



Job No: 8574/7  
Our Ref: 8574/7-AA  
13 December 2017

J K Williams Contracting Pty Ltd  
P O Box 308  
PENRITH NSW 2750  
Email: [SHartog@jkw.com.au](mailto:SHartog@jkw.com.au)

Attention: Mr S Hartog

Dear Sir

re: **Proposed Caddens Hill Residential Subdivision (Stage 2)**  
**O'Connell Lane, Caddens**  
**Site Classification Report**

Please find herewith our site classification report for the proposed dwellings at the above development (Stage 2). A total of 69 lots (Lot 201 to Lot 269) are covered in this report.

This report contains information on surface and sub-surface conditions encountered at the site, together with site classification of the proposed lots in accordance with 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 be "Ziauddin Ahmed", written over a horizontal line.

ZIAUDDIN AHMED  
Associate Geotechnical Engineer

**TABLE OF CONTENTS**

	<b>page</b>
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 TESING-----	2
5.0 DISCUSSION & RECOMMENDATIONS -----	2
5.1 Assessment of Fill -----	2
5.2 Site Classification -----	2

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**APPENDICES**

<i>APPENDIX A</i>	<i>Table A - Summary of Test Pits Drawing No 8574/7-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>

8574/7-AA  
Stage 2 - O'Connell Lane, Caddens

## 1.0 INTRODUCTION

This report provides the results of a site classification investigation for the proposed dwellings to be located at Caddens Hill Residential Development – Stage 2.

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 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

The field work for the investigation was carried out on 20 and 21 November 2017, under the full time supervision of a Geotechnical Engineer from this company. The work consisted of excavation of twenty-eight (28) test pits (TP1 to TP28) to depths ranging from 1.2m to 1.5m, using a rubber-tyred backhoe. The locations of the test pits are shown on the attached Drawing No 8574/7-AA1 in Appendix A. A summary of the field data obtained is presented in Appendix A.

## 3.0 SITE CONDITIONS

### 3.1 Surface Conditions

Stage 2 development is bound by Stage 3 to the north, Caddens Road to the South, Rural properties and Stage 4 to the west and the proposed Oval to the east. At the time of the investigation, the internal roads were constructed and services installed. Site surface levels gently fall towards the east/south-east. The site was not covered with any vegetation and there were no trees planted.

### 3.2 Sub-Surface Conditions

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

<b>Topsoil</b>	Silty Clay, low to medium plasticity, brown
<b>Fill</b>	Silty Clay, medium plasticity, brown, with gravel
<b>Natural</b>	Silty CLAY, medium to high plasticity, orange-brown
<b>Bedrock</b>	SHALE (TP1 and TP2)

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.

8574/7-AA  
Stage 2 - O'Connell Lane, Caddens

#### 4.0 LABORATORY TESING

Six (6) soil samples were recovered during the field work of the investigation and tested for shrink/swell index tests (AS1289 7.1.1). The purpose of the test was to assess soil reactivity to variation in moisture content. The tests results are detailed in the attached certificate and summarised below:

TP	Sample Depth (m)	Summary Description	Shrink/Swell Index % <sub>pF</sub>
1	0.3 – 0.7	(CL) Silty CLAY, low plasticity, brown	0.7
10	0.4 – 0.8	FILL : Silty Clay, low plasticity, brown, trace of fine to medium gravel	1.6
13	0.4 – 0.8	FILL : Silty Clay, low plasticity, brown, trace of fine to medium gravel	1.7
17	0.3 – 0.7	FILL : Silty Clay, low plasticity, brown, trace of fine to medium gravel	1.4
22	0.4 – 0.8	FILL : Silty Clay, low plasticity, brown, trace of fine to medium gravel	1.1
26	0.4 – 0.8	(CL) Silty CLAY, low plasticity, brown, trace of fine to medium gravel	0.9

#### 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 a number of field density tests were conducted by Geotech Testing Pty Ltd during the fill placement and the results are provided in certificates 8574/5 dated 26 July and 8 September 2017. Based on our inspection of the fill encountered in the test pits and the above compaction tests results it is our assessment that the fill encountered at Stage 2 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. Footings supported on compacted clay fill may be designed for a safe bearing pressure of 100kPa, subject to insitu testing of the exposed footings utilising the Dynamic Cone Penetrometer (DCP) test.

The above recommendations are applicable to the Lots at the date of conducting the investigation, being 20 and 21 November 2017 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



J K Williams Contracting Pty Lt  
ZA.sf/13.12.2017

## **APPENDIX A**

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### **TABLE A SUMMARY OF TEST PITS**

**DRAWING NO 8574/7-AA1  
(*Test Pit Location Plan*)**

**TABLE A**

Job No: 8574/7  
Our Ref: 8574/7-AA (Stage 2)

Page 1 of 4

TEST PIT NUMBER	DEPTH (m)	SAMPLE DEPTH (m)	MATERIAL DESCRIPTION
TP1	0-0.3	0.3-0.7	TOPSOIL/SLOPEWASH: Silty Clay, low to medium plasticity, brown
	0.3-1.2		(CL) Silty CLAY, low plasticity, orange-brown, M <sub>≤</sub> PL, VSt
	1.2		Refusal on bedrock (shale)
TP2	0-0.3		TOPSOIL/SLOPEWASH: Silty Clay, low to medium plasticity, brown
	0.3-1.2		(CI-CH) Silty CLAY, medium to high plasticity, orange-brown, M <sub>≤</sub> PL, VSt
	1.2		Refusal on bedrock (shale)
TP3	0-0.3		TOPSOIL/SLOPEWASH: Silty Clay, low to medium plasticity, brown
	0.3-1.5		(CI-CH) Silty CLAY, medium to high plasticity, orange-brown, M <sub>≤</sub> PL, VSt
TP4	0-0.8		FILL: Silty Clay, medium plasticity, brown, with gravel, well compacted
	0.8-1.5		(CI-CH) Silty CLAY, medium to high plasticity, orange-brown, M <sub>≤</sub> PL, VSt
TP5	0-0.8		FILL: Silty Clay, medium plasticity, brown, with gravel, well compacted
	0.8-1.5		(CI-CH) Silty CLAY, medium to high plasticity, orange-brown, M <sub>≤</sub> PL, VSt
TP6	0-1.2		FILL: Silty Clay, medium plasticity, brown, with gravel, well compacted
	1.2-1.5		(CI-CH) Silty CLAY, medium to high plasticity, orange-brown, M <sub>≤</sub> PL, VSt
TP7	0-1.3		FILL: Silty Clay, medium plasticity, brown, with gravel, well compacted
	1.3-1.5		(CI-CH) Silty CLAY, medium to high plasticity, orange-brown, M <sub>≤</sub> PL, VSt

**TABLE A**

Job No: 8574/7  
Our Ref: 8574/7-AA (Stage 2)

Page 2 of 4

TEST PIT NUMBER	DEPTH (m)	SAMPLE DEPTH (m)	MATERIAL DESCRIPTION
TP8	0-1.3		FILL: Silty Clay, medium plasticity, brown, with gravel, well compacted
	1.3-1.5		(CI-CH) Silty CLAY, medium to high plasticity, orange-brown, M <sub>s</sub> PL, VSt
TP9	0-0.5		FILL: Silty Clay, medium plasticity, brown, with gravel, well compacted
	0.5-1.5		(CI-CH) Silty CLAY, medium to high plasticity, orange-brown, M <sub>s</sub> PL, VSt
TP10	0-1.1	0.4-0.8	FILL: Silty Clay, low plasticity, brown, with gravel, well compacted
	1.1-1.5		(CI-CH) Silty CLAY, medium to high plasticity, orange-brown, M <sub>s</sub> PL, VSt
TP11	0-1.2		FILL: Silty Clay, medium plasticity, brown, with gravel, well compacted
	1.2-1.5		(CI-CH) Silty CLAY, medium to high plasticity, orange-brown, M <sub>s</sub> PL, VSt
TP12	0-1.3		FILL: Silty Clay, medium plasticity, brown, with gravel, well compacted
	1.3-1.5		(CI-CH) Silty CLAY, medium to high plasticity, orange-brown, M <sub>s</sub> PL, VSt
TP13	0-0.3		FILL: Silty Clay, low plasticity, brown, with gravel, well compacted
	0.3-1.5		(CI-CH) Silty CLAY, medium to high plasticity, orange-brown, M <sub>s</sub> PL, VSt
TP14	0-0.5	0.4-0.8	FILL: Silty Clay, medium plasticity, brown, with gravel, well compacted
	0.5-1.5		(CI-CH) Silty CLAY, medium to high plasticity, orange-brown, M <sub>s</sub> PL, VSt
TP15	0-1.0		FILL: Silty Clay, medium plasticity, brown, with gravel, well compacted
	1.0-1.5		(CI-CH) Silty CLAY, medium to high plasticity, orange-brown, M <sub>s</sub> PL, VSt

**TABLE A**

Job No: 8574/7  
Our Ref: 8574/7-AA (Stage 2)

Page 3 of 4

TEST PIT NUMBER	DEPTH (m)	SAMPLE DEPTH (m)	MATERIAL DESCRIPTION
TP16	0-0.3	0.3-0.7	FILL: Silty Clay, medium plasticity, brown, with gravel, well compacted
	0.3-1.5		(CI-CH) Silty CLAY, medium to high plasticity, orange-brown, M <sub>s</sub> PL, VSt
TP17	0-0.3		FILL: Silty Clay, low plasticity, brown, with gravel, well compacted
	0.3-1.5		(CI-CH) Silty CLAY, medium to high plasticity, orange-brown, M <sub>s</sub> PL, VSt
TP18	0-0.4	0.4-0.8	FILL: Silty Clay, medium plasticity, brown, with gravel, well compacted
	0.4-1.5		(CI-CH) Silty CLAY, medium to high plasticity, orange-brown, M <sub>s</sub> PL, VSt
TP19	0-0.3		FILL: Silty Clay, medium plasticity, brown, with gravel, well compacted
	0.3-1.5		(CI-CH) Silty CLAY, medium to high plasticity, orange-brown, M <sub>s</sub> PL, VSt
TP20	0-0.3	0.4-0.8	FILL: Silty Clay, medium plasticity, brown, with gravel, well compacted
	0.3-1.5		(CI-CH) Silty CLAY, medium to high plasticity, orange-brown, M <sub>s</sub> PL, VSt
TP21	0-0.3		FILL: Silty Clay, medium plasticity, brown, with gravel, well compacted
	0.3-1.5		(CI-CH) Silty CLAY, medium to high plasticity, orange-brown, M <sub>s</sub> PL, VSt
TP22	0-1.1	0.4-0.8	FILL: Silty Clay, low plasticity, brown, with gravel, well compacted
	1.1-1.5		(CI-CH) Silty CLAY, medium to high plasticity, orange-brown, M <sub>s</sub> PL, VSt
TP23	0-0.3		FILL: Silty Clay, medium plasticity, brown, with gravel, well compacted
	0.3-1.5		(CI-CH) Silty CLAY, medium to high plasticity, orange-brown, M <sub>s</sub> PL, VSt

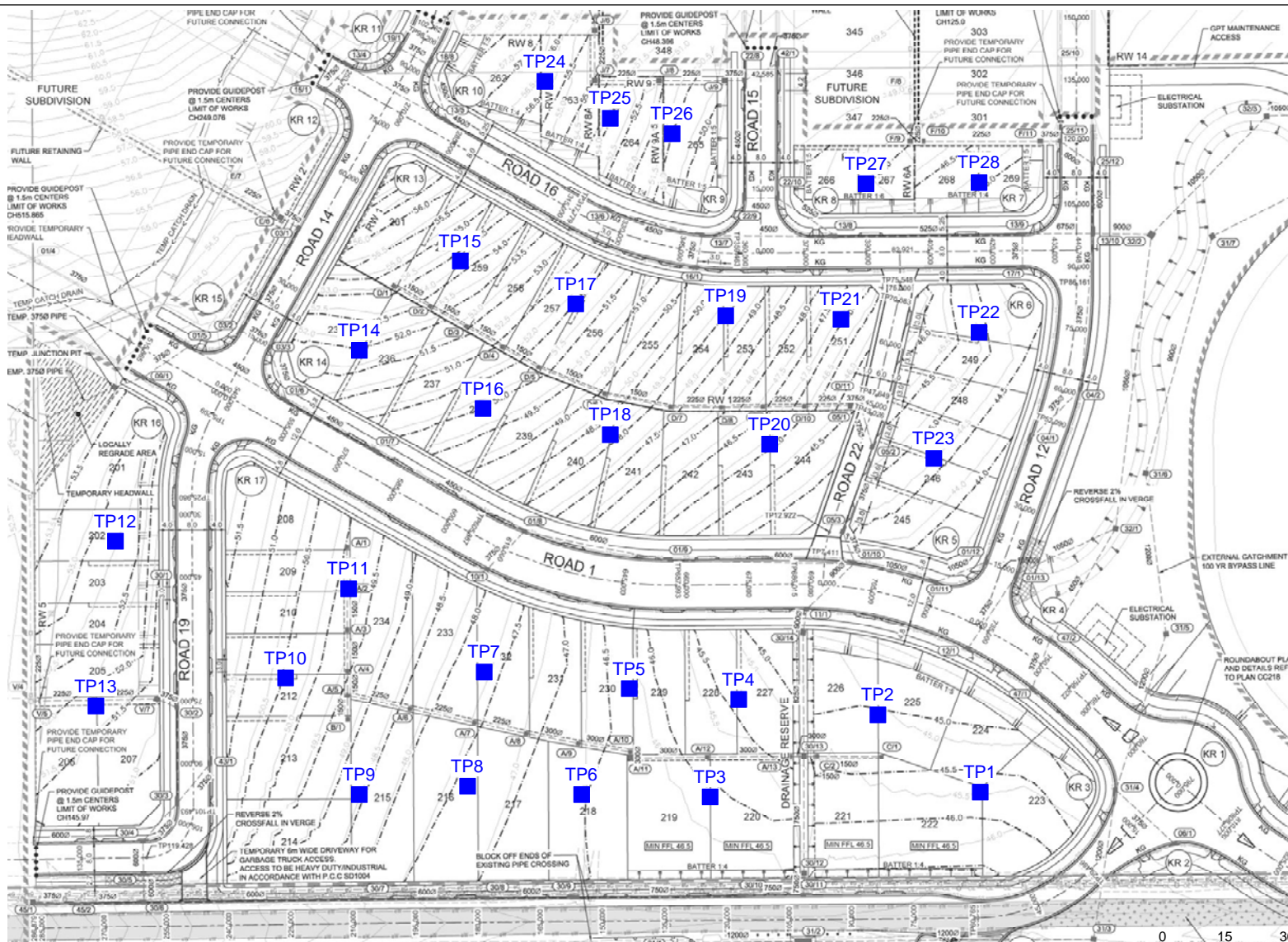


**TABLE A**

Job No: 8574/7  
Our Ref: 8574/7-AA (Stage 2)

Page 4 of 4

TEST PIT NUMBER	DEPTH (m)	SAMPLE DEPTH (m)	MATERIAL DESCRIPTION
TP24	0-1.5		FILL: Silty Clay, medium plasticity, brown, with gravel, well compacted
TP25	0-0.8		FILL: Silty Clay, medium plasticity, brown, with gravel, well compacted
	0.8-1.5		(CI-CH) Silty CLAY, medium to high plasticity, orange-brown, M <sub>s</sub> PL, VSt
TP26	0-0.2		FILL: Silty Clay, medium plasticity, brown, with gravel, well compacted
	0.2-1.5	0.4-0.8	(CL) Silty CLAY, low plasticity, orange-brown, M <sub>s</sub> PL, VSt
TP27	0-1.5		FILL: Silty Clay, medium plasticity, brown, with gravel, well compacted
TP28	0-0.9	0.4-0.8	FILL: Silty Clay, medium plasticity, brown, with gravel, well compacted
	0.9-1.5		(CI-CH) Silty CLAY, medium to high plasticity, orange-brown, M <sub>s</sub> PL, VSt



# LEGEND

■ Test Pit

0 15 30 45 60 75m

Scale 1:1500



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## NOTES

- Site features are indicative and are not to scale.
- 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

J K Williams Contracting Pty Ltd  
Proposed Caddens Hill Residential Subdivision  
Stage 2  
O'Connell Lane, Caddens

## Test Pit Locations

Drawing No: 8574/7-AA1  
Job No: 8574/7  
Drawn By: MH  
Date: 23 November 2017  
Checked By: ZA

File No: 8574-7  
Layers: 0, AA1

## **APPENDIX B**

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### **SUMMARY OF SITE CLASSIFICATIONS**

Job No: 8574/7  
Our Ref: 8574/7-AA

**TABLE B**

**SUMMARY OF SITE CLASSIFICATIONS**

**CADDENS HILL RESIDENTIAL DEVELOPMENT  
STAGE 2  
O'Connell Lane, Caddens**

Lot	Site Classification	Lot	Site Classification
201	Class "M"	236	Class "M"
202	Class "M"	237	Class "M"
203	Class "M"	238	Class "M"
204	Class "M"	239	Class "M"
205	Class "M"	240	Class "M"
206	Class "M"	241	Class "M"
207	Class "M"	242	Class "M"
208	Class "M"	243	Class "M"
209	Class "M"	244	Class "M"
210	Class "M"	245	Class "M"
211	Class "M"	246	Class "M"
212	Class "M"	247	Class "M"
213	Class "M"	248	Class "M"
214	Class "M"	249	Class "M"
215	Class "M"	250	Class "M"
216	Class "M"	251	Class "M"
217	Class "M"	252	Class "M"
218	Class "M"	253	Class "M"
219	Class "M"	254	Class "M"
220	Class "M"	255	Class "M"
221	Class "M"	256	Class "M"
222	Class "M"	257	Class "M"
223	Class "M"	258	Class "M"
224	Class "M"	259	Class "M"
225	Class "M"	260	Class "M"
226	Class "M"	261	Class "M"
227	Class "M"	262	Class "H1"
228	Class "M"	263	Class "H1"
229	Class "M"	264	Class "M"
230	Class "M"	265	Class "M"
231	Class "M"	266	Class "H1"
232	Class "M"	267	Class "H1"
233	Class "M"	268	Class "M"
234	Class "M"	269	Class "M"
235	Class "M"		
M: Moderately Reactive, Free Surface Movement: 20-40mm H1: Highly Reactive, Free Surface Movement: 40-60mm			

## **APPENDIX C**

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### **LABORATORY TEST RESULTS**

J K WILLIAMS CONTRACTING PTY LTD  
PO BOX 308  
PENRITH NSW 2750

Job No: 8574/7  
Tested By: JM  
Checked By: AK  
Date Tested: 23/11/2017  
Laboratory: Penrith

SITE CLASSIFICATION - STAGE 2  
PROPOSED CADDENS HILL RESIDENTIAL SUBDIVISION - O'CONNELL LANE, STAGE 2, CADDENS

**TEST RESULTS - SHRINK / SWELL INDEX**

Page 1 of 2

Test Procedure: AS 1289 7.1.1				
Sample Identification	Test Pit 1	Test Pit 10	Test Pit 13	Test Pit 17
Depth (m)	0.3 - 0.7	0.4 - 0.8	0.4 - 0.8	0.3 - 0.7
Laboratory Number	8574/7-1	8574/7-3	8574/7-4	8574/7-5
Test Description				
Moisture Content				
Initial %	13.7	18.2	16.9	14.1
Final %	17.8	19.2	20.7	17.0
Swell %	Nil	Nil	2.7	1.2
Shrinkage %	1.2	2.8	1.7	1.8
Shrink/Swell Index % <sub>pF</sub>	0.7	1.6	1.7	1.4
Material Description	(CL) Silty CLAY, low plasticity, brown	FILL: Silty Clay, low plasticity, brown, trace of fine to medium gravel	FILL: Silty Clay, low plasticity, brown, trace of fine to medium gravel	FILL: Silty Clay, low plasticity, brown, trace of fine to medium gravel

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 23/11/2017  
Approved Signatory

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J K WILLIAMS CONTRACTING PTY LTD  
PO BOX 308  
PENRITH NSW 2750

Job No: 8574/7  
Tested By: JM  
Checked By: AK  
Date Tested: 23/11/2017  
Laboratory: Penrith

SITE CLASSIFICATION - STAGE 2  
PROPOSED CADDENS HILL RESIDENTIAL SUBDIVISION - O'CONNELL LANE, STAGE 2, CADDENS

**TEST RESULTS - SHRINK / SWELL INDEX**

Page 2 of 2

Test Procedure: AS 1289 7.1.1				
Sample Identification	Test Pit 22	test Pit 26		
Depth (m)	0.4 - 0.8	0.4 - 0.8		
Laboratory Number	8574/7-6	8574/7-7		
Test Description				
Moisture Content				
Initial %	16.5	11.9		
Final %	18.6	18.5		
Swell %	0.4	Nil		
Shrinkage %	1.8	1.6		
Shrink/Swell Index %/pF	1.1	0.9		
Material Description	FILL: Silty Clay, low plasticity, brown, trace of fine to medium gravel	(CL) Silty CLAY, low plasticity, brown, trace of fine to medium gravel		

Form No R007 Version 12 06/13



NATA Accreditation Number 2734  
Corporate Site Number 2727

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SITE CLASSIFICATION - STAGE 2  
PROPOSED CADDENS HILL RESIDENTIAL SUBDIVISION - O'CONNELL LANE, STAGE 2, CADDENS

**TEST RESULTS - ATTERBERG LIMITS**  
**Test Procedure AS1289 3.1.1, 3.2.1, 3.3.1, 3.4.1**

Page 1 of 1

Job No:	8574/7	Tested By:	BG
Laboratory	Penrith	Checked By:	AK
Date Tested	30/11/2017		
Sample Identification	Test Pit 5		
Laboratory Number	8574/7-2		
Depth (m)	0.3 - 0.7		
<b>Test Description</b>			
Liquid Limit ( $W_L$ )	34%		
Plastic Limit ( $W_P$ )	14%		
Plastic Index ( $I_P$ )	20%		
Linear Shrinkage (LS)	11.0%		
Mould Length (mm)	125		
<b>Sample History</b>	Oven Dried Dry Sieved		
<b>Material Description</b>	FILL: Silty Clay, low plasticity, brown		

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



Nata Accreditation Number 2734  
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

A Kench

01/12/2017

Approved Signatory

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