# Allam MHE Developments No.2 Pty Ltd

# **Acid Sulfate Soils Assessment**

# Proposed Manufactured Home Estate – Stage 2

82 Chapmans Road, Tuncurry

Report No. RGS03357.1-AC

13 September 2023





Manning-Great Lakes
Port Macquarie
Coffs Harbour

RGS03357.1-AC

13 September 2023

Allam MHE Developments No.2 Pty Ltd PO Box 7385 BAULKHAM HILLS BC NSW 2153

Attention: Mark Cerone

Dear Mark

RE: Proposed Manufactured Home Estate – Stage 2 – 82 Chapmans Road, Tuncurry
Acid Sulfate Soils Assessment

As requested, Regional Geotechnical Solutions Pty Ltd (RGS) has undertaken an Acid Sulfate Soils assessment for the proposed Manufactured Home Estate Stage 2 at 82 Chapmans Road, Tuncurry. This report presents the results of the assessment.

If you have any questions regarding this project, or require any additional consultations, please contact the undersigned.

For and on behalf of

**Regional Geotechnical Solutions Pty Ltd** 

Prepared by

Reviewed by

**Andrew Hills** 

Senior Environmental Engineer

Andre My

**Steve Morton** 

Principal Geotechnical Engineer



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#### 1 INTRODUCTION

As requested, Regional Geotechnical Solutions Pty Ltd (RGS) has undertaken an Acid Sulfate Soils (ASS) assessment for the proposed Manufactured Home Estate (MHE) Stage 2 at 82 Chapmans Road, Tuncurry. The site location is shown on Figure 1 and the proposed site layout is shown on Figure 2.

The site comprises Lot 11 DP615229 and occupies approximately 16.3 hectares.

The purpose of the assessment is to identify if Actual or Potential ASS will be encountered during development of the site and if so, to develop an ASS Management Plan.

#### 2 METHODOLOGY

The assessment of the site was undertaken on 1 and 2 August 2023 by an Engineer from RGS and involved:

- Review of previous geotechnical and geo-environmental assessment investigations undertaken within the vicinity of the site;
- Observation of site features and surrounding features relevant to the geotechnical conditions of the site;
- Logging and sampling of thirty-three test pits excavated using a track-mounted excavator;
   and
- Laboratory testing of representative samples.

Engineering logs of the test pits are presented in Appendix A. Laboratory test results are presented in Appendix B. Test locations are shown on Figure 3.

#### 3 PREVIOUS INVESTIGATION

RGS has undertaken an ASS Assessment on the adjoining site to the north where the proposed MHE Stage 1 will be located. The findings of the ASS investigation are presented in report RGS03137.1-AB, dated 28 October 2022 and were reviewed as part of this assessment.

A summary of the key points and conclusions are provided below:

- Reference to the Coolongolook 1:25,000 Acid Sulfate Soil Risk Map indicates that the lowlying swampy western part of the site is situated within an area with a high probability of ASS within 1m of the ground surface;
- The ASS risk map indicates the central and eastern parts of the site to also be within an area with a high probability of ASS between 1m and 3m below the ground surface.
- Twenty-three samples obtained from the test pits were screened for the presence of actual or potential ASS using methods 23Af and 22Bf of the ASSMAC Acid Sulfate Soils Manual. The test results are attached. The results indicated:



- $_{\odot}$  The samples revealed pH<sub>f</sub> values of 5.02 to 6.78 in distilled water. In this test, pH <4 can be an indicator of Actual ASS; and
- The samples revealed pH<sub>FOX</sub> values of 1.90 to 4.46 in hydrogen peroxide. Values of less than 3 can be an indicator of Potential ASS.
- Five samples were submitted for Chromium Reducible Sulphur (CRS) analysis, to differentiate between potential organic or inorganic sources of sulfur;
- Each of the samples recorded Titratable Actual Acidity (TAA) concentration below the adopted action criteria, with exception of one sample which exceeded the action criteria indicating the presence of actual acidity;
- Oxidisable sulfur concentrations exceeded the adopted action criteria in two of the samples (TP49 0.8 1.0m and TP51 1.7 1.9m indicating the presence of potential sulphuric acidity. In addition, one sample TP53 0.0 0.2m exceeded the action criteria for net acidity. These soils are therefore considered to be Potential ASS. As such, an ASS Management Plan is required for this part of the site;
- It is understood that excavations for the proposed stormwater basin will be to approximately 1.45m below ground surface. The remainder of the site will be filled. As such the ASS Management Plan should be implemented for excavations for the stormwater basin in the south-west corner of the site, and for other excavations into natural ground profile in the low-lying swampy area in the western part of the site, and more generally in Terrain Zone 1; and
- The ASS Management Plan requirements for excavations into the natural ground profile in Terrain Zone 1 soils in the western parts of the site indicates that lime treatment at a rate of 9kg/tonne would be required.

### 4 SITE CONDITIONS

#### 4.1 Surface Conditions

The site is rectangular in shape and is bound vacant land forming proposed MHE Stage 1 to the north, a former nursery and landscape supplies yard to the north-east, undeveloped land to the east, south and south-west and by Chapmans Road and undeveloped land to the west. The Wallamba River is located approximately 380m to the west of the site.

The central and eastern parts of the site are situated on a low-lying Aeolian sandplain with the natural ground level being typically flat.

The western part of the site is situated on low-lying swampy terrain and is also generally flat. Site surface elevations vary from about RL3m to RL4m.

There was an existing shed located in the north-west corner near a site entrance gate. The shed was of masonry block construction on a concrete slab floor with a corrugated metal roof and adjoining water tank. The shed appeared to have been constructed on a fill mound which graded to the south to natural ground level at about 2° to 3°.



Two small farm dams were present in the central-west and north-east corner of the site respectively.

Drainage of the site will be primarily via infiltration into the upper sandy soils.

The site had been recently slashed prior to the field investigations. Vegetation predominantly comprised grass and weeds with remnant stands of trees including Casuarina and Eucalypts up to 15m in height. The south-west corner comprised remnant uncleared bushland.

Typical site photographs are presented below.



Looking east from the western part of the site showing the typical ground conditions at the time of the field investigations. The site had recently been slashed and was generally open with small stands of trees remaining.



Looking east showing a small farm dam located in the central-west of the site to the south of the shed.



Looking north-west from the south-eastern part of the site. The soil profile in the eastern and central parts of the comprise topsoil overlying Aeolian sands.



Looking south-west in the western part of the site.

The soil profile comprised topsoil overlying Alluvial sands in this part of the site.

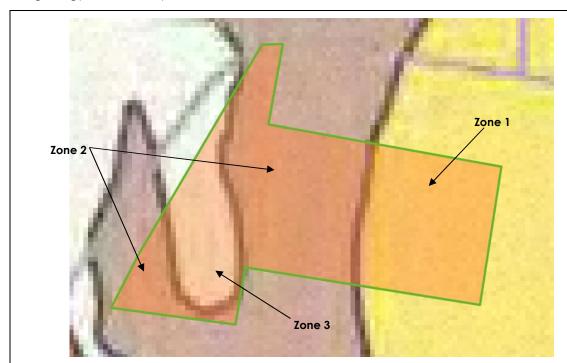


#### 4.2 Subsurface Conditions

Based on the topographic conditions, the site has been divided into three terrain zones. Reference to the MinView website indicates that the underlying geology varies with each terrain as outlined below:

- <u>Terrain Zone 1:</u> The eastern part of the site is underlain by Holocene beach ridge and associated strandplain deposits comprising marine sand, shell and gravel;
- <u>Terrain Zone 2:</u> The central part, north-west corner and south-west corner of the site are underlain by Holocene tidal-delta flat deposits comprising marine sand, silt, clay, shell and gravel; and
- <u>Terrain Zone 3:</u> The western and south-western parts of the site are underlain by Holocene floodplain deposits comprising silt, fluvial sand and clay.

The geology of the site is presented in Plate 1 below:



**Plate 1:** Reference to the MinView website indicates that Terrain Zone 1 is underlain by Holocene beach ridge and associated strandplain deposits, Terrain Zone 2 is underlain by Holocene tidal-delta flat deposits and Terrain Zone 3 is underlain by Holocene floodplain deposits.

The materials encountered during the investigation are summarised in Table 1 and Table 2 respectively. Further details are presented on the attached engineering logs.



Table 1: Summary of Geotechnical Units

Unit	Material	Material Description
Unit 1	Topsoil	Silty SAND, fine to medium grained, some roots (central and eastern areas); or Silty CLAY, low plasticity, some sand, fine to medium grained, some roots (western area)
Unit 2	Aeolian Soil	SAND, fine to coarse grained, trace roots
Unit 3	Indurated Sand	SAND, fine to medium grained
Unit 4	Alluvial Soil	Clayey SAND, fine to coarse grained, clay, low plasticity

Table 2: Summary of Subsurface Profile

		Depth of Material Layer (m)											
Test Pit	Terrain Zone	Unit 1 Topsoil	Unit 2 Aeolian	Unit 3 Indurated Sand	Unit 4 Alluvial								
TP1	1	0.0 – 0.2	0.2 - ≥2.5*										
TP2	1	0.0 – 0.2	0.2 - ≥2.5*										
TP3	1		0.5 - ≥2.5*										
TP4	1	0.0 - 0.4	0.4 – 1.5	1.5 - ≥2.5*									
TP5	1	0.0 – 0.3	0.3 - ≥2.5*										
TP6	1	0.0 – 0.2	0.2 - ≥2.5*										
TP7	1	0.0 – 0.2	0.2 – 1.2	1.2 - ≥2.5*									
TP8	1	0.0 – 0.2	0.2 - ≥2.5*										
TP9	1	0.0 – 0.2	0.2 - ≥2.5*										
TP10	2	0.0 – 0.2	0.2 - ≥2.5*										
TP11	2	0.0 – 0.2	0.2 - ≥2.5*										
TP12	2	0.0 – 0.2	0.2 - ≥2.5*										
TP13	2	0.0 – 0.2	0.2 - ≥2.5*										
TP14	2	0.0 – 0.2	0.2 - ≥2.5*										
TP15	2	0.0 – 0.2	0.2 - ≥2.5*										
TP16	2	0.0 – 0.2	0.2 - ≥2.5*										
TP17	2	0.0 – 0.2	0.2 - ≥2.0*										
TP18	2	0.0 – 0.3	0.3 - ≥2.5*										
TP19	2	0.0 – 0.2	0.2 - ≥2.0*										
TP20	2	0.0 – 0.2			0.2 - ≥2.0*								
TP21	2	0.0 – 0.2	0.2 - ≥2.0*										
TP22	2	0.0 - 0.2			0.2 - ≥2.0*								



			Depth of Material La	yer (m)	
Test Pit	Terrain Zone	Unit 1 Topsoil	Unit 2 Aeolian	Unit 3 Indurated Sand	Unit 4 Alluvial
TP23	2	0.0 – 0.2			0.2 - ≥2.0*
TP24	2	0.0 – 0.2			0.2 - ≥2.0*
TP25	2	0.0 – 0.2			0.2 - ≥2.0*
TP26	3	0.0 – 0.25			0.25 - ≥2.0*
TP27	3	0.0 – 0.2			0.2 - ≥2.0*
TP28	3	0.0 – 0.25			0.25 - ≥2.0*
TP29	3	0.0 – 0.25			0.25 - ≥2.0*
TP30	3	0.0 – 0.25			0.25 - ≥2.0*
TP31	3	0.0 – 0.25			0.25 - ≥2.0*
TP32	3	0.0 – 0.25			0.25 - ≥2.0*
TP33	2	0.0 – 0.25			0.25 - ≥2.0*

Note: ≥ Indicates that base of material layer was not encountered

Indicates that the test pit was terminated due to excavation collapse

-- Indicates that the material was not encountered at the test location

Groundwater was encountered within each of the test pits at depths of between 1.0m and 1.5m below ground surface during the limited time they remained open on the days of the field investigations. It should be noted that fluctuations in groundwater levels can occur as a result of seasonal variations, temperature, rainfall, and other similar factors, the influence of which may not have been apparent at the time of the assessment.

### 5 ACID SULFATE SOILS

Reference to the Coolongolook 1:25,000 Acid Sulfate Soil Risk Map indicates that the low-lying swampy western part of the site is situated in an area with a high probability of ASS within 1m of the ground surface. The map indicates the central and eastern parts of the site to also be within an area with a high probability of ASS between 1m and 3m below the ground surface.







Approximate location of site shown in red as indicated by Google Earth image.

Extract from the Coolongolook 1:25,000 ASS Risk Map indicates the site to be within an area with a high probability of ASS within 1m to 3m below natural ground.

Acid Sulfate Soils (ASS) produce sulphuric acid when exposed to oxygen due to the presence of iron sulphides in the form of pyrite within the soil matrix. These soils form when iron-rich sediments are deposited in saltwater or brackish water environments. Prior to oxidation, these pyritic soils are referred to as Potential ASS. ASS that have produced acid as a result of oxidation are referred to as Actual ASS. They typically occur in natural, low-lying coastal depositional environments below approximately 5m AHD. In the field ASS are generally identified as saline sediments such as alluvial or estuarine soils or bottom sediments in creeks and estuaries.

In environments such as that which exists at the site, the pyrite and resultant acidity (if any) would exist within the fine-grained fraction of the sediment profile.

One hundred and twelve samples obtained from the test pits were screened for the presence of actual or potential ASS using methods 23Af and 22Bf of the ASSMAC Acid Sulfate Soils Manual. The test results are attached. The results indicated:

- The samples revealed pH<sub>f</sub> values of 4.41 to 6.99 in distilled water. In this test, pH <4 can be an
  indicator of Actual ASS; and</li>
- The samples revealed pH<sub>FOX</sub> values of 1.27 to 4.34 in hydrogen peroxide. Values of less than 3 can be an indicator of Potential ASS.

To provide a more comprehensive assessment, fifteen samples were submitted for Chromium Reducible Sulphur (CRS) analysis, to differentiate between potential organic or inorganic sources of sulfur. A summary of the test results is presented in Table 3.



Table 3: Summary of ASS CRS Test Results

T I D''	Baralla (as)	Terrian		Acid Trail	(mol H+/tonne)	S	Julfur Trail (m	nol H+/t)	Net Acidity	Liming Rate
Test Pit	Depth (m)	Zone	Texture	TAA	Action Criteria	Skci	Scr	Action Criteria	(mol H+/tonne)	(kg / Tonne)
TP1	2.3 – 2.5	1	Coarse	16	18	14	91	18	107	8
TP3	2.3 – 2.5	1	Coarse	7	18	4	33	18	40	3
TP4	1.7 – 1.9	1	Coarse	16	18	12	128	18	144	11
TP7	2.3 – 2.5	1	Coarse	21	18	5	50	18	71	5
TP12	1.7 – 1.9	2	Coarse	6	18	7	106	18	113	8
TP15	1.2 – 1.4	2	Coarse	13	18	16	135	18	148	11
TP16	1.2 – 1.4	2	Coarse	20	18	22	429	18	449	34
TP18	0.8 – 1.0	2	Coarse	5	18	9	92	18	97	7
TP19	0.3 – 0.5	2	Coarse	5	18	8	122	18	127	10
TP20	0.8 – 1.0	2	Coarse	5	18	8	95	18	100	8
TP23	1.3 – 1.5	2	Coarse	5	18	12	102	18	107	8
TP24	0.3 – 0.5	2	Medium	5	18	9	176	18	181	14
TP25	1.8 – 2.0	2	Coarse	7	18	17	156	18	163	12
TP30	1.3 – 1.5	3	Coarse	11	18	1	3	18	14	1
TP33	0.8 – 1.0	2	Coarse	6	18	1	0	18	6	0

Note: 1. The adopted action criteria assume that >1,000 tonnes of soil is to be disturbed.

2. Values that are bold exceed the adopted action criteria.



Each of the samples recorded a Titratable Actual Acidity (TAA) concentration below the adopted action criteria, with exception of sample TP7 2.3 – 2.5m and TP16 1.2 – 1.4m which exceeded the action criteria indicating the presence of actual acidity.

Oxidisable sulfur and net acidity concentrations exceeded the adopted action criteria in each of the samples with the exception of sample TP30 1.3 - 1.5m and TP33 0.8 - 1.0m, indicating the presence of sulfuric acidity. These soils are therefore considered to be Potential ASS (PASS). In addition, extractable sulfur concentrations exceeded the adopted action criteria in two samples TP7 2.3 - 2.5m and TP16 1.2 - 1.4m indicating some of the soils in these locations are Actual ASS (AASS). As such, an ASS Management Plan is required for the site.

Details of proposed earthworks and excavation depths are unknown at this stage. However, it is likely that there will be some filling of the site. As such the ASS Management Plan should be implemented for excavations into the natural ground profile across the MHE Stage 2 development area.

The ASS Management Plan is presented in Appendix C.



#### 6 LIMITATIONS

This report comprises the results of an investigation carried out for a specific purpose and client as defined in the document. The report should not be used by other parties or for purposes or projects other than those assumed and stated within the report, as it may not contain adequate or appropriate information for applications other than those assumed or advised at the time of its preparation. The contents of the report are for the sole use of the client and no responsibility or liability will be accepted to any third party. The report should not be reproduced either in part or in full, without the express permission of Regional Geotechnical Solutions Pty Ltd.

Geotechnical site investigation is based on data collection, judgment, experience, and opinion. By its nature, it is less exact than other engineering disciplines. The findings presented in this report and used as the basis for the recommendations presented herein were obtained using normal, industry accepted geotechnical design practises and standards. To our knowledge, they represent a reasonable interpretation of the general condition of the site. Under no circumstances, however, can it be considered that these findings represent the actual state of the site at all points.

The recommended depth and properties of any soil, rock, groundwater, or other material referred to in this report is an engineering estimate based on the information available at the time of writing. The estimate is influenced and limited by the fieldwork and testing method carried out in the site investigation, and other relevant information as has been made available. In cases where information has been provided to Regional Geotechnical Solutions for the purposes of preparing this report it has been assumed that the information is accurate and appropriate for such use. No responsibility is accepted by Regional Geotechnical Solutions for inaccuracies within any data supplied by others.

If site conditions encountered during construction vary significantly from those discussed in this report, Regional Geotechnical Solutions Pty Ltd should be contacted for further advice.

This report alone should not be used by contractors as the basis for preparation of tender documents or project estimates. Contractors using this report as a basis for preparation of tender documents should avail themselves of all relevant background information regarding the site before deciding on selection of construction materials and equipment.

If you have any questions regarding this project, or require any additional consultations, please contact the undersigned.

For and on behalf of

Regional Geotechnical Solutions Pty Ltd

Prepared by

Reviewed by

**Andrew Hills** 

Senior Environmental Engineer

Andre Stry

**Steve Morton** 

Principal Geotechnical Engineer



# **Figures**





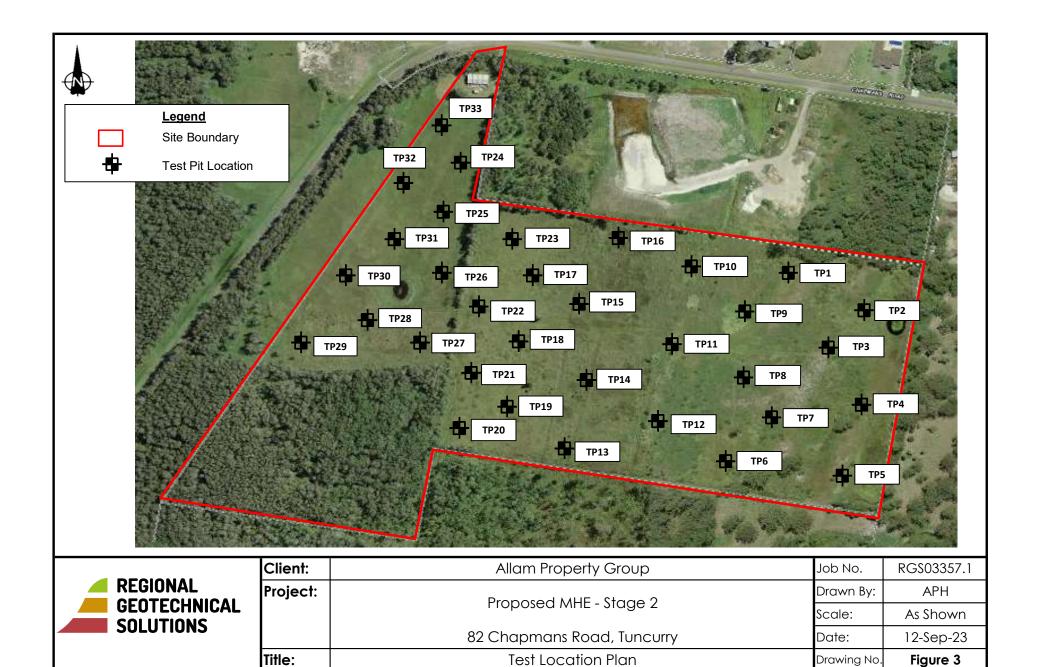
REGIONAL
<b>GEOTECHNICAL</b>
SOLUTIONS

	Client:	Allam Property Group	Job No.	RGS03357.1
F	roject:	Proposed MIJE Stage 2	Drawn By:	APH
		Proposed MHE - Stage 2	Scale:	As Shown
		82 Chapmans Road, Tuncurry	Date:	15-Aug-23
T	itle:	Site Location Plan	Drawing No.	Figure 1





Clien	Allam Property Group	Job No.	RGS03357.1
Proje	Proposed MHE - Stage 2	Drawn By:	APH
	Floposed Mine - Slage 2	Scale:	As Shown
	82 Chapmans Road, Tuncurry	Date:	15-Aug-23
Title:	Proposed Site Layout	Drawing No.	Figure 2





# Appendix A

**Results of Field Investigations** 



**CLIENT:** Allam Property Group

PROJECT NAME: Proposed MHE JOB NO: RGS03357.1

TEST PIT NO:

PAGE:

TP1

1 of 1

SITE LOCATION:82 Chapmans Road, TuncurryLOGGED BY:WWTEST LOCATION:Refer to Figure 1DATE:1/8/23

**EQUIPMENT TYPE:** 6T Excavator - 600mm Toothed Bucket **EASTING:** 451270 m **SURFACE RL:** 

		ENT TYPI					mm Toothed Bucket	EASTING:	451270		SURF		RL:	ALID
		T LENGT		2.0 m	W	IDTH:		NORTHING:	6441950	m l	DATU			AHD
E	Excav	ation and S	ampling				Material description and	profile information				Fiel	d Test	
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION characteristics,colo			MOISTURE	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
Ш				-		SM	TOPSOIL: Silty SAND, grey/black, some roots	fine to medium grain	ned, dark	М				TOPSOIL
		1.20m  ES 1.40m  1.70m  ES 1.90m  2.30m  ES 2.50m		1.6_ 		SP	SAND: Fine to medium  SAND: Fine to medium  Hole Terminated at 2.50 due to collapse		grey					ĀĒOLĪĀN
LEGI Wate	r Wat (Dat	er Level e and time sl		Notes, Sar U <sub>50</sub> CBR E	50mm Bulk s	i Diame	ter tube sample or CBR testing I sample		S S	ery Soft oft irm		<2 25 50	CS (kPa 25 5 - 50 0 - 100 00 - 200	D Dry M Moist W Wet
Strat	Wat <b>a Cha</b> Gr	adational or	]	ASS B Field Test PID	Bulk S <u>s</u>	Sample	Soil Sample on detector reading (ppm)		н н	ery Stiff ard riable V L	V		00 - 400 100 pose	W <sub>L</sub> Liquid Limit  Density Index <15% Density Index 15 - 35%
	_ De	insitional stra efinitive or dis rata change		DCP(x-y) HP	Dynar	nic pen	etrometer test (test depth interval meter test (UCS kPa)	shown)		ME D VE	D M		n Dense	-



CLIENT:

Allam Property Group

PROJECT NAME: Proposed MHE JOB NO: RGS03357.1

TEST PIT NO:

PAGE:

TP2

1 of 1

SITE LOCATION:82 Chapmans Road, TuncurryLOGGED BY:WWTEST LOCATION:Refer to Figure 1DATE:1/8/23

**EQUIPMENT TYPE**: 6T Excavator - 600mm Toothed Bucket **EASTING**: 451346 m **SURFACE RL**:

		IENT TYP IT LENGT		6T Exc 2.0 m		- 600 IDTH:	mm Toothed Bucket 1.0 m	EASTING:	451346		SURF. DATU		RL:	AHD
				2.0 111	VV	יח ו עו:		NORTHING:	6441940	m	DATU		d Test	AHD
METHOD	WATER	sation and S	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL		MATERIAL DESCRIPTION: Soil type, plasticity/partic characteristics,colour,minor components			CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
ш			,	_		SM	TOPSOIL: Silty SANE grey/black, some roots		ned, dark	MOISTURE CONDITION	8			TOPSOIL
-	(< 1/8/2023	1.20m ES 1.40m 1.70m ES 1.90m		- 0.5 1.0 1.5		SP	SAND: Fine to mediur		grey					AEOLIAN
		2.30m ES 2.50m		2.0 <u></u>			2.50m  Hole Terminated at 2.5  due to collapse	50 m						
_ <b>⊢</b>	wat Wat (Dat Wat Wat	er Level e and time s er Inflow er Outflow inges	hown)	U <sub>ss</sub> CBR E ASS B	50mm Bulk s Enviro Acid S	n Diame sample onmenta	eter tube sample for CBR testing al sample Soil Sample		S S F F St S VSt V	ncy /ery Soft coft cirm ctiff /ery Stift lard criable		25 50 10 20	CS (kPa) 25 5 - 50 0 - 100 00 - 200 00 - 400 400	Moisture Condition  D Dry  M Moist  W Wet  W <sub>p</sub> Plastic Limit  W <sub>L</sub> Liquid Limit
	Gi tra	radational or ansitional stra efinitive or dis rata change	ata	Field Test PID DCP(x-y) HP	Photo Dynar	nic pen	on detector reading (ppm) etrometer test (test depth interve ometer test (UCS kPa)	al shown)	Density	V L MI D VI	Lo D M D	ery Lo oose lediun 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:

Allam Property Group

**PROJECT NAME:** Proposed MHE JOB NO: RGS03357.1

TEST PIT NO:

PAGE:

TP3

1 of 1

SITE LOCATION:82 Chapmans Road, TuncurryLOGGED BY:WWTEST LOCATION:Refer to Figure 1DATE:1/8/23

**EQUIPMENT TYPE**: 6T Excavator - 600mm Toothed Bucket **EASTING**: 451298 m **SURFACE RL**:

		MENT TYPE					mm Toothed Bucket	EASTING:	451298		SURF		RL:	ALID
Ľ		IT LENGTI		2.0 m	VV	IDTH:	1.0 m	NORTHING:	0441866	m l	DATU			AHD
$\vdash$	Exca	vation and Sa	ampling			I	Material description and	profile information				Field	d Test	
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION characteristics,colo	N: Soil type, plasticity our,minor component		MOISTURE	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
ш				- - - 0.5		SP	SAND: Fine to medium brown, some roots			М				AEOLIAN
TROGOSSI, I I E LOSUCIO Y NUMBRIGHEY TRUGERSO 95.27 TRUGGOSSI DEBE LEB BIRL III ON TOUT DE LOSUZIAGOSO TIJ, NO EGOLOGOS	ld 1/8/2023	1.20m ES 1.40m 1.70m ES 1.90m		1.0 <u></u>		SP SP	SAND: Fine to medium  Colour change to pale		grey					
		2.30111		-			Hole Terminated at 2.5 due to collapse	0 m						
				-										
	GEND:		<u> </u>	Notes, Sai	mples an	d Tests	<u> </u>		Consister				CS (kPa	·   · · · · · · · · · · · · · · · · · ·
<b>1</b>	– (Da – Wa <b>–</b> Wa <b>rata Ch</b> a		hown)	U <sub>50</sub> CBR E ASS B	Bulk s Enviro Acid S Bulk S	ample f nmenta	ter tube sample or CBR testing I sample Soil Sample		S S F F St S VSt V H H Fb F	ery Soft oft irm tiff ery Stiff ard riable		50 10 20 >4	5 - 50 0 - 100 00 - 200 00 - 400	W <sub>L</sub> Liquid Limit
	tr D	radational or ansitional stra efinitive or dis trata change	ata	Field Test PID DCP(x-y) HP	Photo Dynar	nic pene	on detector reading (ppm) etrometer test (test depth interval meter test (UCS kPa)	shown)	<u>Density</u>	V L MI D VE	Lo D D	ery Lo oose ledium 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:** Allam Property Group

PROJECT NAME: Proposed MHE JOB NO: RGS03357.1

TEST PIT NO:

PAGE:

TP4

1 of 1

SITE LOCATION:82 Chapmans Road, TuncurryLOGGED BY:WWTEST LOCATION:Refer to Figure 1DATE:1/8/23

**EQUIPMENT TYPE**: 6T Excavator - 600mm Toothed Bucket **EASTING**: 451333 m **SURFACE RL**:

		ENT TYP		6T Exc 2.0 m		- 600 <b>IDTH</b> :	mm Toothed Bucket 1.0 m	EASTING: NORTHING:	451333		SURF/ DATU		RL:	AHD
		ation and S		۱۱۱ ک.ک	٧٧	. רו ע.	Material description and		0441020	111	JA I U		d Test	עו וע
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTIO		y/particle is	MOISTURE	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
Е				-		SM	TOPSOIL: Silty SANE grey/brown, some roo		ned, dark	M				TOPSOIL
				- 0.5 1.0_	<i>*///</i>	SP	SAND: Fine to mediui	m grained, grey/pale g	grey					AEOLIAN
		1.20m ES 1.40m		- - 1.5_		SP	1.50m	m grained, pale brown		W				INDURATED SAND
		1.70m ES 1.90m		- 2.0_										
		2.30m ES 2.50m		- - 2.5			2.50m Hole Terminated at 2.3	50 m						
Wate		or Level	!	- - - Notes, Sar			due to collapse			ICY ery Sof	t	<2	<b>CS (kPa</b> ) 25 - 50	Moisture Condition D Dry M Moist
_ 	(Dat Wat Wat ta Cha Gr Gr De	er Level e and time s er Inflow er Outflow nges radational or ansitional stra efinitive or dis rata change	hown) / ! ata	CBR E ASS B Field Test PID DCP(x-y) HP	Bulk s Enviro Acid S Bulk S S Photoi Dynan	ample onmenta Sulfate s Sample ionisati nic pen	or CBR testing I sample Soil Sample on detector reading (ppm) etrometer test (test depth intervalueter test (UCS kPa)	al shown)	F Fi St Si VSt V H H	rm tiff ery Stiff ard iable V L MI	Ve Le D M	50 10 20 >4 ery Lo	0 - 100 00 - 200 00 - 400 00 - 400 ose	W Wet W <sub>p</sub> Plastic Limit W <sub>L</sub> Liquid Limit  Density Index <15% Density Index 15 - 35%



**CLIENT:** Allam Property Group

PROJECT NAME: Proposed MHE JOB NO: RGS03357.1

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WW

SITE LOCATION: 82 Chapmans Road, Tuncurry LOGGED BY:

**TEST LOCATION:** Refer to Figure 1 **DATE:** 1/8/23

**EQUIPMENT TYPE**: 6T Excavator - 600mm Toothed Bucket **EASTING**: 451322 m **SURFACE RL**:

		IENT TYP IT LENGT		6T Exc 2.0 m		- 600 <b>IDTH</b> :	mm Toothed Bucket 1.0 m	EASTING: NORTHING:	451322 6441737		SURF/ DATU		RL:	AHD
		ation and S		2.0 111		υп.	Material description and		0441737	111	DATO		d Test	AND
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTIO			MOISTURE	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
Ш				-		SM	TOPSOIL: Silty SAND grey/black, some roots	), fine to medium grain	ned, dark	M				TOPSOIL
				- 0. <u>5</u> - -	<b>Y</b> ///X	SP	SAND: Fine to mediur	n grained, grey/pale g	grey — —				_	AEOLIAN — — — — —
	l < 1/8/2023	1.20m		- 1.0_ - -										
		ES 1.40m		- 1. <u>5</u>										
		1.70m ES 1.90m		- - 2.0_ -										
		2.30m ES 2.50m		- - 2.5			2.50m							
				-			Hole Terminated at 2.5 due to collapse	50 m						
Wate	 Wat (Dat Wat	ter Level te and time s ter Inflow ter Outflow	hown)	L Notes, Sal U <sub>50</sub> CBR E ASS B	50mm Bulk s Enviro Acid S	Diame ample t	ter tube sample or CBR testing I sample Soil Sample		S S F F St S VSt V H F	ncy Yery Sof Soft Firm Stiff Yery Stiff Jard		25 50 10	- 50 - 100 0 - 200 0 - 400	D Dry M Moist W Wet W <sub>p</sub> Plastic Limit W <sub>L</sub> Liquid Limit
	Gi tra	radational or ansitional stra efinitive or dis rata change	ata	Field Test PID DCP(x-y) HP	Photoi Dynan	nic pen	on detector reading (ppm) etrometer test (test depth interva meter test (UCS kPa)	al shown)	Density	V L MI D VI	Lo D M Do	ery Lo oose ledium 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:** Allam Property Group

**PROJECT NAME:** Proposed MHE JOB NO: RGS03357.1

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SITE LOCATION:82 Chapmans Road, TuncurryLOGGED BY:WWTEST LOCATION:Refer to Figure 1DATE:1/8/23

**EQUIPMENT TYPE**: 6T Excavator - 600mm Toothed Bucket **EASTING**: 451216 m **SURFACE RL**:

		ENT TYP					mm Toothed Bucket	EASTING:	451216		SURF		RL:	ALID
		T LENGT		2.0 m	W	IDTH:		NORTHING:	0441/86	m l	DATU			AHD
- 1	Excav	ation and S	ampling	T		I	Material description and	orofile information				Fiel	d Test	
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION characteristics,color			MOISTURE	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
Ш				_		SM	TOPSOIL: Silty SAND, grey/black, some roots	fine to medium grai	ned, dark	М				TOPSOIL
	li⊲ 1/8/2023	1.20m  ES 1.40m  1.70m  ES 1.90m  2.30m  ES 2.50m		1.5_ 		SP	SAND: Fine to medium  SAND: Fine to medium  Hole Terminated at 2.50 due to collapse		grey					ĀĒŌLĪĀN
LEGI Wate	wat Wat (Dat Wat	er Level e and time si er Inflow er Outflow	hown)	V <sub>50</sub> CBR E ASS B	50mm Bulk s Enviro Acid S	Diame ample f	ter tube sample for CBR testing I sample Soil Sample		S S F Fi St S VSt V	ery Soft oft irm tiff ery Stiff		50 10 20	CS (kPa 25 5 - 50 0 - 100 00 - 200 00 - 400	D Dry M Moist W Wet W <sub>p</sub> Plastic Limit
Strat	tra — De	nges radational or ansitional stra efinitive or dis rata change	ata	Field Test PID DCP(x-y) HP	Photo Dynar	nic pen	on detector reading (ppm) etrometer test (test depth interval meter test (UCS kPa)	shown)	Fb Fi	riable V L MI D VD	Lo D D	ery Lo oose ediun ense ery Do	n Dense	Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



**CLIENT:** Allam Property Group

PROJECT NAME: Proposed MHE JOB NO: RGS03357.1

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SITE LOCATION:82 Chapmans Road, TuncurryLOGGED BY:WWTEST LOCATION:Refer to Figure 1DATE:1/8/23

**EQUIPMENT TYPE:** 6T Excavator - 600mm Toothed Bucket **EASTING:** 451253 m **SURFACE RL:** 

		IENT TYP IT LENGT		6T Exc 2.0 m		- 600 I <b>DTH</b> :	mm Toothed Bucket <b>EASTING</b> 1.0 m <b>NORTHIN</b>	i: 4512! I <b>G</b> : 644182		SURF DATU	ACE RL: IM:	AHD
	Excav	ation and S	ampling				Material description and profile information	n			Field Test	
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plas characteristics,colour,minor compo		MOISTURE	CONSISTENCY DENSITY	Test Type Result	Structure and additional observations
Ш				-		SM	TOPSOIL: Silty SAND, fine to medium grey/black, some roots	grained, dark	M			TOPSOIL
				- 0.5_ -		SP	SAND: Fine to medium grained, grey/pa	ale grey				AEOLIAN —————
	l < 1/8/2023	1.20m		- 1.0_ -		SP	1.20m SAND: Fine to medium grained, brown/	dark brown	_ w			INDURATED SAND
		ES 1.40m		- 1.5_		OF.	SAND. The to medium grained, blown	dark blown	VV			
		1.70m ES 1.90m		- - 2.0_ -								
		2.30m ES		-								
		2.50m		2.5			2.50m  Hole Terminated at 2.50 m due to collapse					
Wate	 Wat (Dat Wat	er Level e and time s er Inflow er Outflow	hown)	U <sub>50</sub> CBR E ASS B	50mm Bulk s Enviro Acid S	Diame ample nmenta	eter tube sample for CBR testing al sample Soil Sample	Consis VS S F St VSt H	Very So Soft Firm Stiff Very Sti Hard		UCS (kP: <25 25 - 50 50 - 100 100 - 200 200 - 400 >400	D Dry M Moist W Wet D W <sub>p</sub> Plastic Limit
Stra	tra — De	inges radational or ansitional stra efinitive or dis rata change	ata	Field Test PID DCP(x-y) HP	Photo Dynar	nic pen	on detector reading (ppm) etrometer test (test depth interval shown) ometer test (UCS kPa)	Fb Density	Friable V V L M D V	D M	ery Loose oose Medium Dens Dense ery Dense	Density Index <15% Density Index 15 - 35% e Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



**CLIENT:** Allam Property Group

PROJECT NAME: Proposed MHE JOB NO: RGS03357.1

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SITE LOCATION:82 Chapmans Road, TuncurryLOGGED BY:WWTEST LOCATION:Refer to Figure 1DATE:1/8/23

**EQUIPMENT TYPE**: 6T Excavator - 600mm Toothed Bucket **EASTING**: 451247 m **SURFACE RL**:

		ENT TYP					mm Toothed Bucket	EASTING:	451247		SURF		RL:	ALID
		T LENGT		2.0 m	W	IDTH:		NORTHING:	6441885	m l	DATU			AHD
E	Excav	ation and S	ampling				Material description and	profile information				Fiel	d Test	
МЕТНОD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION characteristics,colo			MOISTURE	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
Ш				_		SM	TOPSOIL: Silty SAND, grey/black, some roots	fine to medium grain	ned, dark	М				TOPSOIL
	ld 1/8/2023	1.20m  ES 1.40m  1.70m  ES 1.90m  2.30m  ES 2.50m		1.5_ 		SP	SAND: Fine to medium  SAND: Fine to medium  Hole Terminated at 2.50 due to collapse		grey					ĀĒOLĪĀN
LEGI Wate	e <u>r</u> Wat (Dat	er Level e and time sl er Inflow	hown)	Votes, Sar	50mm Bulk s Enviro	Diame ample f	ter tube sample for CBR testing Il sample		S Si F Fi St Si	ery Soft oft rm tiff		<2 25 50 10	CS (kPa 25 5 - 50 0 - 100 00 - 200	D Dry M Moist W Wet W <sub>p</sub> Plastic Limit
<b>→</b>	Wat <u>a Cha</u> Gr tra	er Outflow	ita į	ASS B Field Test PID DCP(x-y)	Bulk S <u>s</u> Photo	Sample ionisatio	on detector reading (ppm) etrometer test (test depth interval	shown)	н н	ery Stiff ard <u>riable</u> V L MI	Ve Lo	ery Lo	00 - 400 100 ose	Density Index <15% Density Index 15 - 35%
		rata change		HP	Hand	Penetro	meter test (UCS kPa)			D VD		ense ery De	ense	Density Index 65 - 85% Density Index 85 - 100%



**CLIENT:** Allam Property Group

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SITE LOCATION:82 Chapmans Road, TuncurryLOGGED BY:WWTEST LOCATION:Refer to Figure 1DATE:1/8/23

**EQUIPMENT TYPE:** 6T Excavator - 600mm Toothed Bucket **EASTING:** 451244 m **SURFACE RL:** 

		MENT TYP					mm Toothed Bucket	EASTING:	451244		SURF		RL:	ALID
Ľ		IT LENGT		2.0 m	W	IDTH:		NORTHING:	6441925	m I	DATU			AHD
L	Exca	vation and S	ampling				Material description and p	orofile information				Field	d Test	
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION characteristics, colou			MOISTURE	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
ш				-		SM	TOPSOIL: Silty SAND, grey/black, some roots	fine to medium graii	ned, dark	М				TOPSOIL
I ROSOUSSY, I IFLUCES GAT «CURRINGFRR» FIGGLUCES USSY TUUSSUUUS DRIGGELEE ARTER TOOI - DGGI, LID. NG ZUUS ALZZASAS PY; NG ZUUJ ALZASAS PY; NG ZUUJ	(⊲ 1/8/2023	1.20m  ES 1.40m  1.70m  ES 1.90m  2.30m  ES 2.50m		1.5_ 		SP S	SAND: Fine to medium:  SAND: Fine to medium:  Hole Terminated at 2.50 due to collapse		grey					AEOLIAN
<u>.</u>	GEND:			Notes, Sai	noles an	d Teete			Consister	ncv		116	CS (kPa	) Moisture Condition
<u> </u>	ater	ter Level te and time si ter Inflow ter Outflow anges	hown)	U <sub>50</sub> CBR E ASS B	50mm Bulk s Enviro Acid S Bulk S	Diame ample f	ter tube sample or CBR testing I sample soil Sample		VS V S S F F St S VSt V H H	ery Soff oft irm tiff ery Stiff ard riable		25 50 10 20	25 5 - 50 0 - 100 00 - 200 00 - 400	D Dry M Moist W Wet W <sub>p</sub> Plastic Limit
	tr	Gradational or ansitional stra Definitive or dis trata change	ata	PID DCP(x-y) HP	Photo Dynar	nic pene	on detector reading (ppm) etrometer test (test depth interval s meter test (UCS kPa)	shown)	<u> </u>	L MI D VE	Lo D D	oose	n Dense	Density Index 15 - 35%



CLIENT:

Allam Property Group

PROJECT NAME: Proposed MHE JOB NO:

SITE LOCATION:82 Chapmans Road, TuncurryLOGGED BY:WWTEST LOCATION:Refer to Figure 1DATE:1/8/23

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**EQUIPMENT TYPE:** 6T Excavator - 600mm Toothed Bucket **EASTING:** 451187 m **SURFACE RL:** 

		ENT TYP					mm Toothed Bucket	EASTING:	451187		SURF		RL:	ALID
		T LENGT		2.0 m	W	DTH:		NORTHING:	6441952	m l	DATU			AHD
E	Excav	ation and S	ampling				Material description and	profile information				Fiel	d Test	
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION characteristics, colo	J: Soil type, plasticity ur,minor component		MOISTURE	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
ш				_		SM	TOPSOIL: Silty SAND, grey/black, some roots	fine to medium grain	ned, dark	М				TOPSOIL
	ld 1/8/2023	1.20m ES 1.40m 1.70m ES 1.90m		0.5 - 1.0 - 1.5 - 2.0 - 2.5		SP	SAND: Fine to medium brown  Colour change to pale of the pale of t	grey/grey	pale					AEOLIAN
				- - -			due to collapse	J 111						
LEGI				Notes, Sar	nples an	d Tests	<u> </u>		Consisten		-	_	CS (kPa	·
Wate	Wat (Dat Wat	er Level e and time sl er Inflow er Outflow <u>inges</u>	hown)	U₅ CBR E ASS B	Bulk s Enviro Acid S Bulk S	ample f nmenta	ter tube sample for CBR testing I sample Soil Sample		S Si F Fi St Si VSt Vi H H	ery Soft oft rm tiff ery Stiff ard riable		25 50 10 20 >4	25 5 - 50 0 - 100 00 - 200 00 - 400	W <sub>L</sub> Liquid Limit
	Gr tra — De	radational or ansitional stra efinitive or dis rata change	ata	Field Test PID DCP(x-y) HP	Photoi Dynan	nic pen	on detector reading (ppm) etrometer test (test depth interval meter test (UCS kPa)	shown)	<u>Density</u>	V L MI D VI	Lo D D	ery Lo oose 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:** Allam Property Group

PROJECT NAME: Proposed MHE JOB NO: RGS03357.1

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SITE LOCATION:82 Chapmans Road, TuncurryLOGGED BY:WWTEST LOCATION:Refer to Figure 1DATE:1/8/23

**EQUIPMENT TYPE:** 6T Excavator - 600mm Toothed Bucket **EASTING:** 451156 m **SURFACE RL:** 

		ENT TYP					mm Toothed Bucket	EASTING:	451156		SURF		RL:	ALID
		T LENGT		2.0 m	W	IDTH:		NORTHING:	6441899	m l	DATU			AHD
E	Excav	ation and S	ampling	1		ı	Material description and	profile information				Fiel	d Test	
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION characteristics,colo			MOISTURE	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
Ш				_		SM	TOPSOIL: Silty SAND, grey/black, some roots	fine to medium grain	ned, dark	М				TOPSOIL
	l	1.20m  ES 1.40m  1.70m  ES 1.90m  2.30m  ES 2.50m		1.5_ 		SP	SAND: Fine to medium  SAND: Fine to medium  Hole Terminated at 2.50 due to collapse		grey					ĀĒOLĪĀN
LEGI Wate	r Wat (Dat	er Level e and time sl er Inflow	hown)	Notes, Sar U <sub>50</sub> CBR E	50mm Bulk s Enviro	Diame ample f	ter tube sample for CBR testing Il sample		S Si F Fi St Si	ery Soft oft rm tiff		<2 25 50 10	CS (kPa 25 5 - 50 0 - 100 00 - 200	D Dry M Moist W Wet W <sub>p</sub> Plastic Limit
<b>→</b>	Wat <b>a Cha</b> Gr	er Outflow	<u>!</u>	ASS B Field Test	Bulk S	Sample ionisatio	on detector reading (ppm)		н н	ery Stiff ard <u>riable</u> V L	Ve Lo	ery Lo		Density Index <15% Density Index 15 - 35%
		efinitive or dis rata change	stict [	DCP(x-y) HP			etrometer test (test depth interval meter test (UCS kPa)	snown)		ME D VE	D	ediun ense ery De	n Dense ense	Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



**CLIENT:** Allam Property Group

PROJECT NAME: Proposed MHE JOB NO: RGS03357.1

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SITE LOCATION:82 Chapmans Road, TuncurryLOGGED BY:WWTEST LOCATION:Refer to Figure 1DATE:1/8/23

**EQUIPMENT TYPE**: 6T Excavator - 600mm Toothed Bucket **EASTING**: 451126 m **SURFACE RL**:

		MENT TYP					mm Toothed Bucket	EASTING:	451126		SURF		RL:	ALID
Ľ		IT LENGT		2.0 m	W	IDTH:		NORTHING:	6441818	m l	DATU			AHD
_	Exca	vation and S	ampling				Material description and	profile information			ı	Field	d Test	
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION characteristics,colo			MOISTURE	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
ш				-		SM	TOPSOIL: Silty SAND, grey/black, some roots	fine to medium grain	ned, dark	М				TOPSOIL
KGSKGSF/T I PLOGS/GFJ <-praymgp-les> 1690/2023 95:5/ 1 UGS/00.09 Dagget Lab and in Shu Tool - DGD   Lib: KG 2,00.3 XUZ-UG-U3 PT; KG 2,00.0 XUZ-UG-GU	(⊲ 1/8/2023	1.20m  ES 1.40m  1.70m  ES 1.90m  2.30m  ES 2.50m		1.5_ 		SP	SAND: Fine to coarse of the second se		ey -					AĒOLĪĀN
	GEND:			Notes, Sai	mnlee an	d Toeto			Consister	lcv.		110	CS (kPa	) Moisture Condition
<u>N</u>	ater	ter Level te and time si ter Inflow ter Outflow anges	hown)	U <sub>50</sub> CBR E ASS B	50mm Bulk s Enviro Acid S Bulk S	Diame ample f	ter tube sample for CBR testing Il sample Soil Sample		S S F Fi St S VSt V H H	ery Soft oft irm tiff ery Stiff ard riable	:	25 50 10 20	25 - 50 - 100 - 200 - 400 - 400	D Dry M Moist W Wet W <sub>p</sub> Plastic Limit
	tr	Gradational or ansitional stra Definitive or dis trata change	ata	PID DCP(x-y) HP	Photo Dynar	nic pene	on detector reading (ppm) etrometer test (test depth interval meter test (UCS kPa)	shown)	Bollotty	L MI D VE	Lo D D	ose	n Dense	Density Index 15 - 35%



**CLIENT:** Allam Property Group

**PROJECT NAME:** Proposed MHE **JOB NO:** RGS03357.1

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SITE LOCATION:82 Chapmans Road, TuncurryLOGGED BY:WWTEST LOCATION:Refer to Figure 1DATE:1/8/23

**EQUIPMENT TYPE**: 6T Excavator - 600mm Toothed Bucket **EASTING**: 451074 m **SURFACE RL**:

		MENT TYP					mm Toothed Bucket	EASTING:	451074		SURF		RL:	ALID
Ľ		IT LENGT		2.0 m	W	IDTH:		NORTHING:	6441801	m I	DATU			AHD
L	Exca	vation and S	ampling				Material description and	profile information			ı	Field	d Test	
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION characteristics, colo	I: Soil type, plasticity ur,minor component		MOISTURE	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
ш				-		SM	TOPSOIL: Silty SAND, grey/black, some roots	fine to medium grain	ned, dark	М				TOPSOIL
KSSUSSETT IF LUGS GPT SQUARMINGFIRES TROUZZUS USSET TUGS VILUA UNISSUUR UNI	ld 1/8/2023	1.20m  ES 1.40m  1.70m  ES 1.90m  2.30m  ES 2.50m		1.5_ 		SP S	2.50m  Hole Terminated at 2.50 due to collapse		grey					AEOLIAN
2	CENID		L , .	Notes S-	mples s	d Toot-			Consist				26 (I-D-	Mointure Condition
W N	– (Da – Wa <b>–</b> Wa <b>rata Ch</b> a	ter Level te and time sl ter Inflow ter Outflow anges	hown)	U <sub>so</sub> CBR E ASS B	50mm Bulk s Enviro Acid S Bulk S	Diame ample f	ter tube sample or CBR testing I sample Soil Sample		S S F F St S VSt V H H	icy fery Soft foft irm tiff fery Stiff lard riable	:	25 50 10 20	6 - 50 0 - 100 00 - 200 00 - 400	D Dry M Moist W Wet W <sub>p</sub> Plastic Limit
- Le 2 M2 2 Le 2 Le 2 Le 2 Le 2 Le 2 Le 2	tr D	radational or ansitional stra efinitive or dis trata change	ata	PID PID DCP(x-y) HP	Photo Dynar	nic pene	on detector reading (ppm) etrometer test (test depth interval meter test (UCS kPa)	shown)	Density	V L MI D V	Lo D D	ose	n Dense	Density Index 15 - 35%



**CLIENT:** Allam Property Group

PROJECT NAME: Proposed MHE JOB NO: RGS03357.1

TEST PIT NO:

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SITE LOCATION:82 Chapmans Road, TuncurryLOGGED BY:WWTEST LOCATION:Refer to Figure 1DATE:1/8/23

**EQUIPMENT TYPE**: 6T Excavator - 600mm Toothed Bucket **EASTING**: 451074 m **SURFACE RL**:

		ENT TYP					mm Toothed Bucket	EASTING:	451074		SURF		RL:	ALID
		T LENGT		2.0 m	VV	IDTH:		NORTHING:	6441890	m	DATU			AHD
 	Excav	ation and S	ampling	Τ		7	Material description and	profile information				Field	d Test	
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTIO characteristics,col	N: Soil type, plasticity our,minor component		MOISTURE	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
Ш				_		SM	TOPSOIL: Silty SANE grey/black, some roots	), fine to medium grai	ned, dark	M				TOPSOIL
	l <mark>d 1/8/2023</mark>	1.20m ES 1.40m		1.0 <u></u>		SP	SAND: Fine to mediur	n grained, pale grey/g	grey					AEOLIAN
		1.90m 2.30m		- 2.0_ - - -										
		ES 2.50m		2.5			2.50m							
				- - -			Hole Terminated at 2.5 due to collapse	50 m						
	END:		. !	Notes, Sa	nples ar	d Tests			Consister VS V	ncy ery Sof	t	<u>UC</u> <2	CS (kPa)	Moisture Condition D Dry
_ ►	Wat (Dat Wat	er Level e and time s er Inflow er Outflow nges	hown)	U <sub>50</sub> CBR E ASS B	Bulk s Enviro Acid S Bulk S	ample nmenta	ter tube sample for CBR testing il sample Soil Sample		S S F F St S VSt V H H Fb F	oft irm tiff ery Stiff lard riable	f	25 50 10 20 >4	6 - 50 0 - 100 00 - 200 00 - 400	M Moist W Wet W <sub>p</sub> Plastic Limit W <sub>L</sub> Liquid Limit
	tra — De	radational or ansitional stra efinitive or dis rata change	ata	Field Test PID DCP(x-y) HP	Photo Dynar	nic pen	on detector reading (ppm) etrometer test (test depth interva meter test (UCS kPa)	al shown)	<u>Density</u>	V L MI D VI	Lo D M Do	ery Lo oose edium 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:** Allam Property Group

PROJECT NAME: Proposed MHE JOB NO: RGS03357.1

TEST PIT NO:

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**TP15** 

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SITE LOCATION:82 Chapmans Road, TuncurryLOGGED BY:WWTEST LOCATION:Refer to Figure 1DATE:1/8/23

**EQUIPMENT TYPE**: 6T Excavator - 600mm Toothed Bucket **EASTING**: 451076 m **SURFACE RL**:

		ENT TYP					mm Toothed Bucket	EASTING:	451076		SURF		RL:	ALID
		T LENGT		2.0 m	W	IDTH:		NORTHING:	6441935	m l	DATU			AHD
ı	Excav	ation and S	ampling				Material description and	profile information				Fiel	d Test	
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION characteristics, colo	I: Soil type, plasticit ur,minor component		MOISTURE	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
Ш				-		SM	TOPSOIL: Silty SAND, grey/black, some roots	fine to medium grain	ned, dark	М				TOPSOIL
	ld 1/8/2023	1.20m  ES 1.40m  1.70m  ES 1.90m  2.30m  ES 2.50m		1.5_ 		SP	2.50m  Hole Terminated at 2.50 due to collapse		grey					ĀĒŌLĪĀN
LEG			!	Notes, Sai	nples ar	d Tests	i.		Consisten VS V	icy ery Soft		_	<b>CS (kPa</b>	Moisture Condition     D Dry
<b>▼</b>	Wat (Dat Wat	er Level e and time si er Inflow er Outflow inges	hown)	U <sub>50</sub> CBR E ASS B	Bulk s Enviro Acid S	ample f nmenta	ter tube sample or CBR testing I sample Soil Sample		S Self First St Self VSt VSt VSt H H	oft irm tiff ery Stiff ard riable		50 10 20	5 - 50 0 - 100 00 - 200 00 - 400 400	1 P
	Gr tra — De	radational or ansitional stra efinitive or dis rata change	ata	Field Test PID DCP(x-y) HP	Photo Dynar	nic pen	on detector reading (ppm) etrometer test (test depth interval meter test (UCS kPa)	shown)	Density	V L ME D VE	Lo D D	ery Lo oose 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:** Allam Property Group

PROJECT NAME: Proposed MHE JOB NO: RGS03357.1

**TP16** 

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TEST PIT NO:

PAGE:

SITE LOCATION:82 Chapmans Road, TuncurryLOGGED BY:WWTEST LOCATION:Refer to Figure 1DATE:1/8/23

**EQUIPMENT TYPE**: 6T Excavator - 600mm Toothed Bucket **EASTING**: 451120 m **SURFACE RL**:

		ENT TYP				- 600 <b>IDTH</b> :	mm Toothed Bucket	EASTING:	451120		SURF		RL:	ALID
		T LENGT		2.0 m	VV	וטוא:		NORTHING:	6441981	m	DATU			AHD
METHOD	WATER	ration and S	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	Material description and  MATERIAL DESCRIPTIO characteristics,col			MOISTURE	CONSISTENCY DENSITY	Test Type	Result Result	Structure and additional observations
Ш				_		SM	TOPSOIL: Silty SANE grey/black, some roots	), fine to medium grains	ned, dark	M	ŏ			TOPSOIL
	l <mark></mark> ⊲ 1/8/2023	1.20m  ES 1.40m  1.70m  ES 1.90m  2.30m  ES 2.50m		1.5		SP	SAND: Fine to mediur	n grained, pale grey/g	grey .					AEOLIAN —————
_ 	wat Wat (Dat Wat	er Level e and time s er Inflow er Outflow	hown)	U <sub>50</sub> CBR E ASS B	50mm Bulk s Enviro Acid S	Diame ample nmenta	Hole Terminated at 2.5 due to collapse	50 m	S S F F St S VSt V H H	ncy fery Sof irm tiff fery Stif lard riable		25 50 10 20	CS (kPa) 5-50 1-100 0-200 0-400	Moisture Condition  D Dry  M Moist  W Wet  W <sub>p</sub> Plastic Limit  W <sub>L</sub> Liquid Limit
	Gr tra — De	radational or ansitional stra efinitive or dis rata change	ata	Field Test PID DCP(x-y) HP	Photo Dynar	nic pen	on detector reading (ppm) etrometer test (test depth interva meter test (UCS kPa)	al shown)	<u>Density</u>	V L MI D VI	Lo D M Do	ery Lo oose edium 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:** Allam Property Group

**PROJECT NAME:** Proposed MHE JOB NO: RGS03357.1

**TP17** 

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TEST PIT NO:

PAGE:

SITE LOCATION:82 Chapmans Road, TuncurryLOGGED BY:WWTEST LOCATION:Refer to Figure 1DATE:1/8/23

**EQUIPMENT TYPE**: 6T Excavator - 600mm Toothed Bucket **EASTING**: 451050 m **SURFACE RL**:

			2.0 m	6T Excavator - 600mm Toothed Bucket 2.0 m <b>WIDTH:</b> 1.0 m			<b>EASTING:</b> 451050 m <b>NORTHING:</b> 6441945 m					AHD	
	Excav	ation and S	ampling		Material description and profile information					1	Field	d Test	
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticit characteristics, colour, minor componen		MOISTURE	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
ш				-		SM	TOPSOIL: Silty SAND, fine to medium graigrey/black, some roots	ined, dark	W				TOPSOIL
		0.30m		-		SP	SAND: Fine to medium grained, pale grey/	grey					AEOLIAN
		ES 0.50m		0. <u>5</u>									
				-									
		0.80m ES		-									
	1/8/2023	1.00m		1.0_									
	- 1/8			_									
				1.5									
				-									
		1.80m		-									
		ES 2.00m		2.0			2.00m Hole Terminated at 2.00 m						
				-			due to collapse						
				-									
				2.5_									
				-									
				-									
LEG Wate	END:		<u> </u>	Notes, Sar	nples an	d Tests		Consister VS V	ncy /ery Soft		<u>UC</u>	<b>S (kPa</b>	Moisture Condition D Dry
	– Wat	er Level		U₅o CBR			ter tube sample or CBR testing	S S	Soft Firm		25	- 50 - 100	M Moist W Wet
		e and time s er Inflow	hown)	E ASS	Enviro	nmenta	I sample Soil Sample	St S	 Stiff /ery Stiff	:	10	0 - 200 0 - 400	W <sub>p</sub> Plastic Limit
	Wat	er Outflow		В		ample		н н	lard riable		>4		
otra		radational or		Field Test		onia-4	on detector reading (****)	Density	V		ery Lo	ose	Density Index <15%
transitional strata				PID DCP(x-y)	Dynan	nic pen	on detector reading (ppm) etrometer test (test depth interval shown)		L ME	) M		Dense	,
		rata change		HP	Hand	Penetro	meter test (UCS kPa)		D VC		ense ery De	ense	Density Index 65 - 85% Density Index 85 - 100%



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**PROJECT NAME:** Proposed MHE RGS03357.1 JOB NO:

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**TP18** 

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SITE LOCATION: 82 Chapmans Road, Tuncurry LOGGED BY: WW **TEST LOCATION:** Refer to Figure 1 DATE: 1/8/23

											SURFACE RL:		
				2.0 m				6441901	6441901 m <b>DAT</b>			AHD	
I	Excav	ation and S	ampling	T			Material description and profile information				Field Test		
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticit characteristics,colour,minor componen	y/particle ts	MOISTURE	CONSISTENCY DENSITY	Test Type Result	Structure and additional observations	
Ш				-		SC	TOPSOIL: Clayey SAND, fine to medium g dark grey/black, clay, low plasticity, some i	grained, roots	М			TOPSOIL	
		0.30m		-		 SP	SAND: Fine to medium grained, grey/pale	grey				AEOLIAN — — — — — —	
		ES 0.50m		0.5									
				-									
		0.80m											
	1/8/2023	ES 1.00m		1.0									
	_ <u>▽</u>	1.30m		-									
		ES 1.50m		1.5									
				-									
		1.80m ES	SS n	2. <u>0</u>									
		2.00m											
		2.30m		-									
		ES 2.50m		2.5			2.50m Hole Terminated at 2.50 m						
				-			due to collapse						
				_									
	Water				otes, Samples and Tests				ncy /ery Soft		<u>UCS (kPa</u> <25	D Dry	
$\blacksquare$		er Level		U₅o CBR	Bulk s	ample t	ter tube sample for CBR testing	FF	Soft Firm		25 - 50 50 - 100	M Moist W Wet	
<b>—</b>		e and time s er Inflow	1	E ASS			al sample Soil Sample	1	Stiff /ery Stiff		100 - 200 200 - 400		
<b>-</b>	Wat	er Outflow		В		ample	•	н н	lard		>400		
Strat	transitional strata			Field Test PID DCP(x-y)	Photoi		on detector reading (ppm) etrometer test (test depth interval shown)	Fb F Density	riable V L MD	Lo	ery Loose oose edium Dense	Density Index <15% Density Index 15 - 35% e Density Index 35 - 65%	
		rata change		HP	Hand	Penetro	ometer test (UCS kPa)		D VD		ense ery Dense	Density Index 65 - 85% Density Index 85 - 100%	



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PROJECT NAME: Proposed MHE JOB NO: RGS03357.1

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TEST PIT NO:

PAGE:

SITE LOCATION: 82 Chapmans Road, Tuncurry LOGGED BY: WW

**TEST LOCATION:** Refer to Figure 1 **DATE:** 1/8/23

**EQUIPMENT TYPE**: 6T Excavator - 600mm Toothed Bucket **EASTING**: 451017 m **SURFACE RL**:

		T LENGT		2.0 m		IDTH:	1.0 m NORTHING:	6441826		DATU	M:		AHD
	Excav	ation and S	ampling				Material description and profile information				Field 7	Test	
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticit characteristics, colour, minor componen		MOISTURE	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
ш				_		SC	TOPSOIL: Clayey SAND, fine to medium g dark grey/black, some roots	rained,	W			-	TOPSOIL
		0.30m ES 0.50m		- - 0.5_		SP	SAND: Fine to medium grained, pale grey/	 grey	_			,	AĒŌLIAN —————
	23	0.80m ES 1.00m		- - 1.0_									
	1/8/2023	1.30m ES 1.50m		- - - 1.5_									
		1.80m ES		- - -									
		2.00m		2.0			2.00m Hole Terminated at 2.00 m						
				- - 2.5 - -			due to collapse						
	END:		<u> </u>	Notes, Sar	nples an	d Tests		Consister				(kPa)	Moisture Condition
	Wat (Dat Wat	er Level e and time s er Inflow er Outflow inges	hown)	U <sub>50</sub> CBR E ASS B	Bulk s Enviro Acid S Bulk S	ample nmenta	ter tube sample or CBR testing I sample Soil Sample	S S F F St S VSt V H H Fb F	ery Soft foft irm diff ery Stiff lard riable		200 >400	50 100 - 200 - 400	D Dry M Moist W Wet W, Plastic Limit W_ Liquid Limit
	tra — De	radational or ansitional stra efinitive or dis rata change	ata	Field Tests PID DCP(x-y) HP	Photoi Dynan	nic pen	on detector reading (ppm) etrometer test (test depth interval shown) meter test (UCS kPa)	<u>Density</u>	V L MC D VD	Lo M D	ery Loos oose edium [ ense ery Dens	Dense	Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



CLIENT:

Allam Property Group

PROJECT NAME: Proposed MHE JOB NO:

SITE LOCATION:82 Chapmans Road, TuncurryLOGGED BY:WWTEST LOCATION:Refer to Figure 1DATE:1/8/23

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RGS03357.1

EQUIPMENT TYPE: 6T Excavator - 600mm Toothed Bucket EASTING: 450978 m SURFACE RL:

		MENT TYP PIT LENGT		6T Exc 2.0 m		- 600ı <b>IDTH</b> :	mm Toothed Bucket 1.0 m	EASTING: NORTHING:	450978 6441801		SURF.		RL:	AHD
	Exc	avation and S	ampling				Material description and p	orofile information				Fiel	d Test	
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION characteristics,colou			MOISTURE	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
Ш				_		SC	TOPSOIL: Clayey SANI dark grey/black, clay, lo	D, fine to medium g w plasticity, some re	rained, oots	W				TOPSOIL
		0.30m		-	<u> </u>	SC	Clayey SAND: Fine to r plasticity, pale grey/grey			_				ALLUVIUM
		ES 0.50m		0. <u>5</u>	- - -									
	33	0.80m		-		SP	SAND: Fine to medium	grained, pale grey/g	 grey	_				
	1/8/2023			1. <u>0</u>										
j: RG 2.00.0 2021-06-30		1.30m		-										
Datgel Lab and in Situ Tool - DGD   Lib: RG 2.00.3 2022-03-03 Prj: RG 2.00.0 2021-06-30		ES 1.50m		1. <u>5</u>										
itu Tool - DGD   Lib. R		1.80m		-										
gel Lab and In S		ES 2.00m		2.0			2.00m							
10.03.00.09				-			Hole Terminated at 2.00 due to collapse	m						
J < <drawingfile>&gt; 16/8/2023 09:58</drawingfile>				2. <u>5</u>										
RGS03357.1 TP LOGS.GPJ				-										
	GENE	):	 	Notes, Sar	nples ar	d Tests			Consister VS V	ncy ery Soft			<b>CS (kPa</b>	
o o		ater Level late and time s later Inflow later Outflow hanges	hown)	U <sub>50</sub> CBR E ASS B	Bulk s Enviro Acid S	ample f nmenta	ter tube sample or CBR testing I sample ioil Sample		S S F Fi St S VSt V H H	ery Soft oft irm tiff ery Stiff ard riable		25 50 10 20	25 5 - 50 0 - 100 00 - 200 00 - 400	M Moist W Wet W <sub>p</sub> Plastic Limit
		nanges Gradational or transitional stra Definitive or dis strata change	ata	Field Test PID DCP(x-y) HP	Photo Dynar	nic pene	on detector reading (ppm) etrometer test (test depth interval s meter test (UCS kPa)	shown)	<u>Density</u>	V L ME D	L( ) N D	ery Lo oose lediun 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:** Allam Property Group

PROJECT NAME: Proposed MHE JOB NO: RGS03357.1

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**TP21** 

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SITE LOCATION:82 Chapmans Road, TuncurryLOGGED BY:WWTEST LOCATION:Refer to Figure 1DATE:1/8/23

**EQUIPMENT TYPE**: 6T Excavator - 600mm Toothed Bucket **EASTING**: 451017 m **SURFACE RL**:

		ENT TYP				- 600 <b>IDTH:</b>	mm Toothed Bucket	EASTING:	451017		SURF		RL:	ALID
		T LENGT		2.0 m	VV	וטוא:		NORTHING:	6441826	m i	DATU	_		AHD
ı	Excav	ation and S	ampling	I		7	Material description and	profile information		I		Fiel	d Test	
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION characteristics,cold	l: Soil type, plasticity ur,minor component		MOISTURE	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
Ш				_		SC	TOPSOIL: Clayey SAN dark grey/black, clay, lo	ID, fine to medium g ow plasticity, some re	rained, oots	W				TOPSOIL
		0.30m		-		SP	SAND: Fine to medium moderate sulfur smell	grained, grey/pale g	 grey,					AEOLIAN —————
		ES 0.50m		0. <u>5</u>										
				- _										
		0.80m		_										
	/2023	ES 1.00m		1.0_										
	l <mark> </mark> ⊲ 1/8/2023	1.30m		_										
		ES		- 1.5										
		1.50m		-										
		1.80m		-										
		ES 2.00m		2.0			2.00m							
		2.00111		-			Hole Terminated at 2.00 due to collapse	) m						
				-										
				2.5										
				-										
				_										
LEG	END:		<u> </u>	Notes, Sar	nples an	l Id Tests	<u> </u> 		Consister VS V	icy Yery Soft	<u> </u>	_	<b>CS (kPa</b> 25	Moisture Condition  D Dry
<b>T</b>	– Wat (Dat	er Level e and time s	hown)	U <sub>50</sub> CBR E	Bulk s Enviro	ample t	ter tube sample for CBR testing ls sample		S S F F St S	oft irm tiff		25 50 10	5 - 50 ) - 100 )0 - 200	M Moist W Wet W <sub>p</sub> Plastic Limit
► Strat		er Inflow er Outflow	'	NSS B		Sulfate S Sample	Soil Sample		н н	'ery Stiff lard riable			00 - 400 100	W <sub>L</sub> Liquid Limit
<u>oua</u>	Gr tra De	i <b>nges</b> radational or ansitional stra efinitive or dis rata change	ata	Field Tests PID DCP(x-y) HP	Photo Dynar	nic pen	on detector reading (ppm) etrometer test (test depth interval meter test (UCS kPa)	shown)	Density	V L MI D	Lo D D	ery Lo oose lediun 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:** Allam Property Group

PROJECT NAME: Proposed MHE JOB NO: RGS03357.1

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**TP22** 

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SITE LOCATION:82 Chapmans Road, TuncurryLOGGED BY:WWTEST LOCATION:Refer to Figure 1DATE:1/8/23

**EQUIPMENT TYPE**: 6T Excavator - 600mm Toothed Bucket **EASTING**: 450996 m **SURFACE RL**:

		ENT TYP					mm Toothed Bucket	EASTING:	450996		SURF		RL:	ALID
'E		T LENGT		2.0 m	VV	DTH:	1.0 m	NORTHING:	0441927	m l	DATU			AHD
	Excav	ation and S	ampling	T		7	Material description and pr	one information		1		Field	d Test	
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: characteristics,colour			MOISTURE	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
Ш				_		CL	TOPSOIL: Silty CLAY, logrey/black, clay, some ro	w plasticity, dark ots		М				TOPSOIL
		0.30m ES 0.50m		- - 0. <u>5</u>		SC	Clayey SAND: Fine to co grey/brown-grey, clay, low smell		— — — ·	_				ALLUVIUM
	/2023	0.80m ES 1.00m		- - 1.0_		SP	SAND: Fine to medium g	rained, pale grey/g	 grey	_				
	1/8/2023	1.30m ES 1.50m		- - 1.5_										
		1.80m ES 2.00m		- - 2.0			2.00m							
				-			Hole Terminated at 2.00 i due to collapse	n						
				2.5_ - -										
				-										
LEG	SEND:		L	Notes, Sar	nples an	d Tests	<u> </u>		Consister				CS (kPa	·   · · · · · · · · · · · · · · · · · ·
·	Wat (Dat Wat	er Level e and time sl er Inflow er Outflow nges	hown)	U₅0 CBR E ASS B	Bulk sa Enviro Acid S Bulk S	ample f nmenta	ter tube sample or CBR testing I sample Soil Sample		S S F F St S VSt V H H Fb F	ery Soft oft irm tiff ery Stiff lard riable		50 10 20 >4	6 - 50 0 - 100 00 - 200 00 - 400	W <sub>L</sub> Liquid Limit
	tra De	adational or insitional stra efinitive or dis rata change	ata	Field Tests PID DCP(x-y) HP	Photoi Dynan	nic pen	on detector reading (ppm) etrometer test (test depth interval s meter test (UCS kPa)	hown)	<u>Density</u>	V L MI D VE	Lo D D	ery Lo oose ledium 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:** Allam Property Group

PROJECT NAME: Proposed MHE JOB NO: RGS03357.1

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**TP23** 

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SITE LOCATION:82 Chapmans Road, TuncurryLOGGED BY:WWTEST LOCATION:Refer to Figure 1DATE:1/8/23

**EQUIPMENT TYPE**: 6T Excavator - 600mm Toothed Bucket **EASTING**: 451008 m **SURFACE RL**:

		IENT TYP IT LENGT		6T Exc 2.0 m		- 600 I <b>DTH</b> :	mm Toothed Bucket 1.0 m	EASTING: NORTHING:	451008		SURF. DATU		RL:	AHD
				2.0 111	VV	חוטו.			6441998	m	DATU	_	d Toot	AHD
	⊏xca/	ation and S	ampling	I		7	Material description and	profile information				rield	d Test	
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTIC characteristics,col	N: Soil type, plasticity our,minor component		MOISTURE	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
В				_		CL	TOPSOIL: Silty CLAY fine to medium grained	, low plasticity, some d, dark grey/black, so	sand, me roots	М				TOPSOIL
		0.30m		-	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	SC	Clayey SAND: Fine to brown, clay, low plasti		 //pale				-	ALLUVIUM
		ES 0.50m		0.5_										
		0.80m		-			0.80m							
	023	ES 1.00m		1. <u>0</u>		SP	SAND: Fine to coarse	grained, pale grey/gi	ey					
	1/8/2023	4.20		-										
		1.30m ES 1.50m		- 1.5										
				-										
		1.80m ES		-										
		2.00m		2.0_										
				-	<u></u>		Hole Terminated at 2.2 due to collapse	20 m						
				2.5_										
				-										
	END:		<u> </u>	Notes, Sar	nples an	d Tests	<u> </u>		Consister VS V	icy ery Sof	<u> </u>	<u>UC</u> <2	CS (kPa)	Moisture Condition  D Dry
_	Wat (Dat Wat Wat	ter Level te and time s ter Inflow ter Outflow	hown)	U <sub>50</sub> CBR E ASS B	Bulk s Enviro Acid S	ample nmenta	ter tube sample or CBR testing I sample Soil Sample		S S F F St S VSt V H H	oft irm tiff ery Stif ard		25 50 10	- 50 - 100 0 - 200 0 - 400	M Moist W Wet W <sub>p</sub> Plastic Limit W <sub>L</sub> Liquid Limit
otra	tra — D	anges radational or ansitional stra efinitive or dis rata change	ata	Field Test PID DCP(x-y) HP	Photoi Dynan	nic pen	on detector reading (ppm) etrometer test (test depth interva meter test (UCS kPa)	al shown)	Fb F Density	riable V L MI D VI	Lo D M D	ery Lo oose ledium ense ery De	n Dense	Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



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**TP24** 

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SITE LOCATION: 82 Chapmans Road, Tuncurry LOGGED BY: WW **TEST LOCATION:** Refer to Figure 1 DATE: 1/8/23

		IENT TYPI		6T Exc 2.0 m		- 600 <b>DTH</b> :	mm Toothed Bucket EASTING: 1.0 m NORTHING:	450989 6442077		SURF		RL:	AHD
	Exca	ation and S	ampling				Material description and profile information				Field	d Test	
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticit characteristics, colour, minor componen		MOISTURE	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
B State Large Control of the Control	(d 1/8/2023	0.30m  ES 0.50m  0.80m  ES 1.00m  1.30m  ES 1.50m  1.80m  ES 2.00m		1.6_ 		SC SP	TOPSOIL: Silty CLAY, low plasticity, dark grey/brown, some sand, fine to medium grasome roots  0.20m  Clayey SAND: Low plasticity, pale grey/pa  SAND: Fine to medium grained, pale grey/s  Hole Terminated at 2.00 m due to collapse	le brown	M -				ALLUVIAL
LEG Wat	Wai (Dai - Wai ¶ Wai ata Cha G tra	ter Level te and time si ter Inflow ter Outflow anges radational or ansitional stra efinitive or dis rata change	hown)	U <sub>so</sub> CBR E ASS B Field Test PID CCP(x-y) HP	50mm Bulk s Enviro Acid S Bulk S Photoi Dynan	Diame ample inmenta ulfate s ample onisation	ter tube sample or CBR testing I sample soil Sample on detector reading (ppm) etrometer test (test depth interval shown) meter test (UCS kPa)	S S S S S S S S S S S S S S S S S S S	ncy /ery Soft Soft Firm Stiff /ery Stiff Hard Friable  V L ME D VE	V L(	25 50 10 20 >4 Gery Lo	6 - 50 1 - 100 0 - 200 0 - 400 000 ose	D Dry M Moist W Wet W <sub>p</sub> Plastic Limit W <sub>L</sub> Liquid Limit  Density Index <15% Density Index 15 - 35%



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**TP25** 

1 of 1

SITE LOCATION:82 Chapmans Road, TuncurryLOGGED BY:WWTEST LOCATION:Refer to Figure 1DATE:1/8/23

		ENT TYP		6T Exc 2.0 m		- 600 <b>DTH</b> :	nm Toothed Bucket EASTING: 1.0 m NORTHING:	45097 644201		SURF		RL:	AHD
	Excav	ation and S	ampling				Material description and profile information				Fiel	d Test	
МЕТНОD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity characteristics, colour, minor component		MOISTURE	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
Ш				-		CL	TOPSOIL: Silty CLAY, low plasticity, dark grey/black, some sand, fine to medium grai roots	ned, some	M				TOPSOIL
		0.30m		-	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	SC	Clayey SAND: Fine to coarse grained, pale grey/pale brown, clay, low plasticity					-	ALLUVIAL
		ES 0.50m		0. <u>5</u>		SP	SAND: Fine to coarse grained, pale grey/gr	rev					
		0.80m		-			0.80m						
	1/8/2023	ES 1.00m		1. <u>0</u>									
	1/8/	1.30m		-									
		ES 1.50m		1. <u>5</u>									
		1.80m		-									
		ES 2.00m		2.0			2.00m Hole Terminated at 2.00 m						
				-			due to collapse						
				-									
				2. <u>5</u> -									
				-									
LEG	END:			Notes, Sar	nples an	d Tests		<u>Consist</u>	tency Very Soft		<u>U(</u>	CS (kPa)	Moisture Condition D Dry
<b>_</b>	Wat (Dat Wat	er Level e and time s er Inflow	hown)	U₅o CBR E ASS	Bulk s Enviro Acid S	ample f nmenta ulfate S	er tube sample or CBR testing sample oil Sample	F St VSt	Soft Firm Stiff Very Stiff		50 10 20	5 - 50 0 - 100 00 - 200 00 - 400	P P
Stra	Wat ta Cha	er Outflow naes		В	Bulk S	ample		1	Hard Friable		>4	100	
	Gr tra De	radational or ansitional stra efinitive or dis rata change	ata	Field Test PID DCP(x-y) HP	Photoi Dynan	nic pen	n detector reading (ppm) trometer test (test depth interval shown) meter test (UCS kPa)	Density		Lo M De	ery Lo oose 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%



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**TP26** 

1 of 1

SITE LOCATION: 82 Chapmans Road, Tuncurry LOGGED BY: WW

**TEST LOCATION:** Refer to Figure 1 DATE: 1/8/23

		ENT TYP					mm Toothed Bucket EASTING:	450956			ACE R	RL:	
		T LENGT		2.0 m	W	IDTH:		6441954	m I	DATU			AHD
E	Excav	ation and S	ampling	T			Material description and profile information		_	I	Field	Test	
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticit characteristics,colour,minor componen	ty/particle ts	MOISTURE	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
В				-		CL	TOPSOIL: Sitty CLAY, low plasticity, dark grey/black, some sand, fine to medium gra roots	ined, some	W				TOPSOIL
		0.30m		-	Y/A\ 	SC	Clayey SAND: Fine to coarse grained, pal grey/pale brown, clay, low plasticity	e					ALLUVIAL
		ES 0.50m		0.5	- -	,							
				-									
		0.80m		-	<u> </u>								
	023	1.00m		1.0_	- -	SP	1.00m  SAND: Fine to coarse grained, pale grey/g		-				
	<b> </b> ⊲ 1/8/2023			-			,	-					
		1.30m		-									
		ES 1.50m		1.5_									
				-									
		1.80m ES		-									
		2.00m		2.0			2.00m Hole Terminated at 2.00 m					_	
LEGI Wate				-			due to collapse						
				-									
				2.5_									
				-									
LEGI	END:			Notes, Sai	mples an	d Tests		Consiste	ncy		UCS	6 (kPa)	Moisture Condition
<b>-</b>	Wat (Dat Wat	er Level e and time sl er Inflow er Outflow	hown)	U₅ CBR E ASS B	Bulk s Enviro Acid S	ample nmenta	oter tube sample for CBR testing al sample Soil Sample	S S S S S S S S S S S S S S S S S S S	ery Soft oft irm stiff ery Stiff			50 100 - 200 - 400	D Dry M Moist W Wet W <sub>p</sub> Plastic Limit W <sub>L</sub> Liquid Limit
Strat	tra _ De	nges radational or insitional stra efinitive or dis rata change	ata	Field Test PID DCP(x-y) HP	Photoi Dynan	nic pen	on detector reading (ppm) etrometer test (test depth interval shown) ometer test (UCS kPa)	Fb F	riable V L ME D VD	Lo D	ery Loos oose ledium E ense ery Dens	Dense	Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



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SITE LOCATION:82 Chapmans Road, TuncurryLOGGED BY:WWTEST LOCATION:Refer to Figure 1DATE:1/8/23

**EQUIPMENT TYPE**: 6T Excavator - 600mm Toothed Bucket **EASTING**: 450951 m **SURFACE RL**:

		IENT TYP					mm Toothed Bucket	EASTING:	450951		SURF		RL:	ALID
		ration and S		2.0 m	VV	DTH:		NORTHING:	0441884	m	DATU	_	d Toot	AHD
	∟xcav	ation and S	ampling			7	Material description an	a profile information				Fiel	d Test	
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION characteristics,co	DN: Soil type, plasticity lour,minor component	//particle s	MOISTURE	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
ш				_		CL	TOPSOIL: Silty CLAY grey/black, some san roots	/, low plasticity, dark d, fine to medium grain	ned, some	W				TOPSOIL
		0.30m ES		-		SC	Clayey SAND: Fine t grey/pale brown, clay	o coarse grained, pale low plasticity		_				ALLUVIAL
		0.50m		0. <u>5</u> -										
		0.80m		-	: : : <del>:</del>	SP	SAND: Fine to coarse	e grained, pale grey/gr	 rey	-				
		ES 1.00m		1.0										
	1/8/2023		1	-										
	<u></u>	1.20		-										
		1.30m		-										
		ES 1.50m		1.5										
				-										
		1.80m		-										
		ES 2.00m		2.0			2.00m							
				-			Hole Terminated at 2. due to collapse	00 m						
				-										
				-										
				2.5_										
				-										
				-										
LEC	END:			Notes, Sar	nnloe a-	d Toot			Consister	) ICV		114	CS (kPa)	) Moisture Condition
Wate	wat Wat (Dat Wat	ter Level te and time s ter Inflow ter Outflow	hown)	U <sub>50</sub> CBR E ASS B	50mm Bulk s Enviro Acid S	Diame ample nmenta	ter tube sample for CBR testing il sample Soil Sample		VS V S S F F St S VSt V	ery Sof oft irm tiff ery Stif		25 50 10 20	25 (RPA) 5 - 50 0 - 100 00 - 200 00 - 400 400	D Dry M Moist W Wet W <sub>p</sub> Plastic Limit
Strat	ta Cha		]	Field Test	<u>s</u>	·			1	riable V		ery Lo		Density Index <15%
	 tra De	ansitional stra efinitive or dis rata change	ata	PID DCP(x-y) HP	Dynan	nic pen	on detector reading (ppm) etrometer test (test depth interv ometer test (UCS kPa)	al shown)		L Mi D VI	D M	oose lediun ense ery De	n Dense ense	Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



**CLIENT:** Allam Property Group

PROJECT NAME: Proposed MHE JOB NO: RGS03357.1

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**TP28** 

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SITE LOCATION:82 Chapmans Road, TuncurryLOGGED BY:WWTEST LOCATION:Refer to Figure 1DATE:1/8/23

**EQUIPMENT TYPE**: 6T Excavator - 600mm Toothed Bucket **EASTING**: 450913 m **SURFACE RL**:

		IENT TYP		6T Exc 2.0 m		- 600 <b>IDTH</b> :	mm Toothed Bucket 1.0 m	EASTING: NORTHING:	450913		SURF.		RL:	AHD
				2.0 111		וטוח:			6441915	m i	DATU	_	d Test	AHD
	Excav	ation and S	ampling	Ι		7	Material description an	d profile information				Field	d Test	
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTIC characteristics,co	DN: Soil type, plasticity lour,minor component	y/particle ss	MOISTURE	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
В				-		CL	TOPSOIL: Silty CLAN grey/black, some sand roots	/, low plasticity, dark d, fine to medium grai	ned, some	W				TOPSOIL
		0.30m ES		-	<del>y//</del> >	SC	Clayey SAND: Fine to grey/pale brown, clay,	o coarse grained, pale low plasticity					-	ALLUVIAL
		0.50m		0.5_										
		0.80m		-		SP	0.80m SAND: Fine to coarse	e grained, pale grey/gi	 ey	_				
	1/8/2023	ES 1.00m		1. <u>0</u>										
	1/8/2	1.30m		-										
		ES 1.50m		1.5										
		1.00111	•	-										
		1.80m ES		-										
		2.00m		2.0			2.00m							
				-			Hole Terminated at 2. due to collapse	00 m						
				2.5_ -										
				-										
LEG	END:		<u> </u>	Notes, Sar	nples an	nd Tests	<u> </u>		Consisten				CS (kPa)	·   ·
_	Wat (Dat Wat	ter Level te and time s ter Inflow ter Outflow	hown)	U <sub>50</sub> CBR E ASS B	Bulk s Enviro Acid S	ample nmenta	ter tube sample for CBR testing I sample Soil Sample		S Si F Fi St Si VSt Vi H H	ery Soft  rm  tiff  ery Stiff  ard  riable		50 10 20	25 5 - 50 0 - 100 00 - 200 00 - 400	D Dry M Moist W Wet W <sub>p</sub> Plastic Limit W <sub>L</sub> Liquid Limit
<u> </u>	Gi tra De	radational or ansitional stra efinitive or dis rata change	ata	Field Test PID DCP(x-y) HP	Photo Dynar	nic pen	on detector reading (ppm) etrometer test (test depth interv meter test (UCS kPa)	al shown)	<u>Density</u>	V L MI D	Lo D D	ery Lo oose ledium ense ery De	n Dense	Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



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**PROJECT NAME:** Proposed MHE JOB NO: RGS03357.1

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SITE LOCATION: 82 Chapmans Road, Tuncurry LOGGED BY: WW **TEST LOCATION:** Refer to Figure 1 DATE: 1/8/23

		IENT TYP		6T Exc 2.0 m		- 600 IDTH:	mm Toothed Bucket EASTING: 1.0 m NORTHING:	450860 6441886		SURF		RL:	AHD
	Excav	ation and S	ampling				Material description and profile information				Field	d Test	
МЕТНОБ	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticit characteristics, colour, minor componen	iy/particle ts	MOISTURE	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
В				-		CL	TOPSOIL: Silty CLAY, low plasticity, dark grey/black, some sand, fine to medium gra roots	ined, some	W				TOPSOIL
		0.30m		_	Y//\\ 	SC	Clayey SAND: Fine to medium grained, pagrey/pale brown, clay, low plasticity	 ale				•	ALLUVIUM
		ES 0.50m		0.5_	_								
				-									
		0.80m ES		-		SP	SAND: Fine to medium grained, pale grey/	grey	-				
	1/8/2023	1.00m		1.0_									
	¥ <u>▼</u>	1.30m		-									
		ES		1.5									
		1.50m		1.5_									
		1.80m		-									
		ES 2.00m		2.0			2.00m						
				-			Hole Terminated at 2.00 m due to collapse						
				-									
				2.5_									
				_									
				_									
LEG Wate	END:	•	. !	Notes, Sar	nples an	d Tests		Consiste VS V	ncy Very Soft		<u>U(</u>	<b>CS (kPa</b> 25	Moisture Condition D Dry
<u>×</u>	Wat (Dat Wat	ter Level te and time s ter Inflow	hown)	U₅ CBR E ASS	Bulk s Enviro Acid S	ample t nmenta sulfate s	ter tube sample or CBR testing I sample Soil Sample	S S F F St S VSt V	Soft Firm Stiff Very Stiff		25 50 10 20	5 - 50 0 - 100 00 - 200 00 - 400	M Moist W Wet W <sub>p</sub> Plastic Limit W <sub>L</sub> Liquid Limit
◀	Wat ta Cha	ter Outflow Inges		В		ample		Fb F	Hard Friable			100	
LEG Wate	Gi tra De	radational or ansitional stra efinitive or dis rata change	ata	Field Test PID DCP(x-y) HP	Photoi Dynan	nic pen	on detector reading (ppm) etrometer test (test depth interval shown) meter test (UCS kPa)	Density	V L ME D VD	Lo D D	ery Lo oose ledium 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:

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SITE LOCATION:82 Chapmans Road, TuncurryLOGGED BY:WWTEST LOCATION:Refer to Figure 1DATE:1/8/23

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		IENT TYP					mm Toothed Bucket EASTING:	450890		SURF		RL:	
i E		IT LENGT		2.0 m	VV	IDTH:	1.0 m NORTHING:	6441953	3 m <b>L</b>	DATU			AHD
	Exca	vation and S	ampling	Ī		7	Material description and profile information				Fiel	d Test	
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity characteristics, colour, minor component		MOISTURE	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
Е				-		CL	TOPSOIL: Silty CLAY, low plasticity, dark grey/black, some sand, fine to medium grain roots	ned, some	W				TOPSOIL
		0.30m ES		-	Y//\\    	SC	Clayey SAND: Fine to medium grained, gra brown, clay, low plasticity	 ∍y/pale	-				ALLUVIUM
ĺ		0.50m		0.5_									
		0.80m		-		 . SP	0.80m		_				
	1/8/2023	ES 1.00m		1. <u>0</u>			3 / 3-5/-	. <del>.</del>					
	4/1 1/8	1.30m		-									
		ES 1.50m		- 1. <u>5</u>									
		1.80m		-									
		ES 2.00m		2.0			2.00m Hole Terminated at 2.00 m						
				-			due to collapse						
				- 2.5									
				-									
				-									
LEC Wat	SEND: ter	<u>I</u>	<u> </u>	Notes, Sar				1	Very Soft		<2	CS (kPa)	D Dry
<b>▼</b>	(Dat	ter Level te and time s ter Inflow ter Outflow	hown)	U <sub>50</sub> CBR E ASS B	Bulk s Enviro Acid S	ample t nmenta	ter tube sample or CBR testing I sample ioil Sample	F F St S VSt \	Soft Firm Stiff Very Stiff Hard		50 10 20	5 - 50 0 - 100 00 - 200 00 - 400 100	$\begin{array}{lll} M & \text{Moist} \\ W & \text{Wet} \\ W_p & \text{Plastic Limit} \\ W_L & \text{Liquid Limit} \end{array}$
Stra	ata Cha G tra De		ata	Field Tests PID DCP(x-y) HP	<u>s</u> Photoi Dynan	onisatio	on detector reading (ppm) etrometer test (test depth interval shown) meter test (UCS kPa)	1	Friable  V L MC D VD	Lo M D	ery Lo	oose n Dense	Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



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SITE LOCATION:82 Chapmans Road, TuncurryLOGGED BY:WWTEST LOCATION:Refer to Figure 1DATE:1/8/23

**EQUIPMENT TYPE**: 6T Excavator - 600mm Toothed Bucket **EASTING**: 450933 m **SURFACE RL**:

		ENT TYP						EASTING:	450933		SURF		RL:	AUD
		T LENGT		2.0 m	VV	IDTH:		NORTHING:	0441995	m I	DATU	_	J.T. (	AHD
1	Excav	ation and S	ampling	Ī		7	Material description and profil	e information				Fiel	d Test	
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: So characteristics, colour, m			MOISTURE	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
Ш				-		CL	TOPSOIL: Silty CLAY, low provided from the grey/black, some sand, fine roots	olasticity, dark to medium grai	ned, some	W				TOPSOIL
		0.30m		-		SC	Clayey SAND: Fine to medi grey/pale brown, clay, low pl	um grained, pa lasticity	 le					ALLUVIUM
		ES 0.50m		0.5_	- -									
				-										
		0.80m ES		-		SP	SAND: Fine to medium grain	ned, pale grey/ç	 grey					
	,2023	1.00m		1.0_										
	l ⊲ 1/8/2023			-										
		1.30m ES		-										
		1.50m		1. <u>5</u>										
		1.80m		-										
		ES 2.00m		2.0										
		2.00111		2.0			Hole Terminated at 2.00 m due to collapse							
				-										
				2. <u>5</u>										
				-										
				-										
LEG	END:		<u> </u>	Notes, Sar	nples an	d Tests	i .		Consisten VS V	<b>cy</b> ery Soft	<u> </u>	_	<b>CS (kPa</b>	) Moisture Condition  D Dry
¥	– Wat (Dat	er Level e and time s er Inflow	hown)	U₅o CBR E ASS	Bulk s Enviro	ample t nmenta	ter tube sample or CBR testing I sample		S Si F Fi St Si	oft rm tiff		50 10	5 - 50 0 - 100 00 - 200 00 - 400	P
<b>-</b>	Wat ta Cha	er Outflow Inges		В	Bulk S	ample	Soil Sample		H H	ery Stiff ard iable		>4	100	,
	tra — De	radational or ansitional stra efinitive or dis rata change	ata	Field Test PID DCP(x-y) HP	Photoi Dynan	nic pen	on detector reading (ppm) etrometer test (test depth interval show meter test (UCS kPa)	vn)	<u>Density</u>	V L ME D VE	Lo D D	ery Lo pose lediun ense ery De	n Dense	Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



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**PROJECT NAME:** Proposed MHE JOB NO: RGS03357.1

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**TP32** 

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SITE LOCATION:82 Chapmans Road, TuncurryLOGGED BY:WWTEST LOCATION:Refer to Figure 1DATE:1/8/23

**EQUIPMENT TYPE:** 6T Excavator - 600mm Toothed Bucket **EASTING:** 450938 m **SURFACE RL:** 

		IENT TYP		6T Exc 2.0 m		- 600ı <b>IDTH:</b>	mm Toothed Bucket 1.0 m	EASTING: NORTHING:	450938 6442043		SURF.		RL:	AHD
	Exca	ation and S	ampling				Material description and prof	île information				Fiel	d Test	
METHOD	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: So characteristics, colour, n			MOISTURE	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
ш				-		CL	TOPSOIL: Silty CLAY, low grey/black, some sand, fine roots	to medium graii		W				TOPSOIL
		0.30m ES 0.50m		- 0. <u>5</u>		SC	Clayey SAND: Fine to med grey/pale brown, clay, low p		le					ALLUVIUM
		0.80m		-		SP	SAND: Fine to medium gragrey  Colour change to grey/pale		 /pale					
2021-06-30	△ 1/8/2023	ES 1.00m		1.0_										
13 Prj; RG 2.00.0	<del>-</del>	1.30m		_										
Lib: RG 2.00.3 2022-03-0		ES 1.50m		1.5_ -										
d In Situ Tool - DGD		1.80m		-										
el Lab an		ES 2.00m		2.0			2.00m							
RO 2 00.3 LB. GLB Log RC NON-CORED BOREHOLE - TEST PIT RGSK0357,1 TP LOGS GPJ. <-OnwangFile>> 16/8/2/023 19:59 10.03.00.09 Dagel Lab and in Situ Tool - DGD   Lib: RC 2.00.3 2/02-4/3 Pp; RC 2.00.0 2/02/1-06:30    IST   No. 100   Lib: RC 2.00.3 2/02-4/3 Pp; RC 2.00.0 2/02/1-06:30    IST   No. 100   Lib: RC 2.00.3 2/02-4/3 Pp; RC 2.00.0 2/02/1-06:30				- - 2.5_ - -			Hole Terminated at 2.00 m due to collapse							
Mat Stra	Wat (Dat Wat Wat ta Cha		hown)	U <sub>50</sub> CBR E ASS B	50mm Bulk s Enviro Acid S Bulk S	Diame ample f nmenta	ter tube sample or CBR testing I sample Soil Sample		S S F F St S VSt V H H	rery Soft fort firm stiff ery Stiff lard riable		<2 25 50 10 20	CS (kPa 25 5 - 50 0 - 100 00 - 200 00 - 400 400	D Dry M Moist W Wet W <sub>p</sub> Plastic Limit
RG 2.00.3 LIB. GLB	tra Do	radational or ansitional stra efinitive or dis rata change	ata	PID DCP(x-y) HP	Photo Dynar	nic pene	on detector reading (ppm) etrometer test (test depth interval sho meter test (UCS kPa)	wn)	Delibity	L ME D VD	Lo M D	oose	n Dense	Density Index 15 - 35%



CLIENT:

Allam Property Group

PROJECT NAME: Proposed MHE JOB NO: RGS03357.1

TEST PIT NO:

PAGE:

**TP33** 

1 of 1

SITE LOCATION:82 Chapmans Road, TuncurryLOGGED BY:WWTEST LOCATION:Refer to Figure 1DATE:1/8/23

**EQUIPMENT TYPE**: 6T Excavator - 600mm Toothed Bucket **EASTING**: 450975 m **SURFACE RL**:

		IENT TYP IT LENGT		6T Exc 2.0 m		- 600r <b>IDTH</b> :	mm Toothed Bucket 1.0 m	EASTING: NORTHING:	450975		SURF.		RL:	AHD
<u> </u>		ation and S		2.0 111		ID 1111.	Material description an		0442102		DATO		d Test	AIID
МЕТНОБ	WATER	SAMPLES	RL (Not measured)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTIO	<u> </u>	y/particle s	MOISTURE	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
Ш				-		CL	TOPSOIL: Silty CLA\ grey/black, some san roots	/, low plasticity, dark d, fine to medium grai	ned, some	W				TOPSOIL
		0.30m ES 0.50m		- - 0. <u>5</u>	\( \) \( \)	SC	Clayey SAND: Fine t grey/pale brown, clay	o medium grained, pa , low plasticity	 le	_				ALLUVIUM
		0.80m		- -			0.80m			-				
	1/8/2023	ES 1.00m		1.0_ -		SP	SAND: Fine to mediu	m graineα, pale grey/ξ	gi ey					
	_ <u>▼</u>	1.30m		-										
		ES 1.50m		1. <u>5</u>										
		1.80m ES		-										
		2.00m		2.0			2.00m  Hole Terminated at 2. due to collapse	00 m						
				-										
				2.5_ -										
				-										
Wat	Wat (Dat Wat	er Level e and time s er Inflow er Outflow	hown)	I Notes, Sar U <sub>50</sub> CBR E ASS B	50mm Bulk s Enviro Acid S	n Diame sample f onmenta	ter tube sample or CBR testing I sample ioil Sample		S S F Fi St S VSt V H H	lery Soft oft irm tiff ery Stiff ard riable		25 50 10 20	CS (kPa 25 5 - 50 0 - 100 00 - 200 00 - 400	D Dry M Moist W Wet W <sub>p</sub> Plastic Limit
	Gi tra De	radational or ransitional stra efinitive or dis rata change	ata	Field Test PID DCP(x-y) HP	Photo Dynar	nic pene	on detector reading (ppm) etrometer test (test depth interv meter test (UCS kPa)	al shown)	Density	V L ME D VD	Lo D D	ery Lo oose lediun ense ery De	n Dense	Density Index <15% Density Index 15 - 35% Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%



# Appendix B Laboratory Test Result Sheets

112 samples supplied by Regional Geotechnical Solutions Pty Ltd on 8/08/2023. Lab Job No. P3902. Analysis requested by Andrew Hills. Your Job: RGS03357.1, Allam Property Group.

44 Bent Street WINGHAM NSW 2429																	Non-trea	ated soil	Non-tre	ated soil
Sample Identification	EAL Lab Code	Texture	Moisture	Content		pH <sub>F</sub> aı	nd pH <sub>FOX</sub>		KCI-extract	table sulfur	Potential Sulf	idic Acidity		Actual Acidity	Retaine	d Acidity	Acid Neutralis	ing Capacity	Net Acidity	Lime Calculation
	Code								(S	ika)	(Chromium Red CF	ucible Sulfur - RS)		(Titratable Actual Acidity - TAA)			(AN	IC <sub>BT</sub> )		
			(% moisture of total wet weight)	(g moisture / g of oven dry soil)	pH <sub>F</sub>	pH <sub>FOX</sub>	pH change	Reaction	(% S <sub>KCI</sub> )	(equiv. mol H */t)	(% S <sub>or</sub> )	(mol H */t)	pH <sub>KCI</sub>	(mol H */t)	(%S <sub>NAS</sub> )	(mol H */t)	(% CaCO <sub>3</sub> )	(mol H */t)	(mol H */t)	(kg CaCO <sub>3</sub> /t DW)
Method Info.		**	worgency	**		(In-house	method S21)			**	(In-house n	nethod S20)	(In-hou	use method 16b)			(In-house r	nethod S14)	**	**
TP 1 1.2-1.4m	P3902/1	Coarse	19.1	0.24	5.60	4.12	-1.48	Low												
TP 1 1.7-1.9m	P3902/1	Coarse	24.2	0.24	5.22	3.50	-1.72	Low			••								**	
TP 1 2.3-2.5m	P3902/3	Coarse	17.3	0.21	4.41	2.21	-2.20	Volcanic	0.022	14	0.146	91	4.99	16					107	8
TP 2 1.2-1.4m	P3902/4	Coarse	17.8	0.22	5.64	3.15	-2.49	Medium				1	,							
TP 2 1.7-1.9m	P3902/5	Coarse	21.0	0.27	4.97	3.50	-1.47	Medium												
TP 2 2.3-2.5m	P3902/6	Coarse	17.4	0.21	4.63	2.48	-2.15	Extreme												
TP 3 1.2-1.4m	P3902/7	Coarse	16.7	0.20	5.07	3.24	-1.83	Medium												
TP 3 1.7-1.9m	P3902/8	Coarse	19.1	0.24	5.76	1.59	-4.17	High												
TP 3 2.3-2.5m	P3902/9	Coarse	17.6	0.21	5.24	1.68	-3.56	Low	0.007	4	0.053	33	5.27	7					40	3
TP 4 1.2-1.4m	P3902/10	Coarse	20.1	0.25	5.92	3.28	-2.64	Medium												
TP 4 1.7-1.9m	P3902/11	Coarse	17.8	0.22	5.00	2.22	-2.78	Volcanic	0.020	12	0.205	128	4.91	16					144	11
TP 4 2.3-2.5m	P3902/12	Coarse	18.6	0.23	5.22	1.27	-3.95	Low												
TP 5 1.2-1.4m	P3902/13	Coarse	20.3	0.25	6.03	4.27	-1.76	Medium												
TP 5 1.7-1.9m	P3902/14	Coarse	20.2	0.25	6.14	4.27	-1.87	Medium												
TP 5 2.3-2.5m	P3902/15	Coarse	16.5	0.20	5.73	2.13	-3.60	Volcanic												
TP 6 1.2-1.4m	P3902/16	Coarse	23.8	0.31	6.10	3.97	-2.13	Medium												
TP 6 1.7-1.9m	P3902/17	Coarse	15.8	0.19	5.12	2.14	-2.98	Extreme												
TP 6 2.3-2.5m	P3902/18	Coarse	16.5	0.20	5.73	2.17	-3.56	Volcanic												
TP 7 1.2-1.4m	P3902/19	Coarse	15.1	0.18	6.18	3.24	-2.94	Medium												
TP 7 1.7-1.9m	P3902/20	Coarse	18.4	0.23	5.74	3.00	-2.74	Medium												
TP 7 2.3-2.5m	P3902/21	Coarse	19.3	0.24	5.75	1.37	-4.38	High	0.009	5	0.080	50	5.11	21					71	5
TP 8 1.2-1.4m	P3902/22	Coarse	23.4	0.31	6.39	3.89	-2.50	Medium												
TP 8 1.7-1.9m	P3902/23	Coarse	19.1	0.24	6.35	1.55	-4.80	High												
TP 8 2.3-2.5m	P3902/24	Coarse	17.9	0.22	5.50	2.18	-3.32	Volcanic												
TP 9 1.2-1.4m	P3902/25	Coarse	24.8	0.33	6.26	3.72	-2.54	Medium												
TP 9 1.7-1.9m	P3902/26	Coarse	16.4	0.20	4.50	2.06	-2.44	Volcanic												
TP 9 2.3-2.5m	P3902/27	Coarse	16.8	0.20	4.69	2.30	-2.39	Extreme												
TP 10 1.2-1.4m	P3902/28	Coarse	21.2	0.27	6.08	2.56	-3.52	Medium												
TP 10 1.7-1.9m	P3902/29	Coarse	16.9	0.20	4.59	2.16	-2.43	Volcanic												
TP 10 2.3-2.5m	P3902/30	Coarse	16.7	0.20	4.59	2.08	-2.51	Volcanic			l									
TP 11 1.2-1.4m	P3902/31	Coarse	20.5	0.26	6.19	3.30	-2.89	Low												
TP 11 1.7-1.9m	P3902/32	Coarse	16.6	0.20	5.23	2.32	-2.91	Extreme												
TP 11 2.3-2.5m	P3902/33	Coarse	16.9	0.20	5.14	2.34	-2.80	Extreme												
TP 12 1.2-1.4m	P3902/34	Coarse	23.9	0.31	6.22	1.80	-4.42	Medium												
TP 12 1.7-1.9m	P3902/35	Coarse	16.1	0.19	4.74	2.17	-2.57	Volcanic	0.012	7	0.171	106	5.53	6					113	8
TP 12 2.3-2.5m	P3902/36	Coarse	15.7	0.19	4.66	2.16	-2.51	Volcanic			l									
TP 13 1.2-1.4m	P3902/37	Coarse	20.0	0.25	5.50	2.22	-3.28	Extreme												
TP 13 1.7-1.9m	P3902/38	Coarse	16.8	0.20	4.83	2.32	-2.51	Extreme												
TP 13 2.3-2.5m	P3902/39	Coarse	17.0	0.21	5.18	2.32	-2.86	Extreme												
TP 14 1.2-1.4m	P3902/40	Coarse	17.0	0.21	6.22	3.92	-2.30	Low												
TP 14 1.7-1.9m	P3902/41	Coarse	18.6	0.23	5.17	2.28	-2.89	Extreme												
TP 14 2.3-2.5m	P3902/42	Coarse	17.8	0.22	5.06	2.21	-2.85	Extreme												
TP 15 1.2-1.4m	P3902/43	Coarse	18.2	0.22	5.38	2.14	-3.24	Volcanic	0.026	16	0.216	135	5.17	13					148	11
TP 15 1.7-1.9m	P3902/44	Coarse	18.7	0.23	5.03	2.21	-2.82	Volcanic												
TP 15 2.3-2.5m	P3902/45	Coarse	18.3	0.22	5.99	3.70	-2.29	Low		l	l		l		l					l

112 samples supplied by Regional Geotechnical Solutions Pty Ltd on 8/08/2023. Lab Job No. P3902. Analysis requested by Andrew Hills. Your Job: RGS03357.1, Allam Property Group.

44 Bent Street WINGHAM NSW 242																	Non-tre	ated soil	Non-tre	ated soil
Sample Identification	EAL Lab Code	Texture	Moisture	Content		pH <sub>F</sub> ar	nd pH <sub>FOX</sub>		KCI-extract	able sulfur	Potential Sulf	idic Acidity		Actual Acidity	Retaine	d Acidity	Acid Neutralis	ing Capacity	Net Acidity	Lime Calculation
	5545								(S	ika)	(Chromium Red			(Titratable Actual Acidity - TAA)			(AA)	IC <sub>BT</sub> )		
			(% moisture of total wet	(g moisture / g of oven	pH <sub>F</sub>	pH <sub>FOX</sub>	pH change	Reaction	(% S <sub>KCI</sub> )	(equiv.	(% S <sub>or</sub> )	(mol H */t)	pH <sub>KCI</sub>	(mol H */t)	(%S <sub>NAS</sub> )	(mol H */t)	(% CaCO <sub>3</sub> )	(mol H */t)	(mol H */t)	(kg CaCO <sub>3</sub> /t DW)
Method Info.		**	weight)	dry soil)		(In-house	method S21)			**	(In-house n	nethod S20)	(In-hou	use method 16b)		**	(In-house i	nethod S14)	**	
TP 16 1.2-1.4m	P3902/46	Coarse	22.1	0.28	6.04	1.69	-4.35	Volcanic	0.035	22	0.688	429	5.10	20					449	34
TP 16 1.7-1.9m	P3902/47	Coarse	20.1	0.25	5.04	2.28	-2.76	Extreme						**					**	
TP 16 2.3-2.5m	P3902/48	Coarse	18.9	0.23	5.37	2.27	-3.10	Extreme												
TP 17 0.8-1.0m	P3902/49	Coarse	17.2	0.21	6.16	4.02	-2.14	Low												
TP 17 1.3-1.5m	P3902/50	Coarse	17.2	0.21	5.09	2.24	-2.85	Extreme								**				
TP 17 1.8-2.0m	P3902/51	Coarse	17.7	0.22	5.44	2.35	-3.09	Low								**				<u>:</u>
TP 18 0.8-1.0m	P3902/52	Coarse	16.7	0.20	4.98	2.13	-2.85	Extreme	0.014	9	0.148	92	5.37	5		**			97	7
TP 18 1.3-1.5m	P3902/53	Coarse	16.8	0.20	5.36	2.26	-3.10	Extreme												
TP 18 1.8-2.0m	P3902/54	Coarse	17.2	0.21	5.23	2.27	-2.96	Extreme												
TP 18 2.3-2.5m	P3902/55	Coarse	18.2	0.22	5.21	2.23	-2.98	Very High	••											
TP 19 0.8-1.0m	P3902/56	Coarse	18.1	0.22	5.07	2.30	-2.77	Very High						**			••			
TP 19 1.3-1.5m	P3902/57	Coarse	18.0	0.22	5.54	2.30	-3.24	Very High	••				••	**			••		**	
TP 19 1.8-2.0m	P3902/58	Coarse	17.7	0.22	5.40	2.26	-3.14	Very High									••			
TP 20 0.8-1.0m	P3902/59	Coarse	17.9	0.22	5.12	2.14	-2.98	Volcanic	0.014	8	0.196	122	5.38	5			••		127	10
TP 20 1.3-1.5m	P3902/60	Coarse	18.2	0.22	5.25	2.17	-3.08	Volcanic	••				••	**			••		**	
TP 20 1.8-2.0m	P3902/61	Coarse	16.6	0.20	6.04	2.29	-3.75	Very High	••							••				
TP 21 0.8-1.0m	P3902/62	Coarse	20.1	0.25	5.22	2.12	-3.10	Volcanic	••				••	**			••		**	**
TP 21 1.3-1.5m	P3902/63	Coarse	18.4	0.23	5.38	2.22	-3.16	Volcanic	••							••				
TP 21 1.8-2.0m	P3902/64	Coarse	19.8	0.25	5.21	2.21	-3.00	Very High	••				••	**			••		**	**
TP 22 0.3-0.5m	P3902/65	Coarse	17.5	0.21	6.38	3.73	-2.65	Low	••							••				
TP 22 0.8-1.0m	P3902/66	Coarse	17.5	0.21	5.45	2.23	-3.22	Very High	••							••				
TP 22 1.3-1.5m	P3902/67 P3902/68	Coarse	18.1	0.22	5.36	2.20	-3.16	Very High	••							••				
TP 22 1.8-2.0m		Medium	16.5	0.20	5.60	2.20	-3.40	Very High	••							••				
TP 23 0.3-0.5m	P3902/69 P3902/70	Coarse	19.6	0.24	6.18	4.22	-1.96	Low Volcanic	••							••				
TP 23 0.8-1.0m	P3902/70 P3902/71	Coarse	18.8 17.6	0.23	5.25 5.47	2.28 2.22	-2.97	Volcanic	0.012	 8	0.152	 95	 5.57	 5		••				
TP 23 1.3-1.5m TP 23 1.8-2.0m	P3902/71	Coarse Coarse	17.0	0.21 0.21	5.95	2.22	-3.25 -3.72	Very High				95		_		••			100	8
	P3902/73	Coarse		0.21		2.23	_	Extreme	••					**		••	**			
TP 24 0.8-1.0m TP 24 1.3-1.5m	P3902/74		16.2 21.6	0.19	5.89 5.85	2.28	-3.61 -3.58		••							••				
TP 24 1.8-2.0m	P3902/75	Coarse Coarse	17.9	0.27	6.48	2.27	-4.25	Extreme Extreme	••							••				
TP 25 0.8-1.0m	P3902/76	Coarse	18.1	0.22	6.62	2.23	-4.25 -4.46	Volcanic	••							••				
TP 25 0.8-1.0m	P3902/77	Coarse	18.2	0.22	6.31	2.10	-4.40	Extreme	••					**		••	**			
TP 25 1.8-2.0m	P3902/78	Coarse	16.6	0.22	6.41	2.23	-4.18	Extreme	0.019	 12	0.164	102	5.41	5			••		 107	8
TP 26 0.3-0.5m	P3902/79	Coarse	18.8	0.20	6.65	4.02	-2.63	Low				102	3.41	_		••	**		107	0
TP 26 0.3-0.5m	P3902/80	Coarse	20.1	0.23	6.43	3.01	-2.63	Low	••											
TP 26 0.6-1.0m	P3902/81	Coarse	20.1	0.25	5.41	2.25	-3.42	Extreme	••											
TP 26 1.8-2.0m	P3902/82	Coarse	18.8	0.23	5.41	2.25	-3.16	Extreme	••											
TP 27 0.8-1.0m	P3902/83	Coarse	19.2	0.23	5.63	2.24	-3.00	Extreme	••					**						
TP 27 0.6-1.0111 TP 27 1.3-1.5m	P3902/84	Coarse	18.2	0.24	6.08	2.34	-3.76	Extreme						"						
TP 27 1.3-1.5m	P3902/85	Coarse	17.7	0.22	5.92	2.32	-3.76	Extreme	••						1 "					
TP 28 0.8-1.0m	P3902/86	Coarse	17.7	0.22	6.29	2.23	-4.06	Extreme	••											
TP 28 1.3-1.5m	P3902/87	Coarse	17.8	0.22	5.18	2.23	-2.92	Extreme												
TP 28 1.3-1.5m	P3902/88	Medium	18.1	0.21	6.26	2.20	-4.06	Extreme	••					**						
TP 28 1.8-2.0m	P3902/89	Coarse	18.9	0.22	6.41	3.06	-3.35	Medium												
	P3902/90			0.23	6.55	2.78	-3.35													
TP 29 0.8-1.0m	F3902/90	Coarse	10.0	0.23	0.55	2.70	-3.//	Low				1								



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Analysis requested by Andrew Hills. Your Job: RGS03357.1, Allam Property Group.

44 Bent Street WINGHAM NSW 2429	9																Non-trea	ated soil	Non-tre	ated soil
Sample Identification	EAL Lab Code	Texture	Moisture	Content		pH <sub>F</sub> ar	nd pH <sub>FOX</sub>		KCI-extract	able sulfur	Potential Sulf	idic Acidity		Actual Acidity	Retained	d Acidity	Acid Neutralis	ing Capacity	Net Acidity	Lime Calculation
									(S	i <sub>kCi</sub> )	(Chromium Red CF			(Titratable Actual Acidity - TAA)			(AN	(C <sub>BT</sub> )		
			(% moisture of total wet weight)	(g moisture / g of oven dry soil)	pH <sub>F</sub>	pH <sub>FOX</sub>	pH change	Reaction	(% S <sub>KCI</sub> )	(equiv. mol H*/t)	(% S <sub>cr</sub> )	(mol H */t)	pH <sub>KCI</sub>	(mol H */t)	(%S <sub>NAS</sub> )	(mol H */t)	(% CaCO <sub>3</sub> )	(mol H */t)	(mol H <sup>+</sup> /t)	(kg CaCO <sub>3</sub> /t DW)
Method Info.		**		**		(In-house	method S21)			**	(In-house n	ethod S20)	(In-hou	se method 16b)		**	(In-house r	nethod S14)	**	**
TD 00 4 0 4 5	P3902/91	0	10.0	0.00	F 0.4	0.00	0.71	Extreme												
TP 29 1.3-1.5m	P3902/91 P3902/92	Coarse	18.9	0.23	5.94	2.23	-3.71													
TP 29 1.8-2.0m TP 30 0.3-0.5m		Medium	20.4 18.5	0.26 0.23	6.22 6.50	2.35 3.42	-3.87 -3.08	Extreme												
TP 30 0.3-0.5m TP 30 0.8-1.0m	P3902/93 P3902/94	Coarse	17.6	0.23		_	-3.06	Low												
TP 30 0.8-1.0m	P3902/94 P3902/95	Coarse	17.6	0.21	6.63 5.40	2.81 2.10	-3.82	Low Volcanic	0.015	9	0.281	 176	 E 4E	 5					 181	
	P3902/95	Coarse						Extreme	0.015	9	0.261	176	5.45	5					101	14
TP 30 1.8-2.0m TP 31 0.8-1.0m	P3902/96	Coarse	20.9	0.26	6.50	2.28	-4.22												••	
TP 31 0.8-1.0m	P3902/97 P3902/98	Coarse	19.2 22.2	0.24 0.29	6.64 6.36	2.55 2.22	-4.09 -4.14	Low												
		Coarse Coarse	19.1	0.29		2.22	-4.14	Extreme												
TP 31 1.8-2.0m TP 32 0.8-1.0m	P3902/99 P3902/100		18.0	0.24	6.56 6.87	2.28	-3.88	Extreme											••	
TP 32 0.6-1.0m	P3902/101	Coarse		0.22				Low											••	
	P3902/101 P3902/102	Coarse	16.4		6.21	2.18	-4.03	Volcanic												
TP 32 1.8-2.0m		Medium	17.0	0.21	6.74	2.19	-4.55	Extreme											••	
TP 33 0.3-0.5m	P3902/103	Coarse	18.4 17.2	0.23	6.39	3.81	-2.58	Low	0.007	 17	0.051	156		 7						
TP 33 0.8-1.0m	P3902/104	Coarse	17.2	0.21	5.93 6.40	2.15	-3.78	Volcanic	0.027	17	0.251	156	5.10	/					163	12
TP 33 1.3-1.5m	P3902/105 P3902/106	Coarse	_	0.22		2.27	-4.13	Extreme												
TP 33 1.8-2.0m		Coarse	16.7	0.20	6.60	2.38	-4.22	Extreme												
TP 32 0.3-0.5m	P3902/107	Coarse	20.0	0.25	6.91	3.92	-2.99	Low												
TP 22 0.3-0.5m	P3902/108	Coarse	16.6	0.20	6.49	2.76	-3.74	Medium		 1										
TP 24 0.3-0.5m	P3902/109	Medium	17.9	0.22	6.33	3.17	-3.16	Medium	0.002		0.005	3	5.67	11					14	'
TP 27 0.3-0.5m	P3902/110	Coarse	18.8	0.23	6.71	3.74	-2.97	Medium												
TP 19 0.3-0.5m	P3902/111	Coarse	16.4	0.20	6.86	3.81	-3.05	Medium	0.001	1	<0.005	0	5.82	6					6	0
TP 25 0.3-0.5m	P3902/112	Medium	16.8	0.20	6.99	4.34	-2.65	Medium												

#### NOTES:

- 1. All analysis is reported on a dry weight (DW) basis, unless wet weight (WW) is specified.
- 2. Samples are dried and ground immediately upon arrival (unless supplied dried and ground).
- 3. Analytical procedures are sourced from Sullivan L, Ward N, Toppler N and Lancaster G. 2018. National acid sulfate soils guidance: national acid sulfate soils identification and laboratory methods manual, Department of Agriculture and Water Resources, Canberra, ACT. CC BY 4.0.
- 4. The Acid Base Accounting Equation, where Acid Neutralising Capacity has not been corroborated by other data, is Net Acidity = Potential Acidity + Actual Acidity + Retained Acidity (Eq. 3.2; Sullivan et al. 2018 full reference above).
- 5. The Acid Base Accounting Equation for post-limed soil materials is Net Acidity = Potential Acidity + Actual Acidity + Retained Acidity (post treatment Acid Neutralising Capacity initial Acid Neutralising Capacity) (Eq. 3.3; Sullivan et al. 2018 full reference above). While the Acid Neutralising Capacity of a soil material may not be included in the Net Acidity calculation (Note 4), it must be measured to give an Initial Acid Neutralising Capacity if verification testing is planned post-liming.

#### The Initial Acid Neutralising Capacity must be provided by the client to enable EAL to produce Verification Net Acidity and Liming calculations for post-limed soil materials.

- 6. The Acid Base Accounting Equation, where Acid Neutralising Capacity (Eq. 3.1; Sullivan et al. 2018 full reference above).
- 7. The lime calculation includes a Safety Factor of 1.5 as a safety margin for acid neutralisation (Sullivan et al. 2018). This is only applied to positive values. An increased Safety Factor may be required in some cases.
- 8. Retained Acidity is required when the pHKCl < 4.5 or where jarosite has been visually observed.
- 9. A negative Net Acidity result indicates an excess acid neutralising capacity.
- 10. If insufficient mixing occurs during initial sampling, or during post-liming, or both: the Potential Sulfidic Acidity may be greater in the post-limed sample than in the initial sample; the post-liming Acid Neutralising Capacity may be lower in the post-limed sample than in the initial sample.
- 11. An acid sulfate soil management plan is triggered by Net Acidity results greater than the texture dependent criterion: coarse texture  $\geq 0.03\%$  S or 18 mol H+/t; medium texture  $\geq 0.05\%$  S or 36 mol H+/t) (Table 1.1; Sullivan et al. 2018 full refere
- 12. For projects that disturb > 1000 t of soil material, the coarse trigger of ≥ 0.03% S or ≥ 18 mol H+/t must be applied in accordance with Sullivan et al. (2018) (full reference above).
- 13. Acid sulfate soil texture triggers can be related to NCST (2009) textures: coarse and peats = sands to loamy sands; medium = clayey sand to light clays; fine = light medium to heavy clays (Sullivan et al. 2018 full reference above).
- 14. Bulk density is required to convert liming rates to soil volume based results. Field bulk density rings can be submitted to EAL for bulk density determination.

checked: ... Graham Lancaster Laboratory Manager

112 samples supplied by Regional Geotechnical Solutions Pty Ltd on 8/08/2023. Lab Job No. P3902. Analysis requested by Andrew Hills. Your Job: RGS03357.1, Allam Property Group.

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Sample Identification	EAL Lab Code	Texture	Moisture (	Content		pH <sub>F</sub> ar	nd pH <sub>FOX</sub>		KCI-extract	able sulfur	Potential Sulfi	dic Acidity		Actual Acidity	Retained	d Acidity	Acid Neutralis	ing Capacity	Net Acidity	Lime Calculation
									(S	ikcı)	(Chromium Redu CR			(Titratable Actual Acidity - TAA)			(AN	C <sub>BT</sub> )		
			(% moisture of total wet weight)		pH <sub>F</sub>	pH <sub>FOX</sub>	pH change	Reaction	(% S <sub>KCI</sub> )	(equiv. mol H*/t)	(% S <sub>or</sub> )	(mol H */t)	pH <sub>KCI</sub>	(mol H */t)	(%S <sub>NAS</sub> )	(mol H */t)	(% CaCO <sub>3</sub> )	(mol H */t)	(mol H <sup>+</sup> /t)	(kg CaCO <sub>3</sub> /t DW)
Method Info.		**		*		(In-house	method S21)			**	(In-house m	ethod S20)	(In-hou:	se method 16b)			(In-house r	nethod S14)	**	**

- 15. A negative Net Acidity result indicates an excess acid neutralising capacity.
- 16. '..' is reported where a test is either not requested or not required. Where pHKCl is < 4.5 or > 6.5, zero is reported for SNAS and ANC in Net Acidity calculations, respectively.
- 17. Results refer to samples as received at the laboratory. This report is not to be reproduced except in full.
- 18. \*\* NATA accreditation does not cover the performance of this service.
- 19. Analysis conducted between sample arrival date and reporting date.
- 20. All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer <a href="SCU.edu.au/eal/t&cs">SCU.edu.au/eal/t&cs</a> or on request).
- 21. Results relate to the samples tested.
- 22. This report was updated on 28/08/2023 and replaces the report issued on 17/08/2023. Net Acidity and KCI extractable Sulfur results are now included.





# Appendix C

Acid Sulfate Soils Management Plan



# **ACID SULFATE SOIL MANAGEMENT PLAN**

#### 1 INTRODUCTION

The Acid Sulfate Soil Management Plan (ASSMP) outlined below shall be adopted for all works associated with the excavation of natural soils during the construction of the proposed MHE Stage 2 at 82 Chapmans Road, Tuncurry. The site is identified as Lot 11 DP615229.

This ASSMP is aimed at remediating or controlling the generation of sulphuric acidity during the excavation of actual and potential Acid Sulfate Soils (ASS) where excavations will be undertaken into the natural ground profile.

Attention is drawn to the fact that verification testing of the treated ASS generally takes between 5 and 10 working days and therefore time should be allowed in the earthworks management plan for the site for this process to occur.

#### 2 RESPONSIBILITIES

The project superintendent is responsible for implementing the ASS management protocols detailed within this ASSMP. Only a suitably experienced ASS consultant may vary the procedures detailed herein.

The superintendent shall:

- Record a daily log showing the volume of material that has been excavated and treated;
- Ensure that verification testing is undertaken by an independent monitoring consultant on a regular basis.

The requirements of the ASSMP are in addition to, but do not override any other standard procedures such as safety considerations. Where conflict results, or may result from, the implementation of the ASS management as against other performance criteria, the project superintendent shall obtain directives from the project manager or the ASS consultant as appropriate.

# 3 NEUTRALISING MATERIALS

Fine Agricultural Lime (aglime) will be used for lining of processing or stockpile areas and for blending within excavated materials. Dolomatic aglime, or magnesium blend aglime, should not be used. The aglime shall have:

- At least 85% by weight passing 1mm, and 100% passing 2.5mm. In general a finer grind is better; and
- Aglime shall have a Neutralising Value (NV) of 90% or better (i.e. NV>90).



#### 4 MANAGEMENT AND PROCESSING OF ASS

#### 4.1 Treatment Area

ASS shall be placed in a prepared treatment area on site or within the road corridor at an approved location. To prevent runoff to other areas of the site the treatment area shall be ringed by a bund wall that has a height of at least 0.5m that comprises soils that are not ASS or are treated ASS. The treatment area should be of sufficient size to treat the excavated materials at the proposed excavation rate and to store material for the period required to undertake the verification testing.

The base of the treatment area and bund wall batters shall be limed at a rate of 34kg<sub>lime</sub>/tonne<sub>soil</sub>.

#### 4.2 Treatment

The ASS shall be placed in the treatment area and spread in layers of not more than 300mm thick with lime being applied across the treatment area at a rate of 34kg/tonne. The lime shall be evenly mixed and be applied within 8 hours of excavation.

# 4.3 Verification Testing

Verification testing shall be undertaken by an independent ASS consultant. The number of samples to be tested shall be based on the volume of the stockpile or treated soil within the treatment area as outlined in Table C1.

Table C1. Number of verification samples required based on treated soil/stockpile volume

Volume (m³)	Number of samples
<250	2
251 - 500	3
501 – 1,000	4
>1,000	4 plus one per additional 500m <sup>3</sup>

The samples shall be submitted for testing by the Chromium Reducible Sulfur suite and the Verification Net Acidity compared to ASSMAC Action Criteria. The Verification Net Acidity shall be determined from the test results as outlined below:

Verification net acidity = Potential Sulfidic Acidity + Actual Acidity + Retained Acidity - (Post treatment Acid Neutralising Capacity - Initial Acid Neutralising Capacity)

If testing indicates verification net acidity values that exceed ASSMAC Action Criteria in the processed material, reprocess (potentially requiring variation in the processing methodology) and re-sample to verify that acceptable values have been obtained.

All records applicable to acid sulfate testing and treatment shall be collated to substantiate treatment.



# 4.4 Water Quality Monitoring

Waters collected in the treatment area (if any) shall be tested for pH on a daily basis during the works. If the recorded pH of any sample is less than 6, it shall be immediately retested. If the pH is again below 6, the pH shall be adjusted by the application of hydrated lime until it is in the range 6 to 8

Where the pH is less than 4.0, the ASS Consultant shall be engaged within 6 hours to review the site practices and monitoring results and to recommend remedial measures.

Complete records of all monitoring results shall be maintained by the Contractor.

#### 4.5 Post Treatment

Once the ASS materials have been treated in accordance with this ASSMP, the materials may be reused on site, or disposed of at a licensed waste landfill. In accordance with a directive from the EPA, unless a specific order, exemption, or approval is granted from the EPA the treated material may not be reused on another site.