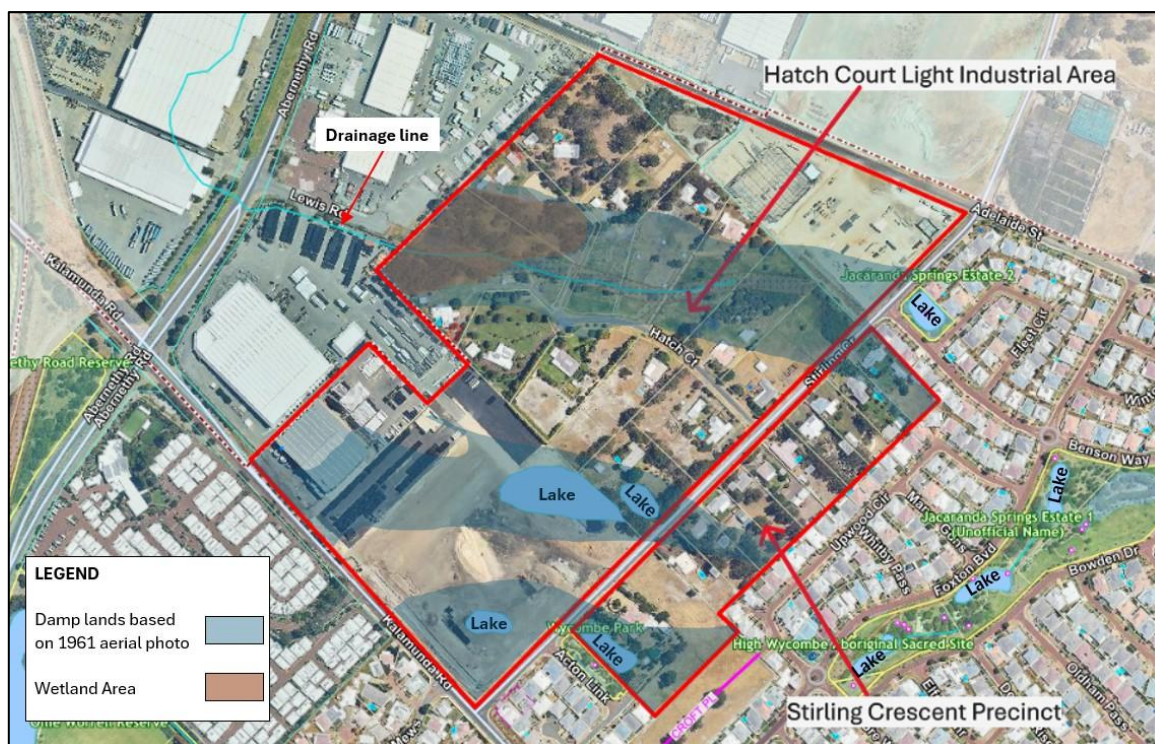
SSEs can be rejected on the basis of not meeting the regulatory requirements of the above. This report is intended to address all these various requirements.

4. SITE DESCRIPTION

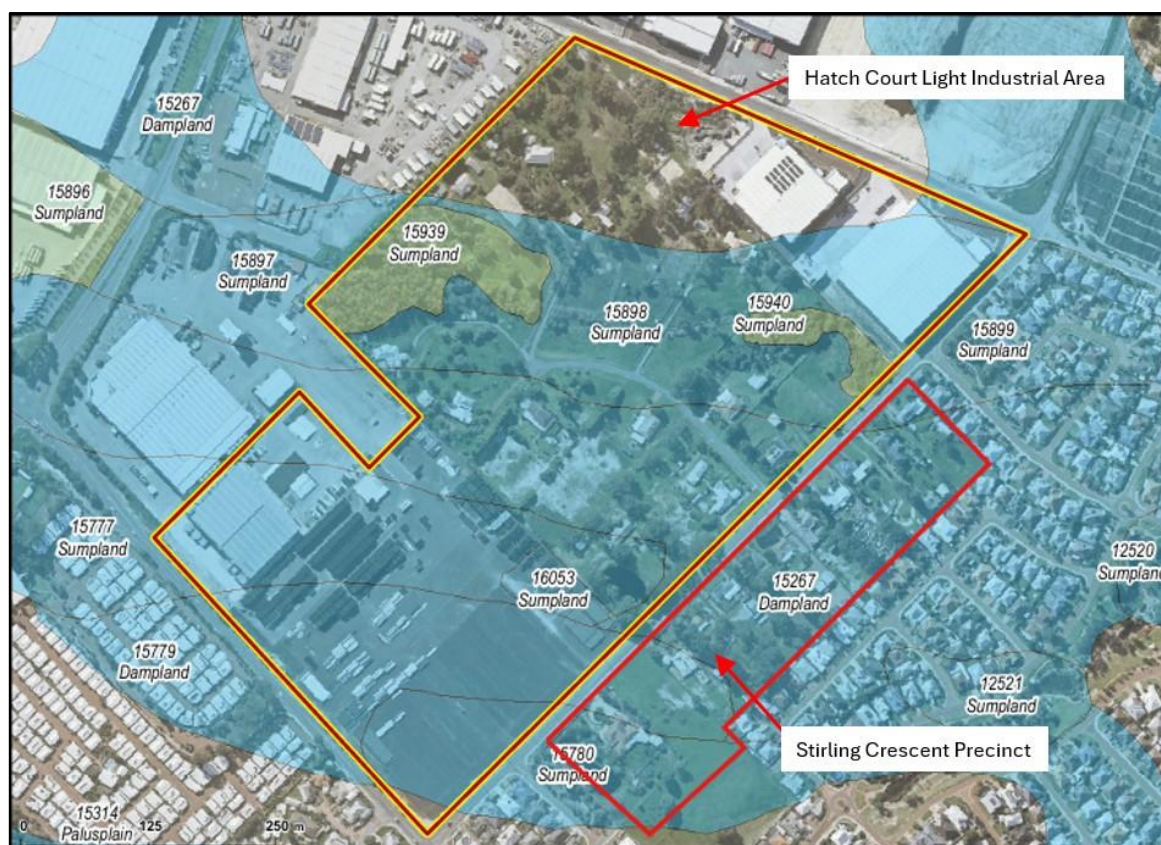
Table 1: Summary of Site

Item	Comment
Site Extent	Refer to In-line Image 1.
Site Area	Hatch Court Light Industrial Area (HCLIA): ~30 ha (16 lots). Stirling Crescent Precinct (SCP): ~6 ha (11 lots).
Current Site Surface Elevation ¹	Around RL 20 m AHD at the north to RL 24 m AHD at the south.
Vegetation	Vegetation present in landscaped areas surrounding houses and associated infrastructure. Vegetation includes grassed areas, some mature trees and some bushes (refer Figure 1). Dense vegetation along drainage line in northern part of site.
DBCA Wetlands	AS shown on In-Line Image 2, indicating that most of the site is a sewage sensitive area.
PDWSA's	None
Current Land Use	Mostly Residential developments and associated infrastructure. South west part of site (Lots 614 and 584) is a hardstand area (refer Figure 1). Some lots have been developed for light industrial use.
Site drainage	Drainage line traverses from west to east in northern part of site. Wetland area present in western corner of site near Lewis Road. Several damp lands are apparent from historical aerial photos (refer In-line Image 2 and 3) which could possibly have been filled. Localised lakes are present in southern part of site, which are judged to be expressions of groundwater. The above features are indicated on Inline Image 1.
Site History ²	Prior to 1979: Site mostly pastoral / agricultural land. Three residences developed on site. 1979 to 1983: Development of residential buildings in SCP. 1983 to 1995: Development of Hatch Court. And associated residential lots / developments. 1995 to 2018: Site relatively unchanged. Some additional residential and light industrial buildings and associated infrastructure constructed progressively during this time. 2018: to Construction of hardstand in western corner of site. 2018 to 2024: progressive construction of hardstand in western part of site (Lots 614 and 584).

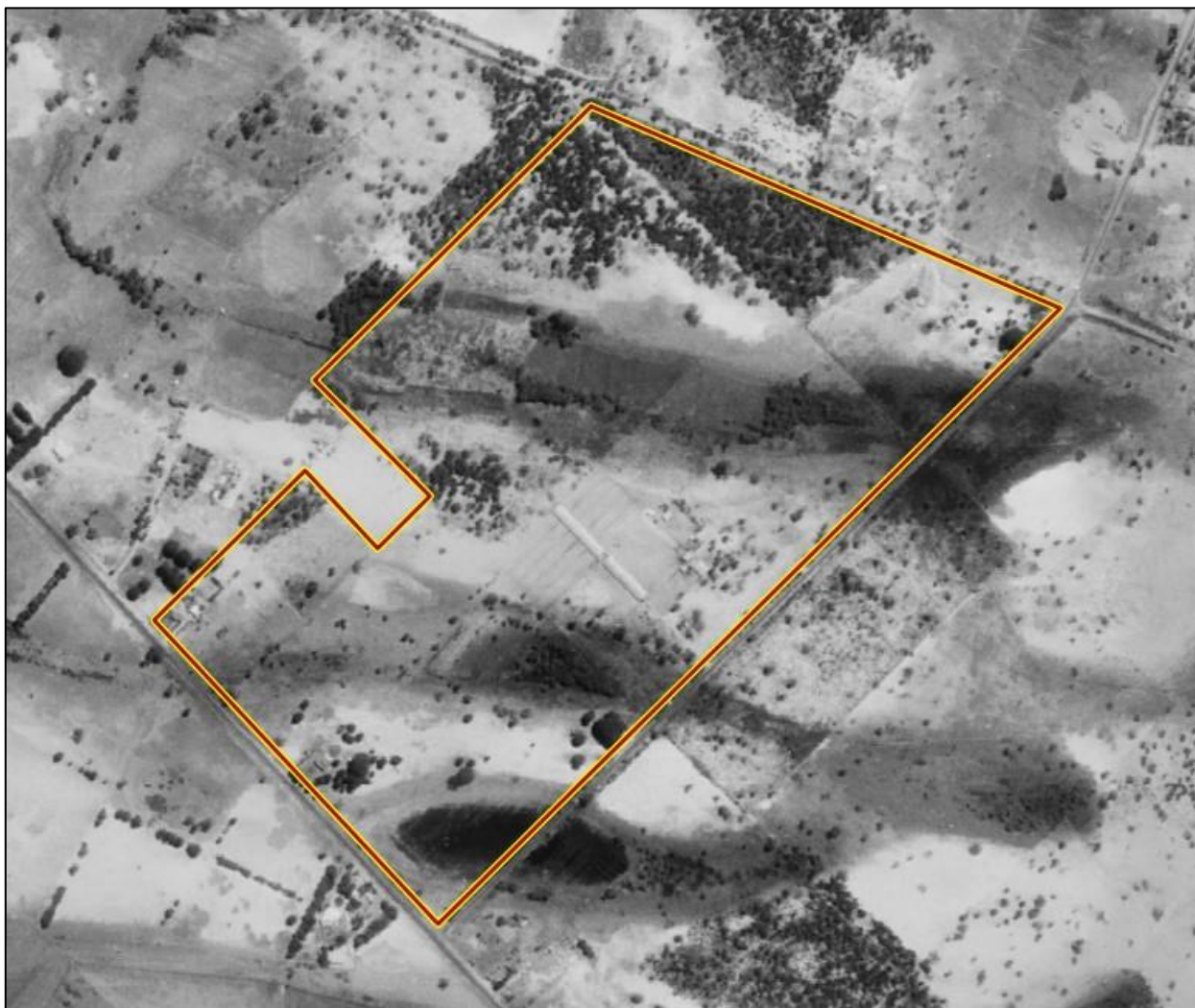
- NOTES:**
1. Site levels based on survey information provided.
 2. Site history based on aerial imagery (Landgate).



In-line Image 1: Approximate extent of subject area



In-line Image 2: Approximate extent of subject area and geomorphic wetlands mapped by DBCA (green and blue)



In-line Image 3: Aerial photo of site in 1961. HCLA marked in red/yellow.

5. PROPOSED DEVELOPMENT

Table 2: Summary of Proposed Development

Item	Comment
Proposed Development	Subdivision of industrial lots with associated infrastructure / development.
Cut/Fill	Assumed typically up to about ± 1 m. Fill is generally anticipated to be required in low lying areas to achieve adequate clearance to groundwater.
Assumed Retaining Walls	Gravity walls up to about 2 m high
Assumed Stormwater Disposal	Possibly On site via soakwells.
Assumed Sewage Disposal ¹	On site via leach drains within individual lots of proposed subdivision. ¹

NOTE: 1. Any onsite systems (if used) serve staff amenities sewage only. Trade/process liquids and wash down water must not infiltrate to ground or enter onsite systems (Refer Section 8.7.13 of SPP-2025).

6. PRELIMINARY HYDRAULIC LOADING

No preliminary hydraulic loading is available at this stage. We have assumed a preliminary hydraulic loading of about 5,000 L/day per lot, but could possibly range from about 2,500 L/day to 7,500 L/day based on individual lot development requirements. The LAA within each lot will need to be resized based on the actual hydraulic loading.

Hydraulic loading must be calculated in accordance with “Supplement to Regulation 29 – Wastewater system loading rates”. The proposed LAA must also be adequately sized to meet the zero effluent storage and Government Sewerage Policy (2019) design requirements. We have assumed that any industrial liquid waste or washdown water is to be disposed off site (and not into the LAA).

The governing LAA area is the larger of SPP conversion factor or the water balance (Refer Section 12.3). Lot sizing will be revisited at DA/application stage prior to installation.

7. PREVIOUS STUDIES

Galt has previously undertaken a number of geotechnical studies for individual lots within and adjacent the sites as summarised below:

- **Located within site:**
 - 27 Hatch Court in May 2025 (report reference: WAG250256-01 001 R Rev1);
 - Lots 8 and 16 Stirling Crescent in November 2024 (report reference: WAG240438-01 001 R Rev2);
- **located north of site / not within site:**
 - 71 Stirling Crescent in March 2023 (report reference: WAG230133-01 001 R Rev1); and
 - Part of Lot 1499 Stirling Crescent in September 2023 (report reference: WAG230463-01 002 R Rev1).

Test locations from the above reports are shown on Figure 1 and summarised in Attached Tables 9 and 10. Relevant information from the above studies are incorporated into this report.

8. FIELDWORK

8.1. Summary

Fieldwork was carried out in the presence of a representative from Galt on 25 August and 5 September 2025 as summarised below.

Table 3: Summary of Field Data

Type	Results Appendix	Summary	Equipment Used	No. Tests	Depth Range (m)
Site Plan	Figure 1	-	Hand held GPS ¹	-	-
Photographs	A	-	-	-	-
Cone Penetration Tests (CPTs)	B	Section 11	Pagani TG 73-200	16	2.34 to 5.20
Boreholes (BH)	C	Section 11	EVH Scout on utility / 7822DT / Hand Auger	14	1.30 to 3.00
Monitoring Wells (MW)	C	Section 8.3	7822DT	3 ²	3.00
Constant Head Permeameter Tests (G)	D	Section 8.2	Guelph Permeameter	7	0.38 to 0.57

- NOTES:**
1. Hand held GPS is accurate to ± 5 m. Test location coordinates and inferred elevations from a provided feature survey are presented as Attached Table 8.
 2. Constant head Guelph Permeameter tests were carried out in hand-auger boreholes in accordance with Appendix G of AS 1547 (2012) “On-site domestic wastewater management”.
 3. One groundwater monitoring well location was unavailable for sampling after installation.

8.2. Permeability Test Results

Table 4: Guelph Permeameter Test Results

Test Location	Soil Description	Depth (m)	Minimum Saturated Hydraulic Conductivity, k_{sat} (m/day)	Soil Category ²
G01/BH01	SAND (SP)	0.38	25.01	1
G02/BH02	SAND (SP-SM)	0.42	0.94 ³	3 ³
G03/BH03	SAND (SP)	0.57	9.05	1
G05/BH05	SAND (SP)	0.44	0.44 ³	4 ³
G07/BH15	SAND (SP)	0.53	9.82	1
G09/BH09	SAND (SP)	0.52	3.94	1
G10/BH10	SAND (SP)	0.47	3.53	1
27 Hatch Court in May 2025 (WAG250256-01 001 R Rev1)				
G01	SAND (SP)	0.33	3.56	1
G02	SAND (SP)	0.41	2.82	2
G03	SAND (SP)	0.40	3.31	1
71 Stirling Crescent in March 2023 (WAG230133-01 001 R Rev1, located north of site / not within site)				
IT01	SAND (SP)	0.50	1.6	2
IT02	SAND (SP)	0.50	2.1	2
IT03	SAND (SP)	0.55	3.3	1
IT04	SAND (SP)	0.60	2.8	2
Lots 8 and 16 Stirling Crescent in November 2024 (WAG240438-01 001 R Rev2)				
G01	SAND (SP)	0.44	5.11	1
G02	SAND (SP)	0.50	3.17	1
G03	SAND (SP)	0.39	3.26	1
G04	SAND (SP)	0.40	10.95	1
Part of Lot 1499 Stirling Crescent in September 2023 (WAG230463-01 002 R Rev1, located north of site / not within site)				
G01	SAND (SP)	1.00	3.9	1
G01A	SAND (SP)	0.80	2.3	2
G01B	SAND (SP)	0.53	> 15	1
G02	SAND (SP-SM)	0.90	0.07 ⁴	- ⁴
G02A	SAND (SP)	0.70	1.74	2
G02B	SAND (SP)	0.70	1.67	2
G02C	SAND (SP)	0.50	>15	1

- NOTES:**
1. Constant head Guelph Permeameter tests were carried out in hand-auger boreholes in accordance with Appendix G of AS1547 (2012) "On-site domestic wastewater management".
 2. Soil type is as per Table 5.2 of AS1547-2012.
 3. Test results likely to have been influenced by shallow groundwater
 4. Result considered spurious, and also not from within the site.
 5. Results in red italics not from within the site and are for context only (not for design).

Table 5: Permeability Test Results (Falling Head)

Test Location	Soil Description	Depth (m)	Minimum Saturated Hydraulic Conductivity, k_{sat} (m/day)	Soil Category ²
27 Hatch Court in May 2025 (WAG250256-01 001 R Rev1)				
BH02 / IT01	SAND (SP)	0.84	3.9	1
BH07 / IT02	SAND (SP)	0.90	3.8	1
BH08 / IT03	SAND (SP)	0.84	31.3	1
BH05 / IT04	SAND (SP)	0.84	4.7	1
Lots 8 and 16 Stirling Crescent in November 2024 (WAG240438-01 001 R Rev2)				
BH07 / IT01	SAND (SP)	0.88	> 15	1
BH08 / IT02	SAND (SP)	0.86	6.3	1
BH10 / IT03	SAND (SP)	0.82	3.9	1
BH16 / IT04	SAND (SP)	0.77	7.1	1
BH06 / IT06	SAND (SP)	0.77	> 15	1
Part of Lot 1499 Stirling Crescent in September 2023 (WAG230463-01 002 R Rev1, located north of site / not within site)				
IT01	SAND (SP)	0.95	<i>10.6</i>	<i>1</i>
IT02	SAND (SP)	1.00	<i>9.4</i>	<i>1</i>

NOTES: 1. *Results in red italics not from within the site and are for context only (not for design).*

8.3. Groundwater Monitoring Wells

Groundwater monitoring wells were installed in boreholes drilled Geoprobe 6620 DT drill rig supplied and operated by Direct Push Probing.

Wells were constructed using 50 mm, class 18 flush-threaded PVC with a 2.5 m screened interval was installed at the base of each well and finished with approximate 0.6 to 0.7 m solid section extending to the surface. Refer to Appendix C for more information on construction details for each well.

A submersible pump was used to remove fine sediments and filter sand from the well. Groundwater levels were measured more than 7 days after installation and development to allow the water in the well to reach hydrostatic levels.

9. LABORATORY TESTING

Geotechnical and chemical laboratory testing of soil samples was undertaken by Western Geotechnical and Laboratory Services (WGLS) and Envirolab Services (WA) at their NATA accredited laboratories. Laboratory test results along with the test methods followed are presented in Appendix F and summarised in Attached Tables 1 and 2.

Chemical test results from previous studies are also included in Attached Table 2.

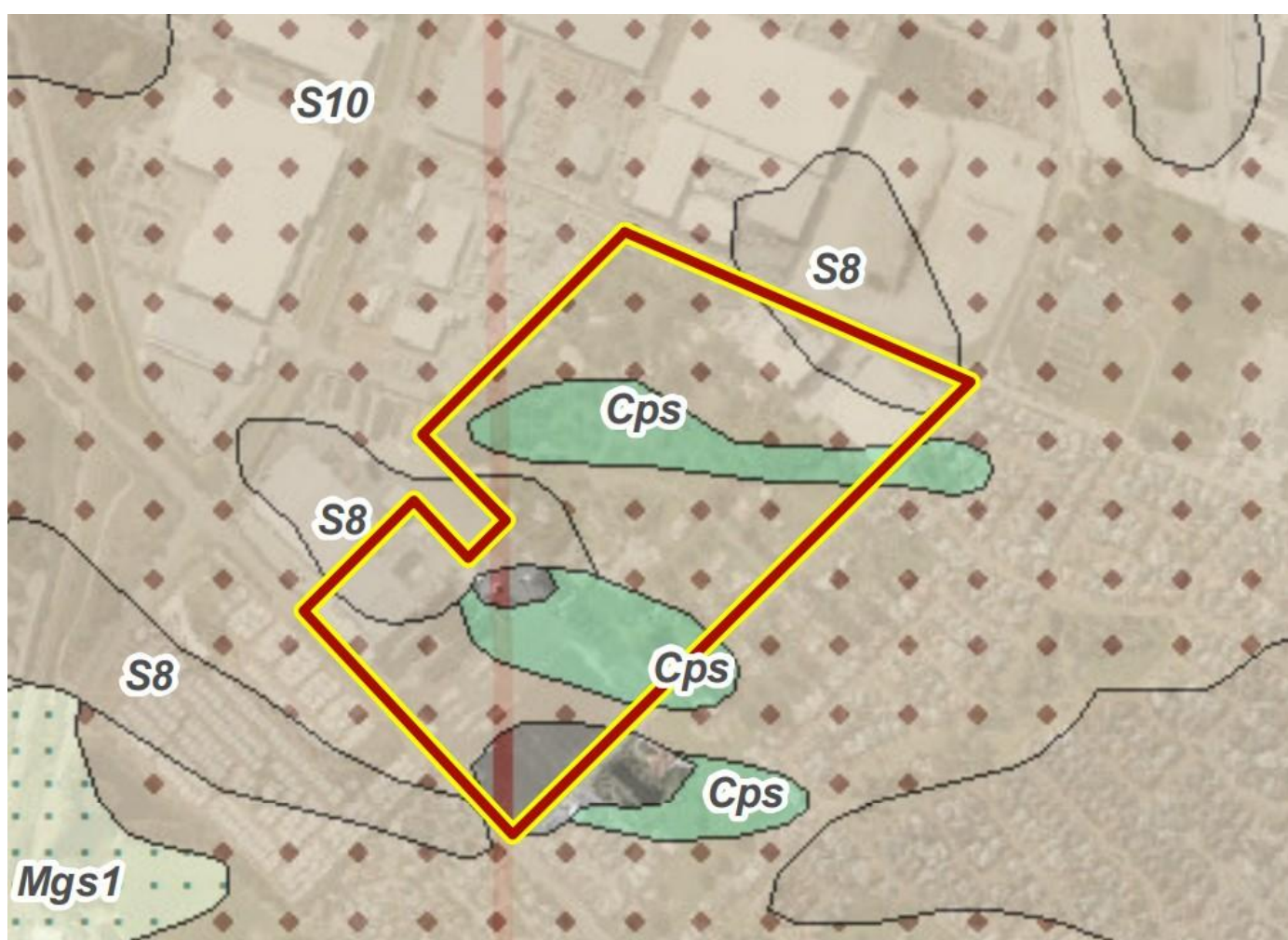
10. SITE CONDITIONS

10.1. Geology

Table 6: Summary of Geology Mapping

Map Sheet	Map Scale	Mapped Soils
Perth	1:50,000	Refer In-Line Image 3 for distribution of following units: - Cps: Peaty CLAY: "dark grey and black with variable sand content of lacustrine origin [Swamp Deposits (Qhw)]" - S8: Bassendean SAND: "very light grey at surface, yellow at depth, fine to medium-grained, sub-rounded quartz, moderately well sorted of eolian origin" - S10: "Thin Bassendean Sand over Guildford formation"

NOTE: Encountered subsurface profile discussed in Section 11.



Inline Image 1: Excerpt from Perth 1:50,000 scale environmental geology map. HCLA marked in red/yellow

10.2. Groundwater and Surface Water

Table 7: Summary of Groundwater and Surface Water Levels

Item	Date	Depth Range (m)	Elevation Range (m AHD)	Comment
Perth Groundwater Atlas	2004	-	North: 13 South: 15	Inferred from levels measured in monitoring wells near the end of summer in 2004 only.
	2019	-	North west: 15.0 to 17.0 South east: 18.5 to 19.5	Inferred from maximum and minimum levels measured in monitoring wells in 2019 only.
DBCA Mapping	-	-	-	Most of the site are mapped as "Sumpland/Dampland", defined as a seasonally inundated/waterlogged area.
Site observations	Aug/Sept 2025	-	Surface to > 3 (Refer Attached Tables 3 to 7)	Groundwater also observed in lakes in southern part of site, and along drainage line in northern part of site. Groundwater could perch on underlying clay / clayey soils at the site.
Recommended Design	-	-	-	Design groundwater levels for the site must be assessed by a suitably qualified civil engineer and / or hydrologist. Filling of the site to gain separation to groundwater levels will be needed. Possibly, subsoil drains may be required.

NOTES: 1. Perth Groundwater Atlas observations based on monitoring wells which are not located at the site.
2. Elevation range for site observations is based on depth and site levels during fieldwork

10.3. Acid Sulfate Soils

According to the DWER online ASS risk database, the proposed site is generally mapped as being within an area of 'moderate to low' ASS risk (highlighted in yellow in In-line Image 4 below), with part of the site identified as having 'high to moderate' risk (highlighted in red in In-line Image 4 below) within the upper 3 m of the soil profile. High risk areas are judged to be associated with potential organic soils mapped in these areas (refer Section 10.1).



In-line Image 4: ASS Risk Mapping (DWER Database)

11. GROUND MODEL

The encountered subsurface conditions are summarised in Attached Tables 3 to 7, and can be generalised as follows:

Most of Site (HCLIA and SCP):

- Surficial Topsoil / Hardstand / Sand Fill Layers; over
- **SAND (SP / SP-SM):** fine to medium grained, sub angular to sub rounded, typically grey, typically trace fines, typically loose to depths of about 0.5 m to 2.5 m and then becomes typically medium dense, extending to depths of 2.0m to over 6.2 m; with
 - **Interbedded layers of cemented sand / 'Coffee Rock':** encountered at some locations as cemented layer of sand typically with a higher fines content (i.e. Silty SAND in some zones) about 0.3 m to 1.0 m thick (where penetrated) and below about 2.0 m to 3.4 m depth (refer Attached Tables 3 to 7 for locations encountered). Coffee rock inferred from CPT refusal at some locations. Associated uncemented zones of discoloured brown / black sand with a higher fines content were also encountered in some locations. Layer underlain by sand; over
- **Guildford Formation interbedded CLAY / Clayey SAND / Sandy CLAY / SAND Layers (SP/SC/CL-CH):** typically stiff to hard cohesive layers and medium dense sand layers, locations of encountered Guildford Formation summarised in Attached Tables 3 to 7.

HCLIA only: within / adjacent drainage line and wetland area¹:

Variable organic soils were encountered as follows:

- **CPT01:** Possible inferred organic soil layer from 0.9 m to 1.2 m depth;
- **BH02:** Trace organics in Clayey SAND from 0.9 m to 2.0 m depth;
- **BH04:** Organic Clayey SAND from 0.7 m to 1.4 m depth
- **BH13/MW01:** PEAT from 0.0 m to 0.6 m depth, and then Organic SAND from 0.6 m to 1.4 m depth.

Notes:

- ¹ Drainage line traverses from west to east in northern part of HCLIA site (refer Figure 1). Wetland area present in western corner of site near Lewis Road. Similar zones of organic soils could be present in lakes at the site (Refer Table 1).
- ² An area of surficial uncontrolled fill about 1.1 m thick was encountered in the northern corner of the HCLIA site at 27 Hatch Court (refer Galt report referenced: WAG250256-01 001 R Rev1);

12. SITE ASSESSMENT

12.1. General

The results of our site assessment are presented in Attached Table 3.

12.2. Horizontal Setbacks

Table 8: Required Horizontal Setback Distances (AS1547)

Feature	Sub-Type	Horizontal Setback Distances (m)
Treatment tanks to buildings, property boundaries, driveways, paths and other tanks	-	1.2
Trenches, beds and soak wells to boundary, building, tanks and other land application systems	-	1.8
Trenches, beds and soak wells to trafficable areas	-	1.2
Any land application system to wells, streams, private bores or underground source of water intended for human consumption	-	30.0
Trenches, beds and soak wells to subsoil drains or open drainage channels	-	6.0
Spray irrigation	Boundaries, buildings, driveways etc.	1.8
	Subsoil and open drains	6.0
	Swimming pools	3.0
	Treatment tanks	1.2
Subsurface Drippers	Boundaries, buildings, driveways etc.	0.5
	Subsoil and open drains	3.0
	Swimming pools	2.0
	Garden bore	10.0
On-site waste system to water resources (river, stream etc.)	-	100.0

12.3. Land Application Areas

12.3.1. State Planning Policy (SPP, 2025)

The minimum LAA size in accordance with the SPP (2025) has been calculated and is shown below. The LAA may need to be resized if the hydraulic loading changes.

Table 9: SPP LAA Calculation

Soil Category (AS1547)	Conversion Factor (Table F.2 of SPP)	Hydraulic Loading (L/day, Section 6)	Minimum LAA (m ²)
1 to 2	0.2	5,000	1,000

12.3.2. Water Balance

Water balance calculations are presented in Appendix E.

As well as the SPP minimum, the LAA must have a minimum size to meet the water balance area requirements (in accordance with the WA Health Regulations Method), calculated as 108 m² per 5,000 L/day of hydraulic loading.

12.3.3. Summary

The SPP sizing will govern with a minimum 1,000 m² total LAA per 5,000 L/day of hydraulic loading. This may need to be resized based on the actual hydraulic loading within each proposed lot.

A detailed plan will be required with the application to install that shows that the required setbacks are met, in particular to the drainage line through the HCLIA (lot configuration will need to be done to allow LAAs to achieve the required setbacks). Provided lot configurations are suitable, there 100 m setback to drainage courses should be achievable.

13. SOIL ASSESSMENT

Details of our soil assessment are presented in Attached Table 4.

14. SITE SUITABILITY AND RECOMMENDATIONS

Based on our assessment, the site is suitable for disposal of wastewater. Wastewater must have secondary treatment (i.e., an ATU).

LAA Location and Setbacks

The exact location of the LAA has not been finalised, however, we judge that setback requirements can be met. A setback of 6 m is required from the open drainage channels, wetland areas, and lakes at the site (refer Table 8). A 100 m setback will be required from the creek line

Any proposed LAA will need to satisfy the setback requirements, including meeting the appropriate distances from site boundaries, buildings, trafficable areas and driveways etc.

Disposal Method

We considered the use of leach drains to dispose of treated effluent is appropriate. Flatbed leach drains or concrete leach drains are likely to be acceptable.

Separation to Groundwater and LAA Surface Level

A minimum 1.5 m clearance to groundwater below leach drains must be achieved.

Groundwater was encountered between 0 m below ground (in low lying areas) and over 3 m below ground (in elevated areas). Surface water (judged to be an expression of the groundwater table) was observed in the table drain, wetland areas and lakes in Section 4.

Design groundwater levels for the site must be assessed by a suitably qualified civil engineer and / or hydrologist. Filling, subsoil drains and / or table drains could possibly be required to control groundwater. Levels for leach drain invert levels can be assessed once design groundwater levels are derived for the development.

We recommend that filling requirements be assessed based on proposed lot configurations and design groundwater levels as established by a hydrologist.

Treatment Units

The wastewater may be treated using an ATU (secondary treatment), also known as aerated wastewater treatment systems (AWTS). ATU's use the processes of aeration followed by clarification to achieve biological treatment of wastewater.

ATU's (or any other proposed system) must be certified to AS1546.3 (2008) and require approval by the Chief Health Officer. A list of approved ATU's is presented in Table 2 on the [Department of Health website](#).

Soil improvement in areas of proposed fill

Any fill at the site below leach drains must have a phosphorous retention index (PRI) of at least 20, and monitored 3-yearly, in accordance with Department of Health requirements. This can be done with a product like 'gypsum', or by using high-PRI soil. High PRI soil must be present to a minimum depth of 200 mm below the base of all infiltration zones and at least 0.5 m in plan outside the leach drain footprint area.

There is no requirement for other fill above leach drains to have a minimum PRI.

15. CLOSURE

GALT GEOTECHNICS

A handwritten signature in black ink, appearing to read "O. Woodland".

Owen Woodland CPEng
Geotechnical Engineer

A handwritten signature in black ink, appearing to read "T. Mardesic".

Tyrone Mardesic CPEng
Geotechnical Engineer

[https://galtgeo.sharepoint.com/sites/wag250138/shared documents/01 dpd si/03 correspondence/wag250138-01 002 r rev1 sse.docx](https://galtgeo.sharepoint.com/sites/wag250138/shared%20documents/01%20dpd%20si/03%20correspondence/wag250138-01%20002%20r%20rev1%20sse.docx)

Attached Table 1: Summary of Geotechnical Index Test Results

Test Name	Sample Depth (m)	Soil Class (AS1726 2017)	Gravel (%)	Sand (%)	Fines (%)	LL (%)	PI (%)	LS (%)	Org %	MMDD (t/m ³)	OMC (%)	CBR (%)	CBR Swell (%)
BH02	1.0 to 1.5	Clayey SAND (SC)	4	71	25	28	5	2.5	-	-	-	-	-
BH03	1.5 to 1.8	SAND (SP)	-	98	2	-	-	-	-	-	-	-	-
BH04	1.0 to 1.4	Organic Clayey SAND (SC)	2	66	32	46	6	3.0	10.7	-	-	-	-
BH06	0.6 to 1.0	SAND (SP-SC)	2	92	6	-	-	-	1.2	-	-	-	-
BH10	1.0 to 1.5	SAND (SP)	-	99	1	-	-	-	-	-	-	-	-
G07	0.5 to 0.6	SAND (SP)	-	97	3	-	-	-	0.4	-	-	-	-
G10	0.4 to 0.5	SAND (SP)	1	94	5	-	-	-	1.1	-	-	-	-

27 Hatch Court in May 2025 (WAG250256-01 001 R Rev1)

BH04	0.3 to 0.5	SAND (SP)	0	95	5	-	-	-	1.7	-	-	-	-
BH06	1.0 to 1.4	SAND (SP)	0	96	4	-	-	-	0.5	-	-	-	-
BH07	0.3 to 0.7	SAND (SP)	6	92	2	-	-	-	2.7	-	-	-	-

Lots 8 and 16 Stirling Crescent in November 2024 (WAG240438-01 001 R Rev2)

G01	0.1 to 0.5	(SP) SAND	0	96	4	-	-	-	-	-	-	-	-
BH16	0.1 to 0.5	(SP) SAND	0	96	4	-	-	-	-	-	-	-	-

Part of Lot 1499 Stirling Crescent in September 2023 (WAG230463-01 002 R Rev1). Located north of site (not within site).

BH01	0.1 to 0.5	SAND (SP)	1	96	3	-	-	-	-	1.76	12.5	20	0.0
BH03	0.6 to 1.2	SAND (SP)	-	95	5	-	-	-	-	-	-	-	-
BH04	0.1 to 0.4	SAND (SP)	-	96	4	NO	NP	0.0	-	-	-	-	-
BH06	0.5 to 1.2	SAND (SP)	-	97	3	NO	NP	0.0	-	-	-	-	-
BH07	0.0 to 0.4	SAND (SP)	1	96	3	-	-	-	-	1.73	14.5	19	0.0
G02	0.2 to 0.6	SAND (SP-SM)	5	89	6	-	-	-	-	-	-	-	-

Notes	1.	Particle size distribution (by mass)			
		Gravel: 2.36 mm – 63 mm		Sand: 0.075 mm – 2.36 mm	Fines: <0.075 mm
2.	Atterberg Limits				
		LL: Liquid limit		PI: Plasticity index	LS: Linear shrinkage
		NO: Not obtainable		NP: Non-plastic	
3.	Org: Organic content (by mass)				
4.	Modified compaction				
		MMDD: Modified maximum dry density		OMC: Optimum moisture content	
6.	CBR: California bearing ratio				
		Remoulding dry density ratio: 95% MMDD		Surcharge: 6.75 kg	Soaking: 4-day soaked

Attached Table 2: Summary of Chemical Test Results

Test Name	Sample Depth (m)	Soil Class (AS1726 2017)	Electric Conductivity (us/cm)	pH	Phosphorus Retention Index	Exchangeable Sodium Percentage (%)
BH02	1.0 to 1.5	Clayey SAND (SC)	300	8.4	21	-
BH04	1.0 to 1.4	Organic Clayey SAND (SC)	1000	4.8	200	-
BH06	0.5 to 1.0	SAND (SP-SC)	110	7.3	4.0	-
G07	0.5 to 0.6	SAND (SP)	14	7.8	0.5	-
G10	0.4 to 0.5	SAND (SP)	73	7.7	1.5	-
27 Hatch Court in May 2025 (WAG250256-01 001 R Rev1)						
G01	0.3	SAND (SP)	66	6.6	-0.14	-
G03	0.4	SAND (SP)	60	6.6	-0.48	-
Lots 8 and 16 Stirling Crescent in November 2024 (WAG240438-01 001 R Rev2)						
G01	0.1 to 0.5	SAND (SP)	32	5.8	-0.11	Not Reportable
BH16	0.1 to 0.5	SAND (SP)	36	6.2	-0.25	Not Reportable
Part of Lot 1499 Stirling Crescent in September 2023 (WAG230463-01 002 R Rev1). Located north of site (not within site).						
BH04	0.1 to 0.4	SAND (SP)	-	-	0.62	-
G02	0.2 to 0.6	SAND (SP-SM)	-	-	1.2	-

Attached Table 3: Summary of encountered conditions (August / September 2025)

Test Location	Hole Depth (m)	Depth to Groundwater (m BGL ¹)	Depth to top of clay / clayey or cemented ⁴ soil (m BGL ¹)	Organic Soil layers (m BGL ¹)
CPT01	5.1	0.60	0.9 to 1.2 and from 4.0	possibly from 0.9 to 1.2
CPT02	5.1	0.40	3.0	-
CPT03	5.1	1.70	2.2	-
CPT04	5.1	Collapsed ²	3.5⁴	-
CPT05	2.3	0.60	-	-
CPT06	5.1	0.80	2.0⁴	-
CPT08	5.1	0.20	-	-
CPT09	5.1	1.40	3.4⁴	-
CPT10	5.1	0.20	-	-
CPT12	5.1	0.60	-	-
CPT13	5.1	0.00	4.2	-
CPT14	5.1	0.80	4.1	-
CPT15	5.1	0.80	3.2⁴	-
CPT16	3.0	1.10	2.8⁴	-
CPT19	5.1	0.80	-	-
CPT20	5.1	0.80	2.2⁴	-
BH01	3.0	2.10	-	-
BH02	3.0	0.80	0.9	0.9 to 2.0 - trace organics in clayey sand
BH03	3.0	1.60	2.6⁴	-
BH04	3.0	0.10	0.7	0.7 to 1.4 Organic clayey sand
BH05	1.3	0.60	-	-
BH06	3.0	0.40	2.6	-
BH09	3.0	1.30	-	-
BH10	3.0	1.60	-	-
BH11	3.0	1.00	-	-
BH12 / MW01	3.0	1.00	0.0 to 1.4 and 2.6	Peat from 0.0 to 0.6, Organic sand from 0.6 to 1.4
BH13	3.0	0.90	-	-
BH14 / MW03	3.0	0.28	2.0	-
BH15	3.0	1.10	-	-
BH16 / MW02	3.0	1.15	2.0⁴	-

- NOTES:**
1. 'BGL' – below current ground level
 2. CPT probe hole collapsed before groundwater could be measured.
 3. CPT probes may not have had sufficient time to recharge to hydrostatic levels.
 4. Coffee rock layer, typically about 0.3 m to 1.0 m thick, and underlain by sand. Coffee rock inferred from CPT refusal at some locations.
 5. Investigation typically encountered thin surficial fill / topsoil sand over clay / clayey or cemented soil layers as stated in table above. Thicker surficial organic layers encountered near / within drainage line in northern part of site as summarised above. Refer to appendices for further details.

Attached Table 4: Summary of encountered conditions at 27 Hatch Court (May 2025)

Test Location	Hole Depth (m)	Depth to Groundwater (m BGL ¹)	Depth to top of clay / clayey soil (m BGL ¹)
BH01	3	1.7	-
BH02	3	-	-
BH03	3	-	-
BH04	3	1.9	2.8
BH05	3	2.8	-
BH06	3	-	-
BH07	3	2.7	-
BH08	3	-	-
CPT01	6.5	collapsed	6.2
CPT02	5.8	collapsed	2.2
CPT03	6.3	collapsed	6.1
CPT04	6.4	collapsed	3.5
CPT05	6.4	collapsed	6.2
CPT06	6.4	collapsed	2.2

- NOTES:**
1. 'BGL' – below current ground level
 2. CPT probe hole collapsed before groundwater could be measured.
 3. CPT probes may not have had sufficient time to recharge to hydrostatic levels.
 4. Investigation typically encountered thin surficial fill / topsoil sand over clay / clayey or cemented soil layers as stated in table above. Refer Report WAG250256-01 001 R Rev1 for further details.

Attached Table 5: Summary of groundwater depths during fieldwork at 71 Stirling Crescent (March 2023)

Test Location	Hole Depth (m)	Depth to Groundwater (m BGL ¹)	Depth to top of cemented ⁴ soil (m BGL ¹)
BH01	1.7	-	1.7 ⁴
BH02	2.0	-	-
BH03	2.0	-	-
BH04	1.0	-	1.0 ⁴

- NOTES:**
1. 'BGL' – below current ground level
 2. CPT probe hole collapsed before groundwater could be measured.
 3. CPT probes may not have had sufficient time to recharge to hydrostatic levels.
 4. Coffee rock layer; inferred from borehole refusal.
 5. Investigation typically encountered thin surficial fill / topsoil sand over clay / clayey or cemented soil layers as stated in table above. Refer Report WAG230133-01 001 R Rev 1 for further details. **Investigation located north of site (not within site).**

Attached Table 6: Summary of groundwater depths during fieldwork at Lots 8 & 16 Stirling Crescent (November 2024)

Test Location	Hole Depth (m)	Depth to Groundwater (m BGL ¹)	Depth to top of clay / clayey or cemented ⁴ soil (m BGL ¹)
BH01	3.00	-	-
BH02	3.00	-	-
BH03	3.00	-	-
BH04	3.00	-	-
BH05	2.70	1.2	-
BH06	3.00	-	-
BH07	3.00	-	-
BH08	2.00	-	2.0 ⁴
BH09	3.00	-	-
BH10	3.00	-	-
BH11	3.00	-	-
BH12	3.00	-	-
BH13	3.00	-	-
BH14	2.88	-	2.5 ⁴
BH15	2.30	-	2.2 ⁴
BH16	3.00	-	-
CPT01	6.90	-	6.5
CPT02	2.70	collapsed	1.8 ⁴
CPT03	6.20	collapsed	6.0
CPT04	6.20	collapsed	-
CPT05	6.20	collapsed	-
CPT06	6.20	collapsed	3.0 ⁴
CPT07	2.83	collapsed	2.8 ⁴
CPT08	2.86	collapsed	2.8 ⁴
CPT09	2.91	collapsed	2.9 ⁴
CPT10	2.51	collapsed	2.5 ⁴

- NOTES:**
1. 'BGL' – below current ground level
 2. CPT probe hole collapsed before groundwater could be measured.
 3. CPT probes may not have had sufficient time to recharge to hydrostatic levels.
 4. Coffee rock layer, typically about 0.3 m to 1.0 m thick, and underlain by sand. Coffee rock inferred from CPT refusal at some locations.
 5. Investigation typically encountered thin surficial fill / topsoil sand over clay / clayey or cemented soil layers as stated in table above. Refer Report WAG240438-01 001 R Rev2 for further details.

Attached Table 7: Summary of groundwater depths during fieldwork at part of Lot 1499 Stirling Crescent (September 2023)

Test Location	Hole Depth (m)	Depth to Groundwater (m BGL ¹)	Depth to top of clay / clayey or cemented ⁴ soil (m BGL ¹)
BH01	2.0	-	-
BH02	2.0	1.7	-
BH03	2.0	1.1	-
BH04	2.0	1.9	-
BH05	2.0	1.9	-
BH06	2.0	-	-
CPT01	3.2	collapsed	3.0⁴
CPT02	8.4	2.5	2.5 to 3.5⁴ , and from 8.0
CPT03	3.0	collapsed	2.8⁴
CPT04	8.2	1.9	-
CPT05	8.2	collapsed	3.4 to 4.0⁴ and 5.6
CPT06	2.7	collapsed	2.6⁴
CPT07	8.2	1.7	4.0

- NOTES:**
1. 'BGL' – below current ground level
 2. CPT probe hole collapsed before groundwater could be measured.
 3. CPT probes may not have had sufficient time to recharge to hydrostatic levels.
 4. Coffee rock layer, typically about 0.3 m to 1.0 m thick, and underlain by sand. Coffee rock inferred from CPT refusal at some locations.
 5. Investigation typically encountered thin surficial fill / topsoil sand over clay / clayey or cemented soil layers as stated in table above. Refer Report WAG230463-01 002 R Rev1 for further details. **Investigation located north of site (not within site).**

Attached Table 8: Summary of test coordinates for site in August and September 2025

Test Location	Easting (m MGA) ¹	Northing (m MGA) ¹	Inferred Elevation (m AHD) ²
BH01/G01	405646	6467292	21.0
BH02/G02	405494	6467178	20.0
BH03/G03	405553	6467032	21.5
BH04	405746	6467085	20.6
BH05/G05	405643	6467054	21.5
BH06	405888	6467056	21.5
BH09/G09	405813	6466819	24.0
BH10/G10	405684	6466750	24.2
BH11	405591	6467171	20.3
BH12/MW01	405435	6467134	19.8
BH13	405618	6467087	20.5
BH14/MW03	405880	6467094	21.5
BH15	405967	6466919	24.0
BH16/MW02	405776	6466716	24.2
CPT01	405528	6467116	20.7
CPT02	405562	6467224	20.5
CPT03	405714	6467260	21.5
CPT04	405645	6467163	20.5
CPT05	405569	6467133	20.0
CPT06	405548	6467067	21.5
CPT08	405689	6467097	20.5
CPT09	405729	6467175	21.5
CPT10	405786	6467141	21.0
CPT12	405474	6467082	21.5
CPT13	405811	6467067	21.1
CPT14	405840	6466998	22.8
CPT15	405997	6466982	23.7
CPT16	405840	6466845	24.0
CPT19	405712	6466747	24.5
CPT20	405722	6466643	24.0
G07	405960	6466917	24.0

NOTES: 1. Hand held GPS is accurate to ± 5 m.
2. Elevation inferred from feature survey provided.

Attached Table 9: Summary of test coordinates for 27 Hatch Court (report reference: WAG250256-01 001 R Rev1, dated May 2025)

Test Location	Easting (m MGA) ¹	Northing (m MGA) ¹	Inferred Elevation (m AHD) ²
BH01	405610	6467113	20.5
BH02/IT01	405543	6467282	20.5
BH03	405566	6467265	20.5
BH04	405625	6467229	20.9
BH05/IT04	405660	6467284	21.0
BH06	405612	6467287	21.0
BH07/IT02	405610	6467330	21.2
BH08/IT03	405648	6467325	21.5
G01	405582	6467303	20.6
G03	405664	6467265	21.1
G02	405667	6467329	21.5
CPT01	405635	6467351	21.4
CPT02	405653	6467260	21.0
CPT03	405635	6467298	21.1
CPT04	405674	6467304	21.5
CPT05	405586	6467301	20.6
CPT06	405600	6467244	20.8

NOTES: 1. Hand held GPS is accurate to ± 5 m.
2. Elevation inferred from feature survey provided.

Attached Table 10: Summary of test coordinates for Lots 8 and 16 Stirling Crescent (WAG240438-01 001 R Rev2, dated November 2024)

Test Location	Easting (m MGA) ¹	Northing (m MGA) ¹	Inferred Elevation (m AHD) ²
G04	405773	6466889	23.5
G03	405801	6466917	23.5
G02	405701	6467032	21.8
G01/SP01	405684	6467031	21.7
CPT01	405686	6467009	22.5
CPT02	405667	6466990	22.5
CPT03	405644	6466967	22.5
CPT04	405625	6466946	22.5
CPT05	405610	6466932	22.5
CPT06	405595	6466917	22.5
CPT07	405723	6466916	23.5
CPT08	405751	6466917	23.5
CPT09	405754	6466945	23.5
CPT10	405780	6466951	24.0
BH01	405677	6467000	22.5
BH02	405656	6466980	22.5
BH03	405635	6466957	22.5
BH04	405616	6466940	22.5
BH05	405602	6466925	22.5
BH07	405638	6466925	22.5
BH08	405671	6466957	22.5
BH09	405707	6466958	23.0
BH10	405706	6466986	23.0
BH11	405737	6466990	22.7
BH12	405768	6466964	23.3
BH13	405768	6466934	23.5
BH14	405736	6466929	23.5
BH15	405738	6466902	23.5
BH16/SP02	405772	6466900	23.5
BH06	405797	6466926	23.5
IT01	405633	6466920	22.5
IT02	405677	6466952	23.0
IT03	405711	6466982	23.0
IT04	405767	6466897	23.5
IT05	405800	6466931	23.5

NOTES: 1. Hand held GPS is accurate to ± 5 m.
2. Elevation inferred from feature survey provided.

Attached Table 11: Site Assessment

Consideration	Assessment / Discussion	Reference	Level of Constraint	Mitigation Measures
Geology	Refer Section 10.1. Mapped as Bassendean sand of variable thickness, with swamp deposits mapped in low lying areas (refer Inline Image 1). LAA are only to be located in areas of deep sand, at least 2 m above any clay or coffee rock layers.	Perth Sheet of the 1:50,000 Environmental Geology Series Map	Nil	-
Climate	To satisfy zero storage requirements, minimum LAA's to be sized as required for hydraulic loading.	Appendix E, Water Balance Calculation	Low	LAA to be greater than area required to meet zero storage requirement.
Exposure	Site will be cleared and broadly levelled - minimal/no tree cover or significant site aspect.	-	Low	-
Vegetation	Assumed area cleared, with minimal vegetation (i.e. limited to grass and / or shrubs)	-	Low	-
Landform and Drainage	The site generally undulates, but slopes down towards the drainage line traversing from west to east in the northern part of the site. Site drainage is controlled by this drainage line. Localised lakes are present in southern part of site, which are judged to be expressions of groundwater.	-	Moderate	Civil design to minimise rainfall run-on and run-off (using bunds/curbs etc.)
Slope	The proposed development area will be relatively flat after earthworks.	-	Low	Slope is <10% grade.
Fill (Imported)	Filling is anticipated to achieve adequate clearance to groundwater. Fill could be site derived or imported and must have similar properties as that encountered (i.e. All fill must be Soil Category 1 to 2).	-	Low	Any imported fill must have minimum hydraulic conductivity of 1.4 m/day (i.e. All fill must be Soil Category 1 to 2).
PDWSAs	The site is not mapped as being within a public drinking water source area.	Department of water (DoW) mapping service	-	-
SSAs	The site is mapped as a Sewage Sensitive Area, being within 1 km of a significant wetland and within the catchment of the Swan Coastal Plan.	Department of lands and heritage (DPLH) mapping service.	Moderate	The underside of any disposal area must be at least 1.5 m above the design groundwater level, provided a secondary treatment system is used.

Attached Table 11: Site Assessment CONTINUED (Page 2 of 2)

Consideration	Assessment / Discussion	Reference	Level of Constraint	Mitigation Measures
Surface gravel and rock outcrops	We did not note any significant surficial gravel and rock outcrops.	Section 11	Low	-
Groundwater Level	Groundwater currently between 0 m below ground (in low lying areas) and over 3 m below ground (in elevated areas). Surface water (judged to be an expression of the groundwater table) was observed in the table drain, wetland areas and lakes discussed above and in Section 4. Design groundwater levels for the site must be assessed by a suitably qualified civil engineer and / or hydrologist. Filling, subsoil drains and / or table drains could possibly be required.	Table 7	Moderate	The underside of any disposal area must be at least 1.5 m above the design groundwater level, provided a secondary treatment system is used.
Groundwater Separation	A minimum groundwater separation of 0.6 m is required for treated effluent at the site.	Government Sewerage Policy (2019)	Moderate	Refer comment above.
Rainfall Run-on/Seepage	Site slopes and levels will be changed significantly by bulk earthworks. Some rainfall run-on and run-off may occur.	-	Moderate	Incident rainfall must be diverted away from LAA's using curbs or diversion bunds. Similarly, any run-off must be prevented by either having a level LAA, or by using retention bunds.
Surface Water/Water Resources	As discussed in Section 4, Surface water (judged to be an expression of the groundwater table) was observed in - the table drain traversing west to east through the northern part of the site - the wetland area in the western part of the site near Lewis Road; and - lakes in the southern part of the site. It is possible some of these features will be removed as part of earthworks.	-	Moderate	LAA to be positioned so the required minimum setbacks to water resources are met. Particularly a 6 m offset from open drainage channels (refer Table 8) and 100 m offset from the creek in the HCLIA.
Flood Potential	The site is not mapped as a Floodplain Development Control Area	DWER floodplain mapping	-	-
Setbacks	All setbacks to be met.	Section 12.2	High	LAA to meet setback requirements.
LAA	The minimum total LAA area by the SPP 2025 method is 1,000 m ² per 5,000 L/day of hydraulic loading. This will need to be resized as required for the actual hydraulic loading within each proposed lot.	Section 12.3.3	Low	LAA to be sized to meet the minimum required infiltrative area and setbacks.

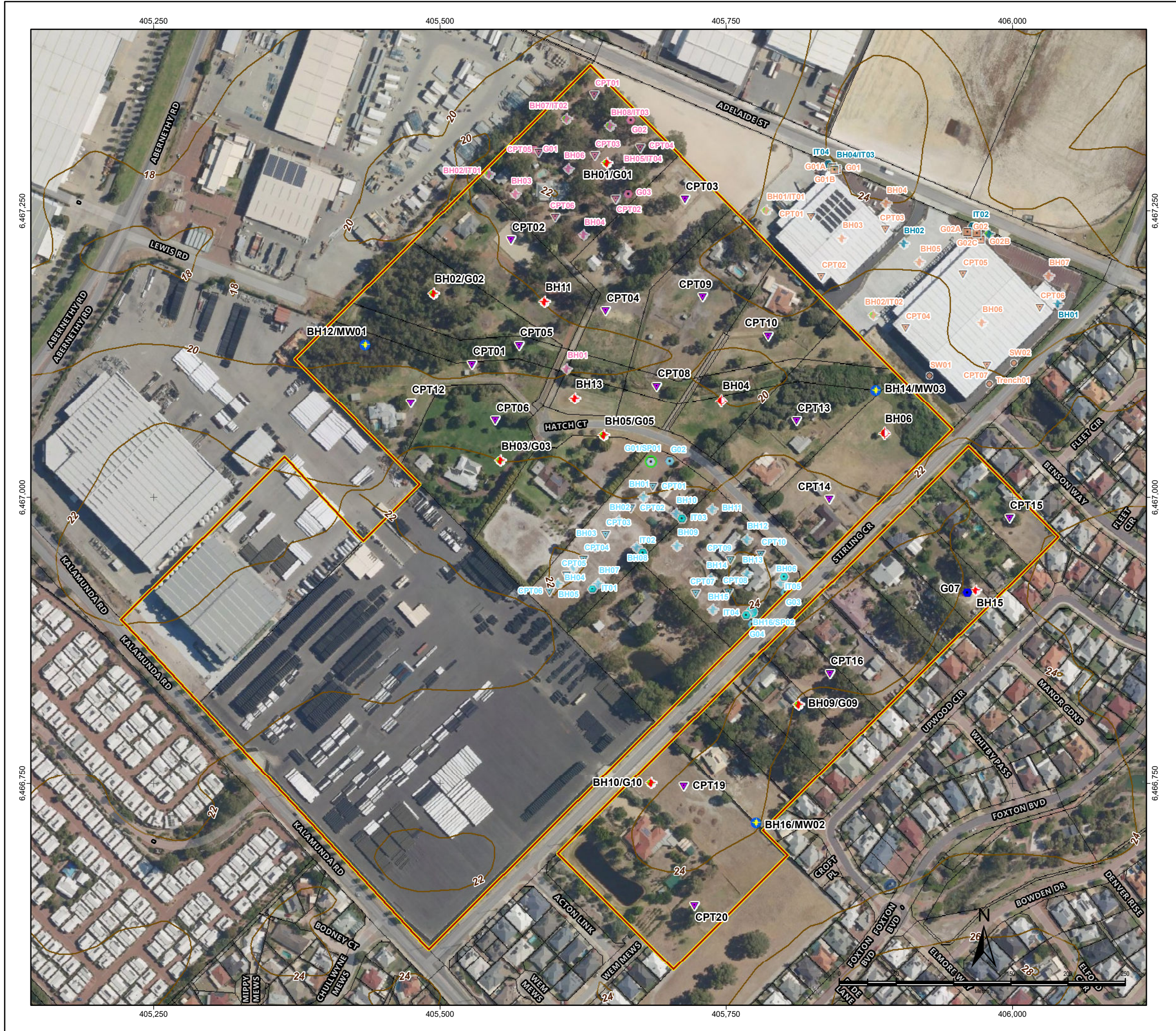
Attached Table 12: Soil Assessment

Consideration	Assessment / Discussion				Reference	Level of Constraint	Mitigation Measures
Subsurface Soil Conditions	In proposed LAA areas, soil conditions to comprise SAND with a minimum permeability of 1.4 m/day (i.e. Soil Category 1 or 2). To a depth of no less than 2 m. This is achievable for most of the site.				Section 11	Moderate	-
Acid Sulfate Soils	Organic soils near drainage lines, wetland areas and possibly within existing lakes could have a high acid sulfate soil risk. LAA's are to be located away from these features in sand above the groundwater, and therefore no significant ASS risk is present.				Department of Environmental Regulation (DER) mapping	Low	-
Soil Category	In situ soil in proposed LAA areas is Category 1 to 2				AS1547-2012	Moderate	Any imported fill must have minimum hydraulic conductivity of 1.4 m/day to meet these assumptions (i.e. All fill must be Soil Category 1 to 2). LAA areas not to be near drainage lines or wetland areas where surficial organic clayey soils could be present.
Design Loading Rates	50 mm/day				Table L1, AS1547-2012	-	Secondary treated effluent
Laboratory Testing in SAND	Level of Constraint				-	-	-
	Result	Low	Medium	High			
Coarse Fragments ¹	Up to 6%	<10%	10-40%	>40%		Low	Erosion risk is relatively low and can be controlled around perimeter using geotextile / vegetation / etc.. as per civil design requirements. No reduction in permeability necessary to account for gravel.
Phosphorous Retention Index (PRI) ²	-0.5 to 4.0	>20	5-20	<5		High	The upper 0.2 m of soil below leach drains must comprise high PRI (PRI>20) soil to ensure nutrient stripping capability.
pH ¹	5.8 to 7.8	6-8	4.5-6	<4.5,>8		Low to Medium	In situ soil not considered to be significantly erodible.
Exchangeable Sodium Percentage ¹	Not Reportable	<10	10-20	<20		-	
Electric Conductivity (dS/m) ¹	0.014 to 0.110	<0.3	0.3 – 2.0	>2.0		Low	
Emerson Class ¹	NIL	> 4	4	1 - 3		-	-

Notes: 1) Level of constraint based on our interpretation of AS1547 description of “non-dispersive soils”. 2) Phosphorus retention index requirements are based on our interpretation of The Department of Primary Industries and Regional Development Standards for Land Resource Mapping (2005), as this is not specified in AS1547.

Figures





Legend

- Site Boundary
- Borehole
- Machine Auger Borehole
- Cone Penetration Test
- Direct Push Borehole / Groundwater Monitoring Well
- Machine Auger Borehole / Guelph Permeameter
- Guelph Permeameter

WAG250256-01-TLF

- Borehole
- Borehole / Infiltration Test
- Cone Penetration Test
- Guelph Permeameter

WAG240438-01-TLF

- Borehole
- Borehole / Standpipe
- Cone Penetration Test
- Guelph Permeameter
- Guelph Permeameter / Standpipe
- Infiltration Test

WAG230463-01-TLF

- Borehole
- Borehole / Infiltration Test
- Cone Penetration Test
- Permeability Test
- Sediment Sample

WAG230133-01-FTL

- Borehole
- Borehole / Infiltration Test
- Infiltration Test

NOTES
Aerial Imagery and Cadastre sourced from Landgate/SLIP

	SCALE	1:3,250	(A3)
	DRAWN	CED	
	DATE DRAWN	11/9/2025	
	CHECKED	—	
	DATE CHECKED	—	
	PROJECTION	GDA 1994 MGA Zone 50	

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CLIENT	CLIENT		
PROJECT	PROJECT		
LOCATION	51 STIRLING CRESCENT HIGH WYCOMBE		
TITLE	SITE & LOCATION PLAN WITH PREVIOUS GALT TEST LOCATIONS		
Job No	WAG250138-01	Fig No	FIGURE 1
Rev	A		

Appendices

Appendix A: Site Photographs

Photograph 1: Site photo near BH13. Water ponded at ground surface



Photograph 2: Near BH02 facing west. Wetland area near Lewis Road.



Photograph 3: Near BH01 facing south east



Photograph 4: Near CPT01 facing north. Wetland area near Lewis Road / drainage line in northern part of site.



Photograph 5: Near BH04 facing north



Photograph 6: Near CPT08 facing west. Drainage line adjacent borehole.



Photograph 7: Near BH10 facing east



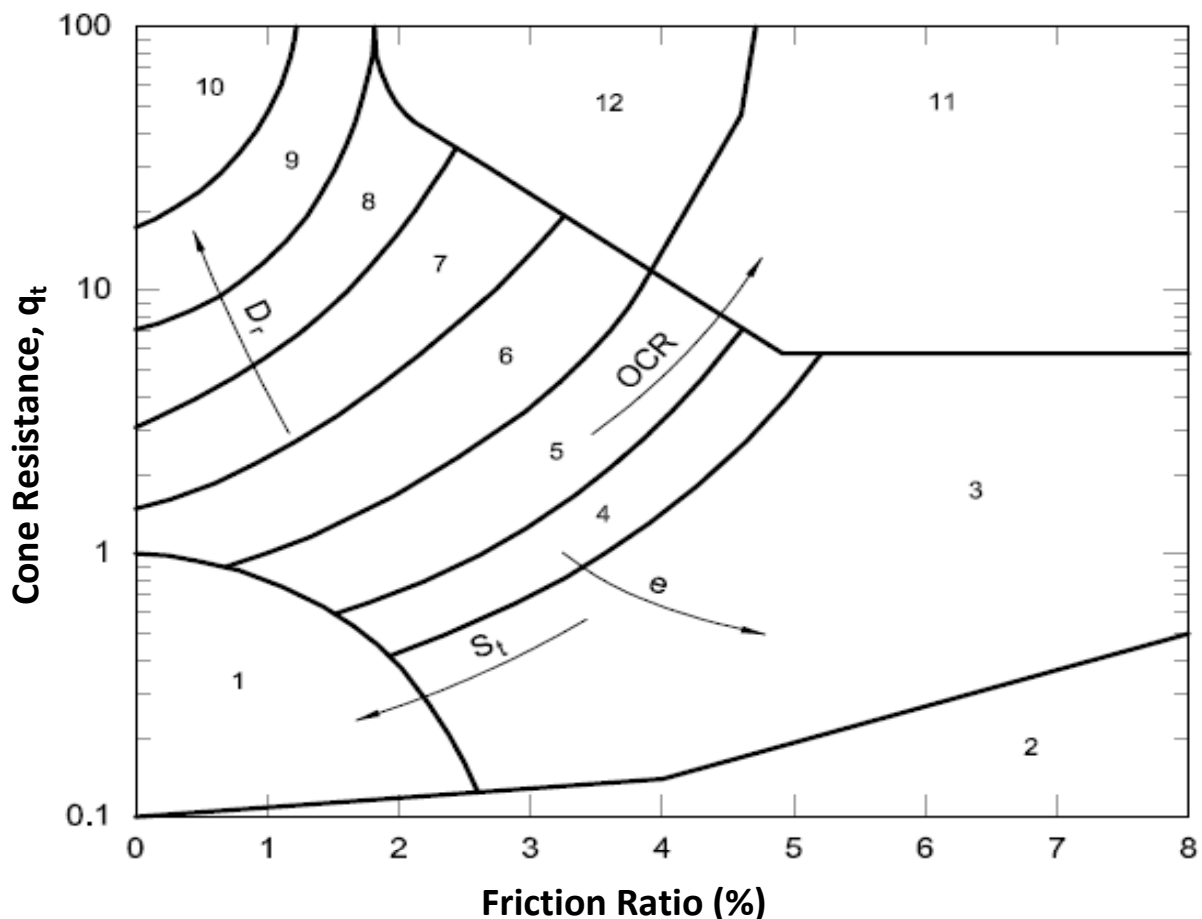
Photograph 8: Near BH15 facing south east



Photograph 9: Near BH06 facing south west



Appendix B: CPT Test Results



DEFINITIONS

- q_t : Cone tip resistance corrected for pore water pressure
 S_t : Sensitivity
 e : Void ratio
 D_r : Relative density
 OCR : Overconsolidation ratio
 OC : Overconsolidated

SOIL BEHAVIOUR TYPE ZONES

- | | |
|------------------------------|--|
| 1. Sensitive fine grained | 7. Silty sand to sandy silt |
| 2. Organic material | 8. Sand to silty sand |
| 3. Clay | 9. Sand |
| 4. Silty clay to clay | 10. Gravelly sand to sand |
| 5. Clayey silt to silty clay | 11. Very stiff fine grained material (OC/cemented) |
| 6. Sandy silt to clayey silt | 12. Sand to clayey sand (OC/cemented) |

NOTES

- A. Some overlap in type zones is expected
 B. Local correlations are preferred and may indicate soil type boundaries that are different from those shown above

Reference: Robertson, P.K., Campanella, R.G., Gillespie, D. and Grieg, J. (1986) "Use of Piezometer Cone Data". Proceedings of the ASCE Speciality Conference In Situ '86: Use of In Situ Tests in Geotechnical Engineering, Blacksburg, pp 1263-80, American Society of Civil Engineers (ASCE)



CONE PENETRATION TESTING (CPT) SOIL TYPE INTERPRETATION

CONE PENETRATION TEST

ALL TESTS

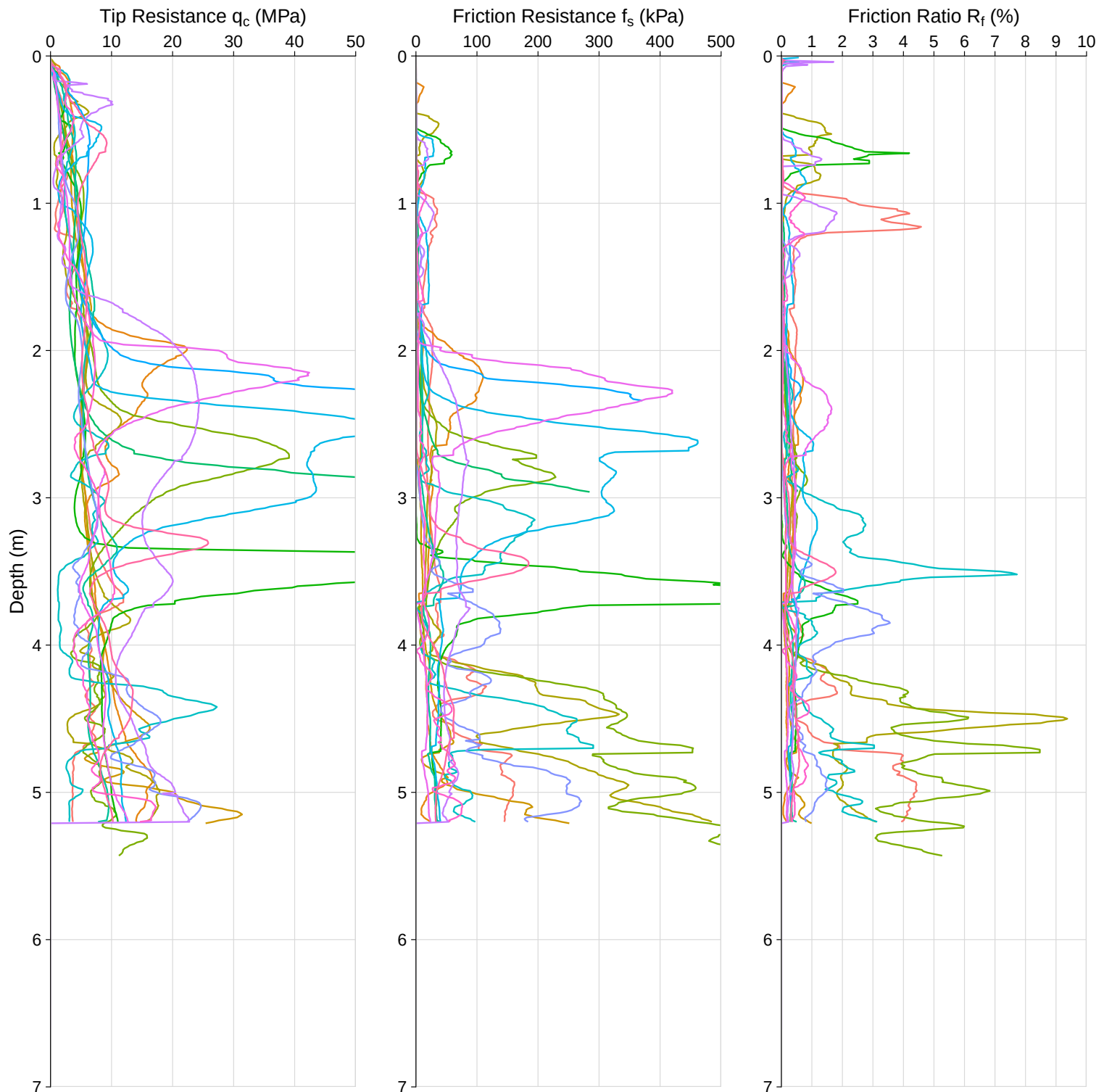
JOB NUMBER: GBI25186-WAG250138

DATE: 05/09/2025

CLIENT: Galt Geotechnics

PROJECT: Proposed Development

LOCATION: High Wycombe



CPT01 CPT012 CPT014 CPT016 CPT02 CPT03 CPT05 CPT08
 CPT010 CPT013 CPT015 CPT019 CPT020 CPT04 CPT06 CPT09

RIG: Pagani TG 73-200 200kN

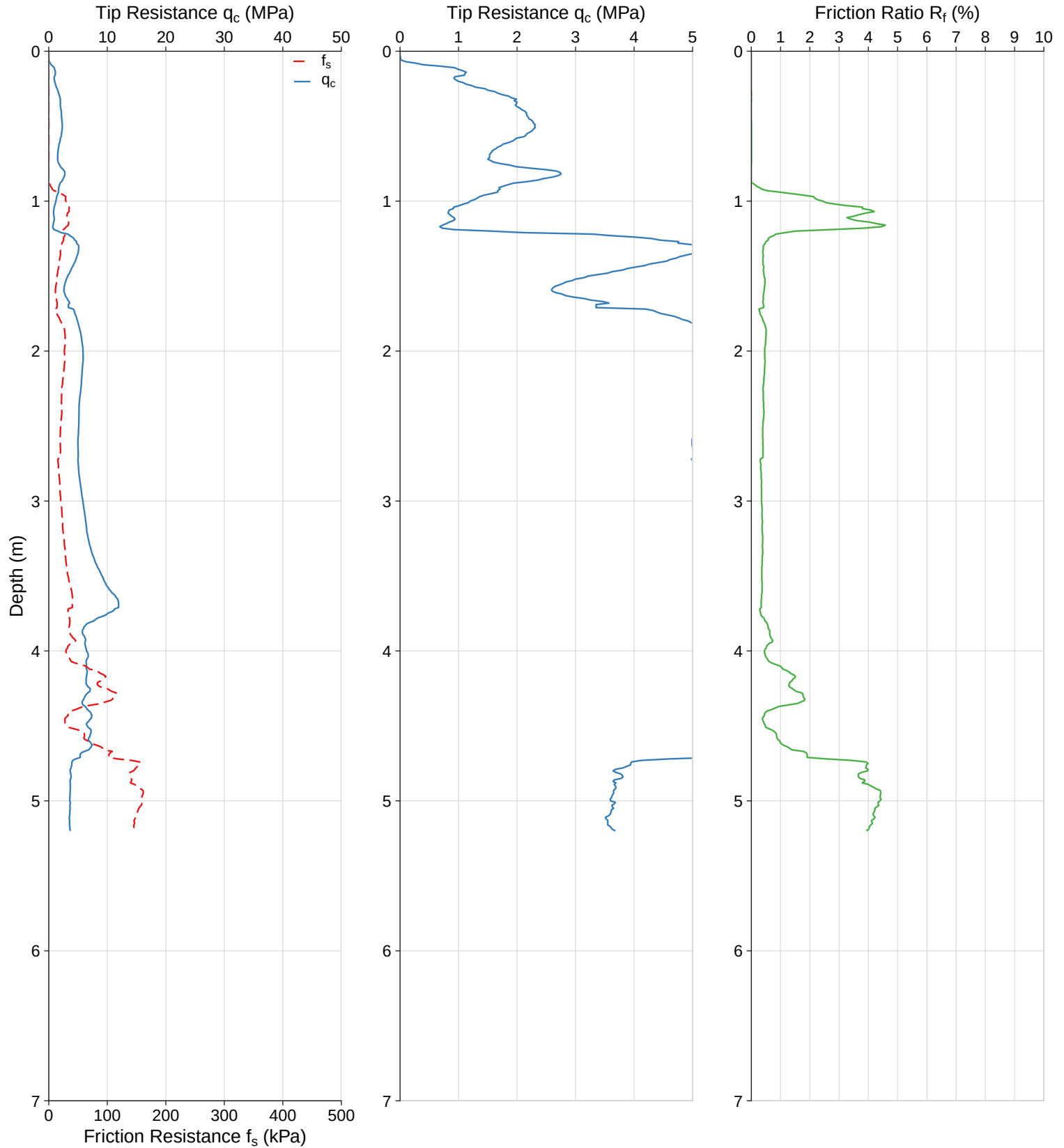


Groundbreaking Investigations - Tested in accordance with AS 1289.6.5.1-1999

CONE PENETRATION TEST

CPT ID: CPT01
JOB NUMBER: GBI25186-WAG250138
DATE: 05/09/2025

CLIENT: Galt Geotechnics
PROJECT: Proposed Development
LOCATION: High Wycombe



WATER: Collapsed, water at 0.6m
TERMINATION: Target Depth
DUMMY PROBE:
RIG: Pagani TG 73-200 200kN

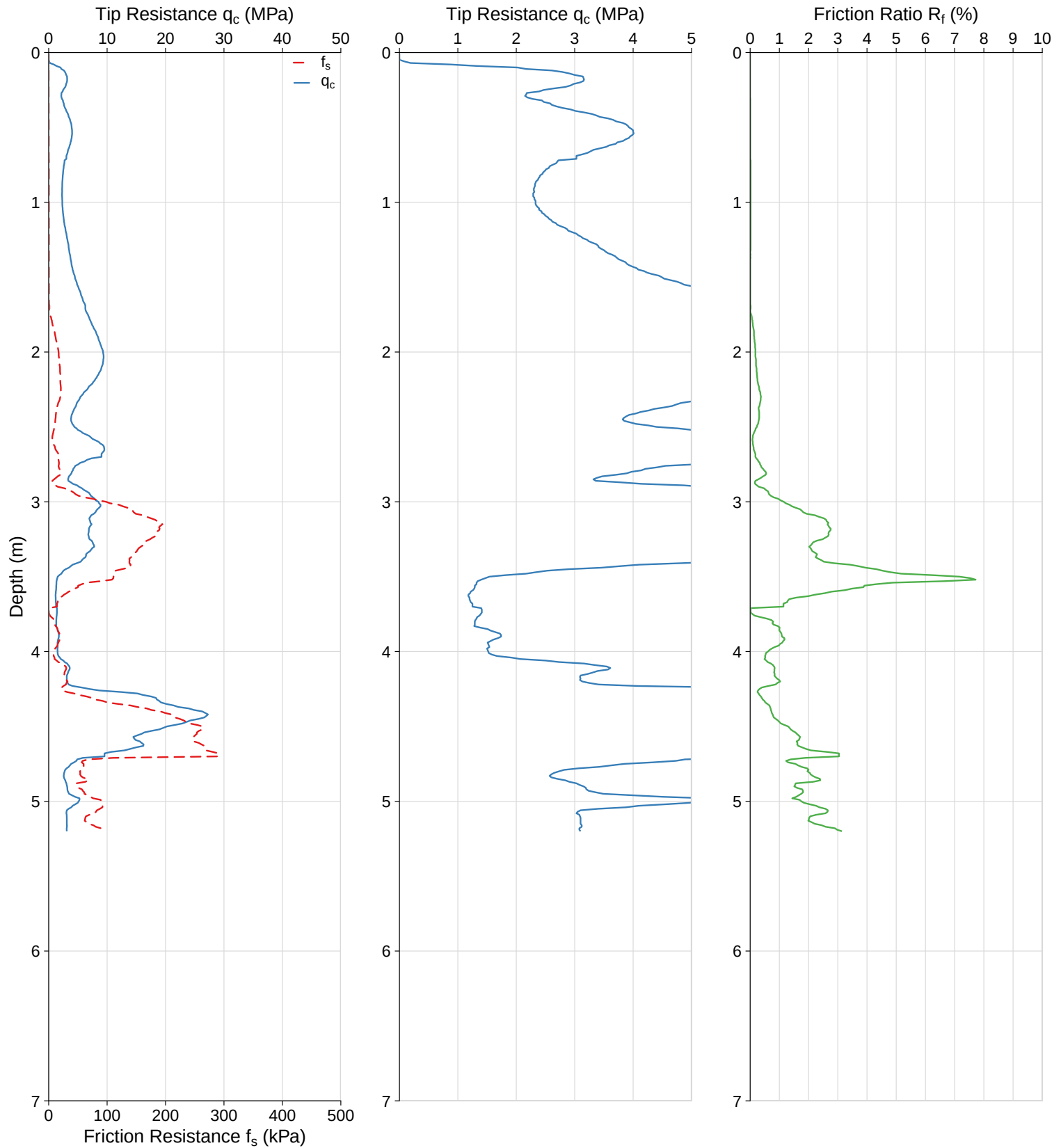
CO-ORDS:
ELEVATION:
PRE-DRILL:
WASHER/DISC: Steel



CONE PENETRATION TEST

CPT ID: CPT02
JOB NUMBER: GBI25186-WAG250138
DATE: 05/09/2025

CLIENT: Galt Geotechnics
PROJECT: Proposed Development
LOCATION: High Wycombe



WATER: Collapsed, water at 0.4m
TERMINATION: Target Depth
DUMMY PROBE:
RIG: Pagani TG 73-200 200kN

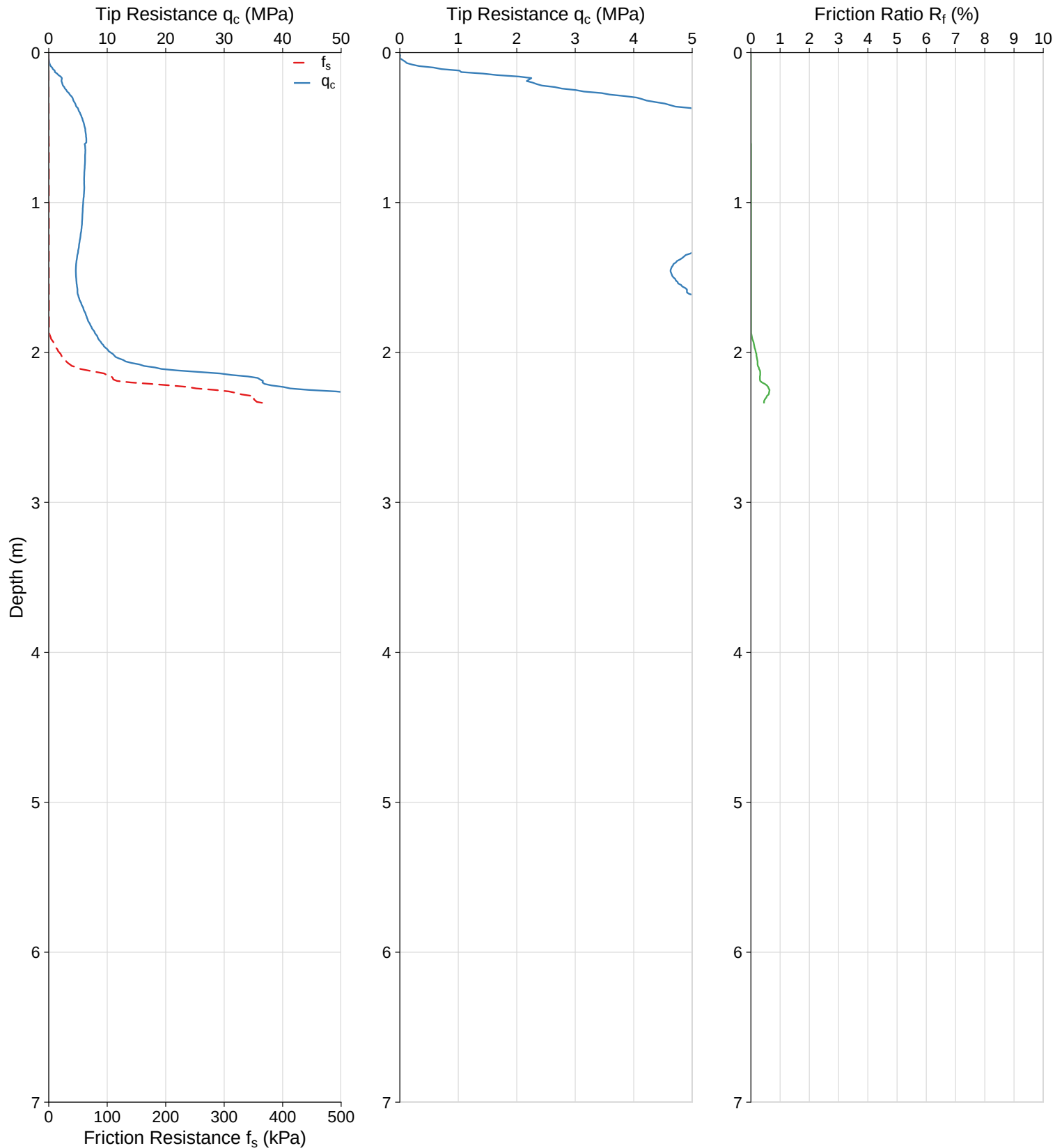
CO-ORDS:
ELEVATION:
PRE-DRILL:
WASHER/DISC: Steel



CONE PENETRATION TEST

CPT ID: CPT03
JOB NUMBER: GBI25186-WAG250138
DATE: 05/09/2025

CLIENT: Galt Geotechnics
PROJECT: Proposed Development
LOCATION: High Wycombe



WATER: Collapsed, water at 1.7m
TERMINATION: Refused, 2.34m
DUMMY PROBE:
RIG: Pagani TG 73-200 200kN

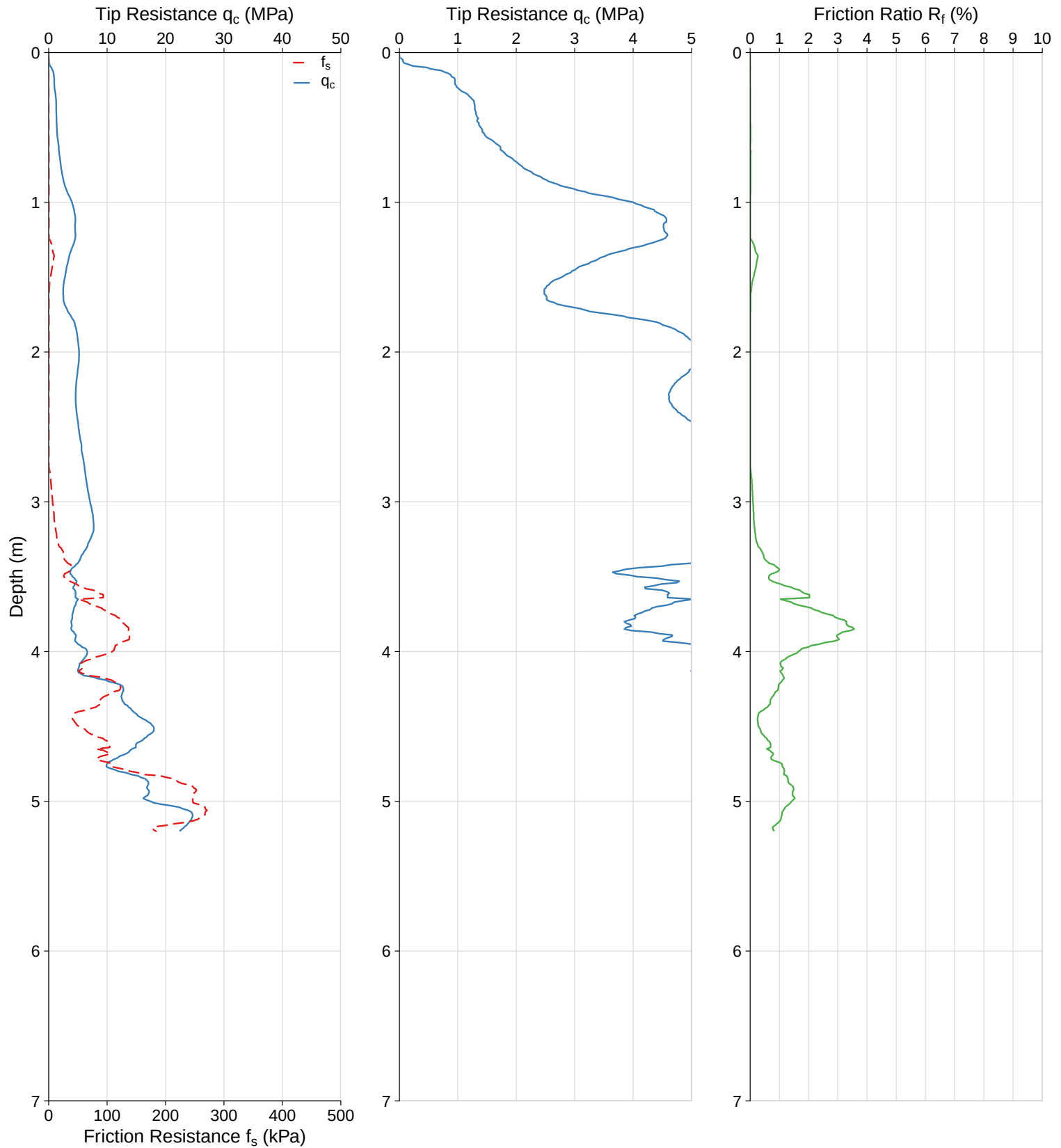
CO-ORDS:
ELEVATION:
PRE-DRILL:
WASHER/DISC: Steel



CONE PENETRATION TEST

CPT ID: CPT04
JOB NUMBER: GBI25186-WAG250138
DATE: 05/09/2025

CLIENT: Galt Geotechnics
PROJECT: Proposed Development
LOCATION: High Wycombe



WATER: Collapsed
TERMINATION: Target Depth
DUMMY PROBE:
RIG: Pagani TG 73-200 200kN

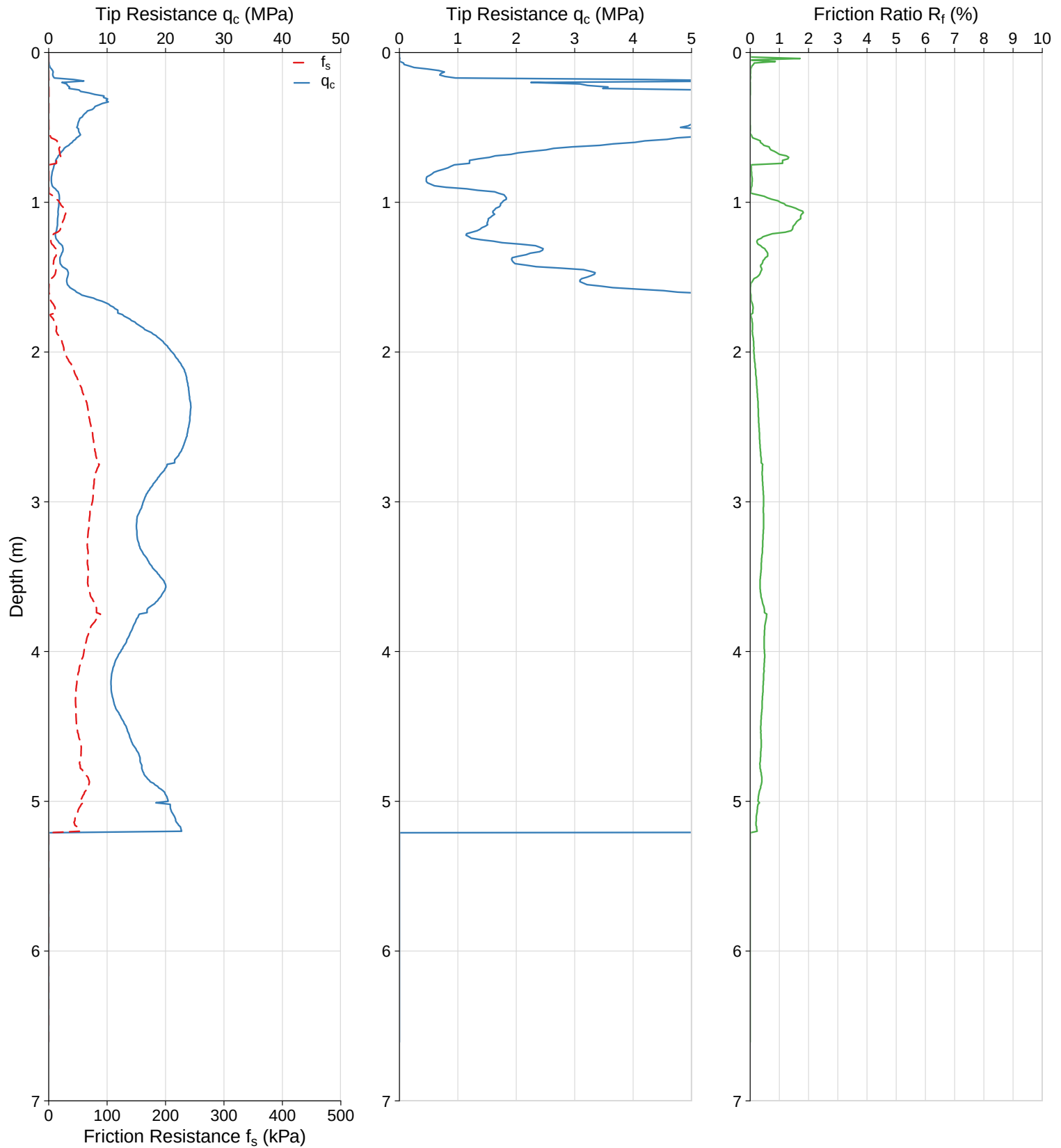
CO-ORDS:
ELEVATION:
PRE-DRILL:
WASHER/DISC: Steel



CONE PENETRATION TEST

CPT ID: CPT05
JOB NUMBER: GBI25186-WAG250138
DATE: 05/09/2025

CLIENT: Galt Geotechnics
PROJECT: Proposed Development
LOCATION: High Wycombe



WATER: Collapsed, water at 0.6m
TERMINATION: Target Depth
DUMMY PROBE:
RIG: Pagani TG 73-200 200kN

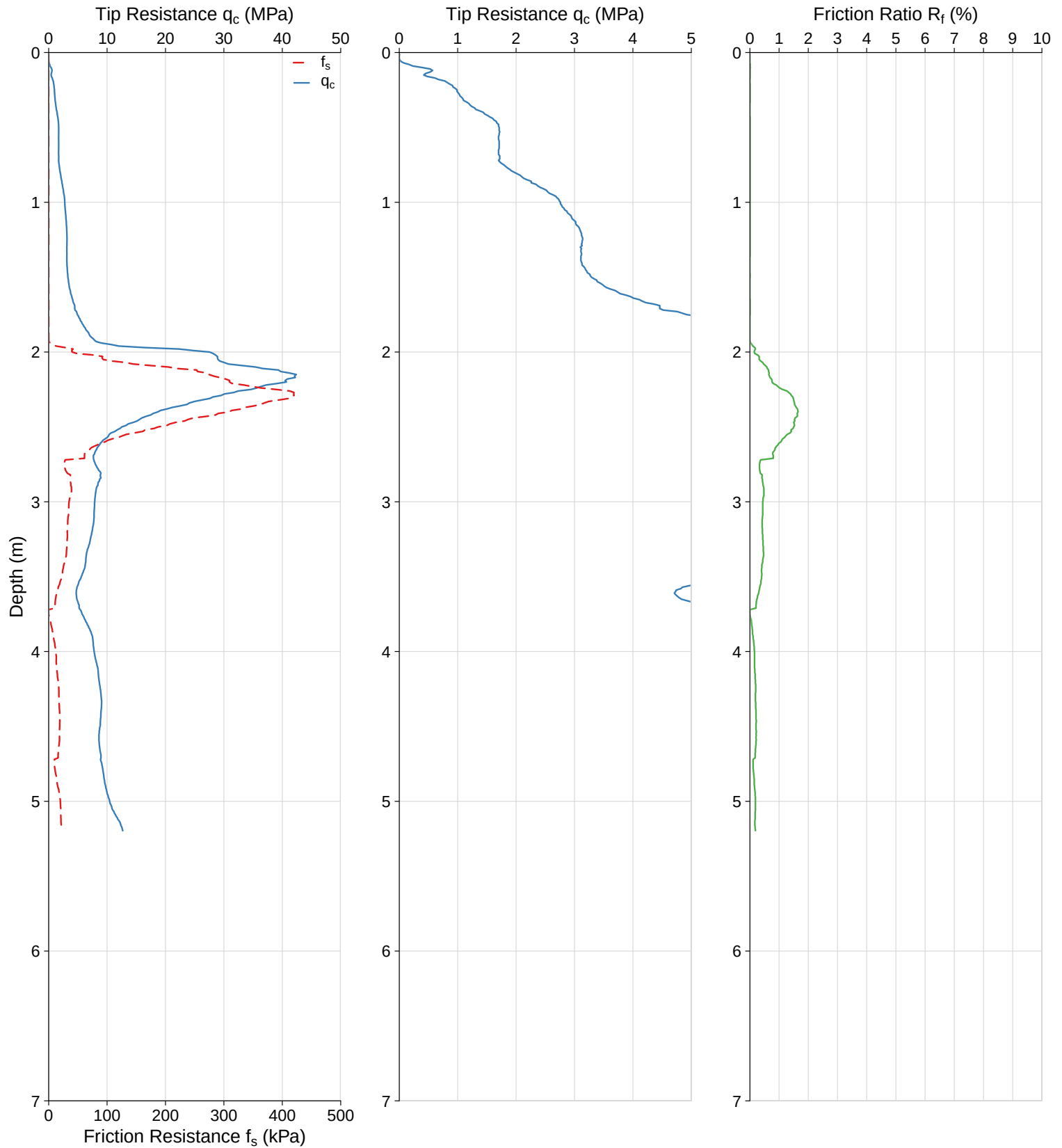
CO-ORDS:
ELEVATION:
PRE-DRILL:
WASHER/DISC: Steel



CONE PENETRATION TEST

CPT ID: CPT06
JOB NUMBER: GBI25186-WAG250138
DATE: 05/09/2025

CLIENT: Galt Geotechnics
PROJECT: Proposed Development
LOCATION: High Wycombe



WATER: Water at 0.8m
TERMINATION: Target Depth
DUMMY PROBE:
RIG: Pagani TG 73-200 200kN

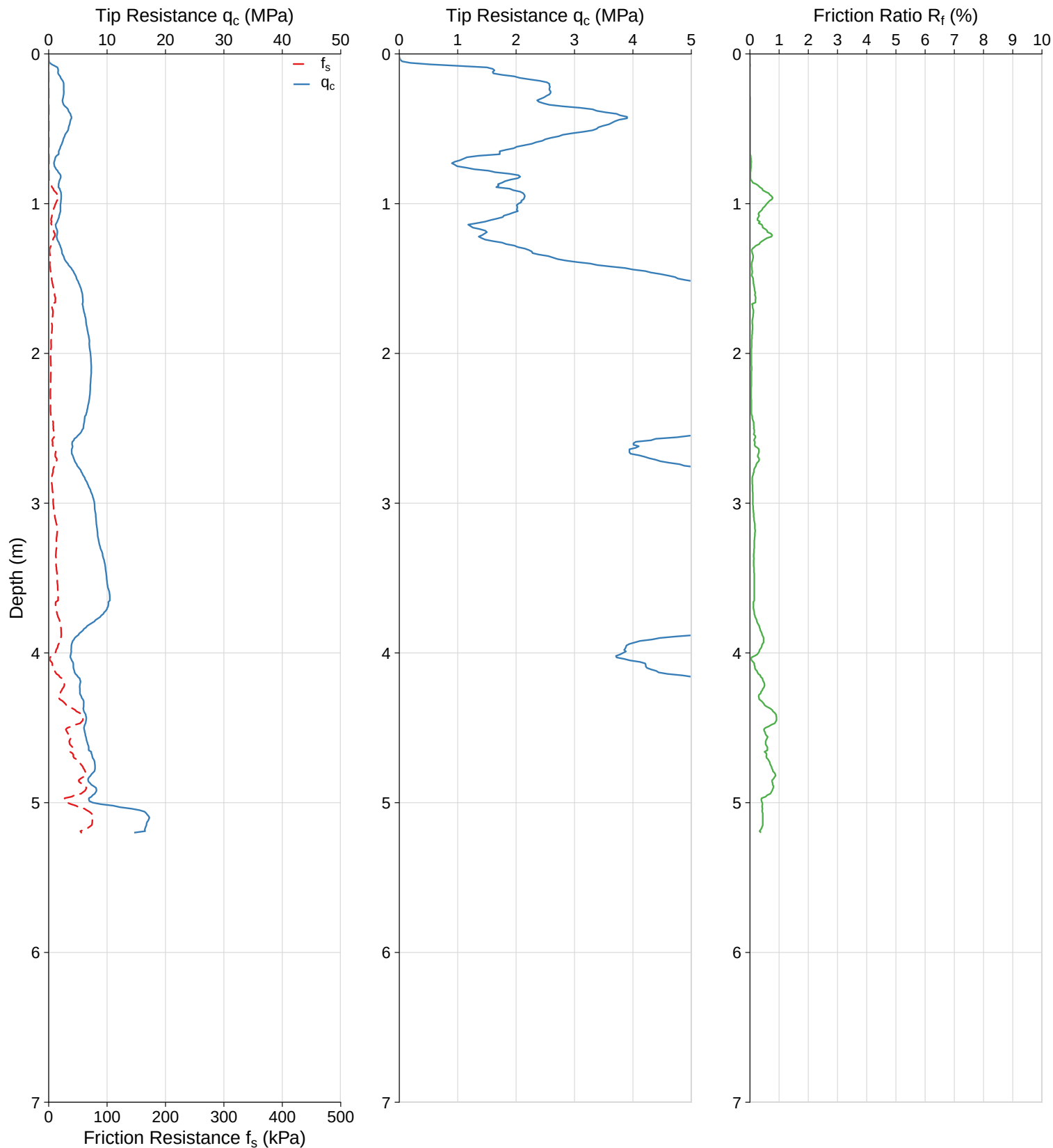
CO-ORDS:
ELEVATION:
PRE-DRILL:
WASHER/DISC: Steel



CONE PENETRATION TEST

CPT ID: CPT08
JOB NUMBER: GBI25186-WAG250138
DATE: 05/09/2025

CLIENT: Galt Geotechnics
PROJECT: Proposed Development
LOCATION: High Wycombe



WATER: Collapsed, water at 0.2m
TERMINATION: Target Depth
DUMMY PROBE:
RIG: Pagani TG 73-200 200kN

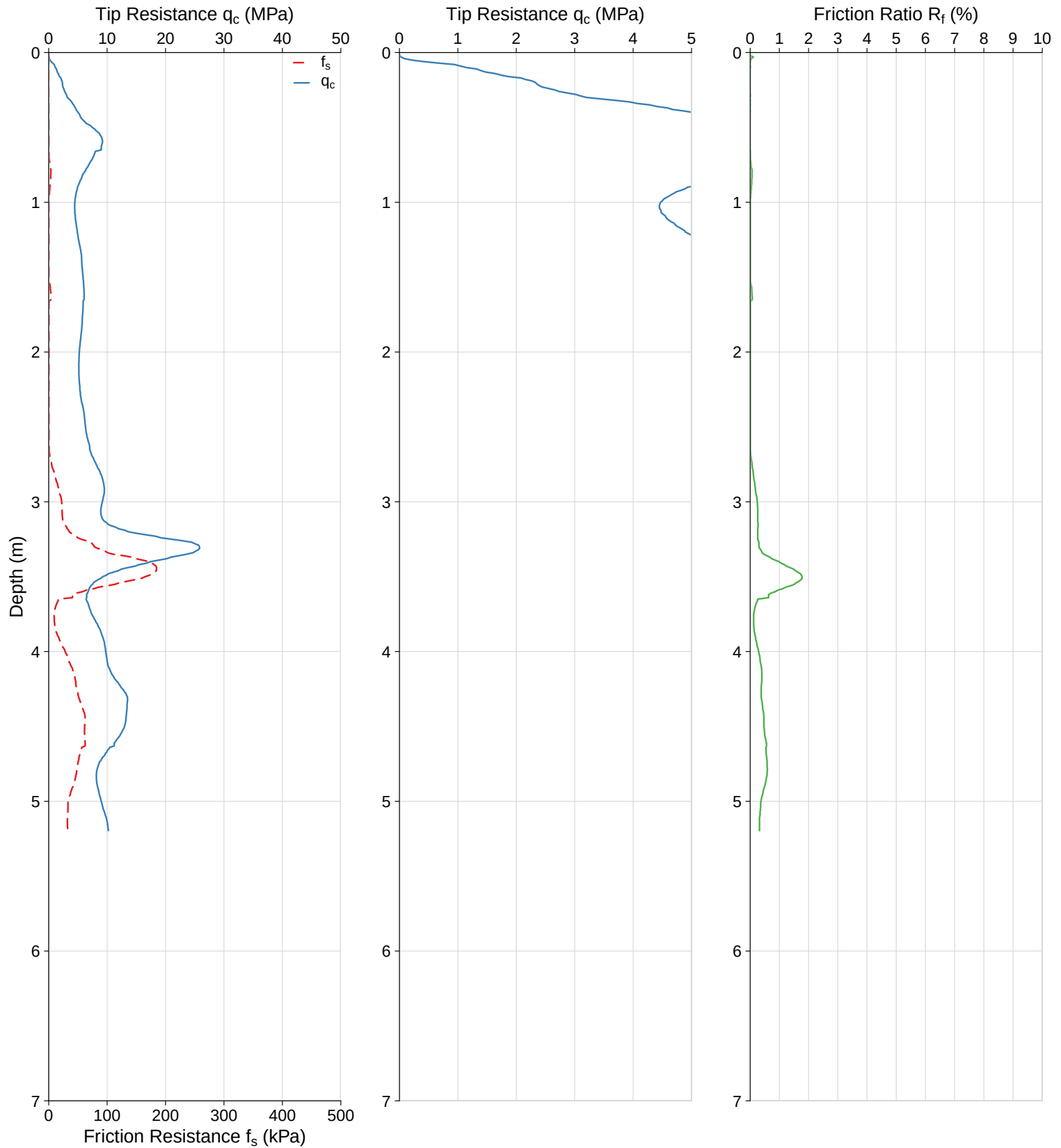
CO-ORDS:
ELEVATION:
PRE-DRILL:
WASHER/DISC: Steel



CONE PENETRATION TEST

CPT ID: CPT09
JOB NUMBER: GBI25186-WAG250138
DATE: 05/09/2025

CLIENT: Galt Geotechnics
PROJECT: Proposed Development
LOCATION: High Wycombe



WATER: Collapsed, water at 1.4m
TERMINATION: Target Depth
DUMMY PROBE:
RIG: Pagani TG 73-200 200kN

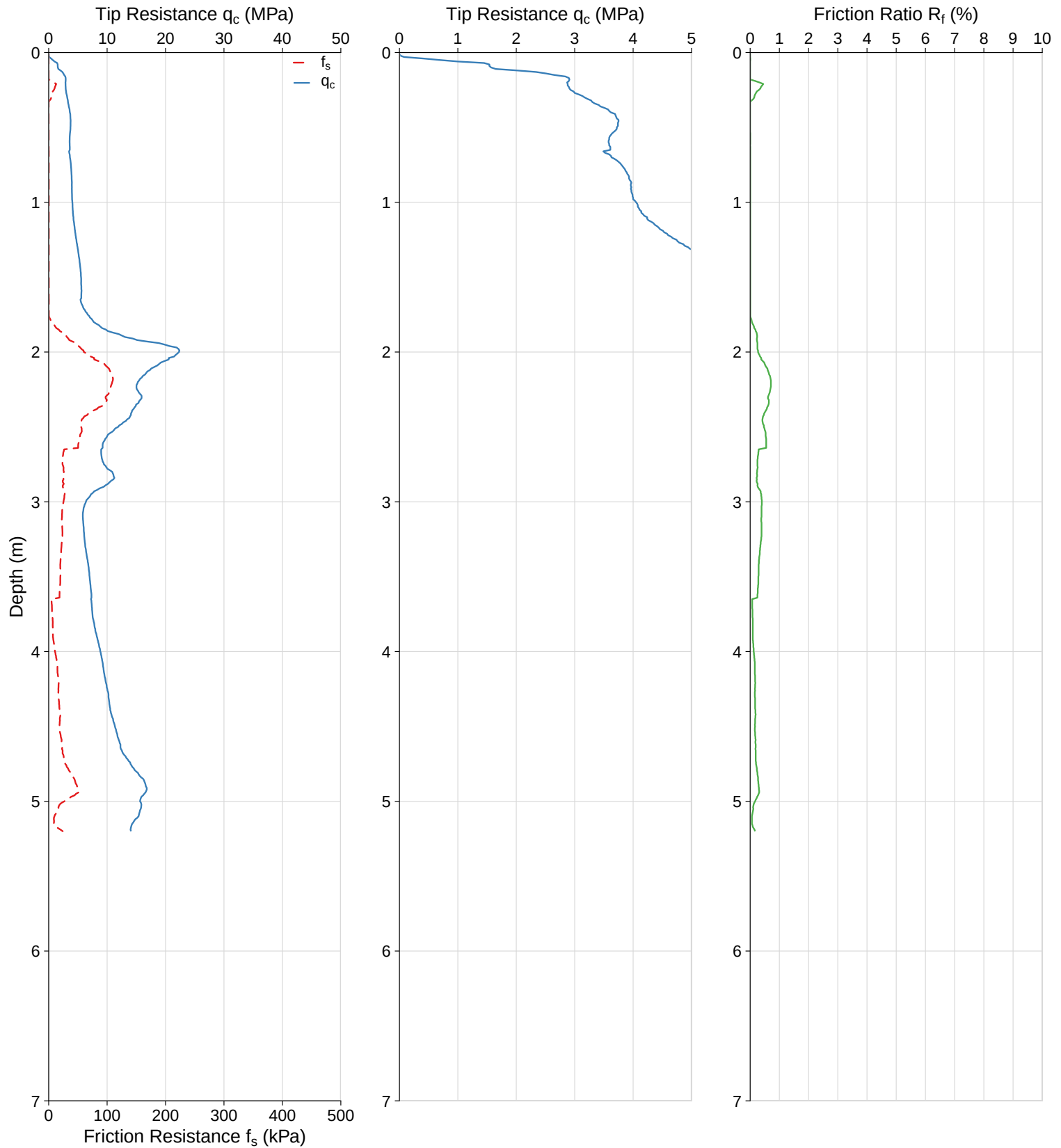
CO-ORDS:
ELEVATION:
PRE-DRILL:
WASHER/DISC: Steel



CONE PENETRATION TEST

CPT ID: CPT010
JOB NUMBER: GBI25186-WAG250138
DATE: 05/09/2025

CLIENT: Galt Geotechnics
PROJECT: Proposed Development
LOCATION: High Wycombe



WATER: Collapsed, water at 0.2m
TERMINATION: Target Depth
DUMMY PROBE:
RIG: Pagani TG 73-200 200kN

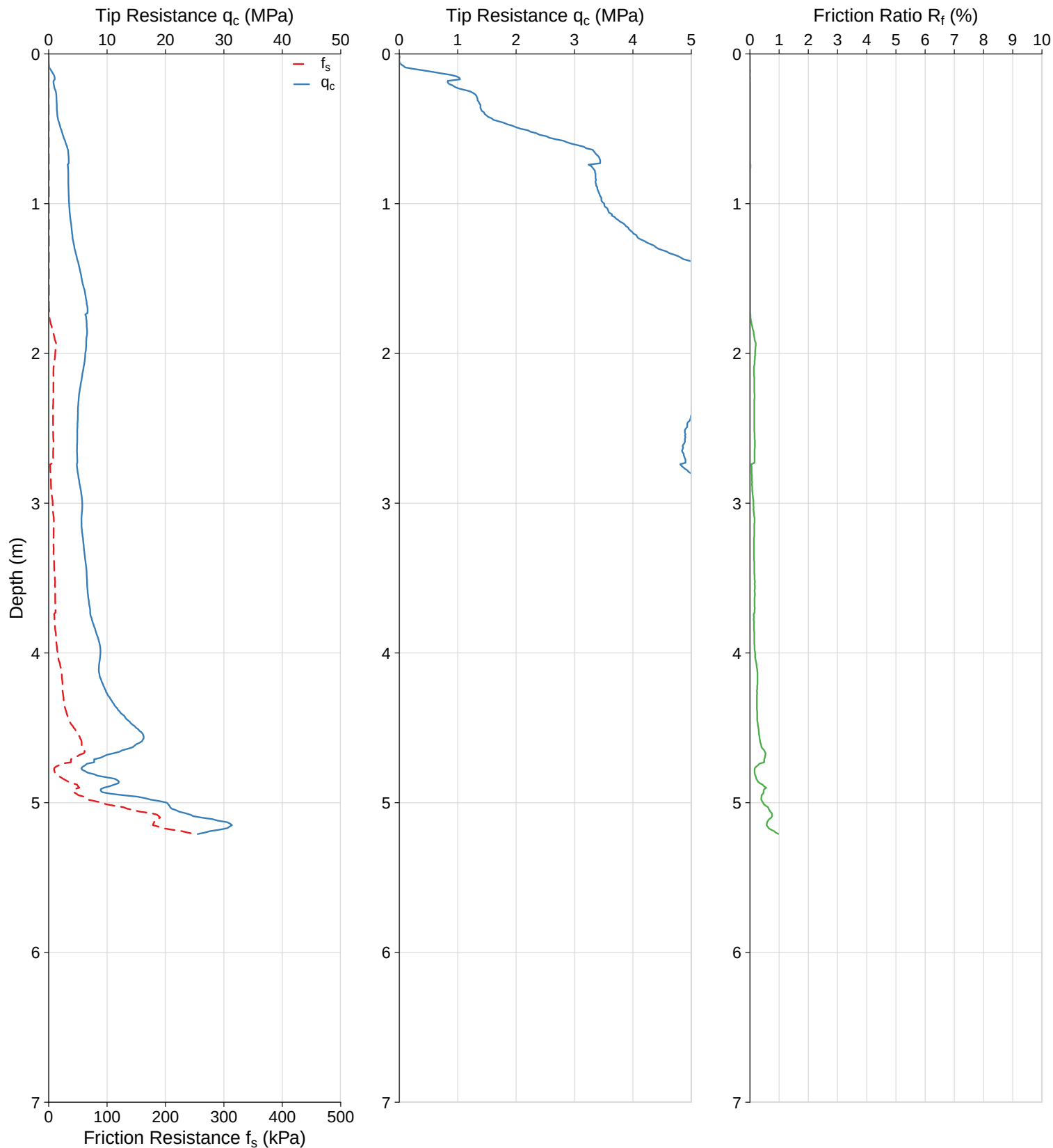
CO-ORDS:
ELEVATION:
PRE-DRILL:
WASHER/DISC: Steel



CONE PENETRATION TEST

CPT ID: CPT012
JOB NUMBER: GBI25186-WAG250138
DATE: 05/09/2025

CLIENT: Galt Geotechnics
PROJECT: Proposed Development
LOCATION: High Wycombe



WATER: Collapsed, water at 0.6m
TERMINATION: Target Depth
DUMMY PROBE:
RIG: Pagani TG 73-200 200kN

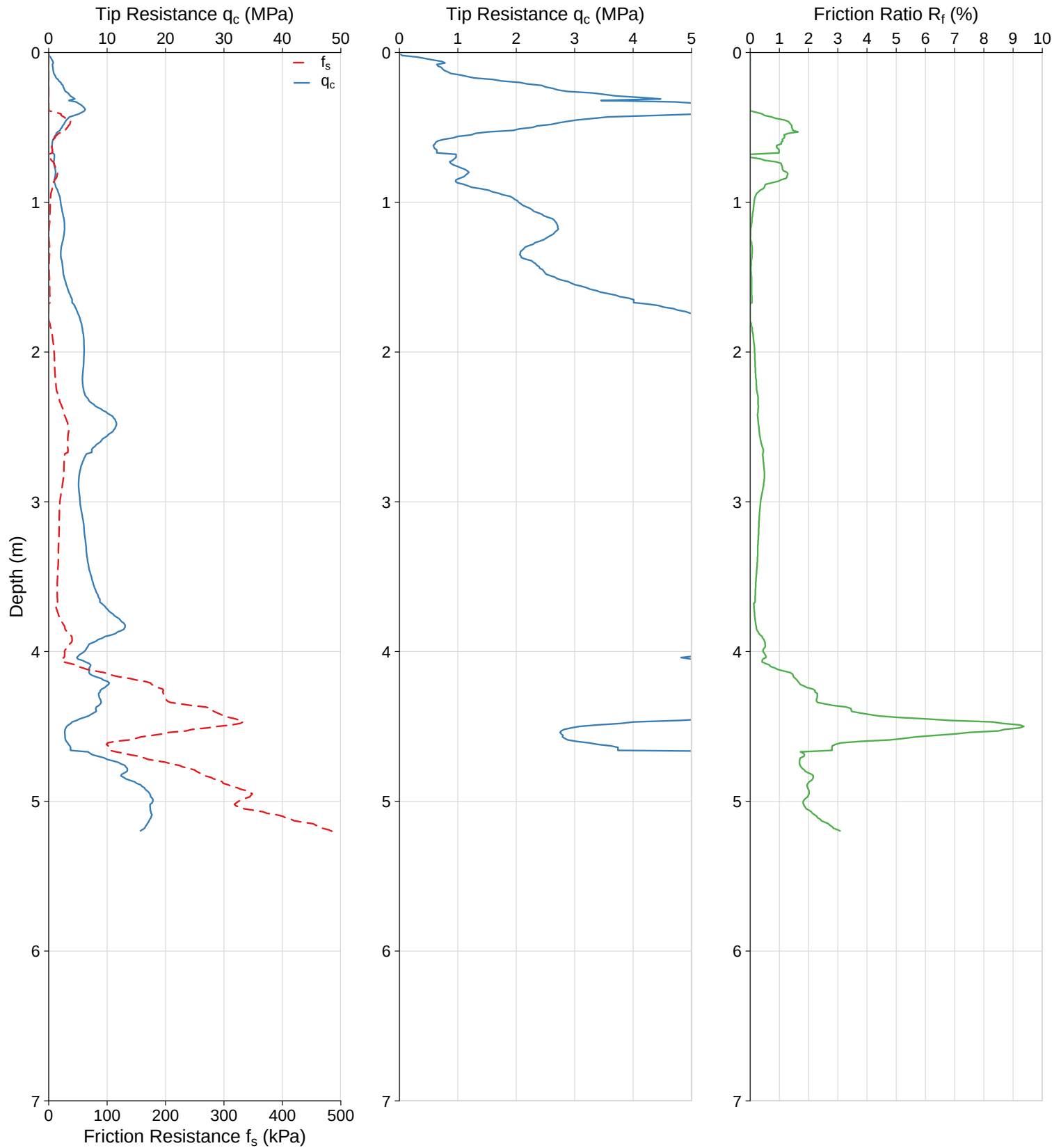
CO-ORDS:
ELEVATION:
PRE-DRILL:
WASHER/DISC: Steel



CONE PENETRATION TEST

CPT ID: CPT013
JOB NUMBER: GBI25186-WAG250138
DATE: 05/09/2025

CLIENT: Galt Geotechnics
PROJECT: Proposed Development
LOCATION: High Wycombe



WATER: Wet surface
TERMINATION: Target Depth
DUMMY PROBE:
RIG: Pagani TG 73-200 200kN

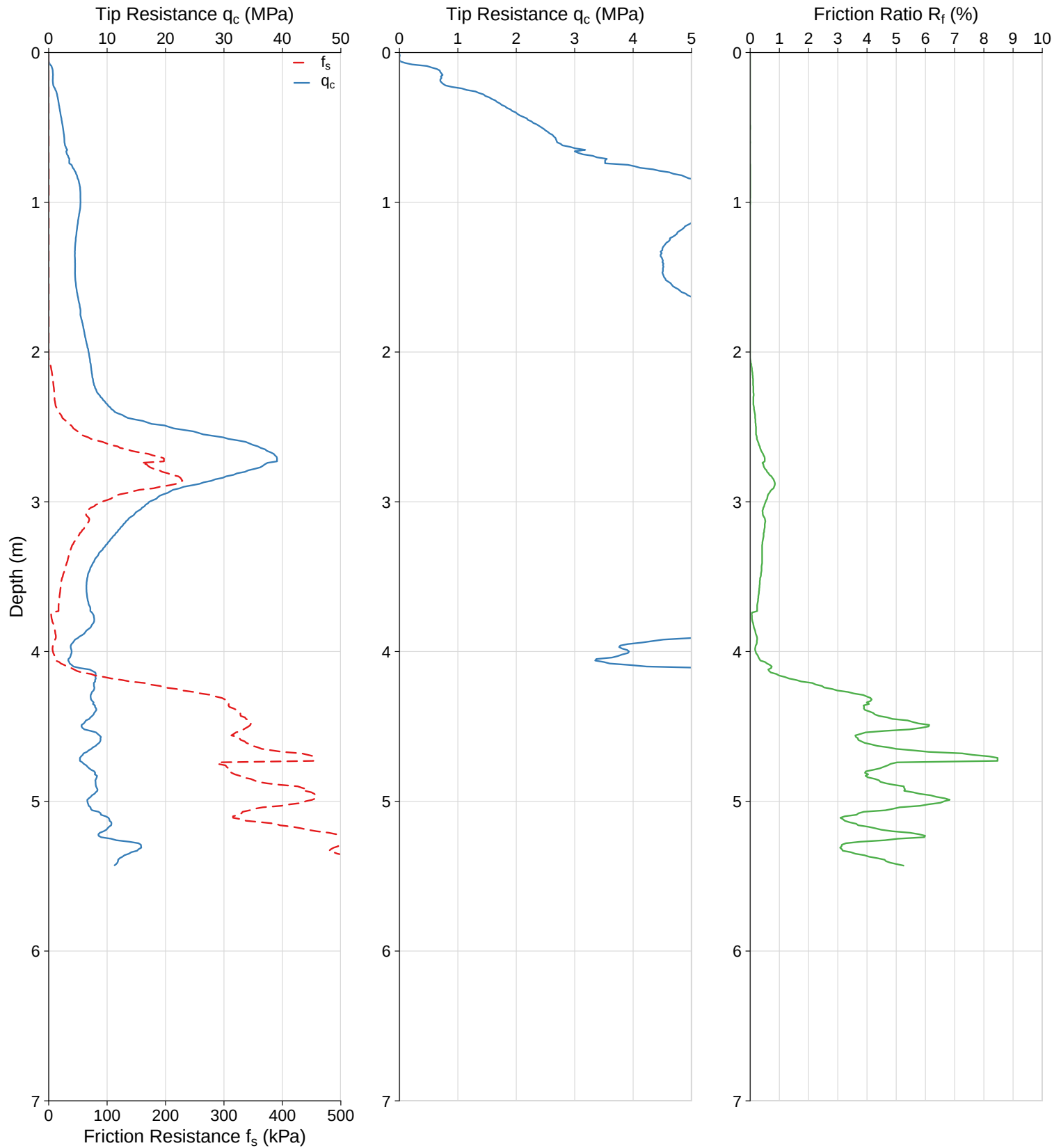
CO-ORDS:
ELEVATION:
PRE-DRILL:
WASHER/DISC: Steel



CONE PENETRATION TEST

CPT ID: CPT014
JOB NUMBER: GBI25186-WAG250138
DATE: 05/09/2025

CLIENT: Galt Geotechnics
PROJECT: Proposed Development
LOCATION: High Wycombe



WATER: Water at 0.8m
TERMINATION: Target Depth
DUMMY PROBE:
RIG: Pagani TG 73-200 200kN

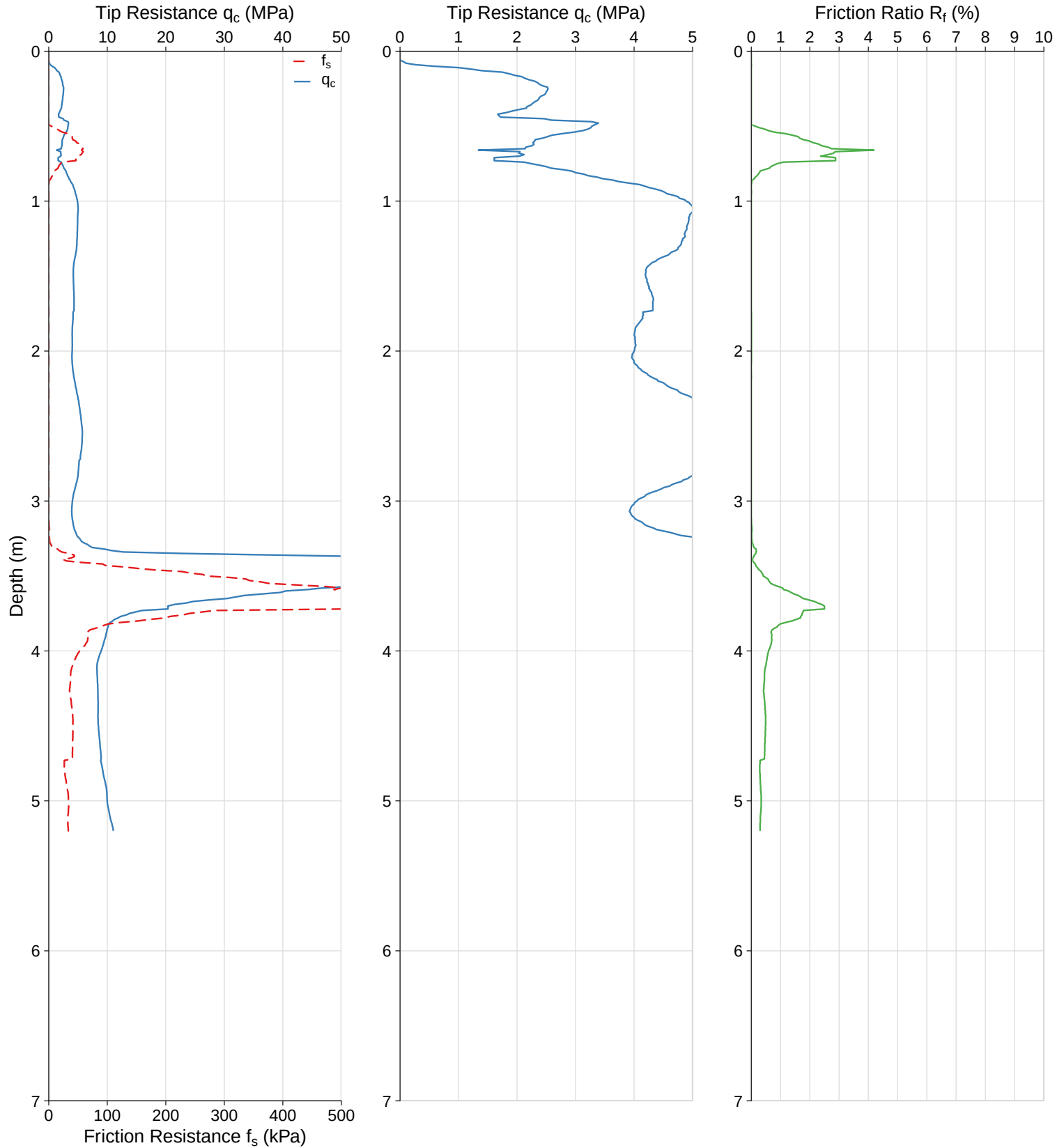
CO-ORDS:
ELEVATION:
PRE-DRILL:
WASHER/DISC: Steel



CONE PENETRATION TEST

CPT ID: CPT015
JOB NUMBER: GBI25186-WAG250138
DATE: 05/09/2025

CLIENT: Galt Geotechnics
PROJECT: Proposed Development
LOCATION: High Wycombe



WATER: Water at 0.8m
TERMINATION: Target Depth
DUMMY PROBE:
RIG: Pagani TG 73-200 200kN

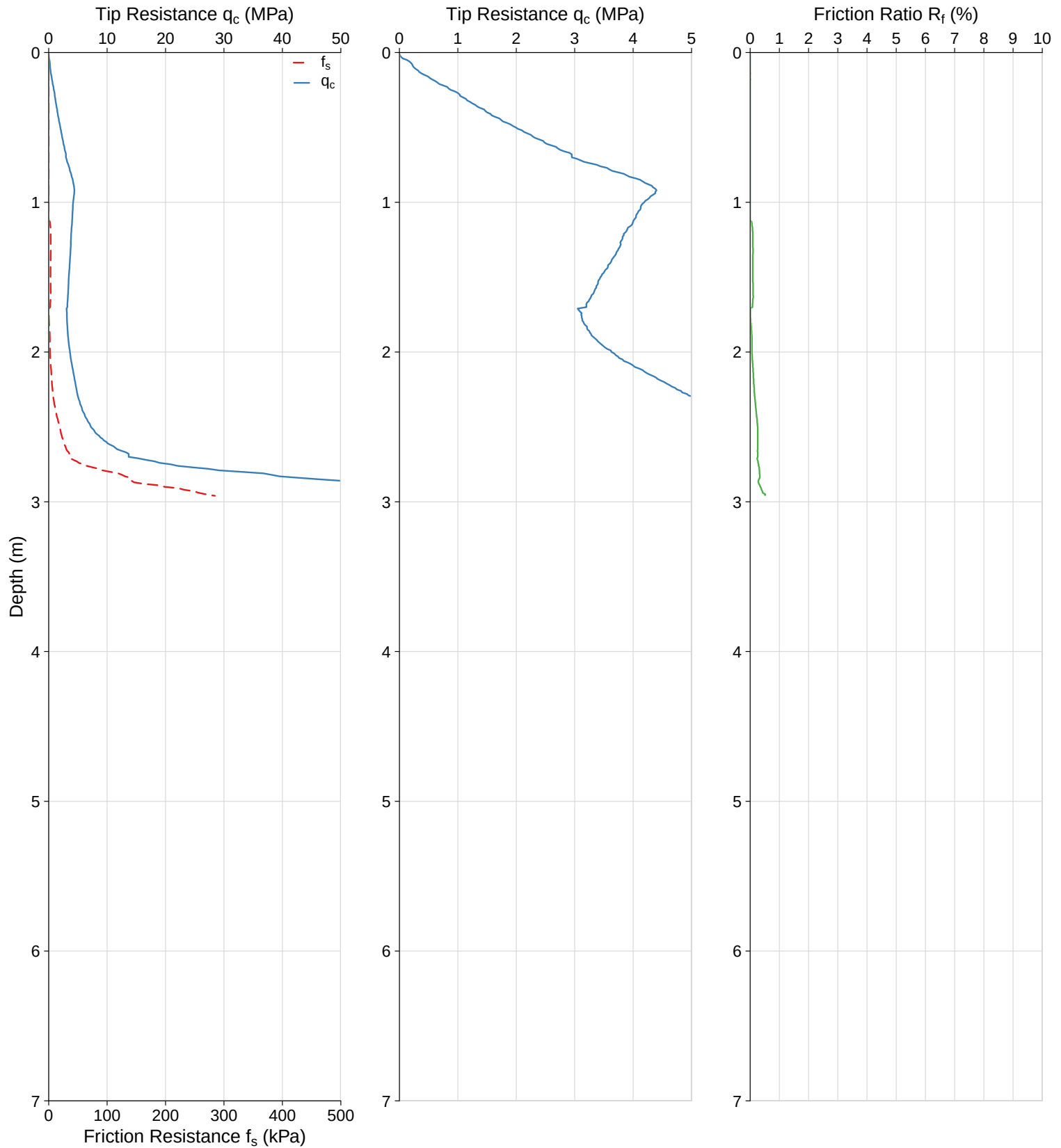
CO-ORDS:
ELEVATION:
PRE-DRILL:
WASHER/DISC: Steel



CONE PENETRATION TEST

CPT ID: CPT016
JOB NUMBER: GBI25186-WAG250138
DATE: 05/09/2025

CLIENT: Galt Geotechnics
PROJECT: Proposed Development
LOCATION: High Wycombe



WATER: Water at 1.1m
TERMINATION: Refused
DUMMY PROBE:
RIG: Pagani TG 73-200 200kN

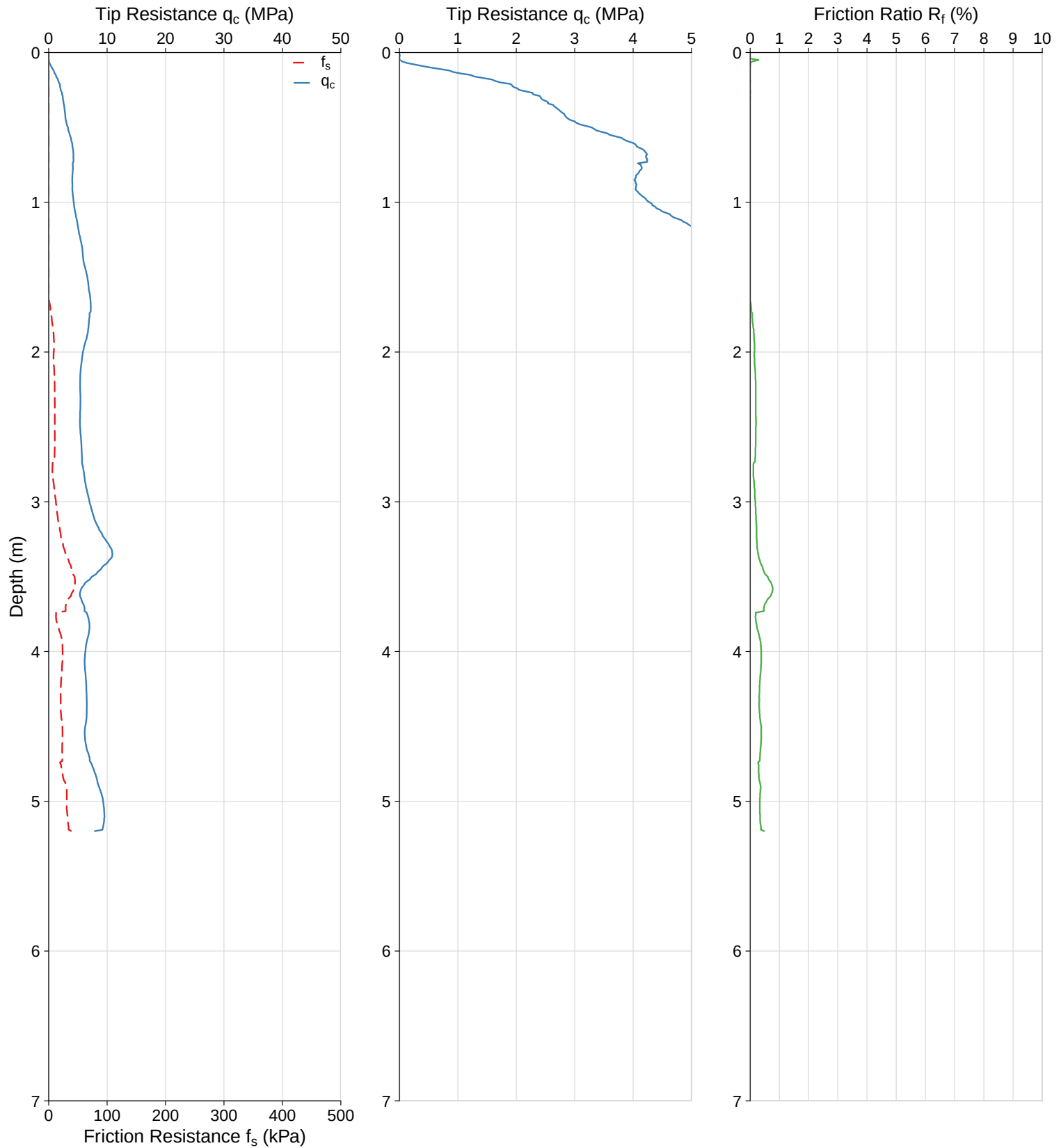
CO-ORDS:
ELEVATION:
PRE-DRILL:
WASHER/DISC: Steel



CONE PENETRATION TEST

CPT ID: CPT019
JOB NUMBER: GBI25186-WAG250138
DATE: 05/09/2025

CLIENT: Galt Geotechnics
PROJECT: Proposed Development
LOCATION: High Wycombe



WATER: Water at 0.8m
TERMINATION: Target Depth
DUMMY PROBE:
RIG: Pagani TG 73-200 200kN

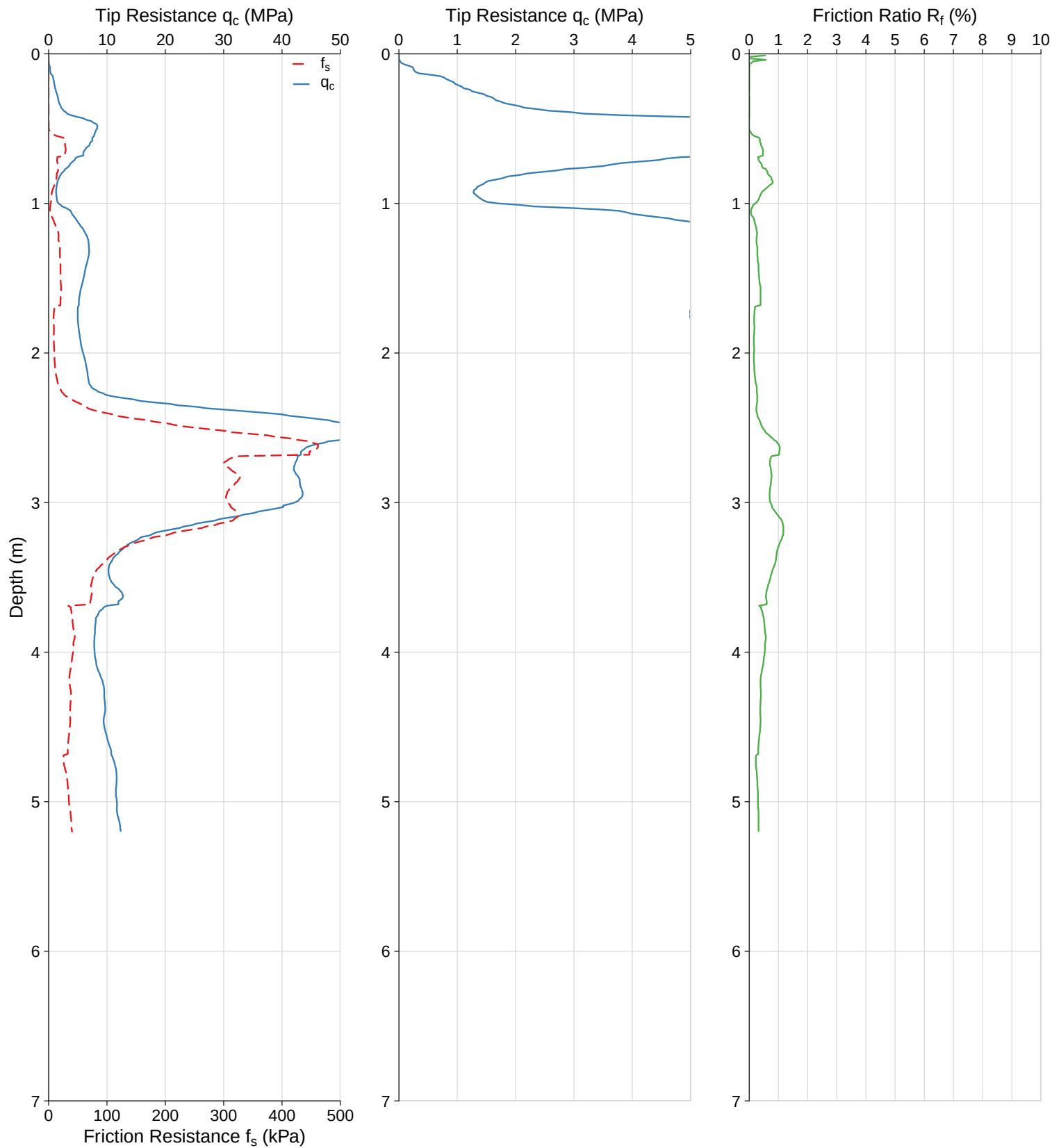
CO-ORDS:
ELEVATION:
PRE-DRILL:
WASHER/DISC: Steel



CONE PENETRATION TEST

CPT ID: CPT020
JOB NUMBER: GBI25186-WAG250138
DATE: 05/09/2025

CLIENT: Galt Geotechnics
PROJECT: Proposed Development
LOCATION: High Wycombe



WATER: Water at 0.8m
TERMINATION: Target Depth
DUMMY PROBE:
RIG: Pagani TG 73-200 200kN

CO-ORDS:
ELEVATION:
PRE-DRILL:
WASHER/DISC: Steel



Appendix C: Machine Borehole Logs

METHOD OF SOIL DESCRIPTION BOREHOLE AND TEST PIT REPORTS



GRAPHIC LOG & SOIL CLASSIFICATION SYMBOLS

Graphic	USCS	Soil Name
		FILL (various types)
		COBBLES / BOULDERS
	GP	GRAVEL (poorly graded)
	GW	GRAVEL (well graded)
	GC	Clayey GRAVEL
	GM	Silty GRAVEL
	SP	SAND (poorly graded)
	SW	SAND (well graded)
	SC	Clayey SAND

Graphic	USCS	Soil Name
	SM	Silty SAND
	ML	SILT (low liquid limit)
	MH	SILT (high liquid limit)
	CL	CLAY (low plasticity)
	CI	CLAY (medium plasticity)
	CH	CLAY (high plasticity)
	OL	Organic SILT (low liquid limit)
	OH	Organic SILT (high liquid limit)
	Pt	PEAT

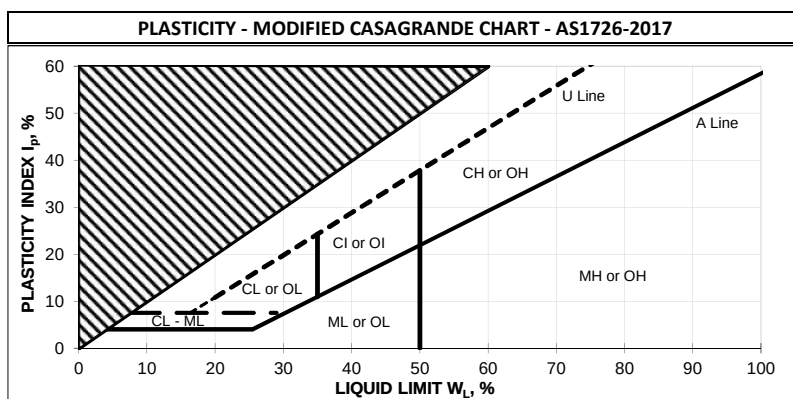
NOTE: Dual classification given for soils with a fines content between 5% and 12%.

SOIL CLASSIFICATION AND INFERRED STRATIGRAPHY

Soil descriptions are based on AS1726-2017. Material properties are assessed in the field by visual/tactile methods in combination with field and laboratory testing techniques (where used).

NOTE: AS 1726-2017 defines a fine grained soil where the total dry mass of fine fractions (<0.075 mm particle size) exceeds 35%.

PARTICLE SIZE		
Soil Name	Particle Size (mm)	
BOULDERS	>200	
COBBLES	63 to 200	
GRAVEL	Coarse	19 to 63
	Medium	6.7 to 19
	Fine	2.3 to 6.7
SAND	Coarse	0.6 to 2.36
	Medium	0.21 to 0.6
	Fine	0.075 to 0.21
FINES	SILT	0.002 to 0.075
	CLAY	<0.002



RESISTANCE TO EXCAVATION		
Symbol	Term	Description
VE	Very easy	All resistances are relative to the selected method of excavation
E	Easy	
F	Firm	
H	Hard	
VH	Very hard	

MOISTURE CONDITION	
Symbol	Term
D	Dry
M	Moist
W	Wet

CEMENTATION	
Cementation	Description
Weakly cemented	Soil may be easily disaggregated by hand in air or water
Moderately cemented	Effort is required to disaggregate the soil by hand in air or water

CONSISTENCY		
Symbol	Term	Undrained Shear Strength (kPa)
VS	Very Soft	0 to 12
S	Soft	12 to 25
F	Firm	25 to 50
St	Stiff	50 to 100
VSt	Very Stiff	100 to 200
H	Hard	>200

ORGANIC SOILS	
Material	Organic Content % of dry mass
Inorganic soil	<2%
Organic soil	2% to 25%
Peat	>25%

DENSITY		
Symbol	Term	Density Index (%)
VL	Very Loose	<15
L	Loose	15 to 35
MD	Medium Dense	35 to 65
D	Dense	65 to 85
VD	Very Dense	>85

EXPLANATORY NOTES TO BE READ WITH BOREHOLE AND TEST PIT REPORTS



METHOD OF DRILLING OR EXCAVATION

AC	Air Core	E	Excavator	PQ3	PQ3 Core Barrel
AD/T	Auger Drilling with TC-Bit	EH	Excavator with Hammer	PT	Push Tube
AD/V	Auger Drilling with V-Bit	HA	Hand Auger	R	Ripper
AT	Air Track	HE	Hand Excavation	RR	Rock Roller
B	Bulldozer Blade	HQ3	HQ3 Core Barrel	SON	Sonic Rig
BH	Backhoe Bucket	N	Natural Exposure	SPT	Driven SPT
CT	Cable Tool	NMLC	NMLC Core Barrel	WB	Washbore
DT	Diatube	PP	Push Probe	X	Existing Excavation

SUPPORT

T	Timbering
---	-----------

PENETRATION EFFORT (RELATIVE TO THE EQUIPMENT USED)

VE	Very Easy	E	Easy	F	Firm
H	Hard	VH	Very Hard		

WATER

▶	Water Inflow	▼	Water Level
◀	Water Loss (complete)		
◁	Water Loss (partial)		

SAMPLING AND TESTING

B	Bulk Disturbed Sample	P	Piston Sample
BLK	Block Sample	PBT	Plate Bearing Test
C	Core Sample	U	Undisturbed Push-in Sample
CBR	CBR Mould Sample		U50: 50 mm diameter
D	Small Disturbed Sample	SPT	Standard Penetration Test
ES	Environmental Soil Sample		Example: 3, 4, 5 N=9
EW	Environmental Water Sample		3,4,5: Blows per 150 mm
G	Gas Sample		N=9: Blows per 300 mm after
HP	Hand Penetrometer		150 mm seating interval
LB	Large Bulk Disturbed Sample	VS	Vane Shear; P = Peak
M	Mazier Type Sample		R = Remoulded (kPa)
MC	Moisture Content Sample	W	Water Sample

ROCK CORE RECOVERY

$$\text{TCR} = \text{Total Core Recovery (\%)} = \frac{\text{CRL}}{\text{TCL}} \times 100$$

$$\text{RQD} = \text{Rock Quality Designation (\%)} = \frac{\text{ALC} > 100}{\text{TCL}} \times 100$$

TCL Length of Core Run

CRL Length of Core Recovered

ALC>100 Total Length of Axial Lengths of Core Greater than 100 mm Long



BOREHOLE: BH01

Project Name: WAG250138-01

Client: Dynamic Planning & Developments

Project: LSP Amendment

Location: Hatch Court & Stirling Cres,
High Wycombe

Contractor: GBI

Drill Rig: EVH Scout 1750

Borehole Diameter: 90 mm

Inclination: -90

Date: 28/08/2025

Logged By: KS

Date Checked: 22/09/2025

Checked By: TM

Depth (m)	Drill Method	Penetration Resistance	Water Level	Sample Information		Graphic Log	Soil Class	Soil/Rock Material Description	Moisture Condition	Consistency Density	Depth (m)	Additional Remarks
				Sample Type	Sample Number							
0.5	ADN						SP	TOPSOIL: SAND: fine to coarse grained, sub-angular to sub-rounded, dark grey, trace fines, trace organics	M		0.5	
1								SAND: fine to coarse grained, sub-angular to sub-rounded, pale grey, trace fines			1	
1.5							SP				1.5	
2			▼								2	
2.5									W		2.5	
3											3	

Borehole terminated at 3.0 m, target depth
Groundwater encountered at 2.1 m depth

Notes:



Depth Range: 0.0 - 3.0 m



PROJECT WAG250138-01
CLIENT Dynamic Planning & Developments
LOCATION High Wycombe, WA

PROJECT NO. LSP Amendment
LOG: BH01
FIGURE NO. Appendix



BOREHOLE: BH02

Project Name: WAG250138-01
Client: Dynamic Planning & Developments
Project: LSP Amendment
Location: Hatch Court & Stirling Cres,
 High Wycombe

Contractor: GBI
Drill Rig: EVH Scout 1750
Borehole Diameter: 90 mm
Inclination: -90

Date: 28/08/2025
Logged By: KS
Date Checked: 22/09/2025
Checked By: TM

Depth (m)	Drill Method	Penetration Resistance	Water Level	Sample Information		Graphic Log	Soil Class	Soil/Rock Material Description	Moisture Condition	Consistency Density	Depth (m)	Additional Remarks
				Sample Type	Sample Number							
							SP	TOPSOIL: SAND: fine to coarse grained, sub-angular to sub-rounded, brown, trace to with gravel, trace fines, trace organics				
0.5							SP/SM	SAND: fine to coarse grained, sub-angular to sub-rounded, dark grey, with fines, trace to with organics	M		0.5	
1				Bulk	BH02-01		SC	Clayey SAND: fine to coarse grained, sub-angular to sub-rounded, dark grey, low plasticity clay, trace gravel, trace organics			1	
1.5											1.5	
2							SC	pale grey mottled dark grey	W		2	
2.5							SC/CL	Sandy CLAY/Clayey SAND: fine to coarse grained, sub-angular to sub-rounded, pale grey, low to medium plasticity clay			2.5	
3											3	

Borehole terminated at 3.0 m, target depth
 Groundwater encountered at 0.8 m depth

Notes:



Depth Range: 0.0 - 3.0 m



PROJECT WAG250138-01
CLIENT Dynamic Planning & Developments
LOCATION High Wycombe, WA

PROJECT NO. LSP Amendment
LOG: BH02
FIGURE NO. Appendix



BOREHOLE: BH03

Project Name: WAG250138-01

Client: Dynamic Planning & Developments

Project: LSP Amendment

Location: Hatch Court & Stirling Cres,
High Wycombe

Contractor: GBI

Drill Rig: EVH Scout 1750

Borehole Diameter: 90 mm

Inclination: -90

Date: 05/09/2025

Logged By: KS

Date Checked: 22/09/2025

Checked By: TM

Depth (m)	Drill Method	Penetration Resistance	Water Level	Sample Information		Graphic Log	Soil Class	Soil/Rock Material Description	Moisture Condition	Consistency Density	Depth (m)	Additional Remarks
				Sample Type	Sample Number							
0.5	ADN			Bulk	BH03-01		SP	TOPSOIL: SAND: fine to coarse grained, sub-angular to sub-rounded, grey, trace fines, trace organics	M		0.1	
								SAND: fine to coarse grained, sub-angular to sub-rounded, pale grey-white, trace fines				
1							SP		M			
1.5												
2							SP	grey			2.0	
2.5												
							SP	trace coffee rock gravel	W		2.6	
3											3.0	

Borehole terminated at 3.0 m, target depth
Groundwater encountered at 1.6 m depth

Notes:



Depth Range: 0.0 - 3.0 m



PROJECT WAG250138-01
CLIENT Dynamic Planning & Developments
LOCATION High Wycombe, WA

PROJECT NO. LSP Amendment
LOG: BH03
FIGURE NO. Appendix



BOREHOLE: BH04

Project Name: WAG250138-01

Client: Dynamic Planning & Developments

Project: LSP Amendment

Location: Hatch Court & Stirling Cres,
High Wycombe

Contractor: GBI

Drill Rig: EVH Scout 1750

Borehole Diameter: 90 mm

Inclination: -90

Date: 28/08/2025

Logged By: KS

Date Checked: 22/09/2025

Checked By: TM

Depth (m)	Drill Method	Penetration Resistance	Water Level	Sample Information		Graphic Log	Soil Class	Soil/Rock Material Description	Moisture Condition	Consistency Density	Depth (m)	Additional Remarks
				Sample Type	Sample Number							
			▼				SP/SM	TOPSOIL: SAND: fine to coarse grained, sub-angular to sub-rounded, dark grey mottled brown, trace to with fines, with organics 0.2	M			
0.5							SP/SM	SAND: fine to medium grained, sub-angular to sub-rounded, dark grey/brown, trace to with fines, trace organics 0.7	W		0.5	
1				Bulk	BH04-01		SC	Organic Clayey SAND: fine to coarse grained, sub-angular to sub-rounded, dark brown, medium plasticity clay 1.4	W		1	
1.5							SC	Clayey SAND: fine to coarse grained, sub-angular to sub-rounded, brown/grey, low plasticity clay 2.0	W		1.5	
2							SP-SC	Fine to coarse grained, sub-angular to sub-rounded, dark grey/white, with fines 3.0			2	
2.5											2.5	
3											3	

Borehole terminated at 3.0 m, target depth
Groundwater encountered at 0.1 m depth

No Guelph testing due to high ground water

Notes:



Depth Range: 0.0 - 3.0 m



PROJECT WAG250138-01
CLIENT Dynamic Planning & Developments
LOCATION High Wycombe, WA

PROJECT NO. LSP Amendment
LOG: BH04
FIGURE NO. Appendix



BOREHOLE: BH05

Project Name: WAG250138-01
Client: Dynamic Planning & Developments
Project: LSP Amendment
Location: Hatch Court & Stirling Cres,
 High Wycombe

Contractor: GBI
Drill Rig: EVH Scout 1750
Borehole Diameter: 90 mm
Inclination: -90

Date: 28/08/2025
Logged By: KS
Date Checked: 22/09/2025
Checked By: TM

Depth (m)	Drill Method	Penetration Resistance	Water Level	Sample Information		Graphic Log	Soil Class	Soil/Rock Material Description	Moisture Condition	Consistency Density	Depth (m)	Additional Remarks
				Sample Type	Sample Number							
0.5	AD/V						SP	TOPSOIL: SAND: fine to medium grained, sub-angular to sub-rounded, dark grey/brown, trace fines, trace organics	M		0.3	
1							SP	SAND: fine to medium grained, sub-angular to sub-rounded, dark grey, trace fines			1.3	

Borehole terminated at 1.3 m, due to collapse
 Groundwater encountered at 0.6 m depth

Notes:



Depth Range: 0.0 - 3.0 m



PROJECT WAG250138-01
CLIENT Dynamic Planning & Developments
LOCATION High Wycombe, WA

PROJECT NO. LSP Amendment
LOG: BH05
FIGURE NO. Appendix



BOREHOLE: BH06

Project Name: WAG250138-01

Client: Dynamic Planning & Developments

Project: LSP Amendment

Location: Hatch Court & Stirling Cres,
High Wycombe

Contractor: GBI

Drill Rig: EVH Scout 1750

Borehole Diameter: 90 mm

Inclination: -90

Date: 05/09/2025

Logged By: KS

Date Checked: 22/09/2025

Checked By: TM

Depth (m)	Drill Method	Penetration Resistance	Water Level	Sample Information		Graphic Log	Soil Class	Soil/Rock Material Description	Moisture Condition	Consistency Density	Depth (m)	Additional Remarks
				Sample Type	Sample Number							
							SP	TOPSOIL: SAND: fine to medium grained, sub-angular to sub-rounded, brown-grey, trace fines, trace organics	M			
0.5								0.3				
				Bulk	BH06-01			SAND: fine to coarse grained, sub-angular to sub-rounded, brown-grey, with fines, trace organics			0.5	
1							SP/SC		W		1	
1.5	ADN										1.5	
2								2.0			2	
							SP/SC	grey	W			
2.5								2.6			2.5	
							SC	Clayey SAND: fine to coarse grained, sub-angular to sub-rounded, grey, low plasticity clay	W			
3								3.0			3	

Borehole terminated at 3.0 m, target depth
Groundwater encountered at 0.4 m depth

Notes:



Depth Range: 0.0 - 3.0 m



PROJECT WAG250138-01
CLIENT Dynamic Planning & Developments
LOCATION High Wycombe, WA

PROJECT NO. LSP Amendment
LOG: BH06
FIGURE NO. Appendix



BOREHOLE: BH09

Project Name: WAG250138-01

Client: Dynamic Planning & Developments

Project: LSP Amendment

Location: Hatch Court & Stirling Cres,
High Wycombe

Contractor: GBI

Drill Rig: EVH Scout 1750

Borehole Diameter: 90 mm

Inclination: -90

Date: 05/09/2025

Logged By: KS

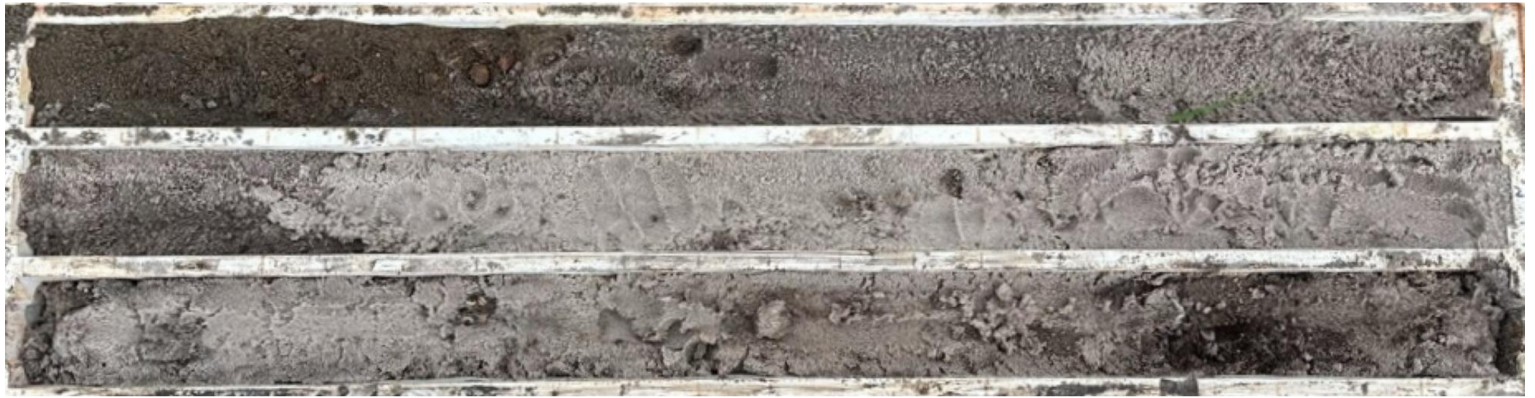
Date Checked: 22/09/2025

Checked By: TM

Depth (m)	Drill Method	Penetration Resistance	Water Level	Sample Information		Graphic Log	Soil Class	Soil/Rock Material Description	Moisture Condition	Consistency Density	Depth (m)	Additional Remarks
				Sample Type	Sample Number							
							SP	FILL: TOPSOIL: SAND: fine to coarse grained, sub-angular to sub-rounded, trace lateritic gravel, trace/with organics	M			
0.5							SP	SAND: fine to coarse grained, sub-angular to sub-rounded, grey, trace fines	M		0.5	
1											1	
1.5							SP	pale grey	M		1.5	
2											2	
2.5							SP	pale grey mottled dark grey	W		2.5	
3											3	

Borehole terminated at 3.0 m, target depth
Groundwater encountered at 1.8 m depth

Notes:



Depth Range: 0.0 - 3.0 m



PROJECT WAG250138-01
CLIENT Dynamic Planning & Developments
LOCATION High Wycombe, WA

PROJECT NO. LSP Amendment
LOG: BH09
FIGURE NO. Appendix



BOREHOLE: BH10

Project Name: WAG250138-01
Client: Dynamic Planning & Developments
Project: LSP Amendment
Location: Hatch Court & Stirling Cres,
 High Wycombe

Contractor: GBI
Drill Rig: EVH Scout 1750
Borehole Diameter: 90 mm
Inclination: -90

Date: 05/09/2025
Logged By: KS
Date Checked: 22/09/2025
Checked By: TM

Depth (m)	Drill Method	Penetration Resistance	Water Level	Sample Information		Graphic Log	Soil Class	Soil/Rock Material Description	Moisture Condition	Consistency Density	Depth (m)	Additional Remarks
				Sample Type	Sample Number							
							SP	TOPSOIL: SAND: fine to coarse grained, sub-angular to sub-rounded, grey, trace fines, trace organics	M			
0.5								0.3				
1				Bulk	BH10-01			SAND: fine to coarse grained, sub-angular to sub-rounded, pale grey/white, trace fines	M			
1.5	ADN		▼				SP					
2												
2.5									W			
3												

Borehole terminated at 3.0 m, target depth
 Groundwater encountered at 1.6 m depth

Notes:



Depth Range: 0.0 - 3.0 m



PROJECT WAG250138-01
CLIENT Dynamic Planning & Developments
LOCATION High Wycombe, WA

PROJECT NO. LSP Amendment
LOG: BH10
FIGURE NO. Appendix



BOREHOLE: BH11

Project Name: WAG250138-01
Client: Dynamic Planning & Developments
Project: LSP Amendment
Location: Hatch Court & Stirling Cres,
 High Wycombe

Contractor: DPP
Drill Rig: 7822DT
Borehole Diameter: 90 mm
Inclination: -90

Date: 05/09/2025
Logged By: SB
Date Checked: 22/09/2025
Checked By: TM

Depth (m)	Drill Method	Penetration Resistance	Water Level	Sample Information		Graphic Log	Soil Class	Soil/Rock Material Description	Moisture Condition	Depth (m)	Additional Remarks
				Sample Type	Sample Number						
				ASS	BH11/0.00			Grass			
				ASS	BH11/0.25		SP	SAND: fine to medium grained, sub-angular to sub-rounded, dark brown/grey, trace organics, with fine to coarse grained gravel (up to 0.6 m) trace fines			
0.5				ASS	BH11/0.50						
				ASS	BH11/0.75		SP	becomes dark grey			
1.0				ASS	BH11/1.00						
				ASS	BH11/1.25						
1.5				ASS	BH11/1.50						
				ASS	BH11/1.75						
2.0				ASS	BH11/2.00		SP				
				ASS	BH11/2.25						
2.5				ASS	BH11/2.50						
				ASS	BH11/2.75						
3.0				ASS	BH11/3.00						

Borehole terminated at 3.0 m, target depth
 Groundwater encountered at 1.0 m depth

Notes:



Depth Range: 0.0 - 3.0 m



PROJECT WAG250138-01
CLIENT Dynamic Planning & Developments
LOCATION High Wycombe, WA

PROJECT NO. LSP Amendment
LOG: BH11
FIGURE NO. Appendix



BOREHOLE/MONITORING WELL: BH12/MW01

Project Name: WAG250138-01
Client Name: Dynamic Planning & Developments
Project: LSP Amendment
Location: Hatch Court & Stirling Cres,

Contractor: DPP
Drill Rig: 7822DT
Hole Diameter: 90 mm
Inclination: -90

Date: 05/09/2025
Logged By: SB
Checked By: TM
Date Checked: 22/09/2025

Drill Method	Depth (m)	Penetration Resistance	Water Level	Sample Information		Graphic Log	Soil Class	Soil/Rock Material Description	Moisture Condition	Depth (m)	Well	Additional Remarks
				Sample Type	Sample Number							
AD/V	0.5 											

Borehole terminated at 3.0 m, target depth
Groundwater encountered at 1.0 m depth

Notes:



Depth Range: 0.0 - 3.0 m



PROJECT WAG250138-01
CLIENT Dynamic Planning & Developments
LOCATION High Wycombe, WA

PROJECT NO. LSP Amendment
LOG: BH12/MW01
FIGURE NO. Appendix



BOREHOLE: BH13

Project Name: WAG250138-01

Client: Dynamic Planning & Developments

Project: LSP Amendment

Location: Hatch Court & Stirling Cres,
High Wycombe

Contractor: DPP

Drill Rig: 7822DT

Borehole Diameter: 90 mm

Inclination: -90

Date: 05/09/2025

Logged By: SB

Date Checked: 22/09/2025

Checked By: TM

Depth (m)	Drill Method	Penetration Resistance	Water Level	Sample Information		Graphic Log	Soil Class	Soil/Rock Material Description	Moisture Condition	Depth (m)	Additional Remarks
				Sample Type	Sample Number						
0.0 											

Borehole terminated at 3.0 m, target depth
Groundwater encountered at 0.9 m depth

Notes:



Depth Range: 0.0 - 3.0 m



PROJECT WAG250138-01
CLIENT Dynamic Planning & Developments
LOCATION High Wycombe, WA

PROJECT NO. LSP Amendment
LOG: BH13
FIGURE NO. Appendix



BOREHOLE/MONITORING WELL: BH14/MW03

Project Name: WAG250138-01
Client Name: Dynamic Planning & Developments
Project: LSP Amendment
Location: Hatch Court & Stirling Cres,

Contractor: DPP
Drill Rig: 7822DT
Hole Diameter: 90 mm
Inclination: -90

Date: 05/09/2025
Logged By: SB
Checked By: TM
Date Checked: 22/09/2025

Drill Method	Depth (m)	Penetration Resistance	Water Level	Sample Information		Graphic Log	Soil Class	Soil/Rock Material Description	Moisture Condition	Depth (m)	Well	Additional Remarks
				Sample Type	Sample Number							
AD/V	E			ASS	BH14/MW03/0.00		SP	Gravelly SAND: sub-angular to sub-rounded, fine to medium grained sand, brown, rounded to sub-rounded, fine to medium grained gravel, trace fines	M	0.5		SUP: +0.65 Solid: 0-0.5 Screen: 0.5-3.0 Concrete: 0-0.1 Bentonite: 0.1-0.5 Gravel: 0.5-3.0
				ASS	BH14/MW03/0.25							
				ASS	BH14/MW03/0.50							
				ASS	BH14/MW03/0.75							
				ASS	BH14/MW03/1.00		SP	SAND: fine to medium grained, sub-angular to sub-rounded, dark grey, trace gravel (up to 1.5 m), trace fines	W	1.0		
				ASS	BH14/MW03/1.25							
				ASS	BH14/MW03/1.50							
				ASS	BH14/MW03/1.75							
				ASS	BH14/MW03/2.00		CL	Sandy CLAY: low plasticity, blue grey, sub-angular to sub-rounded, fine to coarse grained sand		2.0		
				ASS	BH14/MW03/2.25							
				ASS	BH14/MW03/2.50							
				ASS	BH14/MW03/2.75							
				ASS	BH14/MW03/3.00							

Borehole terminated at 3.0 m, target depth
Groundwater encountered at 0.28 m depth

Notes:



Depth Range: 0.0 - 3.0 m



PROJECT WAG250138-01
CLIENT Dynamic Planning & Developments
LOCATION High Wycombe, WA

PROJECT NO. LSP Amendment
LOG: BH14/MW03
FIGURE NO. Appendix



BOREHOLE: BH15

Project Name: WAG250138-01

Client: Dynamic Planning & Developments

Project: LSP Amendment

Location: Hatch Court & Stirling Cres,
High Wycombe

Contractor: DPP

Drill Rig: 7822DT

Borehole Diameter: 90 mm

Inclination: -90

Date: 05/09/2025

Logged By: SB

Date Checked: 22/09/2025

Checked By: TM

Depth (m)	Drill Method	Penetration Resistance	Water Level	Sample Information		Graphic Log	Soil Class	Soil/Rock Material Description	Moisture Condition	Depth (m)	Additional Remarks
				Sample Type	Sample Number						
0.0 <											

Borehole terminated at 3.0 m, target depth
Groundwater encountered at 1.1 m depth

Notes:



Depth Range: 0.0 - 3.0 m



PROJECT WAG250138-01
CLIENT Dynamic Planning & Developments
LOCATION High Wycombe, WA

PROJECT NO. LSP Amendment
LOG: BH15
FIGURE NO. Appendix



BOREHOLE/MONITORING WELL: BH16/MW02

Project Name: WAG250138-01
Client Name: Dynamic Planning & Developments
Project: LSP Amendment
Location: Hatch Court & Stirling Cres,

Contractor: DPP
Drill Rig: 7822DT
Hole Diameter: 90 mm
Inclination: -90

Date: 05/09/2025
Logged By: SB
Checked By: TM
Date Checked: 22/09/2025

Drill Method	Depth (m)	Penetration Resistance	Water Level	Sample Information		Graphic Log	Soil Class	Soil/Rock Material Description	Moisture Condition	Depth (m)	Well	Additional Remarks		
				Sample Type	Sample Number									
AD/V	0.5	E		ASS	BH16/MW02/0.00		SP	SAND: fine to medium grained, sub-angular to sub-rounded, brown, trace rootlets (up to 0.3 m), trace fines	M	0.3		SUP: +0.62 Solid: 0-0.5 Screen: 0.5-3.0 Concrete:0-0.1 Bentonite: 0.1-0.5 Gravel: 0.5-3.0		
				ASS	BH16/MW02/0.25			becomes grey						
				ASS	BH16/MW02/0.50		SP							
				ASS	BH16/MW02/0.75			becomes fine to coarse grained	W	0.7				
				ASS	BH16/MW02/1.00									
				ASS	BH16/MW02/1.25		SP							
				ASS	BH16/MW02/1.50				W	2.0				
				ASS	BH16/MW02/1.75									
				ASS	BH16/MW02/2.00									
				ASS	BH16/MW02/2.25			Gravelly SAND: sub-angular to sub-rounded, fine to medium grained, dark brown, angular to subangular, fine to coarse grained gravel, with coffee rock, trace/with fines		2.5				
				ASS	BH16/MW02/2.50		SP-SM							
				ASS	BH16/MW02/2.75									
				ASS	BH16/MW02/3.00					3.0				

Borehole terminated at 3.0 m, target depth
Groundwater encountered at 1.15 m depth

Notes:



Depth Range: 0.0 - 3.0 m



PROJECT WAG250138-01
CLIENT Dynamic Planning & Developments
LOCATION High Wycombe, WA

PROJECT NO. LSP Amendment
LOG: BH16/MW02
FIGURE NO. Appendix

Appendix D: Guelph Permeameter Test Results

Hydraulic Conductivity Calculation - Constant Head by Permeameter

Galt Geotechnics

Spreadsheet author:

REFERENCE: AS1547-2012, "On-site domestic wastewater management" - Appendix G

Job No: WAG250138-01

Client: DPD

Project: LSP Amendment

Location: Hatch Crt and Stirling Crs

High Wycombe

Test Name BH01/G01

Spreadsheet Legend

Required input

Calculated field

Comment field

Field not used

Fixed field

$$K = \frac{4.4Q[0.5 \sinh^{-1}\left(\frac{H}{2r}\right) - \sqrt{\left(\frac{r}{H}\right)^2 + 0.25} + \frac{r}{H}]}{2\pi H^2}$$

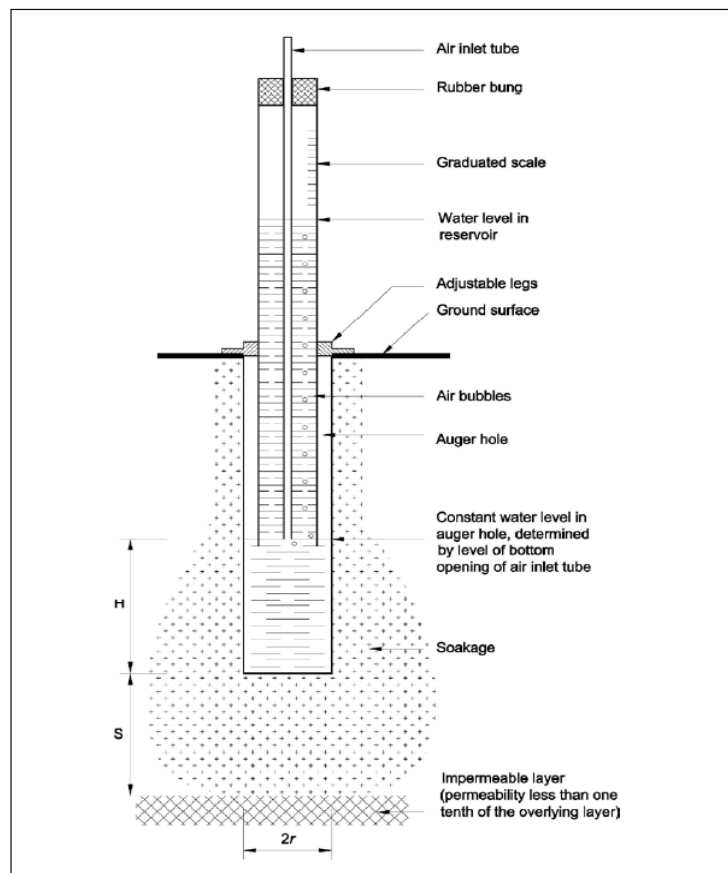
Parameter	Description	Value	Units
K _{sat}	Saturated hydraulic conductivity		cm/min
D	Depth of auger hole	38	cm
H	Head of water above base	8	cm
r	Radius of auger hole	4.5	cm
S	Depth to impermeable stratum		cm
Reservoir	Chosen Guelph reservoir (inner or outer)	Outer	
Area	Area of chosen reservoir	36.3	cm ²
F	Reading of water level in reservoir		cm

Test Results

Time (min)	F (cm)	ΔF (cm)	ΔF (cm)/min
0	52		
0.5	40	12.00	24.00
1	30	10.00	20.00
1.5	20.5	9.50	19.00
2	10	10.50	21.00
2.5	0	10.00	20.00

Calculation

Steady State Flow	20.80	cm/min
Flow from reservoir (Q)	755.04	cm ³ /min
K _{sat}	1.737	cm/min
K _{sat}	2.894E-04	m/s
K _{sat}	25.01	m/day



where:

H = depth of water in test hole

S = the depth to an underlying impermeable layer

r = radius of the test hole

AVERAGE - LAST 5 READINGS 20.80

Hydraulic Conductivity Calculation - Constant Head by Permeameter

Galt Geotechnics

Spreadsheet author:

REFERENCE: AS1547-2012, "On-site domestic wastewater management" - Appendix G

Job No: WAG250138-01

Client: DPD

Project: LSP Amendment

Location: Hatch Crt and Stirling Crs

High Wycombe

Test Name BH02/G02

Spreadsheet Legend

Required input

Calculated field

Comment field

Field not used

Fixed field

$$K = \frac{4.4Q[0.5 \sinh^{-1}\left(\frac{H}{2r}\right) - \sqrt{\left(\frac{r}{H}\right)^2 + 0.25} + \frac{r}{H}]}{2\pi H^2}$$

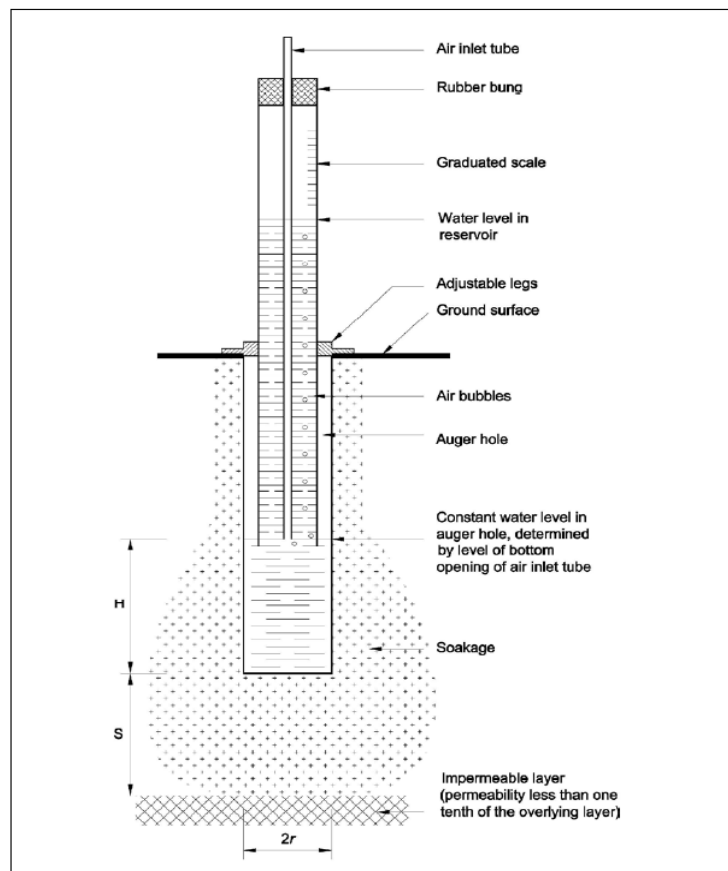
Parameter	Description	Value	Units
K _{sat}	Saturated hydraulic conductivity		cm/min
D	Depth of auger hole	42	cm
H	Head of water above base	11	cm
r	Radius of auger hole	4.5	cm
S	Depth to impermeable stratum		cm
Reservoir	Chosen Guelph reservoir (inner or outer)	Outer	
Area	Area of chosen reservoir	36.3	cm ²
F	Reading of water level in reservoir		cm

Test Results

Time (min)	F (cm)	ΔF (cm)	ΔF (cm)/min
0	46.5		
2	45.5	1.00	0.50
4	42.5	3.00	1.50
6	41	1.50	0.75
8	39.5	1.50	0.75
10	36	3.50	1.75
12	34	2.00	1.00
14	32	2.00	1.00
16	29.8	2.20	1.10

Calculation

Steady State Flow	1.12	cm/min
Flow from reservoir (Q)	40.66	cm ³ /min
K _{sat}	0.065	cm/min
K _{sat}	1.091E-05	m/s
K _{sat}	0.94	m/day



where:

H = depth of water in test hole

S = the depth to an underlying impermeable layer

r = radius of the test hole

AVERAGE - LAST 5 READINGS 1.12

Hydraulic Conductivity Calculation - Constant Head by Permeameter

Galt Geotechnics

Spreadsheet author:

REFERENCE: AS1547-2012, "On-site domestic wastewater management" - Appendix G

Job No: WAG250138-01

Client: DPD

Project: LSP Amendment

Location: Hatch Crt and Stirling Crs

High Wycombe

Test Name BH03/G03

Spreadsheet Legend

Required input

Calculated field

Comment field

Field not used

Fixed field

$$K = \frac{4.4Q[0.5 \sinh^{-1}\left(\frac{H}{2r}\right) - \sqrt{\left(\frac{r}{H}\right)^2 + 0.25} + \frac{r}{H}]}{2\pi H^2}$$

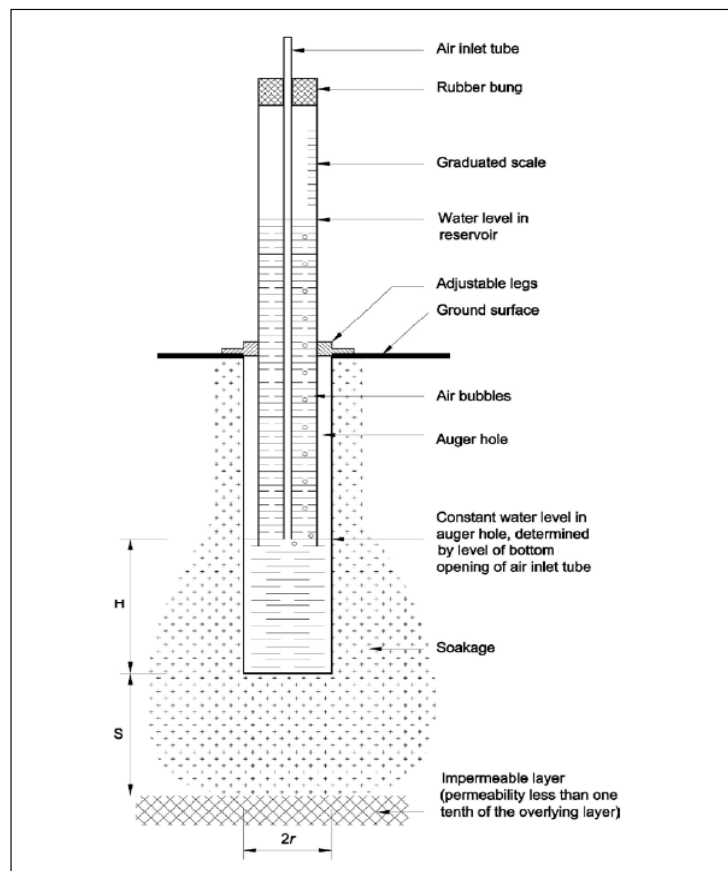
Parameter	Description	Value	Units
K _{sat}	Saturated hydraulic conductivity		cm/min
D	Depth of auger hole	57	cm
H	Head of water above base	23	cm
r	Radius of auger hole	4.5	cm
S	Depth to impermeable stratum		cm
Reservoir	Chosen Guelph reservoir (inner or outer)	Outer	
Area	Area of chosen reservoir	36.3	cm ²
F	Reading of water level in reservoir		cm

Test Results

Time (min)	F (cm)	ΔF (cm)	ΔF (cm)/min
0	71		
0.33	66	5.00	15.15
0.66	59	7.00	21.21
1.33	45	14.00	20.90
1.66	38	7.00	21.21
1.99	28	10.00	30.30
2.33	21	7.00	20.59
2.66	11	10.00	30.30
2.99	1	10.00	30.30

Calculation

Steady State Flow	26.54	cm/min
Flow from reservoir (Q)	963.47	cm ³ /min
K _{sat}	0.628	cm/min
K _{sat}	1.047E-04	m/s
K _{sat}	9.05	m/day



where:

H = depth of water in test hole

S = the depth to an underlying impermeable layer

r = radius of the test hole

AVERAGE - LAST 5 READINGS 26.54

Hydraulic Conductivity Calculation - Constant Head by Permeameter

Galt Geotechnics

Spreadsheet author:

REFERENCE: AS1547-2012, "On-site domestic wastewater management" - Appendix G

Job No: WAG250138-01

Client: DPD

Project: LSP Amendment

Location: Hatch Crt and Stirling Crs

High Wycombe

Test Name: BH05/G05

Spreadsheet Legend

Required input

Calculated field

Comment field

Field not used

Fixed field

$$K = \frac{4.4Q[0.5 \sinh^{-1}\left(\frac{H}{2r}\right) - \sqrt{\left(\frac{r}{H}\right)^2 + 0.25} + \frac{r}{H}]}{2\pi H^2}$$

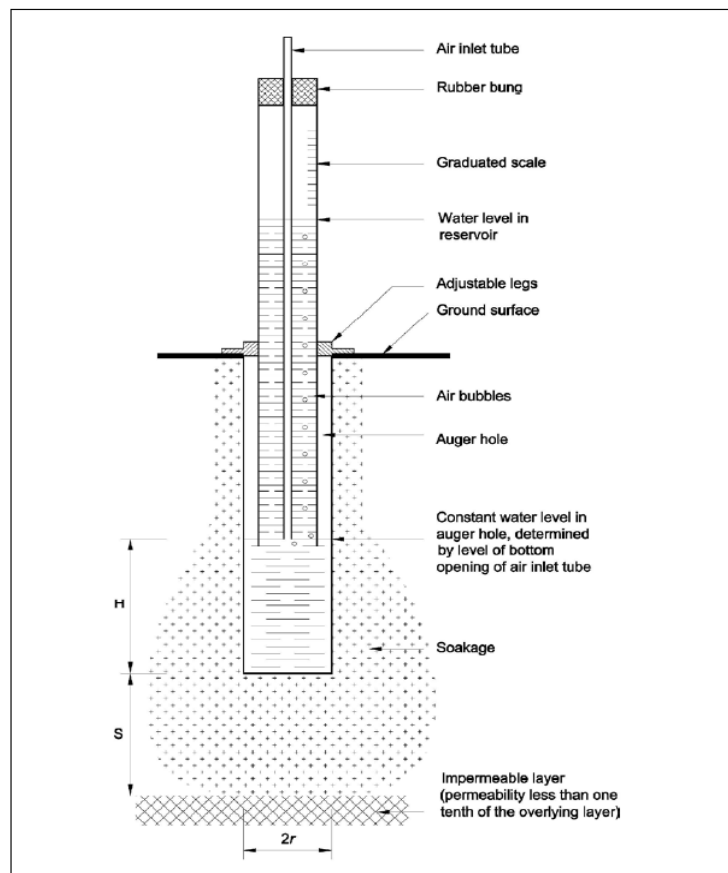
Parameter	Description	Value	Units
K _{sat}	Saturated hydraulic conductivity		cm/min
D	Depth of auger hole	44	cm
H	Head of water above base	14	cm
r	Radius of auger hole	4.5	cm
S	Depth to impermeable stratum		cm
Reservoir	Chosen Guelph reservoir (inner or outer)	Outer	
Area	Area of chosen reservoir	36.3	cm ²
F	Reading of water level in reservoir		cm

Test Results

Time (min)	F (cm)	ΔF (cm)	ΔF (cm)/min
0	53.5		
5	49	4.50	0.90
10	45	4.00	0.80
15	41	4.00	0.80
20	38	3.00	0.60
25	35	3.00	0.60
30	31.5	3.50	0.70

Calculation

Steady State Flow	0.70	cm/min
Flow from reservoir (Q)	25.41	cm ³ /min
K _{sat}	0.031	cm/min
K _{sat}	5.139E-06	m/s
K _{sat}	0.44	m/day



where:

H = depth of water in test hole

S = the depth to an underlying impermeable layer

r = radius of the test hole

AVERAGE - LAST 5 READINGS 0.70

Hydraulic Conductivity Calculation - Constant Head by Permeameter

Galt Geotechnics

Spreadsheet author:

REFERENCE: AS1547-2012, "On-site domestic wastewater management" - Appendix G

Job No: WAG250138-01

Client: DPD

Project: LSP Amendment

Location: Hatch Crt and Stirling Crs

High Wycombe

Test Name: BH09/G09

Spreadsheet Legend

Required input

Calculated field

Comment field

Field not used

Fixed field

$$K = \frac{4.4Q[0.5 \sinh^{-1}\left(\frac{H}{2r}\right) - \sqrt{\left(\frac{r}{H}\right)^2 + 0.25} + \frac{r}{H}]}{2\pi H^2}$$

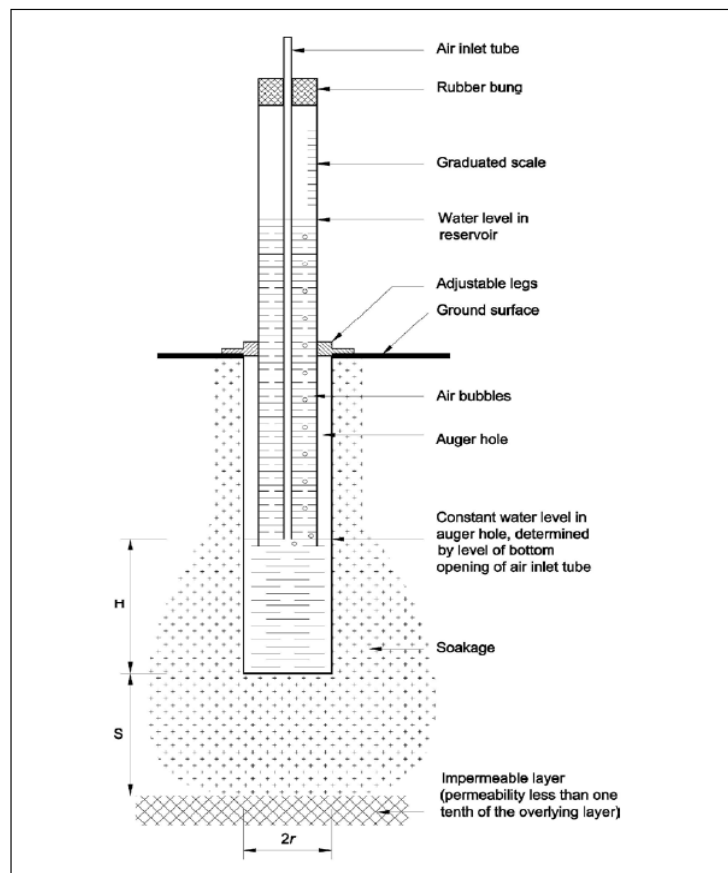
Parameter	Description	Value	Units
K _{sat}	Saturated hydraulic conductivity		cm/min
D	Depth of auger hole	52	cm
H	Head of water above base	16	cm
r	Radius of auger hole	4.5	cm
S	Depth to impermeable stratum		cm
Reservoir	Chosen Guelph reservoir (inner or outer)	Outer	
Area	Area of chosen reservoir	36.3	cm ²
F	Reading of water level in reservoir		cm

Test Results

Time (min)	F (cm)	ΔF (cm)	ΔF (cm)/min
0	72.5		
1	62	10.50	10.50
2	52.5	9.50	9.50
3	46	6.50	6.50
4	38	8.00	8.00
5	28.5	9.50	9.50
6	23.6	4.90	4.90
7	14.5	9.10	9.10
8	8	6.50	6.50
9	1.5	6.50	6.50

Calculation

Steady State Flow	7.30	cm/min
Flow from reservoir (Q)	264.99	cm ³ /min
K _{sat}	0.274	cm/min
K _{sat}	4.559E-05	m/s
K _{sat}	3.94	m/day



where:

H = depth of water in test hole

S = the depth to an underlying impermeable layer

r = radius of the test hole

AVERAGE - LAST 5 READINGS 7.30

Hydraulic Conductivity Calculation - Constant Head by Permeameter

Galt Geotechnics

Spreadsheet author:

REFERENCE: AS1547-2012, "On-site domestic wastewater management" - Appendix G

Job No: WAG250138-01

Client: DPD

Project: LSP Amendment

Location: Hatch Crt and Stirling Crs

High Wycombe

Test Name: BH10/G10

Spreadsheet Legend

Required input

Calculated field

Comment field

Field not used

Fixed field

$$K = \frac{4.4Q[0.5 \sinh^{-1}\left(\frac{H}{2r}\right) - \sqrt{\left(\frac{r}{H}\right)^2 + 0.25} + \frac{r}{H}]}{2\pi H^2}$$

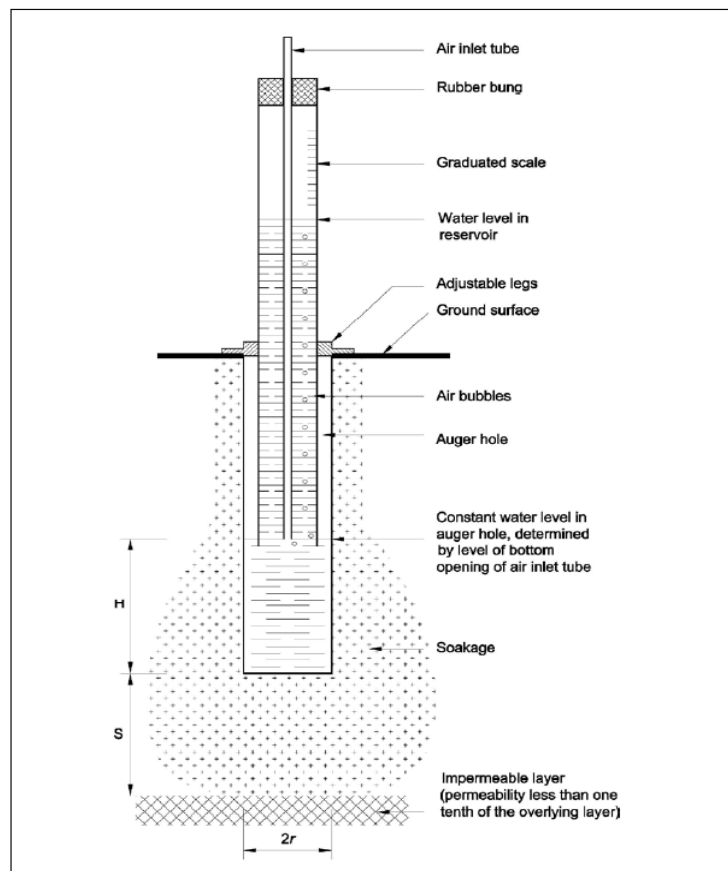
Parameter	Description	Value	Units
K _{sat}	Saturated hydraulic conductivity		cm/min
D	Depth of auger hole	47	cm
H	Head of water above base	11	cm
r	Radius of auger hole	4.5	cm
S	Depth to impermeable stratum		cm
Reservoir	Chosen Guelph reservoir (inner or outer)	Outer	
Area	Area of chosen reservoir	36.3	cm ²
F	Reading of water level in reservoir		cm

Test Results

Time (min)	F (cm)	ΔF (cm)	ΔF (cm)/min
0	58		
1	53	5.00	5.00
2	50	3.00	3.00
3	44	6.00	6.00
4	40	4.00	4.00
5	36	4.00	4.00
6	32	4.00	4.00

Calculation

Steady State Flow	4.20	cm/min
Flow from reservoir (Q)	152.46	cm ³ /min
K _{sat}	0.245	cm/min
K _{sat}	4.090E-05	m/s
K _{sat}	3.53	m/day



where:

H = depth of water in test hole

S = the depth to an underlying impermeable layer

r = radius of the test hole

AVERAGE - LAST 5 READINGS 4.20

Hydraulic Conductivity Calculation - Constant Head by Permeameter

Galt Geotechnics

Spreadsheet author:

REFERENCE: AS1547-2012, "On-site domestic wastewater management" - Appendix G

Job No: WAG250138-01

Client: DPD

Project: LSP Amendment

Location: Hatch Crt and Stirling Crs

High Wycombe

Test Name: BH15/G07

Spreadsheet Legend

Required input

Calculated field

Comment field

Field not used

Fixed field

$$K = \frac{4.4Q[0.5 \sinh^{-1}\left(\frac{H}{2r}\right) - \sqrt{\left(\frac{r}{H}\right)^2 + 0.25} + \frac{r}{H}]}{2\pi H^2}$$

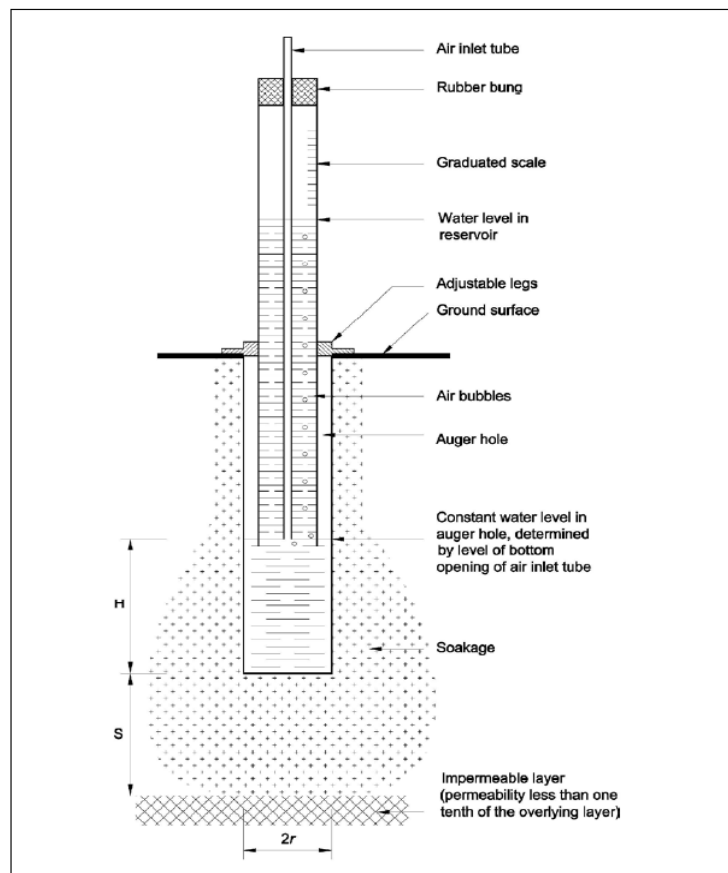
Parameter	Description	Value	Units
K _{sat}	Saturated hydraulic conductivity		cm/min
D	Depth of auger hole	53	cm
H	Head of water above base	16	cm
r	Radius of auger hole	4.5	cm
S	Depth to impermeable stratum		cm
Reservoir	Chosen Guelph reservoir (inner or outer)	Outer	
Area	Area of chosen reservoir	36.3	cm ²
F	Reading of water level in reservoir		cm

Test Results

Time (min)	F (cm)	ΔF (cm)	ΔF (cm)/min
0	60		
0.5	48	12.00	24.00
1	38	10.00	20.00
1.5	31	7.00	14.00
2	20	11.00	22.00
2.5	12	8.00	16.00
3	2.5	9.50	19.00

Calculation

Steady State Flow	18.20	cm/min
Flow from reservoir (Q)	660.66	cm ³ /min
K _{sat}	0.682	cm/min
K _{sat}	1.137E-04	m/s
K _{sat}	9.82	m/day



where:

H = depth of water in test hole

S = the depth to an underlying impermeable layer

r = radius of the test hole

AVERAGE - LAST 5 READINGS

18.20

Appendix E: Water Balance

WA Site & Soil Evaluation

Irrigation area sizing

Please read the attached notes before using this spreadsheet																
Water Balance for Zero Storage																
Site Address:		Hatch Court and Stirling Crescent, High Wycombe WA														
Date:		Wednesday, 24 September 2025				Assessor:		Tyrone Mardesic								
INPUT DATA																
Design Wastewater Flow	Q	5,000	L/day	Based on maximum potential occupancy and derived from the Supplement to Regulation 29 and Schedule 9 - Wastewater system loading rates												
Design Irrigation Rate	DIR	50.0	mm/day	Based on soil texture class/permeability and derived from Table M1 of AS/NZS 1547:2012												
Nominated Land Application Area	L	108	m ²	1												
Crop Factor	C	0.8-1.0	unitless	Estimates evapotranspiration as a fraction of pan evaporation; varies with season and crop type ²												
Rainfall Runoff Factor	RF	1.0	unitless	Proportion of rainfall that remains onsite and infiltrates, allowing for any runoff												
Mean Monthly Rainfall Data	Midland			BoM Station and number												
Mean Monthly Pan Evaporation Data	Upper Swan			BoM Station and number or data from the Evaporation Data for Western Australia Report (https://researchlibrary.agric.wa.gov.au/cgi/viewcontent.cgi?article=1058&context=rmtf)												
Parameter	Symbol	Formula	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Days in month	D		days	31	28	31	30	31	30	31	31	30	31	30	31	365
Rainfall	R		mm/month	10	13.1	16.9	40.3	100.1	159.1	162	122.1	74.1	46.7	22.3	10.7	777.4
Evaporation	E		mm/month	327	281	241	136	89	63	60	87	110	161	221	303	2079
Crop Factor	C		unitless	1.00	1.00	0.90	0.90	0.80	0.80	0.80	0.80	0.90	1.00	1.00	1.00	
OUTPUTS																
Evapotranspiration	ET	ExC	mm/month	327	281	217	122	71	50	48	70	99	161	221	303	1970.5
Percolation	B	DIRxD	mm/month	1550.0	1400	1550.0	1500.0	1550.0	1500.0	1550.0	1550.0	1500.0	1550.0	1500.0	1550.0	18250.0
Outputs		ET+B	mm/month	1877.0	1681	1766.9	1622.4	1621.2	1550.4	1598.0	1619.6	1599.0	1711.0	1721.0	1853.0	20220.5
INPUTS																
Retained Rainfall	RR	RxRF	mm/month	10	13.1	16.9	40.3	100.1	159.1	162	122.1	74.1	46.7	22.3	10.7	777.4
Applied Effluent	W	(QxD)/L	mm/month	1435.2	1296.3	1435.2	1388.9	1435.2	1388.9	1435.2	1435.2	1388.9	1435.2	1388.9	1435.2	16898.1
Inputs		RR+W	mm/month	1445.2	1309.4	1452.1	1429.2	1535.3	1548.0	1597.2	1557.3	1463.0	1481.9	1411.2	1445.9	17675.5
STORAGE CALCULATION																
Storage remaining from previous month			mm/month	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Storage for the month	S	(RR+W)-(ET+B)	mm/month	-431.8	-371.6	-314.8	-193.2	-85.9	-2.4	-0.8	-62.3	-136.0	-229.1	-309.8	-407.1	
Cumulative Storage	M		mm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Maximum Storage for Nominated Area	N		mm	0.00												
	V	NxL	L	0												
LAND AREA REQUIRED FOR ZERO STORAGE			m ²	83	84	89	95	102	108	108	104	98	93	88	84	
MINIMUM AREA REQUIRED FOR ZERO STORAGE:				108 m ²												
CELLS																
		Please enter data in blue cells														
		Enter available Land Application Area														
		Data in yellow cells is calculated by the spreadsheet, DO NOT ALTER THESE CELLS														
NOTES																
¹ This value should be the largest of the following: land application area required based on the most limiting nutrient balance or minimum area required for zero storage																
² Values selected are suitable for grass in WA																

Appendix F: Laboratory Test Results



SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.3.1.1, 3.2.1, 3.3.1 & 3.4.1

Client:	Dynamic Planning and Developments	Ticket No.	S18630
Client Address:	-	Report No.	WG25.15432_1_PI
Project:	Proposed HCLIA	Sample No.	WG25.15432
Location:	Hatch Court and Stirling Crescent, High Wycombe	Date Sampled:	5/09/2025
Sample Identification:	BH02 (1 - 1.5m)	Date Tested:	16/09/2025

TEST RESULTS - Consistency Limits (Casagrande)

Sampling Method:

Sampled by Client, Tested as Received

History of Sample:

Oven Dried <50°C

Method of Preparation:

Dry Sieved

AS 1289.3.1.1	Liquid Limit (%)	28
AS 1289.3.2.1	Plastic Limit (%)	23
AS 1289.3.3.1	Plasticity Index (%)	5
AS 1289.3.4.1	Linear Shrinkage (%)	2.5
AS 1289.3.4.1	Length of Mould (mm)	250
AS 1289.3.4.1	Condition of Dry Specimen:	-

Comments:

Approved Signatory:

Name: Connor Budimir

Date: 17/September/2025



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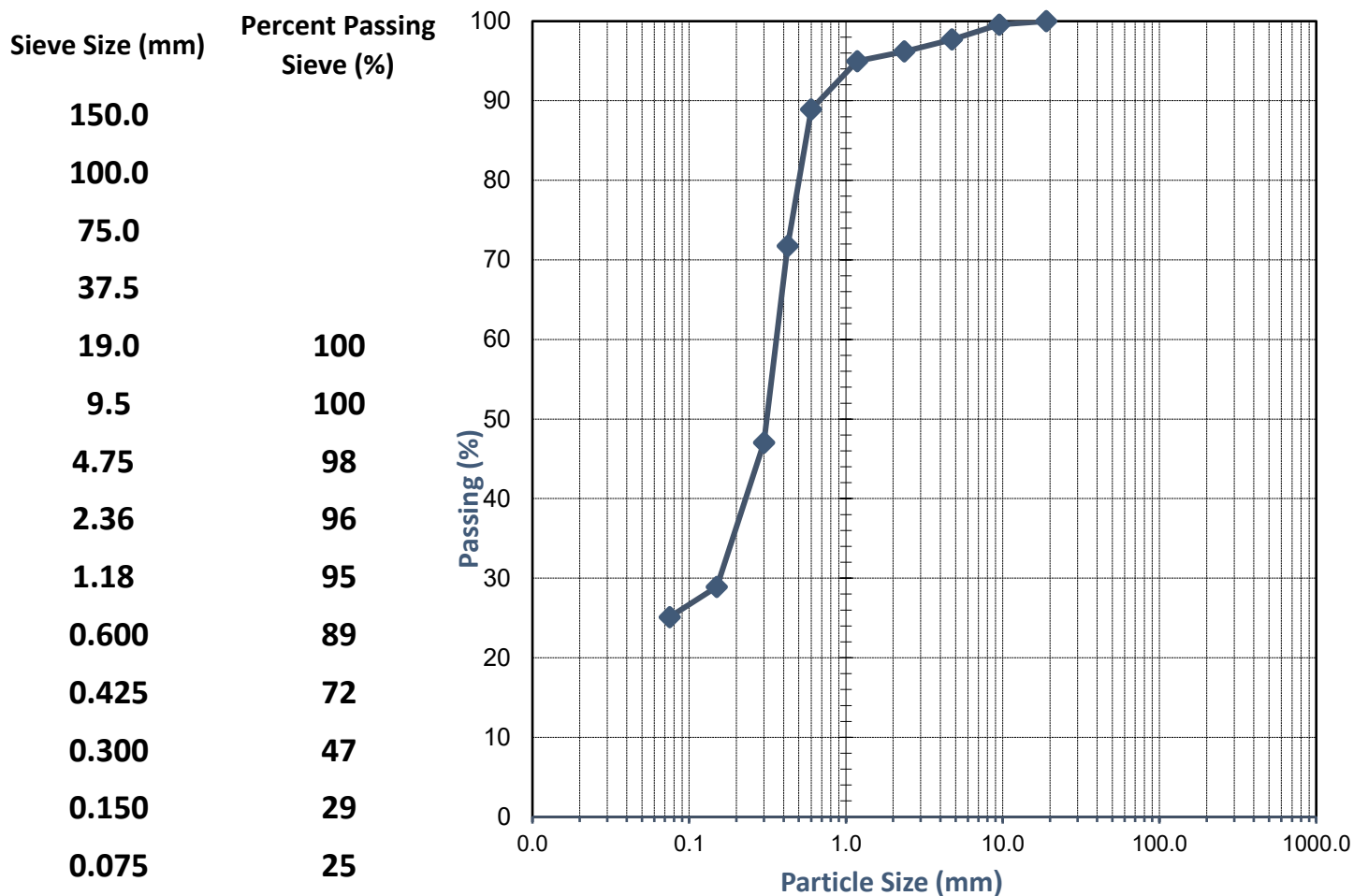
TEST REPORT - AS 1289.3.6.1

Client:	Dynamic Planning and Developments	Ticket No.	S18630
Client Address:	-	Report No.	WG25.15432_1_PSD
Project:	Proposed HCLIA	Sample No.	WG25.15432
Location:	Hatch Court and Stirling Crescent, High Wycombe	Date Sampled:	5/09/2025
Sample Identification:	BH02 (1 - 1.5m)	Date Tested:	15/09 - 16/09/2025

TEST RESULTS - Particle Size Distribution of Soil

Sampling Method:

Sampled by Client, Tested as Received



Comments:

Approved Signatory:

Name: Connor Budimir

Date: 17/September/2025



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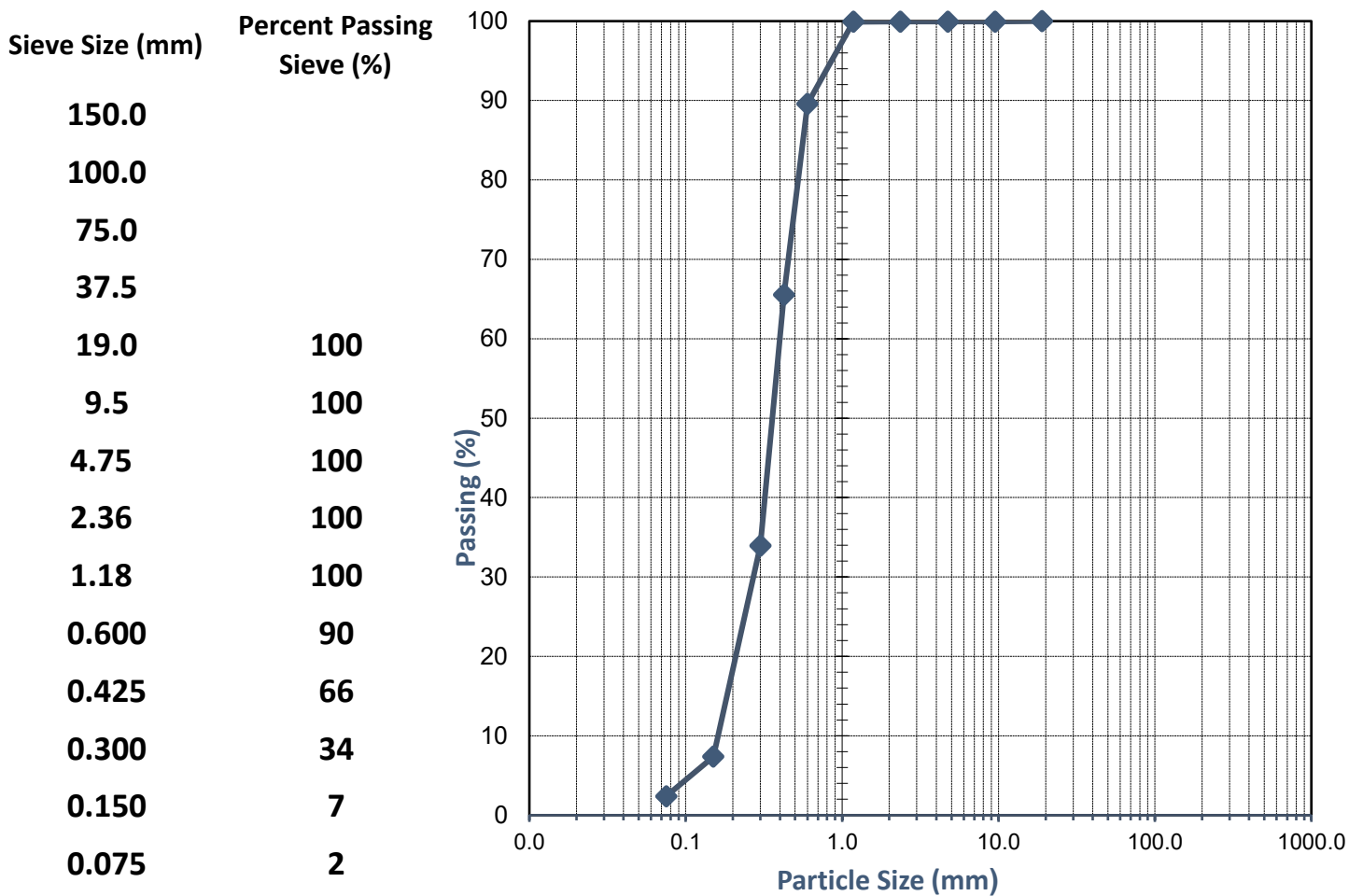
TEST REPORT - AS 1289.3.6.1

Client:	Dynamic Planning and Developments	Ticket No.	S18630
Client Address:	-	Report No.	WG25.15433_1_PSD
Project:	Proposed HCLIA	Sample No.	WG25.15433
Location:	Hatch Court and Stirling Crescent, High Wycombe	Date Sampled:	5/09/2025
Sample Identification:	BH03 (1.5 - 1.8m)	Date Tested:	15/09 - 17/09/2025

TEST RESULTS - Particle Size Distribution of Soil

Sampling Method:

Sampled by Client, Tested as Received



Comments:

Approved Signatory:

Name: Connor Budimir

Date: 17/September/2025



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SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.3.1.2, 3.2.1, 3.3.1 & 3.4.1

Client:	Dynamic Planning and Developments	Ticket No.	S18630
Client Address:	-	Report No.	WG25.15434_1_PI
Project:	Proposed HCLIA	Sample No.	WG25.15434
Location:	Hatch Court and Stirling Crescent, High Wycombe	Date Sampled:	5/09/2025
Sample Identification:	BH04 (1 - 1.4m)	Date Tested:	16/09/2025

TEST RESULTS - Consistency Limits (Casagrande)

Sampling Method:

Sampled by Client, Tested as Received

History of Sample:

Oven Dried <50°C

Method of Preparation:

Dry Sieved

AS 1289.3.1.2	Liquid Limit (%)	46
AS 1289.3.2.1	Plastic Limit (%)	40
AS 1289.3.3.1	Plasticity Index (%)	6
AS 1289.3.4.1	Linear Shrinkage (%)	3.0
AS 1289.3.4.1	Length of Mould (mm)	250
AS 1289.3.4.1	Condition of Dry Specimen	-

Approved Signatory:

Name: Danielle Reynolds

Date: 18/September/2025



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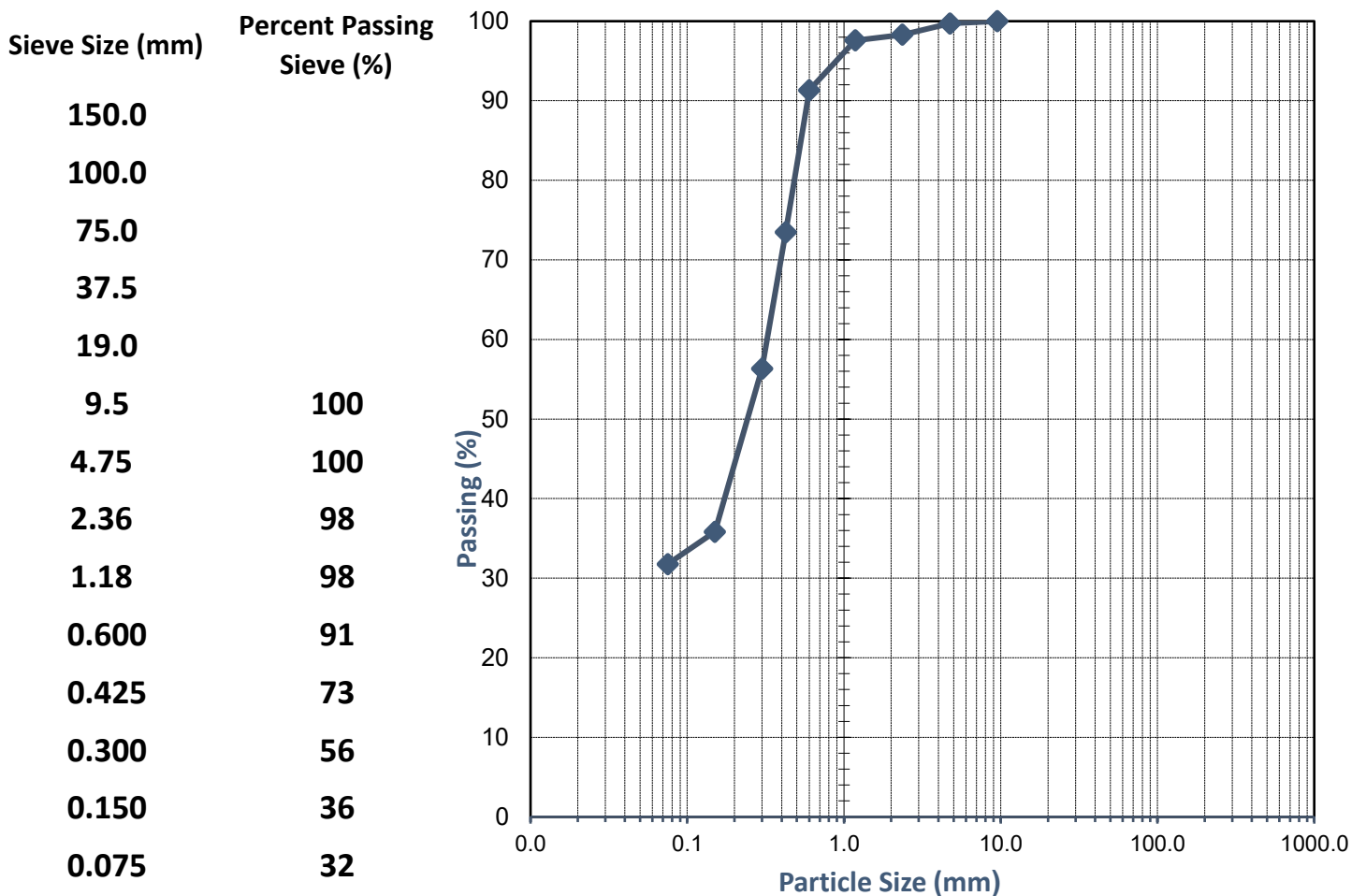
TEST REPORT - AS 1289.3.6.1

Client:	Dynamic Planning and Developments	Ticket No.	S18630
Client Address:	-	Report No.	WG25.15434_1_PSD
Project:	Proposed HCLIA	Sample No.	WG25.15434
Location:	Hatch Court and Stirling Crescent, High Wycombe	Date Sampled:	5/09/2025
Sample Identification:	BH04 (1 - 1.4m)	Date Tested:	15/09 - 16/09/2025

TEST RESULTS - Particle Size Distribution of Soil

Sampling Method:

Sampled by Client, Tested as Received



Comments:

Approved Signatory:

Name: Connor Budimir

Date: 17/September/2025



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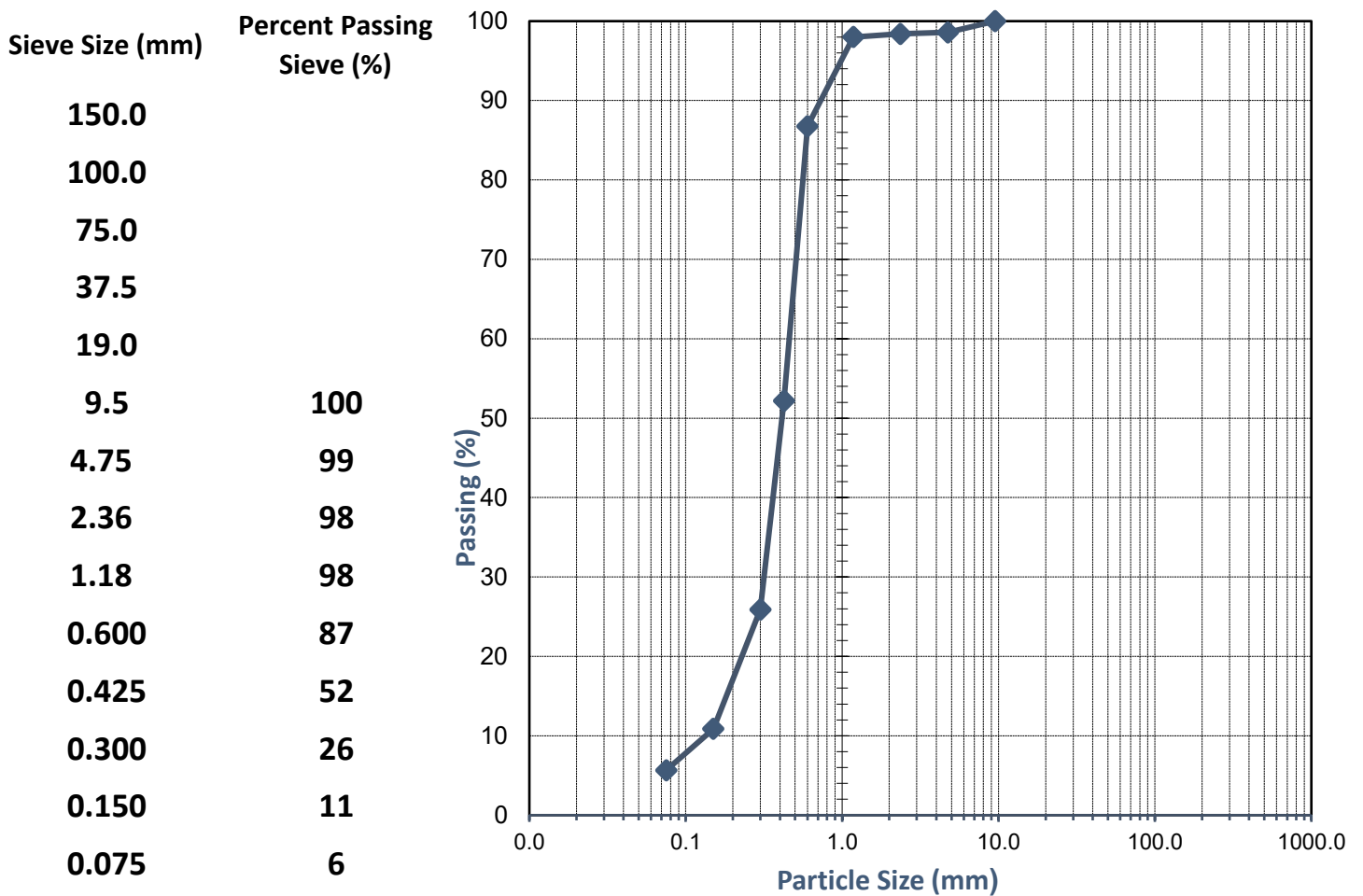
TEST REPORT - AS 1289.3.6.1

Client:	Dynamic Planning and Developments	Ticket No.	S18630
Client Address:	-	Report No.	WG25.15435_1_PSD
Project:	Proposed HCLIA	Sample No.	WG25.15435
Location:	Hatch Court and Stirling Crescent, High Wycombe	Date Sampled:	5/09/2025
Sample Identification:	BH06 (0.6 - 1.0m)	Date Tested:	15/09 - 16/09/2025

TEST RESULTS - Particle Size Distribution of Soil

Sampling Method:

Sampled by Client, Tested as Received



Comments:

Approved Signatory:

Name: Connor Budimir

Date: 17/September/2025



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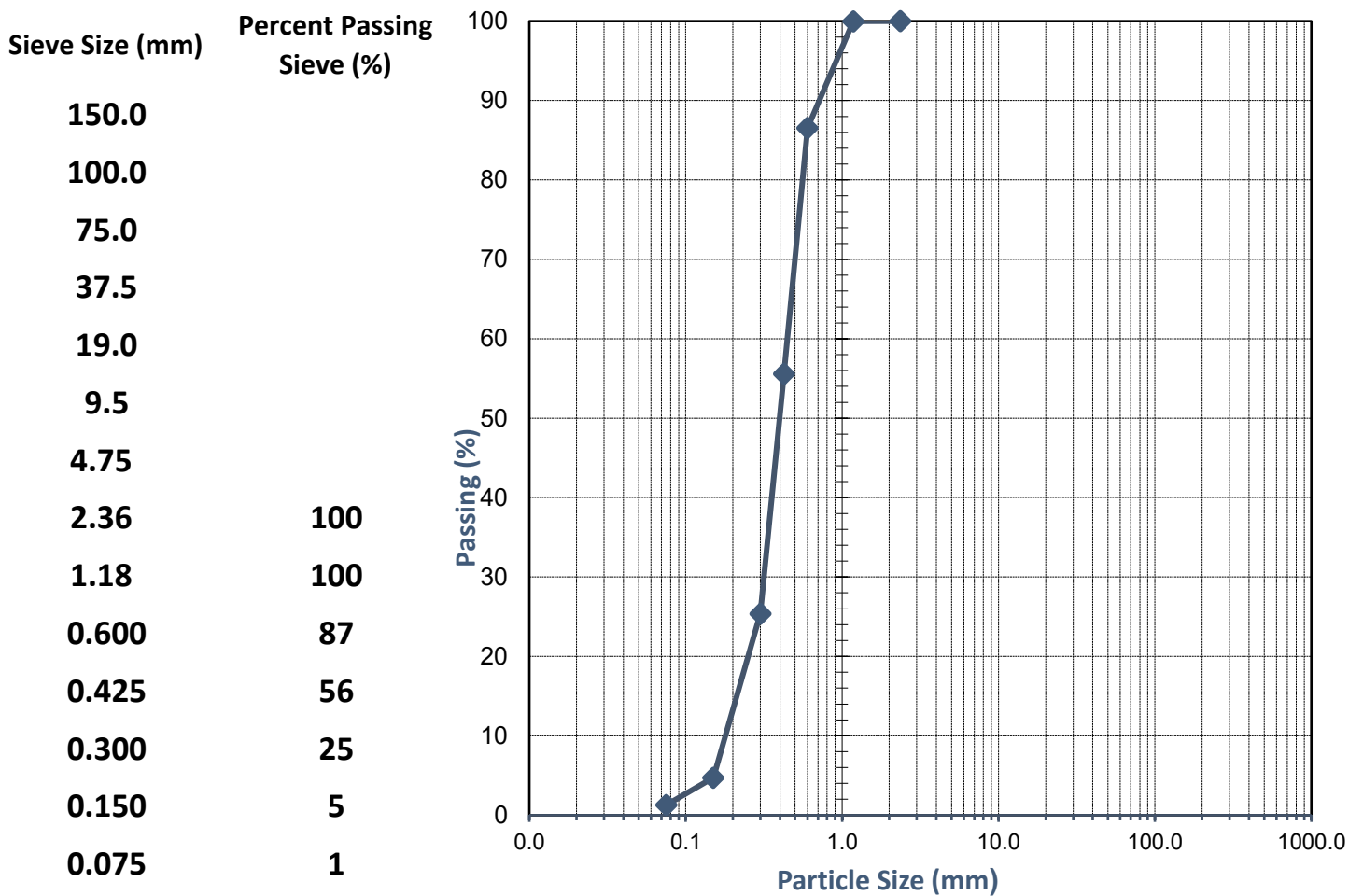
TEST REPORT - AS 1289.3.6.1

Client:	Dynamic Planning and Developments	Ticket No.	S18630
Client Address:	-	Report No.	WG25.15436_1_PSD
Project:	Proposed HCLIA	Sample No.	WG25.15436
Location:	Hatch Court and Stirling Crescent, High Wycombe	Date Sampled:	5/09/2025
Sample Identification:	BH10 (1 - 1.5m)	Date Tested:	15/09 - 16/09/2025

TEST RESULTS - Particle Size Distribution of Soil

Sampling Method:

Sampled by Client, Tested as Received



Comments:

Approved Signatory:

Name: Connor Budimir

Date: 17/September/2025



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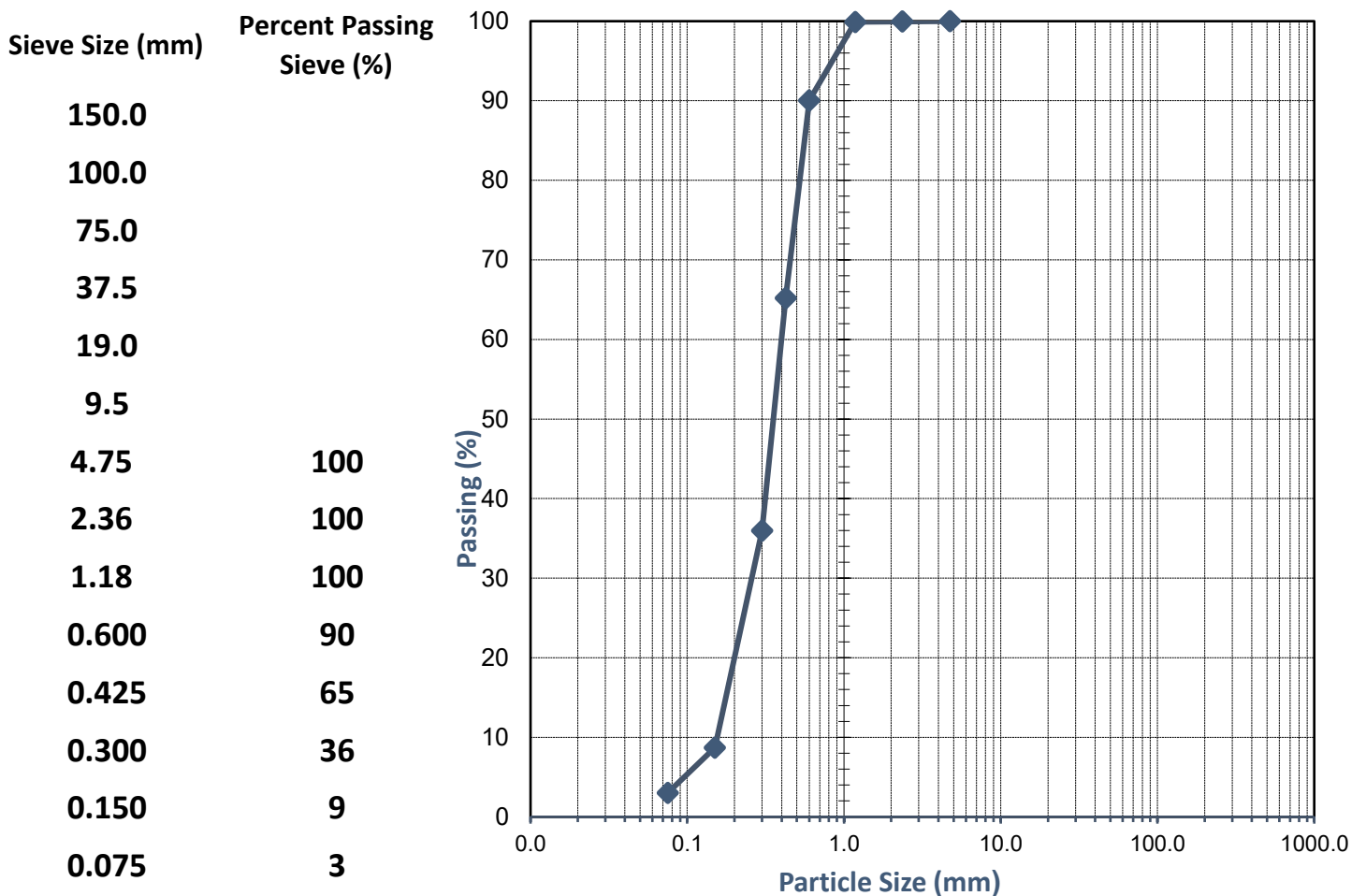
TEST REPORT - AS 1289.3.6.1

Client:	Dynamic Planning and Developments	Ticket No.	S18630
Client Address:	-	Report No.	WG25.15437_1_PSD
Project:	Proposed HCLIA	Sample No.	WG25.15437
Location:	Hatch Court and Stirling Crescent, High Wycombe	Date Sampled:	5/09/2025
Sample Identification:	G07 (0.5 - 0.6m)	Date Tested:	15/09 - 16/09/2025

TEST RESULTS - Particle Size Distribution of Soil

Sampling Method:

Sampled by Client, Tested as Received



Comments:

Approved Signatory:

Name: Connor Budimir

Date: 17/September/2025



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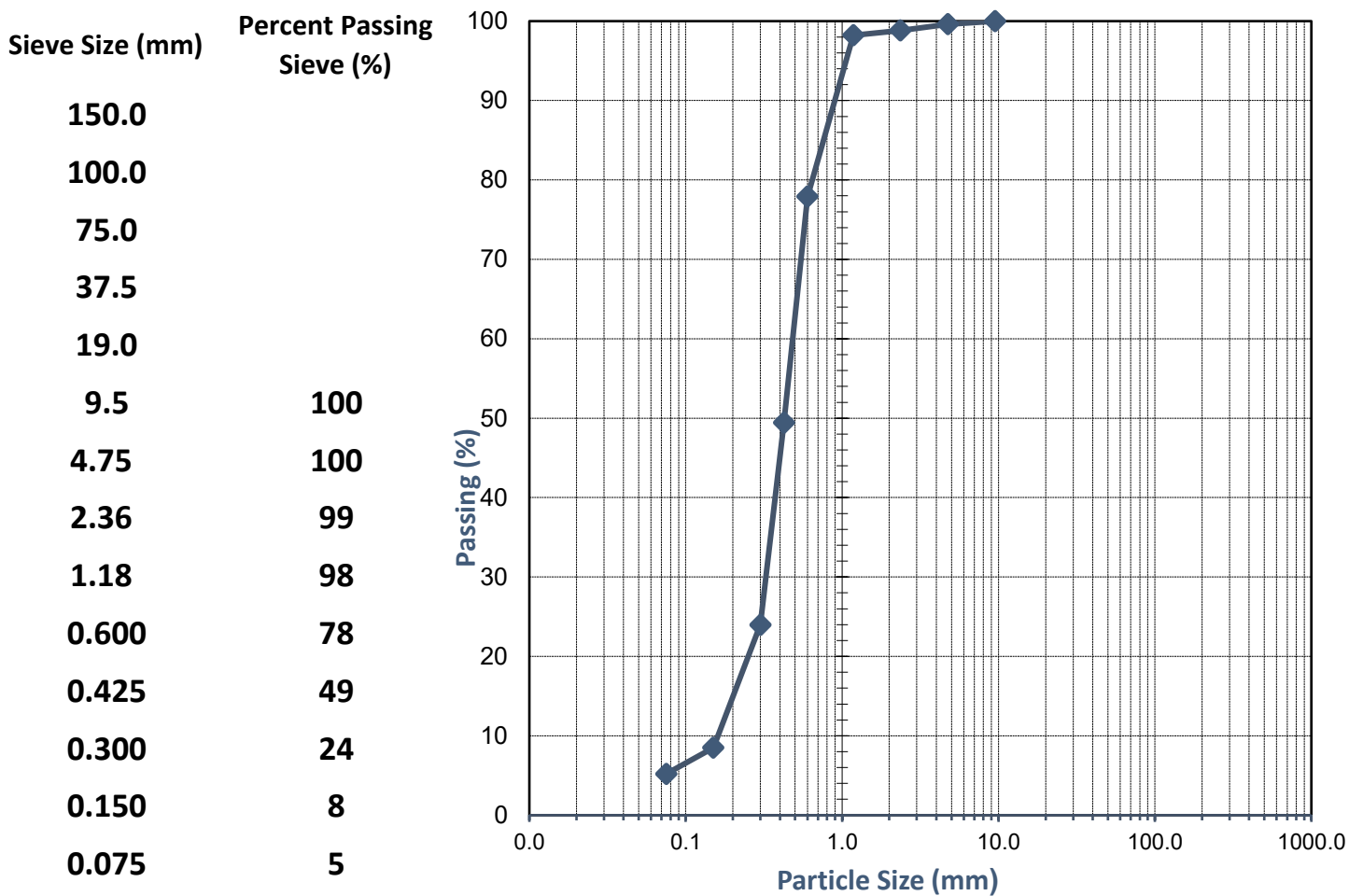
TEST REPORT - AS 1289.3.6.1

Client:	Dynamic Planning and Developments	Ticket No.	S18630
Client Address:	-	Report No.	WG25.15438_1_PSD
Project:	Proposed HCLIA	Sample No.	WG25.15438
Location:	Hatch Court and Stirling Crescent, High Wycombe	Date Sampled:	5/09/2025
Sample Identification:	G10 (0.4 - 0.5m)	Date Tested:	15/09 - 16/09/2025

TEST RESULTS - Particle Size Distribution of Soil

Sampling Method:

Sampled by Client, Tested as Received



Comments:

Approved Signatory:

Name: Connor Budimir

Date: 17/September/2025



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SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.4.1.1

Client:	Dynamic Planning and Developments	Ticket No.	C597
Client Address:	-	Report No.	WC25.779-782_1_OMC
Project:	Proposed HCLIA	Sample No.	WC25.779-782
Location:	Hatch Court and Stirling Crescent, High Wycombe	Date Sampled:	Not Specified
Sample Identification:	Various - see below	Date Tested:	16/09/2025 - 17/09/2025

TEST RESULTS - Organic Matter Content of Soil - Normal Method

Sampling Method:

Sampled by Client, Tested as Received

Sample Number	Sample Identification	Material Description	Organic Matter (%)
WC25.779	BH04 (1 - 1.4m)	Sandy Silt	10.7
WC25.780	BH06 (0.6 - 1.0m)	Sand	1.2
WC25.781	G07 (0.5 - 0.6m)	Sand	0.4
WC25.782	G10 (0.4 - 0.5m)	Sand	1.1

Comments:

Approved Signatory:

Name: Courtney Watt

Date: 18/September/2025



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Certificate of Analysis PGI0989

Client Details

Client	Western Geotechnical & Laboratory Services
Contact	Laboratory
Address	235 Bank Street, WELSHPOOL, WA, 6101

Sample Details

Your Reference	S18630 / Proposed HCLIA
Number of Samples	5 Soil
Date Samples Received	12/09/2025
Date Instructions Received	12/09/2025

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for soils and on an as received basis for other matrices.

Report Details

Date Final Results Expected	23/09/2025
Date of Issue	19/09/2025

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025. Tests not covered by NATA are denoted with *.

Authorisation Details

Results Approved By	Lien Tang, Assistant Operations Manager Lucas Yii, Inorganics Team Leader Varsha Ho Wing, Inorganics and Metals Supervisor
Laboratory Manager	Michael Kubiak

Certificate of Analysis PGI0989

Samples in this Report

Envirolab ID	Sample ID	Matrix	Date Sampled	Date Received
PGI0989-01	WG25.15432 / BH02 (1-1.5m)	Soil	12/09/2025	12/09/2025
PGI0989-02	WG25.15434 / BH04 (1-1.4m)	Soil	12/09/2025	12/09/2025
PGI0989-03	WG25.15435 / BH06 (0.6-1.0m)	Soil	12/09/2025	12/09/2025
PGI0989-04	WG25.15437 / G07 (0.5-0.6m)	Soil	12/09/2025	12/09/2025
PGI0989-05	WG25.15438 / G10 (0.4-0.5m)	Soil	12/09/2025	12/09/2025

Certificate of Analysis PGI0989

Inorganics - General Physical Parameters (Soil)

Envirolab ID	Units	PQL	PGI0989-01	PGI0989-02	PGI0989-03	PGI0989-04	PGI0989-05
Your Reference			WG25.15432 / BH02 (1-1.5m)	WG25.15434 / BH04 (1-1.4m)	WG25.15435 / BH06 (0.6-1.0m)	WG25.15437 / G07 (0.5-0.6m)	WG25.15438 / G10 (0.4-0.5m)
Date Sampled			12/09/2025	12/09/2025	12/09/2025	12/09/2025	12/09/2025
pH	pH units		8.4	4.8	7.3	7.8	7.7
Electrical Conductivity	µS/cm	2.0	300	1000	110	14	73

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PBI/PRI (Soil)

Envirolab ID	Units	PQL	PGI0989-01	PGI0989-02	PGI0989-03	PGI0989-04	PGI0989-05
Your Reference			WG25.15432 / BH02 (1-1.5m)	WG25.15434 / BH04 (1-1.4m)	WG25.15435 / BH06 (0.6-1.0m)	WG25.15437 / G07 (0.5-0.6m)	WG25.15438 / G10 (0.4-0.5m)
Date Sampled			12/09/2025	12/09/2025	12/09/2025	12/09/2025	12/09/2025
Phosphorus Retention Index	-		21	200	4.0	0.50	1.5

Certificate of Analysis PGI0989

Method Summary

Method ID	Methodology Summary
AGRI-003_PRI	Phosphorous Retention index (PRI) is the ratio of adsorbed phosphorus to the equilibrium concentration. Phosphorus is extracted using KCl and determined colourimetrically. Result value is used to calculate PRI as per Allen and Jefferey.
INORG-001	pH - Measured using pH meter and electrode. Please note that the results for water analyses are indicative only, as analysis can be completed outside of the recommended holding times. Solids are reported from a 1:5 water extract unless otherwise specified. Alternatively, pH is determined in a 1:5 extract using 0.01M calcium chloride or a solid is extracted at a ratio of 1:2.5 (AS1289.4.3.1), pH is measured in the extract.
INORG-002	Conductivity and Salinity - measured using a conductivity cell at 25°C. Soil results reported from a 1:5 Soil:Water extract unless otherwise specified. Please note Resistivity is estimated by calculation and may not correlate with results otherwise obtained using the Resistivity current method (based on AS 1289.4.4.1), depending on the nature of the soil being analysed. Blanks may yield EC readings >1µS/cm, this is likely due to adsorption of Carbon Dioxide while the blank sample is sat on the instrument autosampler prior to analysis. The values are generally insignificant (<5µS/cm) compared to most actual sample conductivities.

Certificate of Analysis PGI0989

Result Definitions

Identifier	Description
NR	Not reported
NEPM	National Environment Protection Measure
NS	Not specified
LCS	Laboratory Control Sample
RPD	Relative Percent Difference
>	Greater than
<	Less than
PQL	Practical Quantitation Limit
INS	Insufficient sample for this test
NA	Test not required
NT	Not tested
DOL	Samples rejected due to particulate overload (air filters only)
RFD	Samples rejected due to filter damage (air filters only)
RUD	Samples rejected due to uneven deposition (air filters only)
##	Indicates a laboratory acceptance criteria outlier, for further details, see Result Comments and/or QC Comments

Quality Control Definitions

Blank

This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, and is determined by processing solvents and reagents in exactly the same manner as for samples.

Surrogate Spike

Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

LCS (Laboratory Control Sample)

This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Matrix Spike

A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

Duplicate

This is the complete duplicate analysis of a sample from the process batch. The sample selected should be one where the analyte concentration is easily measurable.

Certificate of Analysis PGI0989

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria. Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction. Spikes for Physical and Aggregate Tests are not applicable. For VOCs in water samples, three vials are required for duplicate or spike analysis.

General Acceptance Criteria (GAC) - Analyte specific criteria applies for some analytes and is reflected in QC recovery tables.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% - see ELN-P05 QAQC tables for details (available on request); <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase. Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was typically insufficient in order to satisfy laboratory QA/QC protocols.

Miscellaneous Information

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached. We have taken the sampling date as being the date received at the laboratory.

Two significant figures are reported for the majority of tests and with a high degree of confidence, for results <10*PQL, the second significant figure may be in doubt i.e. has a relatively high degree of uncertainty and is provided for information only.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS where sediment/solids are included by default.

Urine Analysis - The BEI values listed are taken from the 2022 edition of *TLVs and BEIs Threshold Limits by ACGIH*.

Air volumes are typically provided by customers (often as flow rate(s) and sampling time(s) and/or simply volume(s) sampled or exposure times (determines 'volume' passive badges are exposed to)). Hence in such circumstances the volume measurement is inevitably not covered by Envirolab's NATA accreditation. An exception may occur where Envirolab Newcastle does the sampling where accreditation exists for certain types of sampling and hence volume determination(s). Note air volumes are often used to determine concentrations for dust and/or analyses on filters, sorbents and in impingers. For canister sampling, the air volume is covered by Envirolab's NATA accreditation.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from the latest "Australian Drinking Water Guidelines", published by NHMRC. No guideline values have been set for Total Coliforms in drinking water. Increased concentrations should be investigated. Total Coliforms are not considered useful as indicators of the presence of faecal contamination.

Where we have provided guideline values eg. ADWG Health Value, it is the responsibility of the reader to decide if the water is fit for consumption. Please note that the tests we have conducted are just a selection of common tests to give you a general idea of drinking water quality. There are many other tests included in the ADWG that we have not tested for.

Data Quality Assessment Summary PGI0989

Client Details

Client	Western Geotechnical & Laboratory Services
Your Reference	S18630 / Proposed HCLIA
Date Issued	19/09/2025

Recommended Holding Time Compliance

No recommended holding time exceedances

Quality Control and QC Frequency

QC Type	Compliant	Details
Blank	Yes	No Outliers
LCS	Yes	No Outliers
Duplicates	Yes	No Outliers
Matrix Spike	Yes	No Outliers
Surrogates / Extracted Internal Standards	Yes	No Outliers
QC Frequency	Yes	No Outliers

Surrogates/Extracted Internal Standards, Duplicates and/or Matrix Spikes are not always relevant/applicable to certain analyses and matrices. Therefore, said QC measures are deemed compliant in these situations by default. See Laboratory Acceptance Criteria for more information

Data Quality Assessment Summary PGI0989

Recommended Holding Time Compliance

Analysis	Sample Number(s)	Date Sampled	Date Extracted	Date Analysed	Compliant
EC Soil	1-5	15/09/2025	15/09/2025	16/09/2025	Yes
pH Soil	1-5	15/09/2025	15/09/2025	16/09/2025	Yes
PRI Soil	1-5	12/09/2025	16/09/2025	18/09/2025	Yes

Quality Control PGI0989

INORG-001 | Inorganics - General Physical Parameters (Soil) | Batch BGI2590

Analyte	Units	PQL	Blank	DUP1	LCS %
				PGI0989-03 Samp QC RPD %	
pH	pH units		5.9	7.3 7.5 2.43	102
Electrical Conductivity	µS/cm	2.0	<2.0	108 108 0.00	98.4

AGRI-003_PRI | PBI/PRI (Soil) | Batch BGI2709

Analyte	Units	PQL	Blank	DUP1	LCS %
				PGI0989-01 Samp QC RPD %	
Phosphorus Retention Index	-		0.00	20.5 20.3 1.08	75.6

Understanding your Report

1. EXPECTATIONS OF THE REPORT

The following sections have been prepared to clarify what is and is not provided in your report. It is intended to inform you of what your realistic expectations of this report should be and how to manage your risks associated with the conditions on site.

Geotechnical engineering and environmental science are less exact than other engineering and scientific disciplines. We include this information to help you understand where our responsibilities begin and end. You should read and understand this information. Please contact us if you do not understand the report or this explanation. We have extensive experience in a wide variety of projects and we can help you to manage your risk.

2. THIS REPORT RELATES TO PROJECT-SPECIFIC CONDITIONS

This report was developed for a unique set of project-specific conditions to meet the needs of the nominated client. It took into account the following:

- the project objectives as we understood them and as described in this report;
- the specific site mentioned in this report; and
- the current and proposed development at the site.

It should not be used for any purpose other than that indicated in the report. You should not rely on this report if any of the following conditions apply:

- the report was not written for you;
- the report was not written for the site specific to your development;
- the report was not written for your project (including a development at the correct site but other than that listed in the report); or
- the report was written before significant changes occurred at the site (such as a development or a change in ground conditions).

You should always inform us of changes in the proposed project (including minor changes) and request an assessment of their impact.

Where we are not informed of developments relevant to your report, we cannot be held responsible or liable for problems that may arise as a consequence.

Where design is to be carried out by others using information provided by us, we recommend that we be involved in the design process by being engaged for consultation with other members of the project team. Furthermore, we recommend that we be able to review work produced by other members of the project team that relies on information provided in our report.

3. DATA PROVIDED BY THIRD PARTIES

Where data is provided by third parties, it will be identified as such in our reports. We necessarily rely on the completeness and accuracy of data provided by third parties in order to draw conclusions presented in our reports. We are not responsible for omissions, incomplete or inaccurate data associated with third party data, including where we have been requested to provide advice in relation to field investigation data provided by third parties.

4. SOIL LOGS

Our reports often include logs of intrusive and non-intrusive investigation techniques prepared by Galt. These logs are based on our interpretation of field data and laboratory results. The logs should only be read in conjunction with the report they were issued with and should not be re-drawn for inclusion in other documents not prepared by us.

5. THIRD PARTY RELIANCE

We have prepared this report for use by the client. This report must be regarded as confidential to the client and the client's professional advisors. We do not accept any responsibility for contents of this document from any party other than the nominated client. We take no responsibility for any damages suffered by a third party because of any decisions or actions they may make based on this report. Any reliance or decisions made by a third party based on this report are the responsibility of the third party and not of us.

6. CHANGE IN SUBSURFACE CONDITIONS

The recommendations in this report are based on the ground conditions that existed at the time when the study was undertaken. Changes in ground conditions can occur in numerous ways including anthropogenic events (such as construction or contaminating activities on or adjacent to the site) or natural events (such as floods, groundwater fluctuations or earthquakes). We should be consulted prior to use of this report so that we can comment on its reliability. It is important to note that where ground conditions have changed, additional sampling, testing or analysis may be required to fully assess the changed conditions.

7. SUBSURFACE CONDITIONS DURING CONSTRUCTION

Practical constraints mean that we cannot know every minute detail about the subsurface conditions at a particular site. We use professional judgement to form an opinion about the subsurface conditions at the site. Some variation to our evaluated conditions is likely and significant variation is possible. Accordingly, our report should not be considered as final as it is developed from professional judgement and opinion.

The most effective means of dealing with unanticipated ground conditions is to engage us for construction support. We can only finalise our recommendations by observing actual subsurface conditions encountered during construction. We cannot accept liability for a report's recommendations if we cannot observe construction.

8. ENVIRONMENTAL AND GEOTECHNICAL ISSUES

Unless specifically mentioned otherwise in our report, environmental considerations are not addressed in geotechnical reports. Similarly, geotechnical issues are not addressed in environmental reports. The investigation techniques used for geotechnical investigations can differ from those used for environmental investigations. It is the client's responsibility to satisfy themselves that geotechnical and environmental considerations have been taken into account for the site.

Geotechnical advice presented in a Galt Environmental report has been provided by Galt Geotechnics under a sub-contract agreement. Similarly, environmental advice presented in a Galt Geotechnics report has been provided by Galt Environmental under a sub-contract agreement.

Unless specifically noted otherwise, no parties shall draw any inferences about the applicability of the Western Australian state government landfill levy from the contents of this document.

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