



Engineering Report Geotechnical Engineering Wagerup RSA10 FEL3 - Slope Stability Analysis Report

# Report

# Wagerup RSA10 FEL3 - Slope Stability Analysis Report

H374430-0000-2A0-230-0005 WGP-F-000217-000

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Engineering Report Geotechnical Engineering Wagerup RSA10 FEL3 - Slope Stability Analysis Report

# **Table of Contents**

1.	Intro	duction.		1
2.	Back	ground	Information	3
	2.1		nnical Design References	
	2.2	•	ed Embankment Wall Geometry	
	2.3		tion Geometry	
	2.4		ry of Material Parameters	
		2.4.1	Undrained Strength Functions	8
3.	Slope	e Stabilit	ty Analysis Methodology and Results	9
	3.1		nnical Sections	
	3.2	ANCOL	D Requirements	11
	3.3	Loading	Conditions	12
	3.4		Surfaces within Foundation and Residue Mud	
			Groundwater (Phreatic Surface 1)	
		3.4.2	Residue Mud Liquor (Phreatic Surface 2)	13
4.	Analy	ysis Res	ults	15
	4.1	Impact of	of Reduced Strength of Residue Mud (Seismic)	19
	4.2	Impact of	of Reduced Strength of Foundation Clay (Unit 3)	20
	4.3		of Increased Pore Pressure in Residue Mud	
		4.3.1	Case 1 – Saturated/Unsaturated Model Phreatic Surface	
			Case 2 - Elevated Phreatic Surface	
	4.4	Impact of	of Potentially Contractive Zone (Unit 4B)	26
5.	Seisr	nic Defo	rmation Analysis	26
	5.1	General		26
	5.2	Site Sei	smicity	27
	5.3		ed Deformation Analysis	
		5.3.1	Swaisgood Method	
			Newmark Method	
		5.3.3 5.3.4	Makdisi and Seed Method	
	5.4		ion	
6.	Conc	lusions		35
	6.1		Residue Failure Mechanism	
	6.2		ismic Analysis	
	6.3		tion Failure Mechanism	
	6.4 6.5		ity Analysis Deformation	
7.				
		J		





Engineering Report Geotechnical Engineering Wagerup RSA10 FEL3 - Slope Stability Analysis Report

## List of Tables

Table 2-1: Geological Model Strata and Sub-Layers	6
Table 2-2: Summary of Geotechnical Parameters for Foundation Materials, Construction Materials	,
and Residue	
Table 3-1: RSA10 Section Profile Geometry	11
Table 3-2: Minimum Requirements for Factor of Safety	11
Table 3-3: Phreatic Surface 1 (Groundwater) and Phreatic Surface 2 (Residue Mud) Summary	
Table 4-1: Summary of End of Construction Starter (Upstream and Downstream Slope Failures) fo	
Slope Stability Analysis Results	
Table 4-2: Summary of Starter (Downstream Slope Failures) Slope Stability Analysis Results	
Table 4-3: Summary of Ultimate Facility (Upstream and Downstream Slope Failures) Slope Stabilit	
Analysis Results	
Table 4-4: Section B Ultimate Facility - Residue Mud Strength Sensitivity Analysis	
Table 4-5: Section D Ultimate Facility - Residue Mud Strength Sensitivity Analysis	
Table 4-6: Section B Ultimate Embankment - Unit 3 Foundation Clay Sensitivity Analysis	
Table 4-7: Section D Ultimate Embankment - Unit 3 Foundation Clay Sensitivity Analysis	22
Table 4-8: Summary of Ultimate Facility (Upstream and Downstream Slope Failures) – Case 1 -	
Saturated/Unsaturated Phreatic Surface	23
Table 4-9: Summary of Ultimate Facility (Upstream and Downstream Slope Failures) - Observed	0.4
Elevated Phreatic Surface - Case 2	
Table 4-10: Section B Ultimate Embankment - Unit 4B Foundation Clay Sensitivity Analysis	
Table 5-1: Summary of Site Seismicity	
Table 5-2: Summary of Seismic Deformation for RSA10 (Nemark Method)	
Table 5-3: Summary of Seismic Deformation for RSA10 Embankment (Makdisi and Seed Method)  Table 5-4: Summary of Seismic Deformation for RSA10	
Table 5-4: Summary of Seismic Deformation for RSA10 Embankment (OBE Cases)	
Table 5-6: Summary of Simplified Seismic Deformation for RSA10 Embankment (SEE Cases)	
Table 3-0. Gammary of Gimplined Gelomic Deformation for Notito Embandinent (GEE Gases)	07
List of Figures	
Figure 1-1: Location Map	1
Figure 1-2: Wagerup Refinery Residue Disposal Areas	
Figure 2-1: General Arrangement for RSA10 (Drawing No. WG005469)	
Figure 2-2: Typical Section of New West and North Wall (Drawing No. WG005481)	
Figure 2-3: Profile of Upstream Raise Construction	
Figure 2-4: Shear- Normal Undrained Strength Functions - Unit 3, Unit 4A, Unit 4B, and Unit 6B	
Figure 3-1: RSA10 Layout with Type Section for Stability Analysis	
Figure 3-2: 10yr Winter High Groundwater Levels (Rockwater, 2023)	13
Figure 3-3: Steady State Seepage Analysis Results – Section B – Maximum Pond Level (1:1000 7	2hr
ESS)	
Figure 4-1: Buttress Geometry for Sections B and Section D	19
Figure 4-2: Example of 0.5 m Phreatic Surface Reduction	19
Figure 4-3: Shear Normal Function for Unit 3 - Sensitivity Analysis	
Figure 4-4: Buttress Required for Section B Ultimate Embankment Height - Peak Undrained	
Figure 4-5: Example of Staged Construction Approach	
Figure 4-6: Example of Upstream Stability Post Seismic case, Post Filling	
Figure 5-1: Sensitivity Analysis on Horizontal Acceleration Coefficient for Section B	
Figure 5-2: CMS1 CC-CHY Time History and K <sub>y</sub> for Section B	
Figure 5-3: Seismic Deformation for CMS1 CC-Chy time History of Section B (Newmark Method)	31





Engineering Report Geotechnical Engineering Wagerup RSA10 FEL3 - Slope Stability Analysis Report

## List of Appendices

## Appendix A Starter Embankment Stability Analysis - Prior to Residue Filling

- A.1 Section A Starter Embankment Prior to Residue Filling
- A.2 Section B Starter Embankment Prior to Residue Filling
- A.3 Section C Starter Embankment Prior to Residue Filling
- A.4 Section D Starter Embankment Prior to Residue Filling

## Appendix B Starter Embankment - Residue to Minimum Freeboard

- B.1 Section A Starter Embankment Filled to Minimum Freeboard
- B.2 Section B Starter Embankment Filled to Minimum Freeboard
- B.3 Section C Starter Embankment Filled to Minimum Freeboard
- B.4 Section D Starter Embankment Filled to Minimum Freeboard

## Appendix C Ultimate Embankment Stability Analysis Results

- C.1 Section A Ultimate Embankment
- C.2 Section B Ultimate Embankment
- C.3 Section C Ultimate Embankment
- C.4 Section D Ultimate Embankment

## Appendix D Sensitivity Analysis

- D.1 Section B Ultimate Embankment Post-seismic Residue Strength
- D.2 Section D Ultimate Embankment Post-seismic Residue Strength
- D.3 Section B Ultimate Embankment Foundation Clay Undrained Strength
- D.4 Section D Ultimate Embankment Foundation Clay Undrained Strength
- D.5 Section B Ultimate Embankment Phreatic in Residue Mud
- D.6 Section D Ultimate Embankment Phreatic in Residue Mud
- D.7 Section B Ultimate Embankment Elevated Phreatic Surface (Case 2)
- D.8 Section D Ultimate Embankment Elevated Phreatic Surface (Case 2)
- D.9 Section B Ultimate Embankment Unit 4B Sensitivity

## Appendix E Comments Register





Engineering Report Geotechnical Engineering Wagerup RSA10 FEL3 - Slope Stability Analysis Report

## 1. Introduction

Alcoa of Australia (Alcoa) operates the Wagerup Alumina Refinery, an integrated bauxite mine and Alumina hydrometallurgical processing operation (Refinery) in the south-west of Western Australia. The Refinery is one of three operating alumina refineries in Western Australia and is located approximately 130 kilometres south of the Perth metropolitan area on the boundary of the Peel and Southwest regions (see Figure 1-1).



Figure 1-1: Location Map

The Wagerup residue facility currently comprises nine Residue Storage Areas (RSAs) designated as RSA2 to RSA9. The site also contains the refinery water storage dams, a cooling pond, runoff water storage ponds (ROWS), a sand lake and two Run-off Collection Ponds (ROCPs), refer to Figure 1-2.









Figure 1-2: Wagerup Refinery Residue Disposal Areas

In August 2024, Alcoa commissioned Hatch Pty Ltd (Hatch) to undertake engineering design for a feasibility study (FEL3 Level) to develop a new residue storage area (RSA10) at the Wagerup Alumina Refinery. The preferred site is located north of the existing ROCP3 and west of RSA7. The proposed RSA10 footprint is approximately 45 ha.

This project report provides the slope stability analysis results for the proposed perimeter Wagerup RSA10 embankment walls. A total of four geotechnical type sections were selected as an input to the slope stability assessment. Two-dimensional (2D) limit equilibrium (LE) stability analysis for both the starter embankment (initial perimeter raise) and ultimate upstream embankment of RSA 10 facility were carried out under this scope. For the ultimate configuration it was assumed that solar dried mud would be placed behind mechanically constructed upstream residue sand embankments to a maximum crest elevation of RL 80 m.





Engineering Report Geotechnical Engineering Wagerup RSA10 FEL3 - Slope Stability Analysis Report

# 2. Background Information

## 2.1 Geotechnical Design References

The geotechnical interpretation on the foundation soils were presented in the geotechnical interpretation report (GIR, Hatch Document No. H374430-0000-2A0-230-0004). This report includes a screening level static liquefaction and liquefaction potential assessment for the in-situ foundation soils.

An assessment of the borrow materials used in the construction of the embankments and clay liner is presented in the Borrow Pit Geotechnical Factual and Interpretive Report (H374430-0000-2A0-066-0002).

The geotechnical interpretation on the residue tailings were presented in the residue materials characterisation report (Hatch Document No. H374430-0000-22A-230-0003).

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Seepage analysis has been completed to assess the phreatic levels within the residue mud presented in Technical Memorandum - RSA10 Seepage Assessment (Hatch Document No. H374430-0000-2A0-249-0003, Rev 1).

## 2.2 Proposed Embankment Wall Geometry

The proposed RSA10 impoundment will be bounded to the east by the western perimeter of RSA7 and to the south by the northern embankment of ROCP3. The proposed haul roads, heritage boundaries, and drainage channels constrain the footprint to the north and west. The site layout is shown in Drawing No. WG005469 (H374430-0000-220-270-0001) and has been reproduced in Figure 2-1.

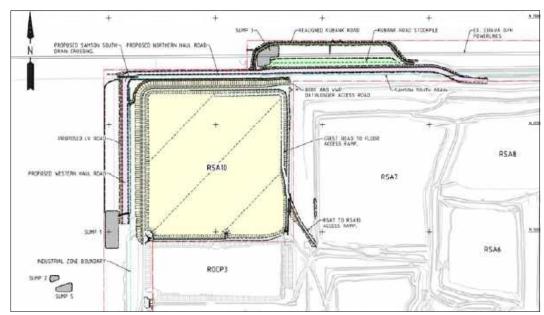


Figure 2-1: General Arrangement for RSA10 (Drawing No. WG005469)





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New perimeter embankments will be constructed and raised along the western and northern boundaries of the impoundment in a staged approach. The initial starter embankments will be constructed using locally sourced clayey fill with future upstream raises constructed from residue sand produced as a by-product of the refining process. The final embankment height is estimated to be RL 80 m with a maximum residue beach elevation of RL 78 m. This equates to a maximum residue fill height of approximately 61 m.

Alcoa requires the construction of a composite liner system within the base of the impoundment to prevent process liquor from seeping into the natural groundwater aquifers. The liner system comprises a 500 mm compacted clay liner (CCL) with a textured 2mm thick HDPE geomembrane, which will be overlain by a nominal 1 m sand drainage system to provide sufficient confining stresses to compress the HDPE against the upper CCL surface. The composite liner system and underdrainage network will tie into the top of the starter embankment. Topsoil will be stripped and stockpiled prior to construction of the bulk earthworks and will be used as cover materials for the external batter slopes of the western and northern embankments.

The starter embankment and liner system will be constructed from engineered fill sourced from the borrow pits to an initial elevation ranging from RL 24.4 m in the northeastern corner to RL 22.5 m in the southwestern corner. The design slope profile is 1V:3H for the internal embankment batter (upstream slope). The external batter profile (downstream slope) is 1V:4H including an exterior zone of compacted topsoil. A typical section of the started embankment is presented in Drawing No. WG005481 (H374430-0000-220-273-0101) and has been reproduced in Figure 2-2.

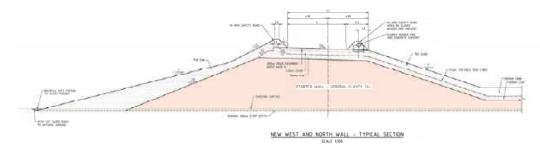


Figure 2-2: Typical Section of New West and North Wall (Drawing No. WG005481)





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Thickened residue mud (nominally placed at an initial solids content of 48% w/w) will be deposited from the mudline droppers located at 80 m centres along the perimeter western and northwestern embankments. The residue will be deposited in approximately 600 mm to 800 mm thickness wet layers and then farmed using amphirols and solar dried to achieve an average 68% w/w final solids content layer. The layers will be progressively placed until the maximum freeboard elevation (nominally 1.0 m from inside crest elevation) is reached and then upstream construction will commence.

The mud farming process adopted increases the density and strength of residue through water drainage, solar and wind drying, and compaction under the upstream raise (Li, Hinton, & Navarro, 2024). The conditioned or structural zone, achieved through mud farming, forms a crucial part of the long-term raising strategy and in integral for safe mud disposal.

Perimeter raising along the northern and western embankments will utilise the upstream construction method using mechanical placement of residue sand material, with an average downstream batter slope of 1V:6H. Each raise will have an upstream (internal) batter slope of 1V:4H and be approximately 5 metres in height, with the final raise approximately 7 m high to meet an RL 80 m elevation. The crest width for each raise will be 10 metres. A section showing the upstream raise geometry to the ultimate facility elevation is shown in Figure 2-3.

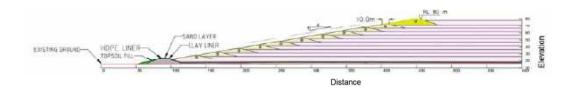


Figure 2-3: Profile of Upstream Raise Construction

## 2.3 Foundation Geometry

A 3D foundation geotechnical model for the RSA10 site was developed using Leapfrog software, by Seequent. Leapfrog uses spheroidal interpolation of stratigraphy points or polylines to produce 3D surfaces. Due to the relative complexity of the layering within the individual subsurface geological units, the model has been developed based on the general geological units as described in the Geotechnical Interpretive Report (GIR), Hatch Document No. H374430-0000-2A0-230-0004. The foundation units are summarised in Table 2-1.





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Table 2-1: Geological Model Strata and Sub-Layers

Geological Formation	Unit	Geotechnical Model Stratum
Not Applicable	Unit 1	Fill
Alluvium	Unit 2	Topsoil
	Unit 3	Clay
5 July 15	Unit 4A	Clayey SAND/ Sandy CLAY
Guildford Formation	Unit 4B	Potentially Contractive Zone
	Unit 5	Cemented SAND/ CLAY and GRAVEL
AA/V	Unit 6A	SAND with interbedded slits and clays
Ascot / Yoganup Formation	Unit 6B	CLAY to Silty CLAY
Leederville Formation	Unit 7	Weathered Siltstone/Conglomerate

Units 5 and 6B are discontinuous sub-units within their respective geological formations. Unit 5 is a highly variable ferruginised zone formed by mineral precipitation within Units 3 and 4. Unit 5 has been ignored in the stability model and has been conservatively assigned the same strength parameters as Unit 4.

Unit 6B represents the interbedded clay layers present within Unit 6A. Unit 6B has been included in the stability model to assess the impact of the fine-grained layer within the Unit 6A Sand. The unit is assigned undrained parameters.

## 2.4 Summary of Material Parameters

A summary of the strength parameters adopted in the analysis are summarised in Table 2-2. The derivation of these parameters are discussed in the Geotechnical Interpretation Report (Hatch, 2025a) for the foundation units and Geotechnical Residue characterisation (Hatch, 2025c). The residue sand strengths for the upstream raise materials are based on triaxial testing completed to inform critical states soil mechanics parameters (Golder, 2021) where q = 1.45 p' was determined for the residue sand based on the Cambridge stress path (i.e. c' = 0 kPa and  $\phi' = 36^\circ$ ).





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		1 SHEET	Effective	Strength	Undrained Strength	Post-Peak (Lurge Strain)	
Alnit	Material Description	Weight, 7 (kNam <sup>2</sup> )	e 1	∳7±	Minimum Underined Shear Strength. (Saw, NP2)	Peak Undrained Shear Strongth Ratio	Shear Strength
CLAY Lines	CLAY Liner	20	10	22		8,65, - 0.22	8/o'v = 0.17
teriace Sines Strength	Liner Interface Shear Strength (Textured: CLAY)	10	0	19			é 16
Mr.	Thickened Residue Mud (Existing)	18.5	0	34		\$,76', = 0.26	\$/d' <sub>4</sub> = 0.15
Me	Trickened Residue Mud (Recent Deposit)	10.5	0	34		5,70% = 0.20	8/4/4= 0.15
Mi	Thickened Residue Mud	18.5	0	34		3./d's = 0.30	5/v/v= 0.26
Sı	Proposed Residue Sand Raises / Basal Underdrainage	19	0	36			₩ - 30
Unit 1A	Engineered Fill	20	5	23		\$,/6'4 = 0.20	5/a/v= 0.20
Unit 1B	Enbankment	20	5	32			c'=4, 6' = 20
Unit 2	TOPSOIL (Sity/ Clayey SAND/ CLAY)	17	D	28			ø: • 21
Unit 2	CLAY (Guildford Fm)	20	5	23	Capped at drained strength for 5, < 75 kPa	\$,/6', = 0.22	5/d <sub>y</sub> = 0.17
Unit dA	Clayey SANDI Sandy CLAY (Guildford Fin)	18	5	32	Capped at drained strength for S <sub>2</sub> < 150 kPa	s,M', = 0.38	s/a' <sub>4</sub> = 0.30
Unit 4B	Contractive Clay Horizon (Guildford Formation)	18	5	32	Capped at drained strength for Pc = 190 kPa	5./o' 0.30	5/a'v = 0.24
Unit 5 *	Cemented SAND/ CLAY and GRAVEL (Guidford Fm)	21	20	30	Capped at drained strength for S <sub>u</sub> < 100 kPa	\$,76, = 0.38	\$/# = 0.30
Unit 6A	SAND (Ascert Fm)	19	0	35			∳7 = 30
Unit 6B	Siltyl Clayey layers (Ascot Fm)	18	- 5	32	Capped at drained strength for Su < 100 NPa	\$,76% = 0.35	3/6'v = 0.28
Unit 7	CLAY/ Weathered SILTSTONE (Leederville Fm)	22	60	33	i.		p'+48, a' - 27

- Notes:

  1. Drained enhasion

  2. Drained friction angle

  3. The material parameters for Unit 2 (Topsoll) have been derived assuming that the material will be licesely dumped along the exterior slopes.

  4. Unit 1 is a highly variable convented zone within Units 3 and 4. The Unit has been ignored in the model. Unit 4 material parameters have been used, where applicable.

  NIA Not Applicable.

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H374430-0000-2A0-230-0006, Rev. 3, Page 7

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## 2.4.1 Undrained Strength Functions

The undrained shear strength of the fine-grained foundation soils, namely Unit 3, Unit 4, and Unit 6B, have been assessed from advanced laboratory testing, reported in the FEL3 GIR Hatch Doc No. H374430-0000-2A0-230-0004. A shear function has been developed for these units to assign appropriate strength parameters at lower confining stress. The undrained strength has been capped at the drained effective strength to the minimum shear strength assigned for the unit.

The undrained shear strength ( $S_u$ ) versus effective stress ( $\sigma'_v$ ) relationships for Unit 3, Unit 4A, Unit 4B, and Unit 6B are presented in Figure 2-4. For higher confining stresses, the  $S_u/\sigma'_v$  ratio assigned to the units was used to estimate the undrained strength.

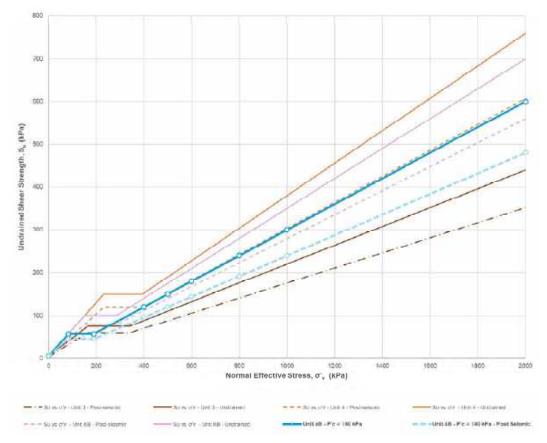


Figure 2-4: Shear- Normal Undrained Strength Functions - Unit 3, Unit 4A, Unit 4B, and Unit



Based on the relationships derived from Figure 2-4, Unit 3 (shallow Guildford Clay unit) governs stability through the natural foundations.





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# 3. Slope Stability Analysis Methodology and Results

Limit Equilibrium (LE) analysis methods were adopted for the slope stability analysis using Slope/W software, part of the GeoStudio 2023 R2 suite. All analyses were carried out for circular/ noncircular failure surfaces using the Morgenstern-Price method which satisfies both force and moment equilibrium.

## 3.1 Geotechnical Sections

A total of four geotechnical sections were selected for the stability analysis. These are designated as Section A and Section B (western embankment) and Section C and Section D (northern embankment).

The type sections are presented in plan on Figure 3-1 and in section view within Appendix A.





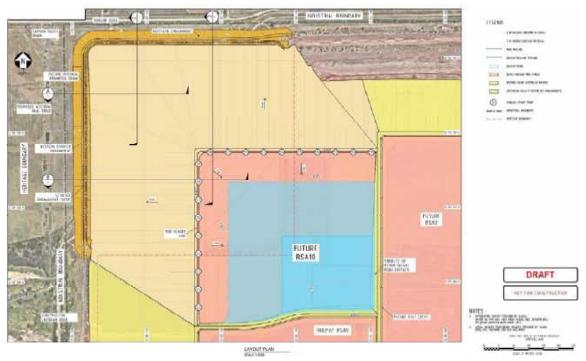


Figure 3-1: RSA10 Layout with Type Section for Stability Analysis

WGP-F-000217-000

H374430-0000-2A0-230-0005, Rev. 3, Page 10

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The following embankment configurations were analysed to determine the geotechnical stability factor of safety (FoS) for the design wall profile at the end of starter construction, end of starter embankment residue filling and at the ultimate height of the facility prior to closure:

- Starter Construction Complete An approximately 9.5 m high starter embankment without thickened residue mud deposition but excess pore pressures associated with construction fill placement above the foundations.
- Starter Embankment Filling Complete An approximately 9.5 m high starter embankment with thickened residue mud deposition and reduced excess pore pressures in the foundations.
- Ultimate Upstream Embankment Upstream embankment raises to RL 80 m for containment of thickened residue.

From Figure 3-1 Section A and Section C do not intersect the crest of the final upstream embankment raise at the ultimate height. The final crest height of Section A and Section C will be RL 46 m to RL 52 m respectively, while the final crest height of Section B and Section D will be RL 80 m. The proposed geometry for the analysed sections is presented in Table 3-1.

Table 3-1: RSA10 Section Profile Geometry

Description	Units	Section A / C	Section B / D	
Crest Height	m RL	46 / 52	80 / 80	
Downstream Slope	H:V	6:1	6:1	

## 3.2 ANCOLD Requirements

The design criteria adopted for assessment of the geotechnical stability analysis were selected from Guidelines on Tailings Dams (ANCOLD 2019). The minimum requirements are presented in Table 3-2.

Table 3-2: Minimum Requirements for Factor of Safety

Loading Condition	Factor of Safety (FoS)		
Long-term Drained	1.5		
Short-term Undrained			
Potential loss of containment	1.5		
No potential loss of containment	1.3		
Post Seismic Loading (1)	1.1		

ANCOLD recommends a range of 1.0 to 1.2 for minimum Factor of Safety for post-seismic analysis. The selection of the minimum requirement is based on the designer's confidence in the post-seismic strength characterisation of materials from cyclic direct simple shear (CDSS) post monotonic testing.





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## 3.3 Loading Conditions

The following loading conditions were assessed in order to estimate the geotechnical stability factor of safety for the RSA10 perimeter embankments:

- Long term, Drained To assess geotechnical stability for the condition where there
  is no excess pore water pressure remaining from external loading. Peak effective
  strengths were adopted for all geotechnical units and represent long termed drained
  case.
- Short term, Undrained To assess geotechnical stability for the condition where excess pore water pressure is generated due to the placement of fill or residue mud or during the construction starter embankment above clayey foundations or upstream raises above fine-grained residue. Peak undrained strengths were adopted for dilative foundation soils. A B-Bar of 0.5 was applied to the over consolidated clayey foundation soils for the starter embankment only. Conservatively, a B-Bar of 1.0 was applied to clayey construction fill materials and residue mud to account for the excess pore pressure generated from the weight of residue mud, starter embankment, or upstream raises.
- Post-seismic To assess geotechnical stability for the condition where dynamic ground motion induced by earthquake causes either shear strength loss due to cyclic loading and/or excess pore pressure generation due to contractive loose, saturated soils under static loading conditions. Post-peak undrained shear strengths were adopted for all contractive foundations and residue mud. Reduced effective stress parameters were adopted for dilative or unsaturated materials zones.

A surcharge crest loading of 10 kN/m³ has been applied to the crest for all cases, to account for traffic live loading during construction and operations. The load is uniformly disturbed over the crest width (10 m) at a height of 1 m, approximately equivalent to the largest vehicle traffic loads from a 740 CAT dump truck.

### 3.4 Phreatic Surfaces within Foundation and Residue Mud

The phreatic condition within the residue mud and sand deposits will be separated from the foundation groundwater system by the installation of a composite liner system comprising a compacted clay liner and HDPE geomembrane, refer Section 2.2. The underdrainage system will manage any hydrostatic heads directly above the floor of the RSA10 facility, which coupled with the composite liner, disconnect the natural groundwater regime from the impoundment phreatic system. As the foundation units and the starter embankment fill materials are disconnected from the residue mud, two phreatic surfaces have been modelled in the analysis.





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- 1. **Phreatic Surface 1 (Groundwater)** assumed 10 year seasonal high level within the upper superficial formations (Rockwater, 2023). The surface has been applied to the foundation geometry and subgrade units below the clay liner.
- Phreatic Surface 2 (Residue Mud Liquor) has been adopted from the seepage analysis and is the phreatic surface within the residue units above the composite liner.

## 3.4.1 Groundwater (Phreatic Surface 1)

In the area of the Wagerup refinery and proposed RSA10, the groundwater level is typically 1 m to 3 m below the ground level depending on the season. Rockwater Hydrogeological Consultants (Rockwater) have developed groundwater contours for the RSA10 site (Rockwater, 2023). The 10-year winter high level represents the worst-case scenario (based on the available data) and has been adopted in the slope stability analysis.

The 10-year winter maximum groundwater level contours for RSA10 range from RL 14 m to RL 16 m AHD. The 10-year Winter high levels are presented in Figure 3-2.

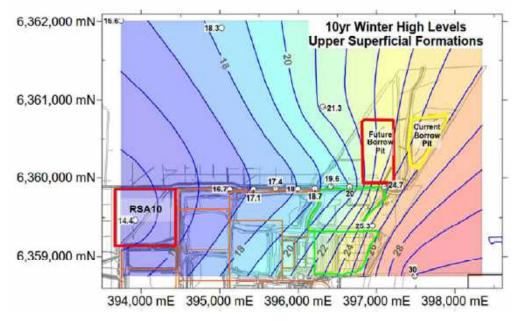


Figure 3-2: 10yr Winter High Groundwater Levels (Rockwater, 2023)

## 3.4.2 Residue Mud Liquor (Phreatic Surface 2)

A steady state seepage analysis has been performed to assess the phreatic levels within the residue mud as presented in Technical Memorandum - RSA10 Seepage Assessment (Hatch Doc. No. H374430-0000-2A0-249-0003, Rev 2).





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The seepage analysis was run under two operating design conditions:

- Normal Operating Pond: The residue mud deposition strategy has been designed to
  push the ultimate decant pond against the southern eastern perimeter of RSA10.
  During normal operations of RSA10, the pond is expected to be located against the
  opposite interior embankments to those defined as the ultimate closure slopes for
  RSA10 (i.e. southeastern corner of the facility with a pond elevation of approximately
  RL 76.1 m).
- Maximum Pond Level (1:1,000 72 hr Storm): This is the short-term storm pond level calculated following an extreme storm surge (ESS) corresponding with a 1 in 1,000 (1%) AEP, 72-hour event. Following the peak design flood event the excess water is expected to be transferred from the facility via a gravity decant into the future run off collection pond (ROCP4). The period of clearance of stormwater from the RSA post storm is estimated to take a maximum of 30 days. The decant pond level after the peak design storm is expected to be at RL 77.6 m. Although the short-term nature of the peak design pond is anticipated to be a transient condition, the analysis has assumed a worst design case whereby the ESS pond remains for an extended period, sufficient to result in steady state conditions which reflects a pessimistic operating condition or complete blockage of the decant system.

The stability analysis has been performed adopting the Maximum Decant Pond phreatic surface for Section B and Section D ultimate embankment case. The seepage analysis results for this case are presented in Figure 3-3 for Section B.

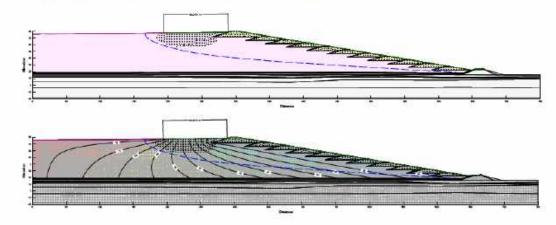


Figure 3-3: Steady State Seepage Analysis Results – Section B – Maximum Pond Level (1:1000 72hr ESS)

A summary of the phreatic surface levels adopted for each loading condition are presented in Table 3-3.





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Table 3-3: Phreatic Surface 1 (Groundwater) and Phreatic Surface 2 (Residue Mud) Summary

Loading Condition	Phreatic Surface 1 (Groundwater)	Phreatic Surface 2 (Residue Mud)		
Starter Construction Complete	Seasonal 10-year high	N/A		
Starter Embankment Filling Complete	Seasonal 10-year high	Top of Residue		
Ultimate Upstream Embankment	Seasonal 10-year high	Maximum Decant Pond (1:1,000 ESS)		

## 4. Analysis Results

The stability models for Sections A, B, C and D were evaluated at three construction/ operational stages described below with the results presented in the following tables:

- Starter embankment end of construction prior to residue filling (upstream and downstream slope failure with no potential loss of containment), refer Table 4-1 with figures in Appendix A.
- Starter embankment with residue filling to minimum freeboard level (downstream slope failure and potential for loss of containment), refer Table 4-2 with figures in Appendix B.
- Ultimate height facility without filling behind the final raise (upstream slope failure with no loss of containment) and with residue filling to ultimate height (downstream slope failure with potential for loss of containment), refer to Table 4-3 with figures in Appendix C.





Table 4-1: Summary of End of Construction Starter (Upstream and Downstream Slope Failures) for Slope Stability Analysis Results

	Calculated FoS									
Target FoS	Section A		Section B		Section C		Section D			
	U/S Slope	D/S Slope	U/S Slope	D/S Slope	U/S Slope	D/S Slope	U/S Slope	D/S Stope		
1.5	2.84	2.23	2.69	2.15	2.86	2.26	2.87	2.37		
1.31	2.10	1.71	2.34	1.88	2.09	1.71	2.23	1.82		
1.1	2.16	1.74	2.02	1.69	2.15	1.76	2.20	1.83		
	1.5 1.3 <sup>1</sup>	1.5 2.84 1.31 2.10	U/S Slope D/S Slope 1.5 2.84 2.23 1.31 2.10 1.71	U/S Slope D/S Slope U/S Slope 1.5 2.84 2.23 2.69 1.31 2.10 1.71 2.34	Target FoS         Section A         Section B           U/S Slope         D/S Slope         U/S Slope         D/S Slope           1.5         2.84         2.23         2.69         2.15           1.31         2.10         1.71         2.34         1.88	Target FoS         Section A         Section B         Sect           U/S Slope         D/S Slope         U/S Slope         D/S Slope         U/S Slope<	Target FoS         Section A         Section B         Section C           U/S Slope         D/S Slope         U/S Slope         U/S Slope         U/S Slope         D/S S	Target FoS         Section A         Section B         Section C         Section C           U/S Slope         D/S Slope         U/S Slope         D/S Slope         U/S Slope         D/S Slope         U/S S		

N/A - Not Applicable

H374430-0000-2A0-230-0005, Rev. 3, Page 16 WGP-F-000217-000

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<sup>1.</sup> Short-term loading conditions, no potential loss of containment.





Table 4-2: Summary of Starter (Downstream Slope Failures) Slope Stability Analysis Results

Analysis	Target FoS	Calculated FoS								
		Section A		Section B		Section C		Section D		
		U/S Slope	D/S Slope	U/S Slope	D/S Slope	U/S Slope	D/S Slope	U/S Slope	D/S Slope	
a. Peak Drained	1.5	N/A	2.23	N/A	2.16	N/A	2.26	N/A	2.38	
b. Peak Undrained	1.5	N/A	2.19	N/A	2.13	N/A	2.22	N/A	2.32	
c. Post-seismic	101	N/A	1.74	N/A	1.69	N/A	1.76	N/A	1.83	

1. Short-term undrained conditions, potential for loss of containment

N/A - Not Applicable

H374430-0000-2A0-230-0005, Rev. 3, Page 17 WGP-F-000217-000

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Table 4-3: Summary of Ultimate Facility (Upstream and Downstream Slope Failures) Slope Stability Analysis Results

Analysis		Calculated FoS									
	Target FoS	Section A		Section B		Section C		Section D			
		U/S Slope 1	D/S Slope 2	U/S Slope 1.	D/S Slope 2	U/S Slope 1	D/S Slope 2	U/S Slope 1	D/S Slope 2		
a. Peak Drained	1.5	3.54	2.62	2.61	2.47	3.57	2.65	3.23	2.68		
b. Peak Undrained	1.31 1.52	1.82	1.79	1.58	1.66	1.87	1.80	1.83	1.71		
c. Post-seismic	1.1	1.50	1.71	1.29	1.15	1.55	1.22	1.50	1.30		

N/A - Not Applicable

H374430-0000-2A0-230-0005, Rev. 3, Page 18 WGP-F-000217-000

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Short-term loading conditions, no potential loss of containment for upstream slope failure.
 Short-term undrained conditions, potential loss of containment for downstream slope failure.





Engineering Report Geotechnical Engineering Wagerup RSA10 FEL3 - Slope Stability Analysis Report

## 4.1 Impact of Reduced Strength of Residue Mud (Seismic)

Due to the current limited post-peak (large strain) undrained shear strength  $(S_i/\sigma'_v)$  data for the residue mud, a conservative value of 0.15 was adopted for the thickened residue mud. To assess the geotechnical stability of the embankment due to a range of undrained shear strength ratios for future residue mud, sensitivity analysis under post-seismic conditions was undertaken. Only the critical downstream cases were assessed for the ultimate facility.

The post-peak undrained shear strength ratio was reduced until a FoS < 1.0 (i.e. Yield FoS). For each case an evaluation was undertaken to determine what modifications would be required to achieve a satisfactory FoS > 1.1. Two options were assessed to determine their efficacy.

 Buttress Construction - A buttress was proposed using compacted Residue Sand material with a typical crest width of 54 m and downstream batter slope of 1V:5H. An example of the buttress geometry is shown in Figure 4-1.

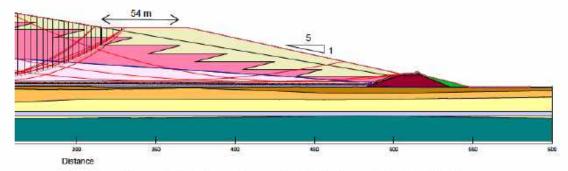


Figure 4-1: Buttress Geometry for Sections B and Section D

Phreatic Surface Reduction - The phreatic surface within the residue mud was
reduced due to effective underdrain dewatering. As the phreatic surface is modelled
using a sloping gradient the reduction was measured from the design phreatic
surface, as shown in Figure 4-2.

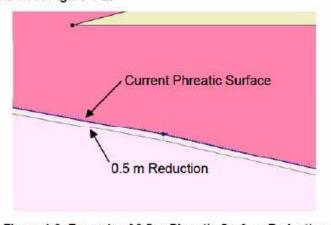


Figure 4-2: Example of 0.5 m Phreatic Surface Reduction





Alcoa Wagerup RSA10 - FEL3 H374430

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The sensitivity analysis for Sections B and D are presented in Table 4-4 and Table 4-5. respectively.

Table 4-4: Section B Ultimate Facility - Residue Mud Strength Sensitivity Analysis

Thickened Residue Mud Undrained Strength (Sr/o'v)	Post- Seismic Case FoS	Buttress Height Required (FoS = 1.1)	Reduction in Phreatic Surface Required (FoS = 1.1)		
0.15 1	1.15	Not Required	Not Required		
0.10	0.98	RL 48.5 m	4.0 m		
0.08	0.88	RL 53.0 m	5.0 m		
0.05 <sup>2</sup>	0.74	Buttress to RL 50 m	and 5.0 m Reduction		

### Notes:

- Design case
- A combination of buttress and phreatic reduction is required to achieve satisfactory FoS of 1.1

Table 4-5: Section D Ultimate Facility - Residue Mud Strength Sensitivity Analysis

Thickened Reside Mud Undrained Strength (S <sub>r</sub> /o' <sub>v</sub> )	Post- Seismic Case FoS	Buttress Height Required (FoS = 1.1)	Reduction in Phreatic Surface Required (FoS = 1.1)
0.15 1	1.30	Not Required	Not Required
0.10	1.11	Not Required	Not Required
0.08	1.04	RL 45.0 m	1.0 m
0.05	0.88	RL 55.0 m	3.5 m

Design case

The results are presented for either a buttress improvement or phreatic reduction. A combination of both solutions could be used to achieve the minimum recommended FoS. requiring a smaller buttress and lesser reduction in the phreatic conditions than presented above.

The results of the sensitivity analysis for Section B and Section D are presented in Appendix D, D.1 and D.2 respectively.

#### 4.2 Impact of Reduced Strength of Foundation Clay (Unit 3)

A shear normal function has been adopted for the critical Unit 3 Foundation Clay layer given this represents the governing foundation unit based on the estimated undrained strengths at high confining stress (refer Figure 2-4). A sensitivity analysis was performed on Section B and D Ultimate Peak Undrained Downstream case to evaluate the impact changes to the strength in this foundation unit have on the overall slope stability. The undrained strength ratio was assessed over a range of values from 0.10 to 0.22 (design case). The design versus sensitivity shear-normal functions adopted are presented in Figure 4-3.





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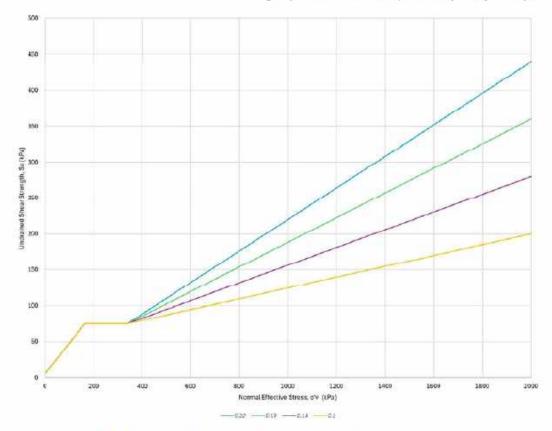


Figure 4-3: Shear Normal Function for Unit 3 - Sensitivity Analysis

To force failure through the foundation, rather than through the overlying residue, a continuous weak surface was defined along the base of Unit 3. Both factors of safety for failure through the residue mud and foundation Unit 3 for Section B and Section D are presented in Table 4-6 and Table 4-7, respectively.

Table 4-6: Section B Ultimate Embankment - Unit 3 Foundation Clay Sensitivity Analysis

Unit 3 Undrained Shear Strength Ratio	Failure Surface Slip Plane		
(S₀/ơ'√)	Foundation Failure <sup>2</sup>	Residue Mud 3	
Shear Normal Function <sup>1</sup> - 0.22	1.65	1.58	
Shear Normal Function - 0.18	1.43		
Shear Normal Function - 0.14	1.37		
Shear Normal Function - 0.10	1.29		

## Notes:

- Design case
- 2. Weak surface defined at the base of Unit 3
- 3. Weak surface defined at the base of the Residue Mud, above the underdrainage layer





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Table 4-7: Section D Ultimate Embankment - Unit 3 Foundation Clay Sensitivity Analysis

Unit 3 Undrained Shear Strength	Failure Surface Slip Plane		
Ratio (S₀/σ'√)	Foundation Failure	Residue Mud	
Shear Normal Function1 - 0.22	1.69	a	
Shear Normal Function1 - 0.18	1.52		
Shear Normal Function1 - 0.14	1.46	1.71	
Shear Normal Function1 - 0.10	1.38		

### Notes:

- Design case
- 2. Weak surface defined at the base of Unit 3 to force failure along this unit
- 3. Weak surface defined at the base of the Residue Mud, above the underdrainage layer

The results show that the Unit 3 clay need to have a  $S_0/\sigma_v^2$  ratio of less than approximately 0.2 for section B and 0.22 for section D. The results of the sensitivity analysis for Section B and Section D are presented in Appendix D, D.3 and D.4 respectively.

## 4.3 Impact of Increased Pore Pressure in Residue Mud

Phreatic Surface 2 (the phreatic level within the residue mud) has been modified to assess the sensitivity on the stability of the Ultimate Embankment. Two 'worst case' scenarios have been modelled based on the seepage analysis and site based observations as outlined below.



## 4.3.1 Case 1 – Saturated/Unsaturated Model Phreatic Surface

During the seepage analysis, Saturated/Unsaturated model parameters were applied to the Residue Mud and Residue Sand layers. The phreatic surface within the Saturated/ Unsaturated material model shows higher pore pressures within the thickened residue mud when compared to the saturated only model. The model is assumed to be conservative due to the simplified model geometry, assumed SWCC material parameters, and simplified boundary conditions.

Nevertheless, this surface has been assessed for Section B and Section D - Ultimate Embankment Height. The results of the analysis are presented below in Table 4-8.



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Table 4-8: Summary of Ultimate Facility (Upstream and Downstream Slope Failures) – Case 1
- Saturated/Unsaturated Phreatic Surface

Analysis		Calculated FoS				
	Target FoS	Section B		Section D		
	,03	U/S Slope 1	D/S Slope 2	U/S Slope 1	D/S Slope 2	
a. Peak Drained	1.5	2.61	2.22	3.23	2.32	
b. Peak Undrained	1.3 <sup>1.</sup> 1.5 <sup>2.</sup>	1.58	1.51	1.83	1.59	
c. Post-seismic	1.1	1.29	0.99	1.50	1.05	

#### Notes

- 1. Short-term loading conditions, no potential loss of containment for upstream slope failure.
- Short-term undrained conditions, potential loss of containment for downstream slope failure. N/A - Not Applicable

The analysis shows the post-seismic case governs the stability for the ultimate facility. The risk of a high phreatic coupled with a seismic event is deemed to be a low probability event but nevertheless shows how sensitive the analysis is to the phreatic conditions and effective stresses within the residue mud unit.

### 4.3.2 Case 2 - Elevated Phreatic Surface



During review of the seepage analysis technical memorandum (Hatch, 2025d), Alcoa in agreement with the third-party technical reviewer, KCB (Engineer of Record) requested Hatch carry out a Reasonable Worst-case Scenario (RWCS) analysis to understand the impacts to the stability under a set of plausible but unlikely simultaneous events. Under these conditions the analysis was used to assess how robust the proposed RSA10 facility is to accommodate sudden adverse or operational changes.

The assumed RWCS phreatic surface has been modelled for both the Section B and Section D Ultimate Embankment Cases. The results of the analysis are presented below in Table 4-9.



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Table 4-9: Summary of Ultimate Facility (Upstream and Downstream Slope Failures) Observed Elevated Phreatic Surface - Case 2

Analysis		Calculated FoS				
	Target FoS	Section B		Section D		
	103	U/S Slope 1	D/S Slope 2	U/S Slope 1	D/S Slope	
a. Peak Drained	1.5	2.61	1.99	3.23	2.02	
b. Peak Undrained	1.3 <sup>1.</sup> 1.5 <sup>2</sup>	0.85	1.29	1.03	1.30	
c. Post-seismic	1.1	0.96	0.83	1.06	0.84	

### Notes:

- 1. Short-term loading conditions, no potential loss of containment for upstream slope failure.
- Short-term undrained conditions, potential loss of containment for downstream slope failure.
   N/A Not Applicable

The analysis shows that under extreme adverse conditions, neither peak undrained or post seismic loading cases would meet the recommended minimum factors of safety. The ultimate raise peak undrained downstream case exhibits a FoS less than required (<1.5) for Sections B and D. To meet recommended ANCOLD (2019) FoS requirements, an approximately 43 m wide buttress would be required to a height of RL 53.5 m.

An example of the buttressed case is presented for Section B in Figure 4-4 and in Appendix D.

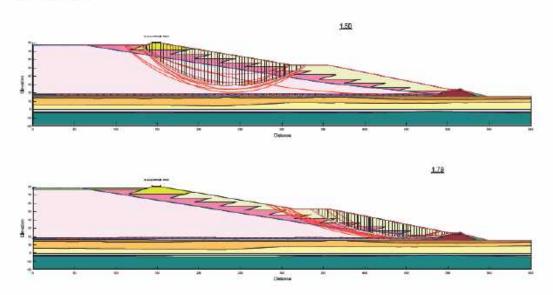


Figure 4-4: Buttress Required for Section B Ultimate Embankment Height - Peak Undrained

Below target FoS (<1.5) were also calculated for the Section B upstream undrained case at the ultimate embankment height. It is recommended that a staged construction approach would be sufficient to achieve the minimum FoS of 1.5. The first stage consists of construction of a 1 m high foundation lift, while the second stage is the construction of the embankment to final height (Figure 4-5). This method demonstrates that a phased





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construction approach will reduce the effects of pore pressure increase in the case of loading. It should be noted that the two-staged plan is based on an undrained shear strength ratio ( $S_u/p'=0.30$ ) for the foundation residue mud. However, in practice residue which have been solar dried and amphirol treated typically achieves a higher  $S_u/p'$  ratio (greater than 0.3).

It is also good practice to complete a geotechnical inspection or investigation prior to each lift to assess pore pressures and underlying strength of the residue mud via cone penetration testing, installation of vibrating wire piezometers, dynamic cone penetration testing, or shear vanes.

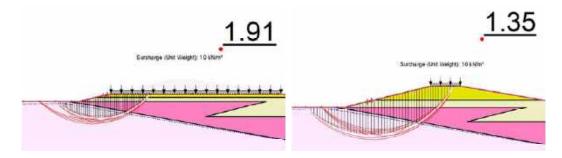


Figure 4-5: Example of Staged Construction Approach

The upstream post-seismic case will be satisfied once residue mud is deposited and buttresses the inside of the upstream lift, as shown in Figure 4-6.

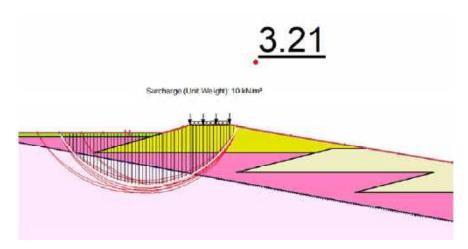


Figure 4-6: Example of Upstream Stability Post Seismic case, Post Filling

The results of the sensitivity analysis for Section B and Section D are presented in Appendix D, D5 and D6 respectively.





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#### 4.4 Impact of Potentially Contractive Zone (Unit 4B)



Analysis of CPT data collected during the FEL2.2 geotechnical investigation identified a lens of shallow contractive material within south-western corner of the RSA10 footprint at CPTu24, 25, 26B. Samples collected and tested from adjacent BH06 at this depth have been used to develop the material parameters for Unit 4. To assess the potential that this material undergoes significant strength loss, a further 20% strength reduction has been applied to Unit 4 to develop material parameters for the contractive lens. The shear normal function has been presented in Figure 2-4.

The discontinuous horizon is only present within Section B, as such only Section B Ultimate Embankment Height case has been assessed. The phreatic surface adopted in the model is deemed to be the 'worst case' Case 1 Saturated/Unsaturated surface described in Section 4.3.1

Table 4-10: Section B Ultimate Embankment - Unit 4B Foundation Clay Sensitivity Analysis

Unit 4B Undrained Shear Strength	Continuous We	ak Surface
Ratio (S <sub>u</sub> /σ' <sub>v</sub> )	Foundation Failure 1	Not Applied
Shear Normal Function - 20% Reduction	1.72	1.51
Su/o'y - 0.10	1.47	1.50

The results of the analysis indicate that an undrained shear strength ratio  $(S_u/\sigma'_v)$  of 0.1 is required to force the critical failure plane through the contractive lens (Unit 4B) with the governing failure mechanism through the Residue Mud.

An analysis of a slice through the slip surface indicates that the base normal stress along the base of the slices through Unit 4B exhibit confining stresses ranging from 550 kPa to 700 kPa with approximately 80 kPa to 90kPa pore pressure. This is in line with the geotechnical laboratory confining stress range from the testing of Unit 4, which ranged between 200 kPa to 800 kPa with peak undrained shear strengths measured at approximately 200 kPa.

The sensitivity of the undrained strength of the foundation Unit 3 clay is deemed to be a greater risk than failure through the localised horizon of contractive material within Unit 4. The results of the sensitivity analysis for Section B are presented in Appendix D, D.7 respectively.

#### 5. Seismic Deformation Analysis

#### 5.1 General

A simplified seismic deformation analysis has been completed for the RSA10 northern and western embankment at its ultimate height using empirical methods. The analysis provides a possible range of seismic induced deformation of the embankments under the load from the design earthquake. It is suggested that a full dynamic time history-based

Weak surface defined at the base of Unit 4B, failure surface has been forced along the base using a grid and radius block search method





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numerical analysis be carried out in the next phase of the project (FEL4) to better predict the seismic deformation of the RSA10 embankment and potential for lateral spreading along the facility toe.

## 5.2 Site Seismicity

The Peak Ground Acceleration (PGA) for earthquakes with different return periods have been estimated based on a Probabilistic Seismic Hazard Assessment (PSHA) study performed by AECOM (AECOM, 2021). The PGA values have been summarised in Table 5-1 which were used in the subsequent geotechnical assessment.

Table 5-1: Summary of Site Seismicity

AEP	Mean Magnitude	PGA (g)
1 in 475 (OBE)	5.97	0.034
1 in 5,000 (SEE)	6.14	0.170

## 5.3 Simplified Deformation Analysis

Simplified seismic deformation analysis methods were adopted for two type sections through the proposed western and northern embankments of RSA10. A minimum of two simplified deformation methodologies (purely empirical database method and Newmark analysis-based empirical methods) were used due to the inherent scatter in results between the methods. For this assessment a total of four different methods were adopted to calculate the seismic deformations at the crest of the RSA10 embankment after construction to the ultimate height. Two geotechnical sections (Section B and Section D) were selected for the seismic deformation analysis (refer to Figure 3-1) by considering the dam geometry and site foundation geotechnical conditions.

Time histories have been adopted from the Pinjarra Ground Motion Report (AECOM, 2021b). The analysis developed time histories for the OBE (1 in 475) and an SEE (1 in 5,000) for the Pinjarra site were applied in lieu of Wagerup specific data. Due to the proximity of the sites (less than 35 km apart and located on the same geological unit), the Pinjarra data is deemed to be representative for this screening level assessment at a FEL3 design definition.

## 5.3.1 Swaisgood Method

Swaisgood examined the embankment behaviour during various seismic events (approximately 70 case histories) and formulated a deformation trend for various embankment types (Swaisgood, 2003). The method is based solely on an empirical database, with the empirical equation formulated to estimate the crest settlement with the input parameters including dam height, dam type, depth of alluvium (or soil horizon) in the foundation, earthquake magnitude, PGA, and the focal distance of the dam to the earthquake. The regression models based on seismic performance data are established and the dam crest settlement can be estimated as:

 $CS = SEF \times RF$ 





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Where CS is the vertical crest settlement expressed as a percentage of the total dam height plus the alluvium thickness. SEF is the seismic energy factor and RF is the resonance factor. An RF for earthfill dams was considered in this assessment.

These factors are calculated from:

$$SEF = e^{(0.72M+6.28PGA-9.1)}$$
 
$$RF = 2.0 \times D^{-0.35} \ \ \text{for earthfill dams}$$

in which M is the magnitude of the earthquake, PGA is the peak horizontal ground acceleration at the dam site as a fraction of the acceleration due to gravity, and D is the distance between the seismic energy source and dam in kilometres.

For Section B, the seismic induced vertical crest deformation (expressed as settlement) is estimated to be 260 mm (OBE) and 810 mm (SEE).

For Section D, the seismic induced vertical crest deformation (expressed as settlement) is estimated to be 260 mm (OBE) and 810 mm (SEE).

### 5.3.2 Newmark Method

Newmark introduced a method to estimate earthquake-induced displacements in embankment dams based on the concept that slope movements are initiated when inertia forces on a potentially sliding mass exceed the available yield resistance along the bounding surface of failure (Newmark, 1965). Newmark treated the sliding mass as a rigid body.

While Newmark's method was the first simplified method used in estimating the deformation considering the earthquake motion, several assumptions were made to simplify the computation. Some of these limitations are summarised below:

- Cyclic behaviour of earthquake motion is not considered; method assumes that
  movement occurs when yield resistance of the block is exceeded by sufficient driving
  forces due to acceleration applied at the base. In other words, movement is a
  cumulative for acceleration exceeding the yield acceleration (where the pseudo-static
  FoS is unity).
- This is a two-step process as yield acceleration needs to be estimated by carrying out a pseudo-static analysis based on Limit Equilibrium (LE) analysis.
- This method assumes that the deformation takes place on a well-defined failure surface; with acceleration along the sliding block remaining constant during shaking.
- The method does not consider the geometrical aspects of earth structures. Shear strength of saturated soils varies (contractive or dilative) during cyclic loading as pore pressure varies during shaking.





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 This method does not account for strength loss due to liquefaction and lateral spreading of soils due to deformation exceeding yield strains.

The yield acceleration  $(K_y)$  is a term to describe the acceleration of a sliding mass of height, y. It is estimated by finding the average horizontal acceleration coefficient  $(K_h)$  using the pseudo-static approach of limit states slope stability analysis software, such as SLOPE/W. The coefficient of horizontal earthquake coefficient  $(K_h)$  was iteratively inputted in the SLOPE/W model until a  $K_h$  corresponding to a factor of safety of 1.0 was determined, which was then defined as the yield acceleration  $(K_y)$ . An example of estimating the Newmark-based seismic deformation for Section B is indicated in Figure 5-1. The estimated yield acceleration coefficient  $(K_y)$  for Section B is 0.21 g.

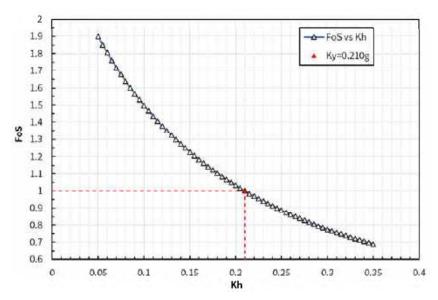


Figure 5-1: Sensitivity Analysis on Horizontal Acceleration Coefficient for Section B

The CC-CHY SEE (CMS#1) time history is shown in Figure 5-2. The time history has been multiplied by a factor of 1.5 from its bedrock-based time history. The site amplification factor is roughly estimated based on the recommendations in relevant standards (refer to AS 1170.4 and ASCE/SEI 7-6). The site-specific amplification factor will be validated using a full time-history-based numerical analysis such as FLAC or Deepsoil in the next phase of the study (FEL4).





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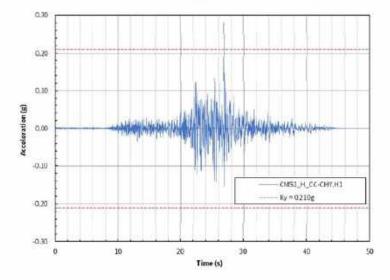
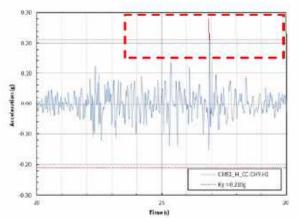
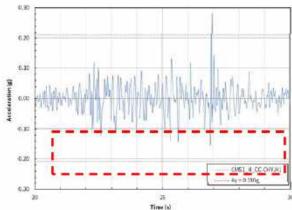


Figure 5-2: CMS1 CC-CHY Time History and Ky for Section B

As presented in Figure 5-3, if the acceleration exceeds the yield acceleration, the dam structure is expected to move, and seismic induced deformation is generated. The deformation can occur in two dimensions corresponding to the direction of the time-history curves. Therefore, the calculation is performed in two directions (0.04 mm or 0 mm, as indicated in Figure 5-3).

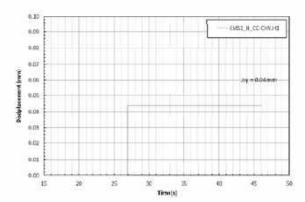






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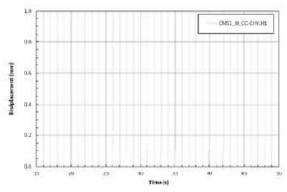


Figure 5-3: Seismic Deformation for CMS1 CC-Chy time History of Section B (Newmark Method)

The K<sub>y</sub> value for Section B and D is significantly greater than the PGA from the OBE time histories, therefore no seismic deformation is expected to occur under the OBE seismic events.

A total of three (3) time histories were used to calculate the seismic deformation under the design earthquake load cases. A summary is provided in Table 5-2.

		Newmark Method-based Seismic Deformation (mm)			
Case	Section	CC_CHY Time History	SPA_JON Time History	WN-VAS.H1 Time History	
OBE	Section B	ē.	=	75	
	Section D	T.	-	lā.	
02025-	Section B	0.04	0.00	0.02 - 0.04	
SEE	Section D	0.04	0.00	0.01 - 0.03	

Table 5-2: Summary of Seismic Deformation for RSA10 (Nemark Method)

## 5.3.3 Makdisi and Seed Method

Makdisi and Seed modified Newmark's approach by recognising that an embankment dam responds as a flexible structure and introduced a technique to estimate the amplification of the ground motions through the structure propagating upwards through the dam fill to the crest of the dam structure (Seed, 1978). Makdisi and Seed addressed the variability of acceleration along the sliding block, which was considered to be uniform in Newmark's method. Furthermore, this method computes displacements considering dynamic response of the embankment.

Makdisi and Seed computes the variation of permanent displacement with ratios of yield acceleration, peak ground acceleration and earthquake magnitude by subjecting several real and hypothetical dams to several recorded and synthetic earthquake ground motions for the design magnitudes. This procedure requires a good understanding of the natural period of the embankment. While this method is considered a rational approach to





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estimate the earthquake induced deformations, certain limitations from Newmark's methods remain.

The input parameters and the deformation estimates based on Makdisi and Seed for both the OBE and SEE events are summarised in Table 5-3.

Table 5-3: Summary of Seismic Deformation for RSA10 Embankment (Makdisi and Seed Method)

Case	Section	PGA at Crest (g)	Magnitude	y/h Ratio	K <sub>v</sub> (g)	Estimated Displacement (mm)
Section B	0.05	5.07		0.210	N/A	
OBE	Section D	0.05	0.05 5.97 1.0	0.215	N/A	
055	Section B	Section B	614	4.0	0.210	13.0
SEE	Section D	0.25	6.14	1.0	0.215	3.0

## 5.3.4 Bray and Macedo Method

Bray and Macedo proposed a simplified procedure for estimating seismic slope displacements for earth structures or natural slopes subject to earthquakes (Bray & Macedo, 2019). The method is based on a Newmark-type sliding block model that captures the nonlinear dynamic response of the potential sliding mass and the effects of periodic sliding. The method uses the yield coefficient (K<sub>y</sub>), the initial fundamental period, and the ground motion's spectral acceleration at a degraded period of the slope as the primary input parameters.

The initial fundamental period (T<sub>s</sub>) of the trapezoidal-shaped potential sliding mass is calculated by the formula below:

$$T_s = \frac{4.H}{V_s}$$

Where: H is the average height of the potential sliding mass and  $V_s$  is the average shear wave velocity of the sliding mass. An average shear wave velocity of 160 m/s was used in the estimation of the fundamental period. An average sliding height of 27 m was used for the Section B and 32 m for Section D, based on the limit equilibrium failure planes. Based on these inputs, a  $T_s$  of 0.57 s and 0.68 s was calculated for Section B and Section D, respectively.

 $S_a(1.3T_s)$  represents the ground motion's spectral acceleration at a period of  $1.3T_s$  for a shallow crustal earthquake, expressed in percentage of gravity (g). The  $S_a(1.3T_s)$  for the OBE and SEE events of both sections are presented in the Site Specific Seismic Hazard Assessment (AECOM, 2021a). A peak ground velocity of 2.4 cm/s for the OBE load and 5.0 cm/sec for the SEE load was adopted (AECOM, 2021a).

The estimated deformation and the relevant parameters based on Bray and Macedo methods for both OBE and SEE events are summarised in Table 5-4. The probability factor of 84% is adopted, which provides an 84% confidence level that the actual displacement is less than or equal to this value and 16% probability that it will be greater.



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Table 5-4: Summary of Seismic Deformation for RSA10

Case	Section	K <sub>y</sub> (g)	Ts (sec)	S <sub>a</sub> (1.3T <sub>s</sub> ) (g)	D <sub>1(P</sub> -84%) (mm)
005	Section B	0.210	0.57	0.04	< 5
OBE	Section D	0.215	0.68	0.04	< 5
COEE	Section B	0.210	0.57	0.18	< 5
5SEE	Section D	0.215	0.68	0.18	< 5





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#### 5.4 Discussion

The seismic deformation analysis results obtained from four different methods are summarised in Table 5-5 (OBE case) and Table 5-6 (SEE case).

Table 5-5: Summary of Simplified Seismic Deformation for RSA10 Embankment (OBE Cases)

		Seismic Def	ormation (mm)	
Section	Swasigood Method	Newmark Method	Makdisi and Seed Method	Bray and Macedo Method
Section B	257	N/A	N/A	< 5
Section D	259	N/A	N/A	< 5

Table 5-6: Summary of Simplified Seismic Deformation for RSA10 Embankment (SEE Cases)

		Seismic Def	ormation (mm)	
Section	Swasigood Method	Newmark Method	Makdisi and Seed Method	Bray and Macedo Method
Section B	809	0.02 - 0.04	13.0	< 5
Section D	813	0.01 - 0.03	3.0	< 5

Based on the geotechnical assessment results, the following observations were made:

- The Swaisgood method predicts much greater displacement than the other methods.
- The Newmark-based empirical methods predict negligible deformation (less than 15 mm) for both Section B and Section D, for both OBE and SEE loading cases.

Based on Hatch's experience, seismic deformation analysis of upstream embankments are geometry dependant and influenced by the key residue properties, not commonly included in the above methods. The Swaisgood method is based on empirical traditional downstream raised dam type geometry and tends to overpredicts the seismic deformation for flatter sloping dams, while the Newmark-based empirical methods underpredict the seismic deformation, particularly for the SEE cases.

The Swaisgood method is the most simplistic method without considering many fundamental aspects of the site seismic loading or construction history and complex material zonation within the RSA. The other methods are all based on derivation or modifications from the original Newmark method, in which the yield acceleration K<sub>y</sub> is a major input in determination of earthquake induced settlement. Also, many other important seismic load information cannot be accounted for in Newmark-based methods.

Many recorded seismic deformations in the Swaisgood database were measured from downstream constructed water dams instead of upstream raised tailings facilities. Therefore, the reliability of Swaisgood method in predicting the seismic deformation for a tailing's facilities like the proposed RSA10 is deemed to be unreliable.



H374430



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Hatch carried out several time history-based numerical analyses (FLAC simulations) to estimate the seismic deformation of upstream raised Alumina tailings facilities in Australia. The seismic deformation for upstream tailings dams is generally less than 10 mm (OBE case) and less than 200 mm (SEE case) if foundation soils and residue materials are not prone to cyclic liquefaction.

It is estimated that the crest PGA at the ultimate embankment height is approximate 0.25 g for the SEE load case. Seismic waves with this level of PGA generally result in some deformation at the embankment crest although these deformations are likely to be within the acceptable tolerance for the structure and unlikely to significantly impact the residual freeboard (less than 0.2% of dam height, refer to Robin Fell, et al. 2018). The dam functionality can therefore be maintained without resulting in complete loss of freeboard and catastrophic overtopping failure.

### 6. Conclusions

### 6.1 Critical Residue Failure Mechanism

The stability analysis results for the starter embankment satisfy the ANCOLD minimum guidelines for tailing dams (ANCOLD, 2019). Based on reasonable design assumptions, the ultimate facility FoS meets the ANCOLD minimum guidelines.

The stability of the ultimate height embankment is shown to be heavily influenced by the phreatic surface within the residue mud. Maintaining drained residue mud within the zone 50 m to 100 m upstream of the perimeter is critical to the overall integrity of the facility. Failure to effectively manage the phreatic surface will likely require remedial stability solutions (e.g. buttressing) for the facility to achieve ultimate embankment height. Operations should ensure that the pond location is maintained within the south-eastern corner of the facility to limit potential for saturation of the exterior mud and provide appropriate conditions for desiccation and effective mud farming.

VWP's will be installed in the residue mud directly upstream of the northern and western perimeter embankments along the four geotechnical type sections to monitor changes within the phreatic conditions and compare these to design assumptions. These instruments will also be utilised to provide Trigger Levels as an input to the RSA10 facility Trigger Action Response Plans (TARPs), which will be developed during the operational phases of the facility.



### 6.2 Post Seismic Analysis

A Factor of Safety for the post-seismic case of 1.1 has been assigned based on the level of confidence in the available data (i.e. pre mud placement). However, with further residue testing and analysis after commencement of operations, confidence in the assigned post-peak (large strain strength) of the residue material may increase and hence any potential remediation can be deferred until full residue characterisation is completed and in-situ field testing performed after the initial residue mud is placed prior and to construction of the first upstream raise. The assigned post-peak (large-strain) strength for the residue mud ( $S_r/\sigma'_v$ ) is considered to be conservative based on the



H374430



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current historical materials database and recent residue characterisation testing (Hatch, 2025c). A more detailed cyclic assessment will be completed as part of ongoing residue mud testing, which will allow for better estimation of the long-term performance of the facility.

#### 6.3 Foundation Failure Mechanism

The RSA10 FEL3 stability assessment has been performed by modelling the Unit 4B and Unit 6B lenses as continuous layers to conservatively model the foundation stability. Strength parameters have been developed based on the available geotechnical data as presented in the GIR (Hatch, 2025a). Sensitivity cases have been performed on Unit 3 and Unit 4B to assess the influence of reduced strength on the stability of the facility. Additional investigation of foundation soils is proposed for the FEL4 study to further assess the extent and strength properties of the potentially contractive clay units.

During operations, monitoring should be carried out to confirm the effectiveness of the underdrainage systems and to update this analysis based on actual field data. Vibrating Wire Piezometers (VWPs) will be installed beneath the underdrainage system in the subgrade to monitor pore pressures below the liner system and provide a key input to the foundation clay performance. Twin monitoring wells have been constructed around the perimeter of RSA10 to monitor the groundwater levels in the foundation soils which will also be used as a check on the VWP results. Inclinometers will be installed at each geotechnical section to measure potential for horizontal movements in the foundation clay units.

## 6.4 Sensitivity Analysis

Sensitivity cases were carried out to assess potential impacts to the FoS resulting from uncertainty in the post seismic shear strength ratio of the residue mud, changes to phreatic conditions within the residue mud and reduced strength through continuous clay lenses in the foundations. To ensure satisfactory factors of safety under lower case sensitivity assumptions, particularly for the ultimate embankment post-seismic case, a buttress may be required, or the phreatic level may require active management to maintain levels below the current design case. A combination of a smaller buttress with a smaller reduction to phreatic levels in the zone directly upstream of the future embankment raises may also be implemented as an alternate solution if the most pessimistic sensitivity assumptions occur during operations.

During operations of RSA10, the pore pressures within the upstream residue mud, perimeter residue sand embankment and natural clayey foundations will be monitored to confirm predicted performance. If required, remedial works such as buttress construction would commence to maintain the stability design criteria.





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#### 6.5 Seismic Deformation

Seismic deformation of the RSA10 ultimate dam configuration has been analysed using four different empirical methods. Due to the complex geometry and material properties of the residue and foundation soils, these simplified methods tend to either over-estimate (Swaisgood method) or under-estimate the probable earthquake induced deformations (Newmark method, Makdisi and Seed method, Bray and Macedo method).

The Swaisgood method predicts orders of magnitude larger seismic deformation than the other three methods for both the OBE and SEE loading cases. The Newmark-based methods predict negligible deformation (less than 15 mm for all load cases) for the RSA10 at the ultimate embankment height.

Based on Hatch's experiences undertaking similar seismic deformation analysis for Alumina tailings facilities in Western Australia, a reasonable estimate of deformation likely falls between these two methods. To better define the final residual freeboard requirements for closure, it is recommended that a full time-history dynamic analysis be carried out in the next phase of the project. At this stage of the design, a minimum 0.5 m dry freeboard limit will be maintained from the maximum mud level to the final embankment crest to accommodate the predicted seismic induced settlements.

This report has been independently reviewed by the Alcoa Engineer of Record for Wagerup. The completed comments register is included in Appendix E.





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H374430

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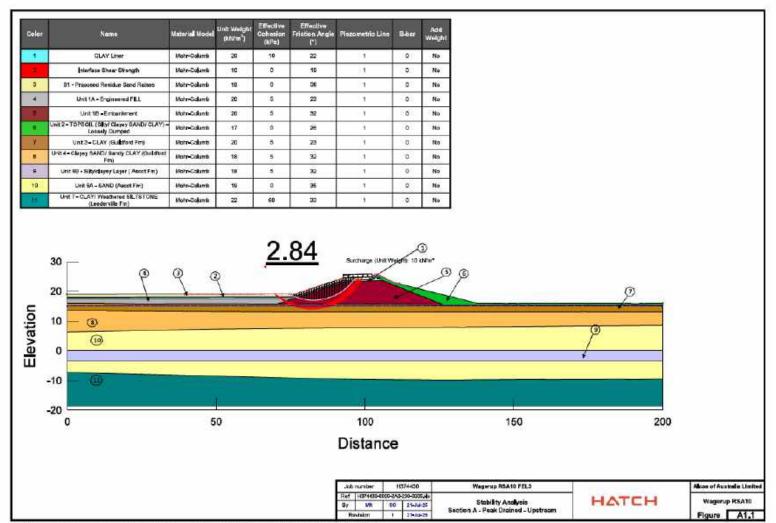
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# Appendix A Starter Embankment Stability Analysis Prior to Residue Filling

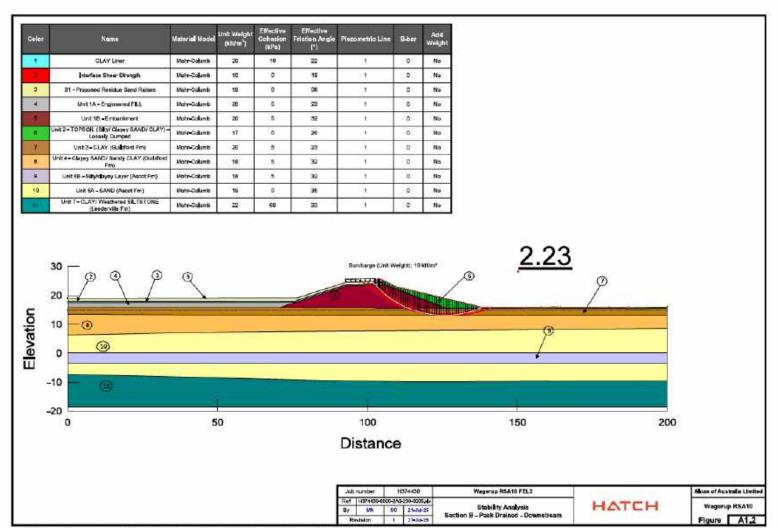


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# A.1 Section A - Starter Embankment - Prior to Residue Filling



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1	QLAY Uner	SHANGEP	50			0	0.22		0	. F:	Y90				
3	Interface Shear Strength	Wohr-Coulomb	10	0	10				- 89	0	No				
9	91 - Proposed Residue Sand Raises	Wohr-Coulomb	19	0	30		1 (		731	0	Yee				
ě.	Unit 1A = Engineered FILL	SHANSEP	20		0		0,26		- 31	0	Vas				
•	Unit 18 • Emperkmet	Wote-Coulcrob	50	3	32					0	Yes				
•	Unit 2 - TOPSÓIL (Sills/ Clayes SAND/ CLAY) - Leosely Dumped	Mote Coolomb	17	.0	26				13	Ó	Yes				
ž.	Unit 3 - GLAY (Guildford Fm)	SHANSEP	20			0		Shear Strength vs Normal Effective	_ 9	0,5	No				
8	Unit 4 - Glayey SANCI/ Sandy CLAY (Guildhard Fm)	SHANSEP	18			0		Sheet Strength vs Normal Effective	- 1	0.5	No				
	Lint 68 - Sitylclayay Layer   Ascot Fm)	SHANSEP	18			0		Shear Strength vs. Normal Effactive	-	0,6	No				
9	Unit SA - SAND (Ascet Firr)	Mohr-Columb	19	0	36				- 1	0	No				
	Unit 7 - CLAY/ Weathored SELTST ONE (Leederville Frr)	Mohe-Costomo	22	60	33				,	0	No				
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lor.	Name	Waterial Wodel	Linit Weight (kN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tou/Sigma Ratio	Strongth Function	Piszomotrie Line	B-ber	Add Weight				
	QLAY Uner	SHANGEP	30			0	0.22		())	10	Yes				
	Interface Shear Strength	Mohr-Caulemb	10	0	10				- 31	0	No				
	91 - Proposed Residue Sand Raises	Mote-Coulomb	19	0	30				7.9	0	Yee				
	Unit 1A=Engineered FILL	SHANSEP	50		65 50		0,26		- 21	0	Yes				
	Unit 18 • Emperkment	Note-Coulcrob	50	5	32					0	Yes				
	Linit 2 - TOPSOIL (Sits/ Clayer SAND/ GLAY) - Leasely Dumped	Mone-Cookeno	17	0	26				- 3	0	Yes				
	Linit 3 - GLAY (Guildford Fm)	SHANSEP	20			0		Shear Strength vs. Normal Effective	- 9	0,5	Mo				
	Unit 4 - Glayay SANC/ Sandy CLAY (Guildford Fm)	SHANSEP	18			0		Sheer Strength vs Normal Effective	-	0.5	No				
	Lint 88 - Sitylclaysy Layer   Ascot Fm)	SHANSEP	18					Shear Strength vs. Normal Effective	- 4	0,6	No				
ŭ.	Unit BA - SAND	Monr-Columb	10	0	35			CO-PERCURSORS	-	0	No				
	Unit 7 - CLAY/ Weathered SELTSTONE (Leederville Fm)	Vole-Coulomb	22	60	33				-,-	0	No				
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olor Name	Material Wodel	(kN/m²)	Cohesian (kPs)	Friction Angle	Shear Strength (kPai	Tau/Sigma Ratio	Strongth Function	Piezometric Line	9-ber	Add Weight		
1 DLAY Liner	SHANSEP	20			c	9,17		())	0	No		
Interface Shear Strength	Wahr-Cou <b>l</b> omb	10	.0	16				<u></u> (1	0	No		
3 S1 - Proposed Residue Sand Raise	9 Mehr-Coulomb	19	0	90				71	0	No		
4 Unit 1A - Engineered FILL	SHANSEP	50			0	0,2		19	0	No		
Unit 18 - Embankmoet	Wehr-Coulomb	50	4	25		Si I		. 24	0	No		
Link 2= TOPSOIL (6 by/ Glayer SANO/ C Lackely Dumped	Webs-Coalomb	17	0	21				. 73	0	No		
Unit 3 - CLAY (Guilatore Fm)	SHANSEP	20			0		Shear Strength vs Normal Effective	1	0	No		
8 Unit 4 - Clayey SAND/ Sandy GLAY (Ou Fm)	Mind SHANSEP	18			0		Shear Strength vs Normal Effective		0	No		
■ Unit 88 – Sifty/clayey Layer (Ascot Fi	m) SHANSEP	18			6		Shear Strength vs. Normal Effective		٥	No		
10 Unit 6A - BAND (Assot Firs)	Mohr-Calumb	19	0	36					0	No		
Unit 7 - CLAY/ Weathered SETSTON (Leederville Pm)	NE Meltr-Coulomb	22	46	27				,	0	No		
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Stability Analysis Section A - Post-ssismic - Upstream Alcoe of Australia Limited

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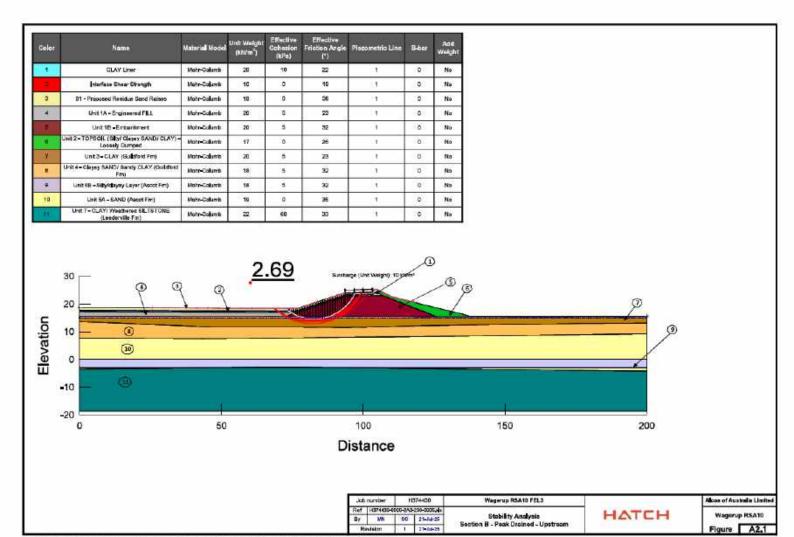
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eker	Name	Material Model	Lieit Weight (kNim <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Shear Strength (kPai	Tau/Sigma Ratio	Strongth Function	Piezometrie Line	B-ber	Add Weight				
1	QLAY Liner	SHANGEP	30			0	51.0		(B)	0	No				
2	Interface Shear Strength	Wohr-Coulomb	10	0	16				- 31	0	No				
9	S1 - Proposed Residue Sand Raises	Mohr-Coulomb	19	0	30		1 1		731	0	No				
4	Unit 1A = Engineered FILL	SHANSEP	50				0,2		- 31	0	No				
	Unit 10 • EmperAnnet	Note-Coulcmb	50	- 4	25					0	No				
	Linit 2 - TOPSOIL (Sits) Clayes SAND/ GLAY) - Leasely Dumped	Mone-Coolomo	17	.0	21				- 3	0	No				
,	Unit 3 - GLAY (Guildrand Fmu	SHANSEP	30			0		Shear Strength vs Normal Effective	- 9	Ü	No				
8	Unit 4 - Clayey SANCI/ Sandy CLAY (Guildhard Fre)	SHANSEP	18		V	0		Sheer Strength vs Normal Effective	-	U	No				
	Unit 68 - Sittyiclaysy Layer   Ascot Fm)	SHANSEP	18		i.			Shear Strength vs. Normal Effective	-	0	No				
a	Unit BA - SAND	Monr-Columb	10	0	36				- 1	0	No				
,	Unit 7 - CLAY/ Weathered SELTSTONE (Leederville Fitt)	Nohe-Coulomb	22	48	27				- 1	0	No				
	20	<b>ৃ</b> ৩	•	Q			Surcharge	(Unit Weight: 10	o white the	i)		<u>1.</u>	<u>74</u>	P	
	20	হ ৩	•	Q			Service Services	-8101-10UP		0		1.	74	P	
	20	<u>ৃ</u> ৽	9	Q			Service Services	-8101-10UP		0		1.	74	9	
	20	Q Q	•	Q			Service Services	-8101-10UP				1.	74	2	
i.	20	Q Q	9	0			0						74	9	
i.	20	Q Q	50	0			Service Services				1	.1.	74	9	20
i.	20 - 10 - 10 - 20 - 20	Q Q	50	•			0				1		74	2	200
	20 - 10 - 10 - 20 - 20	Q Q	50	0		Jab numbe	1000 Dista	nce		A10 FELS	1	50	74		Alcos of Assiral Wagerup R

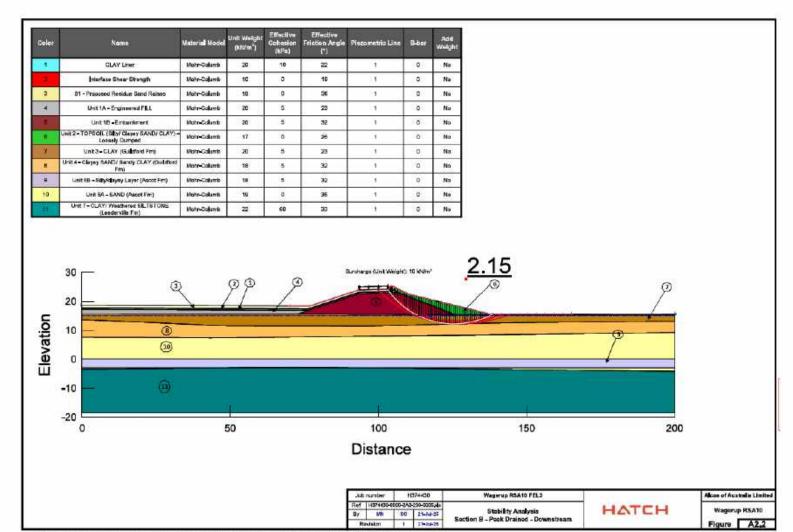


Alcoa of Australia Limited Alcoa Wagerup RSA10 - FEL3 H374430 Engineering Report Geotechnical Engineering Wagerup RSA10 FEL3 - Slope Stability Analysis Report

# A.2 Section B - Starter Embankment - Prior to Residue Filling



LT 2:167/2015 RZ AM | Impulses remains community 44/00/PV removements - Substituting and Andrew Show medic pends in Stein (Fro to Filing day



2.2 [2:57/225 RZ] No. | Stp. Und. Infrastructure and community (AMONATA contributed to Supermunity Monator and Analysis (Supermunity Monator a

rkor	Name	Material Model	Liait Weight (kN/m²)	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tau/Sigma Ratio	Strongth Function	Piszometrie Läne	B-ber	Add Weight			
1	QLAY tiner	SHANGEP	30			0	0.22		(t)	10	Yes			
	Interface Shear Strength	Mohr-Caulemb	10	0	10				- 89	0	No			
	S1 - Proposed Residue Sand Raises	Mote-Coulomb	19	0	36				- 33	0	Yes			
	Unit 1A=Engineered FILL	SHANSEP	20				0,26		- 31	0	Yes			
	Unit 18 - Emparkmet	Note-Coulomb	50	5	32					0	Yes			
	Linit 2 - TOPSÓIL (Silly) Glayer SANDV GLAY) - Leosely Dumped	Mote-Cookeno	17	.0	26				- 1	0	Yes			
	Unit 3 - CLAY (Sullifore Fm)	SHANSEP	20			0		Shear Strength vs Normal Effective	1	0,5	No			
	Unit 4 - Clayey SANO/ Sandy CLAY (Guildhard Free)	SHANSEP	18			0		Sheer Strength vs Normal Effective	-	0.5	No			
	Link IIII - Sityktayoy Layer (Accot Firs)	SHANSEP	18					Shear Strength vs. Named Effective		0,5	Na			
9	Unit 8A - SAND (Ascot Fer)	Mohr-Columb	19		35			Change Princeson	-	0	No			
	Unit 7 - CLAY/ Weathered SELTSTONE (Leederville Frr)	Vote-Coulomo	22	60	33					0	No			
	20			2.34	4	<b>8</b>	9	)						
	30 20	ৃ ভ		2.34	<u>4</u>	Surcharge (Li	cii Weigyl) 16 x	) Natur	©				٩	í.
	•	Q @	₹ .	2.34	4		1		9				Z <sup>o</sup>	
	20 10 10	<b>Q</b> @		2.34	4		1		۶			(3)	P	
	20	<b>Q</b> G		2.34	4		1		9			<b></b>	9	
	20 0	<b>Q</b> G	<b>₹</b>	2.34	4		1		9				<sup>2</sup>	
	20 0	Q @		2.34	4		1		9			<b>(9)</b>	2	
W.	20 0			2.34	4				9			<b></b>	P	
	20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		50	2.34	4				9	150		<b></b>	P	20

Wagerup RSA10 FEL3

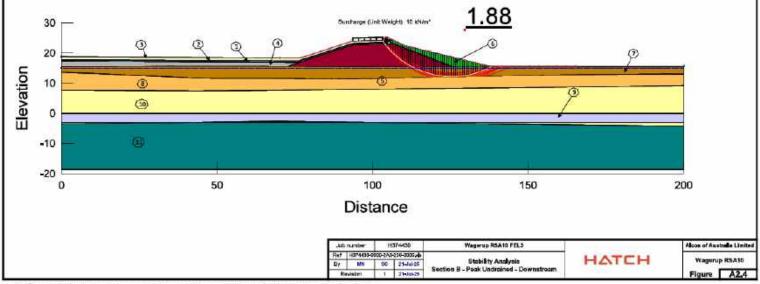
Stability Analysis Section B - Peak Undrained - Upstream Alcos of Australia Limited

Wagerup RSA10 Figure A2.3

HATCH

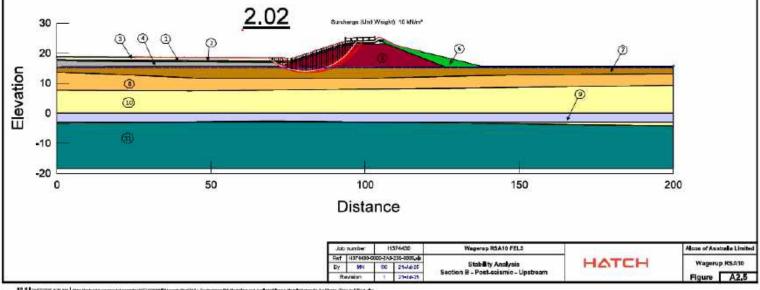
2.3 [2597/255 F25 Air ] stputted: retrustresses constraints AMONETA contributed to September 16 thousing and Analizant September Another (Pror to Filling dar

Celor	Name	Waterial Wodel	Liait Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tou/Sigma Ratio	Strongth Function	Piezometrie Line	B-ber	Add Weigh
1	QLAY ther	SHANGEP	30			0	0.22		()t	10	Y96
2	Interface Shear Strength	Wohr-Caulemb	10	0	10				- 29	0	No
9	91 - Proposed Residue Sand Raises	Mote-Coulomb	19	0	30				731	0	Yee
4	Unit 1A = Engineered FILL	SHANSEP	20				0,26		- 31	0	Ves
	Unit 10 - Emperkment	Mote-Coulomb	50	5	32					0	Yes
in.	Linit 2 - TOPSOIL (Sits) Clayer SAND/ CLAY) - Leasely Dumped	Work-Cookens	17	0	26				- 1	0	Yes
ý	Line 3 - GLAY (Guildrone Fm)	SHANSEP	20			0		Shear Strength vs. Normal Effective	1	0,5	No
8	Unit 4 - Clayey SANO/ Sandy CLAY (Guildhad) Fm)	SHANSEP	18			0		Sheer Strength vs. Normal Effective	-	0.5	No
4	Unit 68 - Sitylolaysy Layer   Accot Fm)	Monr-Columb	18		32	0		Shear Strength vs. Named Effactive		0,6	Na
19	Unit BA - SAND	Monr-Columb	10	0	36				1	0	No
11	Unit 7 - CLAY/ Weathered St. TST ONE (Leederville Fm)	Wohe-Coulomb	22	60	33				- 1	0	No



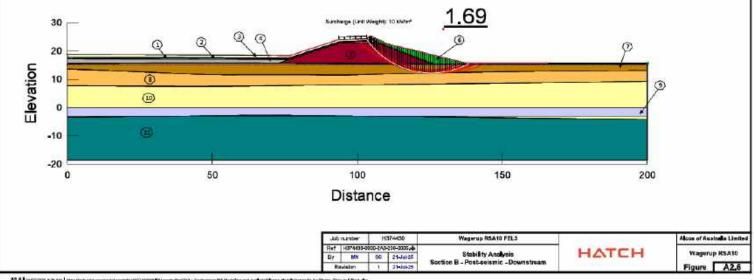
Q.4 [2:57/225 F2X-Ne] stputted: inframentations into the Physical Control of Control of

Color	Name	Material Wodel	unit Weight (Milm <sup>1</sup> )	Effective Cohesion (kPs)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tsu/Sigma Ratio	Strongth Function	Piezometric Line	9-ber	Add Weight
1	DLAY Sher	SHANSEP	20			¢	0,17		139	0	No
2	Interface Shear Strength	Mahr-Coulomb	10:	.0	16				्रा	0	No
3	S1 - Proposed Residue Sand Raises	Mehr-Codomo	19	0	90				1	0	No
4	Unit 1A - Engineered FB.L.	SHANSEP	20			0	0,2		19	0	No
18	Unit 18 - Embankmoet	Mohr-Coulomb	50	4	25				- 1	0	No
	Unit 2- TOPSOR (Silly/Clayer SAND/CLAY) - Leosely Dumped	Webs-Coalomb	17	0	21				79	0	No
y.	Link 3 - CLAY (Guildrand Fm)	SHANSEP	20			o.		Shear Strength vs. Narmal Effactive	1	0	No
	Unit 4 • Clayey SAND/ Sandy GLAY (Guildford . Fm)	SHANSEP	18			o		Shear Strength vs Normal Effective	1	0	No
	Unit 88 - Sitylclayey Layer (Ascot Fm)	SHANSEP	14			0		Shear Strength vs. Normal Effective		٥	No
10	Unit 6A - EANO (Aleast Firs)	Monr-Columb	10	0	36					0	No
11	Unit 7 - CLAY/ Weathered SILTSTORE (Leederville Fm)	Mate-Coulomb	22	46	27				,	0	No



Q.5 | profitted R25 Air | sepurited inframentations into an English Control of September 10 (Appendix A) (App

Cellor	Name	Waterial Wodel	Liait Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shaar Strength (kPai	Tou/Sigma Ratio	Strongth Function	Piezometrie Lâne	B-ber	Add Weight
1	QLAY ther	SHANGEP	30			0	51/6		())	0	No
2	Interface Shear Strength	Wohr-Caulamb	10	0	16				- 31	0	No
0	S1 - Proposed Residue Sand Raises	Mote-Coulomb	19	0	30				331	0	No
4	Unit 1A = Engineered FILL	SHANSEP	20			0	0,2		- 31	0	No
	Unit 10 - Emperkment	Note-Coulcrob	50	- 4	25					0	No
	Linit 2 - TOPSOIL (Sits) Clayer SAND/ GLAY) - Leasely Dumped	Mon-Cookeno	17	.0	21				- 3	0	No
y.	Line 3 - GLAY (Guildrone Fm)	SHANSEP	20			0	9	Shear Strength vs. Named Effective	i i	Ü.	No
8	Unit 4 - Clayey SANO/ Sandy CLAY (Guildford) Fm)	SHANSEP	18			0		Sheer Strength vs Normal Effective	-	U	No
4	Unit 88 - Sitykdayoy Layer (Accot Fm)	SHANSEP	18			0		Shear Strength vs. Normal Effective		0	No
10	Unit 6A - SAND (Asset Firr)	Mohr-Columb	19	0	36					0	No
11	Unit 7 - CLAY/ Weathered SELTSTONE (Leederville Fm)	Wohr-Coulomb	22	48	27				- 9	0	No

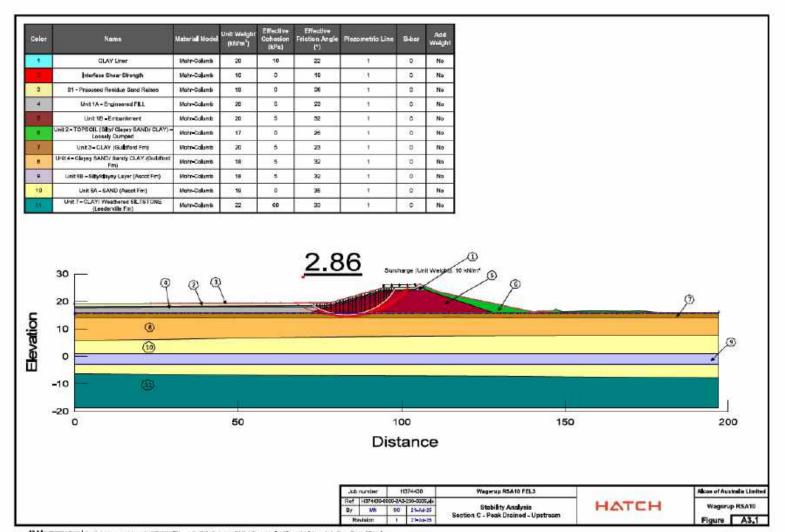


2.6 [2:07/225 F2X-Ne] stputtet: retrusseest constraint X-MXXAFV room (New York Substitute Provincing and Analysis (New York Hospital A-Charte (Provincing Ass

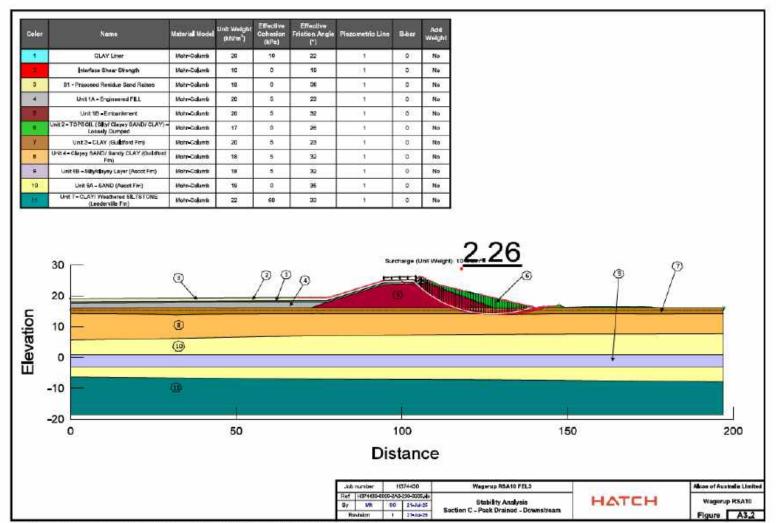


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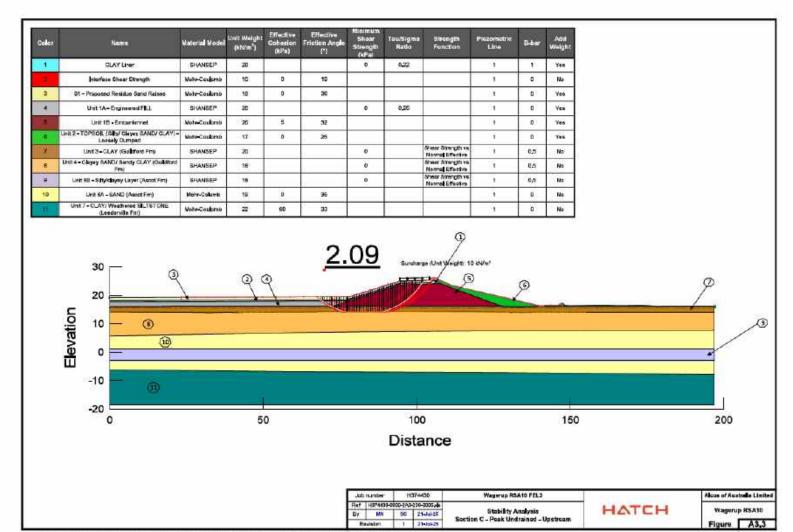
# A.3 Section C - Starter Embankment - Prior to Residue Filling



3.1 [2:47/225 KB Ar ] Reputet remanuscrates and Arthronia Control (Arthronia Control (Art



3.2 (2mm 225 kg) Air | impulses remanusconstants/Alternative constants/Alternative const



Q.3 [2:57/225 R37 Air ] stputted: retrustressed consistent (749/04/PU contributed 4) - September 16 Hooding and Analysis (September 16 Hooding and Analysis (September 16 Hooding 2) - Character (From the File of the Character)

Color	Name	Waterial Wodel	Linit Weight (kN/m²)	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tou/Sigma Ratio	Strongth Function	Piczomotrie Line	B-bur	Add Weight		
- 1	QLAY User	SHANGEP	20		-	0	0,22		())	10	Y90		
3	Interface Shear Strength S1 - Proposed Residue Sand Raise	Mohr-Coulomb	10	0	10			-	- 3	0	No Yes		
4	Unit 1A=Engineered FILL	SHANSEP	20	-	-		0,26		- 31	0	Vas		
	Unit 10 - EmperAnnet	Note-Coulomb	50	3	52					0	Yes		
ě	Linit 2 - TOPSOIL (Sits) Clayes SAND/ C Leasely Dumped	Mon-Cookmo	17	0	26				- 3	0	Yes		
9.	Unit 3 - GLAY (Guildford Fm)	SHANSEP	20			0		Shear Strength vs. Noonol Effective	- 9	0,5	No		
8	Unit 4 - Clayey SANCI/ Sandy CLAY (Gui Fm)	Mind SHANSEP	18			0		Sheef Strength vs Normal Effective	- 1	0.5	No		
4	Unit 88 - Sity/clayey Layer (Accot Fr	m) SHANSEP	18			0	. 1	Shear Strength vs. Named Effective	- 4	0,5	No		
10	LHE SA - SAND (Ascot Firr)	Mohr-Columb	19	0	36				- 1	0	No		
11	Unit 7 - CLAY/ Weathered SELTST (8 (Leederville Fm)	NE Vohe-Costomo	22	60	33				.1	0	No		
		P	Q		@ Q		Surcharge (Un	nt Wagnt; 10 M	<u> / 1</u>	P		0	
<u>.</u>	20		्		9 9		Surehargo (Un	st Wagnt; 10 so		9	-	P	
ation	20 - 0	3	0		0 0		Burcharge (Un	st Waget; 10 kg		9	1	P	
Elevation	20 - 0		Q				Surcharge (Un	st Wagnty 10 jal		9		2	9
	20	3	<b>Q</b>				Surcharge (Un	st Wagnty 10 ps		9		<i>P</i>	9
Elevation	20	<b>1</b>	50				Surcharge (Un	at Wagnity 10 to 1		9	150	2	200
	20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	<b>1</b>	50							9	150		
	20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	<b>1</b>	50			D.	100 istano	ce	Wagerup RS. Stability A		150	НАТСН	

or	Name	Material Wodel	Unit Weight (KNIm*)	Cohesion (kPs)	Effective Eriction Angle (*)	Minimum Shear Strength (kPai	Tsu/Sigma Ratio	Strongth Function	Piezometric Line	g-ber	Add Weight				
	DLAY Liner	SHANSEP	20			c	9,17		1.9	0	No				
	Interface Shear Strength	Mehr-Coulomb	10	0	16				ुर	0.	No				
	S1 - Proposed Residue Sand Raises	Mehr-Coulomb	19	0	90				्रा	0	No				
	Unit 1A = Engineered FILL	SHANSEP	50				0,2		1	0	No				
Į	Unit 18 - Embankmoet	Mohr-Coulomb	50	- 4	25					0	No				
1	Unit 2- TOPSOR (Silly/Clayer SANO/CLAY) - Legaely Dumped	Mehr-Coalomb	17	0	21					0	No				
,	Unit 3 - CLAY (Guildford Fm)	SHANSEP	30			0		Shear Strength vs. Narmal Effactive		0	No				
Į	Unit 4 • Clayey SAND/ Sandy CLAY (Guildford Fm)	SHANSEP	18			0		Shear Strength vs. Normal Effective	1	0	No				
Ţ	Unit 88 - Sitty/clayey Layer (Ascot Fm)	SHANSEP	18					Shear Strength vs. Normal Effective	*	0	No				
Ч	Unit 6A - EAND (Assot Fm)	Mohr-Columb	10	0	36					0	No				
1	Unit 7 - CLAY/ Weathered St_TSTORE (Leederville Fm)	Mate-Coulomo	22	46	27				,	0	No				
	30 30		Q	@ Q	2.1	<u>5</u> ,	urunarge (Unit	Weight]: 10 KNm*	@					ø	
	20 3		্	@ Q	2.1	<u>5</u>	urunarge (Unit	Woght): 10 KNm*	2	W			9	۶	1
	20 3 9 0 0		Q	@ Q	2.1	5	urcharge (Unit	Weight): 10 kN/m²	P			102	7	Ż	
	20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		0	9 4	2.19	5	urcharge (Unit	Woghtj: 10 ktvm*	<u> </u>			- 111	7	2	
	20 3 9 0 0		50	@ <sup>©</sup>	2.19	5	Lucharge (Unit	Weight): 16 Kvm*	9	1	50		7	2	200
	20 3 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9		50	@ G	2.19				<b>P</b>	1	50	III	9	2	200
	20 3 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9		50	<b>9 Q</b>	2.19	Di	100 stance	e	(Wagerap RS	11.5	50		IATO	2	200

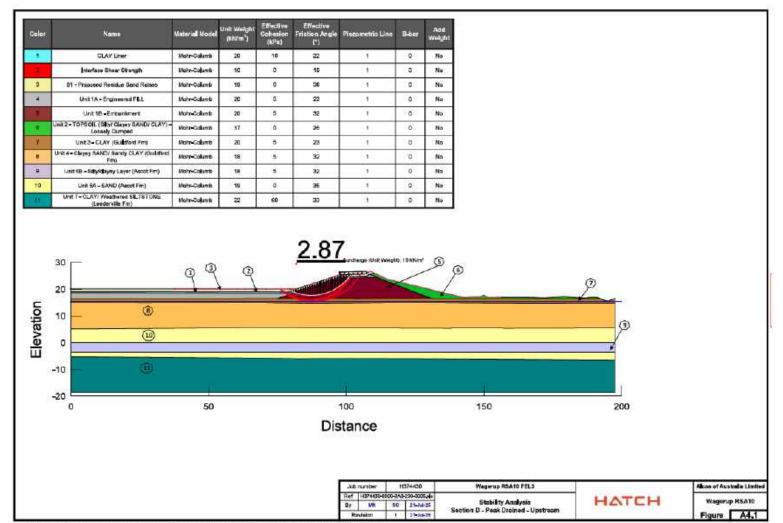
eker	Name	Waterial Wodel	Liait Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPal	Tou/Sigma Ratio	Strongth Function	Pigzometrie Läne	9-ber	Add Weight			
1	QLAY Uner	SHANGEP	30			0	9.17		(t)	0	No			
	Interface Shear Strength	Wohr-Coulomb	10	0	16				- 31	0	No			
	S1 - Proposed Residue Sand Raises	Mote-Coulomb	19	0	30				- 33	0	No			
	Unit 1A= Engineered FILL	SHANSEP	50		0 5	۰	0,2		31	0	No			
	Unit 10 - Empurkmet	Mote-Coulcmb	50	- 4	25					0	No			
	Link 2 - TOPSON (Sits) Clayer SAND/ GLAY) - Leasely Dumped	Mote-Coolomb	17	.0	21				- 3	0	No			
	Unit 3 - GLAY (Guildford Fm)	SHANSEP	20			0		Shear Strength vs Normal Effective	- 3	0	No			
	Unit 4 - Gleyey SANCI/ Sandy CLAY (Guildhad) Fm)	SHANSEP	18			0		Sheer Strength vs Normal Effective	- 1	Ü	No			
	Link #8 - Sity/clayey Layer (Accot Fm)	SHANSEP	18		(6	0		Shear Strength vs. Normal Effactive		0	No			
M.	Unit 8A - SAND (Asset Fer)	Mohr-Columb	19	0	36					0	No			
	Unit 7 - CLAY/ Weathered SELTST ONE (Leederville Fm)	Nohe-Coulomb	22	48	27				- 1	0	No			
Elevation	10 — ③							2 Ulling					9	
Š	(10)													
4	0													
	-10		.0				4				E.			
ב	-10 -20		50				100				150		200	
	-10		50			Di	100 stanc	e			150		200	
	-10 -20		50			Jub numbe	stanc	30	Wagerup RD-		150	HATC	Alcon	of Australia
Ele	-10 -20		50			12.00	stanc				150			200,000,000



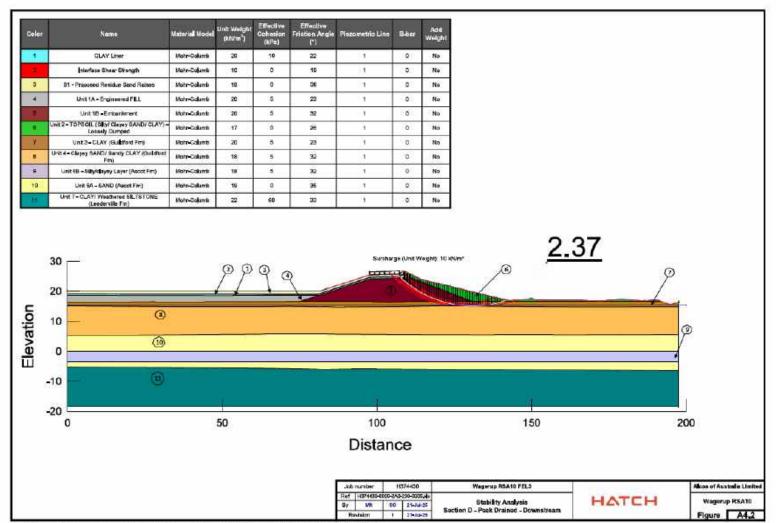


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# A.4 Section D - Starter Embankment - Prior to Residue Filling



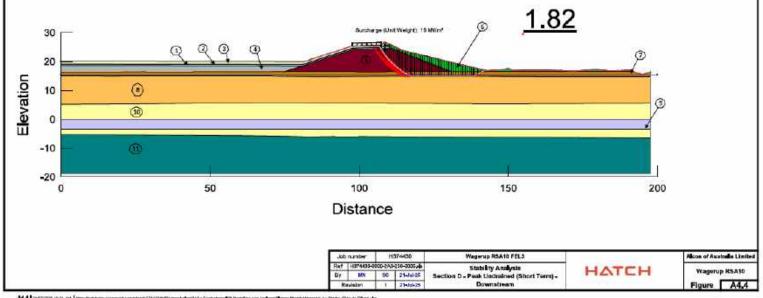
M.1 [2597/225] Bet Air | stputted: retrustresses constraints WHOMPU contributed to be demonstrate thousand and Analysis Show thousand product A-Chara (From to Filling about



4.2 [2:47/225 E41 At ] Reputet: remanusconstants/49/04/FU contributed - Substitute Related by Andread By Andre

leker	Name	Vateral Vodel	Linit Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tou/Sigma Ratio	Strongth Function	Piszometrie Line	B-bor	Add Weight			
1	QLAY Liner	SHANGEP	30			0	0.22		())	10	Yes			
2	Interface Shear Strength	Wohr-Coulomb	10	0	10				- 89	0	No			
9	91 - Proposed Residue Sand Raises	Mote-Coulomb	19	0	30				738	0	Yes			
4	Unit 1A = Engineered FILL	SHANSEP	20				0,26		- 31	0	Yes			
*	Unit 10 - Empunkment	Note-Coulomb	50	- 5	52					0	Yes			
.0	Linit 2 - TOPSOIL (Sills/ Clayes SAND/ CLAY) - Leosely Dumped	Mone-Coolemb	17	.0	26					0	Yes			
y .	Unit 3 - GLAY (Guillatore Fm)	SHANSEP	20			0		Shear Strength vs Normal Effective	_ 9	0,5	No			
8	Unit 4 - Glayey SANCI/ Sandy CLAY (Guildhard Fm)	SHANSEP	18			0		Sheer Strength vs Normal Effective		0.5	No			
	Unit 68 - Sitylclaysy Layer   Accot Fm)	SHANSEP	18					Shear Strength vs. Normal Effective		0,5	No			
10	Unit SA - SAND	Mohr-Columb	10	0	36					0	No			
11	Unit 7 - CLAY/ Weathered SELTSTONE (Leaderville Fm)	Mohr-Coulomb	22	60	33				- 3	0	No			
	20	Q G	₹ @	1		<u>2.</u>		renarge (Unit We	ght); 10 kb/m² ③	Ø			Ø	
ation	20	Q G	₹ @	2	***	2.		William Officerson	ght): 10 kdwm²	2			9	
Elevation	20	Q G	₹ @		***	2.		William Officerson	ghi; 10 kkr# √3	2			2	
Elevation	20	9 9	0	<b>\</b>		2.		William Officerson	ghty 10 kdum=	2			<i>P</i>	
Elevation	20 0 0 0	9 9	50	2		2.			ight); 10 idd/m²	2	11	50	2	200
Elevation	20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	9 9				2.		0	ginty 10 kelumini	2	11	50	2	200
Elevation	20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					,ub number	10 Dista	o ance	(S) Wagerup R5	-	11		Alcos of Au	
Elevation	20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					3,000,000,000,000	10 Dista	o ance		nalysts ained (Sho	260	50 HATCH	Alcos of Au	up KSA

Color	Name :	Material Model	Lieit Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tou/Sigma Ratio	Strangth Function	Piszometrie Line	B-bar	Add Weigh
.1	QLAY Uner	SHANGEP	30			0	0.22		- 0	. E	Yes
2	Interface Shear Strength	Wohr-Caulemb	10	0	10				- 31	0	Na
0	S1 - Proposed Residue Sand Raises	Mote-Coulomb	19	0	36				- 31	0	Yes
4	Unit 1A - Engineered FILL	SHANSEP	20			0	0,26		- 21	0	Yes
3	Unit 1B - EmperArmet	Note-Coulomb	50	5	32				- 1	0	Yes
	Linit 2 - TOPSOIL (Sits) Clayes SAND/ GLAY) - Leasely Dumped	Mone-Cookeno	17	0	26				- 1	0	Yes
y.	Unit 3 - GLAY (Guildrane Fm)	SHANSEP	20			0		Shear Strength vs. Named Effective	1	0,5	No
8	Unit 4 - Clayey SANO/ Sandy CLAY (Guildhad) Fm)	SHANSEP	18			0		Sheer Strength vs. Normal Effective	-	0.5	No
-	Unit 68 - Sitylclayoy Layer (Accot Fm)	SHANSEP	18			0		Shear Strength vs. National Effective		0,5	Na
19	Unit 6A - SAND (Assot Firr)	Mohr-Columb	19	0	36				1	0	No
11	Unit 7 - CLAY/ Weathered SILTSTONE (Leederville Fri)	Wohe-Coulomb	22	60	33				- 1	0	No



MAI (2) NEZES INJ. AM (Impulses the composition related PANNET reconstituted to Geometrical Relating and Analysis Elegan House Apparella in - Serie (Prints - Filling Laborator Relating and Analysis Elegan Relating and A

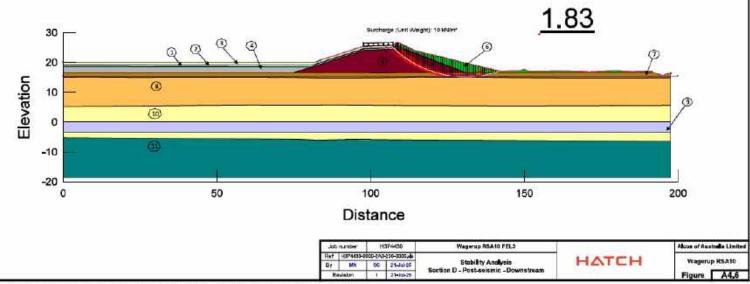
olor	Name	Vaterial Vodel	Linit Weight (KNIm <sup>1</sup> )	Cohesion (kPs)	Effective Eristion Angle (*)	Shear Strength (kPai	Tsu/Sigma Ratio	Strength Function	Piezometric Line	⊕-ber	Add Weight
1	DLAY Liner	GHANGEP	20			0	9,17		179	0	No
2	Interface Shear Strength	Mehr-Coulomb	10	0	16				્રા	0	No
	S1 - Proposed Residue Sand Raises	Mehr-Codomo	19	0	90				(t	0	No
	Unit 1A = Engineered FBLL	SHANSEP	20			0	0.2		19	0	No
	Unit 18 - Embankmoet	Wehr-Coulomb	50	4	25		Si .		179	0	No
	Unit 2= TOPSOIL (Silly/ Glayey SAND/ CLAY) - Lackelly Dumped	Wehr Coalomb	17	0	21				- 3	0	No
	Unit 3 - CLAY (Guildford Pm)	SHANSEP	20			0		Shear Strength vs. Narmal Effective	- 1	0	No
	Unit 4 - Clayey SANEV Sandy CLAY (Guildford Fm)	SHANSEP	18			0		Shear Strength vs Normal Effective		0	No
	Unit 58 - Sitty/clayey Layer (Ascot Fm)	SHANSEP	18					Shear Strength vs. Normal Effective		0	No
N.	Unit 6A - BAND (Assot Firt)	Monr-Columb	10	0	36				*	0	No
	Unit 7 - CLAY/ Weathered St_TSTORE (Leederville Fm)	Mate-Codomo	22	46	27				,	0	No
	30 <u> </u>	0	Q @	}	2	2.20		(Jnit Weight): 10 k	Nin?		
	20	. 9	90	\	2	2.20			oNim²		
	্	্ৰ	@ @	\	2	2.20			olin?		
	20	. 9	90	\	2	2.20			Nim²		
	20 10 -	. 9	00		2	2.20			oline J		
	20	. 9	00		2	2.20			oline JE		
	20	. 9	© ©		2	2.20			oline S		150
	20	. 9	50		2	2.2(			oline S		150

Stability Analysis Section D - Post-seismic - Upstream HATCH

Wagerup RSA10 Figure A4.5

M.5 | 2ntificials 16.00 AM | https://withfurcurreptort.com/state/1744/89MFurcurrellan/2A/- Geoletics/ACC Missaling and Analysis/Eleve Missal/Apparets and Date (File to Filegado

lekor	Name	Water all Wodel	Linit Weight (kN/m²)	Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (KPai	Tou/Sigma Ratio	Strongth Function	Piezometrie Läne	B-ber	Add Weight
1	QLAY Uner	SHANGEP	30			0	9.17		()t	0	No
2	Interface Shear Strength	Mohr-Coulomb	10	0	16				- 39	0	No
9	S1 - Proposed Residue Sand Raises	Mote-Coulomb	19	0	30				- 33	0	No
3	Unit 1A = Engineered FILL	BHANSEP	20				0,2		- 31	0	No
4	Unit 10 - Emperkment	Note-Coulcmb	50	4	25					0	No
	Linit 2 - TOPSOIL (Sits) Clayes SAND/ GLAY) - Leasely Dumped	Mone-Coulomb	17	0	21				- 3	0	No
y.	Unit 3 - GLAY (Guildrane Fmu	SHANSEP	20			0		Shear Strength vs Named Effective	9	Ü	No
8	Unit 4 - Clayey SANO/ Sandy CLAY (Guildford) Fm)	SHANSEP	18			0		Sheer Strength vs Normal Effective	- 1	U	No
ii.	Link 68 - Sityklayey Layer (Accot Fm)	SHANSEP	18			0		Shear Strength vs. Normal Effactive		0	No
10	Unit 64 - SAND (Asset Firr)	Mohr-Columb	19	0	36				- 1	0	No
11	Unit 7 - CLAY/ Weathered SELTST ONE (Leederville Fm)	Wohe-Coulomb	22	-48	27				- 3	0	No



MLS | 2 militaris (E.D. AM | impulsion between points or retent (PH) Militario and alleged of Georgia and Residing and Analysis Slopes Michigary and An-Serie (Philip Silling Libe



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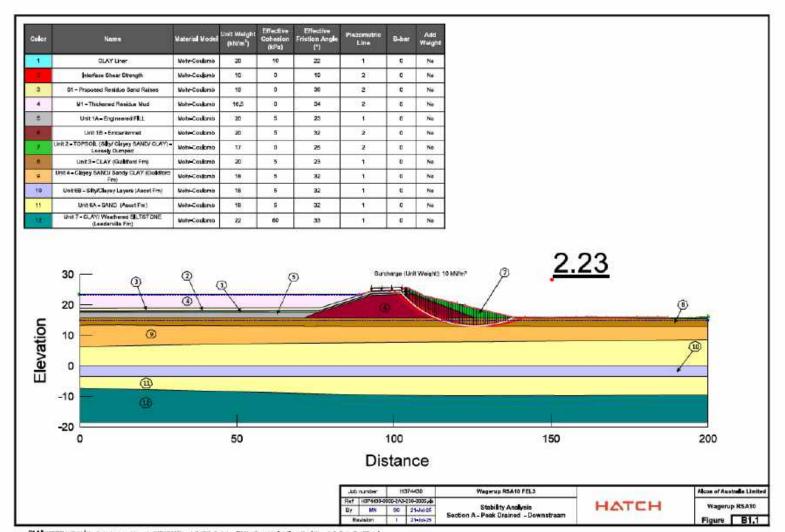
# Appendix B Starter Embankment - Residue to Minimum Freeboard





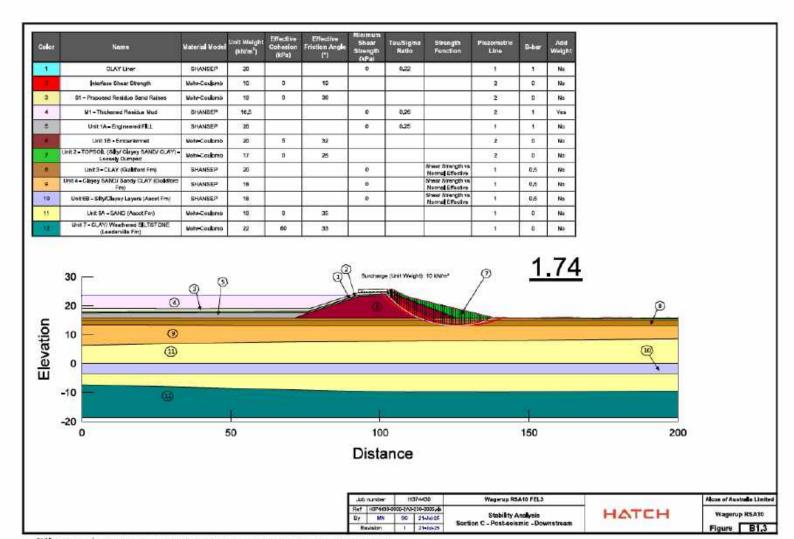
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## B.1 Section A - Starter Embankment - Filled to Minimum Freeboard



1.1 Exhtraces now well report with almost equal community (FM XVM) Proceeds the State country Receiving and Analysis (Experimental System) (F- Charles Floring State (Front State Floring State Florin

lot.	Name	Waterial Wodel	Light Weight (MN/m²)	Effective Cohesion (kPa)	Effective Friction Angle (*)	Shear Strength (kPai	Tau/Sigma Ratio	Strongth Function	Piszometrie Line	B-ber	Add Weight			
1	QLAY Uner	SHANGEP	30			0	0.22		())	10	No			
	Interface Shear Strength	Mohr-Caulamb	10	.0	10				2	0	No			
	St - Proposed Residue Sand Raises	Mohr-Coulomb	19	0	30		1 1		2	0	No			
	M1 = Thickened Residue Wod	BHANSEP	16,5				0,26		2	10	Yes			
	Unit 1A=Engineered FILL	SHANSEP	20			۰	0.25			4.5	No			
	Unit 18 • Emparkment	Mote-Cookimb	30	5	32				2	0	No			
	Link 2 - TOPSON (Silly/ Claye) SAND/ GLAY) - Leasely Dumped	Mohi-Codomb	17	0	25				2	Ü	No			
	Unit 3 - CLAY (Guildrand Pm)	SHANSEP	20			0		Sheer Strength vs Normal Effective	- 1	0.5	No			
	Unit 4 - Clayey SAND/ Sandy CLAY (Guldford Fm)	SHANSEP	18				1 1	Shear Strength vs. Normal Effective	-	0,5	No			
ŽĮ.	Unit 68 - Sity/Clayey Layers (Accet Fm)	SHANSEP	16					Sheer Strength vs. Normal Effective		0,5	No			
	Unit 6A - BAND (Asset Fix)	Note-Costomb	18	0	35				- 1	0	No			
11	Unit 7 - CLAY/ Weathered SILTSTONE (Leaderville Fm)	More-Coulomo	22	60	33				.11	0	No			
	30	3		1	<b>3</b> (1)	② Surona	rge (Unt Weigh	CE 10 KN/HP	P	2	.19	<u>)</u>	ø	
=	20	3		1	D (1)			ej: 10 kN/m²	9	2	2.19	<u>)</u>	9	
dio		3			3 0			et: 10 keum²	9	<u>2</u>	2.19	<u> </u>		
TO ACTOR	20	0		1	9 0			et: 10 kölver	9	2	2.19	<u>)</u>	9	
	20 0	0		1	3 0			et: 10 kN/m²	9	2	2.19	<u>)</u>		
	20 <u>①</u> 10 <u>③</u> 0 -10 <u>③</u>	3	7	}	3 0			RI: 10 KNAHP	9	2	2.19	<u>)</u>		
Lievalion	20 <u>①</u> 10 <u>③</u> 0 -10	The state of the s	50	1	3 0	(8)		RE 10 KRAWE	9	150	2.19	)		0
	20 0 0 10 0 10 -10 0 0 0 0 0 0 0 0 0 0 0	The state of the s	50		3 0	10		CL 10 KNAWP	2		2.19	<u>)</u>		0
	20 0 0 10 0 10 -10 0 0 0 0 0 0 0 0 0 0 0	The state of the s	50		3 0	10 Dist	oo ance		Wagerup RS.	150	2.19	HAT	200	O Akos of Ass

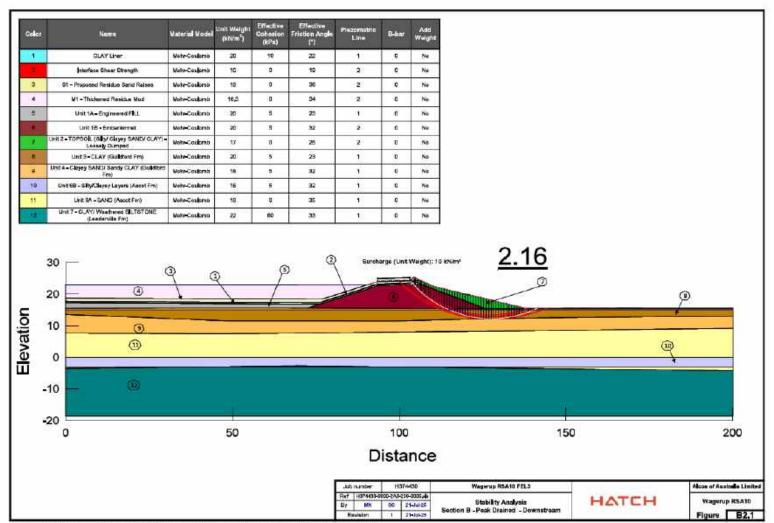


U [2417002] 11.77 Am | Mapuli retrolationer sports amount (FM ANN Procession) (A) - Contact could be brightness on Anthropology Mapulifold (A) - Contact from Procession (A) - Contact fro



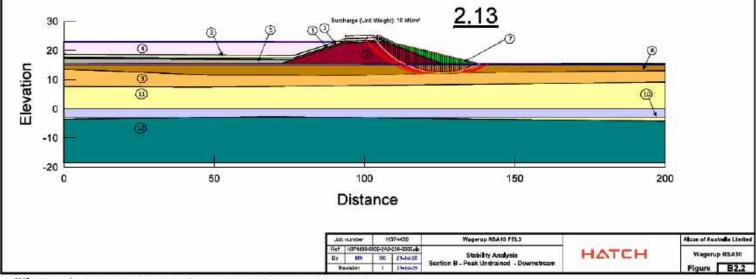
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## B.2 Section B - Starter Embankment - Filled to Minimum Freeboard



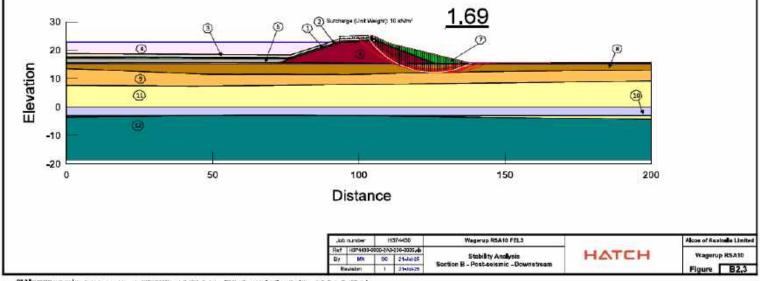
2.1 Exhtraces 11.77 Am | Appart estimates equinous management (PHINAP Proceedings of Business of Receiving and Analysis (Experiment Apparel) 5- Desire of the Principals

Color	Name	Waterial Wodel	Linit Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	Elfective Friction Angle (*)	Minimum Shear Strength (kPai	Tou/Sigma Ratio	Strongth Function	Piezometrie Line	B-bar	Add Weight
1	QLAY ther	SHANGEP	50			0	0.22		()t	10	No
2	Interface Shear Strength	Wohr-Caulemb	10	0	10				2	0	No
9	S1 - Proposed Residue Sand Raises	Mote-Coulomb	19	0	30				2	0	No
4	W1 - Thickened Residue Ned	SHANSEP	16,5			۰	0,26		2	1.	Vas
35	Unit 1A - Engineered FILL	SHANSEP	50			0	9.25		1	. 10	No
	Unit 18 • Emperium wit	Wote-Coulomb	30	5	32				2	0	No
9	Linit 2 - TOPSON, (Silty/ Claye) SAND/ GLAY) - Leasely Dumpad	Moto-Coalomo	ty.	0	25				2	Ü	No
18	Unit 3 - CLAY (Guildford Fm)	SHANSEP	20			0		Sheer Strength vs Normal Effective	-	0.5	No
10	Unit 4 - Clayey SAND/ Sandy CLAY (Guildions Fm)	SHANSEP	18					Shear Strength vs. Named Effactive	,	0,0	No
19	Unit 6B - Sity/Clayey Layers (Accel Firs)	SHANSEP	16					Shear Strength vs. Normal Effective		6,5	No
11	Linit SA - SAND (Asset Firr)	Vole-Coulomb	18	9	35				- 1	0	No
th	Unit 7 - CLAY/ Weathered SILTSTONE (Leaderville Fm)	Worr-Coulomo	22	60	33				1	0	No



2.2 Extraces 11.75 AM | report estimate agree community 749 AMP Reconcident/34 - Bud across/16 Necessing and Analysis (Bayes Hequility power, 5 - Decise of the Filling Alex

Celor	Name	Waterial Wodel	Lieit Weight (MN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shaar Strength (kPai	Tou/Sigma Ratio	Strongth Function	Piezometrie Line	8-ber	Add Weigh
1	QLAY ther	SHANGEP	50			0	0.22		()t	10	No
2	Interface Shear Strength	Wohr-Caulemb	10	0	10				2	0	No
9	S1 - Proposed Residue Sand Raises	Mote-Coulomb	10	0	30				2	0	No
4	W1 - Thickened Residue Ned	SHANSEP	16 <i>5</i>				0,26		2	1.	Ves
3	Unit 1A - Engineered FILL	SHANSEP	50			0	0.25			. 10	No
	Unit 18 - Emperaturet	Mote-Coulomb	20	5	32				2	0	No
y.	Linit 2 - TOPSON (Silty/ Claye) SAND/ GLAY) - Leasely Dumped	Wein-Coalons	tr	0	25				2	Ü	No
18	Unit 3 - CLAY (Guildrand Fm)	SHANSEP	20			0		Sheer Strength vs Normal Effective	1	0.5	No
ii .	Unit 4 - Clayey SAND/ Sandy CLAY (Guildions Fm)	SHANSEP	18					Shear Strength vs. Normal Effective		0,0	No
19	Unit 6B - Sity/Clayey Layers (Accel Firs)	SHANSEP	16					Shear Strength vs. Normal Effective		6,5	No
11	Linit SA - SAND (Asset Firr)	Mohe-Coulomb	18	0	35				- 9	0	No
18	Unit 7 - CLAY/ Weathered SILTSTONE (Leaderville Fm)	Worr-Coulomo	22	60	33				.1	0	No

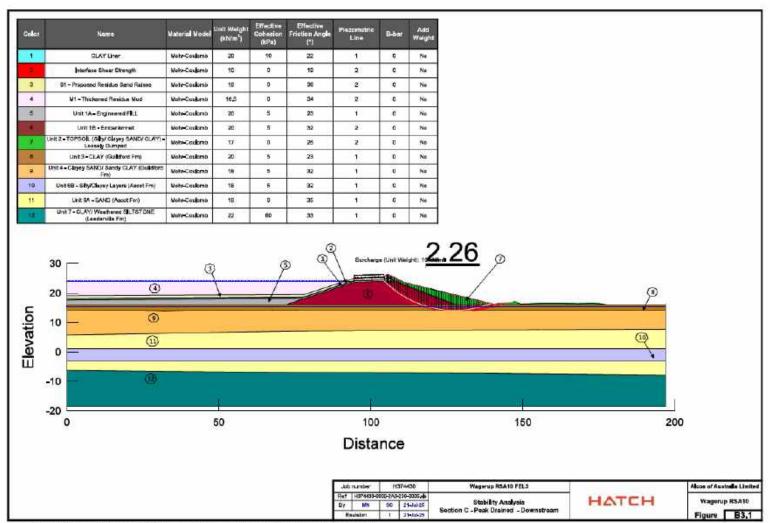


2.3 Exercises 11.79. AM | representation assembles to the Property Section of the Section of the

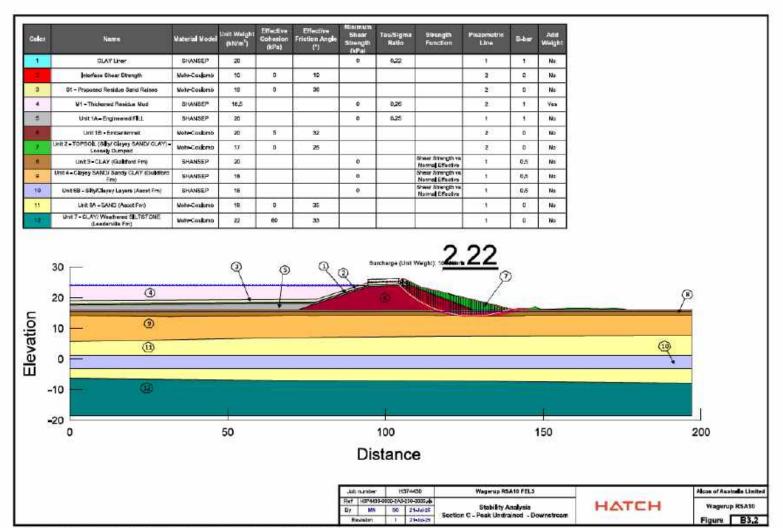


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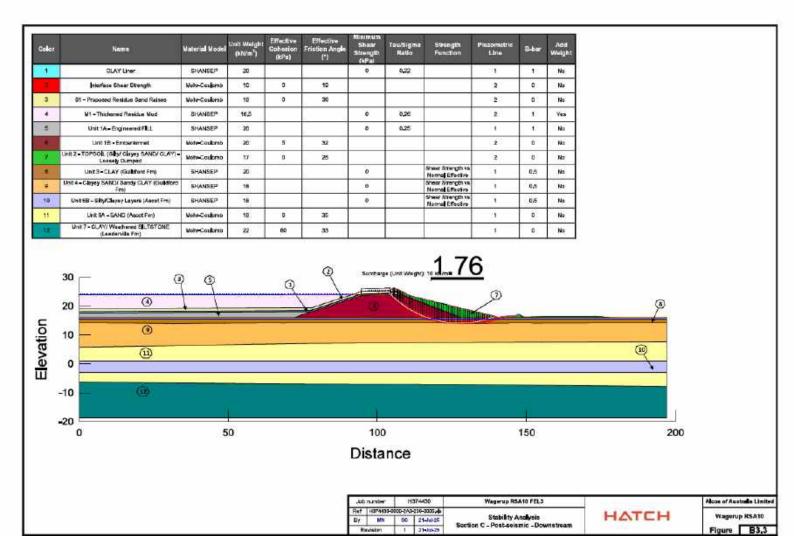
## B.3 Section C - Starter Embankment - Filled to Minimum Freeboard



3.5 EXYTROSC 1130 AM | Mapulinetinal respective medicant (PM WW Proceedy Medical Collection of the College on Analysis (Bayer Medical Approximate Processing Administration of the College of the College



1.2 EXTRACES 11.32 Am | Maga/metrinalmaneropint/complexes/AMAW Processyllate(A.) - Contact conflict Newsling and Analysis (Experimental Appendix Co-Charle of California)

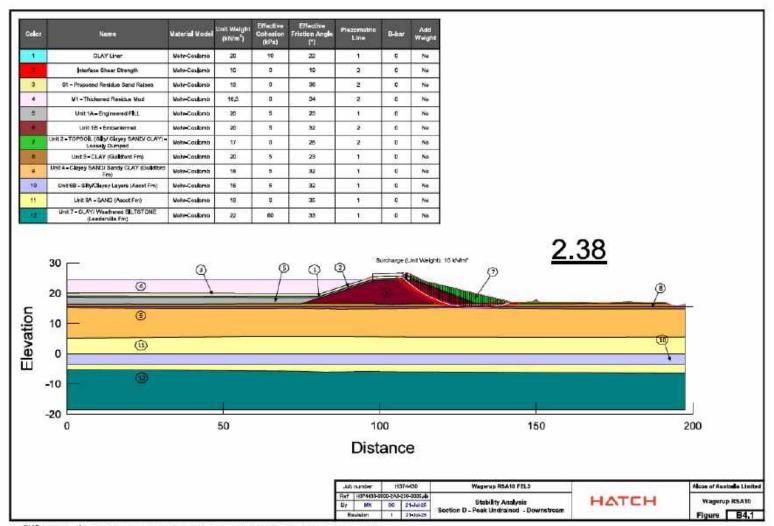


3.3 EXTRACES 11:33 AM | Mapulinetinal respective medicants (PM WWW Processis Medical Collection of the Collection of the



Alcoa of Australia Limited Alcoa Wagerup RSA10 - FEL3 H374430 Engineering Report Geotechnical Engineering Wagerup RSA10 FEL3 - Slope Stability Analysis Report

## B.4 Section D - Starter Embankment - Filled to Minimum Freeboard



4.1 Extracted 1170 AM | report extra frame apoint commission (PARAM Procedulate) All Entertool Resulting and Analysis (Experiment Associated Association (PARAM) (PARA

or Name	Waterial Wodel	Lieit Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tau/Sigma Ratio	Strongth Function	Pigzomotrie Line	9-ber	Add Weight				
QLAY Uner	SHANGEP	30			0	0.22		()t	10	No:				
Interface Shear Strength	Mohr-Caulemb	10	0	10				2	0	No				
91 - Proposed Residue Sand Raises	Mote-Coulomb	19	0	37				2	0	No				
W1 - Thickered Residue Wed	SHANSEP	16,5		6 5		0,26		2	. 1	Yes				
Unit 1A - Engineered FILL	SHANSEP	50			۰	0.25			100	No				
Unit 1B - Entperkeywit	Wote-Cookimb	20	5	32				1	0	No				
Linit 2 - TOPSON (68)/ Olayer SAND/ GLAY) - Leasely Dumped	Mohi-Codemb	t/	0	25				2	O.	No				
Unit3-CLAY (Suittree Pm)	SHANSEP	20			0		Sheer Strength vs Normal Effective	- 1	0.5	No				
Unit 4 - Clayey SANCI/ Sandy CLAY (Guildford)	SHANSEP	18					Shear Strength vs. Normal Effective		0,6	No				
Unit 68 - SityClayer Layers (Ascot Fm.)	SHANSEP	16					Sheer Strength vs Normal Effective		0,5	No				
Linit 9A - SAND (Assot Firr)	Note-Costomo	18	0	35				- 1	0	No				
Unit 7 - CLAY/ Weathered SELTSTONE	a concern to the		-						ú	44				
(Leaderville Fm)	Work-Coulomo	22	60	33				- 31		2	32	,		
30	Water-Coulcino	3	60	9 0	0	Surcharge (L	init Weight; 10 kN	/m²	D)	223	.32	2		
30			60		2	Surcharge (L	int Weight; 10 kM	/m²		223	.32	2	P	
30	<b>③</b>		60		2	Surcharge (L	int Weght: 10 kM	/m²		223	.32	<u>:</u>	<i>P</i>	
30	<ul><li>③</li></ul>		60		0	Surch ange (I	int Weight: 10 lev	/m²		223	.32	<u> </u>	9	
(Leaderville Fir)  30	(a) (b)		60		9	Surcharge (L	int Weight: 10 leh	/m²		223	.32		9	
30	<ul><li>③</li></ul>		60			Surcharge (L	int Weight: 10 leh	/m²		223	.32	2	9	
(Leaderville Fir)  30	(a) (b)		60		0	Surcharge (L	int Weight: 10 lev	/m²		223	.32		9	
(Leaderville Fir)  30	(a) (b)		60		0	Surcharge (L	int Weight: 10 leh	/m²	5)	223	.32	-		200

Distance

Wagerup RSA10 FEL3

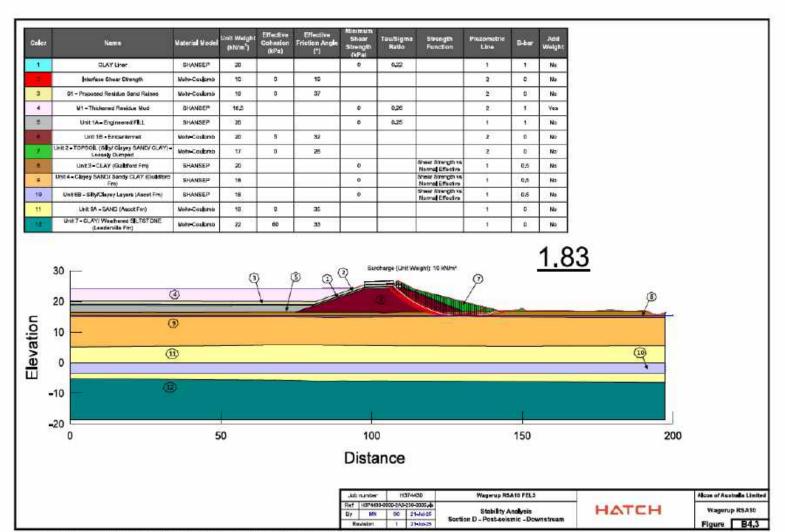
Stability Analysis
Section D - Peak Undrained - Downst

Alcon of Australia Limited

Wagerup RSA10 Figure B4.2

HATCH

4.2 Extracts 11:00 AM | report extra frame quiet complexit (74) 9/49 Proportificity 4 - Bud according to Principles and Andrew Elegan House Approxis 5 - Series (For Filling Alex



43 Extraces 11.34 AM | Maput retrining secretary retrievable (PA WANT Recognition (PA) - Content could be found by an Analysis (Bayer Mepally poorly 5- Charle (For Filling Julie)



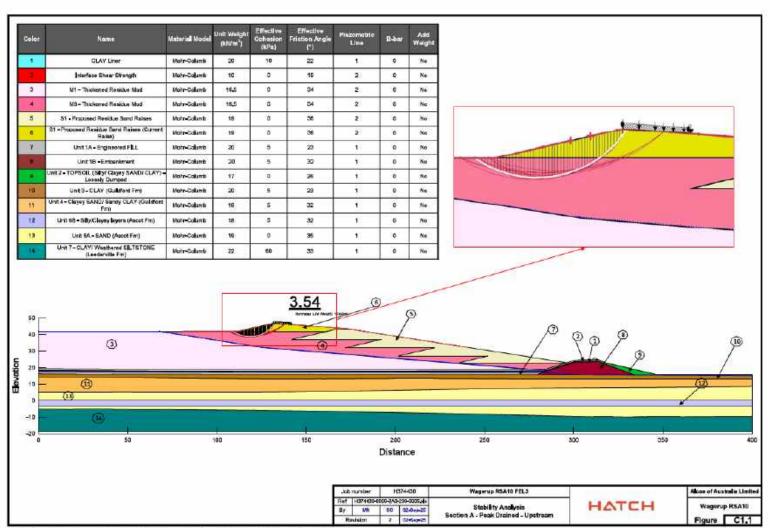
Alcoa of Australia Limited Alcoa Wagerup RSA10 - FEL3 H374430 Engineering Report Geotechnical Engineering Wagerup RSA10 FEL3 - Slope Stability Analysis Report

## Appendix C Ultimate Embankment Stability Analysis Results

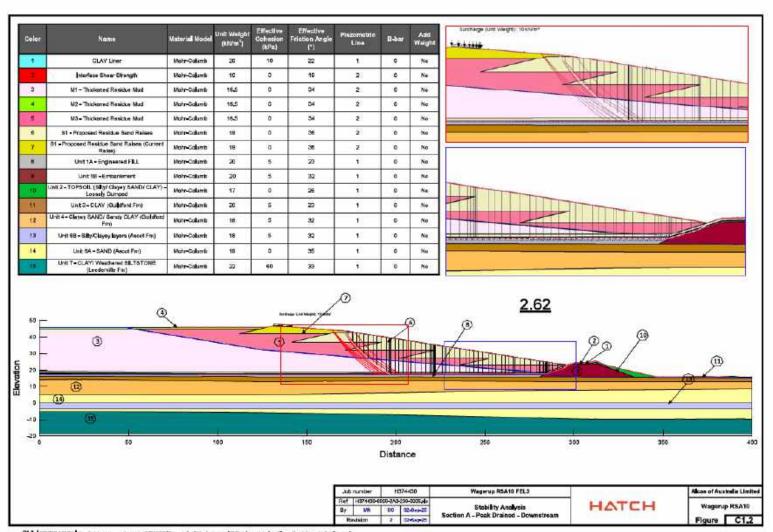


Alcoa of Australia Limited Alcoa Wagerup RSA10 - FEL3 H374430 Engineering Report Geotechnical Engineering Wagerup RSA10 FEL3 - Slope Stability Analysis Report

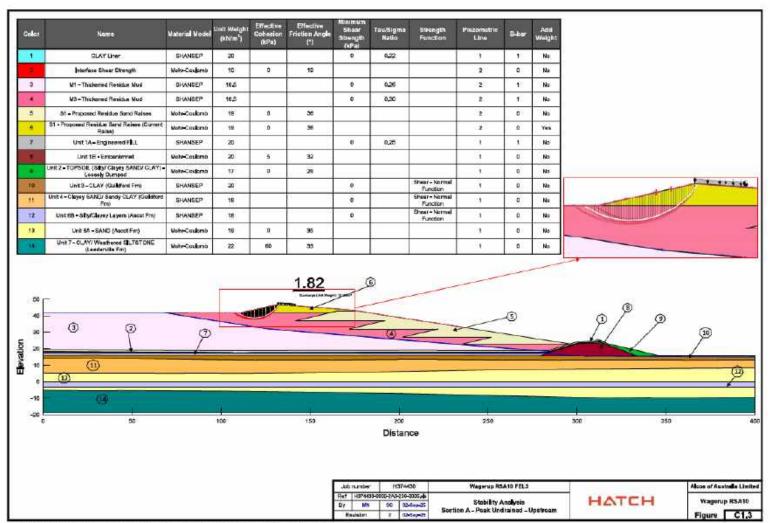
### C.1 Section A - Ultimate Embankment



1.1 I annoted 2 to 19 I impute economican equipment (C+4004II America Acid Concentrative Vocating and Analysis Score Vocating part Analysis Score Vocating and Analysis Score

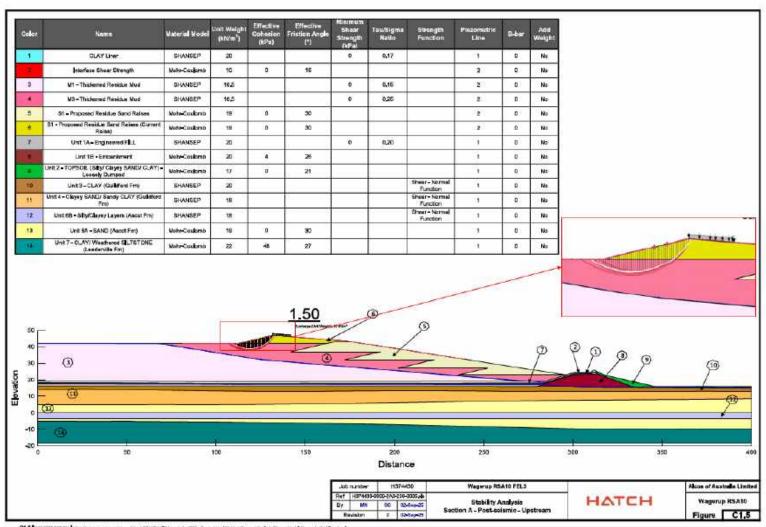


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eker	Name	Wateral Wodel	Linit Weight (kN/m <sup>5</sup> )	Effective Cohesion (kPa)	⊟le≕ive Friction Angle (*)	Minimum Shaar Strength (kPal	Tou/Sigma Ratio	Strongth Function	Piezometrie Line	B-ber	Add Weight		
1	QLAY Uner	SHANGEP	30			0	0.22		(3)	10	No		
2	Interface Shear Strength	Mohr-Caulemb	10	0	10				2	0	No		
9	M1 - Thickened Residue Mod	SHANSEP	16.5			0	0.26		2	100	No		
•	W2 = Thickered Residue Wed	SHANSEP	16,5		0 5	٥	0,26		2	1.	Vas		
5	W5 - Thickened Residue Mud	SHANSEP	16.5			0	0.50		2	47	No		
6	S1 = Proposed Residue Band Raises	Wote-Cookimo	16	.0	36				2	0	No		
ÿ .	81 • Proposed Residue Band Raises (Current Raise)	Wehr-Codemo	19	8	36				2	Ü	Yes		
8	Unit 1A - Engineered FILL	SHANSEP	20			0	0.25			*	No		
	Unit 18 - Embarkment	Voh-Codemb	20		32					0	No		
9	Unit 2 - TOPSOR (Silty/ Clayey SAND/ CLAY) Leasely Dumped	Mohr-Couloma	17	0	26				- 3	0	No		
,	Unit3=CLAY (Guldfuni Fmi	SHANSEP	20			۰		Sheer - Normal Function	-,	0	No		
2	Unit 4 - Clayey SANO/ Sendy CLAY (Culliford	SHANSEP	18		F - 5	0		Sheer - Normal	- 1	0	No		
3	First Unit 68 - Sity/Clayery Layers (Accord Firs)	SHANSEP	18					Function Shear - Normal	13	0	No		
4	Unit SA = SAND (Ascot Firr)	Vohr-Coulomb	10	a	35			Function	10	0	No		
	Unit 7 • CLAY/ Weathered SETSTONE (Leederville Fm)	Mohr-Coulomb	22	60	33					0	No		
eo _	. @		12.1			Ø		>		1	<u>79</u>		
-					- 3	The state of the s					/ B	(2) a	
10	<b>③</b>									Ш		( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )	<u>@</u>
0	. 00												<u></u>
0													ju ju
10	- GB		190		150						7	300 300	) <sup>(1)</sup>
0			100		150		200 Distance	in the same of the	250			399 350	<u></u>
10	- GB		100		150	,tot number	Distanc	50	250 Wagarup R5s	Ajo FELS		399 350 HATCH	Alcos of Australia



C1.5 | 2016/002 200 PM | https://wichestrem.chemosky.com/mash10/44/04/PU/Henrichest/A-Department/M Vooding and Analysis/Department/Henrichest/A-Department/M Vooding and Analysis/Department/Henrichest/A-Department/Henriches

Cellor	Name	Material Model	Light Weight (MN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tou/Sigma Ratio	Strongth Function	Piszomatria Läne	B-ber	Add Weight			
1	QLAY Liner	SHANGEP	30			0	51.0		())	0	No			
2	Interface Shear Strength	Mohr-Caulemb	10	0	16				2	0	No			
9	M1 - Thickeried Residue Mud	SHANSEP	16.5			0	0,15		2	0	No			
4	M2 = Thickened Residue Mud	BHANSEP	16,5			۰	0,16		2	0	No			
*	M3 - Thickened Residue Mod	SHANSEP	16.5			۰	0.25		2	0	No			
6	51 - Proposed Residue Sand Raises	Mote-Coolemb	19	0	30				2	0	No			
y .	81 • Proposed Residue Band Raises (Gurrent Raise)	Mohr-Codomo	19	8	30				2	O.	No			
8	Unit 1A = Engineered FILL	SHANSEP	20			0	0.20		- 1	U	No			
٠.	Unit 18 - Emborisment	Voh-Codemb	30	4	26				-	0	No			
10	Unit 2 - TOPSOL (Silly/ Claye) SAND/ CLAY) Leosely Dumped	Mohr-Coulomb	17	0	21				- 1	0	No			
11	Unit3-CLAY (Gullation) Pmi	SHANSEP	20					Sheer - Normal Function	- 3	0	No			
12	Unit 4 - Clayey SANO/ Sendy CLAY (Guildford Fre)	SHANSEP	18					Shear - Normal Function		0	No			
100)	Unit 68 - Sity/Clayer Layers (Asset Fm)	BHANSEP	18					Shear - Normal Function	181	0	No			
(4	Unit 9A - SAND (Ascut Firr)	Nohr-Cookins	10	0	30			i Piwasan a	- 101	0	No			
18	Unit 7 • CLAY/ Weathered SILTSTONE (Leederville Fm)	Mohr-Coulomb	22	48	27					0	No			
50 40 30	•			9.	Hage Lift Magnit Water		0	<u></u>		1	.71		(10)	<sub>©</sub>
40 30 20	•			9-	Hage Lift Magnic 19 salari		©	(S)		1	.71		<u>→</u>	
40 30 20 10	0			9-	olonga Livit Wagnig Yil saburi		©	3		1	.71		(ii)	9
40 30 20	•			9	daga Lid Majas Washin		©	3		1	.71	000	<b>939</b>	) <sup>®</sup>
40 30 20	0			9.	rhage Lieb Weight Washin		•	<b>3</b>		1	.71	000	9	) <sup>0</sup>

Distance

Wagerup RSA10 FEL3

Stability Analysis Section A - Post-seismic - Downstream Alcon of Australia Limited

Wagerup RSA10 Figure C1,6

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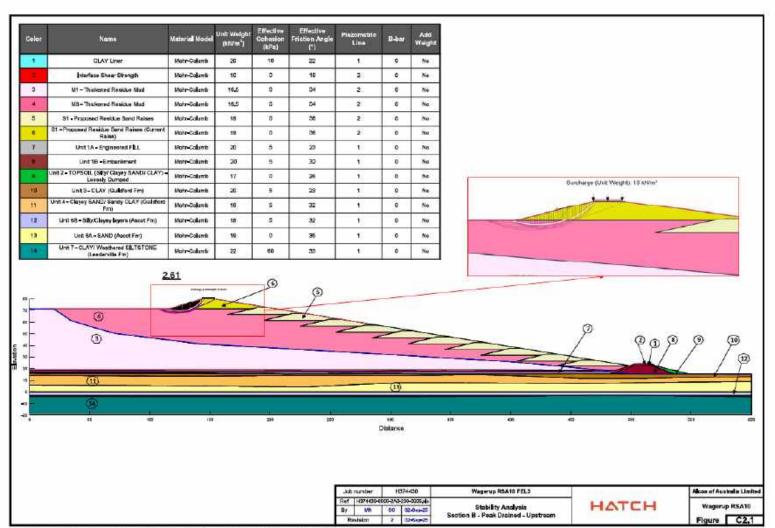
1.6 I anticos 20179 Internacional negoticon historio 4400 Publicano de Concentrativi Vocaling arc Analysis Score Vocaling parts C + Minato Jan



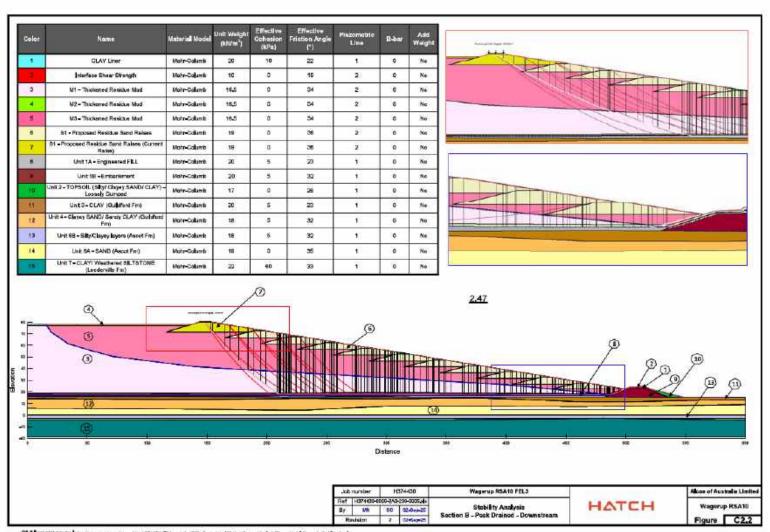


Alcoa of Australia Limited Alcoa Wagerup RSA10 - FEL3 H374430 Engineering Report Geotechnical Engineering Wagerup RSA10 FEL3 - Slope Stability Analysis Report

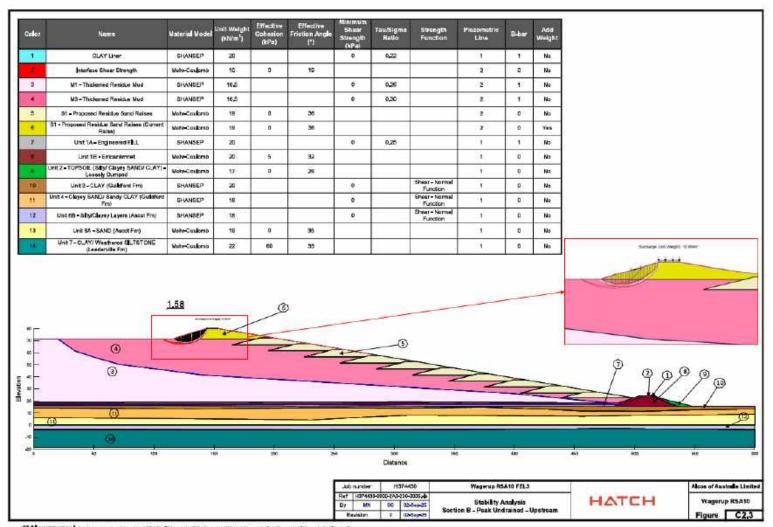
### C.2 Section B - Ultimate Embankment



25.1 | process 2.51 PM | impatricum unanconsucción anticidad Pulsaria de Constituidad Vocality and Andréa Store Vocability parts C - Minato Jan

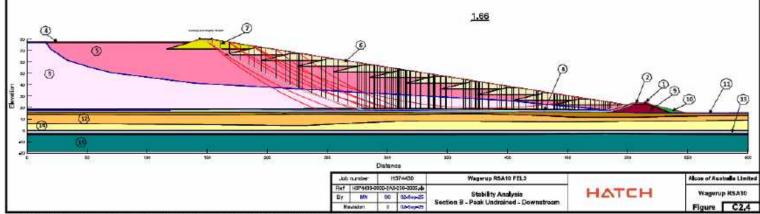


2.2 (2016/02/2017 W | https://www.managestu.com/anas/10/44/20/W/V-horars/Hol/W-Department/W-Vooding and Analysis/Seprit Model/Operato C - Minato Jan

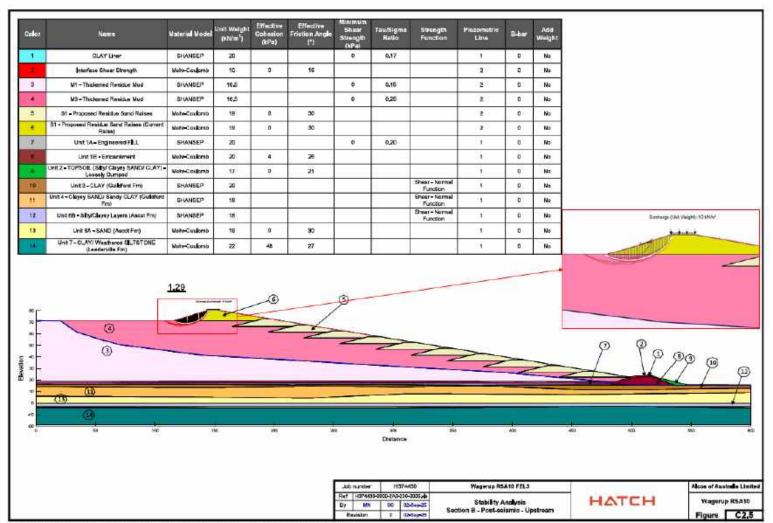


2.2.1 | processor of the | impairment management commission of 4.50 of the minimal to the continue of the cont

Cellor	Name	Material Model	Linit Weight (kN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tou/Sigma Ratio	Strongth Function	Piezometrie Line	B-ber	Add Weight
1	QLAY Liner	SHANGEP	30			0	0,22		())	.10	No:
2	Interface Shear Strength	Mohr-Caulamb	10	0	10				2	0	No
9	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0.26		2	100	No
4	W2 = Thickened Fleeidue Wod	BHANSEP	16,5			0	0,26		2	16	Ves
*	M3=Thickened Residue Mod	SHANSEP	16.5			۰	0.50		2	**	No
6	51 - Proposeci Residue Band Raises	Note-Cookmo	20	.0	37				2	0	No
7	S1 • Proposed Residue Band Raises (Current Raise)	Mehr-Coalomo	20	8	37				2	Ü	Yes
8	Unit 1A = Engineered FBLL	SHANSEP	20			0	0.25		-		No
*	Unit 18 - Embarkennet	Vote-Coulomb	20	- 5	32				- 1	0	Na
10	Unit 2 - TOPSOL (Silly/ Clayer SAND/ CLAY) Leosely Dumped	Mohr-Coulomb	17	0	26					0	No
11	Unit3-CLAY (Gullative) Pmi	SHANSEP	20			۰		Sheer - Normal Function	- 3	0	No
12	Unit 4 - Clayey SANO/ Sendy CLAY (Guildford )	SHANSEP	18			0		Shear - Normal Function	1	0	No
(0)	Unit 68 - Sity/Clayer Layers (Asset Fm)	BHANSEP	18			0		Shear - Normal Function	181	0	No
14	Unit 9A + SAND (Ascot Firr)	Nohr-Coulomb	10	0	35			· EPHOROSIS	10)	0	No
181	Unit 7 • CLAY/ Weathered SILTSTONE (Leederville Fm)	Wehr-Coulomb	22	60	33					0	No



2.4 [arterios 9.00 PM] imperimental continues (V400/MPU) introduced - Occasional M Vocation and Anthropic Color (Anthropic Co



2.5 | process on the | impairment manager (commission of 4.00 of Publishment of Acceptance of Accept

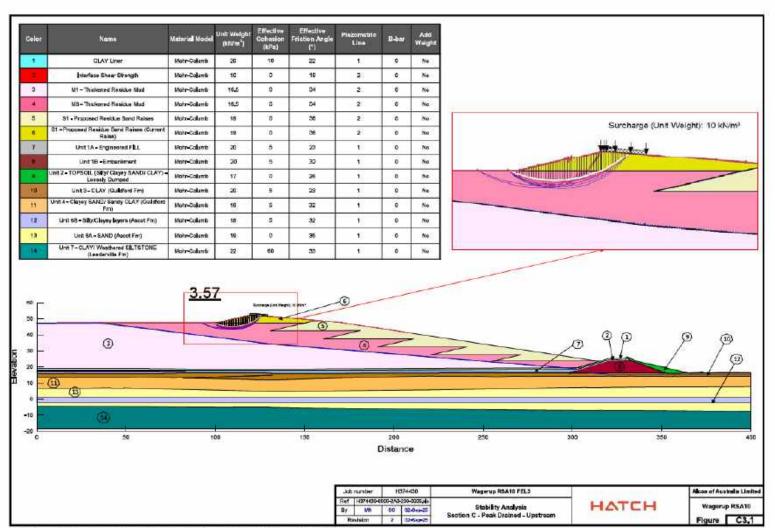
CLAY Liver		Name	Wateral Wodel	Linit Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shaar Strength (kPai	TowSigma Ratio	Strongth Function	Piszometrie Läne	B-bar	Add Weight							
3 M1-Thickenne Residue Mod 3HANSEP 16,5 0 0,16 2 0 No No No Thickenne Residue Mod 3HANSEP 16,5 0 0,0,16 2 0 No No No Thickenne Residue Mod 3HANSEP 16,5 0 0,0,16 2 0 No No No No Handson Mod 3HANSEP 16,5 0 0,0,25 2 0 No No No Handson Mod 3HANSEP 16,5 0 0 0,25 2 0 No No No Handson Mod 3HANSEP 16,5 0 0 0,25 2 0 No No No Handson Mod 3HANSEP 20 0 No No No Handson Mod 3HANSEP 20 0 0 0,20 1 0 No No Handson Mod 3HANSEP 20 0 0 0,20 1 0 No No Handson Mod 3HANSEP 20 0 0 0,20 1 0 No No Handson Mod 3HANSEP 20 0 No No No Handson Mod 3HANSEP 20 No No No No Handson Mod 3HANSEP 20 No	1	QLAY tiner	SHANGEP	50				51/6		0	0	No:							
M2	3	Interface Shear Strength	Mohr-Coulemb	10	0	16				2	0	No							
S	9	M1 - Thickeried Residue Mod	SHANSEP	16.5			0	0.15		2	0	No:							
	4	W2 = Thickened Residue Wod	SHANSEP	16,5			0	0,16		2	0	No							
SI - Proposed Resista Sand Raises (Girrent Mohn-Coldmin)   15   0   30   2   0   No	*	M3 - Thickened Residue Mod	SHANSEP	16.5			0	0.25		2	0	No							
Ration   Work-Cuttern   September   Work-Cuttern   September   Work-Cuttern   W	6		Mote-Coulomb	19	.0	30				2	0	No							
Unit 18 - Emborishment	y .		Mohi-Codomo	19	0	30				2	Ü.	No							
Unit 2 - TOPSOR (SByr Clayer SANDY CLAY)	8	Unit 1A = Engineered FILL	SHANSEP	20			0	0,20		- 1	Ü	No							
Lossely Dunipad Service Colored Service Servic	*	Unit 18 - Embarkment	Vohe-Coulomb	20	4	26					0	No							
Unit 8 - CLAY (Quilifure Fm)	10	Unit 2 - TOPSOIL (Silly/ Obyey SAND/ GLAY) - Leosely Dumped	Mohr-Coulomb	17	0	21				- 1	0	No							
12	th	Unit3-CLAY (Guildfuni Pm)	SHANSEP	50						- 1	0	No							
13 Unit 68 - Stly/Clayer (Juyers (Jusen Fm) BHANSEP 18 Shear- Narmal 1 0 No 14 Unit 64 - SAND (Ascot Fm) Nobe-Coulomb 10 0 30 Init 7 - CLAY/ (Weathwest SILTSTONE (Leeden)Id Fm) Web-Coulomb 22 48 27 1 0 No 1.15	12		SHANSEP	18					Sheer - Normal	.1	0	No							
1	131		SHANSEP	18					Shear - Normal	19	0	No							
(Leedervide Fin) Web-Coulema 22 as 27 1.15	14	Unit SA - SAND (Ascot Fm)	Nohr-Coulomb	10	.0	30				- 101	0	No							
1.15  1.15	100		Maked automa	20	- 4	27				-	0.	No							
		0.40.00		(1)						1.15									
			transportation of the state of				(B)			1.15			nof	<i>9</i>	0	2	رح	10 Ju	2
		(a)	Transport				©						u f	<u>9</u>	0	2	رو	ii) (ii	2
		(a)	Described				(B)						To facility	<b>9</b>	0	2	2	(a) (a)	2
(14)		114 W	The state of the s				0							<i>9</i>	2	<u>0</u>	9	io (ii	
		114 W	Today pulmed	a vase	jeo	100	.0				100			<i>9</i>	800	<u></u>	9	10 gi	800
234 - 35 - 160 160 260 260 660 460 460 860 360 860 860 860 860 860 860 860 860 860 8		114 W	1100	n vaso	190	180		Distance H3744	800				400	9		2		30 Si	) (1) 800



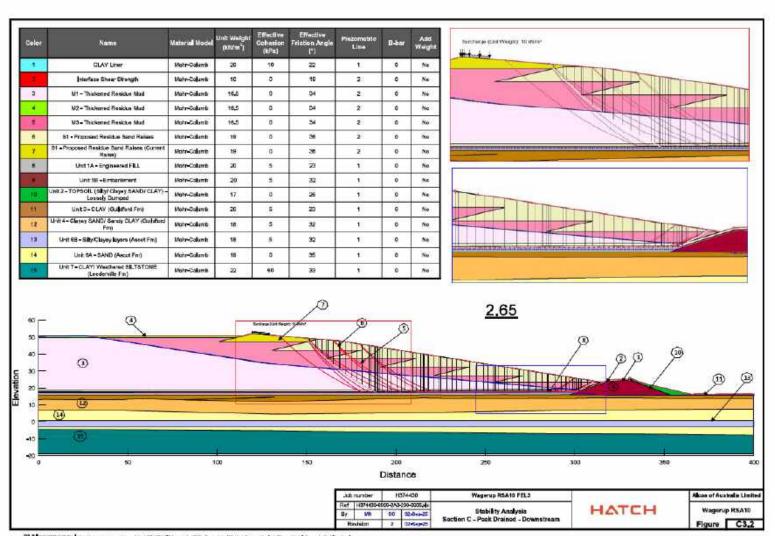


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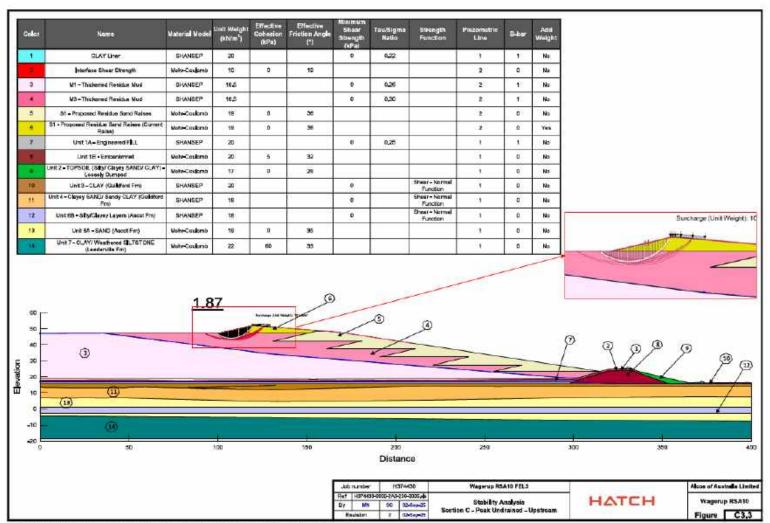
## C.3 Section C - Ultimate Embankment



24.1 | process on the | impairment management commission of 44300 Published According to Available of Association (Association of Association of Association



3.2 I princes one PM | imputerorimane and combinates (44.00 MT) in mission of Concentrative Vocating and Analysis Score Vocating and Analysis



Little County of the County of

lekor	Name	Waterial Wodel	trait Weight (kN/m²)	Effective Cohesion (kPa)	Elfe⇔ive Friction Angle (*)	Minimum Shaar Strength (KPai	Tau/Sigma Ratio	Strongth Function	Piezometrie Line	B-bar	Add Weight			
1	QLAY Uner	SHANGEP	30			0	0.22			10	No			
2.	Interface Shear Strength	Mohr-Caulamb	10	0	10				2	0	No			
9	M1 - Thickened Residue Mod	SHANSEP	16.5			0	0.26		2	12	No			
4	M2 - Thickened Residue Mod	SHANSEP	16,5		C 50	0	0,26		2	1	Vas			
5	M3 - Thickened Residue Mod	SHANSEP	16.5			0	0.50		2	17	No			
6	51 - Proposed Residue Band Ratses	Mote-Cookimb	19	.0	36				2	0	No			
ÿ.	81 • Proposed Realdus Band Raises (Current Raise)	Mohi-Codomb	19	8	36				2	Ü	Yes			
8	Unit 1A - Engineered FILL	SHANSEP	20			0	0.25		1		No			
	Unit 18 - Embankmat	Volte-Coulcrab	20		32					0	No			
0	Unit 2 - TOPSOIL (Silly Claye) SAND/ CLAY; - Leosoly Dumped	Mohr-Coulomb	17	0	26				-	0	No			
15	Unit 3 - CLAY (Guildford Pm)	SHANSEP	20	- 500	( V	۰		Sheer - Normal Function	-	0	No			
12	Unit 4 - Clayey SANO/ Sendy CLAY (Guildford	SHANSEP	18			0		Sheer - Normal	1	0	No			
13	Free Unit 68 - SityClayery Layers (Accest Free)	BHANSEP	18					Function Shear - Normal	13	0	No			
(4	Unit SA - SAND (Ascut For)	Vohe-Cookesis	10	0	35			Function	- 0	0	No			
	Unit 7 • CLAY/ Weathered SILTSTONE	Mohr-Coulomb	22	60	33				-	0	No			
	(Leedervillo Firi)	vers-Couloms												
000 - 000 -	(12)	\$657-08KH3		Secretary of plant when the	s a				1.8					
00 -	(A)		1100		s a		200 Distance	e				300	350	
86 - 160 - 1	(3) (3)							e	1.8			3 scc	350	
30 - 40 - 40 - 40 - 40 - 40 - 40 - 40 -	(3) (3)					.kb n.anbe	Distanc	30	1.8	30			350 TCH	Alcos of Australia

leker	Name	Waterial Wodel	Liait Weight (kN/m²)	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPal	Tou/Sigma Ratio	Strongth Function	Piszometrie Line	B-ber	Add Weight				
1	QLAY Uner	SHANGEP	50			0	51.0			0	No				
3	Interface Chear Strength	Mohr-Coulomb	10	0	16				2	0	No				
9	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0.15		2	0	No				
*	W3-Thickened Residue Mud	BHANSEP	16,5				0,26		2	0	Na				
.5	S1 - Proposed Residue Sand Raises	Note-Coulomb	19	0	30				2	0	No				
6	81 - Proposed Residue Sand Raises (Current, Raises)	Mone-Cookens	19	0	30				2	0	No				
y	Unit 1A - Engineered FILL	SHANSEP	20			0	0,20		- 9	U	Mo				
	Unit 1E • Emperiument	Note-Coulomb	20	4	26				- 1	U	No				
	Unit 2 - TOPSOR (Sity/Chiye) SAND/ GLAY) - Leasely Dumped	Wohr-Coulomb	17	U	21				- 1	0	Na				
19	Unit9-CLAY (Quildford Fm)	SHANSEP	20					Shear - Normal Function		0	No				
11	Unit 4 - Clayey SAND/ Sandy CLAY (Guildrord Fm)	SHANSEP	18					Sheer - Normal Function	- 1	0	No				
12	Unit tiB + Sifty/Clayer Layers (Ascut Fm)	SHANSEP	18		8			Shear - Normal Function	.1	0	No				
13	Unit SA - SAND (Assot Fm)	Mohe-Cautomb	19	.0	30				131	0	No				
16	Unit 7 - CLAY/ Weathered SILTSTONE (Leaderville Fin)	Nohr-Coulomb	22	48	27			<del></del>	10	0	No				
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1.5	-												
50 - 30 - 20 10 0	(B)	1.5	5	Serveys (Into Only)		0	9					9	<b>\</b> 2	) 	9 00
60 50 50 50 50 50 50 50 50 50 50 50 50 50	<b>1 1 1 1 1 1 1 1 1 1</b>		5			0	200 Distance		20			300		300	9 0
30 - 20 - 10 - 10 - 20	① (B) (B)				III TIMOS (C)	(a)	200 Distance	0				300		1 350	

lor	Name	Material Model	Linit Weight (MN/m <sup>1</sup> )	Effective Cohesion (kPa)	Elfedire Friction Angle (*)	Minimum Shear Strength (kPai	Tau/Sigma Ratio	Strongth Function	Piczomatrie Line	B-ber	Add Weight				
	QLAY Uner	SHANGEP	30		*	0	51.0		())	0	No				
	Interface Shear Strength	Wohr-Coulomb	10	0	16				2	0	No				
	M1 - Thickeried Residue Mud	SHANSEP	16.5			0	0,15		2	0	No				
	M2 = Thickened Residue Mod	BHANSEP	16,5			۰	0,15		2	0	No				
- ]	W3 - Thickened Residue Mud	SHANSEP	16.5			•	0.25		2	0	No				
	51 = Proposed Residue Sand Rates	Vote-Codomo	19	.0	30				ž	0	No				
	81 • Proposed Realdus Band Raises (Current Raise)	Wehr-Codemo	19	0	300				2	O.	No				
Į.	Unit 1A = Engineered FILL	SHANSEP	20			0	0,20		- 1	U	No				
	Unit 18 - Embarkment	Vohe-Coulomb	20	a	26					0	No				
	Unit 2 - TOPSOR (Sillyr Clayer SAND/ GLAY) - Leosely Dumped	Mohr-Coulomb	17	0	21				- 1	0	No				
ı	Unit3-CLAY (Guild'uni Fm)	SHANGEP	20					Sheer - Normal Function	- 1	0	No				
	Unit 4 - Clayey SANO/ Sendy CLAY (Guildfund Free)	SHANSEP	18		H S			Sheer - Normal Function	.1	0	No				
	Unit 68 - Sity/Clayey Layors (Asset Frv.)	BHANSEP	18					Shear - Nermal Function	19	0	No				
91	Unit 6A + SAND (Ascot Fm)	Nohr-Codomb	10	.0	90			- IFOVACIA	101	0	No				
	Unit 7 • CLAY/ Weathered SETSTONE (Leederville Fm)	Mohr-Coulomo	22	48	27					0	No				
									4.0	2					
	- @	- Caraci	~			THE PARTY NAMED IN	<b>.</b>	,	<u>1.2</u> .3			6		Ø	
0 0	•		** <u>*</u>	Burday (Let Year			.0   		.s			(8)	9,9	<b>3</b> 100	) <sup>(3)</sup> (
0				Turkings (Led Year	TORE OF THE PROPERTY OF THE PR		.0 		<u>1.2</u>			(D)	32	99	7

Job number H374430
Ref H374433-0000-2A-226-0305/46
By MN SC 03-5+2-25
Revision 2 03-5+3-25

Wagerup RSA10 FEL3

Stability Analysis Section C - Post-seismic - Downstream Alcos of Australia Limited

Wagerup RSA10 Figure C3,6

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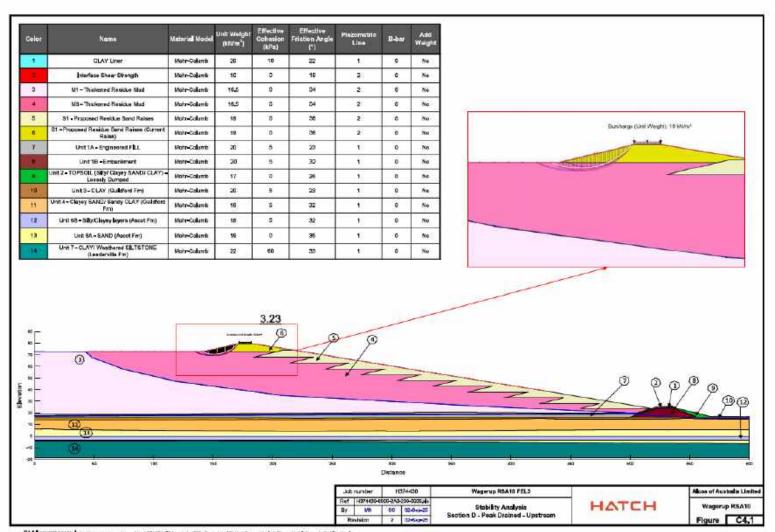
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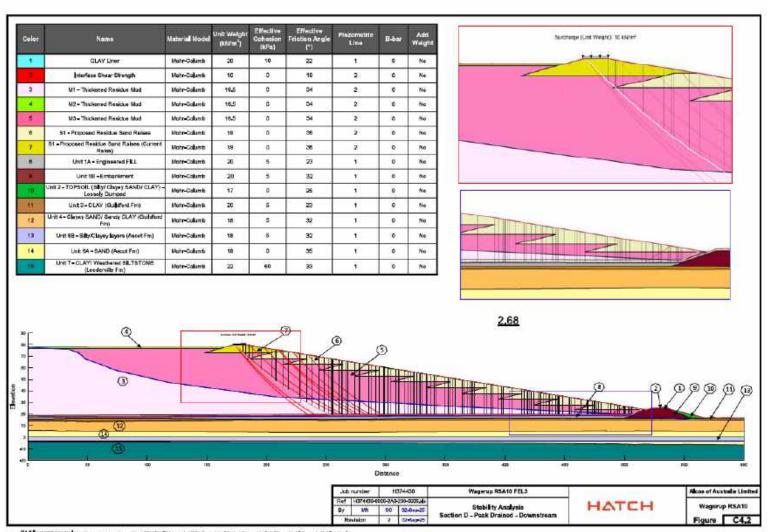


Alcoa of Australia Limited Alcoa Wagerup RSA10 - FEL3 H374430 Engineering Report Geotechnical Engineering Wagerup RSA10 FEL3 - Slope Stability Analysis Report

#### C.4 Section D - Ultimate Embankment



4.1 | anticos con PM | imputerorimane and combinants (4.00 MPuterorished) - Concentrative Vocating and Analysis Score Vocating parts of 4.00 majorates - 4.00 m

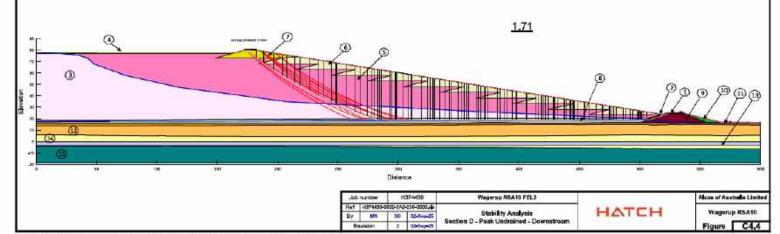


4.2 | anticos con PM | interferormane and combination 4 (Conflict III) in mission of Concentrative Vocating and Analysis Score Vocating parts of 4 (All materials also

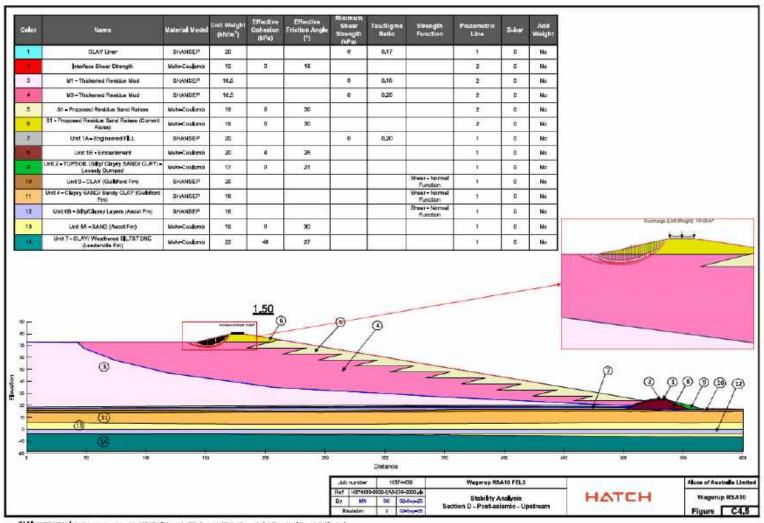
1	Name	Vaterial Wodel	Linit Weight (KNIm <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shaor Strength (kPai	Tau/Sigma Ratio	Strongth Function	Piezometrie Line	9-ber	Add Weight				
	QLAY Uner	SHANGEP	50			0	0.22		()t	. E	No				
	Interface Shear Strength	Wohr-Coulomb	10	0	10				2	0	No				
	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0.26		2	12	No				
	M3+Thickened Residue Ned	BHANSEP	16,5				0,30		2	10	No				
	St - Proposed Residue Sand Raises	Mote-Coulomb	19	0	36				2	0	No				
	81 - Proposed Residue Sand Raises (Current Raise)	Mone-Cookeno	19	0	36				2	0	Yes				
ij	Unt IA-Engineered FILL	SHANSEP	20			0	0,25		- 1	1	No				
ī	Linst 1E • Emperiorvet	Wohr-Coulomb	20	5	32		199		- 1	U	No				
1	Unit 2 - TOPSOR (Sity/Chye) SAND/ GLAY) - Loosely Dumped	Wohr-Coulcmb	17	U	26					0	Na				
Ŋ	Unit3-CLAY (Guildford Fm)	SHANSEP	20					Shear - Normal Function		0	No				
	Unit 4 - Clayay SANE; Sandy CLAY (Guildford Fmi)	SHANSEP	18		(f)	۰		Sheer - Normal Function	-,-	0	No				
	Unit 68 - Silly/Clayery Layers (Ascut Fm)	SHANSEP	18		F	0		Shear - Normal Function	- 1	0	No				
	Unit 6 - SAND with Silly/Clayey layers	Vohe-Coulomb	19	:0	95	555		PURCEOFF	181	0	Na				
	Unit 7 - CLAY/ Weathered SELTSTONE (Leaderville Fm)	Webr-Coulomb	72	80	33			-	10	0	No				
2000	0		_	1.83	9	=	0 1	9					C	) 0	0000
300	(n)	_									$\geq$	2	1		

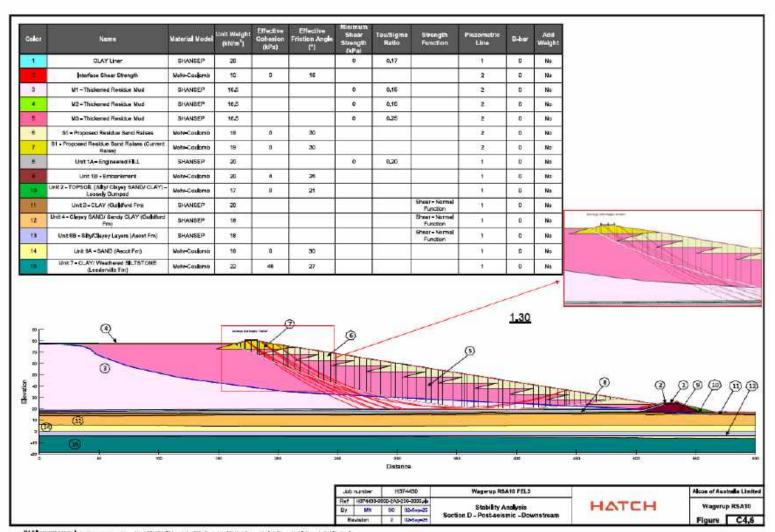
C4.3 [Draz 200 004 PM ] reputition and association 1014 (Swell Character House) - Description Wooding and Analysis Story Wooding product C+ Offices also

Color	Name	Material Model	Linit Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tou/Sigma Ratio	Strongth Function	Piezometrie Line	Bloom	Add Weigh
3	QLAY Uner	SHANGEP	30			0	0.22		(H	10	No
3	Interface Shear Strength	Mohr-Caulemb	10	0	10				2	0	No
9	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0.26		2	100	No
4	W2 = Thickened Residue Med	BHANSEP	16,5				0,26		2	10	Vas
*	W5 - Thickened Residue Mod	SHANSEP	16.5			0	6,50		2	10	No
6	51 - Proposed Residue Band Raises	Vote-Cookmb	19		36				2	0	No
y	81 • Proposed Reaktive Sand Raless (Current Rales)	Mohr-Codemo	19	0	36				2	O.	Yes
8	Unit 1A - Engineered FILL	SHANSEP	20			0	0.25				No
	Unit 18 - Emperiumnet	Vote-Coulomb	20	- 5	32					0	Na
10	Unit 2 - TOPSOL (Silty/ Claye) SANO/ GLAY) Leosely Dumped	Mohr-Coulomb	17	0	28				- 1	0	No
11	Unita-CLAY (Guild'uni Fm)	BHANSEP	20			۰		Sheer - Normal Function	- 1	0	No
12	Unit 4 - Clayey SANO/ Sendy CLAY (Guildford Fm)	SHANSEP	16			0		Shear - Normal Function	.1	0	No
100	Unit 68 - Sity/Clayey Layers (Asset Frn)	BHANSEP	18			0		Shear - Normal Function	19	0	No
3(4)	Unit 6 - SAND with Silly/Clayer layers	Nohr-Codemb	10	0	35			- IFINANCHIII	- 101	0	No
181	Unit 7 • CLAY/ Weathered SILTSTONE (Leederville Fini)	Mohr-Coulomb	22	60	33				- 1	0	No



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Alcoa of Australia Limited Alcoa Wagerup RSA10 - FEL3 H374430 Engineering Report Geotechnical Engineering Wagerup RSA10 FEL3 - Slope Stability Analysis Report

# Appendix D Sensitivity Analysis

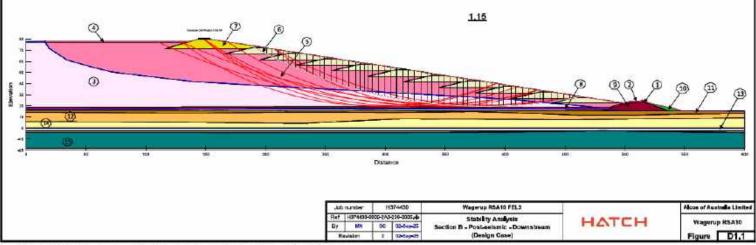


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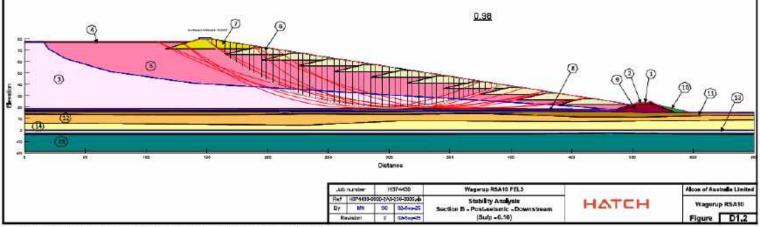
### D.1 Section B Ultimate Embankment - Post-seismic Residue Strength

Cellor	Name	Material Model	Linit Weight (KNIm <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tau/Sigma Ratio	Strongth Function	Piszomotrie Line	Bès	Add Weigh
3	QLAY Uner	SHANGEP	30			0	51/6		(3)	0	No
3	Interface Shear Strength	Mohr-Caulemb	10	0	16				2	0	No
9	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0,15		2	0	No
4	W2 = Thickened Residue Mud	BHANSEP	16,5			۰	0,16		2	0	No
*	M5 - Thickened Residue Mod	SHANSEP	16.5			0	0.25		2	0	No
-6	51 - Proposed Residue Band Raises	Vote-Cookmb	19	.0	30				2	0	No
y	81 • Proposed Reaktive Sand Raless (Current Rales)	Mohr-Codomo	19	0	30				2	O.	No
8	Unit 1A - Engineered FILL	SHANSEP	20			0	0,20			Ü	No
	Unit 18 - Emberkment	Vote-Coulomb	20	4	26					0	No
10	Unit 2 - TOPSOL (Siltyr Clayey SANO/ GLAY) Leosoly Dumped	Mohr-Coulomb	17	0	21				- 1	0	No
11	Unita-CLAY (Guild'uni Fm)	SHANSEP	20					Encer - Normal Function	- 1	0	No
12	Unit 4 - Clayey SANO/ Sendy CLAY (Guildford Fm)	SHANSEP	18					Shear - Normal Function	.1	0	No
(10)	Unit 68 - Sity/Clayey Layers (Asset Frn)	BHANSEP	18					Shear - Normal Function	19	0	No
3(4)	Unit SA + SAND (Ascot Firr)	Nohe-Cookins	10	.0	50			THE STATE OF THE S	- 101	0	No
181	Unit 7 • CLAY/ Weathered SILTSTONE (Leederville Fin)	Mohr-Coulomb	22	48	27				- 1	0	No

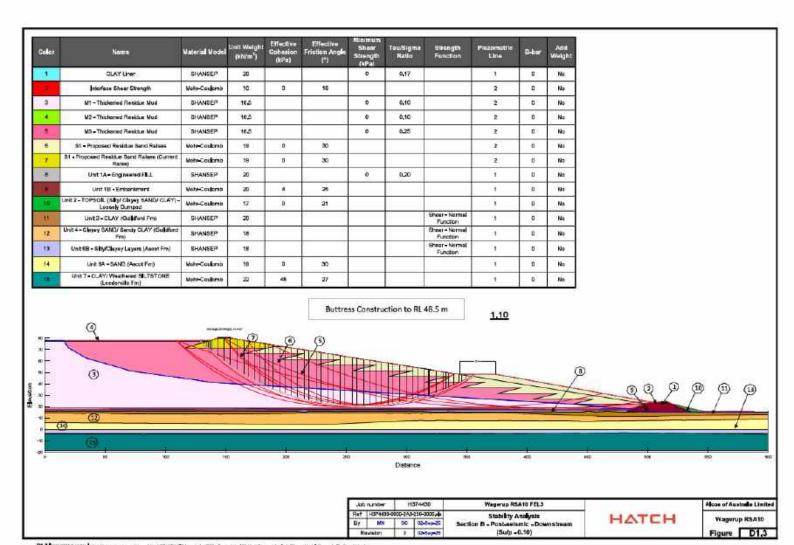


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Cellor	Name	Material Model	Linit Weight (kN/m²)	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tou/Sigma Ratio	Strongth Function	Piszomotrie Line	Bès	Add Weigh
3	QLAY Uner	SHANGEP	30			0	51/6		(3)	0	No
3	Interface Shear Strength	Mohr-Caulemb	10	0	16				2	0	No
9	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0,10		2	0	No
4	W2 = Thickened Residue Mud	BHANSEP	16,5			۰	0,10		2	0	No
*	M5 - Thickened Residue Mod	SHANSEP	16.5			0	6.25		2	0	No
-6	51 - Proposed Residue Band Raises	Vote-Cookmb	16	.0	30				2	0	No
y	81 • Proposed Reaktive Sand Raless (Current Rales)	Mohr-Codomo	19	8	30				2	O.	No
8	Unit 1A - Engineered FILL	SHANSEP	20			0	0,20			Ü	No
	Unit 18 - Emberkment	Vote-Coulomb	20	4	26					0	No
10	Unit 2 - TOPSOL (Siltyr Clayey SANO/ GLAY) Leosoly Dumped	Mohr-Coulomb	17	0	21				- 1	0	No
11	Unita-CLAY (Guild'uni Fm)	SHANSEP	20					Sheer - Normal Function	- 1	0	No
12	Unit 4 - Clayey SANO/ Sendy CLAY (Guildford Fm)	SHANSEP	18					Sheer - Normal Function	.1	0	No
(10)	Unit 68 - Sity/Clayey Layers (Asset Frn)	BHANSEP	18					Shear - Nermal Function	19	0	No
3(4)	Unit SA + SAND (Ascot Firr)	Nohe-Cookins	10	.0	50			. IFOMEOSIO	- 101	0	No
181	Unit 7 • CLAY/ Weathered SILTSTONE (Leederville Fin)	Mohr-Coulomb	22	48	27				- 1	0	No



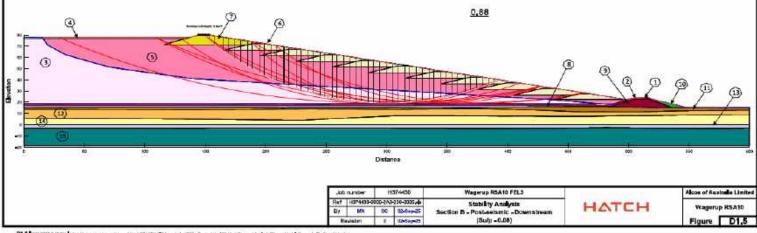
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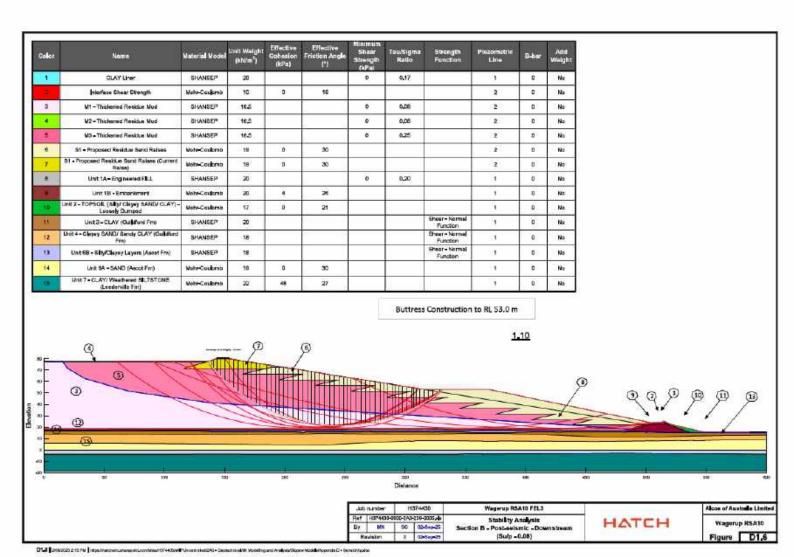
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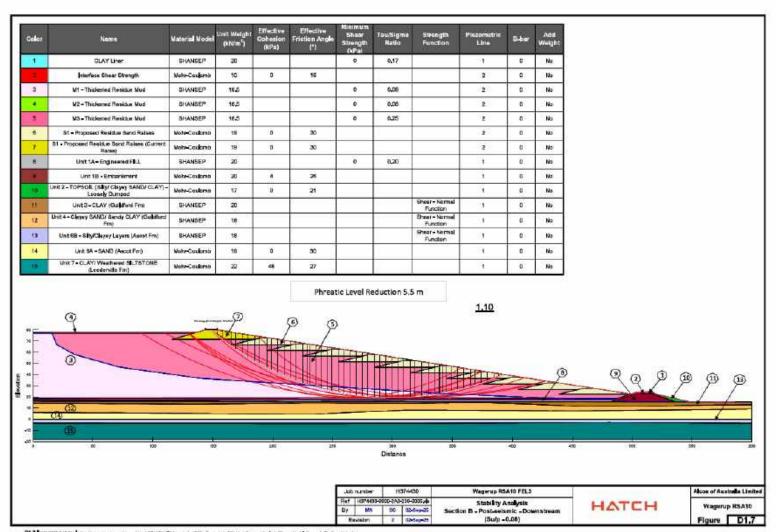
Color	Name	Vateral Vodel	Linit Weight (NNm <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shaar Strength (kPai	Tou/Sigma Ratio	Strongth Function	Piszomatria Line	B-bur	Add Weight		
1	QLAY Liner	SHANGEP	30			0	51/6		(3)	0	No		
3	Interface Shear Strength	Mohr-Coulomb	10	0	16				2	0	No		
3	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0,10		2	0	No		
4	M2 = Thickered Residue Mod	BHANSEP	16,5				0,10		2	0	No		
*	M3 - Thickened Residue Mod	SHANSEP	16.5			0	0.25		2	0	No		
6	51 - Proposed Residue Band Raises	Mote-Cookimb	19	.0	30				2	0	No		
7	81 • Proposed Residue Band Raises (Current Raise)	Mohi-Codomo	te	0	303				2	U	No		
8	Unit 1A = Engineered FILL	SHANSEP	20			0	0,20			U	No		
٠.	Unit 18 - Emborisment	Vote-Coulomb	20	4	26					0	No		
10	Unit 2 - TOPSOIL (Silly Clayer SAND/ CLAY) - Leosely Dumped	Mohr-Coulomb	17	0	21				- 1	0	No		
t)	Unit 3 - GLAY (Guildfund Pm)	SHANSEP	20					Sheer - Normal Function	- 1	0	No		
12	Unit 4 - Clayey SANO/ Sendy CLAY (Guildford Free)	SHANSEP	18		n 8			Shear - Normal Function	.1	0	No		
ta:	Unit 68 - Sity/Clayey Layers (Asset Frn)	SHANSEP	18					Shear - Normal Function	131	0	No		
(4	Unit SA - SAND (Ascut For)	Nohe-Coulomb	10	0	30			Hundton	10	0	No		
18	Unit 7 • CLAY/ Weathered SILTSTONE	Mohr-Coulomb	22	48	27				-	0	No		
	9	*	9	<u>S</u>	)				1.10				
	① (g) (m) (m) (m) (m) (m) (m) (m) (m) (m) (m	3									<b>P</b>	<b>3</b> 92	9 9 6
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Color	Name	Water all Wodel	Linit Weight (KN/m <sup>1</sup> )	Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tou/Sigma Ratio	Strongth Function	Piezometrie Line	B-ber	Add Weight
1	QLAY Liner	SHANGEP	30			0	51.0		- (3	0	No
2	Interface Shear Strength	Wohr-Caulemb	10	0	16				2	0	No
9	M1 - Thickeried Residue Mud	SHANSEP	16.5			0	0,08		2	0	No
4	W2 = Thickened Flesidus Ned	BHANSEP	16,5			0	80,0		2	0	No
*	M3 = Thickened Residue Mod	SHANSEP	16.5			0	6.25		2	0	No
6	51 - Proposed Residue Band Raises	Wote-Cookimb	19	.0	30				2	0	No
y	81 • Proposed Reaklue Sand Ralaes (Current Ralas)	Mohi-Codono	19	8	30				2	Ü	No
8	Unit 1A - Engineered FILL	SHANSEP	20			0	0,20			U	No
*	Unit 18 - Emberkment	Mohi-Coulomb	20	4	26					0	No
10	Link 2 - TOPSOL (Silly/ Obyey SAND/ GLAY) Leosely Dumped	Mohr-Couloma	17	0	21				- 1	0	No
11	Unit3=GLAY (Guildfund Fm)	SHANSEP	20					Sheer - Normal Function	- 1	0	No
12	Unit 4 - Clayey SAND/ Sendy CLAY (Guildfund Fm)	SHANSEP	18					Sheer - Normal Function	.1	0	No
(13)	Unit 68 - Sity/Clayey Layers (Asset Fm)	BHANSEP	18					Shear - Normal Function	19	0	No
34	Unit SA + SAND (Ascot Firr)	Nohr-Coulomb	10	.0	30			193000000	101	0	No
181	Unit 7 • CLAY/ Weathered SILTSTONE (Leederville Firi)	Mohr-Coulomo	22	48	27				- 1	0	No



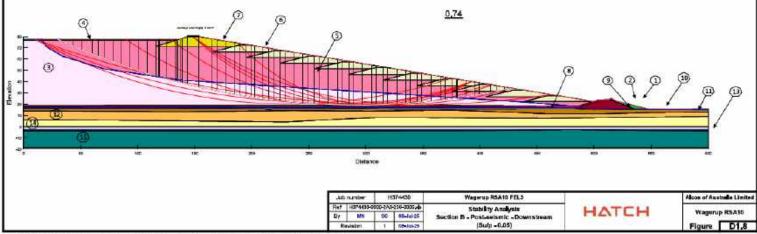
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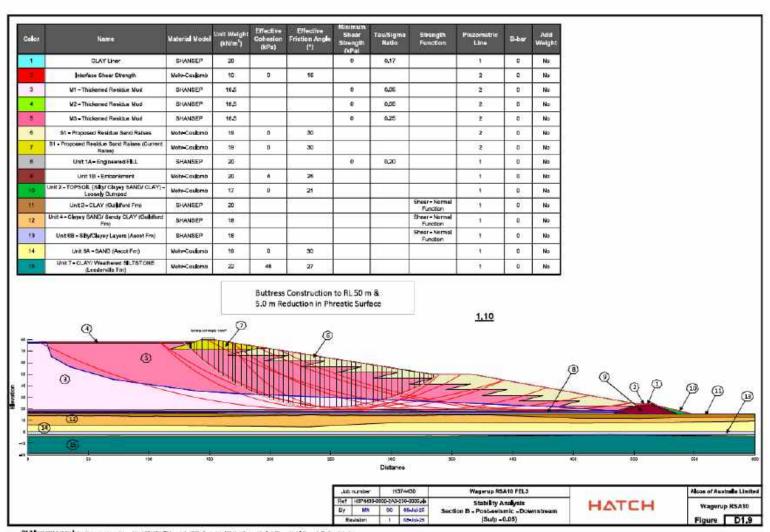


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Color	Name	Vaterial Vodel	Linit Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tau/Sigma Ratio	Strongth Function	Piszomutrie Line	8-ber	Add Weigh
1	QLAY Uner	SHANGEP	30			0	9,17		- (3)	0	No:
2	Interface Shear Strength	Wohr-Coulomb	10	0	16				2	0	No
9	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0,06		2	0	No
4	W2 = Thickened Floridus Nud	BHANSEP	16,5				0,06		2	0	No
*	M5 = Thickened Residue Mod	SHANSEP	16.5			0	6.25		2	0	No
6	51 - Proposed Residue Band Raises	Vote-Cookmb	19	.0	30				2	0	No
y .	81 • Proposed Resklue Sand Raises (Current Raise)	Mohr-Codomo	19	0	30				2	Ü	No
8	Unit 1A - Engineered FILL	SHANSEP	20			0	0,20			U	No
*	Unit 18 - Emberkment	Vote-Coulomb	20	4	26					0	No
10	Unit 2 - TOPSOL (Silty/ Clayey SANO/ GLAY) Leosoly Dumped	Mohr-Coulomb	17	0	21					0	No
11	Unit3-CLAY (Guildfund Pm)	SHANSEP	20					Sheer - Normal Function	- 3	0	No
12	Unit 4 - Clayey SANO/ Sendy CLAY (Guildford Fee)	SHANSEP	18					Shear - Normal Function	.1	0	No
(0)	Unit 68 - Sity/Clayey Layers (Asset Fm)	BHANSEP	18					Shear - Nermal Function	19	0	No
34	Unit SA + SAND (Ascot Firr)	Nohr-Codemb	10	0	30			LYDOROSIN .	- 101	0	No
181	Unit 7 • CLAY/ Weathered SILTSTONE (Leederville Fin)	Mohr-Coulomb	22	48	27				- 1	0	No



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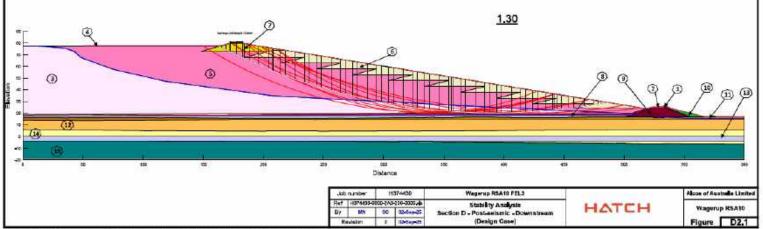


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### D.2 Section D Ultimate Embankment - Post-seismic Residue Strength

ekor	Name	Waterial Wodel	Linit Weight (MN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shaar Strength (kPai	Tau/Sigma Ratio	Strongth Function	Piezometrie Line	B-ber	Add Weight
1	QLAY Uner	SHANGEP	30			0	51.0			0	No
3	Interface Shear Strength	Wohr-Coulomb	10	0	16				2	0	No
9	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0,15		2	0	No
4	W2 = Thickened Residue Ned	BHANSEP	16,5				0,16		2	0	No
*	W5 - Thickened Residue Mod	SHANSEP	16.5			0	0.25		2	0	No
6	51 - Proposed Residue Band Raises	Note-Cookeno	19	.0	30				2	0	No
ž	81 • Proposed Residue Band Raises (Current Raise)	Mohi-Codomb	19	0	30				2	Ü	No
8	Unit 1A - Engineered FILL	SHANSEP	20			0	0,20		- 1	U	No
*	Unit 18 - Embarkment	Voh-Codomb	20	4	26					0	No
10	Unit 2 - TOPSOIL (Silly Obyey SAND/ CLAY) Leosely Dumped	Mohr-Coulomb	17	0	21				- 1	0	No
##	Unit3=CLAY (Guildfund Pm)	SHANSEP	20					Sheer - Normal Function	- 3	0	No
12	Unit 4 - Clayery SANO/ Sendy CLAY (Guildford Free)	SHANSEP	18					Shear - Normal Function	.1	0	No
13()	Unit 68 - Sity/Clayey Layers (Ascot Fra)	BHANSEP	18					Shear - Nermal Function	19	0	No
14	Unit 9A - SAND (Ascut Firr)	Nohr-Cookins	10	.0	30			. IPOVALANIA	101	0	No
181	Unit 7 • CLAY/ Weathered SILTSTONE (Leederville Fin)	Mohr-Coulomb	22	48	27					0	No



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Distriction	<b>k</b> or	Name	Vateral Vodel	Linit Weight (KNIm <sup>1</sup> )	Effective Cohesion (kPa)	Elfective Friction Angle (*)	Minimum Shear Strength (KPal	Tou/Sigma Ratio	Strongth Function	Piszometrie Läne	B-ber	Add Weight	
M1—Thickerned Residue Mud  M2—Thickerned Residue Mud  BHANBEP  16.5  0 6,10  2 0 No  M2  M3—Thickerned Residue Mud  BHANBEP  16.5  0 6,10  2 0 No  M3  M3—Thickerned Residue Mud  BHANBEP  16.5  0 6,10  2 0 No  M3  S1—Proposed Residue Mud  BHANBEP  16.5  0 0,255  2 0 No  S1—Proposed Residue Mud  BHANBEP  18 0 30  2 0 No  Unit A—Engranised BLL  BHANBEP  20 0 0,20  1 0 No  Unit A—Engranised BLL  BHANBEP  Unit 2—TOPSOLI (Right Clashy GAMFAC (LATY)  Unit 2—Clay (GaMfand Prin)  BHANBEP  18 BHANBEP  18 BHANBEP  19 Unit 3—Clay (GaMfand Prin)  Unit 3—Clay (GaMfand Prin)  Unit 3—SAND (Accord Prin)  No  BHANBEP  18 BHANBEP  18 BHANBEP  18 BHANBEP  19 BHANBEP  19 BHANBEP  10 D No  BHANBEP  18 BHANBEP  19 BHANBEP  10 D No  BHANBEP  18 BHANBEP  19 BHANBEP  10 D No  BHANBEP	1	QLAY Liner	SHANGEP	30			0	51.0		())	0	No	
M2-Titicherned Residue Mud   SHANSEP   16,5   0 0,10   2 0 No		Interface Shear Strength	Wohr-Coulomb	10	D	16				2	0	No	
M3 - Thickened Residue Murid Ratises   Mohe-Coultrino   18		M1 - Thickeried Residue Mud	SHANSEP	16.5			0	0,10		2	0	No	
S1 - Proposed Residue Sand Ralase   Woh-Couldmo   18   0   30   2   0   No		M2 - Thickened Residue Mod	BHANSEP	16,5		C 50		0,10		2	0	No	
S1 - Proposed Resikue Bard Releas Gurrent   Motes-Coulomb   18   0   30   2   0   No	J	M3=Thickened Residue Mod	SHANSEP	16.5				0.25		2	0	No	
Unit 14 - Enginated PLL  SHANSEP  20 0 0 0.20 1 0 No		51 - Proposed Residue Band Raises	Mote-Cookmo	19	.0	30				2	0	No	
Unit 18 - Emocrétament   Notw-Costemb   20   4   26   1   0   No			Mohi-Codomo	19	8	300				2	Ü	No	
Unit 2 - TOPSOR (Silly Clayer SAME) CLAY    Meth-Coalems   17   0   21		Unit 1A - Engineered FILL	SHANSEP	20			0	0,20			U	No	
Leosety   Outpied   Methods   Meth		Unit 18 - Embankment	Mohe-Coulomb	20	a	26					0	No	
Unit 4 - Clarger SAND/ Bendy CLAY (Guildford SHANSEP 16 ShanSEP 16 ShanSEP 16 ShanSEP 16 ShanSEP 18 ShanSEP 19	1	Link 2 - TOPSOL (Sillyr Clayer SAND/ CLAY) Leosely Dumond	Mohr-Coulomb	17	0	21					0	No	
Unit 4 - Clarge SAND Bendy CLAY (Guildined SHANSEP 16   Shear - Normal 1 0 No Function 1 0 N	ı	AND A CONTROL OF THE	SHANSEP	20						- 3	0	No	
Unit 68 - Sity/Clayer (Asset Pm)	8		SHANSEP	18		H - 12			Sheer - Normal	.1	0	No	
1/htt7+CLAY; Weathered SE.TSTOME   Mobile Coulimb   22   48   27   1   0   No			BHANSEP	18					Shear - Normal	19	0	No	
(Leederville Firs)		Unit 9A = SAND (Ascot Firr)	Nohe-Cookenb	10	0	30			· PENNSONEN	101	0	No	
		Unit 7 • CLAY/ Weathered SILTSTONE (Leederville Fin)	Mohr-Coulomb	22	48	27		e 8		- 1	0	No	
	73				9		#II.7#	9		£.			A (0)
	Œ	(12)											

Wagerup RSA10 FEL3

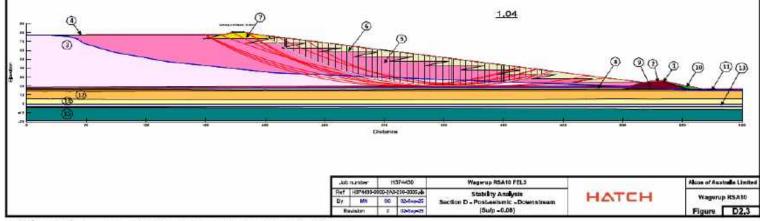
Stability Analysis Section D - Post-seismic - Downstream (Sufp - 0.10) Alcos of Australia Limited

Wagerup RSA10 Figure D2.2

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\$2.2 Intention 2 to PM International name of Commission (V4.50 MP) have been been suited to Commission Vendors and Analysis (Commission Vendors) part of the Commission Commission (Value of Commission Commissio

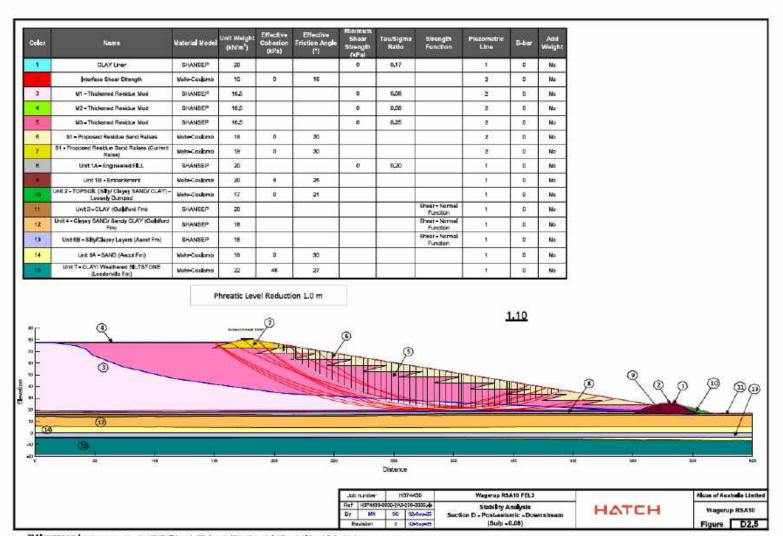
Color	Name	Vaterial Wodel	trait Weight (kN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tau/Sigma Ratio	Strongth Function	Piszomotrie Line	8-ber	Add Weigh
1	QLAY Uner	SHANGEP	30			0	51/6		())	0	No
3	Interface Shear Strength	Mohr-Caulamb	10	0	16				2	0	No
9	M1 - Thickened Residue Musi	SHANSEP	16.5			0	6,08		2	0	No
4	W2 = Thickered Residue Wod	BHANSEP	16,5			0	80,0		2	0	No
*	M5 - Thickened Residue Mud	SHANSEP	10.5			0	6.25		2	0	No
16	51 - Proposed Residue Band Raises	Vote-Cookmb	19	.0	30				2	0	No
7	81 • Proposed Reaktive Sand Raless (Current Rales)	Mohr-Codomo	19	0	30				2	U	No
8	Unit 1A - Engineered FILL	SHANSEP	20			0	0,20		- 1	U	No
*	Unit 18 - Emberkment	Vote-Coulomb	20	4	26					0	No
10	Unit 2 - TOPSOL (Silty/ Clayer SAND/ GLAY) Leosely Dumped	Mohr-Coulomb	17	0	21					0	No
th	Unita-CLAY (Guild'uni Fm)	SHANSEP	20					Sheer - Normal Function	- 1	0	No
12	Unit 4 - Clayey SANO/ Sendy CLAY (Guildford Fm)	SHANSEP	18					Shear - Normal Function	.1	0	No
(10)	Unit 68 - Sity/Clayey Layers (Asset Frn)	BHANSEP	18					Shear - Normal Function	181	0	No
34	Unit SA + SAND (Ascot Firr)	Nohe-Cookins	10	0	50			LYDOROSIN .	101	0	No
181	Unit 7 • CLAY/ Weathered SILTSTONE (Leederville Fin)	Mohr-Coulomb	22	48	27				-	0	No



D&J | 2016/00/2012 15 PM | https://netrommunescolet.com/mea/10/14/20/48Pulnomrated290 - Conscribed99 Vooding and Antiquis/Signer Model/Openda D - Fersis/Appel

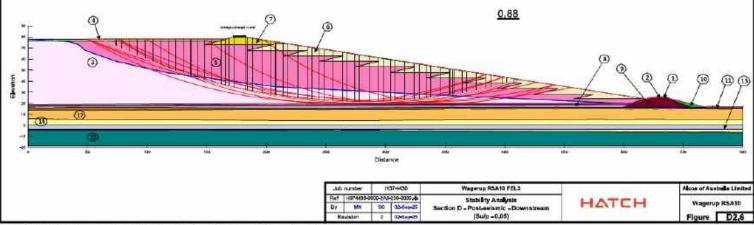
OLAY Liner         SHANGEP         20         0         0.17         1         0         No           Interface Shear Strength         Mohr-Coulemb         10         0         16         2         0         No	kor	Name	Material Model	Linit Weight (kN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tou/Sigma Ratio	Strongth Function	Piszometrie Line	Bloor	Add Weight				
M1—Thickenned Residue Mod  M2—Thickenned Residue Mod  M3—Thickenned Residue Mod  Mod  M3—Thickenned Residue Mod  Mod  Mod  Mod  Mod  Mod  Mod  Mod		QLAY Uner	SHANGEP	20				51/6		0	0	No				
M2-Titiclerred Residue Nucl		Interface Shear Strength	Wohr-Caulemb	10	0	16				2	0	No				
Machine   Machine   Martin   Mathematical   Machine   Machine		M1 - Thickened Residue Mud	SHANSEP	16.5			0	6,08		2	0	No				
S1 - Proposed Residue Sand Rations   Mote-Coulemb   19   0   30   2   0   No		W2 = Thickened Residue Wod	BHANSEP	16,5				80,0		2	0	Na				
St. Proposed Residue Sand Raises (Gurrent Raise)	- 1	W3 - Thickened Residue Mod	SHANSEP	16.5				0.25		2	0	No				
Unit 14 - Enginement   SHANSEP   20   0   0,20   1   0   No		\$1 = Proposed Residue Band Raises	Wote-Cookimb	19	.0	30					0	No				
Unit 18 - Empirishment Note-Costemb 20 a 26 1 0 No No Note-Costemb 20 a 26 1 0 No No Note-Costemb 20 a 26 1 0 No No No Note-Costemb 20 a 26 1 0 No		81 • Proposed Residue Band Raises (Current Raises)	Mohi-Codomb	19	0	30				2	U	Mo				
Unit 2 - TOPSOR, (Sibyr SAND) CLAY!	ļ	CHANGE BUILDING STORY OF THE STORY OF	SHANSEP	20			0	0,20		-	U	No				
Unit 2 - CLAY (Guildren Fm)		Unit 18 - Embankment	Volte-Coulcrab	20	a	26					0	No				
Unit 3 - CLAY (Guillatural Print)   SHANSEP   20   Shear - Normal   1 0 No		Unit 2 - TOPSOR (Silly/ Clayer SAND/ CLAY)	Mohr-Coulomb	17	0	21					0	No				
Unit 68 - SibyClayey Layers (Aeast Fin)		AN AND PROPERTY OF THE PROPERT	SHANSEP	20						- 1	0	No				
Unit 68 - ShyClayer (Asset Fin)	0.1		SHANSEP	18					Sheer - Normal	.1	0	No				
Unit 24 - SAND (Ascot Fire)	de T		BHANSEP	18					Shear - Normal	19	0	No				
Buttress Construction to RL 45 m  1.10	91	Unit SA +SAND (Ascot Firr)	Nate-Codemb	10	0	30			FIRTUELY	- 10	0	No				
Buttress Construction to RL 45 m  1.10			Mohe-Coulomb	20		27				-	0	No				
					Buttress	Construction	to RL 45 n	n			1 10					
	(ÎA	(i)			Buttress	Construction	to RL 45 n	)3) 			1.10		~	90	0	(a)
as nos no six on so six on so	(Fe	<b>3</b>	11		7		©	3	300				43	9 0	- D	9
8 10 16 216 25 25 20 310 44 41 50 50 50	(14	<b>3</b>			7		Q .	no Distance	30	Wagerup RS	B and a second				9200	Ecoe of Austra

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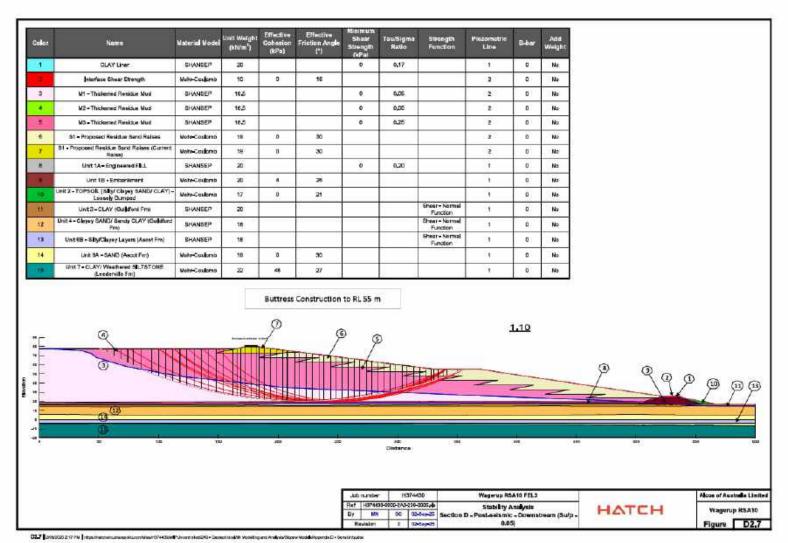


32.5 | 2016/0023 2:15 PM | https://ecommunications/notices/10/44/2016/Pub.microlecci2/0 - Department/10 Vocating and Analysis/Separa Model/Operato D - Department of Communication (Communication Communication Comm

Color	Name	Material Model	Linit Weight (KNIm <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tou/Sigma Ratio	Strongth Function	Pigzometrie Line	Bloom	Add Weigh
3	QLAY Uner	SHANGEP	30			0	51.0		(3)	0	No
3	Interface Shear Strength	Mohr-Caulemb	10	0	16				2	0	No
9	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0.06		2	0	No
4	M2 = Thickened Residue Nud	BHANSEP	16,5				90,05		2	0	No
18	W3 - Thickened Residue Mod	SHANSEP	16.5			٥	0.25		2	0	No
-6	51 - Proposeci Residue Band Raises	Wote-Cookimo	19	.0	30				2	0	No
7	81 • Proposed Residue Band Raises (Current Raise)	Mohr-Codemo	19	0	30				2	U	Ma
8	Unit 1A = Engineered FILL	SHANSEP	20			0	0,20		- 1	Ü	No
*	Unit 18 - Embarkment	Vote-Coulomb	20	4	26					0	No
10	Unit 2 - TOPSOIL (Silly) Clayey SANO/ CLAY) Leosely Dumped	Mohr-Coulomb	17	0	21				-	0	No
111	Unit3-CLAY (Guildfuni Pm)	SHANSEP	20					Sheer - Normal Function	- 1	0	No
12	Unit 4 - Clayey SANO/ Sendy CLAY (Guildford Free)	SHANSEP	18					Sheer - Normal Function	1	0	No
(13)	Unit 6B - Sity/Clayer Layers (Ascot Fm)	BHANSEP	18					Shear - Nermal Function	181	0	No
34	Unit 9A - SAND (Ascot Firr)	Nohr-Codomb	10	.0	30			1 PENNANTE A	- 01	۵	No
18	Unit 7 • CLAY/ Weathered SELTSTONE (Leederville Fm)	Mohr-Coulomb	22	48	27				===	0	No



CLE | Interior 2 to PM | impulsion management continues to 44 to 48 University Continues to 45 Univers



Color	Name	Vaterial Vodel	Linit Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	Elfe⇔ive Friction Angle (*)	Minimum Shear Strength (kPal	TowSigma Ratio	Strongth Function	Piczomatrie Line	9-ber	Add Weight					
1	QLAY Liner	SHANGEP	30			0	51.0		())	0	No	-				
2	Interface Shear Strength	Nohe-Caulemb	10	0	16				2	0	No					
9	M1 - Thickeried Residue Mud	SHANSEP	16.5			0	0,06		2	0	No	Ė				
4	M2 = Thickened Fleeidus Med	BHANSEP	16,5		6 5	0	0,0E		2	0	No					
*	W3 - Thickened Residue Worl	SHANSEP	16.5			۰	0.25		2	0	No					
-6	S1 = Proposed Residue Band Raises	Mote-Coolomb	19	.0	30				2	0	No					
7	81 • Proposed Residue Band Raises (Current Raise)	Mohi-Codomo	19	0	30				2	Ü	No					
8	Unit 1A - Engineered FILL	SHANSEP	20			0	0,20			U	No					
*	Unit 18 - Emparkment	Vote-Coulomb	20	a	26					0	No					
10	Unit 2 - TOPSOL (Silly/ Claye) SAND/ CLAY) - Leosely Dumped	Mohr-Coulomb	17	.0	21					0	No					
.11	Unit3=CLAY (Guildfuni Pm)	SHANSEP	20	- 122				Sheer - Normal Function	- 1	0	No					
12	Unit 4 - Clayey SANO/ Bendy CLAY (Culliford Free)	SHANSEP	18		F			Shear - Normal Function	1	0	No	į.				
13	Unit 68 - Sity/Clayery Layers (Asset Frn)	BHANSEP	18					Shear - Normal	131	0	No					
34	Unit 9A = SAND (Ascut Firr)	Nohe-Coulomb	10	0	30			Function	10	0	No	ŧ.				
18	Unit 7 • CLAY/ Weathered SILTSTONE	Wohr-Coulomo	22	48	27				-	0	No	Ť				
# _ H	9			Ø	evel Reductio	an 3.5 m			á	1.10						
# - # -	0	44										9	0	9/	3 9	99
# - # - # - # - # - # - # - # - # - # -	(0)	10		7.00	300		NE Distance	M		42)		9	(9) 100)	9/	3 0	(i) (i
	(i) (ii)	100		and the same of th	200		Distance					100	1 001	9/		
	(i) (ii)	100		1 200	210	Job numbe	Distance	10	Wagerup Rö. Stability A	A10 FEL3			(9) (0)	9.5	Alicos of A	600 points Lind

28.6 | 2016/2023 2-17 PM | https://www.munescolor.com/marks/44.00/00/Universities290 - Description/94 Vending and Analysis/Separy Model/Operator D - Descriptions

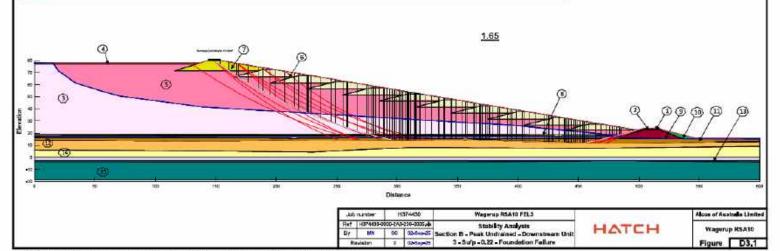




Alcoa of Australia Limited Alcoa Wagerup RSA10 - FEL3 H374430 Engineering Report Geotechnical Engineering Wagerup RSA10 FEL3 - Slope Stability Analysis Report

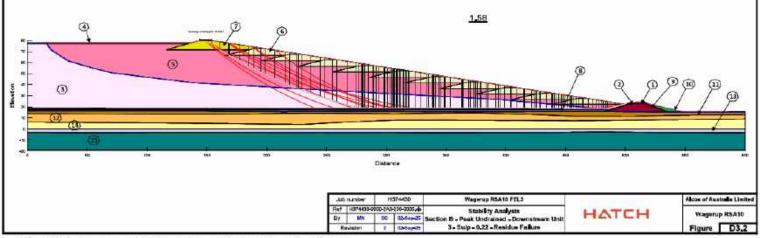
## D.3 Section B Ultimate Embankment - Foundation Clay Undrained Strength

Color	Name	Waterial Wodel	Linit Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tau/Sigma Ratio	Strongth Function	Piszometrie Line	Behar	Add Weigh
1	QLAY Uner	SHANGEP	30			0	0.22		- (3)	10	No:
2	Interface Shear Strength	Mohr-Caulemb	10	0	10				2	0	No
9	M1 - Thickened Residue Musi	SHANSEP	16.5			0	0.26		2	100	No
4	W2 = Thickened Residue Mud	BHANSEP	16,5				0,26		2	10	Yes
*	W5 - Thickened Residue Mod	SHANSEP	16.5			•	6,50		2	10	No
6	51 - Proposed Residue Band Raises	Note-Cookeno	19	.0	36				2	0	No
7	81 • Proposed Residue Sand Raises (Current Raise)	Mohi-Codomb	19	0	36				2	Ü	Yes
	Unt 1A - Engineered FILL	SHANSEP	20			0	0.25		- 9		No
	Unit 18 - Embarkmost	Voh-Coulomb	20	- 5	32					0	Na
10	Unit 2 - TOPSOIL (Silly/ Obyey SAND/ GLAY) Leosely Dumped	Mohr-Coulomb	17	0	28				- 1	0	No
.11	Unit3-CLAY (Guildfund Fm)	SHANSEP	20			۰		Sheer - Normal Function	- 3	0	No
12	Unit 4 - Clayery SANO/ Sendy CLAY (Guildford Fee)	SHANSEP	18			0		Sheer - Normal Function	.1	0	No
(10)	Unit 68 - Sity/Clayer Layers (Asset Fra)	BHANSEP	18			0		Shear - Normal Function	19	0	No
34	Unit SA +SAND (Ascot Firr)	Nohr-Codomb	10	.0	35			I FINANCES	101	0	No
181	Unit 7 • CLAY/ Weathered SETSTONE (Leederville Fm)	Mohr-Coulomo	22	60	33				- 1	0	No



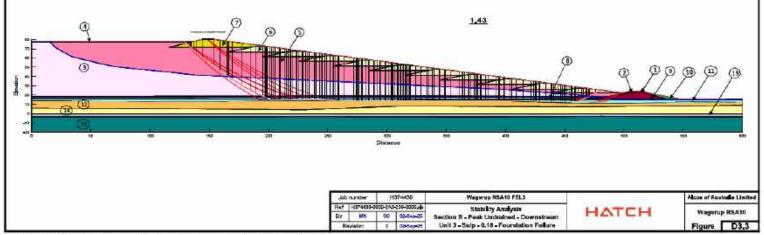
DAS | 2016/00/2017 PM | https://www.manangoistuccom/mach19/44/20/4PU/somrated290 - Consummel/M Visioning and Analysis/Signer Model/Reports D - Fernitripped

Color	Name	Material Model	Linit Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tou/Sigma Ratio	Strongth Function	Piezometrie Line	B-ber	Add Weigh
1	QLAY Uner	SHANGEP	50			0	0.22		(3)	10	No
2	Interface Shear Strength	Wohr-Caulemb	10	0	10				2	0	No
9	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0.26		2	12	No
4	W2 = Thickened Residue Ned	BHANSEP	16,5				0,26		2	10	Ves
*	W3 - Thickened Residue Mud	SHANSEP	16.5			٥	0.50		2	10	No
16	51 - Proposeci Residue Band Raises	Wote-Cookimb	18	.0	36				2	0	No
y	81 • Proposed Residue Band Raises (Current Raise)	Wehr-Coulomb	19	0	36				2	Ü	Yes
8	Unt 1A - Engineered FILL	SHANSEP	20			0	0.25		- 9		No
*	Unit 18 - Embarkennet	Mohr-Coulomb	20	- 5	32					0	No
10	Unit 2 - TOPSOIL (Silly) Clayey SAND/ GLAY) Leosely Dumped	Mohr-Couloma	17	0	26					0	No
10	Unit3-CLAY (Guildfund Pm)	SHANSEP	20			۰		Sheer - Normal Function	- 3	0	No
12	Unit 4 - Clayey SANO/ Sendy CLAY (Guildford Free)	SHANSEP	18			0		Shear - Normal Function	.1	0	No
(13)	Unit 6B - Sity/Clayer Layers (Ascot Fm)	BHANSEP	18			0		Shear - Normal Function	181	0	No
3(4)	Unit 9A +SAND (Ascot Firr)	Nohr-Codomb	10	.0	35			r crowdown	10)	0	No
18	Unit 7 • CLAY/ Weathered SETSTONE (Leederville Fm)	Mohr-Coulomo	22	60	33				- 1	0	No



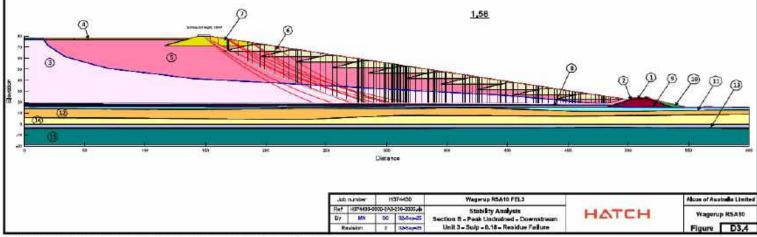
33.2 | 2016/2020 2-17 PM | https://wischestrem.com/control/en/cont

Color	Name	Waterial Wodel	Linit Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tau/Sigma Ratio	Strongth Function	Piszometrie Line	Bloom	Add Weigh
3	QLAY Uner	SHANGEP	30			0	0.22		(H	10	No
3	Interface Shear Strength	Mohr-Caulemb	10	0	10				2	0	No
э	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0.26		2	100	No
4	W2 = Thickened Residue Ned	BHANSEP	16,5			۰	0,26		2	10	Vas
*	W5 - Thickened Residue Mod	SHANSEP	16.5			0	6,50		2	10	No
-6	51 - Proposeci Residue Band Raises	Vote-Cookmo	19	.0	36				2	0	No
y	81 • Proposed Reaktive Band Raises (Current Raise)	Mohr-Codomo	19	0	36				2	Ü	Yes
8	Unit 1A - Engineered FILL	SHANSEP	20			0	0,25				No
	Unit 18 - Emberkment	Vote-Coulomb	20		32					0	No
10	Unit 2 - TOPSOIL (Silly/ Clayer SAND/ GLAY) Leosely Dumped	Mohr-Coulomb	17	0	26				- 3	0	No
11	Unit3 - CLAY (Guildford Fm) - 0,18	SHANSEP	20			۰		Sheer - Normal Function	- 1	0	No
12	Unit 4 - Clayery SANO/ Sendy CLAY (Guildford Free)	SHANSEP	18			0		Shear - Normal Function	.1	0	No
100	Unit 68 - Sity/Clayey Layers (Accet Fm)	BHANSEP	18			0		Shear - Normal Function	19	0	No
34.	Unit SA +SAND (Ascot Firr)	Nohr-Coulomb	10	0	35			- IFOMASSIN	10)	0	No
181	Unit 7 • CLAY/ Weathered SETSTONE (Leederville Fin)	Mohr-Coulomo	22	60	33				- 1	0	No



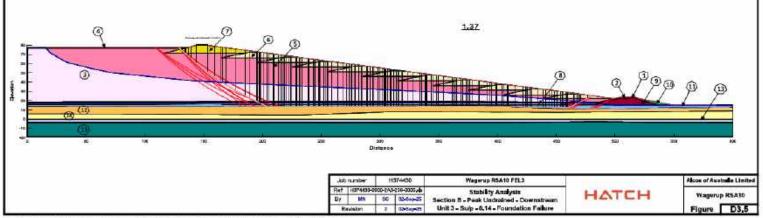
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Color	Name	Vaterial Vodel	Linit Weight (kNim <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tou/Sigma Ratio	Strongth Function	Piezometrie Line	B-ber	Add Weigh
1	QLAY Uner	SHANGEP	50			0	0.22		()t	10	No
3	Interface Shear Strength	Wohr-Coulomb	10	0	10				2	0	No
9	M1 - Thickened Residue Musi	SHANSEP	16.5			0	0.26		2	100	No
4	W2 = Thickered Residue Wod	BHANSEP	16,5			0	0,26		2	10	Ves
*	M5 - Thickened Residue Mud	SHANSEP	10.5			0	0,50		2	100	No
6	51 - Proposed Residue Band Raises	Vote-Cookmb	19	.0	36				2	0	No
y	81 • Proposed Reaktive Sand Raless (Current Rales)	Mohr-Codomo	19	0	36				2	Ü	Yes
8	Unit 1A - Engineered FILL	SHANSEP	20			0	0,25		- 1		No
	Unit 18 - Emberkmost	Vote-Coulomb	20		32					0	No
10	Unit 2 - TOPSOL (Silty/ Clayer SAND/ GLAY) Leosely Dumped	Mohr-Coulomb	17	0	28					0	No
11	Unit3 - CLAY (Guildford Fm) - 0,18	SHANSEP	20			۰		Encer - Normal Function	- 1	0	No
12	Unit 4 - Clayey SANO/ Sendy CLAY (Guildford Fm)	SHANSEP	18			0		Shear - Normal Function	.1	0	No
(10)	Unit 68 - Sity/Clayey Layers (Asset Frn)	BHANSEP	18			0		Shear - Normal Function	181	0	No
34	Unit SA + SAND (Ascot Firr)	Nohe-Cookins	10	0	35			THE STATE OF THE S	101	0	No
181	Unit 7 • CLAY/ Weathered SETSTONE (Leederville Firi)	Mohr-Coulomb	22	60	33				- 1	0	No



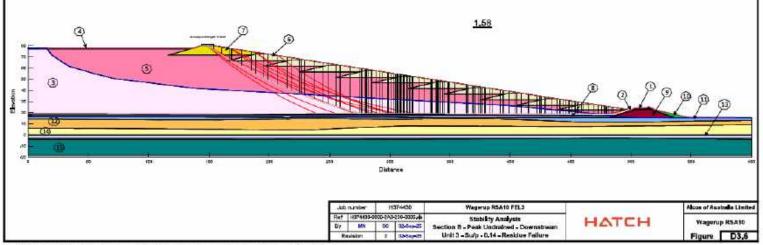
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Color	Name	Vaterial Vodel	Linit Weight (kNim <sup>1</sup> )	Effective Cohesion (kPa)	⊟fec≑re Friction Angle (*)	Minimum Shear Strength (kPai	Tou/Sigma Ratio	Strongth Function	Piszomutrie Line	B-ber	Add Weight
1	QLAY Uner	SHANGEP	30			0	0.22		- (3)	10	No
2	Interface Shear Strength	Wohr-Coulomb	10	0	10				2	0	No
э	M1 - Thickeried Residue Musi	SHANSEP	16.5			0	0.26		2	100	No
4	W2 = Thickered Residue Mud	BHANSEP	16,5			۰	0,26		2	10	Ves
18	M3 = Thickened Residue Mod	SHANSEP	16.5			0	0.50		2	10	No
6	51 - Proposed Residue Band Raises	Vote-Cookmb	19	.0	36				2	0	No
y	81 • Proposed Reaktive Sand Ralaes (Current Ralas)	Mohi-Codomb	19	0	36				2	Ü	Yes
8	Unit 1A - Engineered FILL	SHANSEP	20			0	0.25		- 9		No
*	Unit 18 - Embankment	Vote-Coulomb	20	- 5	32					0	No
10	Unit 2 - TOPSOIL (Silly/ Obyey SAND/ GLAY) Leosely Dumped	Mohr-Coulomb	17	0	26				- 1	0	No
11	Unit3 - CLAY (Guildford Fm) - 0,14	SHANSEP	20			۰		Sheer - Normal Function	- 3	0	No
12	Unit 4 - Gleyey SANO/ Sendy CLAY (Guildfund Fee)	SHANSEP	18		F	0		Shear - Normal Function	.1	0	No
191	Unit 5 - Comencated SAND / CLAY and GRAVEL (Guildferd Fm)	BHANSEP	21			0		Shear - Nermal Function	. 39	0	No
34	Unit 6 - SAND with Silly/Clayey layers	Note-Coulomb	10	.0	35			THE STATE OF THE S	10)	0	No
181	Unit 7 • CLAY/ Weathered SILTSTONE (Leederville Fm)	Mohr-Coulomo	22	60	33				- 1	0	No



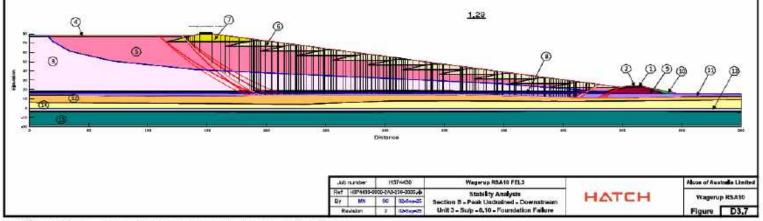
DAS | 2016/00/2016 PM | https://netrommunescolet.com/mass/10/14/20/48PulmontriesEPG - Conscribed/M Visibility and Antiquis/Signer Model/Opends D - Renativity and

Color	Name	Material Model	Linit Weight (kN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tou/Sigma Ratio	Strongth Function	Piezometrie Läne	B-ber	Add Weigh
1	GLAY Uner	SHANGEP	30			0	0.22		()t	10	No
2	Interface Shear Strength	Mohr-Caulemb	10	0	10				2	0	No
9	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0.26		2	100	No
4	W2 = Thickened Residue Med	BHANSEP	16,5				0,26		2	1.	Ves
*	W5 - Thickened Residue Mod	SHANSEP	16.5			0	6,50		2	10	No
6	\$1 - Proposed Residue Band Raises	Vote-Cookmo	19	.0	36				2	0	No
7	81 • Proposed Residue Sand Raises (Current Raise)	Mohi-Codomb	19	0	36				2	Ü	Yes
	Unt 1A - Engineered FILL	SHANSEP	20			0	0.25		- 9		No
	Unit 18 - Embarkment	Voh-Codomb	20	- 5	32				- 1	0	No
10	Unit 2 - TOPSOIL (Silly/ Obyey SAND/ GLAY) Leosely Dumped	Mohr-Coulomb	17	0	26				-	0	No
11	Unit3 - CLAY (Guildford Fm) - 0,14	SHANSEP	20			۰		Sheer - Normal Function	- 1	0	No
12	Unit 4 - Cleyey SANO/ Sendy CLAY (Guildford Fee)	SHANSEP	18			0		Shear - Normal Function	.1	0	No
181	Unit 5 - Comencated SAND / CLAY and GRAVEL (Guildford Fm)	BHANSEP	21			0		Shear - Nermal Function	19	0	No
14	Unit 6 = SAND with Silly/Clayey layers	Note-Coulomb	10	.0	35			THE STATE OF THE S	101	0	No
181	Unit 7 • CLAY/ Weathered SILTSTONE (Leederville Fm)	Mohr-Coulomo	22	60	33					0	No



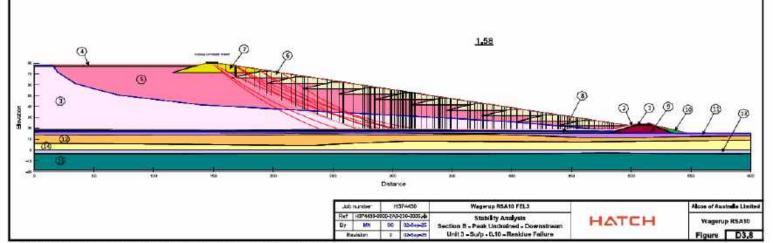
DAG | 2016/00/2016 PM | https://microscommunescolor.com/misses/10/44/20/48PulmontrividEM - Constructive Modeling and Antiquid/Stone Modeling pands D - Renativity and

Color	Name	Waterial Wodel	Liait Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tau/Sigma Ratio	Strongth Function	Piszometrie Line	B-ber	Add Weigh
3	QLAY Uner	SHANGEP	50			0	0.22		(H	10	No
3	Interface Shear Strength	Wohr-Caulemb	10	0	10				2	0	No
9	M1 - Thickeried Residue Mud	SHANSEP	16.5			0	0.26		2	100	No
4	W2 = Thickened Floridus Nud	BHANSEP	16,5				0,26		2	10	Ves
18	M5 = Thickened Residue Mod	SHANSEP	16.5			0	0.50		2	100	No
6	51 - Proposed Residue Band Raises	Note-Coulomb	18	.0	36				2	0	No
7	81 • Proposed Reaktive Sand Raises (Current Raise)	Wehr-Coulomb	19	0	36				2	Ü	Yes
8	Unit 1A - Engineered FILL	SHANSEP	20			0	0.25		- 1		No
*	Unit 18 - Emberkmont	Mohr-Coulomb	20	- 5	32					0	No
10	Link 2 - TOPSOL (Silly/ Claye) SANO/ GLAY) Leosely Dumped	Mohr-Couloma	17	0	28				- 1	0	No
11	Unit3 = CLAY (Guildford Fm) = 0,10	SHANSEP	20			۰		Encer - Normal Function	- 1	0	No
12	Unit 4 - Clayey SANO/ Sendy CLAY (Guildford Fee)	SHANSEP	18			0		Shear - Normal Function	.1	0	No
181	Unit 5 - Comenceted SAND / CLAY and GRAVEL   Guildferd Fm)	BHANSEP	21			0		Shear - Normal Function	39	0	No
34	Unit 6 - GAND with Silly/Clayery layers	Note-Cookins	10	.0	35			TOWN THE	10)	0	No
187	Unit 7 • CLAY/ Weathered SILTSTONE (Leederville Fin)	Mohr-Coulomo	22	60	33					0	No



33.7 | 2016/2020 2:18 PM | https://wiscommunescolor.com/main15/14/20/4/Pub.com/sted2/4-December/M Vocating and Antiquis/Score/Hoddlinopends D + Density byte

Color	Name	Material Model	Liait Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	⊞ective Friction Angle (*)	Minimum Shear Strength (kPai	Tou/Sigma Ratio	Strongth Function	Piezometrie Line	B-ber	Add Weigh
1	GLAY Uner	SHANGEP	30			0	0.22		()t	10	No
4	Interface Shear Strength	Mohr-Caulemb	10	0	10				2	0	No
9	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0.26		2	100	No
4	W2 = Thickened Residue Med	BHANSEP	16,5				0,26		2	1.	Ves
*	W5 - Thickened Residue Mod	SHANSEP	16.5			0	6,50		2	10	No
6	51 - Proposed Residue Band Raises	Note-Coulomb	18	.0	36				2	0	No
7	81 • Proposed Residue Sand Raises (Current Raise)	Mohi-Codomo	19	0	36				2	Ü	Yes
8	Unt 1A - Engineered FILL	SHANSEP	20			0	0.25		- 9		No
*	Unit 18 - Embarkment	Vote-Coulcreb	30	- 5	32				- 1	0	No
10	Unit 2 - TOPSOIL (Silly/ Obyey SAND/ GLAY) Leosely Dumped	Mohr-Coulomb	17	0	26				- 1	0	No
11	Unit3 - CLAY (Guildford Fm) - 0,10	SHANSEP	20			۰		Sheer - Normal Function	- 3	0	No
12	Unit 4 - Cleyey SANO/ Sendy CLAY (Guildford Fee)	SHANSEP	18		F	0		Shear - Normal Function	.1	0	No
191	Unit 5 - Comenceted SAND / CLAY and GRAVEL (Guildford Fre)	BHANSEP	21			0		Shear - Normal Function	19	0	No
34	Unit 6 - SAND with Silly/Clayey layers	Note-Cookins	10	.0	35			Trovasani -	- 101	0	No
181	Unit 7 • CLAY/ Weathered SETSTONE (Leederville Fini)	Mohr-Coulomo	22	60	33					0	No



DAR | 2016/00/20 2:19 PM | https://netrommunescolet.com/mach19/44/20/8Pub-serrolle@PG+ Conscribed/M Visibility and Antiquis/Spore Model/Opends D + Sensitivity and



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Alcoa of Australia Limited Alcoa Wagerup RSA10 - FEL3 H374430 Engineering Report Geotechnical Engineering Wagerup RSA10 FEL3 - Slope Stability Analysis Report

## D.4 Section D Ultimate Embankment - Foundation Clay Undrained Strength

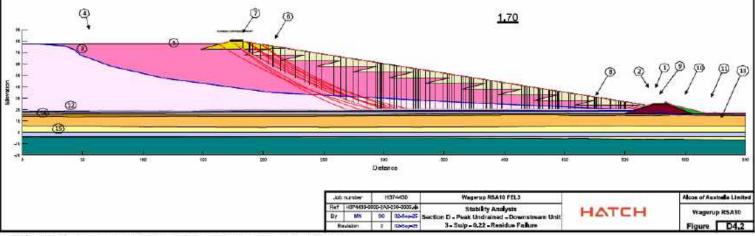
skor	Name	Material Model	Linit Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tau/Sigma Ratio	Strongth Function	Piszometrie Läne	B-bar	Add Weight	
1	QLAY Uner	SHANGEP	30			0	0.22		())	10	No	
	Interface Shear Strength	Mohr-Caulemb	10	0	10				2	0	No	
9	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0.26		2	12	No	
	M2 = Thickened Floridue Mod	BHANSEP	16,5		6 5		0,26		2	. 1	Yes	
5	M3 - Thickened Residue Mud	SHANSEP	16.5			۰	6.50		2	100	No	
3	51 - Proposed Residue Band Raises	Mote-Cookenb	10	.0	36				2	0	No	
	81 • Proposed Residue Band Raises (Current Raise)	Mohi-Codono	19	8	36				2	Ü	Yes	
	Unit 1A = Engineered FILL	SHANSEP	20			0	0,25				No	
	Unit 18 - Emborkment	Vote-Coulomb	20	- 6	32				,	0	No	
9	Unit 2 - TOPSOL (Silly/ Clayer SAND/ CLAY) Leosely Dumped	Mohr-Coulomb	17	0	26				1	0	No	
,	Unit3-CLAY (Guildford Fm)	SHANSEP	20			۰		Sheer - Normal Function	- 1	0	No	
ż	Unit 4 - Clayey SANO/ Sendy CLAY (Cultiford Free)	SHANSEP	18			0		Sheer - Normal Function	.1	0	No	
101	Unit 68 - Sity/Clayey Layers (Accet Fra)	BHANSEP	18			0		Shear - Nermal Function	19	0	No	
1	Unit 9A + SAND (Ascot Firr)	Nohr-Codomb	10	.0	35				101	0	No	
1	Unit 7 • CLAY/ Weathered SETSTONE (Leederville Fm)	Mohr-Coulomb	22	60	33				- 1	0	No	
	0	9			9					1,69		0 0 0 0 0 0
ī	(1)				U.							1

Alcos of Australia Limited

Wagerup RSA10 Figure D4,1

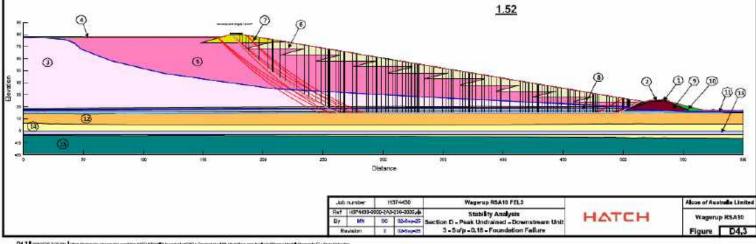
HATCH

Color	Name	Material Model	Linit Weight (KN/m²)	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tou/Sigma Ratio	Strongth Function	Piszomotrie Line	9-ber	Add Weight
1	QLAY Liner	SHANGEP	30			0	0.22		- 01	10	No
3	Interface Shear Strength	Wohr-Coulomb	10	0	10				2	0	No
9	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0.26		2	100	No
4	M2 = Thickened Floridue Ned	BHANSEP	16,5				0,26		2	, £.	Ves
*	M3 - Thickened Residue Mod	SHANSEP	16.5			0	6.50		2	1	No
16	\$1 - Proposed Residue Band Raises	Vote-Codomo	19	.0	36					0	No
y	S1 • Proposed Residue Band Raises (Current Raise)	Mohi-Codono	19	0	36				2	Ü	Yes
8	Unit 1A - Engineered FILL	SHANSEP	20			0	0,25		1		No
*	Unit 18 - Embarkment	Vote-Coulomb	20		32					0	No
10	Unit 2 - TOPSOIL (Silly/ Clayer SAND/ GLAY) Leosely Dumped	Mohr-Coulomb	17	0	28				- 1	0	No
111	Unit3-CLAY (Guildfuni Fm)	SHANSEP	20			۰		Sheer - Normal Function	- 1	0	No
12	Unit 4 - Clayey SANO/ Sendy CLAY (Guildford Free)	SHANSEP	18		in si	0		Shear - Normal Function	.1	0	No
(8)	Unit 68 - Sity/Clayey Layers (Ascot Frn)	BHANSEP	18			0		Shear - Nermal Function	131	0	No
34	Unit 9A + SAND (Ascot Firr)	Nohr-Cookesia	10	0	35			I PENNSONN A	101	0	No
181	Unit 7 • CLAY/ Weathered SILTSTONE (Leederville Fin)	Mohr-Coulomb	22	60	33					0	No



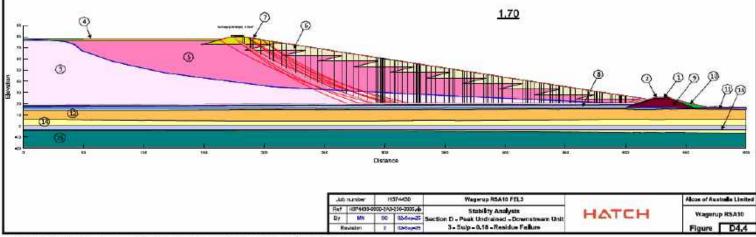
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Color	Name	Material Model	Liait Weight (MN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tou/Sigma Ratio	Strongth Function	Piezometrie Line	B-ber	Add Weight
1	QLAY Uner	SHANGEP	50			0	0.22		()t	10	No
2	Interface Shear Strength	Mohr-Caulemb	10	0	10				2	0	No
9	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0.26		2	12	No
4	W2 = Thickened Residue Ned	BHANSEP	16,5				0,26		2	10	Vas
*	W5 - Thickened Residue Mod	SHANSEP	16.5			0	0.50		2	. 1	No
6	51 - Proposed Residue Band Raises	Note-Coulomb	18	.0	36				2	0	No
y .	S1 • Proposed Residue Band Raises (Current Raise)	Mohi-Codomo	19	8	36				2	Ü	Yes
8	Unit 1A = Engineered FILL	SHANSEP	20			0	0.25				No
*	Unit 18 - Emberkmont	Mohr-Coulomb	20	- 5	32					0	No
10	Unit 2 - TOPSOIL (Silty/ Clayer SAND/ GLAY) Leosely Dumped	Mohr-Coulomb	17	0	26					0	No
11	Unita-CLAY (Guildfuni Fm)	SHANSEP	20			۰		Sheer - Normal Function	- 1	0	No
12	Unit 4 - Clayery SANO/ Sendy CLAY (Guildford Free)	SHANSEP	18			0		Sheer - Normal Function	.1	0	No
(13)	Unit 68 - Sity/Clayey Layers (Asset Fm)	BHANSEP	18			0		Shear - Nermal Function	181	0	No
3(4)	Unit 9A - SAND (Ascot Firr)	Nohr-Cookesb	10	0	35			· FEMALURIA	- 101	0	No
181	Unit 7 • CLAY/ Weathered SETSTONE (Leederville Fin)	Mohr-Coulomo	22	50	33					0	No



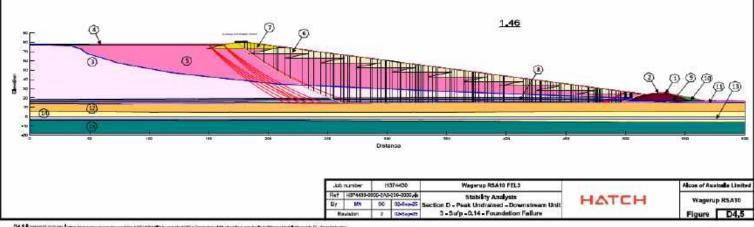
04.3 | 2016/0020 2.00 PM | https://netrommunesco.eu.com/maint/0/44/04/8Pulnomroke@Pulnomroke@PM - Conscirus/dM - Voteling and Analysis/Separ-Modulingsands D - Renativity and

Color	Name	Waterial Wodel	Liait Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tau/Sigma Ratio	Strongth Function	Piszomotrie Line	B-ber	Add Weigh
1	QLAY Liner	SHANGEP	50			0	0.22		()t	. E	No
3	Interface Shear Strength	Nohr-Caulamb	10	0	10				2	0	No
9	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0.26		2	100	No
4	M2 = Thickered Residue Ned	BHANSEP	16,5				0,26		2	1.	Ves
*	M3 = Thickened Residue Mod	SHANSEP	16.5			•	6.50		2	. 1	No
6	51 - Proposed Residue Band Raises	Mote-Cookeno	18		36				2	0	No
y	81 • Proposed Reaktue Sand Raless (Current Rales)	Mohr-Codemo	19	0	36				2	Ü	Yes
8	Unit 1A - Engineered FILL	SHANSEP	20			0	0,25		- 1		No
*	Unit 18 - Emberkment	Mohi-Coulomb	20		32					0	No
10	Link 2 - TOPSOL (Silly/ Obyey SAND/ GLAY) Leosely Dumped	Mohr-Coulomb	17	0	28					0	No
11	Unita-CLAY (Gu <b>jd</b> ivni Pm)	SHANSEP	20			۰		Sheer - Normal Function	- 1	0	No
12	Unit 4 - Clayey SAND/ Sendy CLAY (Guildford Fm)	SHANSEP	18			0		Shear - Normal Function	.1	0	No
(10)	Unit 68 - Sity/Clayey Layers (Asset Fm)	SHANSEP	18					Shear - Nermal Function	181	0	No
34	Unit SA - SAND (Ascot Firr)	Note-Cookers	10	0	35			LYDOROSIN .	101	0	No
181	Unit 7 • CLAY/ Weathered SILTSTONE (Leederville Firi)	Mohr-Coulomb	22	60	33				-	0	No



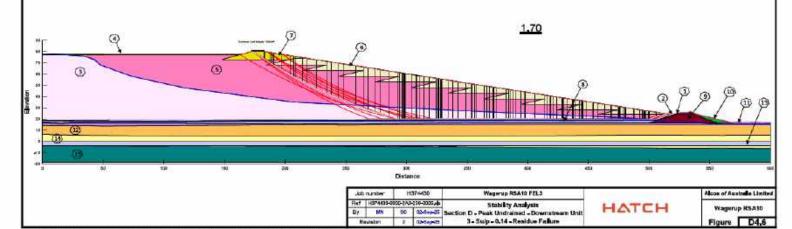
044 | 2016/002 2 20 PM | https://netraminumengoistuscom/mach15/14/20/4/Pub-inntrakeDM - ConstantineM Visibility and Antiquis/Sopre-Modelingsonds D - Renativity and

Color	Name	Material Model	Linit Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shaar Strength (kPai	TawSigma Ratio	Strongth Function	Pigzomatrie Läne	B-bar	Acet Weight
1	QLAY ther	SHANGEP	30			0	0.22		- (3)	15	No
3	Interface Shear Strength	Wohr-Caulemb	10	0	10				2	0	No
9	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0.26		2	100	No
4	W2 = Thickened Residue Ned	BHANSEP	16,5				0,26		2	1.	Ves
*	95 - Thickened Residue Mud	SHANSEP	16.5			0	0.50		2	100	No
6	51 - Proposeci Residue Band Raises	Wote-Cookimb	19	.0	36				2	0	No
y	81 • Proposed Residue Band Raises (Current Raise)	Wehr-Coulomb	19	0	36				2	Ü	Yes
8	Unt 1A - Engineered FILL	SHANSEP	20			0	0.25		- 9		No
	Unit 18 - Embarkennet	Vote-Coulomb	20	- 5	32					0	No
10	Unit 2 - TOPSOIL (Silly) Clayey SAND/ GLAY) Leosely Dumped	Mohr-Coulomb	17	0	28				- 1	0	No
11	Unit3=GLAY (Guildfishi) Fmii	SHANSEP	20			۰		Sheer - Normal Function	- 1	0	No
12	Unit 4 - Clayey SANO/ Sendy CLAY (Guildford Free)	SHANSEP	18			0		Sheer - Normal Function	.1	0	No
130	Unit 6B - Sity/Clayer Layers (Ascot Fm)	BHANSEP	18			0		Shear - Normal Function	19	0	No
34	Unit 9A + SAND (Ascot Firr)	Nohr-Coulomb	10	0	35			1 EPHOROSIN	101	0	No
181	Unit 7 • CLAY/ Weathered SETSTONE (Leederville Fm)	Mohr-Coulomo	22	60	33					0	No

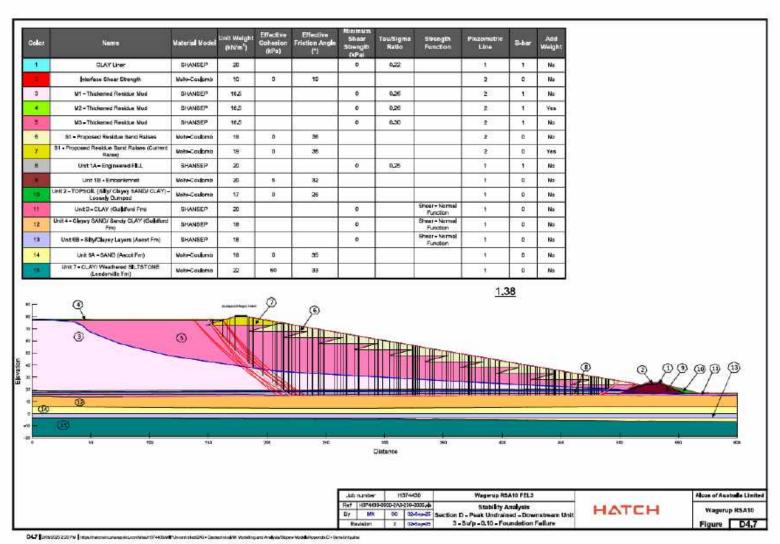


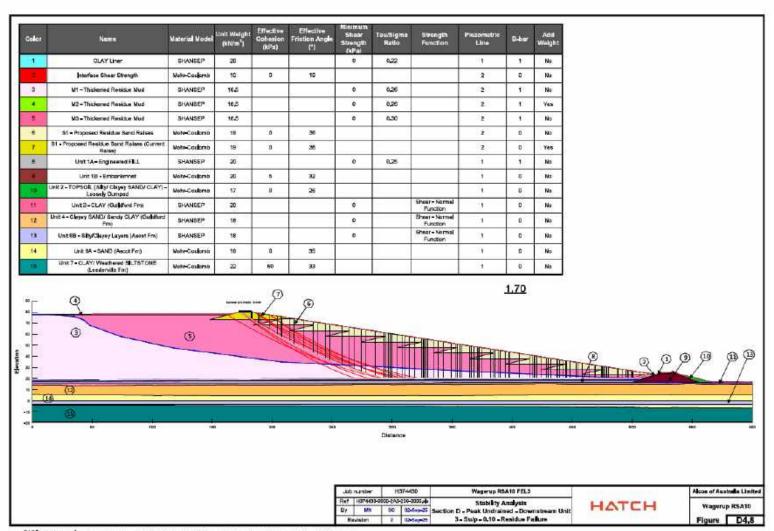
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Color	Name	Waterial Wodel	Linit Weight (kN/m²)	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tou/Sigma Ratio	Strongth Function	Piezometrie Line	B-bar	Add Weigh
3	QLAY Uner	SHANGEP	50			0	0.22		(H	. E	No
3	Interface Shear Strength	Wohr-Caulamb	10	0	10				2	0	No
9	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0.26		2	12	No
4	W2 = Thickered Residue Ned	SHANSEP	16,5			.0	0,26		2	10	Vas
*	M5 - Thickened Residue Mud	SHANSEP	16.5			٥	0.50		2	. 1	No
6	51 - Proposed Residue Band Raises	Note-Cookmo	19	.0	36				2	0	No
y .	81 • Proposed Reaktive Band Ralaes (Current Ralas)	Wehr-Codemo	19	8	36				2	Ü	Yes
8	Unit 1A - Engineered FILL	SHANSEP	20			0	0,25				No
* .	Unit 18 - Emberkment	Mohr-Coulcmb	20		32					0	No
10	Unit 2 - TOPSOIL (Silly/ Claye) SAND/ GLAY) Leosely Dumped	Mete-Coulomb	17	0	28				- 1	0	No
11	Unit3=CLAY (Guildfund Pm)	SHANSEP	20			۰		Sheer - Normal Function	- 3	0	No
12	Unit 4 - Clayery SANO/ Sendy CLAY (Guildford Free)	SHANSEP	18			0		Sheer - Normal Function	.1	0	No
130	Unit 68 - Sity/Clayer Layers (Asset Fm)	BHANSEP	18			0		Shear - Nermal Function	19	0	No
34	Unit SA +SAND (Ascot Firr)	Nohe-Cookins	10	.0	35			1 PENNSONIA A	101	0	No
181	Unit 7 • CLAY/ Weathered SETSTONE (Leederville Fm)	Wehr-Coulomo	22	60	33					0	No



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34.F | 2016/0022 2 27 PM | https://recommunes.edu.com/miss/15/44/2016Pub.miss/sed290 - Decembradity Vocability and Analysis/Separy Vocability parties D - Decembradity



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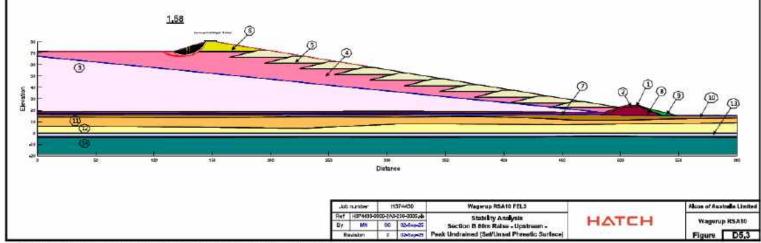
Alcoa of Australia Limited Alcoa Wagerup RSA10 - FEL3 H374430 Engineering Report Geotechnical Engineering Wagerup RSA10 FEL3 - Slope Stability Analysis Report

## D.5 Section B Ultimate Embankment - Phreatic in Residue Mud

Interface Shear Etrength	elor	Name	Vaterial Model	Linit Weight (kNim <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Plezomotric Line	B-bar	Add Weight				
M1-Thickerred Residue Mod   Mori-Columb   16.6   0   34   2   0   Ne	1	QLAY Liner	Mohr-Columb	30	10	22	5.15	q	Ne				
M3 - Trichered Residue Sund Raises	ă.	Interface Shear Strength	Mahr-Calumb	10	0	10	2	0	Ne				
St - Proposed Residue Sand Rations   Mani-Columb   18	9	M1-Thickened Residue Mud	Main-Columb	16.5	0	34	2	c	Ne:				
B1 - Proposed Residue Bard Reisse (Gurert   Mon-Columb   19	4	M3+Thickened Residue Ned	Mahr-Columb	16,5	0	34	2	c	Ne				
Calina   Hort-Calint   Hort-			Mohr-Columb	19	0	36	2		Ne				
Unit 18 - Erroszisment   Mony-Colamb   20   5   30   1   0   Ne	6		MonreColumb	19	0	36	2	0	No				
Unit 2 - TOPSOR (Stay Clayer SAND CLAY) - Monnocolams 17 0 28 1 0 Ne Leosely Cumped 19 Monnocolams 17 0 28 1 0 Ne 11 Unit 3 - CLAY (Subfried Fm) Monnocolams 18 5 32 1 0 Ne 11 Unit 6 - Sith Clayer SAND Sendy CLAY (Guidated Monnocolams 18 5 32 1 0 Ne 12 Unit 6 - Sith Clayer (Ascet Fm) Monnocolams 18 5 32 1 0 Ne 12 Unit 5 - SAND (Ascet Fm) Monnocolams 18 0 35 1 0 Ne 13 Unit 7 - CUNY Washreed SLTSTONE Monnocolams 22 60 33 1 0 Ne	y	Unit 1A-Engineered FILL	Marry-Columb	20	5	23	1	u	Ne				
Lond 3 - CLAY (Guildren Fm)			Control of the Contro	20	5	32	1	0	Ne				
Unit 4 - Closey SANDI Sandy CLAY (Guisticed Moin-Columb 1E 5 32 1 0 Ne Froil   Unit 69 - Sity/Clayev Reyers (Ascot Fm)   Moin-Columb 16 5 32 1 0 Ne   Unit 51 - CLAY (Machiner of Sill Total Columb 16 0 35 1 0 Ne   Unit 7 - CLAY (Washed Sill Total Columb 16 0 35 1 0 Ne   Unit 7 - CLAY (Washed Sill Total Columb 16 0 35 1 0 Ne   Unit 7 - CLAY (Washed Sill Total Columb 16 0 35 1 0 Ne   Unit 7 - CLAY (Washed Sill Total Columb 16 0 35 1 0 Ne   Unit 7 - CLAY (Washed Sill Total Columb 17 0 Ne   Unit 7 - CLAY (Washed Sill Total Columb 17 0 Ne   Unit 7 - CLAY (Washed Sill Total Columb 17 0 Ne   Unit 7 - CLAY (Washed Sill Total Columb 17 0 Ne   Unit 7 - CLAY (Washed Sill Total Columb 17 0 Ne   Unit 7 - CLAY (Washed Sill Total Columb 17 0 Ne   Unit 7 - CLAY (Washed Sill Total Columb 17 0 Ne   Unit 7 - CLAY (Washed Sill Total Columb 18 0 Ne   Uni		Unit Z • TOPSOR (5thy/ Chiye) SAND/ GLAY) • Leosely Dumped	MahryCalumb	17	U	26	-1	u	Ne				
	1000		The State of the S	20	5	23	1	u	Ne				
	11	Unit 4 - Clayey SAND/ Sandy CLAY (Guilatord Fm)	Mohr-Columb	18	5	32	-1	c	Ne				
Unit 7 - CLAN/ Weshered SELTET DNE Musin-Columb 22 60 33 1 0 No  2.0.1	12		Monr-Galumb	18	5	32	1	0	Ne				
(Leaderville Fin)   Harriconero   22   10   35   1   0   Ne	(B)	Unit 64 - SAND (Asset Fm)	Mohr-Columb	19	:0;	95	- 10	q	Ne				
2.0.1									-				
	14-		Mon-Columb	22	60	35	1.	0	Ne				
	u I			z 	60	30 (D)	9	c	Ne				
	14	(Leaderville Fitt)		2	60	33	9					2 Q/9/	<b>9</b> 9 95
		(Leaderville Fitt)		2	60	30	9				- {	2 9 9/	29 9
		(Leaderville Firs)  (3)		2	60	30	9				<u> </u>	2 9 9 7	
* 10 10 700 (401 000 140 700 440 700 140 100 140 100 140 100 140 100 140 100 140 100 140 100 140 100 140 100 140 100 140 100 140 100 140 100 140 100 140 100 140 100 140 14		(Leaderville Firs)  (3)		2	60	3	9						
		(Leaderville Firs)  (3)		2	60	3	9					Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q Q	
		(Leaderville Firs)  (3)		2	900	3	9					(2) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1	
		(Leaderville Firs)  (3)		2	60	3	9					(2) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1	
* 16 199 300 601 276 366 306 446 446 401 100 100		(Leaderville Firs)  (3)		2	60	3	0	Datance			4027		
	14	(Leaderville Firs)  (3)		2	60	3	, bob muerober	patance		Wagerup RSA10 FEL3	4027	11 - 32°	Akon of Australia Lin

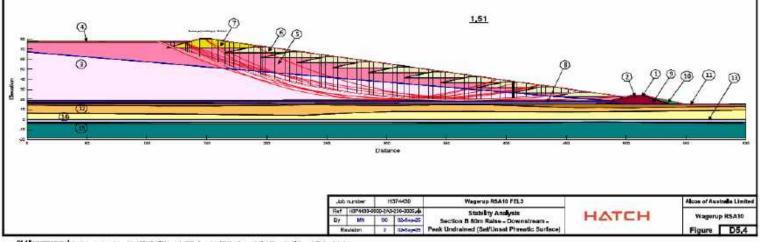
ekor	Name	Vateral Vocel	Linit Weight (kN/m²)	Effective Cohesion (kPa)	Effective Friction Angle (*)	Piezomotric Line	D-bar	Add Weight	
1	QLAY Uner	Mohr-Columb	30	10	22	- 1	.9	Ne	
3	Interface Shear Strength	Mohr-Columb	10	0	10	2	0	Ne	
9	M1-Thickened Residue Mod	Morr-Columb	16.5	0	34	2	c	Ne .	
4	M2 - Thickened Residue Mod	Mahr-Calumb	16,5	0	34	2	o.	Ne	
5	M3=Thickened Residue Mod	Monr-Columb	18.5	0	34	2	0	Ne	
6	51 - Proposed Residue Band Raises	Monr-Columb	19	.0	36	2	0	Ne	
ÿ	81 • Proposed Residue Band Raises (Current Raise)	Marry-Columb	19	8	36	2	ū	Ne	
8	Unit 1A = Engineered FILL	Monr-Columb	20	5	23	1	0	Ne	
* .	Unit 18 - Emberkment	MohryColumb	20		32	- 1	0	Ne	
10	Unit 2 - TOPSOIL (Silly/ Clayer SAND/ CLAY) Leosely Dumped	Monr-Columb	17	0	28	- 1	u	Ne	
th	Unit3=GLAY (Guildford Pm)	Mohr-Columb	20	5	23	-1	c	Ne	
12	Unit 4 - Clayey SANO/ Sendy CLAY (Guildford Free)	Warr-Columb	18	5	32	1	0	Ne	
130)	Unit 68 - Silty/Clayey layers (Ascet Fin)	Moinr-Columb	18	. 8.	32	10	a	Ne	
(4	Unit 6A - SAND (Ascot Fm)	Mohr-Columb	10	.0	35	1.5	0	Ne	
181	Unit 7 • CLAY/ Weathered SETSTONE (Leederville Fm)	Mainr-Columb	22	80	33	1	· c	Ne	
10 10 10 10 10 10 10 10 10 10 10 10 10 1	<u> </u>		C NO	PART I					
0 1	(1)						19		
10	50 100	1	80	200	28		530		Sid 400 454 640 560
6	7 7						Distance		

Color	Name :	Waterial Wodel	Liait Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	TowSigma Ratio	Strongth Function	Piezomatrie Läne	B-bar	Add Weigh
1	QLAY ther	SHANGEP	30			0	0.22		())	10	No
3	Interface Shear Strength	Wohr-Caulamb	10	0	10				2	0	No
9	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0.26		2	12	No
14	M3+Thickened Residue Ned	SHANSEP	16,5				0,30		2	10	No
.5	St - Proposed Residue Sand Raises	Mote-Coulomb	19	0	36				2	0	No
ě	81 - Proposed Residue Band Raises (Current Raise)	Work-Cookimo	19	.0	36				2	0	Yes
7	Unit 1A-Engineered FILL	SHANSEP	20			0	0,25			1	No
	Lint 1E - Emperiment	Note-Coulomb	20	5	32					U	No
	Unit 2 - TOPSOR (Sity/ Caye) SANO/ GLAY) - Leosely Dumped	Worke-Coulomb	17	U	26					0	No
10	Unit3-CLAY (Guildford Fm)	SHANSEP	20			۰		Shear - Normal Function		0	No
11	Unit 4 - Clayey SAND; Sandy CLAY (Guilatord Fm)	SHANSEP	18			۰		Sheer - Normal Function	- 3	0	No
18	Unit 68 • Silly/Clayery Layers (Ascut Fm)	SHANSEP	18			0		Sheer - Normal Function	.1	0	No
180	Unit SA - SAND (Ascot Firr)	Vole-Coulomb	19	:0;	95				181	0	No
96	Unit 7 - CLAY! Weathered SELTSTONE (Leederville Fm)	Note-Cookens	22	60	33				101	0	No



34.3 | 2016/0020 2.22 PM | https://recommunescolor.com/miss/10/44/2018Pub.miss/sec(20) - Description/M Modeling and Analysis/Second Modeling product - Descriptions

Color	Name	Waterial Wodel	Linit Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	⊟fec≑re Friction Angle (*)	Minimum Shear Strength (kPai	Tou/Sigma Ratio	Strongth Function	Piezometrie Line	B-ber	Add Weight
1	GLAY Uner	SHANGEP	30			0	0,22		- (3)	10	No
2	Interface Shear Strength	Mohr-Caulemb	10	0	10				2	0	No
9	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0.26		2	100	No
4	W2 = Thickened Residue Mud	BHANSEP	16,5			۰	0,26		2	10	Vas
18	M5 - Thickened Residue Mud	SHANSEP	16.5			0	0.50		2	10	No
-6	51 - Proposed Residue Band Raises	Note-Cookens	19	.0	36				2	0	No
7	81 • Proposed Reaktive Sand Ralaes (Current Ralas)	Mohi-Codomo	19	0	36				2	Ü	Yes
8	Unt 1A - Engineered FILL	SHANSEP	20			0	0.25		- 9		No
	Unit 18 - Embarkmost	Vote-Coulcreb	20	- 5	32				- 1	0	No
10	Unit 2 - TOPSOIL (Silly/ Obyey SAND/ GLAY) Leosely Dumped	Mohr-Coulomb	17	0	26				- 1	0	No
111	Unita-CLAY (Guild'uni Fm)	SHANSEP	20			۰		Sheer - Normal Function	- 1	0	No
12	Unit 4 - Cleyey SANO/ Sendy CLAY (Guildford Fee)	SHANSEP	18		F	0		Shear - Normal Function	.1	0	No
(0)	Unit 68 - Sity/Clayey Layers (Asset Frn)	BHANSEP	18			0		Shear - Nermal Function	19	0	No
34	Unit 8A + SAND (Ascot Firr)	Nohr-Codemb	10	.0	35			1910/8/910	101	0	No
181	Unit 7 • CLAY/ Weathered SETSTONE (Leederville Fini)	Mohr-Coulomb	22	60	33					0	No



O&A | 2016/00/20 2 20 PM | https://netrommunescolescom/insert/V4/20/48Pulnimiralscol/V4-December Wooding and Antiquis/Sopre-Modelingsonds Di- Renativity Pulnimiralscol/V4-December Wooding and Antiquis/Sopre-Wooding an

DLAY Liner   SHANSEP   20	Celor	Name	Material Model	Linit Weight (kN/m²)	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shaar Strength (kPai	Tau/Sigma Ratio	Strongth Function	Piezometrie Line	B-ber	Add Weight		
MI - Thistened Residus Mult	1	QLAY Liner	SHANGEP	30				51/6			0	. No:		
M3-Thickered Reside Mud   BHANEEP   16,5   0 0,25   2 0 No	2	Interface Shear Strength	Mohr-Coulomb	10	0	16				2	0	No		
Si	9	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0,15		2	0	No		
B1 - Proposed Residue Serial Reisses (Current Values)   10   30   2   0   No	4	M3 - Thickened Residue Med	BHANSEP	16,5				0,26		2	0	No		
	5	St - Proposed Residue Sand Raises	Note-Coulomb	19	0	30				2	0	No		
Unit 1E - Embarkment	é		Vote-Cookmo	18	.0	30				2	0	No		
Unit 2 - TOPSOE (SBSY Clayer SAND CLAY) - Volve-Costemb 17 0 21 1 0 Ns Leadery Dumod 1 0 Ns Unit 3 - CLAY (Subford Fm) SHANSEP 20 Share - Normal Fundion 1 0 Ns 1 Unit 3 - CLAY (Subford Fm) SHANSEP 16 Share - Normal Fundion 1 0 Ns E Unit 56 - Sily/Clayer Layers (Ascal Fm) SHANSEP 16 Share - Normal Fundion 1 0 Ns 1 Unit 56 - Sily/Clayer (Layers (Ascal Fm) Unit-Costemb 19 0 30 Fundion 1 0 Ns Unit 7 - CUAY/ Washeed Sil/TETONE (Ascal Fm) Nshe-Costemb 22 48 27 1 0 Ns	y	Unit 1A - Engineered FILL	SHANSEP	20			0	0,20		. 9	Ü	No		
Unit 3 - CLAY (Guildred Fm)		Unit 18 • Emberkment	Note-Coulomb	20	4	26					U	No		
Unit 3 - CLAY (Guillatine Firm)		Unit Z • TOPSOR (Sity/ Chaye) SANOV G.AY) • Leasely Dumped	Mohr-Coulomb	17	U	21					0	No		
Unit 4 - Claysy SANUT Sandy CLAY (Guistree   SHANGEP   16   Short - Normal   1	9	17/19/17 C 11/19/20 A 11/19 C 20/19/19/19/19/19/19/19/19/19/19/19/19/19/	SHANSEP	20							0	No		
Unit 56 - StlyClarer (Layers (Ascel Fm)   SHANSEP   16   Shear - Normal   1   0   No	,		SHANSEP	18					Sheer - Normal	- 3	0	No		
Unit 7 - CLAY! Washeed (ILTSTONG   Nuir-Coulomb   22   48   27   1   0   No    1.29	2		SHANSEP	18					Shear - Normal	.1	0	No		
(Leadardia Fm) Vorrectuend 22 40 27	3	Unit 6A - SAND (Assot Fm)	Vohe-Coulomb	19	.0	30			1 to control	19	0	No		
1,29 (b)	16	Unit 7 - CLAY! Weathered SELTSTONE	Vohr-Coulomb	22	48	27				101	0	No		
			1,29											

Wagerup RSA10 FEL3

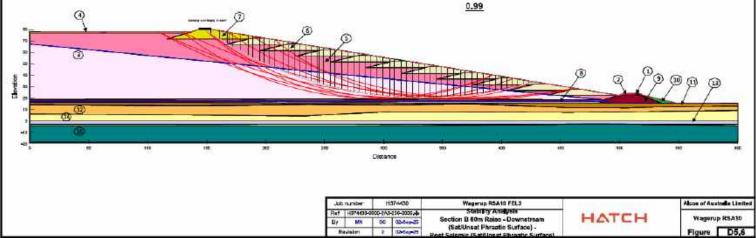
Stability Analysis Section B 60m Reiss - Upstream -Post Seismic (Sat/Unset Phreatic Surface) Alcos of Australia Limited

Wagerup RSA10 Figure D5,5

HATCH

34.5 | 2016/0020 2.20 PM | https://www.munescontrocom/markt0/44/2016/Pub.markte/2016 - Description/Microsoft Vendrig and Analysis/Separy Media/Popunds (2 - Description)

Celor	Name	Material Wodel	Linit Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tau/Sigma Ratio	Strongth Function	Piszometrie Läne	B-ber	Add Weight
1	QLAY Liner	SHANGEP	30			0	9,17			0	No
2	Interface Shear Strength	Mohr-Caulamb	10	0	16				2	0	No
9	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0,15		2	0	No
4	W2 = Thickened Residue Ned	BHANSEP	16,5			۰	0,16		2	0	No
*	W5 - Thickened Residue Mod	SHANSEP	16.5			0	6.25		2	0	No
6	\$1 - Proposed Residue Band Raises	Mote-Cookimb	19	.0	30				2	0	No
y	81 • Proposed Residue Sand Raises (Current Raise)	Mohr-Codemo	19	0	30				2	ū	Mo
8	Unit 1A - Engineered FILL	SHANSEP	20			0	0,20			Ü	No
*	Unit 18 - Emparkment	Vote-Coulomb	20	4	26				,	0	No
10	Unit 2 - TOPSOIL (Silty/ Clayey SANO/ CLAY) Leosely Dumped	Mohr-Couloma	17	0	21				- 3	0	No
11	Unita-CLAY (Guildfuni Fm)	SHANSEP	20					Sheer - Normal Function	- 1	0	No
12	Unit 4 - Clayery SANO/ Sendy CLAY (Guildford Fee)	SHANSEP	18					Shear - Normal Function	.1	0	No
(13)	Unit 68 - Sity/Clayey Layers (Accet Fm)	SHANSEP	18					Shear - Normal Function	131	0	No
14	Unit SA +SAND (Ascot Firr)	Nohr-Coulomb	10	0	30			· EPHOROSIS	101	0	No
181	Unit 7 • CLAY/ Weathered SETSTONE (Leederville Fm)	Mohr-Coulomo	22	48	27				- 1	0	No



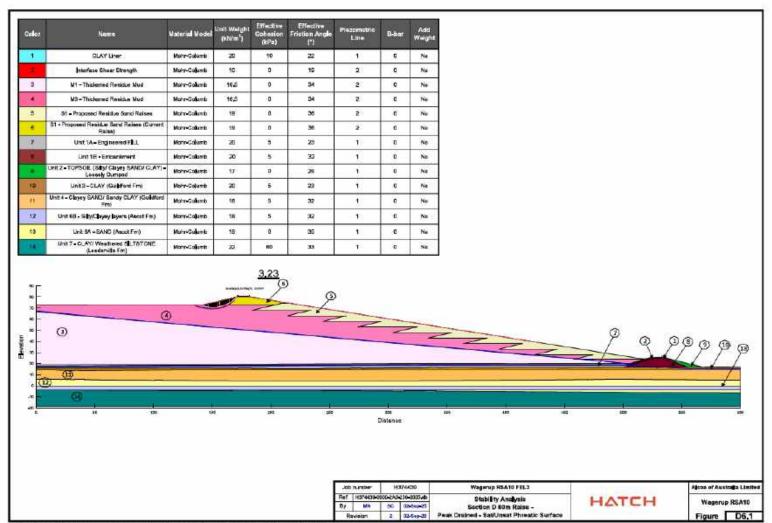
38.6 | 2016/2020 2.20 PM | https://wiscommunescolor.com/main19/44/20/4Pub-com/sheEPG+ December Noorting and Antiquis/Squar-Vocal-Reports D+ Density system





Alcoa of Australia Limited Alcoa Wagerup RSA10 - FEL3 H374430 Engineering Report Geotechnical Engineering Wagerup RSA10 FEL3 - Slope Stability Analysis Report

## D.6 Section D Ultimate Embankment - Phreatic in Residue Mud



K.1 | Interior 254 PM | https://www.nempolic.com/machts/4436/MP-(heart shock/6 - Department/M Vooding and Analysis/Separ Models/operate D - Department of

H.	Name	Vateral Vodel	Linit Weight (kN/m²)	Cohesion (KPa)	Effective Friction Angle (*)	Plezomotric Line	B-bar	Add Weight		
	QLAY-ther	Monr-Columb	20	10	22	5.13	q	Ne	1	
	Interface Shear Strength	Mahr-Calumb	10	0	10	2	0	Ne		
	M1 - Thickened Residue Mod	Morr-Columb	19.5	0	34	2	c	Ne:	1	
	M2 = Thickened Residue Mod	Mohr-Columb	16,5	0	34	2	0	Ne		
9	M3 - Thickened Residue Mud	Monr-Columb	16.5	0	34	2	0	Ne	1	
	\$1 - Proposed Residue Band Raises	Monr-Columb	19	.0	36	2	0	No		
	81 • Proposed RealdLie Band Ralaes (Gurrent Raisa)	Monry-Columb	19	0	36	2	U	Ne		
ļ	Unit 1A - Engineered FILL	Monr-Columb	20	5	23	1	0	No		
ı	Unit 18 - Emborkment	Mohr-Columb	20	5	32		0	Ne		
١	Unit 2 - TOPSOIL (Silly Clayey SAND/ CLAY) - Leosely Dumped	Mohr-Columb	17	0	26	1	u	Ne	1	
ı	Unit 3 - GLAY (Guildfund Fm)	Mohr-Columb	20	5	23		0	Ne		
a	Unit 4 - Clayey SANO/ Sendy CLAY (Culliford	Water-Columb	18	5	32	1	a	Ne	1	
	Frm) Unit 68 - Silty/Clayey layers (Asset Fm)	Moinr-Columb	18	8	32	1	q	Ne		
	Unit 6A - SAND (Ascot Fm)	Morr-Columb	10	0	35	1.	0	Ne	†	
	Unit 7 • CLAY/ Weathered SILTSTONE	Main-Calumb	22	60	33	1	a	Ne	4	
	* (1)			THE STATE OF THE S					2.32	
÷										
Elevation.	(12) 10 (12)									) }
Elevation .	(12)	STORY OF THE PROPERTY OF THE P	186	- 23	200	200	300 Distan		#0 44 49 KC WO	9

	Name	Vateral Vodel	Linit Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	Elle≕ive Friction Angle (*)	Minimum Shear Strength (kPai	Tou/Sigma Ratio	Strongth Function	Pigzomatrie Läne	B-ber	Add Weight					
	QLAY Liner	SHANGEP	50			0	0.22			10	No					
	Interface Shear Strength	Wohr-Coulomb	10	0	10				2	0	No					
	M1 - Thickeried Residue Mod	SHANSEP	16.5			0	0.26		2	12	No					
ij	M3-Thickened Residue Ned	SHANSEP	16,5		6 5		0,30		2	1.	No					
	St - Proposed Residue Sand Raises	Mote-Coulomb	19	0	36				2	0	No					
	61 - Proposed Residue Send Raises (Current Raise)	Mone-Coolomb	19	.0	36				2	0	Yes					
	Unit 1A-Engineered FILL	SHANSEP	20			0	0,25			1	No					
	Unit 1E - Emperium et	Mohe-Coulomb	20	5	32					U	No					
1	Unit Z • TOPSOR (Sity/Citye) SAND/ GLAY) • Leosely Dumped	Mohr-Coulomb	17	υ	26					0	No					
ı	Unit3-CLAY (Guildford Fm)	SHANSEP	20			0		Shear - Normal Function	- 1	0	No					
٦	Unit 4 - Oleyey SAND/ Sandy CLAY (Guildford Fm)	SHANSEP	50		A S	0	-	Sheer - Normal Function	1	0	No					
	Unit 6B - Sity/Clayey Layers (Ascot Fm)	SHANSEP	16			0		Shear - Normal Function		0	No					
	Unit 6A = SAND with Silty/Clayey layers	Wohr-Coulomb	19	0	36			- College	1	0	No					
	Unit 7 - CLAY/ Weathered SILTSTONE (Leederville Fm)	Vole-Coulomb	22	NO	33				19	0	No					
	<b>①</b>		2/100 (-0.00)	1.83	<i>\}</i>	3)			7	2	2		7	) Q	J. J. J.	9
	(3) (3)	***	Summa 0.00/4	(6)	25		)			40		en	2	) Q	(1) (3) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4	9

Wagerup RSA10 FEL3

Stability Analysis Section D 50m Raise -Peak Undrained - SatUnsat Phreatic Surface Ağcus of Australia Limited

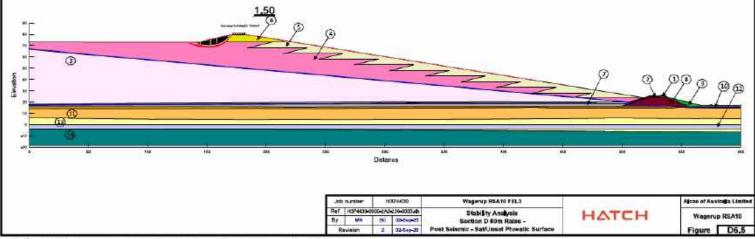
Wagerup RSA10 Figure D6.3

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	Name	Material Model	Lioit Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength	Tau/Sigma Ratio	Strongth Function	Plezometrie Line	B-ber	Add Weight					
ı	QLAY User	SHANGEP	20	50.0240.03		(KPa)	0.22	35.000000	:31	10	No:					
ı	Interface Shear Strength	Wohr-Coulomb	10	0	10				2	0	No					
٦	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0.26		2	1	No					
ı	M2 - Thickened Residue Mod	BHANSEP	16,5				0,26		2	1	Vas					
1	M3 - Thickened Residue Mud	SHANSEP	16.5				6,50		2	1	No					
	51 - Proposed Residue Band Raises	Vote-Cookmo	18	0	36				2	0	No					
	81 • Proposed Residue Band Rales (Gurrent Rales)	Mohi-Codomo	19	0	36				2	U.	Yes					
	Unt 1A-Engineered FILL	SHANSEP	20			0	0,25		-	1	No					
Į	Unit 18 - Embankmet	Voh-Coulomb	20	5	32					0	No					
I	Unit 2 - TOPSOR (Silly Clayer SAND/ CLAY) - Leosely Dumped	Mohr-Couloma	17	0	26				-	0	No					
ı	Unit3-CLAY (Guildfuni Fm)	SHANSEP	20			0		Sheer - Normal Function	-	0	No					
8	Unit 4 - Clayey SANO/ Sendy CLAY (Guildford Free)	SHANSEP	18					Shear - Normal Function	.1	0	No					
	Unit 68 - Sity/Clayey Layers (Asset Frv.)	BHANSEP	18			0		Shear - Normal Function	19	0	No					
	Unit 6 - SAND with Silly/Clayer layers	Note-Coulomb	10	0	35			FIGURE	- 10	0	No					
ı	Unit 7 • CLAY/ Weathered SILTSTONE (Leederville Fm)	Mohr-Coulomo	22	80	33				-	0	No					
	·			(3)						1.59						
	<u> </u>		Samp of the	9	9							0		3	<sup>9</sup> 9 9	9
			Salary of the Control	201		(S)	on Diesect	4		053		0	600	3	\$2 pa	2

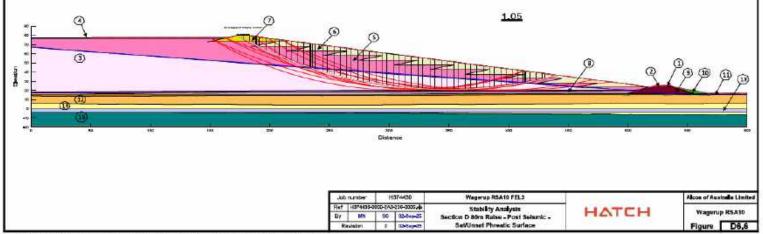
XIA | pressure 250 PM | imputing amunicipal community 44 (WMP-In missing District Continue) Visiting and Antiquis Spory Model Reported District Research (WA

Cellor	Name	Material Model	Liait Weight (KN/m²)	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tou/Sigma Ratio	Strongth Function	Pigzometrie Line	9-bor	Add Weight
1	QLAY User	SHANGEP	30			0	51.0		()t	0	No
2	Interface Shear Strength	Mohr-Caulamb	10	0	16				2	0	No
9	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0,15		2	0	No
14	M3+Thickened Residue Ned	BHANSEP	16,5			0	0,26		2	0	Na
.5	S1 - Proposed Residue Sand Raises	Note-Coulomb	19	0	30				2	0	No
6	81 - Proposed Residue Sand Raises (Current Raise)	Mon-Cookmo	19	.0	30				ž	0	No
y .	Unit 1A - Engineered FILL	SHANSEP	20			0	0,20		- 9	Ü	No
	Linit 1E • Emperiument	Note-Coulomb	20	4	26				_ =	U	No
	Unit Z • TOPSOR (5thy/ Chiye) SAND/ GLAY) • Loosely Dumped	Volu-Coulcino	17	Ü	21				- 1	0	No
10	UnitS-CLAY (Guildford Fm)	SHANSEP	20					Shear - Normal Function	- 1	0	No
11	Unit 4 - Oleyey SAND/ Sandy CLAY (Guildford	SHANSEP	50		A			Sheer - Normal Function	1	0	No
12	Unit 6B + SityClayey Layers (Ascot Fm)	SHANSEP	16					Shear - Normal Function	<u></u>	0	No
19	Unit BA = SAND (Ascot Firi)	Nohr-Coulomb	19	0	30				701	0	No
18	Unit 7 • CLAY/ Weathered SILTSTONE (Leederville Fm)	Vote-Coulomb	22	48	27				16	0	No



DES (2016/2020) 2:23 PM (Imperimental management described and the Committee of Management of Manage

Cellor	Name	Material Model	Linit Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tou/Sigma Ratio	Strongth Function	Piezometrie Line	B-ber	Add Weight
1	QLAY Uner	SHANGEP	30			0	51.0		(3)	0	No
2	Interface Shear Strength	Wohr-Caulemb	10	0	16				2	0	No
9	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0,15		2	0	No
4	W2 = Thickened Residue Ned	BHANSEP	16,5				0,16		2	0	No
*	W3 - Thickened Residue Mud	SHANSEP	16.5			٥	0.25		2	0	No
16	51 - Proposeci Residue Band Raises	Wote-Cookimb	18	.0	30				2	0	No
7	81 • Proposed Residue Band Raises (Current Raise)	Wehr-Coulomb	19	0	300				2	Ü	No
8	Unt 1A - Engineered FILL	SHANSEP	20			0	0,20		- 9	U	No
*	Unit 18 - Emborisment	Mohr-Coulomb	20	4	26					0	No
10	Unit 2 - TOPSOIL (Silly) Clayey SAND/ GLAY) Leosely Dumped	Mohr-Couloma	17	0	21					0	No
10	Unit3-CLAY (Guildfund Pm)	SHANSEP	20					Sheer - Normal Function	- 3	0	No
12	Unit 4 - Clayey SANO/ Sendy CLAY (Guildford Fre)	SHANSEP	18		1 1			Sheer - Normal Function	1	0	No
13	Unit 6B - Sity/Clayer Layers (Ascot Fm)	BHANSEP	18					Shear - Normal Function	19	0	No
3(4)	Unit SA +SAND (Ascot Firr)	Nohr-Coulomb	10	.0	90			I FINANCIA I	10)	0	No
18	Unit 7 • CLAY/ Weathered SETSTONE (Leederville Fm)	Mohr-Coulomo	22	48	27				- 1	0	No



DEST 2016/00/2012/05 PM (https://netroimconengo/stc.com/maint/1/14/06/97/uhrentrike/2014-Cerestrike/M Voorking and Ansthis/Septer Modelingsonds D + Sensitivityses





Alcoa of Australia Limited Alcoa Wagerup RSA10 - FEL3 H374430 Engineering Report Geotechnical Engineering Wagerup RSA10 FEL3 - Slope Stability Analysis Report

D.7 Section B Ultimate Embankment - Elevated Phreatic Surface (Case 2)

	Name	Material Model	Linii Welght (khim <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Plezomotric Line	B-bar	Add Weight							
	QLAY Uner	Mohr-Columb	30	10	22	5.15	0	Ne							
	Interface Shear Strength	Mahr-Calumb	10	0	10	2	0	Ne							
	M1 - Thickened Residue Musi	Morr-Columb	16.5	0	34	2	c	Ne:							
1	M3=Thickened Residue Ned	Mahr-Columb	16,5	0	34	2	0	Ne							
٦	St - Proposed Residue Sand Raises	Mohr-Columb	19	0	36	2		Ne							
ı	81 - Proposed Residue Sand Raises (Current Raise)	Monr-Columb	19	.0	36	2	6	No							
	Unt IA-Engineered FILL	Monry-Columb	20	5	23	1	U	Ne							
ı	Linit 1E • Emberkment	Monr-Columb	20	5	30	1	0	No							
ı	Unit Z = TOPSOR (Sitty/ Chiye) SAND/ GLAY) = Loosely Dumped	Mone-Columb	17	U	26	- 1		Ne							
ı	Unit3-CLAY (Guildford Fm)	Mohr-Columb	20	5	23	- 1	c	Ne							
Ì	Unit 4 - Clayey SAND/ Sandy CLAY (Gullifford Fm)	Mohr-Columb	50	5	32	4	0	Ne							
İ	Unit 68 - Sity/Clayey Jayers (Ascot Fm.)	Monry-Columb	16	5	302	10	0	No							
Ī	Unit 9A = SAND (Ascet Fir)	Many-Calumb	19	0	35	48	c	Ne							
Ì	Unit 7 - CLAY/ Weathered SILTSTONE. (Leederville Fm)	Monry-Columb	22	60	33	Ť	0	Ne							
	3	2.61	11	0	~				2		P (	<b>?</b>	ر ج	<b>9</b>	D.

Ref H374439-0000-2A0-230-0335-ds By Min 50 03-09-25 Revision 2 03-5-9-25 Stability Analysis Section B 80m Raise -Peak Drained - Elevated Phreatic Surface

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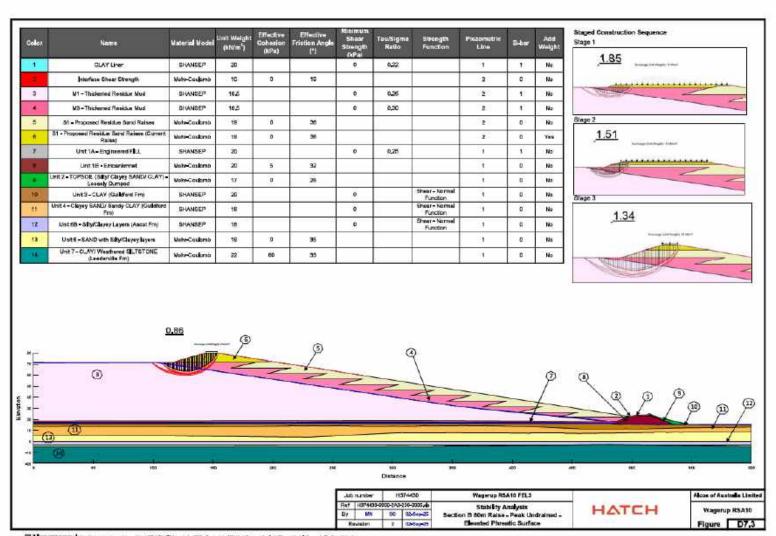
Wagerup RSA10 Figure D7.1

77.5 | artestas 2.55 PM | impulseur municipal combinants/44.00 MP-brims should + Department M Modeling and Antiquid Super Modeling product - General park

	Name	Waterial Wodel	Linit Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Plezomotric Line	B-bar	Add Weight	
1	QLAY Liner	Mohr-Columb	30	10	22	-1	0	Ne	
2	Interface Shear Strength	Monr-Columb	10	0	10	2	0	Ne	
3	M1 - Thickeried Residue Musi	Morr-Columb	193	0	34	2	c	Ne	
4	M2 = Thickered Residue Mod	Mahr-Calumb	16,5	0	34	2	0	Ne	
*	M3 - Thickened Residue Mod	Morr-Columb	16.5	0	34	2	0	Ne	
6	\$1 - Proposed Residue Band Raises	Monr-Columb	19	.0	36	2	6	No	
ý	81 • Proposed Residue Band Raises (Current Raise)	Monr-Columb	19	0	36	2	U	No	
8	Unit 1A = Engineered FILL	Monr-Columb	20	5	23	1	0	Ne	
	Unit 18 - Embarkment	Mohr-Columb	20	5	32	- 1	0	Ne	
10	Unit 2 - TOPSOR (Silly Claye) SAND/ CLAY; - Leosoly Dumped	Monr-Columb	17	0	26	4	u	Ne	
15	Unit3=CLAY (Guildfuni Fm)	Mohr-Columb	20	5	23	_,_	G	Ne	
12	Unit 4 - Clayey SANO/ Sendy CLAY (Cultifland	Warr-Calumb	18	5	32	1	0	Ne	
13	Fm) Unit 68 - Silty/Clayey layers (Asset Fm)	Mainr-Columb	18		32	1	c	Ne	
(4	Unit SA = SAND (Ascot Fm)	Mahr-Calumb	10	0	35	1.	0	Ne	
	Unit 7 • CLAY/ Weathered SILTSTONE	Many-Columb	22	60	33	1	a	Ne	
	9		_p	Ø					1.99
		-	Marie Contract	-		Charles Control			
AND THE THE	<b>3</b>					9			
	3					9			
		120		280	2		SC Natarica		390 -QJ -428 500 -995

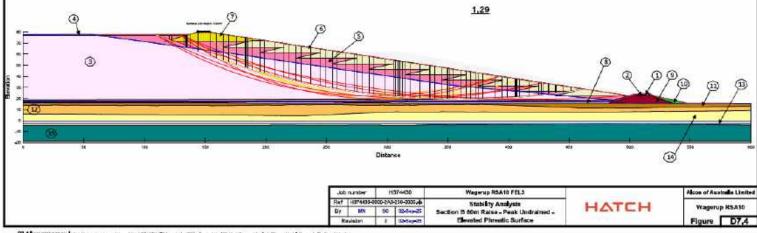
Figure D7.2

7.2 | articolo 2.55 PM | interferormaneae (combination 44.004) University (i) - Department of Vocating and Antiquis Report Code (hoperator) - Sensity (see



7.3 (2000)20219 (https://www.namenit.com/maints/440048/Shimmished24) - Department Vooding and Antigla Stope Voods Reports D - Sensinty Acc

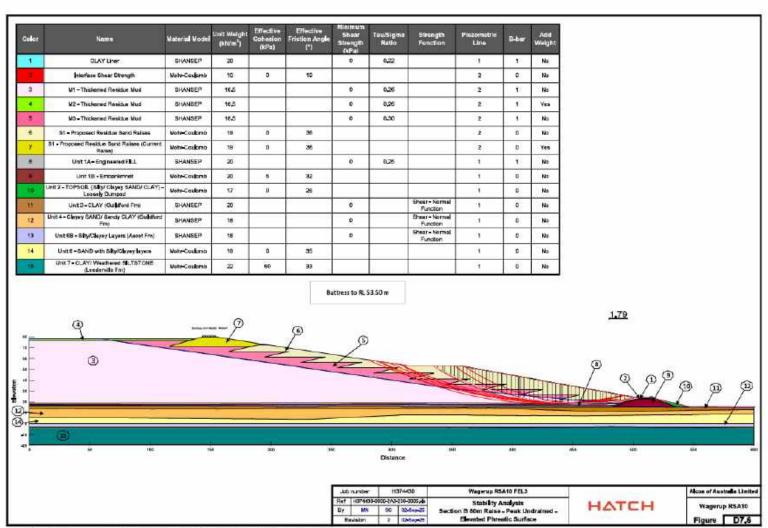
Color	Name	Vaterial Wodel	trait Weight (kN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tau/Sigma Ratio	Strongth Function	Piszomutrie Line	Bloom	Add Weigh
1	QLAY Uner	SHANGEP	30			0	0.22		(3)	10	No
3	Interface Shear Strength	Wohr-Coulomb	10	0	10				2	0	No
9	M1 - Thickened Residue Musi	SHANSEP	16.5			0	0.26		2	100	No
4	W2 = Thickered Residue Wod	BHANSEP	16,5			0	0,26		2	10	Ves
*	M3 - Thickened Residue Mud	SHANSEP	10.5			0	0,50		2	10	No
16	51 - Proposed Residue Band Raises	Vote-Cookmb	19	.0	36				2	0	No
7	81 • Proposed Reaktive Sand Raless (Current Rales)	Mohr-Codomo	19	0	36				2	U.	Yes
8	Unit 1A - Engineered FILL	SHANSEP	20			0	0,25				No
*	Unit 18 - Emberkmost	Vote-Coulomb	20		32					0	No
10	Unit 2 - TOPSOL (Silty/ Claye) SANO/ GLAY) Leosely Dumped	Mohr-Coulomb	17	0	26					0	No
th	Unita-CLAY (Guild'uni Fm)	SHANSEP	20			۰		Sheer - Normal Function	- 1	0	No
12	Unit 4 - Clayey SANO/ Sendy CLAY (Guildford Fm)	SHANSEP	18			0		Sheer - Normal Function	.1	0	No
(10)	Unit 68 - Sity/Clayey Layers (Asset Frn)	BHANSEP	18			0		Shear - Nermal Function	19	0	No
34	Unit 6 - SAND with Silly/Clayey layers	Note-Cookins	10	0	35			. IFOMEOSIO	- 101	0	No
181	Unit 7 • CLAY/ Weathered SILTSTONE (Leederville Fini)	Mohr-Coulomb	22	60	33				- 1	0	No



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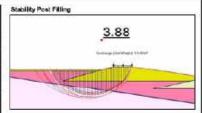
	Name	Material Model	Linit Weight (khim <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tou/Sigma Ratio	Strongth Function	Piczometrie Line	B-ber	Add Weight		
Ī	QLAY Uner	SHANGEP	20			0	0.22		())	10	No:		
ı	Interface Shear Strength	Wehr-Coulomb	10	0	10				2	0	No		
٦	N1 - Thickened Residue Nud	SHANSEP	16.5			0	0.26		2	1	No		
Ī	W2=Thickened Residue Wod	SHANSEP	16,5				0,26		2	1.	Yes		
0	M3 = Thickened Residue Mod	SHANSEP	16.5			۰	0.50		2	1	No		
Ì	S1 - Proposed Residue Band Raises	Vote-Coulomb	19	.0	36				2	0	No		
Ť	81 • Proposed Reskitle Band Raises (Gurrent Raise)	Mehi-Codomo	19	8	36				2	U	Yes		
İ	Unit 1A - Engineered FILL	SHANSEP	20			0	0,25			1	No		
	Unit 18 - Embarkmost	Voh-Codemb	20		32					0	No		
	Link 2 - TOPSOIL (Silly/ Clayer SAND/ CLAY) - Leosely Dumped	Mohr-Coulomb	17	0	26					0	No		
i	Unit3-CLAY (Guildfund Pm)	SHANSEP	20			۰		Sheer - Normal Function	- 1	0	No		
	Unit 4 - Clayey SANO/ Bendy CLAY (Guildford Free)	SHANSEP	18			0		Shear - Normal Function	- 1	0	No		
t	Unit 68 - Sity/Clayey Layers (Assot Frs)	BHANSEP	18					Shear - Nermal	13	0	No		
t	Unit 6 - GAND with Silly/Claver layers	Webr-Cookins	10	0	35			Function	- 0	0	No		
ł	Unit 7 • CLAY/ Weathered SETSTONE (Leederville Fm)	Wehr-Coulomb	22	60	33				-	0	No		
	9	annapra.	-2		P	G	id.		1.50				
20.00	3											J Q 99	(19) (1)
•	8 16	1		11.	1		71	17.		491	400	500	
						Jab numbe	Distance	30	Wagerup RS	A10 FEL3		→ MA =	Alcos of Austr
							33-0000-2A3-226-		Stability A			HATCH	Wagerup
						By M	80 03-	deads Secti	on B 80m Raise				

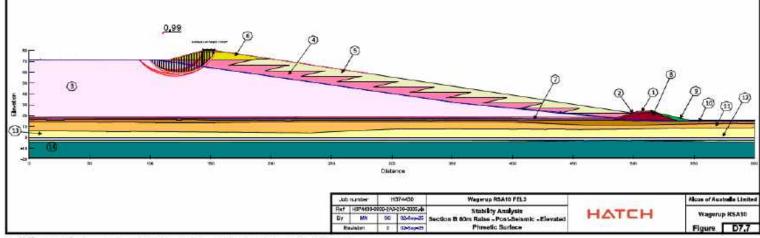
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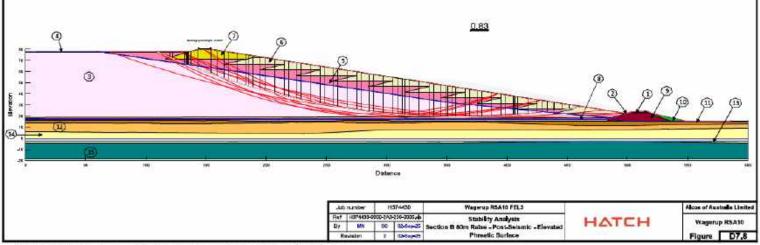
Cellor	Name	Material Model	Liait Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tau/Sigma Ratio	Strongth Function	Piszomutrie Läne	B-bar	Add Weigh
1	QLAY Uner	SHANGEP	30			0	51/6		- (3)	0	No.
2	Interface Shear Strength	Wohr-Caulemb	10	0	16				2	0	No
9	M1-Thickened Residue Mud	SHANSEP	16.5			0	0,15		2	0	No
74	M3+Thickened Residue Ned	SHANSEP	16,5				0,26		2	0	No
.8	St - Proposed Residue Sand Raises	Mote-Coulomb	19	0	30				2	0	No
-6	81 - Proposed Residue Sand Raises (Current Raise)	Monr-Cookens	19	.0	36				1	0	No
9	Unit 1A - Engineered Fill.	SHANSEP	20			0	0,20		- 9	Ü	No
*	Lint 1E - Emperioret	Moh-Coulomb	20	4	26					U	No
	Unit 2 - TOPSOR (Sity/Chye) SANOV GLAY) - Leosely Dumped	Vole-Coulomb	17	U	21					0	No
10	Unit3-CLAY (Guildford Fm)	SHANSEP	20					Shear - Normal Function	- 3	0	No
11	Unit 4 - Clayey SAND: Sandy CLAY (Guildford Frii)	SHANSEP	18					Sheer - Normal Function	- 3	0	No
12	Unit 68 • Silly/Clayer Layers (Ascut Fm)	SHANSEP	18					Sheer - Normal Function	.1	0	No
100	Unit SA - SAND (Ascot Fm)	Mohr-Cautomb	19	:0;	30				131	0	No
16	Unit 7 - CLAY! Weathered SELTSTONE (Leederville Fm)	Wehr-Cookins	22	48	27		j j		101	٥	No





7.7 | articolo 2.55 PM | https://www.managestu.com/man/10/44.0000 Pub ministración - Decembrator Veceting and Antiquisticony Model Reports D - Sensinty Acc

Color	Name	Waterial Wodel	Linit Weight (kN/m <sup>1</sup> )	Effective Cohesion (kPa)	Elfective Friction Angle (*)	Minimum Shear Strength (kPai	Tou/Sigma Ratio	Strongth Function	Piszomatrie Line	B-bar	Add Weight
1	QLAY Uner	SHANGEP	30			0	51/6		- (3)	0	No
3	Interface Shear Strength	Mohr-Caulamb	10	0	16				2	0	No
9	M1 - Thickeried Residue Mud	SHANSEP	16.5			0	0,15		2	0	No
4	W2 = Thickered Residue Mud	BHANSEP	16,5			۰	0,16		2	0	No
*	M3 = Thickened Residue Mod	SHANSEP	16.5			0	0.25		2	0	No
6	51 - Proposed Residue Band Raises	Note-Cookens	19	.0	30				2	0	No
y	81 • Proposed Reaktive Sand Ralaes (Current Ralas)	Wehr-Coulomb	19	0	30				2	Ü	No
	Unit 1A - Engineered FILL	SHANSEP	20			0	0.20		- 9	U	No
*	Unit 18 - Embarkment	Vote-Coulcreb	20	4	26					0	No
10	Unit 2 - TOPSOL (Silly/ Obyey SAND/ GLAY) Leosely Dumped	Mohr-Coulomb	17	0	21				- 1	0	No
111	Unit3=GLAY (Guildfund Frm)	SHANSEP	20					Sheer - Normal Function	- 3	0	No
12	Unit 4 - Clayey SAND/ Sendy CLAY (Guildford Free)	SHANSEP	16					Sheer - Normal Function	.1	0	No
(13)	Unit 68 - Sity/Clayey Layers (Asset Fm)	BHANSEP	18					Shear - Normal Function	19	0	No
34	Unit SA + SAND (Ascot Firr)	Nohr-Codomb	10	.0	30			1 1730000000	101	0	No
181	Unit 7 • CLAY/ Weathered SILTSTONE (Leederville Fm)	Mohr-Coulomb	22	48	27					0	No



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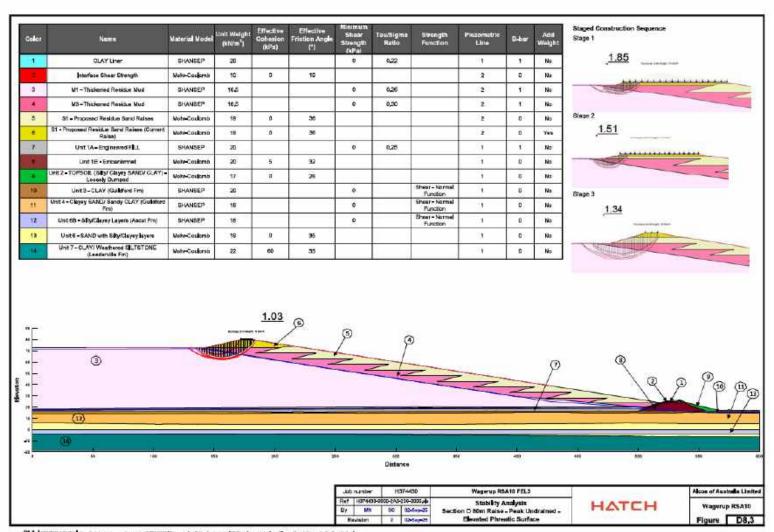
D.8 Section D Ultimate Embankment - Elevated Phreatic Surface (Case 2)

elor	Name	Waterall Wodel	Liait Weight (kN/m²)	Effective Cohesion (kPa)	Ellestre Friction Angle (*)	Plezomotric Line	B-bar	Add Weight							
1	QLAY Liner	Monr-Columb	30	10	222	5.15	.0	Ne							
ā. [	Interface Shear Strength	Mainr-Calumb	10	0	10	2	0	Ne							
3	M1 - Thickened Residue Mud	Morr-Columb	16.5	0	34	2	c	Ne:							
4	W3-Thickened Residue Wod	Mohr-Columb	16,5	0	34	2	· c	Ne							
.5	51 - Proposed Residue Sand Raises	Main-Columb	19	0	36	2	0	Ne							
6	81 - Proposed Residue Sand Raises (Current Roise)	MonreColumb	18	.0	36	2	0	Ne							
y	Unit IA-Engineered FILL	Many-Columb	20	5	23	1	ū	No							
	Unit 1E • Emperiument	Monr-Columb	20	5	30	1	0	No							
	Unit Z - TOPSOR (Sity/ Claye) SAND/ GLAY) - Leosely Dumped	Mone-Columb	17	υ	26	-1	u	Ne							
10	Unit3-CLAY (Guildford Fm)	Mohr-Columb	20	5	23	-	c	Ne							
15 C	Unit 4 - Olayey SAND/ Sandy CLAY (Guilliford	The contract of the	50	5	32	- 1	0	Ne							
12	Unit 68 - Sity/Clayey Jayers (Ascot Fm)	Morr-Columb	16	5	32	10	0	No.							
× .							-								
			19	0	35	1	C	Ne	l						
	Link 94 = SAND (Asset Fm)  Unit 7 = CLAY) Weathered SILTSTONE (Leedarville Fm)	Mater-Columb Mater-Columb	22	но	33	<b>4</b> 17	e	Ne							
10 -	Unit 7 - CLAY/ Weathered SILTSTONE		72	3.23	_®				9			<b>\frac{1}{2}</b>		<u> </u>	9
13	Unit 7 - CLAY) Weathered SELTSTON(C. (Leaderville Fm)	Marricalizeb	12 hangy promise (4 d		<b>6</b>		Sel Distance	630	110	IR RSA10 FEL3	65)	HAT	900	(1) (8) (9)	18

lekor	Name	Waterial Wodel	Liait Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Plezomotric Line	D-bar	Add Weight							
1	QLAY ther	Mohr-Columb	20	10	22	- 1	0	Ne							
3	Interface Shear Strength	Monr-Columb	10	0	10	2	0	Ne							
3	N1 - Thickeried Residue Mud	Morr-Columb	16.5	0	34	2	c	Ne .							
	W2=Thickened Residue Wed	Mahr-Calumb	16,5	0	34	2	c	Ne							
5	M3 - Thickened Residue Mud	Mohr-Columb	16.5	0	34	2	0	Ne							
6	S1 - Proposed Residue Band Raises	Monr-Columb	19	.0	36	2	0	No							
y	81 • Proposed Residue Band Raises (Gurrent Raise)	Many-Columb	19	0	36	2	u	Ne							
8	Unit 1A=Engineered FILL	Monr-Columb	20	5	23	1	0	Ne							
	Unit 18 - Embarkment	Mohr-Columb	20		32	-1	0	Ne							
10	Unit 2 - TOPSOR (Silly/ Clayer SAND/ CLAY) - Leosoly Dumped	Morr-Columb	17	0	26	- 4	u	Ne							
11	Unit3=CLAY (Guildford Pm)	Mohr-Columb	20	5	23		c	Ne							
12	Unit 4 - Clayey SANO/ Bendy CLAY (Guildford	A STATE OF THE STA	18	5	32	1	a	Ne							
13	Fm) Unit 68 - SilbyClayey layers (Accet Fm)	Mohr-Columb	18		32	10	c	Ne							
(4	Unit SA = SAND (Ascut Firr)	Mohr-Columb	10	0	35	1.	0	Ne							
	Unit 7 • CLAY/ Weathered SILTSTONE	Mainr-Columb	22	80	33	1	a	Ne							
	<b>(0</b> )			Ō	Ø.					2.02					
	1		-	9	9 9	)	HT1111			2.02		9			
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Figure D8.2

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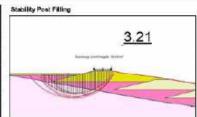
Color	Name	Vaterial Vodel	Linit Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tau/Sigma Ratio	Strongth Function	Piszometrie Line	B-bar	Add Weight		
1	QLAY Uner	SHANGEP	30			0	0.22			10	No		
ā.	Interface Shear Strength	Mohr-Coulomb	10	0	10				2	0	No		
3	M1 - Thickened Residue Mod	SHANSEP	16.5			0	0.26		2	12	No		
a.	M2 = Thickened Residue Mod	BHANSEP	16,5				0,26		2	1.	Vas		
*	M3 - Thickened Residue Mud	SHANSEP	16.5		1	۰	0.50		2	1	No		
6	51 - Proposed Residue Band Raises	Mote-Cookimb	18	.0	36				2	0	No		
ž .	<ul> <li>Proposed Residue Band Raises (Current Raise)</li> </ul>	Mohi-Codono	19	0	36				2	O.	Yes		
8	Unit 1A = Engineered FILL	SHANSEP	20			0	0.25				No		
	Unit 18 - Embarkment	Voh-Codemb	30	- 5	322					0	No		
0	Unit 2 - TOPSOIL (Silly Clayer SAND/ CLAY) - Leosely Dumped	Mohr-Coulomb	17	0	28				- 3	0	No		
	Unit3=GLAY (Guildfuni Pm)	SHANSEP	20			۰		Sheer - Normal Function	,	0	No		
12	Unit 4 - Clayey SANO/ Sendy CLAY (Guildford Free)	SHANSEP	18		F 8	0		Shear - Normal Function	.1	0	No		
ta:	Unit 68 - Sity/Clayey Layers (Asset Fm)	BHANSEP	18					Shear - Normal Function	131	0	No		
4	Unit 6 - SAND with Sity/Clayey layers	Nohr-Coulomb	10	0	35			- mices	101	0	No		
6	Unit 7 • CLAY/ Weathered SILTSTONE (Leederville Fm)	Wohr-Coulomb	22	80	33				-,	0	No		
	① (1)			0						1.30			2 <sup>2</sup> 9
-	M	<sup>g</sup>	e	200	<i>3</i> *	Job number	Distance H3744	200	Wagerup RS Stability A				Alicos of Assimilia
						By MN	and the same of th		on D 80m Raise	contract.		HATCH	Wagerup RSA

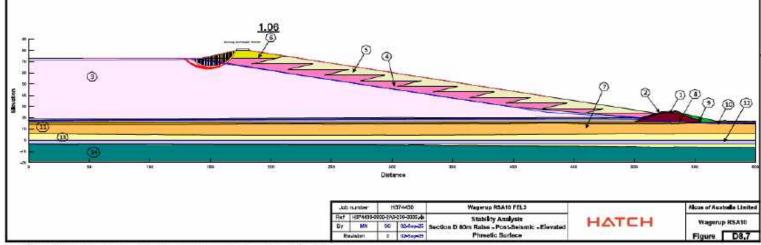
OLA | Discussion 200 PM | Impatriacommunicación combinant (V-440/MP-Unimizated) 40 Desentinal Microsoft Grand Antiquis Septembria (V-400/MP-Unimizated) 40 Desentinal Microsoft Grand Antiquis (V-400/MP-Unimizated) 40

lekor	Name	Vateral Vodel	Liait Weight (KNIm <sup>1</sup> )	Effective Cohesion (kPa)	Elfective Friction Angle (*)	Minimum Shaar Strength (kPal	Tou/Sigma Ratio	Strongth Function	Piszomatrie Line	B-ber	Add Weight		
1	QLAY Liner	SHANGEP	30			0	0.22		())	10	No		
	Interface Shear Strength	Wohr-Coulomb	10	0	10				2	0	No		
3	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0.26		2	12	No		
	W2 = Thickened Flesidus Wed	BHANSEP	16,5		0	0	0,26		2	1.	Yas		
•	W3 - Thickened Residue Worl	SHANSEP	16.5			•	0.50		2	1	No		
	51 - Proposeci Residue Band Raises	Note-Cookmo	19	.0	36				2	0	No		
9	<ul> <li>Proposed Residue Band Raises (Gurrent Raise)</li> </ul>	Mohi-Codomo	19	8	36				2	Ü.	Yes		
	Unit 1A - Engineered FILL	SHANSEP	20			0	0,25				No		
	Unit 18 - Emborkment	Vote-Coulcreb	20	- 5	32				,	0	No		
, lu	rit 2 - TOPSOIL (Silly/ Clayer SAND/ CLAY) - Leosely Dumped	Mohr-Coulomb	17	0	26					0	No		
	Unit3-CLAY (Buildfund Fm)	SHANSEP	20			۰		Sheer - Normal Function	- 1	0	No		
U	hit 4 - Clayey SAND/ Bendy CLAY (Guildford Fm)	SHANSEP	18			0		Shear - Normal Function	.1	0	No		
101	Unit 68 - Sity/Clayey Layors (Accord Fm)	BHANSEP	18			0		Shear - Normal Function	19	0	No		
51	Unit 6 - SAND with Silly/Clayey layers	Webr-Cookins	10	.0	35				100	0	No		
	Unit 7 • CLAY/ Weathered SILTSTONE (Leederville Firi)	Mohr-Coulomo	22	80	33				-	0	No		
	9	~	Service per man	THE PARTY	<b>9</b>	)				<u>1.50</u>	)		
5.0 4.00	3									_			Q
(D)	(3) (a)		20	230	12	50.3	ato Distance	E 38	· · · · · · · · · · · · · · · · · · ·	460		1 1 400 teo	ea
					4	abb number	H3744	30	Wagerup RS	A10 FEL3		(1	Alicon of Austra
						Ref   H3744	39-0000-2A3-220-0	minimum and a second	Stability A			HATCH	_

	Name	Vateral Vodel	Linit Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	⊟lective Friction Angle (*)	Minimum Shear Strength (kPai	Tou/Sigma Ratio	Strongth Function	Piezometrie Line	B-ber	Add Weight			
	QLAY Liner	SHANGEP	50			0	0.22			10	No			
	Interface Shear Strength	Wohr-Caulamb	10	0	10				2	0	No			
	M1 - Thickened Residue Mod	SHANSEP	16.5			0	0.26		2	100	No			
	M2 = Thickened Residue Med	SHANSEP	16,5		0. 50		0,26		2	1.	Yes			
J	M5 - Thickened Residue Mod	SHANSEP	16.5		1	۰	0.50		2	10	No			
1	S1 = Proposed Residue Band Raises	Wote-Cookimb	19	.0	36				2	0	No			
	81 • Proposed Residue Band Raises (Current Raise)	Mons-Coalomo	19	0	36				2	Ü	Yes			
ı	Unit 1A = Engineered FILL	SHANSEP	20			0	0.25		- 1		No			
	Unit 18 - Embarkment	Vote-Coulcrab	20	- 5	312				-	0	No			
	Unit 2 - TOPSOIL (Silty/ Clayey SAND/ GLAY) - Leosely Dumped	Mohr-Coulomb	17	0	28				1	0	No			
ı	Unit3-CLAY (Guildfuni Pm)	SHANSEP	50			۰		Sheer - Normal Function	- 1	0	No			
á	Unit 4 - Clayey SANO/ Sendy CLAY (Guildford Free)	SHANSEP	18		F 8	0		Shear - Normal Function	.1	0	No			
	Unit 68 - Sity/Clayey Layers (Asset Fra)	BHANSEP	18			0		Shear - Normal Function	19	0	No			
	Unit 0 - SAND with Silly/Clayey layers	Nohr-Cookmb	10	0	35			- in topics	- 101	0	No			
	Unit 7 • CLAY/ Weathered SILTSTONE (Leederville Firi)	Webr-Coulomo	22	50	33				-	0	No			
				^										
	@					0		(	3)			<u>1,71</u>		
	<b>®</b>		anne person			0			3			1.71	0	P 9 9
12)	(3) (3) (3)			30	-		wo Distance		3			3	2	1 (3) (10) (10) (10) (10) (10) (10) (10) (10
	<u> </u>			<b>*</b>	-	Jub numbe	mb Distance	50	Wagwap Ro	A10 FEL3		9		Alcon of Assire

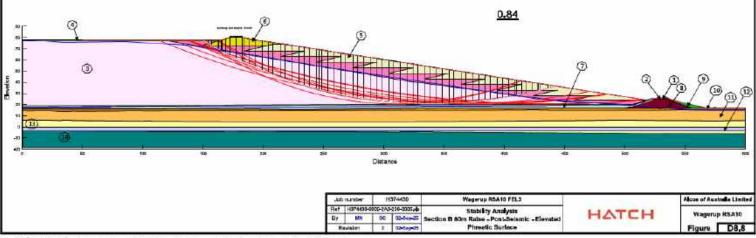
Cellos	Name	Waterial Wodel	Linit Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tou/Sigma Ratio	Strongth Function	Piszometrie Line	B-ber	Add Weigh
1	QLAY ther	SHANGEP	30			0	51/6		- 01	0	No
2	Interface Shear Strength	Woho-Caulemb	10	0	16				2	0	No
9	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0,15		2	0	No
74	M3+Thickened Residue Ned	SHANSEP	16 <i>5</i>				0,26		2	0	No
.5	St - Proposed Residue Sand Raises	Mote-Coulomb	19	0	30				2	0	No
-6	81 - Proposed Residue Sand Raises (Current Raise)	Monr-Cookens	19	.0	30				1	0	No
y	Unit 1A-Engineered FILL	SHANSEP	20			0	0,20			0	No
	Unit 1E - Emperément	Moh-Coulomb	20	4	26					U	No
	Unit 2 - TOPSOR (Sity/ Caye) SANOV G.AY) - Leosely Dumped	Volte-Coulomb	17	υ	21				,	0	No
10	Unit3-CLAY (Guildford Fm)	SHANSEP	20					Shear - Normal Function	- 1	0	No
11	Unit 4 - Cleyey SANE)/ Sandy CLAY (Guildford Fmi)	BHANSEP	18					Sheer - Normal Function	- 3	0	No
12	Unit 66 - Silly/Clayery Layers (Ascar Fm)	SHANSEP	18					Sheer - Normal Function	. 1	0	No
180	Unit SA - SAND (Ascot Firr)	Volte-Coulomb	19	:0	30				131	0	No
16	Unit 7 - CLAY/ Weathered SELTSTONE (Leederville Fm)	Wehr-Cookens	22	48	27		j j		10)	0	No





3.7 | pressor 2.12 PM | imputementation and accomments (44.00 MP) homested 20 + Department of Vocating and Antique Science Accommend to Construy, Acc

Color	Name	Waterial Wodel	Linit Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	⊟fec≑re Friction Angle (*)	Minimum Shear Strength (kPai	Tou/Sigma Ratio	Strongth Function	Piszomatrie Line	B-ber	Add Weigh
1	QLAY Uner	SHANGEP	30			0	51/6		- (3)	0	No
2	Interface Shear Strength	Mohr-Caulemb	10	0	16				2	0	No
9	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0,15		2	0	No
74	M3-Thickened Residue Mud	BHANSEP	16,5			۰	0,26		2	0	No
.5	St - Proposed Residue Sand Raises	Note-Coulomb	19	0	30				2	0	No
- 6	81 - Proposed Residue Sand Raises (Current Raise)	Mone-Cookens	19	.0	30				1	0	No
y	Unit 1A - Engineered FILL	SHANSEP	20			0	0,20		- 9	Ü	No
	Unit 1E • Emberkment	Note-Coulomb	20	4	26					U	No
	Unit Z • TOPSOR (Sity/ Claye) SAND/ GLAY) • Leosely Dumped	Mohr-Coulcmb	17	Ü	21					0	Na
10	Unit3-CLAY (Guildford Fm)	SHANSEP	20					Shear - Normal Function	- 3	0	No
11	Unit 4 - Clayey SAND/ Sandy CLAY (Guildford Fm)	BHANGEP	18					Sheer - Normal Function	- 3	0	No
12	Unit 68 - Silly/Clayery Layers (Ascut Fm)	SHANSEP	18					Sheer - Normal Function	.1	0	No
180	Unit 64 - SAND (Asset Fm)	Volte-Caulomb	19	:0	30				181	0	No
16	Unit 7 - CLAY/ Weathered SILTSTONE (Leederville Fm)	Nohr-Coulomb	22	48	27				101	0	No



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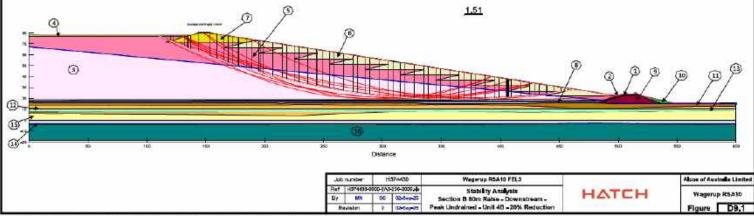




Alcoa of Australia Limited Alcoa Wagerup RSA10 - FEL3 H374430 Engineering Report Geotechnical Engineering Wagerup RSA10 FEL3 - Slope Stability Analysis Report

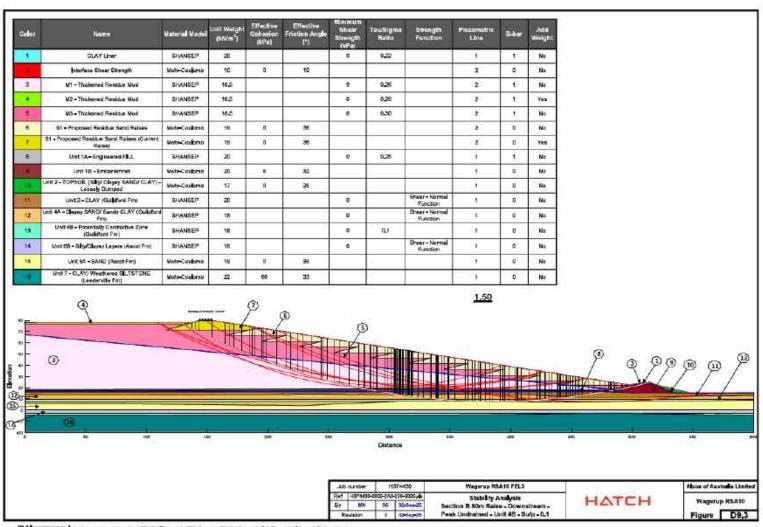
## D.9 Section B Ultimate Embankment – Unit 4B Sensitivity

Celor	Name	Waterial Wodel	Link Weight (KN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	Tau/Sigma Ratio	Strongth Function	Piszometrie Line	B-ber	Add Weight
1	QLAY Uner	SHANGEP	30			0	0.22		.01	10	No
3	Interface Shear Strength	Wohr-Caulemb	10	0	10				2	0	No
9	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0.26		2	100	No
4	W2 = Thickened Residue Nud	SHANSEP	16,5				0,26		2	1.	Vas
*	W5 - Thickened Residue Mud	SHANSEP	16.5			0	0.50		2	. 1	No
6	51 - Proposeci Residue Band Raises	Mote-Cookimo	19	.0	36				2	0	No
ž.	81 • Proposed Residue Band Raises (Current Raise)	Webs-Codemb	19	0	36				2	Ü	Yes
8	Unt 1A - Engineered FILL	SHANSEP	20			0	0.25		- 9		No
*	Unit 18 - Embarkmost	Voh-Codemb	20	- 5	32					0	No
20	Unit 2 - TOPSOIL (Silly) Clayey SAND/ CLAY) Leosely Dumped	Mohi-Coulomb	17	0	28				- 13	0	No
th.	Unit3-CLAY (Guildfuni Fm)	SHANSEP	20			۰		Sheer - Normal Function	- 3	0	No
12	Unit 4A - Clayoy SAND/ Sendy GLAY (Culidford) Fero	SHANSEP	18			0		Sheer - Normal Function	.1	0	No
131	Unit 48 «Potentially Contractive Zone (Guildford Free)	BHANSEP	18			0		Shear - Nermal Function	19	0	No
14	Unit 68 - Sity/Clayey Layers (Ascut Fm)	SHANSEP	10			0		Cheer - Normal Function	101	٥	No
16	Unit 65 - SAND (Agest Firr)	Webr-Coulomb	16	U	95				- 1	0	No
18	Unit 7 - CLAY/ Weathered SILTSTONE (Leederville Fm)	Note-Coulomb	22	60	33				1	0	No



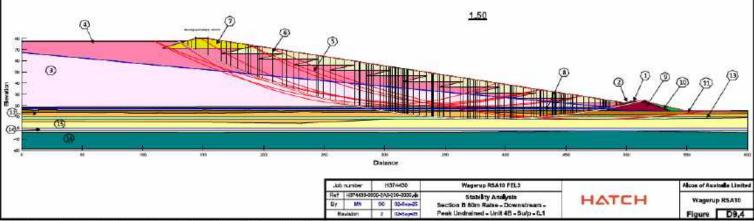
3.1 | pressor 2.00 PM | imputementation and accomments (44.00 MP) in missing 20 - Department of wording and Antiquis Report Accomments (44.00 MP) in missing and A

Celor	Name	Water all Wodel	Linit Weight (kN/m²)	Effective Cohesion (kPa)	Elfective Friction Angle (*)	Minimum Shaar Strength (kPai	Tou/Sigma Ratio	Strongth Function	Piszomotrie Line	B-ber	Add Weight		
1	QLAY liner	SHANGEP	30			0	0.22		.01	10	No		
3	Interface Shear Strength	Wohr-Caulamb	10	0	10				2	0	No		
9	M1 - Thickeried Residue Mud	SHANSEP	16.5			0	0.26		2	12	No		
4	W2 = Thickered Residue Wod	BHANSEP	16,5				0,26		2	1.	Vas		
*	M3=Thickened Residue Mod	SHANSEP	10.5		1	0	0.50		2	1	No		
6	51 - Proposeci Residue Band Raises	Wote-Cookens	19	.0	36				2	0	No		
y .	81 • Proposed Residue Band Raises (Current Raisa)	Mohr-Codomo	19	0	36				2	O.	Yes		
8	Unit 1A = Engineered FILL	SHANSEP	20			0	0,25				No		
	Unit 18 - Embarkment	Vote-Coulcreb	20	- 5	32				,	0	No		
10	Unit 2 - TOPSOL (Silly/ Claye) SANO/ CLAY) - Leosely Dumped	Mohr-Couloma	17	0	26				-	0	No		
th.	Unit3-CLAY (Guildfuni Fm)	SHANSEP	20			۰		Sheer - Normal Function	,	0	No		
12	Unit 4A - Clayey SAND/ Sandy GLAY (Culchird Fire)	SHANSEP	18			0		Sheer - Normal Function	.1	0	No		
13	Unit 48 - Potentially Contractive Zone (Quildford Fm)	BHANSEP	18			0		Shear - Normal Function	19	0	No		
14	Unit 68 - Sity/Clayer Layers (Ascot Fm)	SHANSEP	10			.0		Cheer - Normal Function	101	0	No		
16	Unit 64 - SAND (Agest Firr)	Mohr-Coulomo	10	U	36				- 1	0	No		
16	Unit 7 - CLAY/ Weathered SILTSTONE (Leederville Fm)	Wohr-Coulomb	22	60	33				-	0	No		
	9	-	>	5	9 g				1.72				
79	(3)												9 p /
77 08 - 13 14 14 14 14 14 14 14 14 14 14 14 14 14	49	1	T No.	- 342		Jab numbe	35-0000-2A3-220-0	100				HATCH	Alcos of Australia L Wagerup RSA



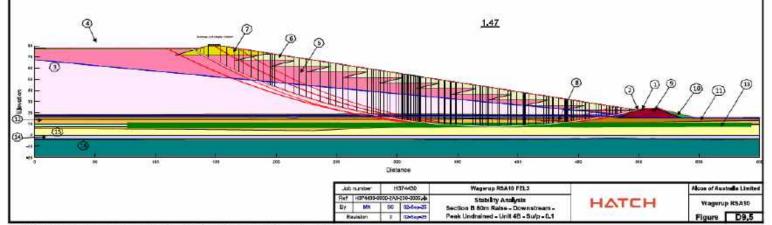
R.3 | prestoco 2.00 PM | imputinarium presidente continuent to 44.00 MP-brimeste differ - December 19 Visited para Antiquis Record Visited Property (III - Personal Property Continuent Con

eker	Name	Waterial Wodel	Lieit Weight (MN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shaar Strength (kPai	Tou/Sigma Ratio	Strongth Function	Piszometrie Line	9-ber	Add Weigh
1	QLAY User	SHANGEP	50			0	0.22		()t	10	No
3	Interface Shear Strength	Wohr-Caulamb	10	0	10				2	0	No
9	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0.26		2	12	No
4	W2 = Thickened Flesidue Nud	BHANSEP	16,5				0,26		2	1.	Ves
*	W5 - Thickened Residue Mud	SHANSEP	16.5			0	0.50		2	. 1	No
6	51 - Proposeci Residue Band Raises	Mote-Cookmo	18	0	36				2	0	No
y .	81 • Proposed Residue Band Raises (Current Raise)	Moto-Cookmo	19	0	36				2	Ü	Yes
8	Unit 1A = Engineered FBLL	SHANSEP	20			0	0.25		- 1		No
	Unit 18 - Embarkmost	Vote-Coulomb	20		32					0	No
10	Unit 2 - TOPSOIL (Silly) Clayey SANO/ CLAY) Leosely Dumped	Mote-Coulomb	17	0	26					0	No
10	Unit3=GLAY (Gullafland Pm)	SHANSEP	20			۰		Sheer - Normal Function	- 1	0	No
12	Unit 4A - Olinyoy SAND/ Sendy GLAY (Culleford) Frm	SHANSEP	18		i	0		Shear - Normal Function	1	0	No
130	Unit 48 - Potentially Contractive Zone (Guildford Fm.)	BHANSEP	18			0	0.1	627 SV 5325	131	0	No
14	Unit 68 - Sity/Clayey Layers (Ascut Fm)	SHANSEP	10			0		Cheer - Normal Function	- 10	٥	No
16	Unit 65 = SAND (Agost Firr)	Wete-Coulomb	16	U	96				-	0	No
16	Unit 7 - CLAY) Weathered SILTSTONE (Leederville Fm)	Wots-Coulomb	22	60	33				- 1	0	No



DBA (Larectics) 2.04 PM (Imperhatorimones electronista (15/4-56/40) Union shell PG - Department in Volvilla and Antiquis Spare Model Reports D - Sensitivity sec

Color	Name	Waterial Wodel	Linit Weight (kN/m <sup>1</sup> )	Effective Cohesion (kPa)	Effective Friction Angle (*)	Minimum Shear Strength (kPai	TowSigma Ratio	Strongth Function	Piezometrie Line	B-bar	Add Weigh
1	QLAY Uner	SHANGEP	30			0	0.22		()t	. E	No
2	Interface Shear Strength	Woho-Caulamb	10	0	10				2	0	No
9	M1 - Thickened Residue Mud	SHANSEP	16.5			0	0.26		2	12	No
4	M2 = Thickened Residue Med	SHANSEP	16,5			.0	0,26		2	10	Vas
*	M3 - Thickened Residue Mod	SHANSEP	16.5			٥	0.50		2	1	No
16	51 - Proposed Residue Band Raises	Wote-Cookens	19	0	36				2	0	No
7	81 • Proposed Residue Band Raises (Current Raise)	Moto-Coalcres	19	0	36				2	Ü	Yes
8	Unit 1A = Engineered FBLL	SHANSEP	20			0	0,25		- 1		No
*	Unit 18 - Embarkennet	Vote-Coulomb	20	- 5	32					0	No
10	Unit 2 - TOPSOIL (Silly) Clayer SAND/ CLAY) Leosely Dumped	Mete-Coulomb	17	0	28					0	No
10	Unit3-CLAY (Guildfuni Fm)	SHANSEP	20			۰		Sheer - Normal Function	- 1	0	No
12	Unit 4A - Claywy SAND/ Sandy CLAY (Culleford) Firm	SHANSEP	18			0		Sheer - Normal Function	1	0	No
13)	Unit 48 - Potentially Contractive Zone (Guildford Fm)	BHANSEP	18			0	0.1	0.00 NV 5305	131	0	No
14	Unit 68 - Sity/Olayey Layers (Asset Fm)	SHANSEP	10			.0.		Cheer - Normal Function	101	٥	No
16	Unit 65 - SAND (Accet Fm)	Wehr-Coulomo	10	U	95				- 1	0	No
18	Unit 7 - CLAY/ Weathered SILTSTONE (Leederville Fm)	Note-Coulomb	22	60	33				- 1	0	No



DLS | 2016/00/20 2.04 PM | https://netrommunescolet.com/maint/1/44/2018Pulnimiralscolet. - December Wooding and Antiquis/Sopre Wooding product - Fernitripped



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Alcoa of Australia Limited Alcoa Wagerup RSA10 - FEL3 H374430 Engineering Report Geotechnical Engineering Wagerup RSA10 FEL3 - Slope Stability Analysis Report

## Appendix E Comments Register



	-	-	-	-	Company of the Compan	<b>SAMPLE</b>	State On Page 19	Degraduate State S	-	Contract of the Contract of th
							(Mariel S. Redden, S. Ch. J. Santoneo Tariffo Jall S. Grand J. Tracks Stated S. Santon S. Liber, S. Chan			
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