Aitken Rowe
GEOTECHNICAL ENGINEERING

Geotechnical Engineering
Environmental Consultancy
Soil Concrete Aggregate Testing
NATA Accredited Laboratories

ABN 53 058 315 138 ACN 058 315 138

23 October 2024 Reg. No.: S24-315

Altitude – The Lodge Smiggins
No. 13 Plume Pine Road,
Smiggins Hole, NSW 2624

Attention: Lisa Schweitzer - Manager

Dear Lisa,

Department of Planning
Housing and Infrastructure

Issued under the Environmental Planning and Assessment Act 1979

Approved Section 4.55 (1A) Modification Application

No 25/294 (DA 22/7811 MOD 1) granted on the 13 May 2025 in respect to DA 22/7811

Signed M D'souza

Sheet No 26 of 31

GEOTECHNICAL INVESTIGATION – PROPOSED FIRE ACCESS STAIR REPLACEMENTS, THE LODGE SMIGGINS, No. 13 PLUM PINE ROAD, SMIGGINS HOLE, NSW

Further to your request in response to our quotation; Q24-243, dated 24 April 2024, we drilled two (2) boreholes (BH1 & BH2) to the depths of 2.0m (solid flight auger borehole refusal depth) in BH1 and 1.5m (powered hand auger termination) in BH2 at the above site at the locations as shown in the attached borehole and DCP test location plan, using our trailer-mounted drill rig (BH1) and powered hand auger (BH2) on 19 September 2024 with disturbed samples recovered from the boreholes for relevant laboratory testing.

Dynamic Cone Penetrometer testing (DCP) was also carried out at each borehole location (BH1 & BH2) from the existing surface level to assess the strength and consistency of the subsoil materials.

The purpose of the investigation is to assess the type and condition of the underlying soil strata and make recommendation in respect to geotechnical design parameters for the proposed fire access stair replacements foundations. It should be noted site classification and site preparation details are outside the scope of this investigation and report therefore not provided.

1.0 Site Description

The site for the proposed works is located at the existing The Lodge Smiggins, No. 13, Plum Pine Road, Smiggins Hole, NSW which is located within the Kosciuszko National Park (refer to the attached site locality plan). The proposed two (2) fire access stair replacement sites are located on the northern end (BH1) and eastern side (BH2) of the existing lodge building as shown in the attached borehole and DCP test location plan.

The subject site was noted to have a general downward slope from north-east to south-west (towards Plum Pine Road) at approximately 1V (vertical): 5H (horizontal) with groundcover of topsoil and snow at the time of the investigation.

2.0 Site Geology

The 1:250,000 Geological Series Sheet for Tallangatta (SJ/55-3 series 1) indicates the area is underlain by lower Devonian aged granite, granodiorite and tonalite.

3.0 Subsurface Condition

3.1 Proposed Northern Stair Replacement

BH1 represents the proposed northern stair replacement. The borehole drilled (solid flight auger) revealed that the site, at the borehole location, is generally underlain by topsoil to 0.1m overlying natural material comprising high plasticity sandy silt to 0.4m, then fine to coarse grained silty sand, extending to the borehole refusal depth (solid flight auger) at 2.0m in BH1. The borehole refusal encountered at the location of BH1 appeared to have been encountered on anticipated bedrock or possible floaters.

The moisture condition of the underlying natural material was generally less than plastic limit throughout the upper silt-based profile and moist in the underlying upper sand-based profile and wet in the lower sand-based profile within the investigation depth in BH1 at the time of the investigation. Seepage was encountered during the drilling at the depth of 1.3 to 2.0m (borehole refusal depth) measured from the existing surface level at the location BH1 at the time of the investigation. It should be noted that variations to the water table level could fluctuate with changes to the season, temperature and rainfall.

As per the DCP test result (DCP1) and visual observation of the resistance by solid flight auger TC bit, the underlying natural material (below topsoil) is assessed to be generally soft to firm consistency in the upper silt-based profile to 0.4m then medium dense throughout the underlying sand-based profile within the investigation depth in BH1 at the time of the investigation.

The borehole log with explanatory note and DCP test report are herewith attached.

3.2 Proposed Eastern Stair Replacement

BH2 represents the proposed eastern stair replacement. The borehole drilled (powered hand auger) revealed that the site, at the borehole location, is generally underlain by topsoil to 0.1m overlying natural material comprising high plasticity sandy silt to 0.6m and then fine to coarse grained silty sand to 1.0m, which is then underlain by extremely weathered, extremely low strength, granite bedrock, extending to the borehole termination depth (powered hand auger limit) at 1.5m in BH2.

The moisture condition of the underlying natural material was generally less than plastic limit throughout the upper silt-based profile and moist throughout the underlying sand-based profile and granite bedrock profile within the investigation depth in BH2 at the time of the investigation. No groundwater or seepage was encountered during the course of the drilling however it should be noted that variations to the water table level could fluctuate with changes to the season, temperature and rainfall.

As per the DCP test result (DCP1) and visual observation of the resistance by solid flight auger TC bit, the underlying natural material (below topsoil) is assessed to be generally firm consistency in the upper silt-based profile to 0.6m, then medium dense throughout the underlying sand-based profile within the investigation depth in BH2 at the time of the investigation.

The visual inspection of the rock cuttings from the borehole drilled and the observation of drilling resistance indicates the underlying granite bedrock is assessed to be generally extremely weathered, extremely low strength throughout the bedrock profile where encountered within the investigated depth in BH2 (refer to attached borehole log).

The borehole log with explanatory note and DCP test report are herewith attached.

4.0 Laboratory Testing

To confirm and evaluate the results of the fieldwork, laboratory tests were carried out on the recovered soil samples from the boreholes. The laboratory tests included field moisture content determination (FMC), particle size distribution, Atterberg Limit and linear shrinkage (LS) tests and they were carried out at our NATA accredited testing laboratory in Wagga Wagga, NSW. The test report is herewith attached. It should be noted that the FMC and LS test results are also incorporated in the respective borehole logs.

5.0 Discussion and Comment

5.1 Foundation – Proposed Fire Stair Replacements

The footing system of the proposed fire stair replacement structures may be founded on the underlying natural material. The design parameters given in Table 1 may be adopted for the footing design founded on the underlying materials. If Pad/Column footing system is to be adopted, then footing size and depth shall be designed in such a way that it withstands lateral forces and overturning moments. The geotechnical design parameters given in Table 1 were estimated from the DCP test results on the soil and bedrock material.

Table 1 Geotechnical Design Parameters

Location	Depth (m)	Material Description	ABP (kPa)	ASA (C) (kPa)	AOF (°)	USS (kPa)	Density (kN/m^3)	Modulus of subgrade reaction (kN/m^3)**
BH1	0.4-0.9	Silty Sand	100	10*	28	-	16.5	10,000.00
	0.9-2.0+	Silty Sand	200	20*	32	-	17.5	20,000.00
BH2	0.6-1.0	Silty Sand	100	10*	28	-	16.5	10,000.00
	1.0-1.5#	Granite (EW)	500	50	38	-	20.0	50,000.00

Note:

ABP - Allowable (End) Bearing Pressure
ASA(C) - Allowable Side Adhesion (Compression)
AOF - Angle of Friction
USS - Undrained Shear Strength
Density - Density (at in-situ moisture)
- The powered hand auger borehole termination depth.
+ - The solid flight auger borehole refusal depth.
* - The side adhesion within the top 1.0m depth of natural soil shall be ignored.
** - **Factor of safety of 2.5 is adopted in estimating the Modulus of Subgrade Reaction.**

If uplift forces are to be assessed, the allowable side resistance on the footing system may be taken as equivalent to 50% of the allowable side adhesion values given above. It should be noted that a factor of safety (FOS) 2.5 was adopted for the bearing pressure and skin friction values given in Table 1 for the natural alluvial material.

Care would be required to ensure the bases of the pile shafts and footings must be clean and free of soft, remoulded and loose material and the sides of bored pier holes where side adhesion is adopted must be free of smear prior to concreting. To achieve this, bases of bored pier holes should be cleaned using a cleaning bucket and the sides of the pile holes should be roughed to remove the smear zone associated with drilling, or the side adhesion values given above should be reduced by 50%. **Some localised seepage or pile wall instability requiring temporary liners may be expected within natural materials during the footing excavation.**

The footing excavations, particularly in the silt-based material and extremely weathered bedrock should not be left exposed for prolonged periods as deterioration of footing bases may occur when subjected to wetting and drying process. Care should be exercised during construction to ensure water ponding does not occur since this may lead to subsequent softening of the founding materials.

Groundwater seepage may be encountered during the footing excavation and any such seepage should be readily controllable by conventional sump and pump dewatering systems installed at the base of the excavation. In a situation of groundwater inflows during the foundation construction, correct underwater concrete placement technique should be adopted to ensure achievement of the

specified concrete quality. The footing excavations shall be cleared off the debris and ponding water prior to the placement of the concrete in order to adopt the recommended design parameters.

If water ponds in the base of footings or the base founding materials are affected by moisture ingress, then this material should be excavated to expose the subgrade, which has not been exposed to moisture, and pour the concrete immediately. If a delay in pouring concrete is anticipated, then a blinding layer should be placed over the base of the footing, particularly in the silt-based and extremely weathered bedrock foundation to prevent softening of the footing base.

It is highly recommended to incorporate proper drainage measures around the perimeter of the structures to ensure surface run-off does not ingress into the founding material.

It is highly recommended that the inspection of the footing construction be undertaken by an experienced geotechnical engineer to ensure that the specified allowable bearing capacity is achieved for the footing system during the construction.

5.2 Settlement

We envisage that the total settlements should be minimal provided the design is made within the allowable design parameters recommended and the maintenance of the structures and proper drainage measures are adopted around the structures.

Shallow footings proportioned in accordance with design parameters recommended above are estimated to have load induced settlements of no greater than 0.75% of the width of the footing.

Pile foundations designed in accordance with design parameters recommended above are estimated to have load induced settlements of no greater than 0.75% of the diameter of the piles. It is anticipated that differential settlement is likely to be less than 50% of the total settlement provided the footings are designed in accordance with the design parameters given above.

5.3 Site Sub-Soil Class – Earthquake Design

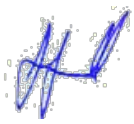
The site sub-soil class in accordance with Section 4.2 of AS1170.4-2007 “Part 4: Earthquake actions in Australia”, is assessed to be “Class C_e- Shallow soil site”.

6.0 General Comment

Occasionally, the subsurface soil conditions between the completed boreholes may be found to be different (or may be interpreted to be different) from those expected. This can also occur with groundwater conditions, especially after climatic changes. If such differences appear to exist, we recommend that you immediately contact us.

It is highly recommended that an adequate drainage system should be formed to maintain constant moisture conditions around the proposed development.

Yours truly,



Jarrod Gornall
Senior Geotechnical Engineer

Tin Maung
Principal Geotechnical Engineer

Attachments:

- Addendum
- Site Locality Plan
- Plan showing borehole & DCP test locations
- Borehole logs with explanatory notes
- Dynamic Cone Penetrometer test reports
- Laboratory test report

ADDENDUM

LIMITS OF INVESTIGATION

The recommendations made in this report are based on the assumption that the test results are representative of the overall subsurface conditions. However, it should be noted that even under optimum circumstances, actual conditions in some parts of the building site may differ from those said to exist, because no geotechnical engineer, no matter how qualified, and no subsurface exploration program, no matter how comprehensive, can reveal all that is hidden by earth, rock and time.

The client should also be aware that our recommendations refer only to our test site locations and the ground level at the time of testing.

The recommendations in this report are based on the following: -

a) The information gained from our investigation.
b) The present "state of the art" in testing and design.
c) The building type and site treatment conveyed to us by the client.
d) Historical information.

Should the client or their agent have omitted to supply us with the correct relevant information, or make significant changes to the building type and/or building envelope, our report may not take responsibility for any consequences and we reserve the right to make an additional charge if more testing is necessary.

Not withstanding the recommendations made in this report, we also recommend that whenever footings are close to any excavations or easements, that consideration should be given to deepening the footings.

Unless otherwise stated in our commission, any dimensions or slope direction and magnitude should not be used for any building costing calculations and/or positioning. Any sketch supplied should be considered as only an approximate pictorial evidence of our work.

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Aitken Rowe Testing Laboratories Pty Ltd

Registration Number: S24-315

Client: ALTITUDE - THE LODGE SMIGGINS - SMIGGINS HOLE, NSW

Project: GEOTECHNICAL INVESTIGATION
PROPOSED FIRE ACCESS STAIR REPLACEMENT, THE LODGE SMIGGINS, No. 13 PLUM PINE ROAD, SMIGGINS HOLE, NSW
SITE LOCALITY PLAN

Aitken Rowe Testing Laboratories Pty Ltd

Registration Number: S24-315

Client: ALTITUDE - THE LODGE SMIGGINS - SMIGGINS HOLE, NSW

Project: GEOTECHNICAL INVESTIGATION
PROPOSED FIRE ACCESS STAIR REPLACEMENT, THE LODGE SMIGGINS, No. 13 PLUM PINE ROAD, SMIGGINS HOLE, NSW
BOREHOLE & DCP TEST LOCATION PLAN

AITKEN ROWE TESTING LABORATORIES PTY LTD

Borehole No.: **1**
Sheet No.: 1 of 1

Ground Level: Existing
Method: Auger Drilling with TC Bit

Date: ***19/09/2024***
GPS N: ***5971684***
E: ***0628208***

USCS Symbol	Description	Depth (m)	Moisture Condition	Consistency/ Rel. Density	Sample Type	Sample No.	Lab. Test L.S % -425µm	Remarks & Field Records
MH	TOPSOIL: Sandy SILT; high plasticity, fine to coarse sand, dark brown		MC<PL	S				NATURAL
MH	Sandy SILT; high plasticity, fine to coarse sand, trace gravel, dark grey brown				D	1A	5.5	FMC = 40.5%
				F				
SM	Silty SAND; fine to coarse grained, trace gravel, fines of low plasticity, cream grey	**0.5**	M	MD	D	1B	3.0	FMC = 28.6%
SM	Silty SAND; fine to coarse grained, trace gravel, fines of low plasticity, cream	**1.0**			D	1C	2.5	
			W					← Seepage @ 1.3m to 2.0m (EOBH)
SM	Silty SAND; fine to coarse grained, trace gravel, fines of low plasticity, cream brown	**1.5**			D	1D		
		2.0						
	End of Borehole (BH1) @ 2.0m	**2.5**						Refusal on anticipated bedrock or floaters
		3.0						
		3.5						
		4.0						

Registration No.: S24-315

Location: Geotechnical Investigation - Proposed Fire Access Stair Replacements, The Lodge Smiggins, No. 13 Plum Pine Road, Smiggins Hole, NSW

Client: Altitude - The Lodge Smiggins - Smiggins Hole, NSW

Logged By: JAG

Scale: As shown

Seepage @ 1.3m to 2.0m (EOBH)

AITKEN ROWE TESTING LABORATORIES PTY LTD

Borehole No.: **2**
Sheet No.: 1 of 1

Ground Level: Existing
Method: Powered Hand Auger

Date: ***19/09/2024***
GPS N: ***5971663***
E: ***0628212***

USCS Symbol	Description	Depth (m)	Moisture Condition	Consistency/ Rel. Density	Sample Type	Sample No.	Lab. Test L.S % -425µm	Remarks & Field Records
MH	TOPSOIL: Sandy SILT; high plasticity, trace sand, dark brown		MC<PL	S				NATURAL
MH	Sandy SILT; high plasticity, fine to coarse sand, trace gravel, dark grey brown	0.5		F	D	2A	5.5	FMC = 51.8%
SM	Silty SAND; fine to coarse grained, trace gravel, fines of low plasticity, cream	1.0	M	MD	D	2B		FMC = 32.3%
	GRANITE; extremely weathered, extremely low strength, cream yellow	1.5			D	2C		
	End of Borehole (BH2) @ 1.5m	2.0						Powered hand auger limit
		2.5						
		3.0						
		3.5						
		4.0						

Registration No.: S24-315

Location: Geotechnical Investigation - Proposed Fire Access Stair Replacements, The Lodge Smiggins, No. 13 Plum Pine Road, Smiggins Hole, NSW

Client: Altitude - The Lodge Smiggins - Smiggins Hole, NSW

Logged By: JAG

Scale: As shown

Dry on completion

AITKEN ROWE TESTING LABORATORIES PTY LTD

LOG SYMBOLS

LOG COLUMN	SYMBOL	DEFINITION
Groundwater Record	▼	Standing water level. Time delay following completion of drilling may be shown.
	▶	Groundwater seepage into borehole or excavation noted during drilling or excavation.
Samples	D	Disturbed bag sample taken between the depths indicated by lines.
	U	Undisturbed 50mm diameter tube sample taken between the depths indicated by lines
Field Tests	4, 7, 10 N=17	Standard Penetration Test (S.P.T.) performed between depths indicated by lines. Individual figures show blows per 150mm penetration driven by SPT hammer.
	5 7 3	Dynamic Cone Penetration Test performed between depths indicated by lines. Individual figures show blows per 100mm penetration for 60 degree solid cone driven by 9 kg hammer.
Moisture Condition (Silt or Clay based)	MC<PL	Moisture content estimated to be less than plastic limit.
	MC=PL	Moisture content estimated to be approx. equal to plastic limit.
	MC>PL	Moisture content estimated to be greater than plastic limit.
Moisture Condition (Gravel or Sand based)	D	DRY – runs freely through fingers.
	M	MOIST – does not run freely but no free water visible on soil surface.
	W	WET – free water visible on soil surface.
Consistency (Silt or Clay based)	VS	VERY SOFT – unconfined compressive strength less than 25kPa.
	S	SOFT – unconfined compressive strength 25-50 kPa.
	F	FIRM – unconfined compressive strength 50-100kPa.
	St.	STIFF – unconfined compressive strength 100-200kPa.
	VSt.	VERY STIFF – unconfined compressive strength 200-400kPa.
	H	HARD – unconfined compressive strength greater than 400kPa.

Relative Density (Gravel or Sand based)		Description	Density Index Range %	'N' Value Range Blows/300mm
	VL	VERY LOOSE	<15	0-5
	L	LOOSE	15-35	6-10
	MD	MEDIUM DENSE	35-65	11-30
	D	DENSE	65-85	31-50
	VD	VERY DENSE	>85	>50

Hand Penetrometer Readings	300 250 280	Numbers indicate individual test results in kPa on representative undisturbed material.
Laboratory Test	L.S. %	Linear Shrinkage (As per TfNSW Method T113)
	M.C. %	Field Moisture Content (As per Australian Standard AS1289.2.1.1 or TfNSW Method T120)
	Iss	Shrink-Swell Index (As per Australian Standard AS1289.7.1.1)

Piezometer Construction	Fill		Piezometer	
		Bentonite		Solid Pipe
		Washed Fine Graded Gravel		Slotted Screen

Remarks	'V' bit	Hardened steel 'V' shaped bit.
	'TC' bit	Tungsten Carbide wing bit.

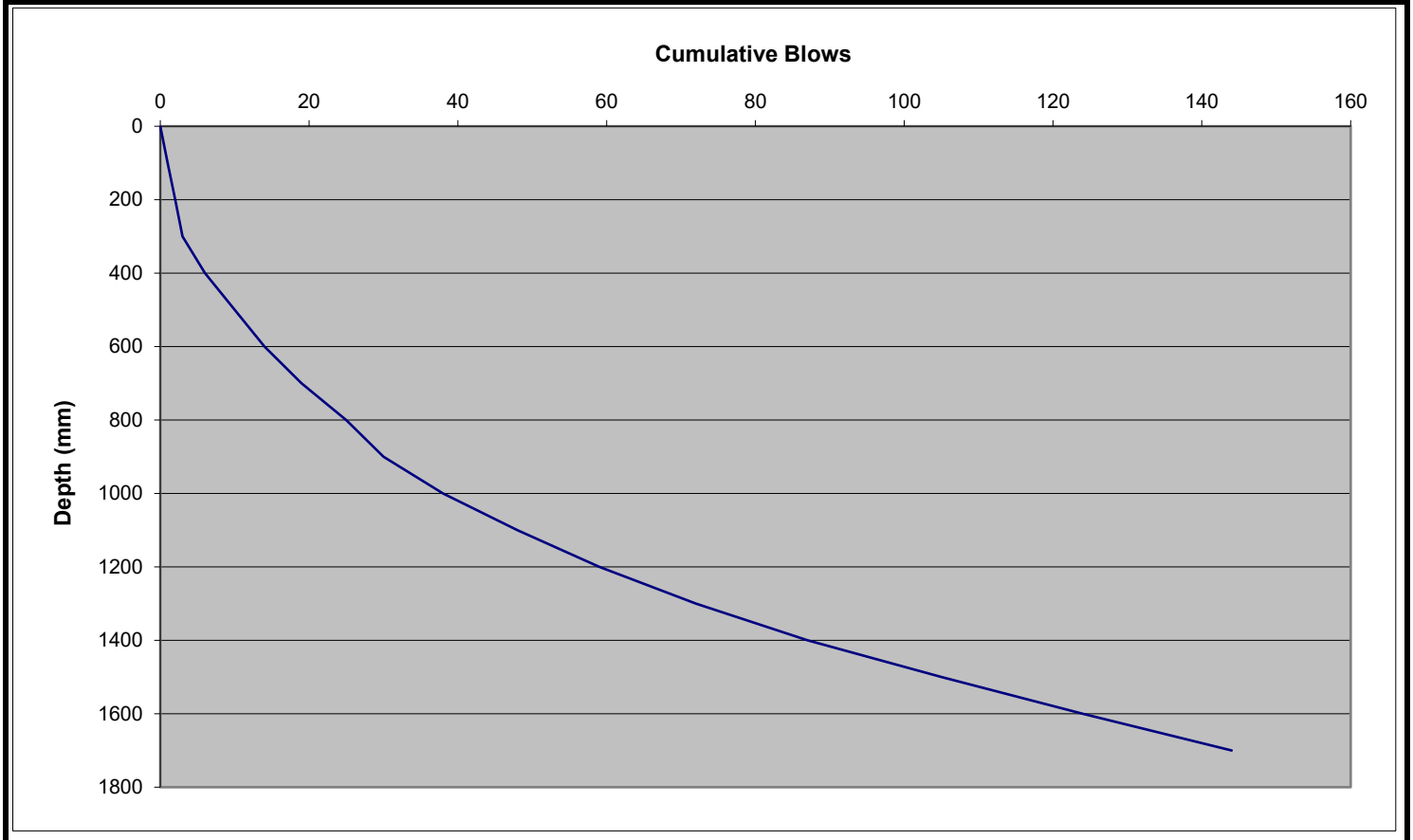
Aitken Rowe Testing Laboratories Pty Ltd

ARTL Wagga: 4/2 Riedell Street, Wagga Wagga NSW 2650

DYNAMIC CONE PENETROMETER REPORT

CLIENT: ALTITUDE - THE LODGE SMIGGINS - SMIGGINS HOLE, NSW	PAGE: 1 OF: 2 ***DCP: 1 (BH1)***
PROJECT: GEOTECHNICAL INVESTIGATION	REGISTRATION NO: **S24-315**
PROPOSED FIRE ACCESS STAIR REPLACEMENT, THE LODGE SMIGGINS,	DATE OF TEST: 19/09/2024
LOCATION: No. 13 PLUM PINE ROAD, SMIGGINS HOLE, NSW	DEPTH BELOW ESL (mm): NIL
SOIL DESCRIPTION: REFER TO BOREHOLE LOGS	MOISTURE CONDITION: REFER TO LOGS
DEPTH OF GROUND WATER TABLE IF INTERSECTED: N/A	TEST METHOD: AS 1289.6.3.2

Depth(m)	Blows	Est. CBR	Depth(m)	Blows	Est. CBR	Depth(m)	Blows	Est. CBR	Depth(m)	Blows	Est. CBR
0.0 - 0.1	1	1	1.5 - 1.6	19	51	3.0 - 3.1	*	*	4.5 - 4.6	*	*
0.1 - 0.2	1	1	1.6 - 1.7	20	55	3.1 - 3.2	*	*	4.6 - 4.7	*	*
0.2 - 0.3	1	1	1.7 - 1.8	END	*	3.2 - 3.3	*	*	4.7 - 4.8	*	*
0.3 - 0.4	3	5	1.8 - 1.9	*	*	3.3 - 3.4	*	*	4.8 - 4.9	*	*
0.4 - 0.5	4	7	1.9 - 2.0	*	*	3.4 - 3.5	*	*	4.9 - 5.0	*	*
0.5 - 0.6	4	7	2.0 - 2.1	*	*	3.5 - 3.6	*	*	5.0 - 5.1	*	*
0.6 - 0.7	5	9	2.1 - 2.2	*	*	3.6 - 3.7	*	*	5.1 - 5.2	*	*
0.7 - 0.8	6	12	2.2 - 2.3	*	*	3.7 - 3.8	*	*	5.2 - 5.3	*	*
0.8 - 0.9	5	9	2.3 - 2.4	*	*	3.8 - 3.9	*	*	5.3 - 5.4	*	*
0.9 - 1.0	8	17	2.4 - 2.5	*	*	3.9 - 4.0	*	*	5.4 - 5.5	*	*
1.0 - 1.1	10	23	2.5 - 2.6	*	*	4.0 - 4.1	*	*	5.5 - 5.6	*	*
1.1 - 1.2	11	25	2.6 - 2.7	*	*	4.1 - 4.2	*	*	5.6 - 5.7	*	*
1.2 - 1.3	13	32	2.7 - 2.8	*	*	4.2 - 4.3	*	*	5.7 - 5.8	*	*
1.3 - 1.4	15	38	2.8 - 2.9	*	*	4.3 - 4.4	*	*	5.8 - 5.9	*	*
1.4 - 1.5	18	48	2.9 - 3.0	*	*	4.4 - 4.5	*	*	5.9 - 6.0	*	*



NATA
WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.

ACCREDITATION NUMBER: 4679

REMARKS:

APPROVED SIGNATORY: Jarrod Gornall

DATE: 1/10/2024

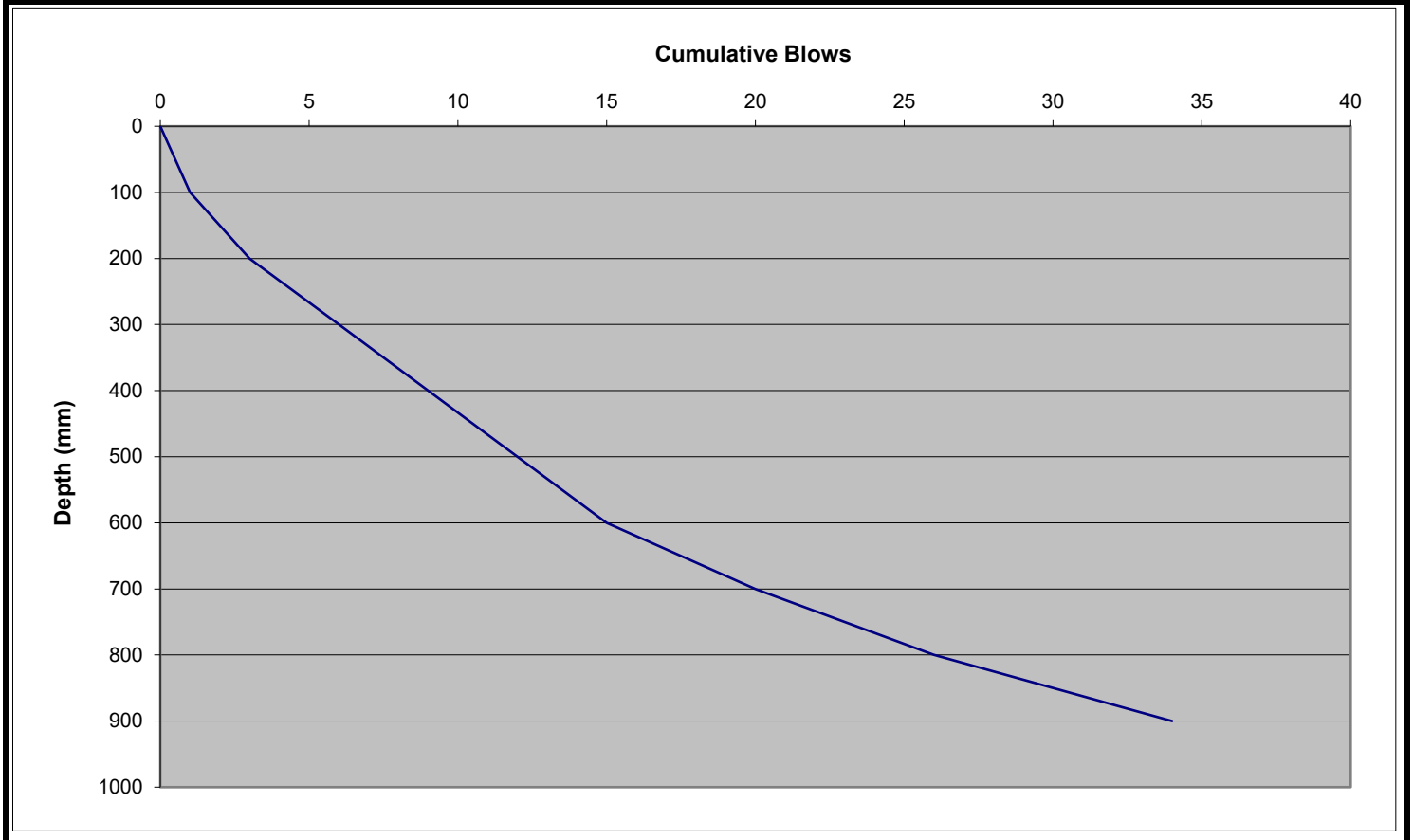
Aitken Rowe Testing Laboratories Pty Ltd

ARTL Wagga: 4/2 Riedell Street, Wagga Wagga NSW 2650

DYNAMIC CONE PENETROMETER REPORT

CLIENT: ALTITUDE - THE LODGE SMIGGINS - SMIGGINS HOLE, NSW	PAGE: 2 OF: 2 ***DCP: 2 (BH2)***
PROJECT: GEOTECHNICAL INVESTIGATION	REGISTRATION NO: **S24-315**
PROPOSED FIRE ACCESS STAIR REPLACEMENT, THE LODGE SMIGGINS,	DATE OF TEST: 19/09/2024
LOCATION: No. 13 PLUM PINE ROAD, SMIGGINS HOLE, NSW	DEPTH BELOW ESL (mm): NIL
SOIL DESCRIPTION: REFER TO BOREHOLE LOGS	MOISTURE CONDITION: REFER TO LOGS
DEPTH OF GROUND WATER TABLE IF INTERSECTED: N/A	TEST METHOD: AS 1289.6.3.2

Depth(m)	Blows	Est. CBR	Depth(m)	Blows	Est. CBR	Depth(m)	Blows	Est. CBR	Depth(m)	Blows	Est. CBR
0.0 - 0.1	1	1	1.5 - 1.6	*	*	3.0 - 3.1	*	*	4.5 - 4.6	*	*
0.1 - 0.2	2	3	1.6 - 1.7	*	*	3.1 - 3.2	*	*	4.6 - 4.7	*	*
0.2 - 0.3	3	5	1.7 - 1.8	*	*	3.2 - 3.3	*	*	4.7 - 4.8	*	*
0.3 - 0.4	3	5	1.8 - 1.9	*	*	3.3 - 3.4	*	*	4.8 - 4.9	*	*
0.4 - 0.5	3	5	1.9 - 2.0	*	*	3.4 - 3.5	*	*	4.9 - 5.0	*	*
0.5 - 0.6	3	5	2.0 - 2.1	*	*	3.5 - 3.6	*	*	5.0 - 5.1	*	*
0.6 - 0.7	5	9	2.1 - 2.2	*	*	3.6 - 3.7	*	*	5.1 - 5.2	*	*
0.7 - 0.8	6	12	2.2 - 2.3	*	*	3.7 - 3.8	*	*	5.2 - 5.3	*	*
0.8 - 0.9	8	17	2.3 - 2.4	*	*	3.8 - 3.9	*	*	5.3 - 5.4	*	*
0.9 - 1.0	END	*	2.4 - 2.5	*	*	3.9 - 4.0	*	*	5.4 - 5.5	*	*
1.0 - 1.1	*	*	2.5 - 2.6	*	*	4.0 - 4.1	*	*	5.5 - 5.6	*	*
1.1 - 1.2	*	*	2.6 - 2.7	*	*	4.1 - 4.2	*	*	5.6 - 5.7	*	*
1.2 - 1.3	*	*	2.7 - 2.8	*	*	4.2 - 4.3	*	*	5.7 - 5.8	*	*
1.3 - 1.4	*	*	2.8 - 2.9	*	*	4.3 - 4.4	*	*	5.8 - 5.9	*	*
1.4 - 1.5	*	*	2.9 - 3.0	*	*	4.4 - 4.5	*	*	5.9 - 6.0	*	*



NATA
WORLD RECOGNISED ACCREDITATION

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ACCREDITATION NUMBER: 4679

REMARKS:

APPROVED SIGNATORY: Jarrod Gornall

DATE: 1/10/2024

AITKEN ROWE Testing Laboratories Pty Ltd

ARTL Wagga: 4/2 Riedell Street, Wagga Wagga NSW 2650

*

SAMPLED BY: ARTL
DATE SAMPLED: 19/09/2024
DATE SUBMITTED: 23/09/2024
SAMPLING METHOD: AS1289.1.2.1
SAMPLING CLAUSE: 6.5.3
DATES TESTED: 25-30/09/2024
ORDER No.: *

TEST REPORT: GEOTECHNICAL INVESTIGATION - SOIL ANALYSIS

CLIENT : ALTITUDE - THE LODGE SMIGGINS - SMIGGINS HOLE, NSW
JOB DESCRIPTION : GEOTECHNICAL INVESTIGATION
PROPOSED FIRE ACCESS STAIR REPLACEMENT, THE LODGE SMIGGINS, No. 13 PLUM PINE ROAD, SMIGGINS HOLE, NSW

MATERIAL SOURCE : IN-SITU BOREHOLES
MATERIAL TYPE : REFER TO BOREHOLE LOGS
PROPOSED USE : DESIGN

REGISTRATION No : R28 **S24-315**

		SAMPLE NUMBER :	1A	1B	1C	2A	2B	*
		SAMPLING LOCATION :	BH1	BH1	BH1	BH2	BH2	*
		DEPTHS BETWEEN WHICH SAMPLES TAKEN (mm) :	100-300	400-600	1000-1200	100-300	600-800	*
TESTS	TEST ELEMENT		*	*	*	*	*	*
AS1289.3.6.1		PASS 100.0mm SIEVE %	*	*	*	*	*	*
		PASS 75.0mm SIEVE %	*	*	*	*	*	*
		PASS 53.0mm SIEVE %	*	*	*	*	*	*
		PASS 37.5mm SIEVE %	*	*	*	*	*	*
		PASS 26.5mm SIEVE %	*	*	*	*	*	*
		PASS 19.0mm SIEVE %	*	*	*	*	*	*
		PASS 13.2mm SIEVE %	*	*	*	*	*	*
		PASS 9.50mm SIEVE %	*	*	*	*	*	*
		PASS 6.70mm SIEVE %	*	100	*	*	*	*
		PASS 4.75mm SIEVE %	*	98	*	100	*	*
		PASS 2.36mm SIEVE %	*	87	*	89	*	*
AS1141.19	WHOLE SAMPLE	PASS 425 µm SIEVE %	*	55	*	66	*	*
		PASS 75 µm SIEVE %	*	34	*	45	*	*
		LESS THAN 13.5 µm %	*	18	*	24	*	*
AS1141.19	-2.36mm	PASS 425 µm SIEVE %	*	64	*	75	*	*
		PASS 75 µm SIEVE %	*	40	*	51	*	*
		LESS THAN 13.5 µm %	*	21	*	26	*	*
		OBSERVATIONS	*	*	*	*	*	*
AS1289.3.1.2		LIQUID LIMIT %	*	43	*	75	*	*
AS1289.3.2.1		PLASTIC LIMIT %	*	35	*	62	*	*
AS1289.3.3.1		PLASTICITY INDEX	*	8	*	13	*	*
		PREPARATION METHOD	*	AS1289.1.1-5.3	*	AS1289.1.1-5.3	*	*
AS1289.5.1.1		STANDARD MAX. DRY DENSITY t/m^3	*	*	*	*	*	*
(NOT DRY PREPPED)		OPTIMUM MOISTURE CONTENT %	*	*	*	*	*	*
		OVERSIZE MATERIAL % RETAINED ON 19.0mm	*	*	*	*	*	*
		LL METHOD OF CURING TIME DETERMINATION	*	*	*	*	*	*
		CURING DURATION HOURS	*	*	*	*	*	*
AS1289.3.4.1		LINEAR SHRINKAGE %	5.5	3.0	2.5	5.5	*	*
(PREP-AIR DRIED)		LENGTH OF MOULD mm	254	254	254	254	*	*
		MOULDING MOISTURE CONDITIONING METHOD	AS1289.3.1.2	AS1289.3.1.2	AS1289.3.1.2	AS1289.3.1.2	*	*
		CRACKING (CA), CRUMBLING (CR) OR CURLING (CU) OCCURRED	CA	CA	N/A	N/A	*	*
AS1289.2.1.1		FIELD MOISTURE CONTENT %	40.5	28.6	*	51.8	32.3	*

NATA
WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.

ACCREDITATION NUMBER: 4679

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All samples are oven dried and dry sieved during prep. unless otherwise stated

APPROVED SIGNATORY : ..... DATE: 1/10/2024

Jarrod Gornall