



Job No: 8599/47
Our Ref: 8599/47-AA
7 December 2020

Daracon Contractors Pty Ltd
184 Adderley Street
AUBURN NSW 2144
Email: SimpsonW@daracon.com.au

Attention: Mr S Wong

Dear Sir

re: **Newpark – Precinct 6C, Marsden Park
Site Classification Report**

Please find herewith our site classification report for the proposed dwellings to be located at the above subdivision. A total of 51 lots are covered in this report (Lots 1 to 51).

This report contains information on sub-surface conditions encountered at the site, together with site classification of the proposed lots 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

A handwritten signature in black ink, appearing to read "Ravi-Indran", written over a horizontal line.

RAM RAVI-INDRAN
Geotechnical Engineer

TABLE OF CONTENTS

	page
1.0 INTRODUCTION -----	1
2.0 FIELD WORK-----	1
3.0 SITE CONDITIONS -----	1
3.1 Surface Conditions -----	1
3.2 Sub-Surface Conditions-----	1
4.0 LABORATORY TESTING -----	3
5.0 DISCUSSION & RECOMMENDATIONS -----	3
5.1 Assessment of Fill -----	3
5.2 Site Classification -----	3

APPENDICES

<i>APPENDIX A</i>	<i>Table A - Summary of Test Pits Drawing No 8599/47-AA1 (Test Pit Location Plan)</i>
<i>APPENDIX B</i>	<i>Summary of Site Classifications</i>
<i>APPENDIX C</i>	<i>Laboratory Test Results</i>

8599/47-AA
Newpark Precinct 6C, Marsden Park

1.0 INTRODUCTION

This report provides results of a site classification investigation for the proposed dwellings to be located at Kaluta Avenue, Marsden Park (Newpark Precinct 6C). A total of 51 lots are covered in this report (Lots 1 to 51).

Site classification in accordance with AS2870-2011 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 including buildings classified as Class 1 and Class 10a in the Building Code of Australia (BCA). AS2870 is not suitable for dwellings situated vertically above or below another dwelling. 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 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.

2.0 FIELD WORK

Field work for the investigation was carried out under the full time supervision of a Geotechnical Engineer on 23rd November 2020 and consisted of excavation of twenty-six (26) test pits (TP1 to TP26) to depths of the order of 1.5m using a 5 tonne excavator. Test pits at shallow depths were terminated due to refusal on bedrock. The locations of the test pits are shown on the attached Drawing No 8599/47-AA1 in Appendix A. A summary of the field data obtained is presented in Appendix A.

3.0 SITE CONDITIONS

3.1 Surface Conditions

The site (Precinct 6C) is of rectangular shape and located within the Elara subdivision. The site is bounded by other stages of the newly developed subdivision. At the time of investigation, earthworks for the lots had been completed and the construction of internal roads was mostly completed. The topography of the site is generally flat with a mild slope towards the westerly direction. The ground surface was generally void of vegetation.

3.2 Sub-Surface Conditions

Sub-surface conditions encountered in the test pits are detailed in the attached Table A and summarised below in Table 1.

Table 1: Sub-surface conditions

Test Pit	Termination Depth (m)	Topsoil (m)	Fill (m)	Natural (m)	Bedrock (m)
TP1	1.5	NE	0.0-0.3	0.3-1.5	NE
TP2	1.5	0.0-0.3	NE	0.3-1.5	NE
TP3	1.5	0.0-0.3	NE	0.3-1.5	NE
TP4	1.5	NE	0.0-0.3	0.3-1.4	1.4-1.5
TP5	1.5	NE	0.0-0.2	0.2-0.4	0.4-0.5

8599/47-AA
Newpark Precinct 6C, Marsden Park

Test Pit	Termination Depth (m)	Topsoil (m)	Fill (m)	Natural (m)	Bedrock (m)
TP6	1.5	NE	0.0-0.2	0.2-1.5	NE
TP7	1.5	NE	0.0-0.2	0.2-0.6	0.6-0.7
TP8	0.5	NE	0.0-0.1	0.1-1.5	NE
TP9	1.5	NE	0.0-0.2	0.2-1.5	NE
TP10	0.6	NE	0.0-0.1	0.1-1.5	NE
TP11	0.5	NE	0.0-0.2	0.2-1.5	NE
TP12	0.5	NE	0.0-0.2	0.2-1.5	NE
TP13	0.3	NE	0.0-0.2	0.2-1.5	NE
TP14	0.4	NE	0.0-0.3	0.3-1.5	NE
TP15	0.4	NE	0.0-0.8	0.8-1.5	NE
TP16	0.3	NE	0.0-1.5	NE	NE
TP17	1.1	NE	0.0-0.6	0.6-1.5	NE
TP18	1.5	NE	0.0-1.2	1.2-1.5	NE
TP19	0.8	NE	0.0-1.5	NE	NE
TP20	0.3	NE	0.0-0.6	0.6-1.5	NE
TP21	0.6	NE	0.0-1.5	NE	NE
TP22	0.5	NE	0.8-1.5	NE	NE
TP23	0.8	NE	0.0-1.3	1.3-1.5	NE
TP24	0.3	NE	0.0-1.4	1.4-1.5	NE
TP25	0.6	NE	0.0-1.2	1.2-1.5	NE
TP26	0.5	NE	0.2-0.4	0.4-0.9	0.9-1.0

NE: Not encountered to the termination depth

The test pit investigation revealed the following generalised sub-surface profile:

Fill	Clayey Silt, low plasticity, brown
Natural	Silty CLAY, high plasticity, brown, with cobbles Silty CLAY, high plasticity, mottled brown and orange Silty Gravely CLAY, medium to high plasticity, mottled brown and grey Silty Clayey GRAVEL, fine grain, dense with ironstone fragments
Bedrock	CONGLOMERATE, low to medium strength, distinctly, weathered

Groundwater was not observed in the test pits during the short time that 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.

8599/47-AA
Newpark Precinct 6C, Marsden Park

4.0 LABORATORY TESTING

A total of two undisturbed U₅₀ samples were recovered from the site. These samples were tested to determine shrink/swell index values. The tests were conducted as per relevant Australian Standards and the results are summarised below and detailed in the attached test certificates.

Table 2: Summary of test results

TP	Depth (m)	Material Description	Shrink/Swell Index
TP2	0.3-0.6	(CH) Silty CLAY, high plasticity, mottled brown and orange	2.7%
TP24	0.5-0.8	FILL: Silty Clay, medium plasticity, brown with gravels	2.1%

5.0 DISCUSSION & RECOMMENDATIONS

5.1 Assessment of Fill

Fill was encountered in a number of test pits excavated across the site. It should be noted that site fill testing and supervision was conducted by Geotech Testing Pty Ltd during the fill placement (bulk earthworks), which was carried out between the period July to October 2017. Final Report 8599/3 dated 18 July 2018 was submitted. No additional fill was placed during the development of Stage 6C. Based on our inspection of the fill during the investigation and the above field density tests results, it is our assessment that the fill is "Controlled Fill".

5.2 Site Classification

Based on the field and laboratory results, the site classification to AS2870-2011 "Residential slabs & footings", for the proposed lots are summarised in Appendix B of this report.

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

The above recommendations are applicable to the Lots at the date of conducting the investigation, being 23rd November 2020 and are made on the following assumptions:

1. The construction requirements of AS2870-2011 must be followed.
2. The recommendations for site maintenance set out in Appendix B of AS2870 are followed.
3. The performance expectations set out in Appendix C of AS2870 are acceptable.

It is recommended that house owners are made aware of the recommendations given by the CSIRO publication, "Guide to Home Owners on Foundation Maintenance and Footing Performance".

GEOTECH TESTING PTY LTD

APPENDIX A

**TABLE A
SUMMARY OF TEST PITS**

**DRAWING NO 8599/47-AA1
(*Test Pit Location Plan*)**

TABLE A

Job No: 8599/47
Our Ref: 8599/47-AA

Page 1 of 6

TEST PIT NUMBER	DEPTH (m)	SAMPLE DEPTH (m)	MATERIAL DESCRIPTION
TP1	0.0-0.3		FILL: Clayey Silt, low plasticity, brown, M<OMC, well compacted
	0.3-1.5	0.3-0.4 (DS) 0.8-0.9 (DS)	(CH) Silty CLAY, medium to high plasticity, brown, with cobbles, M<PL, very stiff to hard
TP2	0.0-0.3		TOPSOIL: Clayey Silt, low plasticity, brown, with root fibres
	0.3-1.5	0.3-0.4 (DS) 0.3-0.6 (U ₅₀) 0.8-0.9 (DS)	(CH) Silty CLAY, medium to high plasticity, mottled brown and orange, M<PL, very stiff to hard
TP3	0.0-0.3		TOPSOIL: Clayey Silt, low plasticity, brown, with root fibres
	0.3-0.9	0.3-0.4 (DS)	(CH) Silty CLAY, medium to high plasticity, brown, with cobbles, M<PL, very stiff to hard
	0.9-1.5	0.9-1.0 (DS)	(CH) Silty CLAY, high plasticity, mottled brown and orange, M<PL, very stiff to hard
TP4	0.0-0.3		FILL: Clayey Silt, low plasticity, brown, M<OMC, well compacted
	0.3-1.1	0.3-0.4 (DS)	(CH) Silty CLAY, medium to high plasticity, brown, with cobbles, M<PL, very stiff to hard,
	1.1-1.4	1.1-1.2 (DS)	(CH) Silty CLAY, high plasticity, mottled brown and orange, M<PL, very stiff to hard
	1.4-1.5		SHALE/CONGLOMERATE, grey, low to medium strength, distinctly weathered
	0.2-0.4	0.3-0.4 (DS)	(CI-CH) Silty Gravely CLAY, medium to high plasticity, mottled brown and grey, M<PL, stiff
	0.4-0.5		SHALE/CONGLOMERATE, grey, low to medium strength, distinctly, weathered

TABLE A

Job No: 8599/47
Our Ref: 8599/47-AA

Page 2 of 6

TEST PIT NUMBER	DEPTH (m)	SAMPLE DEPTH (m)	MATERIAL DESCRIPTION
TP6	0.0-0.2		FILL: Clayey Silt, low plasticity, brown, M<OMC, well compacted
	0.2-0.8	0.3-0.4 (DS)	(CH) Silty CLAY, medium to high plasticity, brown, with gravels, M<PL, very stiff to hard
	0.8-1.5	0.8-0.9 (DS)	(CH) Silty CLAY, high plasticity, mottled brown and orange, M<PL, very stiff to hard
TP7	0.0-0.2		FILL: Clayey Silt, low plasticity, brown, M<OMC, well compacted
	0.2-0.5	0.2-0.3 (DS)	(CI-CH) Silty Gravely CLAY, medium to high plasticity, mottled brown and grey, M<PL, stiff
	0.5-0.6	0.5-0.6 (DS)	Silty Clayey GRAVEL, fine grain, dense, with ironstone fragments
	0.6-0.7		SHALE/CONGLOMERATE, grey, low to medium strength, distinctly weathered
TP8	0.0-0.1		FILL: Clayey Silt, low plasticity, brown, M<OMC, well compacted
	0.1-0.3	0.1-0.2 (DS)	(CI-CH) Silty CLAY, medium to high plasticity, brown, with gravels, M<PL, very stiff to hard
	0.3-1.5	0.4-0.5 (DS)	(CI-CH) Silty Gravely CLAY, medium to high plasticity, mottled brown and grey, M<PL, stiff
TP9	0.0-0.2		FILL: Clayey Silt, low plasticity, brown, M<OMC, well compacted
	0.2-0.8	0.3-0.4 (DS)	(CI-CH) Silty CLAY, medium to high plasticity, brown, with gravels, M<PL, very stiff to hard
	0.8-1.5	0.8-0.9 (DS)	Silty Clayey GRAVEL, fine grain, dense with ironstone fragments

TABLE A

Job No: 8599/47
Our Ref: 8599/47-AA

Page 3 of 6

TEST PIT NUMBER	DEPTH (m)	SAMPLE DEPTH (m)	MATERIAL DESCRIPTION
TP10	0.0-0.1		FILL: Clayey Silt, low plasticity, brown, M<OMC, well compacted
	0.1-0.5	0.3-0.4 (DS)	(CI-CH) Silty CLAY, medium to high plasticity, brown, with gravels, M<PL, very stiff to hard
	0.5-1.5	0.8-0.9 (DS)	(CI) Silty CLAY, medium plasticity, red mottled grey, with ironstone fragments, M<PL, very stiff
	0.2-1.1	0.3-0.4 (DS)	(CI-CH) Silty CLAY, medium to high plasticity, brown, with gravels, M<PL, very stiff to hard
	1.1-1.5	1.1-1.2 (DS)	Silty Clayey GRAVEL, fine grain, dense with ironstone fragments
TP12	0.0-0.2		FILL: Clayey Silt, low plasticity, brown, M<OMC, well compacted
	0.2-1.3	0.3-0.4 (DS)	(CI-CH) Silty CLAY, medium to high plasticity, brown, with gravels, M<PL, very stiff to hard
	1.3-1.5	1.3-1.4 (DS)	Silty Clayey GRAVEL, fine grain, dense with ironstone fragments
TP13	0.0-0.2		FILL: Clayey Silt, low plasticity, brown, M<OMC, well compacted
	0.2-1.5	0.3-0.4 (DS)	(CI-CH) Silty CLAY, medium to high plasticity, brown, with gravels, M<PL, very stiff to hard
		0.8-0.9 (DS)	
TP14	0.0-0.3		FILL: Clayey Silt, low plasticity, brown, M<OMC, well compacted
	0.3-1.5	0.3-0.4 (DS)	(CI-CH) Silty CLAY, medium to high plasticity, brown, with gravels, M<PL, very stiff to hard
		0.8-0.9 (DS)	
	0.2-0.8	0.3-0.4 (DS)	FILL: Silty Clay, medium plasticity, brown with gravels, M<OMC, well compacted
	0.8-1.5	0.8-0.9 (DS)	(CI-CH) Silty Sandy CLAY, medium to high plasticity, mottled grey and brown. M<PL, very stiff

TABLE A

Job No: 8599/47
Our Ref: 8599/47-AA

Page 4 of 6

TEST PIT NUMBER	DEPTH (m)	SAMPLE DEPTH (m)	MATERIAL DESCRIPTION
TP16	0.0-0.2		FILL: Clayey Silt, low plasticity, brown, M<OMC, well compacted
	0.2-1.5	0.3-0.4 (DS)	FILL: Silty Clay, medium plasticity, brown with gravels, M<OMC, well compacted
		0.8-0.9 (DS)	
TP17	0.0-0.2		FILL: Clayey Silt, low plasticity, brown, M<OMC, well compacted
	0.2-0.6	0.3-0.4 (DS)	FILL: Silty Clay, medium plasticity, brown, with gravels, M<OMC, well compacted
	0.6-1.5	0.8-0.9 (DS)	(CI-CH) Silty CLAY, medium to high plasticity, brown, with gravels, M<PL, very stiff to hard
TP18	0.0-0.2		FILL: Clayey Silt, low plasticity, brown, M<OMC, well compacted
	0.2-1.2	0.3-0.4 (DS)	FILL: Silty Gravelly Clay, low to medium plasticity, brown, M<OMC, well compacted
	1.3-1.5	0.8-0.9 (DS)	(CI-CH) Silty CLAY, medium to high plasticity, brown, with gravels, M<PL, very stiff to hard
TP19	0.0-0.3		FILL: Clayey Silt, low plasticity, brown, M<OMC, well compacted
	0.3-1.5	0.3-0.4 (DS)	FILL: Silty Clay, high plasticity, brown, with cobbles and gravels, M<OMC, very stiff to hard
		0.8-0.9 (DS)	
	0.2-0.6	0.3-0.4 (DS)	FILL: Silty Clay, high plasticity, brown, with cobbles and gravels, M<OMC, very stiff to hard
	0.6-1.5	0.7-0.8 (DS)	Silty Clayey GRAVEL, fine grain, dense with ironstone fragments

TABLE A

Job No: 8599/47
Our Ref: 8599/47-AA

Page 5 of 6

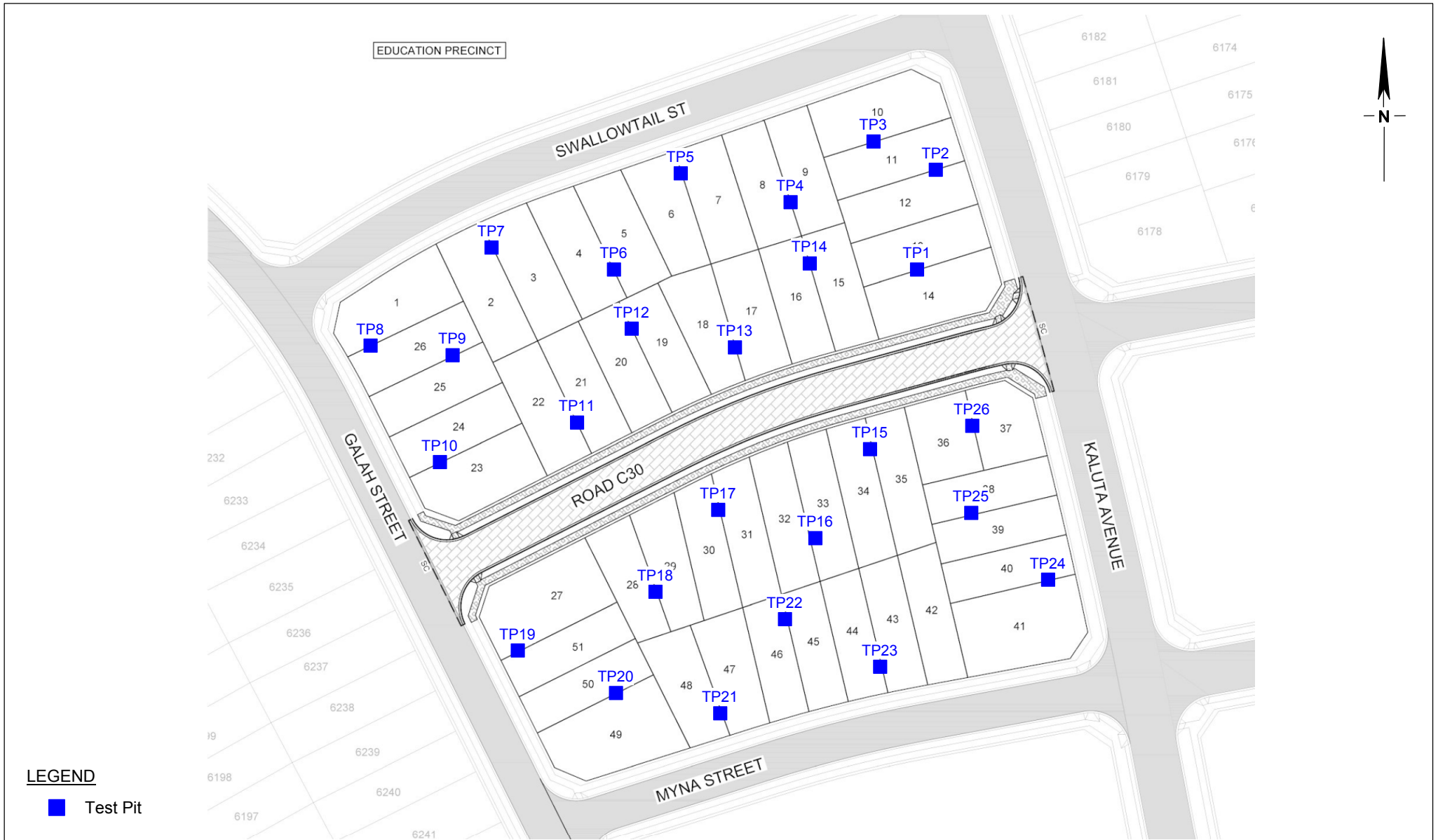
TEST PIT NUMBER	DEPTH (m)	SAMPLE DEPTH (m)	MATERIAL DESCRIPTION
TP21	0.0-0.2		FILL: Clayey Silt, low plasticity, brown, M<OMC, well compacted
	0.2-1.5	0.3-0.4 (DS) 0.8-0.9 (DS)	FILL: Silty Clay, high plasticity, brown, with cobbles and gravels, M<OMC, very stiff to hard
TP22	0.0-0.2		FILL: Clayey Silt, low plasticity, brown, M<OMC, well compacted
	0.2-0.8	0.3-0.4 (DS)	FILL: Silty Clay, high plasticity, brown, with cobbles and gravels, M<OMC, very stiff to hard
	0.8-1.5	0.8-0.9 (DS)	(CI-CH) Silty Gravely CLAY, medium to high plasticity, mottled brown and grey, M<PL, stiff
TP23	0.0-0.3		FILL: Silty Clay, low plasticity, brown, with gravels, M<OMC, well compacted
	0.3-1.3	0.3-0.4 (DS) 0.8-0.9 (DS)	FILL: Silty Clay, medium plasticity, brown with gravels, M<OMC, well compacted
	1.3-1.5		(CI-CH) Silty CLAY, medium to high plasticity, brown, with gravels, M<PL, very stiff to hard
TP24	0.0-0.2		FILL: Clayey Silt, low plasticity, brown, M<OMC, well compacted
	0.2-1.4	0.3-0.4 (DS) 0.5-0.8 (U ₅₀) 0.8-0.9 (DS)	FILL: Silty Clay, medium plasticity, brown with gravels, M<OMC, well compacted
	1.4-1.5		(CI-CH) Silty CLAY, medium to high plasticity, brown, with gravels, M<PL, very stiff to hard

TABLE A

Job No: 8599/47
Our Ref: 8599/47-AA

Page 6 of 6

TEST PIT NUMBER	DEPTH (m)	SAMPLE DEPTH (m)	MATERIAL DESCRIPTION
TP25	0.0-0.2		FILL: Clayey Silt, low plasticity, brown, M<OMC, well compacted
	0.2-1.2	0.3-0.4 (DS)	FILL: Silty Clay, medium plasticity, brown with gravels, M<OMC, well compacted
		0.8-0.9 (DS)	
	1.2-1.5		(CI-CH) Silty CLAY, medium to high plasticity, brown, with gravels, M<PL, very stiff to hard
TP26	0.0-0.2		FILL: Clayey Silt, low plasticity, brown, M<OMC, well compacted
	0.2-0.4	0.3-0.4 (DS)	FILL: Silty Clay, medium plasticity, brown, with gravels, M<OMC, well compacted
	0.4-0.9	0.5-0.6 (DS)	(CI-CH) Silty CLAY, medium to high plasticity, brown, with gravels, M<PL, very stiff to hard
	0.9-1.0		SILTSTONE: low strength, grey, distinctly weathered



LEGEND

■ Test Pit



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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

Daracon Contractors Pty Ltd
Residential Development
Newpark Precinct 6C
Marsden Park

Test Pit Locations

Drawing No: 8599/47-AA1
Job No: 8599/47
Drawn By: MH
Date: 3 December 2020
Checked By: RR

File No: 8599-47
Layers: 0, AA1

APPENDIX B

SUMMARY OF SITE CLASSIFICATIONS

Job No: 8599/47
 Our Ref: 8599/47-AA

TABLE B

SUMMARY OF SITE CLASSIFICATIONS

Newpark Precinct 6C, Marsden Park

Lot	Site Classification	Lot	Site Classification
1	M	27	M
2	M	28	H1
3	M	29	H1
4	M	30	H1
5	M	31	H1
6	M	32	M
7	M	33	M
8	M	34	M
9	M	35	M
10	M	36	M
11	M	37	M
12	M	38	M
13	M	39	M
14	M	40	M
15	M	41	M
16	M	42	M
17	M	43	H1
18	M	44	H1
19	M	45	M
20	M	46	M
21	M	47	M
22	M	48	M
23	M	49	M
24	M	50	M
25	M	51	M
26	M		

M: Moderately Reactive, Free Surface Movement: 20-40mm
 H1: Highly Reactive, Free Surface Movement: 40-60mm

APPENDIX C

LABORATORY TEST RESULTS

DARACON CONTRACTORS PTY LTD
184 ADDERLEY STREET WEST
AUBURN NSW 2144

Job No: 8599/47
Tested By: BN
Checked By: AK
Date Tested: 24/11/2020
Laboratory: Penrith

SITE CLASSIFICATION
RESIDENTIAL DEVELOPMENT WOORONG PARK MARSDEN PARK PRECINCT 6C NEWPARK

TEST RESULTS - SHRINK / SWELL INDEX

Page 1 of 1

Test Procedure: AS 1289 7.1.1				
Sample Identification	Test Pit 2	Test Pit 24		
Depth (m)	0.3 - 0.6	0.5 - 0.8		
Laboratory Number	8599/47-1	8599/47-2		
Test Description				
Moisture Content				
Initial %	24.7	19.4		
Final %	25.1	25.1		
Swell %	0.4	1.4		
Shrinkage %	4.7	3.1		
Shrink/Swell Index %/pF	2.7	2.1		
Material Description	(CI-CH) Silty CLAY, medium to high plasticity, red-brown	FILL: Silty gravelly Clay, medium plasticity, brown		

Form No R007 Version 12 06/13



NATA Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with
ISO/IEC 17025 - Testing.

A Kench 30/11/2020
Approved Signatory

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