

11 August 2017

McCloy Group Suite 1, Level 3, 426 King Street NEWCASTLE WEST NSW 2309

Attention Harry Thomson

Dear Harry,

RE: PROPOSED SUBDIVISION – BILLY'S LOOKOUT – STAGE 5 FISHERMANS DRIVE, TERALBA SITE CLASSIFICATION (LOTS 501 TO 535)

1.0 INTRODUCTION

Qualtest Laboratory NSW Pty Ltd (Qualtest) is pleased to present this site classification report on behalf of McCloy Group (McCloy), for Stage 5 of the proposed residential subdivision of Billy's Lookout, to be located at Fishermans Drive, Teralba.

Based on the brief and drawing provided by the client, Stage 5 is understood to comprise of 35 residential allotments (Lots 501 to 535).

The report provides site classification with respect to reactive soils, in accordance with the requirements of AS2870-2011 '*Residential Slabs and Footings*', for Stage 5 (Lots 501 to 535), following completion of site regrade works.

2.0 DESKTOP STUDY

The scope of work has included a review of the following reports completed by Qualtest.

- Site Classification report, 'Proposed Subdivision, Billy's Lookout Stage 5, Fishermans Drive, Teralba, (Report Reference: NEW15P-0070A-AB, dated 16 June 2016).
- Level 1 Site Regrade Assessment report, 'Proposed Subdivision, Billy's Lookout Stage 5, Fishermans Drive, Teralba, (Report Reference: NEW16P-0179-AA, dated 21 April 2017).

This report includes a summary of selected results from the previous Site Classification report. Reference should be made to the reports outlined above for full details of site description, subsurface conditions, field work conducted, engineering logs of test pits, laboratory testing results, site supervision and density testing carried out.

3.0 FIELD WORK

Following the completion of site regrade works, additional field work investigations were carried out on 28 July 2017 to assess the depth, composition and properties of the controlled fill material placed on lots during site regrade works, and comprised of:

• Excavation of eight test pits (TP5-1 to TP5-8) using a backhoe and 5 tonne tracked excavator with 0.3m wide toothed buckets, to depths of between 1.40m to 1.90m;

- Undisturbed samples (U50 tubes) were taken for subsequent laboratory testing;
- Test pits were backfilled with the excavation spoil and compacted using the backhoe / excavator bucket and tracks.

Investigations were carried out by a Senior Geotechnical Engineer from Qualtest who located the test pits, carried out the testing and sampling, produced field logs of the test pits, and made observations of the site surface conditions:

Approximate borehole locations are shown on the attached Figure AH1, which also includes test pit locations from the previous investigations conducted on site.

Engineering logs of the test pits are presented in Appendix A.

4.0 SITE DESCRIPTION

4.1 Site Regrade Works

Site re-grading works were conducted on Lots 502 to 504, 507, 514 to 521 and 523 to 534 (as shown on Figure AH1), between the dates of 23 November 2016 and 13 March 2017.

Prior to filling, re-grade areas were stripped of all topsoil and unsuitable material to expose suitable natural residual foundation profile. Re-grade works then consisted of filling with approved site fill to finish design levels.

Filling was performed using site material won from excavations cut from around the site. The fill material could generally be described as mixtures of Gravelly Sandy CLAY, Silty SAND and Clayey SAND, of medium plasticity, fine to coarse grained sand, and with some fine to coarse grained gravel inclusions.

As the geotechnical testing authority engaged for the project, we state that the filling performed for the regrade areas (Lots 502 to 504, 507, 514 to 521 and 523 to 534), was carried out to Level 1 criteria as defined in Clause 8.2 – Section 8, of AS3798-2007, 'Guidelines on Earthworks for Commercial and Residential Developments'.

4.2 Surface Conditions

Selected photographs of the site taken on the day of the site investigations are shown below.



Photograph 1: Facing south from Fishermans Drive at Bowline Street towards Lots 507 to 510.



Photograph 2: Facing southwest from Fishermans Drive towards Bowline Street and Lots 502 to 504.



Photograph 3: Facing east from Lot 719, near south-western boundary of Lot 513.



Photograph 4: Facing southeast from Lot 719, near south-western boundary of Lot 513.



Photograph 5: Facing southwest from Fishermans Drive towards Lot 534.



Photograph 6: Facing west from Fishermans Drive towards Lot 522.

4.3 Subsurface Conditions

Reference should be made to the previous reports outlined in Section 2.0 for full details of site description, subsurface conditions, field work conducted, engineering logs of test pits, laboratory testing results, site supervision and density testing carried out.

Reference to the 1:100,000 Newcastle Coalfield Regional Geology Sheet indicates the site to be underlain by the Clifton Subgroup of the Narrabeen Group, and the Moon Island Beach Subgroup of the Newcastle Coal Measures, which are characterised by Conglomerate, Sandstone, Siltstone, Claystone, Tuff and Coal rock types.

Table 1 presents a summary of the typical soil types encountered on site during the field investigations, divided into representative geotechnical units. The units adopted have typically remained consistent with those previously provided, with the addition of Controlled Fill.

Table 2 contains a summary of the distribution of the above geotechnical units at the test pit locations.

No groundwater levels, water inflows were encountered in the test pits during the limited time that they remained open on the day of the field investigations. Moist to wet topsoil was encountered in TP5-1, TP5-2 and TP5-5.

It should be noted that groundwater conditions can vary due to rainfall and other influences including regional groundwater flow, temperature, permeability, recharge areas, surface condition, and subsoil drainage.

Unit	Soil Type	Description
1A	FILL – TOPSOIL & MULCH	Generally about 50mm of mulch, overlying Clayey SAND - fine to coarse grained, grey, fines of low to medium plasticity, with some fine to medium grained gravel and organics.
1B	CONTROLLED FILL	Sandy CLAY – medium and medium to high plasticity, pale brown to orange, brown to red and pale grey, fine to coarse grained sand, with some fine to coarse grained gravel in places. Borderline Clayey SAND or Gravelly Clayey SAND in places. Small pockets of Clayey SAND in places. Typically, of very stiff consistency. In TP5-3 a layer of Silty Gravelly SAND - fine to coarse grained, pale brown with pale grey to white, fine to coarse grained gravel, fines of low plasticity, with some cobble sized rock fragments.
2	TOPSOIL	Silty SAND - fine to coarse grained, brown to grey, fines of low plasticity, root affected. Silty Clayey SAND in places.
3	SLOPEWASH / COLLUVIUM	Silty SAND, SAND - fine to medium grained, pale brown / grey. Clayey SAND - fine to coarse grained, dark brown to grey, fines of medium plasticity.
4	RESIDUAL SOIL	Sandy CLAY, medium and medium to high plasticity, variable colours such as pale brown, orange to pale brown, pale grey, grey, and brown to red, sand fine to coarse grained or fine to medium grained. Typically of very stiff to hard consistency. CLAY and Clayey SAND in places. Some tree roots in places
5	EXTREMELY WEATHERED (XW) ROCK	Extremely Weathered SILTSTONE and SANDSTONE, excavating as Clayey Sandy GRAVEL - fine to coarse grained, angular / sub- angular, grey to pale grey with pale brown, fines of low to medium plasticity. Some pockets of very stiff to hard CLAY and Highly Weathered SILTSTONE in places. Breaks down into Clayey SAND in places.
6	HIGHLY WEATHERED (HW) ROCK	SANDSTONE, fine to medium or fine to coarse grained, variable colours such as pale grey to white, grey, orange, pale brown, variable estimated strength ranging from very low to very high. Pebbly SANDSTONE and SILTSTONE in places. Fractured in places. Extremely to Highly Weathered in places.

TABLE 1 – SUMMARY OF GEOTECHNICAL UNITS AND SOIL TYPES

TEST PIT	UNIT 1A	UNIT 1B	UNIT 2	Unit 3	Unit 4	Unit 5	Unit 6					
NO.	Fill - Topsoil	Fill - Controlled	Topsoil	Slopewash Colluvium	Residual Soil	XW Rock	HW Rock					
Current Geotechnical Assessment (Ref: NEW15P-0070A-AH, August 2017)												
Assessment of Controlled Fill material												
TP5-1	0.00 - 0.25	0.25 - 1.00	-	-	1.00 - 1.80	-	-					
TP5-2	0.00 - 0.30	0.30 - 1.50	-	-	1.50 - 1.60	-	-					
TP5-3	0.00 - 0.20	0.20 - 0.95	-	-	0.95 - 1.50	-	-					
TP5-4	0.00 - 0.25	0.25 - 0.80	-	-	0.80 - 1.50	-	-					
TP5-5	0.00 - 0.25	0.25 - 1.20	-	-	1.20 - 1.40	-	-					
TP5-6	0.00 - 0.20	0.20 - 1.10	-	1.10 - 1.20	1.20 - 1.40	-	-					
TP5-7	0.00 - 0.25	0.25 - 1.80	-	-	-	-	-					
TP5-8	0.00 - 0.25	0.25 - 1.60	-	1.60 - 1.75	1.75 - 1.90	-	-					
		Previous Inv	vestigations (I	February 2016	5 & June 201	6)						
TP103	-	-	0.00 - 0.25	-	0.25 - 0.70	-	0.70 - 0.90					
TP104	-	-	0.00 - 0.15	-	0.15 - 0.30	-	0.30 - 0.35					
TP106	-	-	0.00 - 0.15	-	0.15 - 0.40	0.40 - 0.65	0.65 - 0.70					
TP107	-	-	0.00 - 0.20	-	0.20 - 0.50	-	0.50 - 0.75					
TP109	-	-	0.00 - 0.35	-	0.35 - 2.60	-	-					
TP110	-	-	0.00 - 0.35	-	0.35 - 1.90	-	1.90 - 2.00					
TP201	-	-	0.00 - 0.20	0.20 - 0.40	0.40 - 0.80	0.80 - 1.35	1.35 - 1.40					
TP202	-	-	0.00 - 0.20	0.20 - 0.35	0.35 - 0.55	-	0.55 - 0.85					
TP203	-	-	0.00 - 0.20	-	0.20 - 1.00	-	1.00 - 1.50					
TP204	-	-	0.00 - 0.18	0.18 - 0.27	0.27 - 0.40	-	0.40 - 0.65					
TP205	-	-	0.00 - 0.25	0.25 - 0.30	0.30 - 1.80	-	-					
TP206	-	-	0.00 - 0.22	0.22 - 0.40	0.40 - 1.60	-	1.60 - 1.80					

TABLE 2 – SUMMARY OF GEOTECHNICAL UNITS ENCOUNTERED AT TEST PIT LOCATIONS

5.0 LABORATORY TESTING

Samples collected during the field investigations were returned to our NATA accredited Warabrook Laboratory for testing which comprised of:

• (8 no.) Shrink / Swell tests.

Results of the laboratory testing have been kept on file for reference, with a summary of the Shrink/Swell results presented in Tables 3 and 4.

The tables also include a summary of laboratory testing information (where applicable) from the previous Geotechnical Assessment works carried out by Qualtest.

Location	Depth (m)	Material Description	I _{ss} (%)										
	Current Investigations (Following Site Regrade - August 2017)												
TP5-1	0.40 - 0.55	(CH) Sandy CLAY- Fill	1.5										
TP5-2	0.60 - 0.75	(CI) Sandy CLAY- Fill	0.9										
TP5-4	0.40 - 0.65	(CI) Sandy CLAY- Fill	1.2										
TP5-4	0.80 - 1.00	(CH) CLAY- Residual	4.0										
TP5-5	0.40 - 0.80	(CH) Sandy CLAY- Fill	0.9										
TP5-6	0.40 - 0.54	(CH) Sandy CLAY- Fill	2.1										
TP5-7	0.50 - 0.80	(CH) Sandy CLAY- Fill	2.0										
TP5-8	0.40 - 0.80	(CH) Sandy CLAY- Fill	2.0										
	Previous I	nvestigations (February 2016 & June 2016)											
TP109	0.40 - 0.60	(CI) Sandy CLAY- Residual	0.4										
TP206	0.55 – 0.70	(CI) Sandy CLAY- Residual	2.1										

TABLE 3 – SUMMARY OF SHRINK / SWELL TESTING RESULTS

TABLE 4 – SUMMARY OF ATTERBERG LIMITS TESTING RESULTS

Location	Depth (m)	Material Description	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Linear Shrinkage (%)
		Previous Inve	estigations (June 2016)		
TP201	0.40 - 0.80	(CI) Sandy CLAY	46	13	33	7.5
TP202	0.35 - 0.55	(CI) Sandy CLAY	50	22	28	11.0
TP203	0.30 - 0.70	(CH) Sandy CLAY	86	19	67	15.5
TP204	0.30 - 0.40	(CH) Sandy CLAY	68	19	49	16.0
TP205	0.35 - 0.50	(CI) Sandy CLAY	54	21	33	11.5

6.0 SITE CLASSIFICATION TO AS2870-2011

Based on the results of the field work, laboratory testing, and Level 1 site supervision and testing carried out, residential lots located within the proposed Stage 5 of the Billy's Lookout subdivision located off Pitt Street and Fishermans Drive, Teralba, as shown on Figure AH1, are classified in their current condition in accordance with AS2870-2011 'Residential Slabs and Footings', as shown in Table 5.

Lot Numbers	Site Classification
501 to 516, 521, 522, 526 to 529, 534, 535	Μ
517 to 520, 523 to 525, 530 to 533	H1

TABLE 5 – SITE CLASSIFICATION TO AS2870-2011

A characteristic free surface movement of 20mm to 40mm is estimated for lots classified as Class 'M' in their existing condition.

A characteristic free surface movement of 40mm to 60mm is estimated for lots classified as Class 'H1' in their existing condition.

The effects of changes to the soil profile by additional cutting and filling and the effects of past and future trees should be considered in selection of the design value for differential movement.

If site re-grading works involving cutting or filling are performed after the date of this assessment, the classification may change and further advice should be sought.

Footings for the proposed development should be designed and constructed in accordance with the requirements of AS2870-2011.

The classification presented above assumes that:

- All footings are founded in controlled fill (if applicable) or in the residual clayey soils or rock below all non-controlled fill, topsoil material and root zones, and fill under slab panels meets the requirements of AS2870-2011, in particular, the root zone must be removed prior to the placement of fill materials beneath slabs;
- The performance expectations set out in Appendix B of AS2870-2011 are acceptable, and that site foundation maintenance is undertaken to avoid extremes of wetting and drying;
- Footings are to be founded outside of or below all zones of influence resulting from existing or future service trenches;
- The constructional and architectural requirements for reactive clay sites set out in AS2870-2011 are followed;
- Adherence to the detailing requirement outlined in Section 5 of AS2870-2011 'Residential Slabs and Footings' is essential, in particular Section 5.6, 'Additional requirements for Classes *M*, *H*1, *H*2 and *E* sites' including architectural restrictions, plumbing and drainage requirements;
- Site maintenance complies with the provisions of CSIRO Sheet BTF 18, "Foundation Maintenance and Footing Performance: A Homeowner's Guide", a copy of which is attached in Appendix C.

All structural elements on all lots should be supported on footings founded beneath all uncontrolled fill, layers of inadequate bearing capacity, soft/loose, wet or other potentially deleterious material.

If any areas of uncontrolled fill of depths greater than 0.4m are encountered during construction, they should be designed in accordance with engineering principles for Class 'P' sites.

7.0 LIMITATIONS

The findings presented in the report and used as the basis for recommendations presented herein were obtained using normal, industry accepted geotechnical design practices and standards. To our knowledge, they represent a reasonable interpretation of the general conditions of the site.

The extent of testing associated with this assessment is limited to discrete test locations. It should be noted that subsurface conditions between and away from the test locations may be different to those observed during the field work / site supervision works, and used as the basis of the recommendations contained in this report.

If subsurface conditions encountered during construction differ from those given in this report, further advice should be sought without delay.

Data and opinions contained within the report may not be used in other contexts or for any other purposes without prior review and agreement by Qualtest. If this report is reproduced, it must be in full.

If you have any further questions regarding this report, please do not hesitate to contact Shannon Kelly or the undersigned.

For and on behalf of Qualtest Laboratory (NSW) Pty Ltd

Jason Lee Principal Geotechnical Engineer

Attachments:

Figure AH1 – Approximate Test Pit Location Plan Engineering Logs of Test Pits Results of Laboratory Testing CSIRO Sheet BTF 18 - Foundation Maintenance and Footing Performance



LABORATORY (NSW) PTY LTD

Clier	nt:	MCCLOY GROUP	Drawing No:	FIGURE AH1
Proje	ect:	PROPOSED SUBDIVISION - BILLY'S LOOKOUT - STAGE 5	Project No:	NEW15P-0070A
Loco	ation:	FISHERMANS DRIVE, TERALBA	Scale:	AS SHOWN
Title:		APPROXIMATE TEST PIT LOCATION PLAN	Date:	10 AUGUST 2017

ualtest	
LABORATORY (NSWIPTY LTD	

CLIENT: McCLOY TERALBA

PROJECT: PROPOSED SUBDIVISION - STAGE 5 LOCATION: FISHERMANS DRIVE, TERALBA

TEST PIT NO:

DATE:

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TP5-1

1 OF 1

NEW15P - 0070A

EC	JUIPN		E:	5 TON	INE EX	(CAVA	ATOR		SURF	ACE RL:					
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	Dril	ling and San	npling	_			Material	description and profi	le information				Fiel	d Test	
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIA cha	L DESCRIPTION: So aracteristics,colour,m	/particle	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations	
						<u></u>	0.05m_FILL: N	IULCH - grey to brow	/n		М	-			
						sc	FILL-TO grained some fi	OPSOIL: Clayey SAN I, grey, fines of low to ne to medium graine	ND - fine to coars o medium plastici d gravel and orga	se ity, with anics.	M - M				FILL - TOPSOIL
		0.40m U50 0.55m		0. <u>5</u>		сн	FILL: S brown f coarse grainec	andy CLAY - mediun to orange, brown to rr grained sand, with so I gravel.	n to high plasticit ed and pale grey ome fine to coars	ty, pale , fine to se	> W⊳	VSt	HP	350	CONTROLLED FILL
5 Ш	Not Encountered			1. <u>0</u>		<pre></pre>	1.00m				Σ		HP	300 500	
							brown t	Sandy CLAY - nign to red.	plasticity, pale di	rown and			HP	300	RESIDUAL SUIL
				1. <u>5</u>		СН	1.80m				M ~ W	VSt - H	HP	400	
							Hole Te	erminated at 1.80 m							
				2.0	-										
				2. <u>5</u>	-										
					1										
	GEND:	L		Notes, Sa	mples ar	⊥ <u>ıd Test</u> :	<u>5</u>			Consister		1	U	CS (kPa	<u>Moisture Condition</u>
Wa	Inter U ₅₀ 50mm Diameter tube sample Water Level CBR Bulk sample for CBR testing				9		vs v s s	very Soft Soft		<2 25	25 5 - 50	M Moist			
-	(Date and time shown) E E Environmental sample (Glass jar, sealed and chilled on				l on site)		F F St S	⁻ irm Stiff		50 10) - 100)0 - 200	W Wet W _n Plastic Limit			
	Water Inflow Water Outflow Water Outflow Water Outflow				Soil Sample	, Iled)		VSt V	/ery Stiff		20)0 - 400 100	W _L Liquid Limit		
s <u>Str</u>	water Outflow (Plastic bag, air expelled, chilled Strata Changes B Bulk Sample				neu)		Fb F	riable		>2	ŧUU				
_	Gradational or PID Pho				ests Photoionisation detector reading (ppm)				<u>Density</u>	V	Ve	ery Lo	oose	Density Index <15% Density Index 15 - 35%	
	tra — Do st	ansitional stra efinitive or dis trata change	ata stict	DCP(x-y) HP	Dynai Hand	nic pen Penetro	petrometer test (UC	test depth interval show S kPa)	vn)) M D) V	ediun ense erv De	n Dense ense	 Density Index 10 - 30 // Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



CLIENT: McCLOY TERALBA

PROJECT: PROPOSED SUBDIVISION - STAGE 5 LOCATION: FISHERMANS DRIVE, TERALBA

TEST PIT NO:

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E			E:	5 TON	INE EX	CAVA	ATOR		SURFACE RL:						
	ST P		H:	1.5 m	W	IDTH:	0.5 m		DATU	M:					[
	Dril	ling and Sar	npling				Material de	escription and profile	Information				Fiel	d Test	
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL I chara	DESCRIPTION: Soil t acteristics,colour,min	ype, plasticity or components	/particle	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
-						<u> </u>	0.05m_FILL: MU	LCH - grey to brown.			М				FILL - MULCH
				-		sc	FILL-TOF grained, g some fine	PSOIL: Clayey SAND grey, fines of low to n to medium grained g	- fine to coars nedium plastici gravel and orga	se ity, with anics.	M - M				FILL - TOPSOIL
				0.5_			FILL: Sar orange, p grained s	ndy CLAY - medium pale grown and pale grown and.	plasticity, brow rey, fine to co	n to arse		St - VSt	HP	220	CONTROLLED FILL
	ountered	0.60m U50 0.75m		-		CI									
Ш	Not Enco	0.7011		-							~ ≪		HP	350	
222				1.0			1.10m FILL: Sar fine to co	ndy CLAY - medium parse grained sand, w	olasticity, pale	brown,	ž	VSt		250	CONTROLLED FILL possibly COLLUVIUM
				-		CI	grained g	ravel.						250	
				1.5			1.50m Sandy Cl	 _AY - high plasticity.		 d brown	-				RESIDUAL SOIL
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2				-	-		rible ren								
20				-											
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) j				2.0	-										
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				-	-										
				Notes So	nnlee ar	d Teet				Concieto	ency.			CS (kP-) Moisture Condition
Wa	ater		Notes, Samples and Tests U_{50} 50mm Diameter tube sample CPR Bulk sample for CPR testing			eter tube sample			VS V	Very Soft		<2	25	D Dry	
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	Water Inflow ASS Acid Su			s jar, se Sulfate	aied and chilled o Soil Sample	n site)		St St VSt V	Stiff Very Stiff		10 20)0 - 200)0 - 400	W_{p} Plastic Limit W_{L} Liquid Limit		
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_	D st	efinitive or dis rata change	stict	DCP(x-y) HP	Dynar Hand	nic pen Penetro	etrometer test (tes ometer test (UCS I	t depth interval shown (Pa))		ME D VD	D M	lediun ense erv De	n Dense	 Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



Sendineering Log - Test Pit

CLIENT: McCLOY TERALBA

PROJECT: PROPOSED SUBDIVISION - STAGE 5 **LOCATION:** FISHERMANS DRIVE, TERALBA TEST PIT NO:

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	EQUIPMENT TYPE:				5 TON	INE EX	CAVA	ATOR	SURFACE RL:					
	TE	st Pi	T LENGTI	H:	1.5 m	w	IDTH:	0.5 m	DATUM:					
		Drill	ing and San	npling				Material description and prot	ile information			Fiel	d Test	
	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: So characteristics,colour,r	bil type, plasticity/particle inor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
					-		SC	0.05m FILL: MULCH - grey to brov FILL-TOPSOIL: Clayey SA	vn	м				FILL - MULCH FILL - TOPSOIL
		ıtered	<u>0.55m</u>		- - - - - -		сі	grained, grey, fines of low t <u>0.20m</u> some fine to medium graine FILL: Sandy CLAY / Gravel plasticity, grey to brown, wi pale grey, fine to coarse gr to coarse grained gravel, tr fragments.	o medium plasticity, with d gravel and organics. ly Clayey SAND - medium th brown to orange and ained sand, with some fine ace cobble sized rock	M ~ W	VSt	-		CONTROLLED FILL
1001	Е	Not Encour	U50 0.75m		-		CI	FILL: Silty Gravelly SAND - pale brown with pale grey to grained gravel, fines of low cobble sized rock fragment	fine to coarse grained, o white, fine to coarse plasticity, with some s.	М	D			
					1. <u>0</u> - - - -		СН	Sandy CLAY - medium to h red, pale grey and orange t grained sand.	igh plasticity, brown to o brown, fine to medium	M > w _P	VSt	HP	300 290	RESIDUAL SOIL
	LEGG Watu Strat	END: er (Dat Wat Wat Wat	er Level e and time st er Inflow er Outflow nges	nown)		mples an 50mm Bulk s Enviro (Glast Acid S (Plast	d Tests Diame ample isulfate c bag, ample	Hole Terminated at 1.50 m Hole Terminated at 1.50 m Batter tube sample for CBR testing al sample aled and chilled on site) Soil Sample air expelled, chilled)	VS V S S F F St S VSt V H H Fb Fb	ncy /ery Soft Soft /ery Stiff /ery Stiff lard iriable		U <2 50 10 20 20	CS (kPa 25 5 - 50 0 - 100 00 - 2000 100 - 2000	Moisture Condition D Dry M Moist W Wet Wp Plastic Limit WL Liquid Limit
		Gradational or Field Tests Test Tests Test Tests Tests				Photo Dynar Hand	ionisati nic pen Penetro	on detector reading (ppm) etrometer test (test depth interval sho meter test (UCS kPa)	wn)	L ME D VD	La D M D V	oose lediun ense ery De	n Dense	Density Index 35 - 65% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%

ualtest
LABORATORY (NSW) PTY LTD

CLIENT: McCLOY TERALBA

PROJECT: PROPOSED SUBDIVISION - STAGE 5 LOCATION: FISHERMANS DRIVE, TERALBA

TEST PIT NO:

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I	EQ			:	CASE	BACK	HOE	580ST	SURFACE RL:							
	1E			1:	1.5 M	W	ID I H	U.5 M	orintion and profile info	DATUM:				Fiel	d Toot	
	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	Material des	ESCRIPTION: Soil type teristics,colour,minor of	ormation e, plasticity/particle components	e	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
							×	0.05m FILL: MUL FILL-TOPS grained, gr some fine t	CH - grey to brown. OIL: Clayey SAND - fi ey, fines of low to med o medium grained gra	ne to coarse ium plasticity, with vel and organics.	- ^ 1	М				FILL - MULCH FILL - TOPSOIL
	ВН	Encountered	0.40m U50 0.65m 0.80m		0. <u>5</u>		CI	FILL: Sand fine to coar	y CLAY - medium plas se grained sand.	ticity, pale brown,				HP	250	CONTROLLED FILL
/ 10:41 0.30.000 המושפו במהמוחוו סונע ויסט		Not	U50 1.00m		- 1. <u>0</u> - - - - - -		СН	CLAY - me brown to re grained sar	dium to high plasticity, d and grey, with some nd.	pale brown with fine to medium		M > W _P	VSt	HP	360	RESIDUAL SOIL
02 NOR-CORED BOREROLE - 1501 FIL NEW 101 - 2010A LOGG - 01 AGE & LOFECWING REGIONDE & 2 - 2010AL CO	LEG Wat Stra	END: er (Dat Wat Wat	er Level e and time sh er Inflow er Outflow Inges	nown)	2.0_ 2.0_ 2.5_ 2.5_ 	mples ar 50mm Bulk s Envirc (Glass Acid s (Plast Bulk s	td Tests n Diame sample pomenti ș jar, se Sulfate ic bag, Sample	Hole Termi Hole Termi	site)	Consi VS S F St VSt H Fb	istency Very Soft Firm Stiff Very Haro Frial	¥ y Soft f y Stiff d uble		25 50 10 20	CS (kPa 25 5 - 50 - 100 00 - 200 400) <u>Moisture Condition</u> D Dry M Moist W Wet W _p Plastic Limit W _L Liquid Limit
	<u>Strata Changes</u> Gradational or transitional strata Definitive or distict strata change				Field Test PID DCP(x-y) HP	<u>ts</u> Photo Dynar Hand	ionisati nic pen Penetro	on detector reading etrometer test (test ometer test (UCS kF	(ppm) depth interval shown) Pa)	<u>Densi</u>	ity	V L MD D VD	Vi Lo M Di	ery Lo bose ediun ense ery De	n Dense	Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



CLIENT: McCLOY TERALBA

PROJECT: PROPOSED SUBDIVISION - STAGE 5 LOCATION: FISHERMANS DRIVE, TERALBA

TEST PIT NO:

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DATE:

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1 OF 1 NEW15P - 0070A

TP5-5

SJK 28/7/17

	EQ		IENT TYPI	Е: µ.	CASE	BACK	HOE (580ST		SURF	ACE RL:					
┢		Dril	ling and Sar	nnlina	1.5 11			Material desc	cription and profile in	formation				Fiel	d Test	
	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DE characte	SCRIPTION: Soil typeristics,colour,minor	be, plasticity components	/particle	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
					-		sc	0.05m FILL: MULC FILL-TOPS(grained, gre some fine to	<u>CH - grey to brown</u> DIL: Clayey SAND - cy, fines of low to me p medium grained gra	fine to coars dium plastic avel and org	se ity, with anics.	M > - ¥				FILL - MULCH
ab and In Situ Tool	BH	Not Encountered	0.40m U50 0.80m		- 0.5_ - - 1.0_ -		СН	FILL: Sandy brown to ora coarse grair sub-angular	/ CLAY - medium to ange, brown to red, p red sand, some fine gravel.	high plastici pale grey, fir to coarse gr	ty, pale te to ained	M > Wp	VSt	HP	350	CONTROLLED FILL
8.30.003 Datgel La					-		сн	1.20m CLAY - mec brown to rec grained san 1.40m	lium to high plasticity and grey, with som d.	, pale brown e fine to me	 n with dium	_	St - VSt	HP	200	RESIDUAL SOIL
N-CORED BOREHOLE - TEST PIT NEW15P - 0070A LOGS - STAGE 5 FOLLOWING REGRADE.GPJ < <drawingfile>> 10/08/2017 16</drawingfile>	LEG Watu	END: er (Dat Wat	ter Level ter and time s ter Inflow	hown)	1.5 - - - - - - - - - - - - - - - - - - -	mples ar 50mm Bulk s Envirc (Glass Acid S	Id Tests n Diame ample onmenta s jar, see	E eter tube sample for CBR testing al sample valed and chilled on s Soil Sample	ite)		Consister VS V S S F F St S VSt V	ncy /ery Soft Stiff /ery Stiff		U <25 50 10 20	CS (kPa 25 5 - 50 0 - 100 00 - 200 00 - 400	Moisture Condition D Dry M Moist W Wet Wp Plastic Limit WL Liquid Limit
T LIB 1.1.GLB Log NU	<u>Stra</u>	Wat ta Cha G G tra tra st	ter Outflow anges radational or ansitional stra efinitive or dis rata change	ata stict	B PID DCP(x-y) HP	(Plast Bulk \$ s Photo Dynar Hand	ic bag, Sample ionisati nic pen Penetro	air expelled, chilled) on detector reading (etrometer test (test d ometer test (UCS kPa	ppm) lepth interval shown) a)		H H Fb F <u>Density</u>	fard Friable V L MD D	V La D M	ery Lo pose lediun ense	i00 bose n Dense	Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 65 - 85%



CLIENT: McCLOY TERALBA

PROJECT: PROPOSED SUBDIVISION - STAGE 5 **LOCATION:** FISHERMANS DRIVE, TERALBA TEST PIT NO:

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JOB NO:

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1 OF 1

NEW15P - 0070A SJK

TP5-6

28/7/17

I	EQL	JIPM		:	CASE	BACK	HOE	580ST		SURF	ACE RL:					
Ľ	TES	st Pi	T LENGTI	H:	1.5 m	w	IDTH	0.5 m		DATU	M:					
		Drill	ing and Sam	npling			1	Material de	escription and profile i	nformation		1		Fiel	d Test	
	MEIHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL I chara	DESCRIPTION: Soil to cteristics,colour,mino	ype, plasticity or components	/particle	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
					-		SC	0.05m FILL: MU FILL-TOP grained, g	LCH - grey to brown. SOIL: Clayey SAND rey, fines of low to m to medium grained g	- fine to coars edium plastici	e ty, with	м				FILL - MULCH
			0.40m		0.5			FILL: San to red and sand.	dy CLAY - medium to brown to orange, fin	b high plasticit to medium g	y, brown grained			HP	350	CONTROLLED FILL
	ВН	Not Encountered	<u>0.54m</u>				СН					M > Wp	VSt			
197					-		SM	Silty SAN	D - fine to coarse gra	ined, pale bro	wn, fines	м	MD			SLOPE WASH
							CI	Sandy CL orange ar	AY - medium plasticit d pale grey, fine to m	ty, pale brown nedium graine	to d sand.	M > W	VSt	HP	300	RESIDUAL SOIL
					1.5	<u> </u>	1	Hole Term	ninated at 1.40 m							
	LEGE Wate	END: 1 Wati Wati	er Level e and time sh er Inflow er Outflow	nown)		mples ar 50mn Bulk s Envirc (Glass Acid S (Plast	Id Test Diame ample Suffate ic baa.	Enter tube sample for CBR testing al sample alaed and chilled on Soil Sample	n site)		Consister VS V S S F F St S VSt V H H	DCY ery Soft oft im tiff ery Stiff		U <2 25 50 10 200	CS (kPa 55 5 - 50) - 100 10 - 200 00 - 400	Moisture Condition D Dry M Moist W Wet Wp Plastic Limit W_L Liquid Limit
-	Strat	a Cha Gr	nges radational or		B Field Test	Bulk S	Sample				Fb F Density	riable V	Ve	ery Lo	ose	Density Index <15%
		tra – De sti	nsitional stra efinitive or dis rata change	ita tict	PID DCP(x-y) HP	Photo Dynar Hand	ionisati nic per Penetri	on detector reading etrometer test (tes ometer test (UCS k	g (ppm) t depth interval shown) Pa)			L ME D VD	Lo M De Ve	oose ediun ense ery De	n Dense ense	Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%

6	ualtest	
	LABORATORY (NSW) PTY LTD	

CLIENT: McCLOY TERALBA

PROJECT: PROPOSED SUBDIVISION - STAGE 5 LOCATION: FISHERMANS DRIVE, TERALBA

TEST PIT NO:

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JOB NO:

SJK 28/7/17

TP5-7

1 OF 1

NEW15P - 0070A

	EQI	JIPM		≣:	CASE	BACK	HOE	580ST		SURF	ACE RL:					
	TES	ST PI		H:	1.5 m	w	IDTH:	0.5 m		DATU	M:					
		Drill	ling and San	npling			1_	Material de	escription and profile in	formation		-		Fiel	d Test	
	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL I chara	DESCRIPTION: Soil ty acteristics,colour,minor	pe, plasticity components	/particle	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
					-		sc	0.05m FILL: MU FILL-TOF grained, g some fine 0.25m	LCH - grey to brown. PSOIL: Clayey SAND - grey, fines of low to me to medium grained gr	fine to coars dium plastic avel and org	e / se ity, with anics.	М				FILL - MULCH
o.ou.uus Dagei Labaru III Silu 1001	BH	Not Encountered	0.50m U50 0.80m		- 0.5_ - - - 1.0_ - - - -		СН	FILL: Sau grey and to mediu Clayey S	ndy CLAY - medium to pale brown to orange v n grained sand, with sr AND.	high plastici with brown to mall pockets	ty, pale red, fine of	M > Wp	St - VSt	HP	230	CONTROLLED FILL
					1.5_ -		CI	FILL: Silt pale brov gravel, fir 1.80m	y Gravelly SAND - fine n, fine to medium grain les of low plasticity.	to coarse gr ned sub-rour	ained, nded	м	MD - D			CONTROLLED FILL possibly COLLUVIUM
					2.0	-		Hole Terr	ninated at 1.80 m							
					- - - 2.5_	-										
					-	-										
Ľ	LEG				Notes Sa	mples ar	d Teet	 s			Consistor			114	CS (kPa) Moisture Condition
	Wate	er E			U ₅₀	50mm	n Diame	eter tube sample			VS V	/ery Soft		<2	25	D Dry
	Ŧ	Wat	er Level		CBR E	Bulk s Enviro	ample	for CBR testing al sample			S S F F	irm		25 50	5 - 50) - 100	M Moist W Wet
		(Dat	e and time sl	nown)	-	(Glass	s jar, se	aled and chilled o	n site)		St S	Stiff		10	00 - 200	W _p Plastic Limit
240	<u> </u>	wat Wat	er inflow er Outflow		ASS	Acid S (Plast	Sulfate : ic bad	Soil Sample air expelled. chille	d)		VSt V Н н	'ery Stiff Iard		20 >4)0 - 400 100	W _L Liquid Limit
n Ro	Strat	a Cha	inges		В	Bulk S	Sample		-,		Fb F	riable				
		G	radational or		PID	<u>s</u> Photo	ionicati	on detector readin	a (nom)		<u>Density</u>	V	V	ery Lo	ose	Density Index <15%
9. 		tra 	ansitional stra	ita itict	DCP(x-y)	Dynar	nic pen	etrometer test (tes	st depth interval shown)			ME) M	lediun	n Dense	e Density Index 35 - 65%
		sti	rata change		HP	Hand	Penetro	ometer test (UCS	kPa)			D VD	Di V	ense <u>ery </u> De	ense	Density Index 65 - 85% Density Index 85 - 100%

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CLIENT: McCLOY TERALBA

PROJECT: PROPOSED SUBDIVISION - STAGE 5 LOCATION: FISHERMANS DRIVE, TERALBA

TEST PIT NO:

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1 OF 1 NEW15P - 0070A

> SJK 28/7/17

	EQI	JIPM		: :	CASE	BACK	HOE	580ST		SURFA	CE RL:					
Ľ	TES	ST PI		H:	1.5 m	w	IDTH:	0.5 m		DATUN	Λ:			·		
		Drill	ing and Sam	npling	-			Material des	cription and profile info	ormation				Fiel	d Test	
	METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DE charac	ESCRIPTION: Soil type teristics,colour,minor c	e, plasticity/p omponents	oarticle	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
					-		SC	0.05m FILL: MUL FILL-TOPS grained, gr some fine t	<u>CH - grey to brown</u> OIL: Clayey SAND - fi ey, fines of low to med o medium grained grav	ne to coarse ium plasticity /el and orga	^ 9 y, with nics.	м				FILL - MULCH
		red	0.40m U50 0.80m		- 0. <u>5</u> -		CH	FILL: Sand brown to or coarse gra sub-angula	y CLAY - medium to h ange, brown to red, pa ned sand, some fine to r gravel.	ign plasticity ale grey, fine o coarse gra	, pale to ined			HP	250	CONTROLLED FILL
	Ha	Not Encounter			- 1. <u>0</u> - - - 1. <u>5</u>		CI	FILL: Sand plasticity, p coarse gra	y CLAY / Clayey SAN pale brown to orange a ned sand.	D - medium nd pale grey	r, fine to	M ~ W	VSt	HP	250	
					-	/ /	sc	Clayey SA grey, fines	ND - fine to coarse gra of medium plasticity.		rown to	M	MD			
							СН	to orange a	and grey, fine to coarse	e grained sa	nd.	× ∼ ⊻	Н	HP	450	
	LEGI Wate Strat	END: T Wati Wati Wati a Cha	er Level e and time sh er Inflow er Outflow nges	nown)	2.0_ - - 2.5_ - - - - - - - - - - - - - - - - - - -	mples an 50mm Bulk s Enviro (Glass Acid S (Plast Bulk S	d Tests Diame ample nmentr s jar, se culfate ic bag, Sample	Ender remaining the sample for CBR testing al sample aled and chilled on Soil Sample air expelled, chilled)	site)		Consisten VS V F Fi St St VSt V H H Fb Fr	cy ery Soft oft m ery Stiff ard iable		U <2 25 500 10 20 20	CS (kPa 25 5 - 50 0 - 100 00 - 200 00 - 400) Moisture Condition D Dry M Moist W Wet W _p Plastic Limit W _L Liquid Limit
		Gr tra De str	adational or ansitional stra efinitive or dis rata change	ta tict	Field Test PID DCP(x-y) HP	E Photo Dynar Hand	ionisati nic pen Penetro	on detector reading etrometer test (test ometer test (UCS kF	(ppm) depth interval shown) 'a)		<u>Density</u>	V L MC D <u>VD</u>	V La M D V	ery Lo bose lediun ense ery De	oose n Dense ense	Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



Report No: SSI:NEW17W-3159--S01

- 02 4968 4468 т٠
- 02 4960 9775
- F: E: W: E: admin@qualtest.com.au W: www.qualtest.com.au ABN: 98 153 268 896

Issue No: 2 Shrink Swell Index Report his report replaces all previous issues of report no 'SSI:NEW17W-3159--S01' Accredited for compliance with ISO/IEC 17025 · Client: McCloy Development Management Pty Ltd Testing The results of the tests, calibrations and/or Suite 1 Level 3, 426 King Street Newcastle West NSW 2300 measurements included in this document are traceable to Australian/national standards ΝΑΤΑ Principal: all NEW15P-0070A Project No .: Approved Signatory: Dane Cullen Project Name: Proposed Subdivision - Billy's Lookout - Stage 5 (Senior Geotechnician) WORLD RECOGNISED NATA Accredited Laboratory Number: 18686 Date of Issue: 11/08/2017 Sample Details Sample ID: NEW17W-3159--S01 Client Sample ID: Test Request No .: Sampling Method: AS1289.1.2.1 cl 6.5.4 Material: Sandy Clay Date Sampled: 28/07/2017 Source: On-Site Date Submitted: 31/07/2017 Specification: No Specification Pitt Street, Teralba Project Location: TP5-1 - (0.4 - 0.55m) Sample Location: Borehole Number: TP5-1 Borehole Depth (m): 0.4 - 0.55 AS 1289.7.1.1 AS 1289.7.1.1 Shrink Test Swell Test 2.8 Swell on Saturation (%): -0.6 Shrink on drying (%): 23.3 Shrinkage Moisture Content (%): 24.1 Moisture Content before (%): Moisture Content after (%): 24.2 Est. inert material (%): 2% Est. Unc. Comp. Strength before (kPa): 260 Nil Crumbling during shrinkage: Est. Unc. Comp. Strength after (kPa): 190 Cracking during shrinkage: Nil Shrink Swell Shrinkage Sw ell 10.0 Shrink (%) Esh - Swell (%) Esw 5.0 0.0 -5.0 -10.0 5.0 10.0 15.0 20.0 25.0 30.0 35.0 40.0 45.0 50.0 Moisture Content (%) Shrink Swell Index - Iss (%): 1.5



Report No: SSI:NEW17W-3159--S02

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Issue No: 2 Shrink Swell Index Report his report replaces all previous issues of report no 'SSI:NEW17W-3159--S02' Accredited for compliance with ISO/IEC 17025 · Client: McCloy Development Management Pty Ltd Testing The results of the tests, calibrations and/or Suite 1 Level 3, 426 King Street Newcastle West NSW 2300 measurements included in this document are traceable to Australian/national standards ΝΑΤΑ Principal: all NEW15P-0070A Project No .: Approved Signatory: Dane Cullen Project Name: Proposed Subdivision - Billy's Lookout - Stage 5 (Senior Geotechnician) WORLD RECOGNISED NATA Accredited Laboratory Number: 18686 Date of Issue: 11/08/2017 Sample Details Sample ID: NEW17W-3159--S02 Client Sample ID: Test Request No .: Sampling Method: AS1289.1.2.1 cl 6.5.4 Material: Sandy Clay Date Sampled: 28/07/2017 Source: On-Site Date Submitted: 31/07/2017 No Specification Specification: Pitt Street, Teralba Project Location: TP5-2 - (0.6 - 0.75m) Sample Location: Borehole Number: TP5-2 Borehole Depth (m): 0.6 - 0.75 AS 1289.7.1.1 AS 1289.7.1.1 Shrink Test Swell Test 1.6 Swell on Saturation (%): -1.0 Shrink on drying (%): Shrinkage Moisture Content (%): 17.6 Moisture Content before (%): 17.1 Moisture Content after (%): 17.4 Est. inert material (%): 2% Nil Est. Unc. Comp. Strength before (kPa): 240 Crumbling during shrinkage: Est. Unc. Comp. Strength after (kPa): 390 Cracking during shrinkage: Minor Shrink Swell Shrinkage Sw ell 10.0 Shrink (%) Esh - Swell (%) Esw 5.0 0.0 -5.0 -10.0 5.0 10.0 15.0 20.0 25.0 30.0 35.0 40.0 45.0 50.0 Moisture Content (%) Shrink Swell Index - Iss (%): 0.9



Report No: SSI:NEW17W-3159--S03

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Issue No: 2 Shrink Swell Index Report his report replaces all previous issues of report no 'SSI:NEW17W-3159--S03' Accredited for compliance with ISO/IEC 17025 · Client: McCloy Development Management Pty Ltd Testing The results of the tests, calibrations and/or Suite 1 Level 3, 426 King Street Newcastle West NSW 2300 measurements included in this document are traceable to Australian/national standards ΝΑΤΑ Principal: all NEW15P-0070A Project No .: Approved Signatory: Dane Cullen Project Name: Proposed Subdivision - Billy's Lookout - Stage 5 (Senior Geotechnician) WORLD RECOGNISED NATA Accredited Laboratory Number: 18686 Date of Issue: 11/08/2017 Sample Details Sample ID: NEW17W-3159--S03 Client Sample ID: Test Request No .: Sampling Method: AS1289.1.2.1 cl 6.5.4 Material: Sandy Clay Date Sampled: 28/07/2017 Source: On-Site Date Submitted: 31/07/2017 No Specification Specification: Pitt Street, Teralba Project Location: TP5-4 - (0.4 - 0.65m) Sample Location: Borehole Number: TP5-4 Borehole Depth (m): 0.4 - 0.65 AS 1289.7.1.1 AS 1289.7.1.1 Shrink Test Swell Test Swell on Saturation (%): -0.6 Shrink on drying (%): 2.2 Shrinkage Moisture Content (%): 15.0 Moisture Content before (%): 16.4 Moisture Content after (%): 17.1 Est. inert material (%): 5% Est. Unc. Comp. Strength before (kPa): 380 Nil Crumbling during shrinkage: Est. Unc. Comp. Strength after (kPa): Cracking during shrinkage: Nil 340 Shrink Swell Shrinkage Sw ell 10.0 Shrink (%) Esh - Swell (%) Esw 5.0 0.0 -5.0 -10.0 5.0 10.0 15.0 20.0 25.0 30.0 35.0 40.0 45.0 50.0 Moisture Content (%) Shrink Swell Index - Iss (%): 1.2



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Report No: SSI:NEW17W-3159--S04 Issue No: 2 Shrink Swell Index Report his report replaces all previous issues of report no 'SSI:NEW17W-3159--S04' Accredited for compliance with ISO/IEC 17025 · Client: McCloy Development Management Pty Ltd Testing The results of the tests, calibrations and/or Suite 1 Level 3, 426 King Street Newcastle West NSW 2300 measurements included in this document are traceable to Australian/national standards ΝΑΤΑ Principal: all NEW15P-0070A Project No .: Approved Signatory: Dane Cullen Project Name: Proposed Subdivision - Billy's Lookout - Stage 5 (Senior Geotechnician) WORLD RECOGNISED NATA Accredited Laboratory Number: 18686 Date of Issue: 11/08/2017 Sample Details Sample ID: NEW17W-3159--S04 Client Sample ID: Test Request No .: Sampling Method: AS1289.1.2.1 cl 6.5.4 Material: Clay Date Sampled: 28/07/2017 Source: On-Site Date Submitted: 31/07/2017 No Specification Specification: Project Location: Pitt Street, Teralba TP5-4 - (0.8 - 1.0m) Sample Location: Borehole Number: TP5-4 Borehole Depth (m): 0.8 - 1.0 AS 1289.7.1.1 AS 1289.7.1.1 Shrink Test Swell Test Swell on Saturation (%): -0.5 Shrink on drying (%): 7.2 35.0 Shrinkage Moisture Content (%): 35.7 Moisture Content before (%): Moisture Content after (%): 34.6 Est. inert material (%): 2% Est. Unc. Comp. Strength before (kPa): 330 Nil Crumbling during shrinkage: Est. Unc. Comp. Strength after (kPa): 340 Cracking during shrinkage: Minor Shrink Swell Shrinkage Sw ell 10.0 Shrink (%) Esh - Swell (%) Esw 5.0 0.0 -5.0 -10.0 5.0 10.0 15.0 20.0 25.0 30.0 35.0 40.0 45.0 50.0 Moisture Content (%) Shrink Swell Index - Iss (%): 4.0



Report No: SSI:NEW17W-3159--S05

- 02 4968 4468 т٠
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Issue No: 2 Shrink Swell Index Report his report replaces all previous issues of report no 'SSI:NEW17W-3159--S05' Accredited for compliance with ISO/IEC 17025 · Client: McCloy Development Management Pty Ltd Testing The results of the tests, calibrations and/or Suite 1 Level 3, 426 King Street Newcastle West NSW 2300 measurements included in this document are traceable to Australian/national standards ΝΑΤΑ Principal: all NEW15P-0070A Project No .: Approved Signatory: Dane Cullen Project Name: Proposed Subdivision - Billy's Lookout - Stage 5 (Senior Geotechnician) WORLD RECOGNISED NATA Accredited Laboratory Number: 18686 Date of Issue: 11/08/2017 Sample Details Sample ID: NEW17W-3159--S05 Client Sample ID: Test Request No .: Sampling Method: AS1289.1.2.1 cl 6.5.4 Material: Sandy Clay Date Sampled: 28/07/2017 Source: On-Site Date Submitted: 31/07/2017 No Specification Specification: Pitt Street, Teralba Project Location: TP5-5 - (0.4 - 0.8m) Sample Location: Borehole Number: TP5-5 Borehole Depth (m): 0.4 - 0.8 AS 1289.7.1.1 AS 1289.7.1.1 Shrink Test Swell Test 1.6 Swell on Saturation (%): -0.7 Shrink on drying (%): Shrinkage Moisture Content (%): 15.4 Moisture Content before (%): 15.2 Moisture Content after (%): 17.9 Est. inert material (%): 15% Est. Unc. Comp. Strength before (kPa): >600 Nil Crumbling during shrinkage: Est. Unc. Comp. Strength after (kPa): 550 Cracking during shrinkage: Minor Shrink Swell Shrinkage Sw ell 10.0 Shrink (%) Esh - Swell (%) Esw 5.0 0.0 -5.0 -10.0 5.0 10.0 15.0 20.0 25.0 30.0 35.0 40.0 45.0 50.0 Moisture Content (%) Shrink Swell Index - Iss (%): 0.9



Report No: SSI:NEW17W-3159--S06

- 02 4968 4468 т٠
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Issue No: 2 Shrink Swell Index Report his report replaces all previous issues of report no 'SSI:NEW17W-3159--S06' Accredited for compliance with ISO/IEC 17025 · Client: McCloy Development Management Pty Ltd Testing The results of the tests, calibrations and/or Suite 1 Level 3, 426 King Street Newcastle West NSW 2300 measurements included in this document are traceable to Australian/national standards ΝΑΤΑ Principal: all NEW15P-0070A Project No .: Approved Signatory: Dane Cullen Project Name: Proposed Subdivision - Billy's Lookout - Stage 5 (Senior Geotechnician) WORLD RECOGNISED NATA Accredited Laboratory Number: 18686 Date of Issue: 11/08/2017 Sample Details Sample ID: NEW17W-3159--S06 Client Sample ID: Test Request No .: Sampling Method: AS1289.1.2.1 cl 6.5.4 Material: Sandy Clay Date Sampled: 28/07/2017 Source: On-Site Date Submitted: 31/07/2017 Specification: No Specification Pitt Street, Teralba Project Location: TP5-6 - (0.4 - 0.54m) Sample Location: Borehole Number: TP5-6 Borehole Depth (m): 0.4 - 0.54 AS 1289.7.1.1 AS 1289.7.1.1 Shrink Test Swell Test Swell on Saturation (%): -0.3 Shrink on drying (%): 3.8 25.5 Shrinkage Moisture Content (%): 21.3 Moisture Content before (%): Moisture Content after (%): 28.7 Est. inert material (%): 5% Est. Unc. Comp. Strength before (kPa): 480 Nil Crumbling during shrinkage: Est. Unc. Comp. Strength after (kPa): 430 Cracking during shrinkage: Minor Shrink Swell Shrinkage Sw ell 10.0 Shrink (%) Esh - Swell (%) Esw 5.0 0.0 -5.0 -10.0 5.0 10.0 15.0 20.0 25.0 30.0 35.0 40.0 45.0 50.0 Moisture Content (%) Shrink Swell Index - Iss (%): 2.1



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Report No: SSI:NEW17W-3159--S07

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Report No: SSI:NEW17W-3159--S08

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Issue No: 2 Shrink Swell Index Report his report replaces all previous issues of report no 'SSI:NEW17W-3159--S08' Accredited for compliance with ISO/IEC 17025 · Client: McCloy Development Management Pty Ltd Testing The results of the tests, calibrations and/or Suite 1 Level 3, 426 King Street Newcastle West NSW 2300 measurements included in this document are traceable to Australian/national standards ΝΑΤΑ Principal: all NEW15P-0070A Project No .: Approved Signatory: Dane Cullen Project Name: Proposed Subdivision - Billy's Lookout - Stage 5 (Senior Geotechnician) WORLD RECOGNISED NATA Accredited Laboratory Number: 18686 Date of Issue: 11/08/2017 Sample Details Sample ID: NEW17W-3159--S08 Client Sample ID: Test Request No .: Sampling Method: AS1289.1.2.1 cl 6.5.4 Material: Sandy Clay Date Sampled: 28/07/2017 Source: On-Site Date Submitted: 31/07/2017 No Specification Specification: Project Location: Pitt Street, Teralba TP5-8 - (0.4 - 0.8m) Sample Location: Borehole Number: TP5-8 Borehole Depth (m): 0.4 - 0.8 AS 1289.7.1.1 AS 1289.7.1.1 Shrink Test Swell Test Swell on Saturation (%): -0.4 Shrink on drying (%): 3.6 17.0 Shrinkage Moisture Content (%): 18.0 Moisture Content before (%): Moisture Content after (%): 16.5 Est. inert material (%): 20% Est. Unc. Comp. Strength before (kPa): 280 Nil Crumbling during shrinkage: Est. Unc. Comp. Strength after (kPa): 500 Cracking during shrinkage: Minor Shrink Swell Shrinkage Sw ell 10.0 Shrink (%) Esh - Swell (%) Esw 5.0 0.0 -5.0 -10.0 5.0 10.0 15.0 20.0 25.0 30.0 35.0 40.0 45.0 50.0 Moisture Content (%) Shrink Swell Index - Iss (%): 2.0