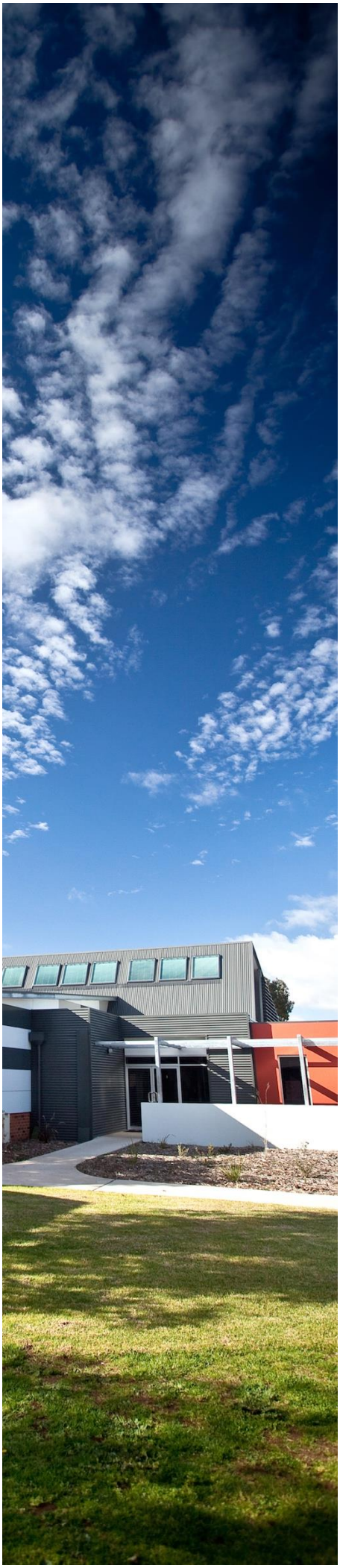

Geotechnical Investigation Report

Training Camp at Putta Bucca Road, Mudgee NSW

(Our Reference:38046-GR01_B)

Disclaimer

This report has been prepared solely for Mid-Western Regional Council in accordance with the scope provided by the client and for the purpose(s) as outlined throughout this report.

Barnson Pty Ltd accepts no liability or responsibility for or in respect of any use or reliance upon this report and its supporting material by anyone other than the client.

Project Name:	Training Camp at Putta Bucca Road, Mudgee NSW
Client:	Mid-Western Regional Council
Project No.	38046
Report Reference	38046-GR01_B
Date:	17.12.2021
Revision:	A

Prepared by:	**Reviewed by:**
[redacted]	[redacted]
Gareth Williams Geotechnical Technician	Richard Noonan *BE(Hons) ME FIEAust CPEng NER* Director

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APPENDICES

1.0 INTRODUCTION

The following is a report on the geotechnical assessment of a site in accordance with AS1726-2017 “Geotechnical Site Investigations”.

The site investigation was carried out by Barnson Pty Ltd, on behalf of Mid-Western Regional Council.

Plate 1 – Area of Investigation

Mid-Western Regional Council is planning to construct a new training camp at Putta Bucca Road, Mudgee NSW. The proposed site features that are covered by this investigation are as follows.

- Proposed Three Training Camp Buildings.

The investigation comprised of six (6) boreholes together with field mapping near the site. Details of the field work and laboratory testing are given in the report together with comments relevant to design and construction practice.

1.1 Terminology

The methods used in this report to describe the soil profiles, including visual classification of material types encountered, are in accordance with Australian standard AS1726-2017 "Geotechnical Site Investigations".

1.2 Limitations

The geotechnical section of Barnson Pty Ltd has conducted this investigation and prepared this report in response to specific instructions from the client to whom this report is addressed. This report is intended for the sole use of the client, and only for the purpose which it is prepared. Any third party who relies on the report or any representation contained in it does so at their own risk.

1.3 Geotechnical Testing

Representative samples from the site were subjected to the following range of tests in accordance with relevant method of Australian Standard AS1289:

- Linear Shrinkage
- pH

NATA reports are attached in *Appendix D*.

2.0 SITE DESCRIPTION

2.1 General Site Description

The site is situated approximately 1km north of Mudgee NSW on the northeast bank of Cudgegong River.

The site consists of moderate to heavy scattered grass and weed cover with no mature trees on site. The site is also littered with building rubble and old machinery.

The site is sloping moderately to the west and has existing sheds on the site. The site is adjacent to the Cudgegong River and Lawsons Creek. Established buildings, wetlands, rural farmland and sporting fields exist in the vicinity surrounding the site.

Plate 2 – General view of proposed building A location facing northwest.

Plate 3 – General view of proposed building B location facing south.

Plate 4 – General view of proposed building C location facing northeast.

3.0 METHOD OF INVESTIGATION

On the 16th of November 2021, a geotechnical investigation was carried out at the above-mentioned development site. The field drilling was carried out by a geotechnical technician who logged the borehole on site and undertook geological mapping of the nearby area.

A drilling rig with a 90mm auger and tungsten tip was used to excavate six (6) boreholes for the proposed buildings to depths of 3.0m within the proposed areas. These are identified as boreholes 1 through 6.

3.1 GPS Co-Ordinates

The boreholes were drilled as close as possible to the anticipated location of the proposed structure. GPS Co-ordinates of these were recorded on site to enable plotting of the borehole locations. The following Table 1 shows this co-ordinates.

Table 1: GPS Co-Ordinates of Boreholes

Location	Longitude	Latitude	Proposed Structure
Borehole 1	149.576117	-32.580218	Building C
Borehole 2	149.576402	-32.580018	Building C
Borehole 3	149.576308	-32.579683	Building B
Borehole 4	149.575983	-32.579801	Building B
Borehole 5	149.575761	-32.579699	Building A
Borehole 6	149.576022	-32.579521	Building A

The boreholes were recorded on site with a Garmin Oregon 550 handheld GPS, using GDA94 Datum. The co-ordinates have an accuracy of +/- 5m. These locations are also shown on site plan in ***Appendix B***.

The borehole logs of sub-surface profiles are attached in ***Appendix C***. Disturbed samples (Ds <3kg) were sampled from the boreholes and returned to the Laboratory where Linear Shrinkage testing was performed to assist in the material classification.

4.0 GENERAL SUB-SURFACE CONDITIONS

4.1 Top Soil

A 0.1m-0.3m thick layer of topsoil was encountered at the boreholes. The topsoil material generally comprised of sandy silt and loam. No fill material was encountered at the boreholes.

4.2 Sub-Soil

Alluvial soils were encountered throughout the boreholes. These generally comprised of slightly moist sandy silt with gravel, clayey silt, silty clay and sandy silt with traces of gravel to depths as shown on the borelogs attached in ***Appendix C.***

Upon visual observation of the soil sample, uncontrolled fill, structural footprints and potential asbestos containing material were not encountered at the site. No sampling or laboratory testing for asbestos contamination was carried out as part of this investigation.

4.3 Sedimentary Rock

Sedimentary Rock was encountered at the borehole location. The sedimentary rock was noted to be of a high strength. T.C Bit refusal and bouncing was encountered on the borehole at depths of 0.7m to 2.1m.

4.4 Regional Geology

Reference to the New South Wales 1:1,000,000 Geological Map indicates the surrounding area consists of "*Alluvial and riverine plain deposits of gravel, sand, silt and clay; claypans and outwash areas of black and red clayey silt and sand.".*

Our investigation encountered alluvial soils overlying sedimentary rock.

4.5 Seismicity

Reference is made to AS1170.4-2007 as per clause 4.1.1 the sites sub-soil class is "C_e – Shallow Sub-soil".

4.6 Seasonal Surface Movement

From the laboratory test results, as shown attached, an estimated ground surface movement (Ys) was calculated in accordance with AS2870-2011 (using a change in suction at the soil surface $\Delta\mu$ = 1.5pF and a depth of design suction change, Hs = 2.3m) being:

Ys = 30-35 mm

Since the site has no other known extraordinary features, it is our opinion that a Site Classification of 'M' should be adopted for the site in its present condition.

5.0 NATA LABORATORY TESTING

Disturbed samples were taken during the field investigation. Laboratory testing was carried out on selected samples of all different material types, with details of the sampling and testing shown below:

Soil Index Properties testing were carried out on samples to aid in classification of the soils encountered and to assist in determining design parameters.

5.1 Linear Shrinkage Testing (L.S)

The shrinkage results are summarised in the below table:

Table 2: Linear Shrinkage Results

Borehole No.	Depth (m)	Proposed Structure	Linear Shrinkage (%)
Borehole 1	0.8	Building C	8.5
Borehole 2	0.8	Building C	9.0
Borehole 3	0.8	Building B	7.0
Borehole 3	2.0	Building B	9.0
Borehole 4	0.8	Building B	8.5
Borehole 4	2.0	Building B	8.5
Borehole 5	0.8	Building A	8.5

The above test results confirm the material as medium plasticity.

5.2 Acid Sulphates

Acidic ground conditions can be caused by dissolved “aggressive” carbon dioxide, pure and very soft waters, organic and mineral acids and bacterial activity. pH testing was conducted on the site samples to determine if any acidic conditions were present in the soils encountered.

Table 3: pH Testing Results

Borehole No.	Sample Depth (m)	Proposed Structure	pH	Exposure Classification
Borehole 1	0.8	Building C	5.8	A1
Borehole 2	0.8	Building C	5.0	A2
Borehole 3	0.8	Building B	5.0	A2
Borehole 4	0.8	Building B	5.7	A1
Borehole 5	0.8	Building A	4.5	A2

These results show the exposure classification as per Table 5.2 AS2870-2011. Groundwater was not encountered during this investigation.

6.0 SUB-SURFACE BEARING CAPACITIES

6.1 Bearing Capacities General

All the below soil strengths are applicable to the sites at the time of the investigation. These bearing capacities should not be used for design purposes, they are provided to give an indication of soil strength only.

Elevation of moisture content will cause a marked decrease in bearing capacity with soil types listed.

Table 4: In-Situ Site Bearing Capacities

Borehole No.	Soil Strata	Depth of Strata (m)	Ultimate Base Bearing Capacity (kPa)	Factored Limit State bearing capacity with Ø = 0.52 (kPa)
Borehole 1	Hard SILT	0.3-1.5	>500	260
Borehole 2	Very Stiff SILT	0.3-0.4	300	156
	Hard SILT	0.4-1.1	>500	260
Borehole 3	Firm SILT	0.1-0.2	96	50
	Stiff SILT	0.2-0.3	150	80
	Stiff CLAY	0.3-0.4	150	80
	Very Stiff CLAY	0.4-0.9	300	156
	Hard CLAY	0.9-1.0	>500	260
	Hard SILT	1.0-2.1	>500	260
Borehole 4	Hard SILT	0.4-3.0	>500	260
Borehole 5	Hard SILT	0.2-1.1	>500	260
Borehole 6	Very Stiff CLAY	0.2-0.4	300	156
	Hard CLAY	0.4-0.5	>500	260
	Hard SILT	0.5-0.7	>500	260

A Geotechnical reduction factor of 0.52 has been applied to all listed ultimate bearing capacities (reference table 4.3.2 (i) AS2159-2009) for low to moderate risk rating.

7.0 EARTHWORKS RECOMMENDATIONS

7.1 Excavations

Excavations within the natural silts and clays will be achievable using conventional earthmoving equipment. The civil contractor should be responsible for selecting excavation equipment based on the proposed excavation depths and equipment capabilities.

Areas where T.C Bit Refusal was encountered onto rock will require the use of ripper tines or hydraulic rock hammer attachments to excavators.

7.2 General Construction Filling

All earthworks performed on site must be undertaken in a controlled manner, in accordance with a suitable earthwork's specification. Filling should be placed, compacted, inspected and tested in accordance with the Level 2 requirements of AS3798-2007.

The following conditions should also be satisfied:

- General filling must be compacted to a minimum dry density ratio of 98-100% relative to standard compaction at a moisture content of -2% to +2% of standard optimum moisture content.
- Filling should proceed in layers of 300mm maximum loose thicknesses.
- Layers of filling should be horizontal or benched to suit the surrounding topography.
- The existing subgrade can be used as bulk fill.

7.3 Site Construction Batters

7.3.1 Temporary batter slopes

In soil should be graded no steeper than 2 Horizontal (H) in 1 Vertical (V), and protected from erosion by re-directing any surface water flows from the batter face, revegetating etc.

7.3.2 Permanent batter slopes

Batter slopes in with clay should be no steeper than 3 Horizontal (H) in 1 Vertical (V) and protected from erosion. Alternatively, fill embankments may be retained with properly designed and constructed retaining walls.

8.0 DESIGN PARAMETERS DISCUSSIONS

8.1 Foundation Recommendation

It is anticipated the footings for the proposed buildings with colorbond wall cladding and steel roof trusses will consist of a stiffened raft slab. Raft slabs should be designed by engineering principles with guidance from AS2870-2011 for the site classification noted.

The design bearing capacity of the natural soil can be taken as 100kPa, once topsoil is stripped and the subgrade is proof rolled.

8.2 General Pavement Notes

All pavement areas are required to be sealed and well drained to prevent moisture affecting the sub-grade. All pavement areas should be removed of any other deleterious material then compacted to a minimum of 100% standard compaction. The pavement should be placed, compacted and tested in accordance with AS3798-2007.

9.0 CONCLUSION

The testing methods adopted are indicative of the site's sub-surface conditions to the depths excavated and to specific sampling and/or testing locations in this investigation, and only at the time the work was carried out.

The accuracy of geotechnical engineering advice provided in this report may be limited by unobserved variations in ground conditions across the site in areas between and beyond test locations and by any restrictions in the sampling and testing which was able to be carried out, as well as by the amount of data that could be collected given the project and site constraints.

These factors may lead to the possibility that actual ground conditions and materials behaviour observed at the test locations may differ from those which may be encountered elsewhere on the site.

If the sub-surface conditions are found to differ from those described in this report, we should be informed immediately to evaluate whether recommendations should be reviewed and amended if necessary.

Appendix A - General Notes

GEOTECHNICAL INVESTIGATION GENERAL NOTES

This report contains the results of a geotechnical investigation conducted for a specific purpose and client. The results should not be used by other parties, or for other purposes, as they may contain neither adequate nor appropriate information. In particular, the investigation does not cover contamination issues unless specifically required to do so by the client.

TEST HOLE LOGGING

The information on the test hole logs (boreholes, test pits, exposures etc.) is based on a visual and tactile assessment, except at the discrete locations where the test information is available (field and/or laboratory results). The borehole logs include both factual data and inferred information. Reference should be made to the relevant sheets for the explanation of logging procedures (Soil and Rock Descriptions, Core Log Sheet Notes etc).

GROUNDWATER

Unless otherwise indicated, the water levels presented on the borehole logs are the levels of free water or seepage in the bore hole recorded at the given time of measuring. The actual groundwater level may differ from this recorded level depending on material permeability's (i.e. depending on response time of the measuring instrument). Further, variations of this level could occur with time due to such effects as seasonal, environmental and tidal fluctuations or construction activities. Confirmation of groundwater levels, phreatic surfaces or piezometric pressures can only be made by appropriate instrumentation techniques and monitoring programmes.

INTERPRETATION OF RESULTS

The discussion or recommendations contained within this report normally are based on a site evaluation from discrete borehole area. Generalised, idealised or inferred subsurface conditions (including any geotechnical cross-sections) have been assumed or prepared by interpolation and/or extrapolation of these data. As such these conditions are an interpretation and must be considered as a guide only.

CHANGE IN CONDITIONS

Local variations or anomalies in the generalised ground conditions do occur in the natural environment, particularly between discrete borehole locations. Additionally, certain design or construction procedures may have been assumed in assessing the soil-structure interaction behaviour of the site. Furthermore, conditions may change at the site from those encountered at the time of the geotechnical investigation through construction activities and constantly changing natural forces.

Any change in design, in construction methods, or in ground conditions as noted during construction, from those assumed or reported should be referred to this firm for appropriate assessment and comment.

GEOTECHNICAL VERIFICATION

Verification of the geotechnical assumptions and/or model is an integral part of the design process – investigation, construction verification and performance monitoring. Variability is a feature of the natural environment and, in many instances, verification of soil or rock quality, or foundation levels are required. There may be a requirement to extend foundation depths to modify a foundation system or to conduct monitoring as a result of this natural variability. Allowance for verification by geotechnical personnel accordingly should be recognised and programmed during construction.

FOUNDATIONS

Where referred to in the report, the soil or rock quality, or the recommendation depth of any foundation (piles, caissons footings etc.) is an engineering estimate. The estimate is influenced and perhaps limited, by the fieldwork method and testing carried out in connection with the site investigation, and other pertinent information as has been made available. The material quality and/or foundation depth remains, however, an estimate and therefore liable to variation. Foundation drawings, designs and specifications should provide for variations in the final depth, depending upon the ground conditions at each point of support, and allow for geotechnical verification.

REPRODUCTION OF REPORTS

Where it is desired to reproduce the information contained in our geotechnical report, or other technical information, for the inclusion in contract documents or engineering specification of the subject development, such reproductions should include at least all of the relevant test hole and test data, together with the appropriate standard description sheets and remarks made in the written report of a factual or descriptive nature.

ROCK

Rock Strength

Rock strength is a scale of strength, based on point load index testing, or field testing.

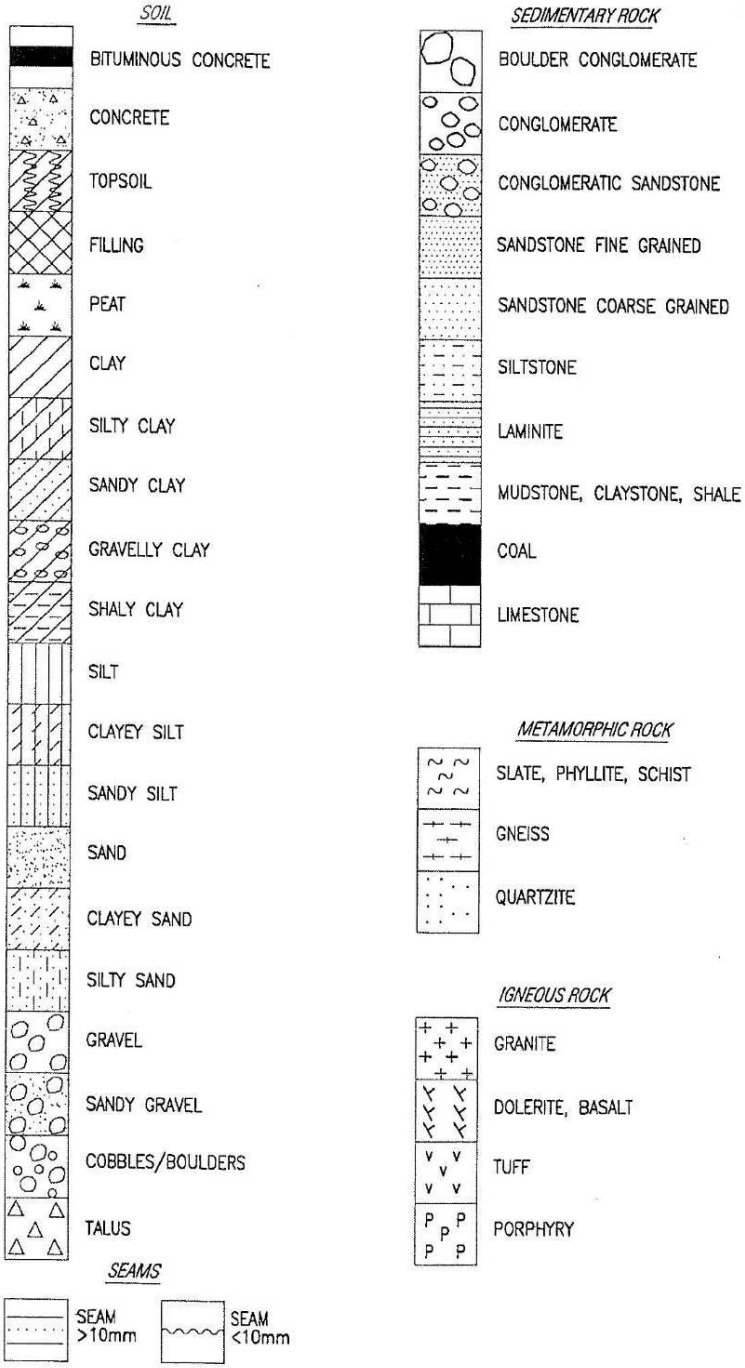
Term	Letter Symbol	Point load index (Mpa) Is (50)	Field guide to strength
Extremely low	EL	< 0.03	Easily remoulded by hand to a material with soil properties.
Very low	VL	0.03 – 0.1	Material crumbles under firm blows with sharp end of pick.
Low	L	0.1 – 0.3	Easily scored by knife, has dull sound under hammer.
Medium	M	0.3 – 1.0	Readily scored with knife, core pieces broken by hand with difficulty
High	H	1 – 3	Rock rings under hammer, core piece broken by pick only.
Very high	VH	3 – 10	Hand specimen breaks with pick after more than one blow.
Extremely high	EH	> 10	Hand specimen breaks with pick after several than one blow.

Rock Weathering

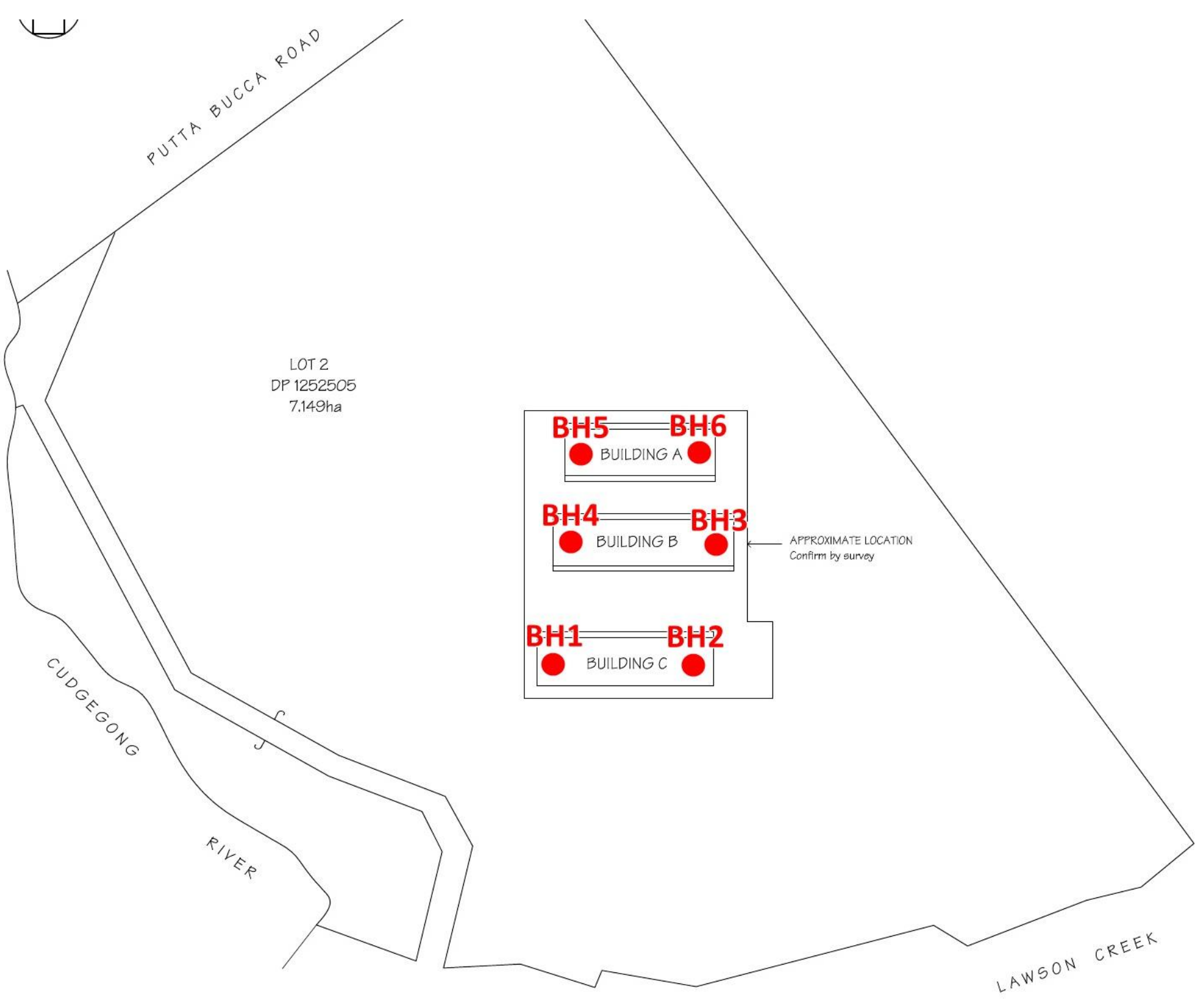
Rock weathering is the degree of rock weathering, determined in the field.

Term	Letter Symbol	Definition
Residual soil	RS	Soil developed on extremely weathered rock.
Extremely weathered rock	XW	Soil is weathered to such an extent that it has soil properties, i.e. it disintegrates or can be remoulded in water.
Distinctly weathered rock	DW	Rock strength usually changed by weathering. The rock may be discoloured, usually by iron staining, porosity is increased.
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.

GRAPHIC SYMBOLS FOR SOIL & ROCK



Appendix B – Site Plan with Borehole Locations


PUTTA BUCCA ROAD
LOT 2
DP 1252505
7.149ha
BH5
BH6
BUILDING A
BH4
BH3
BUILDING B
APPROXIMATE LOCATION
Confirm by survey
BH1
BH2
BUILDING C
CUDGEGONG
RIVER
LAWSON CREEK

Appendix C – Borehole Logs

Barnson Pty Ltd
16L Yarrandale Road
Dubbo NSW 2830
Telephone: 1300 BARNSON

BOREHOLE NUMBER 1

CLIENT Mid-Western Regional Council **PROJECT NAME** Site Classification

PROJECT NUMBER 38046 **PROJECT LOCATION** Putta Bucca Road, Mudgee NSW

DATE STARTED 16/11/21 **COMPLETED** 16/11/21 **R.L. SURFACE** _____ **DATUM** _____

DRILLING CONTRACTOR Barnson **SLOPE** 90° **BEARING** ---

EQUIPMENT GT-10 Drill Rig **HOLE LOCATION** Borehole 1

HOLE SIZE 90mm **LOGGED BY** HC **CHECKED BY** NR

NOTES _____

Method	Samples	Depth (m)	Graphic Log	Classification Symbol	Material Description	Dynamic Cone Penetrometer Blows / 100mm	Additional Observations
Flight Auger & Tungsten Carbide (T.C) Bit		0.0			Sandy SILT: with gravel: pale yellow	0 4 8 12 16 20 24 28 32 0 9 9 16 27 32	TOPSOIL
		0.3		ML	Sandy SILT: with gravel: grey: slightly moist: hard: medium plasticity		ALLUVIAL
	Disturbed Sample LS = 8.5%	0.5					
		1.0					
		1.5			Borehole 1 terminated at 1.5m		REFUSAL ON SEDIMENTARY ROCK
		2.0					
		2.5					
		3.0					

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16L Yarrandale Road
Dubbo NSW 2830
Telephone: 1300 BARNSON

BOREHOLE NUMBER 2

CLIENT Mid-Western Regional Council **PROJECT NAME** Site Classification

PROJECT NUMBER 38046 **PROJECT LOCATION** Putta Bucca Road, Mudgee NSW

DATE STARTED 16/11/21 **COMPLETED** 16/11/21 **R.L. SURFACE** --- **DATUM** ---

DRILLING CONTRACTOR Barnson **SLOPE** 90° **BEARING** ---

EQUIPMENT GT-10 Drill Rig **HOLE LOCATION** Borehole 2

HOLE SIZE 90mm **LOGGED BY** HC **CHECKED BY** NR

NOTES

Method	Samples	Depth (m)	Graphic Log	Classification Symbol	Material Description	Dynamic Cone Penetrometer Blows / 100mm	Additional Observations
Flight Auger & Tungsten Carbide (T.C) Bit		0			Sandy SILT: brown	0 4 8 12 16 20 24 28 32 0 3 3 3	TOPSOIL
		0.3		ML	Sandy SILT: trace gravel: pale brown: slightly moist: very stiff to hard: medium plasticity	7 8 8 8	ALLUVIAL
	Disturbed Sample LS = 9.0%	0.8		ML	Sandy SILT: trace gravel: grey: slightly moist: hard: medium plasticity	9 16 28 32	ALLUVIAL
		1.1			Borehole 2 terminated at 1.1m		REFUSAL ON SEDIMENTARY ROCK
		1.5					
		2.0					
		2.5					
		3.0					

BOREHOLE / TEST PIT WITH DCP 38046-G01A-G06A.GPJ GINT STD AUSTRALIA.GDT 29/11/21

Barnson Pty Ltd
16L Yarrandale Road
Dubbo NSW 2830
Telephone: 1300 BARNSON

BOREHOLE NUMBER 3

CLIENT Mid-Western Regional Council **PROJECT NAME** Site Classification

PROJECT NUMBER 38046 **PROJECT LOCATION** Putta Bucca Road, Mudgee NSW

DATE STARTED 16/11/21 **COMPLETED** 16/11/21 **R.L. SURFACE** **DATUM**

DRILLING CONTRACTOR Barnson **SLOPE** 90° **BEARING** ---

EQUIPMENT GT-10 Drill Rig **HOLE LOCATION** Borehole 3

HOLE SIZE 90mm **LOGGED BY** HC **CHECKED BY** NR

NOTES

Method	Samples	Depth (m)	Graphic Log	Classification Symbol	Material Description	Dynamic Cone Penetrometer Blows / 100mm	Additional Observations
Flight Auger & Tungsten Carbide (T.C) Bit		0.1			LOAM: dark brown	0	TOPSOIL
		0.3		ML	Clayey SILT: brown: slightly moist: firm to stiff: medium plasticity	1, 2	ALLUVIAL
		0.5		ML	Silty CLAY: orange mottled red: slightly moist: stiff to hard: medium plasticity	4, 4, 6, 6, 7, 8, 8	ALLUVIAL
	Disturbed Sample LS = 7.0%	1.0		ML	Sandy SILT: trace gravel: pale brown: slightly moist: hard: medium plasticity	11, 17, 28, 32	ALLUVIAL
		1.8		ML	Sandy SILT: with gravel: grey: slightly moist: hard: medium plasticity		ALLUVIAL
	Disturbed Sample LS = 9.0%	2.0			Borehole 3 terminated at 2.1m		REFUSAL ON SEDIMENTARY ROCK
		2.5					
		3.0					

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16L Yarrandale Road
Dubbo NSW 2830
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BOREHOLE NUMBER 4

CLIENT Mid-Western Regional Council **PROJECT NAME** Site Classification

PROJECT NUMBER 38046 **PROJECT LOCATION** Putta Bucca Road, Mudgee NSW

DATE STARTED 16/11/21 **COMPLETED** 16/11/21 **R.L. SURFACE** _____ **DATUM** _____

DRILLING CONTRACTOR Barnson **SLOPE** 90° **BEARING** ---

EQUIPMENT GT-10 Drill Rig **HOLE LOCATION** Borehole 4

HOLE SIZE 90mm **LOGGED BY** HC **CHECKED BY** NR

NOTES _____

Method	Samples	Depth (m)	Graphic Log	Classification Symbol	Material Description	Dynamic Cone Penetrometer Blows / 100mm	Additional Observations
Flight Auger & Tungsten Carbide (T.C) Bit		0			Sandy SILT: brown	0 4 8 12 16 20 24 28 32	TOPSOIL
		0.4		ML	Sandy SILT: trace gravel: pale brown: slightly moist: hard: medium plasticity	9 9 9 11 15 19 22 26 29 32	ALLUVIAL
	Disturbed Sample LS = 8.5%	0.5					
		1.0					
		1.5					
	Disturbed Sample LS = 8.5%	2.0					
		2.5					
		3.0					

Borehole 4 terminated at 3m

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Dubbo NSW 2830
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BOREHOLE NUMBER 5

CLIENT Mid-Western Regional Council **PROJECT NAME** Site Classification

PROJECT NUMBER 38046 **PROJECT LOCATION** Putta Bucca Road, Mudgee NSW

DATE STARTED 16/11/21 **COMPLETED** 16/11/21 **R.L. SURFACE** _____ **DATUM** _____

DRILLING CONTRACTOR Barnson **SLOPE** 90° **BEARING** ---

EQUIPMENT GT-10 Drill Rig **HOLE LOCATION** Borehole 5

HOLE SIZE 90mm **LOGGED BY** HC **CHECKED BY** NR

NOTES _____

Method	Samples	Depth (m)	Graphic Log	Classification Symbol	Material Description	Dynamic Cone Penetrometer Blows / 100mm	Additional Observations
Flight Auger & Tungsten Carbide (T.C) Bit		0.2			Sandy SILT: brown	0 4 8 12 16 20 24 28 32	TOPSOIL
				ML	Sandy SILT: trace gravel: pale yellow: slightly moist: hard: medium plasticity	0, 3, 9, 9, 12, 14, 21, 32	ALLUVIAL
	Disturbed Sample LS = 8.5%	0.5					
		1.0		ML	Sandy SILT: with gravel: grey: slightly moist: hard: medium plasticity		ALLUVIAL
					Borehole 5 terminated at 1.1m		REFUSAL ON SEDIMENTARY ROCK
		1.5					
		2.0					
		2.5					
		3.0					

Barnson Pty Ltd
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Dubbo NSW 2830
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BOREHOLE NUMBER 6

CLIENT Mid-Western Regional Council **PROJECT NAME** Site Classification

PROJECT NUMBER 38046 **PROJECT LOCATION** Putta Bucca Road, Mudgee NSW

DATE STARTED 16/11/21 **COMPLETED** 16/11/21 **R.L. SURFACE** _____ **DATUM** _____

DRILLING CONTRACTOR Barnson **SLOPE** 90° **BEARING** ---

EQUIPMENT GT-10 Drill Rig **HOLE LOCATION** Borehole 6

HOLE SIZE 90mm **LOGGED BY** HC **CHECKED BY** NR

NOTES _____

Method	Samples	Depth (m)	Graphic Log	Classification Symbol	Material Description	Dynamic Cone Penetrometer Blows / 100mm	Additional Observations
Flight Auger & Tungsten Carbide (T.C) Bit		0.2			Sandy SILT: brown	0 4 8 12 16 20 24 28 32	TOPSOIL
		0.5		CL	Silty CLAY: brown-red: slightly moist: very stiff to hard: medium plasticity	5 5 5 7 13 24 32	ALLUVIAL
				ML	Sandy SILT: with gravel: grey: slightly moist: hard: medium plasticity		ALLUVIAL
					Borehole 6 terminated at 0.7m		REFUSAL ON SEDIMENTARY ROCK
		1.0					
		1.5					
		2.0					
		2.5					
		3.0					

Appendix D – NATA Laboratory Reports

Material Test Report

Report Number: 38046-1
Issue Number: 1
Date Issued: 26/11/2021
Client: Mid-Western Regional Council
P.O. Box 156, Mudgee NSW 2850
Contact: Daniel Newman
Project Number: 38046
Project Name: Site Classification
Project Location: Putta Bucca Road, Mudgee NSW 2850
Work Request: 5692
Sample Number: D21-5692A
Date Sampled: 16/11/2021
Dates Tested: 16/11/2021 - 22/11/2021
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Sample Location: **Borehole 1, Depth: 800mm**
Material: Grey Sandy SILT With Gravel

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Moisture Condition Determined By	AS 1289.3.1.2		
Linear Shrinkage (%)	8.5		
Cracking Crumbling Curling	None		

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Email: nreardon@barnson.com.au

Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Nick Reardon
Laboratory Manager
NATA Accredited Laboratory Number: 9605

Material Test Report

Report Number: 38046-1
Issue Number: 1
Date Issued: 26/11/2021
Client: Mid-Western Regional Council
P.O. Box 156, Mudgee NSW 2850
Contact: Daniel Newman
Project Number: 38046
Project Name: Site Classification
Project Location: Putta Bucca Road, Mudgee NSW 2850
Work Request: 5692
Sample Number: D21-5692B
Date Sampled: 16/11/2021
Dates Tested: 16/11/2021 - 22/11/2021
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Sample Location: **Borehole 2, Depth: 800mm**
Material: Grey Sandy SILT Trace Gravel

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Moisture Condition Determined By	AS 1289.3.1.2		
Linear Shrinkage (%)	9.0		
Cracking Crumbling Curling	None		

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Approved Signatory: Nick Reardon
Laboratory Manager
NATA Accredited Laboratory Number: 9605

Material Test Report

Report Number: **38046-1**
Issue Number: 1
Date Issued: 26/11/2021
Client: Mid-Western Regional Council
P.O. Box 156, Mudgee NSW 2850
Contact: Daniel Newman
Project Number: 38046
Project Name: Site Classification
Project Location: Putta Bucca Road, Mudgee NSW 2850
Work Request: 5692
Sample Number: D21-5692C
Date Sampled: 16/11/2021
Dates Tested: 16/11/2021 - 22/11/2021
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Sample Location: **Borehole 3, Depth: 800mm**
Material: Orange Mottled Red Silty CLAY

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Moisture Condition Determined By	AS 1289.3.1.2		
Linear Shrinkage (%)	7.0		
Cracking Crumbling Curling	None		

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Material Test Report

Report Number: **38046-1**
Issue Number: 1
Date Issued: 26/11/2021
Client: Mid-Western Regional Council
P.O. Box 156, Mudgee NSW 2850
Contact: Daniel Newman
Project Number: 38046
Project Name: Site Classification
Project Location: Putta Bucca Road, Mudgee NSW 2850
Work Request: 5692
Sample Number: D21-5692D
Date Sampled: 16/11/2021
Dates Tested: 16/11/2021 - 22/11/2021
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Sample Location: **Borehole 3, Depth: 2.0m**
Material: Grey Sandy SILT With Gravel

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Moisture Condition Determined By	AS 1289.3.1.2		
Linear Shrinkage (%)	9.0		
Cracking Crumbling Curling	None		

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Laboratory Manager
NATA Accredited Laboratory Number: 9605

Material Test Report

Report Number: **38046-1**
Issue Number: 1
Date Issued: 26/11/2021
Client: Mid-Western Regional Council
P.O. Box 156, Mudgee NSW 2850
Contact: Daniel Newman
Project Number: 38046
Project Name: Site Classification
Project Location: Putta Bucca Road, Mudgee NSW 2850
Work Request: 5692
Sample Number: D21-5692E
Date Sampled: 16/11/2021
Dates Tested: 16/11/2021 - 22/11/2021
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Sample Location: **Borehole 4, Depth: 800mm**
Material: Pale Brown Sandy SILT Trace Gravel

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Moisture Condition Determined By	AS 1289.3.1.2		
Linear Shrinkage (%)	8.5		
Cracking Crumbling Curling	None		

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Material Test Report

Report Number:	**38046-1**
Issue Number:	1
Date Issued:	26/11/2021
Client:	Mid-Western Regional Council
	P.O. Box 156, Mudgee NSW 2850
Contact:	Daniel Newman
Project Number:	38046
Project Name:	Site Classification
Project Location:	Putta Bucca Road, Mudgee NSW 2850
Work Request:	5692
Sample Number:	D21-5692F
Date Sampled:	16/11/2021
Dates Tested:	16/11/2021 - 22/11/2021
Sampling Method:	AS 1289.1.2.1 6.5.3 - Power auger drilling
Sample Location:	**Borehole 4, Depth: 2.0m**
Material:	Pale Brown Sandy SILT Trace Gravel

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Moisture Condition Determined By	AS 1289.3.1.2		
Linear Shrinkage (%)	8.5		
Cracking Crumbling Curling	Curling		

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Material Test Report

Report Number: **38046-1**
Issue Number: 1
Date Issued: 26/11/2021
Client: Mid-Western Regional Council
P.O. Box 156, Mudgee NSW 2850
Contact: Daniel Newman
Project Number: 38046
Project Name: Site Classification
Project Location: Putta Bucca Road, Mudgee NSW 2850
Work Request: 5692
Sample Number: D21-5692G
Date Sampled: 16/11/2021
Dates Tested: 16/11/2021 - 18/11/2021
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Sample Location: **Borehole 5, Depth: 800mm**
Material: Pale Yellow Sandy SILT With Gravel

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Moisture Condition Determined By	AS 1289.3.1.2		
Linear Shrinkage (%)	8.5		
Cracking Crumbling Curling	None		

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