
Report on Geotechnical Investigation

Proposed Industrial Park

Lot 2010 Giorgi Road, Picton East, WA

Prepared for DevelopmentWA

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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.

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Table of Contents

	Page No
1. Introduction.....	1
2. Site Description	2
3. Field Work Methods	4
4. Field Work Results.....	5
4.1 Ground Conditions.....	5
4.2 Groundwater	8
4.3 Permeability	9
5. Laboratory Testing.....	9
5.1 Geotechnical	9
5.2 Acid Sulfate Soil.....	11
6. Proposed development	12
7. Comments.....	12
7.1 Site Suitability and Geotechnical Constraints	12
7.2 Site Classification.....	13
7.3 Foundation Design	14
7.4 Excavation Conditions and Groundwater	14
7.5 Site Preparation.....	15
7.6 Soil Retention and Batters	17
7.7 Pavement Design Parameters.....	18
7.8 Stormwater Disposal and Drainage.....	18
7.9 Acid Sulfate Soils.....	19
8. References	19
9. Limitations.....	20

Appendix A: About This Report

Appendix B: Drawing 1 – Site and Test Location Plan
Test Pit Logs

Appendix C: Geotechnical Laboratory Certificates

Appendix D: Table D1 – Acid Sulfate Soil Testing Results Summary

Chain of Custody Documentation

Acid Sulfate Soil Laboratory Certificates

Report on Geotechnical Investigation Proposed Industrial Park Lot 2010 Giorgi Road, Picton East, WA

1. Introduction

This report prepared by Douglas Partners Pty Ltd (Douglas) presents the results of a geotechnical investigation undertaken for a proposed industrial park at Lot 2010 Giorgi Road, Picton East, WA (the site). The investigation was commissioned by email from Kelli Howell of DevelopmentWA, dated 14 August 2025 and was undertaken in accordance with Douglas' proposal P236293.01 dated 24 July 2025.

It is understood that the site will be developed into an industrial subdivision, with large industrial lots and internal pavements.

The aim of the investigation was to assess the subsurface soil and groundwater conditions across the site in order to provide comments on:

- The suitability of the site for the proposed development.
- Identification of areas of foundation risk, including areas of uncontrolled fill, compressible layers, depth to rock/coffee rock, or other problematic ground conditions and, if encountered, strategies to address any identified risks.
- The site classification in accordance with the Australian Standard (AS 2870, 2011) and measures that could be adopted to improve this classification, if required.
- Excavation conditions and temporary batter slopes for shallow excavations.
- Site preparation including the possible re-use of site soils as controlled fill, specification for any imported fill, the removal/treatment of any unsuitable materials encountered and preliminary blending ratios for re-use of topsoil.
- Suitable foundation types for the proposed development.
- Geotechnical parameters for retaining wall design and safe batter slopes of excavations, including a suitable soil friction angle.
- A California bearing ratio (CBR) for pavement subgrade materials based on observations made in the field, Douglas' experience and limited laboratory testing.
- The permeability of the encountered site soils and suitability for on-site stormwater disposal.
- The depth to groundwater if encountered.
- The nature and extent of acid sulfate soils across the site together with recommendations for treatment/management of soils during construction works.

The investigation included the excavation of 32 test pits 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 is located in East Picton and covers an area of approximately 44.6 ha. At the time of the investigation, it was bounded by Giorgi Road to the west, South Western Highway to the south and east, Temple Road to the northeast and primarily vacant bushland to the north, with the exception of an industrial building on Giorgi Road.

During the field work on 26 and 27 August 2025, the site was generally covered with short grass with some surface water also observed. The topography was predominantly flat with some slight undulations, with surface elevations across the site at the test locations varying from a minimum RL 8.5 (TP2) to maximum RL 14.0 (TP13). Large to medium sized trees were present across most of the periphery of the site, especially along South Western Highway and around two farm dams towards the northern boundary.



Figure 1: Site Photographs (August 2025)

Aerial photographs available from Landgate show that the site is crossed by a natural minor drainage line that meanders across the site between its northeastern corner and its northwestern corner. Several man-made open drains, both oriented east-west and north-south, are also visible

(also observed on site). These features are highlighted on one selected photo, dated 16 August 2018, see Figure 2 below.

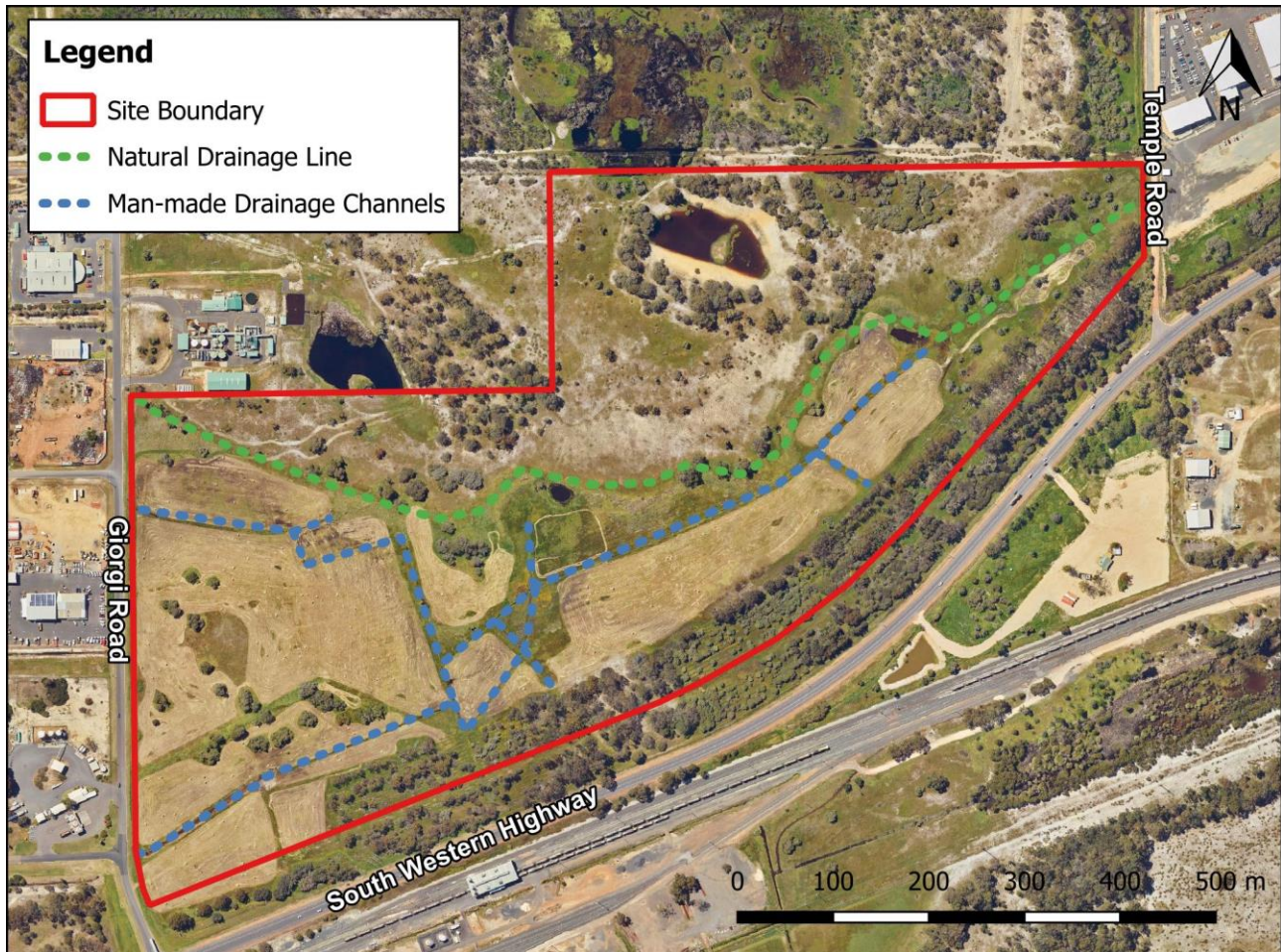


Figure 2: Aerial Photograph showing natural drainage line and-made open drains

The 1:50,000 Bunbury-Burekup Environmental Geology sheet indicate that subsurface conditions across the site comprise three soil units (Figure 3):

- Guildford Formation;
- Thin Bassendean Sand over Guildford Formation; and
- Bassendean Sand.

The waterlogged ground observed in low lying parts of the site during the field work approximately correlates with the mapped Guildford Formation (Q_{pa}) of the geological map.



Figure 3: Geological Mapping with approximate site location. Q_{pa}: Guildford Formation (in dark brown). Q_{pb}: Bassendean Sand (in light brown). Q_{pb}/Q_{pa}: Bassendean Sand over Guildford Formation (in light yellow).

Acid Sulfate Soil Risk Mapping classified most of the site as "moderate to low risk" of acid sulfate soils up to a depth of 3 m below ground surface, however, the site is in close proximity of a "high to moderate risk" region to the west.

3. Field Work Methods

The field work was carried out on 26 and 27 August 2025 and comprised:

- The excavation of 32 test pits; and
- Perth sand penetrometer (PSP) and dynamic cone penetrometer (DCP) testing.

Test pits (TP1 to TP28) were excavated to between 1.5 m and 2.5 m depth using an 8-tonne backhoe equipped with a 450 mm wide toothed bucket, with shallower termination depths caused by collapsing conditions. The ground conditions were logged in accordance with the Australian Standard (AS 1726, 2017) by a geotechnical engineer, and samples were collected from selected locations for laboratory analysis.

Soil samples for assessment of acid sulfate soils were collected at 0.5 m intervals from selected test pits (2, 4, 5, 6, 8, 9, 11, 13, 14, 17, 19, 22, 24, 25 and 28). All soil samples were placed into snap-lock bags and chilled in the field and transported to the laboratory under a chain-of custody.

Test pits 29 to 32 targeted the footprints of former buildings identified as part of Preliminary Site Investigation (PSI) completed by Douglas (ref: 236293.00.R.001.Rev0 dated 20 August 2025) to assess presence of subsurface fragments of potential asbestos containing materials (PACM). Logs

and geotechnical conditions encountered are included herein, however, comments pertaining to the presence of PACM will be presented in a revised version of the PSI..

Perth sand penetrometer (PSP) or dynamic cone penetrometer (DCP) testing, as most appropriate to the conditions was undertaken, adjacent to the test pits, in accordance with Australian Standard (AS 1289.6.3.3, 1997) and (AS 1289.6.3.2, 1997), respectively.

Standpipes, including slotted and solid PVC pipe, were installed in three test pit location (TP03, TP13 and TP26). Groundwater levels in the standpipes were recorded on 16 October 2025 and the measurements are presented as part of a site and soil evaluation (SSE) for the purpose effluent disposal requirements in a separate report.

Test locations and surface elevations were recorded using a dGPS with a variable accuracy, typically accurate to ± 0.1 m, and are shown on Drawing 1 in Appendix B. Surface elevations at each location are quoted relative to the Australian height datum (AHD) and are indicated on the logs in Appendix B.

4. Field Work Results

4.1 Ground Conditions

Logs of the ground conditions and results of the field testing are presented in Appendix B, and should be read together with the notes defining descriptive terms and classification methods, in Appendix A.

The ground conditions encountered at the test locations generally comprised sandy topsoil overlying Bassendean Sand with cemented silty sand, or 'coffee rock' discontinuously present across the site, overlying cohesive materials of the Guildford Formation that were encountered within the depth of investigation across most of the site except in the central northern corner. A summary of the encountered units in general order is detailed below:

FILL / Sand (SP-SM) - Granular fill containing debris, including brick, concrete, metal and potential asbestos containing material (PACM) was encountered in test pits 29, 30 and 31 to a depth of between 0.25 m and more than 1.0 m. These test pits targeted envelopes of former buildings.

Topsoil - Sand (SP / SP-SM) - Fine to medium grained sand, generally with silt (SP-SM) and occasionally trace silt (SP), commonly dark grey-brown to grey and present from surface to between 0.1 m to 0.2 m depth, found in all test locations except TP29 to TP31 where fill was encountered at ground surface.

Bassendean Sand - Sand (SP / SP-SM / SM) - Fine to medium grained sand with a trace of silt (SP), occasionally with silt (SP-SM) or silty (SM), generally medium dense but loose in some zones, predominantly pale grey to pale brown, found underlying the topsoil to depths ranging from 0.3 m (TP18 and TP20) to more than 2.5 m (TP13).

Silty sand (SM) was encountered in TP2 from 1.4 m and TP20 from 0.3 m to 0.6 m.

Zones of loose material are summarised in Table 1, below.

Cemented Sand – Sand / Silty Sand (SP-SM / SM) – Colloquially known as **coffee rock**.

Moderately to strongly cemented fine to medium grained sand was encountered discontinuously across the site within, or at the base of the Bassendean sand, generally with silt (SP-SM) or silty (SM), dark brown colour, medium dense to very dense.

‘Coffee rock’ was encountered in test pits 1, 4-6, 8, 15, 16, 22, 23 and 25 at between 0.9 m (TP22) and 1.7 m depth (TP1), but generally around 1.2 m depth.

Guildford Formation – Sand / Gravel / Clayey Sand / Sandy Clay / Clay – generally low to medium plasticity, firm (or stiffer) sandy clay and clayey sand, underlying the Bassendean Sand (and coffee rock) and encountered within testing depth in many test pits (7, 9, 14-24 and 26-28). Cohesive materials of the Guildford formation were encountered at varied depths as shallow as 0.3 m.

Soft clayey sand was encountered in TP18 between 0.3 m to 0.7 m depth.

The depth to encountered clayey materials is summarised in Table 2, below.

Medium and high plasticity clays were encountered in test pits 7, 8, 14 and 20, deeper than 1.8 m.

Some sand and gravel were variably present within the Guildford alluvial formation.

Table 1: Summary of encountered loose/soft soils

Location	Surface Level (AHD)	Depth of Loose Soils (m)	Loose/Soft Soil Level (m AHD)
TP12	13.8	0.75 - 1.2	13.05 - 12.6
TP14	11.3	0.0 - 0.45	11.3 - 10.85
TP16	10.6	0.75 - 1.2	9.85 - 9.25
TP18	10.5	0.0 - 0.7	10.5 - 9.8
TP23	10.6	0.0 - 1.2	10.6 - 9.4
TP24	11.0	0.0 - 0.8	11.0 - 10.2
TP28	10.1	0.0 - 0.15	10.1 - 9.95
TP29	11.2	0.0 - 1.0	11.2 - 10.2
TP32	11.3	0.75 - 1.0	10.55 - 10.3

Table 2: Depth to encountered clayey or reactive materials

Location	Surface Elevation (m AHD)	Depth to Clay or Reactive Soils (m)	Clay Level (m AHD)
TP1	11.8	Not encountered within 2 m	-
TP2	8.5	1.4	-

Location	Surface Elevation (m AHD)	Depth to Clay or Reactive Soils (m)	Clay Level (m AHD)
TP3	12.8	Not encountered within 2 m	-
TP4	11.9	1.8	10.1
TP5	11.9	Not encountered within 1.5 m	-
TP6	12.9	Not encountered within 2.5 m	-
TP7	11.7	1.8	9.9
TP8	11.7	Not encountered within 2 m	-
TP9	10.5	1.3	9.2
TP10	12.4	Not encountered within 1.5 m	-
TP11	12.7	Not encountered within 1.5 m	-
TP12	13.8	Not encountered within 1.8 m	-
TP13	14.0	Not encountered within 2.5 m	-
TP14	11.3	0.6	10.7
TP15	11.7	1.7	10
TP16	10.6	1.5	9.1
TP17	10.6	1.3	9.3
TP18	10.5	0.3	10.2
TP19	11.1	0.7	10.4
TP20	11.2	0.6	10.6
TP21	10.8	1.8	9
TP22	10.5	1.3	9.2
TP23	10.6	1.35	9.25
TP24	11.0	2.5	8.5
TP25	11.0	Not encountered within 2 m	-
TP26	10.2	1.8	8.4
TP27	10.1	0.5	9.6

Location	Surface Elevation (m AHD)	Depth to Clay or Reactive Soils (m)	Clay Level (m AHD)
TP28	10.1	0.5	9.6

4.2 Groundwater

Groundwater was observed at most test locations during the investigation on 26 and 27 August 2025. The results of these are summarised in Table 3, below. The test pits were backfilled immediately after logging and sampling, which precluded longer-term monitoring of groundwater levels.

It should be noted that groundwater levels are affected by climatic conditions, land usage and soil permeability and will therefore vary over time.

Table 3: Summary of Encountered Groundwater

Location	Surface Level (AHD)	Depth to Groundwater (m)	Groundwater Level (AHD)
TP1	11.8	0.6	11.2
TP2	8.5	0.4	8.1
TP3	12.8	Not observed within 2 m depth	
TP4	11.9	1.0	10.9
TP5	11.9	0.8	11.1
TP6	12.9	1.7	11.2
TP7	11.7	0.3	11.4
TP8	11.7	0.2	11.5
TP9	10.5	0	10.5
TP10	12.4	Not observed within 1.5 m depth	
TP11	12.7	Not observed within 1.5 m depth	
TP12	13.8	Not observed within 1.8 m depth	
TP13	14.0	Not observed within 2.5 m depth	
TP14	11.3	0	11.3
TP15	11.7	0.5	11.2
TP16	10.6	0.2	10.4
TP17	10.6	0	10.6
TP18	10.5	0	10.5
TP19	11.1	0	11.1
TP20	11.2	0	11.2

Location	Surface Level (AHD)	Depth to Groundwater (m)	Groundwater Level (AHD)
TP21	10.8	0	10.8
TP22	10.5	0	10.5
TP23	10.6	0.2	10.4
TP24	11.0	0.3	10.7
TP25	11.0	0.6	10.4
TP26	10.2	0	10.2
TP27	10.1	0	10.1
TP28	10.1	0.1	10.0
TP29	11.2	0.6	10.6
TP30	11.3	0.4	10.9
TP31	11.0	0.5	10.5
TP32	11.3	0.3	11.0

4.3 Permeability

Surface and shallow groundwater across most of the site impacted the performance of in situ infiltration testing. However, in-situ infiltration testing was undertaken at three locations, with one location invalid due to insufficient clearance from shallow groundwater. Permeability was estimated using a calculation based on Hvorslev (Hvorslev, 1951). The permeability results are summarised in Table 4, below.

Table 4: Summary of Permeability Analysis

Test Location	Depth (m)	Measured Permeability (m/day)	Ground Conditions
TP6	1.0	5	SAND (SP) trace silt, over SAND (SP-SM) with silt from 1.1 m, over Silty SAND (SM) from 1.4 m. Medium dense.
TP12	1.0	9	SAND (SP) trace silt. Loose to medium dense.

5. Laboratory Testing

5.1 Geotechnical

A laboratory testing programme was carried out by a NATA registered laboratory on selected soil samples and comprised the following tests:

- The particle size distribution of eleven samples;

- The Atterberg limits of seven samples;
- The shrink-swell index of three samples;
- The California bearing ratio (CBR) and modified maximum dry density (MMDD) of three samples; and
- The organic content of three samples.

The test certificates are included in Appendix C and summarised in Table 5, Table 6 and Table 7, below.

Table 5: Summary of Soil Identification Testing

Location	Depth (m)	Fines (%)	Sand (%)	Gravel (%)	LL (%)	PL (%)	PI (%)	LS (%)	I _{ss}	Material
TP1	0.0-0.1	5	95	0	-	-	-	-	-	Organic SAND (SP-SM) with silt
TP3	0.5	1	99	0	-	-	-	-	-	SAND (SP) trace silt
TP4	1.5	4	96	0	-	-	-	-	-	SAND (SP) trace silt
TP6	1.0	1	99	0	-	-	-	-	-	SAND (SP) trace silt
TP10	1.0	1	99	0	-	-	-	-	-	SAND (SP) trace silt
TP14	0.8	20	72	8	34	18	16	5.0	-	Clayey SAND (SC), low to medium plasticity, trace gravel
TP14	2.5	-	-	-	72	33	39	16.5	-	CLAY (CH), high plasticity
TP18	0.7-1.15	11	71	18	28	23	5	1.5	1.0	SAND (SP-SC) with clay, with gravel
TP19	0.7-1.15	15	67	18	36	17	19	5.0	1.2	Clayey SAND (SC), low to medium plasticity, with gravel
TP20	0.8	8	71	21	NO	NP	NP	0.5	-	SAND (SP-SM) with silt, with gravel
TP24	0.8-1.1	12	74	14	29	19	10	4.0	-	SAND (SP-SC) with clay, with gravel
TP28	0.6-1.05	15	84	1	33	17	16	5.0	0.5	Clayey SAND (SC), low to medium plasticity, trace gravel

Notes:

- The fines content is the percentage by dry weight of particles smaller than 75 µm diameter.
- The sand content is the percentage by dry weight of particles between 75 µm and 2.36 mm diameter.
- The gravel content is the percentage by dry weight of particles between 2.36 mm and 75 mm diameter.
- LL = liquid limit - PL = plastic limit - PI = plasticity index - LS = linear shrinkage
- “-” = not tested - I_{ss} = shrink / swell index - NO/NP = not obtainable/non-plastic soil

Table 6: Summary of Organic Testing

Location	Depth (m)	Organic Content (%)	Material
TP1	0.0-0.1	9.0	Dark grey Organic SAND (SP-SM) with silt
TP4	0.1	12.1	Dark grey-brown Organic SAND (SP-SM) with silt
TP6	1.5	0.5	Dark brown Cemented Silty SAND (SM), 'coffee rock'

Table 7: Summary of Pavement Properties

Location	Depth (m)	OMC (%)	MMDD (t/m ³)	CBR Swell (%)	CBR (%)	Material
TP3	0.5	15.0	1.68	0.0	25	SAND (SP) trace silt
TP19	1.0	12.5	1.93	0.5	12	SAND (SP-SC) with clay
TP24	0.8-1.0	12.0	1.90	0.0	19	SAND (SP-SC) with clay, with gravel

Notes: - OMC = Optimum moisture content
 - CBR = California bearing ratio
 - MMDD = Modified maximum dry density

The CBR tests were undertaken at a target compaction ratio of 95% of the modified maximum dry density on samples of the likely subgrade soils. The samples were tested after soaking for four days with a confining surcharge of 4.5 kg.

5.2 Acid Sulfate Soil

Acid sulfate soil screening tests were undertaken by MPL Laboratories Pty Ltd (MPL) on soil samples retrieved from selected test pits at the site. The screening tests comprised measurement of pH of the soil in water (pH_F) and the pH of the soil after oxidation with a 30% solution of hydrogen peroxide (pH_{FOX}). The results of these tests provide an indication of the presence of actual and potential acid sulfate soils and should be considered as qualitative only.

Following a review of the screening test results, selected soil samples were submitted to MPL to undergo the chromium suite of testing. This laboratory test quantifies the existing acidity and potential acidity derived from sulfide oxidation which is reported as a net acidity. Soil samples were selected for laboratory analysis with due consideration of the following:

- Screening results, with particular focus on the lowest reported pH_F or pH_{FOX} within a soil stratum at each test location;
- Reported reaction strength; and
- Visual identification of the soils encountered.

The acid sulfate soil laboratory results are presented in Table D-1 in Appendix D, together with the laboratory reports and associated chain-of-custody reports.

The laboratory results indicate the following:

- The results for pH_F are not indicative of actual acid sulfate soils conditions at the sampling locations to a depth of up to 2.5 m;

- The results for pH_{FOX} are indicative of potential acid sulfate soil conditions at some of the sampling locations, generally from a depth of 1.5 m, although low pH_{FOX} was recorded as shallow as 0.5 m in TP24; and
- The calculated net acidity was reported above the adopted action criterion of 0.03%S for seven of 21 samples submitted for chromium suite analysis. The exceedances were in broad agreement with the reported $\text{pH}_{\text{FOX}} < 3$. The maximum net acidity was 5.2% S in the dark grey clay at 2.5 m depth in TP24, which is considered to be very high.

6. Proposed development

It is understood that the site is proposed to be developed into an industrial subdivision, with large industrial lots. Warehouse-style buildings with associated internal or single storey offices and pavements for freight and car parking are assumed.

7. Comments

7.1 Site Suitability and Geotechnical Constraints

The investigation indicates that the site is generally underlain by sandy soils (sand and silty sand) generally of greater thickness in the central north part of the site, overlying clayey soils encountered at variable depths from as shallow as 0.3 m to deeper than 2.5 m, as described in Section 4.1 above. Localised shallow fill and soft / loose soil conditions to a maximum depth of 1.2 m were identified at some test locations, as summarised in Table 1. The site topography includes a relatively low-lying and seasonally waterlogged natural drainage line that crosses the site from east to west (as shown in Figure 2 in Section 2).

Based on the anticipated development for this site (an industrial subdivision, with warehouse-type buildings and associated offices and pavements), the primary geotechnical considerations for this site include the following:

- Shallow groundwater and seasonal surface water (that crosses the entire site length in an east to west direction) will require specific consideration in the project drainage design, to direct water away from proposed structures and towards a suitable outflow. Shallow groundwater can also impact earthworks, specifically compaction operations and excavations, hence undertaking the earthworks during summer would minimise this impact and is therefore recommended at this site.
- Encountered zones of loose / soft soil (encountered up to a maximum depth of 1.2 m) which do not form suitable foundation materials in their current conditions, and would require compaction, noting shallow groundwater might limit the performance of compaction plant as previously noted, specifically within in the low parts of the site.
- Uncontrolled fill encountered to more than 1.0 m depth within a small area of the site (TP30 and TP31), which is in a loose to medium dense conditions, contains debris, and does not form suitable foundation material in current conditions.
- Topsoil materials with high organics (>10%) measured at TP04 at 0.1 m depth. This proportion of organic content would require large topsoil blending ratios and thorough topsoil blending methods, if topsoil reuse is proposed following its blending with non-organic sand.

- Reactive clayey soils occur within 1.8 m of the finished surface level based on current site level and would result in seasonal ground surface level movements, albeit relatively small, to consider in the structural design of proposed structures. It is anticipated that the presence of shallow groundwater across the site will necessitate sand filling to raise site level, which would decrease the impact of underlying reactive soils.

From a geotechnical standpoint, the land is physically capable of development, provided that suitable civil design and site preparation are undertaken, as discussed in the following sections, to address the geotechnical constraints outlined above.

7.2 Site Classification

Site classification is determined in accordance with the Australian Standard (AS 2870, 2011) and is based on the expected ground surface movement due to seasonal moisture variability, the expansive nature of cohesive materials in response to moisture changes and the depth to which this movement extends. The depth of soil suction change at this site is assessed to be 1.5 m.

Ground conditions generally consisted of sandy soils, thicker in the central north part of the site, overlying clayey soils locally occurring near ground surface, with shallow groundwater.

Based on laboratory testing together with a visual and tactile assessment, the clayey materials encountered near the surface are assessed to be slightly reactive, with shrink swell index values (I_{ss}) of between 0.5% and 1.2%. Some highly reactive materials were encountered, with a liquid limit value of 70%, which correlates to an I_{ss} value of approximately 3%, however these highly reactive soils occur at greater depths than 1.8 m from current site surface levels and therefore are not anticipated to impact the proposed industrial development.

Some of the sandy soils (eg. silty sands other than described as 'coffee rock' in the logs) were also assessed in the field to comprise a fines content exceeding 15%, thus not meeting the definition of "sand" for the purpose of site classification (AS 2870, 2011). Such silty sand was encountered at two locations (TP2 and TP20) and could occur elsewhere.

Based on the above, it is recommended that the encountered Sand (SP and SP-SM) and Coffee Rock (described as brown cemented Silty Sand in the logs) be considered as non-reactive for site classification purposes. Other soils, including the other Silty Sands (SM) (such as at TP02 and TP20), Sand with clay (SP-SC), Clayey Sand (SC) and Sandy Clay (CL-CI) are recommended to be considered reactive.

Test locations where reactive materials occur within 1.5 m of surface listed in Table 2 (in Section 4.1) would be classified as 'Class S' in accordance with the Australian Standard (AS 2870, 2011) following suitable site preparation for the current site levels. These locations generally correlate with parts of the site mapped as '*Guildford Formation Q_{pg}* ' on the geological mapping (shown in Figure 3 in Section 2) and include a large part of the site. Test locations where at least 1.5 m of non-reactive materials (Sand SP and SP-SM, coffee rock) occurs from existing ground surface would be classified as 'Class A' following site preparation, and generally correlate with parts of the site mapped in the aforementioned Figure 3 as '*Bassendean Sand Q_{ps}* ' and '*Bassendean Sand overlying Guildford Formation Q_{ps}/Q_{pg}* '.

Overall, a site-wide classification of 'Class S' is suggested for the site for the existing site levels (following suitable site preparation).

With reference to Table 2 (in Section 4.1), thicknesses of sand fill of between 1.0 m and 1.4 m will be required to be placed across various parts of the site following topsoil stripping, to achieve a minimum 1.5 m of non-reactive clearance above existing reactive soils, if a site classification 'Class A' is targeted for the proposed development.

It is emphasised that the site classifications provided above will need re-assessment if bulk earthworks for the proposed development include cutting the site.

7.3 Foundation Design

Shallow foundation systems comprising slab, pad and strip footings should be suitable to support the proposed structures. Footings of buildings covered by (AS 2870, 2011) should be designed to satisfy the requirements of this standard for the site classification 'Class S', or 'Class A', as applicable, subject to verification at the completion of the bulk earthworks.

If the proposed building is not covered by (AS 2870, 2011) then the foundations should be designed using engineering principles.

A site-wide allowable bearing pressure of 100 kPa is suggested for the design of foundations at a minimum depth of 0.5 m below surrounding ground. This preliminary allowable bearing capacity considers some relatively weak soils encountered (e.g. firm to stiff clayey soils) and shallow groundwater, however, will depend on finished site levels and footing size specifics, and should be reassessed at detailed project design.

A greater ground bearing capacity would be available if the founding material comprises compacted sand, for instance if raising the site surface using compacted sand fill is proposed.

Provided that suitable site preparation has been undertaken as outlined in section 7.5 below, pad or strip footings under the above bearing pressures are anticipated to experience a total settlement of less than 10 mm, with long-term and differential settlements likely to be less than half of this value.

7.4 Excavation Conditions and Groundwater

The encountered ground conditions generally comprise medium dense sandy soils, with some loose zones, overlying variably cemented silty sand ('coffee rock') and clayey soils. Conventional earthmoving equipment (such as large excavators) should be suitable for shallow excavations in the surficial soils, noting an 8 tonne excavator, fitted with a 600 mm toothed bucket did not encounter refusal up to a target depth of 2.5 m at the test locations.

Shallow groundwater or surface water was encountered at most of the test locations, as detailed in Table 3 in Section 4.2, and can impact excavation, specifically during or shortly following winter. Undertaking excavation well into summer, say between January and March, is therefore recommended to minimise impact of groundwater. Spearpoint dewatering would likely form a suitable dewatering option for shallow excavations within predominantly sandy soils, noting clayey sand of low permeability was also encountered near ground surface at several locations. Dewatering using a sump and pump set-up would be suitable within cohesive clay soils.

It should be noted that due to the presence of potential acid sulfate (PASS) soils, i.e. soils that become acidic when exposed to oxygen, dewatering may result in the acidification of subsurface

soils and lime treatment of the extracted groundwater may be required, prior to environmental release, as further discussed in Section 7.9.

7.5 Site Preparation

7.5.1 Timing for the Earthworks

It is recommended that earthworks take place well into summer, to minimise impact of the shallow groundwater and seasonal surface water at this site. Most favourable conditions would be expected near the end of summer and typically between February and April. Wet soils and soft conditions are considered possible in some parts of the site across most of the year, specifically along the natural drainage line discussed in Section 2.

7.5.2 Surface Stripping

All vegetation and grass including rootlets and the surficial topsoil encountered to depths of between 0.1 m and 0.2 m, should be stripped from all earthworks areas for building and pavement envelopes. All tree roots should be grubbed to at least 0.6 m depth following removal of any trees.

The removal of uncontrolled fill, such as encountered at TP30 and TP31 is anticipated, unless further assessment by a Geotechnical Engineer during earthworks indicates otherwise.

Following stripping, the site should be inspected by a geotechnical engineer to confirm suitable removal of vegetation, topsoil and deleterious material.

7.5.3 Test Rolling and Compaction

The risk of shallow groundwater impacting the handling and compaction of soils at this site should be considered. It is suggested that groundwater levels be measured shortly prior to earthworks to further assess its possible impact on earthworks, for instance by excavating test pits in particular within parts of the site mapped as 'Guildford Formation' in Figure 3 in Section 2 above.

Shallow groundwater and surface water are considered likely at least during the winter months, and if occurring at the time of the earthworks, would likely pose some significant constraints for compaction operations from current site surface level. Under such circumstance, placing a bridging layer of suitable granular fill, with little to no fines content onto the stripped surface of the site, could be considered to assist with ground compaction.

The type of roller and the use of vibratory modes should be at the discretion of the earthworks contractor, noting however the use of heavy roller in vibrating mode is not recommended to compact saturated or submerged sands, because the build-up of excess pore pressure within the soil under compaction vibration would typically result in loosening the ground. Also, distance to neighbouring structures and vibration sensitive services should be considered if heavy vibrating plant are considered. Heavy roller in vibrating mode is not recommended within 25 m of existing buildings or sensitive services.

Areas that show signs of excessive deformation during compaction should be continually compacted until deformation ceases. Following rolling of the bridging layer, the compaction of the site should be assessed by a geotechnical engineer. Compaction control of sand fill and

in-situ sand could be carried out using a Perth sand penetrometer (PSP) in accordance with the Australian Standard (AS 1289.6.3.3, 1997).

7.5.4 Imported Fill

Imported fill should comprise free draining, cohesionless, well graded sand that:

- contains less than 5% by weight of particles less than 75 microns in size;
- contains no particles greater than 150 mm in size;
- is free of organic and other deleterious materials; and
- has a permeability of no less than 5 m/day on a sample compacted to 95% MMDD.

It is recommended that test certificates are reviewed and approved by the geotechnical engineer prior to importing material to site.

Other materials could be considered, provided they are granular and non-reactive, and following review by a geotechnical engineer.

7.5.5 Fill Placement, Compaction and Testing

Fill should be placed in a controlled manner as outlined in the Guidelines on Earthworks for Commercial and Residential Development (AS 3798, 2007), in near horizontal layers of uniform thickness.

The thickness of each layer should be appropriate for the type of compaction equipment utilised, although typically should not exceed 400 mm loose thickness for granular materials. Each layer should be compacted near optimum moisture content (+/- 2%) to achieve a dry density ratio of not less than 95% relative to modified maximum dry density.

The use of medium to heavy (say 12 tonne deadweight and heavier) smooth drum rollers are suggested. Care should be taken not to run heavy plant immediately adjacent to existing structures and services.

The compaction of fill should be assessed in accordance with the requirements set out in the Australian Standard (AS 3798, 2007). Compaction control of sand fill and in situ sand could be carried out using a Perth sand penetrometer (PSP) in accordance with the Australian Standard (AS 1289.6.3.3, 1997), after a correlation between Perth sand penetrometer (PSP) blow counts and dry density ratio (targeting 95% MMDD) has been established by a NATA accredited laboratory and following review by a geotechnical engineer.

During construction, some loosening of the surface sands in foundation excavations is expected. Therefore, the top 300 mm in the base of any excavation should be re-compacted using a vibratory plate compactor prior to construction of any footings.

7.5.6 Re-use of Existing Soils

The results of the investigation indicate that the existing sand (SP, SP-SM), silty sand (SM) and coffee rock (the latter possibly following crushing to suitable size) are generally considered to be

geotechnically suitable for reuse as structural fill provided they are free from deleterious material and oversized particles (>150 mm in size).

However, only the sand classified SP and SP-SM and the silty sand described as 'coffee rock' on the logs appended should be considered as a non-reactive fill with no detrimental impact on site classification (AS 2870, 2011).

Another distinction between the sand with low fines (SP) and the sand with higher fines (SP-SM and SM) is in regard to the selection in the civil and earthworks designs of sand considered suitable for re-use as free-draining fill (following compaction). Taking into account the field observations, results of laboratory testing and Douglas' experience, it is considered that:

- **SAND (SP-SM)** with silt is considered suitable material for use as fill for structural applications. However, Douglas' experience indicates that the SAND (SP-SM) with slightly elevated fines content, typically results in post earthworks permeability values of less than 5 m/day, which subsequently can result in drainage issues.
- **SAND (SP)** with a fines content of no greater than approximately 5% fines is considered suitable for re-use. A permeability of >5 m/day is expected for this type of sand, following placement and compaction. Whilst Bassendean Sand was present across parts of the site (mostly the northeastern part), the availability of such sand suitable for excavation and re-use is possibly limited to some slightly elevated sand dunes, such as at TP13.
- **Silty SAND (SM)** would likely have a permeability of lower than 5 m/day following compaction. Also as previously noted, these soils (other than coffee rock) would impact the site classification if a classification of 'Class A' is targeted for the development (noting no impact on a site classification 'Class S', if targeted).

The sandy topsoil at the site is generally considered suitable for re-use as structural fill following raking/screening to remove large organic particles and blending with clean sand. It is highlighted however that a relatively high blending ratio of 6:1 (clean sand : topsoil) will possibly be required, based on the available results of organic content testing (9 % - 12 %) and observations made during the site investigation. The blended material is likely to have a lower permeability than that of typical clean imported sand fill, therefore some consideration should be given to possible adverse implications of blended materials on site drainage.

The clayey soils (clayey sand, clayey sandy gravel and sandy clay) are considered suitable for re-use as trench backfill within adjoining clay soils outside pavement areas and structural fill for use in cut to fill clay grading operations only, if required. Clayey backfill for trench beneath proposed pavement is not recommended unless specific considerations are given by the Project Geotechnical Engineer once further civil design is available at detailed design stage of the proposed development.

7.6 Soil Retention and Batters

It is recommended that temporary batter slopes within sand, clayey sand and firm or stiffer sandy clay, above groundwater or above surface water, be not steeper than 1.5H:1V (horizontal : vertical) for excavations not deeper than 3 m. The recommended batter angle should also be re-assessed if loads are to be applied near the top of the batter. Dry permanent batter slopes should be not steeper than 2H:1V (limited to batters less than 3 m in height) and should be drained and protected from erosion. It is emphasised that the above slope angles are not suitable below groundwater or if water emanates from the slope. Permanent batter slope in saturated or

submerged sand, if any, would require some specific consideration to ensure batter stability and scouring protection.

Design of temporary and permanent retaining structures can be based on the preliminary design parameters listed below. In addition, retaining structures should be designed to support lateral pressure from external loads.

Table 8: Suggested Soil Parameters for Retaining Wall Design

Soil Type	Unit Weight above groundwater (kN/m ³)	Undrained Cohesion C _u (kPa)	Drained Cohesion C' (kPa)	Drained Angle of Friction Φ' (°)	Active Pressure Coefficient K _a	Passive Pressure Coefficient K _p	At Rest Pressure Coefficient K ₀
Compacted FILL / Sand, medium dense	20	0	0	32	0.31	3.2	0.47
Sand, loose to medium dense	19	0	0	30	0.33	3.0	0.50
Clayey Sand/Sandy Clay – firm or stiffer	20	25	3	25	0.35	2.0	0.55

7.7 Pavement Design Parameters

Based on the results of the site investigation, laboratory testing and our experience, where subgrade comprises sand with a minimum thickness below subgrade level of 1.0 m, a CBR value of 12% would be suitable for pavement design.

A lower design CBR of 4% is recommended for the encountered clayey soils (classified SP-SC, SC, or CI-CH on the logs appended) or if such soils occur within 1 m beneath the proposed pavement layers. This design CBR value could be adjusted (increased) depending on proposed site levels following site preparation and therefore is suggested to be reviewed if proposed pavement is less than 1 m above clay soils.

7.8 Stormwater Disposal and Drainage

Shallow clayey soils of low permeability occur beneath large parts of the site, and shallow groundwater was encountered across most of the site, other than isolated and slightly elevated sand dunes of Bassendean Sand mostly in the northern part of the site. It is also noted that surface water within the site has historically been controlled to some extent (for the inferred former farming land use of the site) using open drains flowing to the west across the site, however surface water was observed in parts of the site at the time of the geotechnical investigation.

Based on the above ground and groundwater conditions, the site is not considered suitable for on-site infiltration of stormwater, unless a significant thickness of highly permeable sand fill is

placed above both the existing low-permeability natural soils and groundwater, as part of the proposed development. If so, possible impact of infiltrated water within the sand fill on adjacent lands should be considered in the civil design.

7.9 Acid Sulfate Soils

Based upon the results of the investigation, Douglas concludes that acid sulfate soils are present, generally from a depth of 1.0 m. It is also noted that the maximum net acidity was 5.2% S reported at a depth of 2.5 m, which is considered to be very high when compared to net acidities typically being reported for similar land development projects in Western Australia. As such, future disturbances of acid sulfate soils in conjunction with proposed dewatering activities, if not managed appropriately, has the potential to impact on the environment.

As such, Douglas recommends that following completion of detailed design (ie when excavation depths and alignments are known), detailed acid sulfate soil and groundwater investigations, targeting proposed excavations, be undertaken. The investigations should be undertaken with reference to DWER endorsed guidelines and aim to determine the extent and severity of acid sulfate soils within the proposed areas of disturbance. Assessment of baseline groundwater quality within proposed areas of disturbance should also be undertaken as required by DWER guidelines. The results of the targeted investigations and assessment of groundwater quality would be utilised to inform the relevant management requirements to be outlined in an acid sulfate soil and dewatering management plan. The information would also be used to support an application for a dewatering licence and/or to address a development condition (if imposed) in relation to investigation and management of acid sulfate soils.

In light of the high net acidity and potential for environmental impacts, proposed excavation and dewatering activities should, where possible, be designed with the following guiding principles as advocated by DWER in mind:

- Disturbance of acid sulfate soils and/or the groundwater table (ie dewatering) should be avoided wherever possible;
- Where disturbance of acid sulfate soils is unavoidable, preferred management strategies are:
 - o Minimisation of disturbance; and
 - o Neutralisation.
- Where disturbance of groundwater is unavoidable, the disturbance should be minimised or otherwise managed and monitored.

8. References

AS 1289.5.8.1. (2007). *Methods for testing soils for engineering purposes - Soil compaction and density tests - Determination of field density and field moisture content of a soil using a nuclear surface moisture-density gauge - Direct transmission mode*. Standards Australia.

AS 1289.6.3.2. (1997). *Methods for testing soils for engineering purposes - Soil strength and consolidation tests - Determination of the penetration resistance of a soil - 9kg dynamic cone penetrometer test*. Reconfirmed 2013: Standards Australia.

AS 1289.6.3.3. (1997). *Methods for testing soils for engineering purposes - Soil strength and consolidation tests - Determination of the penetration resistance of a soil - Perth sand penetrometer test*. Reconfirmed 2013: Standards Australia.

AS 1547. (2012). *On-site domestic wastewater management*. Standards Australia.

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

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

Hvorslev, M. J. (1951). *Time lag and soil permeability in groundwater observations*. US Army Corps of Engineers Waterways Experiment Observation Station, Bulletin 36, Vicksburg, Mississippi.

Luke, G. J. (1987). *Evaporation data for Western Australia*. Department of Primary Industries and Regional Development.

9. Limitations

Douglas Partners Pty Ltd (Douglas) has prepared this report for this project at Lot 2010 Giorgi Road, Picton East, WA in line with Douglas' proposal dated 24 July 2025 and acceptance received from Kelli Howell of DevelopmentWA dated 14 August 2025. The work was carried out under the Engineering Panel Agreement 2023/01. This report is provided for the exclusive use of DevelopmentWA 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 site accessibility and/or field conditions at the time of investigation.

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.

The scope of work for this investigation/report did not include the assessment of surface or sub-surface materials or groundwater for contaminants, within or adjacent to the site. Should evidence of fill of unknown origin be noted in the report, and in particular the presence of building demolition materials, it should be recognised that there may be some risk that such fill may contain contaminants and hazardous building materials.

Appendix A

About this Report

Terminology, Symbols and Abbreviations

Soil Descriptions

Sampling, Testing and Excavation Methodology

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

This report is the property of Douglas Partners Pty Ltd. The report may only be used for the purpose for which it was commissioned and in accordance with the Engagement Terms for the commission supplied at the time of proposal. Unauthorised use of this report in any form whatsoever is prohibited.

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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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 auguring 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

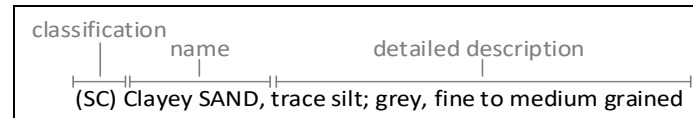
Graphic Symbols

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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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”.

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	Sand
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”.

intentionally blank

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:

SAMPLE			DEPTH (m)	TESTING	
SAMPLE REMARKS	TYPE	INTERVAL		TEST TYPE	RESULTS AND REMARKS
	SPT		1.0 1.45	SPT	4,9,11 N=20

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
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
Dynamic probe super heavy, followed by blow count penetration increment in mm	DPSH/100

Groundwater Observations

	water seepage/inflow
	water seepage/outflow
	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

Introduction

The Cone Penetration Test (CPT) is a sophisticated soil profiling test carried out in-situ. A special cone shaped probe is used which is connected to a digital data acquisition system. The cone and adjoining sleeve section contain a series of strain gauges and other transducers which continuously monitor and record various soil parameters as the cone penetrates the soils.

The soil parameters measured depend on the type of cone being used, however they always include the following basic measurements

- Cone tip resistance q_c
- Sleeve friction f_s
- Inclination (from vertical) i
- Depth below ground z

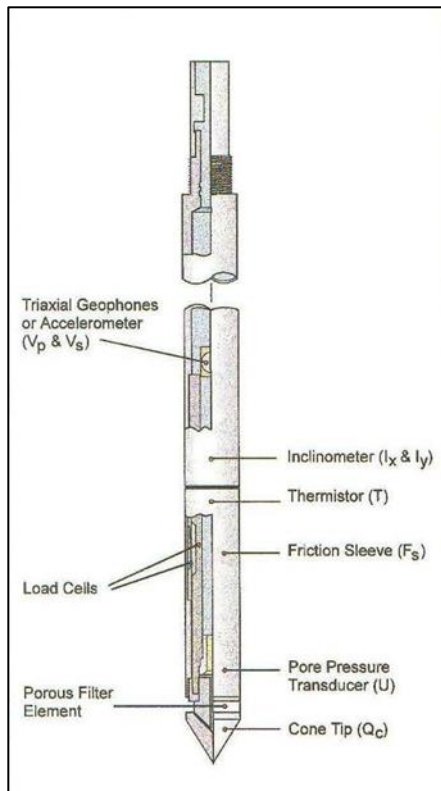


Figure 1: Cone Diagram

The inclinometer in the cone enables the verticality of the test to be confirmed and, if required, the vertical depth can be corrected.

The cone is thrust into the ground at a steady rate of about 20 mm/sec, usually using the hydraulic rams of a purpose built CPT rig, or a drilling rig. The testing is carried out in accordance with the Australian Standard AS1289 Test 6.5.1.



Figure 2: Purpose built CPT rig

The CPT can penetrate most soil types and is particularly suited to alluvial soils, being able to detect fine layering and strength variations. With sufficient thrust the cone can often penetrate a short distance into weathered rock. The cone will usually reach refusal in coarse filling, medium to coarse gravel and on very low strength or better rock. Tests have been successfully completed to more than 60 m.

Types of CPTs

Douglas Partners (and its subsidiary GroundTest) owns and operates the following types of CPT cones:

Type	Measures
Standard	Basic parameters (q_c , f_s , i & z)
Piezocone	Dynamic pore pressure (u) plus basic parameters. Dissipation tests estimate consolidation parameters
Conductivity	Bulk soil electrical conductivity ($\square$) plus basic parameters
Seismic	Shear wave velocity (V_s), compression wave velocity (V_p), plus basic parameters

Strata Interpretation

The CPT parameters can be used to infer the Soil Behaviour Type (SBT), based on normalised values of cone resistance (Q_t) and friction ratio (Fr). These are used in conjunction with soil classification charts, such as the one below (after Robertson 1990)

Cone Penetration testing

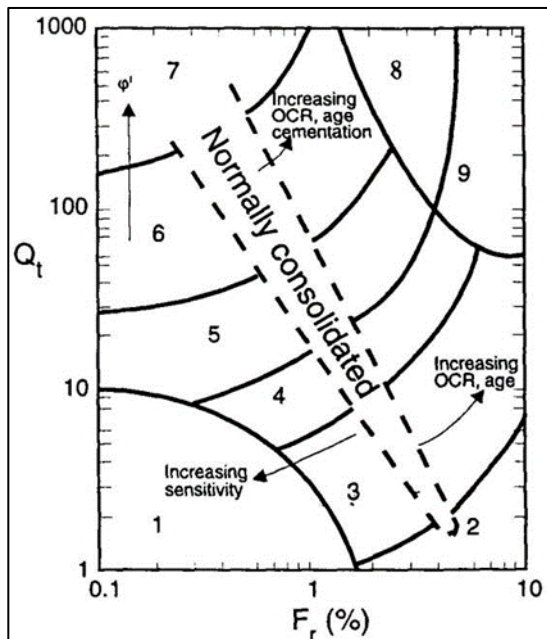


Figure 3: Soil Classification Chart

Douglas' in-house CPT software provides computer aided interpretation of soil strata, generating soil descriptions and strengths for each layer. The software can also produce plots of estimated soil parameters, including modulus, friction angle, relative density, shear strength and over consolidation ratio.

Douglas' CPT software helps our engineers quickly evaluate the critical soil layers and then focus on developing practical solutions for the client's project.

Engineering Applications

There are many uses for CPT data. The main applications are briefly introduced below:

Settlement

CPT provides a continuous profile of soil type and strength, providing an excellent basis for settlement analysis. Soil compressibility can be estimated from cone derived moduli, or known consolidation parameters for the critical layers (eg. from laboratory testing). Further, if pore pressure dissipation tests are undertaken using a piezocone, in-situ consolidation coefficients can be estimated to aid analysis.

Pile Capacity

The cone is, in effect, a small scale pile and, therefore, ideal for direct estimation of pile capacity. Douglas' in-house program ConePile can analyse most pile types and produces pile capacity versus depth plots. The analysis methods are based on proven static theory and empirical studies, taking account of scale effects, pile materials and method of installation.

The results are expressed in limit state format, consistent with the Piling Code AS2159.

Dynamic or Earthquake Analysis

CPT and, in particular, Seismic CPT are suitable for dynamic foundation studies and earthquake response analyses, by profiling the low strain shear modulus G_0 . Techniques have also been developed relating CPT results to the risk of soil liquefaction.

Other Applications

Other applications of CPT include ground improvement monitoring (testing before and after works), salinity and contaminant plume mapping (conductivity cone), preloading studies and verification of strength gain.

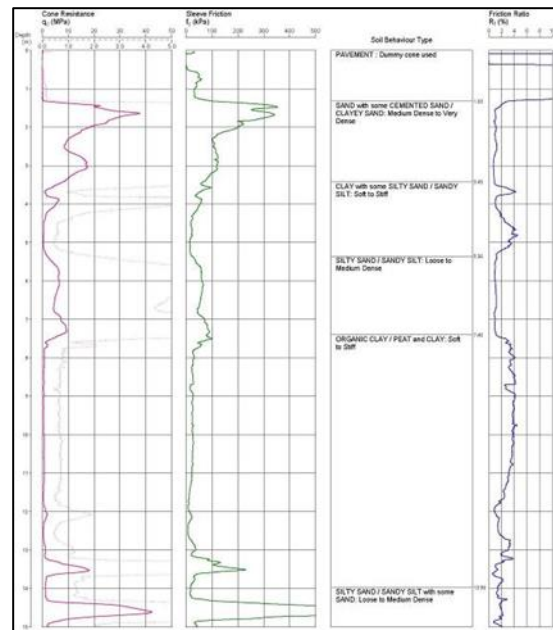
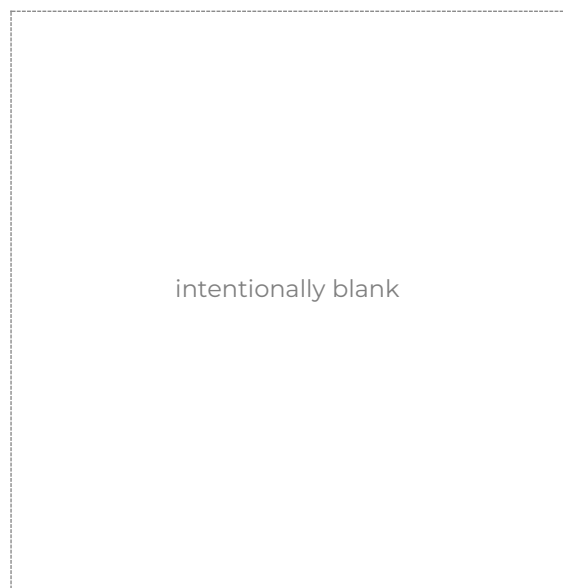


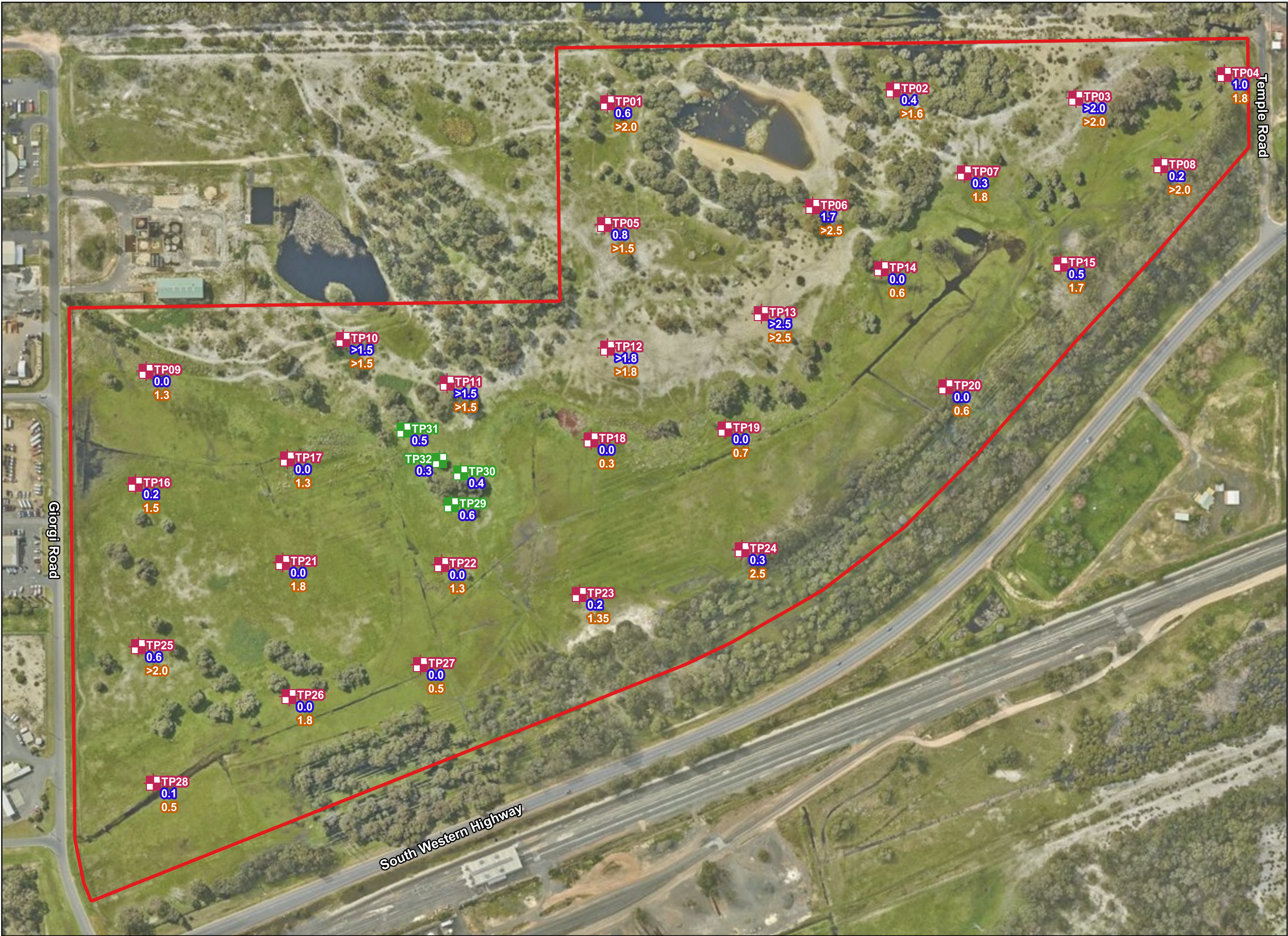
Figure 4: Sample Cone Plot



Appendix B

Drawing 1 – Site and Test Location Plan

Test Pit Logs

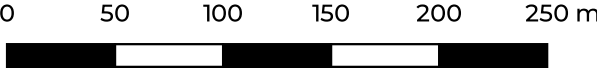


SITE LOCATION

LEGEND

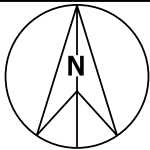
- Site Boundary
- Test Pit (Geo)
- Test Pit (Enviro)
- Depth to groundwater (August 2025)
- Depth to cohesive soil

NOTE:
1. Drawing projection in GDA2020 / MGA zone 50, adapted from aerial imagery from Metromap
2. Test locations are approximate only and were located using differential GPS.



CLIENT: Development WA	
OFFICE: Perth	DRAWN BY: GG
SCALE: 1:3500 @A3	DATE: 04.November.2025

TITLE: **Test Location Plan**
Proposed Industrial Park
Lot 1010 Giorgi Road, Picton East, WA



PROJECT:	236293.01
DRAWING No:	1
REVISION:	0

TEST PIT LOG

CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 11.8 AHD
COORDINATE: E:380365.6, N:6310364.6
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP1
PROJECT No: 236293.01
DATE: 26/08/25
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
Groundwater observed at 0.6 m depth 26/08/25		0.10	TOPSOIL / Organic SAND (SP-SM) with silt: dark grey-brown; fine to medium; trace rootlets. SAND (SP) trace silt: pale grey; fine to medium. Bassendean Sand.		TOP		M		D		0.10		
		1.70	Silty SAND (SM): dark brown and brown; fine to medium; moderately to strongly cemented, 'Coffee Rock'. Bassendean Sand.		AEO	(D) (VD)	M		D		2.00		
		2	Test Pit discontinued at 2.00m depth. (Collapsing conditions).										



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: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 8.5 AHD
COORDINATE: E:380622.4, N:6310376.4
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP2
PROJECT No: 236293.01
DATE: 26/08/25
SHEET: 1 of 1

CONDITIONS ENCOUNTERED														SAMPLE				TESTING AND REMARKS			
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. (%)	DENSITY. (g/cm³)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS							
▼ 26/08/25 Groundwater observed at 0.4 m depth	8	0.15	TOPSOIL / SAND (SP-SM) with silt trace rootlets: dark grey-brown; fine to medium.		TOP			M to W					↕ PSP/150 	5 10 15							
			SAND (SP) trace silt: pale grey; fine to medium. Bassendean Sand.																		
	7	1			AEO			W		ASS		0.50									
		1.40	Silty SAND (SM): dark grey; fine to medium. Bassendean Sand.		AEO				& EC	ASS/D		1.00									
			Test Pit discontinued at 1.60m depth. (Collapsing conditions).																		
		2																			
	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: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

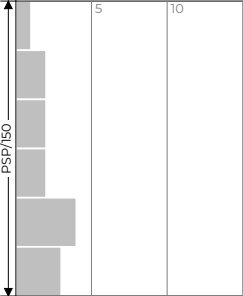
Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 12.8 AHD
COORDINATE: E:380786.2, N:6310369.1
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP3
PROJECT No: 236293.01
DATE: 26/08/25
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							
26/08/25 No free groundwater observed		0.10	TOPSOIL / SAND (SP) trace rootlets trace silt: grey; fine to medium.		TOP																
			SAND (SP) trace silt: pale grey; fine to medium. Bassendean Sand.																		



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: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 12.0 AHD
COORDINATE: E:380919.5, N:6310390.2
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP4
PROJECT No: 236293.01
DATE: 27/08/25
SHEET: 1 of 1

CONDITIONS ENCOUNTERED						SAMPLE			TESTING AND REMARKS	
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. (°)	DENSITY (°)	MOISTURE	REMARKS	TYPE	INTERVAL
RL (m)										
	0.15	TOPSOIL / SAND (SP-SM) with silt trace rootlets: dark grey-brown; fine to medium.	TS	TOP						
		SAND (SP) trace silt: grey; fine to medium; trace rootlets. Bassendean Sand.	TS							
		From 0.50m: - becoming pale grey		AEO	MD		M		ASS	0.50
	1.00	SAND (SP) trace silt: dark brown; fine to medium; trace pockets of cemented Silty SAND ('Coffee Rock'). Bassendean Sand.		AEO	(MD)		W		ASS	1.00
		From 1.30m: - becoming blue-grey and brown							ASS/D	1.50
	1.80	Clayey SAND (SC): blue-grey mottled brown; fine to medium; low to medium plasticity clay. Guildford Formation.		ALV	F to St		w>PL		ASS	2.00
	2.20	CLAY (CI) with sand: dark grey; medium plasticity. Guildford Formation.		ALV	St		w=PL			
		Test Pit discontinued at 2.50m depth. (Target depth).							D	2.50



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: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

Refer to explanatory notes for symbol and abbreviation definitions

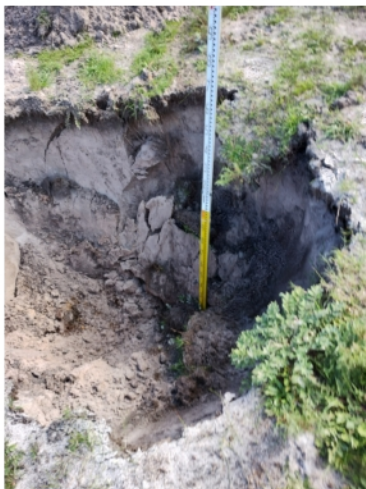
TEST PIT LOG

CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 11.9 AHD
COORDINATE: E:380363.0, N:6310255.4
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP5
PROJECT No: 236293.01
DATE: 26/08/25
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							
Groundwater observed at 0.8 m depth 26/08/25 10 9		0.10	TOPSOIL / SAND (SP) trace rootlets trace silt: grey-brown; fine to medium.	TS TS TS	TOP																
			SAND (SP) trace silt: pale grey; fine to medium. Bassendean Sand.					M													
					AEO		MD			ASS		0.50									
		1					(MD)		W		ASS		1.00								
		1.30	Silty SAND (SM): dark brown and brown; fine to medium; moderately to strongly cemented, 'Coffee Rock'. Bassendean Sand.	X X	AEO	(D) to (VD)		M		ASS		1.50									
			Test Pit discontinued at 1.50m depth. (Slow digging / Collapsing conditions).																		



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: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 12.9 AHD
COORDINATE: E:380549.9, N:6310271.5
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP6
PROJECT No: 236293.01
DATE: 27/08/25
SHEET: 1 of 1

[illegible]

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: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 11.7 AHD
COORDINATE: E:380686.1, N:6310301.7
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP7
PROJECT No: 236293.01
DATE: 27/08/25
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
Groundwater observed at 0.3 m depth 27/08/25 ▼		0.10	TOPSOIL / SAND (SP-SM) with silt trace rootlets: dark grey-brown; fine to medium. SAND (SP) trace silt: pale grey; fine to medium. Bassendean Sand.	TS TS TS T	TOP		M to W						
					AEO	MD							
		1					W		D		1.00		
		1.50	SAND (SP-SM) with silt: grey; fine to medium. Bassendean Sand.		AEO	MD							
		1.80	CLAY (Cl) with sand: grey; medium plasticity. Guildford Formation.	<									



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: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 11.8 AHD
COORDINATE: E:380862.6, N:6310308.1
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP8
PROJECT No: 236293.01
DATE: 27/08/25
SHEET: 1 of 1

[illegible]

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: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 10.5 AHD
COORDINATE: E:379951.5, N:6310123.9
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP9
PROJECT No: 236293.01
DATE: 26/08/25
SHEET: 1 of 1

CONDITIONS ENCOUNTERED														SAMPLE				TESTING AND REMARKS			
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*)		DENSITY. ^(*)	MOISTURE	REMARKS	SAMPLE		DEPTH (m)	TEST TYPE	RESULTS AND REMARKS						
											TYPE	INTERVAL									
Groundwater observed at the surface 26/08/25	0.15	10	TOPSOIL / SAND (SP-SM) with silt: dark grey; fine to medium.		TOP				W				0.50	PSP/ISO							
												ASS									
												ASS									
	1				AEO								1.00								
	9		From 1.30m: - becoming blue-grey, with pockets of dark brown Clayey SAND SC, trace gravel			(MD)							1.50								
			Test Pit discontinued at 1.50m depth. (Collapsing conditions).																		
	2																				
	8																				



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.



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: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 12.4 AHD
COORDINATE: E:380128.4, N:6310152.1
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP10
PROJECT No: 236293.01
DATE: 26/08/25
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	
26/08/25 No free groundwater observed	12	0.10	TOPSOIL / SAND (SP-SM) with silt trace rootlets: dark grey-brown; fine to medium. SAND (SP) trace silt: pale grey; fine to medium. Bassendean Sand.		TOP			M			D	1.00			
		AEO			(MD)										
Test Pit discontinued at 1.50m depth. (Collapsing conditions).															



NOTES: ⁽¹⁾ Soil origin is "probable" unless otherwise stated. ⁽²⁾ Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

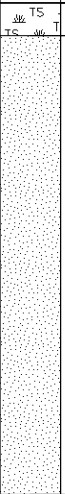
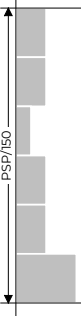
Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 12.7 AHD
COORDINATE: E:380221.7, N:6310112.9
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP11
PROJECT No: 236293.01
DATE: 26/08/25
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							
26/08/25 No free groundwater observed		0.10	TOPSOIL / SAND (SP) trace rootlets trace silt: grey-brown; fine to medium.		TOP					D		0.10									
			SAND (SP) trace silt: yellow-brown; fine to medium. Bassendean Sand.			L to MD				ASS		0.50									
	1				AEO	MD		M		ASS		1.00									
						(MD)				ASS		1.50									
										ASS											
h		2	Test Pit discontinued at 1.50m depth. (Collapsing conditions).																		
		10																			



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.

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: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 13.8 AHD
COORDINATE: E:380365.7, N:6310144.7
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP12
PROJECT No: 236293.01
DATE: 26/08/25
SHEET: 1 of 1

[illegible]

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: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 14.0 AHD
COORDINATE: E:380503.9, N:6310175.4
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP13
PROJECT No: 236293.01
DATE: 27/08/25
SHEET: 1 of 1

CONDITIONS ENCOUNTERED														SAMPLE			TESTING AND REMARKS	
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. (%)	DENSITY. (%)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS					
27/08/25 No free groundwater observed	0.10	TOPSOIL / SAND (SP) trace rootlets trace silt: grey-brown; fine to medium.	TS	TOP					D		0.10	PSP/150	5 10 15					
		SAND (SP) trace silt: yellow-brown; fine to medium. Bassendean Sand.																
					MD				ASS		0.50							
	1								ASS		1.00							
				AEO		(MD)	M		ASS		1.50							
	2								ASS		2.00							
Test Pit discontinued at 2.50m depth. (Target depth).																		



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: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 11.3 AHD
COORDINATE: E:380611.7, N:6310215.5
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP14
PROJECT No: 236293.01
DATE: 27/08/25
SHEET: 1 of 1

[illegible]

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: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

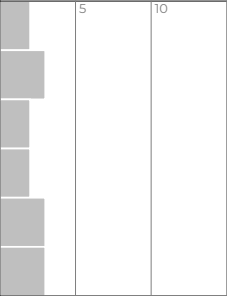
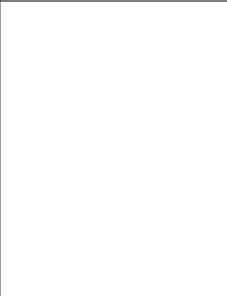
Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 11.7 AHD
COORDINATE: E:380772.5, N:6310220.1
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP15
PROJECT No: 236293.01
DATE: 27/08/25
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
Groundwater observed at 0.5 m depth 27/08/25		0.15	TOPSOIL / SAND (SP-SM) with roots and rootlets with silt: dark grey-brown; fine to medium. SAND (SP) trace silt: pale grey; fine to medium. Bassendean Sand.		TOP		M to W					 PSP/150	 PP 100kPa
				AEO	(MD)		W				1		
		1.20	SAND (SP-SM) with silt: dark brown and brown; fine to medium; trace pockets of cemented Silty SAND ('Coffee Rock'). Bassendean Sand. From 1.50m: - becoming orange-brown		AEO	(MD)							
		1.70	Clayey SAND (SC) with gravel: orange-brown mottled dark brown; fine to medium; low to medium plasticity clay. Guildford Formation.		ALV	F to St	w<PL						
		2.10	SAND (SP-SM) with silt: blue-grey; fine to medium. Bassendean Sand.		AEO	(MD)	W						
			Test Pit discontinued at 2.50m depth. (Target depth).									2.50	



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: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

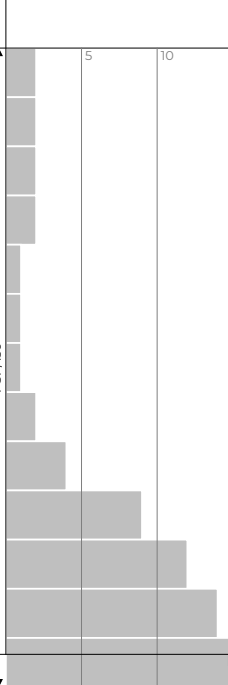
Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 10.6 AHD
COORDINATE: E:379942.0, N:6310022.5
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP16
PROJECT No: 236293.01
DATE: 26/08/25
SHEET: 1 of 1

GROUNDWATER		CONDITIONS ENCOUNTERED					SAMPLE			TESTING AND REMARKS		
RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*) DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
Groundwater observed at 0.2 m depth 26/08/25	0.20	TOPSOIL / SAND (SP-SM) with silt: dark grey; fine to medium; with rootlets.		TOP		M to W						
		SAND (SP) trace silt: pale grey; fine to medium. Bassendean Sand.				MD						
				AEO								
					L							
												
	1.20	SAND (SP-SM) with silt: dark brown and brown; fine to medium; trace pockets of moderately cemented Silty SAND ('Coffee Rock') from 1.4 m depth. Bassendean Sand.		AEO								
	1.50	Clayey SAND (SC): blue-grey mottled yellow brown; fine to medium; low to medium plasticity clay. Guildford Formation.		ALV	MD to D							
	2	Test Pit discontinued at 2.00m depth. (Collapsing conditions).										Refusal 30



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: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 10.6 AHD
COORDINATE: E:380078.3, N:6310044.9
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP17
PROJECT No: 236293.01
DATE: 26/08/25
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				
Groundwater observed at the surface 26/08/25	10	0.15	TOPSOIL / SAND (SP-SM) with silt trace rootlets: dark grey-brown; fine to medium.		TOP									PSP/150		5	10	15
	1		SAND (SP) trace silt: pale brown; fine to medium. Bassendean Sand.		AEO					ASS		0.50						
	1.30		Clayey SAND (SC) with gravel: blue-grey mottled brown; fine to medium; low to medium plasticity clay. Guildford Formation.		ALV	F to St		w<PL				1.00						
	1.50		Test Pit discontinued at 1.50m depth. (Collapsing conditions).							ASS/D		1.50	PP		50-100kPa			



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: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 10.5 AHD
COORDINATE: E:380351.0, N:6310062.3
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP18
PROJECT No: 236293.01
DATE: 27/08/25
SHEET: 1 of 1

[illegible]

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: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 11.1 AHD
COORDINATE: E:380471.3, N:6310071.9
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP19
PROJECT No: 236293.01
DATE: 27/08/25
SHEET: 1 of 1

[illegible]

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: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

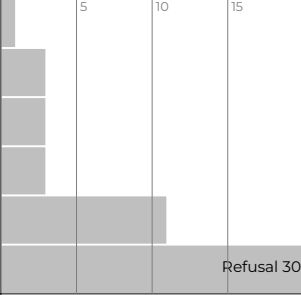
Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 11.2 AHD
COORDINATE: E:380669.6, N:6310109.7
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP20
PROJECT No: 236293.01
DATE: 27/08/25
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				
Groundwater observed at the surface 27/08/25		0.15	TOPSOIL / SAND (SP-SM) with silt trace rootlets: dark grey-brown; fine to medium.		TOP														
		0.30	SAND (SP-SM) with silt: dark grey; fine to medium. Bassendean Sand.		AEO		MD												
		0.60	Silty SAND (SM): dark grey; fine to medium. Bassendean Sand.		AEO				W										
		0.80	Sandy (SP-SM) with silt with gravel: grey-brown; fine to medium sand; fine to coarse gravel. Guildford Formation.		ALV		D to VD				B								
		1.10	Clayey SAND (SC) trace gravel: yellow-brown; fine to medium; low to medium plasticity clay. Guildford Formation.		ALV		F to St		w<PL			D			PP	50-100kPa			
		1.80	CLAY (Cl) with sand: dark grey; medium plasticity. Guildford Formation.		ALV		St		w=PL			D			PP	100-150kPa			
		2.00	From 2.30m: - becoming dark grey mottled red-brown, trace gravel		ALV														
			Test Pit discontinued at 2.50m depth. (Target depth).																



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: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 10.8 AHD
COORDINATE: E:380074.0, N:6309952.0
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP21
PROJECT No: 236293.01
DATE: 26/08/25
SHEET: 1 of 1

GROUNDWATER		CONDITIONS ENCOUNTERED					SAMPLE			TESTING AND REMARKS					
RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. (%) DENSITY. (%)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS			
Groundwater observed at the surface 26/08/25	0.15	TOPSOIL / SAND (SP-SM) with silt trace rootlets: dark grey-brown; fine to medium.		TOP		W				1	PSP/150				
		SAND (SP) trace silt: pale grey; fine to medium. Bassendean Sand.		AEO									MD	5	10
				AEO	(MD)										
				AEO											
				ALV											
	1.10	Silty SAND (SM): dark brown and brown; fine to medium; moderately to strongly cemented, 'Coffee Rock'. Bassendean Sand.		AEO											
	1.40	SAND (SP) trace silt: pale brown; fine to medium. Bassendean Sand.		AEO											
	1.70	SAND (SP-SM) with silt: blue-grey; fine to medium; trace pockets of Clayey SAND SC. Bassendean Sand.		AEO											
	1.80	GRAVEL (GP-GC) with clay with sand: blue-brown-grey; fine to coarse. Guildford Formation.		ALV											
	2	Test Pit discontinued at 2.00m depth. (Collapsing conditions).								2.00					



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: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

Refer to explanatory notes for symbol and abbreviation definitions

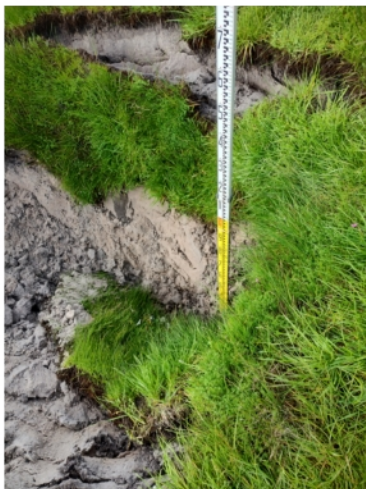
TEST PIT LOG

CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 10.6 AHD
COORDINATE: E:380216.8, N:6309950.1
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP22
PROJECT No: 236293.01
DATE: 26/08/25
SHEET: 1 of 1

GROUNDWATER		CONDITIONS ENCOUNTERED						SAMPLE			TESTING AND REMARKS		
RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. (%)	DENSITY. (%)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
Groundwater observed at the surface 26/08/25	0.10	TOPSOIL / SAND (SP-SM) with silt trace rootlets: dark grey-brown; fine to medium.		TOP									PSP/150
		SAND (SP) trace silt: pale grey; fine to medium. Bassendean Sand.		AEO	MD		W		ASS		0.50		
	0.90	SAND (SP-SM) with silt: brown; fine to medium; trace pockets of cemented Silty SAND ('Coffee Rock'). Bassendean Sand.		AEO	(MD)				ASS/D		1.00		
	1.30	Clayey SAND (SC) trace gravel: blue-grey mottled brown; fine to medium; low to medium plasticity clay. Guildford Formation.		ALV	St		w<PL		EC ASS/D		1.50		
		Test Pit discontinued at 1.50m depth. (Collapsing conditions).											
	2												
	8												



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: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

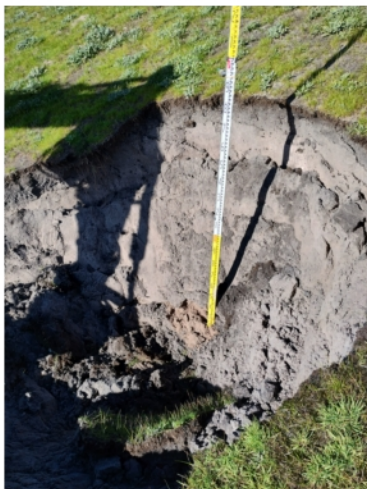
CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 10.6 AHD
COORDINATE: E:380340.5, N:6309923.3
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP23
PROJECT No: 236293.01
DATE: 27/08/25
SHEET: 1 of 1

CONDITIONS ENCOUNTERED						SAMPLE			TESTING AND REMARKS			
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*) DENSITY. ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
RL (m)												
Groundwater observed at 0.2 m depth 27/08/25	0.10	TOPSOIL / SAND (SP-SM) with silt trace rootlets: dark grey-brown; fine to medium.		TOP		M to W				0.10		
		SAND (SP) trace silt: pale grey; fine to medium. Bassendean Sand.										
	1.0		AEO	L	W							
	1.20	Silty SAND (SM): dark brown and brown; fine to medium; moderately to strongly cemented, 'Coffee Rock'. Bassendean Sand.		AEO	VD							
	1.35	SAND (SP) trace silt: pale brown; fine to medium. Bassendean Sand.		AEO	(MD)							
1.50	Clayey SAND (SC): green-grey mottled brown; fine to medium; low to medium plasticity clay. Guildford Formation.			ALV	F to St	w>PL		D		1.70		
2.0										2.0	PP	50-100kPa
Test Pit discontinued at 2.20m depth. (Collapsing conditions).												
8.0												

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.



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: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 11.0 AHD
COORDINATE: E:380486.4, N:6309963.5
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP24
PROJECT No: 236293.01
DATE: 27/08/25
SHEET: 1 of 1

CONDITIONS ENCOUNTERED							SAMPLE				TESTING AND REMARKS											
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ^(*) DENSITY: ^(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS										
RL (m)																						
Groundwater observed at 0.3 m depth 27/09/25	0.20	TOPSOIL / SAND (SP-SM) with roots and rootlets with silt: dark grey-brown; fine to medium. SAND (SP) trace silt: grey; fine to medium. Bassendean Sand.		TOP	L	M to W						PP	50-100kPa	5	10	15						
			AEO	W			ASS	0.50														
	0.80	SAND (SC) with clay with gravel: yellow-brown mottled orange-brown and brown; fine to medium. Guildford Formation.		ALV	F to St	w>PL		D	{	0.80												
	1							ASS		1.00												
	1.60																	ASS	1.50			
	2	SAND (SP-SM) with silt: blue-grey and grey; fine to medium. Guildford Formation.		ALV	(MD)	W		ASS	2.00													
	2.20																					
		CLAY (CI-CH) with sand: dark grey; medium to high plasticity. Guildford Formation.		ALV	F to St	w=PL																
	Test Pit discontinued at 2.50m depth. (Target depth).																					



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: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 11.0 AHD
COORDINATE: E:379944.6, N:6309876.4
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP25
PROJECT No: 236293.01
DATE: 26/08/25
SHEET: 1 of 1

CONDITIONS ENCOUNTERED														SAMPLE				TESTING AND REMARKS			
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. (%)		DENSITY (g/cm³)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS						
Groundwater observed at 0.6 m depth 26/08/25		0.15	TOPSOIL / SAND (SP) trace silt: grey-brown; fine to medium.																		



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: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 10.2 AHD
COORDINATE: E:380080.0, N:6309831.8
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP26
PROJECT No: 236293.01
DATE: 26/08/25
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																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
Groundwater observed at the surface 26/08/25	10	0.15	TOPSOIL / SAND (SP-SM) trace silt: grey-brown; fine to medium.		TOP																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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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: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

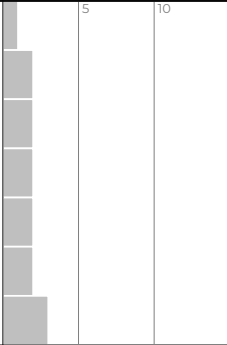
Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 10.1 AHD
COORDINATE: E:380197.7, N:6309860.3
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP27
PROJECT No: 236293.01
DATE: 27/08/25
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						
Groundwater observed at the surface 27/08/25	10	0.15	TOPSOIL / SAND (SP-SM) with silt trace rootlets: dark grey-brown; fine to medium.		TOP	L		W					1	DCP9/150		5	10	15			
			AEO		MD																
		0.50	Clayey SAND (SC) trace gravel: yellow-brown and grey-brown; fine to medium; low to medium plasticity clay. Guildford Formation.					F to St											w>PL		
1		ALV																			
2	9		From 1.20m: - becoming yellow-brown mottled brown																		
	8		Test Pit discontinued at 2.00m depth. (Collapsing conditions).																		



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: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

Refer to explanatory notes for symbol and abbreviation definitions



TEST PIT LOG

CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 10.1 AHD
COORDINATE: E:379958.1, N:6309753.9
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP28
PROJECT No: 236293.01
DATE: 26/08/25
SHEET: 1 of 1

CONDITIONS ENCOUNTERED						SAMPLE			TESTING AND REMARKS		
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. (%)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE
26/08/25 Groundwater observed at 0.1 m depth	0	TOPSOIL / SAND (SP-SM) with silt: dark grey-brown; fine to medium; with rootlets.	TS	TOP	L						
	0.15	SAND (SP) trace silt: pale grey; fine to medium. Bassendean Sand.	TS	AEO	MD	W					
	0.50	Clayey SAND (SC) trace gravel: grey mottled yellow-brown; fine to medium; low to medium plasticity clay. Guildford Formation.		ALV	VSt			ASS	0.50		
	1.05	Clayey SAND (SC): yellow-brown mottled grey-brown; fine to medium; low to medium plasticity clay. Guildford Formation.		ALV	F to St	w=PL		B/D	0.60		
	1.40	SAND (SP) trace silt: grey; fine to medium. Guildford Formation.		ALV	(F) to (St)			U	1.00		
	2.00	From 1.80m: - becoming blue-grey, with pockets of Clayey SAND SC		ALV	MD	W		ASS	1.50		
	2.00	Test Pit discontinued at 2.00m depth. (Collapsing conditions).						ASS	2.00		



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: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

Refer to explanatory notes for symbol and abbreviation definitions



TEST PIT LOG

CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 11.3 AHD
COORDINATE: E:380225.7, N:6310003.7
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP29
PROJECT No: 236293.01
DATE: 26/08/25
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							
Groundwater observed at 0.6 m depth 26/08/25	11	0.25	FILL / SAND (SP) trace silt: grey and grey-brown; fine to medium; fragments of brick, scrap metal and PACM observed in fill.		FILL		L to MD	M to W					PSP/150		51015						
			AEO	W																	
Test Pit discontinued at 1.00m depth. (Target depth).																					



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: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 11.3 AHD
COORDINATE: E:380234.0, N:6310032.6
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP30
PROJECT No: 236293.01
DATE: 26/08/25
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							
▼	26/08/25	11	FILL / SAND (SP-SM) with silt: grey-brown and grey; fine to medium; fragments of brick, concrete, tile, scrap metal observed in fill, fly tipped rubbish on the surface in vicinity of the test pit.		FILL	MD	D to M	W to M													
observed at 0.4 m depth		1						W													
Groundwater	10	2	Test Pit discontinued at 1.00m depth. (Target depth / Collapsing conditions).																		
	9																				

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: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

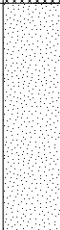
Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 11.0 AHD
COORDINATE: E:380182.9, N:6310070.8
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP31
PROJECT No: 236293.01
DATE: 26/08/25
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					
Groundwater observed at 0.5 m depth 26/08/25	1	0.30	FILL / SAND (SP-SM) with silt: grey and grey-brown; fine to medium; fragment of concrete, paver and PACM observed in fill.		FILL		MD		M to W					PSP/150		5	10	15		
		SAND (SP) trace silt: pale grey; fine to medium. Bassendean Sand.		AEO	W															
Groundwater observed at 0.5 m depth	10	1	Test Pit discontinued at 1.00m depth. (Target depth).																	
	9	2																		



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: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

Refer to explanatory notes for symbol and abbreviation definitions

TEST PIT LOG

CLIENT: DevelopmentWA
PROJECT: Proposed Industrial Park
LOCATION: Lot 2010 Giorgi Road, Picton East, WA

SURFACE LEVEL: 11.2 AHD
COORDINATE: E:380205.9, N:6310041.9
DATUM/GRID: MGA2020 Zone 50
DIP/AZIMUTH: 90°/---°

LOCATION ID: TP32
PROJECT No: 236293.01
DATE: 26/08/25
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						
Groundwater observed at 0.3 m depth 26/08/25	h	0.20	TOPSOIL / SAND (SP-SM) with silt trace rootlets: dark grey-brown; fine to medium.		TOP			M to W												
		SAND (SP) trace silt: pale grey; fine to medium. Bassendean Sand.		AEO				W												
		1						L												
Test Pit discontinued at 1.00m depth. (Target depth).																				



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: 8 t excavator, 600 mm wide toothed bucket

OPERATOR: BCP

LOGGED: GG

METHOD: test pit

REMARKS: The location and surface elevation at each test location was surveyed by Douglas using a differential global positioning system (dGPS) with variable accuracy depending on satellite coverage

Refer to explanatory notes for symbol and abbreviation definitions

Appendix C

Geotechnical Laboratory Test Certificates



WESTERN GEOTECHNICAL

& Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - ASTM D2974-20 (Test Method A)

Client:	Development WA	Ticket No.	S18615
Client Address:	-	Report No.	WG25.15378-15393_1_ORG
Project:	Proposed Industrial Park	Sample No.	WG25.15378-15393
Location:	Lot 2010 Giorgi Road, Picon East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	Various - see below	Date Tested:	12/09 - 13/09/2025

TEST RESULTS - Organic Content

Sampling Method:

Sampled by Client, Tested as Received

Testing Completed By:

WGLS - SH

Furnace Temperature (°C):

440

Sample Number	Sample Identification	Ash Content (%)	Organic Content (%)
WG25.15378	TP1 (0.0-0.1m)	91.0	9.0
WG25.15390	TP6 (0.1m)	87.9	12.1
WG25.15393	TP4 (1.5m)	99.5	0.5

Comments:

Approved Signatory:

Name: Cody O'Neill

Date: 24/September/2025



Accreditation No. 20599

Accredited for compliance

with ISO/IEC 17025 - Testing

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SOIL | AGGREGATE | CONCRETE | CRUSHING

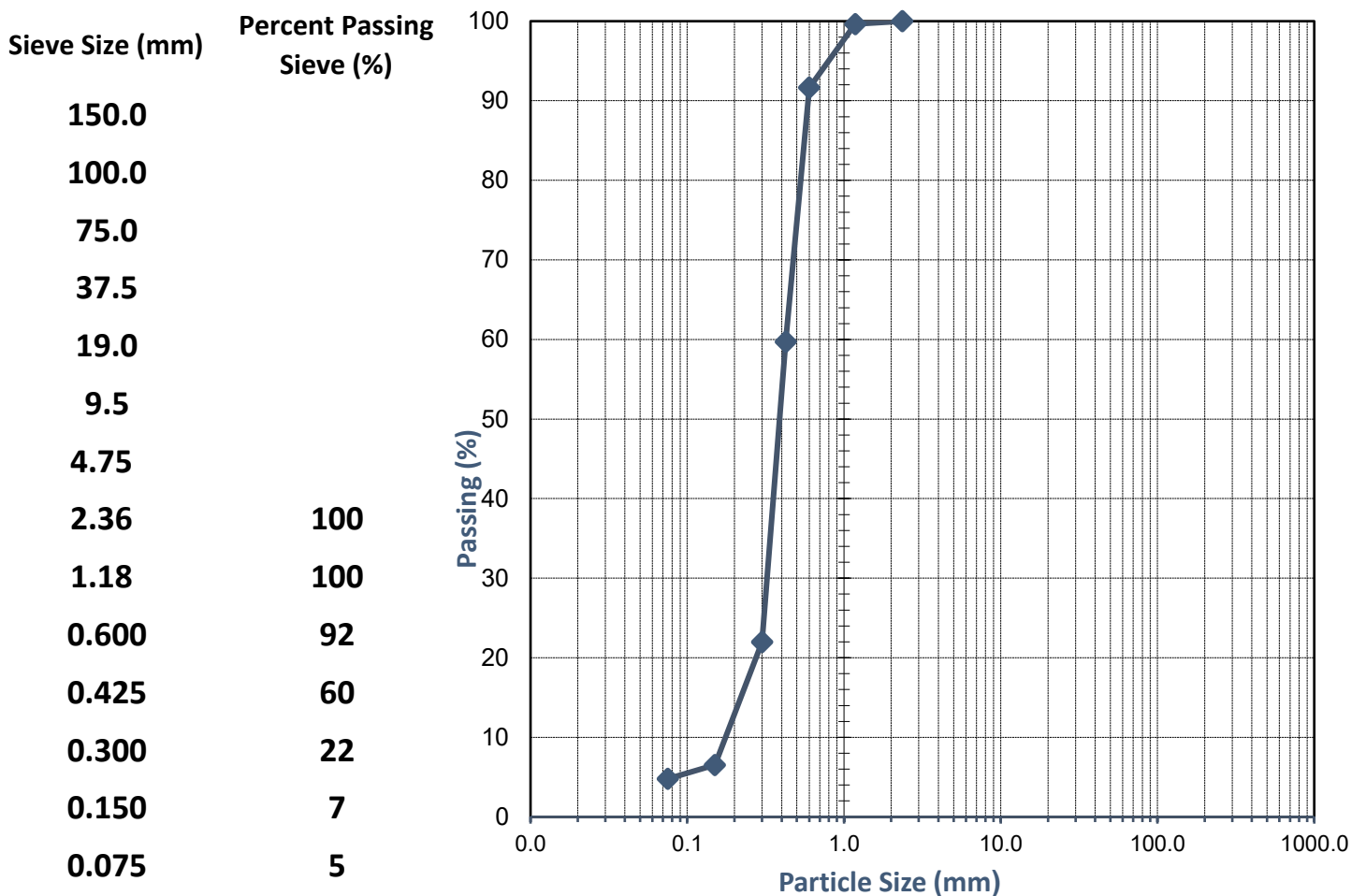
TEST REPORT - AS 1289.3.6.1, *AS 1289.1.1

Client:	Development WA	Ticket No.	S18615
Client Address:	-	Report No.	WG25.15378_1_PSD
Project:	Proposed Industrial Park	Sample No.	WG25.15378
Location:	Lot 2010 Giorgi Road, Picon East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP1 (0.0-0.1m)	Date Tested:	16/09 - 17/09/25025

TEST RESULTS - Particle Size Distribution of Soil

Sampling Method:

Sampled by Client, Tested as Received



Comments: *AS 1289.1.1- Deviation from standard: Insufficient sample according to test method requirements. NATA accreditation does not cover the performance of this service.

Approved Signatory:

Name: Danielle Reynolds

Date: 17/September/2025



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SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.3.8.1

Client:	Development WA	Ticket No.	S18615
Client Address:	-	Report No.	WG25.15379_1_ECN
Project:	Proposed Industrial Park	Sample No.	WG25.15379
Location:	Lot 2010 Giorgi Road, Picon East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP2 (1.5m)	Date Tested:	15/09/2025

TEST RESULTS - Emerson Class Number

Sampling Method:

Sampled by Client, Tested as Received

Source of Material:

Not Specified

Soil Description:

Sand

Water Used:

Distilled

**EMERSON CLASS
NUMBER**

5

Comments:

Approved Signatory:

Name: Madhav Basnet

Date: 15/September/2025



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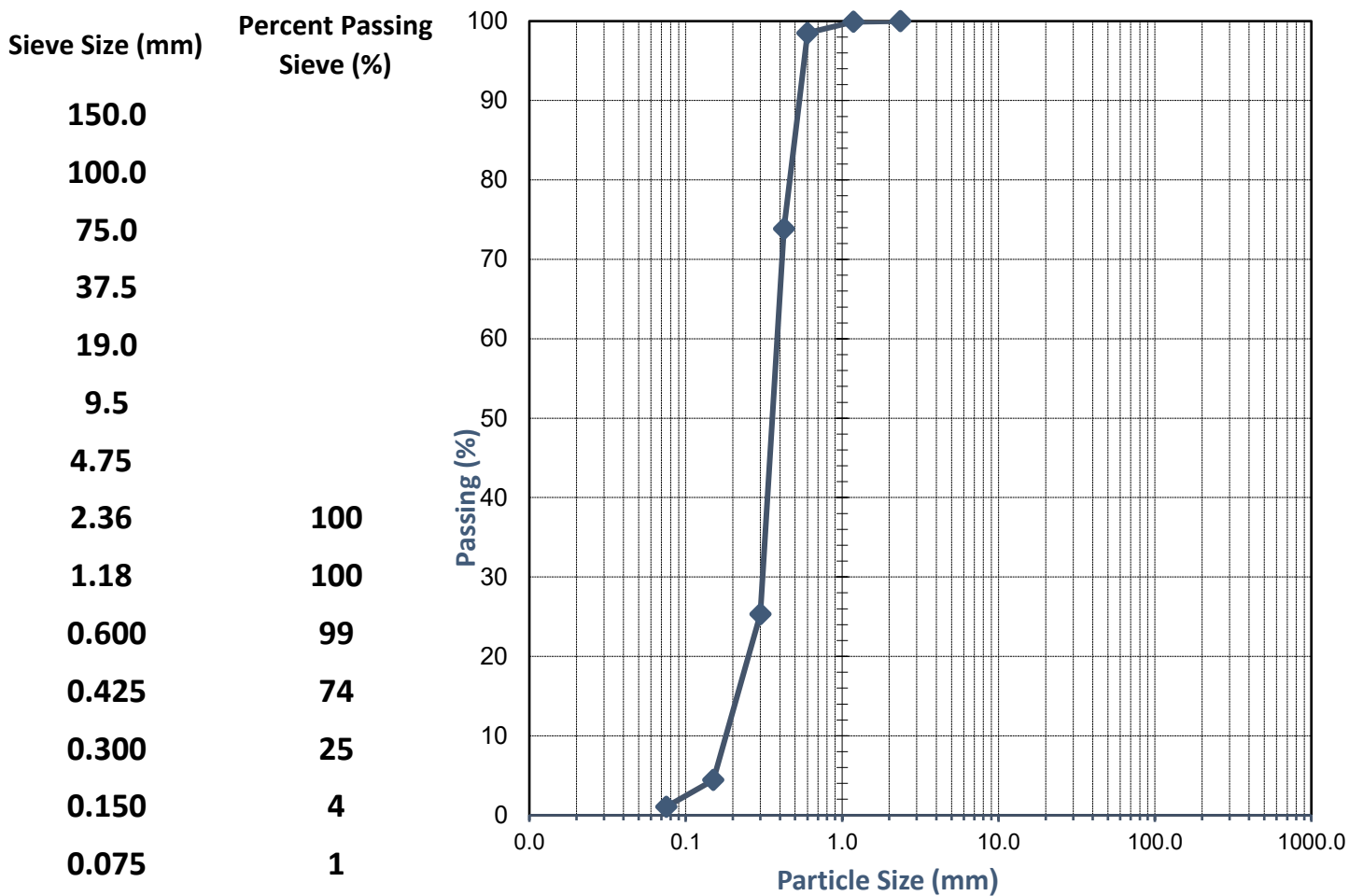
TEST REPORT - AS 1289.3.6.1

Client:	Development WA	Ticket No.	S18615
Client Address:	-	Report No.	WG25.15380_1_PSD
Project:	Proposed Industrial Park	Sample No.	WG25.15380
Location:	Lot 2010 Giorgi Road, Picon East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP3 (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: 16/September/2025



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SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.5.2.1

Client:	Development WA	Ticket No.	S18615
Client Address:	-	Report No.	WG25.15380_1_MMDD
Project:	Proposed Industrial Park	Sample No.	WG25.15380
Location:	Lot 2010 Giorgi Road, Picon East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP3 (0.5m)	Date Tested:	15/09/2025

TEST RESULTS - Modified Maximum Dry Density

Sampling Method:

Sampled by Client, Tested as Received

Sample Curing Time (Hours):

>2

Method used to Determine Liquid Limit:

Visual / Tactile Assessment by Competent Technician

Material + 19.0mm (%):

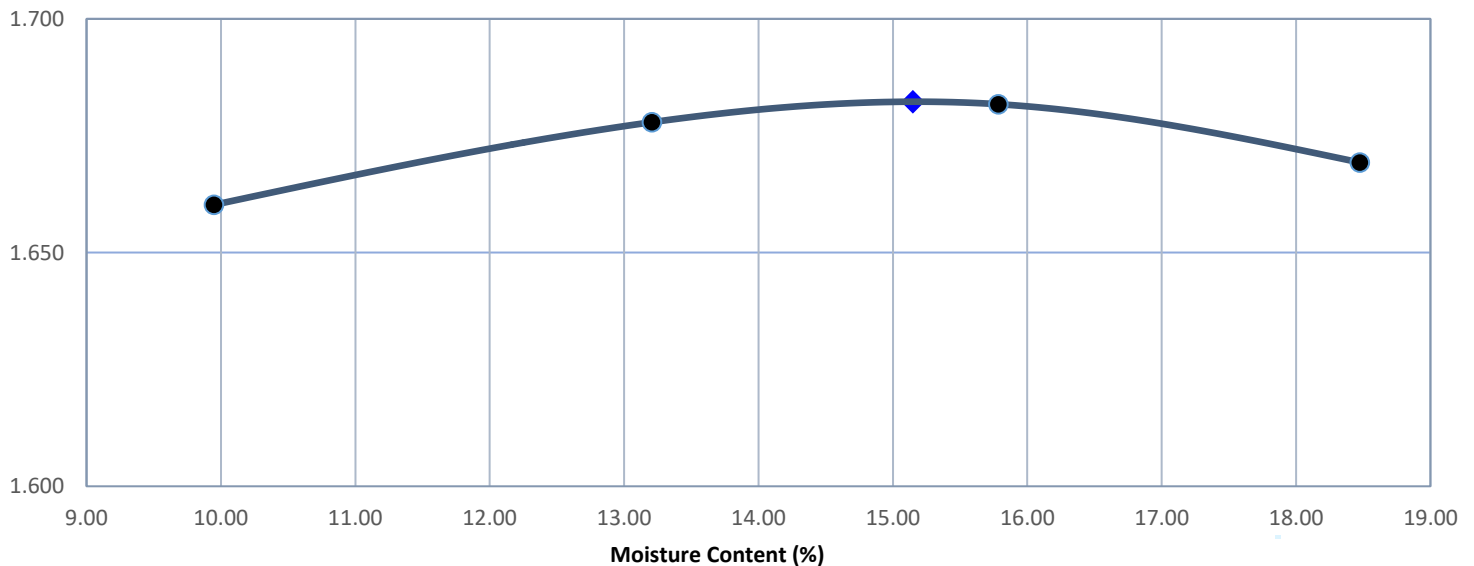
0

Material + 37.5mm (%):

-

Moisture Content (%)	9.9	13.2	15.8	18.5	
Dry Density (t/m³)	1.660	1.678	1.682	1.669	

Dry Density (t/m³)



Modified Maximum Dry Density (t/m³)

1.68

Optimum Moisture Content (%)

15.0

Comments:

Approved Signatory:

Name: Danielle Reynolds

Date: 16/September/2025



Accreditation No. 20599

Accredited for compliance

with ISO/IEC 17025 - Testing

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SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.6.1.1

Client:	Development WA	Ticket No.	S18615
Client Address:	-	Report No.	WG25.15380_1_SCBR
Project:	Proposed Industrial Park	Sample No.	WG25.15380
Location:	Lot 2010 Giorgi Road, Picon East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP3 (0.5m)	Date Tested:	15/09 - 22/09/25

TEST RESULTS - CALIFORNIA BEARING RATIO

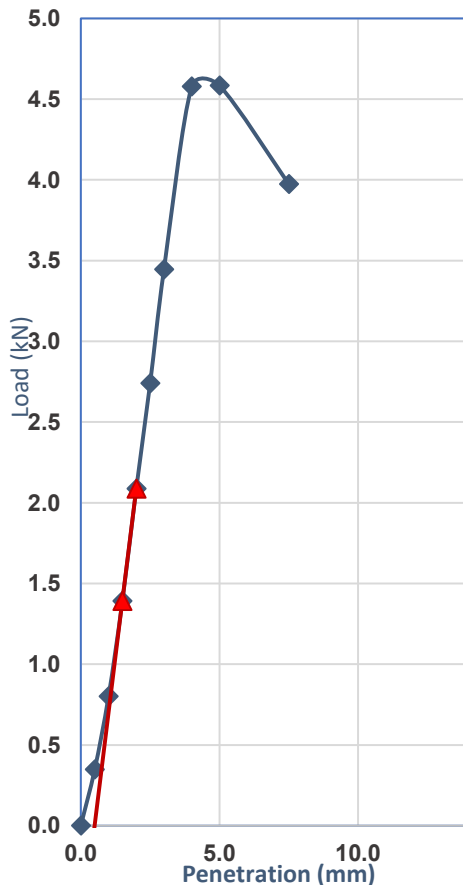
Sample Description:

Sand

Sampling Method:

Sampled by Client, Tested as Received

Load Penetration Curve



Compaction Details

Compaction Method	AS 1289.5.2.1	Hammer Type	Modified
Plasticity Determined by	Estimated	Curing Time (Hours)	>48
% Retained 19.0mm	0	Excluded/Replaced	Excluded
Maximum Dry Density (t/m ³)	1.68	Optimum Moisture (%)	15.0
Target Dry Density Ratio (%)	95	Target Moisture Ratio (%)	100

Specimen Conditions At Compaction

Dry Density (t/m ³)	1.60	Moisture Content (%)	15.0
Density Ratio (%)	95.0	Moisture Ratio (%)	99.5

Specimen Conditions After Soak

Soaked or Unsoaked	Soaked	Soaking Period (days)	4
Surcharges Applied (kg)	4.50	Measured Swell (%)	0.0
Dry Density (t/m ³)	1.60	Dry Density Ratio (%)	95.0
Moisture Content (%)	18.8	Moisture Ratio (%)	124.5

Specimen Conditions After Test

Top 30mm Moisture (%)	18.5	Remaining Depth (%)	18.9
-----------------------	------	---------------------	------

Correction applied to Penetration: 0.5mm

Determined at a Penetration of: 2.5mm

California Bearing Ratio (CBR): 25%

Comments:

Approved Signatory:

Name: Cody O'Neill

Date: 23/September/2025



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SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.3.8.1

Client:	Development WA	Ticket No.	S18615
Client Address:	-	Report No.	WG25.15393_1_ECN
Project:	Proposed Industrial Park	Sample No.	WG25.15393
Location:	Lot 2010 Giorgi Road, Picon East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP4 (1.5m)	Date Tested:	15/09/2025

TEST RESULTS - Emerson Class Number

Sampling Method:

Sampled by Client, Tested as Received

Source of Material:

Not Specified

Soil Description:

Sand

Water Used:

Distilled

**EMERSON CLASS
NUMBER**

5

Comments:

Approved Signatory:

Name: Madhav Basnet

Date: 15/September/2025



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SOIL | AGGREGATE | CONCRETE | CRUSHING

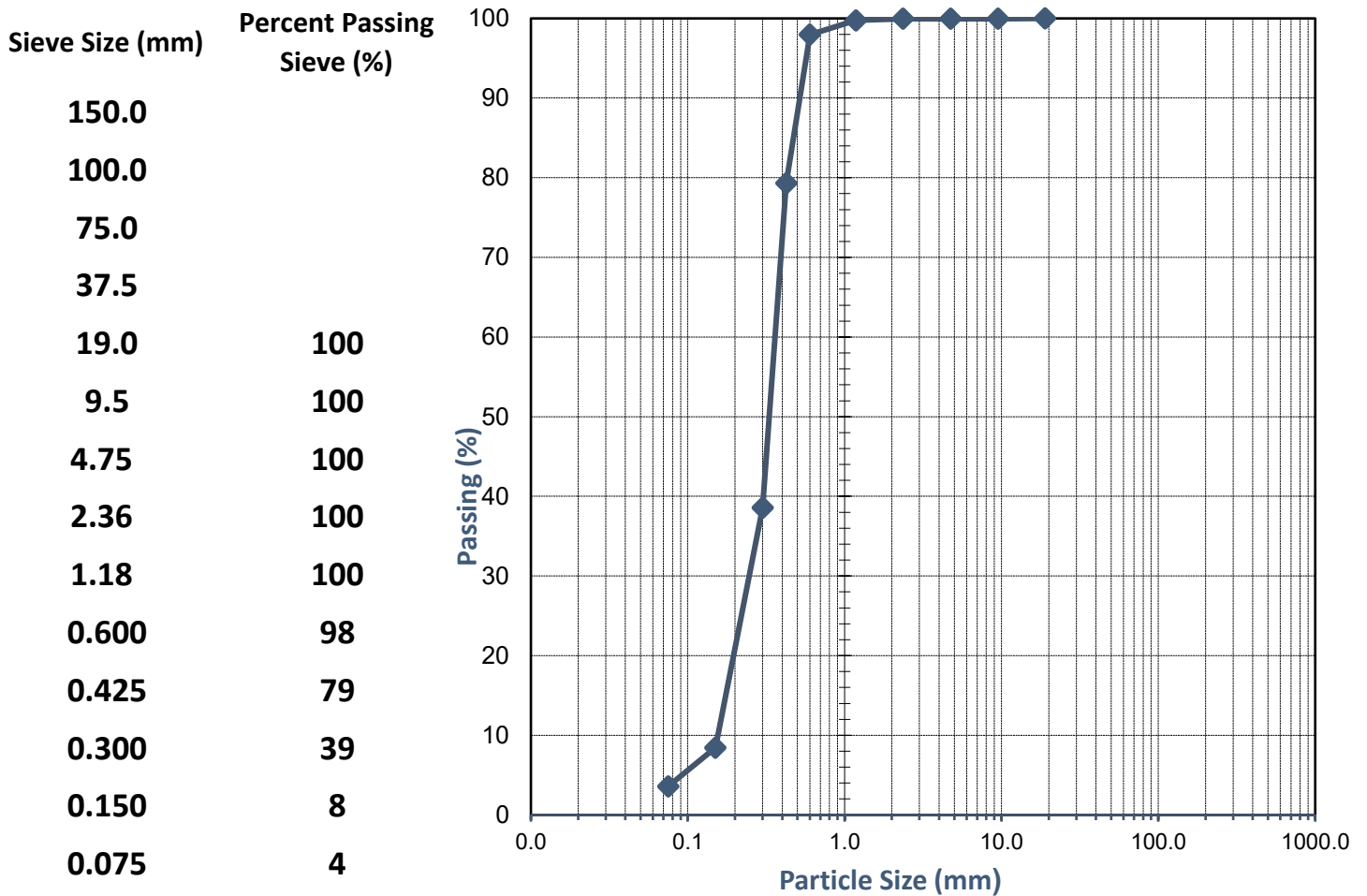
TEST REPORT - AS 1289.3.6.1

Client:	Development WA	Ticket No.	S18615
Client Address:	-	Report No.	WG25.15393_1_PSD
Project:	Proposed Industrial Park	Sample No.	WG25.15393
Location:	Lot 2010 Giorgi Road, Picon East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP4 (1.5m)	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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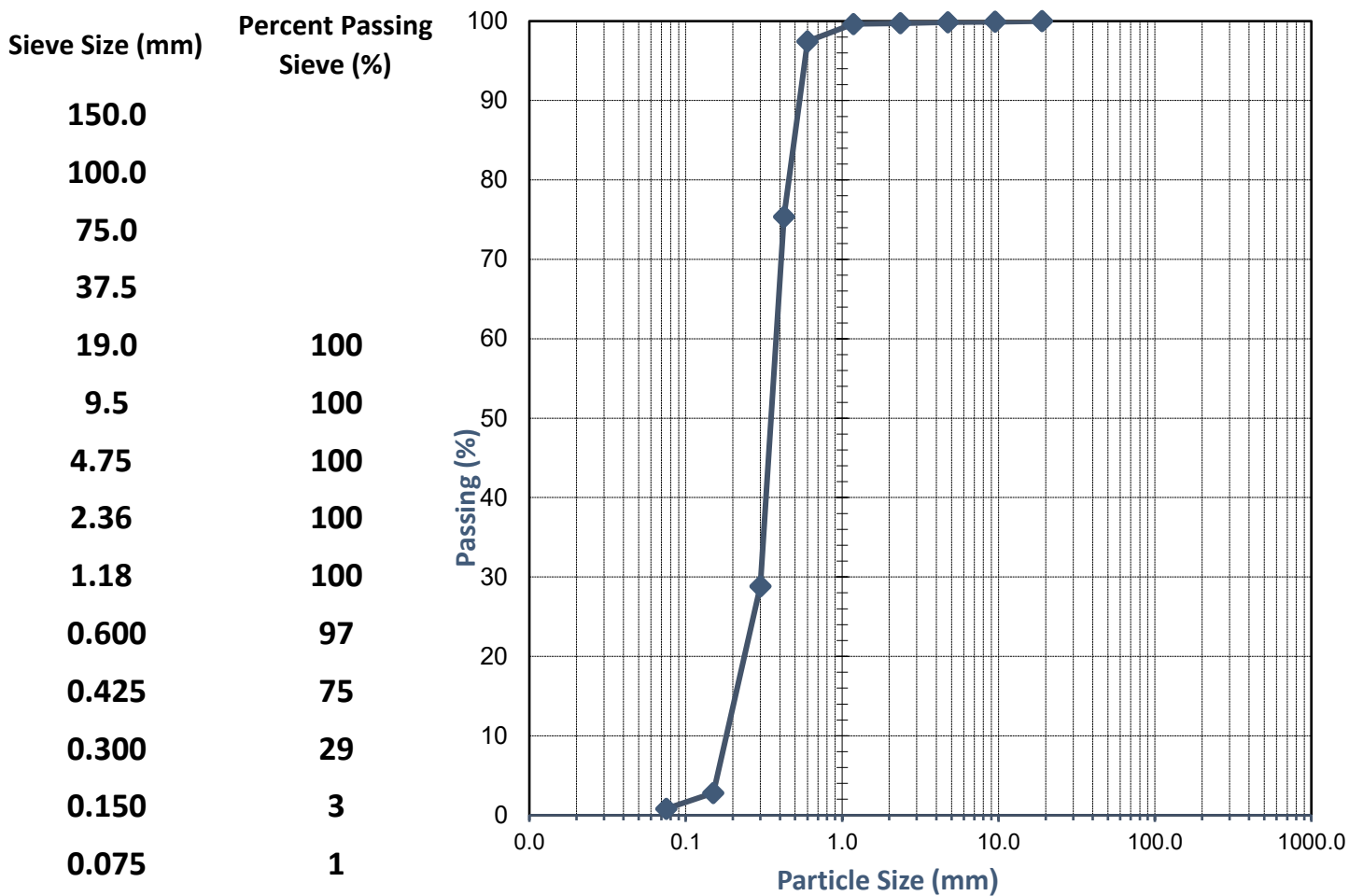
TEST REPORT - AS 1289.3.6.1

Client:	Development WA	Ticket No.	S18615
Client Address:	-	Report No.	WG25.15392_1_PSD
Project:	Proposed Industrial Park	Sample No.	WG25.15392
Location:	Lot 2010 Giorgi Road, Picon East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP6 (1.0m)	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 1289.3.8.1

Client:	Development WA	Ticket No.	S18615
Client Address:	-	Report No.	WG25.15381_1_ECN
Project:	Proposed Industrial Park	Sample No.	WG25.15381
Location:	Lot 2010 Giorgi Road, Picon East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP8 (0.5m)	Date Tested:	15/09/2025

TEST RESULTS - Emerson Class Number

Sampling Method:

Sampled by Client, Tested as Received

Source of Material:

Not Specified

Soil Description:

Sand

Water Used:

Distilled

**EMERSON CLASS
NUMBER**

5

Comments:

Approved Signatory:

Name: Madhav Basnet

Date: 15/September/2025



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SOIL | AGGREGATE | CONCRETE | CRUSHING

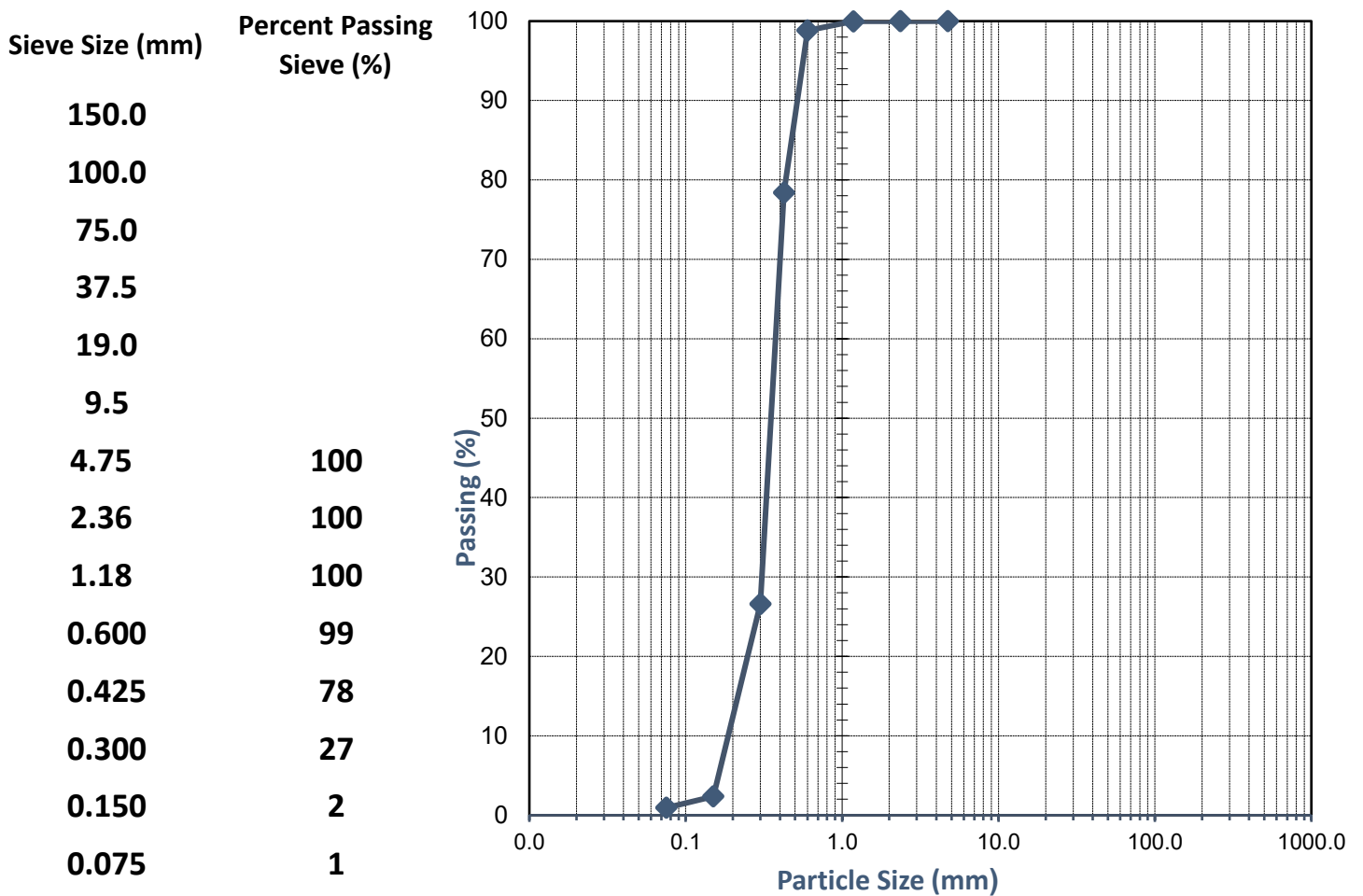
TEST REPORT - AS 1289.3.6.1

Client:	Development WA	Ticket No.	S18615
Client Address:	-	Report No.	WG25.15391_1_PSD
Project:	Proposed Industrial Park	Sample No.	WG25.15391
Location:	Lot 2010 Giorgi Road, Picon East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP10 (1.0m)	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: Danielle Reynolds

Date: 17/September/2025



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SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.3.8.1

Client:	Development WA	Ticket No.	S18615
Client Address:	-	Report No.	WG25.15382_1_ECN
Project:	Proposed Industrial Park	Sample No.	WG25.15382
Location:	Lot 2010 Giorgi Road, Picon East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP14 (0.8m)	Date Tested:	15/09/2025

TEST RESULTS - Emerson Class Number

Sampling Method:

Sampled by Client, Tested as Received

Source of Material:

Not Specified

Soil Description:

Clayey Sand

Water Used:

Distilled

**EMERSON CLASS
NUMBER**

5

Comments:

Approved Signatory:

Name: Madhav Basnet

Date: 15/September/2025



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SOIL | AGGREGATE | CONCRETE | CRUSHING

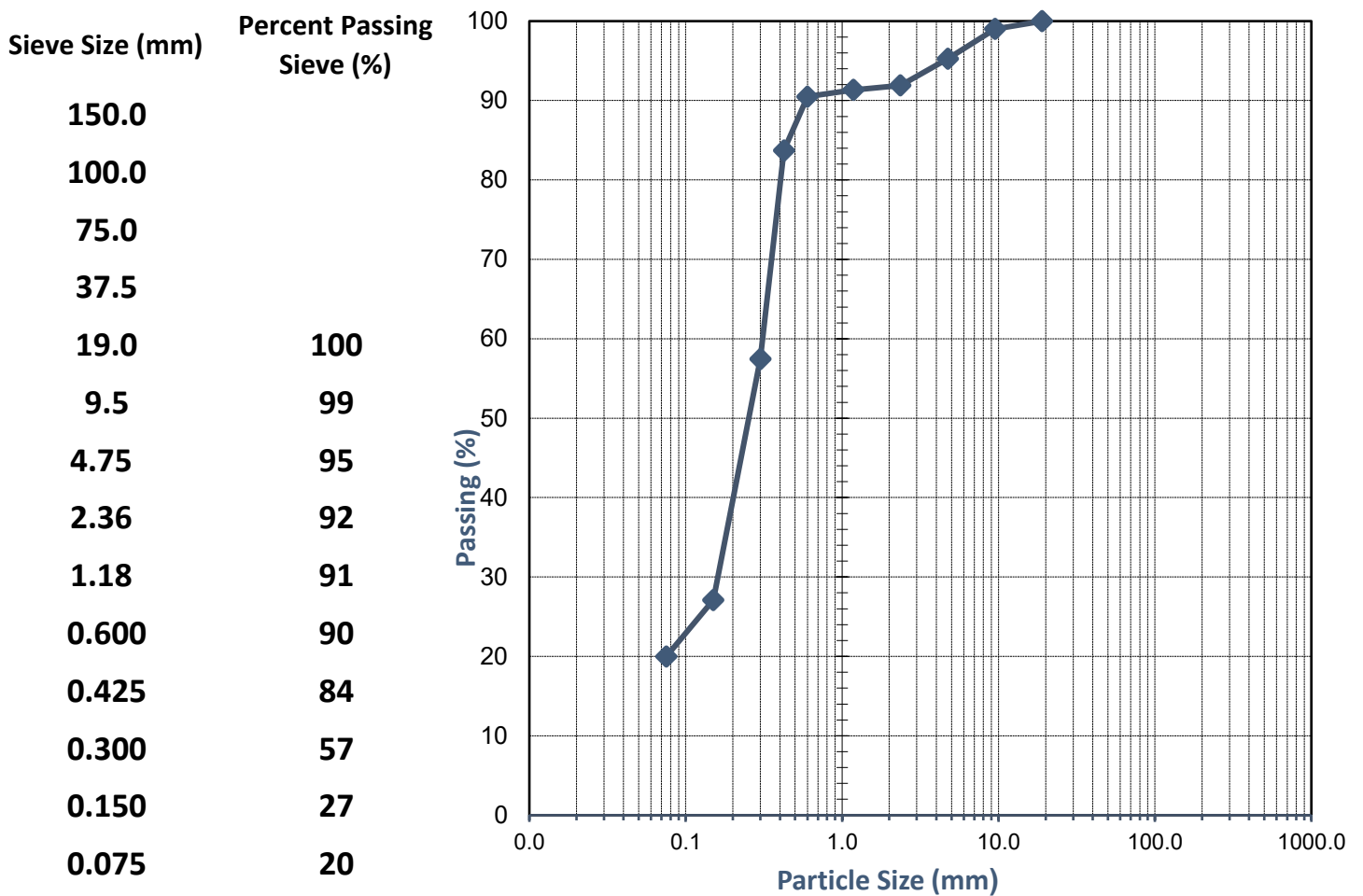
TEST REPORT - AS 1289.3.6.1

Client:	Development WA	Ticket No.	S18615
Client Address:	-	Report No.	WG25.15382_1_PSD
Project:	Proposed Industrial Park	Sample No.	WG25.15382
Location:	Lot 2010 Giorgi Road, Picon East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP14 (0.8m)	Date Tested:	15/09 - 17/09/25

TEST RESULTS - Particle Size Distribution of Soil

Sampling Method:

Sampled by Client, Tested as Received



Comments:

Approved Signatory:

Name: Connor Budimir

Date: 18/September/2025



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SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.3.1.1, 3.2.1, 3.3.1 & 3.4.1

Client:	Development WA	Ticket No.	S18615
Client Address:	-	Report No.	WG25.15382_1_PI
Project:	Proposed Industrial Park	Sample No.	WG25.15382
Location:	Lot 2010 Giorgi Road, Picon East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP14 (0.8m)	Date Tested:	16/09/225

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 (%) 34

AS 1289.3.2.1 Plastic Limit (%) 18

AS 1289.3.3.1 Plasticity Index (%) 16

AS 1289.3.4.1 Linear Shrinkage (%) 5.0

AS 1289.3.4.1 Length of Mould (mm) 250

AS 1289.3.4.1 Condition of Dry Specimen: Cracked

Comments:

Approved Signatory:

Name: Danielle Reynolds

Date: 17/September/2025



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WESTERN GEOTECHNICAL

& Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.3.1.2, 3.2.1, 3.3.1 & 3.4.1

Client:	Development WA	Ticket No.	S18615
Client Address:	-	Report No.	WG25.15389_1_PI
Project:	Proposed Industrial Park	Sample No.	WG25.15389
Location:	Lot 2010 Giorgi Road, Picon East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP14 (2.5m)	Date Tested:	18/09/2025

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 (%)	72
AS 1289.3.2.1	Plastic Limit (%)	33
AS 1289.3.3.1	Plasticity Index (%)	39
AS 1289.3.4.1	Linear Shrinkage (%)	16.5
AS 1289.3.4.1	Length of Mould (mm)	250
AS 1289.3.4.1	Condition of Dry Specimen	Curled

Approved Signatory:

Name: Danielle Reynolds

Date: 19/September/2025



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SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.7.1.1

Client:	Development WA	Ticket No.	S18615
Client Address:	-	Report No.	WG25.15383_1_SSI
Project:	Proposed Industrial Park	Sample No.	WG25.15383
Location:	Lot 2010 Giorgi Road, Picon East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP18 (0.7-1.15m)	Date Tested:	12/09 - 15/09/2025

TEST RESULTS - SHRINK SWELL INDEX

Sampling Method:

Sampled by Client, Tested as Received

Material Description:

Sandy Clay with Gravel

SWELL SPECIMEN	
Moisture Content Initial (%):	24.7
Dry Density - Initial (t/m^3):	1.50
Moisture Content Final (%):	33.7
Estimated Inert Inclusions (%):	16

SHRINK SPECIMEN	
Moisture Content Initial (%):	27.9
Extent of Crumbling:	Nil
Length/Diameter Ratio:	2.1
Extent of Cracking:	Slight

SHRINK SWELL INDEX

Shrink Swell Index (I_{ss})

1.0

Comments:

Approved Signatory:

Name: Cody O'Neill

Date: 24/September/2025

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SOIL | AGGREGATE | CONCRETE | CRUSHING

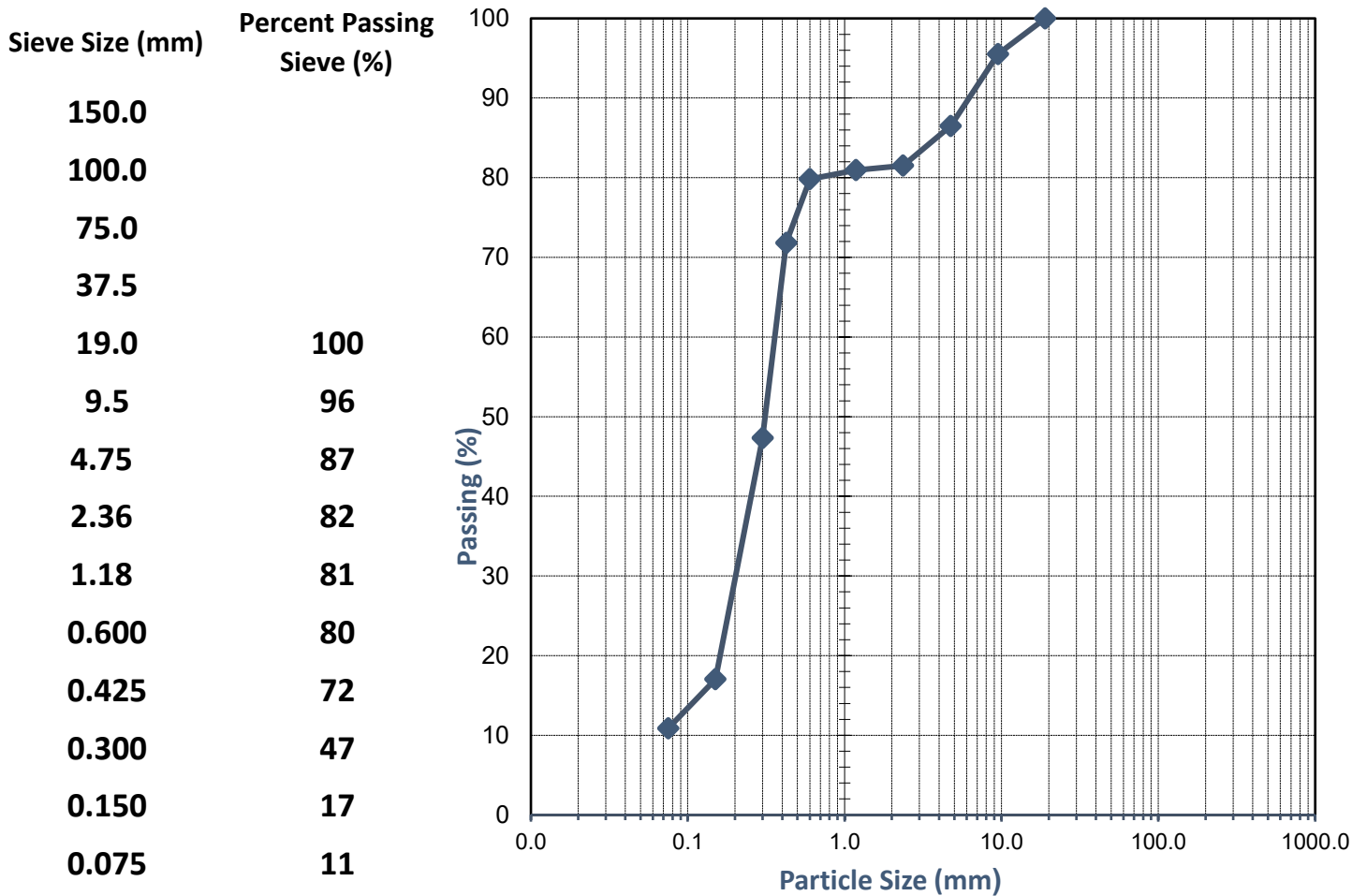
TEST REPORT - AS 1289.3.6.1

Client:	Development WA	Ticket No.	S18615
Client Address:	-	Report No.	WG25.15384_1_PSD
Project:	Proposed Industrial Park	Sample No.	WG25.15384
Location:	Lot 2010 Giorgi Road, Picon East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP18 (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: 16/September/2025



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SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.3.1.1, 3.2.1, 3.3.1 & 3.4.1

Client:	Development WA	Ticket No.	S18615
Client Address:	-	Report No.	WG25.15384_1_PI
Project:	Proposed Industrial Park	Sample No.	WG25.15384
Location:	Lot 2010 Giorgi Road, Picon East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP18 (1.0m)	Date Tested:	17/09/2025

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 (%)	1.5
AS 1289.3.4.1	Length of Mould (mm)	250
AS 1289.3.4.1	Condition of Dry Specimen:	-

Comments:

Approved Signatory:

Name: Danielle Reynolds

Date: 18/September/2025



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SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.7.1.1

Client:	Development WA	Ticket No.	S18615
Client Address:	-	Report No.	WG25.15385_1_SSI
Project:	Proposed Industrial Park	Sample No.	WG25.15385
Location:	Lot 2010 Giorgi Road, Picon East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP19 (0.7-1.15m)	Date Tested:	12/09 - 15/09/2025

TEST RESULTS - SHRINK SWELL INDEX

Sampling Method:

Sampled by Client, Tested as Received

Material Description:

Sandy Clay trace Gravel

SWELL SPECIMEN	
Moisture Content Initial (%):	19.0
Dry Density - Initial (t/m^3):	1.65
Moisture Content Final (%):	24.9
Estimated Inert Inclusions (%):	6

SHRINK SPECIMEN	
Moisture Content Initial (%):	20.7
Extent of Crumbling:	Nil
Length/Diameter Ratio:	2.2
Extent of Cracking:	Nil

SHRINK SWELL INDEX

Shrink Swell Index (I_{ss})

1.2

Comments:

Approved Signatory:

Name: Cody O'Neill

Date: 24/September/2025

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SOIL | AGGREGATE | CONCRETE | CRUSHING

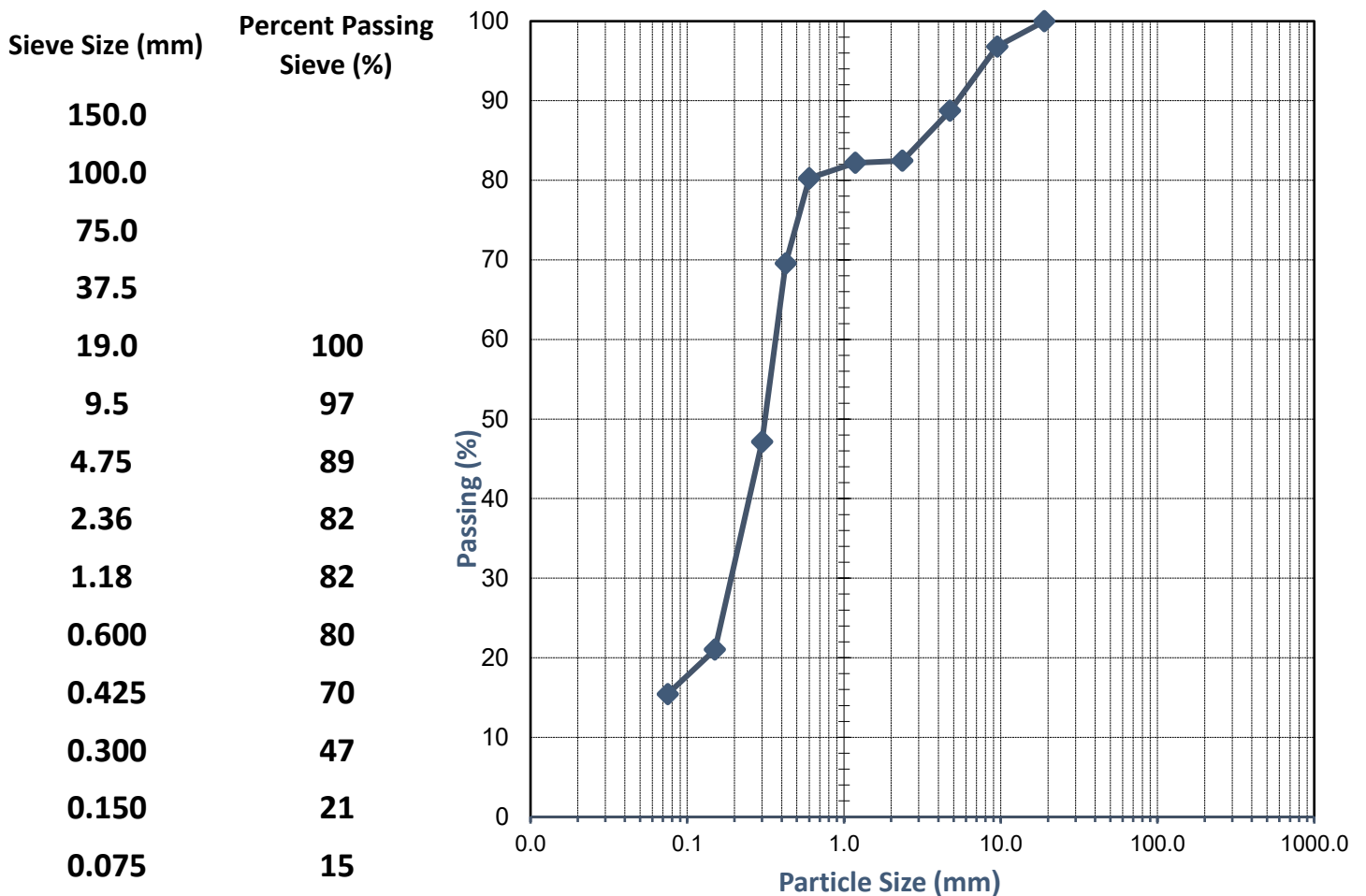
TEST REPORT - AS 1289.3.6.1

Client:	Development WA	Ticket No.	S18818
Client Address:	-	Report No.	WG25.16472_1_PSD
Project:	Proposed Industrial Park	Sample No.	WG25.16472
Location:	Lot 2010 Giorgi Road, Picton East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP19 (1.0m)	Date Tested:	02/10 - 03/10/2025

TEST RESULTS - Particle Size Distribution of Soil

Sampling Method:

Sampled by Client, Tested as Received



Comments:

Approved Signatory:

Name: Cody O'Neill

Date: 03/October/2025



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SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.3.1.1, 3.2.1, 3.3.1 & 3.4.1

Client:	Development WA	Ticket No.	S18818
Client Address:	-	Report No.	WG25.16472_1_PI
Project:	Proposed Industrial Park	Sample No.	WG25.16472
Location:	Lot 2010 Giorgi Road, Picton East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP19 (1.0m)	Date Tested:	6/10/2025

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 (%) 36

AS 1289.3.2.1 Plastic Limit (%) 17

AS 1289.3.3.1 Plasticity Index (%) 19

AS 1289.3.4.1 Linear Shrinkage (%) 5.0

AS 1289.3.4.1 Length of Mould (mm) 250

AS 1289.3.4.1 Condition of Dry Specimen: Curled

Comments:

Approved Signatory:

Daniel Telo

Name: Daniel Telo

Date: 07/October/2025



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SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.5.2.1

Client:	Development WA	Ticket No.	S18818
Client Address:	-	Report No.	WG25.16472_1_MMDD
Project:	Proposed Industrial Park	Sample No.	WG25.16472
Location:	Lot 2010 Giorgi Road, Picton East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP19 (1.0m)	Date Tested:	3/10/2025

TEST RESULTS - Modified Maximum Dry Density

Sampling Method:

Sampled by Client, Tested as Received

Sample Curing Time (Hours):

>48

Method used to Determine Liquid Limit:

Visual / Tactile Assessment by Competent Technician

Material + 19.0mm (%):

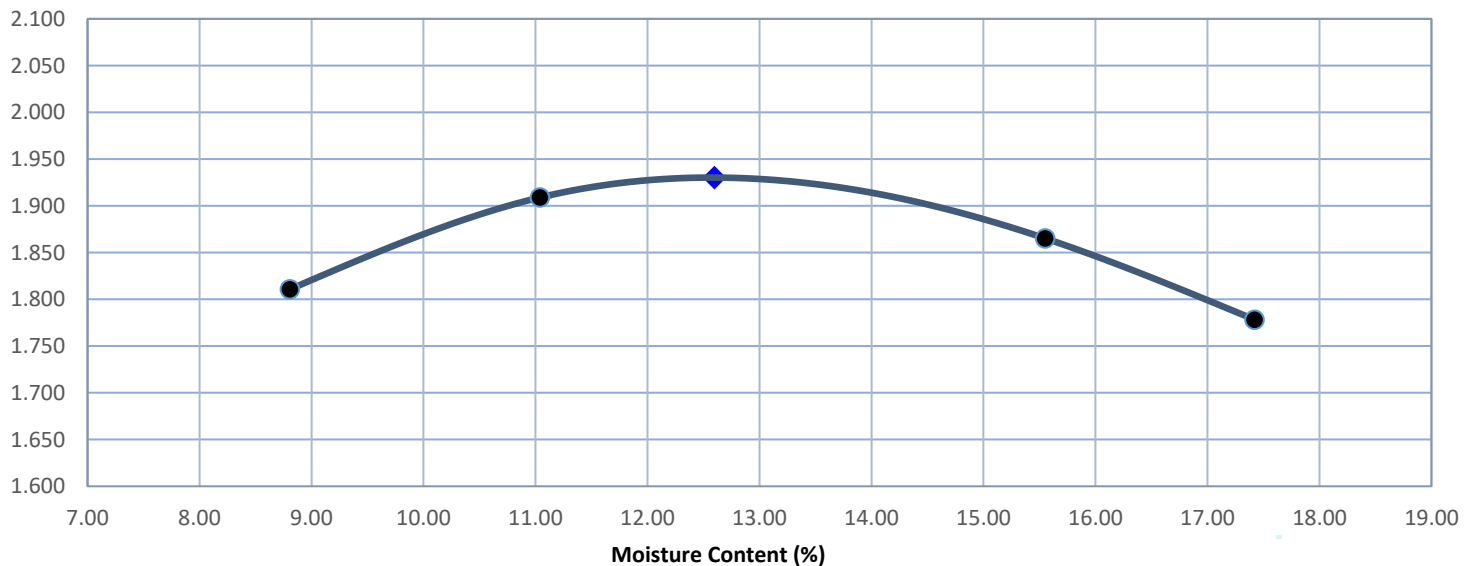
0

Material + 37.5mm (%):

-

Moisture Content (%)	8.8	11.0	15.6	17.4	
Dry Density (t/m³)	1.811	1.909	1.865	1.778	

Dry Density (t/m³)



Modified Maximum Dry Density (t/m³)

1.93

Optimum Moisture Content (%)

12.5

Comments:

Approved Signatory:

Name: Danielle Reynolds

Date: 06/October/2025



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SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.6.1.1

Client:	Development WA	Ticket No.	S18818
Client Address:	-	Report No.	WG25.16472_1_SCBR
Project:	Proposed Industrial Park	Sample No.	WG25.16472
Location:	Lot 2010 Giorgi Road, Picton East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP19 (1.0m)	Date Tested:	03/10 - 08/10/25

TEST RESULTS - CALIFORNIA BEARING RATIO

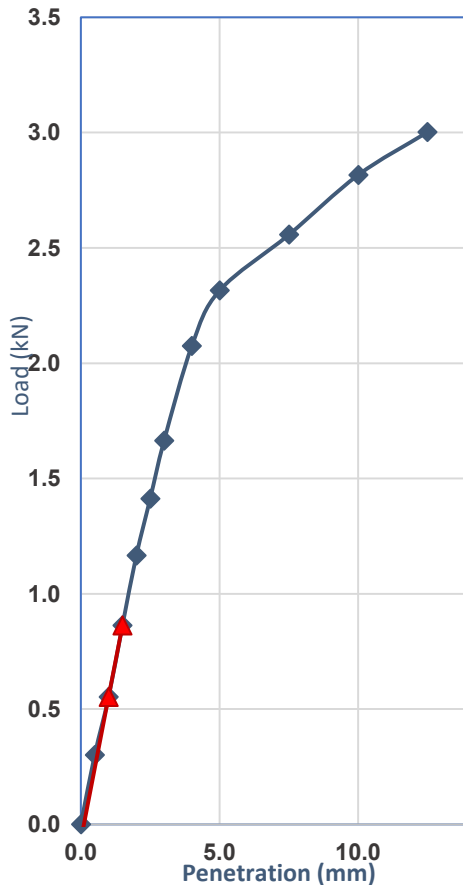
Sample Description:

Sandy Clay trace Gravel

Sampling Method:

Sampled by Client, Tested as Received

Load Penetration Curve



Compaction Details

Compaction Method	AS 1289.5.2.1	Hammer Type	Modified
Plasticity Determined by	Estimated	Curing Time (Hours)	>2
% Retained 19.0mm	0	Excluded/Replaced	Excluded
Maximum Dry Density (t/m ³)	1.93	Optimum Moisture (%)	12.5
Target Dry Density Ratio (%)	95	Target Moisture Ratio (%)	100

Specimen Conditions At Compaction

Dry Density (t/m ³)	1.84	Moisture Content (%)	12.3
Density Ratio (%)	95.5	Moisture Ratio (%)	97.5

Specimen Conditions After Soak

Soaked or Unsoaked	Soaked	Soaking Period (days)	4
Surcharges Applied (kg)	4.50	Measured Swell (%)	0.5
Dry Density (t/m ³)	1.84	Dry Density Ratio (%)	95.0
Moisture Content (%)	17.9	Moisture Ratio (%)	142.0

Specimen Conditions After Test

Top 30mm Moisture (%)	18.0	Remaining Depth (%)	16.7
-----------------------	------	---------------------	------

Correction applied to Penetration: 0.1mm

Determined at a Penetration of: 5.0mm

California Bearing Ratio (CBR): 12%

Comments:

Approved Signatory:

Name: Cody O'Neill

Date: 10/October/2025



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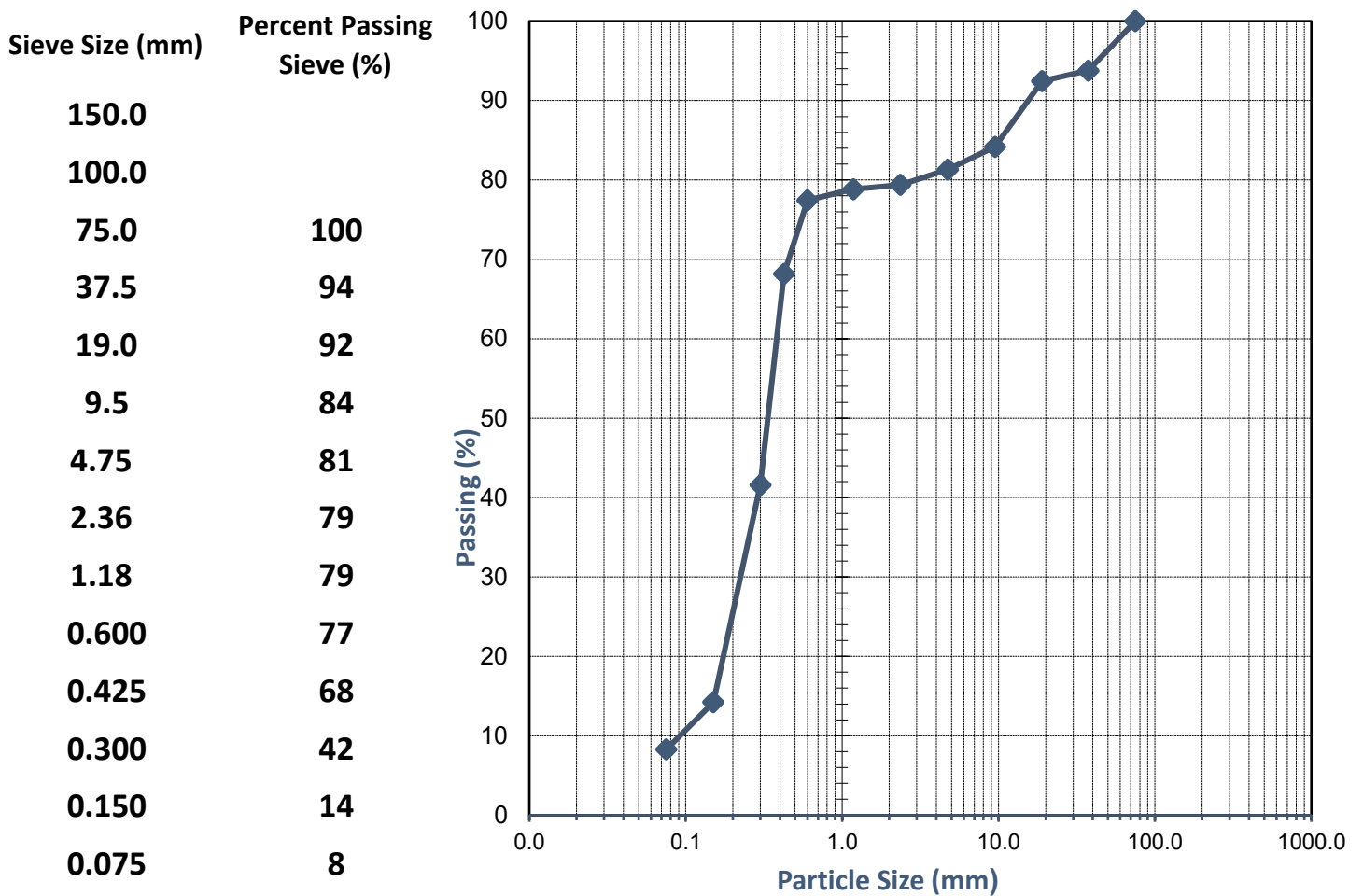
TEST REPORT - AS 1289.3.6.1

Client:	Development WA	Ticket No.	S18615
Client Address:	-	Report No.	WG25.15386_1_PSD
Project:	Proposed Industrial Park	Sample No.	WG25.15386
Location:	Lot 2010 Giorgi Road, Picon East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP20 (0.8m)	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: Courtney Watt

Date: 18/September/2025



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SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.3.1.1, 3.2.1, 3.3.1 & 3.4.1

Client:	Development WA	Ticket No.	S18615
Client Address:	-	Report No.	WG25.15386_1_PI
Project:	Proposed Industrial Park	Sample No.	WG25.15386
Location:	Lot 2010 Giorgi Road, Picon East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP20 (0.8m)	Date Tested:	17/09/2025

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 (%)	Not Obtainable
AS 1289.3.2.1	Plastic Limit (%)	Non-Plastic
AS 1289.3.3.1	Plasticity Index (%)	Non-Plastic
AS 1289.3.4.1	Linear Shrinkage (%)	0.5
AS 1289.3.4.1	Length of Mould (mm)	250
AS 1289.3.4.1	Condition of Dry Specimen:	-

Comments:

Approved Signatory:

Name: Danielle Reynolds

Date: 18/September/2025



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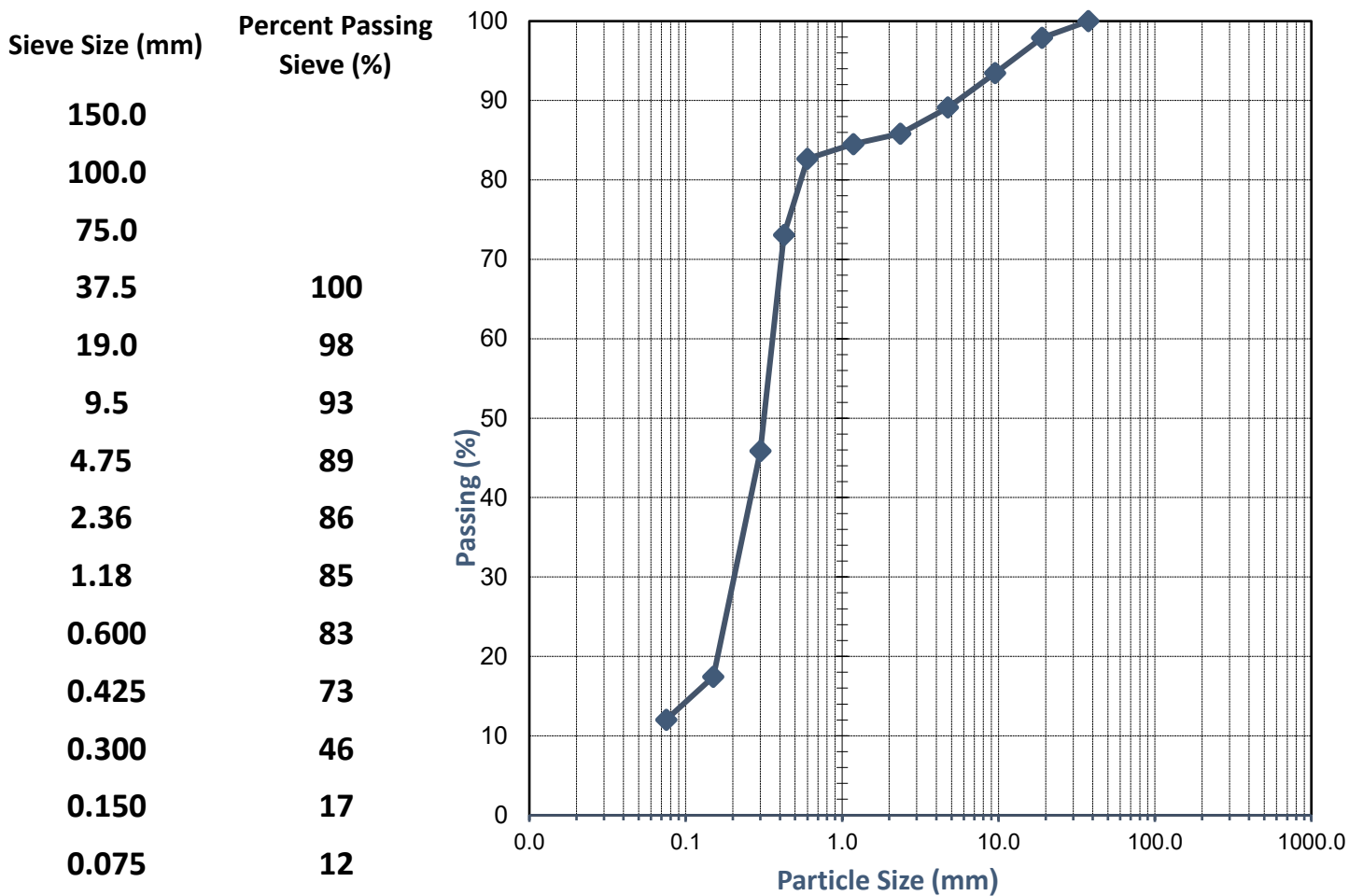
TEST REPORT - AS 1289.3.6.1

Client:	Development WA	Ticket No.	S18818
Client Address:	-	Report No.	WG25.16473_1_PSD
Project:	Proposed Industrial Park	Sample No.	WG25.16473
Location:	Lot 2010 Giorgi Road, Picton East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP24 (0.8-1.0m)	Date Tested:	02/10 - 04/10/2025

TEST RESULTS - Particle Size Distribution of Soil

Sampling Method:

Sampled by Client, Tested as Received



Comments:

Approved Signatory:

Name: Danielle Reynolds

Date: 06/October/2025



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SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.3.1.1, 3.2.1, 3.3.1 & 3.4.1

Client:	Development WA	Ticket No.	S18818
Client Address:	-	Report No.	WG25.16473_1_PI
Project:	Proposed Industrial Park	Sample No.	WG25.16473
Location:	Lot 2010 Giorgi Road, Picton East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP24 (0.8-1.0m)	Date Tested:	6/10/2025

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 (%)	29
AS 1289.3.2.1	Plastic Limit (%)	19
AS 1289.3.3.1	Plasticity Index (%)	10
AS 1289.3.4.1	Linear Shrinkage (%)	4.0
AS 1289.3.4.1	Length of Mould (mm)	125
AS 1289.3.4.1	Condition of Dry Specimen:	-

Comments:

Approved Signatory:

Daniel Telo

Name: Daniel Telo

Date: 07/October/2025



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SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.5.2.1

Client:	Development WA	Ticket No.	S18818
Client Address:	-	Report No.	WG25.16473_1_MMDD
Project:	Proposed Industrial Park	Sample No.	WG25.16473
Location:	Lot 2010 Giorgi Road, Picton East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP24 (0.8-1.0m)	Date Tested:	2/10/2025

TEST RESULTS - Modified Maximum Dry Density

Sampling Method:

Sampled by Client, Tested as Received

Sample Curing Time (Hours):

>24

Method used to Determine Liquid Limit:

Visual / Tactile Assessment by Competent Technician

Material + 19.0mm (%):

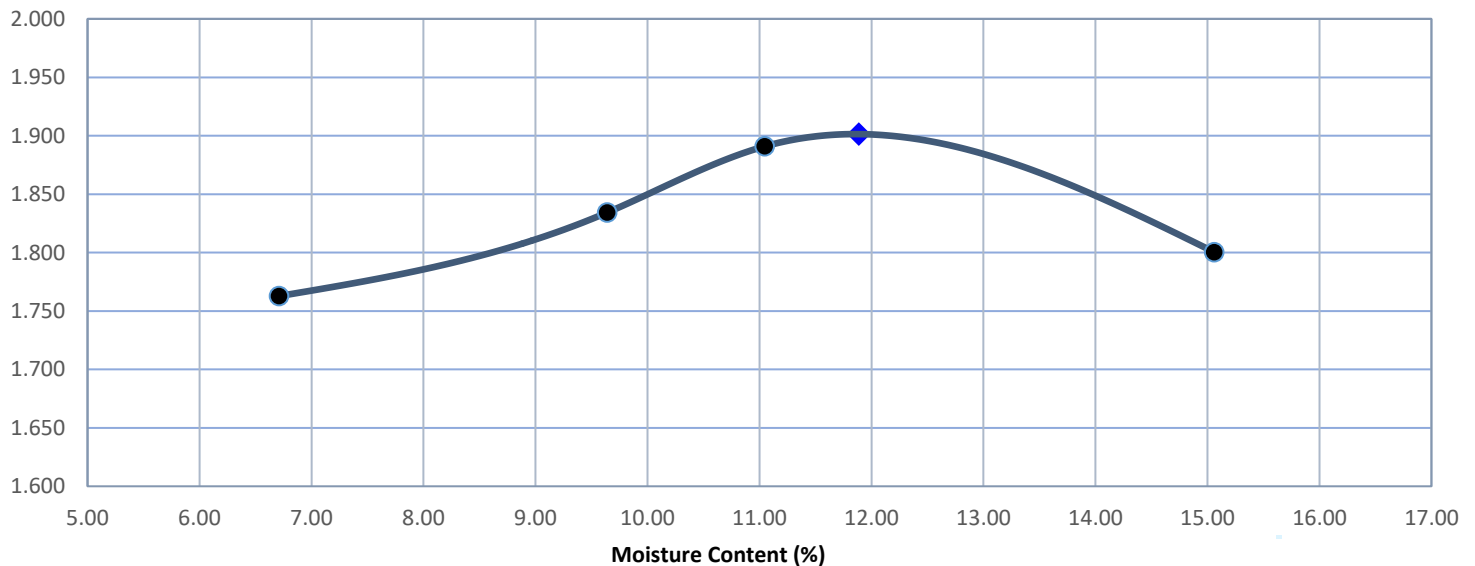
0

Material + 37.5mm (%):

-

Moisture Content (%)	6.7	9.6	11.0	15.1	
Dry Density (t/m ³)	1.763	1.834	1.891	1.800	

Dry Density (t/m³)



Modified Maximum Dry Density (t/m³)

1.90

Optimum Moisture Content (%)

12.0

Comments:

Approved Signatory:

Name: Danielle Reynolds

Date: 03/October/2025



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SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.6.1.1

Client:	Development WA	Ticket No.	S18818
Client Address:	-	Report No.	WG25.16473_1_SCBR
Project:	Proposed Industrial Park	Sample No.	WG25.16473
Location:	Lot 2010 Giorgi Road, Picton East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP24 (0.8-1.0m)	Date Tested:	2/10 - 8/10/25

TEST RESULTS - CALIFORNIA BEARING RATIO

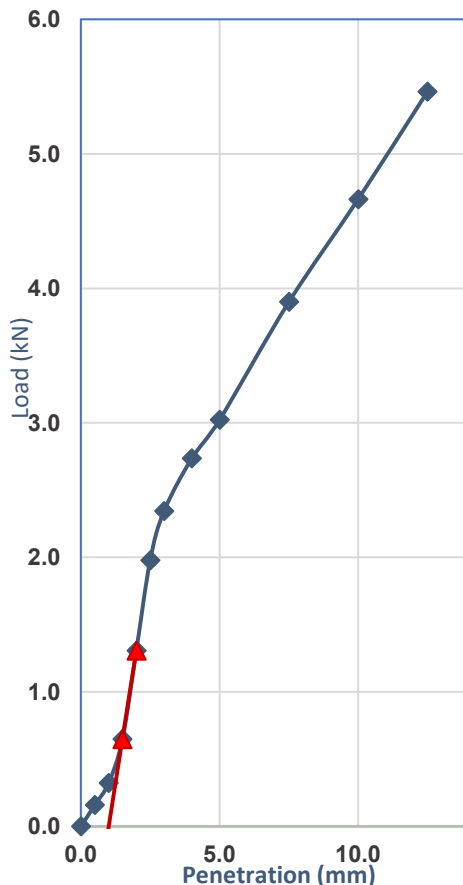
Sample Description:

Silty Sand trace Gravel

Sampling Method:

Sampled by Client, Tested as Received

Load Penetration Curve



Compaction Details

Compaction Method	AS 1289.5.2.1	Hammer Type	Modified
Plasticity Determined by	Estimated	Curing Time (Hours)	>24
% Retained 19.0mm	0	Excluded/Replaced	Excluded
Maximum Dry Density (t/m ³)	1.90	Optimum Moisture (%)	12.0
Target Dry Density Ratio (%)	95	Target Moisture Ratio (%)	100

Specimen Conditions At Compaction

Dry Density (t/m ³)	1.82	Moisture Content (%)	11.4
Density Ratio (%)	96.0	Moisture Ratio (%)	96.0

Specimen Conditions After Soak

Soaked or Unsoaked	Soaked	Soaking Period (days)	4
Surcharges Applied (kg)	4.50	Measured Swell (%)	0.0
Dry Density (t/m ³)	1.82	Dry Density Ratio (%)	95.5
Moisture Content (%)	19.8	Moisture Ratio (%)	166.5

Specimen Conditions After Test

Top 30mm Moisture (%)	17.1	Remaining Depth (%)	18.1
-----------------------	------	---------------------	------

Correction applied to Penetration: 1mm

Determined at a Penetration of: 2.5mm

California Bearing Ratio (CBR): 19%

Comments:

Approved Signatory:

Name: Cody O'Neill

Date: 10/October/2025



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SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.3.8.1

Client:	Development WA	Ticket No.	S18615
Client Address:	-	Report No.	WG25.15387_1_ECN
Project:	Proposed Industrial Park	Sample No.	WG25.15387
Location:	Lot 2010 Giorgi Road, Picon East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP28 (0.6m)	Date Tested:	15/09/2025

TEST RESULTS - Emerson Class Number

Sampling Method:

Sampled by Client, Tested as Received

Source of Material:

Not Specified

Soil Description:

Clayey Sand

Water Used:

Distilled

EMERSON CLASS
NUMBER

5

Comments:

Approved Signatory:

Name: Madhav Basnet

Date: 15/September/2025



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SOIL | AGGREGATE | CONCRETE | CRUSHING

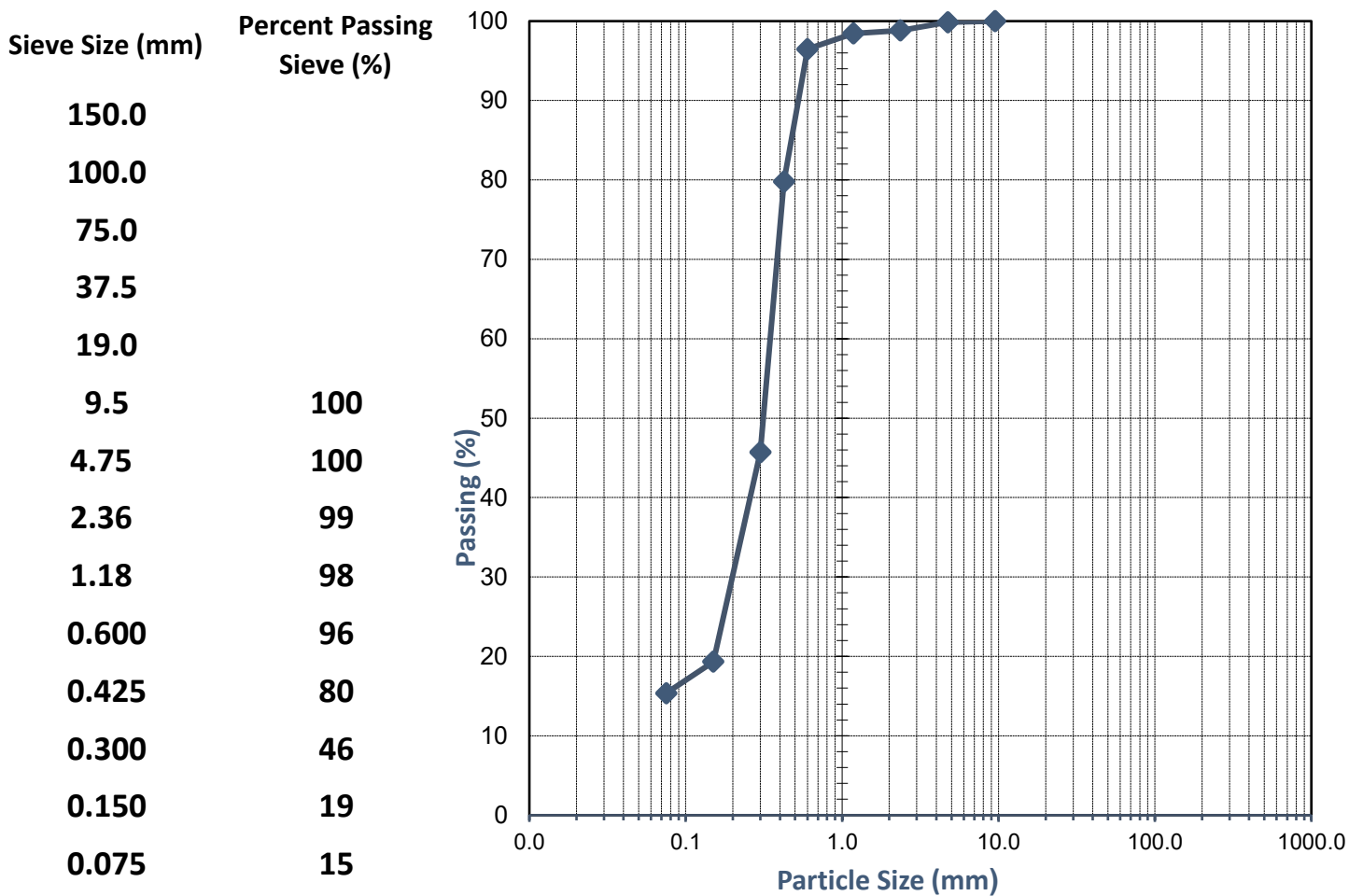
TEST REPORT - AS 1289.3.6.1

Client:	Development WA	Ticket No.	S18615
Client Address:	-	Report No.	WG25.15387_1_PSD
Project:	Proposed Industrial Park	Sample No.	WG25.15387
Location:	Lot 2010 Giorgi Road, Picon East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP28 (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: Cody O'Neill

Date: 16/September/2025



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TEST REPORT - AS 1289.3.1.1, 3.2.1, 3.3.1 & 3.4.1

Client:	Development WA	Ticket No.	S18615
Client Address:	-	Report No.	WG25.15387_1_PI
Project:	Proposed Industrial Park	Sample No.	WG25.15387
Location:	Lot 2010 Giorgi Road, Picon East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP28 (0.6m)	Date Tested:	17/09/2025

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 (%)	33
AS 1289.3.2.1	Plastic Limit (%)	17
AS 1289.3.3.1	Plasticity Index (%)	16
AS 1289.3.4.1	Linear Shrinkage (%)	5.0

AS 1289.3.4.1	Length of Mould (mm)	250
AS 1289.3.4.1	Condition of Dry Specimen:	Curled

Comments:

Approved Signatory:

Name: Connor Budimir

Date: 18/September/2025



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TEST REPORT - AS 1289.7.1.1

Client:	Development WA	Ticket No.	S18615
Client Address:	-	Report No.	WG25.15388_1_SSI
Project:	Proposed Industrial Park	Sample No.	WG25.15388
Location:	Lot 2010 Giorgi Road, Picon East, WA	Date Sampled:	26/08 - 27/08/2025
Sample Identification:	TP28 (0.6-1.05m)	Date Tested:	12/09 15/09/2025

TEST RESULTS - SHRINK SWELL INDEX

Sampling Method:

Sampled by Client, Tested as Received

Material Description:

Silty Sand with Gravel

SWELL SPECIMEN	
Moisture Content Initial (%):	20.8
Dry Density - Initial (t/m^3):	1.59
Moisture Content Final (%):	22.4
Estimated Inert Inclusions (%):	9

SHRINK SPECIMEN	
Moisture Content Initial (%):	22.1
Extent of Crumbling:	Nil
Length/Diameter Ratio:	1.8
Extent of Cracking:	Nil

SHRINK SWELL INDEX

Shrink Swell Index (I_{ss})

0.5

Comments:

Approved Signatory:

Name: Cody O'Neill

Date: 24/September/2025

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Appendix D

Table D1 – Acid Sulfate Soil Testing Results Summary

Chain of Custody Documentation

Acid Sulfate Soil Laboratory Certificates

Table D-1: Summary of Screening and Chromium Suite Results

Test Location	Depth (m)	Soil Description	Screening Tests				Chromium Suite of Testing					
			pH _F	pH _{FOX}	Reaction ² Strength	Δ pH ³	pH _{KCl}	TAA ⁴ (%S)	S _{CR} ⁵ (%S)	S _{NAS} ⁶ (%S)	ANC _{BT} ⁷ (%S)	Net ⁸ Acidity (%S)
Assessment Criteria			<4	<3	-	-	-	-	-	-	-	>0.03
TP2	0.5	SAND - pale grey, trace silt	4.8	3.2	Low	1.6						
TP2	1	SAND - pale grey, trace silt	4.3	3.0	Low	1.3						
TP2	1.5	SILTY SAND - dark grey	8.2	2.2	Medium	6.0	6.9	<0.010	0.20	NT	0.056	0.20
TP4	0.5	SAND - pale grey, trace silt	7.4	4.6	Low	2.8						
TP4	1	SAND - dark brown, with silt	5.8	3.7	Low	2.1						
TP4	1.5	SAND - blue-grey and brown, trace silt	5.4	1.9	High	3.5	6.6	<0.010	0.26	NT	0.030	0.26
TP4	2	CLAYEY SAND - blue-grey mottled brown	6.6	3.3	High	3.3						
TP5	0.5	SAND - pale grey, trace silt	4.8	3.4	Low	1.4	6.2	<0.010	<0.0050	NT	NT	<0.0050
TP5	1	SAND - pale grey, trace silt	4.7	4.0	Low	0.7						
TP5	1.5	CEMENTED SILTY SAND - dark brown and brown	5.3	4.1	Low	1.2	5.5	0.057	<0.0050	NT	NT	0.060
TP6	0.5	SAND - grey and yellow-brown, trace silt	6.3	4.9	Low	1.4						
TP6	1	SAND - grey and yellow-brown, trace silt	6.6	4.6	Low	2.0	6.0	<0.010	<0.0050	NT	NT	<0.0050
TP6	1.5	CEMENTED SILTY SAND - dark brown and brown	5.9	3.2	Medium	2.7	5.2	0.10	0.016	NT	NT	0.12
TP6	2	CEMENTED SILTY SAND - dark brown and brown	5.9	3.6	Medium	2.3						
TP8	0.5	SAND - pale grey, trace silt	6.3	4.9	Low	1.4						
TP8	1	SAND - pale grey, trace silt	6.6	5.3	Low	1.3	6.2	<0.010	<0.0050	NT	NT	<0.0050
TP8	1.5	SAND with CEMENTED SAND - dark brown, with silt	6.7	5.1	Low	1.6						
TP8	2	SAND with CEMENTED SILTY SAND - yellow-brown, with silt	6.6	4.8	Low	1.8						
TP9	0.5	SAND - grey, trace silt	6.4	5.0	Low	1.4						
TP9	1	SAND - grey, trace silt	6.6	3.4	Low	3.2						
TP9	1.5	SAND with CLAYEY SAND - blue-grey	6.7	2.7	Medium	4.0	5.5	0.017	0.0072	NT	NT	0.024
TP11	0.5	SAND - yellow-brown, trace silt	6.1	4.4	Low	1.7						
TP11	1	SAND - yellow-brown, trace silt	6.0	4.5	Low	1.5						
TP11	1.5	SAND - yellow-brown, trace silt	6.0	4.6	Low	1.4	6.2	<0.010	<0.0050	NT	NT	<0.0050

Note:

1.

Screening Tests undertaken by MPL Laboratories

2.

Low – indicates no or slight effervescence in hydrogen peroxide

3.

Δ pH - pH_F - pH_{FOX}

4.

TAA – titratable actual acidity

5.

SCR – chromium reducible sulphur

6.

SNAS – retained acidity (reported for pH_{KCl} < 4.5)

7.

ANC – acid neutralising capacity (reported for pH_{KCl} > 6.5)

8.

Net Acidity = TAA + Scr + NASS. (It should be noted that ANC is excluded as per WA Guidelines)

NT

Not Tested

0.03

Exceedance of criteria.

Table D-1: Summary of Screening and Chromium Suite Results

Test Location	Depth (m)	Soil Description	Screening Tests				Chromium Suite of Testing					
			pH _F	pH _{FOX}	Reaction ² Strength	Δ pH ³	pH _{KCl}	TAA ⁴ (%S)	S _{CR} ⁵ (%S)	S _{NAS} ⁶ (%S)	ANC _{BT} ⁷ (%S)	Net ⁸ Acidity (%S)
Assessment Criteria			<4	<3	-	-	-	-	-	-	-	>0.03
TP13	0.5	SAND - yellow-brown, trace silt	5.8	4.5	Low	1.3						
TP13	1	SAND - yellow-brown, trace silt	5.8	4.6	Low	1.2						
TP13	1.5	SAND - yellow-brown, trace silt	6.0	4.8	Low	1.2						
TP13	2	SAND - yellow-brown, trace silt	6.1	4.7	Low	1.4						
TP14	0.5	SAND - grey, with silt	5.7	3.8	Low	1.9	5.8	<0.010	<0.0050	NT	NT	<0.0050
TP14	1	CLAYEY SAND - grey-brown, trace gravel	7.6	6.1	Low	1.5						
TP14	1.5	CLAYEY SAND - green-grey mottled brown with gravel	7.2	7.1	High	0.1						
TP14	2	CLAY - dark grey, with sand	7.0	5.7	High	1.3	5.0	0.059	<0.0050	NT	NT	0.060
TP14	2.5	CLAY - dark grey, with sand	8.5	6.0	High	2.5						
TP17	0.5	SAND - pale brown, trace silt	7.4	4.4	Low	3.0						
TP17	1	SAND - pale brown, trace silt	7.1	3.2	Low	3.9	6.1	<0.010	<0.0050	NT	NT	<0.0050
TP17	1.5	CLAYEY SAND - blue-grey mottled brown, with gravel	6.8	3.5	Medium	3.3						
TP19	0.5	SAND - pale brown, trace silt	7.2	3.0	Medium	4.2	6.0	<0.010	<0.0050	NT	NT	<0.0050
TP19	1	CLAYEY SAND - yellow-brown, with gravel	7.6	5.5	Low	2.1	-	-	-	-	-	
TP19	1.5	CLAYEY SAND - dark grey mottled brown, with gravel	8.2	7.2	High	1.0						
TP19	2	CLAYEY SAND - green-grey mottled brown , with gravel	8.1	6.1	Low	2.0						
TP19	2.5	SAND - dark grey, with silt	7.5	2.4	Medium	5.1	5.6	<0.010	0.022	NT	NT	0.030
TP22	0.5	SAND - pale grey, trace silt	7.2	4.4	Low	2.8						
TP22	1	CEMENTED SAND - brown with silt	6.8	4.4	Low	2.4	6.0	<0.010	<0.0050	NT	NT	<0.0050
TP22	1.5	CLAYEY SAND - blue-grey mottled brown, trace gravel	7.5	4.2	Low	3.3						
TP24	0.5	SAND - grey, trace silt	4.8	2.9	Low	1.9						
TP24	1	SAND - yellow-brown mottled orange brown, with clay, with gravel	5.7	1.5	Low	4.2	5.5	<0.010	<0.0050	NT	NT	0.0063
TP24	1.5	SAND - yellow-brown mottled orange brown, with clay, with gravel	6.6	1.6	High	5.0						

Note:

1.

Screening Tests undertaken by MPL Laboratories

2.

Low – indicates no or slight effervescence in hydrogen peroxide

3.

Δ pH - pH_F - pH_{FOX}

4.

TAA – titratable actual acidity

5.

SCR – chromium reducible sulphur

6.

SNAS – retained acidity (reported for pH_{KCl} < 4.5)

7.

ANC – acid neutralising capacity (reported for pH_{KCl} > 6.5)

8.

Net Acidity = TAA + Scr + NASS. (It should be noted that ANC is excluded as per WA Guidelines)

NT

Not Tested

0.03

Exceedance of criteria.

Table D-1: Summary of Screening and Chromium Suite Results

Test Location	Depth (m)	Soil Description	Screening Tests				Chromium Suite of Testing					
			pH _F	pH _{FOX}	Reaction ² Strength	Δ pH ³	pH _{KCl}	TAA ⁴ (%S)	S _{CR} ⁵ (%S)	S _{NAS} ⁶ (%S)	ANC _{BT} ⁷ (%S)	Net ⁸ Acidity (%S)
Assessment Criteria			<4	<3	-	-	-	-	-	-	-	>0.03
TP24	2	SAND - blue-grey and grey, with silt	6.4	2.0	Low	4.4	5.5	<0.010	0.090	NT	NT	0.097
TP24	2.5	CLAY - dark grey, with sand	6.9	1.5	High	5.4	4.7	0.24	4.9	NT	NT	5.2
TP25	0.5	SAND - pale grey, trace silt	5.4	5.0	Low	0.4						
TP25	1	SAND with CEMENTED SAND - dark brown, with silt	5.9	4.9	Low	1.0	5.7	<0.010	<0.0050	NT	NT	0.012
TP25	1.5	SAND - pale brown, trace silt	8.8	6.2	Low	2.6						
TP28	0.5	CLAYEY SAND - yellow-brown mottled orange brown, trace gravel	6.7	4.9	Low	1.8						
TP28	1	CLAYEY SAND - yellow-brown mottled orange brown, trace gravel	6.9	5.1	Low	1.8						
TP28	1.5	SAND - grey, trace silt	8.2	5.8	Low	2.4	6.4	<0.010	0.010	NT	NT	0.010
TP28	2	SAND and CLAYEY SAND - blue-grey, trace silt	8.6	5.9	Low	2.7						

- Note:
1.

Screening Tests undertaken by MPL Laboratories

2.

Low – indicates no or slight effervescence in hydrogen peroxide

3.

Δ pH - pH_F - pH_{FOX}

4.

TAA – titratable actual acidity

5.

SCR – chromium reducible sulphur

6.

SNAS – retained acidity (reported for pH_{KCl} < 4.5)

7.

ANC – acid neutralising capacity (reported for pH_{KCl} > 6.5)

8.

Net Acidity = TAA + Scr + NASS. (It should be noted that ANC is excluded as per WA Guidelines)

NT

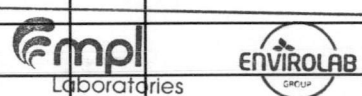
Not Tested

0.03

Exceedance of criteria.

Project No: 236293.01				Suburb: Picton				To: MPL			
Project Manager: Rob Shapland				Order Number: PE252210				Lab address			
Email: rob.shapland@douglaspartners.com.au								Attn: Michael K			
Turnaround time: ☒ Standard ☐ 72 hour ☐ 48 hour ☐ 24 hour ☐ Same day								Lab phone Lab email			
Prior Storage: ☐ Fridge ☒ Freezer ☐ Esky ☐ Shelf				Do samples contain 'potential' HBM? ☐ No (If Yes, Yes, handle, transport and store in accordance with FPM HAZID)							

Lab ID	Sample ID			Date Sampled	Sample Type	Container Type	Analytes										Notes/ Preservation/ Additional Requirements		
	Location / Other ID	Depth From	Depth To		S - soil W - water M - Material	G - glass P - plastic	ASS Screening (pH _F and pH _{ox} reaction)												
1	TP2		0.5	26/08/25	S	P	X												
2	TP2		1	26/08/25	S	P	X												
3	TP2		1.5	26/08/25	S	P	X												
4	TP4		0.5	27/08/25	S	P	X												
5	TP4		1	27/08/25	S	P	X												
6	TP4		1.5	27/08/25	S	P	X												
7	TP4		2	27/08/25	S	P	X												
8	TP5		0.5	26/08/25	S	P	X												
9	TP5		1	26/08/25	S	P	X												
10	TP5		1.5	26/08/25	S	P	X												
11	TP6		0.5	27/08/25	S	P	X												
12	TP6		1	27/08/25	S	P	X												
13	TP6		1.5	27/08/25	S	P	X												
14	TP6		2	27/08/25	S	P	X												
15	TP8		0.5	27/08/25	S	P	X												
16	TP8		1	27/08/25	S	P	X												
17	TP8		1.5	27/08/25	S	P	X												
18	TP8		2	27/08/25	S	P	X												



Laboratories

Job No. - PG10557

Date Rec - 08 SEP 2025

Time Rec - 16:30

Rec By - [Signature]

TAT Req - SAME 1/2/3/STD

Temp - cool / ambient

Cooling - Ice / Ice pack / None

Security Seal - Yes / No

-2°

19	TP9		0.5	26/08/25	S	P	X										
20	TP9		1	26/08/25	S	P	X										
21	TP9		1.5	26/08/25	S	P	X										
22	TP11		0.5	26/08/25	S	P	X										
23	TP11		1	26/08/25	S	P	X										
24	TP11		1.5	26/08/25	S	P	X										
25	TP13		0.5	27/08/25	S	P	X										
26	TP13		1	27/08/25	S	P	X										
27	TP13		1.5	27/08/25	S	P	X										
28	TP13		2	27/08/25	S	P	X										
29	TP14		0.5	27/08/25	S	P	X										
30	TP14		1	27/08/25	S	P	X										
31	TP14		1.5	27/08/25	S	P	X										
32	TP14		2	27/08/25	S	P	X										
33	TP14		2.5	27/08/25	S	P	X										
34	TP17		0.5	26/08/25	S	P	X										
35	TP17		1	26/08/25	S	P	X										
36	TP17		1.5	26/08/25	S	P	X										
37	TP19		0.5	27/08/25	S	P	X										
38	TP19		1	27/08/25	S	P	X										
39	TP19		1.5	27/08/25	S	P	X										
40	TP19		2	27/08/25	S	P	X										
41	TP19		2.5	27/08/25	S	P	X										
42	TP22		0.5	26/08/25	S	P	X										
43	TP22		1	26/08/25	S	P	X										

44	TP22		1.5	26/08/25	S	P	X										
45	TP24		0.5	27/08/25	S	P	X										
46	TP24		1	27/08/25	S	P	X										
47	TP24		1.5	27/08/25	S	P	X										
48	TP24		2	27/08/25	S	P	X										
49	TP24		2.5	27/08/25	S	P	X										
50	TP25		0.5	26/08/25	S	P	X										
51	TP25		1	26/08/25	S	P	X										
52	TP25		1.5	26/08/25	S	P	X										
53	TP28		0.5	26/08/25	S	P	X										
54	TP28		1	26/08/25	S	P	X										
55	TP28		1.5	26/08/25	S	P	X										
56	TP28		2	26/08/25	S	P	X										

Metals to analyse:

Number of samples in container:

Transported to laboratory by:

Send results to: Douglas Partners Pty Ltd

Address:

Phone:

Relinquished by: Mubashar Ahmed

Date: 8/09/2025

Signed: *M Ahmed*

Project No: 236293.01

Suburb: Picton

Project Manager: Rob Shapland

LAB RECEIPT

Lab Ref. No:

Received by: *MPL*

Date & Time: 8/9/25, 16:30

Signed: *[Signature]*

To: MPL

Dispatch date: 8/09/2025



GROUNDED
EXPERTISE

Douglas Partners Pty Ltd
ABN 75 053 980 117
www.douglaspartners.com.au

PURCHASE ORDER

Date

08-Sep-25

PO No.

PE252210

Vendor/ Subcontractor:

MPL

Contact Name: Kiara and Genevieve

Deliver To:

Douglas Partners Pty Ltd

Requisitioner: Mubashar

This order covers the supply of goods, materials or services shown here, subject to the terms and conditions of the purchase order.

PO number or **Project number** and **Requisitioner** should always be quoted in your invoice.

To ensure prompt payment, please attach this PO to your invoice and **email** it directly to

accounts.payable.invoices@douglaspartners.com.au in PDF format.

Item	Description	Quantity	Unit Price	Total	Project No. & G/L Code
	Soil Sam ples as per COC				236293.01
					512

Comments or Special Instructions

SUBTOTAL

GST/TAX

SHIPPING/
OTHER

TOTAL

Brisbane (07) 32737 8900 · Cairns (07) 4055 1550 · Canberra (02) 6260 2788 · Central Coast (02) 4351 1422 · Coffs Harbour (02) 6650 3200 · Darwin (08) 8948 6800 · Geelong (03) 5221 0711 · Gold Coast (07) 5568 8900 · Macarthur (02) 4647 0075 · Melbourne (03) 9683 3500 · Newcastle (02) 4960 9600 · North-West Sydney (02) 4666 0450 · Perth (08) 9204 3511 · Port Macquarie (02) 6581 5992 · Sunshine Coast (07) 5351 0400 · Sydney (02) 9809 0666 · Townsville (07) 4779 9866 · Wollongong (02) 4271 1836

Registered Address: 96 Hermitage Road, West Ryde NSW 2114 · PO Box 472, West Ryde NSW 1685

Certificate of Analysis PGI0557

Client Details

Client	Douglas Partners Pty Ltd (Perth)
Contact	Rob Shapland
Address	36 O'Malley St, OSBORNE PARK, WA, 6017

Sample Details

Your Reference	236293.01 - Picton
Number of Samples	56 Soil
Date Samples Received	08/09/2025
Date Instructions Received	09/09/2025

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	16/09/2025
Date of Issue	09/09/2025

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

Authorisation Details

Results Approved By	Stacey Hawkins, ASS/AMD Supervisor
Laboratory Manager	Michael Kubiak

Certificate of Analysis PGI0557

Samples in this Report

Envirolab ID	Sample ID	Depth	Matrix	Date Sampled	Date Received
PGI0557-01	TP2	0.50	Soil	26/08/2025	09/09/2025
PGI0557-02	TP2	1.00	Soil	26/08/2025	09/09/2025
PGI0557-03	TP2	1.50	Soil	26/08/2025	09/09/2025
PGI0557-04	TP4	0.50	Soil	27/08/2025	09/09/2025
PGI0557-05	TP4	1.00	Soil	27/08/2025	09/09/2025
PGI0557-06	TP4	1.50	Soil	27/08/2025	09/09/2025
PGI0557-07	TP4	2.00	Soil	27/08/2025	09/09/2025
PGI0557-08	TP5	0.50	Soil	26/08/2025	09/09/2025
PGI0557-09	TP5	1.00	Soil	26/08/2025	09/09/2025
PGI0557-10	TP5	1.50	Soil	26/08/2025	09/09/2025
PGI0557-11	TP6	0.50	Soil	27/08/2025	09/09/2025
PGI0557-12	TP6	1.00	Soil	27/08/2025	09/09/2025
PGI0557-13	TP6	1.50	Soil	27/08/2025	09/09/2025
PGI0557-14	TP6	2.00	Soil	27/08/2025	09/09/2025
PGI0557-15	TP8	0.50	Soil	27/08/2025	09/09/2025
PGI0557-16	TP8	1.00	Soil	27/08/2025	09/09/2025
PGI0557-17	TP8	1.50	Soil	27/08/2025	09/09/2025
PGI0557-18	TP8	2.00	Soil	27/08/2025	09/09/2025
PGI0557-19	TP9	0.50	Soil	26/08/2025	09/09/2025
PGI0557-20	TP9	1.00	Soil	26/08/2025	09/09/2025
PGI0557-21	TP9	1.50	Soil	26/08/2025	09/09/2025
PGI0557-22	TP11	0.50	Soil	26/08/2025	09/09/2025
PGI0557-23	TP11	1.00	Soil	26/08/2025	09/09/2025
PGI0557-24	TP11	1.50	Soil	26/08/2025	09/09/2025
PGI0557-25	TP13	0.50	Soil	27/08/2025	09/09/2025
PGI0557-26	TP13	1.00	Soil	27/08/2025	09/09/2025
PGI0557-27	TP13	1.50	Soil	27/08/2025	09/09/2025
PGI0557-28	TP13	2.00	Soil	27/08/2025	09/09/2025
PGI0557-29	TP14	0.50	Soil	27/08/2025	09/09/2025
PGI0557-30	TP14	1.00	Soil	27/08/2025	09/09/2025
PGI0557-31	TP14	1.50	Soil	27/08/2025	09/09/2025
PGI0557-32	TP14	2.00	Soil	27/08/2025	09/09/2025
PGI0557-33	TP14	2.50	Soil	27/08/2025	09/09/2025
PGI0557-34	TP17	0.50	Soil	26/08/2025	09/09/2025
PGI0557-35	TP17	1.00	Soil	26/08/2025	09/09/2025

Certificate of Analysis PGI0557

Samples in this Report

Envirolab ID	Sample ID	Depth	Matrix	Date Sampled	Date Received
PGI0557-36	TP17	1.50	Soil	26/08/2025	09/09/2025
PGI0557-37	TP19	0.50	Soil	27/08/2025	09/09/2025
PGI0557-38	TP19	1.00	Soil	27/08/2025	09/09/2025
PGI0557-39	TP19	1.50	Soil	27/08/2025	09/09/2025
PGI0557-40	TP19	2.00	Soil	27/08/2025	09/09/2025
PGI0557-41	TP19	2.50	Soil	27/08/2025	09/09/2025
PGI0557-42	TP22	0.50	Soil	26/08/2025	09/09/2025
PGI0557-43	TP22	1.00	Soil	26/08/2025	09/09/2025
PGI0557-44	TP22	1.50	Soil	26/08/2025	09/09/2025
PGI0557-45	TP24	0.50	Soil	27/08/2025	09/09/2025
PGI0557-46	TP24	1.00	Soil	27/08/2025	09/09/2025
PGI0557-47	TP24	1.50	Soil	27/08/2025	09/09/2025
PGI0557-48	TP24	2.00	Soil	27/08/2025	09/09/2025
PGI0557-49	TP24	2.50	Soil	27/08/2025	09/09/2025
PGI0557-50	TP25	0.50	Soil	26/08/2025	09/09/2025
PGI0557-51	TP25	1.00	Soil	26/08/2025	09/09/2025
PGI0557-52	TP25	1.50	Soil	26/08/2025	09/09/2025
PGI0557-53	TP28	0.50	Soil	26/08/2025	09/09/2025
PGI0557-54	TP28	1.00	Soil	26/08/2025	09/09/2025
PGI0557-55	TP28	1.50	Soil	26/08/2025	09/09/2025
PGI0557-56	TP28	2.00	Soil	26/08/2025	09/09/2025

Certificate of Analysis PGI0557

Acid Sulfate Soils (Soil)

Envirolab ID	Units	PQL	PGI0557-01	PGI0557-02	PGI0557-03	PGI0557-04	PGI0557-05
Your Reference			TP2	TP2	TP2	TP4	TP4
Date Sampled			26/08/2025	26/08/2025	26/08/2025	27/08/2025	27/08/2025
Depth			0.50	1.00	1.50	0.50	1.00
pHF (field pH test)*	pH units		4.8	4.3	8.2	7.4	5.8
pHFOX (field peroxide test)*	pH units		3.2	3.0	2.2	4.6	3.7
Reaction Rate*	-		Low	Low	Medium	Low	Low
Envirolab ID	Units	PQL	PGI0557-06	PGI0557-07	PGI0557-08	PGI0557-09	PGI0557-10
Your Reference			TP4	TP4	TP5	TP5	TP5
Date Sampled			27/08/2025	27/08/2025	26/08/2025	26/08/2025	26/08/2025
Depth			1.50	2.00	0.50	1.00	1.50
pHF (field pH test)*	pH units		5.4	6.6	4.8	4.7	5.3
pHFOX (field peroxide test)*	pH units		1.9	3.3	3.4	4.0	4.1
Reaction Rate*	-		High	High	Low	Low	Low
Envirolab ID	Units	PQL	PGI0557-11	PGI0557-12	PGI0557-13	PGI0557-14	PGI0557-15
Your Reference			TP6	TP6	TP6	TP6	TP8
Date Sampled			27/08/2025	27/08/2025	27/08/2025	27/08/2025	27/08/2025
Depth			0.50	1.00	1.50	2.00	0.50
pHF (field pH test)*	pH units		6.3	6.6	5.9	5.9	6.3
pHFOX (field peroxide test)*	pH units		4.9	4.6	3.2	3.6	4.9
Reaction Rate*	-		Low	Low	Medium	Medium	Low
Envirolab ID	Units	PQL	PGI0557-16	PGI0557-17	PGI0557-18	PGI0557-19	PGI0557-20
Your Reference			TP8	TP8	TP8	TP9	TP9
Date Sampled			27/08/2025	27/08/2025	27/08/2025	26/08/2025	26/08/2025
Depth			1.00	1.50	2.00	0.50	1.00
pHF (field pH test)*	pH units		6.6	6.7	6.6	6.4	6.6
pHFOX (field peroxide test)*	pH units		5.3	5.1	4.8	5.0	3.4
Reaction Rate*	-		Low	Low	Low	Low	Low
Envirolab ID	Units	PQL	PGI0557-21	PGI0557-22	PGI0557-23	PGI0557-24	PGI0557-25
Your Reference			TP9	TP11	TP11	TP11	TP13
Date Sampled			26/08/2025	26/08/2025	26/08/2025	26/08/2025	27/08/2025
Depth			1.50	0.50	1.00	1.50	0.50
pHF (field pH test)*	pH units		6.7	6.1	6.0	6.0	5.8
pHFOX (field peroxide test)*	pH units		2.7	4.4	4.5	4.6	4.5
Reaction Rate*	-		Medium	Low	Low	Low	Low
Envirolab ID	Units	PQL	PGI0557-26	PGI0557-27	PGI0557-28	PGI0557-29	PGI0557-30
Your Reference			TP13	TP13	TP13	TP14	TP14
Date Sampled			27/08/2025	27/08/2025	27/08/2025	27/08/2025	27/08/2025
Depth			1.00	1.50	2.00	0.50	1.00
pHF (field pH test)*	pH units		5.8	6.0	6.1	5.7	7.6
pHFOX (field peroxide test)*	pH units		4.6	4.8	4.7	3.8	6.1
Reaction Rate*	-		Low	Low	Low	Low	Low
Envirolab ID	Units	PQL	PGI0557-31	PGI0557-32	PGI0557-33	PGI0557-34	PGI0557-35
Your Reference			TP14	TP14	TP14	TP17	TP17
Date Sampled			27/08/2025	27/08/2025	27/08/2025	26/08/2025	26/08/2025
Depth			1.50	2.00	2.50	0.50	1.00
pHF (field pH test)*	pH units		7.2	7.0	8.5	7.4	7.1
pHFOX (field peroxide test)*	pH units		7.1	5.7	6.0	4.4	3.2

Certificate of Analysis PGI0557

Acid Sulfate Soils (Soil)

Envirolab ID	Units	PQL	PGI0557-31	PGI0557-32	PGI0557-33	PGI0557-34	PGI0557-35
Your Reference			TP14	TP14	TP14	TP17	TP17
Date Sampled			27/08/2025	27/08/2025	27/08/2025	26/08/2025	26/08/2025
Depth			1.50	2.00	2.50	0.50	1.00
Reaction Rate*	-		High	High	High	Low	Low

Envirolab ID	Units	PQL	PGI0557-36	PGI0557-37	PGI0557-38	PGI0557-39	PGI0557-40
Your Reference			TP17	TP19	TP19	TP19	TP19
Date Sampled			26/08/2025	27/08/2025	27/08/2025	27/08/2025	27/08/2025
Depth			1.50	0.50	1.00	1.50	2.00
pHF (field pH test)*	pH units		6.8	7.2	7.6	8.2	8.1
pHFOX (field peroxide test)*	pH units		3.5	3.0	5.5	7.2	6.1
Reaction Rate*	-		Medium	Medium	Low	High	Low

Envirolab ID	Units	PQL	PGI0557-41	PGI0557-42	PGI0557-43	PGI0557-44	PGI0557-45
Your Reference			TP19	TP22	TP22	TP22	TP24
Date Sampled			27/08/2025	26/08/2025	26/08/2025	26/08/2025	27/08/2025
Depth			2.50	0.50	1.00	1.50	0.50
pHF (field pH test)*	pH units		7.5	7.2	6.8	7.5	4.8
pHFOX (field peroxide test)*	pH units		2.4	4.4	4.4	4.2	2.9
Reaction Rate*	-		Medium	Low	Low	Low	Low

Envirolab ID	Units	PQL	PGI0557-46	PGI0557-47	PGI0557-48	PGI0557-49	PGI0557-50
Your Reference			TP24	TP24	TP24	TP24	TP25
Date Sampled			27/08/2025	27/08/2025	27/08/2025	27/08/2025	26/08/2025
Depth			1.00	1.50	2.00	2.50	0.50
pHF (field pH test)*	pH units		5.7	6.6	6.4	6.9	5.4
pHFOX (field peroxide test)*	pH units		1.5	1.6	2.0	1.5	5.0
Reaction Rate*	-		Low	High	Low	High	Low

Envirolab ID	Units	PQL	PGI0557-51	PGI0557-52	PGI0557-53	PGI0557-54	PGI0557-55
Your Reference			TP25	TP25	TP28	TP28	TP28
Date Sampled			26/08/2025	26/08/2025	26/08/2025	26/08/2025	26/08/2025
Depth			1.00	1.50	0.50	1.00	1.50
pHF (field pH test)*	pH units		5.9	8.8	6.7	6.9	8.2
pHFOX (field peroxide test)*	pH units		4.9	6.2	4.9	5.1	5.8
Reaction Rate*	-		Low	Low	Low	Low	Low

Envirolab ID	Units	PQL	PGI0557-56				
Your Reference			TP28				
Date Sampled			26/08/2025				
Depth			2.00				
pHF (field pH test)*	pH units		8.6				
pHFOX (field peroxide test)*	pH units		5.9				
Reaction Rate*	-		Low				

Certificate of Analysis PGI0557

Method Summary

Method ID	Methodology Summary
INORG-063	pH- measured using pH meter and electrode. Solids are oxidised with Hydrogen Peroxide or extracted with water. To ensure accurate results these tests are recommended to be done in the field as pH may change with time thus these results may not be representative of true field conditions. There is no documented official holding time, we have assigned an arbitrary 180 days to frozen samples.

Certificate of Analysis PGI0557

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 PGI0557

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.

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.

Data Quality Assessment Summary PGI0557

Client Details

Client	Douglas Partners Pty Ltd (Perth)
Your Reference	236293.01 - Picton
Date Issued	09/09/2025

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 PGI0557

Recommended Holding Time Compliance

Analysis	Sample Number(s)	Date Sampled	Date Extracted	Date Analysed	Compliant
pH F Soil	1-3, 8-10, 19-24, 34-36, 42-44, 50-56	26/08/2025	09/09/2025	09/09/2025	Yes
	4-7, 11-18, 25-33, 37-41, 45-49	27/08/2025	09/09/2025	09/09/2025	Yes
pH FOX Soil	1-3, 8-10, 19-24, 34-36, 42-44, 50-56	26/08/2025	09/09/2025	09/09/2025	Yes
	4-7, 11-18, 25-33, 37-41, 45-49	27/08/2025	09/09/2025	09/09/2025	Yes
Reaction Rate Soil	1-3, 8-10, 19-24, 34-36, 42-44, 50-56	26/08/2025	09/09/2025	09/09/2025	Yes
	4-7, 11-18, 25-33, 37-41, 45-49	27/08/2025	09/09/2025	09/09/2025	Yes

Quality Control PGI0557

INORG-063 | Acid Sulfate Soils (Soil) | Batch BGI1606

Analyte	Units	PQL	Blank	DUP1	DUP2	LCS %
				PGI0557-01 Samp QC RPD %	PGI0557-11 Samp QC RPD %	
pHF (field pH test)	pH units			4.8 4.7 2.54	6.3 6.4 1.72	100
pHFOX (field peroxide test)	pH units			3.2 3.2 2.20	4.9 4.7 2.71	100
Reaction Rate	-			Low Low [NA]	Low Low [NA]	[NA]

Analyte	Units	PQL	Blank	DUP3	DUP4	LCS %
				PGI0557-21 Samp QC RPD %	PGI0557-31 Samp QC RPD %	
pHF (field pH test)	pH units			6.7 6.7 0.596	7.2 7.1 0.559	100
pHFOX (field peroxide test)	pH units			2.7 2.6 2.99	7.1 7.2 1.26	100
Reaction Rate	-			Medium Medium [NA]	High High [NA]	[NA]

Analyte	Units	PQL	Blank	DUP5	DUP6	LCS %
				PGI0557-41 Samp QC RPD %	PGI0557-51 Samp QC RPD %	
pHF (field pH test)	pH units			7.5 7.6 1.06	5.9 6.0 1.18	100
pHFOX (field peroxide test)	pH units			2.4 2.3 3.02	4.9 5.0 0.202	100
Reaction Rate	-			Medium Medium [NA]	Low Low [NA]	[NA]