ANNEXURE F- INTERFACE STABILITY CHECKS

INTERFACE STABILITY

Stability Analysis was undertaken on each of the liner interfaces using the SLIDE 3 part of the Rock Science Suite of Geotechnical Software. Analysis was undertaken for the case of the empty PCD, i.e. with no loading, when the PCD is full of water, and the worse case scenario when the PCD is full of water and with a loading from a seismic (earthquake) event.

Scenario 1 – No Loading (water) on slope

Safety Factor 0.000 8 Min FS Method Name 0.500 Bishop simplified 1.631 1.620 1.000 1.500 Janbu corrected 1.625 2.000 GLE / Morgenstern-Price 1.620 2.500 3,000 Phi (deg) ₽ Colo (eigh m3) 3.500 (kPa) Surfa 4.000 22 0 28 Non 4.500 0.11 10 16 HDPE Liner None Coulomb 5.000 ynthetic Clay 16.8 M 18 s None 5.500 17 26 None 0 Layer 6.000+ Col Calcrete 16 0 34 None esidual Sandstone 20 34 None 5 8 Hardrock 18 20 40 None N 8 -10 10 20 30 40

Geocell – HDPE interface



Base Prep – in-situ Ground



No external Loading (water) on slope – but there is Seismic loading Geocell - HDPE



Method Name Min FS Bishop simplified 3.104 Janbu corrected 3.098 GLE / Morgenstern-Price 3.080 Marenial Color Wnith Warging Strength Colesian Glead Surface Geocell 2 22 Colormbo 2 28 None 0 0 2.6 0 0 3.080 HDPELIne 0.11 Colormbo 2 28 None 0 0 2.6 0 0 2.6 0 0 2.6 0 <									_	Safety Fact
Wettrod Name Win Ps Bishop simplified 3.104 Janbu corrected 3.098 GLE / Morgenstern-Price 3.080 Mame Color Weight Strength 0 color Weight Strength 0 2 color Mohth 0 28 None 0 Marcel 0.11 Color Color 0 1 color 0.11 Color 0 28 None 0 Gescell 0 22 Color 0 28 None 0 Gescell 0 16 None 0 0 5 18 None 0 Gescell 16.8 Color 0 26 None 0 0 Sardstone 16 Mohth 20 Kohth 0 Sardstone 18 Color 0 34 None 0 Sardstone 18 Color None 0 </th <th>Mat</th> <th>_</th> <th>Main EC</th> <th></th> <th></th> <th></th> <th></th> <th>0.00</th>	Mat	_	Main EC					0.00		
Bishop simplified 3.104 Janbu corrected 3.098 GLE / Morgenstern-Price 3.080 Material Color Weight Strength Older Unit Type Inter Older 0 28 None Ogeosphihetic 0 18 None 0 PrepLayer 0 16 None 0 PrepLayer 16 Color Mohr- 12 None 0 PrepLayer 16 Color Mohr- 0 28 None 0 PrepLayer 16 Mohr- 0 28 None 0 0 Residual 20 Color Mohr- 0 26 None 0 Residual 12 0 Anone 0 0 34 None 0 Bardstone 18 Mohr- 138 None 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 <td< td=""><td colspan="4">Iviethod Name Min FS</td><td>IVIIN FS</td><td></td><td></td><td></td><td></td><td>1.00</td></td<>	Iviethod Name Min FS				IVIIN FS					1.00
Janbu corrected 3.098 GLE / Morgenstern-Price 3.080 Mame Color Mame Color Gecell 22 Outro 28 None 0 HDPELiner 0.11 Main 10 16.8 Color Gecoll 16.8 Color Mohr- 1 16.8 Color Mohr- 1 16.8 Color Mohr- 1 120 Marcial 120 Mohr- 128 None 0 1 128 1 120 Color Mohr- 1 128 1 20 Color 128 1 20 Color 128 1 20 1 20 1 20 1 20 1 20 1 20 1 20	Bisho	p sin	plified		3.104					1.50
GLE / Morgenstern-Price 3.080 Material Color Unit Weight Strength Type Colesion Phi (KP) Water Ru Geocell 22 Color Unit Strength Colesion Phi Water Ru Geocell 22 Color Unit Outor 0 28 None 0 HDFELIner 0.11 Color Material 16 None 0 Geocyliner 16.8 Color 5 18 None 0 Geocyliner 16 Coulor 0 24 None 0 Trisitu Base 17 Coulor 0 34 None 0 Sandstone 20 Coulor 5 34 None 0 Hardrock 18 Mohr. 5 34 None 0	Janb	u cor	rected		3.098				3.080	2.00
Material Name Coler Wnight Weight (WM/m3) Strength Type Colesion (Be3) Material (Be3) Water Surface None O Geocell 22 Mohr- Coulomb 0 28 None O HDPELiner 0.11 Mohr- Coulomb 10 15 None O Insitu Base 16.8 Coulomb 25 None O TestBolian 20 Coulomb 24 None O Sandstone 16 Mohr- Coulomb 24 None O Sandstone 18 Mohr- Sandstone 20 40 None O	GLE / Mo	rgen	stern-Pr	ice	3.080					2.50
Marrial Name Color Write Waynag Strength (WP) Obesion (Beg) Phi (Beg) Water (Beg) Ru Geocell 222 Columb 0 28 None 0 HDPELiner 0.11 Mohr- 5 18 None 0 Geocynthetic Calcy Liner 16.8 Mohr- 5 18 None 0 Tin-Situ Base 17 Mohr- 5 34 None 0 Residual Sandstone 20 Mohr- 5 34 None 0 Hardrock 18 Mohr- 5 34 None 0										3.00
Name (MV/m3) Vyce (MP) (Verg) Surrace Geocell 22 Coulomb 0 28 None 0 HDPELIner 0.11 Mohr. 10 16 None 0 Geosynthetic 16.8 Mohr. 10 16 None 0 Geosynthetic 16.8 Mohr. 0 26 None 0 In-situ Base 17 Coulomb 0 34 None 0 Residual 20 Mohr. 0 34 None 0 Sandstone 20 Mohr. 20 40 None 0	Material	Color	Unit Weight	Stren	gth Cohesion	Phi	Water	Ru		3.50
Geocell 22 Mohr- Coulomb 0 28 None 0 HDFELIner 0.11 Mohr- Coulomb 10 16 None 0 Geocynthetic ClayLiner 16.8 Mohr- Coulomb 0 26 None 0 In-situ Base 17 Mohr- Coulomb 0 26 None 0 Residual Sandstone 20 Mohr- Coulomb 0 34 None 0 Hardrock 18 Mohr- Coulomb 0 34 None 0 Hardrock 18 Mohr- Coulomb 20 40 None 0	Name		(kN/m3)	Тур	e (kPa)	(deg)	Surface			4.00
HDPELiner 0.11 Mohr- 10 16 None 0 Geosynthetic 16.8 Mohr- 5 18 None 0 Institu Base 17 Coulomb 0 26 None 0 Residual 20 Mohr- 5 34 None 0 Residual 20 Mohr- 5 34 None 0 Hardrock 18 Mohr- 5 34 None 0 Hardrock 18 Mohr- 5 34 None 0	Geocell		22	Coulo	omb 0	28	None	0		4.50
Geosynthetic I 16.8 Coulomb 5 18 None 0 In-situ Base I I 16.8 Coulomb 0 26 None 0 Calcrete I I6 Mohr- 0 34 None 0 Residual I 20 Coulomb 5 34 None 0 Hardrock I8 Mohr- 20 40 None 0	HDPELiner		0.11	Mot	^{1r-} 10	16	None	0		5.00
Clay Liner 18.6 Coulomb 5 18 None 0 In-situ Base 17 Mohr- 0 26 None 0 Calcrete 16 Mohr- 0 34 None 0 Residual 20 Coulomb 5 34 None 0 Hardrock 18 Mohr- 20 40 None 0	Geosynthetic		16.9	Moh	nr	10	Nees	0		5.50
Insitu Base 17 Wohn 0 26 None 0 Calcrete 16 Mohr- 0 34 None 0 Residual 20 Mohr- 5 34 None 0 Hardrock 18 Mohr- 5 34 None 0 Hardrock 18 Coulomb 20 40 None 0	Clay Liner		10.0	Coulo	omb ³	10	None	•		6.00
Ceicrete Residual 20 Mohr- 5 34 None 0 Hardrock 18 Mourbe 20 40 None 0	PrepLayer		17	Coulo	omb 0	26	None	0		
Residual Sandstone Hardrock 18 Mohr- 20 40 None 0	Calcrete		16	Moh Coulo	nr- 0	34	None	0		1
	Residual Sandstone		20	Mol Coulo	nr- 5 omb	34	None	0	and a second	
	Hardrock		18	Moh	nr- 20	40	None	0	TURNER COLOR	
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Base Prep - Ground



External Loading (water) Applied

Geocell – HDPE



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Base Prep - in-situ Ground



External Loading (water) + Seismic

Geocell - HDPE



HDPE ·	- GCL
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Method Name			Min FS							
Bishop simplified		1.491					A	Safety	Facto	
Janhu corrected		1 4 7 3						Jurco	0.000	
CLE / Morgonstorn Drice		ern-Price	1 / 7 /							0.500
	schist	chi-r nec	1.4/4							1.500
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Ru			2.000
Geocell		22	Mohr- Coulomb	0	28	None	0			3.000
HDPE Liner		0.11	Mohr- Coulomb	10	16	None	0			3.500
Geosynthetic Clay Liner		16.8	Mohr- Coulomb	5	18	None	0	1.473		4.500
In-situ Base Prep Layer		17	Mohr- Coulomb	0	26	None	0			5.500
Calcrete		16	Mohr- Coulomb	0	34	None	0			6.000
Residual Sandstone		20	Mohr- Coulomb	5	34	None	0		<u>/</u>	
Hardrock		18	Mohr- Coulomb	20	40	None	0			
							*	Landana and Landana		
-20		-10					10		40	

Base Prep – In-situ ground

