



Geotechnical Investigation Report

Assessment Site: Rylstone Caravan Park, Rylstone NSW 2849

Client: Mid-Western Regional Council

Address: P.O. Box 156, Mudgee NSW 2850



(Our Reference: 36407-GR01_A)

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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.

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Client:	Mid-Western Regional Council
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1.0 INTRODUCTION

The following is a report on the geotechnical assessment of a site in accordance with AS1726-1993 “Geotechnical Site Investigations”.

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

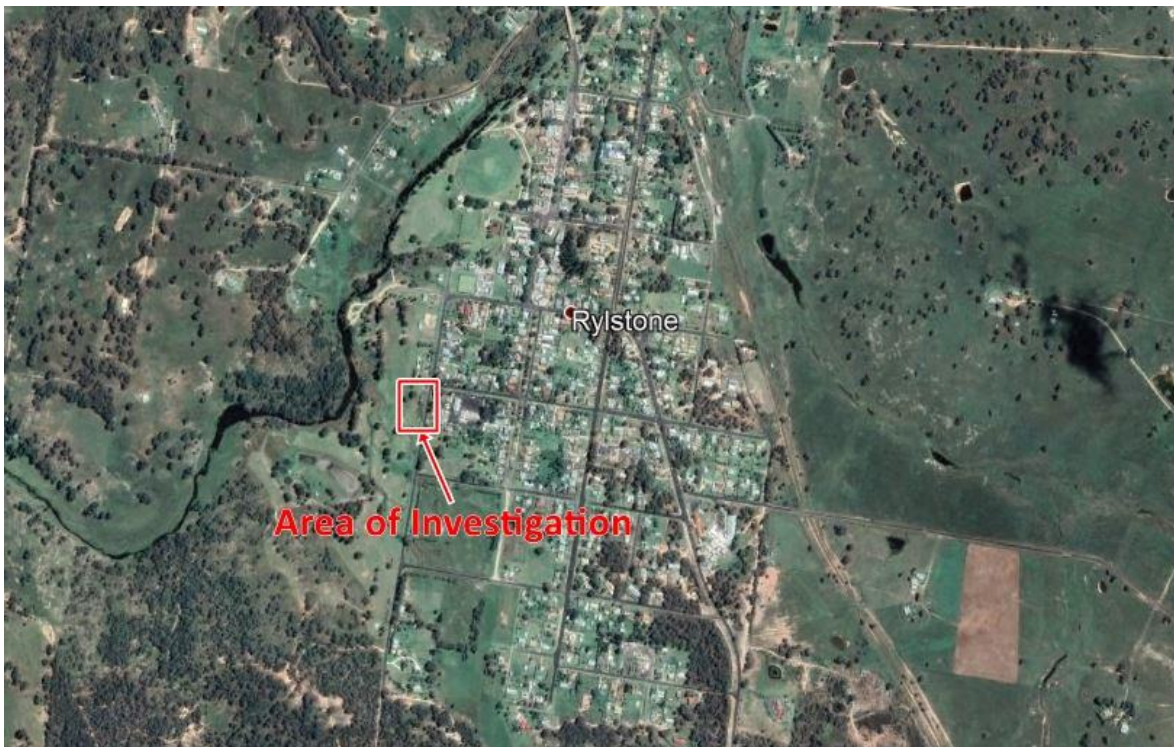


Plate 1 – Area of Investigation

Mid Western Regional Council is proposing to construct new amenities building and cabins at Rylstone Caravan Park, Rylstone NSW. The proposed site features that are covered by this investigation are as follows.

- Proposed New Amenities building.
- Proposed Cabins

The investigation comprised of four (4) 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 AS1726-1993 “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 in a residential area on the south of Rylstone NSW.

The site consists of lightly scattered grass and weed cover with mature trees scattered over the site.

The site is sloping slightly to the west. There are existing established houses, sports fields and showground in the vicinity surrounding the site with Cudegong river to the west of the site.

Any trees noted to be within the building zone, should be removed and the excavation remaining should be backfilled with natural material and reinstated in layers to a minimum of 95% Standard Maximum Dry Density.



Plate 2 – View of borehole 1 facing north.



Plate 3 – View of borehole 2 facing south.



Plate 4 – View of borehole 3 facing east.



Plate 5 – View of borehole 4 facing northeast.

3.0 METHOD OF INVESTIGATION

On the 22nd of April 2021, a geotechnical investigation was carried out at the site of the above-mentioned development site. The field drilling was carried out by a geotechnical technician who logged the boreholes on site and undertook geological mapping of the nearby area.

A drilling rig with a 90mm auger and tungsten tip was used to excavate four (4) boreholes for the proposed infrastructures to depths of 3.0m within the proposed areas. These are identified as boreholes 1 through 4.

3.1 GPS Co-Ordinates

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

Table 1: GPS Co-Ordinates of Boreholes

Location	Longitude	Latitude	Proposed Structure
Borehole 1	149.967437	-32.800494	Cabins/ New Amenities
Borehole 2	149.967511	-32.801000	Cabins/ New Amenities
Borehole 3	149.967771	-32.800774	Cabins/ New Amenities
Borehole 4	149.967835	-32.800351	Cabins/ New Amenities

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 all relevant 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 layer of topsoil was encountered throughout the boreholes. These generally comprised of sandy silt, sandy silt with traces of gravel and loam to the depths shown in the borehole logs attached in *Appendix C*.

4.2 Sub-Soil

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

4.3 Regional Geology

Reference to the New South Wales 1:1,000,000 Geological Map indicates the surrounding area consists of "*Rhyolitic and dacitic tuffs*".

Rock was not encountered during this investigation.

4.4 Seismicity

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

4.5 Seasonal Surface Movement

From the laboratory test results, as shown attached, an estimated ground surface movement (Y_s) was calculated in accordance with AS2870-2011 (using a change in suction at the soil surface $\Delta\mu = 1.5\text{pF}$ and a depth of design suction change, $H_s = 3.0\text{m}$) being:

$$Y_s = 25\text{-}30 \text{ mm}$$

The site has mature trees scattered over the area which will cause abnormal soil moisture content and at borehole location 4 (BH4), the site was noted to have low bearing capacity of less than 100Kpa as is detailed in section 6.1. Thus, it is our opinion that a **Site Classification of 'P'** should be adopted for the site in its present condition. The soil reactivity indicates a M-D soil classification.

Reference is made to Appendix 'H' of AS2870-2011, which gives guidance on the design of footings on reactive clay soils with the effect of trees. The footing design engineer will need to calculate the tree induced differential centre heave mound height (y_m) based on the tree height and distance of the proposed buildings from the tree or group of trees. This value should be used to design a suitable footing design in accordance with section 4 of the code.

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	Cabins/New Amenities	0.5
Borehole 1	2.0	Cabins/New Amenities	12.0
Borehole 2	0.8	Cabins/New Amenities	0.5
Borehole 2	2.0	Cabins/New Amenities	10.0
Borehole 3	0.8	Cabins/New Amenities	0.5
Borehole 3	2.0	Cabins/New Amenities	14.0
Borehole 4	0.8	Cabins/New Amenities	0.5
Borehole 4	2.0	Cabins/New Amenities	4.5

The above test results confirm the material as low to 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	Cabins/New Amenities	5.9	A1
Borehole 2	0.8	Cabins/New Amenities	6.2	A1
Borehole 3	0.8	Cabins/New Amenities	5.2	A2
Borehole 4	0.8	Cabins/New Amenities	5.8	A1

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.

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 $\phi = 0.52$ (kPa)
Borehole 1	Hard SILT	0.2-1.6	>500	260
Borehole 1	Hard CLAY	1.6-3.0	>500	260
Borehole 2	Dense SAND	0.2-0.8	300	260
Borehole 2	Very Dense SAND	0.8-1.5	>500	260
Borehole 2	Hard CLAY	1.5-3.0	>500	260
Borehole 3	Dense SAND	0.2-0.5	300	156
Borehole 3	Very dense SAND	0.5-1.3	>500	260
Borehole 3	Hard CLAY	1.3-3.0	>500	260
Borehole 4	Medium Dense SAND	0.3-1.3	150	80
Borehole 4	Stiff CLAY	1.3-1.5	150	80
Borehole 4	Hard CLAY	1.5-3.0	>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) low to moderate risk rating.

7.0 EARTHWORKS RECOMMENDATIONS

7.1 Excavations

Excavations within the natural 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.

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 should NOT 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 FOUNDATION RECOMMENDATIONS

8.1 Foundation General

It is anticipated the footings for the proposed building will consist of a stiffened raft slab which can be designed in accordance with section 3 or 4 of AS2870-2011 for the tree affected expected ground movement as indicated in section 4.5 above. The design bearing capacity at depths of 500mm can be taken as 80kPa. This is suitable for support of raft slabs, yet not for pad footings or strip footings, which would need to be founded at a depth of 1.5m at borehole 4 location and 1.0m at other locations.

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. 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 test 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 piezo metric 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 because 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.

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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

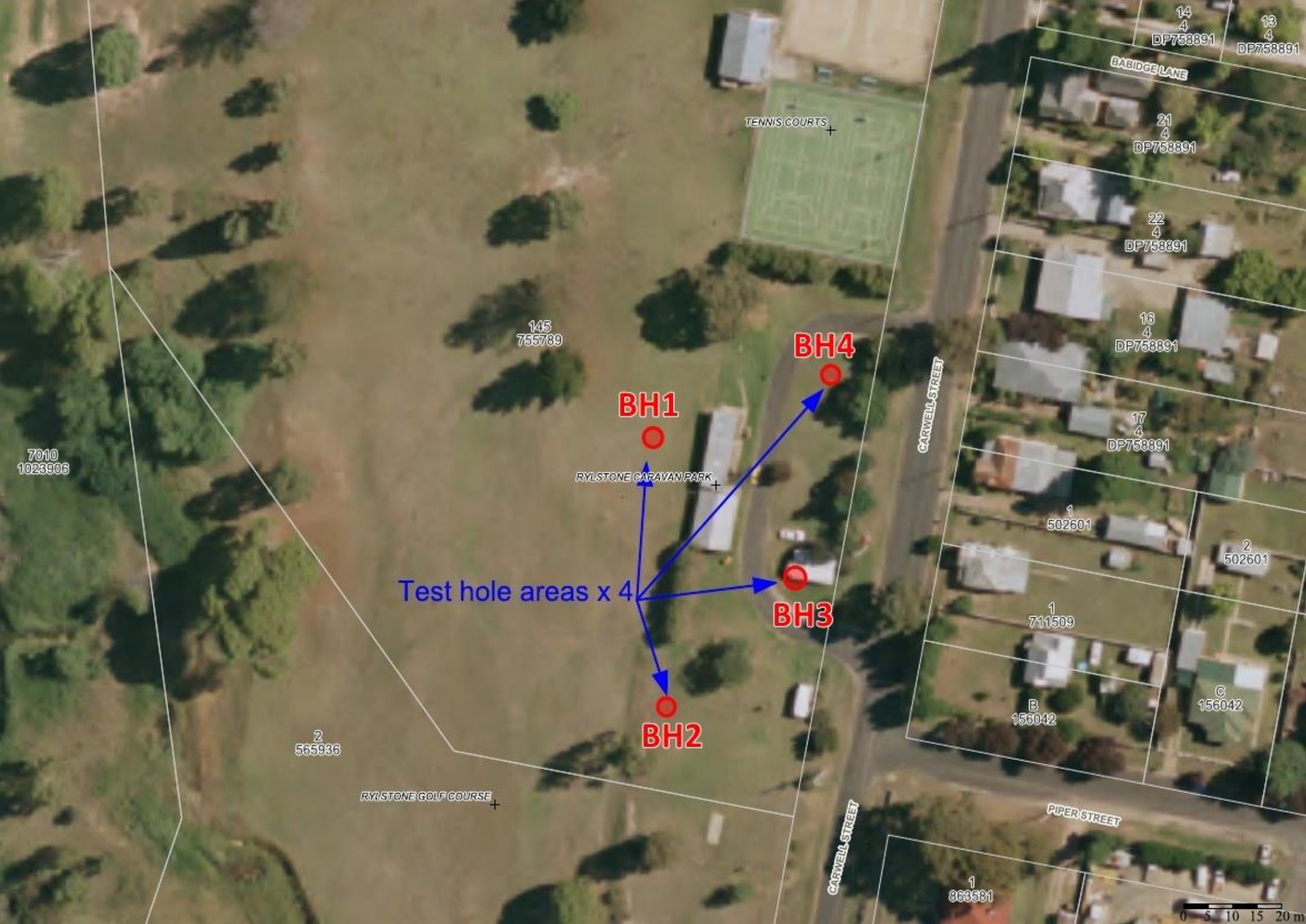
Rock weathering is the degree of rock weathering, determined in the field.

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

<u>SOIL</u>		<u>SEDIMENTARY ROCK</u>	
	BITUMINOUS CONCRETE		BOULDER CONGLOMERATE
	CONCRETE		CONGLOMERATE
	TOPSOIL		CONGLOMERATIC SANDSTONE
	FILLING		SANDSTONE FINE GRAINED
	PEAT		SANDSTONE COARSE GRAINED
	CLAY		SILTSTONE
	SILTY CLAY		LAMINITE
	SANDY CLAY		MUDSTONE, CLAYSTONE, SHALE
	GRAVELLY CLAY		COAL
	SHALY CLAY		LIMESTONE
	SILT		
	CLAYEY SILT		
	SANDY SILT		
	SAND		SLATE, PHYLLITE, SCHIST
	CLAYEY SAND		GNEISS
	SILTY SAND		QUARTZITE
	GRAVEL		
	SANDY GRAVEL		GRANITE
	COBBLES/BOULDERS		DOLERITE, BASALT
	TALUS		TUFF
			PORPHYRY
<u>SEAMS</u>			
	SEAM >10mm		SEAM <10mm

Appendix B - Site Plan with Borehole Locations



7010
1023906

145
755789

2
565986

RYLSTONE GOLF COURSE

RYLSTONE CARAVAN PARK

TENNIS COURTS

CARWELL STREET

BABIDGE LANE

14
4
DP758891

13
4
DP758891

21
4
DP758891

22
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PIPER STREET

1
868581

0 5 10 15 20

Test hole areas x 4

BH1



BH4



BH3



BH2



Appendix C - Borehole Logs

CLIENT Mid-Western Regional Council PROJECT NAME Site Classification

PROJECT NUMBER 36407 PROJECT LOCATION Rylstone Caravan Park, Rylstone NSW



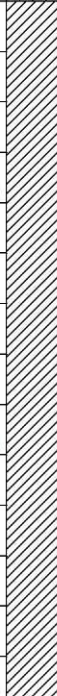
DATE STARTED 22/4/21 COMPLETED 22/4/21 R.L. SURFACE _____ DATUM _____

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: pale brown	0	TOPSOIL
		0.2		ML	Sandy SILT: with gravel: pale brown: slightly moist: hard: low plasticity	6 9 11 18 23 29 32	RESIDUAL
	Disturbed Sample LS = 0.5%	1.0		CL	Sandy Silty CLAY: with gravel: brown: slightly moist: hard: medium plasticity		RESIDUAL
	Disturbed Sample LS = 12.0%	2.0					
		2.5					
		3.0					

BOREHOLE / TEST PIT WITH DCP: 36407-G01A-G04A.GPJ GINT STD AUSTRALIA.GDT: 30/4/21

Borehole 1 terminated at 3m

CLIENT Mid-Western Regional Council PROJECT NAME Site Classification

PROJECT NUMBER 36407 PROJECT LOCATION Rylstone Caravan Park, Rylstone NSW


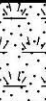





DATE STARTED 22/4/21 COMPLETED 22/4/21 R.L. SURFACE _____ DATUM _____

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		0.0			Sandy SILT: trace gravel: brown	0	TOPSOIL
		0.2		SM	Silty SAND: trace gravel: brown: slightly moist: dense to very dense: low plasticity	7	RESIDUAL
	Disturbed Sample LS = 0.5%	0.5				7, 9, 8, 11, 10, 10, 5, 7	
		1.0		CL	Sandy CLAY: with gravel: brown: slightly moist: hard: medium plasticity	19	RESIDUAL
	Disturbed Sample LS = 10.0%	2.0				27, 32	
		2.5					
		3.0					

Borehole 2 terminated at 3m

BOREHOLE / TEST PIT WITH DCP: 36407-G01A-G04A.GPJ GINT STD AUSTRALIA.GDT: 30/4/21

CLIENT Mid-Western Regional Council PROJECT NAME Site Classification

PROJECT NUMBER 36407 PROJECT LOCATION Rylstone Caravan Park, Rylstone NSW

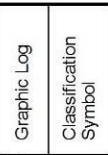
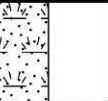
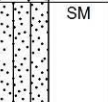




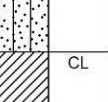



DATE STARTED 22/4/21 COMPLETED 22/4/21 R.L. SURFACE _____ DATUM _____

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
		0.0			Sandy SILT: pale brown	0	TOPSOIL
		0.2		SM	Silty SAND: brown: slightly moist: dense to very dense: low plasticity	4	RESIDUAL
		0.5				9	
		0.8				8	
		1.0				11	
	Disturbed Sample LS = 0.5%	1.3				13	
		1.5		CL	Sandy CLAY: with gravel: brown: slightly moist: hard: medium plasticity	15	RESIDUAL
		1.8				17	
		2.0		CL	Sandy Silty CLAY: trace gravel: brown: slightly moist: hard: medium plasticity	23	RESIDUAL
	Disturbed Sample LS = 14.0%	2.5				27	
		3.0				32	

BOREHOLE / TEST PIT WITH DCP: 36407-G01A-G04A.GPJ GINT STD AUSTRALIA.GDT: 30/4/21

Flight Auger & Tungsten Carbide (T.C) Bit

Borehole 3 terminated at 3m

CLIENT Mid-Western Regional Council PROJECT NAME Site Classification

PROJECT NUMBER 36407 PROJECT LOCATION Rylstone Caravan Park, Rylstone NSW

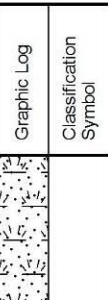
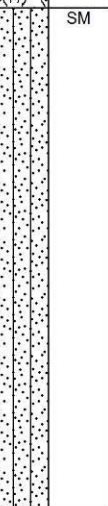

DATE STARTED 22/4/21 COMPLETED 22/4/21 R.L. SURFACE _____ DATUM _____

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
		0.0			LOAM: dark brown	0	TOPSOIL
		0.3		SM	Silty SAND: brown: slightly moist: medium dense to dense: low plasticity	4	RESIDUAL
	Disturbed Sample LS = 0.5%	0.5				6	
		1.0				4	
		1.3		CL	Sandy CLAY: brown: slightly moist: stiff to hard: medium plasticity	4	RESIDUAL
		1.5				3	
		2.0				11	
	Disturbed Sample LS = 4.5%	2.0				15	
		2.5				27	
		3.0				32	

BOREHOLE / TEST PIT WITH DCP: 36407-G01A-G04A.GPJ GINT STD AUSTRALIA.GDT: 30/4/21

Flight Auger & Tungsten Carbide (T.C) Bit

Borehole 4 terminated at 3m



Appendix D - NATA Laboratory Reports

Material Test Report

Report Number: 36407-1
Issue Number: 1
Date Issued: 30/04/2021
Client: Mid-Western Regional Council
P.O. Box 156, Mudgee NSW 2850
Contact: Scott Jackson
Project Number: 36407
Project Name: Site Classification
Project Location: Rylstone Caravan Park, Rylstone NSW
Work Request: 4665
Sample Number: D21-4665A
Date Sampled: 22/04/2021
Dates Tested: 22/04/2021 - 30/04/2021
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Sample Location: Borehole 1, Depth: 800mm
Material: Pale Brown Sandy SILT With Gravel



Barnson Pty Ltd
Dubbo Laboratory
16 L Yarrandale Road Dubbo NSW 2830
Phone: 1300 BARNSON
Email: jeremy@barnson.com.au

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A handwritten signature in blue ink, appearing to read "J. Wiatkowski".

Approved Signatory: Jeremy Wiatkowski
Geotechnical Technician
NATA Accredited Laboratory Number: 9605

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 (%)	0.5		
Cracking Crumbling Curling	None		

Material Test Report

Report Number: 36407-1
Issue Number: 1
Date Issued: 30/04/2021
Client: Mid-Western Regional Council
P.O. Box 156, Mudgee NSW 2850
Contact: Scott Jackson
Project Number: 36407
Project Name: Site Classification
Project Location: Rylstone Caravan Park, Rylstone NSW
Work Request: 4665
Sample Number: D21-4665B
Date Sampled: 22/04/2021
Dates Tested: 22/04/2021 - 30/04/2021
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Sample Location: Borehole 1, Depth: 2.0m
Material: Brown Sandy Silty CLAY With Gravel



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Approved Signatory: Jeremy Wiatkowski
Geotechnical Technician
NATA Accredited Laboratory Number: 9605

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 (%)	12.0		
Cracking Crumbling Curling	Curling		

Material Test Report

Report Number: 36407-1
Issue Number: 1
Date Issued: 30/04/2021
Client: Mid-Western Regional Council
P.O. Box 156, Mudgee NSW 2850
Contact: Scott Jackson
Project Number: 36407
Project Name: Site Classification
Project Location: Rylstone Caravan Park, Rylstone NSW
Work Request: 4665
Sample Number: D21-4665C
Date Sampled: 22/04/2021
Dates Tested: 22/04/2021 - 30/04/2021
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Sample Location: Borehole 2, Depth: 800mm
Material: Brown Silty SAND Trace Gravel



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Approved Signatory: Jeremy Wiatkowski
Geotechnical Technician
NATA Accredited Laboratory Number: 9605

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 (%)	0.5		
Cracking Crumbling Curling	None		

Material Test Report

Report Number: 36407-1
Issue Number: 1
Date Issued: 30/04/2021
Client: Mid-Western Regional Council
P.O. Box 156, Mudgee NSW 2850
Contact: Scott Jackson
Project Number: 36407
Project Name: Site Classification
Project Location: Rylstone Caravan Park, Rylstone NSW
Work Request: 4665
Sample Number: D21-4665D
Date Sampled: 22/04/2021
Dates Tested: 22/04/2021 - 30/04/2021
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Sample Location: Borehole 2, Depth: 2.0m
Material: Brown Sandy CLAY With Gravel



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Geotechnical Technician

NATA Accredited Laboratory Number: 9605

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 (%)	10.0		
Cracking Crumbling Curling	Curling		

Material Test Report

Report Number: 36407-1
Issue Number: 1
Date Issued: 30/04/2021
Client: Mid-Western Regional Council
P.O. Box 156, Mudgee NSW 2850
Contact: Scott Jackson
Project Number: 36407
Project Name: Site Classification
Project Location: Rylstone Caravan Park, Rylstone NSW
Work Request: 4665
Sample Number: D21-4665E
Date Sampled: 22/04/2021
Dates Tested: 22/04/2021 - 30/04/2021
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Sample Location: Borehole 3, Depth: 800mm
Material: Brown Silty SAND



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Geotechnical Technician

NATA Accredited Laboratory Number: 9605

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 (%)	0.5		
Cracking Crumbling Curling	None		

Material Test Report

Report Number: 36407-1
Issue Number: 1
Date Issued: 30/04/2021
Client: Mid-Western Regional Council
P.O. Box 156, Mudgee NSW 2850
Contact: Scott Jackson
Project Number: 36407
Project Name: Site Classification
Project Location: Rylstone Caravan Park, Rylstone NSW
Work Request: 4665
Sample Number: D21-4665F
Date Sampled: 22/04/2021
Dates Tested: 22/04/2021 - 30/04/2021
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Sample Location: Borehole 3, Depth: 2.0m
Material: Brown Sandy Silty CLAY Trace Gravel



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Geotechnical Technician
NATA Accredited Laboratory Number: 9605

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 (%)	14.0		
Cracking Crumbling Curling	Curling		

Material Test Report

Report Number: 36407-1
Issue Number: 1
Date Issued: 30/04/2021
Client: Mid-Western Regional Council
P.O. Box 156, Mudgee NSW 2850
Contact: Scott Jackson
Project Number: 36407
Project Name: Site Classification
Project Location: Rylstone Caravan Park, Rylstone NSW
Work Request: 4665
Sample Number: D21-4665G
Date Sampled: 22/04/2021
Dates Tested: 22/04/2021 - 30/04/2021
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Sample Location: Borehole 4, Depth: 800mm
Material: Brown Silty SAND



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NATA Accredited Laboratory Number: 9605

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 (%)	0.5		
Cracking Crumbling Curling	None		

Material Test Report

Report Number: 36407-1
Issue Number: 1
Date Issued: 30/04/2021
Client: Mid-Western Regional Council
P.O. Box 156, Mudgee NSW 2850
Contact: Scott Jackson
Project Number: 36407
Project Name: Site Classification
Project Location: Rylstone Caravan Park, Rylstone NSW
Work Request: 4665
Sample Number: D21-4665H
Date Sampled: 22/04/2021
Dates Tested: 22/04/2021 - 30/04/2021
Sampling Method: AS 1289.1.2.1 6.5.3 - Power auger drilling
Sample Location: Borehole 4, Depth: 2.0m
Material: Brown Sandy CLAY



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NATA Accredited Laboratory Number: 9605

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 (%)	4.5		
Cracking Crumbling Curling	None		