GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Site Investigation

Report 11992/1

Monday, 17 November 2025

Department of Planning, Lands and Heritage

Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330

PE013471 / QU-1764-R1

Presented By: A.Purdie
Great Southern Geotechnics Pty Ltd
5a 209 Chester Pass Rd, Albany WA

GREAT SOUTHERN GEOTECHNICS

1.0 INTRODUCTION

This investigation was commissioned by the Department of Planning, Lands and Heritage for the proposed development located over Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330.
The field works were conducted over the 22nd and 23rd of October 2025.

The intent of the investigation carried out by Great Southern Geotechnics Pty Ltd was to evaluate the subsurface conditions of the site and to provide detailed records of the encountered soil conditions for reference and further assessment.

2.0 GENERAL

The site has been broken into two areas comprising of the "Proposed Residential Development" and "Proposed Road Widening and Access Connection".

The primary objectives of this investigation were to Identify and characterise the existing soil types and stratigraphic profiles, including the assessment of in-situ permeability characteristics, dynamic cone penetrometer testing, and sampling of materials to assist in determining a general expectation of the soil classification type within the "Proposed Residential Development".

The secondary object was to determine the subgrade soil properties relevant to the "Proposed Road Widening and Access Connection".

The scope of works was designed to provide representative subsurface data across the proposed development area.

The investigation results are intended to inform the client of soil conditions; however, all engineering design recommendations and earthworks specifications remain the responsibility of a suitably qualified engineering consultant.

3.0 SITE INVESTIGATION

The field program comprised the excavation of 20 boreholes/test pits across the "Proposed Residential Development" conducted to depths of 2.0 metres. Further to this, 5 boreholes/test pits across the "Proposed Road Widening and Access Connection" were conducted to 1.0 meters. All were completed using a Kubota KX41-3V mini excavator fitted with a 300mm diameter auger.

Test pit locations have been located such as to try and provide representative coverage across the development footprint. However due to extreme density of vegetation (notably in the northern portion of the "Proposed Residential Development"), some areas were inaccessible until further clearing has taken place. The positions of these investigations are illustrated in Appendix A – Site Maps.

All soil horizons encountered during excavation were visually assessed, logged, and classified in the field in accordance with relevant Australian Standards. The soil logs and profiles recorded are presented in Appendix B – Test Pit Logs.

Representative soil samples were collected from the test pits and transported to the Great Southern Geotechnics Albany Laboratory for confirmatory classification and laboratory testing.

IMPORTANT NOTE: The test pits have been spread so that they are representative of the subsurface materials across the intended reconstruction area, however, soil conditions may change dramatically over short distances and our investigations may not locate all soil variations across the site.

4.0 LABORATORY TESTING

Laboratory testing was performed on selected soil samples to support field observations and provide a more robust characterisation of the site's subsurface profile. Laboratory results are presented in Appendix C – Test Results.

Report 11992/2 is comprised of the insitu testing performed whilst onsite (Dynamic cone penetrometer and Talsma-Hallam Permeameter testing).

Report 11992/3 is comprised of samples tested in Great Southern Geotechnics Albany Laboratory.

Testing conducted by other Accredited laboratories will be included in Appendix C - Test Results

5.0 Site Classification

In accordance with Australian Standard 2870 (2011) Residential slabs and footings, the area within the "Proposed Residential Development" on the accompanying site plan of Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330 is its current state is classified as class P

The site in present state has been classified P due to the dense vegetation and depth of organic matter across the proposed development. Site testing also indicates inadequate bearing capacity of the In Situ soil at depths up to and exceeding 1200mm from current ground level.

Reccomendations:

Selective clearing of all trees, shrubs, stumps and major roots within any building envelope and a reasonable perimeter, e.g.: At least 1.5–2.0 m beyond the slab footprint as a minimums,

Strip the root-bound sand / topsoil to a uniform depth of a minimum 300 mm, and locally deeper (up to ~600 mm) where heavy roots or organic pockets are observed.

Remove all stumps and large woody material, not just cutting flush with the surface. No timber, mulch, or major roots to remain within the slab influence depth.

To meet 100 kPa, deep undercut of loose sands and replace with controlled clean compacted non cohesive fill in accordance with AS 3798.

Upon remediation then the site could potentially be reclassified to an "A"

The site classification was determined by visual assessment of relevant site conditions, analysis of the soil profiles revealed by the Test Pit logs, and laboratory testing of samples taken from the boreholes. Post any earthworks, and individual building envelope are determined, it is highly reccomended follow up classifications are obtained

All test pit profiles noted are recorded from existing ground levels as on the day of investigation and any removal or addition of imported material will alter the results found. The Site classification is valid only in the state of which the investigation was conducted on the day.

This report and associated documentation was undertaken for the specific purpose described in the report and shall not be relied on for other purposes.

This report was prepared solely for the use by the Department of Planning, Lands and Heritage any reliance assumed by other parties on this report shall be at such parties own risk.

Appendix A

Maps

Figure 1

Test Pits 1 to 25

Test Pit Locations



GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Job No: 11992
Client: Department of Planning, Lands and Heritage
Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330

Figure 2

Supplied Test Plan



Appendix B

Test Pit Logs

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Report No	Test Pit No.	Sample No.	Sheet		
11992/1	1	11992G1	8	of	58

Client:	Department of Planning, Lands and Heritage	**Date Commenced**	**Operator/Contractor:**	GSG
Project:	Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330	22/10/2025	**Equipment Type:**	Kubota KX41-3V
		Logged By	**Excavation Method :**	300mm Auger
Location:	Proposed Residential Development 50 H 583882, 6127187	A.Purdie / T.Barradeen	**Position:**	Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						Water table encounted at 680mm below existing ground level.		
0 - 400	400	**(Topsoil) Silty SAND:** Dark grey / black, fine to medium.	W	L				✓
		Contains high organics.						
		Contains roots and root fibres.						
400 - 580	180	**SAND with silt:** Grey, fine to medium.	W	L				✓
		Contains roots and root fibres						
580 - 800	220	**SAND with silt:** Light grey, fine to medium.	W	MD				✓
800 - 2000	1200	**SAND with silt:** Grey, fine to medium.	W	MD				✓

Samples Taken			
TP1 0-250,250-500,500-750,750-1000,1000-1250,1250-1500,1500-1750,1750-2000mm (11992G40 - 11992G47) pHF,phFOX	Target Depth	✓	2000
	Cave In		
	Refusal		
Comments	Near Refusal		
In-field Talsma-Hallam permeability 11992G27	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.1



Excavation



Spoil

GREAT SOUTHERN GEOTECHNICS CONSTRUCTION MATERIALS TESTING	**Job No:** 11992 **Client:** Department of Planning, Lands and Heritage **Project:** Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330	**Sheet** 9 **of** 58

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Report No	Test Pit No.	Sample No.	Sheet		of	
11992/1	2	11992G2	10		58	

Client: Department of Planning, Lands and Heritage

Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330

Location: Proposed Residential Development
50 H 583883 6127160

Date Commenced 22/10/2025

Logged By A.Purdie / T.Barradeen

Operator/Contractor: GSG

Equipment Type: Kubota KX41-3V

Excavation Method : 300mm Auger

Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						Water table encounted at 700mm below existing ground level.		
0 - 400	400	**(Topsoil) SAND with silt:** Dark grey, fine to medium.	W	L				✓
		Contains roots and root fibres.						
400 - 2000	1600	**SAND with silt:** Grey to light grey, fine to coarse.	W	L-MD				✓
		Contains roots and root fibres to 800mm.						

Samples Taken			
TP2 0-250,250-500,500-750,750-1000,1000-1250,1250-1500,1500-1750,1750-2000mm (11992G48 - 11992G55) pHF,phFOX	Target Depth	✓	2000
	Cave In		
	Refusal		
Comments	Near Refusal		
	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.2



Excavation



Spoil

GREAT SOUTHERN GEOTECHNICS CONSTRUCTION MATERIALS TESTING	**Job No:** 11992 **Client:** Department of Planning, Lands and Heritage **Project:** Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330		**Sheet** 11 **of** 58

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Report No	Test Pit No.	Sample No.	Sheet		of	
11992/1	3	11992G3	12		58	

Client: Department of Planning, Lands and Heritage

Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330

Location: Proposed Residential Development
50 H 583957 6127158

Date Commenced 22/10/2025

Logged By A.Purdie / T.Barradeen

Operator/Contractor: GSG

Equipment Type: Kubota KX41-3V

Excavation Method : 300mm Auger

Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						No water table encountered.		
0 - 300	300	**(Topsoil) SAND with silt:** Grey, fine to medium.	M	VL				✓
		Contains roots and root fibres.						
300 - 2000	1700	**SAND:** Grey to light grey / white, fine to medium.	M	VL-MD				✓
		Contains roots and root fibres to 1200mm.						
		Refer to comment #						

Samples Taken			
TP3 0-250,250-500,500-750,750-1000,1000-1250,1250-1500,1500-1750,1750-2000mm (11992G56 - 11992G63) pHF,phFOX	Target Depth	✓	2000
	Cave In		
	Refusal		
Comments	Near Refusal		
# Textile debris encounted at 1000mm.	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.3



Excavation



Spoil

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GREAT SOUTHERN GEOTECHNICS CONSTRUCTION MATERIALS TESTING	**Report No** 11992/1	**Test Pit No.** 4	**Sample No.** 11992G4	**Sheet** 14 **of** 58

Client:	Department of Planning, Lands and Heritage	**Date Commenced**	**Operator/Contractor:**	GSG
Project:	Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330	22/10/2025	**Equipment Type:**	Kubota KX41-3V
		Logged By	**Excavation Method :**	300mm Auger
Location:	Proposed Residential Development 50 H 584086 6127176	A.Purdie / T.Barradeen	**Position:**	Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						No water table encountered.		
0 - 260	260	**(Topsoil) Silty SAND:** Grey / brown, fine to medium.	D/M	VL				✓
		Contauns roots and root fibres.						
260 - 1700	1440	**SAND with silt:** Grey, fine to medium.	M	VL-L				✓
		Contains roots and root fibres to 1200mm.						
1700 - 1800	100	**SAND with silt:** Light grey / brown, fine to medium.	M	L				✓
1800 - 2000	200	**SAND:** Light grey / white, fine to medium.	M	L				✓

Samples Taken			
TP4 0-250,250-500,500-750,750-1000,1000-1250,1250-1500,1500-1750,1750-2000mm (11992G64 - 11992G71) pHF,phFOX	Target Depth	✓	2000
	Cave In		
	Refusal		
Comments	Near Refusal		
	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.4



Excavation



Spoil

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GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

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11992/1	5	11992G5	Sheet	16	of	58

Client:	Department of Planning, Lands and Heritage	**Date Commenced**	**Operator/Contractor:**	GSG	
Project:	Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330	22/10/2025	**Equipment Type:**	Kubota KX41-3V	
		Logged By	**Excavation Method :**	300mm Auger	
Location:	Proposed Residential Development 50 H 584042 6127141	A.Purdie / T.Barradeen	**Position:**	Refer to site plan	

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						No water table encountered.		
0 - 100	100	**(Topsoil) SAND with silt:** Light grey, fine to medium.	M	VL				✓
		Contains roots and root fibres.						
100 - 2000	1900	**SAND:** Light grey to white, fine to medium.	M	VL-MD				✓
		Contains roots and root fibres to 1200mm.						

Samples Taken			
TP5 0-250,250-500,500-750,750-1000,1000-1250,1250-1500,1500-1750,1750-2000mm (11992G72 - 11992G79) pHF,phFOX	Target Depth	✓	2000
	Cave In		
	Refusal		
Comments	Near Refusal		
	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.5



Excavation



Spoil

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GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Report No	Test Pit No.	Sample No.	Sheet			
11992/1	6	11992G6	Sheet	18	of	58

Client: Department of Planning, Lands and Heritage

Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330

Location: Proposed Residential Development
50 H 583960 6127134

Date Commenced 22/10/2025

Logged By A.Purdie / T.Barradeen

Operator/Contractor: GSG

Equipment Type: Kubota KX41-3V

Excavation Method : 300mm Auger

Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						No water table encountered.		
0 - 200	200	**(Topsoil) SAND with silt:** Grey, fine to medium.	D/M	L				✓
		Contains roots and root fibres.						
200 - 2000	1800	**SAND:** Light grey to white, fine to medium.	M	L-D				✓
		Contains roots and root fibres to 1000mm.						

Samples Taken			
TP6 0-250,250-500,500-750,750-1000,1000-1250,1250-1500,1500-1750,1750-2000mm (11992G80 - 11992G87) pHF,phFOX	Target Depth	✓	2000
	Cave In		
	Refusal		
Comments	Near Refusal		
In-field Talsma-Hallam permeability 11992G28	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.6



Excavation



Spoil

GREAT SOUTHERN GEOTECHNICS CONSTRUCTION MATERIALS TESTING	**Job No:** 11992 **Client:** Department of Planning, Lands and Heritage **Project:** Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330	**Sheet** 19 **of** 58

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Report No	Test Pit No.	Sample No.	Sheet		
11992/1	7	11992G7	Sheet 20	of	58

Client: Department of Planning, Lands and Heritage

Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330

Location: Proposed Residential Development
50 H 583963 6127096

Date Commenced 22/10/2025

Logged By A.Purdie / T.Barradeen

Operator/Contractor: GSG

Equipment Type: Kubota KX41-3V

Excavation Method : 300mm Auger

Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						No water table encountered.		
0 - 250	250	**(Topsoil) SAND with silt:** Grey, fine to medium.	M	L				✓
		Contains roots and root fibres.						
250 - 1150	900	**SAND:** Brown / light brown / white, fine to medium.	M	MD-D				✓
		Contains roots and root fibres to 900mm.						
1150 - 2000	850	**SAND:** White, fine to medium.	M	D				✓

Samples Taken			
TP7 0-250,250-500,500-750,750-1000,1000-1250,1250-1500,1500-1750,1750-2000mm (11992G88 - 11992G95) pHF,phFOX	Target Depth	✓	2000
	Cave In		
TP7 250 - 1150mm (11992G38 AS 1289.3.6.1,3.1.1,3.2.1,3.3.1,3.4.1,5.2.1,6.2.2)	Refusal		
Comments	Near Refusal		
	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.7



Excavation



Spoil

GREAT SOUTHERN GEOTECHNICS CONSTRUCTION MATERIALS TESTING	**Job No:** 11992 **Client:** Department of Planning, Lands and Heritage **Project:** Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330	**Sheet** 21 **of** 58

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Report No	Test Pit No.	Sample No.	Sheet			
11992/1	8	11992G8	Sheet	22	of	58

Client: Department of Planning, Lands and Heritage

Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330

Location: Proposed Residential Development
50 H 583948 6127068

Date Commenced 22/10/2025

Logged By A.Purdie / T.Barradeen

Operator/Contractor: GSG

Equipment Type: Kubota KX41-3V

Excavation Method : 300mm Auger

Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						No water table encountered.		
0 - 180	180	**(Topsoil) SAND with silt:** Light grey, fine to medium.	M	L				✓
		Contains roots and root fibres.						
180 - 400	220	**SAND:** Brown / light brown mottle, fine to medium.	M	D				✓
		Contains roots and root fibres to 350mm.						
400 - 1700	1300	**SAND:** White, fine to medium.	M	D				✓
1700 - 1800	100	**Silty SAND:** Brown, fine to medium.	M	MD-D	PC			✓
1800 - 2000	200	**SAND:** Brown / light brown mottle, fine to medium.	M	MD-D				✓

Samples Taken			
P8 0-250,250-500,500-750,750-1000,1000-1250,1250-1500,1500-1750,1750-2000mm (11992G96 - 11992G103) pHF,phFO	Target Depth	✓	2000
	Cave In		
	Refusal		
Comments	Near Refusal		
	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.8



Excavation



Spoil

GREAT SOUTHERN GEOTECHNICS CONSTRUCTION MATERIALS TESTING	**Job No:**	11992	**Sheet**	23	**of** 58
	Client:	Department of Planning, Lands and Heritage			
	Project:	Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330			

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Report No	Test Pit No.	Sample No.	Sheet		
11992/1	9	11992G9	Sheet 24	of	58

Client: Department of Planning, Lands and Heritage

Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330

Location: Proposed Residential Development
50 H 583965 6127023

Date Commenced 23/10/2025

Logged By A.Purdie / T.Barradeen

Operator/Contractor: GSG

Equipment Type: Kubota KX41-3V

Excavation Method : 300mm Auger

Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						No water table encountered.		
0 - 290	290	**(Topsoil) SAND with silt:** Grey, fine to medium.	M	MD				
		Contains roots and root fibres.						
290 - 650	360	**SAND:** Light brown / yellow, fine to medium.	M	D-VD				
650 - 2000	1350	**SAND:** Light grey to white, fine to medium.	M	D-VD				

Samples Taken			
	Target Depth	✓	2000
	Cave In		
	Refusal		
Comments	Near Refusal		
In-field Talsma-Hallam permeability 11992G29	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.9



Excavation



Spoil

GREAT SOUTHERN GEOTECHNICS CONSTRUCTION MATERIALS TESTING	**Job No:** 11992 **Client:** Department of Planning, Lands and Heritage **Project:** Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330	**Sheet** 25 **of** 58

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Report No	Test Pit No.	Sample No.	Sheet		
11992/1	10	11992G10	Sheet 26	of	58

Client: Department of Planning, Lands and Heritage

Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330

Location: Proposed Residential Development
50 H 583963 6126983

Date Commenced 23/10/2025

Logged By A.Purdie / T.Barradeen

Operator/Contractor: GSG

Equipment Type: Kubota KX41-3V

Excavation Method : 300mm Auger

Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						No water table encountered.		
0 - 180	180	**(Topsoil) Silty SAND:** Grey / brown, fine to medium.	M	L				
		Contains roots and root fibres.						
		Refer to comment #						
180 - 770	590	**SAND with silt:** Grey to light grey, fine to medium.	M	MD				
		Contains roots and root fibres to 600mm.						
770 - 2000	1230	**SAND:** White, fine to medium.	M					

Samples Taken			
	Target Depth	✓	2000
	Cave In		
	Refusal		
Comments	Near Refusal		
# Contains rubber debris embedded in topsoil.	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.10



Excavation



Spoil

GREAT SOUTHERN GEOTECHNICS CONSTRUCTION MATERIALS TESTING	**Job No:** 11992 **Client:** Department of Planning, Lands and Heritage **Project:** Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330	**Sheet** 27 **of** 58

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Report No	Test Pit No.	Sample No.	Sheet		
11992/1	11	11992G11	Sheet 28	of	58

Client: Department of Planning, Lands and Heritage

Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330

Location: Proposed Residential Development
50 H 583959 6126930

Date Commenced 22/10/2025

Logged By A.Purdie / T.Barradeen

Operator/Contractor: GSG

Equipment Type: Kubota KX41-3V

Excavation Method : 300mm Auger

Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						No water table encountered.		
0 - 350	350	**(Topsoil) SAND with silt: Grey, fine to medium.**	M	L				
		Contains roots and root fibres.						
350 - 600	250	**SAND with silt:** Light grey, fine to medium.	M	L-MD				
		Contains roots and root fibres.						
600 - 2000	1400	**SAND:** White, fine to medium	M	MD-D				

Samples Taken			
	Target Depth	✓	2000
	Cave In		
	Refusal		
Comments	Near Refusal		
	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.11



Excavation



Spoil

GREAT SOUTHERN GEOTECHNICS CONSTRUCTION MATERIALS TESTING	**Job No:** 11992 **Client:** Department of Planning, Lands and Heritage **Project:** Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330	**Sheet** 29 **of** 58

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Report No	Test Pit No.	Sample No.	Sheet		
11992/1	12	11992G12	Sheet 30	of	58

Client: Department of Planning, Lands and Heritage

Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330

Location: Proposed Residential Development
50 H 583996 6126930

Date Commenced 22/10/2025

Logged By A.Purdie / T.Barradeen

Operator/Contractor: GSG

Equipment Type: Kubota KX41-3V

Excavation Method : 300mm Auger

Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						No water table encountered.		
0 - 290	290	**(Topsoil) SAND with silt:** Grey, fine to medium.	M	L				
		Contains roots and root fibres.						
290 - 550	260	**SAND with silt:** Light grey, fine to medium.	M	MD				
		Contains roots and root fibres.						
550 - 2000	1450	**SAND:** White, fine to medium.	M	MD-D				

Samples Taken			
	Target Depth	✓	2000
	Cave In		
	Refusal		
Comments	Near Refusal		
	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.12



Excavation



Spoil

GREAT SOUTHERN GEOTECHNICS CONSTRUCTION MATERIALS TESTING	**Job No:** 11992 **Client:** Department of Planning, Lands and Heritage **Project:** Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330	**Sheet** 31 **of** 58

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Report No	Test Pit No.	Sample No.	Sheet		
11992/1	13	11992G13	32	of	58

Client:	Department of Planning, Lands and Heritage	**Date Commenced**	**Operator/Contractor:**	GSG
Project:	Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330	23/10/2025	**Equipment Type:**	Kubota KX41-3V
		Logged By	**Excavation Method :**	300mm Auger
Location:	Proposed Residential Development 50 H 584003 6126985	A.Purdie / T.Barradeen	**Position:**	Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						No water table encountered.		
0 - 200	200	**(Topsoil) Silty SAND:** Grey / brown, fine to medium.	M	L				✓
		Contains roots and root fibres.						
200 - 430	230	**SAND with silt:** Grey to light grey, fine to medium.	M	L-MD				✓
		Contains roots and root fibres.						
430 - 2000	1570	**SAND:** Light grey to white, fine to medium.	M	MD				✓

Samples Taken			
TP13 0-250,250-500,500-750,750-1000,1000-1250,1250-1500,1500-1750,1750-2000mm (11992G104-11992G111) pHF,phFOX	Target Depth	✓	2000
	Cave In		
	Refusal		
Comments	Near Refusal		
In-field Talsma-Hallam permeability 11992G30	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.13



Excavation



Spoil

GREAT SOUTHERN GEOTECHNICS CONSTRUCTION MATERIALS TESTING	**Job No:** 11992 **Client:** Department of Planning, Lands and Heritage **Project:** Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330	**Sheet** 33 **of** 58

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Report No	Test Pit No.	Sample No.	Sheet		
11992/1	14	11992G14	Sheet 34	of	58

Client:	Department of Planning, Lands and Heritage	**Date Commenced**	**Operator/Contractor:**	GSG	
Project:	Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330	23/10/2025	**Equipment Type:**	Kubota KX41-3V	
		Logged By	**Excavation Method :**	300mm Auger	
Location:	Proposed Residential Development 50 H 584003 6127024	A.Purdie / T.Barradeen	**Position:**	Refer to site plan	

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						No water table encountered.		
0 - 120	120	**(Topsoil) Silty SAND:** Grey, fine to medium.	M	L				
		Contains roots and root fibres.						
120 - 250	130	**SAND with silt:** Light brown, fine to medium.	M	MD				
		Contains roots and root fibres.						
250 - 2000	1750	**SAND:** Light grey / white, fine to medium.	M	MD				

Samples Taken			
	Target Depth	✓	2000
	Cave In		
	Refusal		
Comments	Near Refusal		
	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.14



Excavation



Spoil

GREAT SOUTHERN GEOTECHNICS CONSTRUCTION MATERIALS TESTING	**Job No:** 11992 **Client:** Department of Planning, Lands and Heritage **Project:** Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330	**Sheet** 35 **of** 58

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Report No	Test Pit No.	Sample No.	Sheet		
11992/1	15	11992G15	Sheet 36	of	58

Client: Department of Planning, Lands and Heritage

Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330

Location: Proposed Residential Development
50 H 584013 6127064

Date Commenced 23/10/2025

Logged By A.Purdie / T.Barradeen

Operator/Contractor: GSG

Equipment Type: Kubota KX41-3V

Excavation Method : 300mm Auger

Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						No water table encountered.		
0 - 220	220	**(Topsoil) Silty SAND with gravel:** Grey / brown, fine to medium.	M	MD				
		Fine to coarse, sub-rounded to sub-angular gravel.						
		Contains cobbles, roots and root fibres.						
220 - 400	180	**SAND with silt:** Light brown / grey, fine to medium.	M	D				
		Contains roots and root fibres.						
400 - 2000	1600	**SAND:** Light grey / white, fine to medium.	M	D-MD				

Samples Taken			
TP15 400 - 2000mm (11992G38 AS 1289.3.6.1,3.1.1,3.2.1,3.3.1,3.4.1,5.2.1,6.2.2)	Target Depth	✓	2000
	Cave In		
	Refusal		
Comments	Near Refusal		
	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.15



Excavation



Spoil

GREAT SOUTHERN GEOTECHNICS CONSTRUCTION MATERIALS TESTING	**Job No:** 11992 **Client:** Department of Planning, Lands and Heritage **Project:** Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330	**Sheet** 37 **of** 58

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Report No	Test Pit No.	Sample No.	Sheet		
11992/1	16	11992G16	Sheet 38	of	58

Client: Department of Planning, Lands and Heritage

Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330

Location: Proposed Residential Development
50 H 584080 6127108

Date Commenced 23/10/2025

Logged By A.Purdie / T.Barradeen

Operator/Contractor: GSG

Equipment Type: Kubota KX41-3V

Excavation Method : 300mm Auger

Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						No water table encountered.		
0 - 300	300	**(Topsoil) SAND with silt: Grey, fine to medium.**	M	VL				
		Contains roots and root fibres.						
300 - 2000	1700	**SAND:** Light grey to white, fine to medium.	M	L-MD				

Samples Taken			
	Target Depth	✓	2000
	Cave In		
	Refusal		
Comments	Near Refusal		
In-field Talsma-Hallam permeability 11992G31	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.16



Excavation



Spoil

GREAT SOUTHERN GEOTECHNICS CONSTRUCTION MATERIALS TESTING	**Job No:** 11992 **Client:** Department of Planning, Lands and Heritage **Project:** Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330	**Sheet** 39 **of** 58

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Report No	Test Pit No.	Sample No.	Sheet		
11992/1	17	11992G17	Sheet 40	of	58

Client: Department of Planning, Lands and Heritage

Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330

Location: Proposed Residential Development
50 H 584069 6127059

Date Commenced 23/10/2025

Logged By A.Purdie / T.Barradeen

Operator/Contractor: GSG

Equipment Type: Kubota KX41-3V

Excavation Method : 300mm Auger

Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
0 - 400	400	**(Topsoil) SAND with silt:** Grey, fine to medium.	M	VL		No water table encountered.		
		Contains roots and root fibres.						
400 - 1700	1300	**SAND with silt:** Grey / white mottle, fine to medium.	M	MD				
1700 - 2000	300	**SAND:** White, fine to medium.	M	MD				

Samples Taken			
	Target Depth	✓	2000
	Cave In		
	Refusal		
Comments	Near Refusal		
	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.17



Excavation



Spoil

GREAT SOUTHERN GEOTECHNICS CONSTRUCTION MATERIALS TESTING	**Job No:** 11992 **Client:** Department of Planning, Lands and Heritage **Project:** Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330	**Sheet** 41 **of** 58

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Report No	Test Pit No.	Sample No.	Sheet		
11992/1	18	11992G18	42	of	58

Client:	Department of Planning, Lands and Heritage	**Date Commenced**	**Operator/Contractor:**	GSG
Project:	Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330	23/10/2025	**Equipment Type:**	Kubota KX41-3V
		Logged By	**Excavation Method :**	300mm Auger
Location:	Proposed Residential Development 50 H 584069 6127026	A.Purdie / T.Barradeen	**Position:**	Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						No water table encountered.		
0 - 300	300	**(Topsoil) SAND with silt:** Grey, fine to medium.	M	L				✓
		Contains roots and root fibres.						
300 - 750	450	**SAND with silt:** Light grey / white, fine to medium.	M	L-MD				✓
		Contains roots and root fibres.						
750 - 2000	1250	**SAND:** White mottle light grey, fine to medium.	M	MD				✓

Samples Taken			
TP18 0-250,250-500,500-750,750-1000,1000-1250,1250-1500,1500-1750,1750-2000mm (11992G111-11992G119) pHF,phFOX	Target Depth	✓	2000
	Cave In		
	Refusal		
Comments	Near Refusal		
In-field Talsma-Hallam permeability 11992G32	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.18



Excavation



Spoil

GREAT SOUTHERN GEOTECHNICS CONSTRUCTION MATERIALS TESTING	**Job No:** 11992 **Client:** Department of Planning, Lands and Heritage **Project:** Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330	**Sheet** 43 **of** 58

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Report No	Test Pit No.	Sample No.	Sheet		
11992/1	19	11992G19	44	of	58

Client:	Department of Planning, Lands and Heritage	**Date Commenced**	**Operator/Contractor:**	GSG
Project:	Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330	23/10/2025	**Equipment Type:**	Kubota KX41-3V
		Logged By	**Excavation Method :**	300mm Auger
Location:	Proposed Residential Development 50 H 584059 6126965	A.Purdie / T.Barradeen	**Position:**	Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						No water table encountered.		
0 - 310	310	**(Topsoil) SAND with silt:** Grey, fine to medium.	M	L				
		Contains roots and root fibres.						
310 - 2000	1690	**SAND:** Light grey to white, fine to medium.	M	MD				
		Contains roots and root fibres to 900mm.						

Samples Taken			
	Target Depth	✓	2000
	Cave In		
	Refusal		
Comments	Near Refusal		
	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.19



Excavation



Spoil

GREAT SOUTHERN GEOTECHNICS CONSTRUCTION MATERIALS TESTING	**Job No:** 11992 **Client:** Department of Planning, Lands and Heritage **Project:** Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330	**Sheet** 45 **of** 58

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Report No	Test Pit No.	Sample No.	Sheet		
11992/1	20	11992G20	Sheet 46	of	58

Client: Department of Planning, Lands and Heritage

Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330

Location: Proposed Residential Development
50 H 584066 6126923

Date Commenced 22/10/2025

Logged By A.Purdie / T.Barradeen

Operator/Contractor: GSG

Equipment Type: Kubota KX41-3V

Excavation Method : 300mm Auger

Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
0 - 460	460	**(Topsoil) SAND with silt:** Grey, fine to medium.	M	L		No water table encountered.		
		Contains roots and root fibres.						
460 - 680	220	**SAND with silt:** Light grey, fine to medium.	M	L-MD				
		Contains roots and root fibres.						
680 - 2000	1320	**SAND:** White, fine to medium.	M	MD				

Samples Taken			
	Target Depth	✓	2000
	Cave In		
	Refusal		
Comments	Near Refusal		
	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.20



Excavation



Spoil

GREAT SOUTHERN GEOTECHNICS CONSTRUCTION MATERIALS TESTING	**Job No:** 11992 **Client:** Department of Planning, Lands and Heritage **Project:** Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330	**Sheet** 47 **of** 58

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Report No	Test Pit No.	Sample No.	Sheet		
11992/1	21	11992G21	48	of	58

Client:	Department of Planning, Lands and Heritage	**Date Commenced**	**Operator/Contractor:**	GSG
Project:	Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330	22/10/2025	**Equipment Type:**	Kubota KX41-3V
		Logged By	**Excavation Method :**	300mm Auger
Location:	Proposed Road Widening and Access Connection 50 H 583855 6126961	A.Purdie / T.Barradeen	**Position:**	Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						No water table encountered.		
0 - 250	250	**(Topsoil) SAND with silt and gravel:** Grey, fine to medium.	D/M	MD				
		Fine to medium, sub-rounded to sub-angular gravel.						
		Contains roots and root fibres.						
250 - 550	300	**SAND:** Grey, fine to medium.	M	MD				✓
		Contains roots and root fibres.						
550 - 1000	450	**SAND:** White, fine to medium.	M	MD				

Samples Taken			
TP21 250 - 550mm (11992G33 AS 1289.3.6.1,3.1.1,3.2.1,3.3.1,3.4.1,5.2.1,6.1.1)	Target Depth	✓	1000
	Cave In		
	Refusal		
Comments	Near Refusal		
	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.21



Excavation



Spoil

GREAT SOUTHERN GEOTECHNICS CONSTRUCTION MATERIALS TESTING	**Job No:** 11992 **Client:** Department of Planning, Lands and Heritage **Project:** Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330	**Sheet** 49 **of** 58

GREAT SOUTHERN GEOTECHNICS CONSTRUCTION MATERIALS TESTING	**Report No** 11992/1	**Test Pit No.** 22	**Sample No.** 11992G22	**Sheet** 50 **of** 58

Client:	Department of Planning, Lands and Heritage	**Date Commenced**	**Operator/Contractor:**	GSG
Project:	Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330	22/10/2025	**Equipment Type:**	Kubota KX41-3V
Location:	Proposed Road Widening and Access Connection 50 H 583853 6127085	**Logged By** A.Purdie / T.Barradeen	**Excavation Method :**	300mm Auger
			Position:	Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						Water table encounted at 600mm below existing ground level.		
0 - 350	350	**(Topsoil) Silty SAND:** Dark grey / black, fine to medium.	M-W	L				
		Contains roots and root fibres.						
350 - 1000	650	**SAND with silt:** Grey, fine to medium.	W	MD				✓

Samples Taken	Target Depth	✓	1000
TP22 350 - 1000mm (11992G34 AS 1289.3.6.1,3.1.1,3.2.1,3.3.1,3.4.1,5.2.1,6.1.1)	Cave In		
	Refusal		
Comments	Near Refusal		
	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.22



Excavation



Spoil

GREAT SOUTHERN GEOTECHNICS CONSTRUCTION MATERIALS TESTING	**Job No:** 11992 **Client:** Department of Planning, Lands and Heritage **Project:** Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330	**Sheet** 51 **of** 58

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Report No	Test Pit No.	Sample No.	Sheet		of	
11992/1	23	11992G23	52		58	

Client: Department of Planning, Lands and Heritage

Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330

Location: Proposed Road Widening and Access Connection 50 H 583866 6127219

Date Commenced 22/10/2025

Logged By A.Purdie / T.Barradeen

Operator/Contractor: GSG

Equipment Type: Kubota KX41-3V

Excavation Method : 300mm Auger

Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						Water table encounted at 700mm below existing ground level.		
0 - 300	300	**(Topsoil) Silty SAND:** Dark grey / black, fine to medium.	W	L				
		Contains roots and root fibres.						
300 - 750	450	**SAND with silt:** Dark grey, fine to medium.	W	L-MD				✓
		Contains roots and root fibres.						
750 - 1000	250	**SAND with silt:** Grey, fine to medium.	W	MD				
		Perched water table encounted at 0 - 300mm below existing ground level.						

Samples Taken			
TP23 300 - 750mm (11992G35 AS 1289.3.6.1,3.1.1,3.2.1,3.3.1,3.4.1,5.2.1,6.1.1)	Target Depth	✓	1000
	Cave In		
	Refusal		
Comments	Near Refusal		
	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.23



Excavation



Spoil

GREAT SOUTHERN GEOTECHNICS CONSTRUCTION MATERIALS TESTING	**Job No:** 11992 **Client:** Department of Planning, Lands and Heritage **Project:** Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330	**Sheet** 53 **of** 58

GREAT SOUTHERN GEOTECHNICS CONSTRUCTION MATERIALS TESTING	**Report No** 11992/1	**Test Pit No.** 24	**Sample No.** 11992G24	**Sheet** 54 **of** 58

Client:	Department of Planning, Lands and Heritage	**Date Commenced**	**Operator/Contractor:**	GSG
Project:	Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330	22/10/2025	**Equipment Type:**	Kubota KX41-3V
		Logged By	**Excavation Method :**	300mm Auger
Location:	Proposed Road Widening and Access Connection 50 H 583963 6127231	A.Purdie / T.Barradeen	**Position:**	Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						Water table encounted at 780mm below existing ground level.		
0 - 280	280	**(Topsoil) Silty SAND:** Grey, fine to medium.	M	L				
		Contains roots and root fibres.						
280 - 1000	720	**SAND:** Grey to light grey, fine to medium.	M-W	L-MD				✓

Samples Taken	Target Depth	✓	1000
TP24 280 - 1000mm (11992G36 AS 1289.3.6.1,3.1.1,3.2.1,3.3.1,3.4.1,5.2.1,6.1.1)	Cave In		
	Refusal		
Comments	Near Refusal		
	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.24



Excavation



Spoil

GREAT SOUTHERN GEOTECHNICS CONSTRUCTION MATERIALS TESTING	**Job No:** 11992 **Client:** Department of Planning, Lands and Heritage **Project:** Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330	**Sheet** 55 **of** 58

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

Report No	Test Pit No.	Sample No.	Sheet		
11992/1	25	11992G25	56	of	58

Client: Department of Planning, Lands and Heritage

Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330

Location: Proposed Road Widening and Access Connection 50 H 584081 6127228

Date Commenced 22/10/2025

Logged By A.Purdie / T.Barradeen

Operator/Contractor: GSG

Equipment Type: Kubota KX41-3V

Excavation Method : 300mm Auger

Position: Refer to site plan

Depth Below Surface (mm)	Layer Depth (mm)	Material Description SOIL TYPE, Plasticity, Colour, Particle characteristics, Secondary and other minor components	Moist. Condition	Consistency / Strength	Cementation	Water Table	Classification Symbol	Sample/Test
						No water table encountered.		
0 - 500	500	**(Topsoil) SAND with silt:** Grey / brown, fine to medium.	D	L				
		Contains toots and root fibres.						
500 - 1000	500	**SAND:** Grey to white, fine to medium.	M	MD				✓

Samples Taken			
TP25 500 - 1000mm (11992G37 AS 1289.3.6.1,3.1.1,3.2.1,3.3.1,3.4.1,5.2.1,6.1.1)	Target Depth	✓	1000
	Cave In		
	Refusal		
Comments	Near Refusal		
	Flooding		
	Lack of Reach		

Cohesive	Non-Cohesive	Rock	Cementation	General
VS - Very Soft	VL - Very Loose	EL - Extremely Low	IN - Indurated	D - Dry M - Moist W - Wet
S - Soft	L - Loose	VL - Very Low	PC - Poorly Cemented	
F - Firm	MD - Medium Dense	L - Low		N/A - Not Applicable
St - Stiff	D - Dense	M - Medium	MC - moderately Cemented	
VSt - Very Stiff	VD - Very Dense	H - High		N/D - Not Determined
H - Hard	CO - Compact	VH - Very High	WC - Well Cemented	
		EH - Extremely High		

Test Pit No.25



Excavation



Spoil

GREAT SOUTHERN GEOTECHNICS CONSTRUCTION MATERIALS TESTING	**Job No:** 11992 **Client:** Department of Planning, Lands and Heritage **Project:** Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330	**Sheet** 57 **of** 58

Appendix C

Test Results

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

5a 209 Chester Pass Rd, Milpara WA 6330
Phone: 0407 903 297
Email: Info@gsgeotechnics.com
WWW.GSGEOTECHNICS.COM

Client: Department of Planning, Lands and Heritage
Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330
Section: Proposed Development

Client Number: PE013471 / QU-1764-R1
Date Tested: 22 & 23/10/2025

Dynamic Cone Penetrometer Test Report

Test Method - AS 1289.6.3.2

Sample No.	11992G26	Material Description	SAND

Penetration Resistance - Seated at 100 mm below existing ground level.												Moisture Condition	Ground Water Table (If known)	Reduced Ground Surface Level
Site No.	Test Pit No.	100-200 (mm)	200-300 (mm)	300-400 (mm)	400-500 (mm)	500-600 (mm)	600-700 (mm)	700-800 (mm)	800-900 (mm)	900-1000 (mm)	1000-1100 (mm)			
1	1	1	1	1	2	2	3	4	4	4	4	Wet	680mm	0
2	2	1	1	1	1	2	2	2	2	2	1	Wet	700mm	0
3	3	1			1		1	1	1	1		Moist	Unknown	0
4	4	1		1	1	1	1	1		1		Moist	Unknown	0
5	5	1			1		1	1		2	2	Moist	Unknown	0
6	6	1	2	2	3	3	3	2	3	3	3	Moist	Unknown	0
7	7	1	2	3	4	5	5	5	6	8	5	Moist	Unknown	0
8	8	1	2	2	5	4	5	5	5	5	4	Moist	Unknown	0
9	9	2	3	5	7	10	13	17	13	11	9	Moist	Unknown	0
10	10	1		2	2	3	3	3	3	3	2	Moist	Unknown	0
11	11	1	1	2	1	2	2	2	2	2	2	Moist	Unknown	0
12	12	1	1	2	2	2	1	2	2	2	2	Moist	Unknown	0
13	13	1	1	1	2	2	3	3	3	2	2	Moist	Unknown	0
14	14	1	2	2	2	3	4	4	4	3	3	Moist	Unknown	0
15	15	2	2	4	6	7	5	4	5	4	3	Moist	Unknown	0
16	16	1		1	1	2	2	2	1	2	2	Moist	Unknown	0
17	17	1		1	1	1	2	1	2	2	2	Moist	Unknown	0
18	18	1	1	2	2	2	2	2	2	3	2	Moist	Unknown	0
19	19	1	2	2	3	3	3	3	3	3	2	Moist	Unknown	0
20	20	1	1	1	1	2	2	2	2	2	2	Moist	Unknown	0

Site plan not to scale

Refer to Figure 1 on Report 11992/1 for test locations

Comments:

Distribution: Laboratory File / Vincent Jenkins
Document ID: WS_AS_DCP-2_Rev3_Mar2024
Accredited for compliance with ISO/IEC 17025 - Testing - Accreditation No. 20092

Name: A.Purdie
Function: Laboratory Manager
Date: 10/11/2025

Approved Signatory:

NATA
WORLD RECOGNISED ACCREDITATION

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

5a 209 Chester Pass Rd, Milpara WA 6330
Phone: 0407 903 297
Email: Info@gsgeotechnics.com
WWW.GSGEOTECHNICS.COM

Client: Department of Planning, Lands and Heritage
Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330
Section: Proposed Development

Client Number: PE013471 / QU-1764-R1
Date Tested: 22 & 23/10/2025

Dynamic Cone Penetrometer Test Report

Test Method - AS 1289.6.3.2

Sample No.	11992G26	Material Description	SAND

Penetration Resistance - Seated at 1100 mm below existing ground level.												Moisture Condition	Ground Water Table (If known)	Reduced Ground Surface Level
Site No.	Test Pit No.	1100-1200 (mm)	1200-1300 (mm)	1300-1400 (mm)	1400-1500 (mm)	1500-1600 (mm)	1600-1700 (mm)	1700-1800 (mm)	1800-1900 (mm)	1900-2000 (mm)	2000-2100 (mm)			
1	1	3	4	5	5	5	5	6	5	5	-	Wet	680mm	0
2	2	2	2	2	2	3	3	3	3	4	-	Wet	700mm	0
3	3	1	2	2	2	2	2	3	3	3	-	Moist	Unknown	0
4	4	1		1	2	1	1	1	2	2	-	Moist	Unknown	0
5	5	2	2	2	2	2	3	3	2	3	-	Moist	Unknown	0
6	6	3	3	4	3	4	4	4	4	5	-	Moist	Unknown	0
7	7	6	5	4	4	4	4	4	4	4	-	Moist	Unknown	0
8	8	3	3	4	3	4	3	3	4	4	-	Moist	Unknown	0
9	9	8	8	8	8	8	7	7	7	6	-	Moist	Unknown	0
10	10	2	2	2	2	3	2	3	3	3	-	Moist	Unknown	0
11	11	3	2	3	3	3	4	4	4	4	-	Moist	Unknown	0
12	12	2	2	3	2	3	3	4	3	4	-	Moist	Unknown	0
13	13	3	2	2	3	3	3	4	3	3	-	Moist	Unknown	0
14	14	3	3	3	3	3	3	3	4	3	-	Moist	Unknown	0
15	15	3	3	3	3	4	3	4	3	4	-	Moist	Unknown	0
16	16	3	2	3	3	3	3	3	3	4	-	Moist	Unknown	0
17	17	2	2	2	2	2	2	2	3	3	-	Moist	Unknown	0
18	18	3	3	3	3	3	3	3	3	4	-	Moist	Unknown	0
19	19	2	3	3	2	3	3	3	3	3	-	Moist	Unknown	0
20	20	2	3	3	2	3	3	3	3	3	-	Moist	Unknown	0

Site plan not to scale

Refer to Figure 1 on Report 11992/1 for test locations

NATA
WORLD RECOGNISED ACCREDITATION

Comments:

Distribution: Laboratory File / Vincent Jenkins
Document ID: WS_AS_DCP-2_Rev3_Mar2024
Accredited for compliance with ISO/IEC 17025 - Testing - Accreditation No. 20092

Name: A.Purdie
Function: Laboratory Manager
Date: 10/11/2025

Approved Signatory:

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

5a 209 Chester Pass Rd, Milpara WA 6330
Phone: 0407 903 297
Email: Info@gsgeotechnics.com
WWW.GSGEOTECHNICS.COM

Client: Department of Planning, Lands and Heritage
Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330
Section: Proposed Development

Client Number: PE013471 / QU-1764-R1
Date of Test: 23/10/2025

Talsma-Hallam Permeameter Test Data

Layer Type	In Situ	Material Description	Silty SAND
Location	Test Pit 1 (Refer to Report 11992/1)		

Sample No.	11992G27

Saturated Hydraulic Conductivity (cm/min)	**Not obtainable** Movement too slow to ascertain an accurate value
Saturated Hydraulic Conductivity (m/day)	
Saturated Hydraulic Conductivity (m/sec)	

Site Location



Comments: The Talsma-Hallam Permeameter is not a method covered by Great Southern Geotechnics Scope of Accreditation. No movement observed after 1 hour.

Disclaimer: Great Southern Geotechnics does not warrant data produced from the use of this spreadsheet or any interpretation based on that data.The Talsma-Hallam permeameter is suitable for use in soils with permeability in the range 0.009 to 2.9 metres/day (8.6 to 2,900 mm/day or 1x10-7to 3x10-5 metres/second). Any values obtained outside of this range may affect the validity of the results.

Distribution: Laboratory File / Vincent Jenkins
Document ID: WS_1547_TalsmaHallam_Rev6_Aug2025

Name: A.Purdie
Function: Laboratory Manager
Date: 10/11/2025

Approved By:

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5a 209 Chester Pass Rd, Milpara WA 6330
Phone: 0407 903 297
Email: Info@gsgeotechnics.com
WWW.GSGEOTECHNICS.COM

Client: Department of Planning, Lands and Heritage
Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330
Section: Proposed Development

Client Number: PE013471 / QU-1764-R1
Date of Test: 23/10/2025

Talsma-Hallam Permeameter Test Data

Layer Type	In Situ	Material Description	SAND with silt
Location	Test Pit 6 (Refer to Report 11992/1)		

Sample No.	11992G28

Saturated Hydraulic Conductivity (cm/min)	0.2925
Saturated Hydraulic Conductivity (m/day)	4.21
Saturated Hydraulic Conductivity (m/sec)	4.87E-05

Site Location



Comments: The Talsma-Hallam Permeameter is not a method covered by Great Southern Geotechnics Scope of Accreditation.

Disclaimer: Great Southern Geotechnics does not warrant data produced from the use of this spreadsheet or any interpretation based on that data.The Talsma-Hallam permeameter is suitable for use in soils with permeability in the range 0.009 to 2.9 metres/day (8.6 to 2,900 mm/day or 1x10-7to 3x10-5 metres/second). Any values obtained outside of this range may affect the validity of the results.

Distribution: Laboratory File / Vincent Jenkins
Document ID: WS_1547_TalsmaHallam_Rev6_Aug2025

Name: A.Purdie
Function: Laboratory Manager
Date: 10/11/2025

Approved By:

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CONSTRUCTION MATERIALS TESTING

5a 209 Chester Pass Rd, Milpara WA 6330
Phone: 0407 903 297
Email: Info@gsgeotechnics.com
WWW.GSGEOTECHNICS.COM

Client: Department of Planning, Lands and Heritage
Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330
Section: Proposed Development

Client Number: PE013471 / QU-1764-R1
Date of Test: 23/10/2025

Talsma-Hallam Permeameter Test Data

Layer Type	In Situ	Material Description	SAND with silt
Location	Test Pit 9 (Refer to Report 11992/1)		

Sample No.	11992G29

Saturated Hydraulic Conductivity (cm/min)	1.1114
Saturated Hydraulic Conductivity (m/day)	16.00
Saturated Hydraulic Conductivity (m/sec)	1.85E-04

Site Location



Comments: The Talsma-Hallam Permeameter is not a method covered by Great Southern Geotechnics Scope of Accreditation.

Disclaimer: Great Southern Geotechnics does not warrant data produced from the use of this spreadsheet or any interpretation based on that data.The Talsma-Hallam permeameter is suitable for use in soils with permeability in the range 0.009 to 2.9 metres/day (8.6 to 2,900 mm/day or 1x10-7to 3x10-5 metres/second). Any values obtained outside of this range may affect the validity of the results.

Distribution: Laboratory File / Vincent Jenkins
Document ID: WS_1547_TalsmaHallam_Rev6_Aug2025

Name: A.Purdie
Function: Laboratory Manager
Date: 10/11/2025

Approved By:

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CONSTRUCTION MATERIALS TESTING

5a 209 Chester Pass Rd, Milpara WA 6330
Phone: 0407 903 297
Email: Info@gsgeotechnics.com
WWW.GSGEOTECHNICS.COM

Client: Department of Planning, Lands and Heritage
Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330
Section: Proposed Development

Client Number: PE013471 / QU-1764-R1
Date of Test: 23/10/2025

Talsma-Hallam Permeameter Test Data

Layer Type	In Situ	Material Description	SAND with silt
Location	Test Pit 13 (Refer to Report 11992/1)		

Sample No.	11992G30

Saturated Hydraulic Conductivity (cm/min)	0.6435
Saturated Hydraulic Conductivity (m/day)	9.27
Saturated Hydraulic Conductivity (m/sec)	1.07E-04

Site Location



Comments: The Talsma-Hallam Permeameter is not a method covered by Great Southern Geotechnics Scope of Accreditation.

Disclaimer: Great Southern Geotechnics does not warrant data produced from the use of this spreadsheet or any interpretation based on that data.The Talsma-Hallam permeameter is suitable for use in soils with permeability in the range 0.009 to 2.9 metres/day (8.6 to 2,900 mm/day or 1x10-7to 3x10-5 metres/second). Any values obtained outside of this range may affect the validity of the results.

Distribution: Laboratory File / Vincent Jenkins
Document ID: WS_1547_TalsmaHallam_Rev6_Aug2025

Name: A.Purdie
Function: Laboratory Manager
Date: 10/11/2025

Approved By:

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

5a 209 Chester Pass Rd, Milpara WA 6330
Phone: 0407 903 297
Email: Info@gsgeotechnics.com
WWW.GSGEOTECHNICS.COM

Client: Department of Planning, Lands and Heritage
Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330
Section: Proposed Development

Client Number: PE013471 / QU-1764-R1
Date of Test: 23/10/2025

Talsma-Hallam Permeameter Test Data

Layer Type	In Situ	Material Description	SAND with silt
Location	Test Pit 16 (Refer to Report 11992/1)		

Sample No.	11992G31

Saturated Hydraulic Conductivity (cm/min)	0.8775
Saturated Hydraulic Conductivity (m/day)	12.64
Saturated Hydraulic Conductivity (m/sec)	1.46E-04

Site Location



Comments: The Talsma-Hallam Permeameter is not a method covered by Great Southern Geotechnics Scope of Accreditation.

Disclaimer: Great Southern Geotechnics does not warrant data produced from the use of this spreadsheet or any interpretation based on that data.The Talsma-Hallam permeameter is suitable for use in soils with permeability in the range 0.009 to 2.9 metres/day (8.6 to 2,900 mm/day or 1x10-7to 3x10-5 metres/second). Any values obtained outside of this range may affect the validity of the results.

Distribution: Laboratory File / Vincent Jenkins
Document ID: WS_1547_TalsmaHallam_Rev6_Aug2025

Name: A.Purdie
Function: Laboratory Manager
Date: 10/11/2025

Approved By:

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

5a 209 Chester Pass Rd, Milpara WA 6330
Phone: 0407 903 297
Email: Info@gsgeotechnics.com
WWW.GSGEOTECHNICS.COM

Client: Department of Planning, Lands and Heritage
Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330
Section: Proposed Development

Client Number: PE013471 / QU-1764-R1
Date of Test: 23/10/2025

Talsma-Hallam Permeameter Test Data

Layer Type	In Situ	Material Description	SAND with silt
Location	Test Pit 18 (Refer to Report 11992/1)		

Sample No.	11992G32

Saturated Hydraulic Conductivity (cm/min)	1.3454
Saturated Hydraulic Conductivity (m/day)	19.37
Saturated Hydraulic Conductivity (m/sec)	2.24E-04

Site Location



Comments: The Talsma-Hallam Permeameter is not a method covered by Great Southern Geotechnics Scope of Accreditation.

Disclaimer: Great Southern Geotechnics does not warrant data produced from the use of this spreadsheet or any interpretation based on that data.The Talsma-Hallam permeameter is suitable for use in soils with permeability in the range 0.009 to 2.9 metres/day (8.6 to 2,900 mm/day or 1x10-7to 3x10-5 metres/second). Any values obtained outside of this range may affect the validity of the results.

Distribution: Laboratory File / Vincent Jenkins
Document ID: WS_1547_TalsmaHallam_Rev6_Aug2025

Name: A.Purdie
Function: Laboratory Manager
Date: 10/11/2025

Approved By:

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

5a 209 Chester Pass Rd, Milpara WA 6330
Phone: 0407 903 297
Email: Info@gsgeotechnics.com
WWW.GSGEOTECHNICS.COM

Client: Department of Planning, Lands and Heritage
Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330
Section: Proposed Road Widening and Access Connection

Client Number: PE013471 / QU-1764-R1
Date Sampled: 22/10/2025
Date Received: 22/10/2025

Soil Classification Test Report

Test Method - AS 1289.3.1.1,3.2.1,3.3.1,3.4.1,3.6.1
Date of Test - PSD - 30/10/2025 Limits - 31/10/2025

Location	Test Pit 21 (Refer to Report 11992/1)	Test Depth (mm)	250 - 550	Preparation Method	AS1289.1.1
Layer Type	In Situ	Layer Depth (mm)	300	Sampling Method	AS1289.1.2.1 C6.5

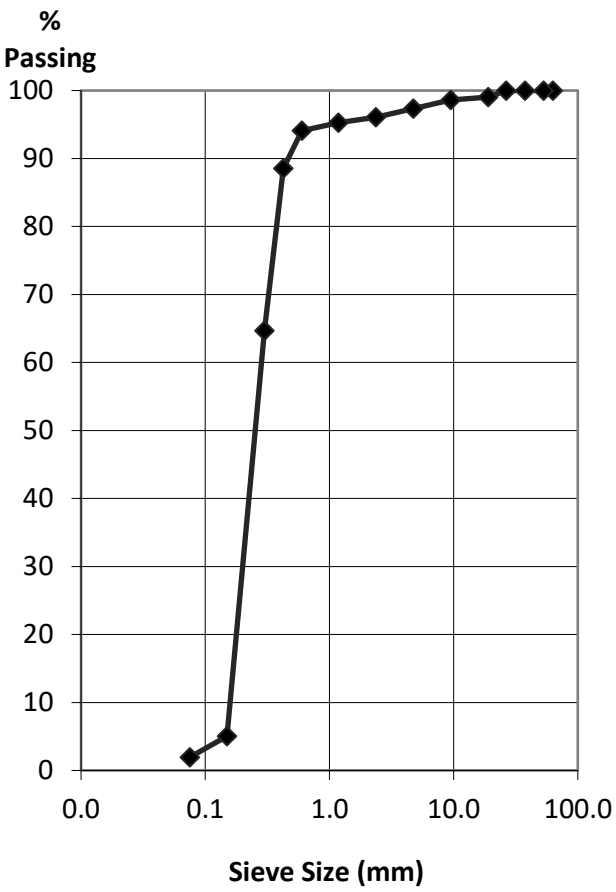
Sample No.	11992G33
Material Description	SAND

Sieve Size (mm)	% Passing	% Retained
100.0	-	-
75.0	-	-
63.0	100	0
53.0	100	0
37.5	100	0
26.5	100	0
19.0	99	1
9.5	99	1
4.75	97	3
2.36	96	4
1.18	95	5
0.600	94	6
0.425	89	11
0.300	65	35
0.150	5	95
0.075	2	98

AS 1289.3.1.1,3.2.1,3.3.1,3.4.1	
Method of Preparation	Dry Sieved
History of Sample	Oven-Dried

Liquid Limit	%	Not Obtainable
Plastic Limit	%	Non Plastic
Plasticity Index	%	Non Plastic
Linear Shrinkage	%	0.0
Linear Shrinkage Condition		Normal

Particle Size Distribution Chart



GROUP SYMBOL	SP

AS 1726 - Tables 9 & 10 (Laboratory classification elements only)

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WORLD RECOGNISED ACCREDITATION

Comments:

Distribution: Laboratory File / Vincent Jenkins
Document ID: WS_AS_PSD/C.L_Rev9_Dec2024
Accredited for compliance with ISO/IEC 17025 - Testing - Accreditation No. 20092

Name: A.Purdie
Function: Laboratory Manager
Date: 10/11/2025

Approved Signatory:

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

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Phone: 0407 903 297
Email: Info@gsgeotechnics.com
WWW.GSGEOTECHNICS.COM

Client: Department of Planning, Lands and Heritage
Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330
Section: Proposed Road Widening and Access Connection

Client Number: PE013471 / QU-1764-R1
Date Sampled: 22/10/2025
Date Received: 22/10/2025

Dry Density & Moisture Content Relation of Soil Test Report

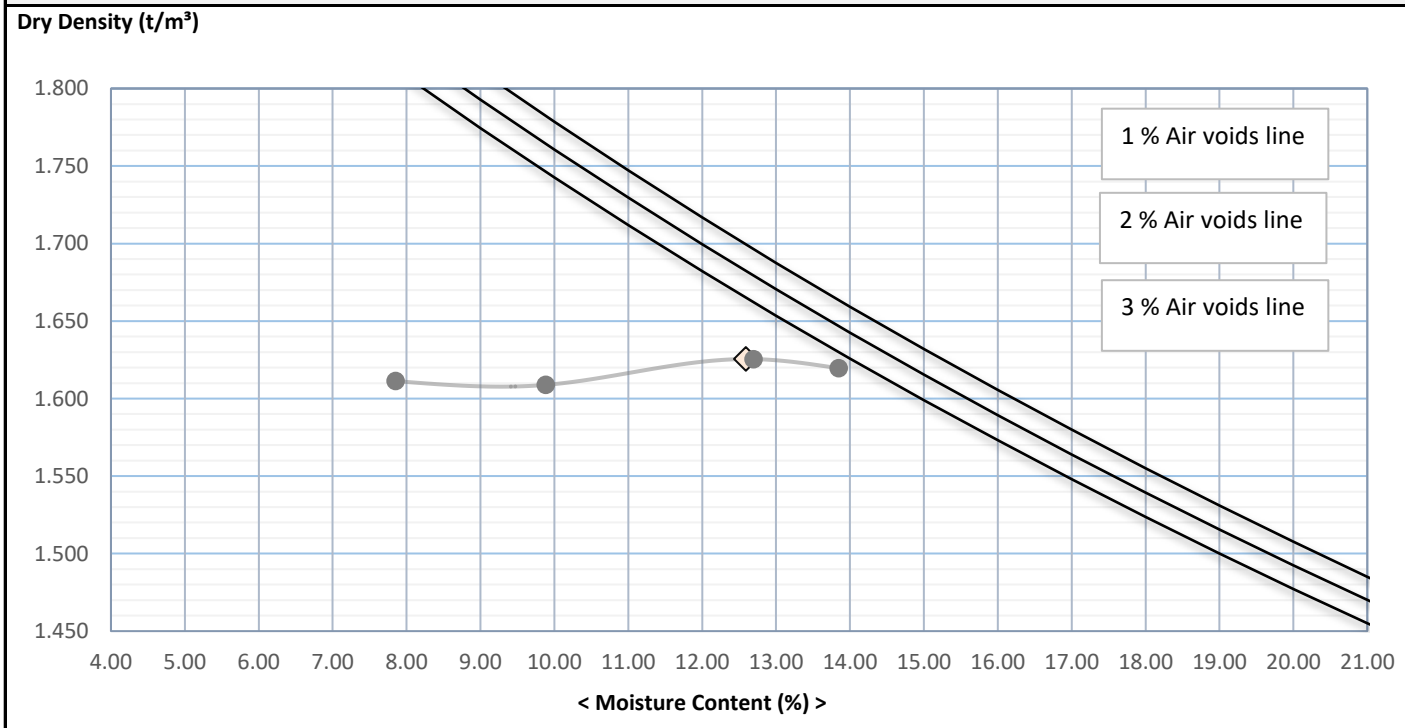
Test Method - AS 1289.5.2.1: Modified
Date of Test - 30/10/2025

Location	Test Pit 21 (Refer to Report 11992/1)	Test Depth (mm)	250 - 550	Preparation Method	AS1289.1.1
Layer Type	In Situ	Layer Depth (mm)	300	Sampling Method	AS1289.1.2.1 C6.5

Sample No.	11992G33	Material Description	SAND			Curing Period Water
						24 hrs
Chainage (m)	-	Offset (m)	-	Offset From	-	Curing Period Stabiliser
						N/A hrs
Retained 19.0mm (%)		1	Liquid Limit Method	Visual/Tactile assessment by competent technician		Stabiliser Type / Added
Retained 37.5mm (%)		N/A				

Moisture Content (%)	7.9	9.9	12.7	13.8	
Dry Density (t/m³)	1.61	1.61	1.63	1.62	

Dry Density / Moisture Content Relationship



Maximum Dry Density (t/m³)	1.63	Optimum Moisture Content (%)	12.5

NATA
WORLD RECOGNISED ACCREDITATION

Comments:

Distribution: Laboratory File / Vincent Jenkins
Document ID: WS_AS_MDD_Rev6_Mar2024
Accredited for compliance with ISO/IEC 17025 - Testing - Accreditation No. 20092

Name: A.Purdie
Function: Laboratory Manager
Date: 10/11/2025

Approved Signatory:

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

5a 209 Chester Pass Rd, Milpara WA 6330
Phone: 0407 903 297
Email: Info@gsgeotechnics.com
WWW.GSGEOTECHNICS.COM

Client: Department of Planning, Lands and Heritage
Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330
Section: Proposed Road Widening and Access Connection

Client Number: PE013471 / QU-1764-R1
Date Sampled: 22/10/2025
Date Received: 22/10/2025

California Bearing Ratio Test Report

Test Method - AS 1289.6.1.1
Date of Test - 7/11/2025

Location	Test Pit 21 (Refer to Report 11992/1)	Test Depth (mm)	250 - 550	Preparation Method	AS 1289 1.1
Layer Type	In Situ	Layer Depth (mm)	300	Sampling Method	AS1289.1.2.1 C6.5

Sample No.	11992G33
Material Description	SAND

Compaction Details - AS 1289.6.1.1, 1289.2.1.1

LL Determined By	Estimated	Curing Time	2 days 2 hrs
% Retained 19.0mm	1	Excluded/Replaced	Excluded
Maximum Dry Density (t/m3)	1.63	Optimum Moisture (%)	12.5
Target Dry Density Ratio (%)	95	Target Moisture Ratio (%)	100
Compaction Rammer	AS 1289.5.2.1		

Specimen Conditions At Compaction

Dry Density (t/m3)	1.54	Density Ratio (%)	95
Moisture Content (%)	12.5	Moisture Ratio (%)	99.5

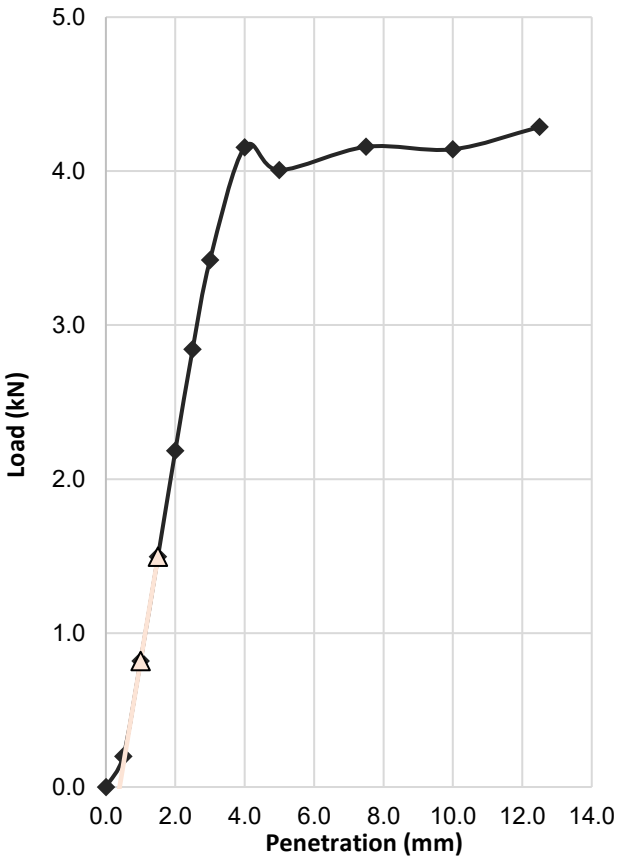
Specimen Conditions At Penetration

Soaked or Unsoaked	Soaked	Soaking Period (days)	4
Surcharges Applied (kg)	6.75	Measured Swell (%)	-0.5
Dry Density (t/m³)	1.55	Dry Density Ratio (%)	95.5
Moisture Content (%)	23.3	Moisture Ratio (%)	184.5

Specimen Conditions After Test

Top 30mm Moisture (%)	21.5	Moisture Ratio (%)	170.3
Remaining Depth (%)	23.3	Moisture Ratio (%)	184.8

Load vs Penetration Curve



California Bearing Ratio (CBR)	25%	Determined at a Penetration of	2.5mm
		Correction applied to Penetration	0.4mm

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Comments:

Distribution: Laboratory File / Vincent Jenkins
Document ID WS_AS_CBR_Rev9_Jan2025
Accredited for compliance with ISO/IEC 17025 - Testing - Accreditation No. 20092

Name: A.Purdie
Function: Laboratory Manager
Date: 10/11/2025

Approved Signatory:

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Phone: 0407 903 297
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Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330
Section: Proposed Road Widening and Access Connection

Client Number: PE013471 / QU-1764-R1
Date Sampled: 22/10/2025
Date Received: 22/10/2025

Soil Classification Test Report

Test Method - AS 1289.3.1.1,3.2.1,3.3.1,3.4.1,3.6.1
Date of Test - PSD - 30/10/2025 Limits - 31/10/2025

Location	Test Pit 22 (Refer to Report 11992/1)	Test Depth (mm)	350 - 1000	Preparation Method	AS1289.1.1
Layer Type	In Situ	Layer Depth (mm)	650	Sampling Method	AS1289.1.2.1 C6.5

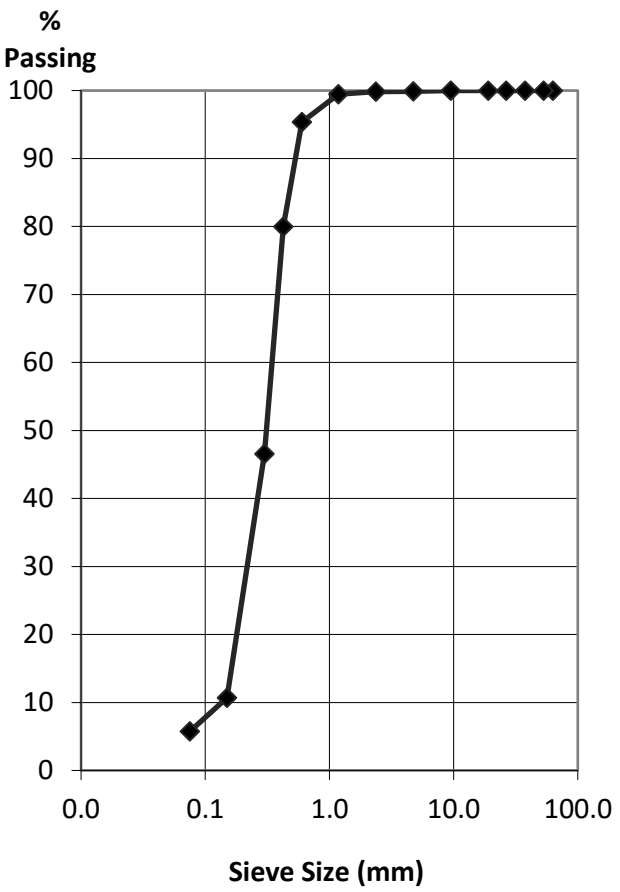
Sample No.	11992G34
Material Description	SAND with silt

Sieve Size (mm)	% Passing	% Retained
100.0	-	-
75.0	-	-
63.0	100	0
53.0	100	0
37.5	100	0
26.5	100	0
19.0	100	0
9.5	100	0
4.75	100	0
2.36	100	0
1.18	99	1
0.600	95	5
0.425	80	20
0.300	47	53
0.150	11	89
0.075	6	94

AS 1289.3.1.1,3.2.1,3.3.1,3.4.1	
Method of Preparation	Dry Sieved
History of Sample	Oven-Dried

Liquid Limit	%	Not Obtainable
Plastic Limit	%	Non Plastic
Plasticity Index	%	Non Plastic
Linear Shrinkage	%	0.0
Linear Shrinkage Condition		Normal

Particle Size Distribution Chart



GROUP SYMBOL	SP-SM

AS 1726 - Tables 9 & 10 (Laboratory classification elements only)

Comments:

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Name: A.Purdie
Function: Laboratory Manager
Date: 10/11/2025

Approved Signatory:

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Phone: 0407 903 297
Email: Info@gsgeotechnics.com
WWW.GSGEOTECHNICS.COM

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Section: Proposed Road Widening and Access Connection

Client Number: PE013471 / QU-1764-R1
Date Sampled: 22/10/2025
Date Received: 22/10/2025

Dry Density & Moisture Content Relation of Soil Test Report

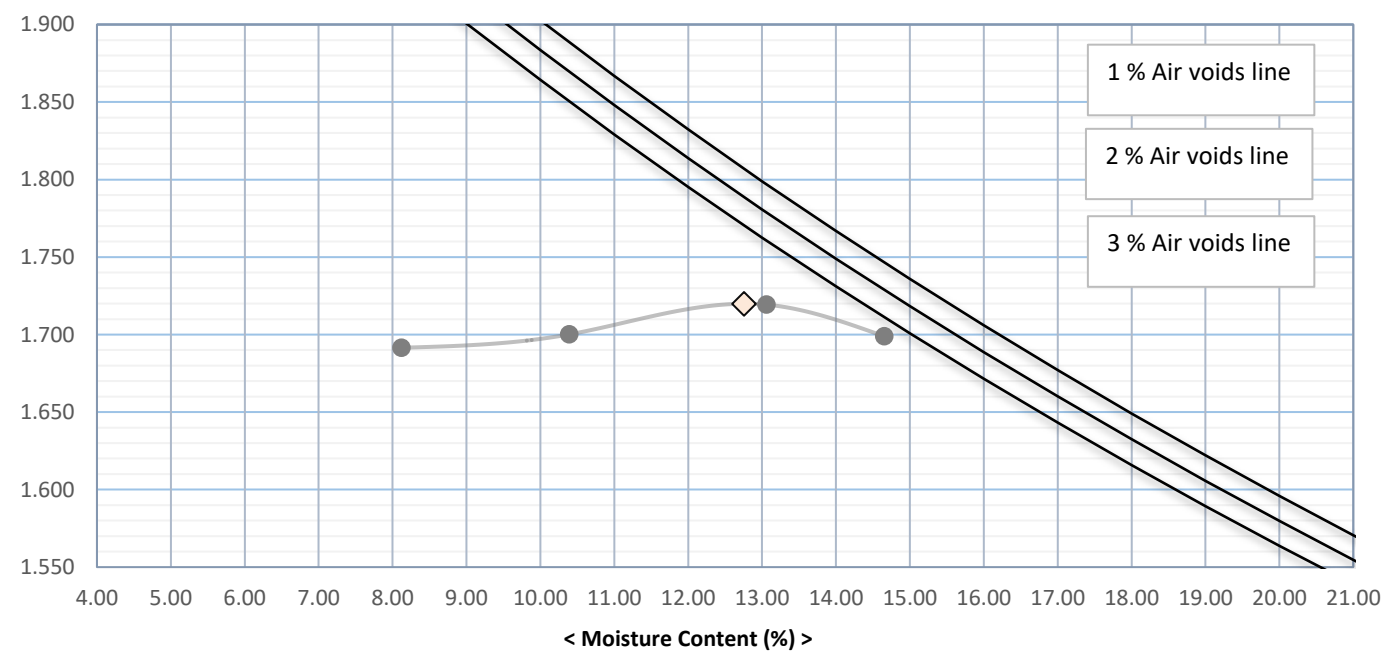
Test Method - AS 1289.5.2.1: Modified
Date of Test - 30/10/2025

Location	Test Pit 22 (Refer to Report 11992/1)	Test Depth (mm)	350 - 1000	Preparation Method	AS1289.1.1
Layer Type	In Situ	Layer Depth (mm)	650	Sampling Method	AS1289.1.2.1 C6.5

Sample No.	11992G34	Material Description	SAND with silt			Curing Period Water
						19 hrs
Chainage (m)	-	Offset (m)	-	Offset From	-	Curing Period Stabiliser
						N/A hrs
Retained 19.0mm (%)	0	Liquid Limit Method	Visual/Tactile assessment by competent technician			Stabiliser Type / Added
Retained 37.5mm (%)	N/A					

Moisture Content (%)	8.1	10.4	13.1	14.7	
Dry Density (t/m³)	1.69	1.70	1.72	1.70	

Dry Density / Moisture Content Relationship



Maximum Dry Density (t/m³)	1.72	Optimum Moisture Content (%)	13.0

NATA
WORLD RECOGNISED ACCREDITATION

Comments:

Distribution: Laboratory File / Vincent Jenkins
Document ID: WS_AS_MDD_Rev6_Mar2024
Accredited for compliance with ISO/IEC 17025 - Testing - Accreditation No. 20092

Name: A.Purdie
Function: Laboratory Manager
Date: 10/11/2025

Approved Signatory:

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

5a 209 Chester Pass Rd, Milpara WA 6330
Phone: 0407 903 297
Email: Info@gsgeotechnics.com
WWW.GSGEOTECHNICS.COM

Client: Department of Planning, Lands and Heritage
Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330
Section: Proposed Road Widening and Access Connection

Client Number: PE013471 / QU-1764-R1
Date Sampled: 22/10/2025
Date Received: 22/10/2025

California Bearing Ratio Test Report

Test Method - AS 1289.6.1.1
Date of Test - 4/11/2025

Location	Test Pit 22 (Refer to Report 11992/1)	Test Depth (mm)	350 - 1000	Preparation Method	AS 1289 1.1
Layer Type	In Situ	Layer Depth (mm)	650	Sampling Method	AS1289.1.2.1 C6.5

Sample No.	11992G34
Material Description	SAND with silt

Compaction Details - AS 1289.6.1.1, 1289.2.1.1

LL Determined By	Estimated	Curing Time	0 days 4 hrs
% Retained 19.0mm	0	Excluded/Replaced	Excluded
Maximum Dry Density (t/m3)	1.72	Optimum Moisture (%)	13.0
Target Dry Density Ratio (%)	95	Target Moisture Ratio (%)	100
Compaction Rammer	AS 1289.5.2.1		

Specimen Conditions At Compaction

Dry Density (t/m3)	1.64	Density Ratio (%)	95
Moisture Content (%)	12.4	Moisture Ratio (%)	97

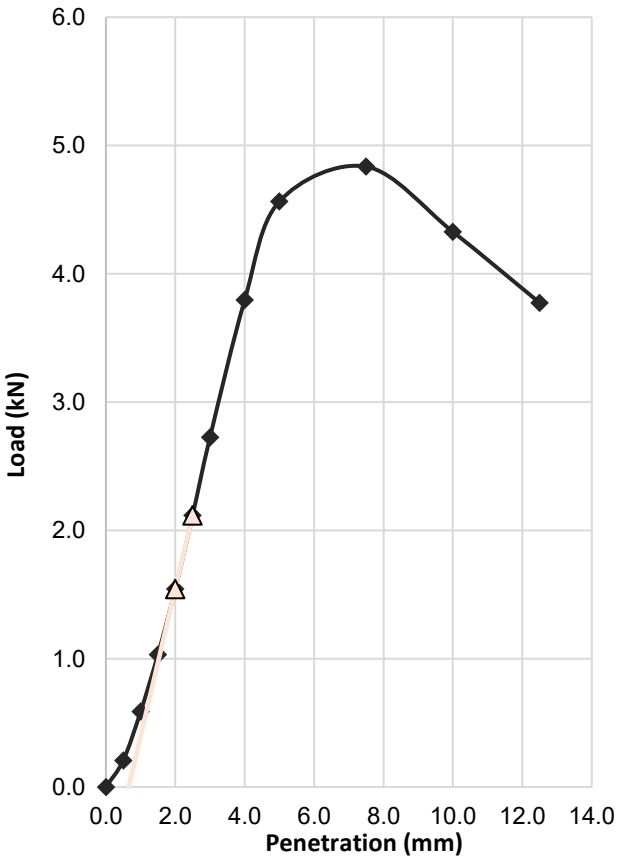
Specimen Conditions At Penetration

Soaked or Unsoaked	Soaked	Soaking Period (days)	4
Surcharges Applied (kg)	6.75	Measured Swell (%)	0
Dry Density (t/m³)	1.64	Dry Density Ratio (%)	95
Moisture Content (%)	17.4	Moisture Ratio (%)	135.5

Specimen Conditions After Test

Top 30mm Moisture (%)	15.9	Moisture Ratio (%)	124.1
Remaining Depth (%)	17.3	Moisture Ratio (%)	135.1

Load vs Penetration Curve



California Bearing Ratio (CBR)	25%	Determined at a Penetration of	5.0mm
		Correction applied to Penetration	0.7mm

NATA
WORLD RECOGNISED ACCREDITATION

Comments:

Distribution: Laboratory File / Vincent Jenkins
Document ID WS_AS_CBR_Rev9_Jan2025
Accredited for compliance with ISO/IEC 17025 - Testing - Accreditation No. 20092

Name: A.Purdie
Function: Laboratory Manager
Date: 10/11/2025

Approved Signatory:

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

5a 209 Chester Pass Rd, Milpara WA 6330
Phone: 0407 903 297
Email: Info@gsgeotechnics.com
WWW.GSGEOTECHNICS.COM

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Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330
Section: Proposed Road Widening and Access Connection

Client Number: PE013471 / QU-1764-R1
Date Sampled: 22/10/2025
Date Received: 22/10/2025

Soil Classification Test Report

Test Method - AS 1289.3.1.1,3.2.1,3.3.1,3.4.1,3.6.1
Date of Test - PSD - 30/10/2025 Limits - 31/10/2025

Location	Test Pit 23 (Refer to Report 11992/1)	Test Depth (mm)	300 - 750	Preparation Method	AS1289.1.1
Layer Type	In Situ	Layer Depth (mm)	450	Sampling Method	AS1289.1.2.1 C6.5

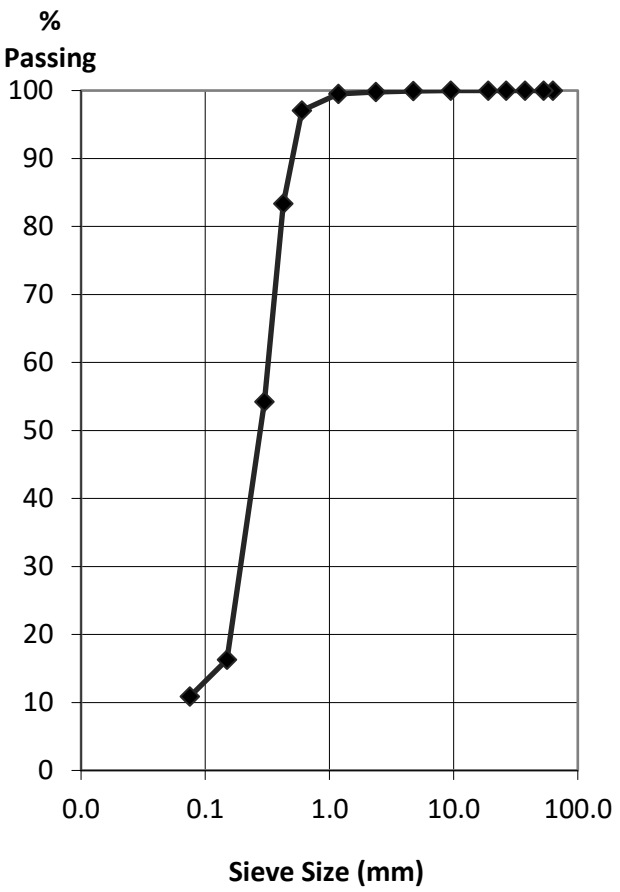
Sample No.	11992G35
Material Description	SAND with silt

Sieve Size (mm)	% Passing	% Retained
100.0	-	-
75.0	-	-
63.0	100	0
53.0	100	0
37.5	100	0
26.5	100	0
19.0	100	0
9.5	100	0
4.75	100	0
2.36	100	0
1.18	100	0
0.600	97	3
0.425	83	17
0.300	54	46
0.150	16	84
0.075	11	89

AS 1289.3.1.1,3.2.1,3.3.1,3.4.1	
Method of Preparation	Dry Sieved
History of Sample	Oven-Dried

Liquid Limit	%	Not Obtainable
Plastic Limit	%	Non Plastic
Plasticity Index	%	Non Plastic
Linear Shrinkage	%	0.0
Linear Shrinkage Condition		Normal

Particle Size Distribution Chart



GROUP SYMBOL	SP-SM

AS 1726 - Tables 9 & 10 (Laboratory classification elements only)

NATA
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Comments:

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Section: Proposed Road Widening and Access Connection

Client Number: PE013471 / QU-1764-R1
Date Sampled: 22/10/2025
Date Received: 22/10/2025

Dry Density & Moisture Content Relation of Soil Test Report

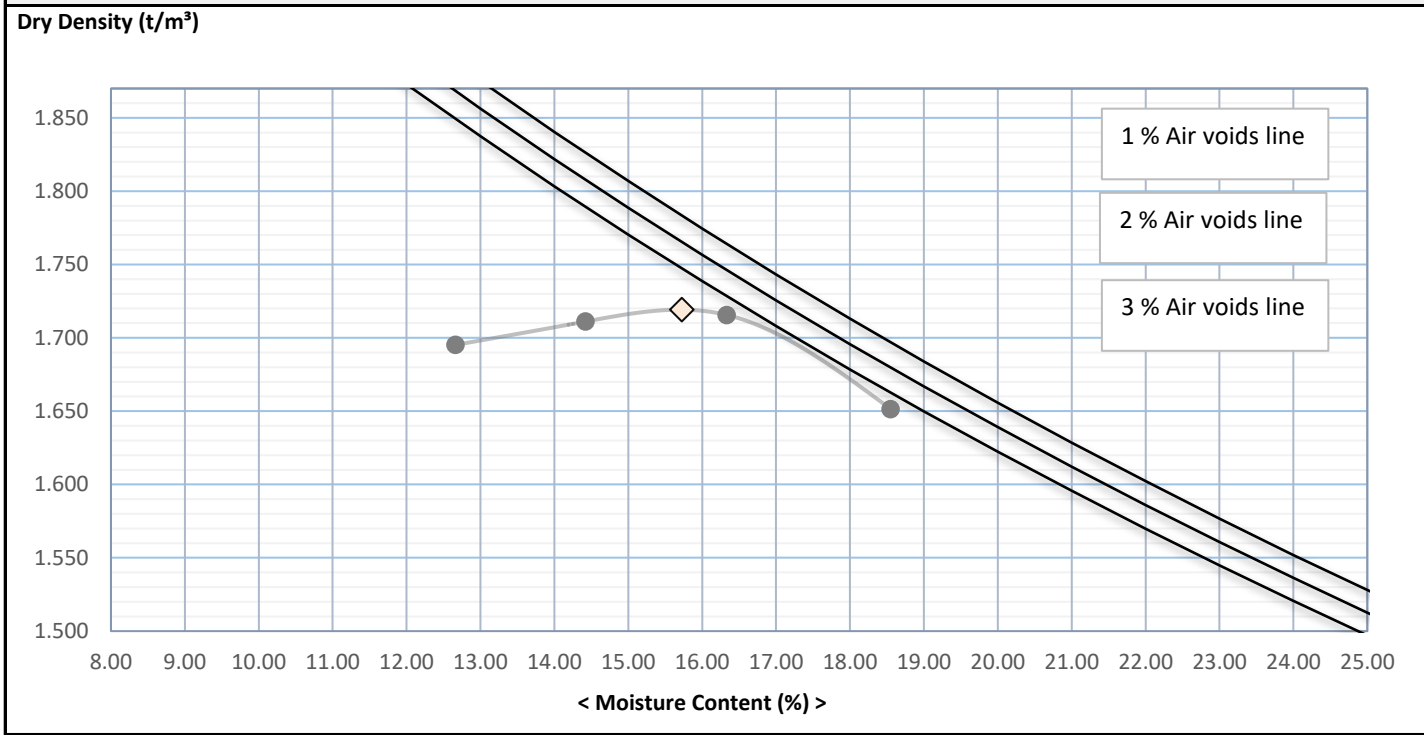
Test Method - AS 1289.5.2.1: Modified
Date of Test - 30/10/2025

Location	Test Pit 23 (Refer to Report 11992/1)	Test Depth (mm)	300 - 750	Preparation Method	AS1289.1.1
Layer Type	In Situ	Layer Depth (mm)	450	Sampling Method	AS1289.1.2.1 C6.5

Sample No.	11992G35	Material Description	SAND with silt			Curing Period Water
						18 hrs
Chainage (m)	-	Offset (m)	-	Offset From	-	Curing Period Stabiliser
						N/A hrs
Retained 19.0mm (%)	0	Liquid Limit Method	Visual/Tactile assessment by competent technician			Stabiliser Type / Added
Retained 37.5mm (%)	N/A					

Moisture Content (%)	12.7	14.4	16.3	18.6	
Dry Density (t/m³)	1.70	1.71	1.72	1.65	

Dry Density / Moisture Content Relationship



Maximum Dry Density (t/m³)	1.72	Optimum Moisture Content (%)	15.5

NATA
WORLD RECOGNISED ACCREDITATION

Comments:

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Document ID: WS_AS_MDD_Rev6_Mar2024
Accredited for compliance with ISO/IEC 17025 - Testing - Accreditation No. 20092

Name: A.Purdie
Function: Laboratory Manager
Date: 10/11/2025

Approved Signatory:

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

5a 209 Chester Pass Rd, Milpara WA 6330
Phone: 0407 903 297
Email: Info@gsgeotechnics.com
WWW.GSGEOTECHNICS.COM

Client: Department of Planning, Lands and Heritage
Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330
Section: Proposed Road Widening and Access Connection

Client Number: PE013471 / QU-1764-R1
Date Sampled: 22/10/2025
Date Received: 22/10/2025

California Bearing Ratio Test Report

Test Method - AS 1289.6.1.1
Date of Test - 4/11/2025

Location	Test Pit 23 (Refer to Report 11992/1)	Test Depth (mm)	300 - 750	Preparation Method	AS 1289 1.1
Layer Type	In Situ	Layer Depth (mm)	450	Sampling Method	AS1289.1.2.1 C6.5

Sample No.	11992G35
Material Description	SAND with silt

Compaction Details - AS 1289.6.1.1, 1289.2.1.1

LL Determined By	Estimated	Curing Time	0 days 5 hrs
% Retained 19.0mm	0	Excluded/Replaced	Excluded
Maximum Dry Density (t/m3)	1.72	Optimum Moisture (%)	15.5
Target Dry Density Ratio (%)	95	Target Moisture Ratio (%)	100
Compaction Rammer	AS 1289.5.2.1		

Specimen Conditions At Compaction

Dry Density (t/m3)	1.63	Density Ratio (%)	95
Moisture Content (%)	16.1	Moisture Ratio (%)	103

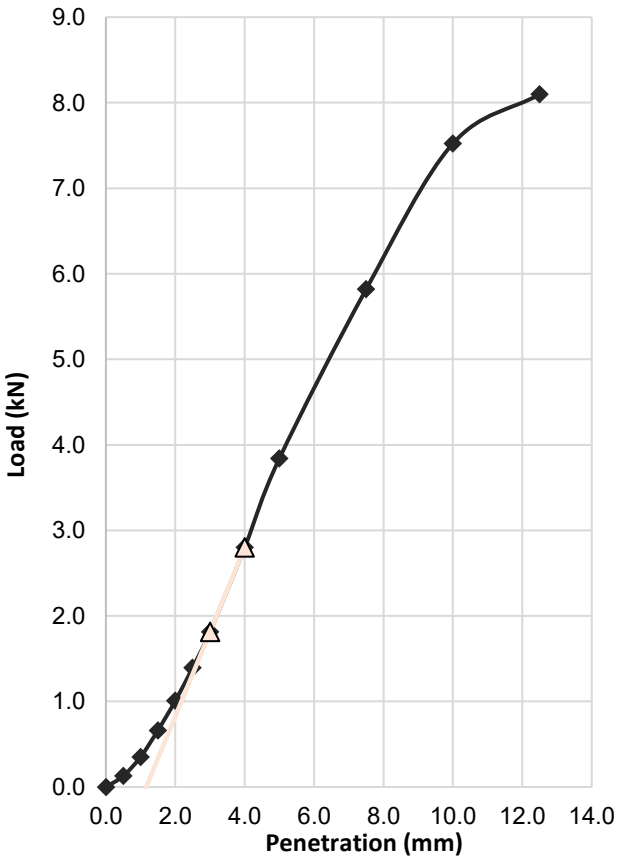
Specimen Conditions At Penetration

Soaked or Unsoaked	Soaked	Soaking Period (days)	4
Surcharges Applied (kg)	6.75	Measured Swell (%)	0
Dry Density (t/m³)	1.63	Dry Density Ratio (%)	95
Moisture Content (%)	19.6	Moisture Ratio (%)	124.5

Specimen Conditions After Test

Top 30mm Moisture (%)	18.3	Moisture Ratio (%)	116.3
Remaining Depth (%)	18.7	Moisture Ratio (%)	119.3

Load vs Penetration Curve



California Bearing Ratio (CBR)	25%	Determined at a Penetration of	5.0mm
		Correction applied to Penetration	1.2mm

Comments:

Distribution: Laboratory File / Vincent Jenkins
Document ID WS_AS_CBR_Rev9_Jan2025
Accredited for compliance with ISO/IEC 17025 - Testing - Accreditation No. 20092

Name: A.Purdie
Function: Laboratory Manager
Date: 10/11/2025

Approved Signatory:

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

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Section: Proposed Road Widening and Access Connection

Client Number: PE013471 / QU-1764-R1
Date Sampled: 22/10/2025
Date Received: 22/10/2025

Soil Classification Test Report

Test Method - AS 1289.3.1.1,3.2.1,3.3.1,3.4.1,3.6.1
Date of Test - PSD - 30/10/2025 Limits - 31/10/2025

Location	Test Pit 24 (Refer to Report 11992/1)	Test Depth (mm)	280 - 1000	Preparation Method	AS1289.1.1
Layer Type	In Situ	Layer Depth (mm)	720	Sampling Method	AS1289.1.2.1 C6.5

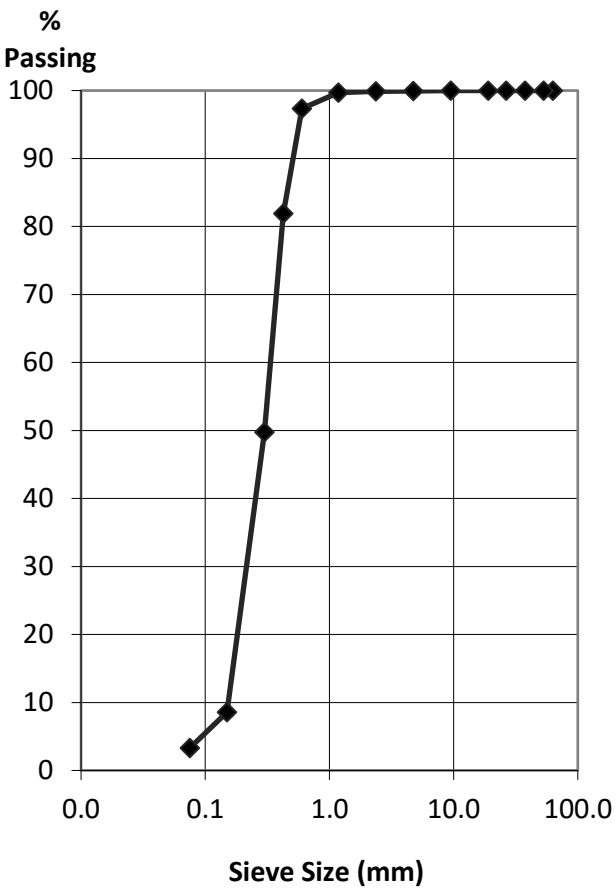
Sample No.	11992G36
Material Description	SAND

Sieve Size (mm)	% Passing	% Retained
100.0	-	-
75.0	-	-
63.0	100	0
53.0	100	0
37.5	100	0
26.5	100	0
19.0	100	0
9.5	100	0
4.75	100	0
2.36	100	0
1.18	100	0
0.600	97	3
0.425	82	18
0.300	50	50
0.150	9	91
0.075	3	97

AS 1289.3.1.1,3.2.1,3.3.1,3.4.1	
Method of Preparation	Dry Sieved
History of Sample	Oven-Dried

Liquid Limit	%	Not Obtainable
Plastic Limit	%	Non Plastic
Plasticity Index	%	Non Plastic
Linear Shrinkage	%	0.0
Linear Shrinkage Condition		Normal

Particle Size Distribution Chart



GROUP SYMBOL	SP

AS 1726 - Tables 9 & 10 (Laboratory classification elements only)

NATA
WORLD RECOGNISED ACCREDITATION

Comments:

Distribution: Laboratory File / Vincent Jenkins
Document ID: WS_AS_PSD/C.L_Rev9_Dec2024
Accredited for compliance with ISO/IEC 17025 - Testing - Accreditation No. 20092

Name: A.Purdie
Function: Laboratory Manager
Date: 10/11/2025

Approved Signatory:

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

5a 209 Chester Pass Rd, Milpara WA 6330
Phone: 0407 903 297
Email: Info@gsgeotechnics.com
WWW.GSGEOTECHNICS.COM

Client: Department of Planning, Lands and Heritage
Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330
Section: Proposed Road Widening and Access Connection

Client Number: PE013471 / QU-1764-R1
Date Sampled: 22/10/2025
Date Received: 22/10/2025

Dry Density & Moisture Content Relation of Soil Test Report

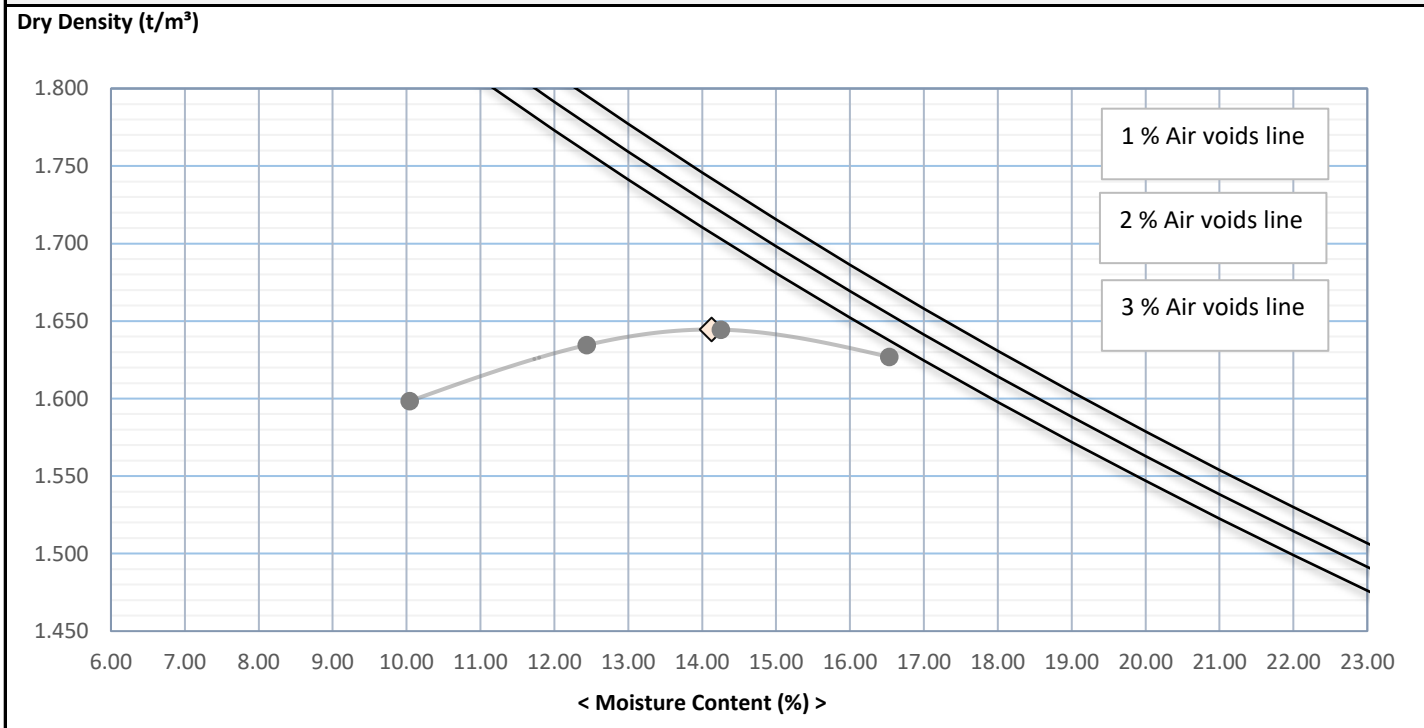
Test Method - AS 1289.5.2.1: Modified
Date of Test - 30/10/2025

Location	Test Pit 24 (Refer to Report 11992/1)	Test Depth (mm)	280 - 1000	Preparation Method	AS1289.1.1
Layer Type	In Situ	Layer Depth (mm)	720	Sampling Method	AS1289.1.2.1 C6.5

Sample No.	11992G36	Material Description	SAND			Curing Period Water
						21 hrs
Chainage (m)	-	Offset (m)	-	Offset From	-	Curing Period Stabiliser
						N/A hrs
Retained 19.0mm (%)	0	Liquid Limit Method	Visual/Tactile assessment by competent technician			Stabiliser Type / Added
Retained 37.5mm (%)	N/A					

Moisture Content (%)	10.0	12.4	14.3	16.5	
Dry Density (t/m³)	1.60	1.63	1.64	1.63	

Dry Density / Moisture Content Relationship



Maximum Dry Density (t/m³)	1.64	Optimum Moisture Content (%)	14.0

NATA
WORLD RECOGNISED ACCREDITATION

Comments:

Distribution: Laboratory File / Vincent Jenkins
Document ID: WS_AS_MDD_Rev6_Mar2024
Accredited for compliance with ISO/IEC 17025 - Testing - Accreditation No. 20092

Name: A.Purdie
Function: Laboratory Manager
Date: 10/11/2025

Approved Signatory:

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Client: Department of Planning, Lands and Heritage
Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330
Section: Proposed Road Widening and Access Connection

Client Number: PE013471 / QU-1764-R1
Date Sampled: 22/10/2025
Date Received: 22/10/2025

California Bearing Ratio Test Report

Test Method - AS 1289.6.1.1
Date of Test - 4/11/2025

Location	Test Pit 24 (Refer to Report 11992/1)	Test Depth (mm)	280 - 1000	Preparation Method	AS 1289 1.1
Layer Type	In Situ	Layer Depth (mm)	720	Sampling Method	AS1289.1.2.1 C6.5

Sample No.	11992G36
Material Description	SAND

Compaction Details - AS 1289.6.1.1, 1289.2.1.1

LL Determined By	Estimated	Curing Time	0 days 4 hrs
% Retained 19.0mm	0	Excluded/Replaced	Excluded
Maximum Dry Density (t/m3)	1.65	Optimum Moisture (%)	14.0
Target Dry Density Ratio (%)	95	Target Moisture Ratio (%)	100
Compaction Rammer	AS 1289.5.2.1		

Specimen Conditions At Compaction

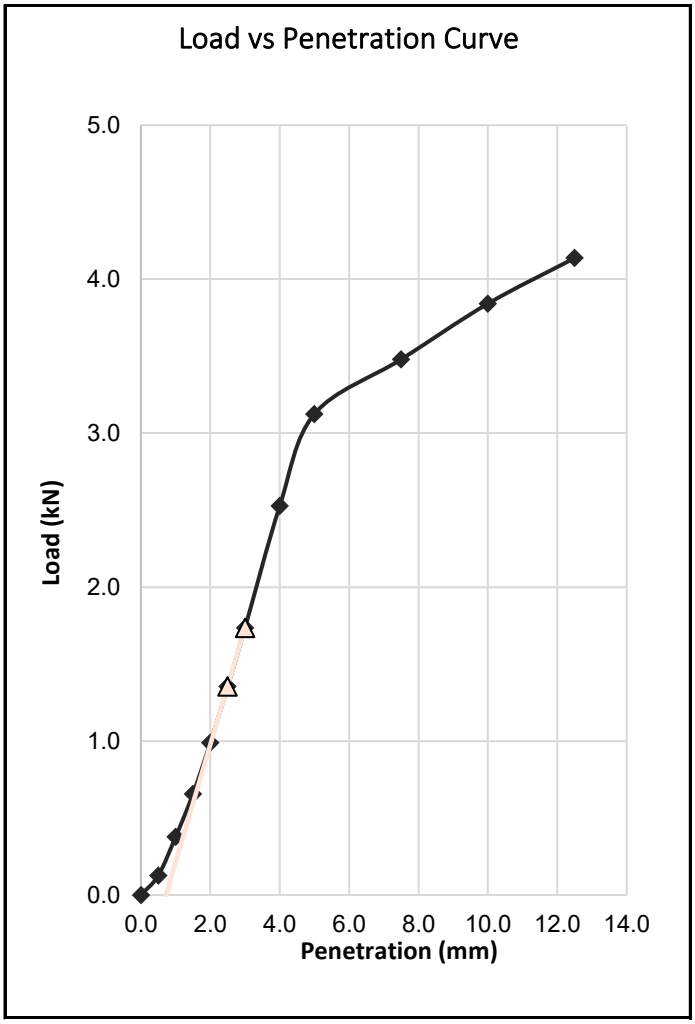
Dry Density (t/m3)	1.56	Density Ratio (%)	94.5
Moisture Content (%)	14.3	Moisture Ratio (%)	101.5

Specimen Conditions At Penetration

Soaked or Unsoaked	Soaked	Soaking Period (days)	4
Surcharges Applied (kg)	6.75	Measured Swell (%)	-0.5
Dry Density (t/m³)	1.57	Dry Density Ratio (%)	95
Moisture Content (%)	22.5	Moisture Ratio (%)	159.5

Specimen Conditions After Test

Top 30mm Moisture (%)	21.2	Moisture Ratio (%)	150.6
Remaining Depth (%)	22.2	Moisture Ratio (%)	157.3



California Bearing Ratio (CBR)	16%	Determined at a Penetration of	5.0mm
		Correction applied to Penetration	0.7mm

Comments:

Distribution: Laboratory File / Vincent Jenkins
Document ID: WS_AS_CBR_Rev9_Jan2025
Accredited for compliance with ISO/IEC 17025 - Testing - Accreditation No. 20092

Name: A.Purdie
Function: Laboratory Manager
Date: 10/11/2025

Approved Signatory:

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

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Client: Department of Planning, Lands and Heritage
Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330
Section: Proposed Road Widening and Access Connection

Client Number: PE013471 / QU-1764-R1
Date Sampled: 22/10/2025
Date Received: 22/10/2025

Soil Classification Test Report

Test Method - AS 1289.3.1.1,3.2.1,3.3.1,3.4.1,3.6.1
Date of Test - PSD - 30/10/2025 Limits - 31/10/2025

Location	Test Pit 25 (Refer to Report 11992/1)	Test Depth (mm)	500 - 1000	Preparation Method	AS1289.1.1
Layer Type	In Situ	Layer Depth (mm)	500	Sampling Method	AS1289.1.2.1 C6.5

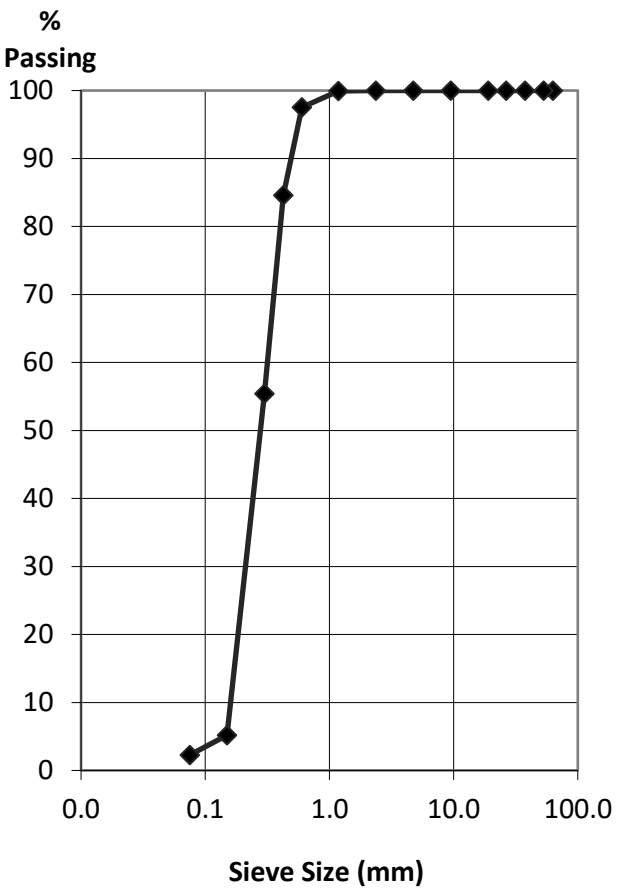
Sample No.	11992G37
Material Description	SAND

Sieve Size (mm)	% Passing	% Retained
100.0	-	-
75.0	-	-
63.0	100	0
53.0	100	0
37.5	100	0
26.5	100	0
19.0	100	0
9.5	100	0
4.75	100	0
2.36	100	0
1.18	100	0
0.600	98	2
0.425	85	15
0.300	55	45
0.150	5	95
0.075	2	98

AS 1289.3.1.1,3.2.1,3.3.1,3.4.1	
Method of Preparation	Dry Sieved
History of Sample	Oven-Dried

Liquid Limit	%	Not Obtainable
Plastic Limit	%	Non Plastic
Plasticity Index	%	Non Plastic
Linear Shrinkage	%	0.0
Linear Shrinkage Condition		Normal

Particle Size Distribution Chart



GROUP SYMBOL	SP

AS 1726 - Tables 9 & 10 (Laboratory classification elements only)

NATA WORLD RECOGNISED ACCREDITATION

Comments:

Distribution: Laboratory File / Vincent Jenkins
Document ID: WS_AS_PSD/C.L_Rev9_Dec2024
Accredited for compliance with ISO/IEC 17025 - Testing - Accreditation No. 20092

Name: A.Purdie
Function: Laboratory Manager
Date: 10/11/2025

Approved Signatory:

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Client: Department of Planning, Lands and Heritage
Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330
Section: Proposed Road Widening and Access Connection

Client Number: PE013471 / QU-1764-R1
Date Sampled: 22/10/2025
Date Received: 22/10/2025

Dry Density & Moisture Content Relation of Soil Test Report

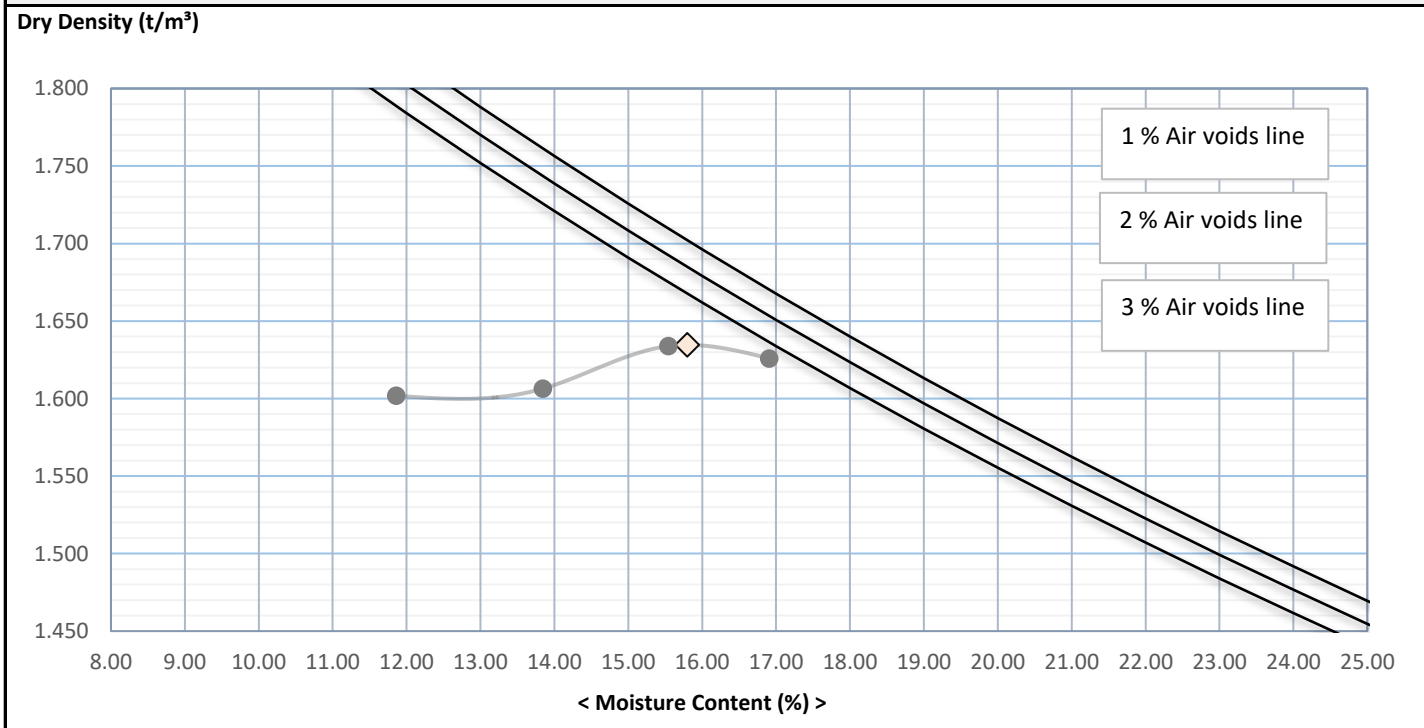
Test Method - AS 1289.5.2.1: Modified
Date of Test - 30/10/2025

Location	Test Pit 25 (Refer to Report 11992/1)	Test Depth (mm)	500 - 1000	Preparation Method	AS1289.1.1
Layer Type	In Situ	Layer Depth (mm)	500	Sampling Method	AS1289.1.2.1 C6.5

Sample No.	11992G37	Material Description	SAND			Curing Period Water
						25 hrs
Chainage (m)	-	Offset (m)	-	Offset From	-	Curing Period Stabiliser
						N/A hrs
Retained 19.0mm (%)		0	Liquid Limit Method	Visual/Tactile assessment by competent technician		Stabiliser Type / Added
Retained 37.5mm (%)		0				

Moisture Content (%)	11.9	13.8	15.5	16.9	
Dry Density (t/m³)	1.60	1.61	1.63	1.63	

Dry Density / Moisture Content Relationship



Maximum Dry Density (t/m³)	1.63	Optimum Moisture Content (%)	16.0

NATA
WORLD RECOGNISED ACCREDITATION

Comments:

Distribution: Laboratory File / Vincent Jenkins
Document ID: WS_AS_MDD_Rev6_Mar2024
Accredited for compliance with ISO/IEC 17025 - Testing - Accreditation No. 20092

Name: A.Purdie
Function: Laboratory Manager
Date: 10/11/2025

Approved Signatory:

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

5a 209 Chester Pass Rd, Milpara WA 6330
Phone: 0407 903 297
Email: Info@gsgeotechnics.com
WWW.GSGEOTECHNICS.COM

Client: Department of Planning, Lands and Heritage
Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330
Section: Proposed Road Widening and Access Connection

Client Number: PE013471 / QU-1764-R1
Date Sampled: 22/10/2025
Date Received: 22/10/2025

California Bearing Ratio Test Report

Test Method - AS 1289.6.1.1
Date of Test - 4/11/2025

Location	Test Pit 25 (Refer to Report 11992/1)	Test Depth (mm)	500 - 1000	Preparation Method	AS 1289 1.1
Layer Type	In Situ	Layer Depth (mm)	500	Sampling Method	AS1289.1.2.1 C6.5

Sample No.	11992G37
Material Description	SAND

Compaction Details - AS 1289.6.1.1, 1289.2.1.1

LL Determined By	Estimated	Curing Time	0 days 4 hrs
% Retained 19.0mm	0	Excluded/Replaced	Excluded
Maximum Dry Density (t/m3)	1.64	Optimum Moisture (%)	16.0
Target Dry Density Ratio (%)	95	Target Moisture Ratio (%)	100
Compaction Rammer	AS 1289.5.2.1		

Specimen Conditions At Compaction

Dry Density (t/m3)	1.55	Density Ratio (%)	95
Moisture Content (%)	15.3	Moisture Ratio (%)	97

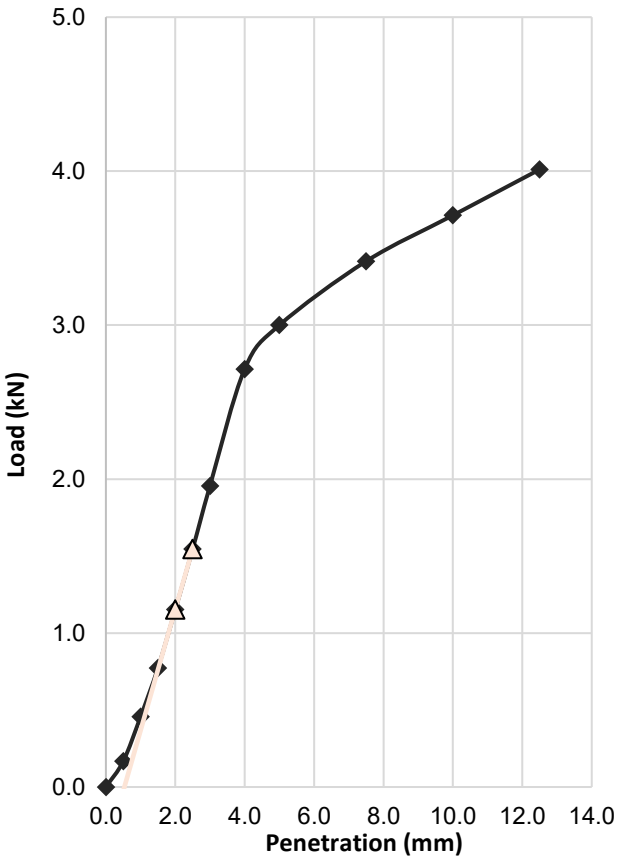
Specimen Conditions At Penetration

Soaked or Unsoaked	Soaked	Soaking Period (days)	4
Surcharges Applied (kg)	6.75	Measured Swell (%)	-0.5
Dry Density (t/m³)	1.56	Dry Density Ratio (%)	95.5
Moisture Content (%)	22.3	Moisture Ratio (%)	141.5

Specimen Conditions After Test

Top 30mm Moisture (%)	19.5	Moisture Ratio (%)	123.6
Remaining Depth (%)	21.5	Moisture Ratio (%)	136.0

Load vs Penetration Curve



California Bearing Ratio (CBR)	16%	Determined at a Penetration of	5.0mm
		Correction applied to Penetration	0.5mm

NATA
WORLD RECOGNISED ACCREDITATION

Comments:

Distribution: Laboratory File / Vincent Jenkins
Document ID WS_AS_CBR_Rev9_Jan2025
Accredited for compliance with ISO/IEC 17025 - Testing - Accreditation No. 20092

Name: A.Purdie
Function: Laboratory Manager
Date: 10/11/2025

Approved Signatory:

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

5a 209 Chester Pass Rd, Milpara WA 6330
Phone: 0407 903 297
Email: Info@gsgeotechnics.com
WWW.GSGEOTECHNICS.COM

Client: Department of Planning, Lands and Heritage
Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330
Section: Proposed Residential Development

Client Number: PE013471 / QU-1764-R1
Date Sampled: 22/10/2025
Date Received: 22/10/2025

Soil Classification Test Report

Test Method - AS 1289.3.1.1,3.2.1,3.3.1,3.4.1,3.6.1
Date of Test - PSD - 29/10/2025 Limits - 29/10/2025

Location	Test Pit 7 (Refer to Report 11992/1)	Test Depth (mm)	250 - 1150	Preparation Method	AS1289.1.1
Layer Type	In Situ	Layer Depth (mm)	900	Sampling Method	AS1289.1.2.1 C6.5

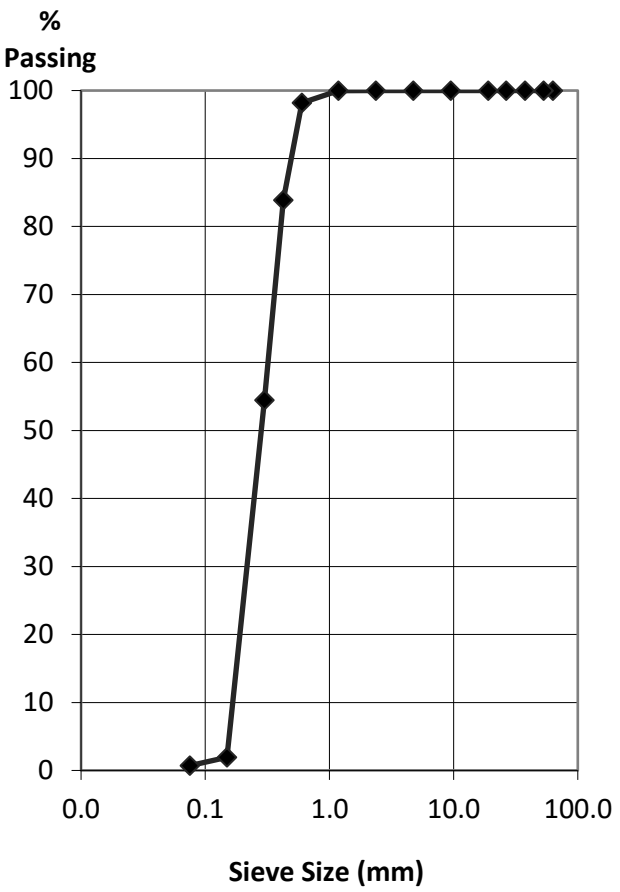
Sample No.	11992G38
Material Description	SAND

Sieve Size (mm)	% Passing	% Retained
100.0	-	-
75.0	-	-
63.0	100	0
53.0	100	0
37.5	100	0
26.5	100	0
19.0	100	0
9.5	100	0
4.75	100	0
2.36	100	0
1.18	100	0
0.600	98	2
0.425	84	16
0.300	54	46
0.150	2	98
0.075	1	99

AS 1289.3.1.1,3.2.1,3.3.1,3.4.1	
Method of Preparation	Dry Sieved
History of Sample	Oven-Dried

Liquid Limit	%	Not Obtainable
Plastic Limit	%	Non Plastic
Plasticity Index	%	Non Plastic
Linear Shrinkage	%	0.0
Linear Shrinkage Condition		Normal

Particle Size Distribution Chart



GROUP SYMBOL	SP

AS 1726 - Tables 9 & 10 (Laboratory classification elements only)

NATA
WORLD RECOGNISED ACCREDITATION

Comments:

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Name: A.Purdie
Function: Laboratory Manager
Date: 10/11/2025

Approved Signatory:

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CONSTRUCTION MATERIALS TESTING

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Phone: 0407 903 297
Email: Info@gsgeotechnics.com
WWW.GSGEOTECHNICS.COM

Client: Department of Planning, Lands and Heritage
Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330
Section: Proposed Residential Development

Client Number: PE013471 / QU-1764-R1
Date Sampled: 22/10/2025
Date Received: 22/10/2025

Dry Density & Moisture Content Relation of Soil Test Report

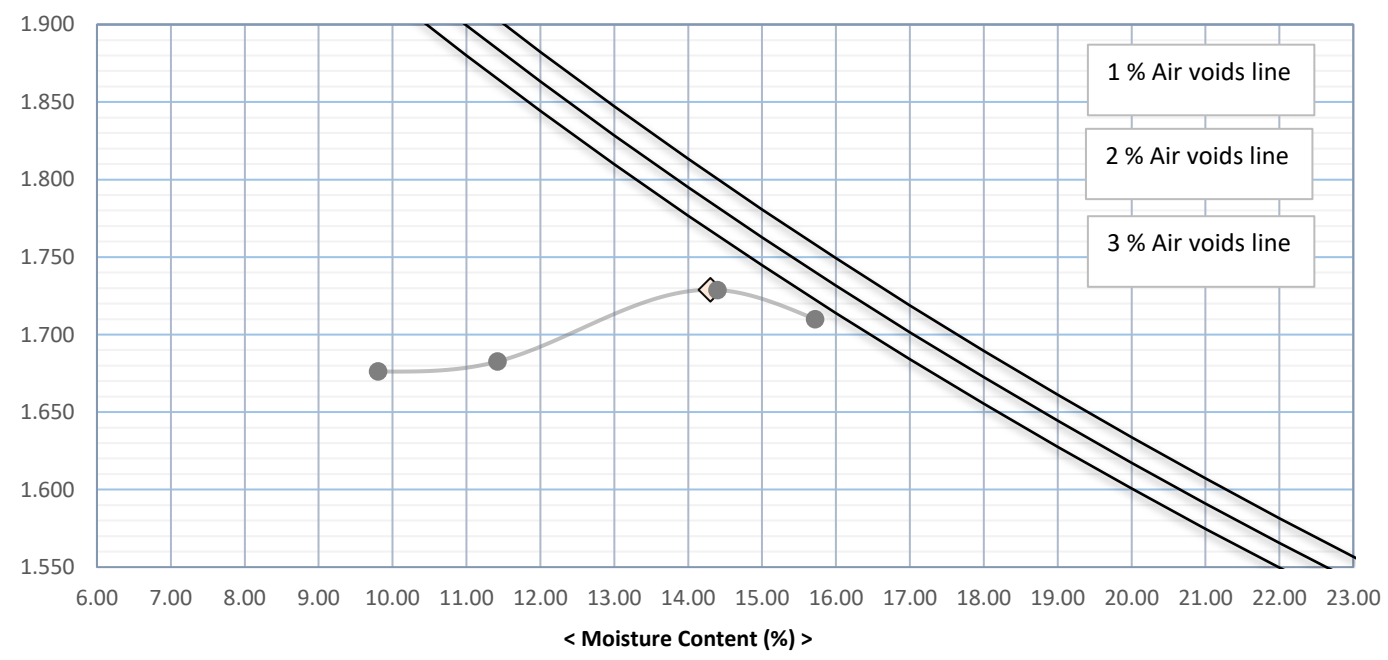
Test Method - AS 1289.5.2.1: Modified
Date of Test - 29/10/2025

Location	Test Pit 7 (Refer to Report 11992/1)	Test Depth (mm)	250 - 1150	Preparation Method	AS1289.1.1
Layer Type	In Situ	Layer Depth (mm)	900	Sampling Method	AS1289.1.2.1 C6.5

Sample No.	11992G38	Material Description	SAND			Curing Period Water
						25 hrs
Chainage (m)	-	Offset (m)	-	Offset From	-	Curing Period Stabiliser
						N/A hrs
Retained 19.0mm (%)	0	Liquid Limit Method	Visual/Tactile assessment by competent technician			Stabiliser Type / Added
Retained 37.5mm (%)	N/A					

Moisture Content (%)	9.8	11.4	14.4	15.7	
Dry Density (t/m³)	1.68	1.68	1.73	1.71	

Dry Density / Moisture Content Relationship



Maximum Dry Density (t/m³)	1.73	Optimum Moisture Content (%)	14.5

NATA
WORLD RECOGNISED ACCREDITATION

Comments:

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Name: A.Purdie
Function: Laboratory Manager
Date: 10/11/2025

Approved Signatory:

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Email: Info@gsgeotechnics.com
WWW.GSGEOTECHNICS.COM

Client: Department of Planning, Lands and Heritage
Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330
Section: Proposed Residential Development

Client Number: PE013471 / QU-1764-R1
Date Sampled: 23/10/2025
Date Received: 23/10/2025

Soil Classification Test Report

Test Method - AS 1289.3.1.1,3.2.1,3.3.1,3.4.1,3.6.1
Date of Test - PSD - 29/10/2025 Limits - 29/10/2025

Location	Test Pit 15 (Refer to Report 11992/1)	Test Depth (mm)	400 - 2000	Preparation Method	AS1289.1.1
Layer Type	In Situ	Layer Depth (mm)	1600	Sampling Method	AS1289.1.2.1 C6.5

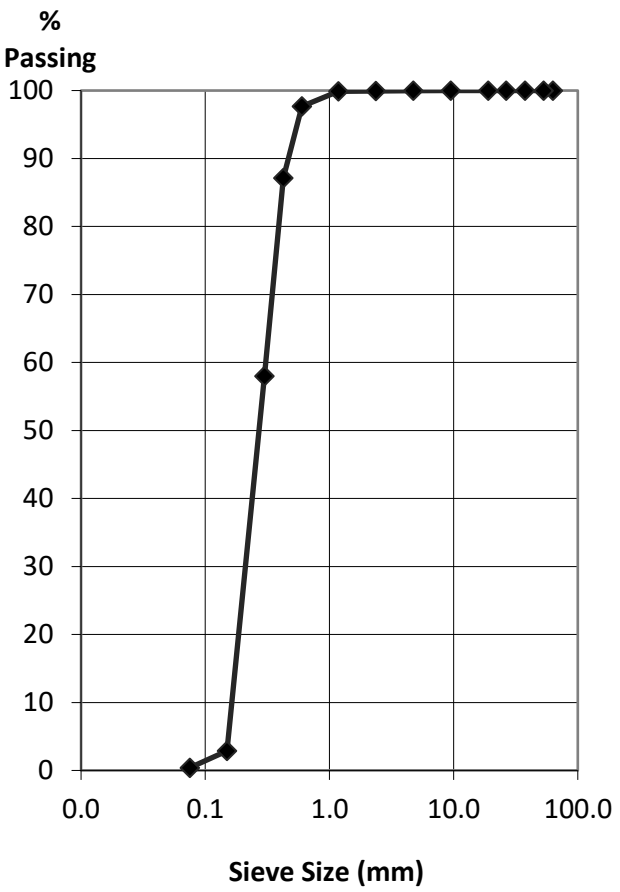
Sample No.	11992G39
Material Description	SAND

Sieve Size (mm)	% Passing	% Retained
100.0	-	-
75.0	-	-
63.0	100	0
53.0	100	0
37.5	100	0
26.5	100	0
19.0	100	0
9.5	100	0
4.75	100	0
2.36	100	0
1.18	100	0
0.600	98	2
0.425	87	13
0.300	58	42
0.150	3	97
0.075	0	100

AS 1289.3.1.1,3.2.1,3.3.1,3.4.1	
Method of Preparation	Dry Sieved
History of Sample	Oven-Dried

Liquid Limit	%	Not Obtainable
Plastic Limit	%	Non Plastic
Plasticity Index	%	Non Plastic
Linear Shrinkage	%	0.0
Linear Shrinkage Condition		Normal

Particle Size Distribution Chart



GROUP SYMBOL	SP

AS 1726 - Tables 9 & 10 (Laboratory classification elements only)

NATA
WORLD RECOGNISED ACCREDITATION

Comments:

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Name: A.Purdie
Function: Laboratory Manager
Date: 10/11/2025

Approved Signatory:

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CONSTRUCTION MATERIALS TESTING

5a 209 Chester Pass Rd, Milpara WA 6330
Phone: 0407 903 297
Email: Info@gsgeotechnics.com
WWW.GSGEOTECHNICS.COM

Client: Department of Planning, Lands and Heritage
Project: Lots 22 & 23, Lower King Road, Collingwood Heights WA 6330
Section: Proposed Residential Development

Client Number: PE013471 / QU-1764-R1
Date Sampled: 23/10/2025
Date Received: 23/10/2025

Dry Density & Moisture Content Relation of Soil Test Report

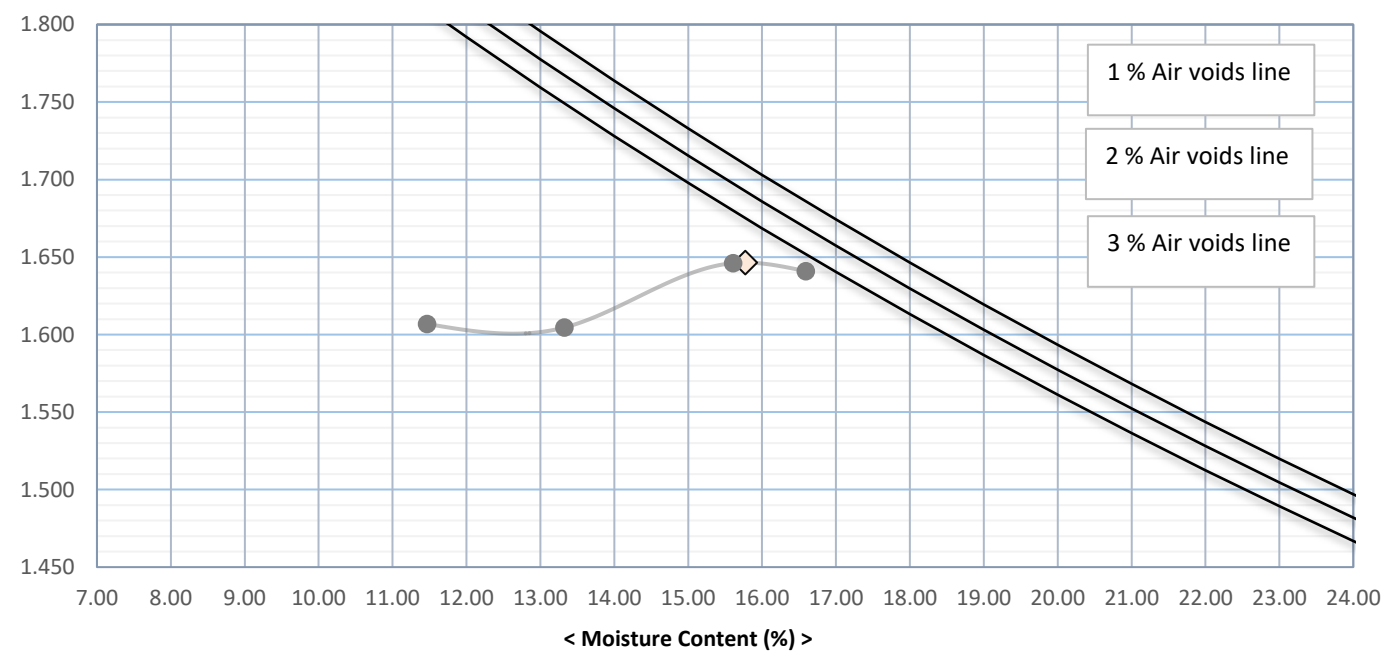
Test Method - AS 1289.5.2.1: Modified
Date of Test - 28/10/2025

Location	Test Pit 15 (Refer to Report 11992/1)	Test Depth (mm)	-	Preparation Method	AS1289.1.1
Layer Type	In Situ	Layer Depth (mm)	-	Sampling Method	AS1289.1.2.1 C6.5

Sample No.	11992G39	Material Description	SAND			Curing Period Water
						25 hrs
Chainage (m)	-	Offset (m)	-	Offset From	-	Curing Period Stabiliser
						N/A hrs
Retained 19.0mm (%)	0	Liquid Limit Method	Visual/Tactile assessment by competent technician			Stabiliser Type / Added
Retained 37.5mm (%)	N/A					

Moisture Content (%)	11.5	13.3	15.6	16.6	
Dry Density (t/m³)	1.61	1.60	1.65	1.64	

Dry Density / Moisture Content Relationship



Maximum Dry Density (t/m³)	1.65	Optimum Moisture Content (%)	16.0

NATA
WORLD RECOGNISED ACCREDITATION

Comments:

Distribution: Laboratory File / Vincent Jenkins
Document ID: WS_AS_MDD_Rev6_Mar2024
Accredited for compliance with ISO/IEC 17025 - Testing - Accreditation No. 20092

Name: A.Purdie
Function: Laboratory Manager
Date: 10/11/2025

Approved Signatory:

Trilab
Soil Rock Calibration

Brisbane
346A Bilsen Road,
Geebung
QLD 4034
Ph: +61 7 3265 5656

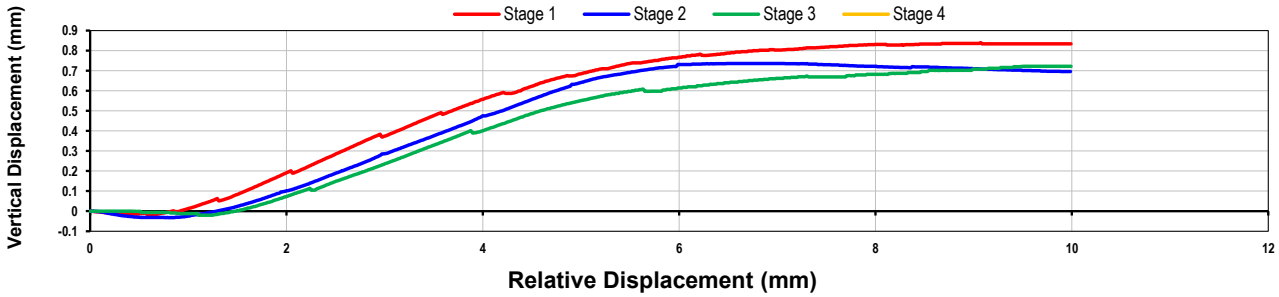
Perth
2 Kimmer Place,
Queens Park
WA 6107
Ph: +61 8 9258 8323

DIRECT SHEAR TEST REPORT

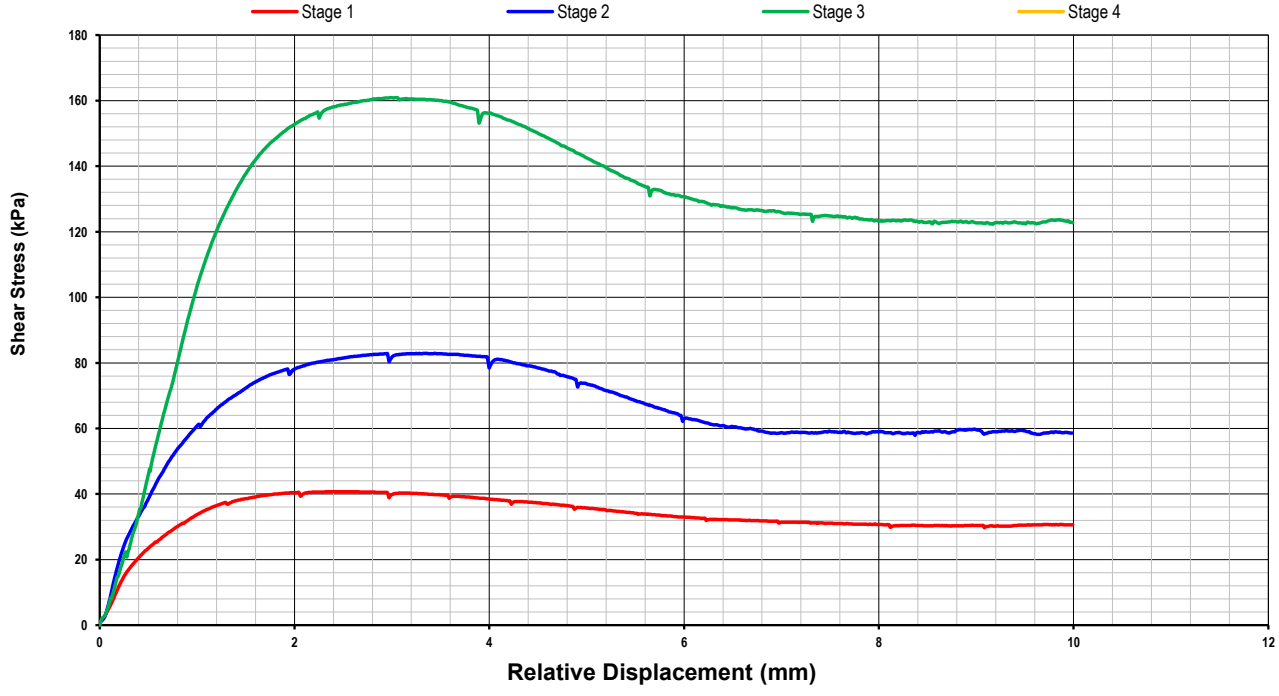
Test Method: AS 1289.6.2.2

Client	Great Southern Geotechnics Pty Ltd	**Report No.**	P25110004-MSDS
		Workorder No	20498/T/25-214
Address	5a/209 Chester Pass Road Milpara WA 6330	**Test Date**	13/11/2025
		Report Date	17/11/2025
Project	Lots 22&23, Lower King Road, Collingwood Heights WA 6330		
Client ID	11992G38	**Location** TP7	**Depth (m)** 0.250-1.150
Description	Sand		
Sample Type	Three individual soil specimens - Remoulded		

Vertical Displacement/Relative Displacement Plot



Shear Stress/Displacement Plot



Notes/Remarks: Tested As Requested

Sampled by client Nata Accreditation 20092 and MDD values taken from Report 11992/3

Graph not to scale

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Approved Signatory

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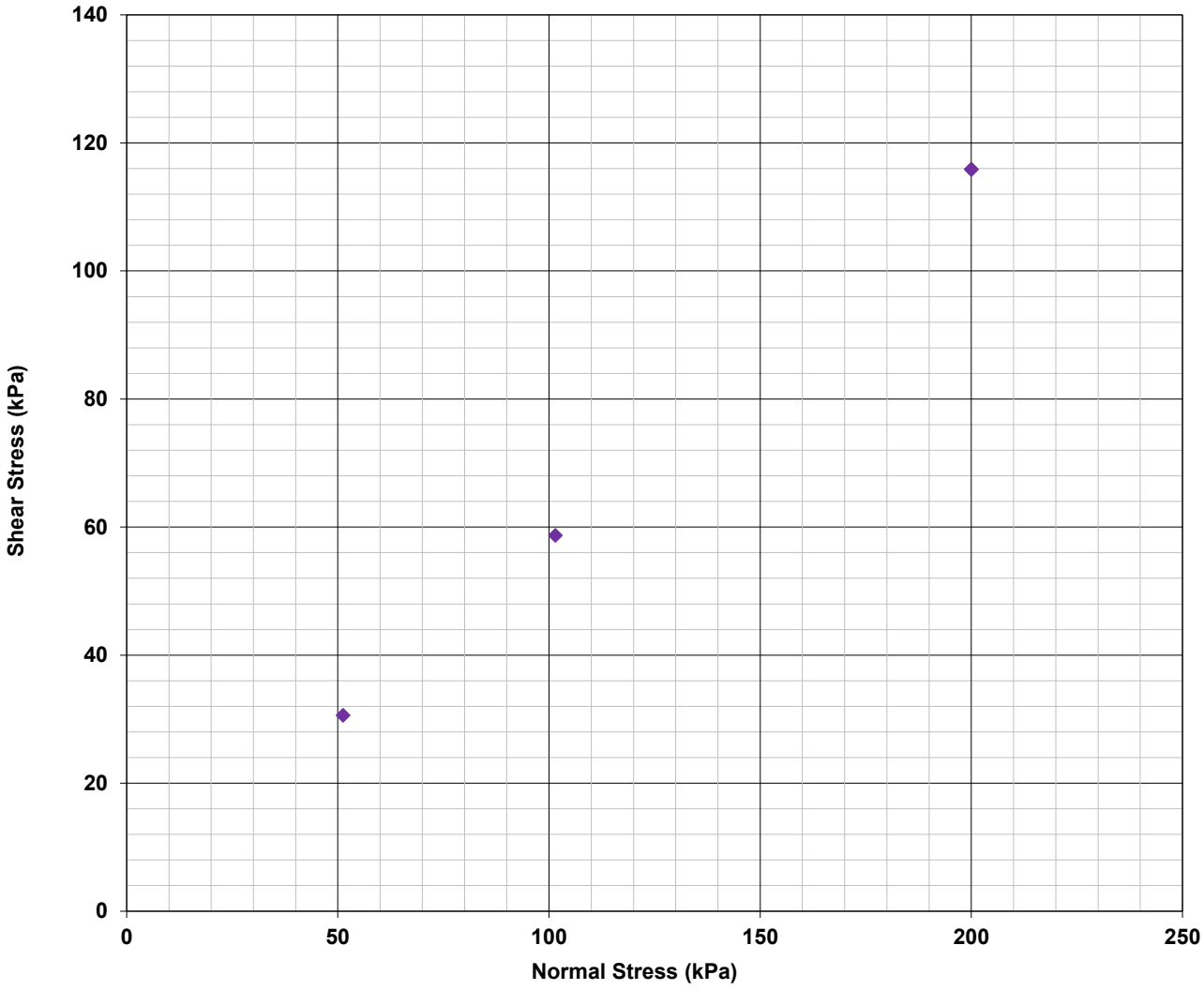
DIRECT SHEAR TEST REPORT

Test Method: AS 1289.6.2.2

Client	Great Southern Geotechnics Pty Ltd	**Report No.**	P25110004-MSDS

Failure Criteria **Residual @ 10 , 10 , 10 , mm Displacement**

Residual - Normal Stress vs Shear Stress



Shear Angle (°)	**29.8**	**Cohesion (kPa)**	**0.9**	**R^2**	**1.000**
Specimen Condition	Inundated	Normal Stress (kPa)		Shear Stress (kPa)	
Specimen Dimensions (mm)	100*100	Stage 1	51.2	30.6	
Initial Height (mm)	42.5	Stage 2	101.5	58.7	
Rate of Strain (mm/min)	0.010	Stage 3	200.0	115.9	
Initial Moisture Content (%)	14.7				
Initial Wet Density(t/m^3)	1.98				
Initial Dry Density(t/m^3)	1.72				

Graph not to scale

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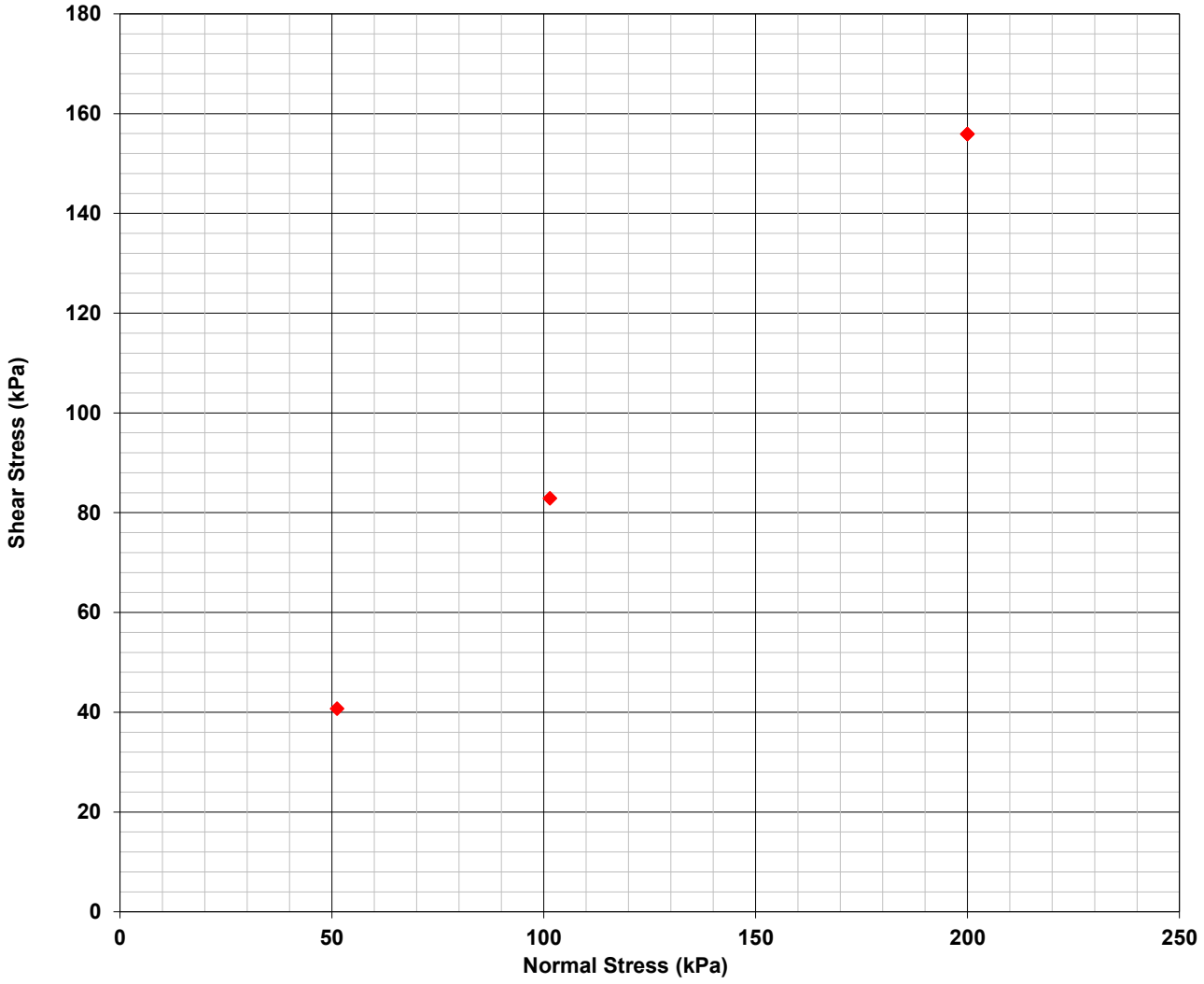
DIRECT SHEAR TEST REPORT

Test Method: AS 1289.6.2.2

Client	Great Southern Geotechnics Pty Ltd	**Report No.**	P25110004-MSDS

Failure Criteria **Peak**

Peak - Normal Stress vs Shear Stress



Shear Angle (°) 37.6		**Cohesion (kPa)** 2.7		**R^2** 0.999
Specimen Condition	Inundated	Normal Stress (kPa)		Shear Stress (kPa)
Specimen Dimensions (mm)	100*100	Stage 1	51.2	40.7
Initial Height (mm)	42.5	Stage 2	101.5	82.9
Rate of Strain (mm/min)	0.010	Stage 3	200.0	155.9
Initial Moisture Content (%)	14.7			
Initial Wet Density(t/m^3)	1.98			
Initial Dry Density(t/m3)	1.72			

Graph not to scale

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Test Method: AS 1289.6.2.2

Client	Great Southern Geotechnics Pty Ltd	**Report No.**	P25110004-MSDS



Notes/Remarks:

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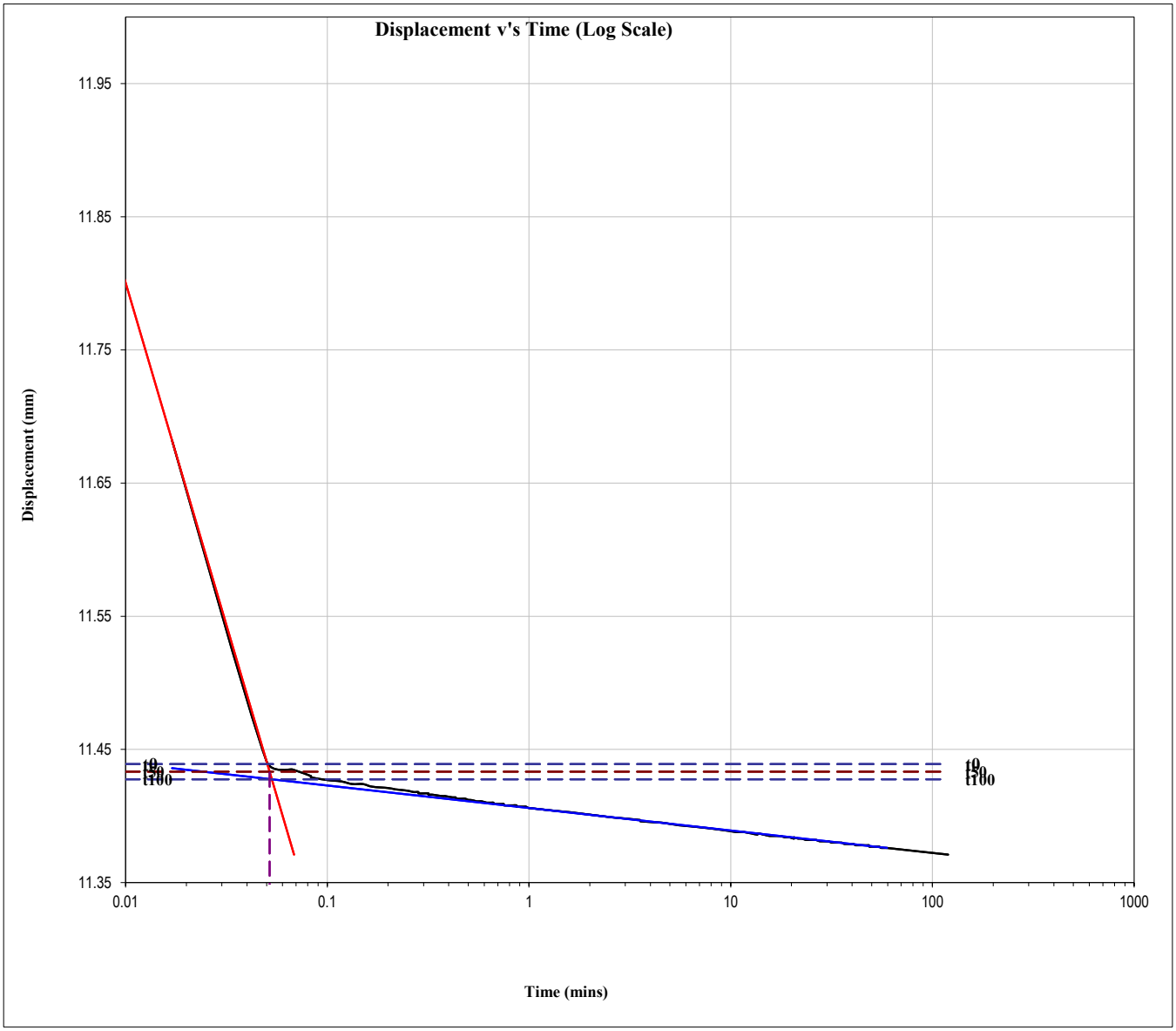
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DIRECT SHEAR TEST REPORT

Test Method: AS 1289.6.2.2

Client	Great Southern Geotechnics Pty Ltd	**Report No.**	P25110004-MSDS

Stage 1 Consolidation



t_{50}	0.05	mins
t_{100}	0.05	mins
Time to Failure =	2.59	mins
Estimated Displacement to Failure =	5	mm
Displacement Rate =	1.9320032	mm/min

Notes/Remarks:

Graph not to scale

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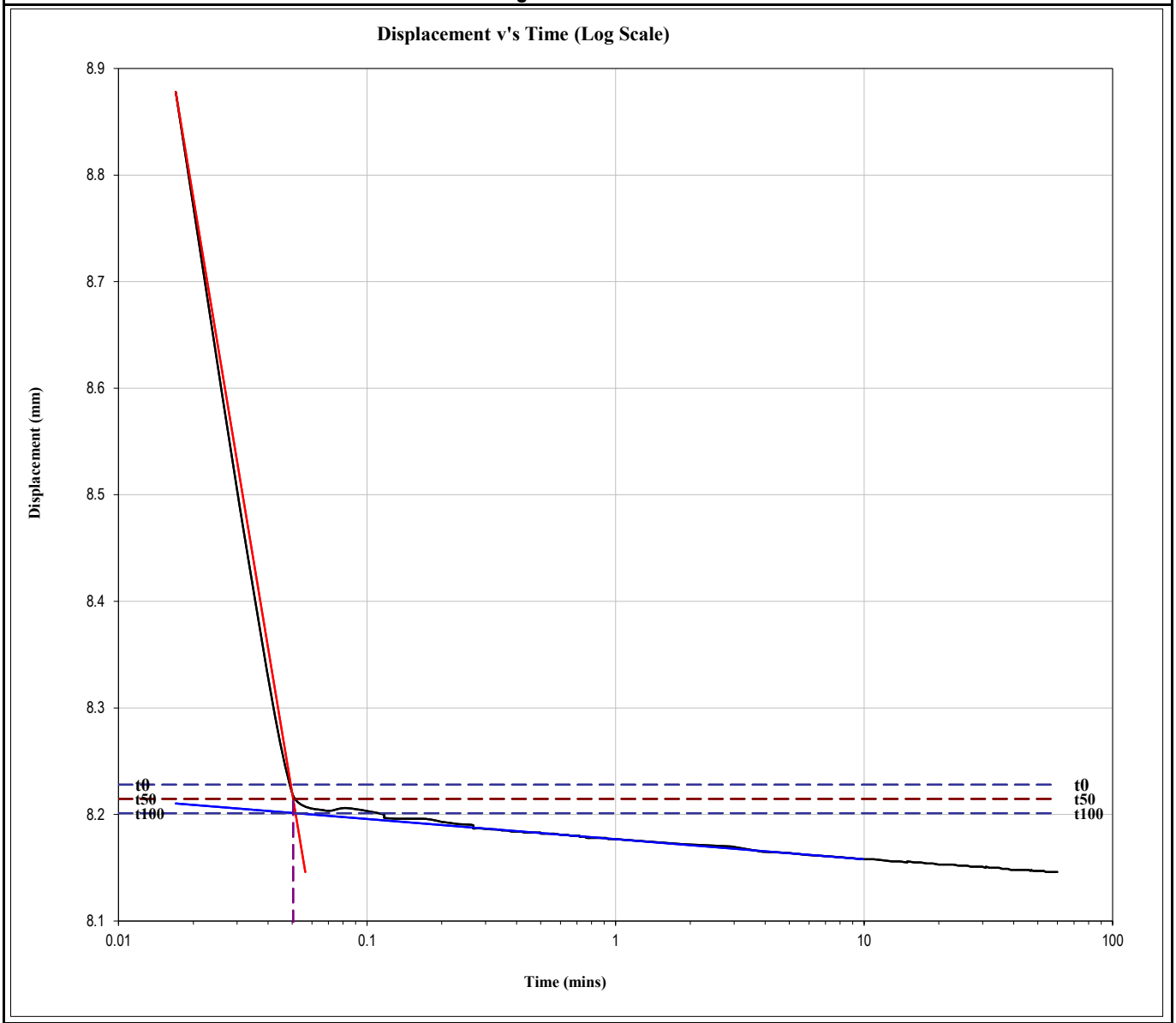
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DIRECT SHEAR TEST REPORT

Test Method: AS 1289.6.2.2

Client	Great Southern Geotechnics Pty Ltd	**Report No.**	P25110004-MSDS

Stage 2 Consolidation



t_{50}	0.05	mins
t_{100}	0.05	mins
Time to Failure =	2.52	mins
Estimated Displacement to Failure =	5	mm
Displacement Rate =	1.9823945	mm/min

Notes/Remarks:

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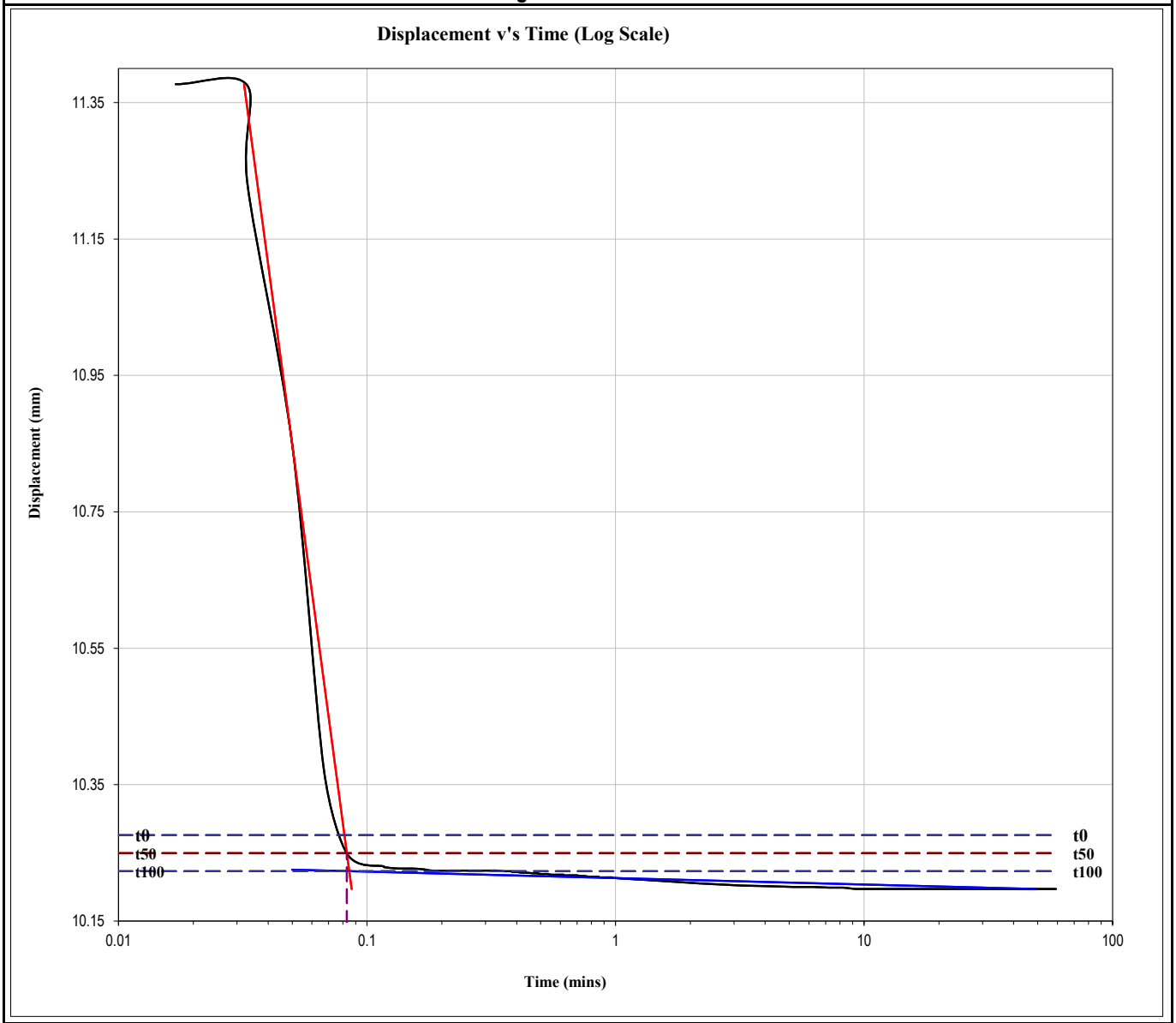
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DIRECT SHEAR TEST REPORT

Test Method: AS 1289.6.2.2

Client	Great Southern Geotechnics Pty Ltd	**Report No.**	P25110004-MSDS

Stage 3 Consolidation



t_{50}	0.08	mins
t_{100}	0.08	mins
Time to Failure =	4.15	mins
Estimated Displacement to Failure =	5	mm
Displacement Rate =	1.2053945	mm/min

Notes/Remarks:

Graph not to scale

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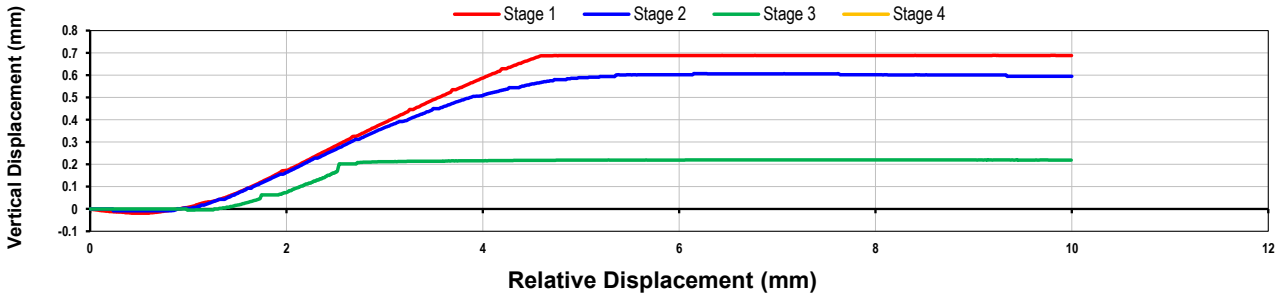
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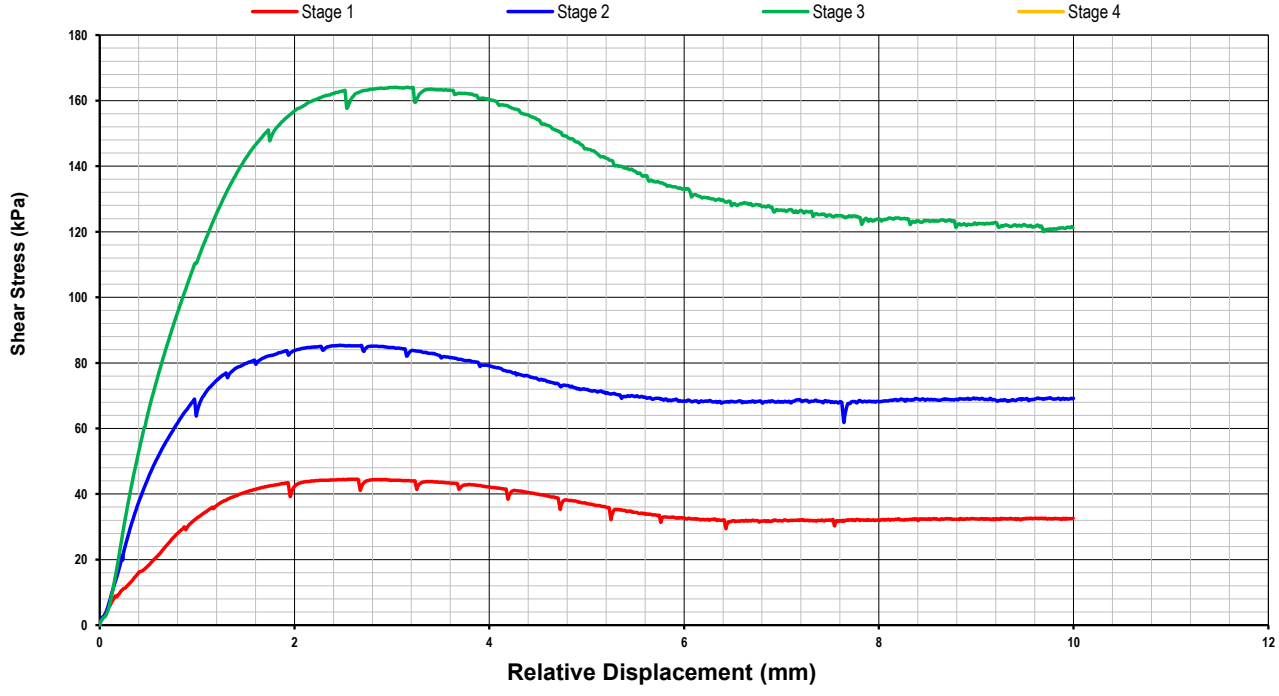
Test Method: AS 1289.6.2.2

Client	Great Southern Geotechnics Pty Ltd	**Report No.**	P25110005-MSDS
		Workorder No	20498/T/25-214
Address	5a/209 Chester Pass Road Milpara WA 6330	**Test Date**	12/11/2025
		Report Date	14/11/2025
Project	Lots 22&23, Lower King Road, Collingwood Heights WA 6330		
Client ID	11992G39	**Location** TP15	**Depth (m)** 0.400-2.000
Description	Sand		
Sample Type	Three individual soil specimens - Remoulded		

Vertical Displacement/Relative Displacement Plot



Shear Stress/Displacement Plot



Notes/Remarks: Tested As Requested

Sampled by client Nata Accreditation 20092 and MDD values taken from Report 11992/3

Graph not to scale

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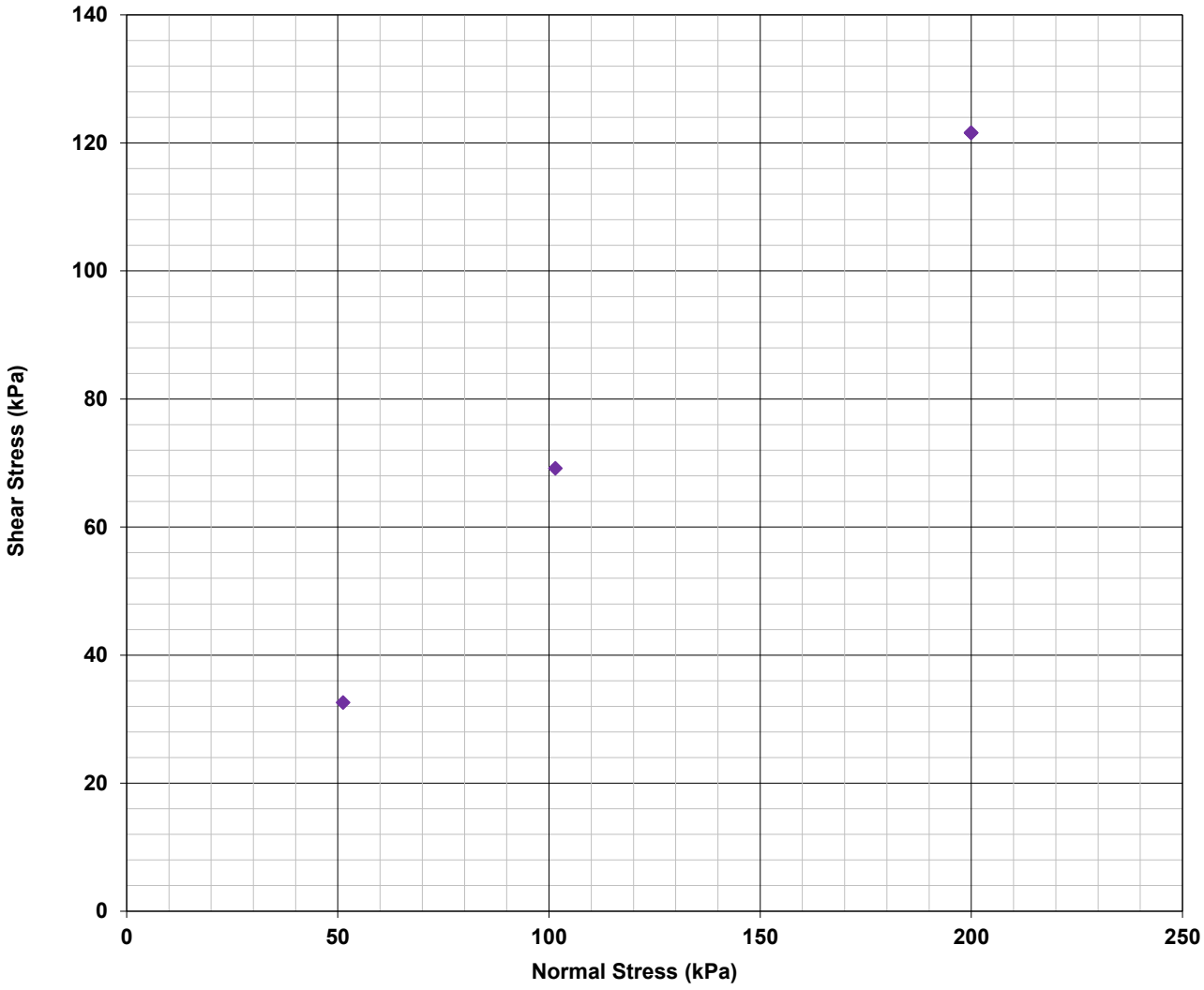
DIRECT SHEAR TEST REPORT

Test Method: AS 1289.6.2.2

Client	Great Southern Geotechnics Pty Ltd	**Report No.**	P25110005-MSDS

Failure Criteria **Residual @ 10 , 10 , 10 , mm Displacement**

Residual - Normal Stress vs Shear Stress



Shear Angle (°)	30.5	Cohesion (kPa)	5.2	R^2	0.997
Specimen Condition	Inundated	Normal Stress (kPa)		Shear Stress (kPa)	
Specimen Dimensions (mm)	100*100	Stage 1	51.2		32.6
Initial Height (mm)	42.5	Stage 2	101.4		69.2
Rate of Strain (mm/min)	0.010	Stage 3	199.9		121.6
Initial Moisture Content (%)	15.6				
Initial Wet Density(t/m^3)	1.91				
Initial Dry Density(t/m^3)	1.65				

Graph not to scale

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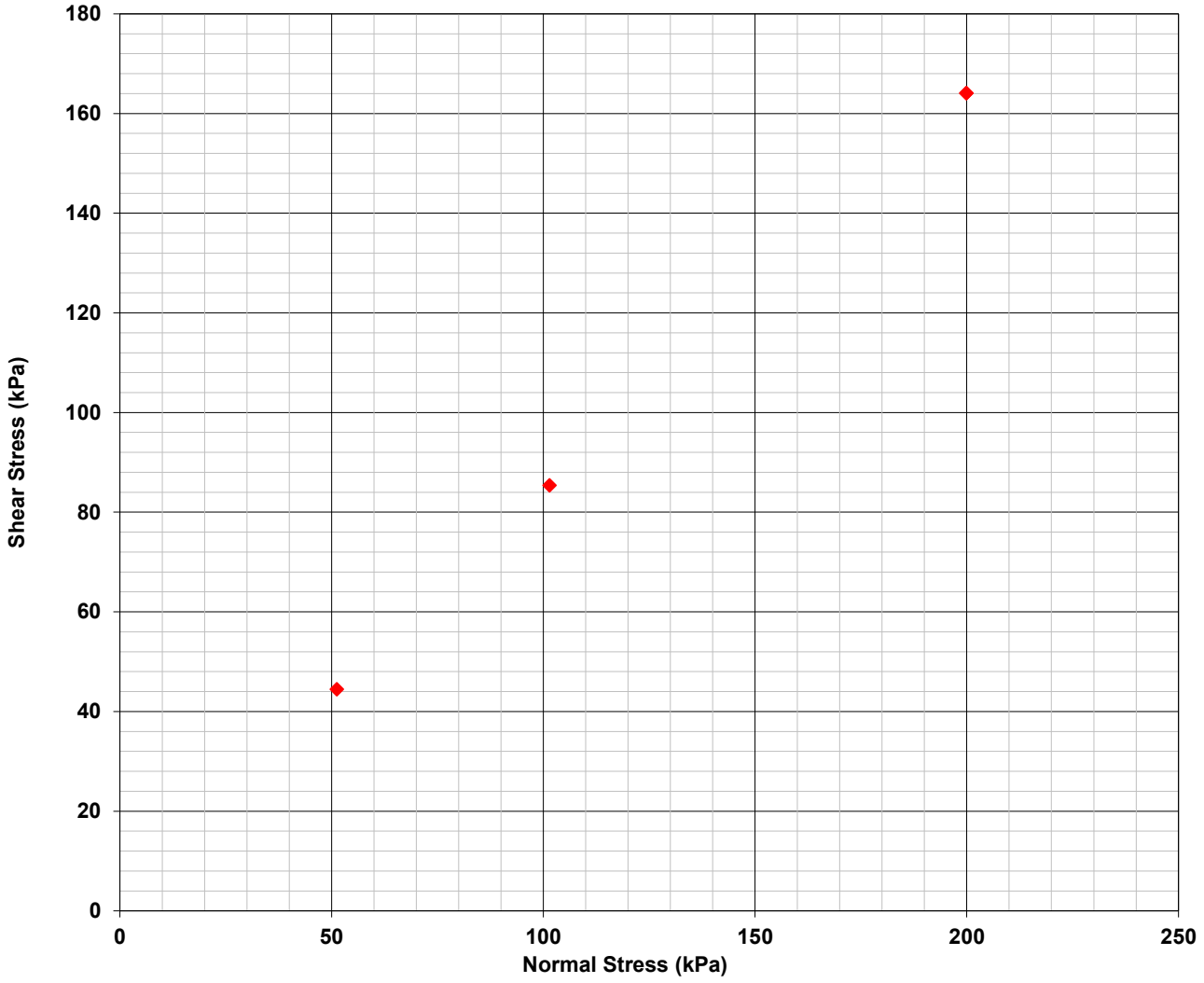
DIRECT SHEAR TEST REPORT

Test Method: AS 1289.6.2.2

Client	Great Southern Geotechnics Pty Ltd	**Report No.**	P25110005-MSDS

Failure Criteria **Peak**

Peak - Normal Stress vs Shear Stress



Shear Angle (°) 38.8		Cohesion (kPa) 3.5		R^2 1.000
Specimen Condition	Inundated	Normal Stress (kPa)		Shear Stress (kPa)
Specimen Dimensions (mm)	100*100	Stage 1	51.2	44.5
Initial Height (mm)	42.5	Stage 2	101.4	85.4
Rate of Strain (mm/min)	0.010	Stage 3	199.9	164.1
Initial Moisture Content (%)	15.6			
Initial Wet Density(t/m^3)	1.91			
Initial Dry Density(t/m3)	1.65			

Graph not to scale

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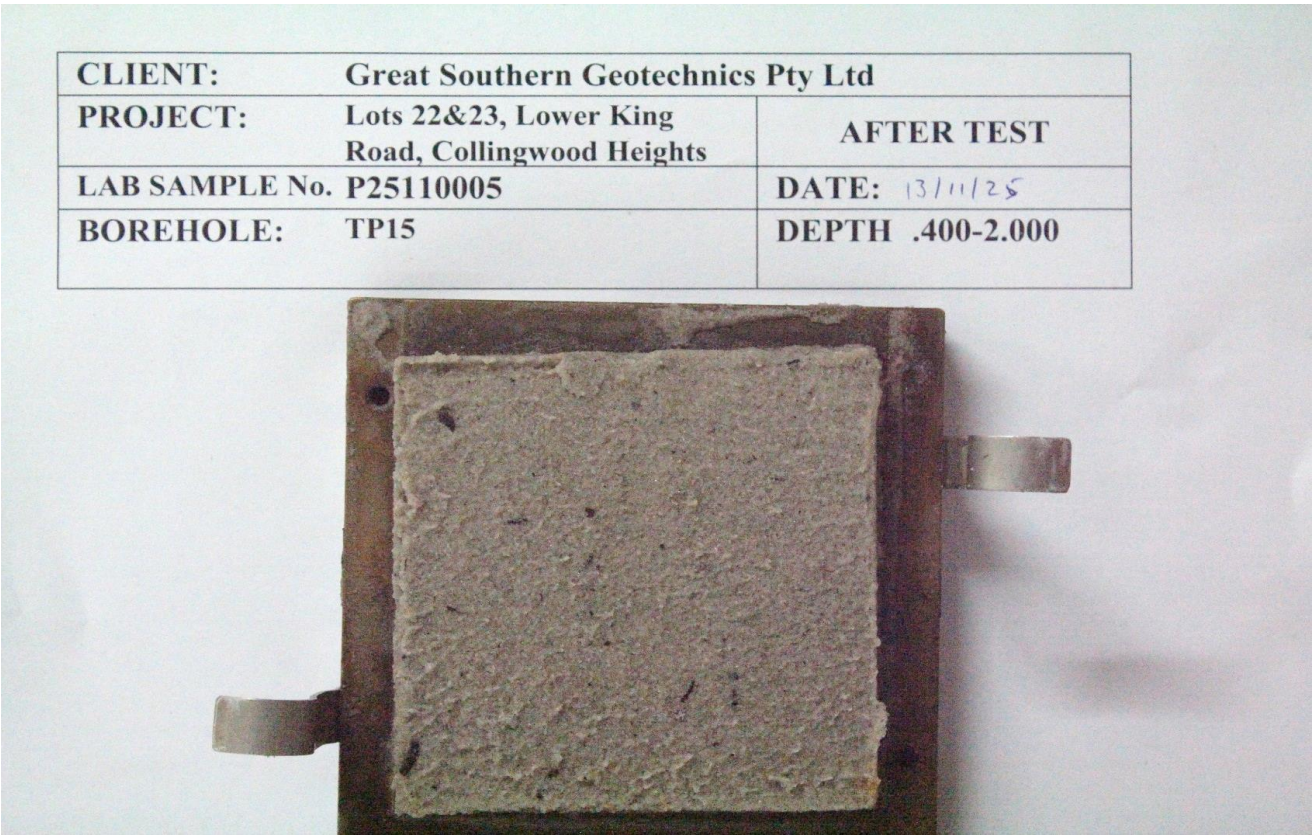
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Test Method: AS 1289.6.2.2

Client	Great Southern Geotechnics Pty Ltd	**Report No.**	P25110005-MSDS



Notes/Remarks:

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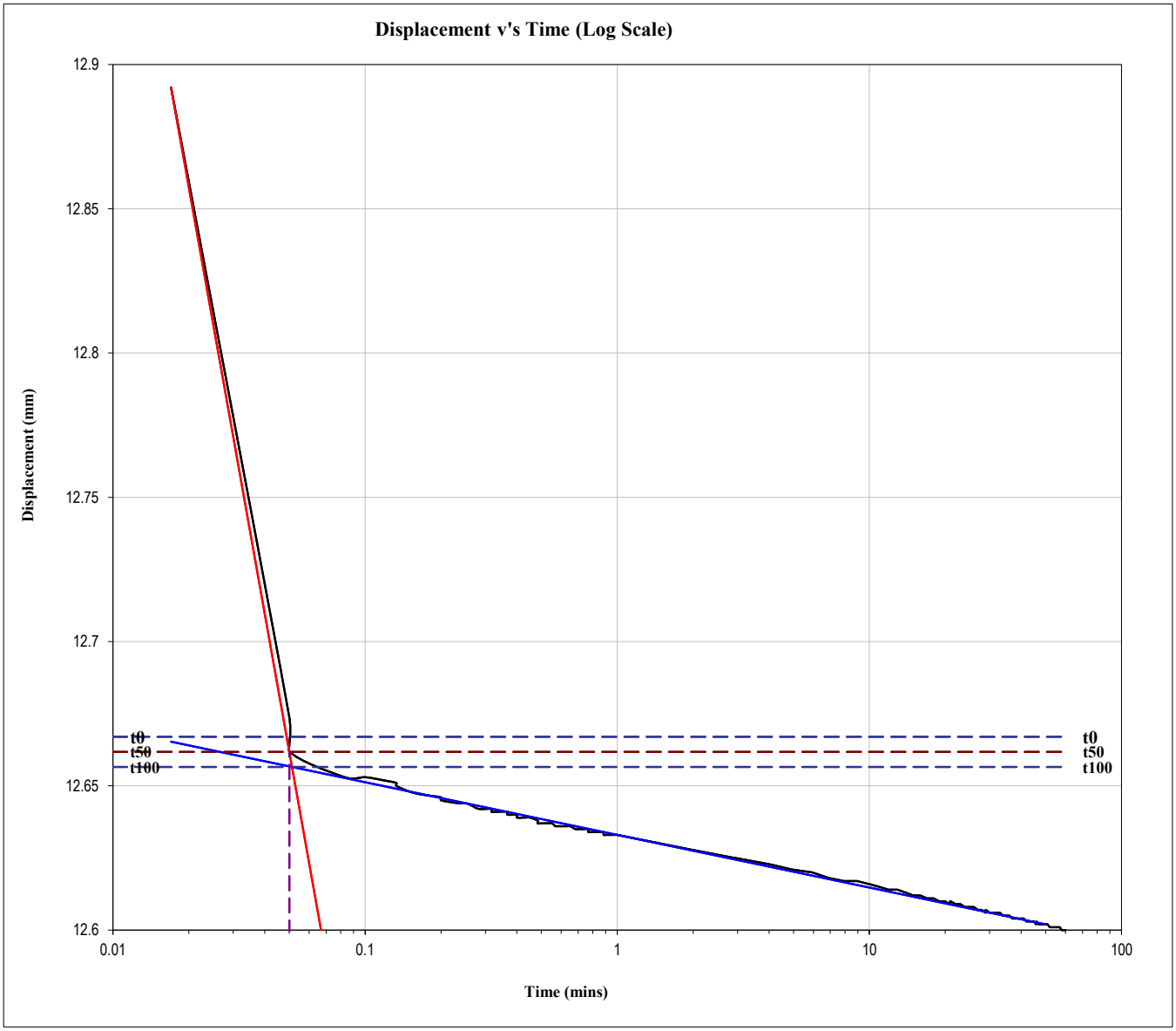
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DIRECT SHEAR TEST REPORT

Test Method: AS 1289.6.2.2

Client	Great Southern Geotechnics Pty Ltd	**Report No.**	P25110005-MSDS

Stage 1 Consolidation



t_{50}	0.05	mins
t_{100}	0.05	mins
Time to Failure =	2.50	mins
Estimated Displacement to Failure =	5	mm
Displacement Rate =	1.9978639	mm/min

Notes/Remarks:

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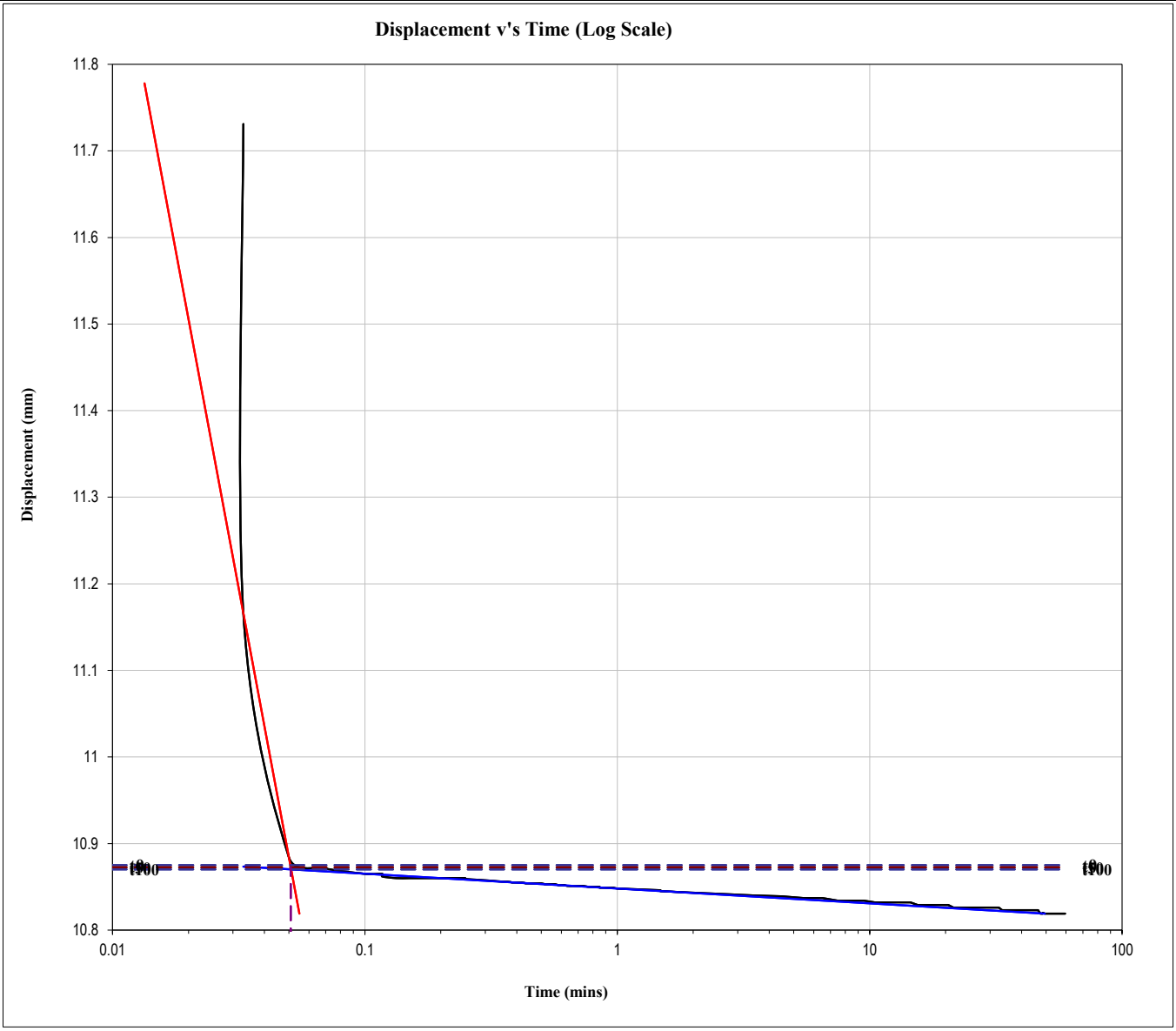
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DIRECT SHEAR TEST REPORT

Test Method: AS 1289.6.2.2

Client	Great Southern Geotechnics Pty Ltd	**Report No.**	P25110005-MSDS

Stage 2 Consolidation



t_{50}	0.05	mins
t_{100}	0.05	mins
Time to Failure =	2.54	mins
Estimated Displacement to Failure =	5	mm
Displacement Rate =	1.966562	mm/min

Notes/Remarks:

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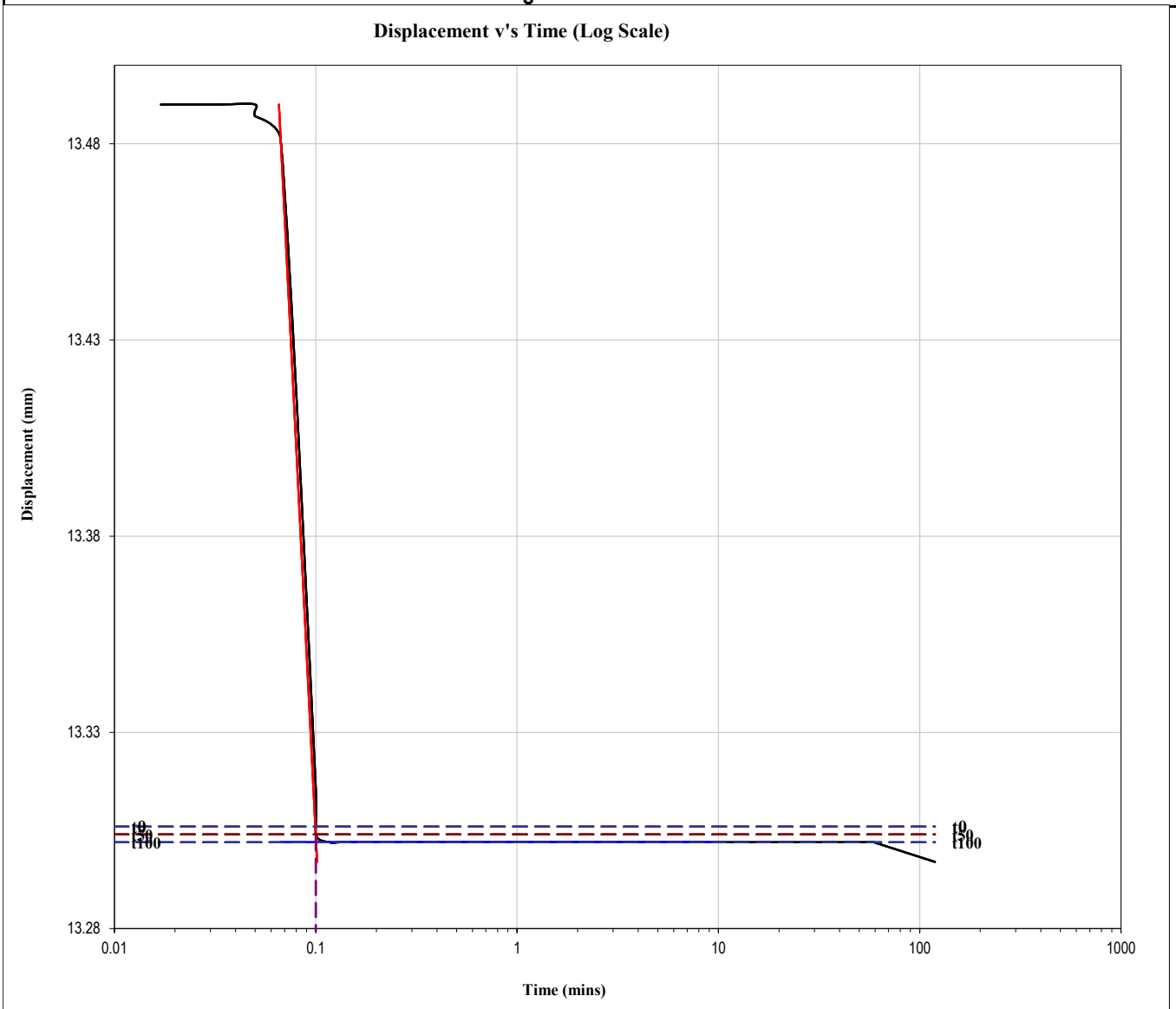
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DIRECT SHEAR TEST REPORT

Test Method: AS 1289.6.2.2

Client	Great Southern Geotechnics Pty Ltd	**Report No.**	P25110005-MSDS

Stage 3 Consolidation



t_{50}	0.10	mins
t_{100}	0.10	mins
Time to Failure =	5.00	mins
Estimated Displacement to Failure =	5	mm
Displacement Rate =	1	mm/min

Notes/Remarks:

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ABN 53 140 099 207
7-11 Catalano Road Canning Vale WA 6155
ph +61 8 9317 2505
lab@mpl.com.au
www.mpl.com.au

Certificate of Analysis PGJ1758

Client Details

Client	Great Southern Geotechnics
Contact	Andrew Purdie
Address	5a/209 Chester Pass Rd, MILPARA, WA, 6330

Sample Details

Your Reference	Dept. Planning, Lands and Heritage - Lots 22 & 23, Lower King Road
Number of Samples	80 Soil
Date Samples Received	28/10/2025
Date Instructions Received	29/10/2025

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	05/11/2025
Date of Reissue	11/11/2025 - This report supercedes previous report, see amendment history for details

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Authorisation Details

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

Report Amendment History

Revision	Reason for Amendment
R-01	Sample Dates amended for samples -01 to -64.
R-02	Sample Dates amended for samples -01 to -64.

Certificate of Analysis PGJ1758

Samples in this Report

Envirolab ID	Sample ID	Description	Depth	Matrix	Date Sampled	Date Received
PGJ1758-01	Test Pit 1	1192G40	0.00-25.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-02	Test Pit 1	1192G41	25.00-50.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-03	Test Pit 1	1192G42	50.00-75.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-04	Test Pit 1	1192G43	75.00-100.00 Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-05	Test Pit 1	1192G44	100.00-125.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-06	Test Pit 1	1192G45	125.00-150.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-07	Test Pit 1	1192G46	150.00-175.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-08	Test Pit 1	1192G47	175.00-200.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-09	Test Pit 2	1192G48	0.00-25.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-10	Test Pit 2	1192G49	25.00-50.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-11	Test Pit 2	1192G50	50.00-75.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-12	Test Pit 2	1192G51	75.00-100.00 Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-13	Test Pit 2	1192G52	100.00-125.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-14	Test Pit 2	1192G53	125.00-150.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-15	Test Pit 2	1192G54	150.00-175.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-16	Test Pit 2	1192G55	175.00-200.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-17	Test Pit 3	1192G56	0.00-25.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-18	Test Pit 3	1192G57	25.00-50.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-19	Test Pit 3	1192G58	50.00-75.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-20	Test Pit 3	1192G59	75.00-100.00 Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-21	Test Pit 3	1192G60	100.00-125.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-22	Test Pit 3	1192G61	125.00-150.00Centimeters	Soil	22/10/2025	29/10/2025

Samples in this Report

Envirolab ID	Sample ID	Description	Depth	Matrix	Date Sampled	Date Received
PGJ1758-23	Test Pit 3	1192G62	150.00-175.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-24	Test Pit 3	1192G63	175.00-200.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-25	Test Pit 4	1192G64	0.00-25.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-26	Test Pit 4	1192G65	25.00-50.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-27	Test Pit 4	1192G66	50.00-75.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-28	Test Pit 4	1192G67	75.00-100.00 Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-29	Test Pit 4	1192G68	100.00-125.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-30	Test Pit 4	1192G69	125.00-150.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-31	Test Pit 4	1192G70	150.00-175.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-32	Test Pit 4	1192G71	175.00-200.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-33	Test Pit 5	1192G72	0.00-25.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-34	Test Pit 5	1192G73	25.00-50.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-35	Test Pit 5	1192G74	50.00-75.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-36	Test Pit 5	1192G75	75.00-100.00 Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-37	Test Pit 5	1192G76	100.00-125.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-38	Test Pit 5	1192G77	125.00-150.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-39	Test Pit 5	1192G78	150.00-175.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-40	Test Pit 5	1192G79	175.00-200.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-41	Test Pit 6	1192G80	0.00-25.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-42	Test Pit 6	1192G81	25.00-50.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-43	Test Pit 6	1192G82	50.00-75.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-44	Test Pit 6	1192G83	75.00-100.00 Centimeters	Soil	22/10/2025	29/10/2025

Samples in this Report

Envirolab ID	Sample ID	Description	Depth	Matrix	Date Sampled	Date Received
PGJ1758-45	Test Pit 6	1192G84	100.00-125.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-46	Test Pit 6	1192G85	125.00-150.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-47	Test Pit 6	1192G86	150.00-175.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-48	Test Pit 6	1192G87	175.00-200.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-49	Test Pit 7	1192G88	0.00-25.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-50	Test Pit 7	1192G89	25.00-50.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-51	Test Pit 7	1192G90	50.00-75.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-52	Test Pit 7	1192G91	75.00-100.00 Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-53	Test Pit 7	1192G92	100.00-125.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-54	Test Pit 7	1192G93	125.00-150.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-55	Test Pit 7	1192G94	150.00-175.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-56	Test Pit 7	1192G95	175.00-200.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-57	Test Pit 8	1192G96	0.00-25.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-58	Test Pit 8	1192G97	25.00-50.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-59	Test Pit 8	1192G98	50.00-75.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-60	Test Pit 8	1192G99	75.00-100.00 Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-61	Test Pit 8	1192G100	100.00-125.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-62	Test Pit 8	1192G101	125.00-150.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-63	Test Pit 8	1192G102	150.00-175.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-64	Test Pit 8	1192G103	175.00-200.00Centimeters	Soil	22/10/2025	29/10/2025
PGJ1758-65	Test Pit 13	1192G104	0.00-25.00Centimeters	Soil	23/10/2025	29/10/2025
PGJ1758-66	Test Pit 13	1192G105	25.00-50.00Centimeters	Soil	23/10/2025	29/10/2025

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Samples in this Report

Envirolab ID	Sample ID	Description	Depth	Matrix	Date Sampled	Date Received
PGJ1758-67	Test Pit 13	1192G106	50.00-75.00Centimeters	Soil	23/10/2025	29/10/2025
PGJ1758-68	Test Pit 13	1192G107	75.00-100.00 Centimeters	Soil	23/10/2025	29/10/2025
PGJ1758-69	Test Pit 13	1192G108	100.00-125.00Centimeters	Soil	23/10/2025	29/10/2025
PGJ1758-70	Test Pit 13	1192G109	125.00-150.00Centimeters	Soil	23/10/2025	29/10/2025
PGJ1758-71	Test Pit 13	1192G110	150.00-175.00Centimeters	Soil	23/10/2025	29/10/2025
PGJ1758-72	Test Pit 13	1192G111	175.00-200.00Centimeters	Soil	23/10/2025	29/10/2025
PGJ1758-73	Test Pit 18	1192G112	0.00-25.00Centimeters	Soil	23/10/2025	29/10/2025
PGJ1758-74	Test Pit 18	1192G113	25.00-50.00Centimeters	Soil	23/10/2025	29/10/2025
PGJ1758-75	Test Pit 18	1192G114	50.00-75.00Centimeters	Soil	23/10/2025	29/10/2025
PGJ1758-76	Test Pit 18	1192G115	75.00-100.00 Centimeters	Soil	23/10/2025	29/10/2025
PGJ1758-77	Test Pit 18	1192G116	100.00-125.00Centimeters	Soil	23/10/2025	29/10/2025
PGJ1758-78	Test Pit 18	1192G117	125.00-150.00Centimeters	Soil	23/10/2025	29/10/2025
PGJ1758-79	Test Pit 18	1192G118	150.00-175.00Centimeters	Soil	23/10/2025	29/10/2025
PGJ1758-80	Test Pit 18	1192G119	175.00-200.00Centimeters	Soil	23/10/2025	29/10/2025

Sample Comments

General Comment	Payment received 29/10/25

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Acid Sulfate Soils (Soil)

Envirolab ID	Units	PQL	PGJ1758-01	PGJ1758-02	PGJ1758-03	PGJ1758-04	PGJ1758-05
Your Reference			Test Pit 1 1192G40	Test Pit 1 1192G41	Test Pit 1 1192G42	Test Pit 1 1192G43	Test Pit 1 1192G44
Date Sampled			22/10/2025	22/10/2025	22/10/2025	22/10/2025	22/10/2025
Depth			0.00-25.00	25.00-50.00	50.00-75.00	75.00-100.00	100.00-125.00
pHF (field pH test)*	pH units		3.8	3.8	4.3	4.4	5.9
pHFOX (field peroxide test)*	pH units		2.8	2.6	3.3	3.6	4.7
Reaction Rate*	-		Medium	Medium	Low	Low	Low

Envirolab ID	Units	PQL	PGJ1758-06	PGJ1758-07	PGJ1758-08	PGJ1758-09	PGJ1758-10
Your Reference			Test Pit 1 1192G45	Test Pit 1 1192G46	Test Pit 1 1192G47	Test Pit 2 1192G48	Test Pit 2 1192G49
Date Sampled			22/10/2025	22/10/2025	22/10/2025	22/10/2025	22/10/2025
Depth			125.00-150.00	150.00-175.00	175.00-200.00	0.00-25.00	25.00-50.00
pHF (field pH test)*	pH units		7.0	7.0	7.0	4.4	3.9
pHFOX (field peroxide test)*	pH units		4.9	4.5	4.7	3.1	3.0
Reaction Rate*	-		Low	Low	Low	Medium	Medium

Envirolab ID	Units	PQL	PGJ1758-11	PGJ1758-12	PGJ1758-13	PGJ1758-14	PGJ1758-15
Your Reference			Test Pit 2 1192G50	Test Pit 2 1192G51	Test Pit 2 1192G52	Test Pit 2 1192G53	Test Pit 2 1192G54
Date Sampled			22/10/2025	22/10/2025	22/10/2025	22/10/2025	22/10/2025
Depth			50.00-75.00	75.00-100.00	100.00-125.00	125.00-150.00	150.00-175.00
pHF (field pH test)*	pH units		4.1	4.1	4.5	5.1	6.3
pHFOX (field peroxide test)*	pH units		2.9	3.0	3.7	4.2	4.9
Reaction Rate*	-		Medium	Low	Low	Low	Low

Envirolab ID	Units	PQL	PGJ1758-16	PGJ1758-17	PGJ1758-18	PGJ1758-19	PGJ1758-20
Your Reference			Test Pit 2 1192G55	Test Pit 3 1192G56	Test Pit 3 1192G57	Test Pit 3 1192G58	Test Pit 3 1192G59
Date Sampled			22/10/2025	22/10/2025	22/10/2025	22/10/2025	22/10/2025
Depth			175.00-200.00	0.00-25.00	25.00-50.00	50.00-75.00	75.00-100.00
pHF (field pH test)*	pH units		5.8	5.0	5.1	4.7	5.7
pHFOX (field peroxide test)*	pH units		4.4	3.5	3.3	3.0	3.6
Reaction Rate*	-		Low	Medium	Medium	Medium	Medium

Envirolab ID	Units	PQL	PGJ1758-21	PGJ1758-22	PGJ1758-23	PGJ1758-24	PGJ1758-25
Your Reference			Test Pit 3 1192G60	Test Pit 3 1192G61	Test Pit 3 1192G62	Test Pit 3 1192G63	Test Pit 4 1192G64
Date Sampled			22/10/2025	22/10/2025	22/10/2025	22/10/2025	22/10/2025
Depth			100.00-125.00	125.00-150.00	150.00-175.00	175.00-200.00	0.00-25.00
pHF (field pH test)*	pH units		6.1	6.2	6.0	5.8	4.7
pHFOX (field peroxide test)*	pH units		4.4	4.6	4.5	4.6	3.1
Reaction Rate*	-		Low	Low	Low	Medium	Medium

Envirolab ID	Units	PQL	PGJ1758-26	PGJ1758-27	PGJ1758-28	PGJ1758-29	PGJ1758-30
Your Reference			Test Pit 4 1192G65	Test Pit 4 1192G66	Test Pit 4 1192G67	Test Pit 4 1192G68	Test Pit 4 1192G69
Date Sampled			22/10/2025	22/10/2025	22/10/2025	22/10/2025	22/10/2025
Depth			25.00-50.00	50.00-75.00	75.00-100.00	100.00-125.00	125.00-150.00
pHF (field pH test)*	pH units		4.7	5.1	4.9	4.5	5.6
pHFOX (field peroxide test)*	pH units		2.9	3.3	3.2	3.2	3.6
Reaction Rate*	-		Medium	Medium	Medium	Medium	Low

Acid Sulfate Soils (Soil)

Envirolab ID	Units	PQL	PGJ1758-31	PGJ1758-32	PGJ1758-33	PGJ1758-34	PGJ1758-35
Your Reference			Test Pit 4 1192G70	Test Pit 4 1192G71	Test Pit 5 1192G72	Test Pit 5 1192G73	Test Pit 5 1192G74
Date Sampled			22/10/2025	22/10/2025	22/10/2025	22/10/2025	22/10/2025
Depth			150.00-175.00	175.00-200.00	0.00-25.00	25.00-50.00	50.00-75.00
pHF (field pH test)*	pH units		6.4	6.6	5.7	5.8	5.8
pHFOX (field peroxide test)*	pH units		4.6	4.6	3.7	3.6	4.1
Reaction Rate*	-		Medium	Medium	Medium	Low	Low

Envirolab ID	Units	PQL	PGJ1758-36	PGJ1758-37	PGJ1758-38	PGJ1758-39	PGJ1758-40
Your Reference			Test Pit 5 1192G75	Test Pit 5 1192G76	Test Pit 5 1192G77	Test Pit 5 1192G78	Test Pit 5 1192G79
Date Sampled			22/10/2025	22/10/2025	22/10/2025	22/10/2025	22/10/2025
Depth			75.00-100.00	100.00-125.00	125.00-150.00	150.00-175.00	175.00-200.00
pHF (field pH test)*	pH units		5.9	5.5	5.3	5.6	5.4
pHFOX (field peroxide test)*	pH units		4.0	3.6	4.6	4.6	4.2
Reaction Rate*	-		Low	Low	Low	Low	Low

Envirolab ID	Units	PQL	PGJ1758-41	PGJ1758-42	PGJ1758-43	PGJ1758-44	PGJ1758-45
Your Reference			Test Pit 6 1192G80	Test Pit 6 1192G81	Test Pit 6 1192G82	Test Pit 6 1192G83	Test Pit 6 1192G84
Date Sampled			22/10/2025	22/10/2025	22/10/2025	22/10/2025	22/10/2025
Depth			0.00-25.00	25.00-50.00	50.00-75.00	75.00-100.00	100.00-125.00
pHF (field pH test)*	pH units		4.9	5.1	5.3	5.0	5.0
pHFOX (field peroxide test)*	pH units		3.2	3.3	4.1	4.2	4.2
Reaction Rate*	-		Low	Low	Low	Low	Low

Envirolab ID	Units	PQL	PGJ1758-46	PGJ1758-47	PGJ1758-48	PGJ1758-49	PGJ1758-50
Your Reference			Test Pit 6 1192G85	Test Pit 6 1192G86	Test Pit 6 1192G87	Test Pit 7 1192G88	Test Pit 7 1192G89
Date Sampled			22/10/2025	22/10/2025	22/10/2025	22/10/2025	22/10/2025
Depth			125.00-150.00	150.00-175.00	175.00-200.00	0.00-25.00	25.00-50.00
pHF (field pH test)*	pH units		4.8	5.0	5.0	5.7	7.6
pHFOX (field peroxide test)*	pH units		4.3	4.1	4.4	3.8	6.3
Reaction Rate*	-		Low	Low	Low	Medium	Low

Envirolab ID	Units	PQL	PGJ1758-51	PGJ1758-52	PGJ1758-53	PGJ1758-54	PGJ1758-55
Your Reference			Test Pit 7 1192G90	Test Pit 7 1192G91	Test Pit 7 1192G92	Test Pit 7 1192G93	Test Pit 7 1192G94
Date Sampled			22/10/2025	22/10/2025	22/10/2025	22/10/2025	22/10/2025
Depth			50.00-75.00	75.00-100.00	100.00-125.00	125.00-150.00	150.00-175.00
pHF (field pH test)*	pH units		8.1	8.2	8.0	7.3	7.1
pHFOX (field peroxide test)*	pH units		6.6	6.7	6.5	5.6	5.4
Reaction Rate*	-		Low	Low	Low	Low	Low

Envirolab ID	Units	PQL	PGJ1758-56	PGJ1758-57	PGJ1758-58	PGJ1758-59	PGJ1758-60
Your Reference			Test Pit 7 1192G95	Test Pit 8 1192G96	Test Pit 8 1192G97	Test Pit 8 1192G98	Test Pit 8 1192G99
Date Sampled			22/10/2025	22/10/2025	22/10/2025	22/10/2025	22/10/2025
Depth			175.00-200.00	0.00-25.00	25.00-50.00	50.00-75.00	75.00-100.00
pHF (field pH test)*	pH units		7.0	7.9	8.0	7.4	7.1
pHFOX (field peroxide test)*	pH units		5.3	6.2	6.5	5.5	5.7
Reaction Rate*	-		Low	Medium	Low	Low	Low

Acid Sulfate Soils (Soil)

Envirolab ID	Units	PQL	PGJ1758-61	PGJ1758-62	PGJ1758-63	PGJ1758-64	PGJ1758-65
Your Reference			Test Pit 8 1192G100	Test Pit 8 1192G101	Test Pit 8 1192G102	Test Pit 8 1192G103	Test Pit 13 1192G104
Date Sampled			22/10/2025	22/10/2025	22/10/2025	22/10/2025	23/10/2025
Depth			100.00-125.00	125.00-150.00	150.00-175.00	175.00-200.00	0.00-25.00
pHF (field pH test)*	pH units		6.9	6.8	6.5	5.6	5.6
pHFOX (field peroxide test)*	pH units		5.3	5.4	4.8	4.6	3.5
Reaction Rate*	-		Low	Low	Low	Low	Medium

Envirolab ID	Units	PQL	PGJ1758-66	PGJ1758-67	PGJ1758-68	PGJ1758-69	PGJ1758-70
Your Reference			Test Pit 13 1192G105	Test Pit 13 1192G106	Test Pit 13 1192G107	Test Pit 13 1192G108	Test Pit 13 1192G109
Date Sampled			23/10/2025	23/10/2025	23/10/2025	23/10/2025	23/10/2025
Depth			25.00-50.00	50.00-75.00	75.00-100.00	100.00-125.00	125.00-150.00
pHF (field pH test)*	pH units		5.2	5.4	5.6	5.5	5.4
pHFOX (field peroxide test)*	pH units		3.1	3.4	3.7	4.0	3.9
Reaction Rate*	-		Medium	Low	Low	Low	Low

Envirolab ID	Units	PQL	PGJ1758-71	PGJ1758-72	PGJ1758-73	PGJ1758-74	PGJ1758-75
Your Reference			Test Pit 13 1192G110	Test Pit 13 1192G111	Test Pit 18 1192G112	Test Pit 18 1192G113	Test Pit 18 1192G114
Date Sampled			23/10/2025	23/10/2025	23/10/2025	23/10/2025	23/10/2025
Depth			150.00-175.00	175.00-200.00	0.00-25.00	25.00-50.00	50.00-75.00
pHF (field pH test)*	pH units		5.3	5.3	5.2	5.3	5.5
pHFOX (field peroxide test)*	pH units		4.3	4.3	3.2	3.6	4.0
Reaction Rate*	-		Low	Low	Medium	Low	Low

Envirolab ID	Units	PQL	PGJ1758-76	PGJ1758-77	PGJ1758-78	PGJ1758-79	PGJ1758-80
Your Reference			Test Pit 18 1192G115	Test Pit 18 1192G116	Test Pit 18 1192G117	Test Pit 18 1192G118	Test Pit 18 1192G119
Date Sampled			23/10/2025	23/10/2025	23/10/2025	23/10/2025	23/10/2025
Depth			75.00-100.00	100.00-125.00	125.00-150.00	150.00-175.00	175.00-200.00
pHF (field pH test)*	pH units		5.4	5.2	5.1	5.1	5.2
pHFOX (field peroxide test)*	pH units		3.9	4.2	4.2	4.5	4.5
Reaction Rate*	-		Low	Low	Low	Low	Low

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.

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.

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.

[redacted]

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

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

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

Data Quality Assessment Summary PGJ1758

Client Details

Client	Great Southern Geotechnics
Your Reference	Dept. Planning, Lands and Heritage - Lots 22 & 23, Lower King Road
Date Issued	11/11/2025

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 PGJ1758

Recommended Holding Time Compliance

Analysis	Sample Number(s)	Date Sampled	Date Extracted	Date Analysed	Compliant
pH F | Soil	1-64	22/10/2025	29/10/2025	29/10/2025	Yes
	65-80	23/10/2025	29/10/2025	29/10/2025	Yes
pH FOX | Soil	1-64	22/10/2025	29/10/2025	29/10/2025	Yes
	65-80	23/10/2025	29/10/2025	29/10/2025	Yes
Reaction Rate | Soil	1-64	22/10/2025	29/10/2025	29/10/2025	Yes
	65-80	23/10/2025	29/10/2025	29/10/2025	Yes

Quality Control PGJ1758

INORG-063|Acid Sulfate Soils (Soil) | Batch BGJ4822

Analyte	Units	PQL	Blank	DUP1 PGJ1758-01 Samp | QC | RPD %	DUP2 PGJ1758-11 Samp | QC | RPD %	LCS %
pHF (field pH test)	pH units			3.8 | 3.8 | 0.786	4.1 | 3.9 | 4.00	100
pHFOX (field peroxide test)	pH units			2.8 | 2.7 | 2.21	2.9 | 2.9 | 1.04	100
Reaction Rate	-			Medium | Medium | [NA]	Medium | Medium | [NA]	[NA]

Analyte	Units	PQL	Blank	DUP3 PGJ1758-21 Samp | QC | RPD %	DUP4 PGJ1758-31 Samp | QC | RPD %	LCS %
pHF (field pH test)	pH units			6.1 | 6.2 | 2.59	6.4 | 6.2 | 2.22	99.6
pHFOX (field peroxide test)	pH units			4.4 | 4.5 | 1.79	4.6 | 4.7 | 0.430	99.7
Reaction Rate	-			Low | Low | [NA]	Medium | Medium | [NA]	[NA]

Analyte	Units	PQL	Blank	DUP5 PGJ1758-41 Samp | QC | RPD %	DUP6 PGJ1758-51 Samp | QC | RPD %	LCS %
pHF (field pH test)	pH units			4.9 | 5.0 | 3.42	8.1 | 8.0 | 0.743	99.7
pHFOX (field peroxide test)	pH units			3.2 | 3.2 | 1.25	6.6 | 6.5 | 1.37	100
Reaction Rate	-			Low | Low | [NA]	Low | Low | [NA]	[NA]

Analyte	Units	PQL	Blank	DUP7 PGJ1758-61 Samp | QC | RPD %	DUP8 PGJ1758-71 Samp | QC | RPD %	LCS %
pHF (field pH test)	pH units			6.9 | 6.9 | 1.01	5.3 | 5.4 | 1.67	99.7
pHFOX (field peroxide test)	pH units			5.3 | 5.2 | 1.90	4.3 | 4.4 | 1.86	99.9
Reaction Rate	-			Low | Low | [NA]	Low | Low | [NA]	[NA]

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

COLOURS

BLACK - BROWN (bk)	BLUE (bl)	ORANGE (or)
BROWN (br)	BLUE - GREEN (bl/gr)	RED (rd)
GREY - BROWN (gy/br)	GREEN (gr)	RED - BROWN (rd/br)
GREY (gy)	YELLOW (yl)	PINK (pk)
BLUE - GREY (bl/gy)	YELLOW - BROWN (yl/br)	PURPLE (pr)

MOISTURE CONDITION OF SOIL

TERM	DESCRIPTION
Dry	Cohesive soils; hard and friable or powdery, well dry of plastic limit. Granular soils; cohesionless and free-running.
Moist	Soil feels cool, darkened in colour. Cohesive soils can be moulded. Granular soils tend to cohere.
Wet	Soil feels cool, darkened in colour. Cohesive soils usually weakened and free water forms on hands when handling. Granular soils tend to cohere and free water forms on hands when handling.

PARTICLE SHAPES

ANGULAR	SUB-ANGULAR	SUB-ROUNDED	ROUNDED






PARTICLE SIZES

BOULDERS	COBBLES	COARSE GRAVEL	MEDIUM GRAVEL	FINE GRAVEL	COARSE SAND	MEDIUM SAND	FINE SAND	SILT	CLAY
>200mm	63-200mm	20-63mm	6-20mm	2.36-6mm	0.6-2.36mm	0.2-0.6mm	0.075-0.2mm	0.002-0.075mm	<0.002mm

GRAIN SIZE

SOIL TYPE (ABBREV.)	CLAY (CL)	SILT (SI)	←	SAND (SA)	→	←	GRAVEL (GR)	→	COBBLES (CO)
SIZE	< 2µm	2-75µm	Fine 0.075-0.2mm	Medium 0.2-0.6mm	Coarse 0.6-2.36mm	Fine 2.36-6mm	Medium 6-20mm	Coarse 20-63mm	63-200mm
SHAPE & TEXTURE	Shiny	Dull	← angular or sub angular or sub rounded or rounded →						
FIELD GUIDE	Not visible under 10x	Visible under 10x	Visible by eye	Visible at < 1m	Visible at < 3m	Visible at < 5m	Road gravel	Rail ballast	Beaching

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

CLASSIFICATION CHART

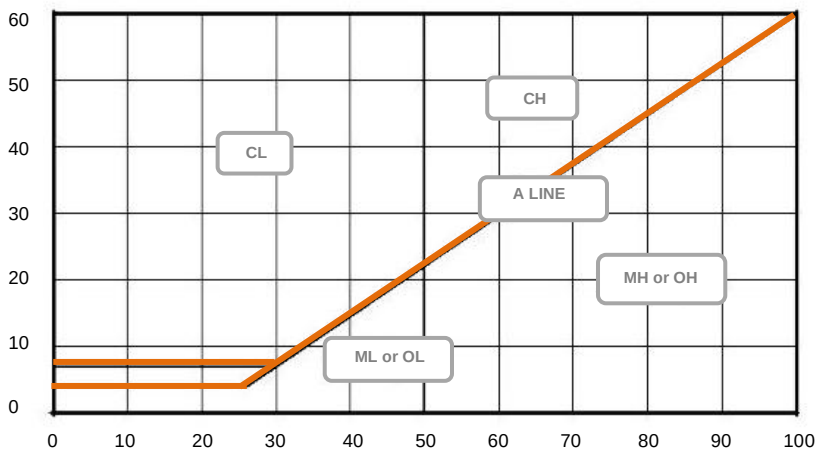
FIELD IDENTIFICATION PROCEDURES (Excluding particles larger than 60mm and basing fractions on estimated mass)				GROUP SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS More than 50% of material less than 63 mm is larger than 0.075 mm	GRAVELS More than 50% of coarse fraction is larger than 2.36mm	CLEAN GRAVELS (Little or no fines)	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	GW	Well graded gravels, gravel-sand mixtures, little or no fines
			Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength	GP	Poorly Graded gravels and gravel-sand mixtures, little or no fines, uniform gravels
		GRAVELS WITH FINES (Appreciable amount of fines)	Dirty' materials with excess of non-plastic fines, zero to medium dry strength	GM	Silty gravels, gravel-sand-silt mixtures
			'Dirty' materials with excess of plastic fines, medium to high dry strength	GC	Clayey gravels, gravel-sand-clay mixtures
	SANDS More than 50% of coarse fraction is smaller than 2.36mm	CLEAN SANDS (Little or no fines)	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	SW	Well graded sands, gravelly sands, little or no fines
			Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength '	SP	Poorly graded sands and gravelly sands; little or no fines, uniform sands
		SANDS WITH FINES (Appreciable amount of fines)	Dirty' materials with excess of non-plastic fines, zero to medium dry strength	SM	Silty sands, sand-silt mixtures
			'Dirty' materials with excess of plastic fines, medium to high dry strength	SC	Clayey sands, sand-clay mixtures

FINE GRAINED SOILS More than 50% of material less than 63 mm is smaller than 0.075 mm	IDENTIFICATION PROCEDURES ON FRACTIONS <0.2mm					
		DRY STRENGTH	DILATANCY	TOUGHNESS		
	SILTS AND CLAYS Liquid limit less than 50	None to low	Quick to slow	None	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands with low plasticity. Silts of low to medium Liquid Limit.
		Medium to high	None to very slow	Medium	CL, CI	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays.
		Low to medium	Slow	Low	OL	Organic silts and organic silt-clays of low to medium plasticity.
	SILTS AND CLAYS Liquid limit greater than 50	Low to medium	Slow to none	Low to medium	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, silts of high Liquid Limit.
		High to very high	None	High	CH	Inorganic clays of high plasticity.
		Medium to high	None to very slow	Low to medium	OH	Organic clays of high plasticity

HIGHLY ORGANIC SOILS	Readily identified by colour, odour, spongy feel and frequently by fibrous texture	Pt	Peat and other highly organic soils

PLASTICITY CHART

For laboratory classification of fine grained soils



GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

PLASTICITY

DESCRIPTIVE TERM	OF LOW PLASTICITY	OF MEDIUM PLASTICITY	OF HIGH PLASTICITY
Range Of Liquid Limit (%)	≤ 35	> 35 ≤ 50	> 50

DESCRIPTION OF ORGANIC OR ARTIFICIAL MATERIALS

PREFERRED TERMS	SECONDARY DESCRIPTION
Organic Matter	Fibrous Peat/ Charcoal/ Wood Fragments/ Roots (greater than approximately 2mm diameter)/ Root Fibres (less than approximately 2mm diameter)
Waste Fill	Domestic Refuse/ Oil/ Bitumen/ Brickbats/ Concrete Rubble/ Fibrous Plaster/ Wood Pieces/ Wood Shavings/ Sawdust/ Iron Filings/ Drums/ Steel Bars/ Steel Scrap/ Bottles/ Broken Glass/ Leather

CONSISTENCY - Cohesive soils

TERM	VERY SOFT	SOFT	FIRM	STIFF	VERY STIFF	HARD
Symbol	VS	S	F	St	VSt	H
Undrained Shear Strength (kPa)	< 12	12 - 25	25 - 50	50 - 100	100 - 200	> 200
SPT (N) Blowcount	0 - 2	2 - 4	4 - 8	8 - 15	15 - 30	> 30
Field Guide	Exudes between the fingers when squeezed	Can be moulded by light finger pressure	Can be moulded by strong finger pressure	Cannot be moulded by fingers. Can be indented by thumb nail	Can be indented by thumb nail	Can be indented with difficulty with thumb nail

CONSISTENCY - Non-cohesive soils

TERM	VERY LOOSE	LOOSE	MEDIUM DENSE	DENSE	VERY DENSE	COMPACT
Symbol	VL	L	MD	D	VD	CO
SPT (N) Blowcount	0 - 4	4 - 10	10 - 30	30 - 50	50 - 100	> 50/150 mm
Density Index (%)	< 15	15 - 35	35 - 65	65 - 85	85 - 95	> 95
Field Guide	Ravels	Shovels easily	Shovelling very difficult	Pick required	Pick difficult	Cannot be picked

MINOR COMPONENTS

TERM	TRACE	WITH
% Minor Component	Coarse grained soils: < 5% Fine grained soils: <15%	Coarse grained soils: 5 – 12% Fine grained soils: 15 – 30%
Field Guide	Presence just detectable by feel or eye, but soil properties little or no different to general properties of primary components	Presence easily detectable by feel or eye, soil properties little different to general properties of primary component

GREAT SOUTHERN GEOTECHNICS
CONSTRUCTION MATERIALS TESTING

GEOLOGICAL ORIGIN

	TYPE	DETAILS
TRANSPORTED SOILS	Aeolian Soils	Deposited by wind
	Alluvial Soils	Deposited by streams and rivers
	Colluvial Soils	Deposited on slopes
	Lacustrine Soils	Deposited by lakes
	Marine Soils	Deposited in ocean, bays, beaches and estuaries
FILL MATERIALS	Soil Fill	Describe soil type, UCS symbol and add 'FILL'
	Rock Fill	Rock type, degree of weathering, and word 'FILL'.
	Domestic Fill	Percent soil or rock, whether pretrucible or not.
	Industrial Fill	Percent soil, whether contaminated, particle size & type of waste product, ie brick, concrete, metal

STRENGTH OF ROCK MATERIAL

TERM	SYMBOL	IS(50)	(MPA)	FIELD GUIDE TO STRENGTH
Extremely Low	EL	≤0.03		Easily remoulded by hand to a material with soil properties.
Very Low	VL	>0.03	≤0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; too hard to cut a triaxle sample by hand. Pieces up to 3 cm thick can be broken by finger pressure.
Low	L	>0.1	≤0.3	Easily scored with a knife; indentations 1 mm to 3 mm show in the specimen with firm blows of the pick point; has dull sound under hammer. A piece of core 150 mm long by 50 mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
Medium	M	>0.3	≤1.0	Readily scored with a knife; a piece of core 150 mm long by 50 mm diameter can be broken by hand with difficulty.
High	H	>1	≤3	A piece of core 150 mm long by 50 mm diameter cannot be broken by hand but can be broken by a pick with a single firm blow; rock rings under hammer.
Very High	VH	>3	≤10	Hand specimen breaks with pick after more than one blow; rock rings under hammer.
Extremely High	EH	>10		Specimen requires many blows with geological pick to break through intact material; rock rings under hammer.

ROCK MATERIAL WEATHERING CLASSIFICATION

TERM	SYMBOL	DEFINITION
Residual Soil	RS	Soil developed on extremely weathered rock; the mass structure and substance fabric are no longer evident; there is a large change in volume but the soil has not been significantly transported
Extremely Weathered Rock	XW	Rock is weathered to such an extent that it has 'soil' properties, i.e. it either disintegrates or can be remoulded, in water.
Distinctly Weathered Rock	DW	Rock strength usually changed by weathering. Rock may be highly discoloured, usually be iron staining. Porosity may be increased by leaching or may be decreased due to deposition of weathering products in pores.
Slightly Weathered Rock	SW	Rock is slightly discoloured but shows little or no change of strength from fresh rock.
Fresh Rock	FR	Rock shows no sign of decomposition or staining.