REGIONAL GEOTECHNICAL SOLUTIONS

Manning-Great Lakes
Port Macquarie
Coffs Harbour

RGS02890.1 - AB

21 October 2021

Shyam Sundar
34 Mimosa Road
TURRAMURRA NSW 2074

Delivered via email to: shyamlives@hotmail.com

Dear Shyam

RE: Proposed Dwelling – 32 William Street, Blackhead
Geotechnical Site Classification

1 INTRODUCTION

Regional Geotechnical Solutions Pty Ltd have undertaken a geotechnical site classification for a proposed residential dwelling that is to be located at 32 William Street, Blackhead. The site is identified as Lot A DP330509 and occupies 404m^2.

The purpose of the geotechnical assessment was to provide a site classification in accordance with *AS2870-2011- Residential Slabs and Footings*.

It is proposed to build a residential dwelling at the site. A site plan showing the approximate building footprint has been provided and indicates a basement level garage will be located on the northern side of the lot. Correspondence indicates cuts of up to 1.4m depth are proposed on the southern end of the garage excavation. No other building plans have been provided.

In preparing this report and site classification it has been assumed that the performance expectations of *AS2870-2011* are acceptable for the proposed structure.

2 METHODOLOGY

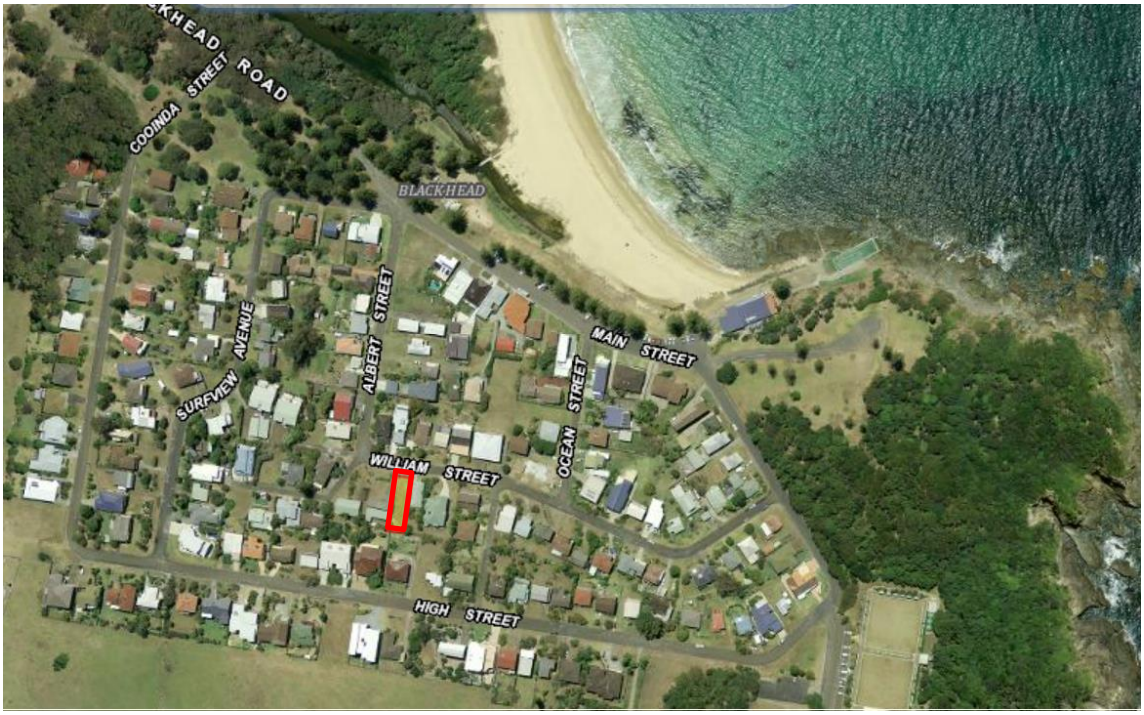
Field work involved a general site walkover and observation of the site conditions. Three boreholes were drilled within the building footprint of the proposed dwelling and samples were recovered for subsequent laboratory testing. Dynamic Cone Penetrometer (DCP) tests were undertaken adjacent to each borehole.

The subsurface profile encountered in the boreholes is presented on the attached Engineering Logs. The borehole locations are presented on Figure 1.

3 SITE CONDITIONS

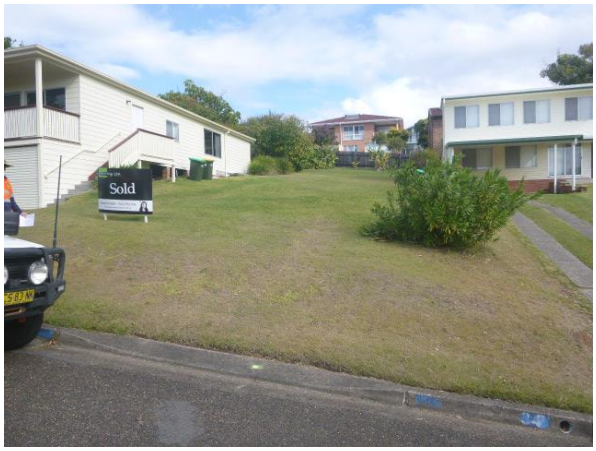
The site is situated within an area of moderately sloping residual terrain that grades down to a lagoon and Blackhead Beach. The proposed dwelling site is on the upper north and north west facing slopes of a generally south to north trending section of ridgeline. The lot occupies approximately 404m^2 and is bordered by other residential lots with dwellings to the south, east and west and William Street to the north which provides access to the lot. The site generally slopes towards the northwest at between 6° to 10°. The site was vacant at the time of the fieldwork and vegetated with grass. Some trees up to 5m in height are located along the east and southern side. An area of fill was observed along a part the eastern side of the lot next to the neighbouring dwelling. There is a small cutting up to 1.0m depth located on the western boundary southern end. Drainage is via minor infiltration and overland flow.

An aerial photograph that shows the location of the site and the site setting is reproduced below:

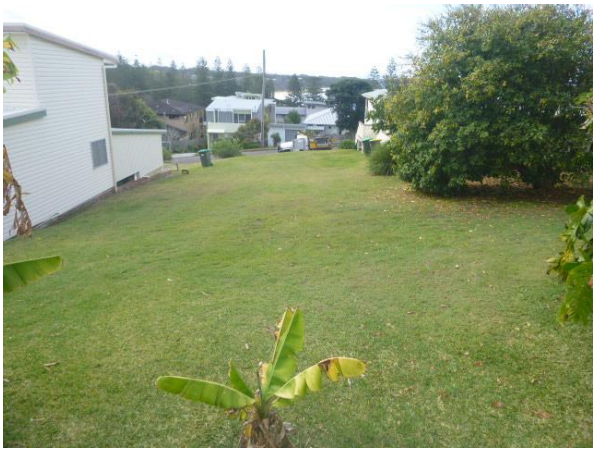


An aerial photograph obtained from the NSW Government 'Six Maps' that illustrates the site location and setting is shown above. The approximate site boundaries are shown by a red outline.

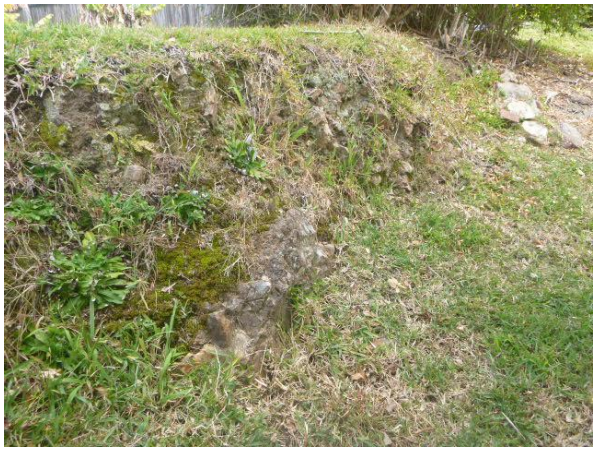
Typical site photographs are presented below.



Looking south upslope over lot showing typical slopes and vegetation.



Looking downslope to the north from southern boundary showing typical vegetation and slopes.



Looking at part of cutting along western boundary showing rock.

Looking along eastern boundary showing area of fill outlined in yellow.

The 1:100,000 Bulahdelah Geology map indicates that the property is located within an area underlain by the Bundook Beds which comprise grey to brown lithic sandstone & siltstone, interbedded with massive greywackes & minor conglomerate. These formations are typically overlain by residual clay soil profiles derived from these rock types.

The subsurface conditions encountered in the boreholes are summarised in Table 1.

Table 1: Summary of Subsurface Materials

Material Name	Material Description	Depth to Base of Material Layer (m)		
		BH1	BH2	BH3
Topsoil	Silty CLAY, low plasticity, dark brown.	0.1	0.15	0.15
Residual Soil	Gravelly CLAY/CLAY, medium plasticity, pale brown, very stiff to hard.	0.8	0.5	0.35
Extremely Weathered siltstone	Gravelly CLAY/Clayey GRAVEL, medium to high plasticity clay, pale brown / orange / brown, hard. Gravel fine to medium grained.	--	0.7	0.6
Extremely to Highly weathered siltstone.	Estimated low to medium strength, excavates as Clayey Gravel, pale brown / orange / brown, fine to coarse grained.	≥1.1*	≥2.7	≥0.8*

Note: ≥ Indicates that base of material layer was not encountered
* Indicates TC auger bit refusal
-- Indicates material not encountered

A cutting up to 1.0m depth along the western boundary showed around 0.4m of soil depth overlying weathered rock.

No groundwater inflows were noted at the time of the investigation. Groundwater levels may fluctuate as a result of seasonal variations, temperature, rainfall and other similar factors, the influence of which may not have been apparent at the time of the assessment.

Laboratory testing on a representative sample of the more reactive clay sampled from BH1 (0.3 – 0.6m) revealed a Liquid Limit of 53%, Plasticity Index of 32% and Linear Shrinkage of 32%. Published correlations (Jayasekera & Mohajerani, 2003) with the liquid limit and the plasticity index indicate that a shrink-swell index of around 3.2% is appropriate.

Clay reactivity did vary at the site and in nearby areas RGS have encountered shrink swell index values of generally between 2.5% to 3.5%.

4 EXCAVATION CONDITIONS & RETAINING WALLS.

The site is underlain by residual clays and weathered siltstone. Tungsten carbide bit auger refusal was encountered in BH1 at 1.1m and BH3 at 0.8m depth.

Excavation into the hillside for the proposed garage around 1.4m depth is proposed. It is anticipated that excavation of the upper 1m of the profile will be achievable with a small excavator. Excavatability of higher strength rock lower in the profile will be influenced by several factors including rock strength and defect spacing. For example in some cases high strength rock with close open defect spacing can be more readily excavated than low strength rock with very wide defect spacing.

The drilling undertaken and experience within the area indicates excavations of the higher strength rock could be achievable with a medium sized excavator. It is possible that some excavations into highly to moderately weathered rock may require the use of a single tyne ripper.

To appropriately assess excavation conditions and plant requirements an excavatability assessment could be undertaken with a medium to large excavator or rock core drilling could be undertaken that extends beyond the proposed depths of excavation.

The need to use rock hammers is considered low but may be required if isolated hard bands are encountered, or possibly for detailed excavations such as trenches. Use of rock hammers around existing structures should be undertaken with extreme caution. The hammer should only be used in short duration bursts to allow vibrations to dissipate. Excavations should be undertaken without the use of hammers to the maximum extent possible. Should the use of rock hammers be required, then it is recommended that a dilapidation assessment be undertaken on the adjacent structures prior to undertaking the rock hammer work.

All excavations must comply with the Safework Australia *Excavation Work Code of Practice*, October 2018

Excavations and filling site should be limited to reduce the potential for instability of cuts and fills. Unsupported cut or fill batters up to 1m should not exceed 2H:1V for permanent slopes, or 1V:1H for temporary (ie during construction) batters. All cuts or fills exceeding 1m in height should be supported by engineer-designed retaining walls. Any fill placed on the site must be placed on a foundation that has been benched into the slope to provide a level surface to avoid a sloping interface that could facilitate instability.

All retaining walls should be designed in accordance with AS4678-2002 and must take into account surcharge loading associated with slopes, future traffic and/or structures above the wall. Retaining walls must be provided with free draining backfill and a slotted subsoil drain behind the wall that discharges to the site stormwater system, or else discharges well beyond the wall foundations.

Gravity or cantilever retaining walls can be designed on the basis of a triangular lateral earth pressure distribution using the characteristic earth pressure coefficients and subsoil parameters provided below:

Table 2. Retaining Wall Design Parameters

Material Type	Bulk Unit Weight (kN/m3)	Angle of Internal Friction (Φ)	Cohesion (kPa)	Active earth pressure coefficient (Ka)	Passive earth pressure coefficient (Kp)	Allowable base bearing pressure (kPa)
Topsoil	18	20	--	0.49	2.04	--
Residual Clays	19	27	5	0.38	2.66	100
EW-HW Rock	22	38	15	0.24	4.20	400

5 SITE CLASSIFICATION

The site classification presented herein is provided on the basis that the performance expectations of AS2870-2011 are acceptable.

Calculations were based on the following:

- Depth of design suction change of Hs=1.5m;
- Crack depth multiplication factor of 0.5;
- Change in suction at design surface level of Δu=1.2;
- Adopted shrink-swell index of 3.2% for the residual clay soils at the site;
- Adopted shrink-swell index of 1.5% for the extremely weathered rock such as that encountered at BH2;
- Small trees up to 5m in height are located within the zone of influence; and
- Distance of the trees from the building (Dt) as little as 2m;

On the basis of the conditions encountered during fieldwork and the laboratory test results, the site is classified as **Class 'M'** (Moderately Reactive) in accordance with AS2870-2011 with a characteristic free surface movement of 25 to 35mm. For the design of footings an allowable bearing pressure of 100kPa should be adopted for the residual clay. Additional shrink - swell related characteristic free surface movement (Yt) of up to 10mm resulting from the drying effects of nearby trees has been calculated and included in the total movement.

Where footings extend to found within the underlying weathered rock, footings should be designed based on an allowable bearing pressure of 400 kPa.

To reduce the potential of differential shrink swell movements it is recommended that all footings be founded on materials with similar geotechnical properties. This includes founding footings on materials with similar stiffness and shrink swell potential.

Shrink-swell related movements can be affected by alterations to the soil profile by cutting and filling, and by the suction related effects of trees close to the building area. The effects of any such cutting, filling, tree planting, or tree removal should be taken into account when selecting design values for differential movement across the building.

The planting of trees and shrubs in the vicinity of the building will affect the moisture profile in the vicinity of the footings. Trees or shrubs should not be planted within a distance from the building equivalent to 1.5 times the height of the tree, measured from the nearest footing. Garden beds directly adjacent to footings will cause abnormal moisture conditions under the footings and should also be avoided.

If further site re-grading works are undertaken at the site, reclassification may be required.

6 CONSTRUCTION AND SITE MAINTENANCE CONSIDERATIONS

All structural footings should be founded as follows:

- All footings should be founded in residual clay or on weathered rock below all topsoil, slopewash and any uncontrolled fill;
- Footings founded within residual clay can be designed on the basis of a maximum allowable base bearing pressure of **100kPa**;
- Footings founded within low strength weathered rock of can be designed on the basis of a maximum allowable base bearing pressure of **400kPa**;

- All footings, edge beams and internal beams should be founded on similar materials and outside or below the zones of influence resulting from existing or future service trenches and other subsurface structures;
- The soils and rocks in the Blackhead area are prone to fretting and softening on exposure to air and water. It is therefore recommended that concrete be poured as soon as possible after footing excavation. In the event that wet weather occurs prior to pouring of concrete, the base of footing excavations should be checked for the presence of loose or softened material, which should be removed prior to pouring concrete.
- Earthworks may result in parts of the building being founded on or close to weathered rock and other parts on residual clay soils. In this case the building should be designed to allow for the predicted differential shrink-swell related movements or all footings extended to found on weathered rock;
- Site drainage associated with the proposed development should be designed to avoid concentrated flows in the vicinity of any proposed cuttings and foundations and to discharge water downslope of the development in a controlled manner that limits erosion.
- Any foundations located within areas where tree removals, earthworks or demolition works have previously been carried out or will occur in the future will need to be taken through the disturbed ground to be founded on the undisturbed natural ground beneath. All organic root material should be removed from within the building footprint.
- Where lot filling works are proposed, all fill for the support of structures should be placed and compacted in accordance with the recommendations outlined in AS3798-2007 *Guidelines on Earthworks for Residential and Commercial Developments*, under Level 1 supervision, for it to be considered Controlled Fill as defined in AS2870-2011. The founding of structures on fill that is not placed in accordance with Level 1 requirements is not recommended.

Site maintenance must comply with the recommendations and advice provided in CSIRO Sheet BTF18 "*Foundation Maintenance and Footing Performance: A Homeowners Guide* "a copy of which is which is available from the CSIRO website http://www.publish.csiro.au/pid/7076.htm

7 LIMITATIONS

This report comprises the results of an investigation carried out for a specific purpose and client as defined in the document. The report should not be used by other parties or for purposes or projects other than those assumed and stated within the report, as it may not contain adequate or appropriate information for applications other than those assumed or advised at the time of its preparation. The contents of the report are for the sole use of the client and no responsibility or liability will be accepted to any third party. The report should not be reproduced either in part or in full, without the express permission of Regional Geotechnical Solutions Pty Ltd.

Geotechnical site investigation is based on data collection, judgment, experience, and opinion. By its nature, it is less exact than other engineering disciplines. The findings presented in this report and used as the basis for the recommendations presented herein were obtained using normal, industry accepted geotechnical design practises and standards. To our knowledge, they represent a reasonable interpretation of the general condition of the site. Under no circumstances, however, can it be considered that these findings represent the actual state of the site at all points.

The recommended depth and properties of any soil, rock, groundwater, or other material referred to in this report is an engineering estimate based on the information available at the time of its

writing. The estimate is influenced and limited by the fieldwork method and testing carried out in the site investigation, and other relevant information as has been made available. In cases where information has been provided to Regional Geotechnical Solutions for the purposes of preparing this report it has been assumed that the information is accurate and appropriate for such use. No responsibility is accepted by Regional Geotechnical Solutions for inaccuracies within any data supplied by others.

If site conditions encountered during construction vary significantly from those discussed in this report, Regional Geotechnical Solutions Pty Ltd should be contacted for further advice.

This report alone should not be used by contractors as the basis for preparation of tender documents or project estimates. Contractors using this report as a basis for preparation of tender documents should avail themselves of all relevant background information regarding the site before deciding on selection of construction materials and equipment.

If you have any questions regarding this project, or require any additional consultations, please contact the undersigned.

For and on behalf of

Regional Geotechnical Solutions Pty Ltd

Prepared by

James Dowling

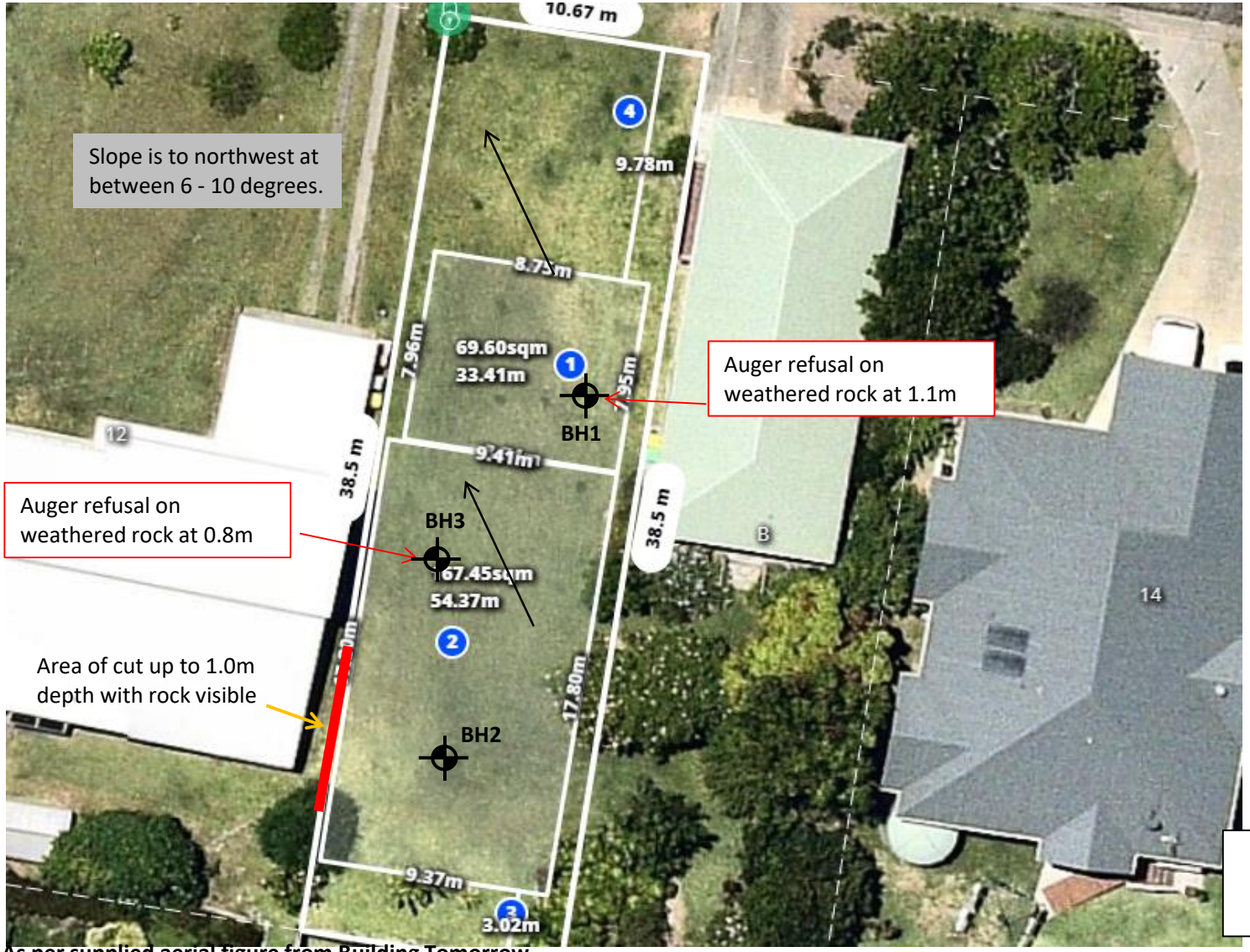
Senior Technical Officer

Reviewed by

Matt Rowbotham

Associate Engineering Geologist

Attachments: Figure 1 – Borehole Location Plan
Borehole Logs
Test Results



As per supplied aerial figure from Building Tomorrow

REGIONAL GEOTECHNICAL SOLUTIONS	**Client:**	Shyam Sundar	Job No. RGS02890.1
	Project:	Proposed Dwelling 32 William Street, Blackhead	Drawn By: JD Scale: NTS Date: 21-Oct-21
	Title:	Test Location Plan	Drawing No. **Figure 1**

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH1

CLIENT: Shyam Sundar
PAGE: 1 of 1
PROJECT NAME: Proposed Dwelling
JOB NO: RGS02890.1
SITE LOCATION: 32 William Street, Black Head
LOGGED BY: JD
TEST LOCATION: Refer to Figure 1
DATE: 16/9/21

DRILL TYPE: Ute Mounted Drill Rig
EASTING:
SURFACE RL: N.M m
BOREHOLE DIAMETER: 100 mm
INCLINATION: 90°
NORTHING:
DATUM: AHD

Drilling and Sampling					Material description and profile information						Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered					CL	**TOPSOIL:** Silty CLAY, low plasticity, dark brown, brown, trace of sand and gravel fine to medium grained, trace of grass roots.	$M > w_P$		DCP (0-1.2m)	2	TOPSOIL
						CI	0.10m **Gravelly CLAY:** medium plasticity, brown, grey, orange brown, gravel fine to medium grained, trace of sand fine to medium grained.	$M > w_P$	VSt to H		5	RESIDUAL
											13	
						GC	0.30m **Clayey GRAVEL/Gravelly CLAY:** medium to high plasticity, pale brown, orange brown, gravel fine to medium grained, trace of sand fine to medium grained.	$M < w_P$	H		20	
		0.50m		0.5			0.50m				23	
		D				CI-CH	**CLAY:** medium to high plasticity, pale brown, grey with some gravel and sand fine to medium grained.	$M > w_P$	H		21	
		0.80m									8	HP=600kPa
							0.80m				8	
						GC	**Clayey GRAVEL:** fine to coarse grained, orange brown, pale orange brown, clay medium plasticity.	D	D to VD		8	EXTREMELY WEATHERED TO HIGHLY WEATHERED SILTSTONE
				1.0							9	
							1.10m				16	
							Practical Refusal on moderately weathered Siltstone. Hole Terminated at 1.10 m				6	DCP REFUSAL Bouncing after 10mm travel
				1.5								
				2.0								
				2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH2

CLIENT: Shyam Sundar
PAGE: 1 of 1
PROJECT NAME: Proposed Dwelling
JOB NO: RGS02890.1
SITE LOCATION: 32 William Street, Black Head
LOGGED BY: JD
TEST LOCATION: Refer to Figure 1
DATE: 16/9/21

DRILL TYPE: Ute Mounted Drill Rig
EASTING:
SURFACE RL: N.M m
BOREHOLE DIAMETER: 100 mm
INCLINATION: 90°
NORTHING:
DATUM: AHD

Drilling and Sampling					Material description and profile information						Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered			0		CL	**TOPSOIL:** Silty CLAY, low plasticity, dark brown, brown, trace of sand fine to medium grained, trace of grass roots.	M > w_P		DCP (0-0.9m)	3	TOPSOIL
							0.15m				4	
						CI	**CLAY:** medium plasticity, pale brown, pale grey, orange mottling with some gravel fine to medium grained.	M > w_P	VSt to H		7	RESIDUAL HP=300kPa
				0.5							8	
							0.50m				7	
						GC	**Clayey GRAVEL/Gravelly CLAY:** medium to high plasticity, orange brown, orange, gravel fine to medium grained.	M < w_P	H		10	EXTREMELY WEATHERED SILTSTONE
							0.70m				15	
						GC	**Clayey GRAVEL:** fine to medium grained, orange brown, pale orange brown, clay medium plasticity.	M	D to VD		22	Consistant drilling pressure 0.7-2.7m
				1.0							25	DCP=25/80mm
				1.5								
				2.0								
				2.5								
							2.70m					
							Hole Terminated at 2.70 m					

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Moisture Condition	
D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

Density		
	V	Very Loose — Density Index <15%
	L	Loose — Density Index 15 - 35%
	MD	Medium Dense — Density Index 35 - 65%
	D	Dense — Density Index 65 - 85%
	VD	Very Dense — Density Index 85 - 100%

REGIONAL GEOTECHNICAL SOLUTIONS

ENGINEERING LOG - BOREHOLE

BOREHOLE NO: BH3

CLIENT: Shyam Sundar
PAGE: 1 of 1
PROJECT NAME: Proposed Dwelling
JOB NO: RGS02890.1
SITE LOCATION: 32 William Street, Black Head
LOGGED BY: JD
TEST LOCATION: Refer to Figure 1
DATE: 16/9/21

DRILL TYPE: Ute Mounted Drill Rig
EASTING:
SURFACE RL: N.M m
BOREHOLE DIAMETER: 100 mm
INCLINATION: 90°
NORTHING:
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered					CL	**TOPSOIL:** Silty CLAY, low plasticity, brown with some grass roots.	$M > w_P$		DCP (0-0.7m)	2	TOPSOIL
							0.15m				4	
						CI	**CLAY:** medium plasticity, brown, grey with some gravel fine to medium grained.	$M > w_P$	VSt		11	RESIDUAL
							0.35m				19	
				0.5		CI-CH	**Gravelly CLAY:** medium to high plasticity, orange brown, pale orange brown, gravel fine to medium grained.	$M < w_P$	H		12	EXTREMELY WEATHERED SILTSTONE
							0.60m				16	
						GC	**Clayey GRAVEL:** fine to medium grained, pale orange brown, pale brown, pale orange, clay medium plasticity.	D	D to VD		10	HIGHLY WEATHERED SILTSTONE DCP bouncing 20mm travel Drilling resistance increased at 0.6m
							0.80m					
							Practical Refusal on moderately weathered Siltstone Hole Terminated at 0.80 m					
				1.0								
				1.5								
				2.0								
				2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample
ASS	Acid Sulfate Soil Sample
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Moisture Condition	
D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

Density		
V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

QUALTEST Laboratory (NSW) Pty Ltd (20708)
2 Murray Dwyer Circuit, Mayfield West, NSW 2304
T: 02 4968 4468
F: 02 4960 9775
E: admin@qualtest.com.au
W: www.qualtest.com.au
ABN: 98 153 268 896

Report No: MAT:NEW21W-4245-S01
Issue No: 1

Material Test Report

Client: Regional Geotechnical Solutions Pty Ltd
44 Bent Street
Wingham NSW 2429

Project No.: MNC16P-0001
Project Name: Various Testing
Project Location: 32 William Street, Blackhead, NSW

Accredited for compliance with ISO/IEC 17025-Testing.
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.
Results provided relate only to the items tested or sampled.

Approved Signatory: Brent Cullen
(Senior Geotechnician)
NATA Accredited Laboratory Number: 18686
Date of Issue: 6/10/2021

Sample Details

Sample ID: NEW21W-4245-S01
Date Sampled: 22/09/2021
Date Received: 22/09/2021
Source: On-Site
Material: Insitu
Specification: No Specification
The results outlined below apply to the sample as received
TRN: RGS02890.1
Sample Location: BH1 - (0.5 - 0.8m)

Test Results

Description	Method	Result	Limits
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	13.0	
Mould Length (mm)		250	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	53	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	21	
Plasticity Index (%)	AS 1289.3.3.1	32	
Date Tested		1/10/2021	

Comments

N/A