Douglas PARTNERS

GROUNDED EXPERTISE

Report on Geotechnical Investigation

The Sanctuary Stage 7

Brush Cherry Boulevard, Thrumster NSW

Prepared for Bird In The Hand 2 Pty Ltd

Project 209310.05

23 September 2025

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Document History

Details

Project No.	209310.05
Document Title	Report on Geotechnical Investigation
Site Address	Brush Cherry Boulevard, Thrumster NSW
Report Prepared For	Bird In The Hand 2 Pty Ltd
Filename	209310.05.R.001.Rev1

Status and Review

Status	Prepared by	Reviewed by	Date issued
Revision 0	Shaun van Kal	Michael Gawn	18 September 2025
Revision 1	Shaun van Kal	Michael Gawn	23 September 2025

Distribution of Copies

Status	Issued to
Revision 0	Bird In The Hand 2 Pty Ltd
Revision 0	King & Campbell Pty Ltd
Revision 1	Bird In The Hand 2 Pty Ltd
Revision 1	King & Campbell Pty Ltd

The undersigned, on behalf of Douglas Partners Pty Ltd, confirm that this document and all attached drawings, logs and test results have been checked and reviewed for errors, omissions and inaccuracies.

Signature		Date
Author		23 September 2025
Reviewer		23 September 2025

FS604853

Douglas Partners acknowledges Australia's First Peoples as the Traditional Owners of the Land and Sea on which we operate. We pay our respects to Elders past and present and to all Aboriginal and Torres Strait Islander peoples across the many communities in which we live, visit and work. We recognise and respect their ongoing cultural and spiritual connection to Country.

Douglas PARTNERS | GROUNDED EXPERTISE

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Report on Geotechnical Investigation
The Sanctuary Stage 7
Brush Cherry Boulevard, Thrumster NSW

1. Introduction

This report prepared by Douglas Partners Pty Ltd (Douglas) presents the results of a geotechnical investigation undertaken for the proposed Stage 7 of The Sanctuary subdivision at Brush Cherry Boulevard, Thrumster NSW (the site). The investigation was commissioned by email instructing to proceed dated 17 March 2025 from Massimo Raniolo of Bird In The Hand 2 Pty Ltd and was undertaken in accordance with Douglas' proposal 234631.00.P.001.Rev0 dated 7 March 2025.

Stage 7 comprises thirty-one (31) residential lots (Lots 701 to 718 and 720 to 732). The site location is shown on Figure 1. The proposed subdivision is shown on Drawing 1, Appendix D.

Figure 1: Site location plan (image source: Metromap Image dated 1 September 2024)

The aim of the investigation was to provide comment on the following:

- Subsurface soil and groundwater conditions at test locations;
- Site Geology; and
- Site classification in accordance with AS 2870 (2011) of the proposed lots.

The investigation included the drilling of sixteen boreholes and laboratory testing of selected samples. The details of the field work are presented in this report, together with comments and recommendations on the items listed above.

This report must be read in conjunction with all appendices including the notes provided in Appendix A.

2. Site description

The site comprises thirty-one (31) residential lots with associated surfaced access roads and concrete footpaths. The areas of the proposed residential lots have been terraced with retaining walls up to approximately 1.2 m height along lot boundaries (refer Figures 2 and 3). The ground surface across the residential lots had a sparce covering of grass.

Overall ground surface levels across the northern and central parts of site (Lots 701 to 725) fall towards the east with a gradient less than 10%. Ground surface levels across the northern and central part of the site range from approximately 5 m above Australian Height Datum (AHD) in the north-east to 13.5 m AHD in the north-west.

Ground surface levels across the southern part of the site (Lots 726 to 732) fall towards the south-east at gradients less than 10%. Ground surface levels within the southern part of the site range from 9.6 m AHD in the south to 11.0 m AHD in the north-western part.

The ground surface levels within each of the residential lots have gradients less than 5%. A tree approximately 20 m tall is present in the north-western part of Lot 718 located in the northern part of the site (refer Figure 2).

Figure 2: View west of the northern part of the site

Figure 3: View south of the southern part of the site

3. Published geology

Reference to regional geological mapping (GSNSW, 2019) indicates that the majority of the site is underlain by Thrumster Slate comprising slate, metasandstone and metagranule conglomerate. The Karikeree Metadolerite comprising massive, cleaved metadolerite is indicated to the south-east of the site. Based on previous investigations in the area of this site, it is expected that the Karikeree Metadolerite may be interlayered with the Thrumster Slate beneath this site.

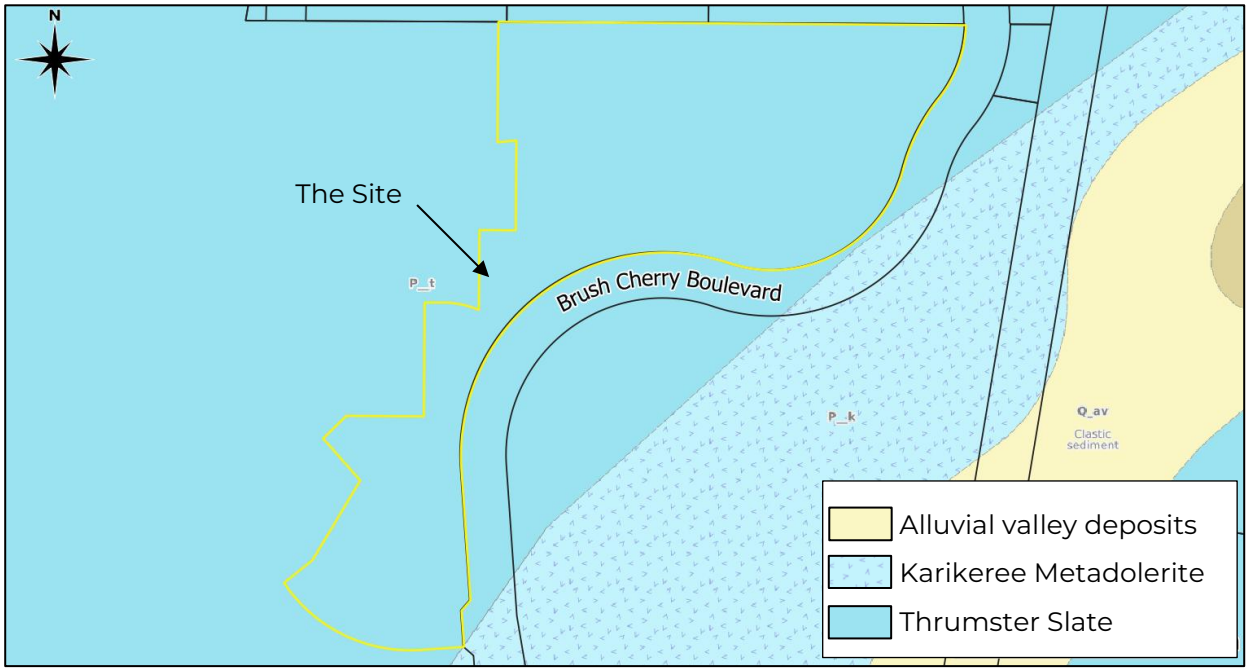

Figure 4: Published geology (GSNSW, 2019)

4. Fill placement and testing

4.1 2022 Earthworks

'Level 1' inspections and testing of the larger subdivision referred to as The Sanctuary was undertaken by Douglas during bulk earthworks undertaken between 15 October 2021 to 18 March 2022 with reference to AS 3798 (2007) (Douglas, 2022). The extent of the Level 1 filling is shown on Drawing 1, Appendix D.

Douglas was not provided specifications for compaction. The following criteria were adopted:

- A maximum loose layer thickness of 300 mm;
- Minimum compaction of 98% density ratio (standard); and
- Moisture contents that are generally within 2% dry to 2% wet of optimum moisture content for standard compaction.

A senior technician from Douglas was present on-site full-time during placement and compaction of all fill between 15 October 2021 to 18 March 2022.

The fill material was won from cuttings within the development and consisted of clay, silty clay and gravelly silty clay. Fill depths ranged from approximately 0.2 m to 3.0 m over the development.

Tests carried out during the Level 1 operation returned density ratios in excess of 98% standard compaction to meet the specifications AS 3798 (2007).

The moisture contents were generally within the moisture specification with the exception of 4 tests that were only marginally out of the specification by 0.5% and are considered acceptable due to all other surrounding tests being within the specification.

It is considered that the placement and compaction of filling by DP during the period between 15 October 2021 to 18 March 2022 as shown on Drawing 1 was generally undertaken in accordance with the specification for layer thickness, compaction and moisture variation and to a Level 1 Standard, as defined in Section 8 of AS 3798 (2007).

4.2 2025 Earthworks

'Level 1' inspections and testing was also carried out by Doulgas during bulk earthworks for Stage 7 (this site), with reference to AS 3798 (2007) (Douglas, 2025). The earthworks inspection and testing undertaken by Douglas were carried out between the following periods:

- 25 January 2025;
- 17 February 2025 to 28 February 2025;
- 3 June 2025; and
- 25 and 26 June 2025.

The extent of the Level 1 filling is shown on Drawing 1, Appendix D.

A Douglas geo-technician was present on site full-time during the placement of controlled fill material.

During the Level 1 works, the following compaction requirements were specified:

- A maximum loose layer thickness of 300 mm for each layer of fill;
- Minimum compaction of 98% density ratio (Standard); and
- Moisture contents that are generally within 2% dry to 2% wet of optimum moisture content for standard compaction.

The fill material comprised gravelly silty clay and gravelly sandy clay that was site-won and previously stockpiled on the site. The fill material was placed and compacted in near horizontal layers.

The geo-technician selected test locations generally at a frequency of one test per layer per 2,500 m^2 in accordance with AS 3798 (2007). This frequency was also dependent on the area of fill placed at any one time.

All tests carried out during the Level 1 works returned density ratios of at least 98% (Standard density ratio). In the event where a test showed a failure to meet the required density ratio the area was re-compacted and re-tested, with the compliant result included in the summary. The moisture contents were generally within ±2% of optimum moisture content except for some areas where slightly lower or higher moisture contents were accepted subject to adequate compaction.

5. Field work

5.1 Field work methods

The field work was undertaken on 28 August 2025. The investigation comprised the drilling of 16 boreholes (designated as Bores 1 to 16) to 1.5 m depth using a 5.5-tonne excavator fitted with a 300 mm auger attachment.

In situ sampling and testing in the soil profile comprised recovery of disturbed samples from the auger and thin-walled undisturbed U50 samples. Pocket penetrometer (PP) testing was also carried out on selected samples. In addition, dynamic penetrometer tests (DPTs, with cone tip) were carried out adjacent to the bores from the surface to depths of up to 1.65 m.

The bores and DCPs were set out by an engineering geologist from Douglas relative to the lot boundaries and road alignments on site. The Douglas engineering geologist logged the subsurface profile at each test location and took regular samples for laboratory testing and identification purposes. The encountered subsurface ground conditions were logging in accordance with AS 1726, 2017. The test locations are shown on Drawing 1 in Appendix C.

The location of the bores and respective surface levels were recorded using a differential GPS unit which generally has an accuracy of ±0.1 m depending on satellite coverage and surrounding site conditions. The location (to GDA2020) and surface elevations (in mAHD) of the bores are presented on the relevant borehole logs in Appendix B. However, it should be noted that a detailed survey undertaken by registered surveyor has not been undertaken for our investigation.

The boreholes were backfilled using the spoil generated during the drilling process.

5.2 Field work results

Details of the subsurface conditions encountered within the test bores are presented in the attached borehole logs in Appendix B. These should be read in conjunction with the accompanying notes in Appendix A, which explain the descriptive terms and classification methods used in the logs. The subsurface profiles are summarised into geotechnical units and are presented in Table 1 with a summary of the units at each bore presented in Table 2.

Table 1: Summary of geotechnical unit descriptions

Geotechnical unit	Material type	Description
1a	Fill 1	Silty clay, dark brown, dark grey or grey brown, generally medium to high plasticity, with variable amounts of sand and gravel. This material may have been placed as a covering topsoil layer and does not appear to have well compacted.
1b	Fill 2	Silty clay, red brown and grey or red brown and pale grey, generally medium to high plasticity, with variable amounts of sand and gravel. The results of in-situ testing indicate that the fill is well compacted.
2	Alluvium	Predominantly silty clay with lesser amounts of clay with silt and sandy clay, grey green, yellow brown and grey or green grey and grey, high plasticity, very stiff.
3	Residual soil	Silty clay, red brown and grey, orange brown and grey, and yellow brown and red brown, medium to high plasticity, very stiff to hard.
4	Extremely weathered rock	Silty clay, pale grey and red brown, medium to high plasticity, medium to high plasticity (in a very stiff to hard consistency).

Table 2: Summary of geotechnical units at bore locations

Bore	Depth encountered below existing ground level (m)				
	Fill 1	Fill 2	Alluvium	Residual soil	Extremely weathered rock
1	0 - 0.2	0.2 – 1.5	-	–	–
2	0 - 0.15	–	–	0.15 – 0.45	0.45 – 1.5
3	0 - 0.15	–	–	0.15 – 1.5	–
4	0 - 0.1	–	–	0.1 – 1.5	–
5	0 - 0.1	–	–	0.1 – 1.5	–
6	0 - 0.1	0.1 – 0.5	0.5 – 1.3	1.3 – 1.5	–
7	0 - 0.12	0.12 – 0.8	0.8 – 1.5	–	–
8	0 - 0.12	0.12 – 0.55	0.55 – 1.5	–	–
9	0 – 0.1	0.1 – 1.4	1.4 – 1.5	–	–
10	0 – 0.2	0.2 – 0.5	–	0.5 – 1.5	–
11	0 – 0.2	–	–	0.2 – 1.5	–
12	0 – 0.4	0.4 – 1.1	1.1 – 1.3	1.3 – 1.5	–
13	0 – 0.24	0.24 – 1.4	1.4 – 1.5	–	–
14	0 – 0.28	0.28 – 1.45	1.45 – 1.5	–	–
15	0 – 0.1	0.1 – 0.74	0.74 – 0.88	0.88 – 1.5	–
16	0 – 0.33	0.33 – 0.75	–	0.75 – 1.5	–

Free groundwater was not encountered within the bores whilst they remained open. Groundwater levels are variable and can be affected by factors such as climatic conditions, and soil permeability.

6. Laboratory testing

Shrink-swell index tests were performed on 10 undisturbed 50 mm diameter (U50) samples collected during the fieldwork. The laboratory test results are summarised in Table 3. The laboratory test certificate is enclosed as Appendix B.

Table 3: Results of laboratory testing - shrink swell

Bore depth (m)	Description	FMC (%)	Shrink (%)	Swell (%)	I_{ss} (% per ΔpF)
BH 1 0.5 - 0.8	Red-brown silty clay (fill)	29.8	5	0.2	2.8
BH 3 0.5 - 0.8	Red-brown and pale grey silty clay (residual soil)	28.6	4.3	1.3	2.8
BH 5 0.5 - 0.8	Yellow-brown and red-brown silty clay (residual soil)	26.2	4.2	0	2.3
BH 6 0.5 - 0.8	Green silty clay (alluvium)	30.5	5	0.3	2.9
BH 7 0.5 - 0.8	Red-brown and pale grey silty clay (fill)	29.5	4.4	0.7	2.7
BH 8 0.5 - 0.8	Grey and yellow brown silty clay (alluvium)	29.7	5.3	0.4	3
BH 11 0.5 - 0.8	Yellow-brown and red-brown silty clay (residual soil)	30.2	2.5	-0.1	1.4
BH 13 0.5 - 0.8	Red-brown and pale grey silty clay (fill)	24.6	1.5	0.2	0.9
BH 14 0.5 - 0.8	Red-brown and pale grey silty clay (fill)	26.6	2.6	0.7	1.6
BH 16 0.5 - 0.8	Red-brown and pale grey silty clay (fill)	31.4	3.8	0.8	2.3

Notes to Table 3:
FMC - field moisture content
I_{ss} - shrink swell index
PP - pocket penetrometer reading

7. Comments

Site classification of foundation soil reactivity provides an indication of the propensity of the ground surface to move with seasonal variation in moisture. The site classification is based on procedures presented in AS2870 (2011), the typical soil profiles revealed in the bores, and the results of laboratory testing.

The I_{ss} values ranges are as follows:

- Controlled fill: 0.9% to 2.8%.
- Alluvium: 2.9% and 3.0%.
- Residual soil: 1.4 to 2.8%.

Based on the sub-surface ground conditions encountered and the laboratory test results the lot classifications and recommendations are provided in Table 4.

Table 4: Lot classifications and recommendations

Lots	Classification	Recommendations
701 to 717 and 720 to 732 (Bores 1 to 8 and 10 to 16)	H1	Based on the subsurface conditions encountered in the bores and assessment of the reactivity of the clay soil, characteristic surface movements (y_s) in the order of 40 mm to 60 mm may be experienced. It is recommended that all footings be constructed to bear on material of similar stiffness to minimise potential differential settlements. Therefore, all footings should be founded wholly within engineered fill, stiff (or stronger) clay soil (alluvium or residual) or within extremely weathered very low strength rock unless sufficient articulation is provided within the structure to cater for possible differential movement of footings founded on material of differing stiffness. Shallow spread footings may be adopted founded in engineered fill or very stiff (or stronger) clay soil (alluvium or residual) or extremely weathered very low strength rock with an allowable bearing pressure of 100 kPa. Alternately, end-bearing piers could be founded in engineered fill, very stiff (or stronger) residual soil, alluvium or extremely weathered rock with an allowable bearing pressure of 200 kPa.
718 (Bore 9)	H1 (with additional surface movement)	Based on the subsurface conditions encountered in Bore 9 and assessment of the reactivity of the clay soil, characteristic surface movements (y_s) in the order of 40 mm to 60 mm may be experienced. Additionally, assuming that the proposed building at least 5 m away from the tree, additional ground surface movement (y_t) due to tree-induced suction change is likely to be in the order of 10 mm to 20 mm. Differential mound movement (y_m) due to the removal of trees is anticipated to be in the order of 50 mm to 60 mm. It is recommended that all footings be constructed to bear on material of similar stiffness to minimise potential differential settlements. Therefore, all footings should be founded wholly within the within engineered fill or very stiff (or stronger) alluvium unless sufficient articulation is provided within the structure to cater for possible differential movement of footings founded on material of differing stiffness. Shallow spread footings may be adopted founded in engineered fill with an allowable bearing pressure of 100 kPa. Alternately, end-bearing piers could be founded in engineered fill or very stiff (or stronger) alluvium with an allowable bearing pressure of 200 kPa.

The site classifications are based on the information obtained from the bores and laboratory testing. If the conditions encountered during construction are different to those presented in this report, it is recommended that advice be obtained from Douglas.

AS2870 (2011) provides guidance and a method to estimate potential surface movements due to tree induced suction change for existing and possible new trees (e.g. extreme drying effects). Additional surface movements due to drying from trees remaining on or near to the site, within a distance of 0.5 times the height of the tree from the buildings, are estimated from Appendix H4(e) of AS2870 (2011). Based on Douglas' experience, it is expected that additional surface movements due to swelling following removal of trees would be of similar magnitude to that for drying.

It should be noted that the classifications are dependent on proper site maintenance, which should be carried out in accordance with the attached CSIRO (2021), "Foundation Maintenance and Footing Performance" and with AS 2870 (2011). Design, construction and maintenance needs to achieve and preserve an equilibrium soil moisture regime beneath and around buildings. Such measures include providing an outward fall in all paved areas around buildings. These and other measures are described in AS 2870 (2011) and CSIRO (2021). Further, if trees are planted in the vicinity of a building, the structural engineer should consider the additional potential foundation movements, as described in Appendix H of AS 2870 (2011).

Masonry walls should be articulated in accordance with TN 61 CCAA (2008) to reduce the effects of differential movement.

The above classifications should be revised if any additional cutting or filling is proposed, as required by AS2870 (2011).

8. References

AS 1726. (2017). *Geotechnical Site Investigations.* Standards Australia.

AS 2870. (2011). *Residential Slabs and Footings.* Standards Australia.

AS 3798. (2007). *Guidelines on Earthworks for Commercial and Residential Developments.* Standards Australia.

CSIRO. (2021). *Building Technology Resource: Foundation Maintenance and Footing Performance.* CSIRO Publishing.

Douglas. (2022). *The Sanctuary Level 1 John Oxley Drive, Thrumster. Ref. 209310.00.R.001.Rev0 dated 10 November 2022.* Douglas Partners Pty Ltd.

Douglas. (2025). *Report on Level 1 Earthworks Inspection and Testing The Sanctuary Residential Subdivision Stage 7 - Level 1 344 John Oxley Drive, Thrumster NSW. Ref.: 209310.04.R.001.Rev0 dated 15 August 2025.* Douglas Partners Pty Ltd.

GSNSW. (2019). *NSW Seamless Geology.* Geological Survey NSW Web Map Service.

9. Limitations

Douglas Partners Pty Ltd (Douglas) has prepared this report for this project at Brush Cherry Boulevard, Thrumster NSW in line with Douglas' proposal 234631.00.P.001.Rev0 dated 7 March 2025 and acceptance received from Massimo Raniolo of Bird In The Hand 2 Pty Ltd dated 17 March 2025. The work was carried out under Douglas' Engagement Terms. This report is provided for the exclusive use of Bird In The Hand 2 Pty Ltd for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of Douglas, does so entirely at its own risk and without recourse to Douglas for any loss or damage. In preparing this report Douglas has necessarily relied upon information provided by the client and/or their agents.

The results provided in the report are indicative of the sub-surface conditions on the site only at the specific sampling and/or testing locations, and then only to the depths investigated and at the time the work was carried out. Sub-surface conditions can change abruptly due to variable geological processes and also as a result of human influences. Such changes may occur after Douglas' field testing has been completed.

Douglas' advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by Douglas in this report may be affected by undetected variations in ground conditions across the site between and beyond the sampling and/or testing locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

The assessment of atypical safety hazards arising from this advice is restricted to the geotechnical components set out in this report and based on known project conditions and stated design advice and assumptions. While some recommendations for safe controls may be provided, detailed 'safety in design' assessment is outside the current scope of this report and requires additional project data and assessment.

This report must be read in conjunction with all of the attached and should be kept in its entirety without separation of individual pages or sections. Douglas cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by Douglas. This is because this report has been written as advice and opinion rather than instructions for construction.

Appendix A

About this Report

Terminology, Symbols and Abbreviations

Soil Descriptions

Sampling, Testing and Excavation Methodology

About this Report

October 2024

Introduction

These notes have been provided to amplify Douglas' report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

Douglas' reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

Copyright

Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;
- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, Douglas will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, Douglas cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, Douglas will be pleased to assist with investigations or advice to resolve the matter.

About this Report

Site Anomalies

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, Douglas requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

Information for Contractual Purposes

Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. Douglas would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.

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Terminology, Symbols and Abbreviations

November 2023

Introduction to Terminology, Symbols and Abbreviations

Douglas Partners' reports, investigation logs, and other correspondence may use terminology which has quantitative or qualitative connotations. To remove ambiguity or uncertainty surrounding the use of such terms, the following sets of notes pages may be attached Douglas Partners' reports, depending on the work performed and conditions encountered:

- Soil Descriptions;
- Rock Descriptions; and
- Sampling, insitu testing, and drilling methodologies

In addition to these pages, the following notes generally apply to most documents.

Abbreviation Codes

Site conditions may also be presented in a number of different formats, such as investigation logs, field mapping, or as a written summary. In some of these formats textual or symbolic terminology may be presented using textual abbreviation codes or graphic symbols, and, where commonly used, these are listed alongside the terminology definition. For ease of identification in these note pages, textual codes are presented in these notes in the following style XW. Code usage conforms with the following guidelines:

- Textual codes are case insensitive, although herein they are generally presented in upper case; and
- Textual codes are contextual (i.e. the same or similar combinations of characters may be used in different contexts with different meanings (for example `PL` is used for plastic limit in the context of soil moisture condition, as well as in `PL(A)` for point load test result in the testing results column)).

Data Integrity Codes

Subsurface investigation data recorded by Douglas Partners is generally managed in a highly structured database environment, where records "span" between a top and bottom depth interval. Depth interval "gaps" between records are considered to introduce ambiguity, and, where appropriate, our practice guidelines may require contiguous data sets. Recording meaningful data is not always appropriate (for example assigning a "strength" to a concrete pavement) and the following codes may be used to maintain contiguity in such circumstances.

Term	Description	Abbreviation Code
Core loss	No core recovery	KL
Unknown	Information was not available to allow classification of the property. For example, when augering in loose, saturated sand auger cuttings may not be returned.	UK
No data	Information required to allow classification of the property was not available. For example if drilling is commenced from the base of a hole predrilled by others	ND
Not Applicable	Derivation of the properties not appropriate or beyond the scope of the investigation. For example providing a description of the strength of a concrete pavement	NA

Graphic Symbols

Douglas Partners' logs contain a "graphic" column which provides a pictorial representation of the basic composition of the material. The symbols used are directly representing the material name stated in the adjacent "Description of Strata" column, and as such no specific graphic symbology legend has been provided in these notes.

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Soil Descriptions

Terminology
Symbols
Abbreviations

March 2024

Introduction

All materials which are not considered to be "in-situ rock" are described in general accordance with the soil description model of AS 1726-2017 Part 6.1.3, and can be broken down into the following description structure:

The "classification" comprises a two character "group symbol" providing a general summary of dominant soil characteristics. The "name" summarises the particle sizes within the soil which most influence its behaviour. The detailed description presents more information about composition, condition, structure, and origin of the soil.

Classification, naming and description of soils require the relative proportion of particles of different sizes within the whole soil mixture to be considered.

Particle size designation and Behaviour Model

Solid particles within a soil are differentiated on the basis of size.

The engineering behaviour properties of a soil can subsequently be modelled to be either "fine grained" (also known as "cohesive" behaviour) or "coarse grained" ("non cohesive" behaviour), depending on the relative proportion of fine or coarse fractions in the soil mixture.

Particle Size Designation	Particle Size (mm)	Behaviour Model	
		Behaviour	Approximate Dry Mass
Boulder	>200	Excluded from particle behaviour model as "oversize"	
Cobble	63 - 200		
Gravel[1]	2.36 - 63	Coarse	>65%
Sand[1]	0.075 - 2.36		
Silt	0.002 - 0.075	Fine	>35%
Clay	<0.002		

[1] – refer grain size subdivision descriptions below

The behaviour model boundaries defined above are not precise, and the material behaviour should be assumed from the name given to the material (which considers the particle fraction which dominates the behaviour, refer "component proportions" below), rather than strict observance of the proportions of particle sizes. For example, if a material is named a "Sandy CLAY", this is indicative that the material exhibits fine grained behaviour, even if the dry mass of coarse grained material may exceed 65%.

Component proportions

The relative proportion of the dry mass of each particle size fraction is assessed to be a "primary", "secondary", or "minor" component of the soil mixture, depending on its influence over the soil behaviour.

Component Proportion Designation	Definition[1]	Relative Proportion	
		In Fine Grained Soil	In Coarse Grained Soil
Primary	The component (particle size designation, refer above) which dominates the engineering behaviour of the soil	The clay/silt component with the greater proportion	The sand/gravel component with the greater proportion
Secondary	Any component which is not the primary, but is significant to the engineering properties of the soil	Any component with greater than 30% proportion	Any granular component with greater than 30%; or Any fine component with greater than 12%
Minor[2]	Present in the soil, but not significant to its engineering properties	All other components	All other components

[1] As defined in AS1726-2017 6.1.4.4

[2] In the detailed material description, minor components are split into two further sub-categories. Refer "identification of minor components" below.

Composite Materials

In certain situations, a lithology description may describe more than one material, for example, collectively describing a layer of interbedded sand and clay. In such a scenario, the two materials would be described independently, with the names preceded or followed by a statement describing the arrangement by which the materials co-exist. For example, "INTERBEDDED Silty CLAY AND SAND".

Soil Descriptions

Classification

The soil classification comprises a two character group symbol. The first character identifies the primary component. The second character identifies either the grading or presence of fines in a coarse grained soil, or the plasticity in a fine grained soil. Refer AS1726-2017 6.1.6 for further clarification.

Soil Name

For most soils, the name is derived with the primary component included as the noun (in upper case), preceded by any secondary components stated in an adjective form. In this way, the soil name also describes the general composition and indicates the dominant behaviour of the material.

Component [1]	Prominence in Soil Name
Primary	Noun (eg "CLAY")
Secondary	Adjective modifier (eg "Sandy")
Minor	No influence

[1] – for determination of component proportions, refer component proportions on previous page

For materials which cannot be disaggregated, or which are not comprised of rock or mineral fragments, the names "ORGANIC MATTER" or "ARTIFICIAL MATERIAL" may be used, in accordance with AS1726-2017 Table 14.

Commercial or colloquial names are not used for the soil name where a component derived name is possible (for example "Gravelly SAND" rather than "CRACKER DUST").

Materials of "fill" or "topsoil" origin are generally assigned a name derived from the primary/secondary component (where appropriate). In log descriptions this is preceded by uppercase "FILL" or "TOPSOIL". Origin uncertainty is indicated in the description by the characters (?), with the degree of uncertainty described (using the terms "probably" or "possibly" in the origin column, or at the end of the description).

Identification of minor components

Minor components are identified in the soil description immediately following the soil name. The minor component fraction is usually preceded with a term indicating the relative proportion of the component.

Minor Component Proportion Term	Relative Proportion	
	In Fine Grained Soil	In Coarse Grained Soil
With	All fractions: 15-30%	Clay/silt: 5-12% sand/gravel: 15-30%
Trace	All fractions: 0-15%	Clay/silt: 0-5% sand/gravel: 0-15%

The terms "with" and "trace" generally apply only to gravel or fine particle fractions. Where cobbles/boulders are encountered in minor proportions (generally less than about 12%) the term "occasional" may be used. This term describes the sporadic distribution of the material within the confines of the investigation excavation only, and there may be considerable variation in proportion over a wider area which is difficult to factually characterise due to the relative size of the particles and the investigation methods.

Soil Composition

Plasticity

Descriptive Term	Laboratory liquid limit range	
	Silt	Clay
Non-plastic materials	Not applicable	Not applicable
Low plasticity	≤50	≤35
Medium plasticity	Not applicable	>35 and ≤50
High plasticity	>50	>50

Note, Plasticity descriptions generally describe the plasticity behaviour of the whole of the fine grained soil, not individual fine grained fractions.

Grain Size

Type		Particle size (mm)
Gravel	Coarse	19 - 63
	Medium	6.7 - 19
	Fine	2.36 – 6.7
Sand	Coarse	0.6 - 2.36
	Medium	0.21 - 0.6
	Fine	0.075 - 0.21

Grading

Grading Term	Particle size (mm)
Well	A good representation of all particle sizes
Poorly	An excess or deficiency of particular sizes within the specified range
Uniformly	Essentially of one size
Gap	A deficiency of a particular size or size range within the total range

Note, AS1726-2017 provides terminology for additional attributes not listed here.

Soil Condition

Moisture

The moisture condition of soils is assessed relative to the plastic limit for fine grained soils, while for coarse grained soils it is assessed based on the appearance and feel of the material. The moisture condition of a material is considered to be independent of stratigraphy (although commonly these are related), and this data is presented in its own column on logs.

Applicability	Term	Tactile Assessment	Abbreviation code
Fine	Dry of plastic limit	Hard and friable or powdery	w<PL
	Near plastic limit	Can be moulded	w=PL
	Wet of plastic limit	Water residue remains on hands when handling	w>PL
	Near liquid limit	"oozes" when agitated	w=LL
	Wet of liquid limit	"oozes"	w>LL
Coarse	Dry	Non-cohesive and free running	D
	Moist	Feels cool, darkened in colour, particles may stick together	M
	Wet	Feels cool, darkened in colour, particles may stick together, free water forms when handling	W

The abbreviation code NDF, meaning "not-assessable due to drilling fluid use" may also be used.

Note, observations relating to free ground water or drilling fluids are provided independent of soil moisture condition.

Consistency/Density/Compaction/Cementation/Extremely Weathered Material

These concepts give an indication of how the material may respond to applied forces (when considered in conjunction with other attributes of the soil). This behaviour can vary independent of the composition of the material, and on logs these are described in an independent column and are generally mutually exclusive (i.e it is inappropriate to describe both consistency and compaction at the same time). The method by which the behaviour is described depends on the behaviour model and other characteristics of the soil as follows:

- In fine grained soils, the "consistency" describes the ease with which the soil can be remoulded, and is generally correlated against the materials undrained shear strength;
- In granular materials, the relative density describes how tightly packed the particles are, and is generally correlated against the density index;
- In anthropogenically modified materials, the compaction of the material is described qualitatively;
- In cemented soils (both natural and anthropogenic), the cemented "strength" is described qualitatively, relative to the difficulty with which the material is disaggregated; and
- In soils of extremely weathered material origin, the engineering behaviour may be governed by relic rock features, and expected behaviour needs to be assessed based the overall material description.

Quantitative engineering performance of these materials may be determined by laboratory testing or estimated by correlated field tests (for example penetration or shear vane testing). In some cases, performance may be assessed by tactile or other subjective methods, in which case investigation logs will show the estimated value enclosed in round brackets, for example (VS).

Consistency (fine grained soils)

Consistency Term	Tactile Assessment	Undrained Shear Strength (kPa)	Abbreviation Code
Very soft	Extrudes between fingers when squeezed	<12	VS
Soft	Mouldable with light finger pressure	>12 - ≤25	S
Firm	Mouldable with strong finger pressure	>25 - ≤50	F
Stiff	Cannot be moulded by fingers	>50 - ≤100	St
Very stiff	Indented by thumbnail	>100 - ≤200	VSt
Hard	Indented by thumbnail with difficulty	>200	H
Friable	Easily crumbled or broken into small pieces by hand	-	Fr

Relative Density (coarse grained soils)

Relative Density Term	Density Index	Abbreviation Code
Very loose	<15	VL
Loose	>15 - ≤35	L
Medium dense	>35 - ≤65	MD
Dense	>65 - ≤85	D
Very dense	>85	VD

Note, tactile assessment of relative density is difficult, and generally requires penetration testing, hence a tactile assessment guide is not provided.

Compaction (anthropogenically modified soil)

Compaction Term	Abbreviation Code
Well compacted	WC
Poorly compacted	PC
Moderately compacted	MC
Variably compacted	VC

Cementation (natural and anthropogenic)

Cementation Term	Abbreviation Code
Moderately cemented	MOD
Weakly cemented	WEK

Extremely Weathered Material

AS1726-2017 considers weathered material to be soil if the unconfined compressive strength is less than 0.6 MPa (i.e. less than very low strength rock). These materials may be identified as "extremely weathered material" in reports and by the abbreviation code XWM on log sheets. This identification is not correlated to any specific qualitative or quantitative behaviour, and the engineering properties of this material must therefore be assessed according to engineering principles with reference to any relic rock structure, fabric, or texture described in the description.

Soil Origin

Term	Description	Abbreviation Code
Residual	Derived from in-situ weathering of the underlying rock	RS
Extremely weathered material	Formed from in-situ weathering of geological formations. Has strength of less than 'very low' as per as1726 but retains the structure or fabric of the parent rock.	XWM
Alluvial	Deposited by streams and rivers	ALV
Fluvial	Deposited by channel fill and overbank (natural levee, crevasse splay or flood basin)	FLV
Estuarine	Deposited in coastal estuaries	EST
Marine	Deposited in a marine environment	MAR
Lacustrine	Deposited in freshwater lakes	LAC
Aeolian	Carried and deposited by wind	AEO
Colluvial	Soil and rock debris transported down slopes by gravity	COL
Slopewash	Thin layers of soil and rock debris gradually and slowly deposited by gravity and possibly water	SW
Topsoil	Mantle of surface soil, often with high levels of organic material	TOP
Fill	Any material which has been moved by man	FILL
Littoral	Deposited on the lake or seashore	LIT
Unidentifiable	Not able to be identified	UID

Cobbles and Boulders

The presence of particles considered to be "oversize" may be described using one of the following strategies:

- Oversize encountered in a minor proportion (when considered relative to the wider area) are noted in the soil description; or
- Where a significant proportion of oversize is encountered, the cobbles/boulders are described independent of the soil description, in a similar manner to composite soils (described above) but qualified with "MIXTURE OF".

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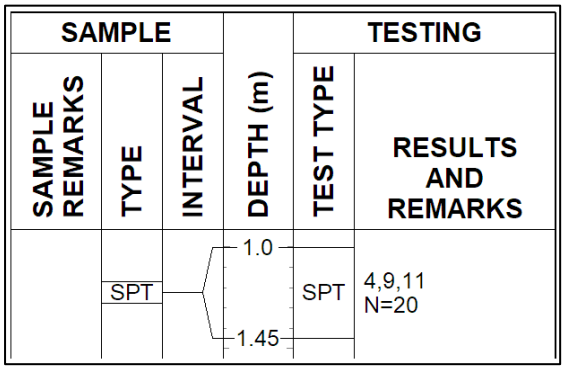
Sampling, Testing and Excavation Methodology

Terminology
Symbols
Abbreviations

October 2024

Sampling and Testing

A record of samples retained, and field testing performed is usually shown on a Douglas Partners' log with samples appearing to the left of a depth scale, and selected field and laboratory testing (including results, where relevant) appearing to the right of the scale, as illustrated below:



Sampling

The type or intended purpose for which a sample was taken is indicated by the following abbreviation codes.

Sample Type	Code
Auger sample	A
Acid Sulfate sample	ASS
Bulk sample	B
Core sample	C
Disturbed sample	D
Environmental sample	ES
Driven Tube sample	DT
Gas sample	G
Piston sample	P
Sample from SPT test	SPT
Undisturbed tube sample	U[1]
Water sample	W
Material Sample	MT
Core sample for unconfined compressive strength testing	UCS

[1] – numeric suffixes indicate tube diameter/width in mm

The above codes only indicate that a sample was retained, and not that testing was scheduled or performed.

Field and Laboratory Testing

A record that field and laboratory testing was performed is indicated by the following abbreviation codes.

Test Type	Code
Pocket penetrometer (kPa)	PP
Photo ionisation detector (ppm)	PID
Standard Penetration Test x/y =x blows for y mm penetration HB = hammer bouncing HW = fell under weight of hammer	SPT
Shear vane (kPa)	V
Unconfined compressive strength, (MPa)	UCS

Field and laboratory testing (continued)

Test Type	Code
Point load test, (MPa), axial (A), diametric (D), irregular (I)	PLT(_)
Dynamic cone penetrometer, followed by blow count penetration increment in mm (cone tip, generally in accordance with AS1289.6.3.2)	DCP9/150
Perth sand penetrometer, followed by blow count penetration increment in mm (flat tip, generally in accordance with AS1289.6.3.3)	PSP/150

Groundwater Observations

▷	seepage/inflow
▽	standing or observed water level
NFGWO	no free groundwater observed
OBS	observations obscured by drilling fluids

Drilling or Excavation Methods/Tools

The drilling/excavation methods used to perform the investigation may be shown either in a dedicated column down the left-hand edge of the log, or stated in the log footer. In some circumstances abbreviation codes may be used.

Method	Abbreviation Code
Direct Push	DP
Solid flight auger. Suffixes: /T = tungsten carbide tip, /V = v-shaped tip	AD[1]
Air Track	AT
Diatube	DT[1]
Hand auger	HA[1]
Hand tools (unspecified)	HAND
Existing exposure	X
Hollow flight auger	HSA[1]
HQ coring	HQ3
HMLC series coring	HMLC
NMLC series coring	NMLC
NQ coring	NQ3
PQ coring	PQ3
Predrilled	PD
Push tube	PT[1]
Ripping tyne/ripper	R
Rock roller	RR[1]
Rock breaker/hydraulic hammer	EH
Sonic drilling	SON[1]
Mud/blade bucket	MB[1]
Toothed bucket	TB[1]
Vibrocore	VC[1]
Vacuum excavation	VE
Wash bore (unspecified bit type)	WB[1]

[1] – numeric suffixes indicate tool diameter/width in mm

Douglas PARTNERS

Appendix B

Borehole Logs (Bores 1 to 16)

BOREHOLE LOG

CLIENT: Bird In The Hand 2 Pty Ltd
PROJECT: The Sanctuary Stage 7
LOCATION: Brush Cherry Boulevard, Thrumster

SURFACE LEVEL: 13.5 AHD
COORDINATE: E:485450.3, N:6520190.8
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 1
PROJECT No: 209310.05
DATE: 28/08/25
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE			TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN[#]	CONSIS.[*] / DENSITY.[*]	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
28/08/25 No free groundwater observed	13.5	FILL / Silty CLAY with sand trace gravel: dark brown; medium to high plasticity; fine to coarse sand; fine to coarse, rounded to angular gravel.		FILL	NA	w<PL						
	0.20	FILL / Silty CLAY trace sand trace gravel: red brown and grey; medium to high plasticity; fine to coarse sand; fine to coarse, rounded to sub-rounded gravel.		FILL	NA	w<PL		U50		0.50	PP	240kPa
	13									0.80	PP	340kPa
	1									1	DCP9/150	
											PP	240kPa
	12	Borehole discontinued at 1.50m depth. Limit of investigation.										

NOTES: [#] Soil origin is "probable" unless otherwise stated. [*] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5.5 tonne excavator
METHOD: 300mm Ø auger
REMARKS: Coordinates and elevations measured by dGPS with accuracy dependant on satellite coverage and site condition.

OPERATOR: Magnum Haulage (Wallace)

LOGGED: Van Kal
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

BOREHOLE LOG

CLIENT: Bird In The Hand 2 Pty Ltd
PROJECT: The Sanctuary Stage 7
LOCATION: Brush Cherry Boulevard, Thrumster

SURFACE LEVEL: 10.9 AHD
COORDINATE: E:485482.2, N:6520190.5
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 2
PROJECT No: 209310.05
DATE: 28/08/25
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN[#]	CONSIS.[^] / DENSITY.[^]	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
28/08/25 No free groundwater observed	10.9 / 0	FILL / Silty CLAY trace sand trace gravel: dark brown; medium to high plasticity; fine to coarse sand; fine to coarse, rounded to angular gravel.		FILL	NA	w<PL						
	10.75 / 0.15	Silty CLAY: red brown and grey; medium to high plasticity.		RS	H	w<PL					DCP9/150	5 10 15
	10.45 / 0.45	Silty CLAY: pale grey and red brown; medium to high plasticity.		XWM	H	w<PL		D		0.50	PP	>400kPa 25/110mm
	9.9 / 1							D		1.00	PP	>400kPa
											PP	>400kPa
	9.4 / 1.50	Borehole discontinued at 1.50m depth. Limit of investigation.										

NOTES: [#] Soil origin is "probable" unless otherwise stated. [^] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5.5 tonne excavator
METHOD: 300mm Ø auger
REMARKS: Coordinates and elevations measured by dGPS with accuracy dependant on satellite coverage and site condition.

OPERATOR: Magnum Haulage (Wallace)

LOGGED: Van Kal
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

BOREHOLE LOG

CLIENT: Bird In The Hand 2 Pty Ltd
PROJECT: The Sanctuary Stage 7
LOCATION: Brush Cherry Boulevard, Thrumster

SURFACE LEVEL: 8.3 AHD
COORDINATE: E:485514.1, N:6520192.7
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 3
PROJECT No: 209310.05
DATE: 28/08/25
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE			TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
28/08/25 No free groundwater observed	8.3 / 0.00	FILL / Silty CLAY trace sand trace gravel: dark brown; medium to high plasticity; fine to coarse sand; fine to coarse, rounded to angular gravel.		FILL	NA	w<PL						
	8.15 / 0.15	Silty CLAY: red brown and pale grey; medium to high plasticity.		RS	H	w<PL		U		0.50	PP	>400kPa
										0.80		
	7.3 / 1							D		1.00	PP	>400kPa
	6.8 / 1.50	Borehole discontinued at 1.50m depth. Limit of investigation.									PP	>400kPa

DCP9/150

5 10 15

NOTES: (#) Soil origin is "probable" unless otherwise stated. (*) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5.5 tonne excavator
METHOD: 300mm Ø auger
REMARKS: Coordinates and elevations measured by dGPS with accuracy dependant on satellite coverage and site condition.

OPERATOR: Magnum Haulage (Wallace)

LOGGED: Van Kal
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

BOREHOLE LOG

CLIENT: Bird In The Hand 2 Pty Ltd
PROJECT: The Sanctuary Stage 7
LOCATION: Brush Cherry Boulevard, Thrumster

SURFACE LEVEL: 6.4 AHD
COORDINATE: E:485546.3, N:6520188.9
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 4
PROJECT No: 209310.05
DATE: 28/08/25
SHEET: 1 of 1

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	SAMPLE DEPTH (m)	TESTING AND REMARKS: TEST TYPE	TESTING AND REMARKS: RESULTS AND REMARKS
28/08/25 No free groundwater observed	6	0.10	FILL / Silty CLAY trace sand trace gravel: dark brown; medium to high plasticity; fine to coarse sand.		FILL	NA	w<PL						
			Silty CLAY: orange brown and pale grey; medium to high plasticity.		RS	H	w<PL					PP	>400kPa
		0.80	Silty CLAY: red brown and pale grey; medium to high plasticity.										
	5	1			RS	H	w<PL		D		1.00	PP	>400kPa
									D		1.40	PP	>400kPa
			Borehole discontinued at 1.50m depth. Limit of investigation.										

DCP9/150: 5 | 10 | 15 | 21 | 25/110mm

NOTES: (#) Soil origin is "probable" unless otherwise stated. (*) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5.5 tonne excavator
METHOD: 300mm Ø auger
REMARKS: Coordinates and elevations measured by dGPS with accuracy dependant on satellite coverage and site condition.

OPERATOR: Magnum Haulage (Wallace)

LOGGED: Van Kal
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

BOREHOLE LOG

CLIENT: Bird In The Hand 2 Pty Ltd
PROJECT: The Sanctuary Stage 7
LOCATION: Brush Cherry Boulevard, Thrumster

SURFACE LEVEL: 5.4 AHD
COORDINATE: E:485580.2, N:6520197.4
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 5
PROJECT No: 209310.05
DATE: 28/08/25
SHEET: 1 of 1

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN[#]	CONSIS.[*] / DENSITY.[*]	MOISTURE	REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING AND REMARKS: TEST TYPE	RESULTS AND REMARKS
28/08/25 No free groundwater observed		0.10	FILL / Silty CLAY trace sand trace gravel: dark brown; medium to high plasticity; fine to coarse sand; fine to coarse, rounded to angular gravel.		FILL	NA	w<PL						
			Silty CLAY: yellow brown and red brown; medium to high plasticity.		RS	VSt to H	w<PL		U50		0.50 0.80	PP	>400kPa
		1.50	Borehole discontinued at 1.50m depth. Limit of investigation.						D		1.40 1	PP PP	>400kPa 310kPa

DCP9/150: 21 blows / 25/140mm

NOTES: [#] Soil origin is "probable" unless otherwise stated. [*] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5.5 tonne excavator
METHOD: 300mm Ø auger
REMARKS: Coordinates and elevations measured by dGPS with accuracy dependant on satellite coverage and site condition.

OPERATOR: Magnum Haulage (Wallace)

LOGGED: Van Kal
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

BOREHOLE LOG

CLIENT: Bird In The Hand 2 Pty Ltd
PROJECT: The Sanctuary Stage 7
LOCATION: Brush Cherry Boulevard, Thrumster

SURFACE LEVEL: 5.0 AHD
COORDINATE: E:485593.5, N:6520170.7
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 6
PROJECT No: 209310.05
DATE: 28/08/25
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN[#]	CONSIS.[*] / DENSITY.[*]	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
28/08/25 No free groundwater observed	0.10	FILL / Silty CLAY trace sand trace gravel: dark brown; medium to high plasticity; fine to coarse sand; fine to coarse, sub-angular to angular gravel.		FILL	NA	w<PL						
		FILL / Silty CLAY trace sand trace gravel: red brown, brown and pale grey; medium to high plasticity; fine to coarse sand; fine to coarse, rounded to angular gravel.		FILL	NA	w<PL						
	0.50	Silty CLAY: green grey and grey; medium to high plasticity.		ALV	VSt	w>PL		U50		0.50 0.80	PP	>400kPa
	4 1									1	PP	220kPa
	1.30	Silty CLAY: red brown; medium to high plasticity.		RS	H	w<PL		D		1.40	PP	>400kPa
	3	Borehole discontinued at 1.50m depth. Limit of investigation.										

DCP9/150

5 10 15 23 25

NOTES: [#] Soil origin is "probable" unless otherwise stated. [*] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5.5 tonne excavator
METHOD: 300mm Ø auger
REMARKS: Coordinates and elevations measured by dGPS with accuracy dependant on satellite coverage and site condition.

OPERATOR: Magnum Haulage (Wallace)

LOGGED: Van Kal
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

BOREHOLE LOG

CLIENT: Bird In The Hand 2 Pty Ltd
PROJECT: The Sanctuary Stage 7
LOCATION: Brush Cherry Boulevard, Thrumster

SURFACE LEVEL: 5.2 AHD
COORDINATE: E:485577.7, N:6520133.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 7
PROJECT No: 209310.05
DATE: 28/08/25
SHEET: 1 of 1

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING AND REMARKS: TEST TYPE	RESULTS AND REMARKS
28/08/25 No free groundwater observed	5	0.12	FILL / Silty CLAY trace sand trace gravel: dark brown; medium to high plasticity; fine to coarse sand; fine to coarse, sub-angular to angular gravel.		FILL	NA	w<PL						
			FILL / Silty CLAY trace sand trace gravel: red-brown and pale grey; medium to high plasticity; fine to coarse sand; fine to coarse, rounded to angular gravel.		FILL	NA	w<PL		U50		0.50	PP	>400kPa
		0.80	CLAY with silt: yellow brown and grey; high plasticity.		ALV	VSt	w<PL				0.80		
	4	1									1	PP	>400kPa
									D		1.40	PP	220kPa
			Borehole discontinued at 1.50m depth. Limit of investigation.										

TESTING AND REMARKS: RESULTS AND REMARKS — DCP9/150: 5, 10, 15, 25

NOTES: (#) Soil origin is "probable" unless otherwise stated. (*) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5.5 tonne excavator
METHOD: 300mm Ø auger
REMARKS: Coordinates and elevations measured by dGPS with accuracy dependant on satellite coverage and site condition.

OPERATOR: Magnum Haulage (Wallace)

LOGGED: Van Kal
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

BOREHOLE LOG

CLIENT: Bird In The Hand 2 Pty Ltd
PROJECT: The Sanctuary Stage 7
LOCATION: Brush Cherry Boulevard, Thrumster

SURFACE LEVEL: 6.0 AHD
COORDINATE: E:485545.9, N:6520122.2
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 8
PROJECT No: 209310.05
DATE: 28/08/25
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE			TESTING AND REMARKS	
GROUNDWATER	RL (m) / DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN[#]	CONSIS.[*] / DENSITY.[*]	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
28/08/25 No free groundwater observed	0.12	FILL / Silty CLAY trace sand trace gravel: dark brown; medium to high plasticity; fine to coarse sand; fine to coarse, rounded to angular gravel.		FILL	NA	w<PL						
		FILL / Silty CLAY trace sand trace gravel: red brown and pale grey; medium to high plasticity; fine to coarse sand; fine to coarse, rounded to angular gravel.		FILL	NA	w<PL				0.50	PP	>400kPa
	0.55	Silty Sandy CLAY with gravel: yellow brown and grey; high plasticity; fine to coarse, rounded to angular gravel.		ALV	VSt	w>PL		U		0.80	DCP9/150	
	1	Borehole discontinued at 1.50m depth. Limit of investigation.						D		1	PP	>400kPa
										1.40	PP	220kPa
												21
												25/130mm

NOTES: [#] Soil origin is "probable" unless otherwise stated. [*] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5.5 tonne excavator
METHOD: 300mm Ø auger
REMARKS: Coordinates and elevations measured by dGPS with accuracy dependant on satellite coverage and site condition.

OPERATOR: Magnum Haulage (Wallace)

LOGGED: Van Kal
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE-GS by Geroc - Soil Log

BOREHOLE LOG

CLIENT: Bird In The Hand 2 Pty Ltd
PROJECT: The Sanctuary Stage 7
LOCATION: Brush Cherry Boulevard, Thrumster

SURFACE LEVEL: 7.9 AHD
COORDINATE: E:485516.7, N:6520129.9
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 9
PROJECT No: 209310.05
DATE: 28/08/25
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE			TESTING AND REMARKS		
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN[#]	CONSIS.[*] / DENSITY.[*]	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
28/08/25 No free groundwater observed		0.10	FILL / Silty CLAY trace sand trace gravel: dark brown; medium to high plasticity; fine to coarse sand; fine to coarse, rounded to angular gravel.		FILL	NA	w<PL						
			FILL / Silty CLAY trace sand trace gravel: red brown and pale grey; medium to high plasticity; fine to coarse sand; fine to coarse, sub-angular to angular gravel.		FILL	NA	w<PL		D		0.50	PP	310kPa
	7	1									1	DCP9/150	
		1.40	Silty CLAY trace sand trace gravel: green grey and grey; high plasticity; fine to coarse sand; fine to coarse, rounded to angular gravel.		ALV	VSt	w>PL		D		1.40	PP	260kPa
			Borehole discontinued at 1.50m depth. Limit of investigation.								1.50		
	6												

NOTES: [#] Soil origin is "probable" unless otherwise stated. [*] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5.5 tonne excavator
METHOD: 300mm Ø auger
REMARKS: Coordinates and elevations measured by dGPS with accuracy dependant on satellite coverage and site condition.

OPERATOR: Magnum Haulage (Wallace)

LOGGED: Van Kal
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

BOREHOLE LOG

CLIENT: Bird In The Hand 2 Pty Ltd
PROJECT: The Sanctuary Stage 7
LOCATION: Brush Cherry Boulevard, Thrumster

SURFACE LEVEL: 11.0 AHD
COORDINATE: E:485471.4, N:6520137.5
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 10
PROJECT No: 209310.05
DATE: 28/08/25
SHEET: 1 of 1

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN[#]	CONSIS.[*] / DENSITY.[*]	MOISTURE	REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING AND REMARKS: TEST TYPE	TESTING AND REMARKS: RESULTS AND REMARKS
28/08/25 No free groundwater observed		0.10	FILL / Silty CLAY trace sand trace gravel: dark brown; medium to high plasticity; fine to coarse sand; fine to coarse, rounded to angular gravel.		FILL	NA	w<PL						
		0.20	FILL / Silty CLAY trace sand trace gravel: dark grey; medium to high plasticity; fine to coarse sand; fine to coarse gravel.		FILL	NA	w<PL						
			FILL / Silty CLAY trace sand trace gravel: red brown and pale grey; medium to high plasticity; fine to coarse sand; fine to coarse, rounded to angular gravel.		FILL	NA	w<PL					PP	380kPa
		0.50	Silty CLAY: red brown; medium to high plasticity.		RS	VSt to H	w<PL		D		1.00	PP	220kPa
			Borehole discontinued at 1.50m depth. Limit of investigation.						D		1.40	PP	>400kPa
											1.50		

DCP9/150

NOTES: [#] Soil origin is "probable" unless otherwise stated. [*] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5.5 tonne excavator
METHOD: 300mm Ø auger
REMARKS: Coordinates and elevations measured by dGPS with accuracy dependant on satellite coverage and site condition.

OPERATOR: Magnum Haulage (Wallace)

LOGGED: Van Kal
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE-GS by Geroc - Soil Log

BOREHOLE LOG

CLIENT: Bird In The Hand 2 Pty Ltd
PROJECT: The Sanctuary Stage 7
LOCATION: Brush Cherry Boulevard, Thrumster

SURFACE LEVEL: 12.5 AHD
COORDINATE: E:485441.5, N:6520137.2
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 11
PROJECT No: 209310.05
DATE: 28/08/25
SHEET: 1 of 1

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN[#]	CONSIS.[*] / DENSITY.[*]	MOISTURE	REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING AND REMARKS: TEST TYPE	RESULTS AND REMARKS
28/08/25 No free groundwater observed	12	0.20	FILL / Silty CLAY trace sand trace gravel: dark brown; medium to high plasticity; fine to coarse sand; fine to coarse, rounded to angular gravel.		FILL	NA	w<PL				0.50	PP	290kPa
			Silty CLAY: yellow brown and red brown; medium to high plasticity.		RS	H	w<PL		U50		0.80	DCP9/150	
	1	1.10	Silty CLAY: pale grey and red brown; medium to high plasticity.		RS	H	w<PL				1	PP	>400kPa
									D		1.40	PP	>400kPa
	11	1.50	Borehole discontinued at 1.50m depth. Limit of investigation.								1.50		

NOTES: [#] Soil origin is "probable" unless otherwise stated. [*] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5.5 tonne excavator
METHOD: 300mm Ø auger
REMARKS: Coordinates and elevations measured by dGPS with accuracy dependant on satellite coverage and site condition.

OPERATOR: Magnum Haulage (Wallace)

LOGGED: Van Kal
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

BOREHOLE LOG

CLIENT: Bird In The Hand 2 Pty Ltd
PROJECT: The Sanctuary Stage 7
LOCATION: Brush Cherry Boulevard, Thrumster

SURFACE LEVEL: 11.0 AHD
COORDINATE: E:485442.0, N:6520104.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 12
PROJECT No: 209310.05
DATE: 28/08/25
SHEET: 1 of 1

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) DENSITY.(*)	MOISTURE	REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	SAMPLE DEPTH (m)	TESTING AND REMARKS: TEST TYPE	RESULTS AND REMARKS
28/08/25 No free groundwater observed		0.40	FILL / Silty CLAY trace sand trace gravel: dark brown; medium to high plasticity; fine to coarse sand; fine to coarse gravel.		FILL	NA	w<PL						
		1.10	FILL / Silty CLAY trace sand trace gravel: red brown and grey; medium to high plasticity; fine to coarse sand; fine to coarse, rounded to angular gravel.		FILL	NA	w<PL		D		1.00	PP	>400kPa
		1.30	Silty CLAY trace sand trace gravel: yellow grey and grey; high plasticity; fine to coarse sand; fine to coarse, rounded to angular gravel.		ALV	VSt	w>PL		D		1.20	PP	270kPa
			Silty CLAY: red brown; medium to high plasticity.		RS	H	w<PL				1.30	PP	>400kPa
			Borehole discontinued at 1.50m depth. Limit of investigation.										

DCP9/150

NOTES: (#) Soil origin is "probable" unless otherwise stated. (*) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5.5 tonne excavator
METHOD: 300mm Ø auger
REMARKS: Coordinates and elevations measured by dGPS with accuracy dependant on satellite coverage and site condition.

OPERATOR: Magnum Haulage (Wallace)

LOGGED: Van Kal
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE-GS by Geroc - Soil Log

BOREHOLE LOG

CLIENT: Bird In The Hand 2 Pty Ltd
PROJECT: The Sanctuary Stage 7
LOCATION: Brush Cherry Boulevard, Thrumster

SURFACE LEVEL: 9.7 AHD
COORDINATE: E:485471.2, N:6520112.7
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 13
PROJECT No: 209310.05
DATE: 28/08/25
SHEET: 1 of 1

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
28/08/25 No free groundwater observed	9	0.24	FILL / Silty CLAY trace sand trace gravel: grey brown; medium to high plasticity; fine to coarse sand; fine to coarse, rounded to angular gravel.		FILL	NA	w<PL						
			FILL / Silty CLAY trace sand trace gravel: red brown and pale grey; low plasticity; fine to coarse sand; fine to coarse, rounded to angular gravel.		FILL	NA	w<PL		U50		0.50	PP	>400kPa
											0.80	PP	>400kPa
	8	1.40	Silty CLAY trace sand trace gravel: yellow grey and grey; high plasticity; fine to coarse sand; fine to coarse, rounded to sub-rounded gravel.		ALV	VSt	w<PL					PP	350kPa
			Borehole discontinued at 1.50m depth. Limit of investigation.										

DCP9/150

5 10 15

1 1

NOTES: (#)Soil origin is "probable" unless otherwise stated. (*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5.5 tonne excavator
METHOD: 300mm Ø auger
REMARKS: Coordinates and elevations measured by dGPS with accuracy dependant on satellite coverage and site condition.

OPERATOR: Magnum Haulage (Wallace)

LOGGED: Van Kal
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

BOREHOLE LOG

CLIENT: Bird In The Hand 2 Pty Ltd
PROJECT: The Sanctuary Stage 7
LOCATION: Brush Cherry Boulevard, Thrumster

SURFACE LEVEL: 10.3 AHD
COORDINATE: E:485409.8, N:6520040.8
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 14
PROJECT No: 209310.05
DATE: 28/08/25
SHEET: 1 of 1

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN[#]	CONSIS.[*] / DENSITY.[*]	MOISTURE	REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING AND REMARKS: TEST TYPE	RESULTS AND REMARKS
28/08/25 No free groundwater observed	10	0.28	FILL / Silty CLAY trace sand trace gravel: grey brown; medium to high plasticity; fine to coarse sand; fine to coarse, rounded to angular gravel.		FILL	NA	w<PL						
			FILL / Silty CLAY trace sand trace gravel: red brown and pale grey; medium to high plasticity; fine to coarse sand; fine to coarse, rounded to angular gravel.		FILL	NA	w<PL		U50		0.50 0.80	PP	>400kPa
	9	1									1	PP	>400kPa
		1.45	Silty CLAY trace sand trace gravel: yellow brown and grey; high plasticity; fine to coarse sand; fine to coarse, rounded to sub-rounded gravel.		ALV	VSt	w≈PL to w>PL		D		1.45 1.50	PP	300kPa
			Borehole discontinued at 1.50m depth. Limit of investigation.										

DCP9/150

NOTES: [#] Soil origin is "probable" unless otherwise stated. [*] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5.5 tonne excavator
METHOD: 300mm Ø auger
REMARKS: Coordinates and elevations measured by dGPS with accuracy dependant on satellite coverage and site condition.

OPERATOR: Magnum Haulage (Wallace)

LOGGED: Van Kal
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

BOREHOLE LOG

CLIENT: Bird In The Hand 2 Pty Ltd
PROJECT: The Sanctuary Stage 7
LOCATION: Brush Cherry Boulevard, Thrumster

SURFACE LEVEL: 10.1 AHD
COORDINATE: E:485386.2, N:6520009.5
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 15
PROJECT No: 209310.05
DATE: 28/08/25
SHEET: 1 of 1

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) DENSITY.(*)	MOISTURE	REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING AND REMARKS: TEST TYPE	RESULTS AND REMARKS
28/08/25 No free groundwater observed	10	0.10	FILL / Silty CLAY trace sand trace gravel: grey brown; medium to high plasticity; fine to coarse sand; fine to coarse, rounded to angular gravel.		FILL	NA	w<PL						
			FILL / Silty CLAY trace sand trace gravel: red brown and pale grey; medium to high plasticity; fine to coarse sand; fine to coarse, rounded to angular gravel.		FILL	NA	w<PL		U50		0.50	PP	300kPa
		0.74	Silty CLAY trace sand trace gravel: green grey and grey; high plasticity; fine to coarse sand; fine to coarse, rounded to sub-rounded gravel.		ALV	VSt	w>PL				0.80	PP	270kPa
	9	0.88	Silty CLAY: pale grey and red brown; medium to high plasticity.		RS	H	w<PL				1		
		1							D		1.40	PP	>400kPa
			Borehole discontinued at 1.50m depth. Limit of investigation.								1.50		

DCP9/10 — 25/140mm

NOTES: (#) Soil origin is "probable" unless otherwise stated. (*) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5.5 tonne excavator
METHOD: 300mm Ø auger
REMARKS: Coordinates and elevations measured by dGPS with accuracy dependant on satellite coverage and site condition.

OPERATOR: Magnum Haulage (Wallace)

LOGGED: Van Kal
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE-GS by Geroc - Soil Log

Douglas PARTNERS

BOREHOLE LOG

CLIENT: Bird In The Hand 2 Pty Ltd
PROJECT: The Sanctuary Stage 7
LOCATION: Brush Cherry Boulevard, Thrumster

SURFACE LEVEL: 9.7 AHD
COORDINATE: E:485400.9, N:6519981.8
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: 16
PROJECT No: 209310.05
DATE: 28/08/25
SHEET: 1 of 1

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN[#]	CONSIS.[*] / DENSITY.[*]	MOISTURE	REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING AND REMARKS: TEST TYPE	RESULTS AND REMARKS
28/08/25 No free groundwater observed	9	0.33	FILL / Silty CLAY trace sand trace gravel: grey brown; medium to high plasticity; fine to coarse sand; fine to coarse, rounded to angular gravel.		FILL	NA	w<PL						
			FILL / Silty CLAY trace sand trace gravel: red brown and pale grey; medium to high plasticity; fine to coarse sand; fine to coarse, sub-angular to angular gravel.		FILL	NA	w<PL		U50		0.50	PP	220kPa
		0.75	Silty CLAY: red brown; medium to high plasticity.		RS	VSt	w<PL				0.80	DCP9/150	23
		1									1	PP	>400kPa
		1.40	Silty CLAY: pale grey and red brown; medium to high plasticity.		RS	H	w<PL					PP	>400kPa
	8		Borehole discontinued at 1.50m depth. Limit of investigation.										

NOTES: [#] Soil origin is "probable" unless otherwise stated. [*] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 5.5 tonne excavator
METHOD: 300mm Ø auger
REMARKS: Coordinates and elevations measured by dGPS with accuracy dependant on satellite coverage and site condition.

OPERATOR: Magnum Haulage (Wallace)

LOGGED: Van Kal
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

Appendix C

Laboratory Test Results

Material Test Report

Report Number: **209310.05-1**
Issue Number: 1
Date Issued: 12/09/2025
Client: Bird In The Hand 2 Pty Ltd
Suite 103, 2 Miami Key, Broadbeach QLD
Contact: Massimo Raniolo
Project Number: 209310.05
Project Name: The Sanctuary Stage 7
Project Location: Brush Cherry Boulevard, Thrumster NSW
Work Request: 17955
Date Sampled: 28/08/2025
Dates Tested: 29/08/2025 - 11/09/2025
Sampling Method: Sampled by Engineering Department
The results apply to the sample as received
Location: Brush Cherry Boulevard, Thrumster

Douglas Partners Pty Ltd
Port Macquarie Laboratory
Unit 2, 32 Geebung Drive Port Macquarie NSW 2444
Phone: (02) 6581 5992
Email: luke.hetherington@douglaspartners.com.au

Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Luke Hetherington
Laboratory Manager
Laboratory Accreditation Number: 828

Shrink Swell Index AS 1289 7.1.1 & 2.1.1					
Sample Number	PM-17955A	PM-17955B	PM-17955C	PM-17955D	PM-17955E
Date Sampled	28/08/2025	28/08/2025	28/08/2025	28/08/2025	28/08/2025
Date Tested	01/09/2025	01/09/2025	01/09/2025	01/09/2025	01/09/2025
Material Source	U50	U50	U50	U50	U50
Sample Location	BH 1 (0.5 - 0.8)	BH 3 (0.5 - 0.8)	BH 5 (0.5 - 0.8)	BH 6 (0.5 - 0.8)	BH 7 (0.5 - 0.8)
Inert Material Estimate (%)	10	3	1	1	2
Pocket Penetrometer before (kPa)	380	>400	>400	>400	>400
Pocket Penetrometer after (kPa)	350	>400	>400	>400	>400
Shrinkage Moisture Content (%)	29.8	28.6	26.2	30.5	29.5
Shrinkage (%)	**5.0**	**4.3**	**4.2**	**5.0**	**4.4**
Swell Moisture Content Before (%)	26.1	27.5	25.7	33.2	30.1
Swell Moisture Content After (%)	31.4	30.9	28.7	36.7	37.3
Swell (%)	**0.2**	**1.3**	**-0.0**	**0.3**	**0.7**
Shrink Swell Index Iss (%)	**2.8**	**2.8**	**2.3**	**2.9**	**2.7**
Visual Description	Silty Clay	Silty Clay	Silty Clay	Silty Clay	Silty Clay
Cracking	FR	SC	SC	SC	SC
Crumbling	No	No	No	No	No
Remarks	**	**	**	**	**

Shrink Swell Index (Iss) reported as the percentage vertical strain per pF change in suction.
Cracking Terminology: UC Uncracked, SC Slightly Cracked, MC Moderately Cracked, HC Highly Cracked, FR Fragmented.
NATA Accreditation does not cover the performance of pocket penetrometer readings.

Material Test Report

Report Number: **209310.05-1**
Issue Number: 1
Date Issued: 12/09/2025
Client: Bird In The Hand 2 Pty Ltd
Suite 103, 2 Miami Key, Broadbeach QLD
Contact: Massimo Raniolo
Project Number: 209310.05
Project Name: The Sanctuary Stage 7
Project Location: Brush Cherry Boulevard, Thrumster NSW
Work Request: 17955
Date Sampled: 28/08/2025
Dates Tested: 29/08/2025 - 11/09/2025
Sampling Method: Sampled by Engineering Department
The results apply to the sample as received
Location: Brush Cherry Boulevard, Thrumster

Douglas Partners Pty Ltd
Port Macquarie Laboratory
Unit 2, 32 Geebung Drive Port Macquarie NSW 2444
Phone: (02) 6581 5992
Email: luke.hetherington@douglaspartners.com.au

Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Luke Hetherington
Laboratory Manager
Laboratory Accreditation Number: 828

Shrink Swell Index AS 1289 7.1.1 & 2.1.1					
Sample Number	PM-17955F	PM-17955G	PM-17955H	PM-17955I	PM-17955J
Date Sampled	28/08/2025	28/08/2025	28/08/2025	28/08/2025	28/08/2025
Date Tested	01/09/2025	09/09/2025	09/09/2025	09/09/2025	11/09/2025
Material Source	U50	U50	U50	U50	U50
Sample Location	BH 8 (0.5 - 0.8)	BH 11 (0.5 - 0.8)	BH 13 (0.5 - 0.8)	BH 14 (0.5 - 0.8)	BH 16 (0.5 - 0.8)
Inert Material Estimate (%)	1	1	1	2	1
Pocket Penetrometer before (kPa)	>400	>400	>400	>400	>400
Pocket Penetrometer after (kPa)	>400	>400	>400	300	350
Shrinkage Moisture Content (%)	29.7	30.2	24.6	26.6	31.4
Shrinkage (%)	**5.3**	**2.5**	**1.5**	**2.6**	**3.8**
Swell Moisture Content Before (%)	27.8	30.9	24.6	25.6	31.3
Swell Moisture Content After (%)	34.4	36.2	24.4	33.4	33.3
Swell (%)	**0.4**	**-0.1**	**0.2**	**0.7**	**0.8**
Shrink Swell Index Iss (%)	**3.0**	**1.4**	**0.9**	**1.6**	**2.3**
Visual Description	Silty Clay	Silty Clay	Silty Clay	Silty Clay	Silty Clay
Cracking	SC	MC	MC	MC	SC
Crumbling	No	No	No	No	No
Remarks	**	**	**	**	**

Shrink Swell Index (Iss) reported as the percentage vertical strain per pF change in suction.
Cracking Terminology: UC Uncracked, SC Slightly Cracked, MC Moderately Cracked, HC Highly Cracked, FR Fragmented.
NATA Accreditation does not cover the performance of pocket penetrometer readings.

Appendix D

Drawing 1: Test Location Plan

NOTE:
1. Drawing projection in GDA2020 / MGA zone 56, adapted from aerial imagery from Metromap dated 01.09.2024.
2. Test locations are approximate only and were located using differential GPS typically accurate to ± 0.1 m depending on satellite coverage

Douglas PARTNERS

CLIENT: Bird In The Hand 2 Pty Ltd		
OFFICE: PMQ	DRAWN BY: SvK	
SCALE: 1:1250 @A3	DATE: 17.September.2025	

TITLE: **Test Location Plan**
Proposed Road Upgrade
The Sanctuary Stage 7, Brush Cherry Boulevard, Thrumster

PROJECT:	209310.05
DRAWING NO:	1
REVISION:	0