Realty Realizations Pty Ltd C/- Allen, Price & Associates

Stage 1 Land Contamination Assessment

Part DP 1065111 and Lot 61 DP 755971 Culburra Road, West Culburra, NSW

P1002842JR01V02 February 2013





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Revision No.	Status	Release Date	File Copy	Reality Realizations Pty Ltd	Allen, Price & Associates		•
1	Draft	22.12.2010	1E, 1P, 1H	1E	1P		
2	Final	22.02.2013	1E, 1P, 1H	1E	1P		

Distribution Types: F = Fax, H = hard copy, P = PDF document, E = Other electronic format. Digits indicate number of document copies.

All enquiries regarding this project are to be directed to the Project Manager.



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1 Introduction

1.1 Scope of Works

Martens & Associates Pty Ltd has prepared this preliminary (Stage 1) land contamination assessment for Realty Realizations Pty Ltd C/- Allen, Price & Associates to inform a concept plan for a mixed use subdivision at West Culburra.

The purpose of the assessment is to detail the suitability of the site for the proposed development and to determine if further site assessment (Stage 2 soil sampling and testing) is required. The Stage 1 assessment was based on a historical review of site land use and does not involve soil sampling.

The assessment has been prepared in accordance with NSW OEH (2011) Guidelines for Consultants Reporting on Contaminated Sites and SEPP 55 – Remediation of Land.



2 Site Description

2.1 Location and Site Description

The study area is located on the northern side of Culburra Road, West Culburra, within the Shoalhaven City Council local government area (LGA). The study area consists of the following lots (Attachment A):

- o Lot 61 DP 755971
- Part Lot 5 DP 1065111
- Part Lot 6 DP 1065111
- o Part Lot 7 DP 1065111

The study area covers an area of approximately 109 ha and consists of undeveloped vegetated land and some agricultural areas in Lot 5 DP 1065111 and Lot 61 DP 755971.

2.2 Physiography and Hydrology

Majority of the site is elevated >5 mAHD above the Crookhaven River estuary. Immediate foreshore areas are moderately steep and transitional between the subject site and the estuary. Relief across the site is approximately 20 m. The landscape is gently undulating with slopes ranging between 2.5-6.0 %, with some areas of localised over steepening typically associated with drainage lines.

The site of the proposed subdivision lies on a ridgeline and associated northern side slopes discussed above, except for an area of Lot 5 which lies on the southern side of the ridge line.

Site drainage ranges from good to poor across the site, with poor draining areas characteristically associated with lower points of elevation within the landscape. Site drainage likely consists of both infiltration and overland flow (sheet and concentrated).

2.3 Geology

The Wollongong 1:250,000 Geological Sheet (NSW Dept. of Mines, 1966) identifies the site as being underlain predominantly by Wandrawandian Siltstone, a member of the Shoalhaven Group. Wandrawandian Siltstone is dominated by siltstone and silty sandstone lithologies, and is pebbly in parts. Immediate foreshore areas of the site, adjacent to Crookhaven River Estuary consist of Quaternary sedimentary units of gravel, sands, silts, and clays of marine to freshwater environments, and likely overlie Wandrawandian Siltstone in these areas.



On-site borehole investigations for a site geotechnical assessment (Martens & Associates report P1002842JR02V01, December 2010) encountered weathered siltstone at 0.8 – 2.3 m below ground level at 22 borehole locations across the site. Bedrock was deeper than 2.2 m ball at 2 borehole locations.

2.4 Soil Profile

The Soil Landscapes of the Kiama 1:100,000 Sheet identifies the site as having soils of the Greenwell Point soil landscape (Table 1). Total soil depth is typically <1.0 m.

Table 1: Soil profile summary of Greenwell Point soil landscape: coastal cliffs and headlands (Chapman & Murphy, 1989).

Layer	Depth Range of soil layer (m)	Description
gpl	0.0 – 0.5	Hardsetting brownish black SILT LOAM.
gp2	0.5 – 0.9	Yellowish brown strongly pedal SANDY CLAY.

On-site borehole investigations for a site geotechnical assessment (Martens & Associates report P1002842JR02V01, December 2010) found the soil profile to typically consist of no more than 0.5 m of topsoil (silty sand and sandy silt) overlying clay subsoil grading to extremely-highly weathered siltstone. Relevant excerpts from that report are provided in Attachment B.

2.5 Groundwater

2.5.1 Bore Search

A review of the former NSW Department of Natural Resources groundwater bore database indicates that there are no licensed bores in the vicinity of the site.

2.5.2 Site Observations

Groundwater was observed during intrusive investigations at the site (November 22, 2010), and is summarised in Table 2. More detailed investigation of groundwater at the site is presented in Martens and Associates report P0902521JR02V01 (2010).



Table 2: Groundwater level measurements

GMB ID 1	GMB Surface Level ²	23.11.2010 mAHD	24.11.2010 mAHD	25.11.2010 mAHD	26.11.2010 mAHD
1	6	5.38	5.38	5.34	5.31
1a	6	-	4.84	4.93	4.97
2	22	20.8	20.71	20.63	20.59
2a	22	-	Dry	Dry	Dry
3	15	Dry	Dry	Dry	Dry
4	8	Dry	Dry	Dry	Dry
5	8	Dry	Dry	Dry	Dry
6	5	-	-	4.87	4.86

Note:



¹ GMB – groundwater monitoring bore.

² Level approximate mAHD based on Allen, Price and Associates survey (Ref: 25405-02)

3 Site History Review (Stage 1 Investigation)

3.1 Overview

A review of the history of site use and development has been completed based on Council development consent and building plan records, NSW EPA/DECC contaminated land records, historical aerial photography and a walkover site inspection to form a preliminary assessment of the risk of land contamination resulting from past land uses.

3.2 Zoning

Zoning of the subject lots is as follows according to the Shoalhaven LEP (1985):

- Lot 61 DP 755971 mostly residential 2(c) (Living Areas) with a 7(a) (Ecology) Environmental Protection buffer along the shoreline;
- Part Lot 5 DP 1065111 north of Culburra Road business 3(f) (Village);
- Part Lot 5 DP 1065111 south of Culburra Road partly residential
 2(c) (Living Areas) and partly 5(a) Community Uses
- Part Lot 6 DP 1065111 mostly residential 2(c) (Living Areas) with a 7(a) (Ecology) Environmental Protection buffer along the shoreline and portions of business 3(f) (Village) and 5(a) Community Uses near the boundary with Lot 5; and
- o Part Lot 7 DP 1065111 residential 2(c) (Living Areas).

3.3 NSW EPA/DECC Contaminated Land Record

Review of the NSW EPA/DECC contaminated land record shows that the subject site has not been regulated by the EPA in regards to contaminated land. No site within the suburb of Culburra was listed on the register.

3.4 Development Application History

Development application and building plan records kept by Shoalhaven City Council were reviewed in November 2010. Council's records date back to approximately 1960 – 1970. The records indicate that all previous development applications have been in relation to residential use (Table 3) and were approved within the last 9 months prior. Properties not listed did not have any associated recorded applications.



Table 3: Building or development applications for the site, approximately 1960 - current.

Year	DA No.	Description	Decision
		Lot 6 DP 1065111	
2010	1330	New dwelling – single storey and detached shed.	Approved 30/04/2010
		Lot 7 DP 1065111	
2010	1494	New dwelling – single storey and detached garage.	Approved 13/09/2010
		Lot 5 DP 1065111	
2009	2675	Dwelling – single storey sustainable house	Approved 02/03/2010

3.5 Historical Aerial Photograph Analysis

Historical aerial photographs taken of the site during 1949, 1961, 1974, 1993, 2002 and 2008 were reviewed in order to investigate the history of land use on the site (Table 4). Copies of all aerial photographs are provided in Attachment B.

Photos indicate that the site has not sustained any intensive land use except for possibly grazing of pasture in cleared portions of the site.



Table 2: Historical aerial photograph observations 1949 – 2008.

Year	Description
1949	The northern portion of Lot 61 and eastern portions of Lot 5 are fully cleared with other parts of the site either mainly cleared or covered by remnant forest. A number of access tracks but no structures or intensive land use are observed. Surrounding land use has a similar pattern of use.
1961	As per 1949, the site is partly cleared with some remnant forest; surrounding land use is similar with small residential lots in present day residential areas.
1974	Site condition appears similar to 1961 except Lot 61 has been more extensively cleared along the western boundary and there is some fencing in the north-west corner of the site. Some vegetation regrowth has occurred in other areas. Residential development has become more prominent around the Culburra town centre and some clearing and possibly earthworks can be seen at the site of the current Culburra wastewater treatment plant. It appears that quarrying operation has started on the property to the west of Lot 5 DP 1065111.
1993	Significant vegetation regrowth outside of present day cleared areas has occurred. Residential development has intensified around the Culburra town centre. Culburra wastewater treatment plant is established, as is Culburra nursing home adjacent to Lot 5 DP 1065111.
2002	Land use on-site is consistent with the 1993 photo. Industrial area on STP access road has increased in size with the concrete batching plant.
2008	Land use on-site and in the surrounding area is consistent with the 2002 photo, although the quarrying operation on the southern side of Culburra Road and west of Lot 5 DP 1065111 appears to have ceased. The site is predominantly remnant and regrowth forest and there are no structures or intensive land use apparent. The western portion of Lot 61 and a portion of Lot 5 on the north side of Culburra Road remain cleared.

3.6 Walkover Site Inspection

A site inspection completed 23 – 26 November 2010 made the following observations:

- Some scattered bulky waste items (including a few old cars and a wheel barrow) in various locations about the site, but otherwise no significant/widespread dumping was identified; and
- 4 stockpiles of soil containing minor building waste (e.g. wire) in the south-east corner of proposed Lot 1.

No other evidence of potential contamination such as soil staining, unnatural odours or plant stress was observed on-site.



4 Conclusions and Recommendations

The results of the site history review (preliminary site investigation) indicate that the site has possibly been used for grazing. Some bulky waste items and a few stockpiles of soil were identified by a site walkover inspection (Section 3.6) but do not represent widespread site contamination. On this basis, the site is unlikely to be contaminated other than by waste and stockpiles noted, and further site assessment (sampling and laboratory testing) is generally not necessary. Future investigation of identified stockpiles are to be undertaken and they, and any others found during site works, are to be removed from site unless classified as acceptable to remain on a residential site.

Subject to the appropriate management of the identified stockpiles, dumped vehicles and any other such areas, the site is considered suitable for residential purposes.



5 Limitations Statement

The Stage 1 contamination assessment was undertaken in line with current industry standards. No site soil sampling has been undertaken.

It is important, however, to note that no Stage 1 land contamination study can be considered to be a complete and exhaustive characterisation of a site nor can it be guaranteed that any assessment shall identify and characterise all areas of potential contamination or all past potentially contaminating land-uses. This is particularly the case on sites where extensive areas of past cleared land have revegetated. Therefore, this report should not be read as a guarantee that no contamination shall be found on the site. Should material be exposed in future which appears to be contaminated, additional testing may be required to determine the implications for the site.

Martens & Associates Pty Ltd has undertaken this assessment for the purposes of the current development proposal. No reliance on this report should be made for any other investigation or proposal. Martens & Associates accepts no responsibility, and provides no guarantee regarding the characteristics of areas of the site not specifically studied in this investigation.



6 References

Martens and Associates (2010) Geotechnical Constraints Assessment: Lot 61 DP 755971 and Part of Lot 6 DP 106511, Culburra Road, West Culburra, NSW (Report Ref: P1002842JR02V01).

Soil Landscapes of the Kiama 1:100 000 sheet. Soil Conservation Service of NSW, Sydney.

Shoalhaven City Council - Shoalhaven LEP (1985).

Wollongong 1:250,000 Geological Sheet; New South Wales Dept of Mines, 1970.

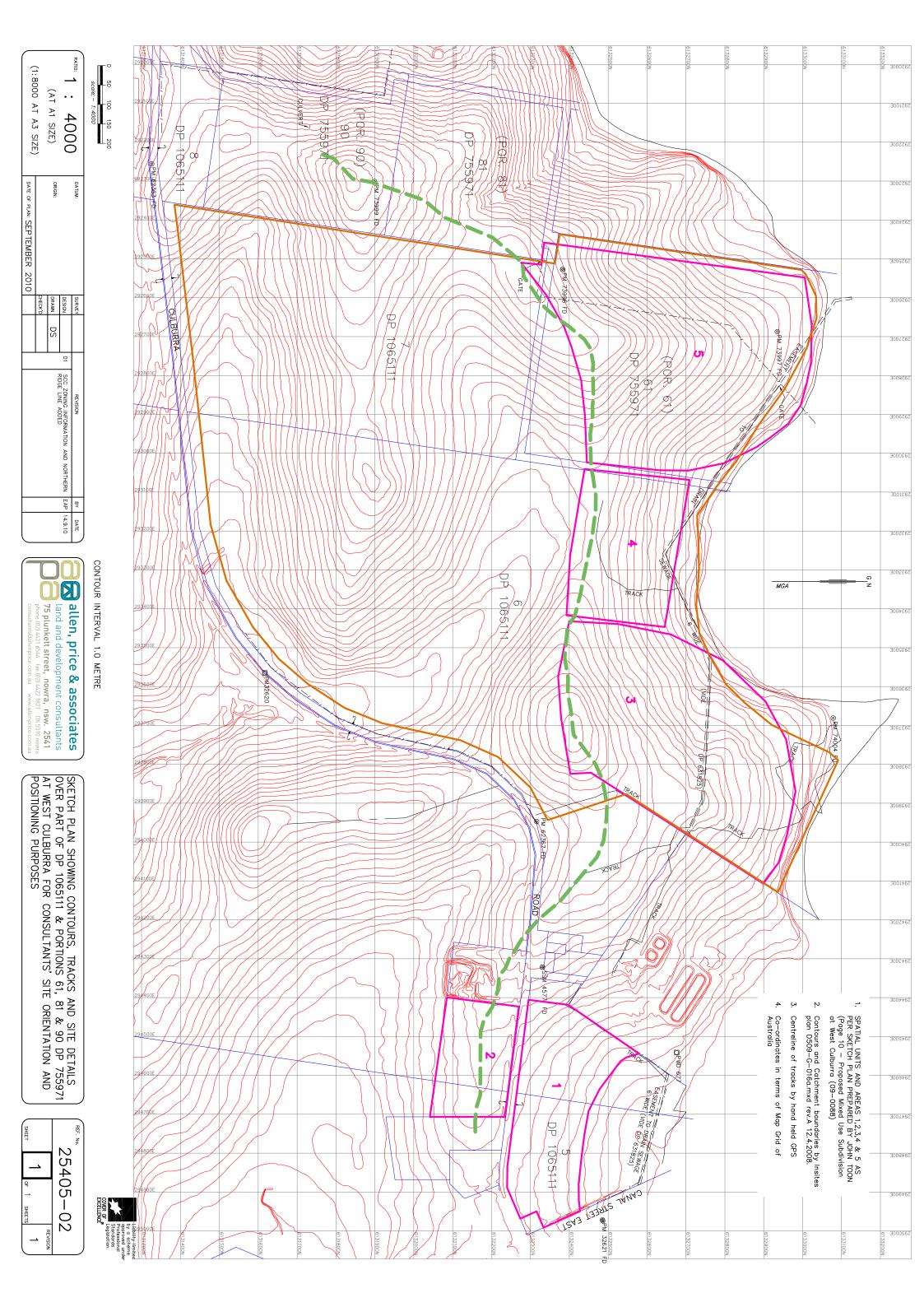
NSW EPA (2000) Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites.

NSW DEC (2005) Contaminated Sites: Guidelines for Assessing Former Orchards and Market Gardens.



7 Attachment A – Site Plan





8 Attachment B – Excerpts from Martens (2010)

Geotechnical Assessment Report (P1002842JR02V01)



3 Factors Affecting Development

3.1 Geotechnical

3.1.1 Sub-surface Conditions

Subsurface investigations at the subject indicate that predominantly sandy silts or silty sands (with some organic content) typically overlie medium to high-plasticity clays derived from *in-situ* weathering of the underlying Wandrawandian Siltstone. The soil mantle typically ranges in depths from 1.3 – 1.5 m below ground level (BGL). Extremely to highly-weathered siltstone is encountered below 1.5 mBGL, with rock strength variation ranging from extremely to slightly weathered to depths of 5.5 mBGL. Significant rock outcropping was not observed on the site.

Borehole, test pit and DCP locations are shown on the site plan (Attachment A). Detailed borehole and test pit logs are presented in Attachment B.

Table 2: Indicative soil and rock depth range.

Material Description 1	Depth ² (m)
SILTY SAND / SANDY SILT	0.0 – 0.3
CLAY	0.3 – 1.3
EW – SW SILTSTONE (weathering patterns variable down profile)	1.3 - >5.5

Notes:

3.1.2 Soil Strength Properties

Preliminary soil strength estimates indicate soils below 0.3 m are likely to have allowable bearing capacities (ABC) ranging between 50 – 200 kPa, providing suitable bearing capacity for standard shallow foundations for residential dwellings. Areas of the site identified to contain soft soils are likely to have ABC <50 kPa.

Further investigation is required at detailed design stage to formally assess ABC and related soil strength properties across the site. We also recommend that additional assessment is conducted to formally identify the distribution of soft soil areas and associated ABC and related soil strength properties which may have implications for development in these areas.

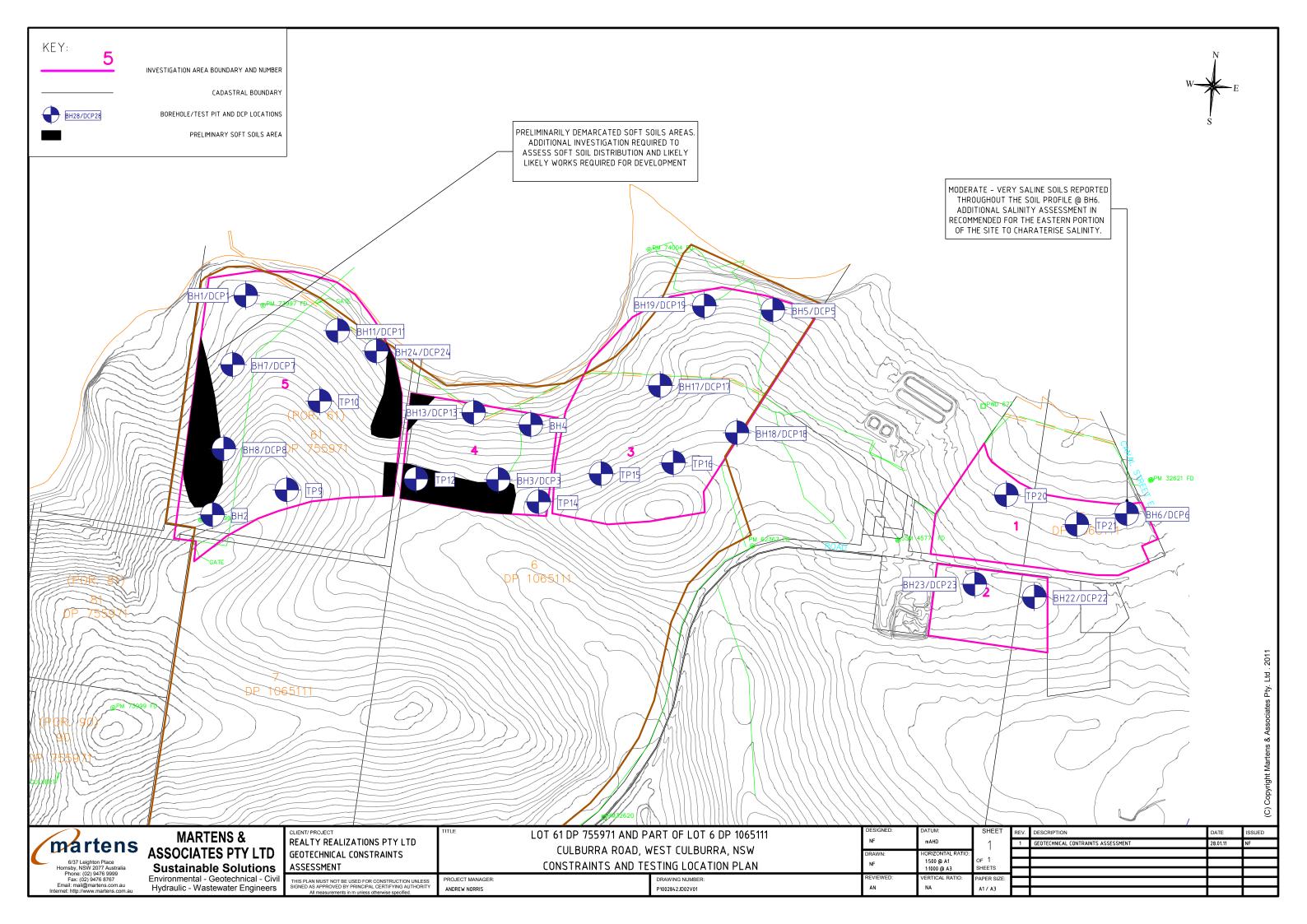


 $^{^1}$ F = Fresh, SW=Slightly weathered, MW = Moderately weathered, HW = Highly weathered, EW = Extremely weathered. Refer to borehole logs for material description details.

² Indicative depth range. Material depth may vary across a site depending on site and local geological conditions. Depth of fill variable across the site. Refer to borehole logs for accurate depths of soil materials at each borehole.

7 Attachment A – Site Plan





8 Attachment B – Borehole and Test Pit Logs



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-			DIMEN	ISIONS	0.1mØ X 7				NORTHING	NA NA	ASPECT	North				SLOPE	3-4	1%		
	EX	CA	/AT	ION DA	TA			MA	TERIAL DA	TA	•			SA	MPLIN	G & TE	STING	}		
METHOD	SUPPORT	WATER	MOISTURE	DEPTH (M)	PENETRATION RESISTANCE	GRAPHIC LOG	CLASSIFICATION	Soil type, texture, structure, n particle characteristics, orga	PTION OF STR. nottling, colour, pla anics, secondary a ontamination, odou	sticity, rocks, oxidation, and minor components,	CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)		WATER	WELL	DET	AILS — Well Cover 0.73m agl	
A	Nil Nil	N N	M	0.1			OL	ORGANIC SILT	Y CLAY – Da	rk grey/black.	S		٨	0.2	2042/2/0	2+ B	†	1.	Concrete	=
Α	NII	N		0.2 -	*****		CL		Y – Brown/ligl		S F		A	0.2	2842/2/0	.2+ B			-0.3m bgl	_
Α	Nil	N	М	0.6		 	CL	CLAY – Red, moderat mottles ind	tely plastic, w creassing with		'		A	0.5	2842/2/0	.5 + Att			Bentonite Seal	_
А	Nil	N	М	1.0 1.1	*******		СН	CLAY – Red, mediun	n plasticity, g	rey/brown mottles.	St		А	1.0	2842/2/1	.0	(UPVC Pipe.	1.0
Α	Nil	N	М	1.2			СН	CLAY - Grey with	h minor red/b	rown mottles.	VSt		Α	1.2	2842/2/1	.2	23	2E		_
													A	2.0	2842/2/1					2.0
			D										А	2.5	2842/2/2	.5				3.0
A	Nil	N	M	4.0 			CL EW	CLAY - EXTREMEL' Clay to sandy gre			VSt		А	4.5	2842/2/4	.5		- 17.51	4.05m bgl Sand Pack UPVC Screen	4.0
А	Nil	N	М	5.5 - - - - 6.0 - - - - 6.5			CL	SILTSTONE CLAY - highly w	Brown/dark g eathered silts		St		А	6.0	2842/2/6	.0				6.0
А	Nil	N	w				CL EW	CLAY - Dark gi weat	rey/brown, cla hered siltston		VSt		A	7.0	2842/2/7	7.0	ZII ZII			70
				7.0 - - - - - - - - - - - - -				Borehole term	inated at 7.0r	n on clays.				7.0	2012/2	.v		7 :. I	— 7.05mbgl Well end plug	7.0 - - - - 8.0 - - - - -
N Natural exposure SH Shoring N None observed D Dry L L									w VS oderate S gh F ifusal St S VSt H	SISTENCY	se A Au B Bu Dense U Un D Dis se M Mo	ING & Ti ger sample k sample disturbed turbed sa isture con pe sample	e sample mple itent	pr S V: D: FI	o Pocket pr Standard S Vane shi CP Dynam penetro D Field der /S Water sa	ic cone ometer osity	test	SYMB SOIL D	BIFICATION OLS AND DESCRIPTIO USCS Agricultural	9. <u>0</u>
	_ 50		2010			EXCAVATIO	ON LO	OG TO BE READ IN CONJU	INCTION WITH	ACCOMPANYING REP	ORT NOTES	AND A	BBRE\	/IATI	ONS					
)							ASSOCIATES PTY LTD			F	nc	nino	erin	a I	0	~ _	

CL	IEN ⁻	Γ	Α	llen Pric	ce & A	ssc	ociates	Pty	Ltd	COMMENCED	23.11.10		COMPLET	ED :	23.11.10			REF	ı	BH	2 A
PR	OJE	СТ	Е	ngineer	ing Se	rvi	ces			LOGGED	GT		CHECKE)	AN			Sheet 1		1	
SIT	Έ		С	ullburra	Road	I, W	lest Cu	llbu	rra	GEOLOGY	Siltstone		VEGETAT	ION	Grasses			PROJECT	NO.	1002842	
EQU	IPME	ΝT			Hydrauli	c Aug	ger			EASTING	NA		RL SURFA	ACE	NA			-			
EXC				ISIONS	0.1mØ X	(1.5r	m depth			NORTHING	NA		ASPECT	ı	North			SLOPE		4%	
<u> </u>	EX	CA	/AT	ION DA		4		_	M.A	ATERIAL D	ATA					S	AMPLIN	IG & TE	STIN	<u> </u>	
METHOD	SUPPORT	WATER	MOISTURE	DEPTH (M)	PENETRATION RESISTANCE		GRAPHIC LOG	CLASSIFICATION	Soil type, texture, structure, r particle characteristics, orga	PTION OF STE mottling, colour, p anics, secondary ontamination, odo	lasticity, rocks and minor co	s, oxidation, mponents,	CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)		WATER	R WELI	DETAI	LS Well Cover
Α	Nil	N	М	0.1	- 2 T	œ		ن OL	ODCANIC CILT	V CLAV D	ark arou/b	look	S	-	1	+			-H		
A	Nil	N	M	0.2		Ħ		CL	ORGANIC SILT	Y CLAY – Da Y – Brown/lig		аск.	S					0.25m bgl		1/4//	Concrete Bentonite Seal
А	Nil	N	М	0.6		-	 	CL	CLAY – Red, moderat		vith light b	rown/grey	F					0 <u>.4</u> 7m bgl		25 25	UPVC Pipe
Α	Nil	N	М	1.0 1.1		-	 	СН	CLAY – Red, mediur	n plasticity, ເ	rey/browr	n mottles.	St								Sand Pack. 1.0
Α_	Nil	N	M D	1.2				CH	CLAY - Grey wit	h minor red/l	orown mot	ttles.	VSt			+					
Α	Nil	N	M	1.5				EW	CLAY TO EXTREME				VSt		А	1.5	2842/2A/	1.5 1.42m bgl		15 12	
				_					Clay to sandy	clay, weathe ey/red/brown		ls,							L	We	ll end plug
				-					Borehole termin			nelv									_
				<u>2.0</u> –						hered siltsto		,									2 <u>.0</u> –
				_																	_
				-																	-
				-																	-
				3.0																	3 <u>.0</u>
				-																	-
				_																	_
				_																	_
				4.0																	4.0
				_																	_
				_																	_
				-																	-
				_																	_
				5.0																	5.0
				-																	=
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				_																	-
				-																	-
				6.0																	6 <u>.0</u>
				E																	=
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				7.0 -																	7 <u>.0</u> -
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				<u>8.0</u>																	8 <u>.0</u>
				F																	
				F																	-
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				Ė																	- -
	OLIIDA	/ENT	/ME	9.0 THOD SU	JPPORT		WATER		MOISTURE PENE	TRATION CON	ISISTENCY	DENSITY	CAN	ADI INIC	& TESTIN	IG.				CLASSIF	9.0
N X	Na	itural e	expos	ure SH	JPPORT H Shoring C Shotor		N None X Not r	e obse	rved D Dry L Lo		Very Soft Soft	VL Very Loos L Loose	se A	IPLING Auger s Bulk sa	sample	- 1	op Pocket p	enetrometer d penetration		SYMBOL	
B E	H Ba Ex	ckhoe bucket RB Rock Bolts Water level W Wet Facavator Nil No support Wp Plastic limit F							W Wet H Hig Wp Plastic limit R Re	gh F efusal St	Firm Stiff	MD Medium D D Dense	ense U I	Undistu Disturb	irbed samp ed sample	le '	VS Vane sh DCP Dynar	near nic cone	.001		ics
HA Hand auger ✓ Water outflow William S Hand spade									low WI Liquid limit	VSt H	Very Stiff Hard	VD Very Dens	e M M	Moistur	e content ample (x mr	n) l	penetr FD Field de	ometer nsity		\vdash	ricultural
Α	PT Push tube A Auger CC Concrete Corer							er inflo	w	F	Friable					,	WS Water s	ample			
	U U01	ruete	core			EX	CAVATIO	ON LO	OG TO BE READ IN CONJU	JNCTION WIT	H ACCOMF	PANYING REP	ORT NOT	ES AN	ID ABBR	EVIAT	IONS				
)							MARTENS &								ovin			_

CLI			+			sociates	Ply	Lta	COMMENCED	23.11.10		COMPLETE		.10			REF		В	Н3	
PRO		СТ	+		ing Ser				LOGGED	GT		CHECKED	AN				Sheet 1	of '			
SIT			Cı	ıllburra		West Cu	ıllbu	rra	GEOLOGY	Siltstone		VEGETATIO					PROJECT I	NO. P1	0028	42	4
EQUI			NAC N	SIONS	Hydraulic A 0.1mØ X 5				EASTING NORTHING	NA NA		RL SURFAC	E NA North				SLOPE	2-3	n/		\dashv
				ON DA		.om depin		MΔ	TERIAL DA			ASPECT	Norui		SΔ		3 & TES				ᅱ
METHOD	SUPPORT	WATER	MOISTURE	DEPTH (M)	PENETRATION R RESISTANCE	GRAPHIC LOG	CLASSIFICATION	DESCRIF Soil type, texture, structure, rr particle characteristics, orga	PTION OF STR	ATA asticity, rocks,	oxidation, ponents,	CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)		WATER			AILS — Well Cover	
Α	Nil	N	М	- 0.15		**************************************	SM	SILTY SAND – Brov	wn/dark brow	n, minor g	ravels.		L	Α	0.2	2842/3/0.2		†		Concrete	_
А	Nil	N	М	- -0.35 - -			SP	SAND – Light brown/ gravels (1-	brown, medi -5mm, appro		l sands,	F	L	A	0.5	2842/3/0.5				0.6m bgl	1111
Α	Nil	N	М	0.8 1.05			CL	CLAY - Yellow/bro siltstone band				St		Α	1.0	2842/3/1.0)	3 -		Bentonite Seal UPVC Pipe.	1.0
Α	Nil	N	М	- -1.25 -			CL/ HW	SANDY CLAY/HIGHI - (LY WEATHE Orange/grey.		STONE	VSt		Α	1.2	2842/3/1.2	2				
Α	Nil	N	М				CL HW	CLAY - HIGHLY W Grey with red/orange				VSt		Α	1.5	2842/3/ 1.5	; 	v2 29≡E		1.565m bgl	
A	Nil	N	М				CL MW EW	CLAY - MODERATELY SILTSTONE - C				VSt		Α	2.0	2842/3/2.0)			Sand Pack. UPVC Screen.	2.0
Α	Nil	N	D	- - - - - - - - - - - - - - -			SC EW	CLAYEY SAND/E SILTSTONE mediur		red, fine to	RED	VSt		Α	2.5	2842/3/2.5	5				3.0
Α	Nil	N	D	3.2		St W N	MW	MODERATELY W		SILTSTO	NE -						/		24= 3d=	`	<u>).U</u>
Α	Nil	N	D				HW/ EW	Or HIGHLY/EXTREMEL	ange brown.	RED SILTS	STONE.			В	4.0	2842/3/4.0	; ; ;			4	4
А	Nil	N	D	- - - - - - -			MW/ SW	MODERATELY/ S	SLIGHTLYV ILTSTONE.	VEATHER	ED						4 <u>.565</u> m <u>bgl</u>			<u>Well e</u> nd plug.	11111111
А	Nil	N	D	5.0 - - - 5.5			EW/ MW	EXTREMELY/MC S	DERATELY ILTSTONE.	WEATHEI	RED										5.0 - - -
Borehole termina weat 6.0							hered siltstor	ne.											6.0 		
N Natural exposure SH Shoring N None observed D Dry L X Existing excavation SC Shotcrete X Not measured M Moist M BH Backhoe bucket RB Rock Bolts $\nabla \!$							rved D Dry L Lov red M Moist M Mc i W Wet H Hig Wp Plastic limit R Rei low WI Liquid limit	w VS oderate S gh F fusal St VSt H	Very Soft Soft Firm Stiff	DENSITY VL Very Loose L Loose MD Medium D D Dense VD Very Dens	se A Au B Bu Dense U Ur D Dis	LING & TE ger sample lk sample idisturbed s sturbed san pisture cont be sample	e sample mple tent	pp S VS DC	Pocket per Standard p Vane shea P Dynamic penetron Field dens S Water san	penetration to ar cone neter ity	est S	YMB SOIL D	SIFICATION OLS AND DESCRIPTION JSCS Agricultural	-	
UC	, 001	crete	Core		F	EXCAVATION	ON I (OG TO BE READ IN CONJU	NCTION WITH	1 ACCOMP4	NYING REP	ORT NOTES	S AND A	3BRF\	/JATIC	ONS					-
							J. T L		MARTENS &				, N			•					\dashv

CL	IEN ⁻	Γ	Α	llen Pri	ce & As	sociates	Pty	Ltd	COMMENCED	23.11.10	COMPLETE	D 2	3.11.10			REF		BH4
PR	OJE	СТ	E	ngineeı	ring Se	rvices			LOGGED	GT	CHECKED	A	AN			Sheet 1		
SIT			С	ullburr		West Cu	ıllbı	ırra	GEOLOGY	Siltstone	VEGETATI	_	lone			PROJECT	NO. P1	002842
-	IPMEI			1010110	Hydraulic				EASTING	NA NA	RL SURFAC		IA			OL ODE	0.00	,
EXC				ISIONS		5.5m depth		M 2	NORTHING	NA NTA	ASPECT	ı	lorth	84	MPIIN	SLOPE	2-39	⁶
МЕТНОБ	SUPPORT	WATER	MOISTURE	DEPTH (M)	PENETRATION	GRAPHIC LOG	CLASSIFICATION	DESCRII Soil type, texture, structure, r particle characteristics, org-	PTION OF STR	ATA asticity, rocks, oxidation, and minor components,	CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)				DETAILS Well Cover
_				-	_ ≥ ± α	• • • • • • • • • • • • • • • • • • •		CILTY CAND Drawn		0	8		A	0.2	2842/4/0	.2		Concrete -
A	Nil Nil	N N	M	0.3		× × ×	SM	SILTY SAND – Brown CLAY - Brown/orange	e, mottles inci	reasing with depth,	S		A	0.5	2842/4/0	.5		-
А	Nil	N	М	1.0			CL	gravels (1-	10mm, appro	· · · · · · · · · · · · · · · · · · ·		F	А	1.0	2842/4/1	.0	•	0.6m bgl Bentonite Seal UPVC Pipe. 1.0
А	Nil	N	М	1.8			CL HW	CLAY - HIGHLY V Grey with red/orange			VSt		А	1.5	2842/4/1	.5		1.26m bgl
A NII N M - CLAY - MODERATELY TO EXTREMELY WEATHERED SILTSTONE - Grey with red/pink mottles.													2 <u>0</u>					
A NII N D SC SC SULTSTONE - Grey/pink/red/orange, fine to medium grained sands. B 4.0 2842/4/4.0												.0 4 <u>.26m</u> bgl		3.0 				
А	Nil	N	D	5.0 - - - - - - - - - -			EW/ MW	EXTREMELY/MC SILTSTONE	_ , ,,				А	5.0	2842/4/5	.0		5 <u>0</u>
				- - - - - - - - -				Borehole to extremely/mode	erminated at a crately weathe									6 <u>0</u> 6 <u>0</u> - - - - - -
				7.0 - - - - - - - - - - - - -														7 <u>.0</u> - - - - - - - 8 <u>.0</u>
																		- - - - - - 9 <u>0</u>
N B E H S P	Na Ex H Ba Ex A Ha Ha T Pu	itural existing ckhoe cavate nd aug ind sp sh tub ger	expos excar buck or ger ade e	ure S vation S et R N	UPPORT H Shoring C Shotcre B Rock Bo iil No supp	te X Not olts ∇7 Wat	e obse measu er leve	erved D Dry L Lo red M Moist M M- II W Wet H Hig Wp Plastic limit R Re low WI Liquid limit	ow VS oderate S gh F efusal St VSt H	SISTENCY	se A A Dense U U D D se M M	uger sa ulk san ndistur isturbe oisture		pr S V: D		nic cone ometer nsity	S	_
	. 55					EXCAVATI	ON L	OG TO BE READ IN CONJU	JNCTION WITH	ACCOMPANYING REP	ORT NOTE	S AN	D ABBRE	VIATI	SNC			
		/							MARTENS &	ASSOCIATES PTY LTD							-	

CL	IEN	Γ	Α	llen Pric	ce & As	sociates	Pty	Ltd	COMMENCED	23.11.10	COMPLETI	ED 2	23.11.10			REF		BH6	
_	OJE	СТ	E	ngineer	ing Ser	vices			LOGGED	GT	CHECKED	A	AN			Sheet 1	of '	_	
SIT		_	С	ullburra		West Cu	ıllbu	ırra	GEOLOGY	Siltstone	VEGETATI	_	None			PROJECT	NO . P1	002842	
-	IPMEI AVAT		DIMEN	ISIONS	Hydraulic / 0.1mØ X 5				EASTING NORTHING	NA NA	RL SURFA	_	NA North			SLOPE	1-2	%	
				ION DA				M.A	TERIAL DA					SA		G & TES			
МЕТНОВ	SUPPORT	WATER	MOISTURE	DEPTH (M)	M PENETRATION H RESISTANCE	GRAPHIC LOG	CLASSIFICATION	Soil type, texture, structure, r particle characteristics, orga	PTION OF STR mottling, colour, pl anics, secondary a ontamination, odos	asticity, rocks, oxidation, and minor components,	CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)		WATER 0.63m agl	WELL	DETAILS Well	Cover
Α	Nil	N	М	0.1			CL	SILTY SANDY	CLAY – Dark	arev/brown.	S					C.	+	Concre	ete -
А	Nil	N	М	_			CL	SILTY SAND C			s		A	0.2	2842/6/0				
A	Nil	N	М	- 0.45 -		 	CL	CLAY - Red/orange wi			St		A	0.5	2842/6/0	.5		-0.5m t	ngl –
				0.7		 		with depth, minor g	ravels (1-10	nm, approx 5%).							4	Bentonit	e Seal
А	Nil	N	М	1.0 - 1.3			СН	CLAY - Grey/cream wi plastic, gravel	th red/brown s (1-5mm, ap	mottles, moderately oprox 20%).	St		А	1.0	2842/6/1	.0	*/ 	UPVC	Pipe. 1.0
													А	1.5	2842/6/1	.5			
A	Nil	N	М	_ _ _ _ 			CL HW	CLAY - HIGHLY V Light grey with red n			VSt		A	2.0	2842/6/2	.0		Sand	Pack. –
				- - - -		-=			asing with de				А	2.5	2842/6/2	.5	X <u> </u>	2.33mt	ogl – – –
\vdash				2.8													₩ <u>=</u>	UPVC	Screen
A	Nil Nil	N N	M D	3.0 3.1 3.3			CL/ HW		ODERATELY E - Light brownm, approx 1	n, gravels	VSt		В	3.0	2842/6/3	.0			3.0
CLAY/HIGHLY WEATHERED SILTSTONE - Light grey.													Ś	-					
Α	Nil	N	w	- - - - - - - - - - - - - - - - - - -			CL	CLAY - EXTREMEL Dark brown/dark (VSt		В	4.5	2842/6/4	5.33m bgl		Well end p	4.0 4.0 - - - - - - - - - - - - - - - - - - -
				-															-
	Borehole terminated at 5.5m on extremely weathered siltstone.																		
N Natural exposure SH Shoring N None observed D Dry L Low VS Very Soft VL Very Loose A Auger sample S Standard p S Soft L Loose B B Bulk sample S Standard p S Soft L Loose B B Bulk sample S Standard p S Soft L Loose B B Bulk sample S Standard p S Soft L Loose B B Bulk sample S Standard p S Soft L Loose B B Bulk sample S Standard p S Soft L Loose B B Bulk sample S Standard p S Soft L Loose B B Bulk sample S Standard p S Soft L Loose B B Bulk sample S Standard p S Soft L Loose B B Bulk sample S Standard p S Soft L Loose B B Bulk sample S S Soft L Loose B B Bulk sample S Standard p S Soft L Loose B B Bulk sample S S Soft L Loose B B Bulk sample S S Soft L Loose B B Bulk sample S S Soft L Loose B Bulk sample S S Soft L Soft S Soft L Loose B B Bulk sample S S Soft L Soft S Soft L Loose B B Bulk sample S S Soft L Soft S Soft S Soft S Soft L Soft S Soft S Soft L Soft S Soft S Soft L Soft S Soft S Soft S Soft S Soft S Soft S Soft L Soft S So											penetration tear ic cone meter sity	est S	SYMBOLS AN SOIL DESCRI Y USCS N Agricultu	PTION					
	C Coi		Core	r		EXCAVATI	ON L	OG TO BE READ IN CONJU	JNCTION WITH	H ACCOMPANYING REP	ORT NOTE	S AN	D ABBRE\	/IATI	ONS				
			7							ASSOCIATES PTY LTD						orin	I		

CLIENT Allen Price & Associates Pty Ltd commenced 24.11.10 completed 24.11.10 REF TP9 PROJECT Engineering Services LOGGED GT CHECKED AN Sheet 1 of 1																	
PR	OJE	СТ	E	ngineer	ing Ser	vices			LOGGED	GT	CHECKED	AN					
SIT	E		С	ullburra	Road,	West Cu	ıllbu	ırra	GEOLOGY	Siltstone	VEGETATIO	N Nor	e			PROJECT NO. P1002842	
EQU	PMEN	NT			Backhoe				EASTING	NA	RL SURFAC	E NA			•		
EXC	VAT	ION D	IMEN	ISIONS	0.4m X 2.0	m X 2.5m de	pth		NORTHING	NA	ASPECT	Sou	rth			SLOPE 2-3%	
	EX	CAV	ΆT	ION DA				MA	TERIAL DA	ATA				SA	MPLIN	G & TESTING	
METHOD	SUPPORT	WATER	MOISTURE	DEPTH (M)	L PENETRATION H RESISTANCE	GRAPHIC LOG	CLASSIFICATION	Soil type, texture, structure, n particle characteristics, orga	PTION OF STR nottling, colour, pla anics, secondary a intamination, odou	sticity, rocks, oxidation, and minor components,	CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)	AI	RESULTS AND DDITIONAL OBSERVATIONS	
	Nil	N	M	0.1		* * * * * * * *	SM	ORGANIC SILTY	' SAND – Da	k grey/brown.		L	В	0.2	2842/9/0.	2	
ВН	Nil	N	М	-0.35		× × ×	SM	SILTY SAND – Light g	rey/grey, gra	vels (1-5mm, 10%).		L					\exists
вн	Nil	N	М			 	CL	CLAY - Orange/brov	vn mottled, m	oderately plastic.	F St		В	0.5	2842/9/0.		
вн	Nil	Z	М	1.0 - - 1.4		 	CL	CLAY - Grey/red/orar	nge mottled, r	noderately plastic.	VSt		В	1.0	2842/9/1.		1.0
вн	Nil	N	М	_			CL/ HW	CLAY/HIGHLY W Grey/pink/red/orange, to extremely we	siltstone grav	vels bands, tending	VSt		В	1.5	2842/9/1.		
Ni															0	2.0 - -	
		4ENT	/ME	3.0 	PPPORT	WATER		weath	ered siltstone		SAMO	ibic s	TESTING			CLASSIFICATION	3.0
N X BH E HA	Na Ex Ex Ha Ha	tural edisting ckhoe cavato aug	exposi excav bucke or ger ade	ure SH vation SC et RE	H Shoring Shotcrete	N None X Notr ts ∇ Wate	e obse measu er leve er outf	erved D Dry L Lo red M Moist M M. H W Wet H Hig Wp Plastic limit R Re low WI Liquid limit	w VS oderate S gh F fusal St VSt H	Very Soft	ose A Au B Bul Dense U Un D Dis se M Mo	ger sam k sampli disturbe turbed s isture co	ple e d sample ample	pp S VS D(netrometer SYMBOLS AND SOIL DESCRIPTIC ar c cone meter sity N Agricultural	- 1
		ncrete	Core	r	_	VO *\ / · T ·	2011	00 TO DE DEAD !!! 00! :::	NOTION	1 A O O O M D A N / 1 C D = -	ODT NOTE:		ADDD==		ONC		\dashv
			_		Е	-AUAVATI(JN L(OG TO BE READ IN CONJU	INCTION WITH	ACCOMPANYING REP	UKI NUTES	AND.	HRRKE,	v IA I I	JIN2.		_

CLI	EN	Γ	Al	len Pric	e & Ass	sociates	Pty	Ltd	COMMENCED	24.11.10	COMPLETE	24.1	1.10		REF TP10
PR	ΟJΕ	СТ	Eı	ngineer	ing Serv	vices			LOGGED	GT	CHECKED	AN			Sheet 1 of 1
SIT	E		C	ullburra	Road,	West Cu	ıllbu	ırra	GEOLOGY	Siltstone	VEGETATIO	N Non	е		PROJECT NO. P1002842
EQUI	PMEN	NT			Backhoe				EASTING	NA	RL SURFAC	E NA			
_				SIONS		m X 2.0m de	pth		NORTHING	NA	ASPECT	Nort	h West		SLOPE 2-3%
_	EX	CAV	'AT	ON DA				M A	TERIAL DA	ATA			+	SA	MPLING & TESTING
МЕТНОБ	SUPPORT	WATER	MOISTURE	DEPTH (M)	L PENETRATION H RESISTANCE	GRAPHIC LOG	CLASSIFICATION	Soil type, texture, structure, r particle characteristics, org- fill, co	anics, secondary a ntamination, odou	sticity, rocks, oxidation, ind minor components, r.	CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)	RESULTS AND ADDITIONAL OBSERVATIONS
BH BH	Nil Nil	N N	M	0.1		× * * × × ×	SM	ORGANIC SILTY				<u> </u>	В	0.2	2842/10/ 0.2
ВН	Nil	N	М	0.3 0.5			CL	SILTY SAND – Light of CLAY - Orange/brow			F St		В	0.5	2842/10/ 0.5
вн	Nil	N	М	0.8 1.0 - 1.3		 	CL	CLAY - Grey/red/orar	nge mottled, r	noderately plastic.	VSt		В	1.0	2842/10/ 1.0 1 <u>.0</u>
вн	Nil	N	М	- - - - - - - - 2.0			CL/ EW	CLAY/EXTREMELY Grey minor mott siltstone band weat	les, moderate	ely weathered moderately	VSt		В	1.5	2842/10/ 1.5
Test pit terminated at 2.0m on moderately/slightly weathered siltstone.															
				- - 4.0 -											- - 4 <u>.0</u> - -
				_ _ _ _ _ _ 											- - - - 5 <u>.0</u>
				_ _ _ _ _ _ _											- - - - - - -
				6.0 - - -											6 <u>.0</u>
				- - - <u>7.0</u>											- - - 7 <u>.0</u>
				- - - - -											= = = = = = = = = = = = = = = = = = =
				8.0 - -											8 <u>.0</u> - - -
	VI III.	AEN'T	/	9.0	IDDOST	\		MOIOTURE	EDATION COST	CICTENOV SEVE		INIO 1			9.0
N X BH E HA S PT A	Na Ex Ex Ha Ha Pus Au	tural e disting ckhoe cavato nd aug nd spa sh tube	exposi excav bucke or ger ger ade	ure SH vation SC et RE Nil	Rock Bolt No suppo	ts <u>▼</u> Wat ort <u></u> Wat → Wat	e obse measu er leve er outf er inflo	erved D Dry L Lo red M Moist M M- II W Wet H Hig Wp Plastic limit R Re low WI Liquid limit	w VS oderate S gh F fusal St VSt H F	SISTENCY	se A Au B Bu Dense U Un D Dis se M Mo Ux Tul	ger sample k sample disturbed sturbed s isture co be samp	e d sample ample ontent le (x mm)	PP S VS DO FE W	D Pocket penetrometer Standard penetration test S Vane shear CP Dynamic cone penetrometer D Field density S Water sample CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION S USCS Penetrometer D Field density S Water sample
						_						Т	_	_	

PROJECT Company Property	CLI	ENT	Г	Α	llen Pric	ce & As	sociates	Pty	Ltd	COMMENCED	24.11.10	COMPLETED	24.11	.10			PROJECT Engineering Services LOGGED GT CHECKED AN Sheet 1 of 1												
Secondary Company Co	PRO	IJΕ	СТ	E	ngineer	ing Ser	vices			LOGGED	GT	CHECKED	AN						_										
Security	SIT	E		С	ullburra	Road,	West Cu	ıllbu	ırra	GEOLOGY	Siltstone	VEGETATION	None	!			PROJECT NO). P1002842											
SAMPLING & TESTING SAMPLING & TESTING & TESTIN	EQUI	PMEN	NT							EASTING	NA	RL SURFACE	NA																
December	EXCA	VAT	ION D	IMEN	ISIONS	0.4m X 2.0)m X 2.2m de	pth		NORTHING	NA	ASPECT	North	1			SLOPE	2-3%											
Company Comp		EX	CAV	/AT	ION DA				M.A	TERIAL DA	ATA				SA	MPLIN	G & TEST	ING											
Note						M PENETRATION H RESISTANCE		-	Soil type, texture, structure, r particle characteristics, org fill, co	mottling, colour, pla anics, secondary a ontamination, odou	asticity, rocks, oxidation, and minor components, ir.	CONSISTENCY		TYPE	DEPTH (M)	Α			NS										
## A							X * * X							В	0.2	2842/12/	0.2												
No.	Dii	1411	- 14	IVI	0.3	83) 88 88	<u> </u>	SIVI	SILTY SAND – Light o	grey/grey, gra	vels (1-5mm, 10%).								_										
EQUIPMENT NUMBER DESPREY NATURE THE PROPERTY OF THE PROPERTY	вн	Nil	N	М				CL	CLAY - Orange/brov	vn mottled, m	oderately plastic.			В	0.5	2842/12/	0.5												
Test pit terminated at 2 2m on moderately weathered allistone. CLAYEXTREMELY WEATHERED SILTSTONE-Grey minor modifies, enderately weathered allistone. CLAYEXTREMELY WEATHERED SILTSTONE-Grey minor modifies, enderately weathered allistone. CLAYEXTREMELY WEATHERED SILTSTONE-Grey minor modifies, enderately weathered siltstone. CLAYEXTREMELY WEATHERED SILTSTONE-Grey minor modifies with a subject of the control of	вн	Nil	N	М	_		 	CL	CLAY - Grey/red/ora	nge mottled, r	noderately plastic.	VSt		В	1.0	2842/12/	1.0		1 <u>.0</u> - -										
Test pit terminated at 2.2 m on moderately weathered silistone. Test pit terminated at 2.2 m on moderately weathered silistone. Test pit terminated at 2.2 m on moderately weathered silistone. Test pit terminated at 2.2 m on moderately weathered silistone. Test pit terminated at 2.2 m on moderately weathered silistone. Test pit terminated at 2.2 m on moderately weathered silistone. Test pit terminated at 2.2 m on moderately weathered silistone. Test pit terminated at 2.2 m on moderately weathered silistone. Test pit terminated at 2.2 m on moderately weathered silistone. Test pit terminated at 2.2 m on moderately weathered silistone. Test pit terminated at 2.2 m on moderately weathered silistone. Test pit terminated at 2.2 m on moderately weathered silistone. Test pit terminated at 2.2 m on moderately weathered silistone. Test pit terminated at 2.2 m on moderately weathered silistone. Test pit te	вн	Nil	Ν	М					Grey minor mott siltstone band	les, moderate ls, tending to	ely weathered moderately	VSt		В	1.5	2842/12/	1.5		2 <u>.0</u>										
EQUIPMENT / METHOD SUPPORT N Natural exposure SH Eschive bucket RB Rock Bols V Water level HA Hard super SH A Rock Bols V Water level HA Hard super SH HA Spade F Friable Water inflow Wat					3.0 - - - - - - - - - - - - - - - - - - -				Test pit termina weat	ted at 2.2m o hered siltston	n moderately e.								3 <u>.0</u>										
N Natural exposure SH Shoring N None observed D Dry L Low VS Very Soft VL Very Loose A Auger sample B Backhoe bucket RB Rock Bolts W Water level W Wet High F Firm MD Medium Dense U Undisturbed sample VS Standard penetration test VS Vands shear VS Very Soft VS Very Soft VL Loose B Bulk sample S Standard penetration test VS Vands shear	ECC	UIPM	MENT	/ ME		JPPORT	WATER		MOISTURE PENE	TRATION CON	SISTENCY DENSITY	SAMPL	ING & Ti	ESTING				CLASSIFICA	6.0 6.0 - - - - 7.0 - - - - - - - - - - - - - - - - - - -										
EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS	N X BH E HA S PT A	Na Ex Ex Ha Ha Pus	itural e kisting ckhoe cavato nd aug ind spa sh tube ger	exposi excar bucke or ger ade e	ure St vation SC et RE Ni	H Shoring C Shotcrete B Rock Bol I No suppo	N None X Not its ▼ Wate Wate Wate	e obse measu er leve er outf er inflo	erved D Dry L Lo red M Moist M M el W Wet H Hir Wp Plastic limit R Re riow WI Liquid limit	oderate S gh F sfusal St VSt H F	Very Soft VL Very Loo Soft L Loose Firm MD Medium I Stiff D Dense Very Stiff VD Very Dense Hard Friable VD	se A Aug B Bulk Dense U Unc D Dist se M Moi Ux Tub	er sample s sample disturbed turbed sa sture con e sample	sample sample ample atent e (x mm)	PP S VS DO FE W	Standard S Vane she CP Dynam penetro D Field den S Water sa	penetration test ar ic cone meter sity	SYMBOLS A SOIL DESCI	IND RIPTION										

CLI	EN	Γ	Al	len Pric	e & Ass	sociates	Pty	Ltd	COMMENCED	24.11.10	COMPLETE	D 24	1.11.10			REF	TP14
PRO	ΟJΕ	СТ	Eı	ngineeri	ing Serv	/ices			LOGGED	GT	CHECKED	ΑN	N			Sheet 1 c	
SIT	E		C	ullburra	Road,	West Cu	ıllbu	ırra	GEOLOGY	Siltstone	VEGETATIO	NO NO	one			PROJECT NO	. P1002842
EQUI	PMEN	NT			Backhoe				EASTING	NA	RL SURFAC	E NA	4				
_				SIONS		m X 1.5m de	pth		NORTHING	NA	ASPECT	No	orth			SLOPE	2-3%
	EX	CAV	AT	ON DA			_	M A	TERIAL DA	ATA				SA	MPLIN	G & TEST	ING
МЕТНОБ	SUPPORT	WATER	MOISTURE	DEPTH (M)	L PENETRATION H RESISTANCE	GRAPHIC LOG	CLASSIFICATION	Soil type, texture, structure, r particle characteristics, orga	PTION OF STR nottling, colour, pla anics, secondary a ontamination, odou	sticity, rocks, oxidation, and minor components,	CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)	A		.TS AND DBSERVATIONS
BH BH	Nil Nil	N N	M M	0.1 -0.25	***	× × ×	SM	ORGANIC SILTY	′ SAND – Da	k grey/brown.		L L	В	0.2	2842/14/	0.2	_
вн	Nil	N	М	- 0. <u>35</u> - 0. <u>35</u> 0.5			CL	SILTY SAND – Light g CLAY - Orange/brow			F St		В	0.5	2842/14/		
вн	Nil	N	М	0.8			CL	CLAY - Light grey/g	rey with brow	n/orange mottled.	VSt						<u>-</u>
вн	Nil	N	М	1.0			EW	EXTREMELY WEAT	HERED SILT	STONE BANDS.	VSt		В	1.0	2842/14/	1.0	1.0
ВН	Nil	N	М	_			MW	MODERATELY V Grey	VEATHERED , minor mottle		VSt		В	1.2	2842/14/	1.2	-
				1.5 _ _				Test pit termina	ted at 1.5m o				В	1.5	2842/14/	1.5	
	2.0																
	2.0 2.0																
				3.0 -													3 <u>.0</u> -
				- - -													- - -
				_ _													- - -
				<u>4.0</u>													4 <u>.0</u>
																	_ _ _
				- - -													- - -
				<u>5.0</u>													5 <u>.0</u>
				_ _ _													_ _ _
				- - -													- - -
																	6 <u>.0</u> -
				- - -													- - -
				_ _ _													- - -
				7.0 -													7 <u>.0</u> -
				_													- - -
				_ _ _													- - -
				8.0 _													8 <u>.0</u> - -
				_ _ _													- - - -
																	- - -
EC	UIPN	/ENT	/ ME		IPPORT	WATER	ш	MOISTURE PENE	TRATION CON	SISTENCY DENSITY	SAMP	LING 8	L R TESTING				9.0 CLASSIFICATION
N X	Na Ex	tural e	exposi excav	re SH ration SC	Shoring Shotcrete	N None X Not r	e obse measu	rved D Dry L Lo red M Moist M Mo	w VS oderate S	Very Soft VL Very Loos Soft L Loose	se A Au B Bu	ıger sar ılk samı	mple ple	pp S	Standard	enetrometer penetration test	SYMBOLS AND SOIL DESCRIPTION
BH E	I Ba	ckhoe cavato	bucke or	et RE		ts <u>▼</u> Wate	er leve	W Wet H Hig Wp Plastic limit R Re	gh F fusal St	Firm MD Medium D Stiff D Dense	Dense U Ur D Di	ndisturb sturbed	ed sample I sample	VS	S Vane she CP Dynam	ear ic cone	Y USCS
HA S	Ha	nd aug	ade			→ Wate			Н	Very Stiff VD Very Dens Hard	se M Mo	oisture (content nple (x mm)	FE	penetro Field den	meter sity	N Agricultural
PT A	Au					→ Wate	er inflo	ow .	F	Friable				W	S Water sa	imple	
CC	Cor	ncrete	Core	T.	F	XCAVATIO	ON I (OG TO BE READ IN CONJU	INCTION WITH	ACCOMPANYING REP	ORT NOTE:	SAND) ABBRF\	/JATI	ONS		
																	

CLI	EN	Γ	A	llen Pri	ce & As	sociates	Pty	Ltd	COMMENCED	24.11.10	COMPLETE	24.11	.10			REF	TP15	
PR	OJE	СТ	E	ngineer	ing Ser	vices			LOGGED	GT	CHECKED	AN				Sheet 1 of		
SIT	E		С	ullburra	a Road,	West Cu	ıllbı	ırra	GEOLOGY	Siltstone	VEGETATIO	None				PROJECT NO.	P1002842	
EQU	PMEN	NT			Backhoe				EASTING	NA	RL SURFACI	NA NA						
_				SIONS		m X 2.7m de	pth		NORTHING	NA	ASPECT	North	1				1-2%	
	EX	CAV	AT	ION DA	_	-	_	M A	TERIAL DA	ATA				SA	MPLIN	G & TESTII	NG	
МЕТНОБ	SUPPORT	WATER	MOISTURE	DEPTH (M)	L PENETRATION H RESISTANCE	GRAPHIC LOG	CLASSIFICATION	Soil type, texture, structure, r particle characteristics, orga	PTION OF STR nottling, colour, pla anics, secondary a ntamination, odou	asticity, rocks, oxidation, and minor components,	CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)	А	RESUL ¹ DDITIONAL O	TS AND BSERVATIONS	8
BH BH	Nil Nil	Z Z	M	0.1	88	× × ×	SM	ORGANIC SILTY	′ SAND – Da	rk grey/brown.		L	В	0.2	2842/15/	0.2		
вн	Nil	Z	М				CL	SILTY SAND – Light o			F St		В	0.5	2842/15/			11111
вн	Nil	Z	М	1.0 - - - - - - 1.7			CL	CLAY - Grey/red/orar	nge mottled, r	noderately plastic.	VSt		В	1.5	2842/15/ 2842/15/			1.0
BH Nii N M - CLAY/HIGHLY WEATHERED SILTSTONE - Grey/pink/red, siltstone gravels bands, tending to extremely weathered siltstone past 2.3m. Test pit terminated at 2.7m on extremely weathered siltstone.																2 <u>.0</u> - - - -		
				2.7									В	2.6	2842/15/	2.6		-
				3.0 	UPPORT	WATER		weat	hered siltston			ING & Ti					CLASSIFICATI	3,0 4,0 4,0 5,0 7,0 8,0 9,0 0
N X Bi E H/ S P A	Na Ex Ex Ha Ha Pus Au	tural edisting ckhoe cavato nd aug nd spands tube ger	exposi excav bucke or ger ger ade	ure St vation SC et RI Ni	H Shoring C Shotcrete	N Non ≥ X Not Its	e obse measu er leve	erved D Dry L Lo red M Moist M M- II W Wet H Hig Wp Plastic limit R Re low WI Liquid limit	w VS oderate S gh F ifusal St VSt H	Very Soft	B Bul Dense U Und D Dis se M Mo	per sample sample disturbed turbed sa sture con e sample	sample imple itent	pp S VS D(Pocket pe Standard S Vane she CP Dynam penetro D Field den S Water sa	ic cone meter sity	SYMBOLS AND SOIL DESCRIP Y USCS N Agricultur	O PTION
	, 001	ncrete	SOIG		ı	EXCAVATION	ON L	OG TO BE READ IN CONJU	INCTION WITH	I ACCOMPANYING REP	ORT NOTES	AND A	BBRE	/IATI	ONS			
			_									1						

CLIENT Allen Price & Associates Pty Ltd COMMENCED 24.11.10 COMPLETED 24.11.10 REF TP16 PROJECT Engineering Services GT CHECKED AN Sheet 1 of 1													TP16				
PR	OJE	СТ	Е	ngineer	ing Ser	vices			LOGGED	GT	CHECKED	AN					
SIT	E		С	ullburra	Road,	West Cu	ıllbu	ırra	GEOLOGY	Siltstone	VEGETATIO	No.	ne		F	ROJECT NO.	P1002842
EQU	PMEN	NT			Backhoe				EASTING	NA	RL SURFAC	E NA					
				NSIONS	1	m X 2.4m de	pth		NORTHING	NA	ASPECT	No	rth				2-3%
	EX	CAV	/AT	ION DA			_	M.A	TERIAL DA	ATA				SA	MPLING	& TESTI	NG
МЕТНОD	SUPPORT	WATER	MOISTURE	DEPTH (M)	M PENETRATION H RESISTANCE	GRAPHIC LOG	CLASSIFICATION	Soil type, texture, structure, n particle characteristics, orga	PTION OF STR nottling, colour, pla anics, secondary a ntamination, odou	sticity, rocks, oxidation, and minor components,	CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)	AD	RESULT DITIONAL O	TS AND BSERVATIONS
ВН		N	M	0.1		× × ×	SM	ORGANIC SILTY				L	В	0.2	2842/16/ 0.2	2	
ВН	Nil	N	М	0.4		< × × × ×	SM	SILTY SAND – Light g	rey/grey, gra	vels (1-5mm, 10%).		L					_
ВН	Nil	N	М				CL	CLAY - Light brown/g	grey mottles, i	moderately plastic.	F St		В	0.5	2842/16/ 0.5	5	- - - -
вн	Nil	N	М	1.0			CL	CLAY - Grey with			VSt		В	1.0	2842/16/ 1.0)	1.0
				1.2 - - - -				CLAY - HIGHLY WEAT	with depth. THERED SIL	STONE - Grey with			В	1.5	2842/16/ 1.8	5	
BH Nil N M - CL HW minor red/orange mottles, minor gravels, moderately plastic, mottles increasing with depth, siltstone bands/gravels (1-10mm, approx 20%), tending to extremely weathered siltstone.															2842/16/ 2.0)	_ 2.0 _ _ _
2.0 bands/gravels (1-10mm, approx 20%), B 2.0 2842/16/2.0														4	<u>-</u> - -		
				_ _ 				weat	nered sitistori	с.							3 <u>.0</u> -
				- - - -													- - -
				_ _ _ 4.0													- - 4 <u>.0</u>
				- - - -													- - - - -
				_ _ _ _ 5.0													_ _ _ 5.0
				- - - - -													
				_ _ <u>6.</u> 0													6 <u>.0</u>
				- - - -													- - - - -
				7.0 -													7 <u>.0</u> -
				- - - -													- - - - -
				-													- -
				8.0 - -													8 <u>.0</u> - - -
				- - - -													- - - - -
Щ		4E. :-		9.0	IDDOS=	,		MOISTURE	TDATION	NOTENOV				<u> </u>			9.0
N BH E H/ S P1 A	Na Ex Ex Ha Ha Pus	tural edisting ckhoe cavate nd aug nd spa	expos excar buck or ger ade e	ture SF vation SC et RE Nil		lts Wat	e obse measu er leve	erved D Dry L Lo red M Moist M M. H W Wet H Hig Wp Plastic limit R Re low WI Liquid limit	w VS oderate S gh F ifusal St VSt H	DENSITY	se A Au B Bu Dense U Ur D Dis	ger sam lk samp disturbe sturbed isture o	le ed sample sample	pr S V: D:	Pocket pene Standard pr S Vane shear CP Dynamic penetrom D Field densit 'S Water sam	cone eter	CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION Y USCS N Agricultural
						EXCAVATI	ON LO	OG TO BE READ IN CONJU	INCTION WITH	ACCOMPANYING REP	ORT NOTES	AND	ABBRE	VIATIO	ONS		

CLIENT Allen Price & Associates Pty Ltd COMMENCED 24.11.10 COMPLETED 24.11.10 REF TP20 PROJECT Engineering Services LOGGED GT CHECKED AN Sheet 1 of 1												TP20					
PR	OJE	СТ	E	ngineer	ing Ser	vices			LOGGED	GT	CHECKED		AN			Sheet 1 of	
SIT	E		С	ullburra	Road,	West Cu	ıllbu	ırra	GEOLOGY	Siltstone	VEGETATI	ION	None			PROJECT NO.	P1002842
EQU	IPMEI	ΝT			Backhoe				EASTING	NA	RL SURFA	CE	NA				
EXC				ISIONS		0m X 2.2m de	pth		NORTHING	NA	ASPECT		North Wes				1-2%
	EX	CA	/AT	ION DA				M A	ATERIAL DA	ATA				S/	AMPLIN	IG & TESTII	NG
МЕТНОD	SUPPORT	WATER	MOISTURE	DEPTH (M)	L PENETRATION H RESISTANCE	GRAPHIC LOG	CLASSIFICATION	Soil type, texture, structure, r particle characteristics, orga	PTION OF STR mottling, colour, pl anics, secondary a ontamination, odos	asticity, rocks, oxidation, and minor components,	CONSISTENCY	DENCITY INDEX	7 P	DEPTH (M)		RESUL ¹ DDITIONAL O	TS AND BSERVATIONS
вн	Nil	N	М	0.2		(* (* ()	SM	SILTY SAI	ND – Dark gr	ey/grey.		I	- Е	0.2	2842/20/	0.2	_
ВН	Nil	Υ	W	-0.35		× × ×	SM	SILTY CLAYEY	SAND – Brov	vn/light brown.		l		0.2	2012/20/	0.2	_
ВН	Nil	Υ	W	- 0 <u>.45</u> - 0.55			CL	CLAY - Orange/brown,	minor gravels	s, moderately plastic.	F St		E	0.5	2842/20/	0.5	
вн	Nil	N	М	- - 1.0 - - - - - -			СН	CLAY - Red/grey, r moderate	ninor gravels ely to highly p	, orange mottled, plastic.	VSt		E				1 <u>.0</u> 1.0 - - - - - - -
				2.0 2.2									E	3 2.0	2842/20/	2.0	2 <u>.0</u>
Test pit terminated at 2.2m on clays. 3.0																	
				5.0 _ _ _ _ _ _ _ _ _													5 <u>.0</u> - - - - - - -
				6.0 - - - - - - - - - - - - - - - - - - -													6 <u>.0</u> - - - - - - - - - - - - - - - - - - -
N BI E H, S P	Na Ex Ex A Ha Ha T Pus	itural existing ckhoe cavate nd aug ind sp sh tub ger	expos exca buck or ger ade e	ure St vation SC et RE Ni	JPPORT H Shoring C Shotrette 3 Rock Bo I No suppo	lts <u>▼</u> Wat ort 	e obse measu er leve er outf	erved D Dry L Lo red M Moist M M- II W Wet H Hig Wp Plastic limit R Re low WI Liquid limit	ow VS oderate S gh F efusal St VSt H F	SISTENCY DENSITY Very Soft VL Very Lot Soft L Loose Firm MD Medium Stiff D Dense Very Stiff VD Very Den Hard Friable H ACCOMPANYING REF	ose A A B B Dense U U D C se M M Ux T	Auger Bulk sa Jndistr Disturb Toistur Tube s	G & TESTI sample imple urbed sample re content ample (x m	ple V Emm) F	S Standard S Vane sh DCP Dynam penetro D Field der VS Water sa	nic cone ometer nsity	CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION Y USCS N Agricultural

CL	IEN	Τ	Α	llen Pric	ce & As	sociates	Pty	Ltd	COMMENCED	24.11.10	COMPLE	TED	24.11.1	10			REF	TP21
PR	OJE	СТ	E	ngineer	ing Ser	vices			LOGGED	GT	CHECKE	D	AN				Sheet 1 o	
SIT			С	ullburra		West Cu	ıllbuı	rra	GEOLOGY	Siltstone	VEGETA		None				PROJECT NO.	P1002842
	IPMEI				Backhoe				EASTING	NA	RL SURF	ACE	NA					1-2%
EXC				ION DA		0m X 2.6m de	eptn	МД	NORTHING	NA NTA	ASPECT		North V	vest	SΔ		SLOPE G & TESTI	
МЕТНОБ	SUPPORT	WATER	MOISTURE	DEPTH (M)	M PENETRATION H RESISTANCE	GRAPHIC LOG	CLASSIFICATION	DESCRIF Soil type, texture, structure, nr particle characteristics, orga	PTION OF STR	ATA asticity, rocks, oxidation, and minor components,	CONSISTENCY	DENOITY INDEX	DENSIL INDEX	TYPE	DEPTH (M)		RESUL	TS AND BSERVATIONS
ВН	Nil	N	М	_0.12			CL	SILTY SANDY	CLAY – Dark	grey/brown.	S			<u> </u>		00.40/00/	0.0	
вн	Nil	N	М	_ _ 			CL	SILTY SAND C			S			В	0.2	2842/20/ 2842/20/		
вн	Nil	N	М				CL	CLAY - Red/orange wi with depth, minor g	th light browi ravels (1-10r	n mottles increasing nm, approx 5%).	St							
вн	Nil	N	М	1.0 - -			СН	CLAY - Grey/cream wit plastic, gravels			St			В	1.0	2842/20/	1.0	1 <u>.</u>
														В	1.5	2842/20/	1.5	
вн	Nil	N	М	2.0 - - -			CL HW	CLAY - HIGHLY W Light grey with red n increa		ne gravels bands	VSt			В	2.0	2842/20/	2.0	<u>2.</u>
				2.6								-		В	2.6	2842/20/	2.6	
								Test pit terminate weath	ed at 2.6m on ered siltstone									3 <u>.</u>
				5.0														<u>5.</u>
				- - - - -														
				6.0 - - -														6 <u>.</u>
				- - - - - 7.0														7
				- - - -														
				- - -														
				8.0 -														8 <u>.</u>
				- - -														
				- -														
				- 9.0														9.
N X B E H S P	Na Ex H Ba Ex A Ha Ha T Pu	atural oxisting ckhoe cavate and au and sp sh tub iger	expos g exca e buck or iger pade ie	ure SH vation SC et RE Nil	JPPORT I Shoring C Shotcret B Rock Bo I No supp	lts <u>▼</u> Wat ort 	e obser measure er level er outflo	ved D Dry L Loved M Moist M Mc W Wet H Hig Wp Plastic limit R Rei	w VS oderate S gh F fusal St VSt H F	Stiff D Dense Very Stiff VD Very De Hard Friable	oose A B n Dense U D ense M Ux	Auger: Bulk sa Undistr Disturb Moistu Tube s	urbed sam bed sam ire conte sample (ample nple ent (x mm)	pr S VS DO FE	Standard S Vane she CP Dynam penetro D Field der S Water sa	ic cone meter sity	CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION Y USCS N Agricultural

CL	IEN	Т	Α	llen Pri	ce & A	ssociates	Pty	Ltd	COMMENCED	24.11.10	COMPLET	ED 24.1	11.10			REF		В	H5	
PR	OJE	СТ	E	ngineer	ing Se	rvices			LOGGED	JSF	CHECKED	GT				Sheet 1	of			
SIT			С	ullburra		, West Cι	ıllbu	rra	GEOLOGY	Siltstone	VEGETATI	_	alypts			PROJECT	NO. F	10028	342	
_	IPME			ISIONS	Hydraulic				EASTING	NA NA	RL SURFA ASPECT	_	41-			SLOPE	59			
EXC				ION DA		X 5.5m depth		M 2	NORTHING		ASPECT	Nor	tn	8/	MPIIN	IG & TES				
МЕТНОБ	SUPPORT	WATER	MOISTURE	DEPTH (M)	PENETRATION RESISTANCE	GRAPHIC LOG	CLASSIFICATION	DESCRII Soil type, texture, structure, r particle characteristics, orq	PTION OF STR	ATA asticity, rocks, oxidation, and minor components,	CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)		WATER			TAILS Well Cover	
_			_	_	-> ± c	× × × ×		0.001110.01	NDV OUT							7.6	Ţ	***	Concrete	_
A .	Nil	N	М	0.3		* × × × ×	OL	ORGANIC SA	NDY SILT – I	Dark brown.	S		A	0.2	2842/5/0					_
А	Nil	N	М				CL	CLAY - Orange/bro tending grey with mino	own mottles, for brown and i	irm grading stiff, red mottles at depth.	F- St		A	1.0	2842/5/1				Bentonite Seal 1.0m bgl UPVC Pipe	1.0
А	Nil	N	D	_			EW	EXTREMELY W Orange	EATHERED /				А	1.5	2842/5/1	.5	72 72			
А	Nil	N	D	1.7 			MW	MODERATELY W		SILTSTONE -			A	2.5	2842/5/2	2.5			Sand Pack. UPVC Scree	2.0
А	Nil	N	D	- - - - - - - - - - - - - - - - - - -			EW	EXTREMELY W Orange	EATHERED //grey mottled											
Α	Nil	N	D	- 4.3			SW	SLIGHTLY WE	EATHERED S	SILTSTONE.										
Α	Nil	N	D				MW	MODERATELY WEATHERE					В	5.5	2842/5/5	<u>4.68</u> m <u>bgl</u>		⊋ ∴ 1	<u>Well e</u> nd plug.	5 <u>.(</u>
				<u>-</u>					erminated at											
								moderately	weathered s	illsione.										7 <u>.</u> (1
				_ <u>9</u> .0																9.0
N X B E H S P	Na E: H Ba Ex A Ha Ha T Pu	atural existing ackhoe acavate and au and spand shade and spand sp	expos excar buck or ger ade e	ure St vation SC et RI Ni	JPPORT H Shoring C Shotore B Rock B I No sup	ete X Not olts \(\frac{\psi}{\psi} \) Wat \(\frac{\psi}{\psi} \) Wat \(\frac{\psi}{\psi} \) Wat	e obse measur er leve er outfl er inflo	rved D Dry L Lo red M Moist M M. I W Wet H Hig Wp Plastic limit R Re ow WI Liquid limit	w VS oderate S gh F fufusal St VSt H H F		se A A B B Dense U L D D Se M M Ux T	PLING & uger sam ulk samplindisturbed sisturbed soloisture coube samp	ple e d sample sample ontent ele (x mm)	PI S V D	Standard S Vane sh CP Dynam penetro D Field der /S Water sa	nic cone ometer nsity		SYMB SOIL I	SIFICATION BOLS AND DESCRIPTIO USCS Agricultural	
l									MARTENS &	ASSOCIATES PTY LTD		- 1	_			ovin	_ I			

	NT		Alle	n Pric	e & A	SS	ociates	Pty	Ltd	COMMENCED	24.11.10	C	OMPLETED	24.11	.10			REF	1	BH7	
PRO.	JEC	т	Eng	ineeri	ng S	erv	ices			LOGGED	JSF	CI	HECKED	GT				Sheet 1	1 of		
SITE			Cull				Vest Cu	llbu	rra	GEOLOGY	Siltstone	VE	EGETATION		5			PROJECT	NO.	P1002842	
EQUIPM					Hydraul					EASTING	NA	-	L SURFACE					0.005		.,	
EXCAV				N DAT		X 2.	.5m depth		MΔ	NORTHING	NA NTA	AS	SPECT	North	West	SA		SLOPE G & TE		<u>%</u> G	
METHOD			MOISTURE	DEPTH (M)	L PENETRATION H RESISTANCE	2	GRAPHIC LOG	CLASSIFICATION	DESCRIF Soil type, texture, structure, n particle characteristics, orga	PTION OF STR	ATA asticity, rocks, oxidation, and minor components,		CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)		RE	SULTS		
			M 0.1				× × ×	OL	ORGANIC SAI	NDY SILT -	Dark brown.	+	S		Α	0.2	2842/7/0	2			_
A N	lil	N	M 0.3	3		-	× × ×	sc	CLAYEY SAND - Bro	own, moist (a	Imost wet), loose.	\perp		L							
AN	lil I	N	M)		-		CL	CLAY - Orange/bro	own mottles, f r brown and	irm grading stiff, red mottles at depth		F		A	1.0	2842/7/0				- - - - 1 <u>.0</u>
1 A	Vil	N	1.2 D –	2				EW	EXTREMELY W Grey, cl	EATHERED ay like prope					А	1.5	2842/7/ 1	5			-
AN	iil I	N	D 2.0					MW	MODERATELY WEATHERE								Bore	hole left ope after drillir	en and c	hecked 2 hours ound dry.	2 <u>.0</u> - - -
N	Natur	ral ex	3.0 3.0 4.0 4.0 5.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6)))))	PPORT	ng	WATER N None	e obser	MOISTURE PENET	w VS	SISTENCY DENSITY VerySoft VL VeryL		SAMPLI A AU	er sample		pp		enetrometer		CLASSIFICATIC	
X BH E HA S PT A	Exist Backt Excar Hand Hand Push Auge	ting e hoe b vator auge spac tube r	xcavatio ucket er le	on SC RB	Shotci Rock I No su	rete Bolts	X Not r	measur er level er outfl	ed M Moist M Mo W Wet H Hig Wp Plastic limit R Re ow WI Liquid limit	oderate S gh F fusal St VSt H	Soft L Loose Firm MD Mediur Stiff D Dense Very Stiff VD Very D Hard Friable	n Dens	B Bulk se U Undi	sample sturbed urbed sa ture con	sample mple tent	S V: D		penetration ear ic cone meter sity		SOIL DESCRIP Y USCS N Agricultura	TION
CC	Concr	ete C	orer			ΕX	XCAVATIO	ON LC	OG TO BE READ IN CONJU	INCTION WITH	ACCOMPANYING RE	POR	T NOTES	AND A	BBRE\	/IATI	ONS				

CLI	EN	Γ	Α	llen Pric	e & Ass	sociates	Pty	Ltd	COMMENCED	24.11.10	COMPLETED	24.11	1.10			REF BH8
PR	OJE	СТ	E	ngineer	ing Ser	vices			LOGGED	JSF	CHECKED	GT				Sheet 1 of 1
SIT	E		С	ullburra	Road,	West Cu	ıllbu	ırra	GEOLOGY	Siltstone	VEGETATIO	N Gras	s			PROJECT NO. P1002842
EQU	PME	NT			Hydraulic A				EASTING	NA	RL SURFACE	NA.				
EXC	AVAT	ION D	IMEN	ISIONS	0.95mØ X	2.5m depth			NORTHING	NA	ASPECT	North	n West			SLOPE 5%
	EX	CAV	/AT	ION DA				MA	TERIAL DA	ATA				SA	MPLIN	G & TESTING
МЕТНОВ	SUPPORT	WATER	MOISTURE	DEPTH (M)	L M PENETRATION H RESISTANCE	GRAPHIC LOG	CLASSIFICATION	Soil type, texture, structure, n particle characteristics, orga fill, co	anics, secondary a ntamination, odou	asticity, rocks, oxidation, and minor components, ir.	CONSISTENCY	DENSITY INDEX	ТҮРЕ	DEPTH (M)	А	RESULTS AND DDITIONAL OBSERVATIONS
A	Nil Nil	N N	M	0.1		× × × × × ×	OL SC	ORGANIC SAI			S	L	Α	0.2	2842/7/ 0.	2
А	Nil	N	М	0.3 - - - - - 1.0 - 1.3			CL	CLAYEY SAND - Bro	own mottles, f	irm grading stiff,	F		A	1.0	2842/7/ 0. 2842/7/ 1.	- - -
А	Nil	N D EXTREMELY WEATHERED SILTSTONE - A 1.5 2842/7/1.5														5
				1.6				Grey, red mot EXTREMELY W	-				-			
Α	Nil	Z	D	1.9			EW		clay like prop							
				2.0		L							A	2.0	2842/7/2.	0 2 <u>.0</u>
Α	Nil	N	D				мw	MODERATELY V	VEATHERED Grey.	SILTSTONE -						_
									Gloy.							Borehole dry after 2 hours.
									erminated at 2 weathered s							5.0 6.0
F	יחוו וע	JENIT	/	- - - - - - - - - - - - - - - - - - -	IDDOPT	MATER		MOJETI DE DESCRI	EDATION CON	SISTEMOV DENOTE	CAMP	INC 0 T	ECTING			
N BH E H/ S P1 A	Na Ex Ex A Ha Ha Pu Au	itural e	exposi excave bucke or ger ade e	ure SH vation SC et RE Nil	Rock Boli No suppo	ts <u>▼</u> Wat ort <u></u> Wat → Wat	e obse measu er leve er outf er inflo	erved D Dry L Lor red M Moist M Mo- el W Wet H Hig Wp Plastic limit R Re rilow WI Liquid limit	w VS oderate S yh F fusal St VSt H F	DENSITY	se A Aug B Bull Dense U Und D Dis se M Moi Ux Tub	er sample s sample disturbed turbed sa sture cor e sample	sample ample ntent e (x mm)	PF S VS DO FE W	Standard S Vane she CP Dynam penetro D Field den S Water sa	ic cone Y USCS meter N Agricultural

CLI						sociates	Pty	Lia	COMMENCED			COMPLETED	24.11.10			REF	BH11
PRO		СТ			ing Serv				LOGGED	JSF		CHECKED	GT			Sheet 1 o	
SIT			Cu	Ilburra		West Cu	ıllbu	rra	GEOLOGY	Siltstone		VEGETATION		S		PROJECT NO.	P1002842
EQUI			IMENS	IONE	Hydraulic A				EASTING NORTHING	NA NA		ASPECT	NA North Ea			SLOPE	4%
				ON DA	0.95mØ X :	z.om depth	—	M 2	ATERIAL DA		I,	ASPECT	North		SAMPI II	NG & TESTI	
	SUPPORT	WATER	MOISTURE	DEPTH (M)	FESISTANCE	GRAPHIC LOG	CLASSIFICATION	DESCRII Soil type, texture, structure, r particle characteristics, org-	PTION OF STR	ATA asticity, rocks, oxidation	n,	CONSISTENCY	DENSITY INDEX		<u>(a)</u>	RESUL	TS AND BSERVATIONS
Α	Nil	N	М	0.2		× × ×	OL	ORGANIC SA	NDY SILT – I	Dark brown.		S		A C	.2 2842/11	/0.2	_
A	Nil	Ν	M				CL	CLAY - Orange/bro tending grey with mino	own mottles, f or brown and	irm grading stiff, red mottles at de	epth.	F- St		Α (.5 2842/11	/ 0.5	- - - - - 1 <u>0</u> -
А	Nil	N	D	-			EW	EXTREMELY W Gre	EATHERED by with mottled					A 1	.5 2842/11	/ 1.5	- - - -
Α	Nil	N	П	2.0			MW	MODERATELY W						\top			2.0
			5.5	5.0	PPORT	WATER		Borehole to moderately	ey with mottled erminated at y weathered s	2.0m on			NG & TES				3.0
N X BH	Na Ex	tural e isting	exposure excava bucket	e SH ition SC	Shoring Shotcrete Rock Bolt	N None X Not r	e obsei measur	rved D Dry L Lo red M Moist M Mo	ow VS oderate S	Very Soft VL Ve Soft L Lo	ery Loose oose	A Auge B Bulks	r sample sample		S Standar	penetrometer d penetration test	SYMBOLS AND SOIL DESCRIPTION
E HA	Ex	cknoe cavato nd aug	or		No suppo		er level er outfl	Wp Plastic limit R Re	efusal St	Stiff D De	edium Der ense ery Dense	D Distu	sturbed sar rbed samp ture conter	le	VS Vane sl DCP Dynar penetr		Y USCS
S PT	Ha Pus	nd spa sh tube	ade			→ Wate		•	Н	Hard Friable	,		sample (x		FD Field de WS Water s	ensity	N Agricultural
A CC	Au Cor		Corer														
			_		E	XCAVATIO	ON LC	OG TO BE READ IN CONJU		A ACCOMPANYING		RT NOTES A	AND ABE	REVIA	TIONS		

CLI	EN	Γ	Α	llen Pric	e & As	sociates	Pty	Ltd	COMMENCED	24.11.10	COMPLET	ΓED	24.11.10			REF	BH13
PRO	IJΕ	СТ	E	ngineer	ing Ser	vices			LOGGED	JSF	CHECKE	D	GT			Sheet 1 of	
SIT			С	ullburra		West Cu	llbu	rra	GEOLOGY	Siltstone	VEGETA	TION	Eucalypts			PROJECT NO.	P1002842
EQUI					Hydraulic A				EASTING	NA	RL SURF	ACE	NA			OL ODE	00/
				ION DA		2.5m depth		МД	NORTHING	NA NTA	ASPECT		North		SAMPI IN	SLOPE	6% JG
МЕТНОБ	SUPPORT	WATER	MOISTURE	DEPTH (M)	M PENETRATION H RESISTANCE	GRAPHIC LOG	CLASSIFICATION	DESCRIF Soil type, texture, structure, n particle characteristics, orga	PTION OF STR	ATA sticity, rocks, oxidation, and minor components,	CONSISTENCY		DENSII 4 INDEX		(a)	RESULI	
Α	Nil	N	М	- 0.25	3214		ML	ORGANIC SILTY/CLA	YEY SAND -	Dark brown, moist.	S		+	A 0	.2 2842/13/	0.2	_
Α	Nil	0.4	М	-0.25 0.4			CL	SANDY CLA	Y - Light brow	wn, moist.	F						=
А	Nil	0.4 <u>N</u>	w	_			CL	GRAVELLY CLA gravels (5- 10m			S- F			A 0	.5 2842/13/	0.5	
A	Nil	N	М	0.7 - 1.0 - 1.3			CL	CLAY - Brown and or	•		F- St			A 1	.0 2842/13/	1.0	_ 1 <u>.0</u> _ _ _
А	Nil	N	М	- - - 1.7			EW	EXTREMELY W Brown/grey m						A 1	.5 2842/13/	1.5	_ _ _
Α	Nil	Ν	М				MW	MODERATELYW	/EATHERED Light grey.	SILTSTONE -				A 2	.0 2842/13/	2.0	_ 2 <u>.0</u> _ _ _ _
EC	Na	tural e	expos	ure SH	IPPORT 1 Shoring	WATER N Non		MOISTURE PENET					G & TEST sample	ING	pp Pocket p	enetrometer	3.0
N X BH E HA S PT A	Na Ex Ex Ha Ha Pus	tural edisting ckhoe cavato nd aug nd spatch tube ger	exposi excar bucke or ger ade e	ure SH vation SC et RE Nil	H Shoring Shotcrete	N None X Not r ts	e obse neasu er leve er outf	rved D Dry L Lor red M Moist M Mo I W Wet H Hig Wp Plastic limit R Re low WI Liquid limit	w VS oderate S gh F fusal St VSt H	Very Soft VL Very L Soft L Loose	oose A B m Dense U D ense M	Auger Bulk s Undist Distur Moistu	sample ample turbed sam bed sample ure content sample (x r	iple e	pp Pocket p S Standard VS Vane sh DCP Dynam penetro FD Field der WS Water sa	d penetration test ear nic cone ometer nsity	
	, 001	ncrete	core		E	EXCAVATIO	ON LO	OG TO BE READ IN CONJU	INCTION WITH	ACCOMPANYING RI	EPORT NOT	ES A	ND ABBI	REVIA	TIONS		

CLIE	NT		Al	llen Pric	e & As	sociates	Pty	Ltd	COMMENCED	24.11.10	COMPLETE	24	.11.10			REF	ВН	17
PRO.	JE	СТ	Eı	ngineer	ing Ser	vices			LOGGED	JSF	CHECKED	G ⁻	Г			Sheet 1		
SITE			C	ullburra		West Cu	ıllbu	rra	GEOLOGY	Siltstone	VEGETATIO	_				PROJECT N	O. P1002842	2
EQUIPM				010110	Hydraulic A				EASTING	NA NA	RL SURFAC	-				01.005	T 50/	
EXCAV.				ION DA		2.5m depth		MA	NORTHING	NA NTA	ASPECT	INC	orth West	SΔ		SLOPE G & TES	5% FING	
METHOD		WATER	MOISTURE	DЕРТН (M)	PENETRATION RESISTANCE	GRAPHIC LOG	CLASSIFICATION	DESCRII Soil type, texture, structure, n particle characteristics, orga	PTION OF STR	ATA asticity, rocks, oxidation, and minor components,	CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)		RESL	ILTS AND OBSERVA	TIONS
A N	lil	N	М	0.3		× × × × ×	ML	ORGANIC SILTY/CLA	YEY SAND -	Dark brown, moist.		L	А	0.2	2842/17/	0.2		_ _
A N	lil	N	М	- - - - - - 1.0			CL	CLAY - Orange/bro tending grey with mino			F		A	0.5	2842/17/ 2842/17/			- - - - - 1 <u>.0</u> -
A N	lil	N	М	1.4 - - - - - - - - - - - - -			CL	CLAY - Grey with r moist, sand in p SANDY CLAY - Gre	rofile from 1.8	3m, grades to	St		A	2.0	2842/17/ 2842/17/ 2842/17/	2.0		- - - - 2 <u>.0</u> - - -
				2.3 - 3.0 - 3.0 - 4.0 				Borehole termina	ated at 2.5m o	on sandy clay.				2.3	2042111			3.0 3.0
N X BH E HA S PT A	Nat Exi Bac Exc Han Har Pusl Aug	ural e sting khoe avato d aug d spa n tube er	exposi excav bucke or ger ade	ure SH vation SC et RE Nil	Rock Bol No suppo	ts <u>▼</u> Wate ort 	e obse measu er leve er outf er inflo	rved D Dry L Lo red M Moist M M I W Wet H Hig Wp Plastic limit R Re low WI Liquid limit	w VS oderate S gh F fusal St VSt H F	SISTENCY DENSITY Very Soft VL Very Lot Soft L Loose Firm MD Medium I Stiff D Dense Very Stiff VD Very Den Hard Friable I ACCOMPANYING REF	ose A Au B Bu Dense U Un D Dis se M Mo Ux Tul	ger san lk sam disturb sturbed isture be sam	ole ed sample I sample content ople (x mm)	PP S VS DO FE W	Standard Vane she DP Dynam penetro Field den S Water sa	ic cone meter sity	SYMBO SOIL DE	FICATION LS AND SCRIPTION SCS gricultural

CLI	EN	Γ	Α	llen Pric	e & As	sociates	Pty	Ltd	COMMENCED	24.11.10	COMPLET	ΓED	24.11.10				REF	BH	18
PR	IJΕ	СТ	E	ngineer	ing Ser	vices			LOGGED	JSF	CHECKE)	GT				Sheet 1		
SIT			С	ullburra		West Cเ	ıllbu	ırra	GEOLOGY	Siltstone	VEGETAT	ION		s			PROJECT NO	o . P100284	2
EQUI					Hydraulic A				EASTING NORTHING	NA NA	RL SURFA	ACE	NA Na -th-				01.005	4.00/	
				ISIONS		2.5m depth		MA	TERIAL DA		ASPECT		North		SΔ		SLOPE G & TEST	1-2% TING	
МЕТНОБ	SUPPORT	WATER	MOISTURE	DEPTH (M)	M PENETRATION H RESISTANCE	GRAPHIC LOG	CLASSIFICATION	DESCRII Soil type, texture, structure, n	PTION OF STR	ATA asticity, rocks, oxidation, and minor components,	CONSISTENCY		DENSII Y INDEX	TYPE	DEPTH (M)			LTS AND	TIONS
А	Nil	N	М	- 0.3	33	× × × × × ×	OL	ORGANIC SA	NDY SILT – I	Dark brown.	S	<u> </u>	_	А	0.2	2842/18/	0.2		
A	Nil	Z	М	- - - - - - - - 1.0			CL	CLAY - Orange/bro tending grey with mino	own mottles, f r brown and i	irm grading stiff, red mottles at depth.	F- St			A	1.0	2842/18/	1.0		- - - - 1 <u>.0</u> - -
А	Nil	N	D	1.5 - - - - 2.0			EW	EXTREMELY WEAT properties, grey with	HERED SILT h red mottles	STONE - Clay like stiff to very stiff.	St- VSt			A	2.0	2842/18/			2.0
Α	Nil	N	D	_ _ _ _ 2.5			MW	MODERATELY WE	ATHERED S	LTSTONE - Grey.				A	2.5	2842/18/	2.5		- - -
				3.0 				moderately	erminated at a veathered s	iltstone.									5.0 6.0 7.0 8.0 8.0
N X BH E HA S PT A	Na Ex Ex Ha Ha Pus	tural edisting ckhoe cavato aug	exposi excar bucke or ger ger ade	ure SH vation SC et RE Nil	Rock Bol No suppo	ts <u>▼</u> Wat ort 	e obse measu er leve er outf er inflo	rived D Dry L Lo red M Moist M Me I W Wet H Hig Wp Plastic limit R Re low WI Liquid limit	w VS oderate S gh F fusal St VSt H F	DENSITY Very Soft VL Very Los	pose A B B I Dense U D D D D Ux S	Auger Bulk s Undist Distur Moistu Tube s	G & TES sample ample turbed sar bed samp ure conten sample (x	mple le t mm)	S VS DC FD WS	Standard Vane she P Dynami penetro Field den S Water sa	ic cone meter sity	SYMBO SOIL D	FICATION ILS AND ESCRIPTION SCS gricultural
						-XCAVATI	JN L	OG TO BE READ IN CONJU	INCTION WITE	I ACCOMPANYING RE	PURT NOT	∟S A	IND ABB	KEV	ia i iC	พร			

CL	IEN	Т	A	len Pri	ce & As	sociates	Pty	Ltd	COMMENCED	24.11.10	COMPLETE	24.1	1.10			REF	BH19
PR	OJE	СТ	Eı	ngineer	ing Ser	vices			LOGGED	JSF	CHECKED	GT				Sheet 1 o	
SIT	Έ		C	ullburra	a Road,	West C	ıllbu	rra	GEOLOGY	Siltstone	VEGETATIO	N Euca	alypts			PROJECT NO.	. P1002842
EQL	IPME	NT			Hydraulic				EASTING	NA	RL SURFAC	≣ NA					
EXC				SIONS		2.5m depth			NORTHING	NA	ASPECT	North	h			SLOPE	2-3%
<u> </u>	EX	CA	/AT	ON DA		-	-	M.A	ATERIAL DA	ATA				SA	MPLIN	G & TESTI	ING
METHOD	SUPPORT	WATER	MOISTURE	DEPTH (M)	L PENETRATION H RESISTANCE		CLASSIFICATION	Soil type, texture, structure, r particle characteristics, org- fill, co	ontamination, odo	asticity, rocks, oxidation, and minor components, ır.	CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)	A		.TS AND DBSERVATIONS
A	Nil	N	М	0.1	0000	× ×	× OL	ORGANIC SA	NDY SILT -	Dark brown.	S		A	0.2	2842/19/	0.2	
А	Nil	N	М				CL	CLAY - Orange/bro tending grey with mino	own mottles, 1 or brown and	irm grading stiff, red mottles at depth	F- St		A	1.0	2842/19/ 2842/19/		1.
				_ 1.6		<u> </u>							Α	1.5	2842/19/	1.5	
А	Nil	N	D				EW	EXTREMELY WEA and grey mot highly weath	tles, clay like	properties,			A	2.0	2842/19/		2
				2.5									A	2.5	2842/19/	2.5	
				- - - - - - - - - - - - - - - - - - -					erminated at y weathered s								3 <u>.</u> 4 <u>.</u> 5 <u>.</u>
				- - - - - - - -													6_
																	7 <u>.</u>
	01::-		,,,,	9.0				Mais=::==		OIOTENO:							9.
N B E H S P	Na Ex H Ba Ex A Ha Ha T Pu Au	atural existing ackhoe acavate and aug and sp sh tub	ger ade	re SI ration SC et RI Ni	UPPORT H Shoring C Shotcret B Rock Bo iil No supp	ort <u>Ψ</u> Wa ort <u>-</u> Wa <u>-</u> Wa	ne obse measu ter leve ter outf ter inflo	rved D Dry L Lo red M Moist M Mi I W Wet H Hig Wp Plastic limit R Re low WI Liquid limit	w VS oderate S gh F fusal St VSt H F	Stiff D Dense Very Stiff VD Very De Hard Friable	n Dense U Un D Dis ense M Mo Ux Tut	ger sample k sample disturbed turbed sa sture con ne sample	i sample ample ntent e (x mm)	PF S VS D(FE W	Standard S Vane she CP Dynam penetro D Field den S Water sa	ic cone meter sity	CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION Y USCS N Agricultural

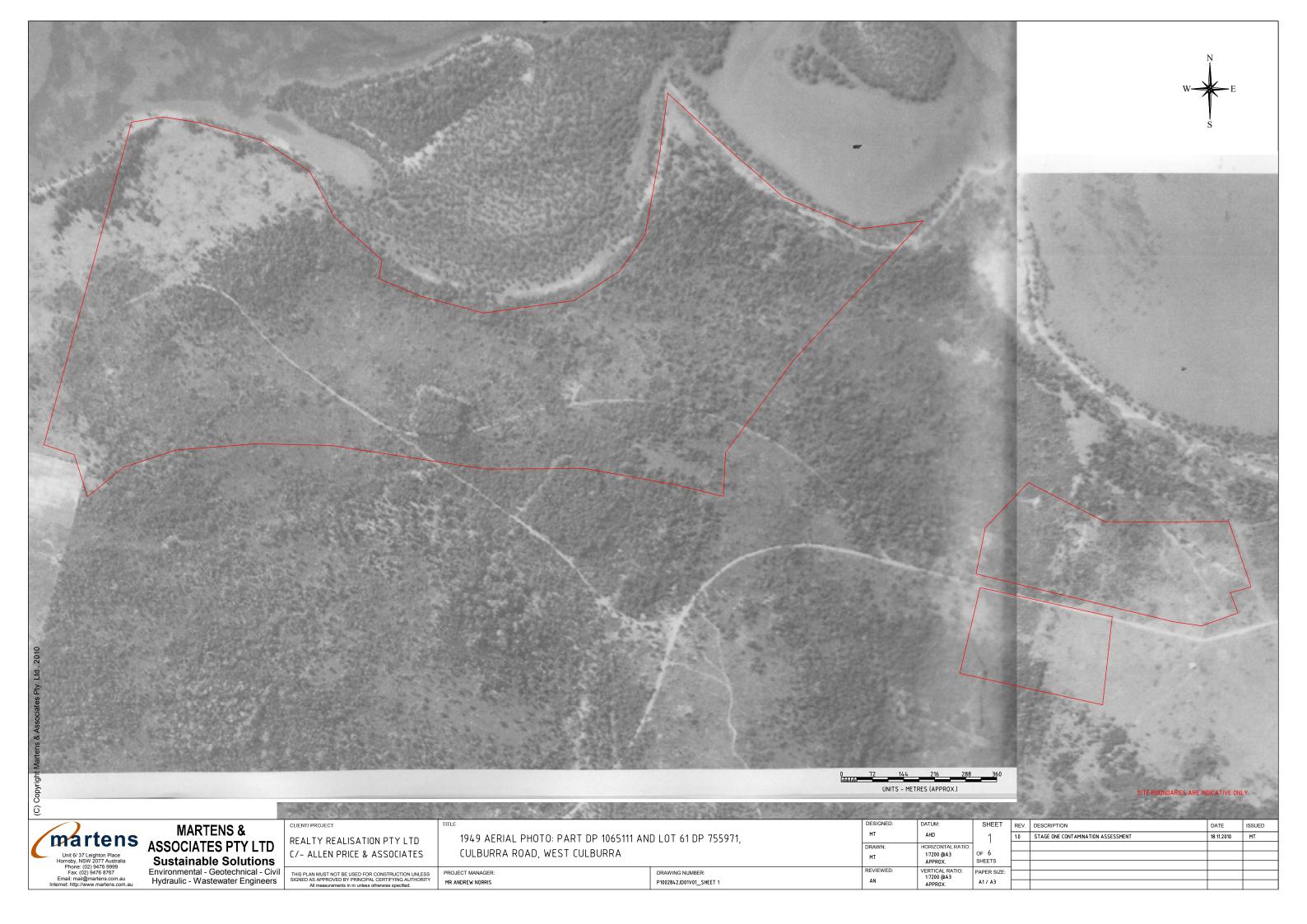
CL	IEN	Т	Α	llen Pric	e & A	Ass	ociates	Pty	Ltd	COMMENCED	24.11.10		COMPLET	ED 24.	11.10			REF	BH22
PR	OJE	СТ	E	ngineer	ing S	erv	ices			LOGGED	BR		CHECKED	GT				Sheet 1	
SIT	Έ		С	ullburra		_		Ilbu	rra	GEOLOGY	Siltstone		VEGETAT		ss			PROJECT N	O. P1002842
-	IPME				Hydrau					EASTING	NA		RL SURFA	_					1.00
EXC				ISIONS		0 X 2	2.5m depth		M	NORTHING	NA ATA		ASPECT	Nor	th East	S/		SLOPE G & TES	1-2% FING
METHOD	SUPPORT	WATER	MOISTURE	DEPTH (M)	PENETRATION	RESISTANCE	GRAPHIC LOG	CLASSIFICATION	DESCRII Soil type, texture, structure, n particle characteristics, orga	PTION OF STR	ATA asticity, rocks, and minor comp	oxidation, ponents,	CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)		RESU	ILTS AND OBSERVATIONS
А	Nil	N	М	_ 0.3			× × × × × ×	OL	ORGANIC SILT – Dark	k brown, grav	els (5-10m	ım, 30%).	S		А	0.2	2842/22/	0.2	
А	Nil	N	М	_ _ _ _ _ 0.8				CL	CLAY - Variable cold	ours (grey, re	d, yellow, b	orown).	F		А	0.5	2842/22/	0.5	
А	Nil	N	D	1.0 1.2				EW	EXTREMELY WE SILTSTO	ATHERED F NE - Reddish		NED			А	1.0	2842/22/	1.0	1.
А	Nil	N	D	- - - - - 1.9				EW	EXTREMELY WE SILT	EATHERED I STONE - Gre		NED			A	1.5	2842/22/	1.5	
А	Nil	N	D					EW	EXTREMELY WE SILTSTONE - (A	2.0	2842/22/		2.
				2.5 _ _ _					Borehole to extremely	erminated at weathered si	2.5m on Itstone.				A	2.5	2842/22/	2.5	
				3.0 _ _															3.
				<u> </u>															
				4.0															4
				_ - -															
				<u>-</u> -															
				<u>5.</u> 0															5_
				_															
				- - -															
				6.0															6.
				_															
																			7.
				- - -															
				- - -															
				8.0 _															8.
				_ _ _															
				<u></u>															
N B E H S P	Na Ex H Ba Ex A Ha Ha T Pus	atural existing ackhoe acavate and aug and sp sh tub	exposi excar bucki or ger ade e	ure SH vation SC et RE Nil	JPPOR1 I Shori C Shoto 3 Rock No su	ng crete Bolts uppor	S	e obser measur er level er outfl er inflo	rved D Dry L Lo red M Moist M M I W Wet H Hig Wp Plastic limit R Re ow WI Liquid limit	w VS oderate S gh F fusal St VSt H F	Very Soft Soft Firm Stiff Very Stiff Hard Friable	DENSITY VL Very Loo L Loose MD Medium I D Dense VD Very Dens	se A A Dense U I D I Se M M Ux 1	PLING & Auger sample sample sample sturbed sample s	ple e d sample sample ontent ole (x mm)	PI S V D V	Standard S Vane she CP Dynam penetro D Field der /S Water sa	ic cone meter nsity	9 CLASSIFICATION SYMBOLS AND SYMBOLS AND SOIL DESCRIPTION Y USCS N Agricultural

CLIEN		1			sociates	Pty	Lta	COMMENCED			COMPLETEL		10		—— ŀ	KEF	BH2	3
PROJE	СТ	1 -		ng Ser				LOGGED	BR		CHECKED	GT				heet 1 of		
SITE		Cul			West Cu	ıllbu	rra	GEOLOGY	Siltstone		VEGETATIO				Р	ROJECT NO.	P1002842	
EQUIPMEN		BAT NOW		Hydraulic A				EASTING	NA		RL SURFACE	_	F4			.OPE	4.00/	
EXCAVAT			N DAT		1.0m depth		N/I	NORTHING ATERIAL DA	NA NTA		ASPECT	North	Easi	64		& TESTI	1-2% NG	
METHOD SUPPORT	WATER	MOISTURE	DEPTH (M)	M PENETRATION H RESISTANCE	GRAPHIC LOG	CLASSIFICATION	DESCRI Soil type, texture, structure, particle characteristics, org	PTION OF STR	ATA asticity, rocks, oxice	dation, ents,	CONSISTENCY	DENSITY INDEX	TYPE	DЕРТН (M)		RESUL [*]		NS
A Nil	N	M -	2		× × ×	OL	ORGANIC SILT – Dar	k brown, grav	rels (5-10mm,	, 30%).	S		Α	0.2	2842/23/ 0.2	,		_
A Nil	N	M 0.	3			CL		CLAY - Grey.			S							
A Nil	N	M – 0.9			 	CL	CLAY - Variable col	ours (grey, re	d, yellow, bro	wn).	S		А	0.5	2842/23/ 0.5			- - -
A Nil	N	D 1.0				EW	EXTREMELY W			D			Α	1.0	2842/23/ 1.0			1.0
			0				Borehole t	NE - Reddish terminated at weathered si	1.0m on									
		9.0	<u> </u>															9. <u>0</u>
N Na X E) BH Ba E Ex HA Ha S Ha PT Pus	atural e xisting ckhoe cavato ind aug ind spa sh tube iger	/ METH exposure excavati bucket or ger ade	OD SU SH on SC RB	PPORT Shoring Shotcrete Rock Bol No suppo	ts <u>▼</u> Wat ort <u></u> Wat → Wat	e obser measur er level er outflo er inflov	rved D Dry L Lo red M Moist M M W Wet H Hi Wp Plastic limit R Ro ow WI Liquid limit	ow VS loderate S gigh F efusal St VSt H F	Very Soft VL Soft L Firm MD Stiff D Very Stiff VD Hard Friable	Loose Medium D Dense Very Dense	se A Aug B Bull ense U Und D Dis e M Moi Ux Tub	ING & TE per sample s sample disturbed s turbed sar sture cont e sample	sample mple ent (x mm)	pp S VS DC FD WS	S Vane shear CP Dynamic of penetrome D Field density S Water samp	enetration test cone eter	CLASSIFICA SYMBOLS A SOIL DESCF Y USCS N Agricul	TION ND RIPTION

CL	ENT	Γ	Al	len Pri	ce & A	۱ss	ociates	Pty	Ltd	COMMENCED	24.11.10	c	COMPLETE	Đ	24.11.10			REF	BH24
PR	OJE	СТ	Eı	ngineer	ing S	erv	ices			LOGGED	JSF		CHECKED		GT			Sheet 1	
SIT	Ε		C	ullburra	Roa	d, V	Vest Cu	ıllbu	rra	GEOLOGY	Siltstone	V	VEGETATI	ON	Eucalypts			PROJECT NO	. P1002842
EQU	IPMEN	NT			Hydraul	lic Aı	uger			EASTING	NA	F	RL SURFA	CE	NA				
EXC				SIONS) X 2	.6m depth			NORTHING	NA	A	ASPECT		North East			SLOPE	5%
_	EX	CAV	/AT	ON DA				_	M.A	TERIAL DA	ATA					S	AMPLIN	G & TEST	ING
МЕТНОD	SUPPORT	WATER	MOISTURE	DEPTH (M)	E PENETRATION	R	GRAPHIC LOG	CLASSIFICATION	Soil type, texture, structure, r particle characteristics, orga	PTION OF STR nottling, colour, pla anics, secondary a ontamination, odou	asticity, rocks, oxidation, and minor components,		CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)	A		.TS AND DBSERVATIONS
Α	Nil	N	М	0.2			× × ×	OL	ORGANIC SA	NDY SILT – I	Dark brown.		S		A	0.2	2842/24/	0.2	=
Α	Nil	N	М	- - - - - - - - - - - - - - - - - - -				CL	CLAY - Orange/bro tending grey with mino	own mottles, f r brown and	irm grading stiff, ed mottles at dep	th.	St- VSt		A	1.0	2842/24/ 2842/24/	1.0	1 <u>.0</u>
				2.0 - 2.3											A	2.0	2842/24/	2.0	2 <u>.0</u> - -
А	Nil	N	D	26				EW	EXTREMELY WEA	THERED SII	TSTONE - Grey properties.				A	2.5	2842/24/	2.5	-
	NII	2		2.6 - - - - - - - - - - - - -				EW EXTREMELY WEATHERED SILTSTONE - Grey with red mottles, clay like properties. Borehole terminated at 2.6 m on extremely weathered siltstone. 3.0 4.0 6.0											
E N X X B B E E	Na Ex H Ba	tural e	/ ME- exposi excav	ure SI vation S0 et RI	JPPORT H Shorir C Shotc B Rock I No su	ng rete Bolts	₩ Wat		rved D Dry L Lo red M Moist M Mo	w VS oderate S gh F	Soft L Loos Firm MD Med	y Loose se lium Den	B B	uger: ulk sa ndisti	6 & TESTII sample mple urbed samp	le \	S Standard /S Vane she		8.0 8.0 8.0 8.0 CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION Y USCS
H. S	A Ha Ha	nd aug nd spa	ger ade	INI	i inu su	μμαι	[™] Wat		low WI Liquid limit	VSt H	Very Stiff VD Very Hard		M M	oistu	ed sample e content ample (x m	n) F		meter sity	N Agricultural
P ⁻	Γ Pus Au	Hand spade H Hard Ux Tube sample (x mm) FD Field density WS Water sample WS Water sample Agricultural N Agricultural N Operation of the property of th																	
	J 001	.u. ele	COIE			E.	XCAVATIO	ON LO	OG TO BE READ IN CONJU		A ACCOMPANYING		RT NOTE	S AI	ND ABBR	EVIAT	IONS		

Attachment C – Historical Aerial Photographs 9











C/- ALLEN PRICE & ASSOCIATES

CULBURRA ROAD, WEST CULBURRA

PROJECT MANAGER: DRAWING NUMBER: MR ANDREW NORRIS P1002842JD01V01_SHEET 4

HORIZONTAL RATI 1:7200 @A3 APPROX. SHEETS VERTICAL RATIO: 1:7200 @A3 APPROX. REVIEWED: A1 / A3



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REALTY REALISATION PTY LTD C/- ALLEN PRICE & ASSOCIATES

2008 AERIAL PHOTO: PART DP 1065111 AND LOT 61 DP 755971, CULBURRA ROAD, WEST CULBURRA

MR ANDREW NORRIS

PROJECT MANAGER: DRAWING NUMBER:

P1002842JD01V01_SHEET 6

REVIEWED:

HORIZONTAL RAT 1:7200 @A3 APPROX. SHEETS A1 / A3

SHEET REV. DESCRIPTION 1.0 STAGE ONE CONTAMINATION ASSESSMENT

18.11.2010