

Response (13)23
Sketches SK190-193





Legend

- Hand Auger
- Test Pits
- Machine Holes
- Site Boundary
- Property Boundaries
- Lot Boundaries (08 Jan 25)

Cut/Fill contours

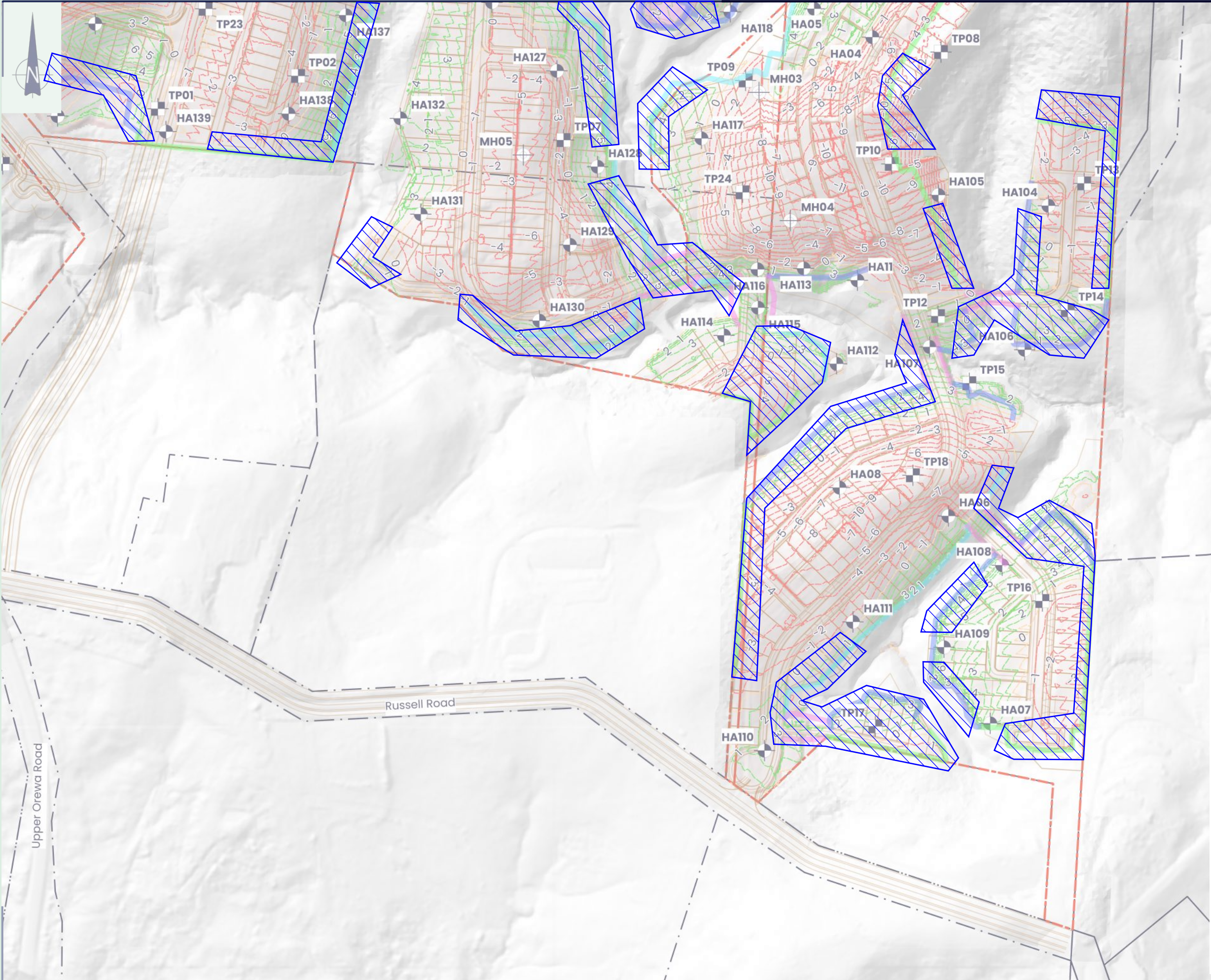
- Cut (1.0m Interval)
- Fill (1.0m Interval)
- 0m contour

Preliminary Proposed Stabilisation Enhancement Measures

- Retaining wall
- Tiered retaining wall
- Palisade wall
- REB
- REB slope + shear pile
- Back-to-back REB
- Soil nails
- Shear key
- Counterfort drains
- Future investigation areas

Notes:

- Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024.
- Existing ground surface outside of the site boundary taken from LINZ DEM 2016-2018.
- Proposed lot development provided by McKenzie & Co., dated 08 January 2025.
- Property data taken from LINZ Data Service.
- Site investigation completed by Riley Consultants across November and December 2024.
- This sketch shows the indicative extent of the proposed stabilisation enhancement measures. Final extent and configurations is subject to detailed design and confirmation on site.
- Earthwork cut and fill profile generated from design ground surface provided by McKenzie & Co., dated 02 May 2025.



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- Lot Boundaries (08 Jan 25)

Cut/Fill contours

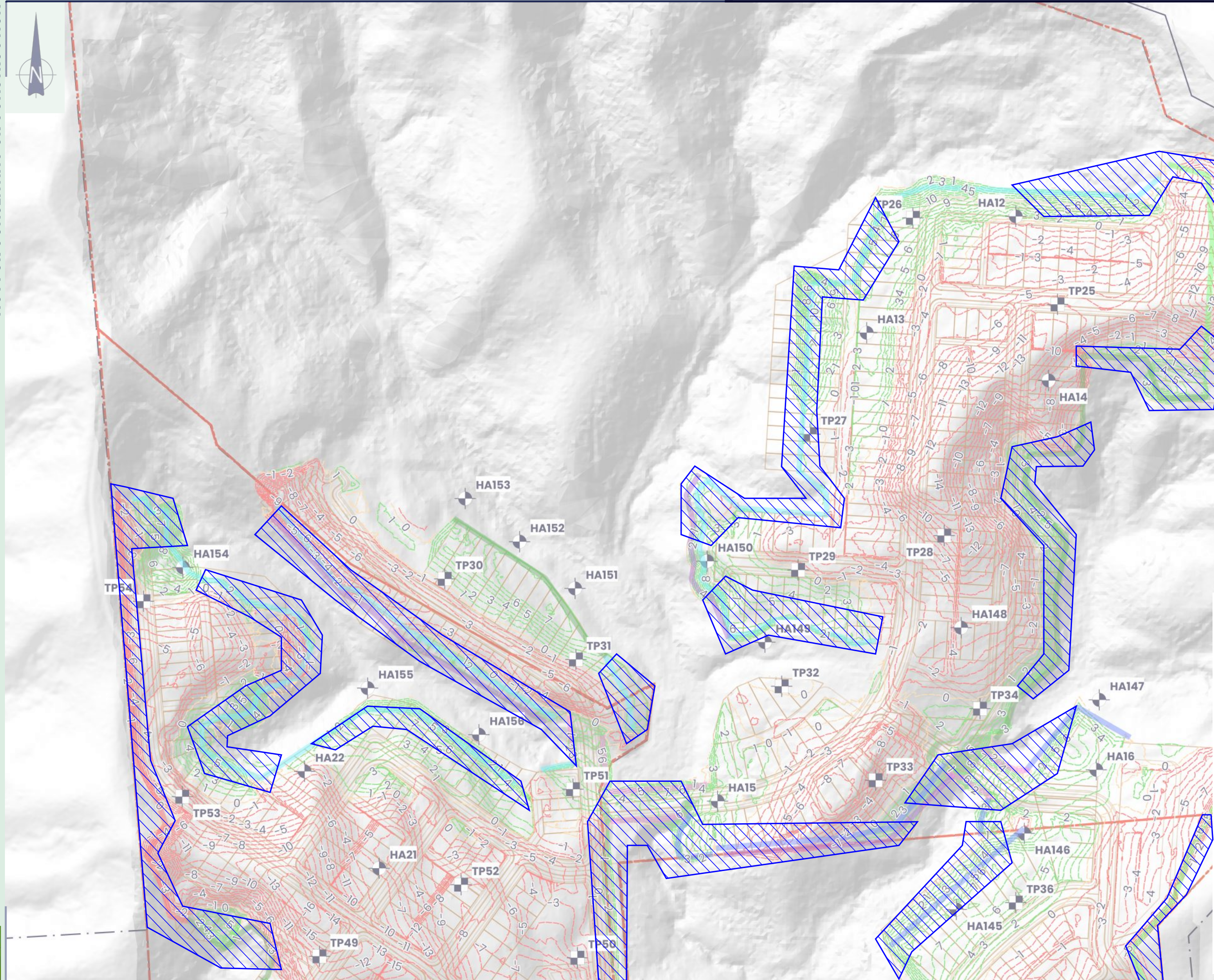
- Cut (1.0m Interval)
- Fill (1.0m Interval)
- 0m contour

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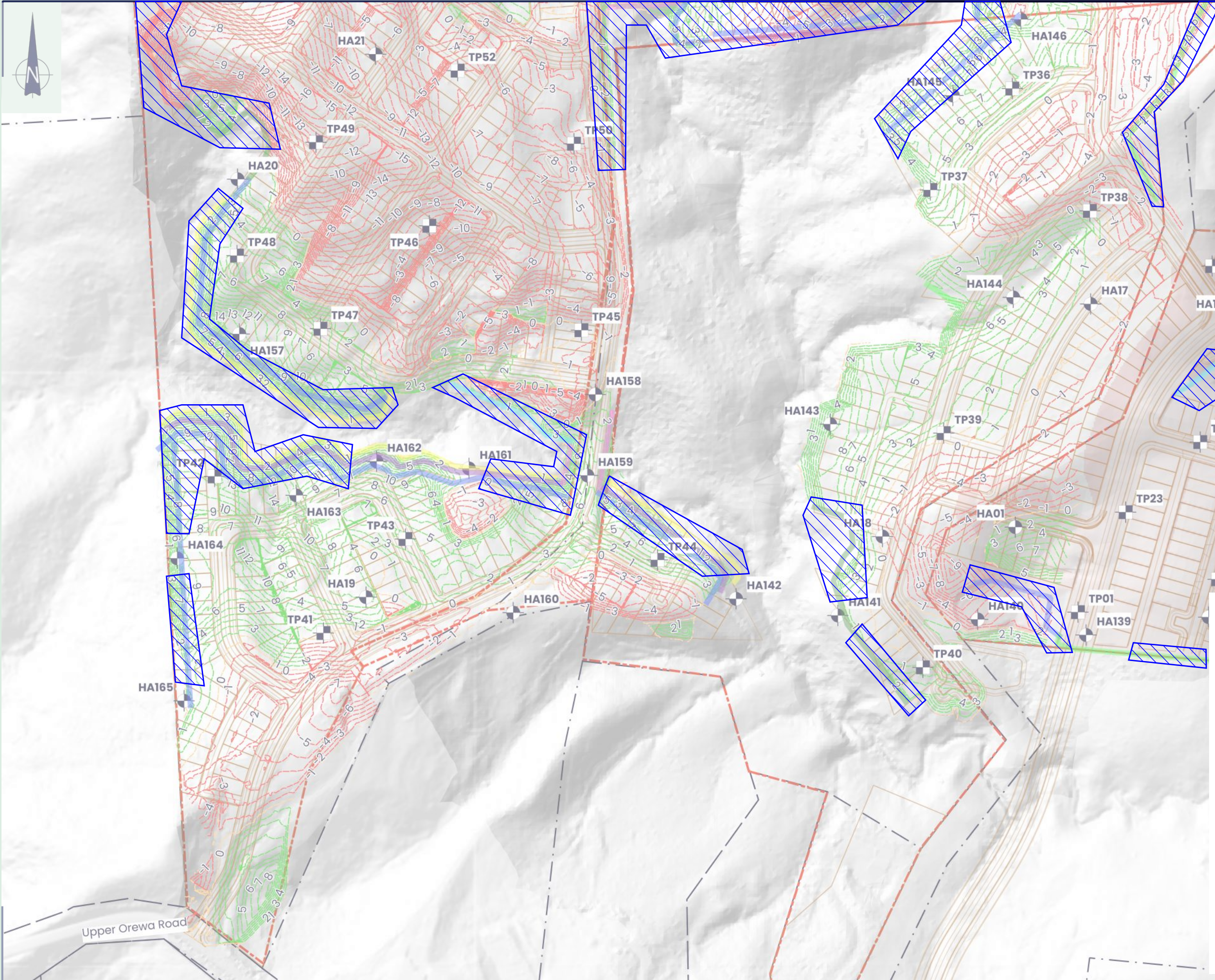
- Cut (1.0m Interval)
- Fill (1.0m Interval)
- 0m contour

Preliminary Proposed Stabilisation Enhancement Measures

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Legend

- Hand Auger
- Test Pits
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- Site Boundary
- Property Boundaries
- Lot Boundaries (08 Jan 25)

Cut/Fill contours

- Cut (1.0m Interval)
- Fill (1.0m Interval)
- 0m contour

Preliminary Proposed Stabilisation Enhancement Measures

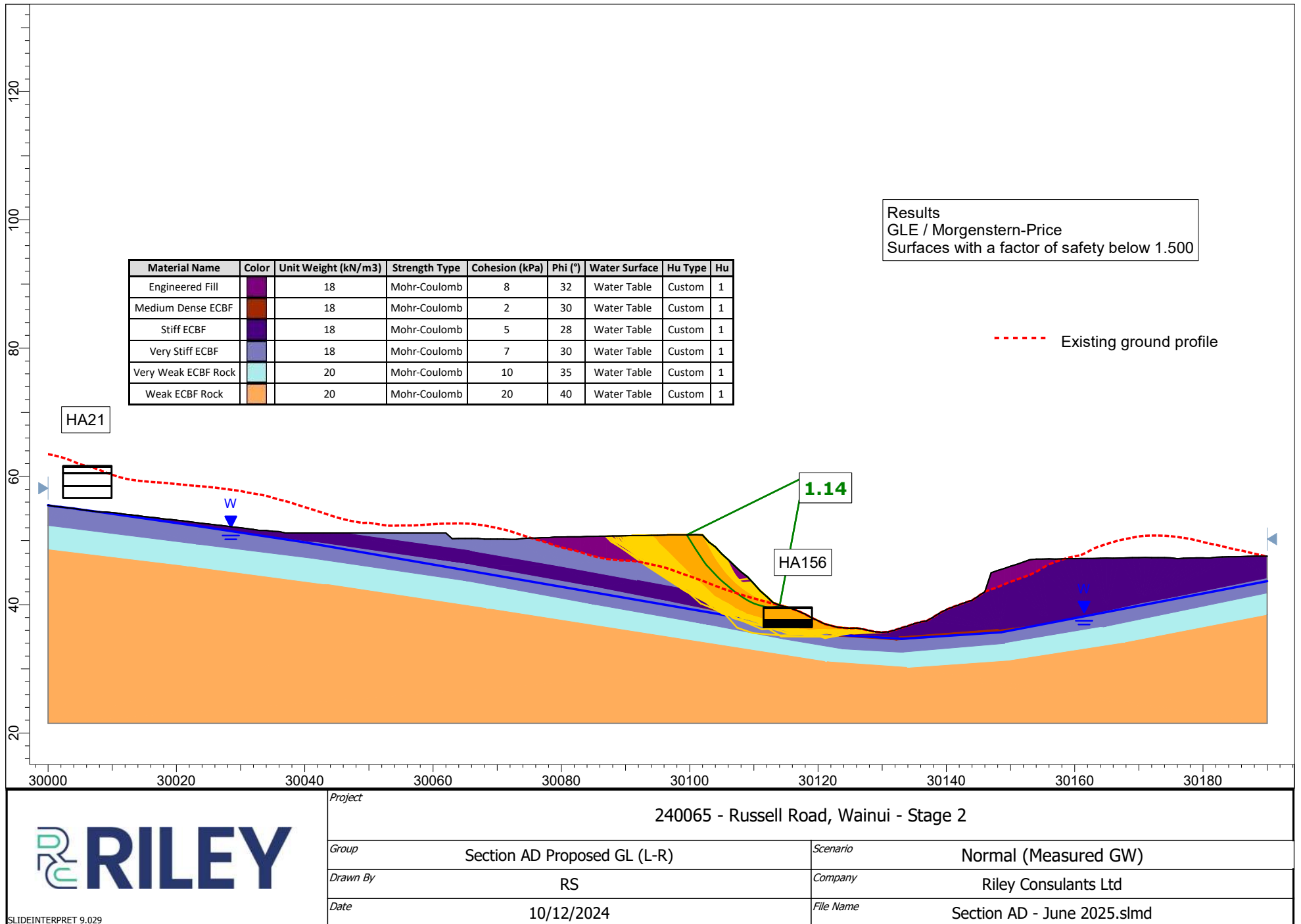
- Retaining wall
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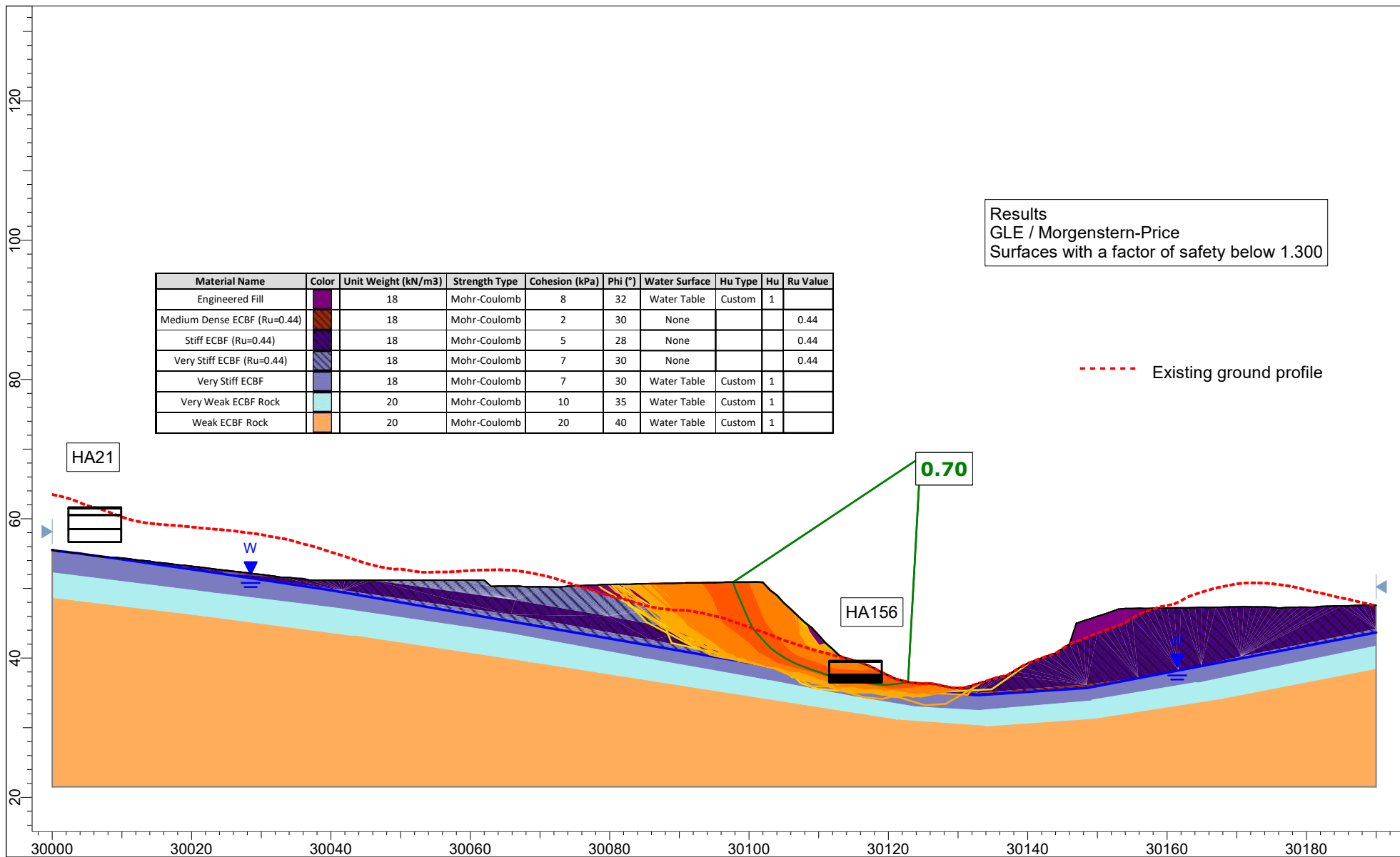
Notes:

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- Existing ground surface outside of the site boundary taken from LINZ DEM 2016-2018.
- Proposed lot development provided by McKenzie & Co., dated 08 January 2025.
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Response (14)24
Slope Stability Outputs
Cross Section AD (left-to-right)

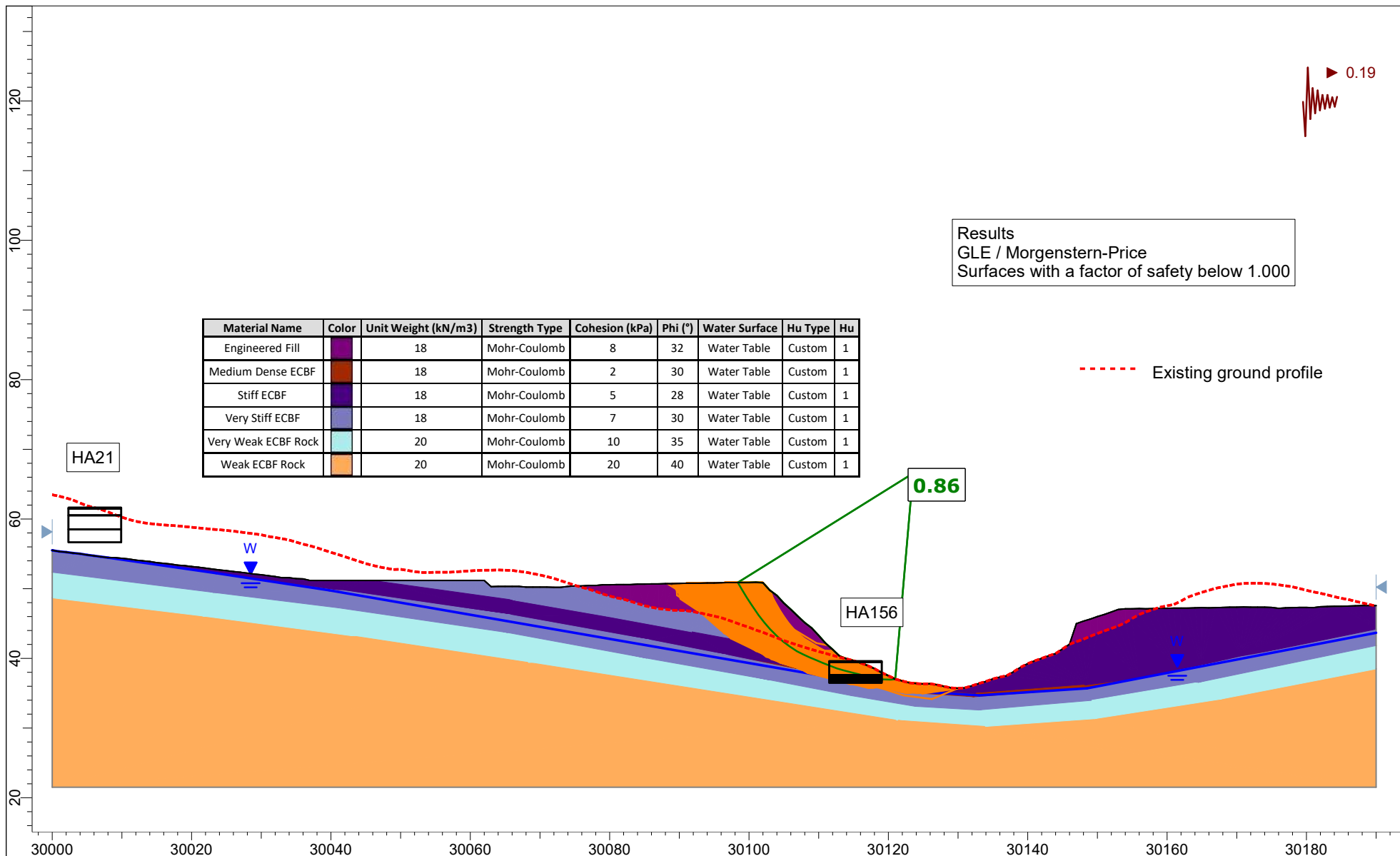






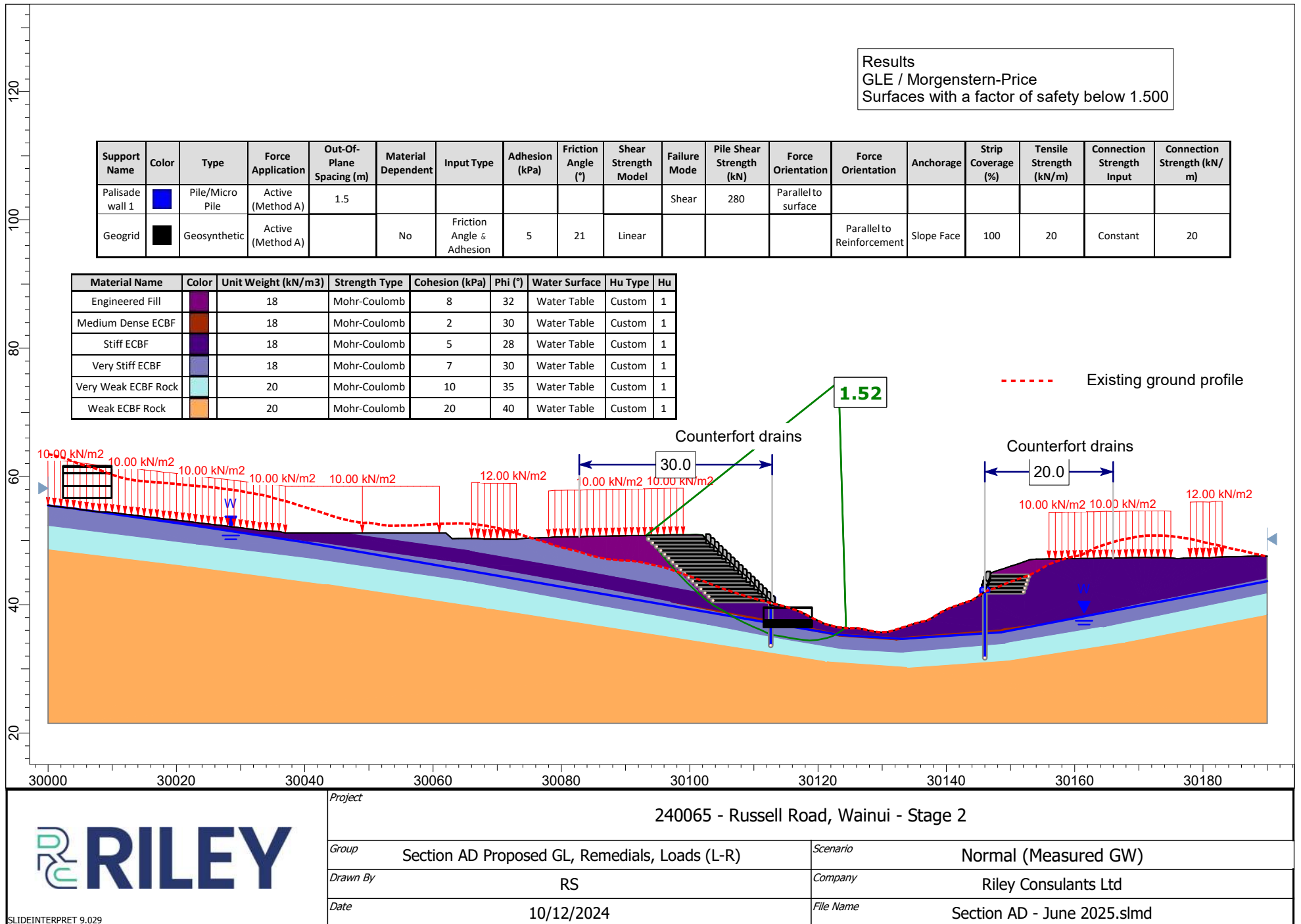
SLIDEINTERPRET 9.029

Project		240065 - Russell Road, Wainui - Stage 2	
Group	Section AD Proposed GL (L-R)	Scenario	Extreme (Worst Credible GW)
Drawn By	RS	Company	Riley Consultants Ltd
Date	10/12/2024	File Name	Section AD - June 2025.slmd



SLIDEINTERPRET 9.029

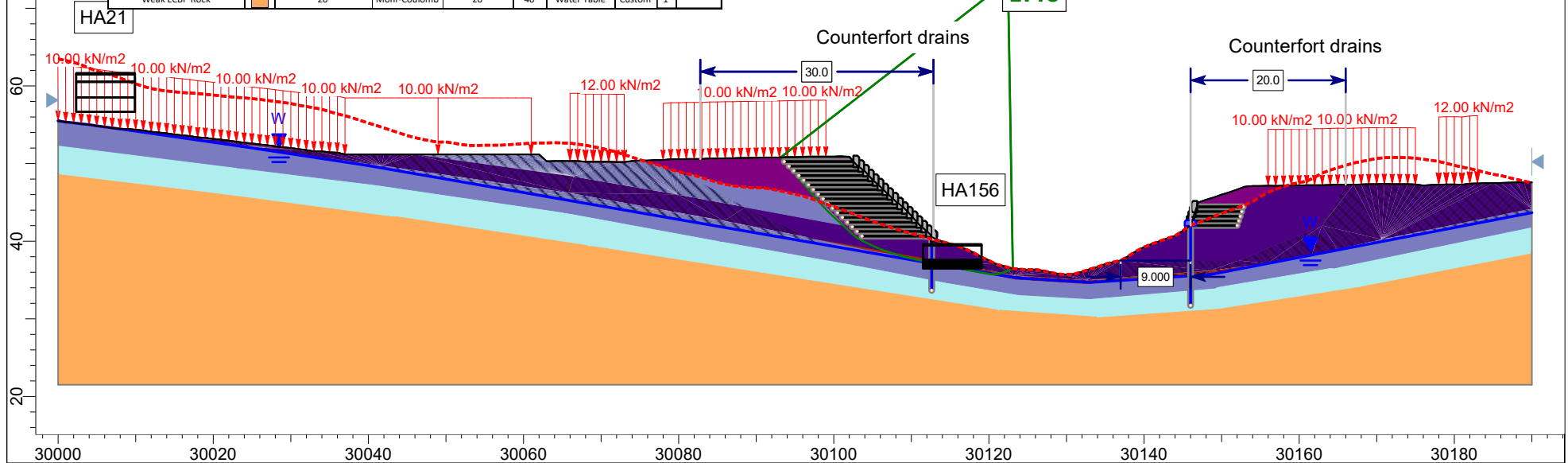
Project		240065 - Russell Road, Wainui - Stage 2	
Group	Section AD Proposed GL (L-R)	Scenario	Seismic (0.19g)
Drawn By	RS	Company	Riley Consultants Ltd
Date	10/12/2024	File Name	Section AD - June 2025.slmd



Results
GLE / Morgenstern-Price
Surfaces with a factor of safety below 1.300

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (m)	Material Dependent	Input Type	Adhesion (kPa)	Friction Angle (°)	Shear Strength Model	Failure Mode	Pile Shear Strength (kN)	Force Orientation	Force Orientation	Anchorage	Strip Coverage (%)	Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Palisade wall 1		Pile/Micro Pile	Active (Method A)	1.5						Shear	280	Parallel to surface						
Geogrid		Geosynthetic	Active (Method A)		No	Friction Angle & Adhesion	5	21	Linear				Parallel to Reinforcement	Slope Face	100	20	Constant	20

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Ru Value
Engineered Fill		18	Mohr-Coulomb	8	32	Water Table	Custom	1
Medium Dense ECBF (Ru=0.44)		18	Mohr-Coulomb	2	30	None		0.44
Medium Dense ECBF		18	Mohr-Coulomb	2	30	Water Table	Custom	1
Stiff ECBF (Ru=0.44)		18	Mohr-Coulomb	5	28	None		0.44
Stiff ECBF		18	Mohr-Coulomb	5	28	Water Table	Custom	1
Very Stiff ECBF (Ru=0.44)		18	Mohr-Coulomb	7	30	None		0.44
Very Stiff ECBF		18	Mohr-Coulomb	7	30	Water Table	Custom	1
Very Weak ECBF Rock		20	Mohr-Coulomb	10	35	Water Table	Custom	1
Weak ECBF Rock		20	Mohr-Coulomb	20	40	Water Table	Custom	1



	<i>Project</i>
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240065 - Russell Road, Wainui - Stage 2

Group

Section AD Proposed GL, Remedials, Loads (L-R)

	<i>Scenario</i>
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Extreme (Worst Credible GW)

Drawn By

RS

	<i>Company</i>
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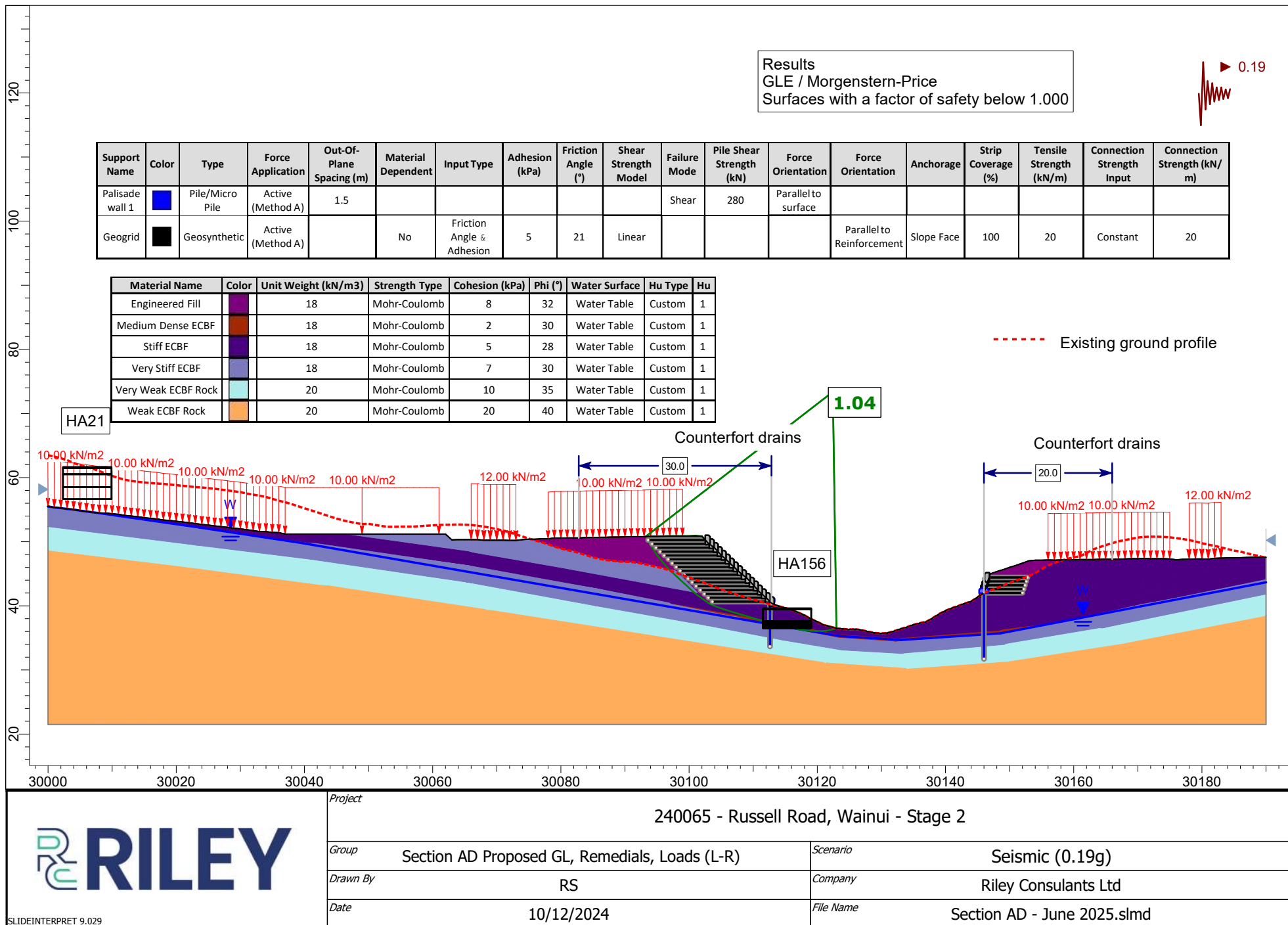
Riley Consultants Ltd

Date

10/12/2024

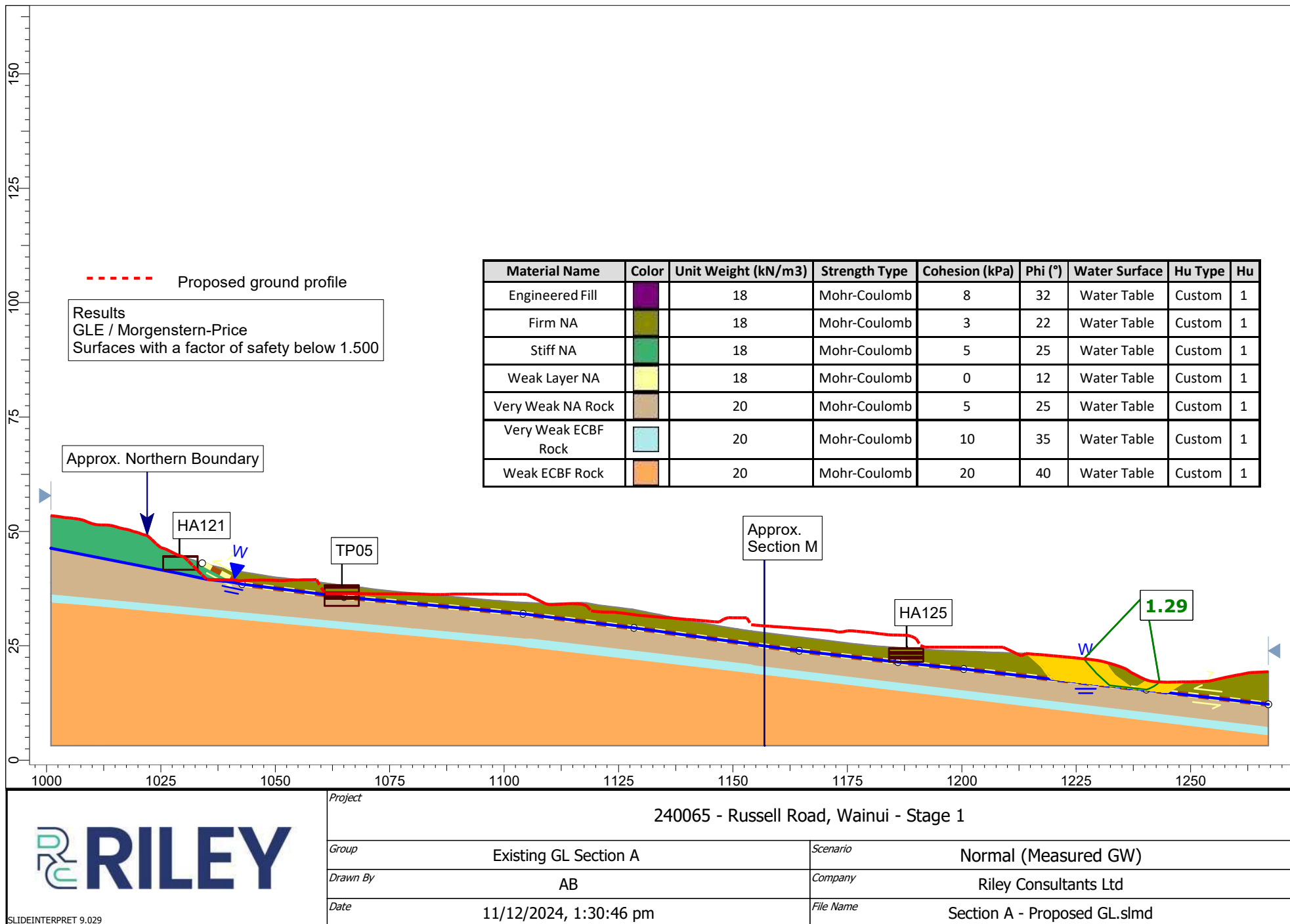
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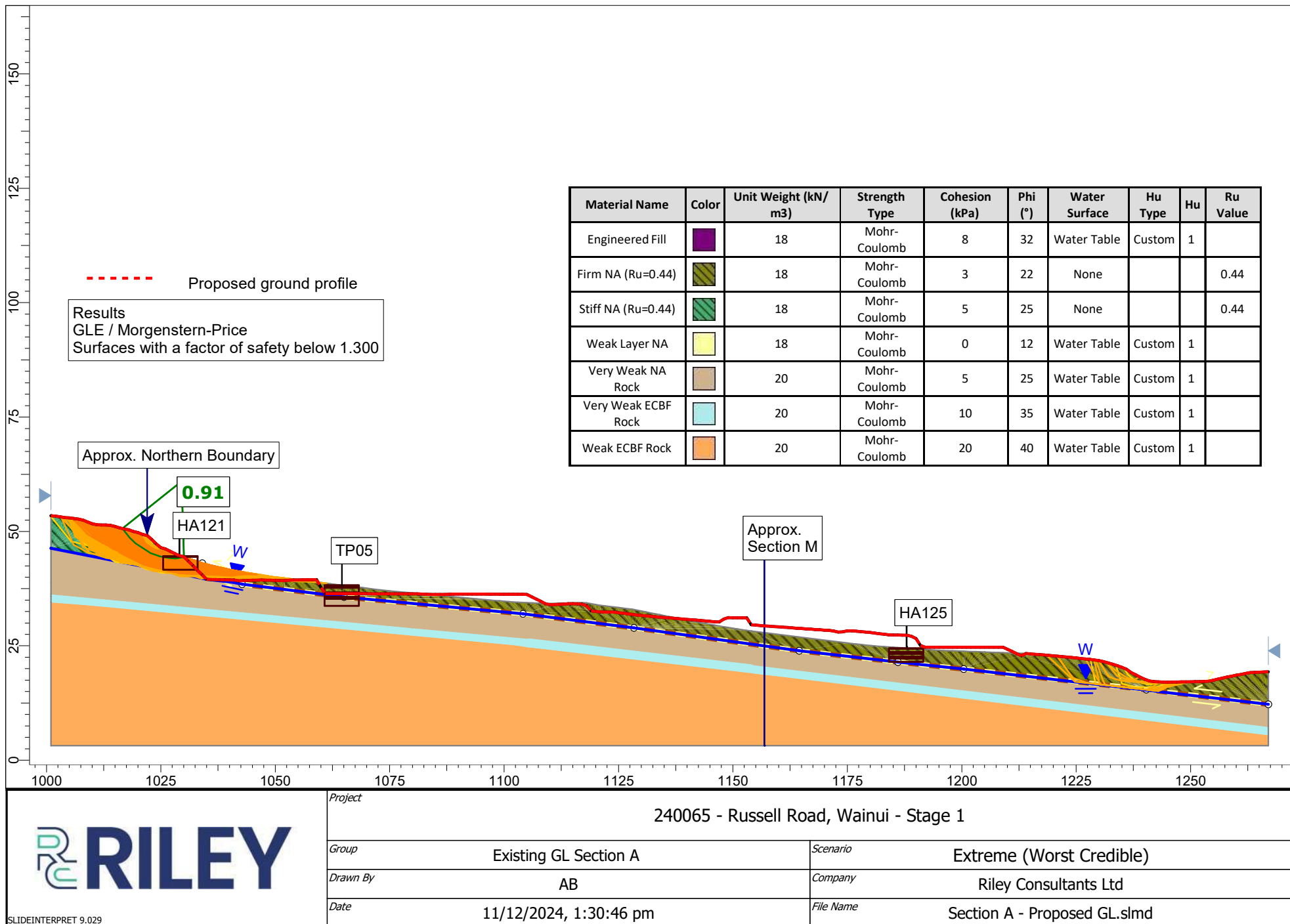
Section AD - June 2025.slmd

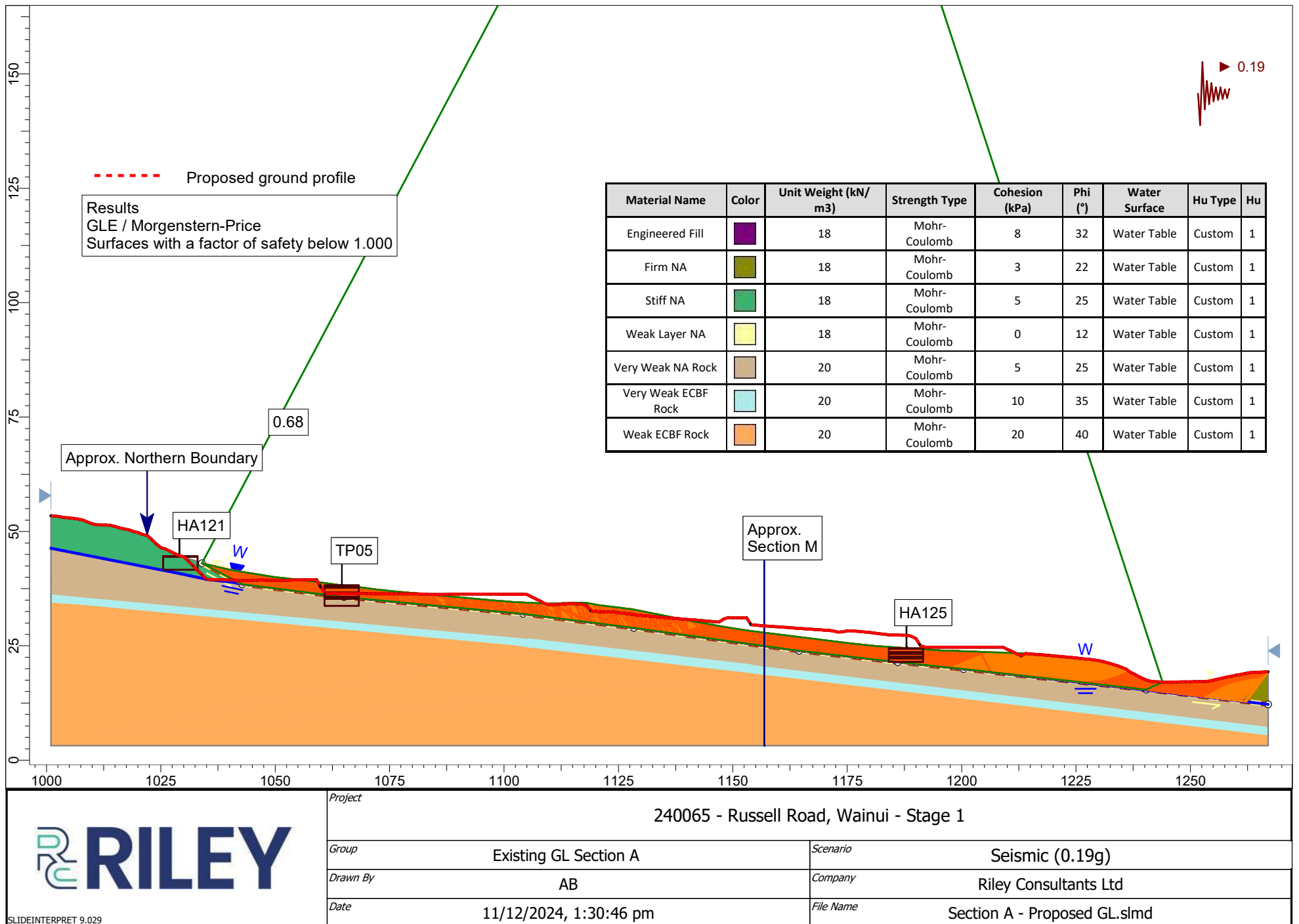


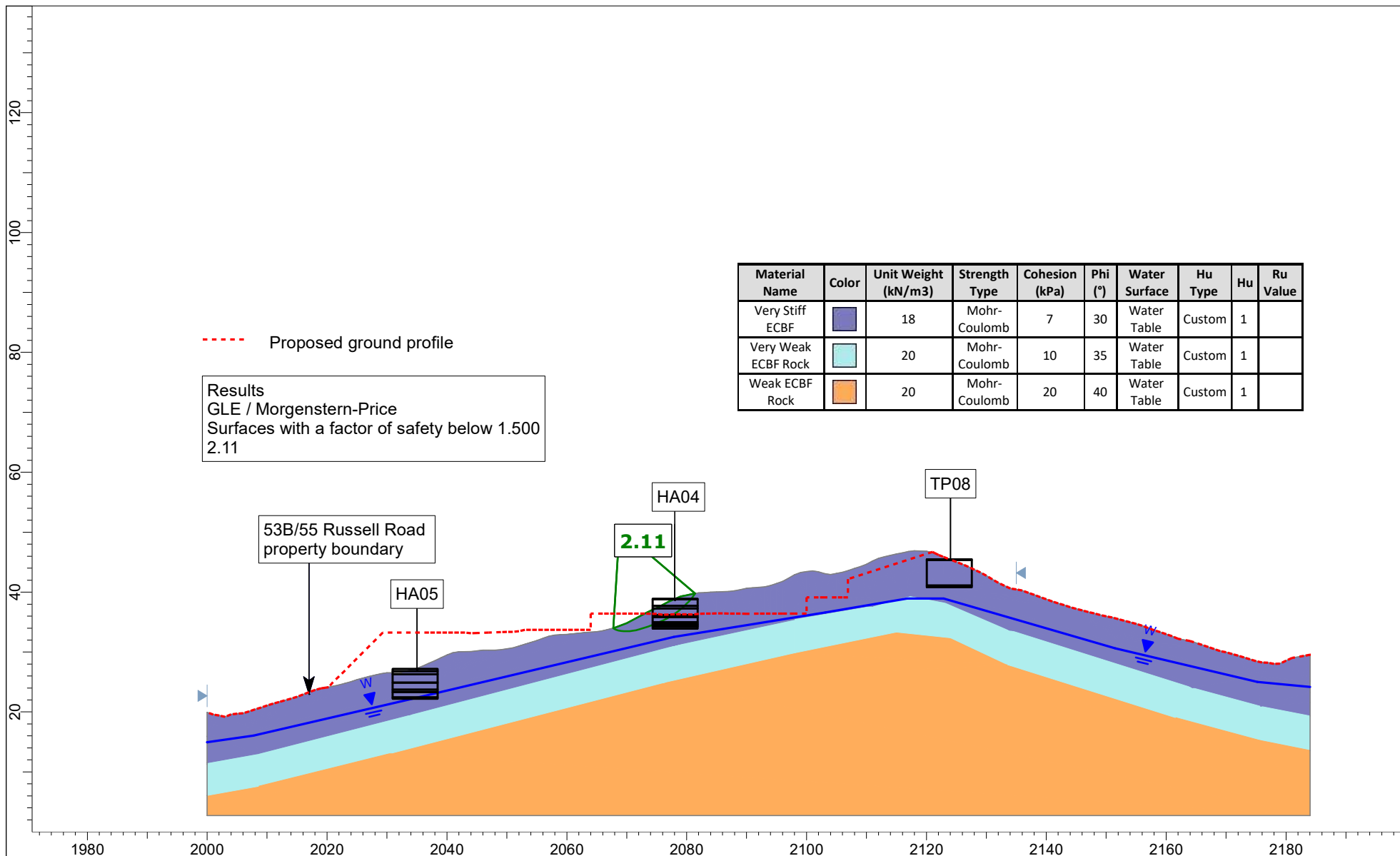
Response (15)25
Slope Stability Outputs
Pre-Development Contours



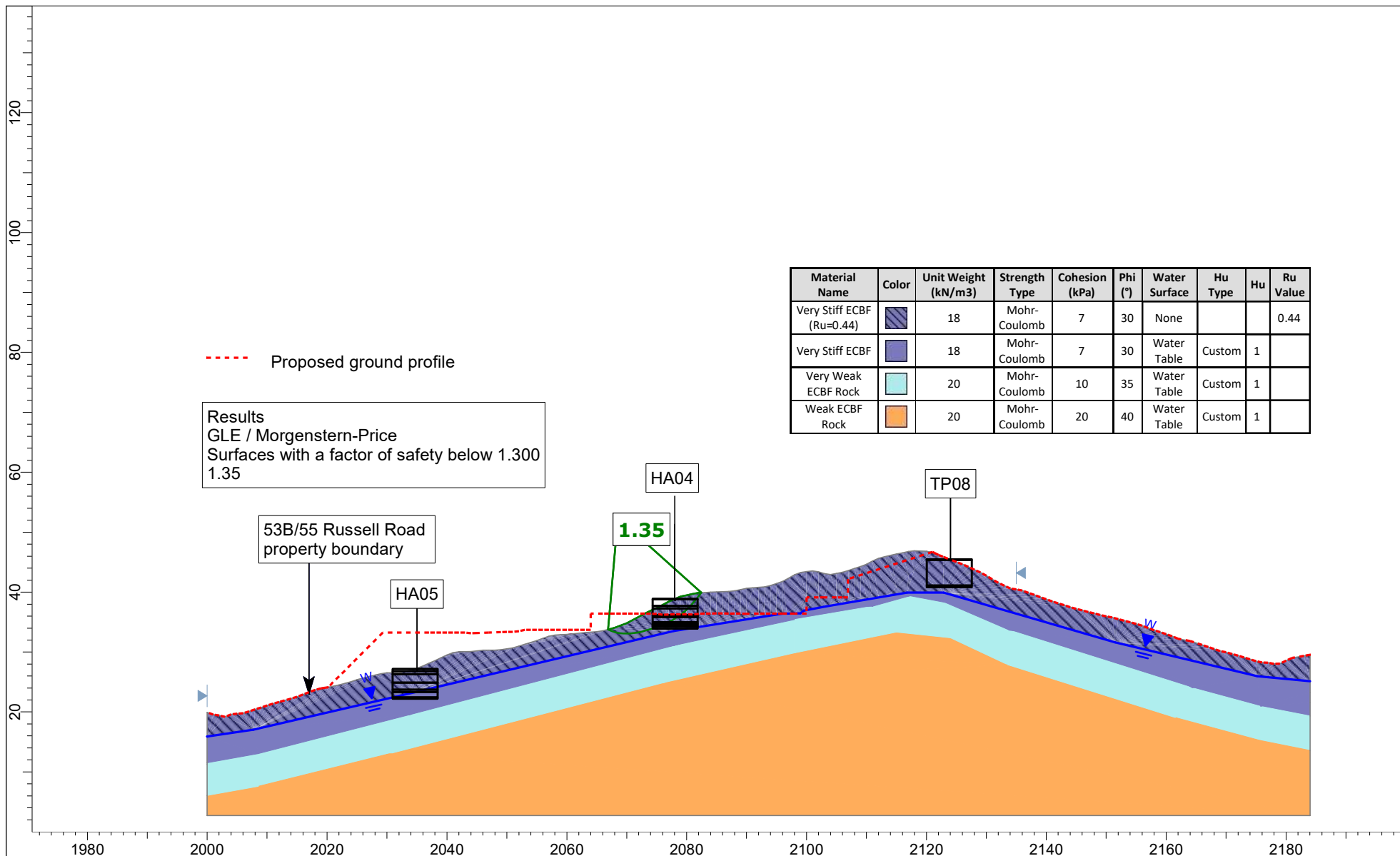








Project		240065 - Russell Road, Wainui - Stage 1	
Group	Existing GL Section B	Scenario	Normal (Measured GW)
Drawn By	RS	Company	Riley Consultants Ltd
Date	12/12/2024, 8:28:52 am	File Name	Section B - Proposed GL.slm

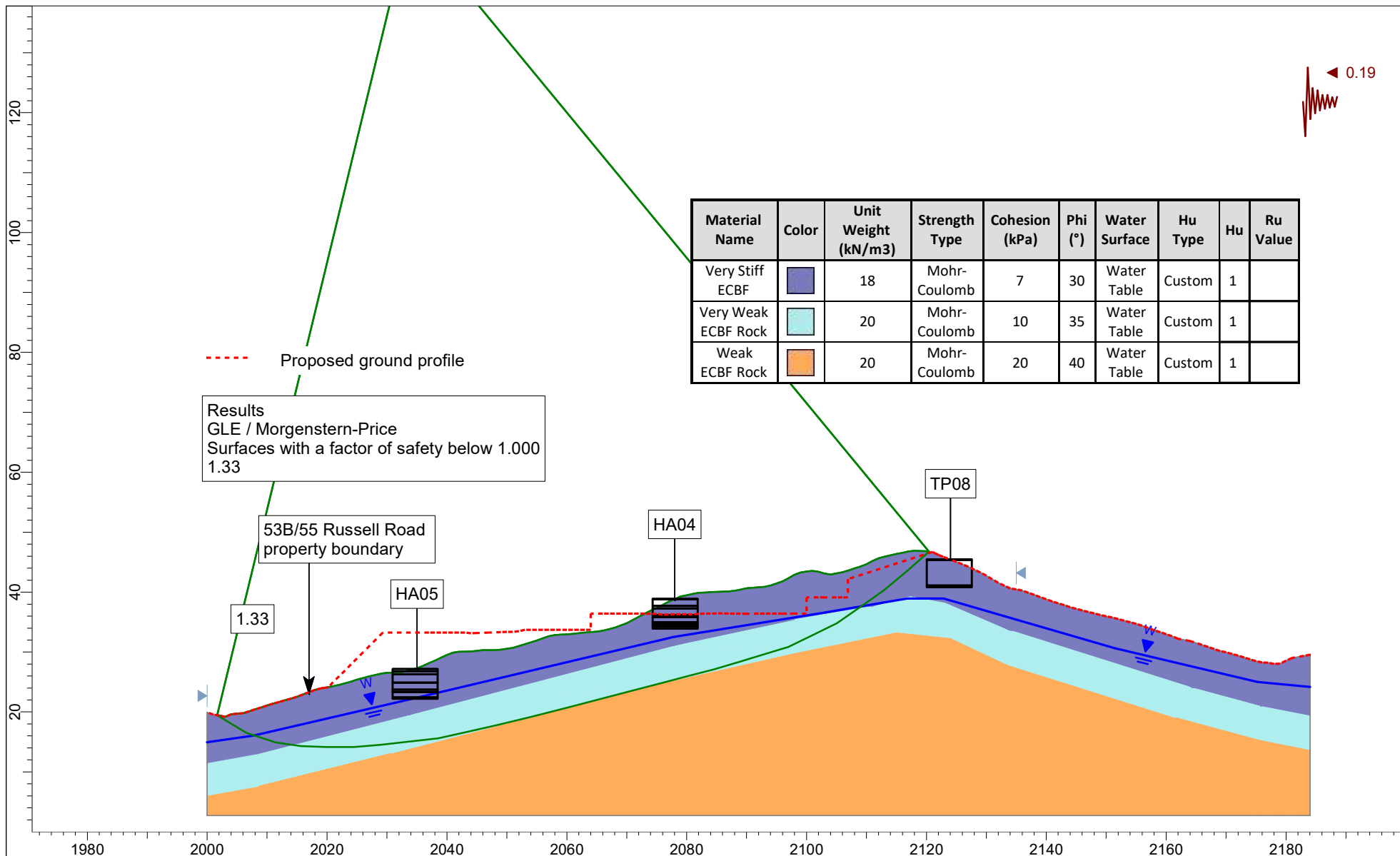


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Very Stiff ECBF (Ru=0.44)		18	Mohr-Coulomb	7	30	None			0.44
Very Stiff ECBF		18	Mohr-Coulomb	7	30	Water Table	Custom	1	
Very Weak ECBF Rock		20	Mohr-Coulomb	10	35	Water Table	Custom	1	
Weak ECBF Rock		20	Mohr-Coulomb	20	40	Water Table	Custom	1	

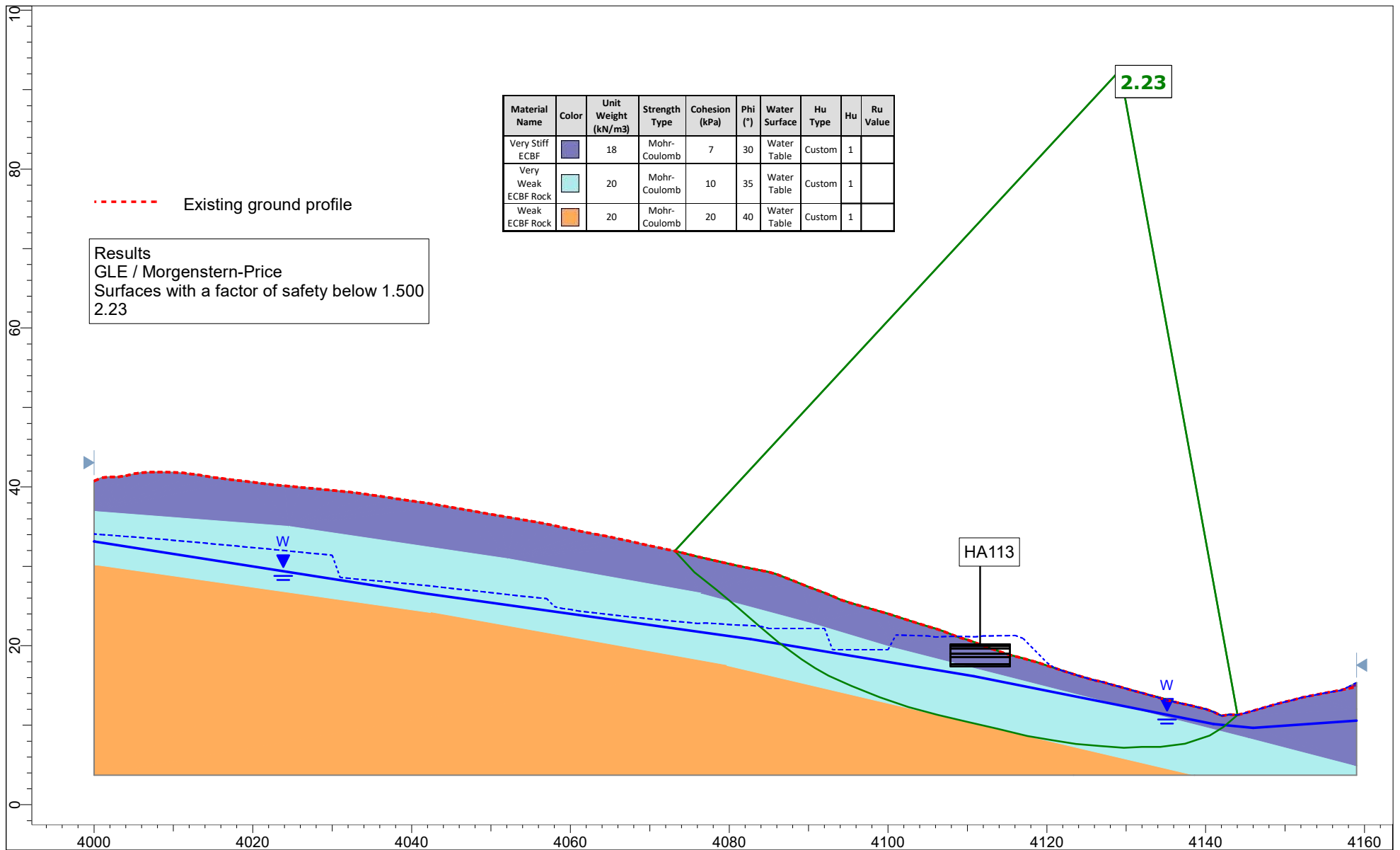


SLIDEINTERPRET 9.029

Project	240065 - Russell Road, Wainui - Stage 1		
Group	Existing GL Section B	Scenario	Extreme (Worst Credible GW)
Drawn By	RS	Company	Riley Consultants Ltd
Date	12/12/2024, 8:28:52 am	File Name	Section B - Proposed GL.slm

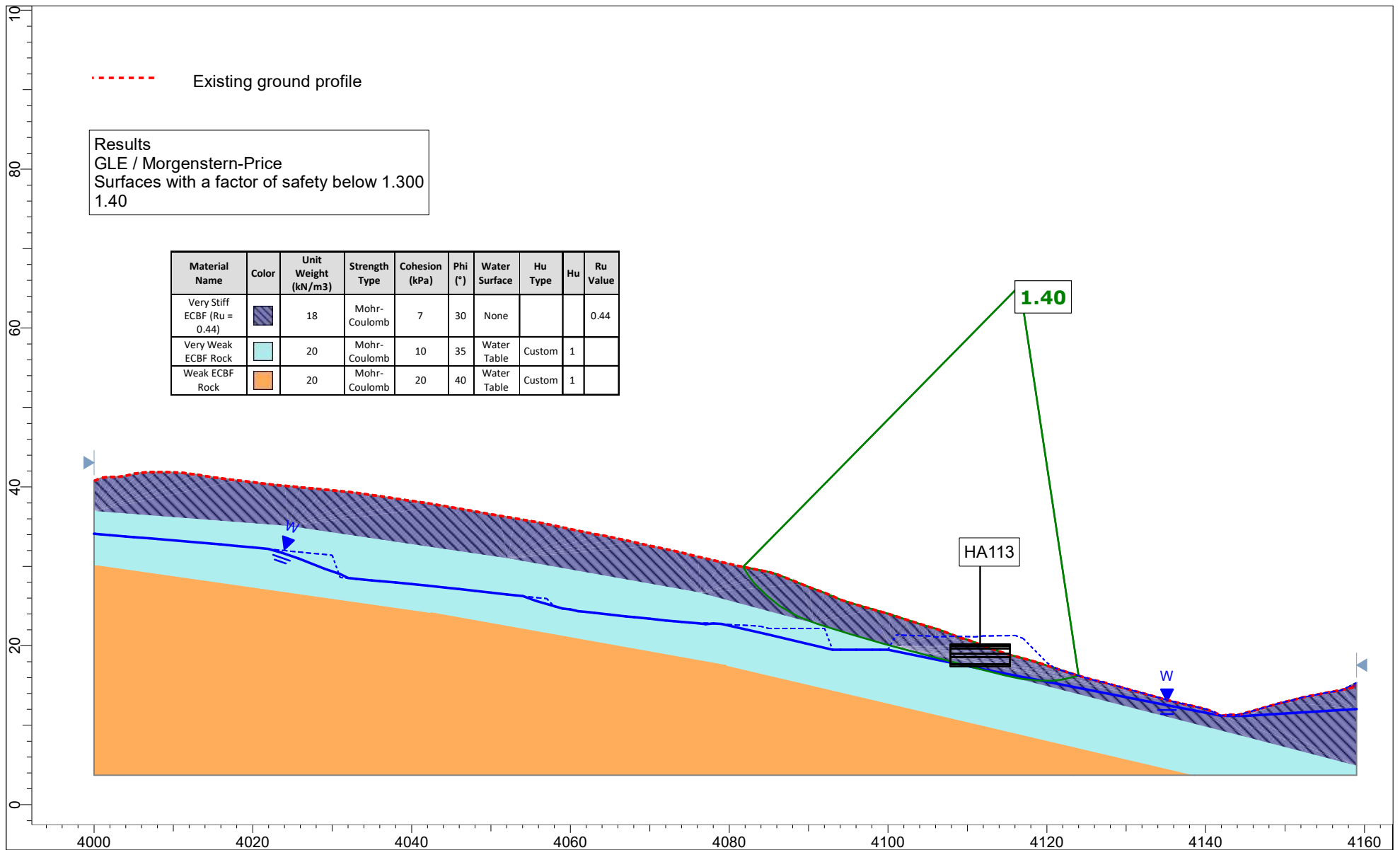


Project		240065 - Russell Road, Wainui - Stage 1	
Group	Existing GL Section B	Scenario	Seismic (0.19g)
Drawn By	RS	Company	Riley Consultants Ltd
Date	12/12/2024, 8:28:52 am	File Name	Section B - Proposed GL.slm



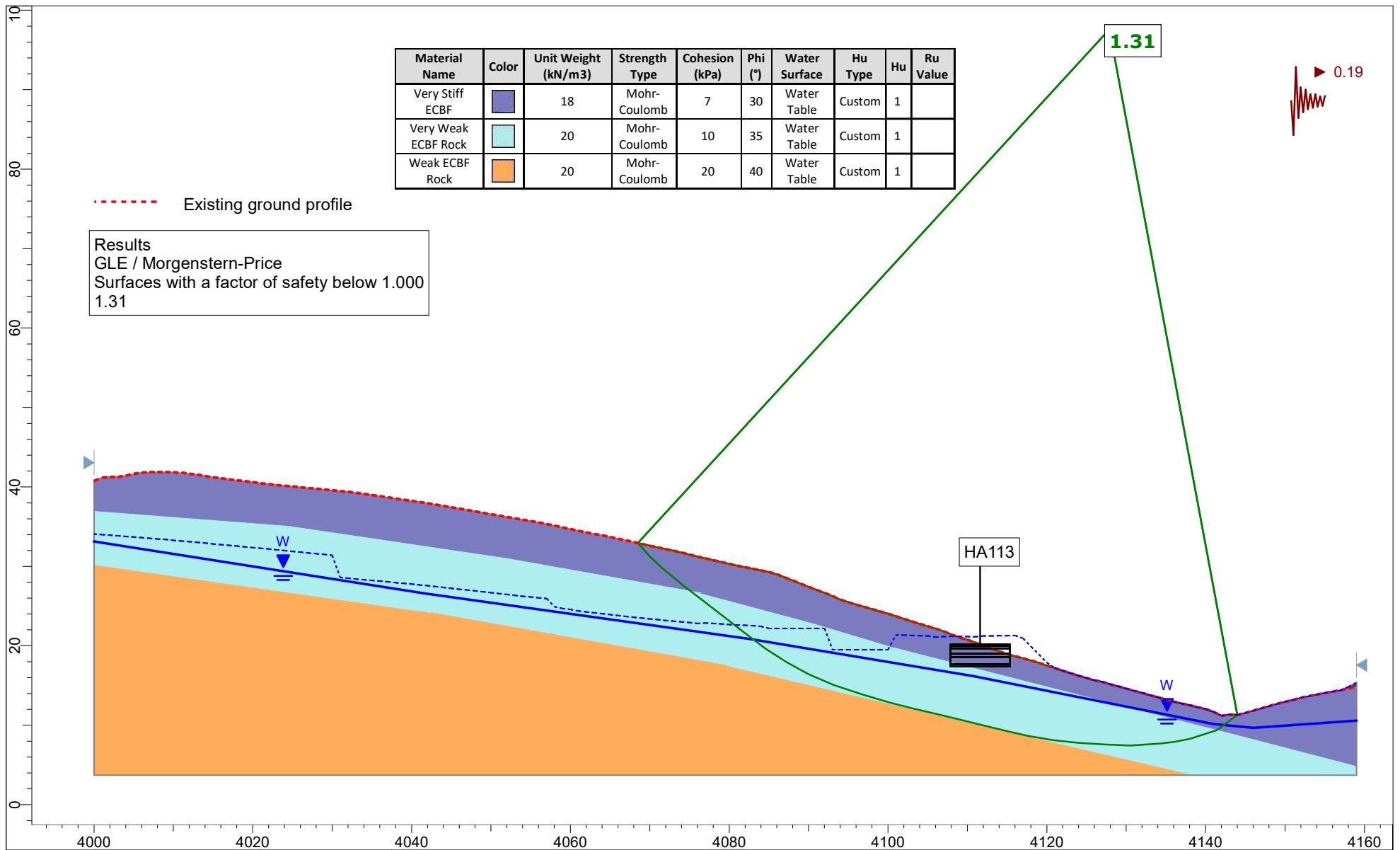
SLIDEINTERPRET 9.029

Project		240065 - Russell Road, Wainui - Stage 1	
Group	Existing GL Section D	Scenario	Normal (Measured GW)
Drawn By	RS	Company	Riley Consultants Ltd
Date	12/12/2024, 4:26:19 pm	File Name	Section D - Proposed GL.slm



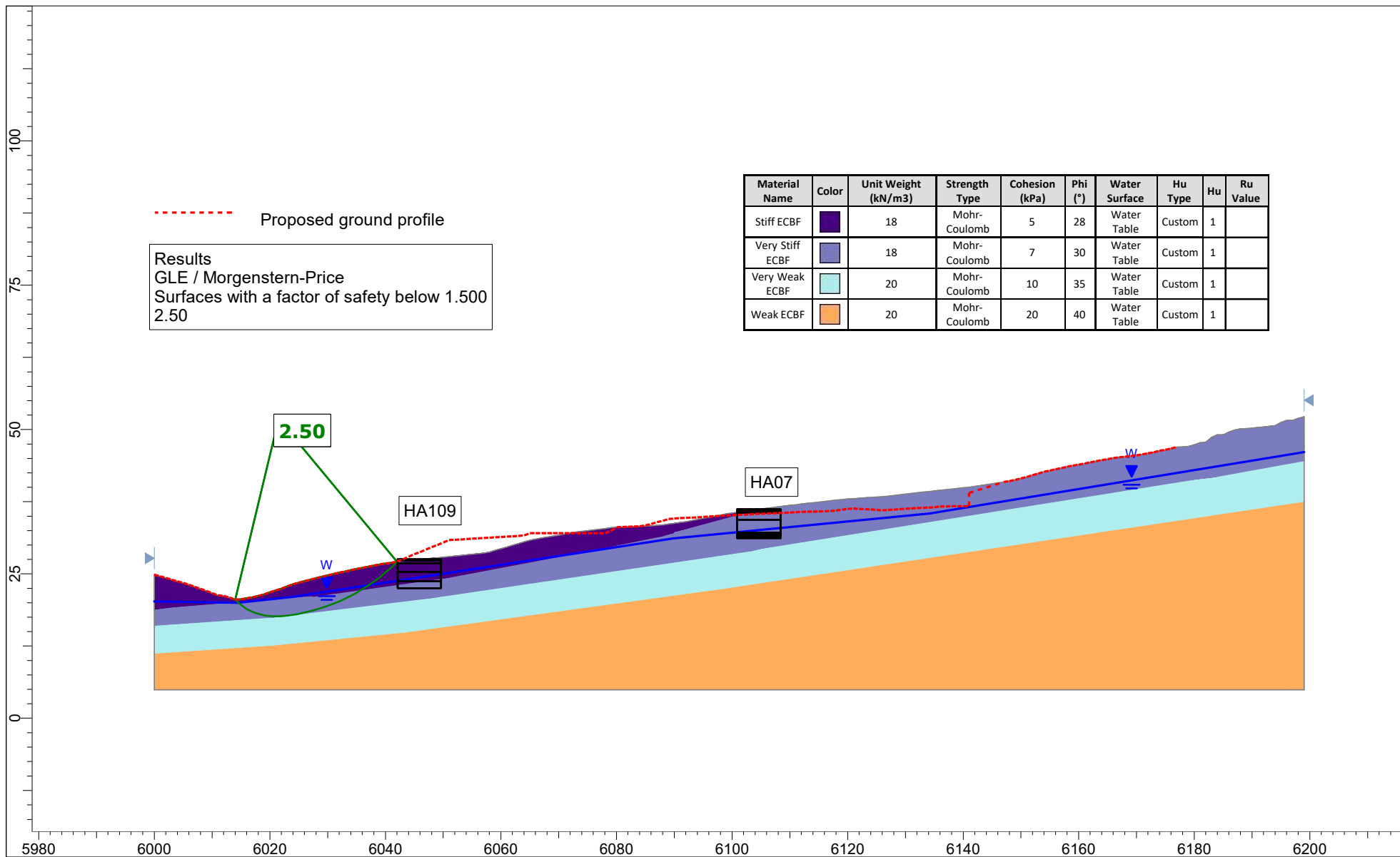
SLIDEINTERPRET 9.029

Project		240065 - Russell Road, Wainui - Stage 1	
Group	Existing GL Section D	Scenario	Extreme (Worst Credible GW)
Drawn By	RS	Company	Riley Consultants Ltd
Date	12/12/2024, 4:26:19 pm	File Name	Section D - Proposed GL.slmd



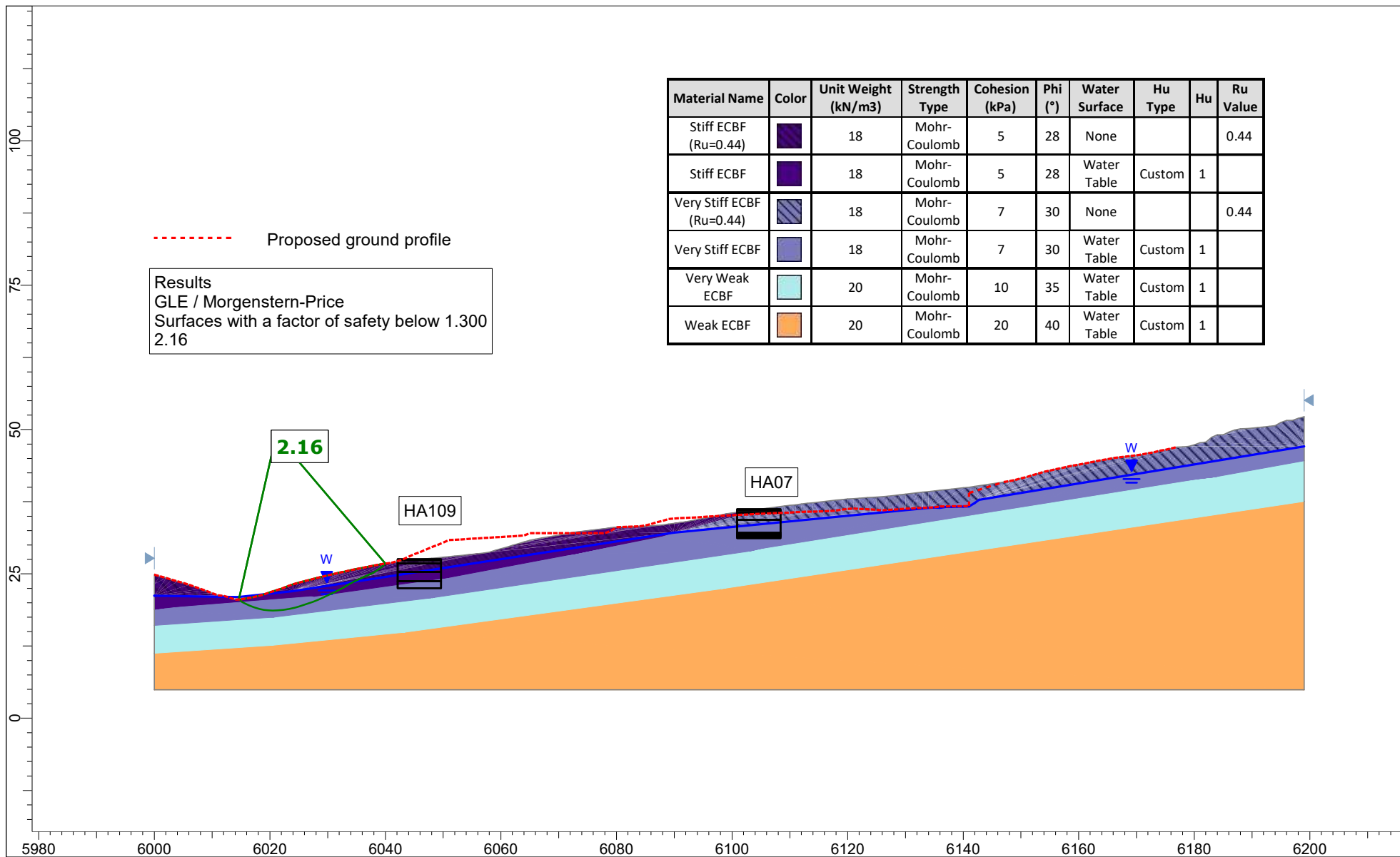
SLIDEINTERPRET 9.029

Project		240065 - Russell Road, Wainui - Stage 1	
Group	Existing GL Section D	Scenario	Seismic (0.19g)
Drawn By	RS	Company	Riley Consultants Ltd
Date	12/12/2024, 4:26:19 pm	File Name	Section D - Proposed GL.slmd



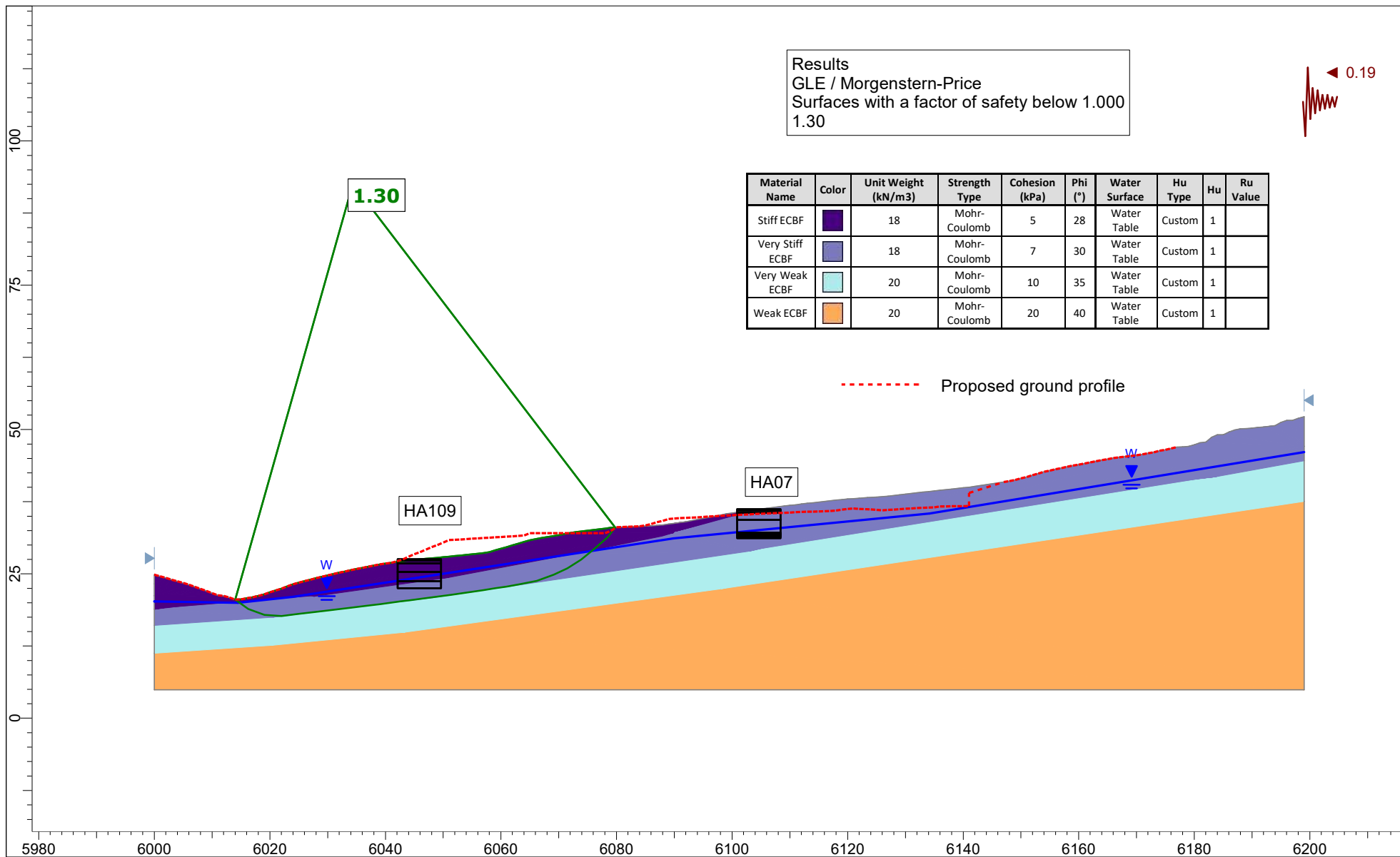
SLIDEINTERPRET 9.029

Project		240065 - Russell Road, Wainui - Stage 1	
Group	Existing GL Section F	Scenario	Normal (Measured GW)
Drawn By	RS	Company	Riley Consultants Ltd
Date	13/12/2024, 8:15:35 am	File Name	Section F - Proposed GL.slm



SLIDEINTERPRET 9.029

Project		240065 - Russell Road, Wainui - Stage 1	
Group	Existing GL Section F	Scenario	Extreme (Worst Credible GW)
Drawn By	RS	Company	Riley Consultants Ltd
Date	13/12/2024, 8:15:35 am	File Name	Section F - Proposed GL.slm



Results
GLE / Morgenstern-Price
Surfaces with a factor of safety below 1.000
1.30

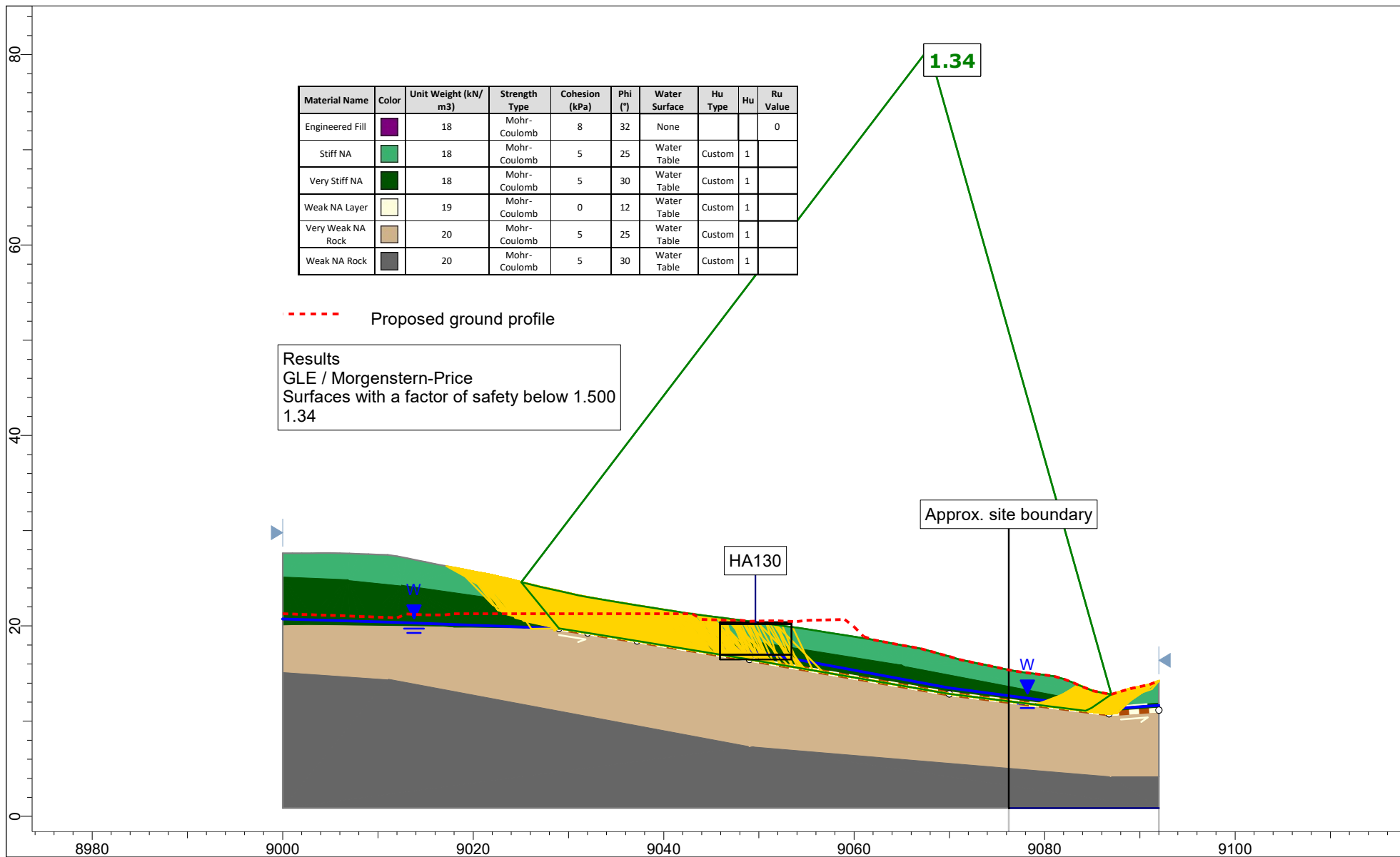
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Stiff ECBF		18	Mohr-Coulomb	5	28	Water Table	Custom	1	
Very Stiff ECBF		18	Mohr-Coulomb	7	30	Water Table	Custom	1	
Very Weak ECBF		20	Mohr-Coulomb	10	35	Water Table	Custom	1	
Weak ECBF		20	Mohr-Coulomb	20	40	Water Table	Custom	1	

..... Proposed ground profile

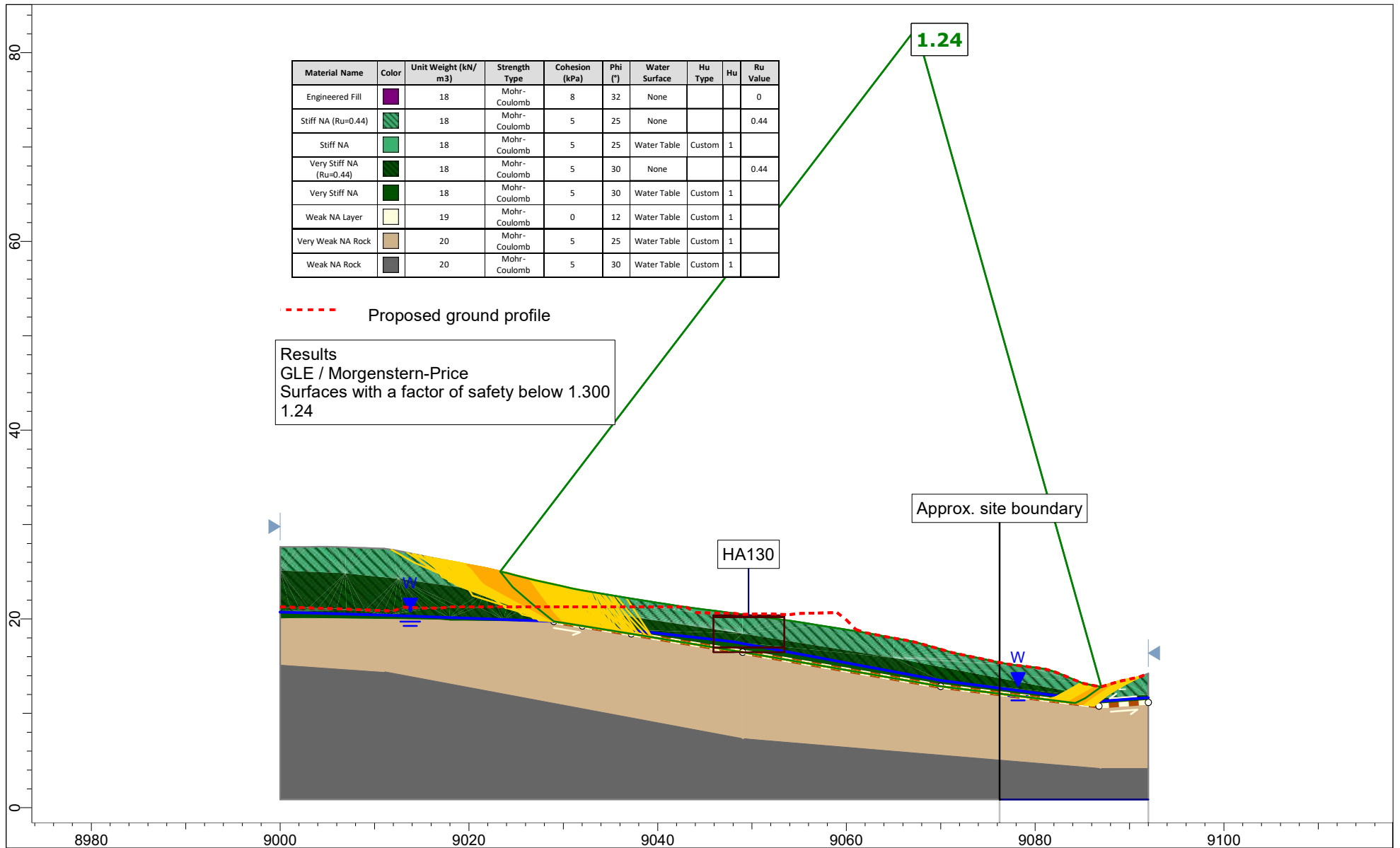


SLIDEINTERPRET 9.029

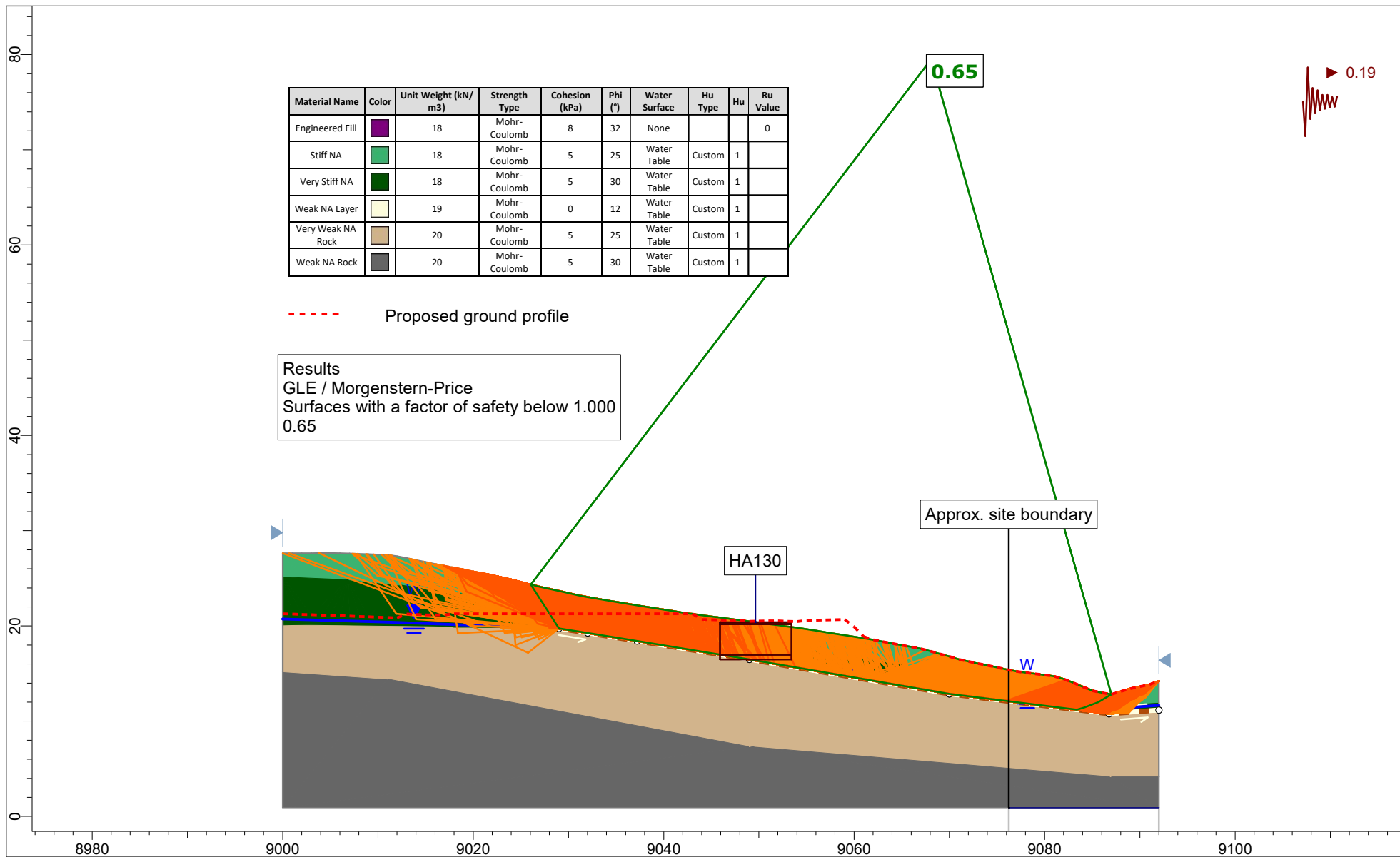
Project		240065 - Russell Road, Wainui - Stage 1	
Group	Existing GL Section F	Scenario	Seismic (0.19g)
Drawn By	RS	Company	Riley Consultants Ltd
Date	13/12/2024, 8:15:35 am	File Name	Section F - Proposed GL.slm



Project		240065 - Russell Road, Wainui - Stage 1	
Group	Existing GL Section I	Scenario	Normal (Measured GW)
Drawn By	ADT	Company	Riley Consultants Ltd
Date	15/01/2025	File Name	Section I - Proposed GL.slmd

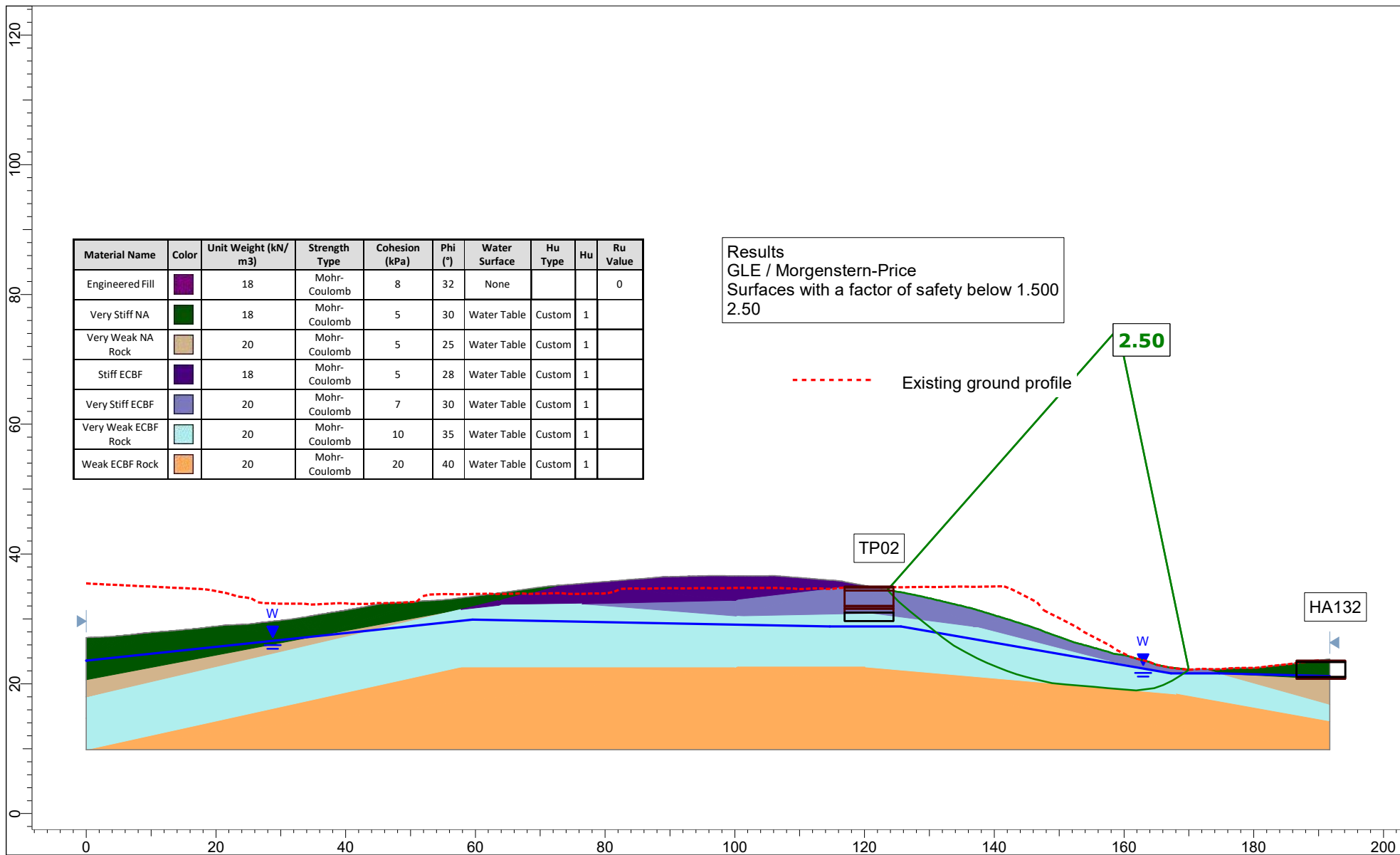


Project		240065 - Russell Road, Wainui - Stage 1	
Group	Existing GL Section I	Scenario	Extreme (Worst Credible GW)
Drawn By	ADT	Company	Riley Consultants Ltd
Date	15/01/2025	File Name	Section I - Proposed GL.slm



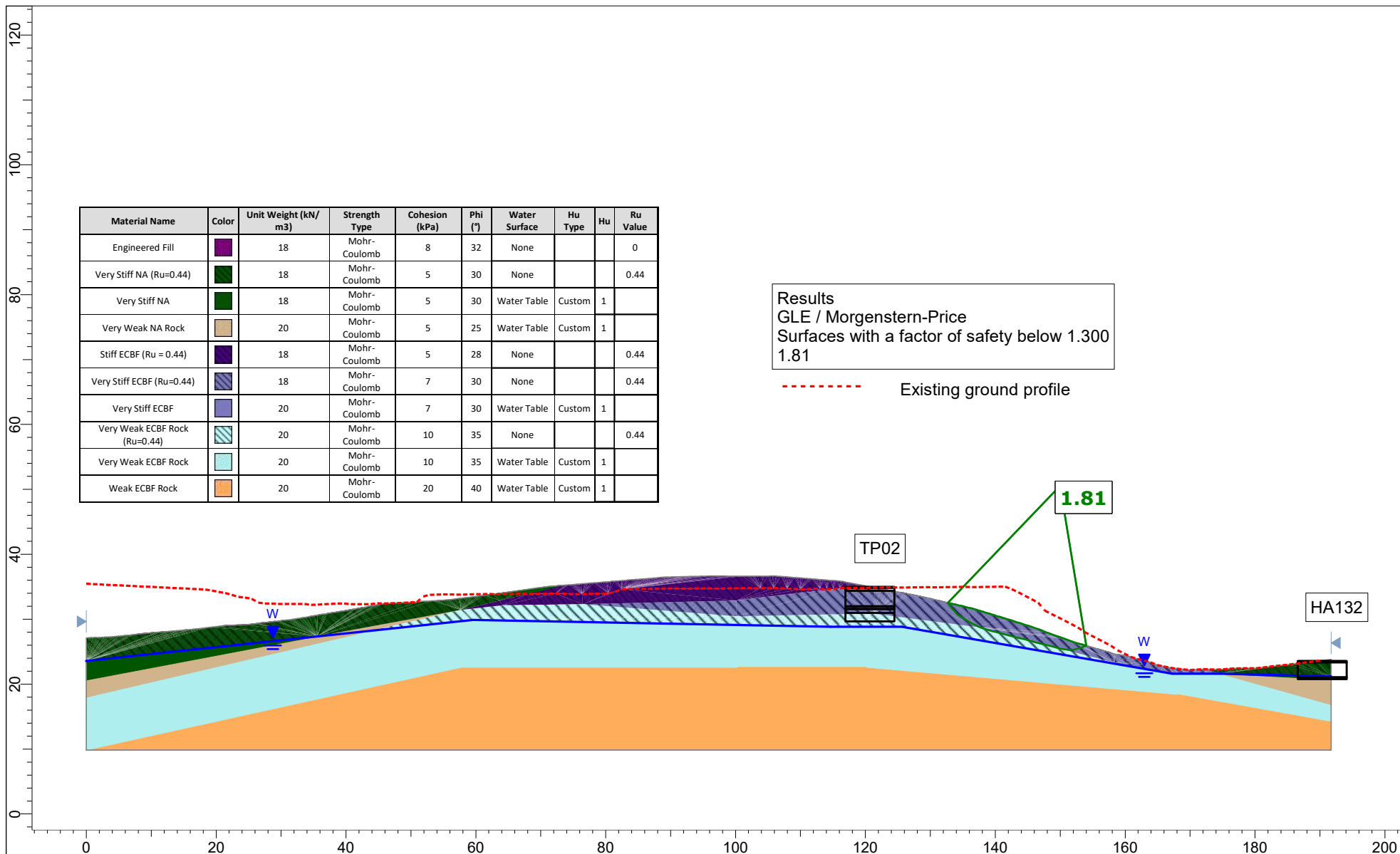
SLIDEINTERPRET 9.029

Project		240065 - Russell Road, Wainui - Stage 1	
Group	Existing GL Section I	Scenario	Seismic (0.19g)
Drawn By	ADT	Company	Riley Consultants Ltd
Date	15/01/2025	File Name	Section I - Proposed GL.slmd



SLIDEINTERPRET 9.029

Project		240065 - Russell Road, Wainui - Stage 1	
Group	Existing GL Section H	Scenario	Normal (Measured GW)
Drawn By	RS	Company	Riley Consultants Ltd
Date	20/12/2024	File Name	Section H - Proposed GL.slmd

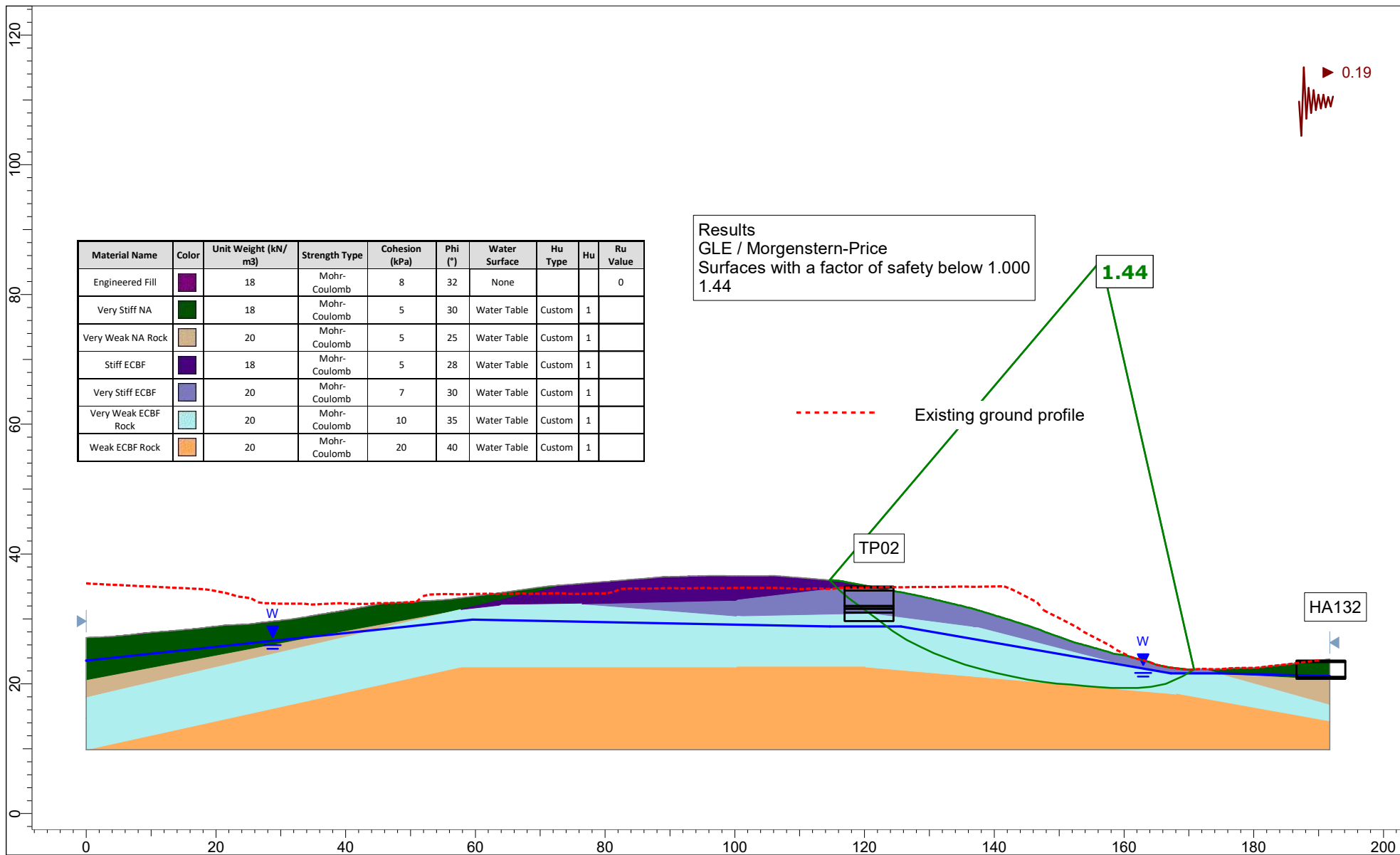


Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Engineered Fill		18	Mohr-Coulomb	8	32	None			0
Very Stiff NA (Ru=0.44)		18	Mohr-Coulomb	5	30	None			0.44
Very Stiff NA		18	Mohr-Coulomb	5	30	Water Table	Custom	1	
Very Weak NA Rock		20	Mohr-Coulomb	5	25	Water Table	Custom	1	
Stiff ECBF (Ru = 0.44)		18	Mohr-Coulomb	5	28	None			0.44
Very Stiff ECBF (Ru=0.44)		18	Mohr-Coulomb	7	30	None			0.44
Very Stiff ECBF		20	Mohr-Coulomb	7	30	Water Table	Custom	1	
Very Weak ECBF Rock (Ru=0.44)		20	Mohr-Coulomb	10	35	None			0.44
Very Weak ECBF Rock		20	Mohr-Coulomb	10	35	Water Table	Custom	1	
Weak ECBF Rock		20	Mohr-Coulomb	20	40	Water Table	Custom	1	

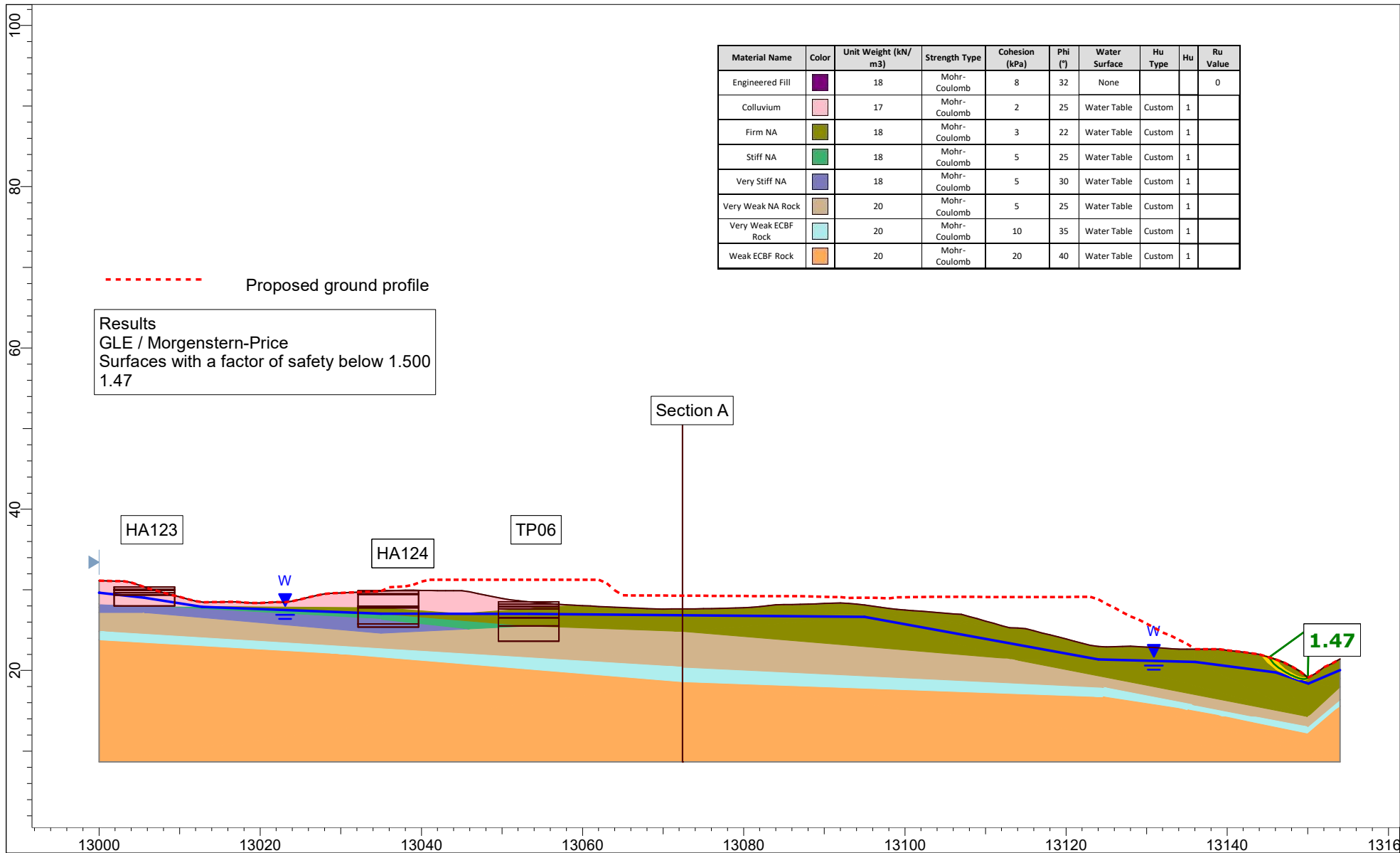


SLIDEINTERPRET 9.029

Project	240065 - Russell Road, Wainui - Stage 1		
Group	Existing GL Section H	Scenario	Extreme (Worst Credible GW)
Drawn By	RS	Company	Riley Consultants Ltd
Date	20/12/2024	File Name	Section H - Proposed GL.slm



Project		240065 - Russell Road, Wainui - Stage 1	
Group	Existing GL Section H	Scenario	Seismic (0.19g)
Drawn By	RS	Company	Riley Consultants Ltd
Date	20/12/2024	File Name	Section H - Proposed GL.slm

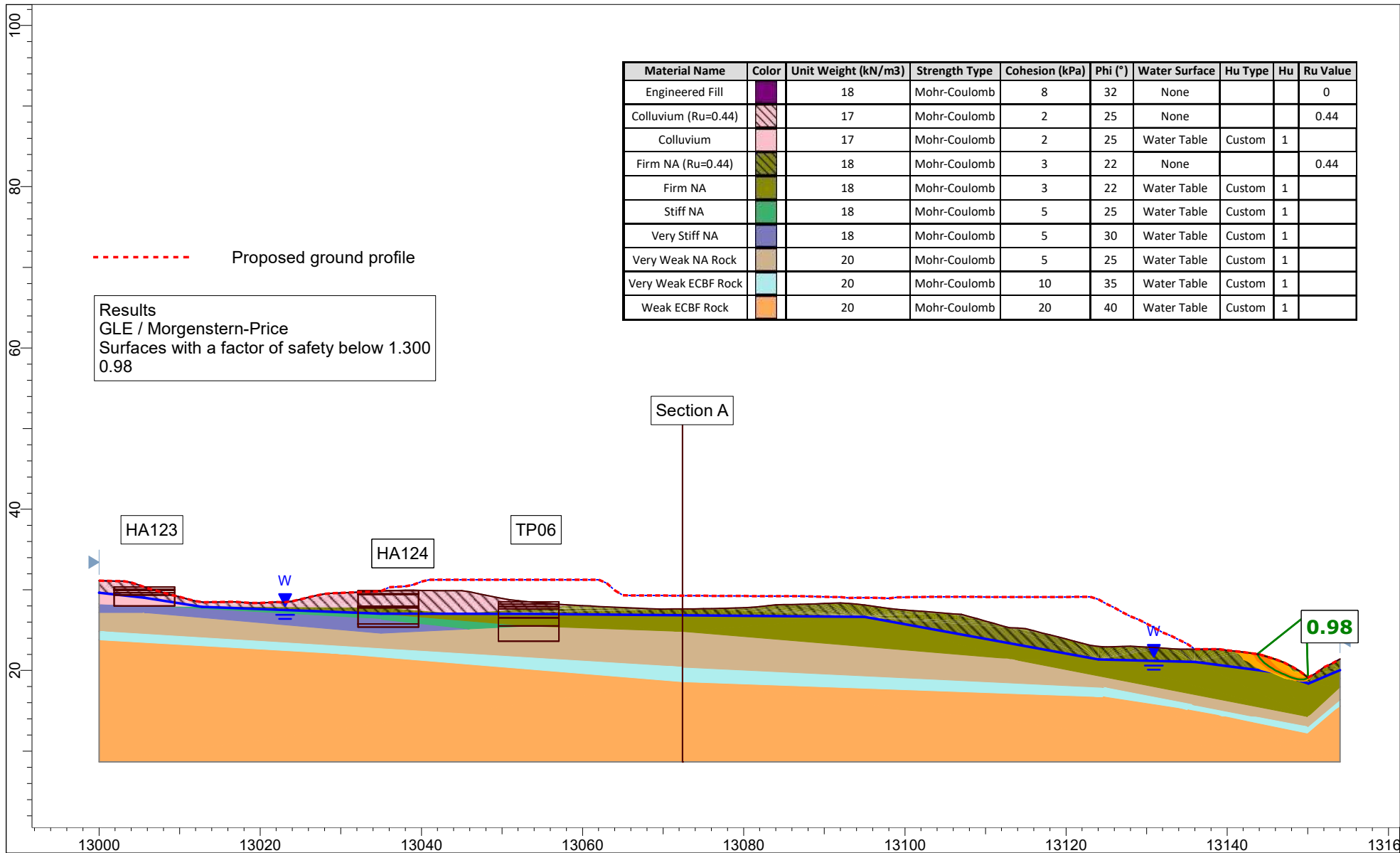


Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Engineered Fill		18	Mohr-Coulomb	8	32	None			0
Colluvium		17	Mohr-Coulomb	2	25	Water Table	Custom	1	
Firm NA		18	Mohr-Coulomb	3	22	Water Table	Custom	1	
Stiff NA		18	Mohr-Coulomb	5	25	Water Table	Custom	1	
Very Stiff NA		18	Mohr-Coulomb	5	30	Water Table	Custom	1	
Very Weak NA Rock		20	Mohr-Coulomb	5	25	Water Table	Custom	1	
Very Weak ECBF Rock		20	Mohr-Coulomb	10	35	Water Table	Custom	1	
Weak ECBF Rock		20	Mohr-Coulomb	20	40	Water Table	Custom	1	



SLIDEINTERPRET 9.029

Project	240065 - Russell Road, Wainui - Stage 1		
Group	Existing GL Section M	Scenario	Normal (Measured GW)
Drawn By	RS	Company	Riley Consultants Ltd
Date	20/12/2024	File Name	Section M - Proposed GL.slmd

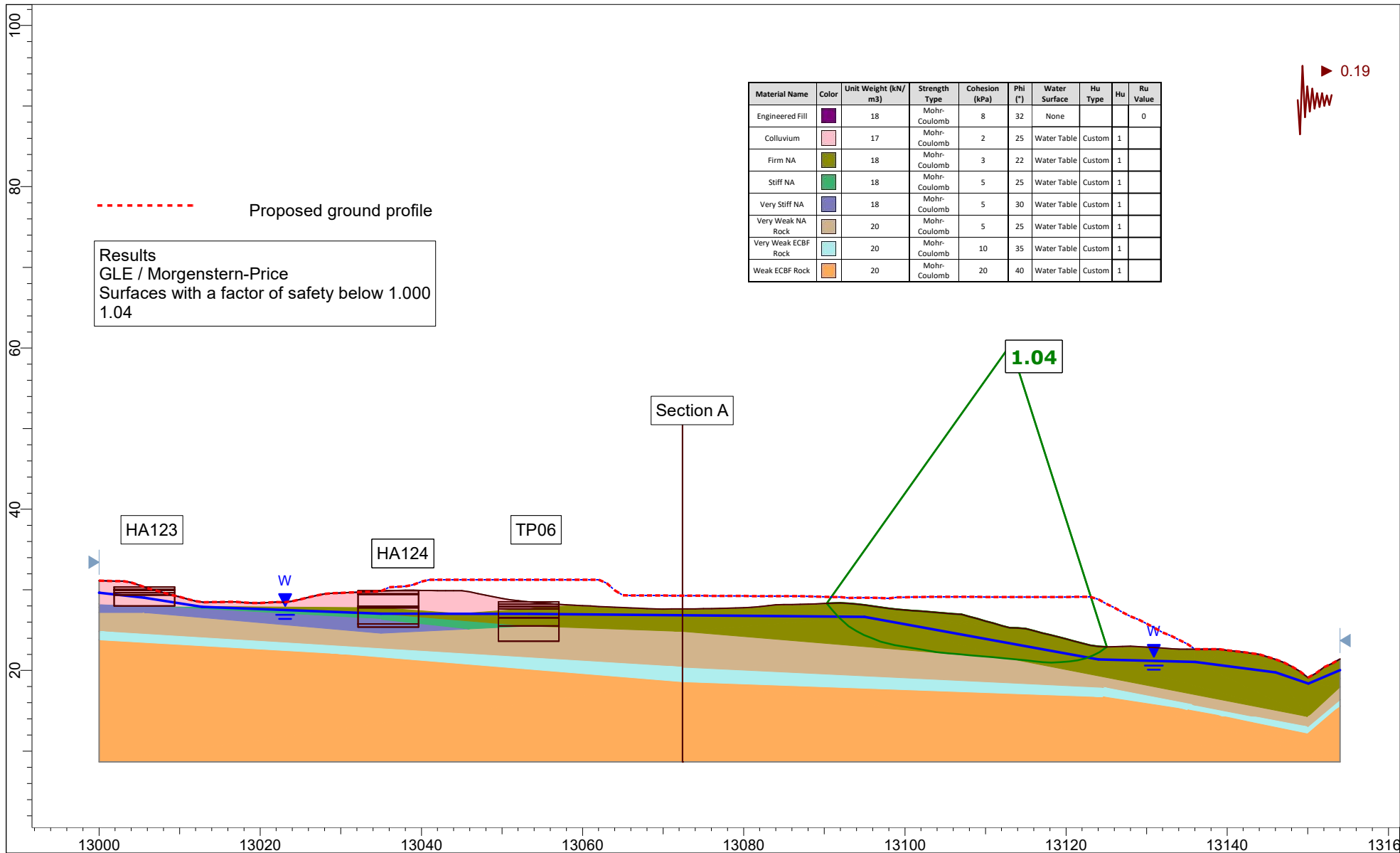


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Engineered Fill		18	Mohr-Coulomb	8	32	None			0
Colluvium (Ru=0.44)		17	Mohr-Coulomb	2	25	None			0.44
Colluvium		17	Mohr-Coulomb	2	25	Water Table	Custom	1	
Firm NA (Ru=0.44)		18	Mohr-Coulomb	3	22	None			0.44
Firm NA		18	Mohr-Coulomb	3	22	Water Table	Custom	1	
Stiff NA		18	Mohr-Coulomb	5	25	Water Table	Custom	1	
Very Stiff NA		18	Mohr-Coulomb	5	30	Water Table	Custom	1	
Very Weak NA Rock		20	Mohr-Coulomb	5	25	Water Table	Custom	1	
Very Weak ECBF Rock		20	Mohr-Coulomb	10	35	Water Table	Custom	1	
Weak ECBF Rock		20	Mohr-Coulomb	20	40	Water Table	Custom	1	



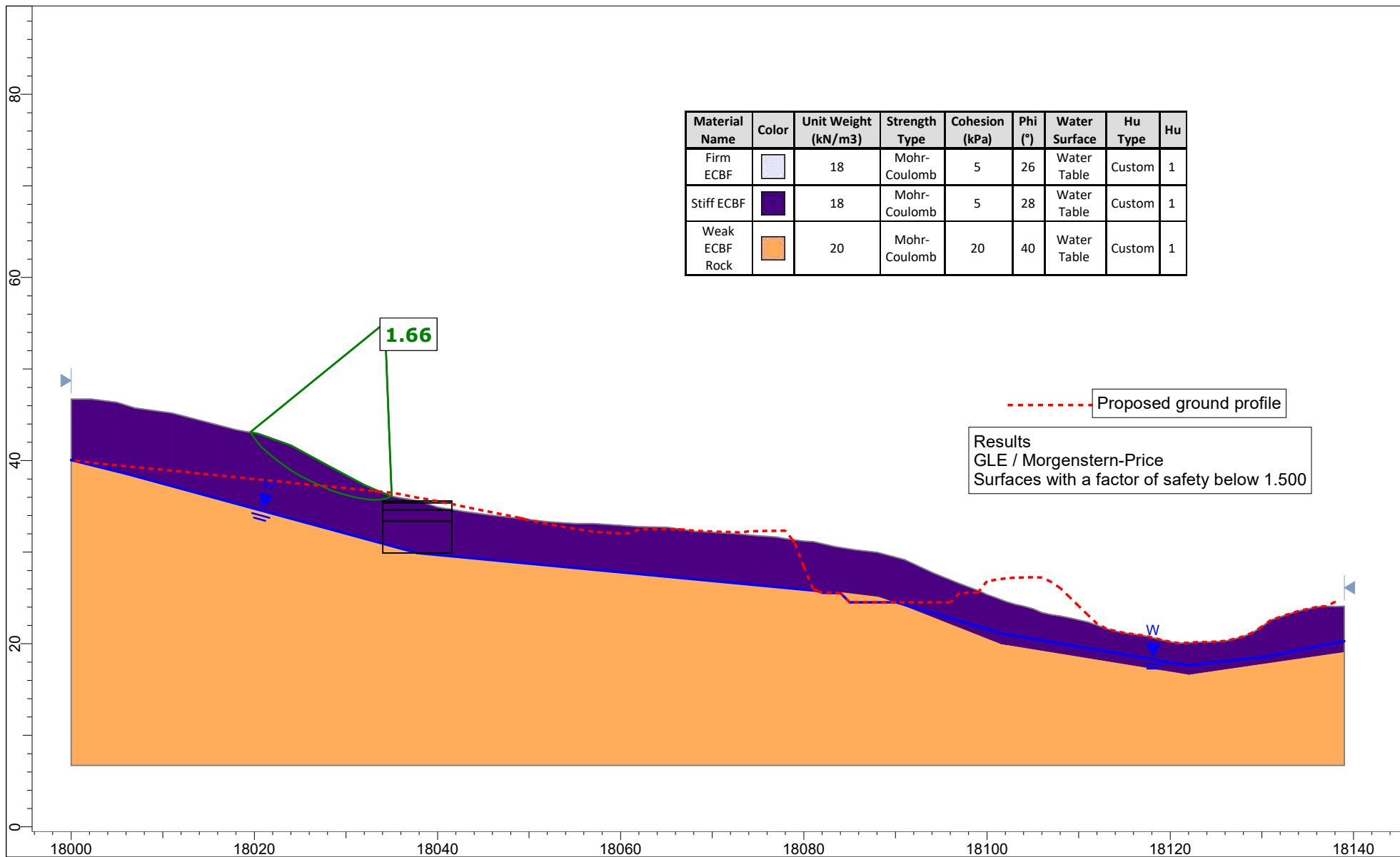
SLIDEINTERPRET 9.029

Project		240065 - Russell Road, Wainui - Stage 1	
Group	Existing GL Section M	Scenario	Extreme (Worst Credible GW)
Drawn By	RS	Company	Riley Consultants Ltd
Date	20/12/2024	File Name	Section M - Proposed GL.slmd

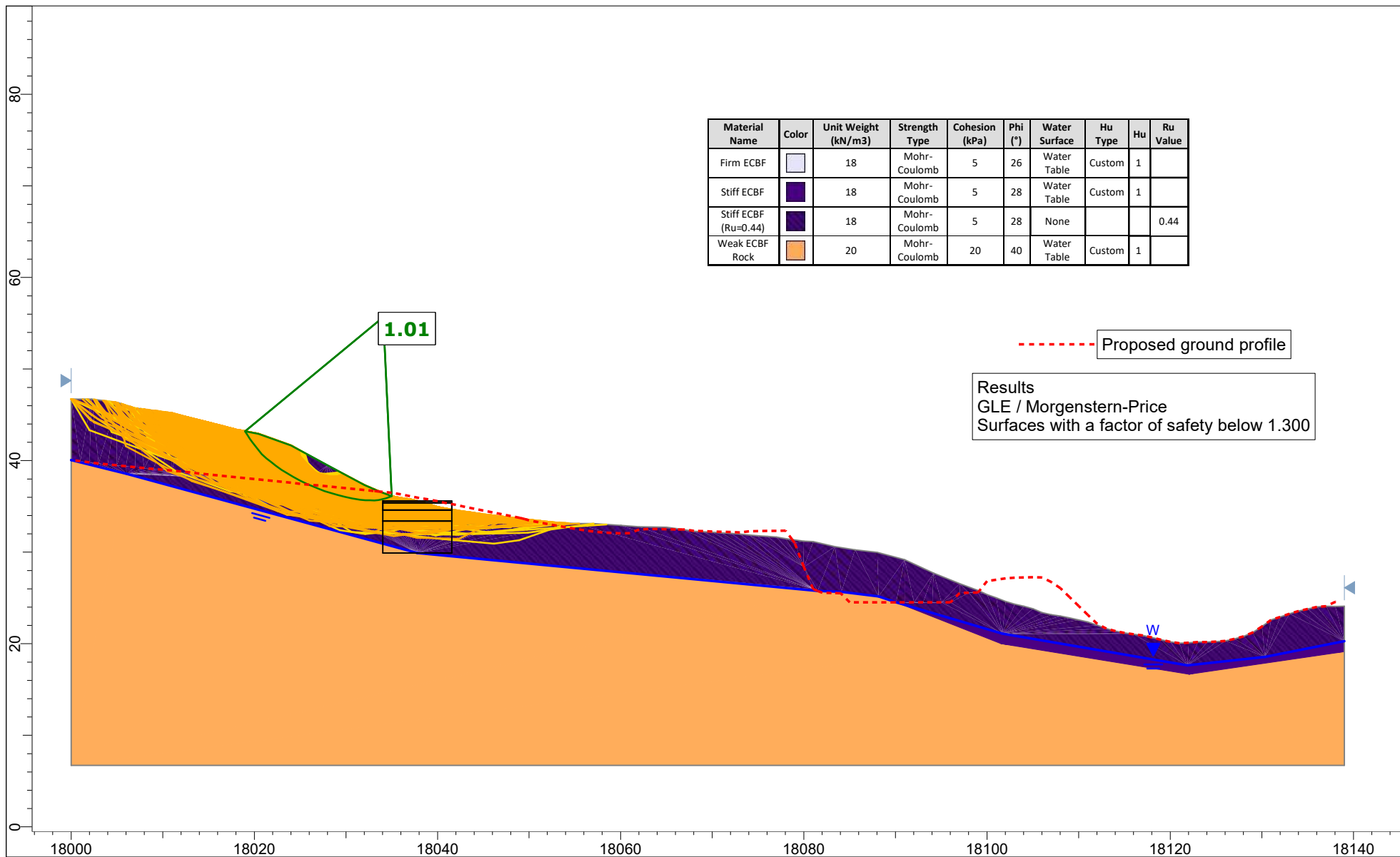


SLIDEINTERPRET 9.029

Project		240065 - Russell Road, Wainui - Stage 1	
Group	Existing GL Section M	Scenario	Seismic (0.19g)
Drawn By	RS	Company	Riley Consultants Ltd
Date	20/12/2024	File Name	Section M - Proposed GL.slmd



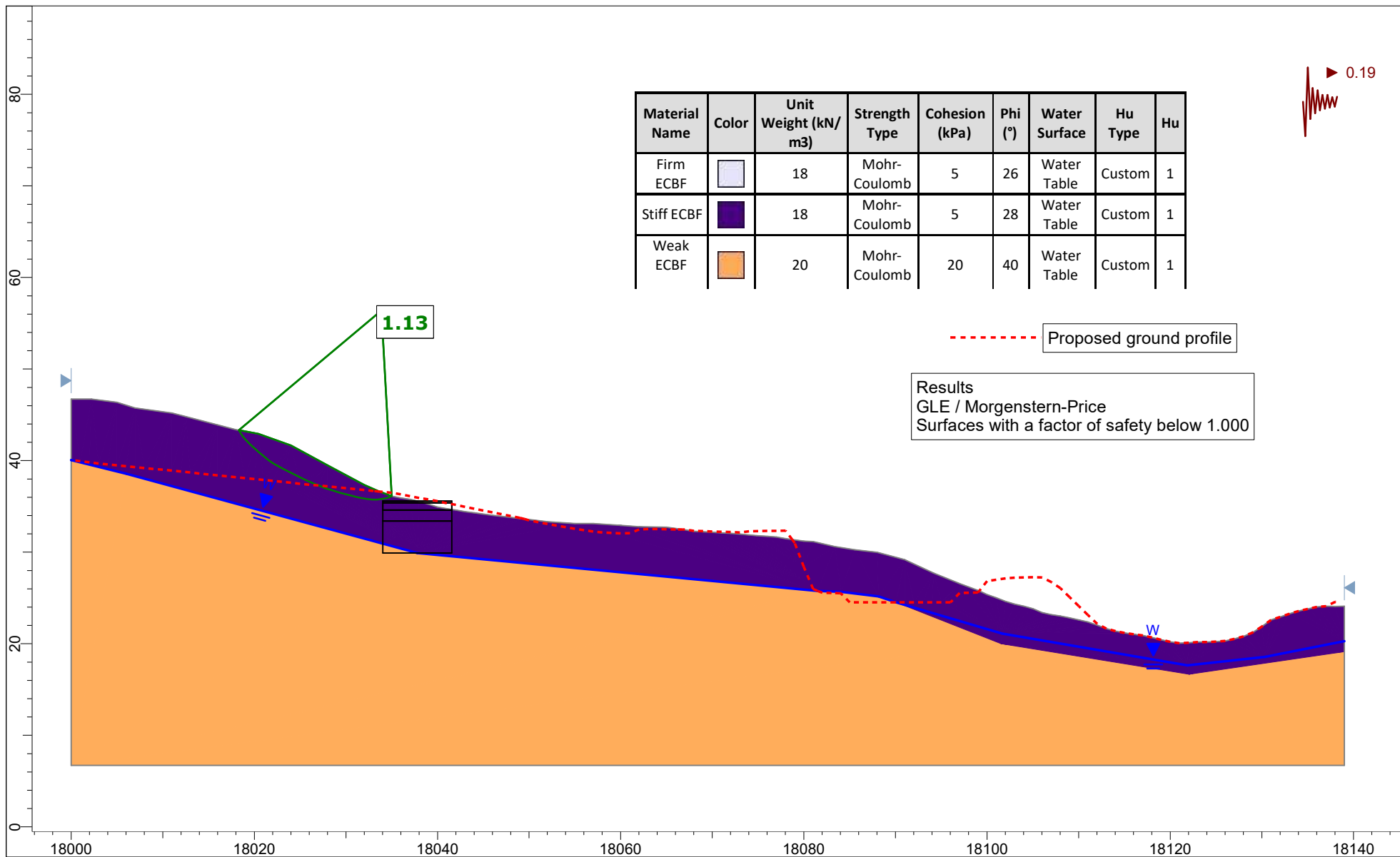
	Project		240065 - Russell Road, Wainui - Stage 2	
	Group	Section R Existing GL (L-R)	Scenario	Normal (Measured GW)
	Drawn By	RS	Company	Riley Consultants Ltd
	Date	10/12/2024	File Name	Section R - June 2025.slmd



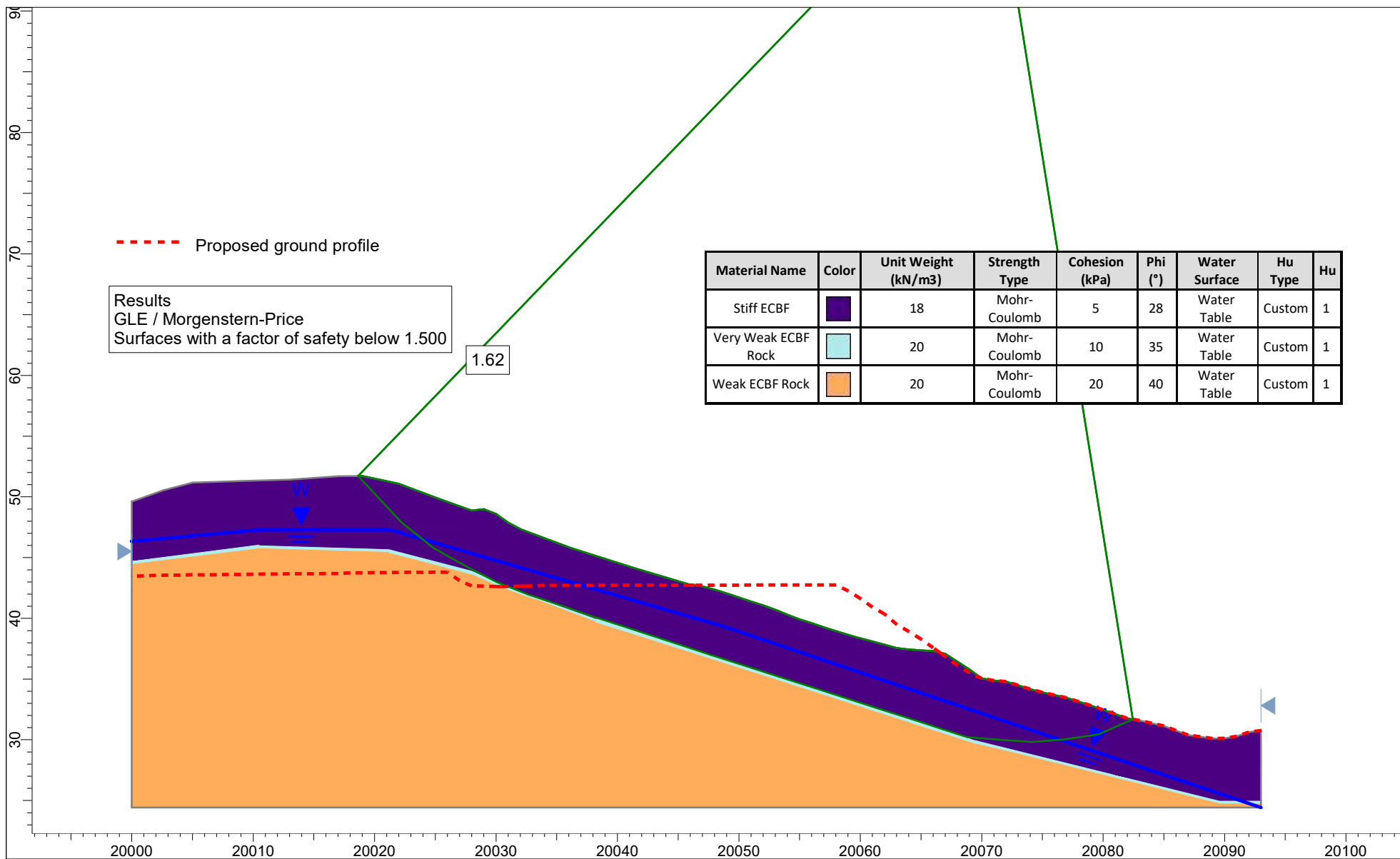
Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Firm EECBF		18	Mohr-Coulomb	5	26	Water Table	Custom	1	
Stiff EECBF		18	Mohr-Coulomb	5	28	Water Table	Custom	1	
Stiff EECBF (Ru=0.44)		18	Mohr-Coulomb	5	28	None			0.44
Weak EECBF Rock		20	Mohr-Coulomb	20	40	Water Table	Custom	1	



Project				240065 - Russell Road, Wainui - Stage 2			
Group		Section R Existing GL (L-R)			Scenario		
Drawn By		RS			Company		
Date		10/12/2024			File Name		
					Section R - June 2025.slmd		

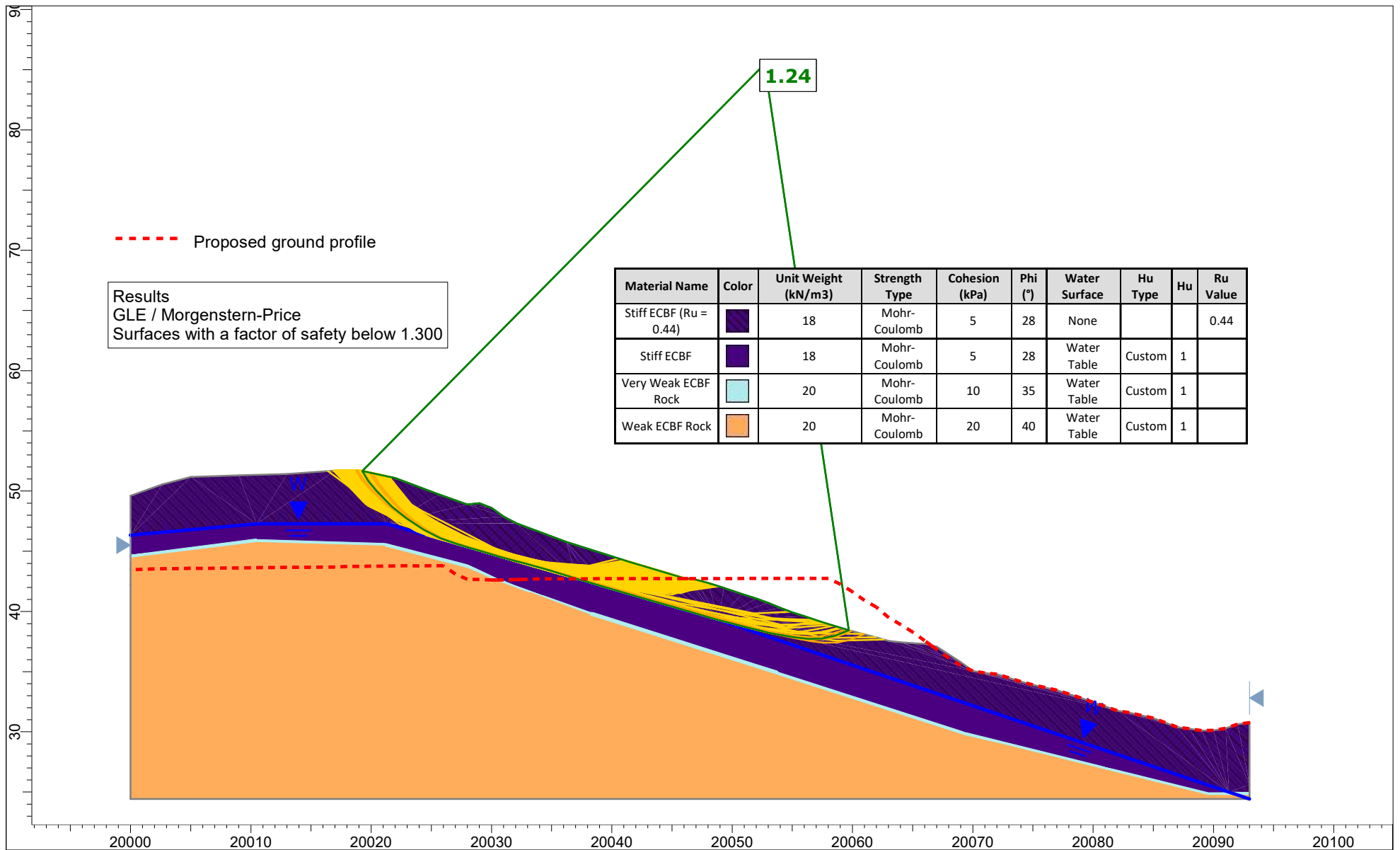


Project			
240065 - Russell Road, Wainui - Stage 2			
Group	Section R Existing GL (L-R)		Scenario
			Seismic (0.19g)
Drawn By	RS		Company
			Riley Consultants Ltd
Date	10/12/2024		File Name
			Section R - June 2025.slmd



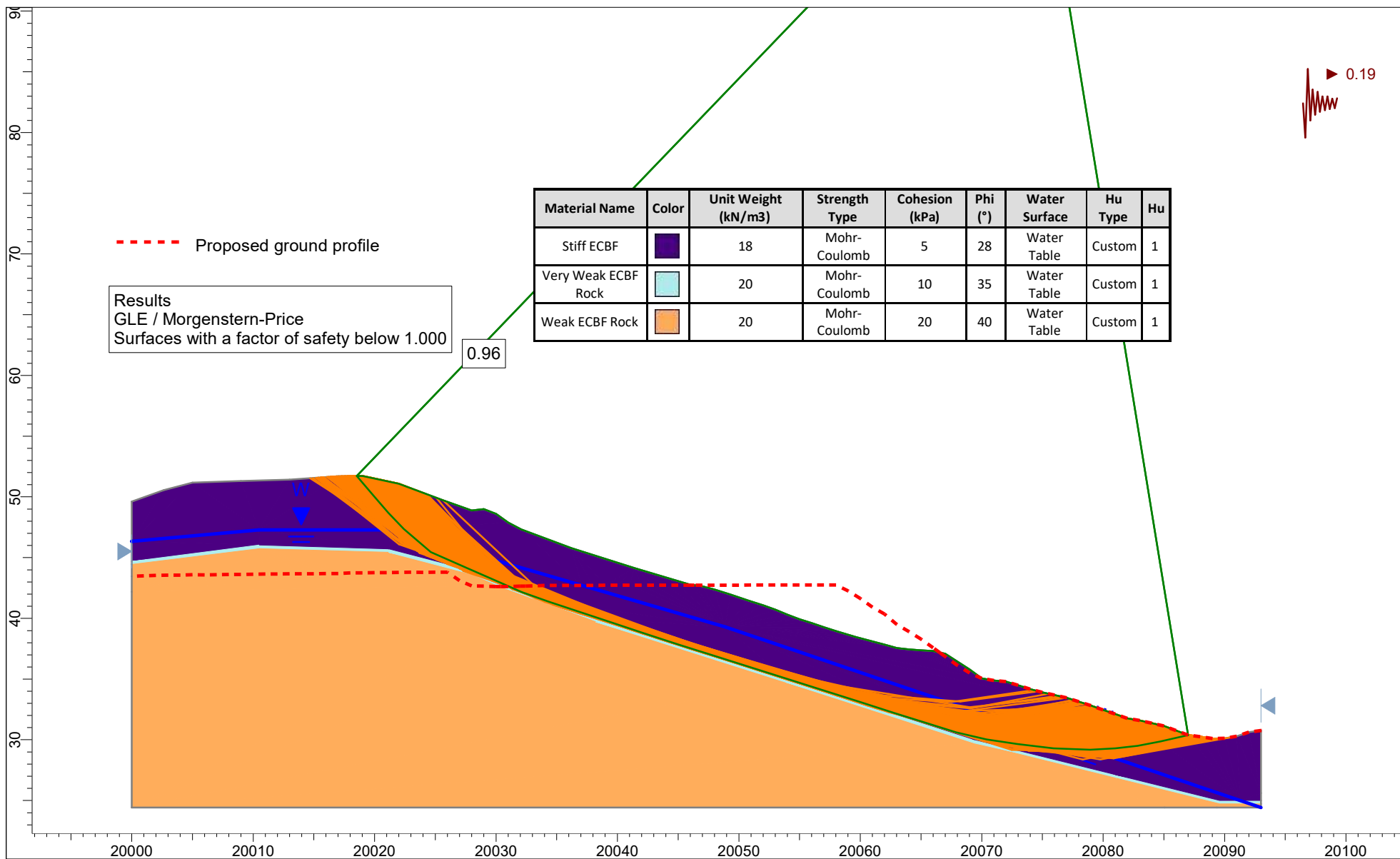
SLIDEINTERPRET 9.029

Project			
240065 - Russell Road, Wainui - Stage 2			
Group	Proposed GL Section T		Scenario
			Normal (Measured GW)
Drawn By	RS		Company
			Riley Consultants Ltd
Date	10/12/2024		File Name
			Section T - June 2025.slm

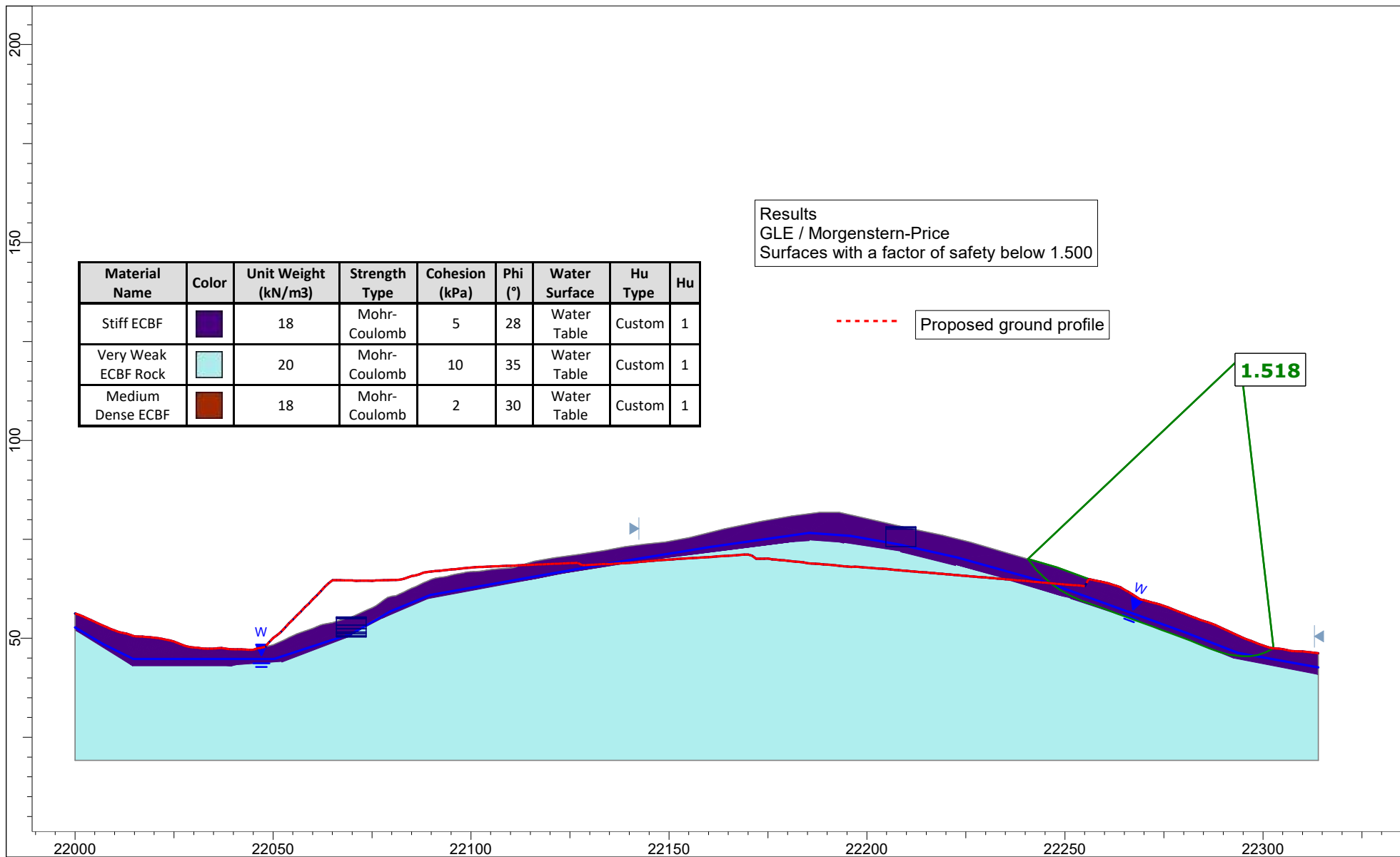


SLIDEINTERPRET 9.029

Project				240065 - Russell Road, Wainui - Stage 2			
Group		Proposed GL Section T			Scenario		
Drawn By		RS			Company		
Date		10/12/2024			File Name		
					Extreme (Worst Credible GW)		
					Riley Consultants Ltd		
					Section T - June 2025.slm		



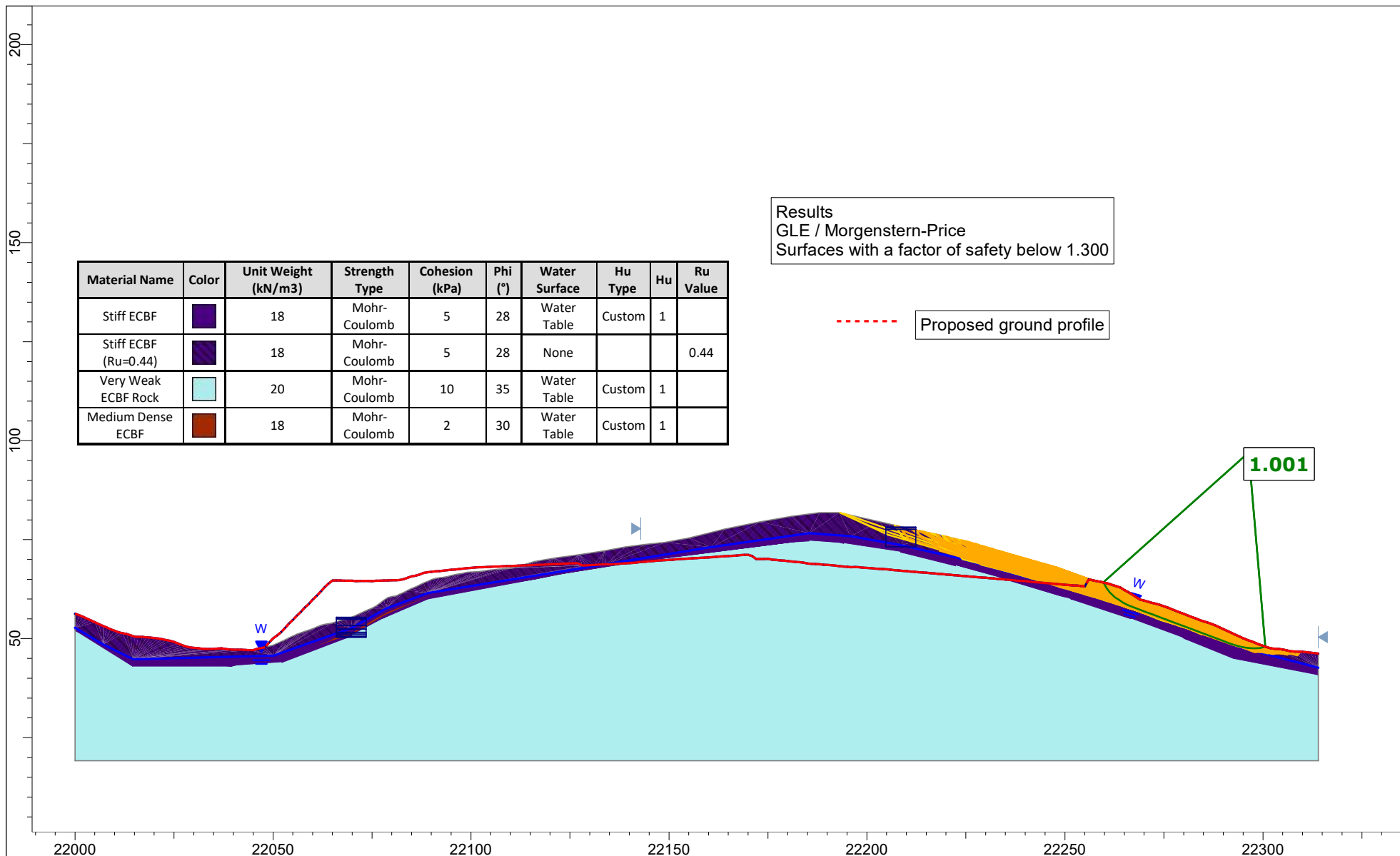
Project			
240065 - Russell Road, Wainui - Stage 2			
Group	Proposed GL Section T		Scenario
Drawn By	RS		Company
Date	10/12/2024		File Name
			Section T - June 2025.slm



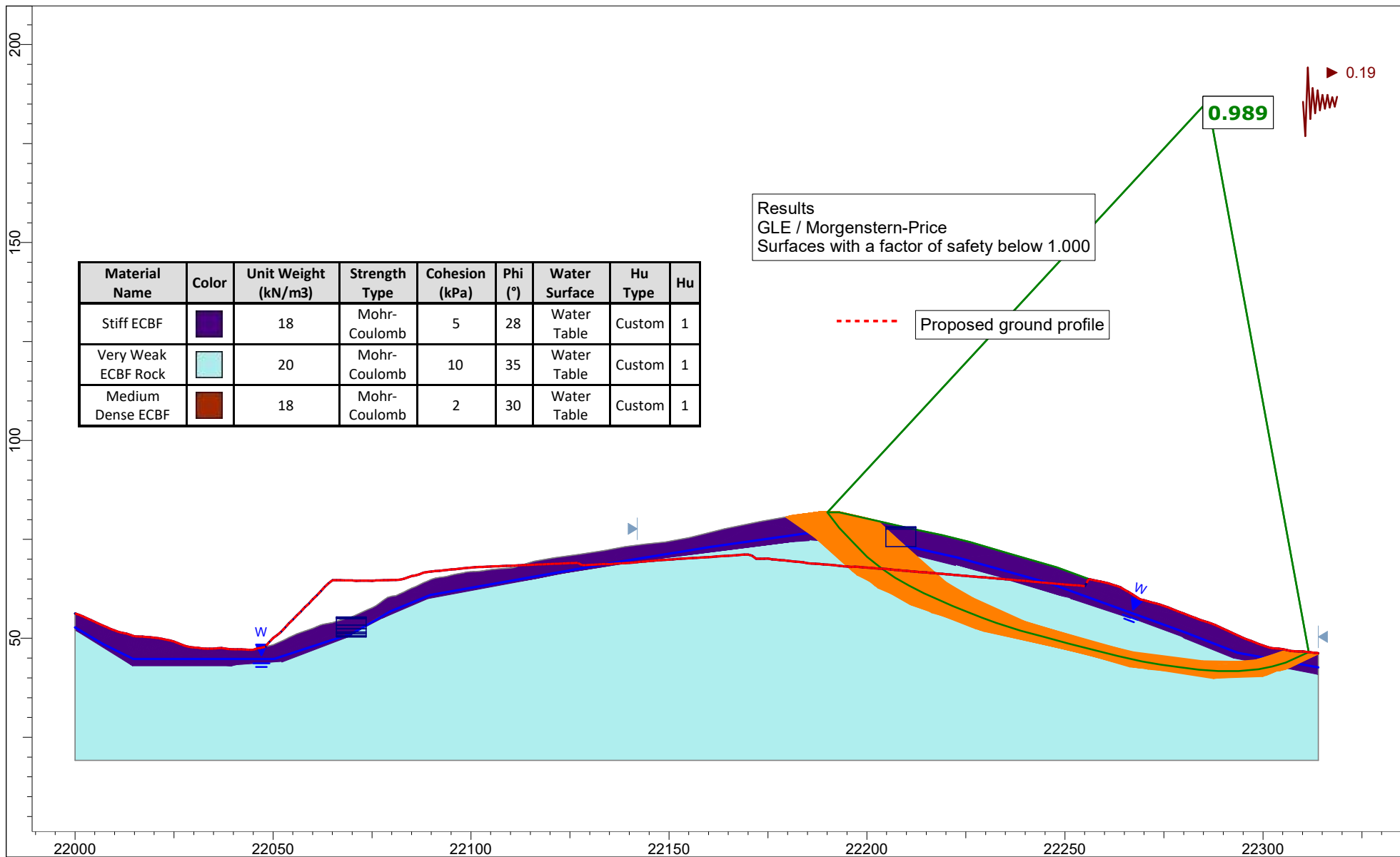


SLIDEINTERPRET 9.029

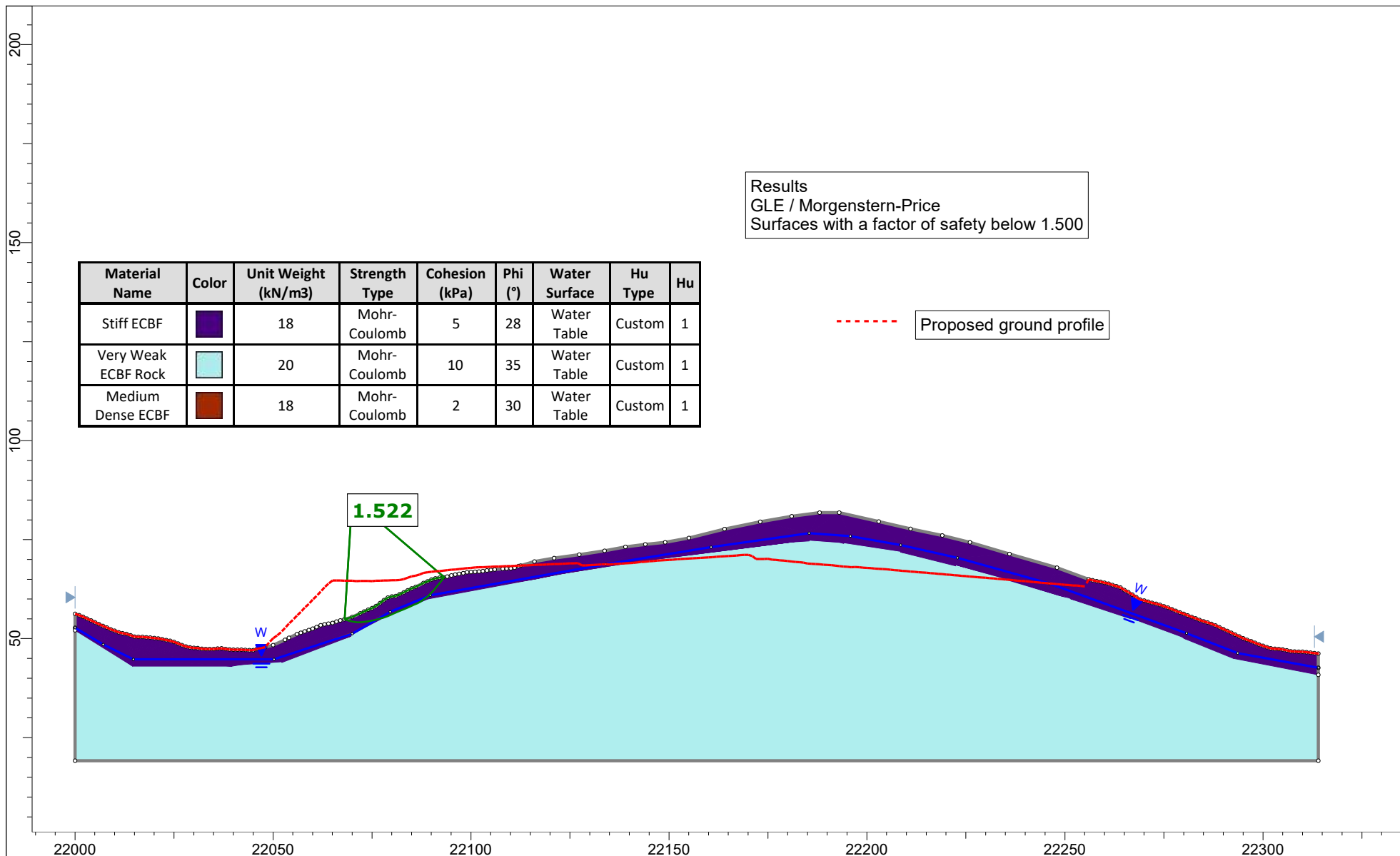
Project		240065 - Russell Road, Wainui - Stage 2	
Group	Section V - Existing GL (L-R)	Scenario	Normal (Measured GW)
Drawn By	JJW	Company	Riley Consultants Ltd
Date	10/12/2024	File Name	Section V - June 2025.slmd



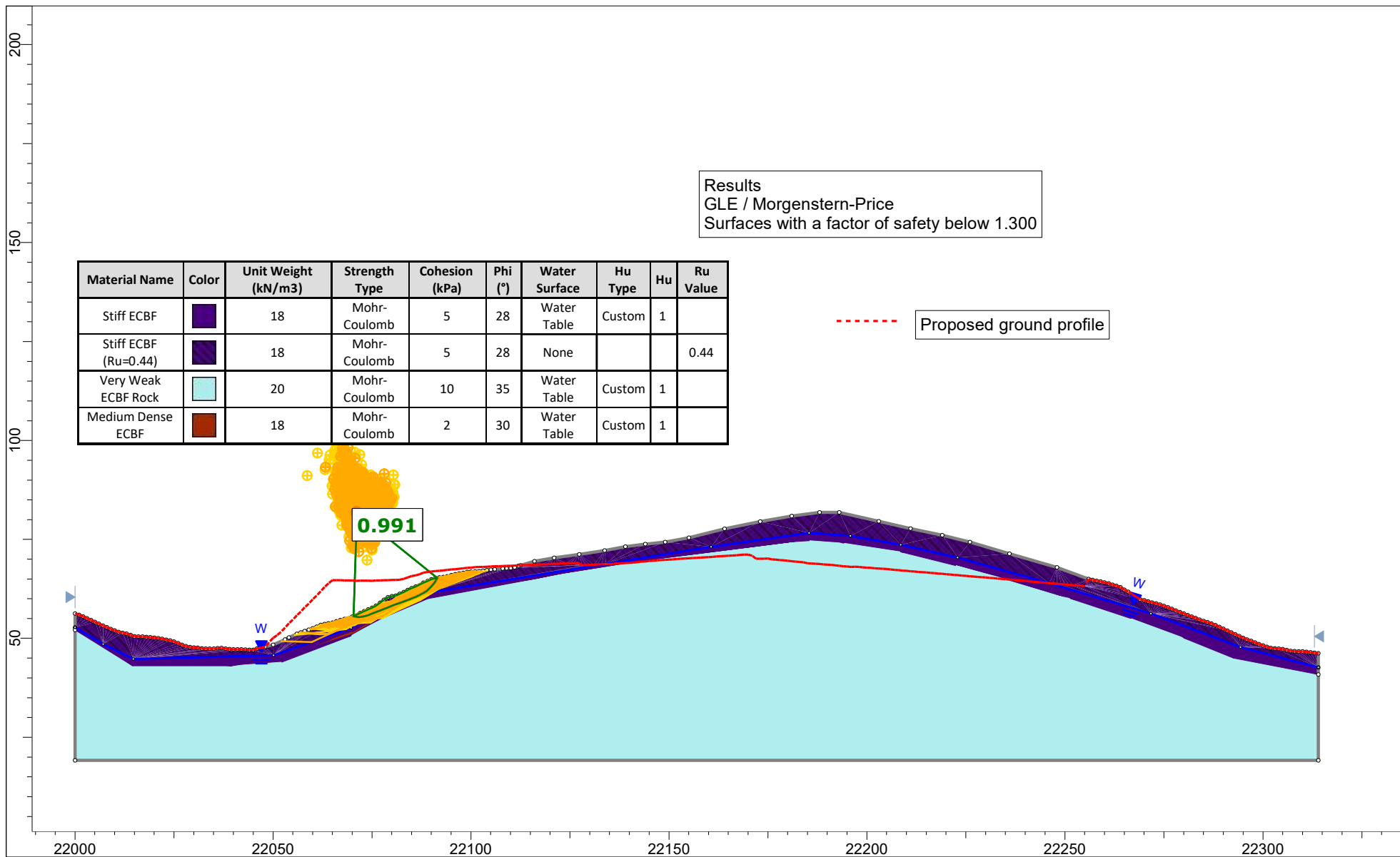
	Project		240065 - Russell Road, Wainui - Stage 2	
	Group		Section V - Existing GL (L-R)	Scenario
	Drawn By		JJW	Company
	Date		10/12/2024	File Name
				Section V - June 2025.sldm



	Project		240065 - Russell Road, Wainui - Stage 2	
	Group		Section V - Existing GL (L-R)	Scenario
	Drawn By		JJW	Company
	Date		10/12/2024	File Name
		Section V - June 2025.slmd		



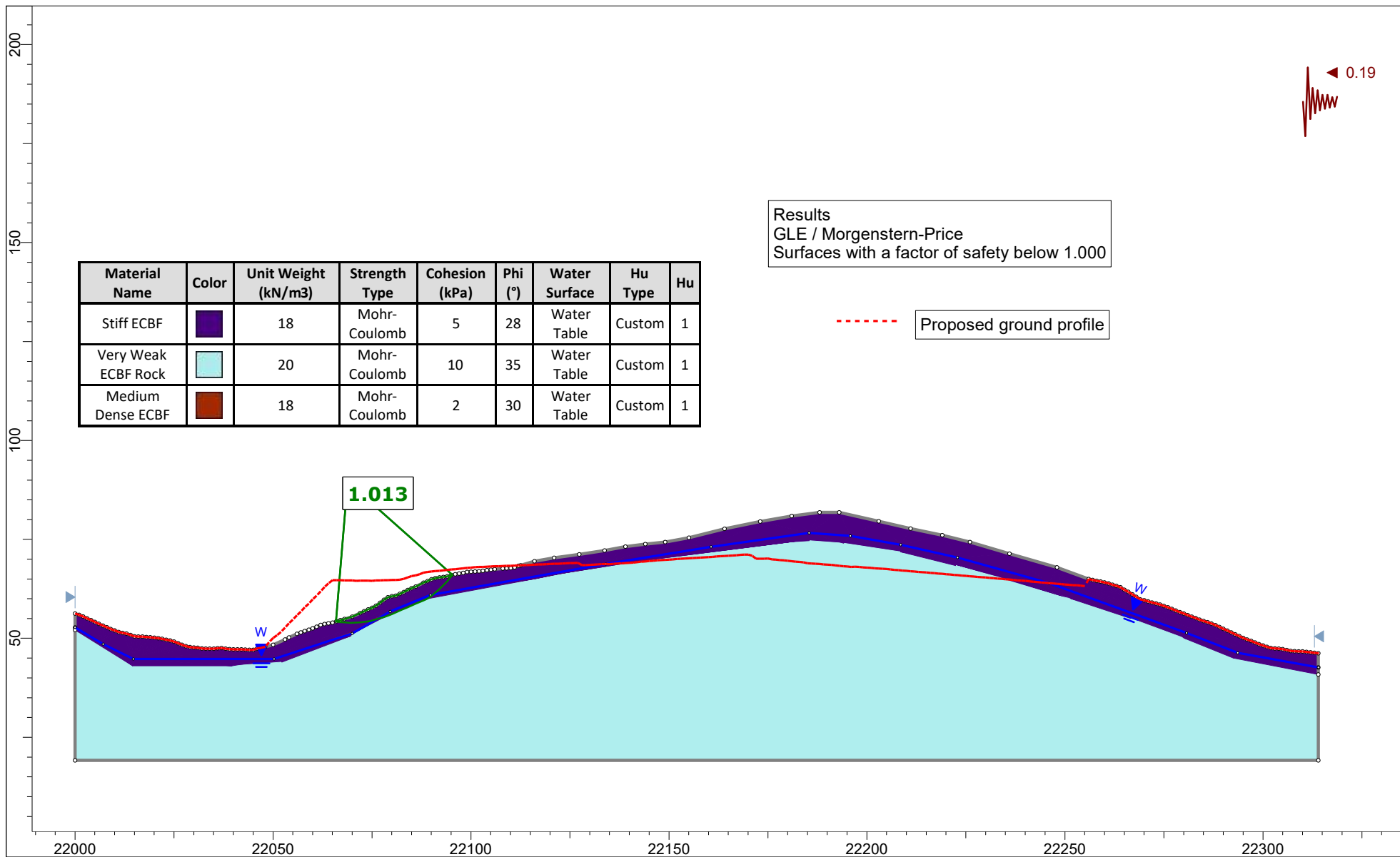
Project			
240065 - Russell Road, Wainui - Stage 2			
Group	Section V - Existing GL (R-L)		Scenario
			Normal (Measured GW)
Drawn By	JJW		Company
			Riley Consultants Ltd
Date	10/12/2024		File Name
			Section V - June 2025.slmd





SLIDEINTERPRET 9.029

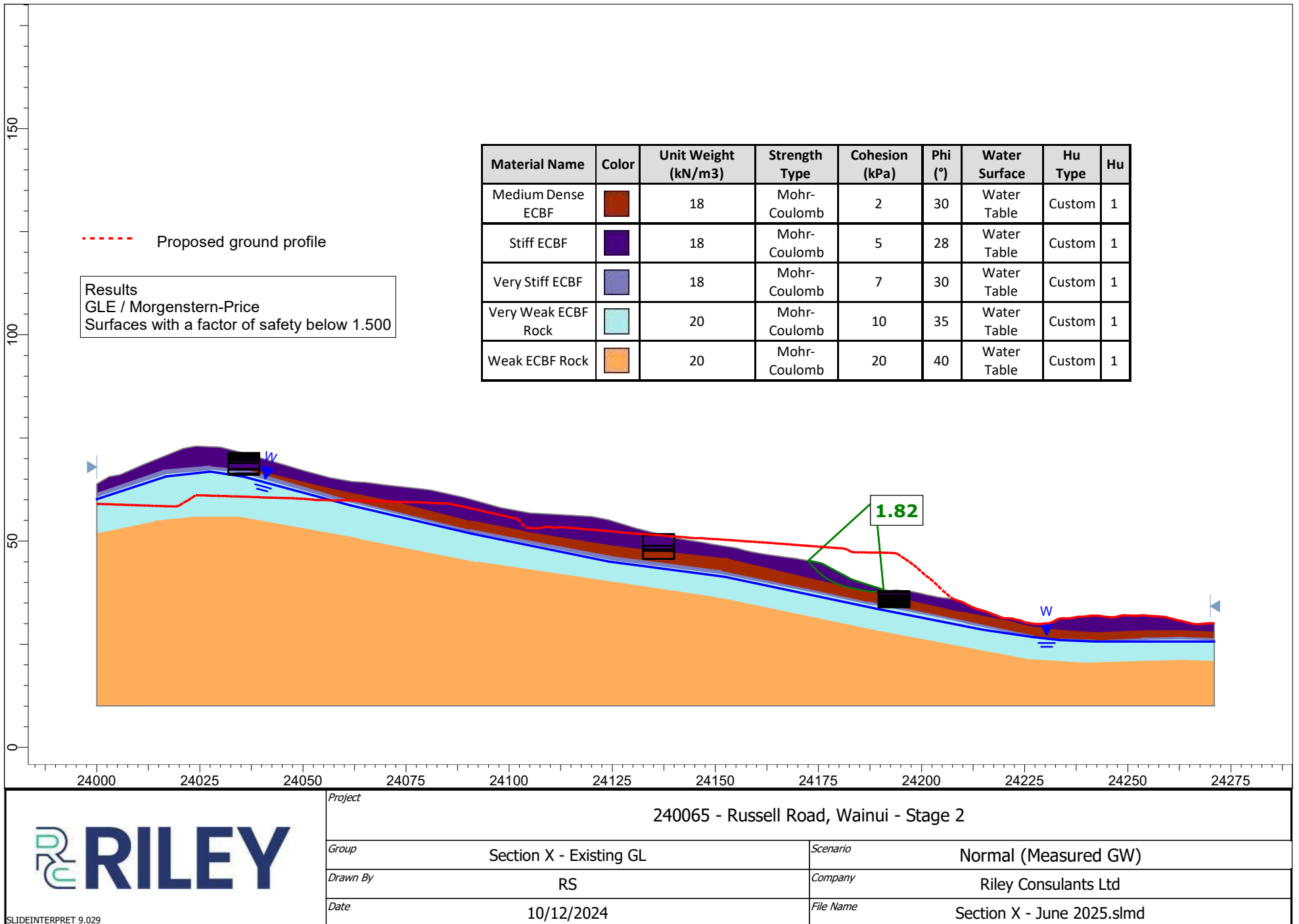
Project		240065 - Russell Road, Wainui - Stage 2	
Group	Section V - Existing GL (R-L)	Scenario	Extreme (Worst Case GW)
Drawn By	JJW	Company	Riley Consultants Ltd
Date	10/12/2024	File Name	Section V - June 2025.slmd

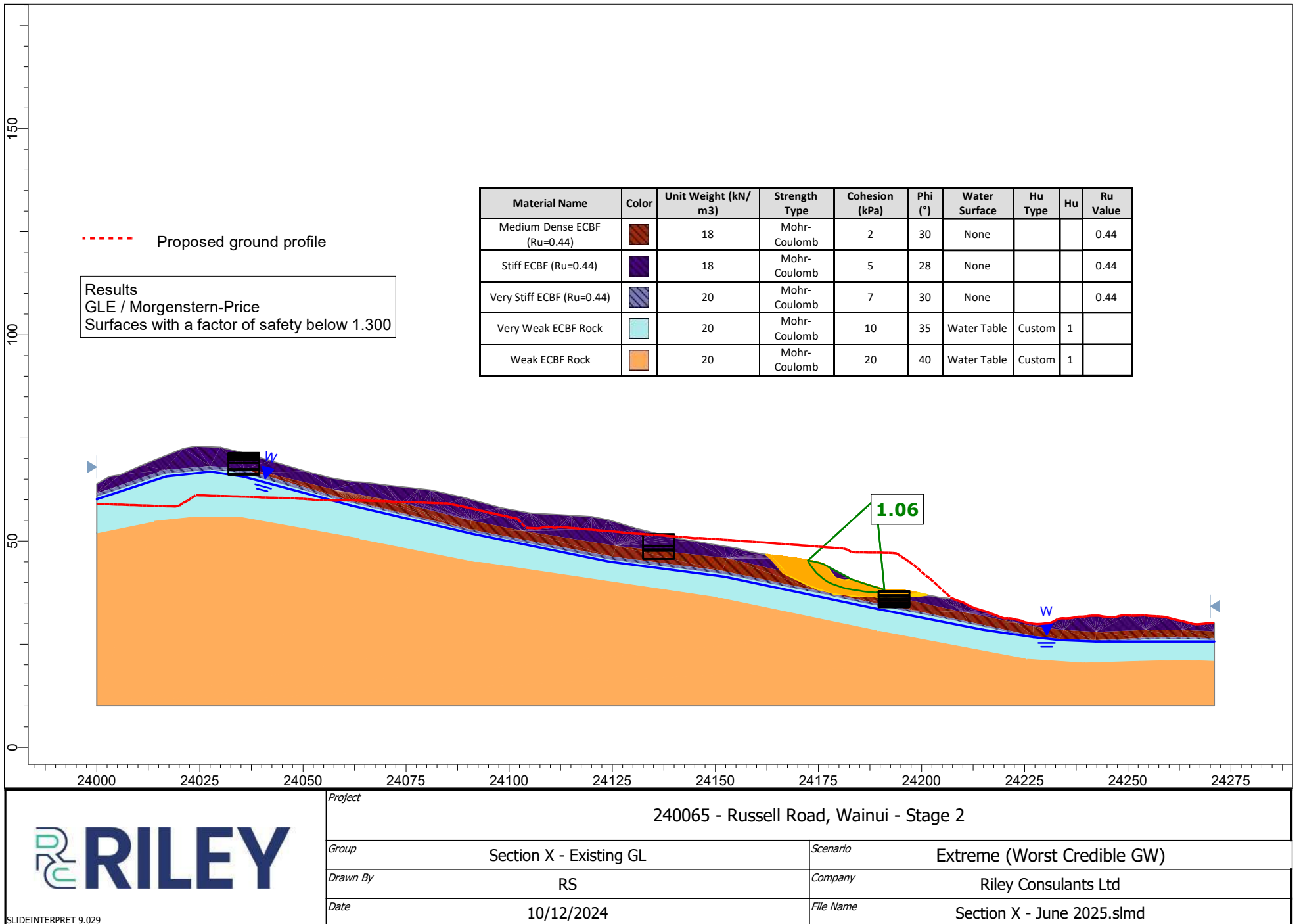


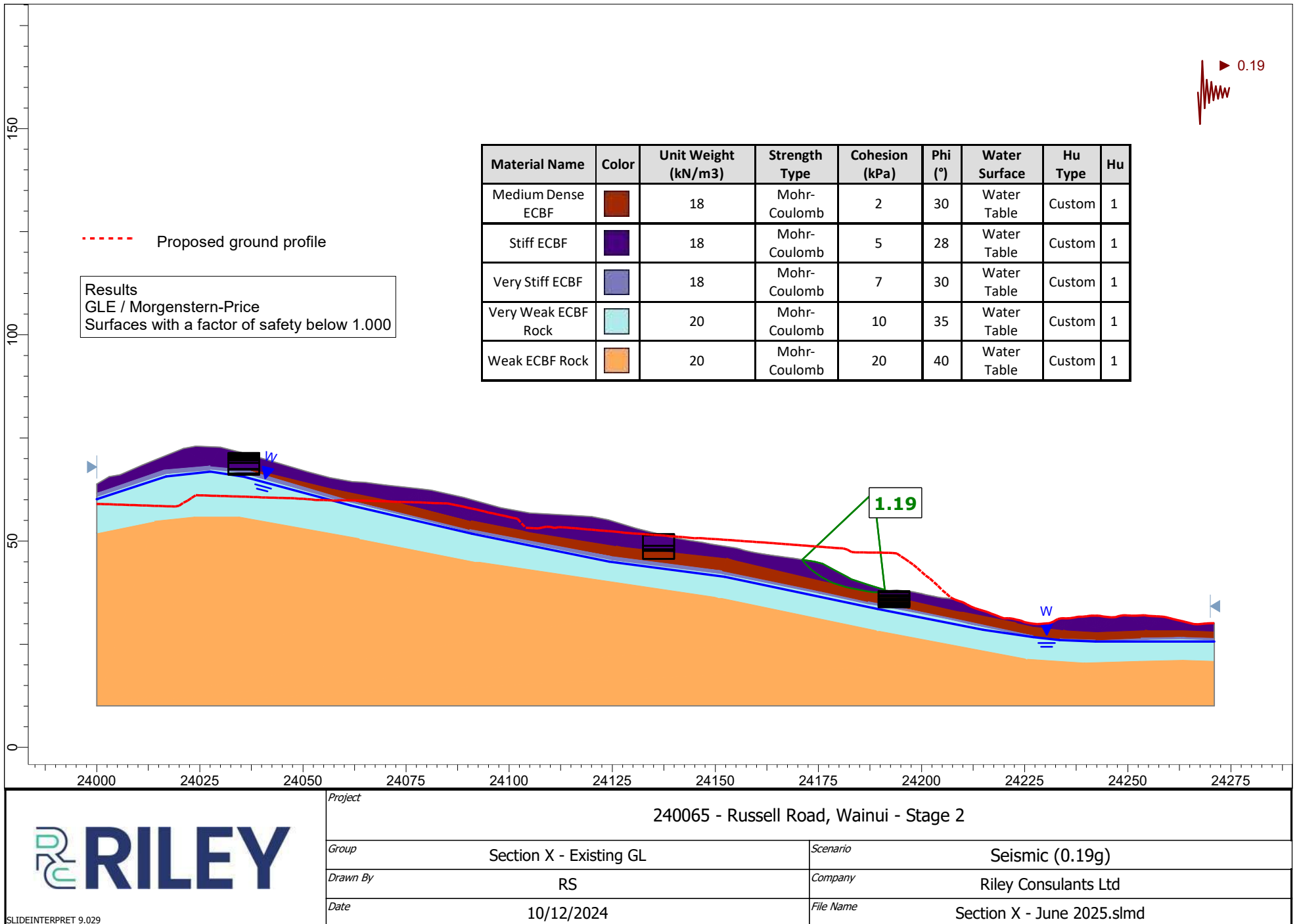


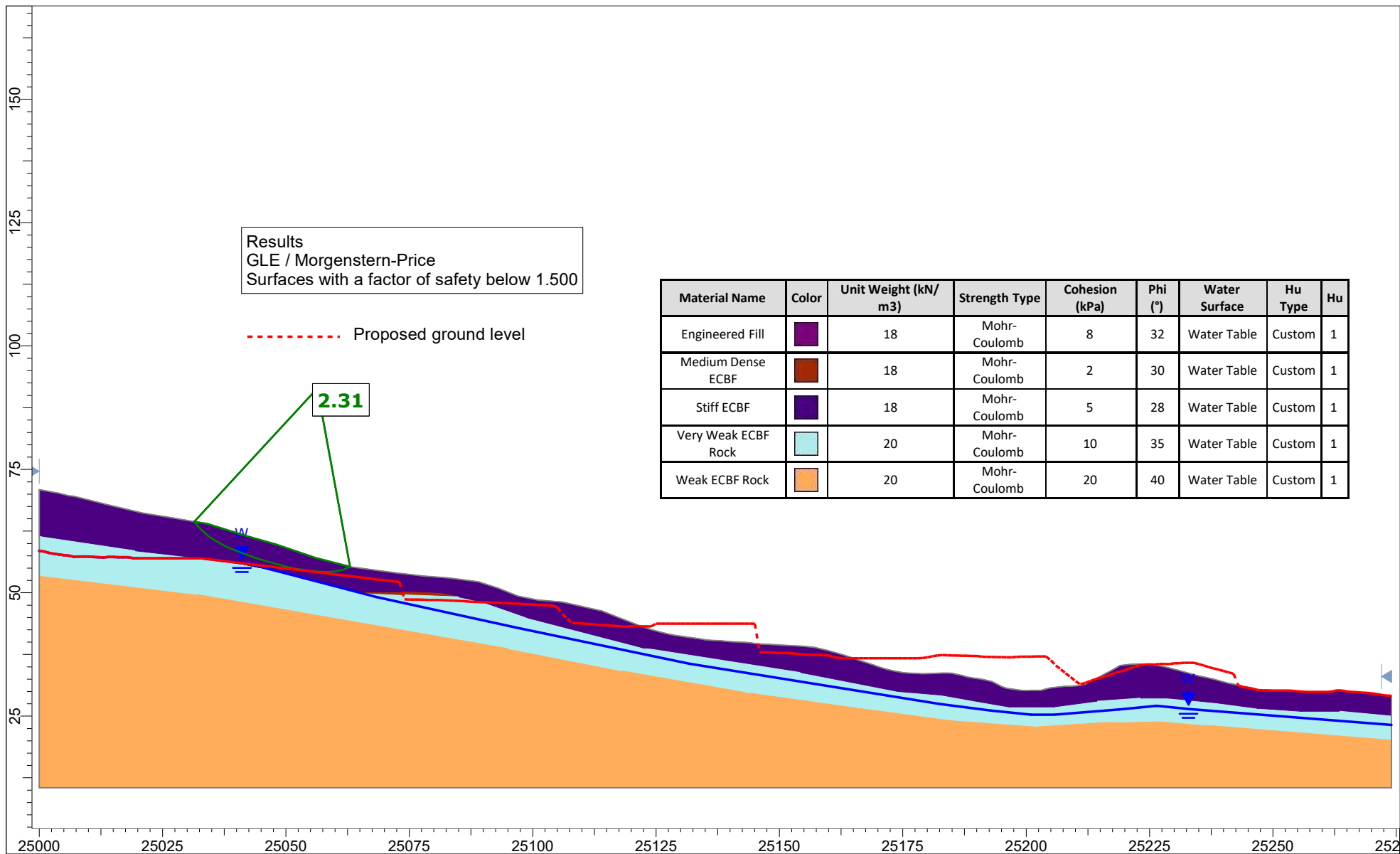
SLIDEINTERPRET 9.029

Project		240065 - Russell Road, Wainui - Stage 2	
Group	Section V - Existing GL (R-L)	Scenario	Seismic (0.19g)
Drawn By	JJW	Company	Riley Consultants Ltd
Date	10/12/2024	File Name	Section V - June 2025.slmd

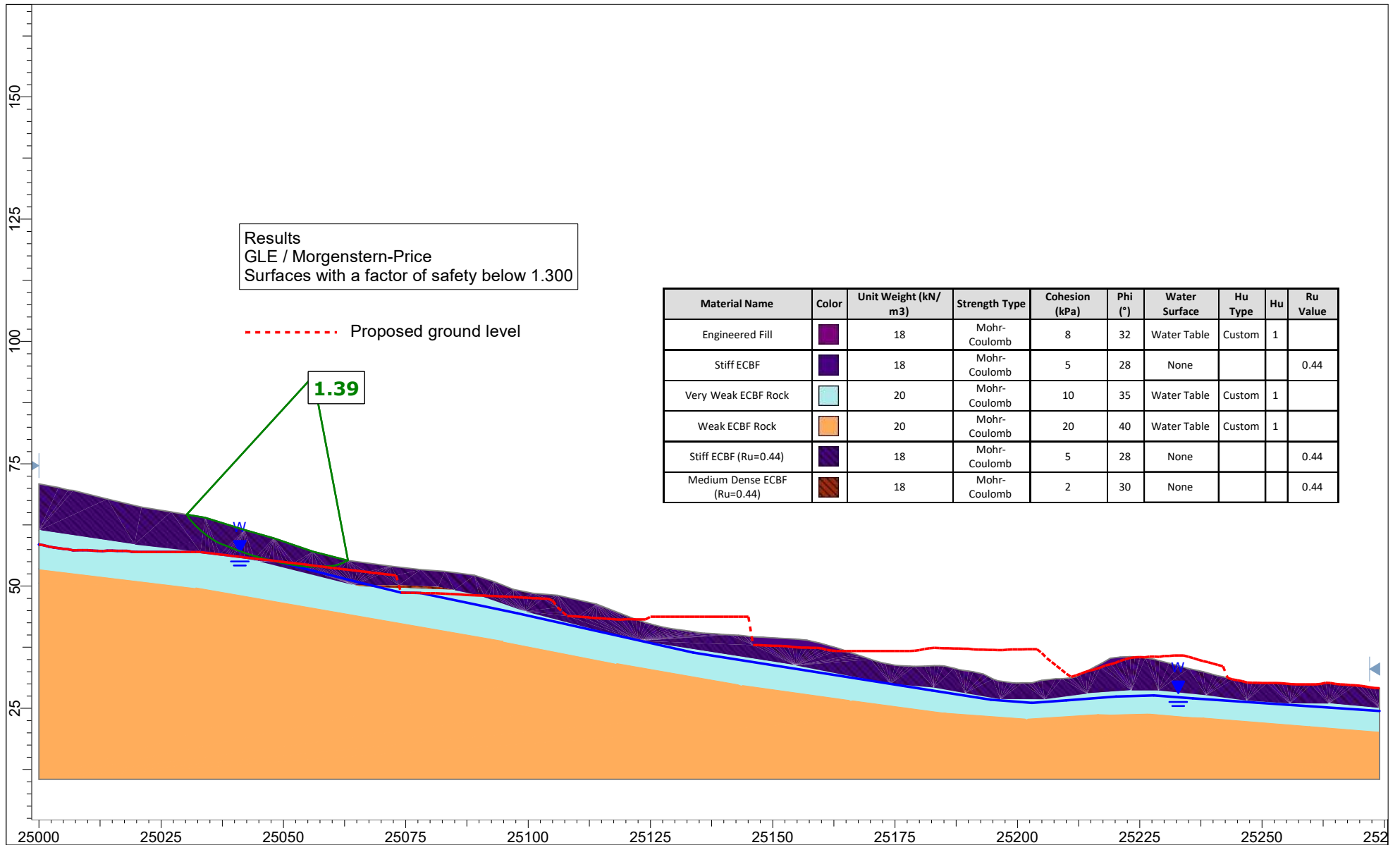




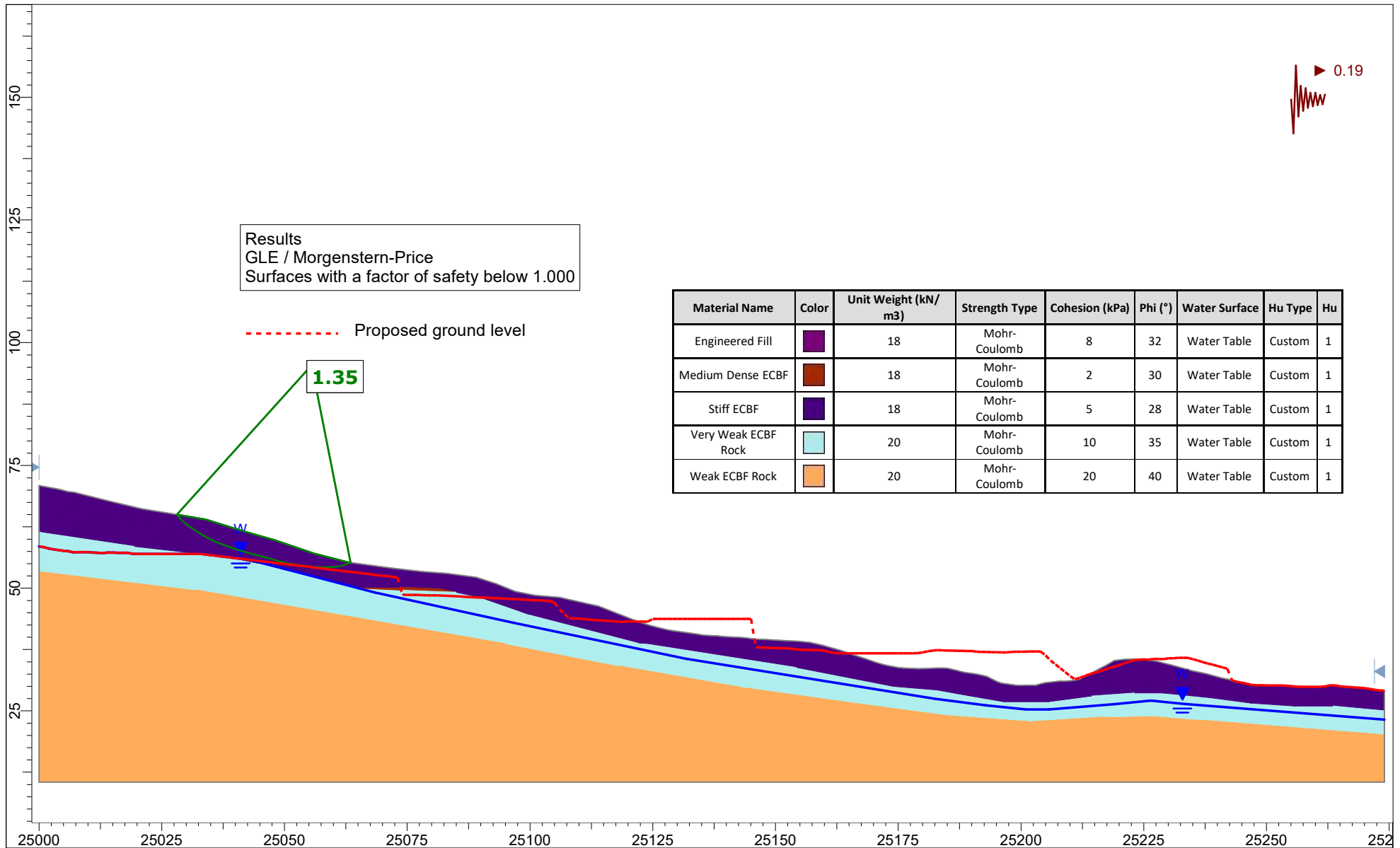




Project		240065 - Russell Road, Wainui - Stage 2	
Group	Section Y - Existing GL	Scenario	Normal (Measured GW)
Drawn By	RS	Company	Riley Consultants Ltd
Date	10/12/2024	File Name	Section Y - June 2025.slm

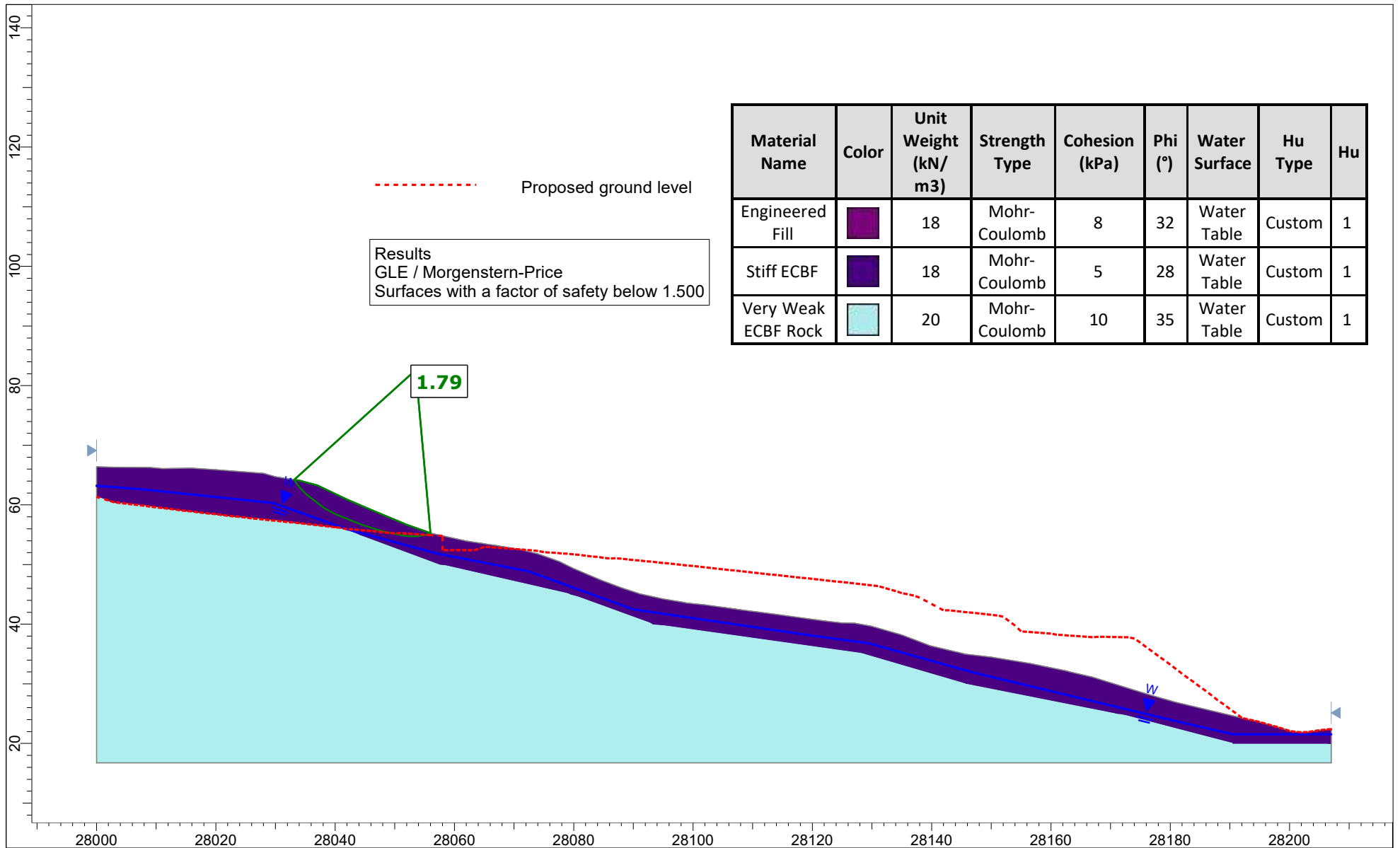


Project		240065 - Russell Road, Wainui - Stage 2	
Group	Section Y - Existing GL	Scenario	Extreme (Worst Case GW)
Drawn By	RS	Company	Riley Consultants Ltd
Date	10/12/2024	File Name	Section Y - June 2025.slm



SLIDEINTERPRET 9.029

Project		240065 - Russell Road, Wainui - Stage 2	
Group	Section Y - Existing GL	Scenario	Seismic (0.19g)
Drawn By	RS	Company	Riley Consultants Ltd
Date	10/12/2024	File Name	Section Y - June 2025.slm

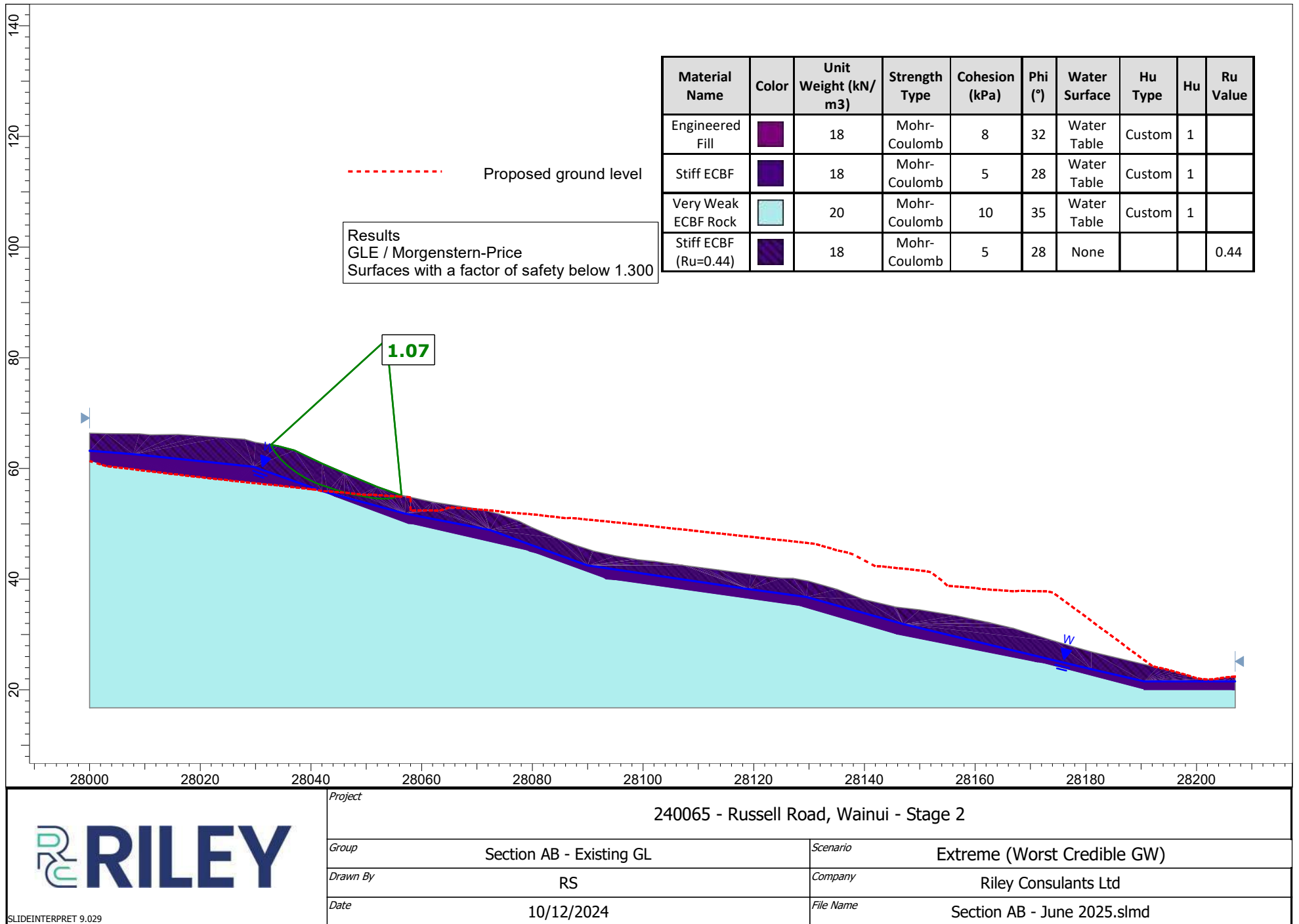


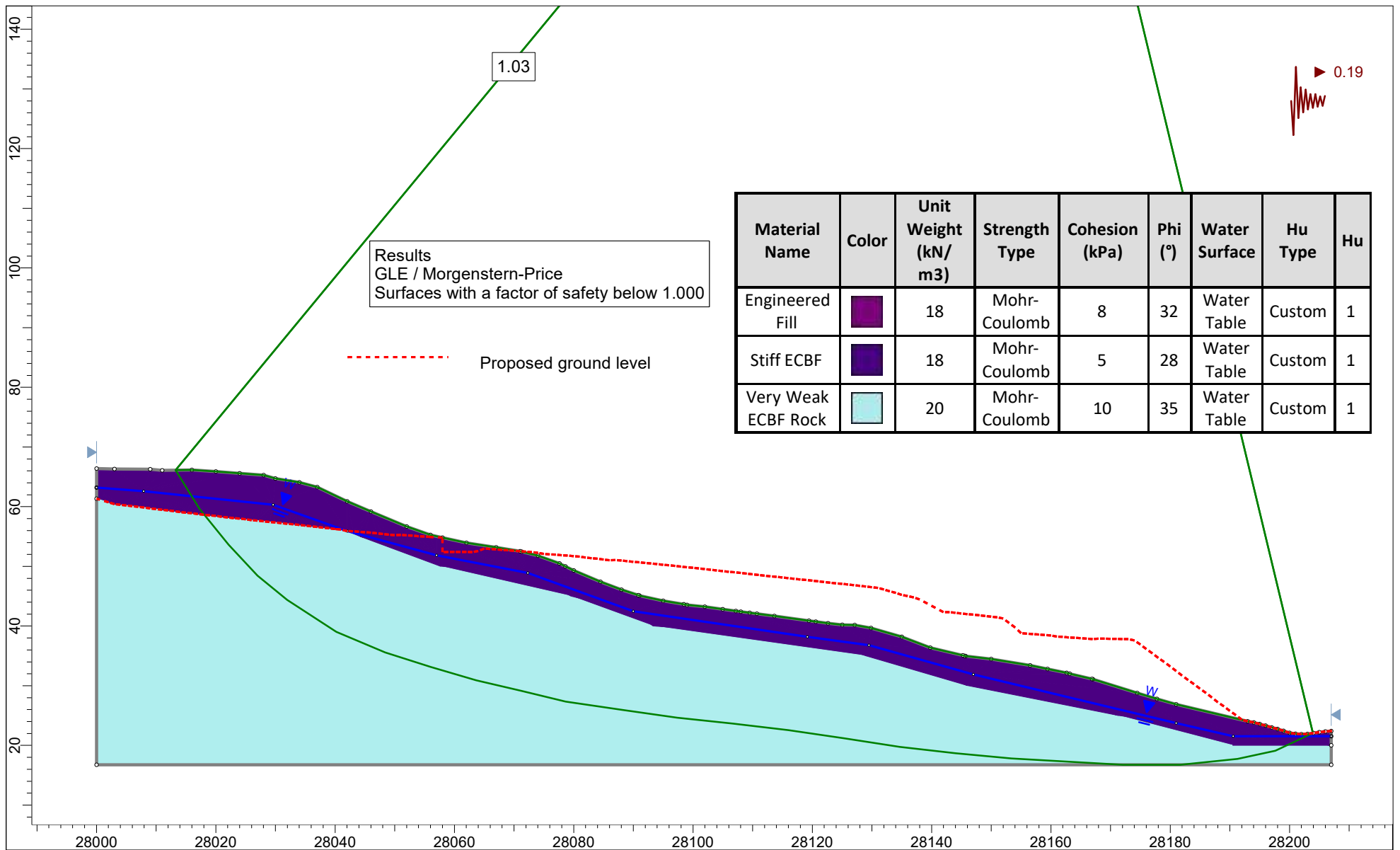
Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Engineered Fill		18	Mohr-Coulomb	8	32	Water Table	Custom	1
Stiff ECBF		18	Mohr-Coulomb	5	28	Water Table	Custom	1
Very Weak ECBF Rock		20	Mohr-Coulomb	10	35	Water Table	Custom	1



SLIDEINTERPRET 9.029

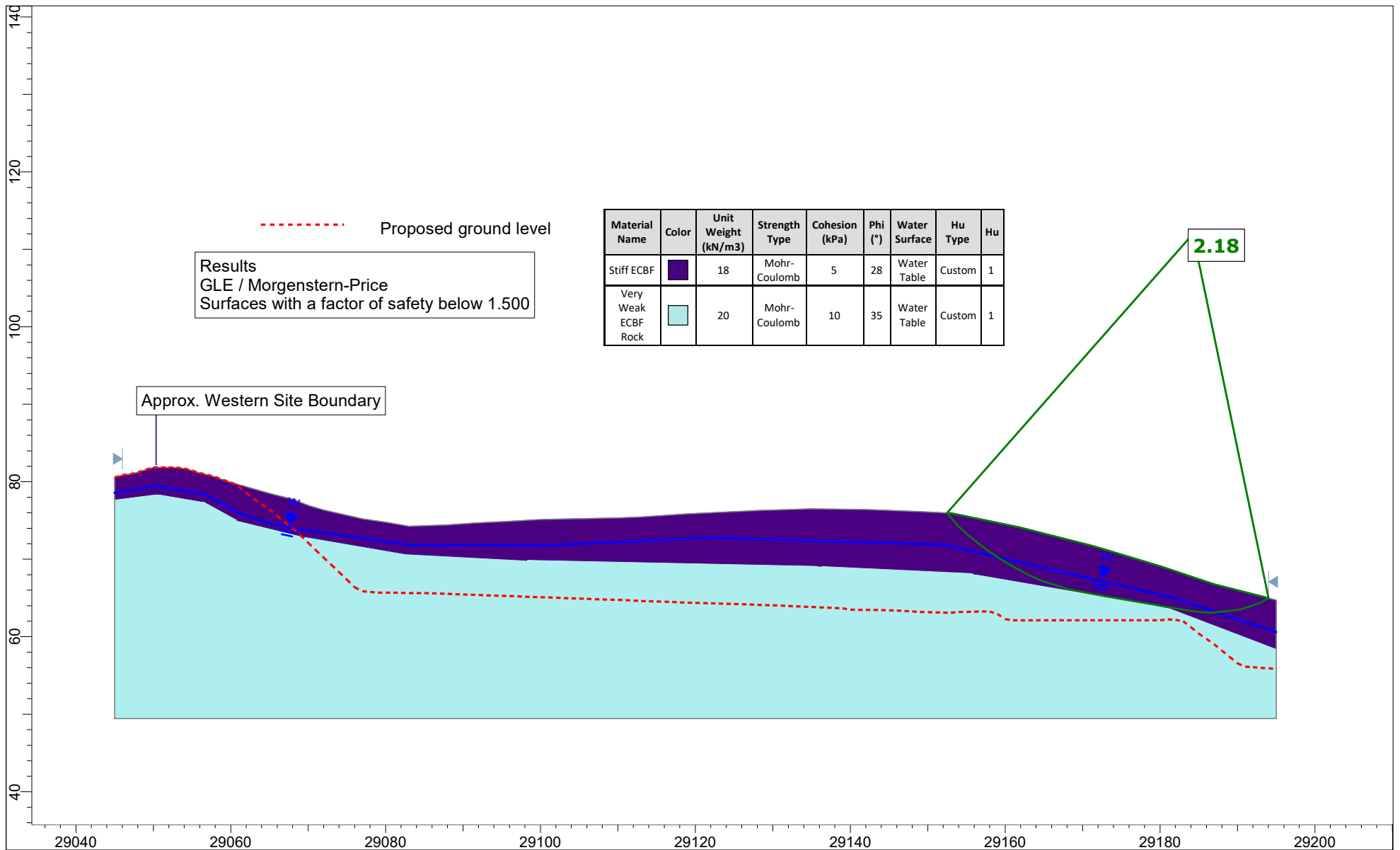
Project	240065 - Russell Road, Wainui - Stage 2		
Group	Section AB - Existing GL	Scenario	Normal (Measured GW)
Drawn By	RS	Company	Riley Consultants Ltd
Date	10/12/2024	File Name	Section AB - June 2025.slm



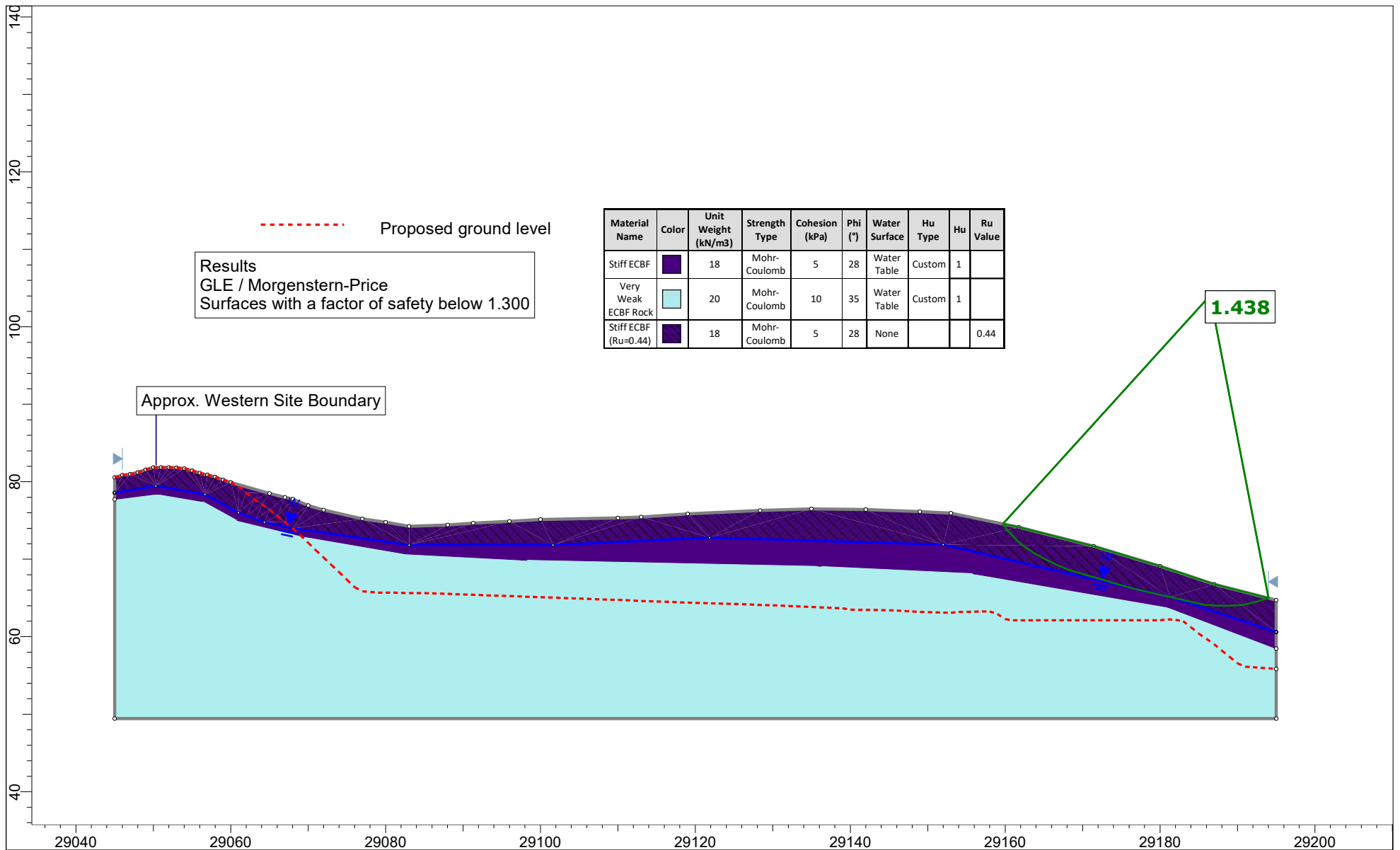


SLIDEINTERPRET 9.029

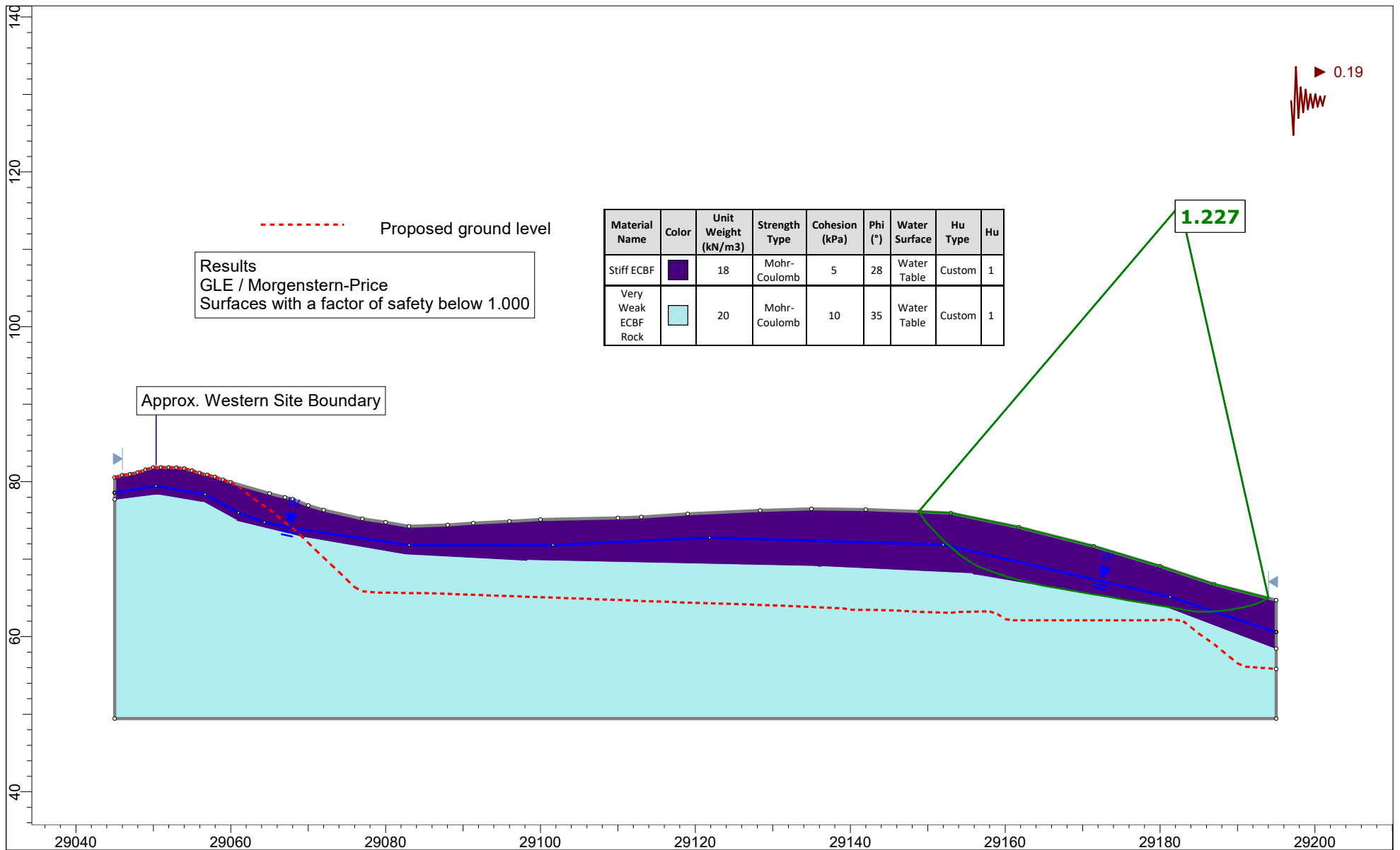
Project		240065 - Russell Road, Wainui - Stage 2	
Group	Section AB - Existing GL	Scenario	Seismic (0.19g)
Drawn By	RS	Company	Riley Consultants Ltd
Date	10/12/2024	File Name	Section AB - June 2025.slm



Project			
240065 - Russell Road, Wainui - Stage 2			
Group		Scenario	
Section AC - Existing GL		Normal (Measured GW)	
Drawn By		Company	
RS		Riley Consultants Ltd	
Date		File Name	
10/12/2024		Section AC - June 2025.slmd	



Project				240065 - Russell Road, Wainui - Stage 2			
Group		Section AC - Existing GL			Scenario		
Drawn By		RS			Company		
Date		10/12/2024			File Name		
					Section AC - June 2025.slmd		



Project			
240065 - Russell Road, Wainui - Stage 2			
Group	Section AC - Existing GL		Scenario
			Seismic (0.19g)
Drawn By	RS		Company
			Riley Consultants Ltd
Date	10/12/2024		File Name
			Section AC - June 2025.slmd

Response (21)31
Sketches SK180–189





Scale: 1:7500 (A3)
400 m
300
200
100
0

Notes:

- Existing ground surface taken from drone survey provided by McKenzie & Co. on 6 December 2024.
- Existing ground surface outside of the site boundary taken from LINZ DEM 2016–2018.
- Proposed lot development provided by McKenzie & Co., dated 08 January 2025.
- Property data taken from LINZ Data Service.
- Geomorphology mapped by Riley Consultants' Geologists during site walkovers on 08 April 2024 and 08 November 2024.
- Site investigation completed by Riley Consultants across November and December 2024.
- Geological contact inferred from geomorphological mapping and available intrusive site investigation.
- This sketch shows the indicative extent of the proposed stabilisation enhancement measures. Final extent and configurations is subject to detailed design and confirmation on site.



240065-SK183

240065-SK184

240065-SK181

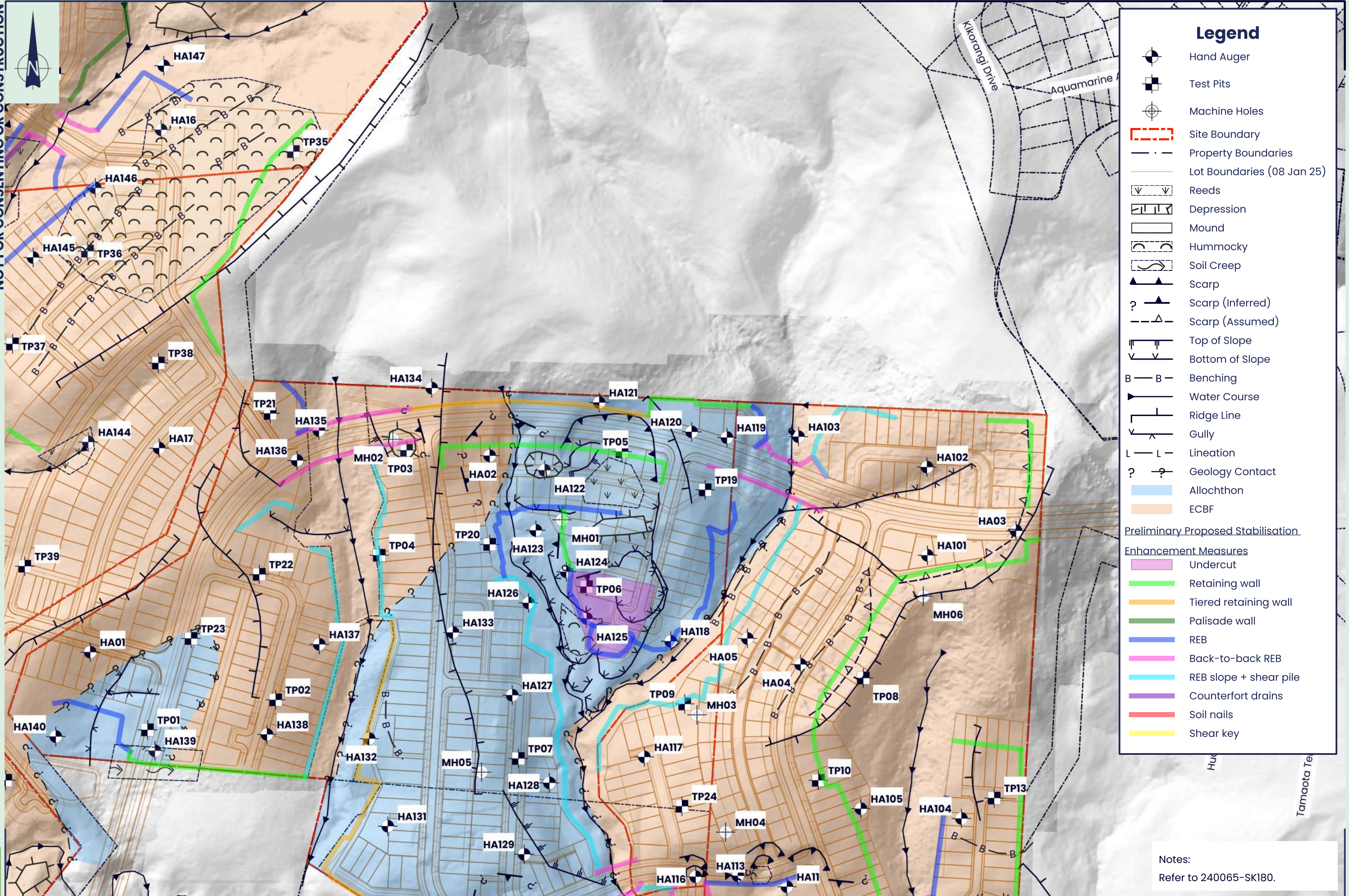
240065-SK182

Legend

- Hand Auger
- Test Pits
- Machine Holes
- Site Boundary
- Property Boundaries
- Lot Boundaries (08 Jan 25)
- Reeds
- Depression
- Mound
- Hummocky
- Soil Creep
- Scarp
- Scarp (Inferred)
- Scarp (Assumed)
- Top of Slope
- Bottom of Slope
- Benching
- Water Course
- Ridge Line
- Gully
- Liation
- Geology Contact
- Allochthon
- ECBF
- Preliminary Proposed Stabilisation Enhancement Measures**
 - Undercut
 - Retaining wall
 - Tiered retaining wall
 - Palisade wall
 - REB
 - Back-to-back REB
 - REB slope + shear pile
 - Counterfort drains
 - Soil nails
 - Shear key

FOR PRELIMINARY QUANTITIES ONLY/
NOT FOR CONSENTING OR CONSTRUCTION

Scale: 1:2500 (A3)
240 m
180
120
60
0



Legend

- Hand Auger
- Test Pits
- Machine Holes
- Site Boundary
- Property Boundaries
- Lot Boundaries (08 Jan 25)
- Reeds
- Depression
- Mound
- Hummocky
- Soil Creep
- Scarp
- Scarp (Inferred)
- Scarp (Assumed)
- Top of Slope
- Bottom of Slope
- Benching
- Water Course
- Ridge Line
- Gully
- Lineation
- Geology Contact
- Allochthon
- ECBF

Preliminary Proposed Stabilisation

Enhancement Measures

- Undercut
- Retaining wall
- Tiered retaining wall
- Palisade wall
- REB
- Back-to-back REB
- REB slope + shear pile
- Counterfort drains
- Soil nails
- Shear key

Notes:
Refer to 240065-SK180.



Vineway Ltd

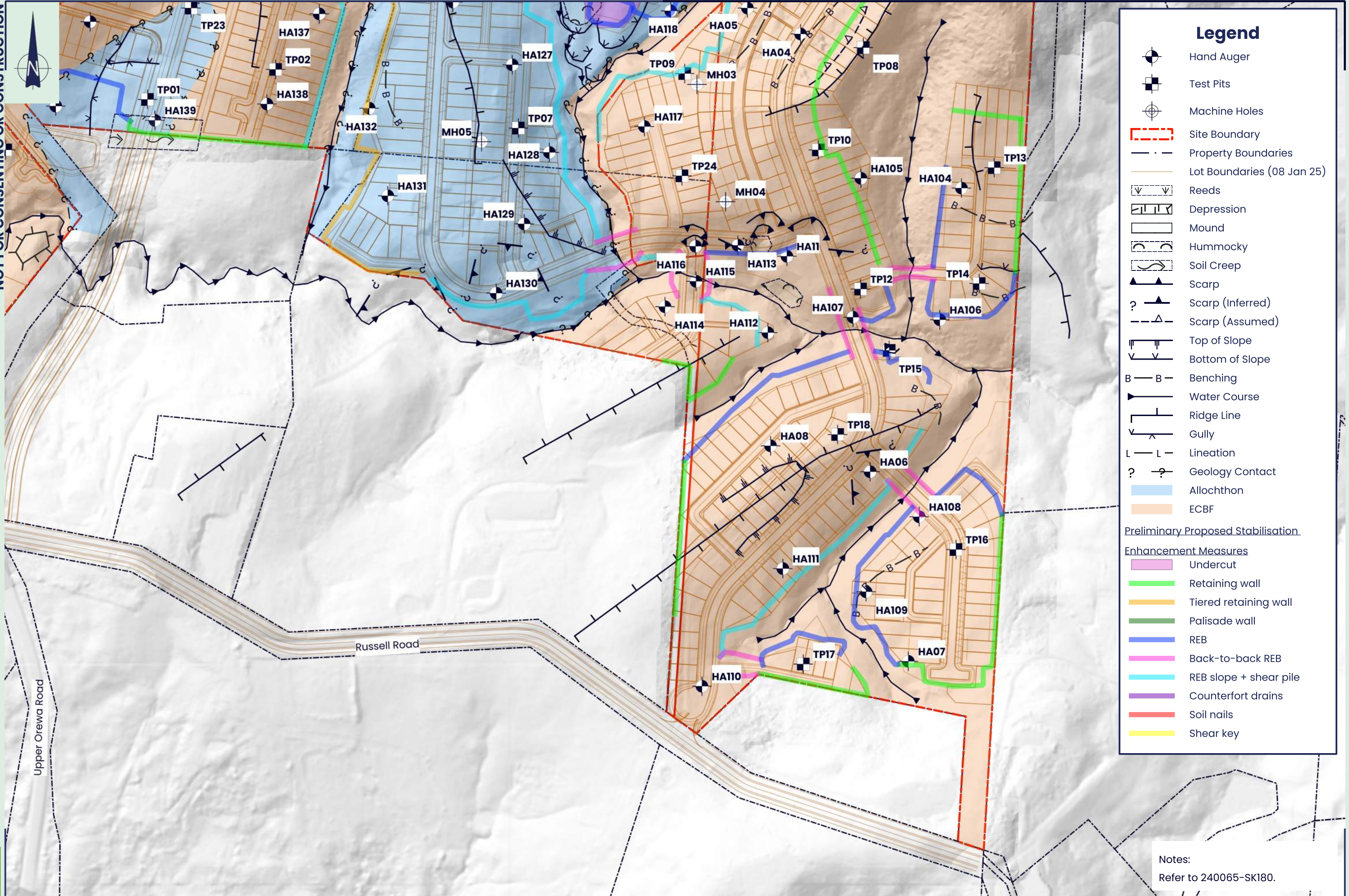
Russell Road, Wainui - Delmore

Investigation and Geological Features Plan - Sheet 1 of 4

Sketch: 240065-SK181 (Rev A)
Drawn By AB | Checked By JLB
Approved By BB | 12/06/2025

FOR PRELIMINARY QUANTITIES ONLY/
NOT FOR CONSENTING OR CONSTRUCTION

Scale: 1:2500 (A3)
240 m
180
120
60
0



Legend

- Hand Auger
- Test Pits
- Machine Holes
- Site Boundary
- Property Boundaries
- Lot Boundaries (08 Jan 25)
- Reeds
- Depression
- Mound
- Hummocky
- Soil Creep
- Scarp
- Scarp (Inferred)
- Scarp (Assumed)
- Top of Slope
- Bottom of Slope
- Benching
- Water Course
- Ridge Line
- Gully
- Lineation
- Geology Contact
- Allochthon
- ECBF

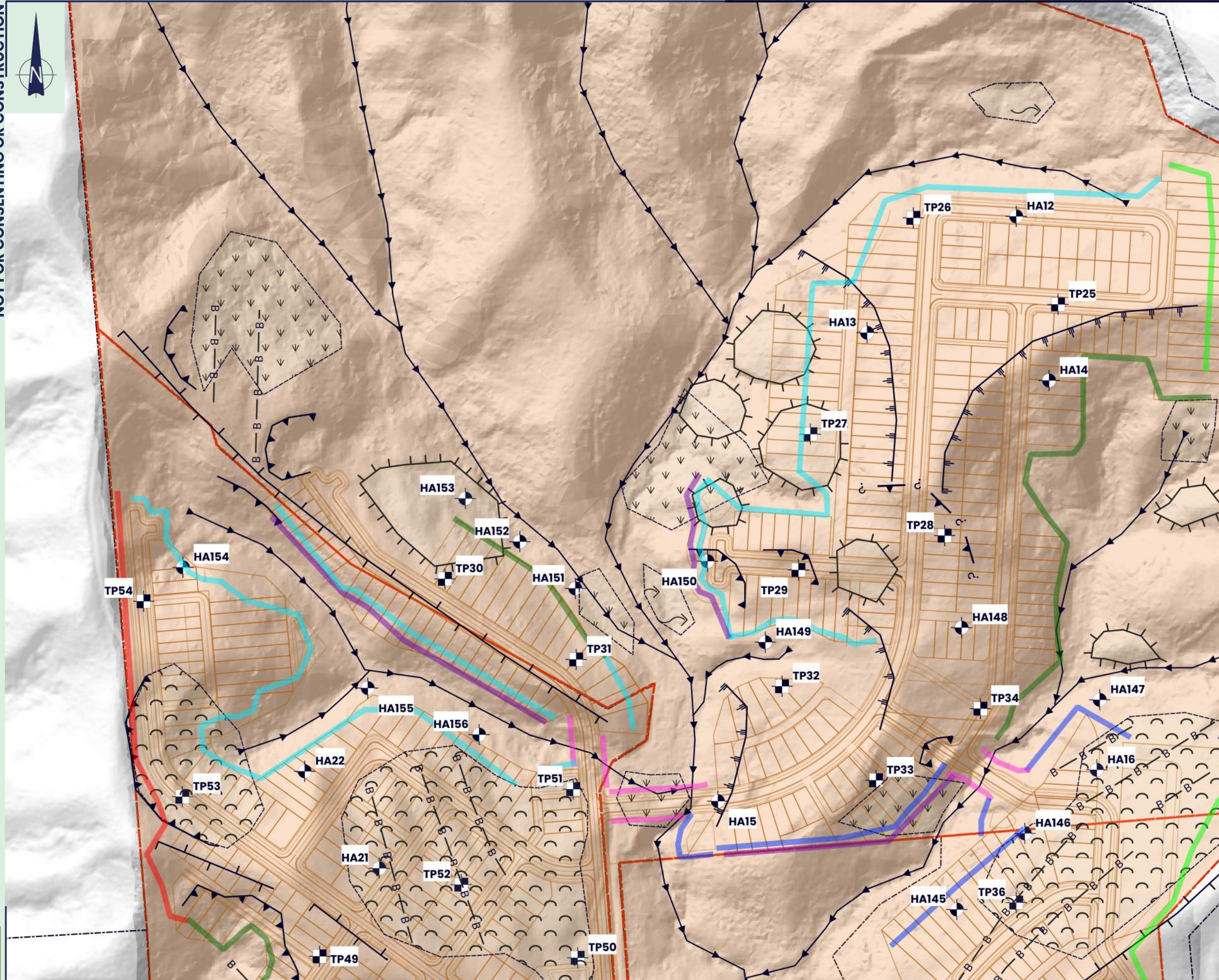
Preliminary Proposed Stabilisation

Enhancement Measures

- Undercut
- Retaining wall
- Tiered retaining wall
- Palisade wall
- REB
- Back-to-back REB
- REB slope + shear pile
- Counterfort drains
- Soil nails
- Shear key

Notes:
Refer to 240065-SK180.





Legend

- Hand Auger
- Test Pits
- Machine Holes
- Site Boundary
- Property Boundaries
- Lot Boundaries (08 Jan 25)
- Reeds
- Depression
- Mound
- Hummocky
- Soil Creep
- Scarp
- Scarp (Inferred)
- Scarp (Assumed)
- Top of Slope
- Bottom of Slope
- Benching
- Water Course
- Ridge Line
- Gully
- Lineation
- Geology Contact
- Allochthon
- ECBF

Preliminary Proposed Stabilisation

Enhancement Measures

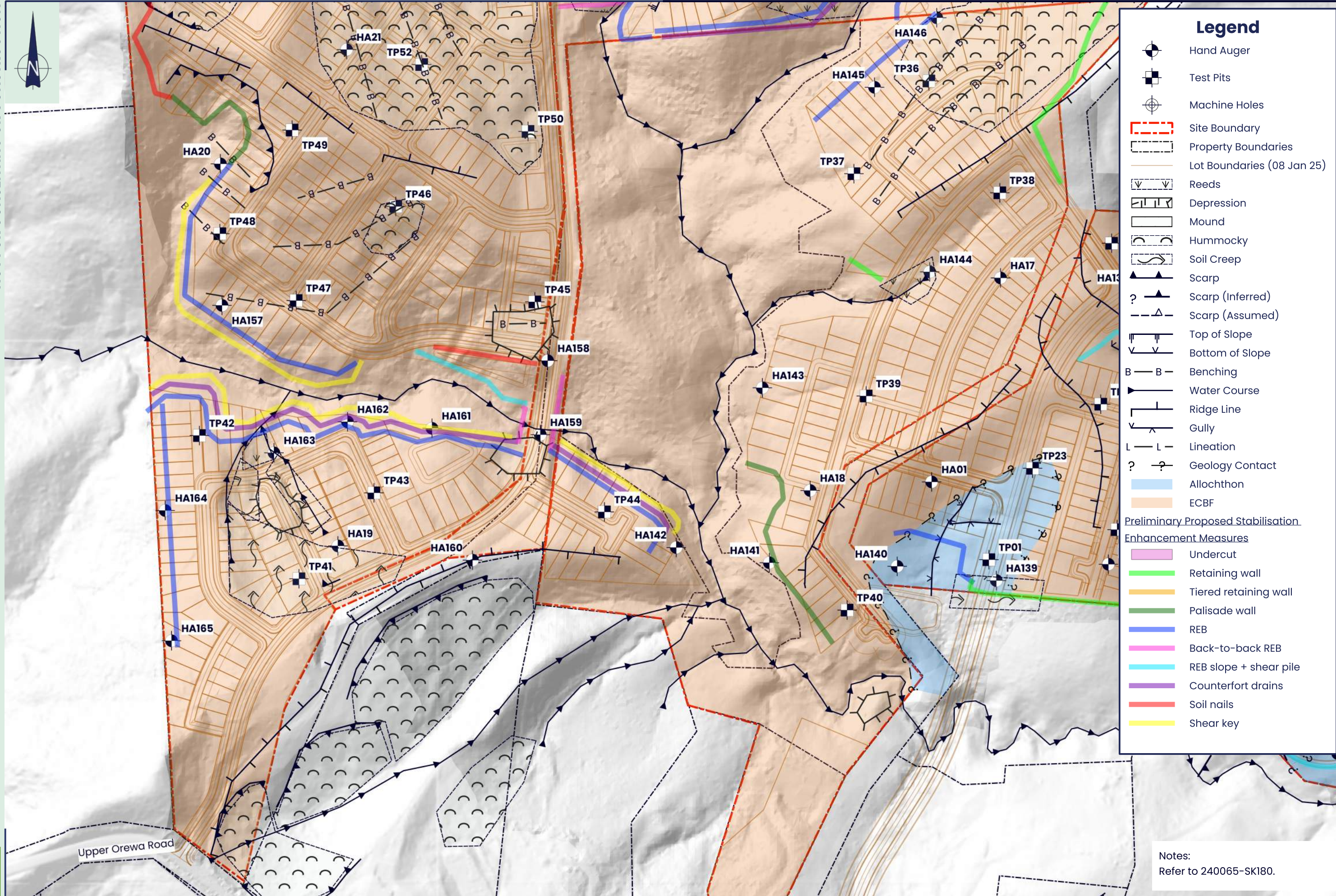
- Undercut
- Retaining wall
- Tiered retaining wall
- Palisade wall
- REB
- Back-to-back REB
- REB slope + shear pile
- Counterfort drains
- Soil nails
- Shear key

Notes:
Refer to 240065-SK180.

FOR PRELIMINARY QUANTITIES ONLY/
NOT FOR CONSENTING OR CONSTRUCTION



Scale: 1:2500 (A3)
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120
60
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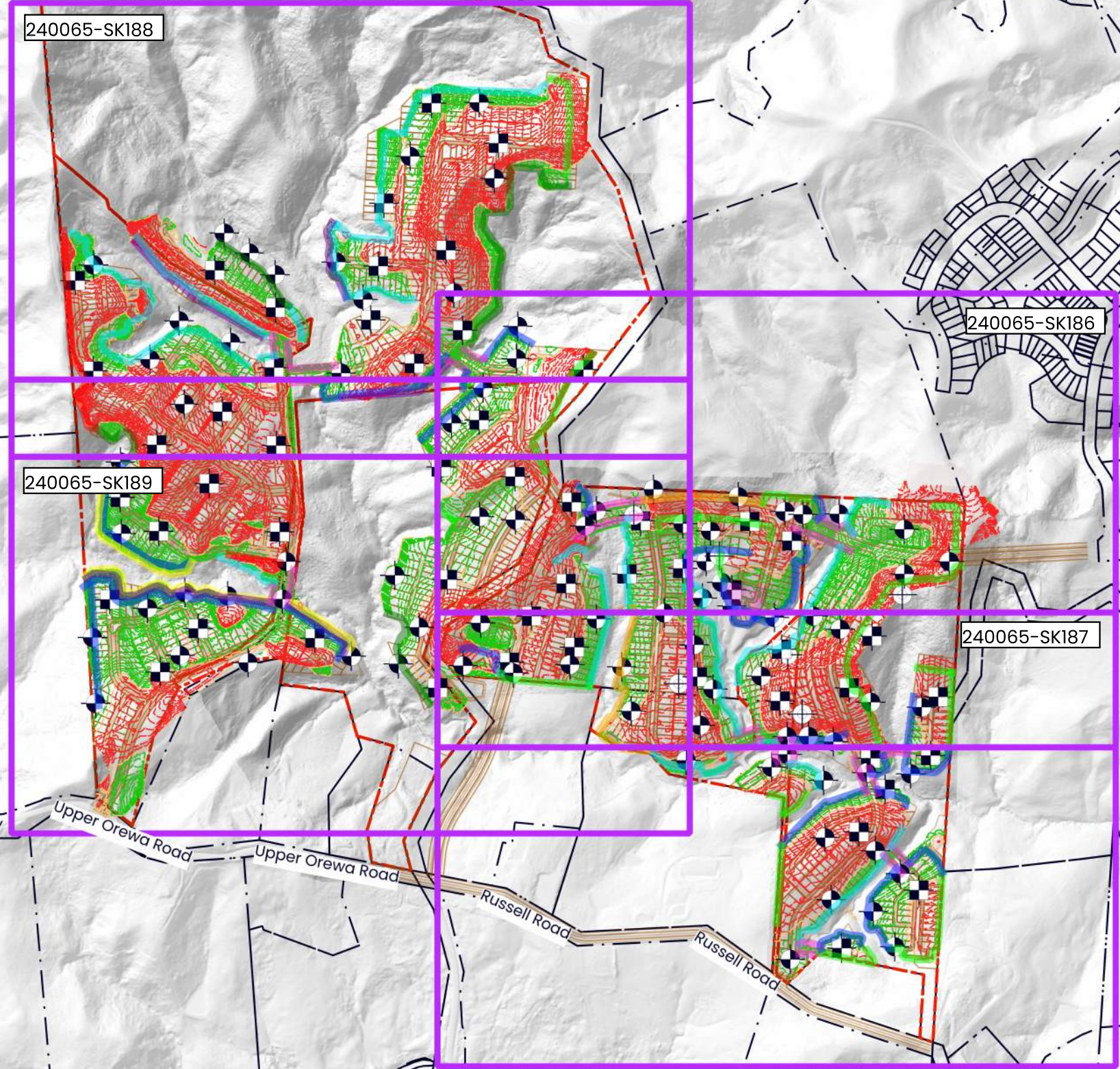


FOR INFORMATION/NOT FOR CONSTRUCTION



Legend

Site Boundary



- Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024.
 2. Existing ground surface outside of the site boundary taken from LINZ DEM 2016-2018.
 3. Proposed lot development provided by McKenzie & Co., dated 08 January 2025.
 4. Property data taken from LINZ Data Service.
 5. Site investigation completed by Riley Consultants across November and December 2024.
 6. This sketch shows the indicative extent of the proposed stabilisation enhancement measures. Final extent and configurations are subject to detailed design and confirmation on site.
 7. Earthwork cut and fill profile for Stage 1 is generated from design ground surface provided by McKenzie & Co., dated 02 May 2025.
 8. 7. Earthwork cut and fill profile for Stage 2 is generated from design ground surface provided by McKenzie & Co., dated 07 January 2025.



Vineway Ltd
Russell Road, Wainui – Delmore
Investigation and Proposed Cut/Fill Plan – Overview

Sketch: 240065-SK185 (Rev A)
Drawn By AB | Checked By JLB
Approved By BB | 12/06/2025

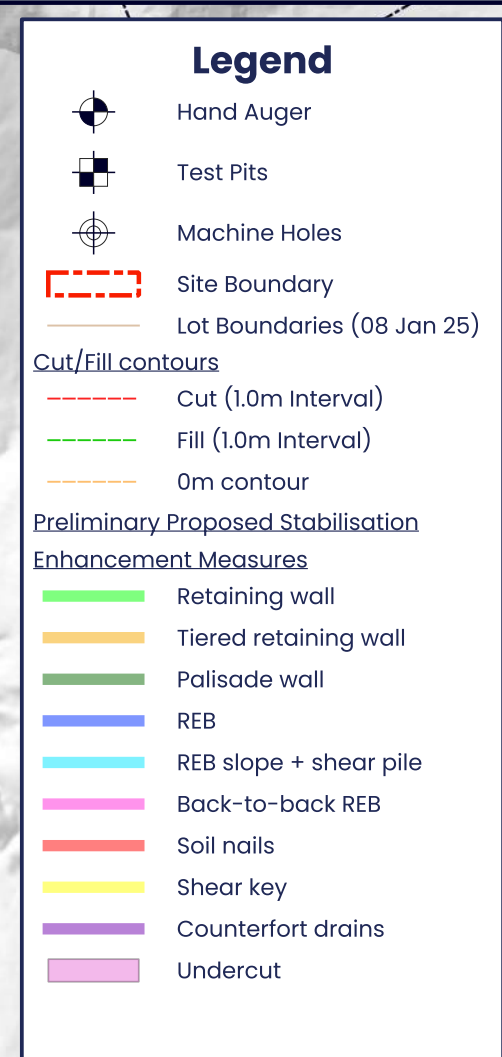
Project Number: | Drawn by abyod | Date printed: 12/06/2025 | Scale: 1:7500





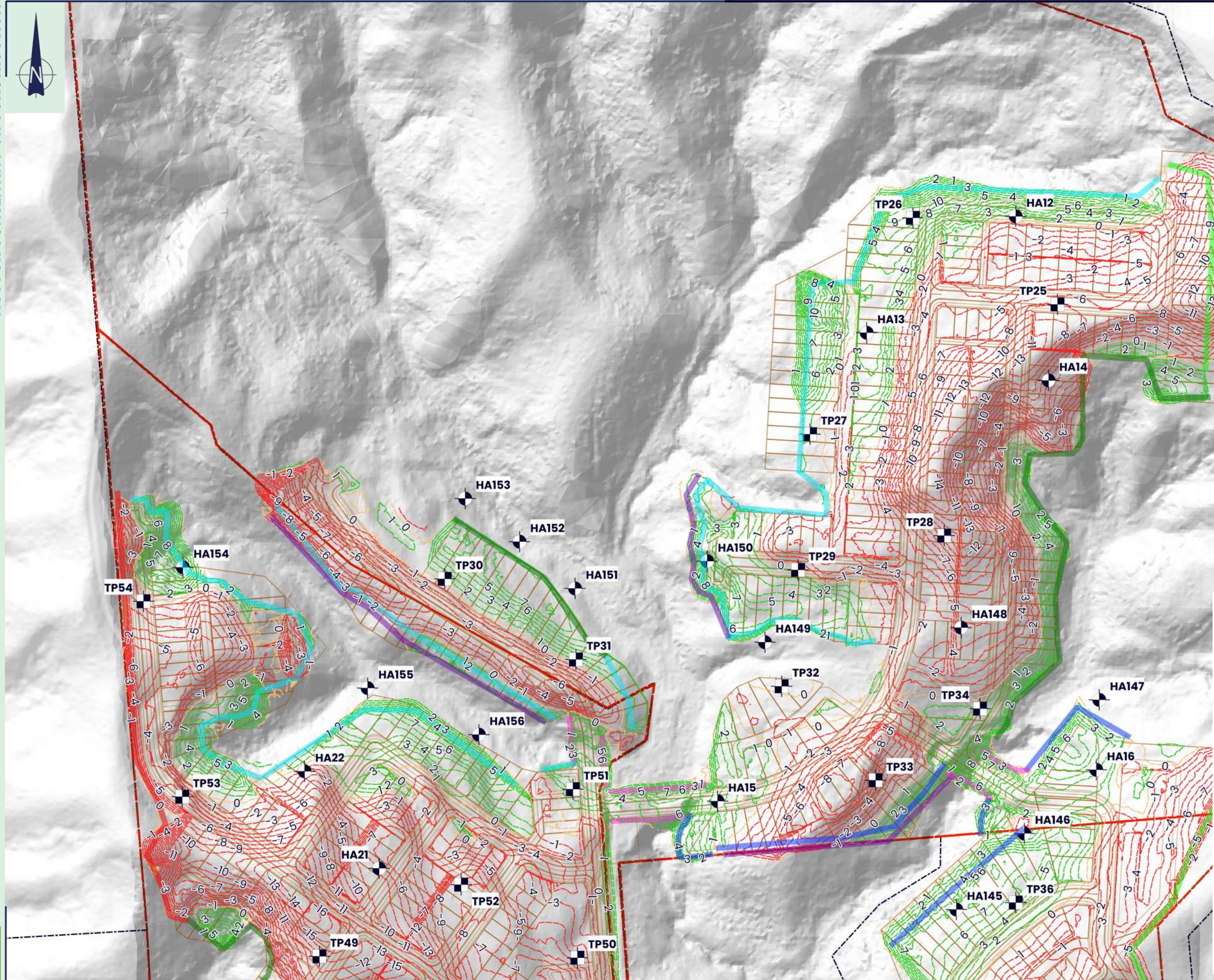
Upper Orewa Road

Russell Road



Notes:

- Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024.
- Existing ground surface outside of the site boundary taken from LINZ DEM 2016-2018.
- Proposed lot development provided by McKenzie & Co., dated 08 January 2025.
- Property data taken from LINZ Data Service.
- Site investigation completed by Riley Consultants across November and December 2024.
- This sketch shows the indicative extent of the proposed stabilisation enhancement measures. Final extent and configurations is subject to detailed design and confirmation on site.
- Earthwork cut and fill profile generated from design ground surface provided by McKenzie & Co., dated 02 May 2025.



Legend

- Hand Auger
- Test Pits
- Machine Holes
- Site Boundary
- Lot Boundaries (08 Jan 25)

Cut/Fill contours

- Cut (1.0m Interval)
- Fill (1.0m Interval)
- 0m contour

Preliminary Proposed Stabilisation Enhancement Measures

- Retaining wall
- Tiered retaining wall
- Palisade wall
- REB
- REB slope + shear pile
- Back-to-back REB
- Soil nails
- Shear key
- Counterfort drains
- Undercut

Notes:

- Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024.
- Existing ground surface outside of the site boundary taken from LINZ DEM 2016-2018.
- Proposed lot development provided by McKenzie & Co., dated 08 January 2025.
- Property data taken from LINZ Data Service.
- Site investigation completed by Riley Consultants across November and December 2024.
- This sketch shows the indicative extent of the proposed stabilisation enhancement measures. Final extent and configurations is subject to detailed design and confirmation on site.
- Earthwork cut and fill profile generated from design ground surface provided by McKenzie & Co., dated 07 January 2025.



Legend

- Hand Auger
- Test Pits
- Machine Holes
- Site Boundary
- Lot Boundaries (08 Jan 25)

Cut/Fill contours

- Cut (1.0m Interval)
- Fill (1.0m Interval)
- 0m contour

Preliminary Proposed Stabilisation Enhancement Measures

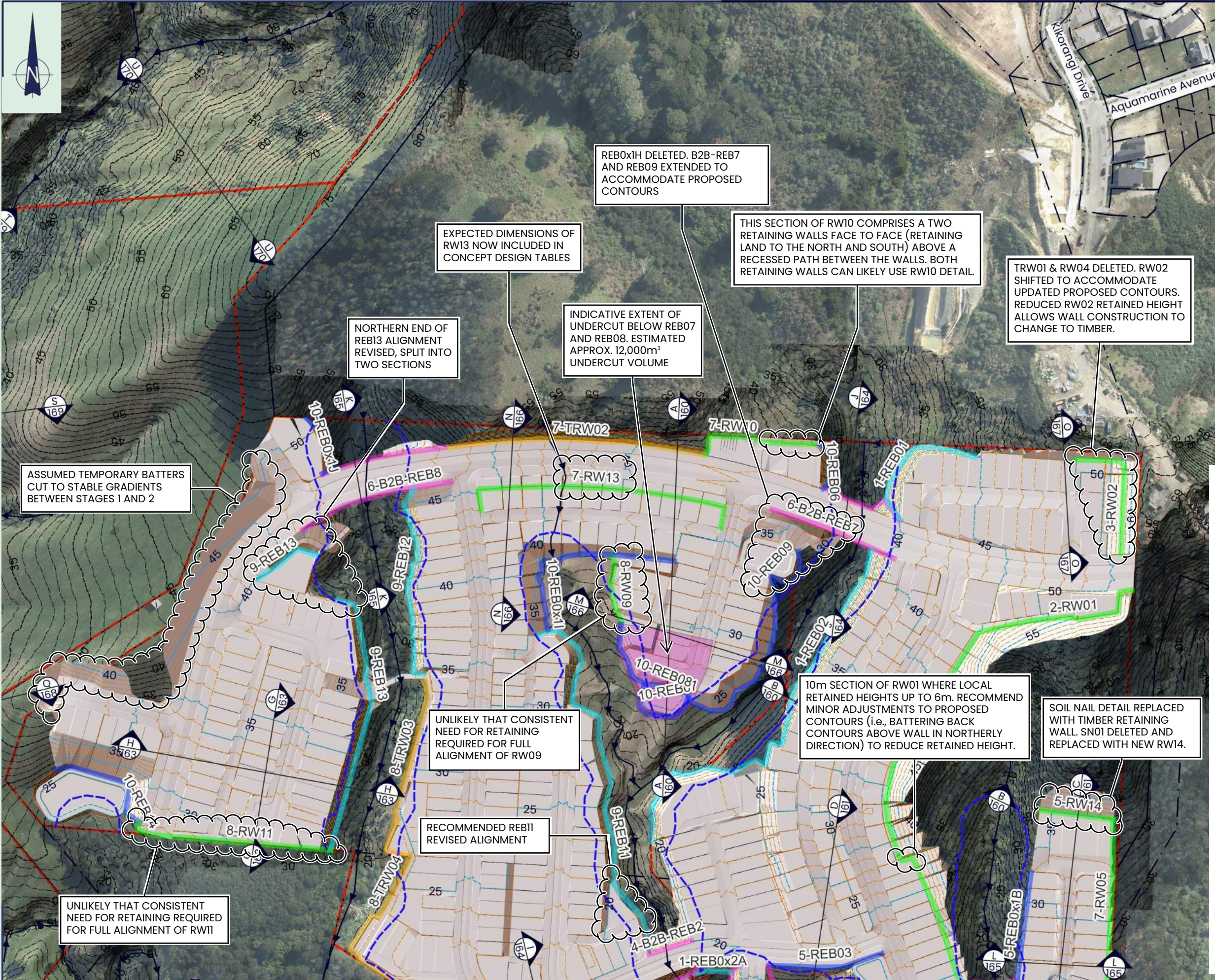
- Retaining wall
- Tiered retaining wall
- Palisade wall
- REB
- REB slope + shear pile
- Back-to-back REB
- Soil nails
- Shear key
- Counterfort drains
- Undercut

Notes:

- Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024.
- Existing ground surface outside of the site boundary taken from LINZ DEM 2016-2018.
- Proposed lot development provided by McKenzie & Co., dated 08 January 2025.
- Property data taken from LINZ Data Service.
- Site investigation completed by Riley Consultants across November and December 2024.
- This sketch shows the indicative extent of the proposed stabilisation enhancement measures. Final extent and configurations is subject to detailed design and confirmation on site.
- Earthwork cut and fill profile generated from design ground surface provided by McKenzie & Co., dated 07 January 2025.

**Supplementary Response
Updated Sketches SK141-142
(Rev D)**







Legend

- Site Boundary
- Proposed Major Contours (5m Interval)
- Proposed Minor Contours (1m Interval)
- Existing Major Contours (5m Interval)
- Existing Minor Contours (1m Interval)

Waterways

- Watercourse
- Estimated Riparian margin

Indicative Remedial Measures

- Soil nails
- Retaining wall
- Tiered retaining wall
- MSE slope
- Back-to-back MSE slopes
- MSE slope + shear pile

- Notes:**
1. This sketch shows the indicative extent of proposed stabilisation enhancement measures. Final extent and configuration subject to detailed design and confirmation on site. For further details, refer to Riley report ref. 240065-F, Table 8 and 9, and Appendix E.
 2. For details on stability enhancement measures required between platforms, refer to 240065-F Section 5.1.6.
 3. The maximum gradient of the ground upslope of a proposed retaining wall is 18°.
 4. Existing ground surface taken from drone survey provided by McKenzie & Co. on 6 December 2024.
 5. Existing ground surface outside of the site boundary taken from LINZ DEM 2016-2018.
 6. Earthworks cut and fill profile provided by McKenzie & Co., dated 03 March 2025.
 7. Aerial imagery taken from LINZ Basemaps.
 8. Property data taken from LINZ Data Service.