GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

REDBANK COMMUNITIES

REDBANK DEVELOPMENT – SANDSTONE ARCH
GROSE VALE ROAD, NORTH RICHMOND

SITE CLASSIFICATION

REPORT NO 7747/51-AA-R1 26 FEBRUARY 2021

34 Borec Road, Penrith NSW 2750
Telephone: (02) 4722 2744

Unit 4, 18-20 Whyalla Place, Prestons NSW 2170
Telephone: (02) 9607 6111

Email: info@geotech.com.au www.geotech.com.au

GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

Job No: 7747/51
Our Ref: 7747/51-AA-R1
26 February 2021

Redbank Communities
PO Box 262
NORTH RICHMOND NSW 2754
Email: ravipillay@redbankcommunities.com.au

Attention: Mr R Pillay

Dear Sir

re: **Redbank Development – Sandstone Arch**
Grose Vale Road, North Richmond
Site Classification Report

This report provides site classifications for the proposed lots at the above site. A total of twenty-five lots (Lots 1001 to 1025) are covered in the report.

This report contains information on surface and sub-surface conditions encountered at the site, together with an assessment of the site classifications in accordance with Australian Standard AS2870-2011 "Residential Slabs & Footings".

If you have any questions, please do not hesitate to contact the undersigned.

Yours faithfully
GEOTECH TESTING PTY LTD

ZIAUDDIN AHMED
Senior Associate

TABLE OF CONTENTS

page

APPENDICES

1.0 INTRODUCTION

This report provides site classification as per AS2870 (Standards Australia, 2011) of the proposed lots (Lot 1001 to 1025) at the subject development.

Site classification in accordance with AS2870 is only applicable for design of footing systems for a single dwelling, house, townhouse or similar structure that would be detached or separated by a party wall or common wall. AS2870 is not suitable for dwellings situated vertically above or below another dwelling, including buildings classified as Class 1 and Class 10a in the Building Code of Australia (BCA). Therefore, a geotechnical investigation would be required for other dwellings to be classified in accordance with the BCA.

It is understood that the proposed dwellings are to be of brick veneer construction and that wall loadings are expected to be in the range of 15kN/m to 50kN/m. The maximum working load (safe bearing pressure) would be in the order of 50kPa for ground supported floor slabs and 100kPa for strip and pad footings (AS2870-2011).

2.0 FIELD WORK

Field work for the investigation was conducted on 4 December 2020, under the full time supervision of a Geotechnical Engineer and consisted of excavation of twelve (12) test pits (TP1 to TP12) to a depth of 1.5m, using an excavator provided by J K Williams.

The test pit locations are indicated on the attached Drawing No 7747/51-AA1 (Appendix A).

3.0 SITE CONDITIONS

3.1 Surface Conditions

The following observations were made at the time of field work:

- Cut and fill, as part of the bulk earthworks, have been completed.
- Installations of services and construction of internal roads are completed.
- The topography of the site is generally flat with slight slope towards the north
- The site is bounded by various stages of Redbank development.

3.2 Sub-Surface Conditions

Sub-surface conditions encountered at the site are detailed in the attached Table A and summarised below.

Fill	Silty Sandy Clay, low plasticity, brown, with gravel Silty Clay, low to high plasticity, brown, with gravel
Natural	Silty CLAY, low to high plasticity, brown, with shale gravel
Bedrock	SHALE, grey, low strength, extremely weathered

3.3 Groundwater Condition

Groundwater was not observed in the test pits during the short time they remained open. It must be noted that fluctuations in the level of groundwater might occur due to variations in rainfall, temperature, and/or other factors not evident during investigation.

4.0 LABORATORY TESTING

During the course of the investigation, three samples were recovered to determine Atterberg limits (AS1289 3.1.1, 3.2.1, 3.3.1, 3.4.1). The results are summarised below and detailed in the attached certificates. It should be noted that recovery of undisturbed U_{50} samples for shrink/swell testing was attempted; however, they could not be recovered due to the hard nature of the subsurface soils at the site.

Table 1 : Summary of Test Results

TP	Depth (m)	Material Description	W_L (%)	W_P (%)	I_P (%)	LS (%)
2	0.3 – 0.6	FILL: Silty Clay, low to medium plasticity, brown, some fine to medium gravel	36	17	19	9.5
5	0.5 – 0.8	(CI) Silty CLAY, medium plasticity, brown	44	19	25	11
9	0.4 – 0.7	(CI) Silty CLAY, low to medium plasticity, brown, some fine to medium gravel	37	18	19	9.5

W_L : Liquid Limit, W_P : Plastic Limit, I_P : Plasticity Index, LS: Linear Shrinkage

5.0 DISCUSSION AND RECOMMENDATIONS

5.1 Assessment of Fill

Geotech Testing Pty Ltd provided geotechnical inspections and testing during bulk earthworks and conducted sufficient compaction control testing during placement of fill. The results of the compaction testing were provided in our report 7747/42-AC-R2 dated 2 February 2021.

5.2 Site Classifications

Based on the above information, site classifications to AS2870-2011 are summarised in Appendix B. It should be noted that lots containing more than 400mm of clay fill (assessed as controlled fill) would originally be classified as Class “P” (i.e. Problematic) in accordance with AS2870-2011. However, based on the results of this investigation, including laboratory testing, the lots are classified as detailed in Appendix B.

It is recommended that footings and floor slabs for the proposed dwellings are founded on the same stratum, below any topsoil or deleterious material, to minimise the potential for differential movement.

The classifications presented in Appendix B of this report are applicable to the lots at the date of conducting the investigation, being 4 December 2020 and have been made on the following assumptions:

- The design and construction requirements of AS2870 must be followed.
- The recommendations for foundation performance and site maintenance set out in Appendix B of AS2870 must be followed.
- The proposed dwellings must be in accordance with AS2870. A detailed geotechnical investigation will be required for other dwellings that would be classified in accordance with the BCA.

It is recommended that house owners are made aware of recommendations in the CSIRO publication, "Guide to Home Owners on Foundation Maintenance and Footing Performance" and AS2870 Appendix H of AS2871-2011.

5.3 Conclusion

The above investigation and fill testing at the site were conducted as per relevant Australian Standards. Based on the investigation and site fill testing results we confirm that the lots at the site are acceptable for residential building construction.

GEOTECH TESTING PTY LTD

APPENDIX A

TABLE A
(Test Pit Summary)

TEST PIT LOCATION PLAN
(Drawing No 7747/51-AA1)

TABLE A

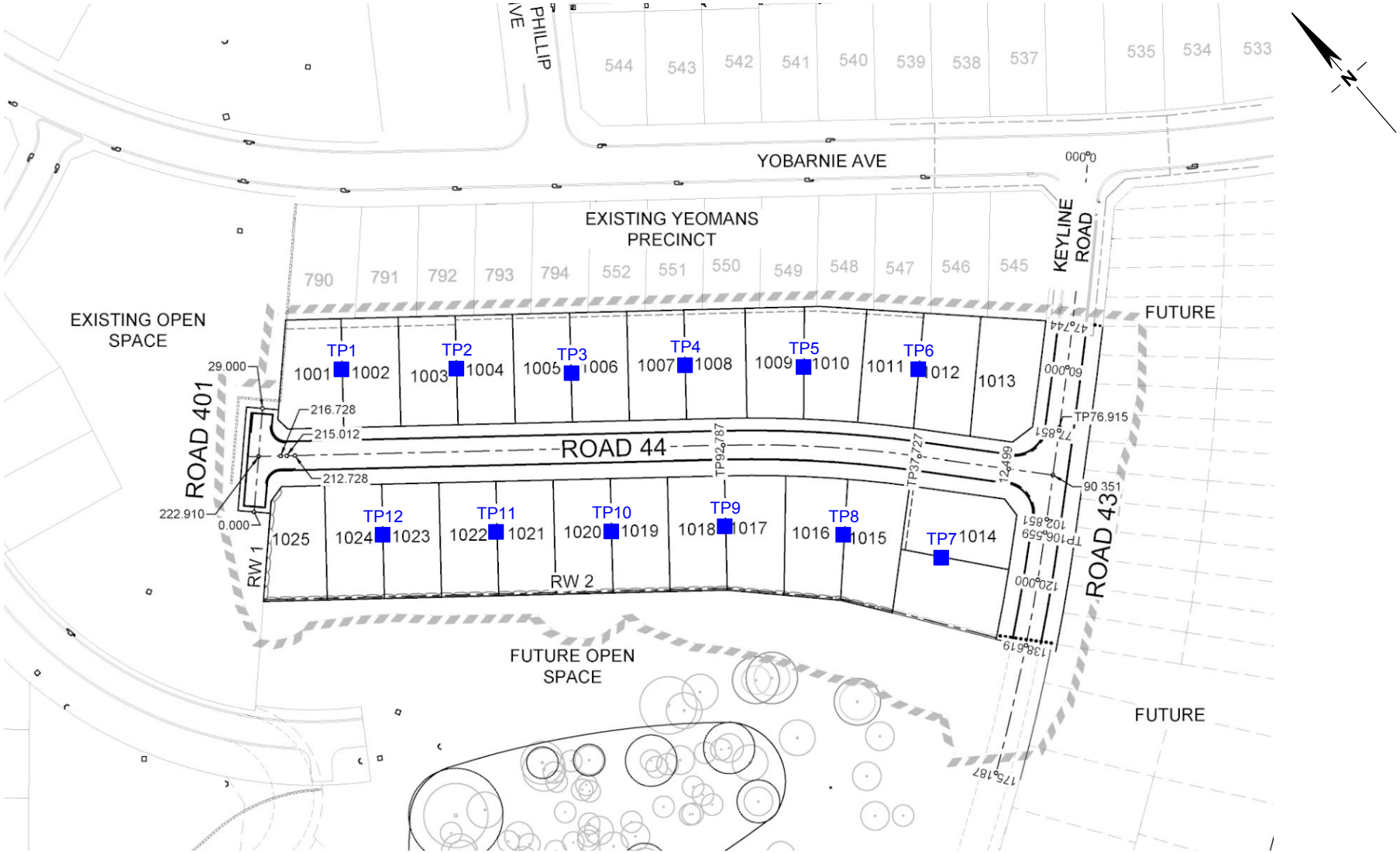
Job No: 7747/51
Our Ref: 7747/51-AA

TEST PIT NUMBER	DEPTH (m)	SAMPLE DEPTH (m)	MATERIAL DESCRIPTION
TP1	0.0 – 0.2		FILL: Silty Sandy Clay, low plasticity, brown, with gravel, M<OMC, well compacted
	0.2 – 1.5		FILL: Silty Clay, medium to high plasticity, brown, with gravel, M<OMC, well compacted
TP2	0.0 – 0.2		FILL: Silty Sandy Clay, low plasticity, brown, with gravel, M<OMC, well compacted
	0.2 – 1.5	0.3 – 0.6 (DS)	FILL: Silty Clay, medium to high plasticity, brown, with gravel, M<OMC, well compacted
TP3	0.0 – 0.2		FILL: Silty Sandy Clay, low plasticity, brown, with gravel, M<OMC, well compacted
	0.2 – 0.5		FILL: Silty Clay, low to medium plasticity, brown, with gravel, M<OMC, well compacted
	0.5 – 1.5		(CL-CI) Silty CLAY, low to medium plasticity, brown, with shale gravel, M<PL, very stiff to stiff
TP4	0.0 – 0.2		FILL: Silty Sandy Clay, low plasticity, brown, with gravel, M<OMC, well compacted
	0.2 – 1.5		(CL-CI) Silty CLAY, low to medium plasticity, brown, with shale gravel, M<PL, very stiff to hard
TP5	0.0 – 0.2		FILL: Silty Sandy Clay, low plasticity, brown, with gravel, M<OMC, well compacted
	0.2 – 1.2	0.5 – 0.8 (DS)	(CI-CH) Silty CLAY, medium to high plasticity, M<PL, very stiff
	1.2 – 1.3		SHALE, grey, low strength, extremely weathered
TP6	0.0 – 0.2		FILL: Silty Sandy Clay, low plasticity, brown, with gravel, M<OMC, well compacted
	0.2 – 1.1		(CL) Silty CLAY, low plasticity, brown, with shale gravel, M<PL, hard
	1.1 – 1.2		SHALE, grey, low strength, extremely weathered

TABLE A

Job No: 7747/51
Our Ref: 7747/51-AA

TEST PIT NUMBER	DEPTH (m)	SAMPLE DEPTH (m)	MATERIAL DESCRIPTION
TP7	0.0 – 0.2		FILL: Silty Sandy Clay, low plasticity, brown, with gravel, M<OMC, well compacted
	0.2 – 1.5		(CL) Silty CLAY, low plasticity, brown, with shale gravel, M<PL, very stiff to hard
TP8	0.0 – 0.2		FILL: Silty Sandy Clay, low plasticity, brown, with gravel, M<OMC, well compacted
	0.2 – 1.2		(CL) Silty CLAY, low plasticity, brown, with shale gravel, M<PL, very stiff to hard
TP9	0.0 – 0.2		FILL: Silty Sandy Clay, low plasticity, brown, with gravel, M<OMC, well compacted
	0.2 – 0.8	0.4 – 0.7 (DS)	(CL) Silty CLAY, low plasticity, brown, with shale gravel, M<PL, hard
	0.8 – 0.9		SHALE, grey, low strength, extremely weathered
TP10	0.0 – 0.2		FILL: Silty Sandy Clay, low plasticity, brown, with gravel
	0.2 – 1.5		(CL-CI) Silty CLAY, low to medium plasticity, brown, with shale gravel, M<PL, very stiff to hard
TP11	0.0 – 0.2		FILL: Silty Sandy Clay, low plasticity, brown, with gravel, M<OMC, well compacted
	0.2 – 1.0		(CL-CI) Silty CLAY, low to medium plasticity, brown, with shale gravel, M<PL, very stiff to hard
	1.0 – 1.5		(CI-CH) Silty CLAY, medium to high plasticity, M<PL, very stiff
TP12	0.0 – 0.2		FILL: Silty Sandy Clay, low plasticity, brown, with gravel, M<OMC, well compacted
	0.2 – 1.5		(CL-CI) Silty CLAY, low to medium plasticity, brown, with shale gravel, M<PL, very stiff to hard



LEGEND

Test Pit

GEOTECH TESTING PTY LTD ®
34 Borec Road
Penrith
NSW 2750
ABN 71 076 676 321
Ph: 02 4722 2744
Fx: 02 4722 2777
www.geotech.com.au
e-mail:info@geotech.com.au

NOTES

1. Site features are indicative and are not to scale.
2. This drawing has been produced using a base plan provided by others to which additional information e.g test pits, borehole locations or notes have been added. Some or all of the plan may not be relevant at the time of producing this drawing

Redbank Communities
Proposed Development
Sandstone Arch
Grose Vale Road, North Richmond

Test Pit Locations

Drawing No: 7747/51-AA1
Job No: 7747/51
Drawn By: MH
Date: 8 December 2020
Checked By: ZA

File No: 7747-51
Layers: 0, AA1

APPENDIX B

SUMMARY OF SITE CLASSIFICATIONS

Job No: 7747/51
Our Ref: 7747/51-AA-R1

TABLE B

Summary of Site Classifications
Redbank Development – Sandstone Arch

Lot No	Classification	Lot No	Classification
1001	Class "M"	1014	Class "M"
1002	Class "M"	1015	Class "M"
1003	Class "M"	1016	Class "M"
1004	Class "M"	1017	Class "M"
1005	Class "M"	1018	Class "M"
1006	Class "M"	1019	Class "M"
1007	Class "M"	1020	Class "M"
1008	Class "M"	1021	Class "M"
1009	Class "M"	1022	Class "M"
1010	Class "M"	1023	Class "M"
1011	Class "M"	1024	Class "M"
1012	Class "M"	1025	Class "M"
1013	Class "M"		

Class “M” : Moderately Reactive (20 to 40mm)
Class “H1” : Highly Reactive (40 to 60mm)

APPENDIX C

LABORATORY TEST RESULTS

GEOTECH TESTING PTY LTD ®
ABN 71 076 676 321

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

SITE CLASSIFICATION
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SANDSTONE ARCH

TEST RESULTS - ATTERBERG LIMITS

Test Procedure AS1289 3.1.1, 3.2.1, 3.3.1, 3.4.1

Job No:	7747/51	Tested By:	BG & BN
Laboratory	Penrith	Checked By:	AK
Date Tested	16/12/2020		

Sample Identification	Test Pit 2	Test Pit 5	Test Pit 9
Laboratory Number	7747/51-1	7747/51-2	7747/51-3
Depth (m)	0.3 - 0.6	0.5 - 0.8	0.4 - 0.7
Test Description			
Liquid Limit (W_L)	36%	44%	37%
Plastic Limit (W_P)	17%	19%	18%
Plastic Index (I_P)	19%	25%	19%
Linear Shrinkage (LS)	9.5%	11.0%	9.5%
Mould Length (mm)	125	127	127
Sample History	Oven Dried Dry Sieved	Oven Dried Dry Sieved	Oven Dried Dry Sieved
Material Description	FILL: Silty Clay, low to medium plasticity, brown, some fine to medium gravel	(CI) Silty CLAY, medium plasticity, tan	(CI) Silty CLAY, low to medium plasticity, brown, some fine to medium gravel

Form No R004 Version 12 - 06/13 - Issued by ER

A Kench 17/12/2020
Approved Signatory

NATA
Accredited for compliance with ISO/IEC 17025 - Testing.

Nata Accreditation Number 2734
Corporate Site Number 2727

34 Borec Road, Penrith NSW 2750
Telephone: (02) 4722 2744

Unit 4, 18-20 Whyalla Place, Prestons NSW 2170
Telephone: (02) 9607 6111

email: info@geotech.com.au www.geotech.com.au