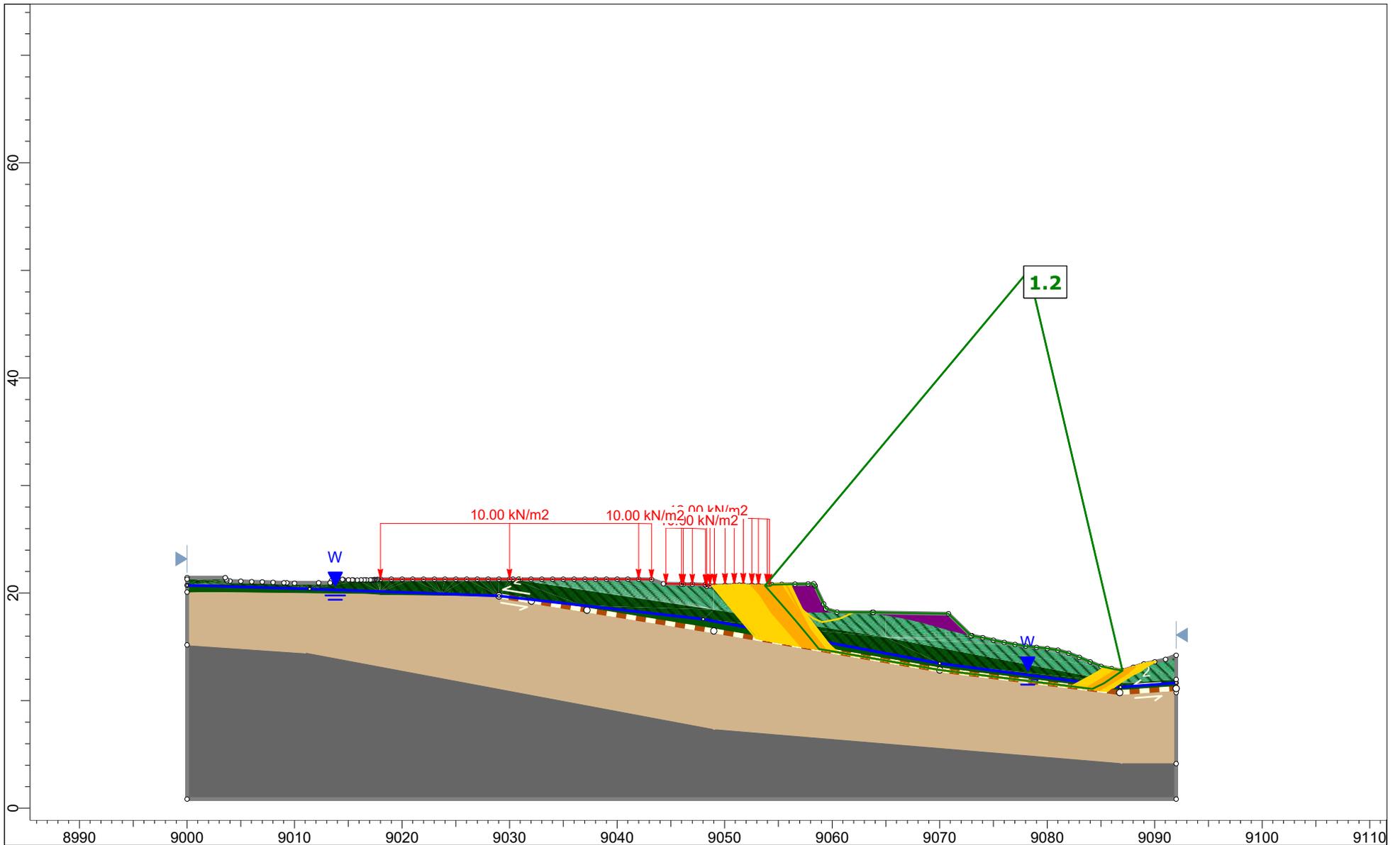
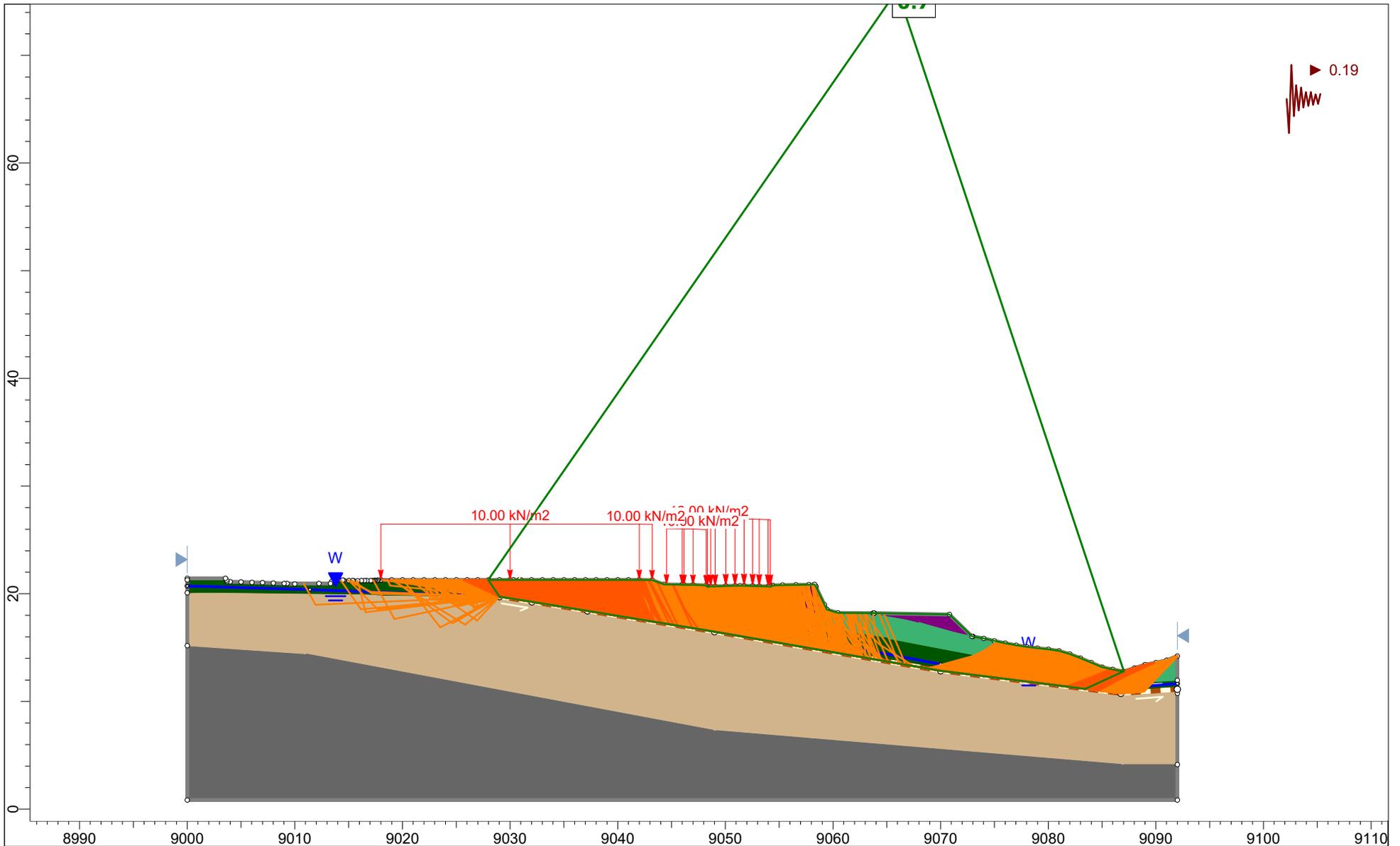


<i>Project</i>	240065 - Russell Road, Waunui		
<i>Group</i>	Scenario I - Proposed GL	<i>Scenario</i>	Normal (Measured GW)
<i>Drawn By</i>	LKB	<i>Company</i>	Riley Consultants Ltd
<i>Date</i>	19/12/2025	<i>File Name</i>	Section I.slm

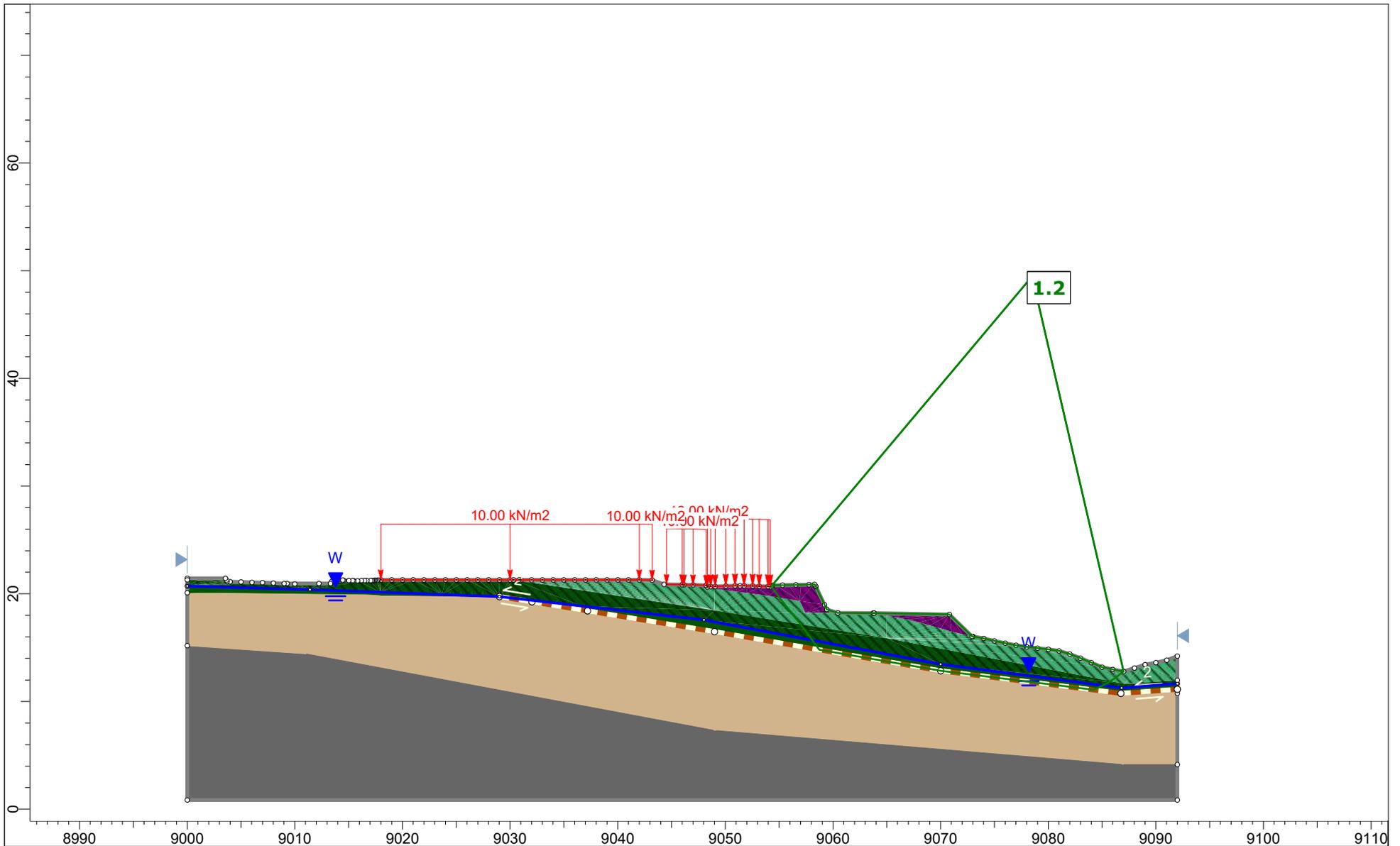


<i>Project</i>	240065 - Russell Road, Waunui		
<i>Group</i>	Scenario I - Proposed GL	<i>Scenario</i>	Extreme (Worst Credible GW)
<i>Drawn By</i>	LKB	<i>Company</i>	Riley Consultants Ltd
<i>Date</i>	19/12/2025	<i>File Name</i>	Section I.sldm



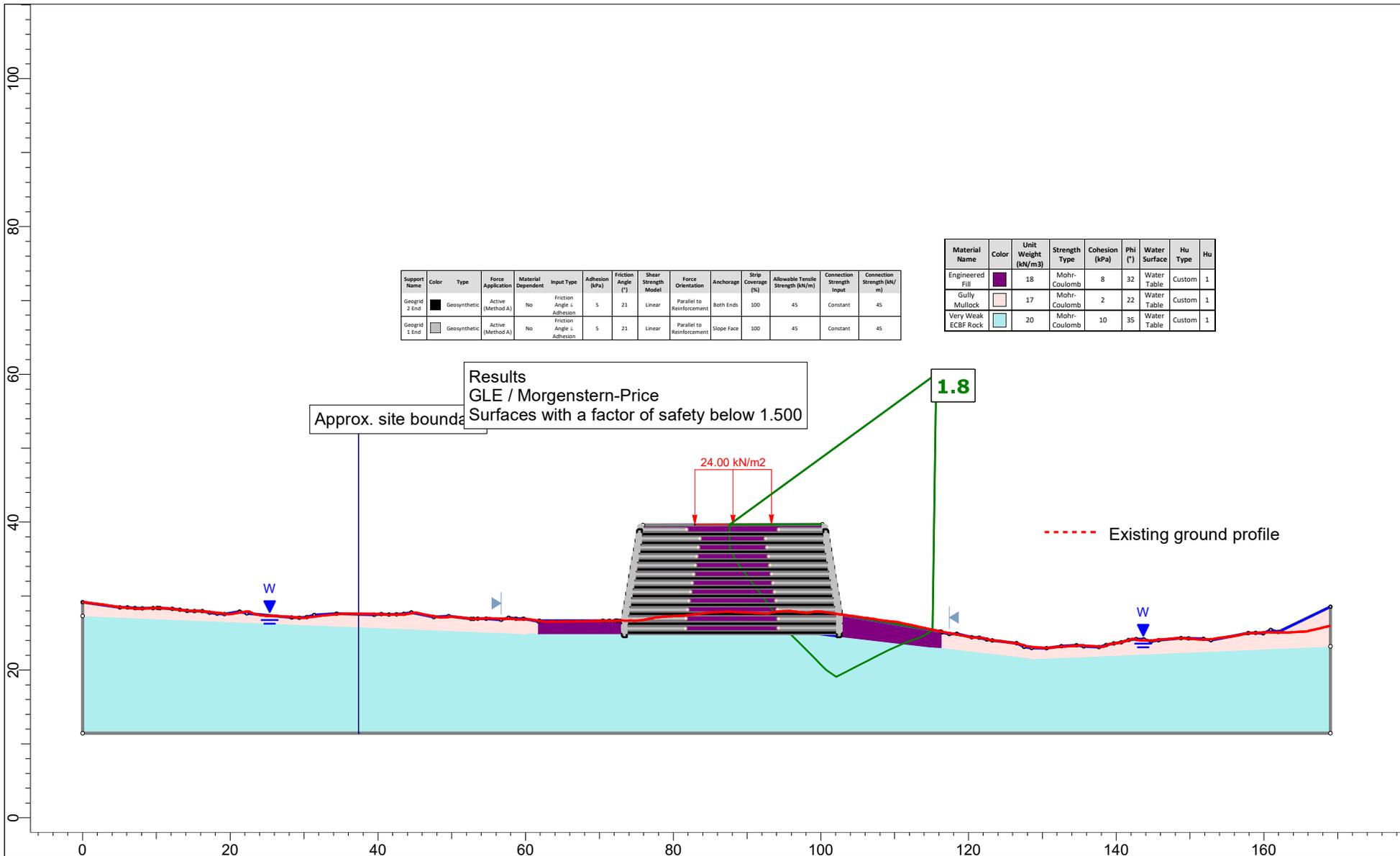
SLIDEINTERPRET 9.038

<i>Project</i>	240065 - Russell Road, Waunui		
<i>Group</i>	Scenario I - Proposed GL	<i>Scenario</i>	Seismic (0.19g)
<i>Drawn By</i>	LKB	<i>Company</i>	Riley Consultants Ltd
<i>Date</i>	19/12/2025	<i>File Name</i>	Section I.slm



SLIDEINTERPRET 9.038

<i>Project</i>	240065 - Russell Road, Waunui		
<i>Group</i>	Scenario I - Proposed GL	<i>Scenario</i>	Extreme (50% saturation)
<i>Drawn By</i>	LKB	<i>Company</i>	Riley Consultants Ltd
<i>Date</i>	19/12/2025	<i>File Name</i>	Section I.slm

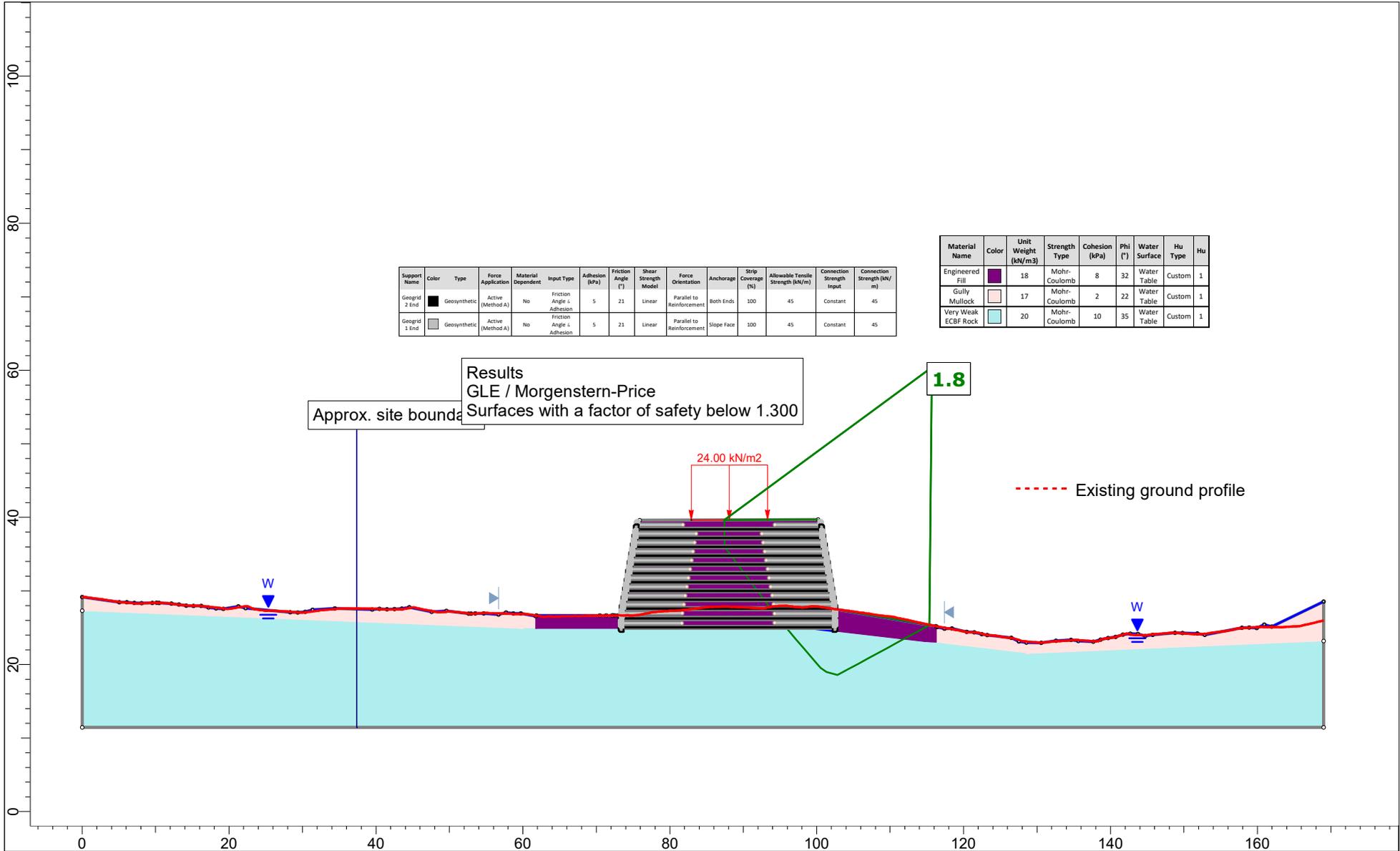


Support Name	Color	Type	Force Application	Material Dependent	Input Type	Adhesion (kPa)	Friction Angle (°)	Shear Strength Model	Force Orientation	Anchorage	Strip Coverage (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid 2 End	Black	Geosynthetic	Active (Method A)	No	Friction Angle & Adhesion	5	21	Linear	Parallel to Reinforcement	Both Ends	100	45	Constant	45
Geogrid 1 End	Grey	Geosynthetic	Active (Method A)	No	Friction Angle & Adhesion	5	21	Linear	Parallel to Reinforcement	Slope Face	100	45	Constant	45

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	Water Table	Custom	1
Gully Mullock	Light Blue	17	Mohr-Coulomb	2	22	Water Table	Custom	1
Very Weak ECBF Rock	Light Cyan	20	Mohr-Coulomb	10	35	Water Table	Custom	1



Project		240065 - Russell Road, Waunui	
Group	Section J - Proposed GL & Remedials (L-R)	Scenario	Normal (Measured GW)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section J.sldm

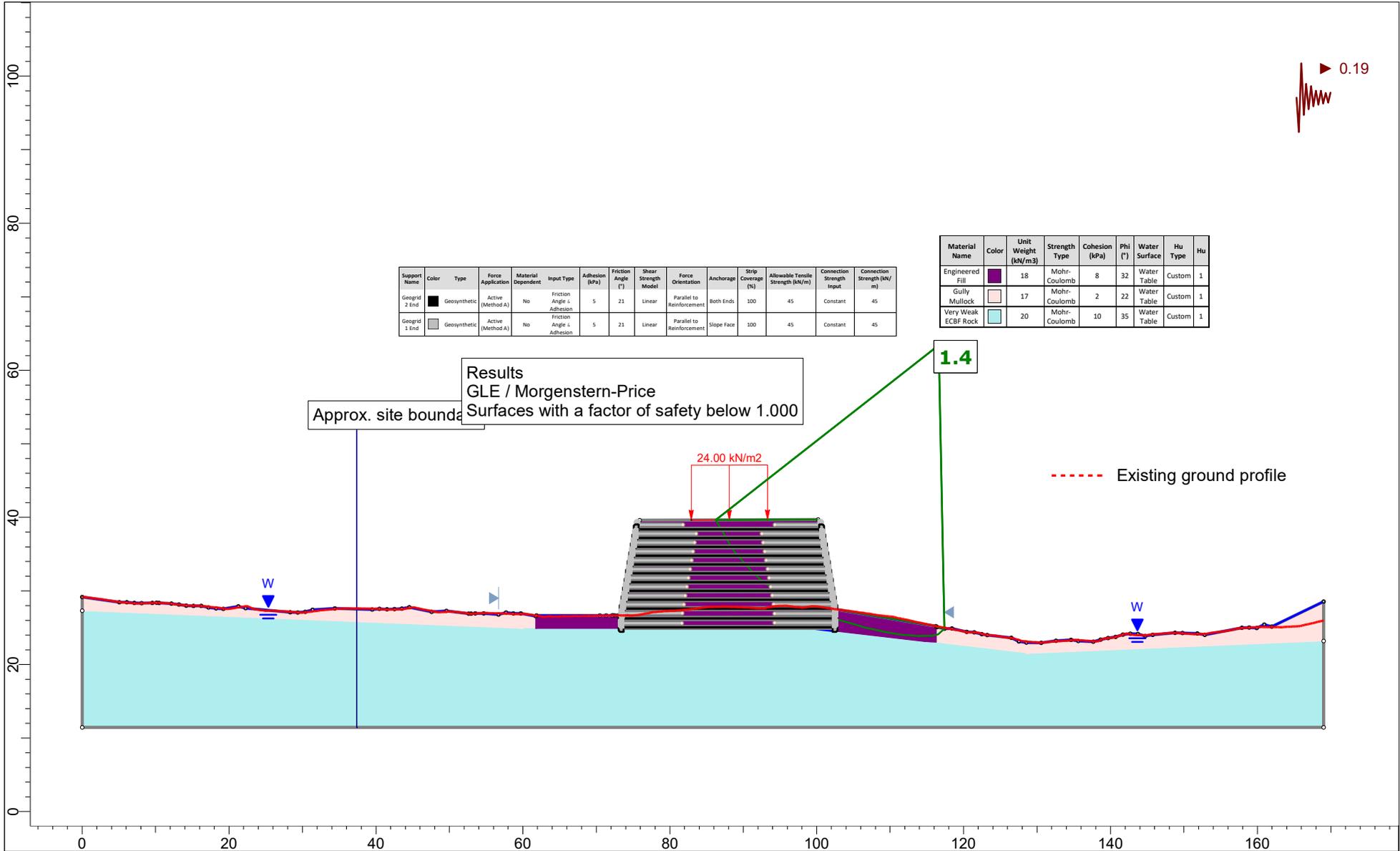


Support Name	Color	Type	Force Application	Material Dependent	Input Type	Adhesion (kPa)	Friction Angle (°)	Shear Strength Model	Force Orientation	Anchorage	Strip Coverage (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid 2 End	Black	Geosynthetic	Active (Method A)	No	Friction Angle & Adhesion	5	21	Linear	Parallel to Reinforcement	Both Ends	100	45	Constant	45
Geogrid 1 End	Grey	Geosynthetic	Active (Method A)	No	Friction Angle & Adhesion	5	21	Linear	Parallel to Reinforcement	Slope Face	100	45	Constant	45

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	Water Table	Custom	1
Gully Mullock	Light Blue	17	Mohr-Coulomb	2	22	Water Table	Custom	1
Very Weak ECBF Rock	Light Cyan	20	Mohr-Coulomb	10	35	Water Table	Custom	1



Project		240065 - Russell Road, Waunui	
Group	Section J - Proposed GL & Remedials (L-R)	Scenario	Extreme (Worst Credible GW)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section J.sldm



Support Name	Color	Type	Force Application	Material Dependent	Input Type	Adhesion (kPa)	Friction Angle (°)	Shear Strength Model	Force Orientation	Anchorage	Strip Coverage (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid 2 End	Black	Geosynthetic	Active (Method A)	No	Friction Angle & Adhesion	5	21	Linear	Parallel to Reinforcement	Both Ends	100	45	Constant	45
Geogrid 1 End	Grey	Geosynthetic	Active (Method A)	No	Friction Angle & Adhesion	5	21	Linear	Parallel to Reinforcement	Slope Face	100	45	Constant	45

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	Water Table	Custom	1
Gully Mullock	Light Blue	17	Mohr-Coulomb	2	22	Water Table	Custom	1
Very Weak ECBF Rock	Light Cyan	20	Mohr-Coulomb	10	35	Water Table	Custom	1

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

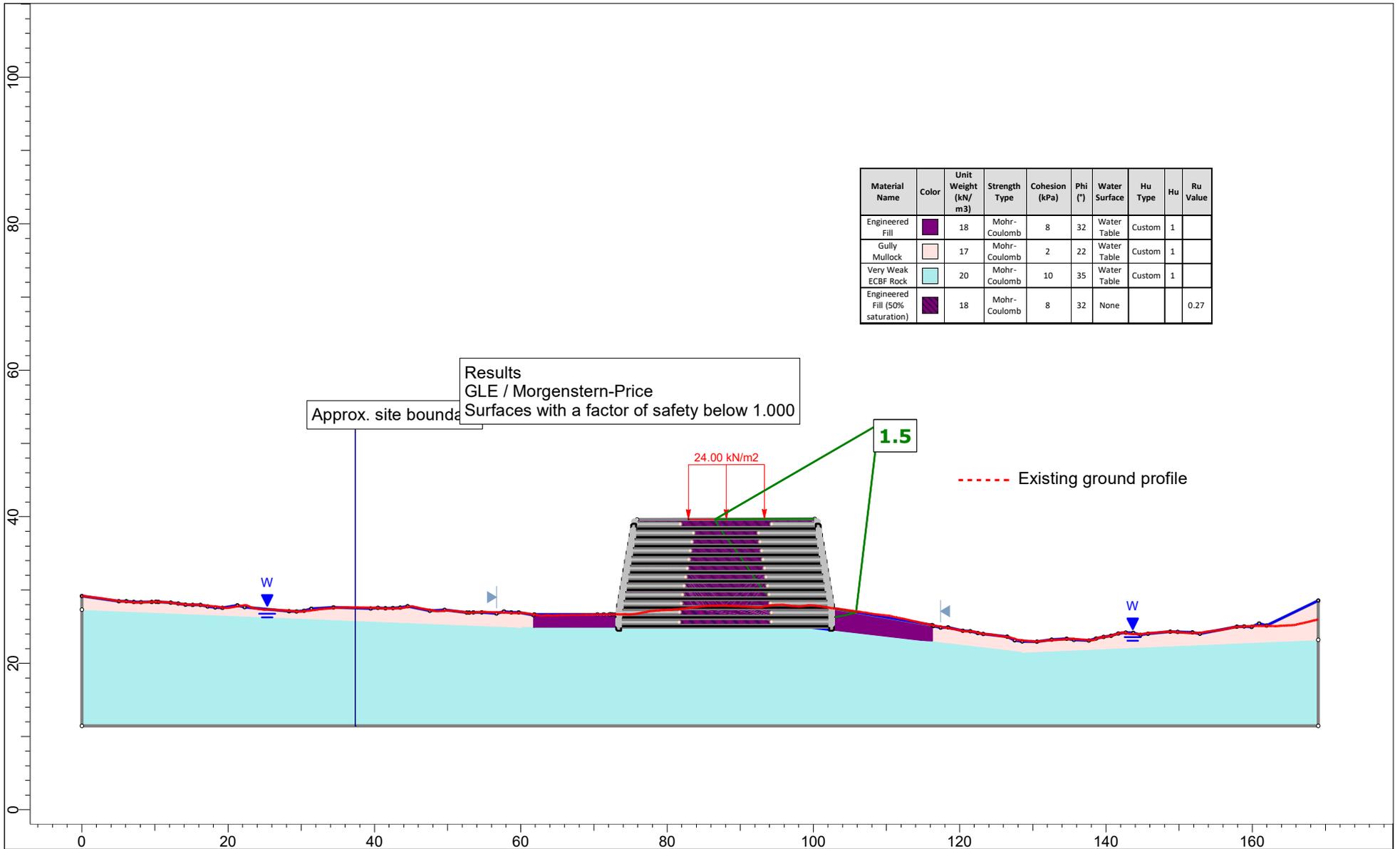
Approx. site boundary

1.4

--- Existing ground profile



Project		240065 - Russell Road, Waunui	
Group	Section J - Proposed GL & Remedials (L-R)	Scenario	Seismic (0.19g)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section J.sldm



Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Engineered Fill	Dark Purple	18	Mohr-Coulomb	8	32	Water Table	Custom	1	
Gully Mullock	Light Pink	17	Mohr-Coulomb	2	22	Water Table	Custom	1	
Very Weak ECBF Rock	Light Blue	20	Mohr-Coulomb	10	35	Water Table	Custom	1	
Engineered Fill (50% saturation)	Dark Purple	18	Mohr-Coulomb	8	32	None			0.27

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

Approx. site boundary

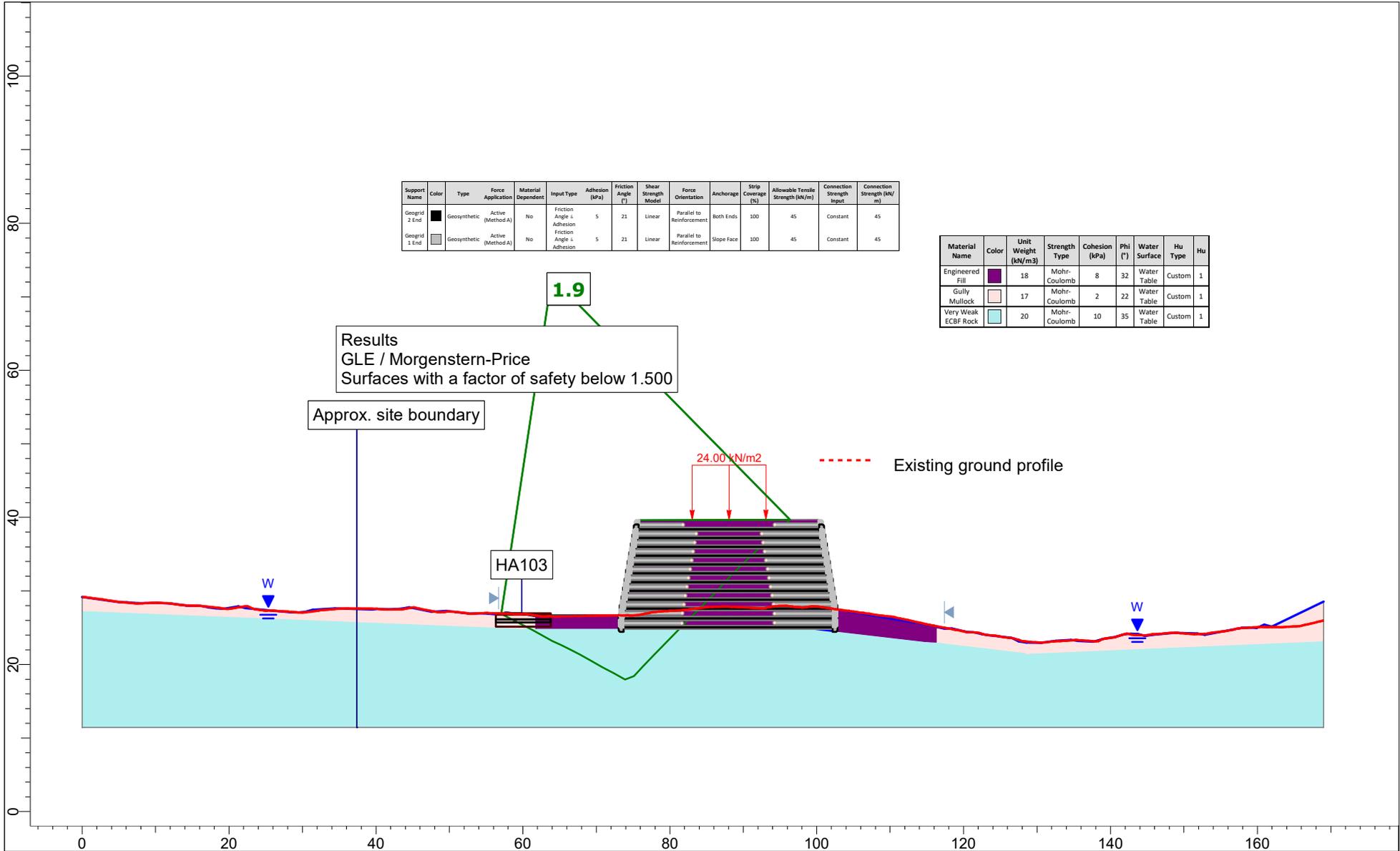
24.00 kN/m²

1.5

--- Existing ground profile



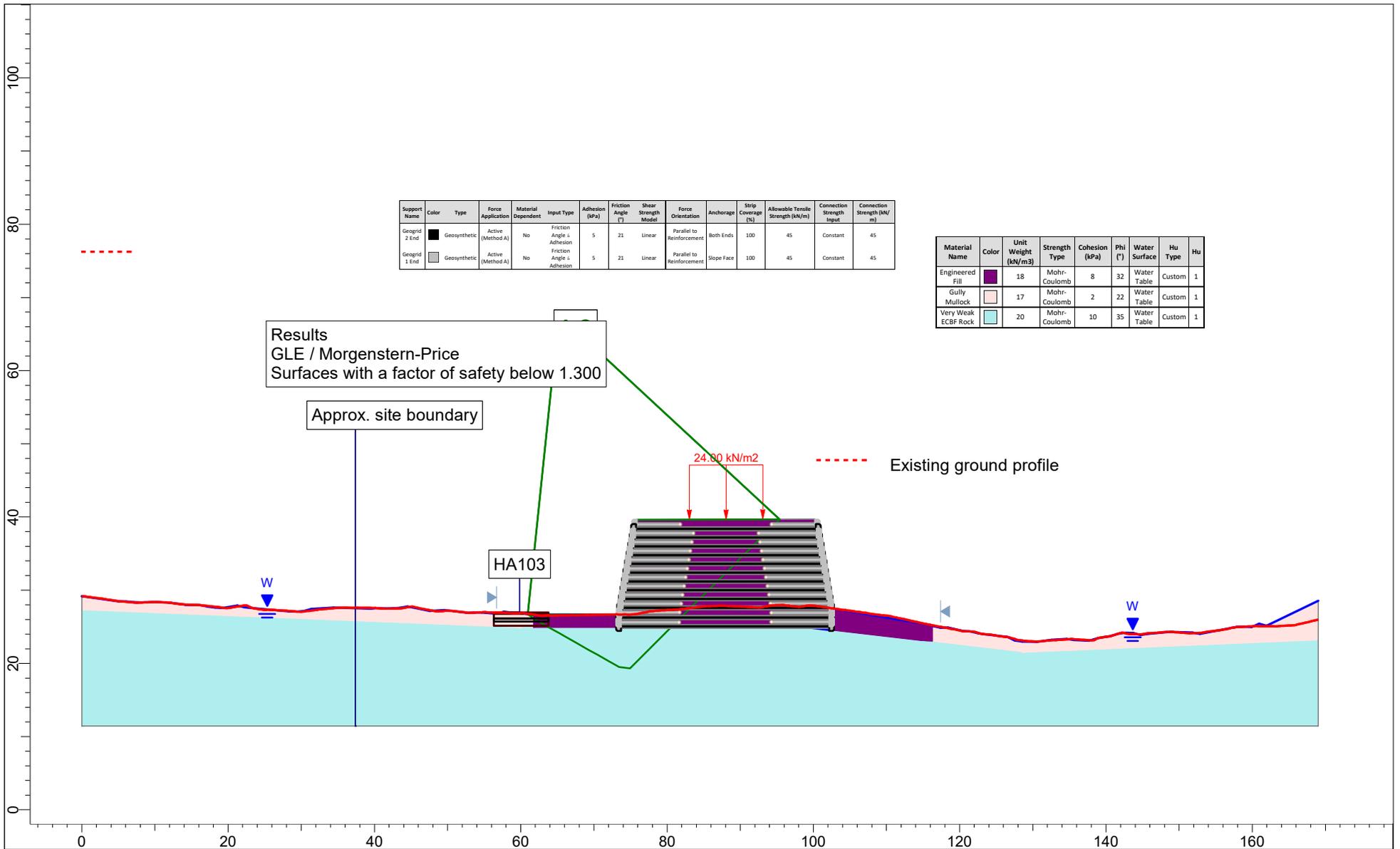
Project		240065 - Russell Road, Waunui	
Group	Section J - Proposed GL & Remedials (L-R)	Scenario	Extreme (Saturated Fill)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section J.sldm



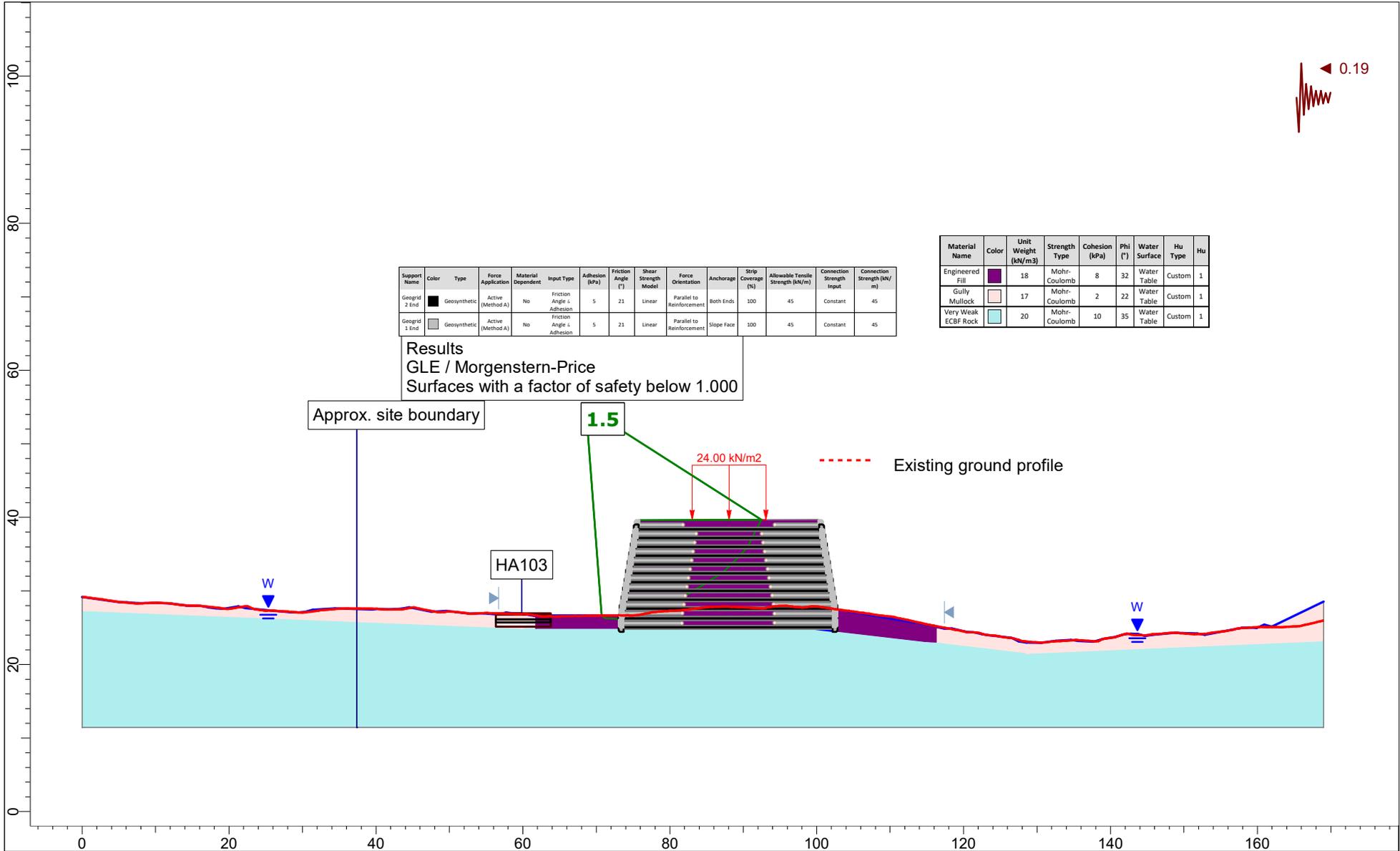
Support Name	Color	Type	Force Application	Material Dependent	Input Type	Adhesion (kPa)	Friction Angle (°)	Shear Strength Model	Force Orientation	Anchorage	Strip Coverage (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid 2 End	Black	Geosynthetic	Active (Method A)	No	Friction Angle \leq Adhesion	5	21	Linear	Parallel to Reinforcement	Both Ends	100	45	Constant	45
Geogrid 1 End	Grey	Geosynthetic	Active (Method A)	No	Friction Angle \leq Adhesion	5	21	Linear	Parallel to Reinforcement	Slope Face	100	45	Constant	45

Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	Water Table	Custom	1
Gully Mullock	Light Blue	17	Mohr-Coulomb	2	22	Water Table	Custom	1
Very Weak ECBF Rock	Light Cyan	20	Mohr-Coulomb	10	35	Water Table	Custom	1

	Project		240065 - Russell Road, Waunui		
	Group		Section J - Proposed GL & Remedials (R-L)	Scenario	
	Drawn By		LKB	Company	Riley Consultants Ltd
	Date		19/12/2025	File Name	Section J.sldm



	Project		240065 - Russell Road, Waunui		
	Group		Section J - Proposed GL & Remedials (R-L)	Scenario	
	Drawn By		LKB	Company	Riley Consultants Ltd
	Date		19/12/2025	File Name	Section J.sldm

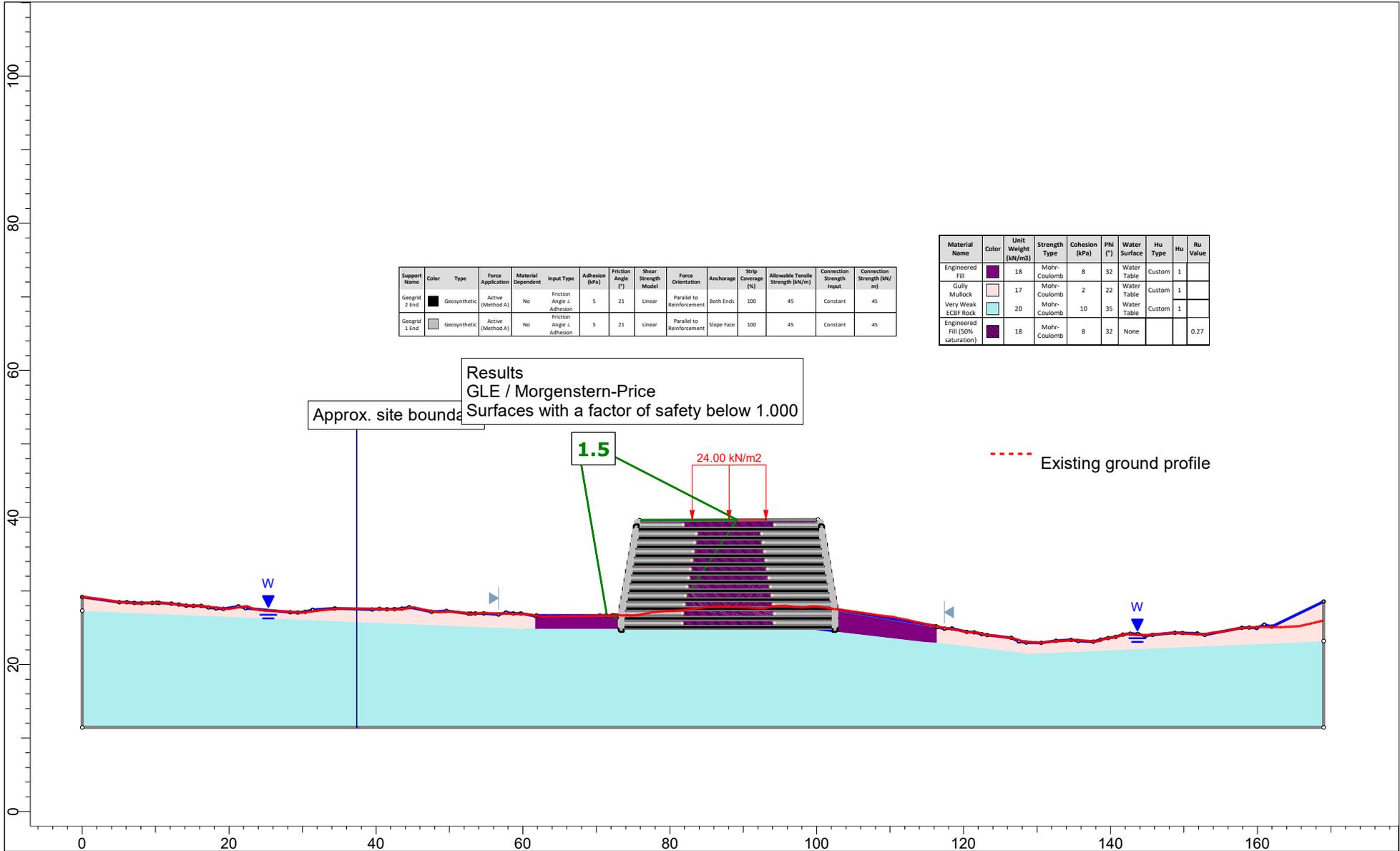


Support Name	Color	Type	Force Application	Material Dependent	Input Type	Adhesion (kPa)	Friction Angle (°)	Shear Strength Model	Force Orientation	Anchorage	Strip Coverage (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid 2 End	Black	Geosynthetic	Active (Method A)	No	Friction Angle & Adhesion	5	21	Linear	Parallel to Reinforcement	Both Ends	100	45	Constant	45
Geogrid 1 End	Grey	Geosynthetic	Active (Method A)	No	Friction Angle & Adhesion	5	21	Linear	Parallel to Reinforcement	Slope Face	100	45	Constant	45

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	Water Table	Custom	1
Gully Mullock	Light Blue	17	Mohr-Coulomb	2	22	Water Table	Custom	1
Very Weak ECBF Rock	Light Blue	20	Mohr-Coulomb	10	35	Water Table	Custom	1

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

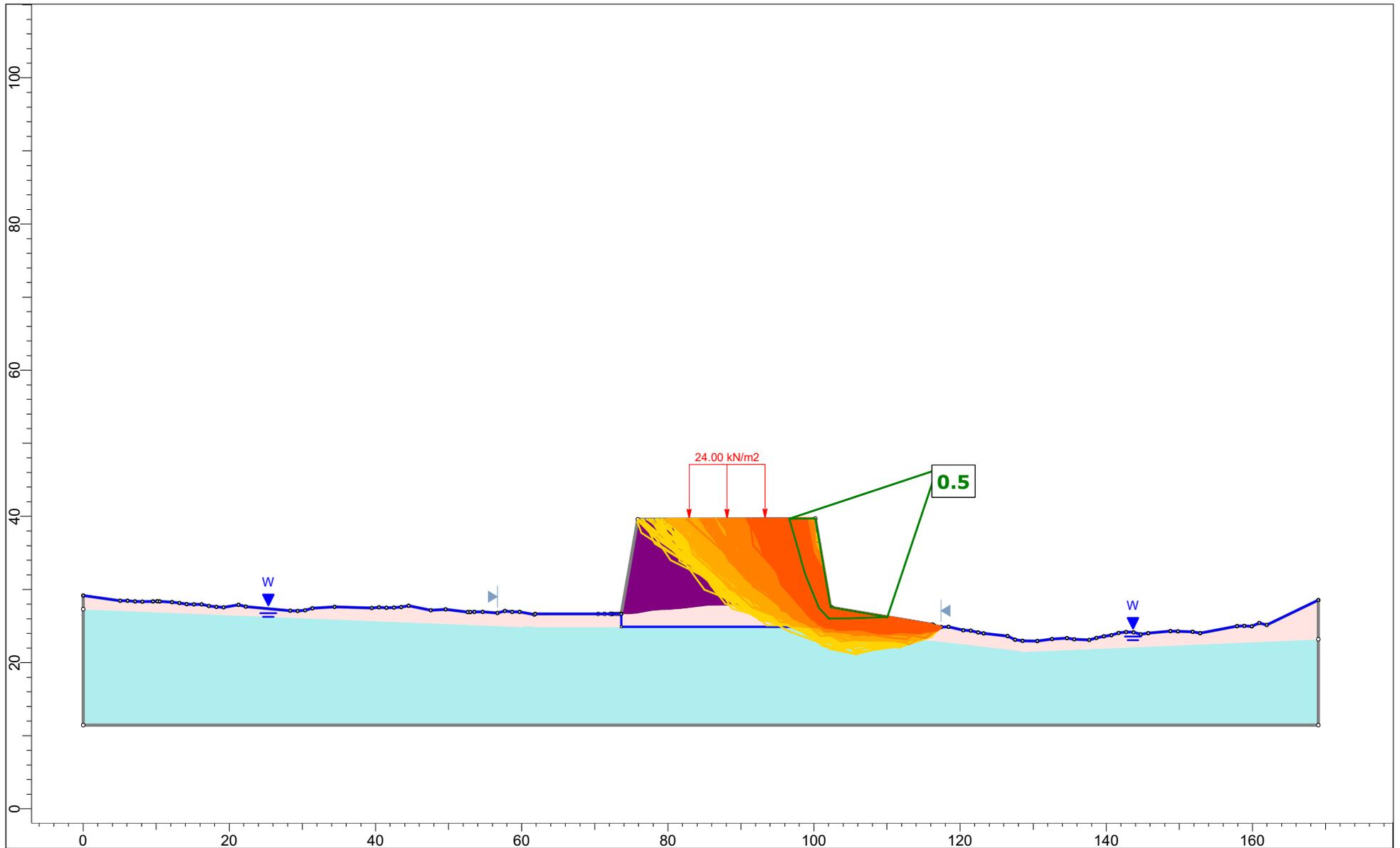
	Project		240065 - Russell Road, Waunui		
	Group		Section J - Proposed GL & Remedials (R-L)	Scenario	
	Drawn By		LKB	Company	Riley Consultants Ltd
	Date		19/12/2025	File Name	Section J.sldm



Support Name	Color	Type	Force Application	Material Dependent	Input Type	Adhesion (kPa)	Friction Angle (°)	Shear Strength Model	Force Orientation	Anchorage	Strip Coverage (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid 2 End	Black	Geosynthetic	Active (Method A)	No	Friction Angle & Adhesion	5	21	Linear	Parallel to Reinforcement	Both Ends	100	45	Constant	45
Geogrid 1 End	Grey	Geosynthetic	Active (Method A)	No	Friction Angle & Adhesion	5	21	Linear	Parallel to Reinforcement	Slope Face	100	45	Constant	45

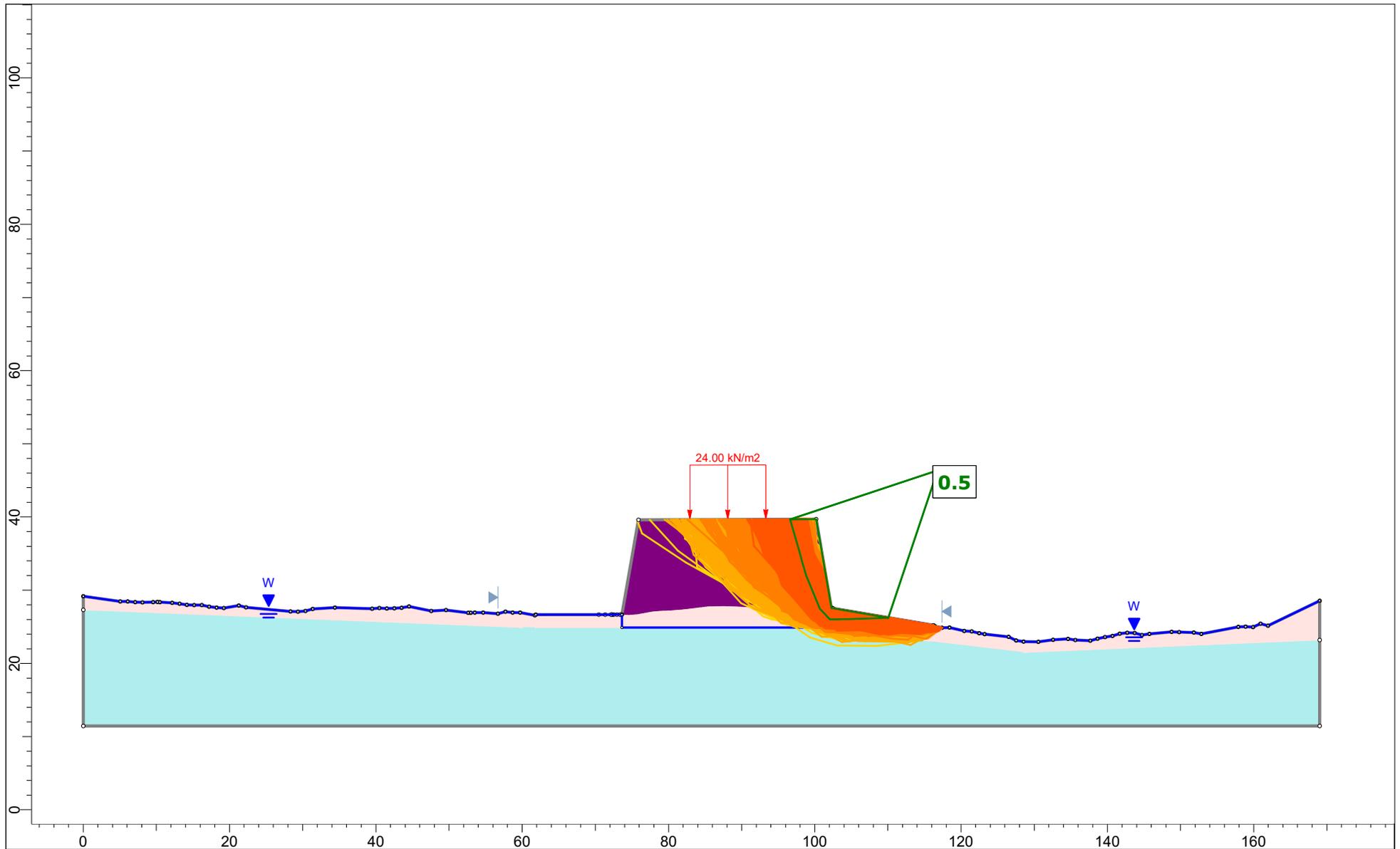
Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	Water Table	Custom	1	
Gully Mullock	Light Blue	17	Mohr-Coulomb	2	22	Water Table	Custom	1	
Very Weak ECBF Rock	Light Green	20	Mohr-Coulomb	10	35	Water Table	Custom	1	
Engineered Fill (50% saturation)	Dark Purple	18	Mohr-Coulomb	8	32	None			0.27

	Project		240065 - Russell Road, Waunui		
	Group		Section J - Proposed GL & Remedials (R-L)	Scenario	
	Drawn By		LKB	Company	Riley Consultants Ltd
	Date		19/12/2025	File Name	Section J.sldm



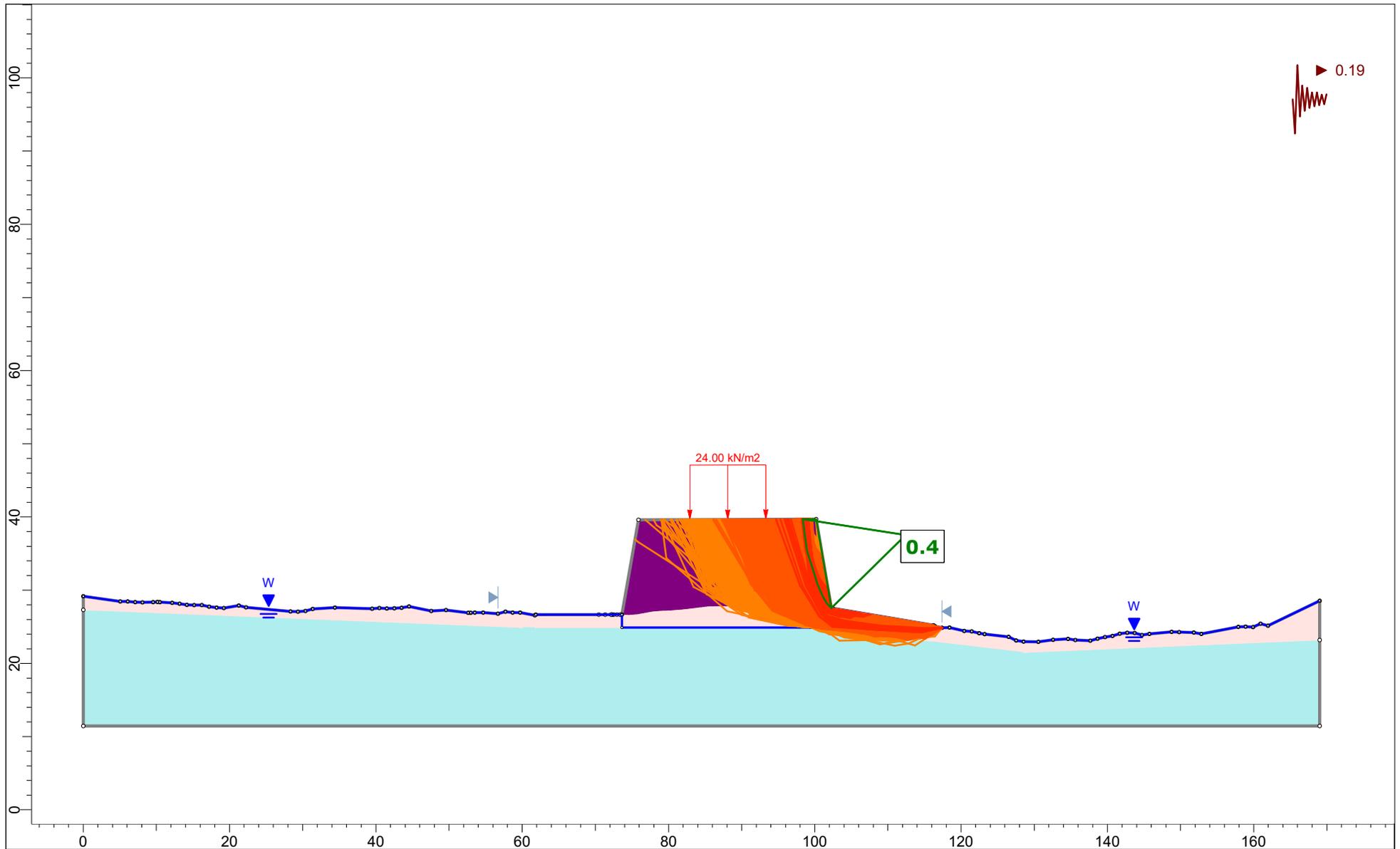
SLIDEINTERPRET 9.038

<i>Project</i>	240065 - Russell Road, Waunui		
<i>Group</i>	Section J - Proposed GL (L-R)	<i>Scenario</i>	Normal (Measured GW)
<i>Drawn By</i>	LKB	<i>Company</i>	Riley Consultants Ltd
<i>Date</i>	19/12/2025	<i>File Name</i>	Section J.slmd



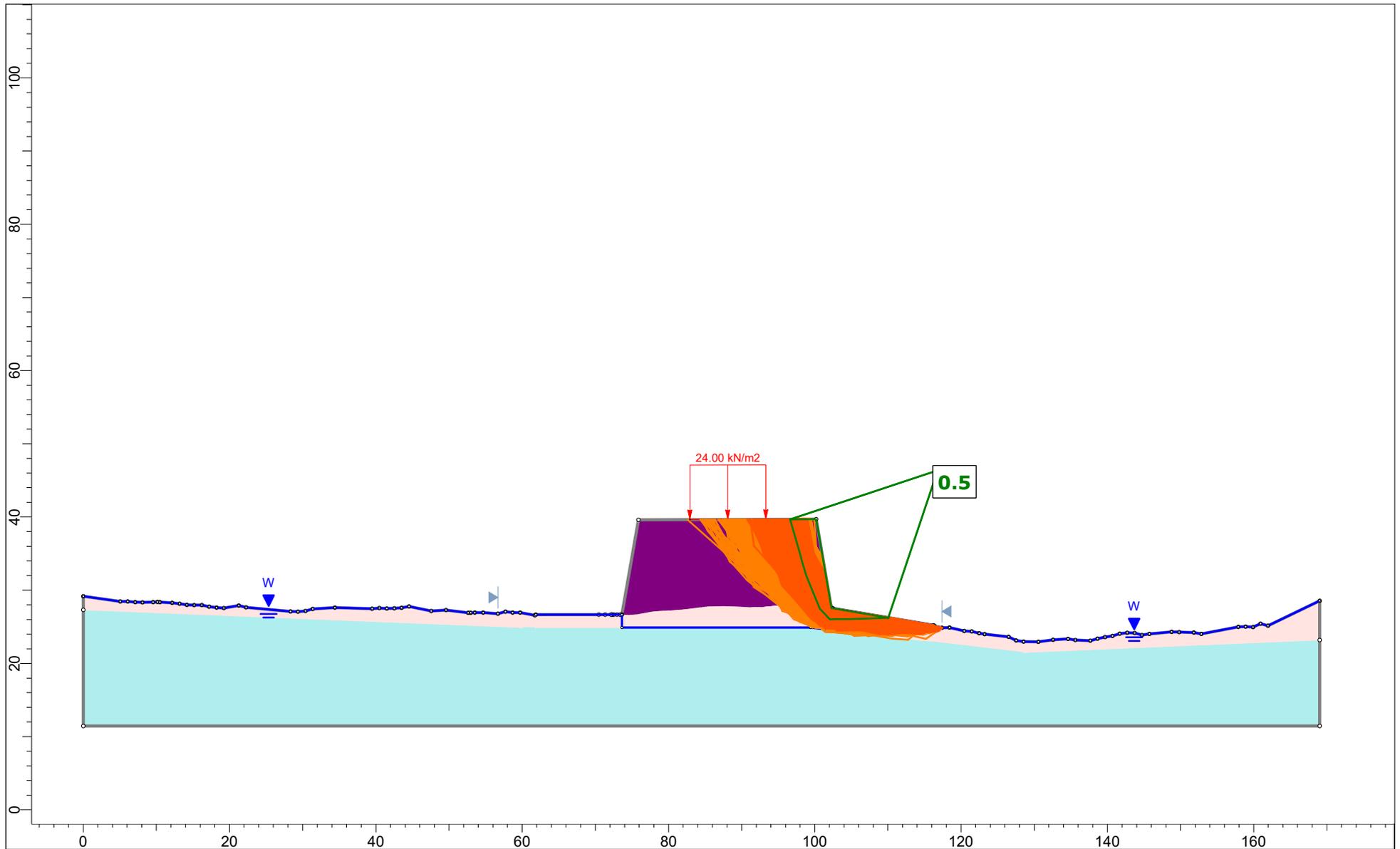
SLIDEINTERPRET 9.038

<i>Project</i>	240065 - Russell Road, Waunui		
<i>Group</i>	Section J - Proposed GL (L-R)	<i>Scenario</i>	Extreme (Worst Credible GW)
<i>Drawn By</i>	LKB	<i>Company</i>	Riley Consultants Ltd
<i>Date</i>	19/12/2025	<i>File Name</i>	Section J.slmd



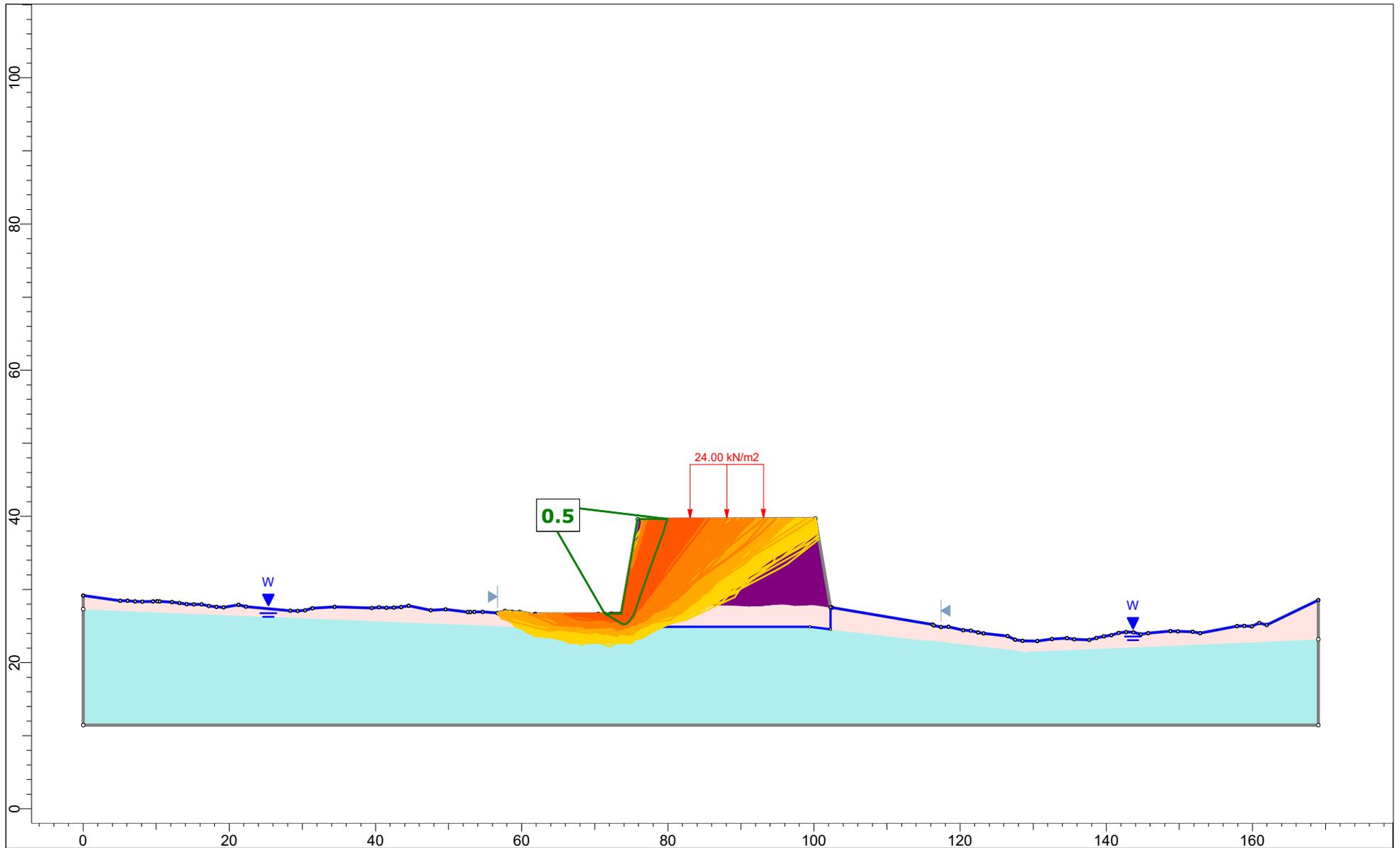
SLIDEINTERPRET 9.038

<i>Project</i>	240065 - Russell Road, Waunui		
<i>Group</i>	Section J - Proposed GL (L-R)	<i>Scenario</i>	Seismic (0.19g)
<i>Drawn By</i>	LKB	<i>Company</i>	Riley Consultants Ltd
<i>Date</i>	19/12/2025	<i>File Name</i>	Section J.slmd



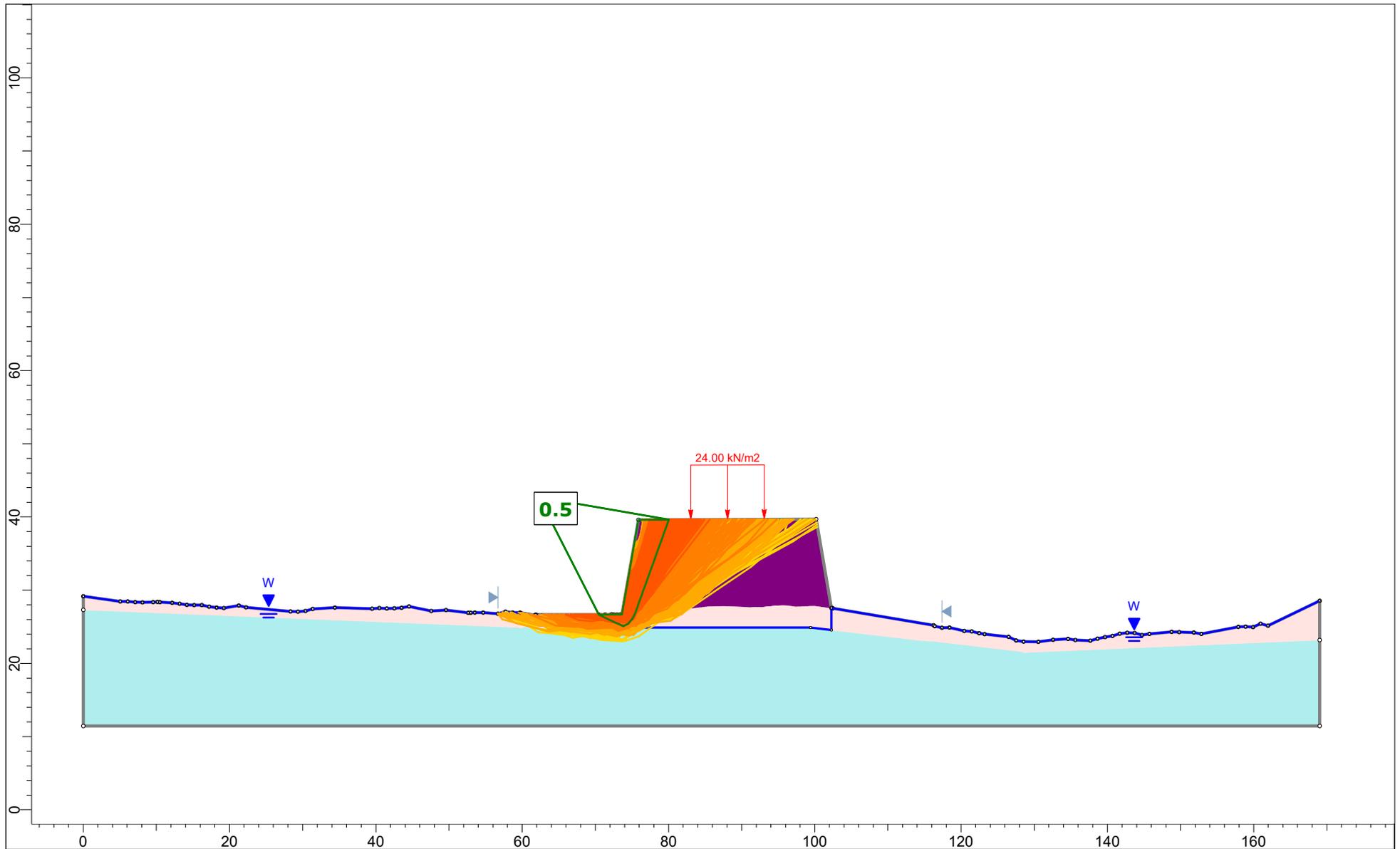
SLIDEINTERPRET 9.038

Project	240065 - Russell Road, Waunui		
Group	Section J - Proposed GL (L-R)	Scenario	Extreme (Saturated Fill)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section J.slmd



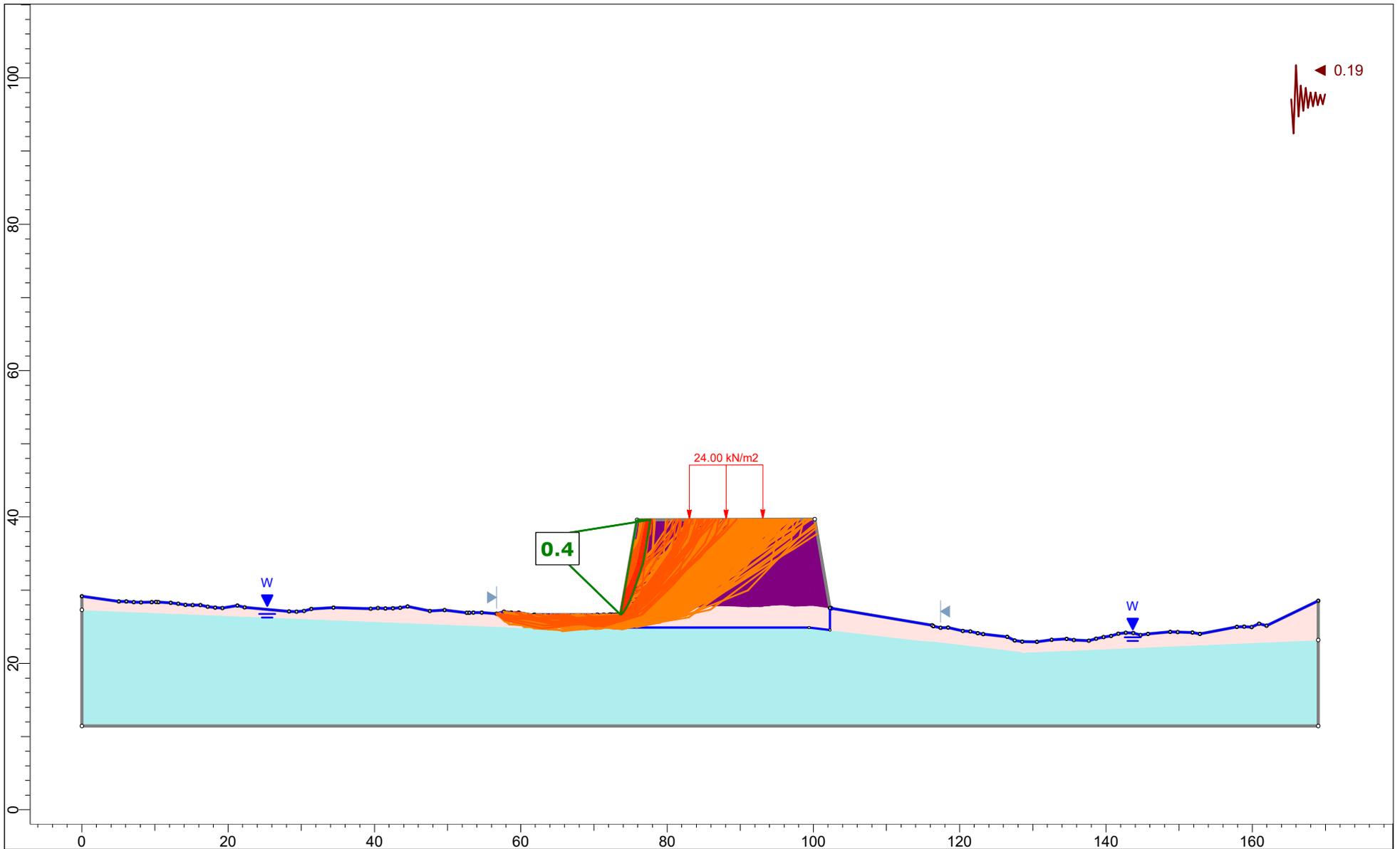
SLIDEINTERPRET 9.038

<i>Project</i>	240065 - Russell Road, Waunui		
<i>Group</i>	Section J - Proposed GL (R-L)	<i>Scenario</i>	Normal (Measured GW)
<i>Drawn By</i>	LKB	<i>Company</i>	Riley Consultants Ltd
<i>Date</i>	19/12/2025	<i>File Name</i>	Section J.slmd



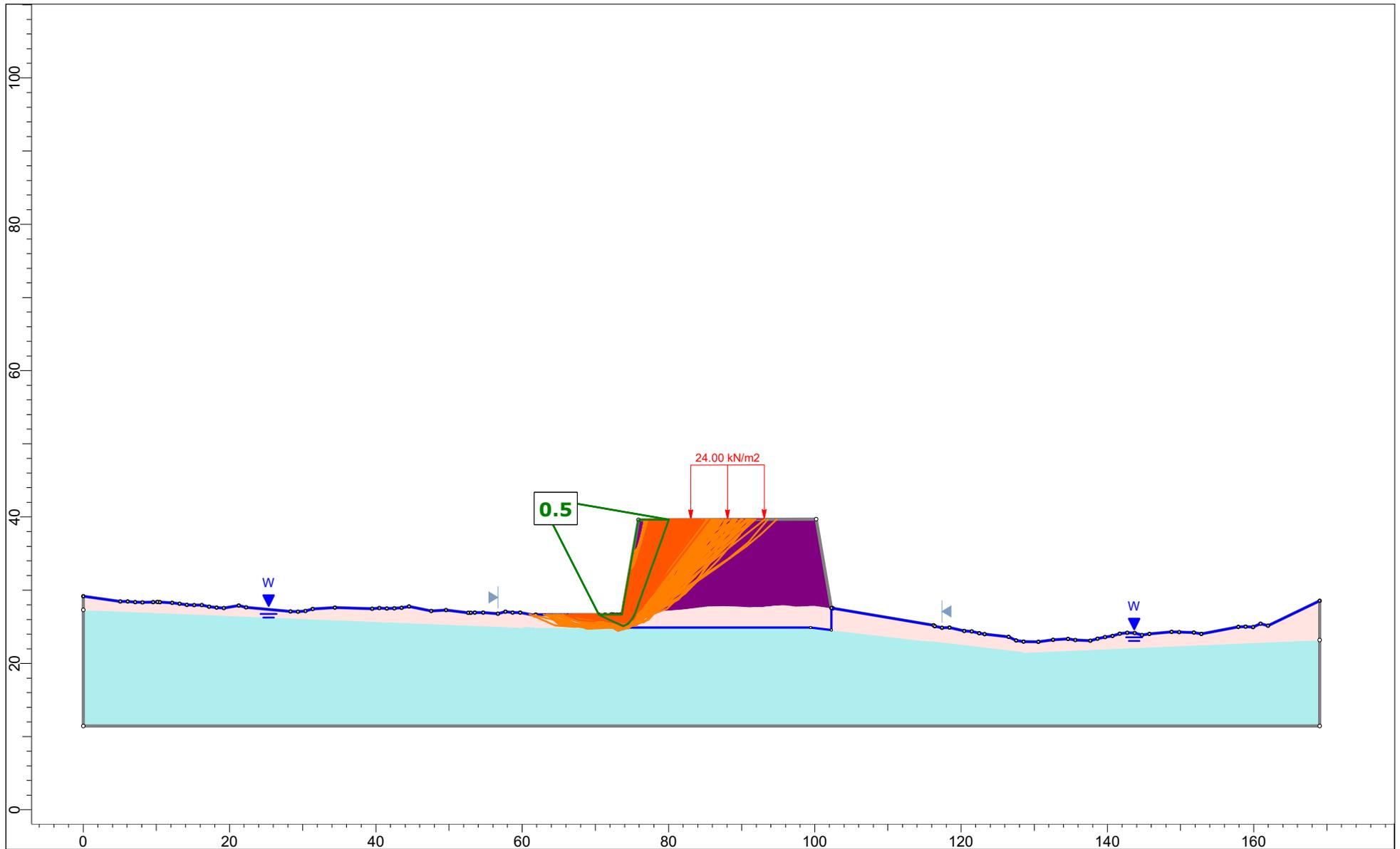
SLIDEINTERPRET 9.038

<i>Project</i>	240065 - Russell Road, Waunui		
<i>Group</i>	Section J - Proposed GL (R-L)	<i>Scenario</i>	Extreme (Worst Credible GW)
<i>Drawn By</i>	LKB	<i>Company</i>	Riley Consultants Ltd
<i>Date</i>	19/12/2025	<i>File Name</i>	Section J.sldm



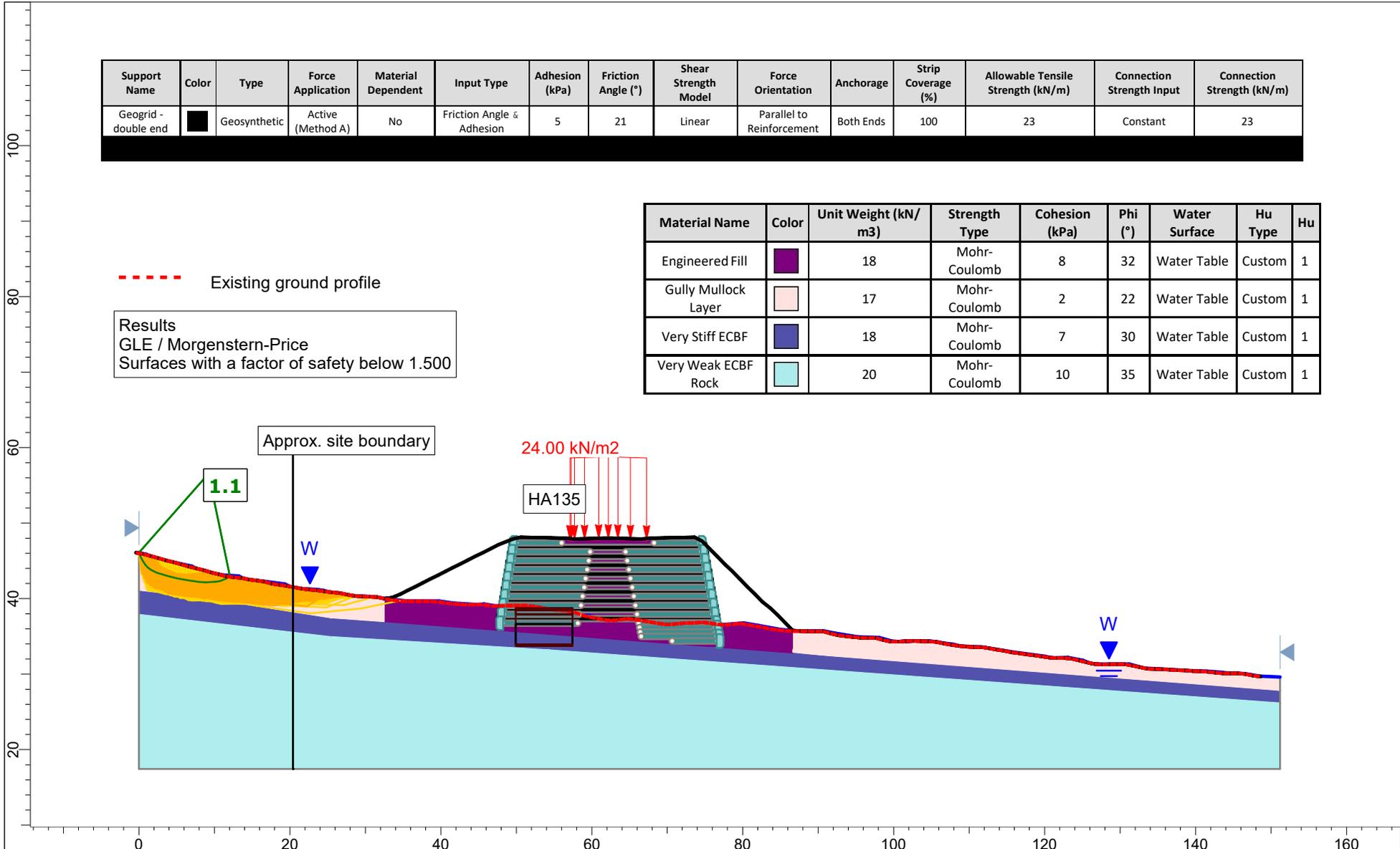
SLIDEINTERPRET 9.038

<i>Project</i>	240065 - Russell Road, Waunui		
<i>Group</i>	Section J - Proposed GL (R-L)	<i>Scenario</i>	Seismic (0.19g)
<i>Drawn By</i>	LKB	<i>Company</i>	Riley Consultants Ltd
<i>Date</i>	19/12/2025	<i>File Name</i>	Section J.slmd



SLIDEINTERPRET 9.038

<i>Project</i>	240065 - Russell Road, Waunui		
<i>Group</i>	Section J - Proposed GL (R-L)	<i>Scenario</i>	Extreme (Saturated Fill)
<i>Drawn By</i>	LKB	<i>Company</i>	Riley Consultants Ltd
<i>Date</i>	19/12/2025	<i>File Name</i>	Section J.slmd



Support Name	Color	Type	Force Application	Material Dependent	Input Type	Adhesion (kPa)	Friction Angle (°)	Shear Strength Model	Force Orientation	Anchorage	Strip Coverage (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid - double end	Black	Geosynthetic	Active (Method A)	No	Friction Angle & Adhesion	5	21	Linear	Parallel to Reinforcement	Both Ends	100	23	Constant	23

Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	Water Table	Custom	1
Gully Mullock Layer	Pink	17	Mohr-Coulomb	2	22	Water Table	Custom	1
Very Stiff ECFB	Blue	18	Mohr-Coulomb	7	30	Water Table	Custom	1
Very Weak ECFB Rock	Light Blue	20	Mohr-Coulomb	10	35	Water Table	Custom	1

--- Existing ground profile

Results
GLE / Morgenstern-Price
Surfaces with a factor of safety below 1.500

Approx. site boundary

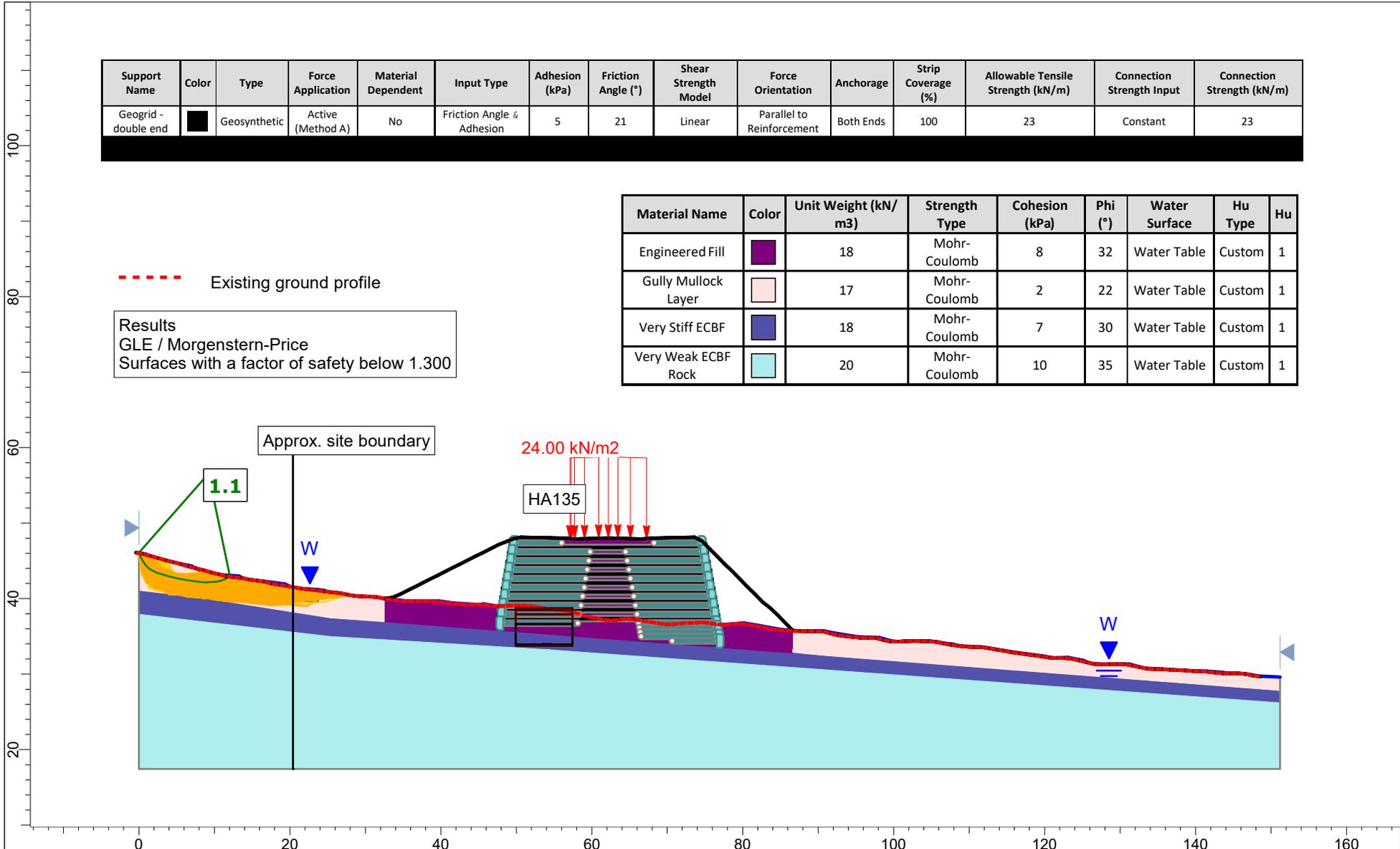
1.1

24.00 kN/m²

HA135



Project	240065 - Russell Road, Waunui		
Group	Section K - Proposed GL & Remedials (L-R)	Scenario	Normal (Measured GW)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section K.sldm



Support Name	Color	Type	Force Application	Material Dependent	Input Type	Adhesion (kPa)	Friction Angle (°)	Shear Strength Model	Force Orientation	Anchorage	Strip Coverage (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid - double end	Black	Geosynthetic	Active (Method A)	No	Friction Angle & Adhesion	5	21	Linear	Parallel to Reinforcement	Both Ends	100	23	Constant	23

Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	Water Table	Custom	1
Gully Mullock Layer	Light Pink	17	Mohr-Coulomb	2	22	Water Table	Custom	1
Very Stiff ECBF	Dark Blue	18	Mohr-Coulomb	7	30	Water Table	Custom	1
Very Weak ECBF Rock	Light Blue	20	Mohr-Coulomb	10	35	Water Table	Custom	1



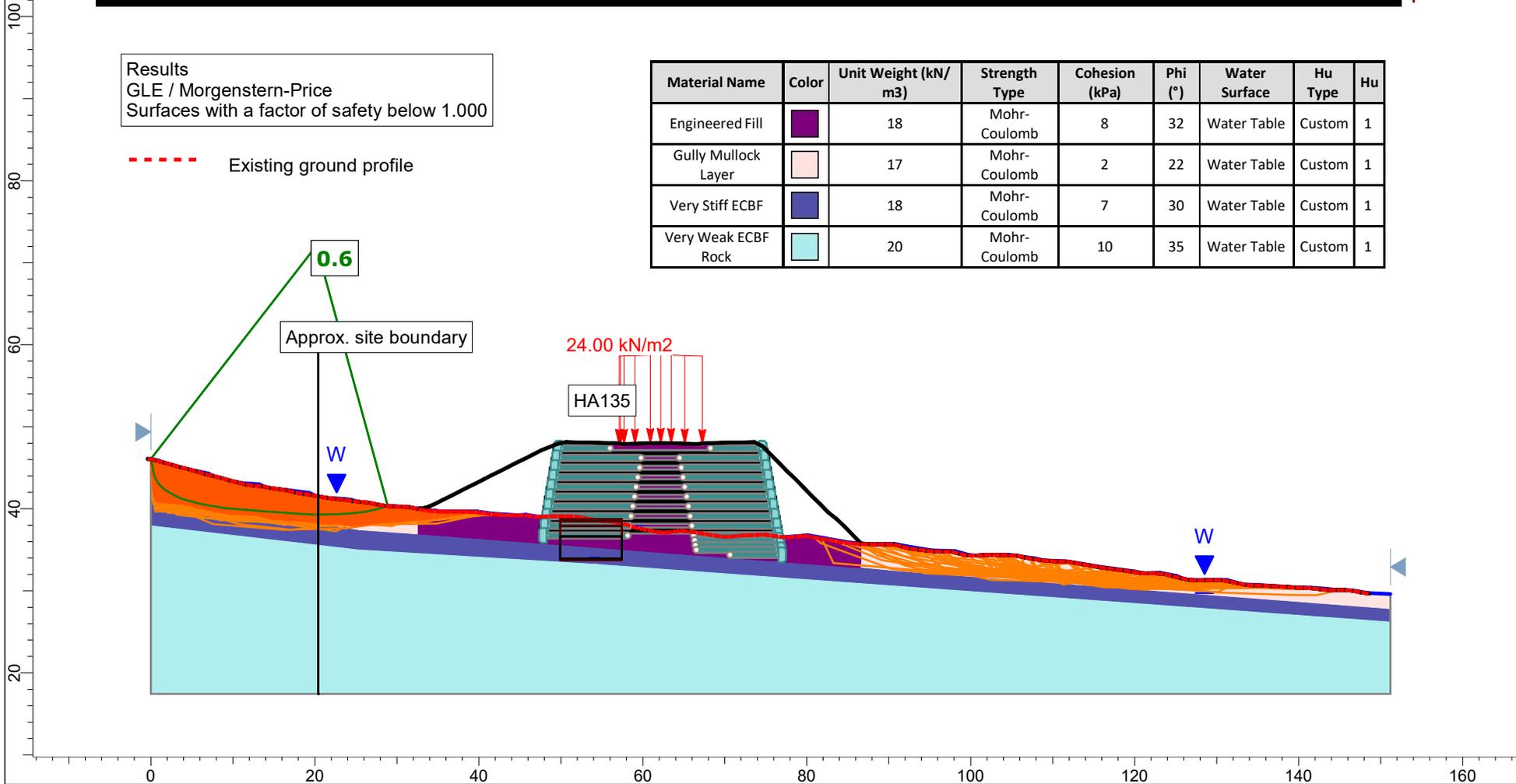
<i>Project</i>	240065 - Russell Road, Waunui		
<i>Group</i>	Section K - Proposed GL & Remedials (L-R)	<i>Scenario</i>	Extreme (Worst Case)
<i>Drawn By</i>	LKB	<i>Company</i>	Riley Consultants Ltd
<i>Date</i>	19/12/2025	<i>File Name</i>	Section K.slmd

Support Name	Color	Type	Force Application	Material Dependent	Input Type	Adhesion (kPa)	Friction Angle (°)	Shear Strength Model	Force Orientation	Anchorage	Strip Coverage (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid - double end	Black	Geosynthetic	Active (Method A)	No	Friction Angle & Adhesion	5	21	Linear	Parallel to Reinforcement	Both Ends	100	23	Constant	23

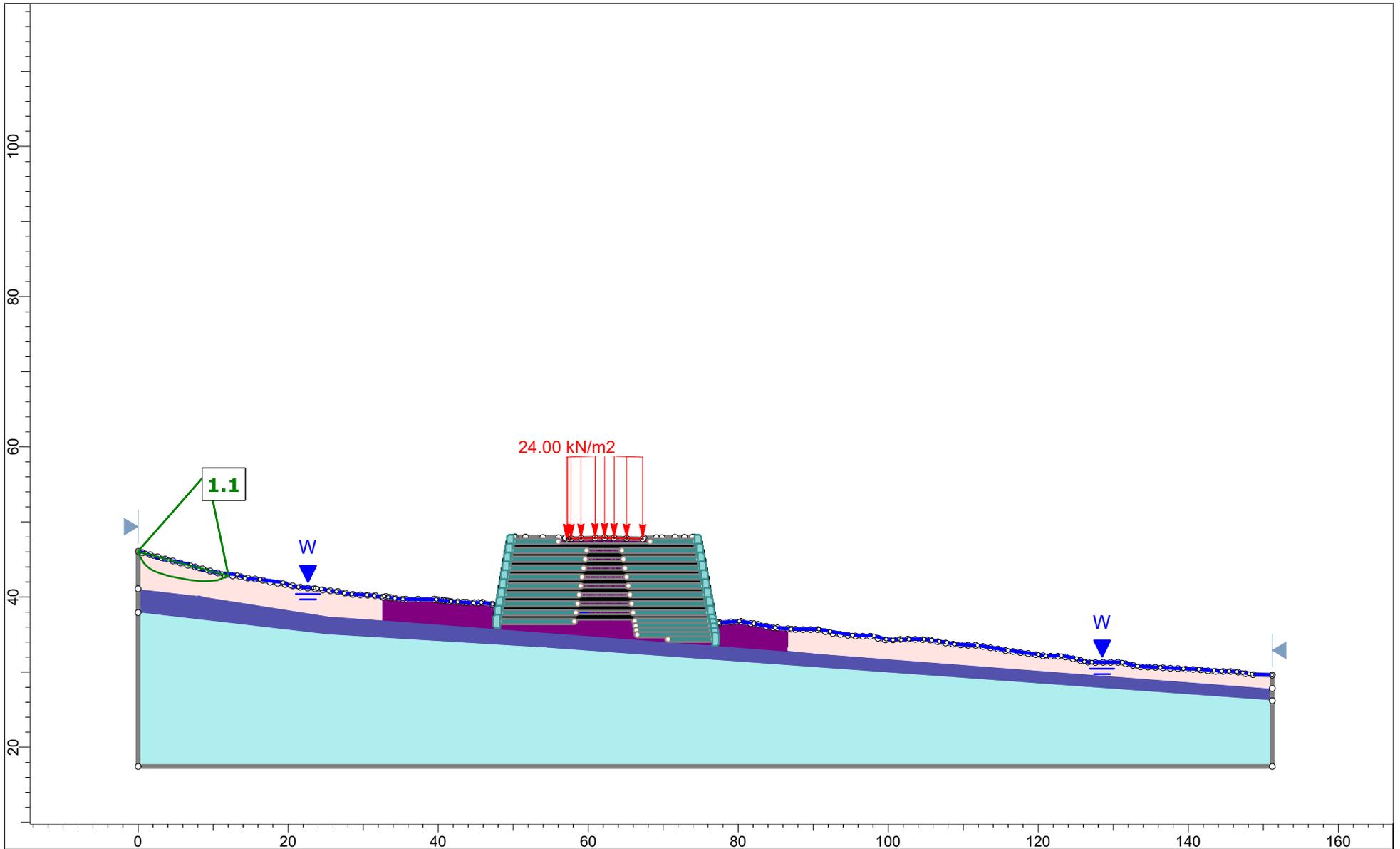


Results
GLE / Morgenstern-Price
Surfaces with a factor of safety below 1.000

Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	Water Table	Custom	1
Gully Mullock Layer	Light Orange	17	Mohr-Coulomb	2	22	Water Table	Custom	1
Very Stiff ECFB	Dark Blue	18	Mohr-Coulomb	7	30	Water Table	Custom	1
Very Weak ECFB Rock	Light Blue	20	Mohr-Coulomb	10	35	Water Table	Custom	1

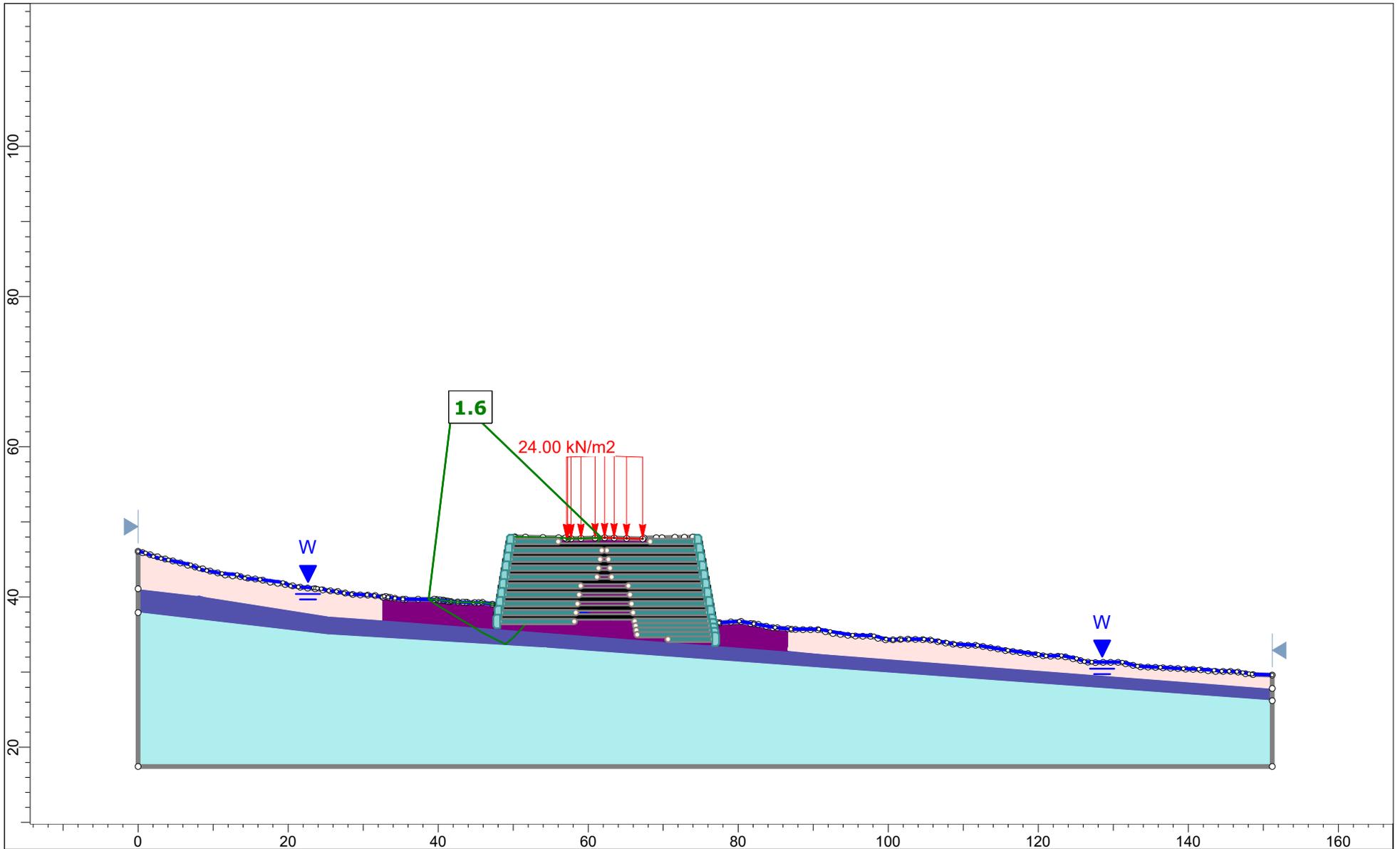


Project	240065 - Russell Road, Waunui		
Group	Section K - Proposed GL & Remedials (L-R)	Scenario	Seismic (0.19g)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section K.slmd

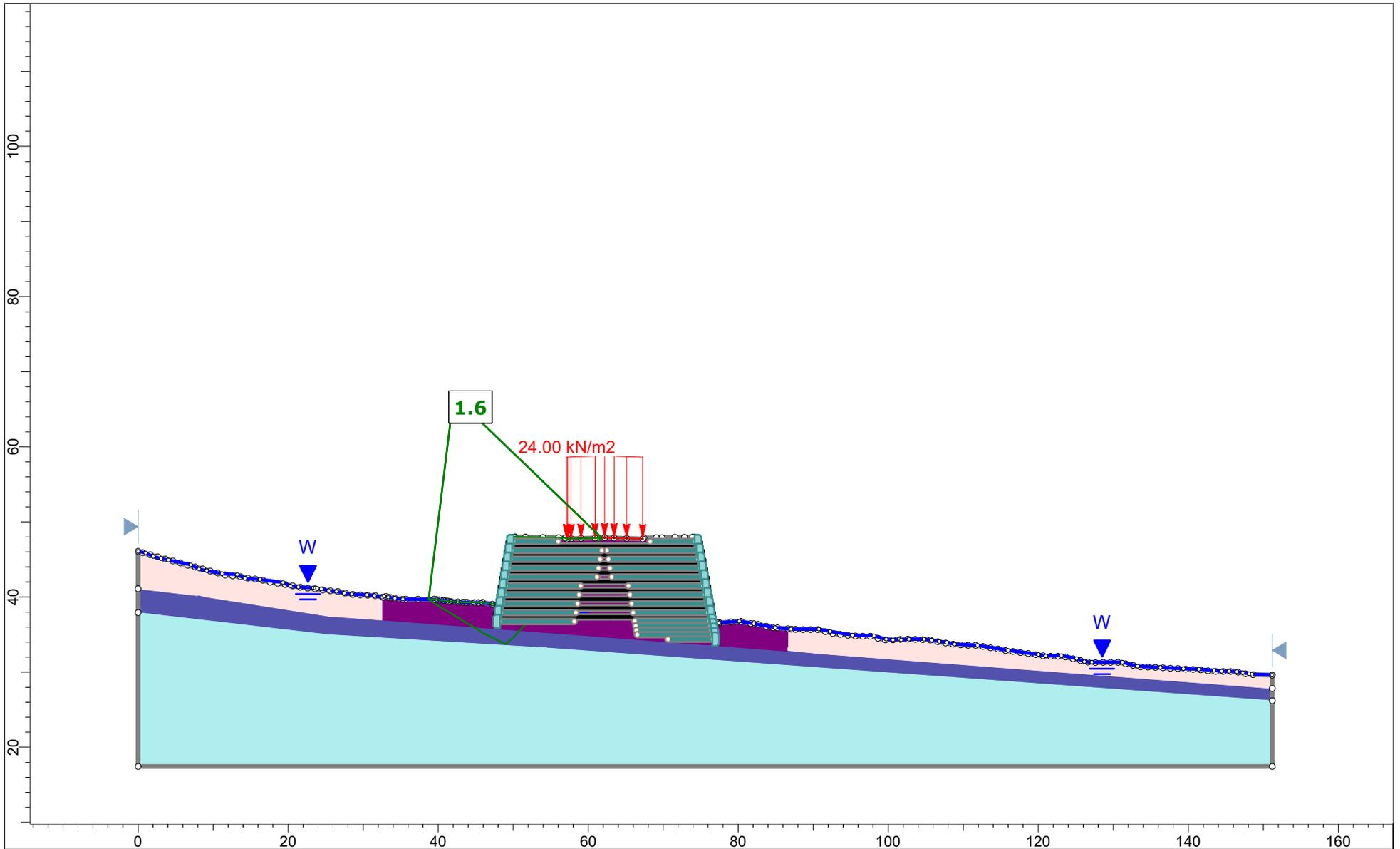


SLIDEINTERPRET 9.038

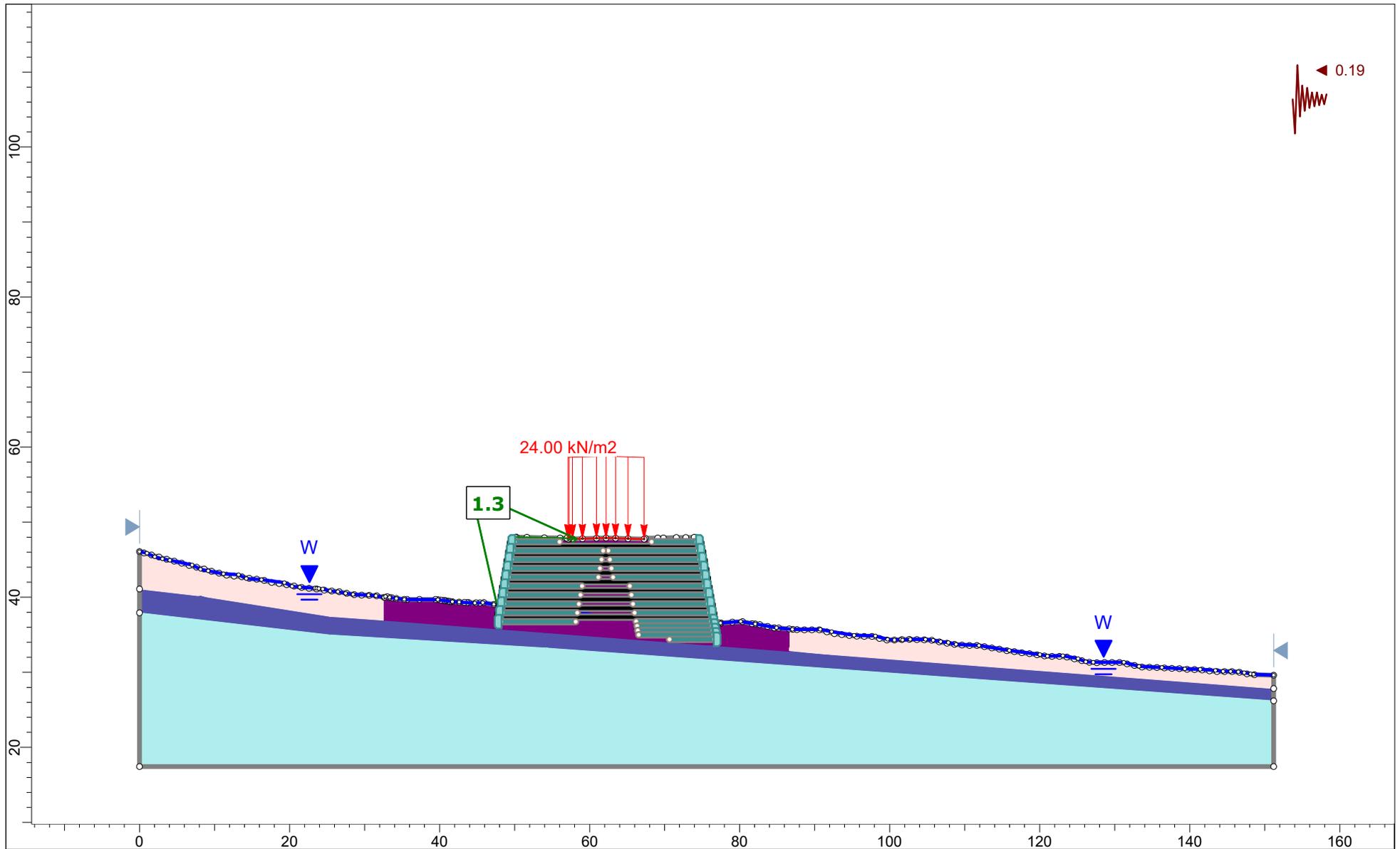
<i>Project</i>	240065 - Russell Road, Waunui		
<i>Group</i>	Section K - Proposed GL & Remedials (L-R)	<i>Scenario</i>	Extreme (50% saturation)
<i>Drawn By</i>	LKB	<i>Company</i>	Riley Consultants Ltd
<i>Date</i>	19/12/2025	<i>File Name</i>	Section K.sldm



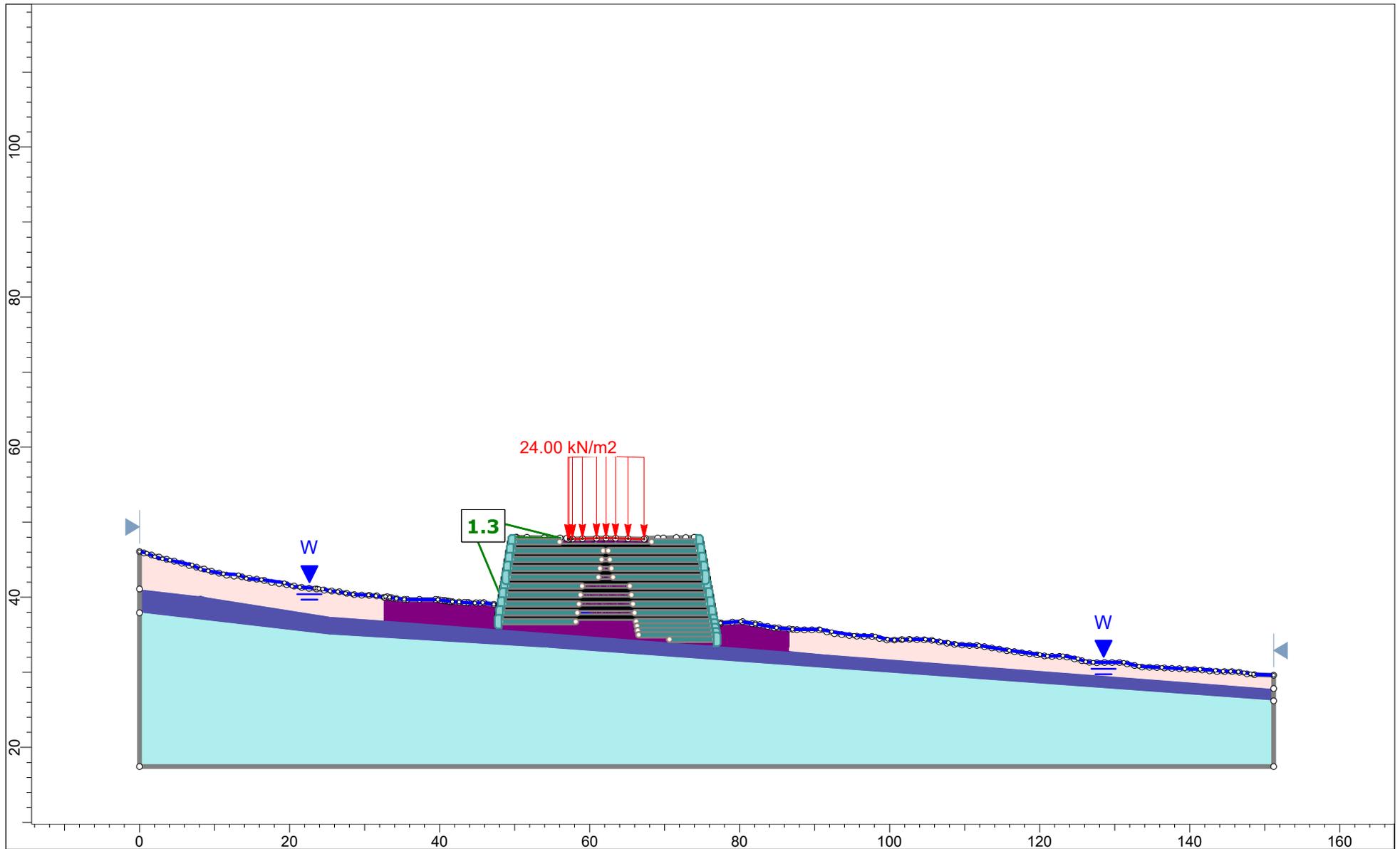
Project	240065 - Russell Road, Waunui		
Group	Section K - Proposed GL& Remedials (R-L) - Master Scenario	Scenario	Normal (Measured GW)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section K.sldm



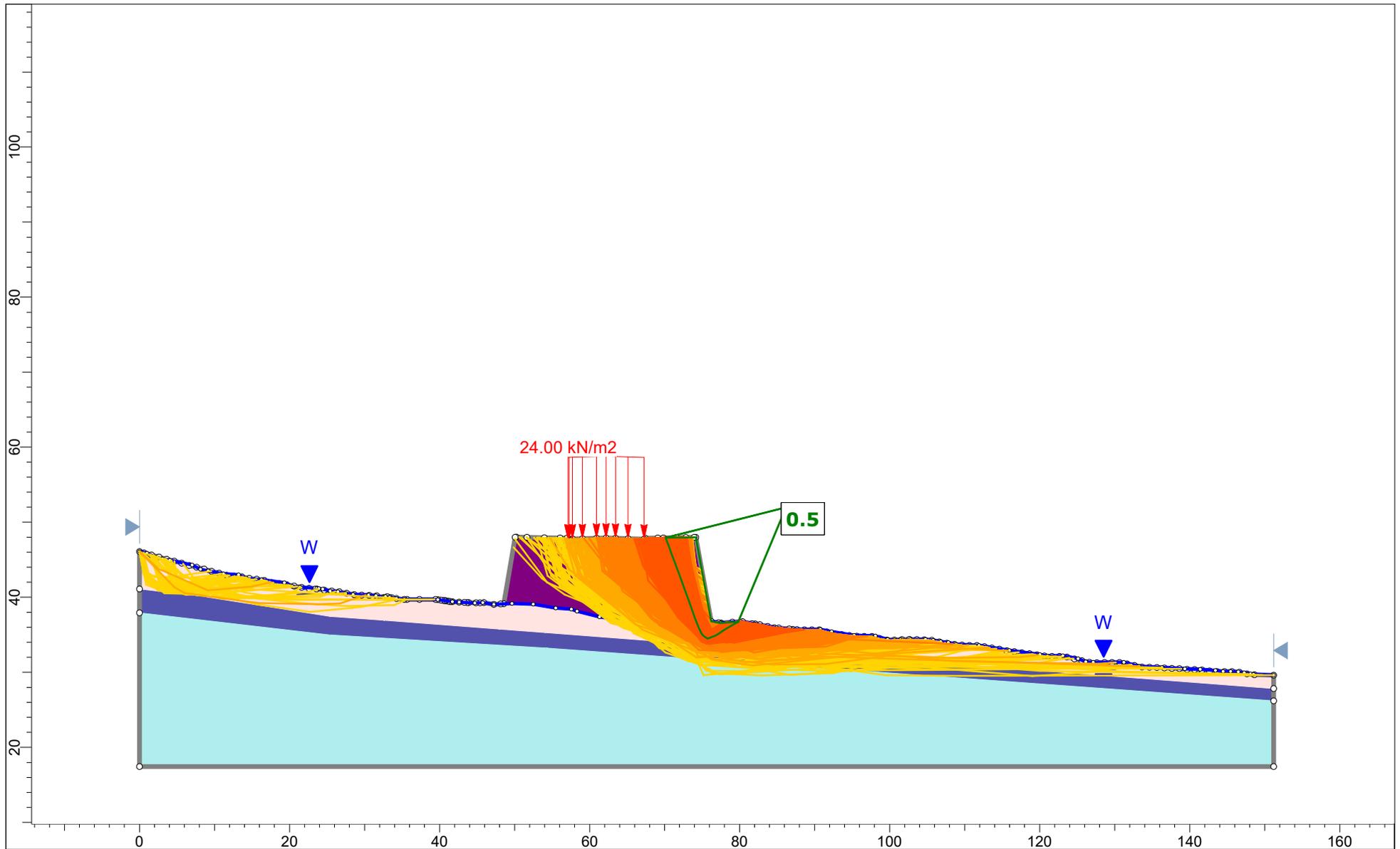
Project	240065 - Russell Road, Waunui	
Group	Section K - Proposed GL& Remedials (R-L) - Master Scenario	Scenario
Drawn By	LKB	Company
Date	19/12/2025	File Name
		Extreme (Worst Case)
		Riley Consultants Ltd
		Section K.sldm



<i>Project</i>	240065 - Russell Road, Waunui		
<i>Group</i>	Section K - Proposed GL& Remedials (R-L) - Master Scenario	<i>Scenario</i>	Seismic (0.19g)
<i>Drawn By</i>	LKB	<i>Company</i>	Riley Consultants Ltd
<i>Date</i>	19/12/2025	<i>File Name</i>	Section K.sldm

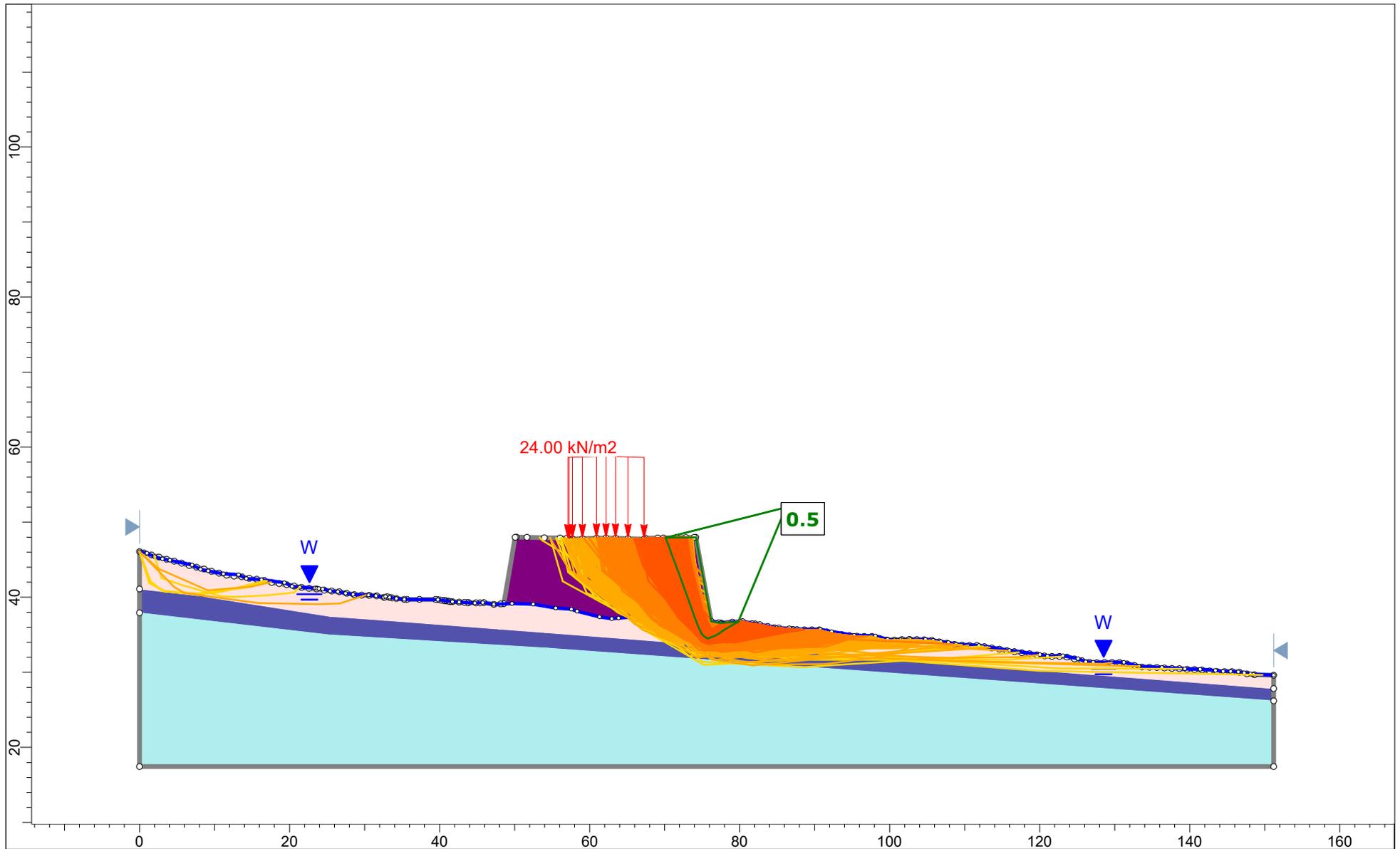


Project	240065 - Russell Road, Waunui		
Group	Section K - Proposed GL& Remedials (R-L) - Master Scenario	Scenario	Extreme (50% saturation)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section K.sldm



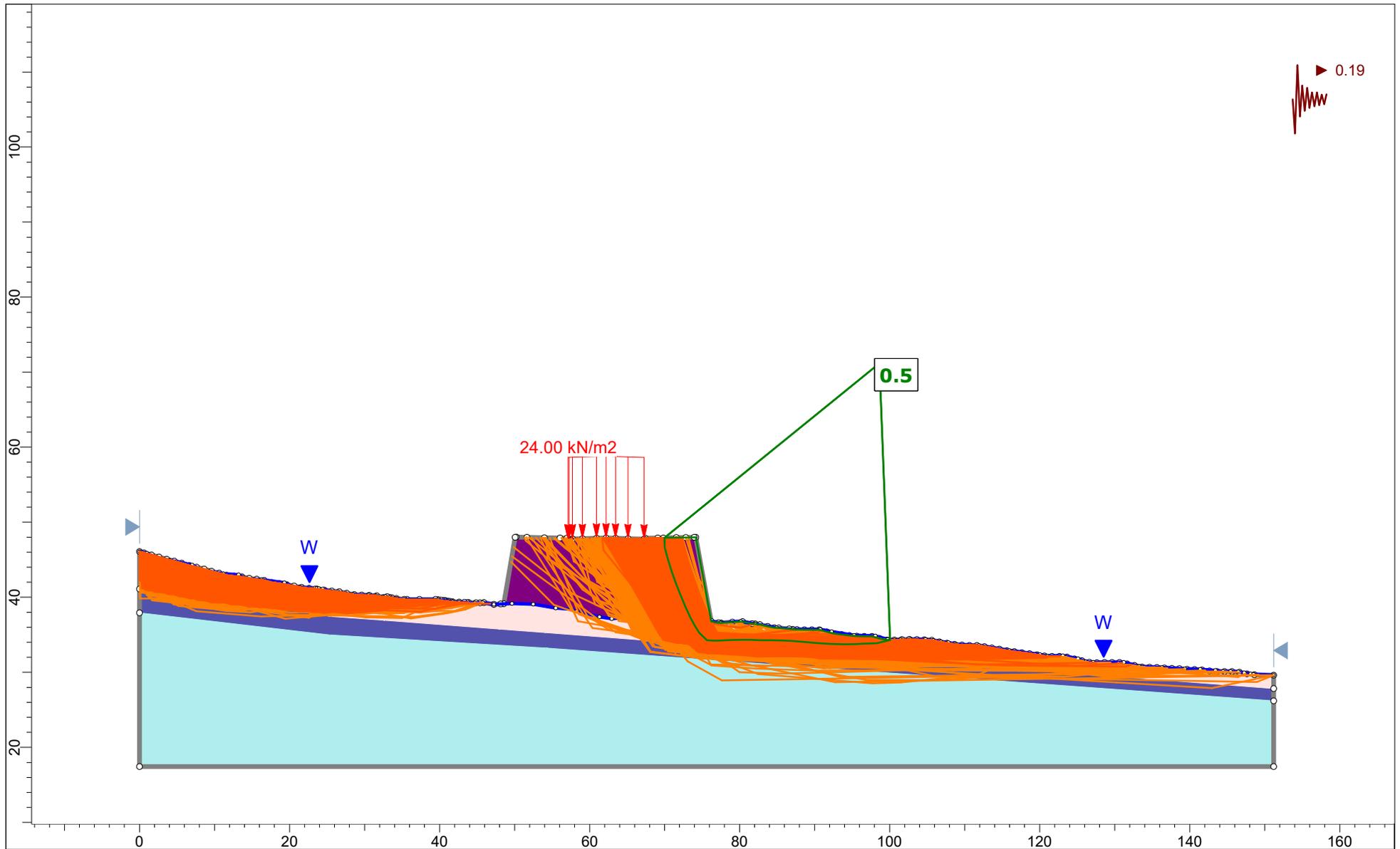
SLIDEINTERPRET 9.038

<i>Project</i>	240065 - Russell Road, Waunui		
<i>Group</i>	Section K - Proposed GL (L-R)	<i>Scenario</i>	Normal (Measured GW)
<i>Drawn By</i>	LKB	<i>Company</i>	Riley Consultants Ltd
<i>Date</i>	19/12/2025	<i>File Name</i>	Section K.sldm



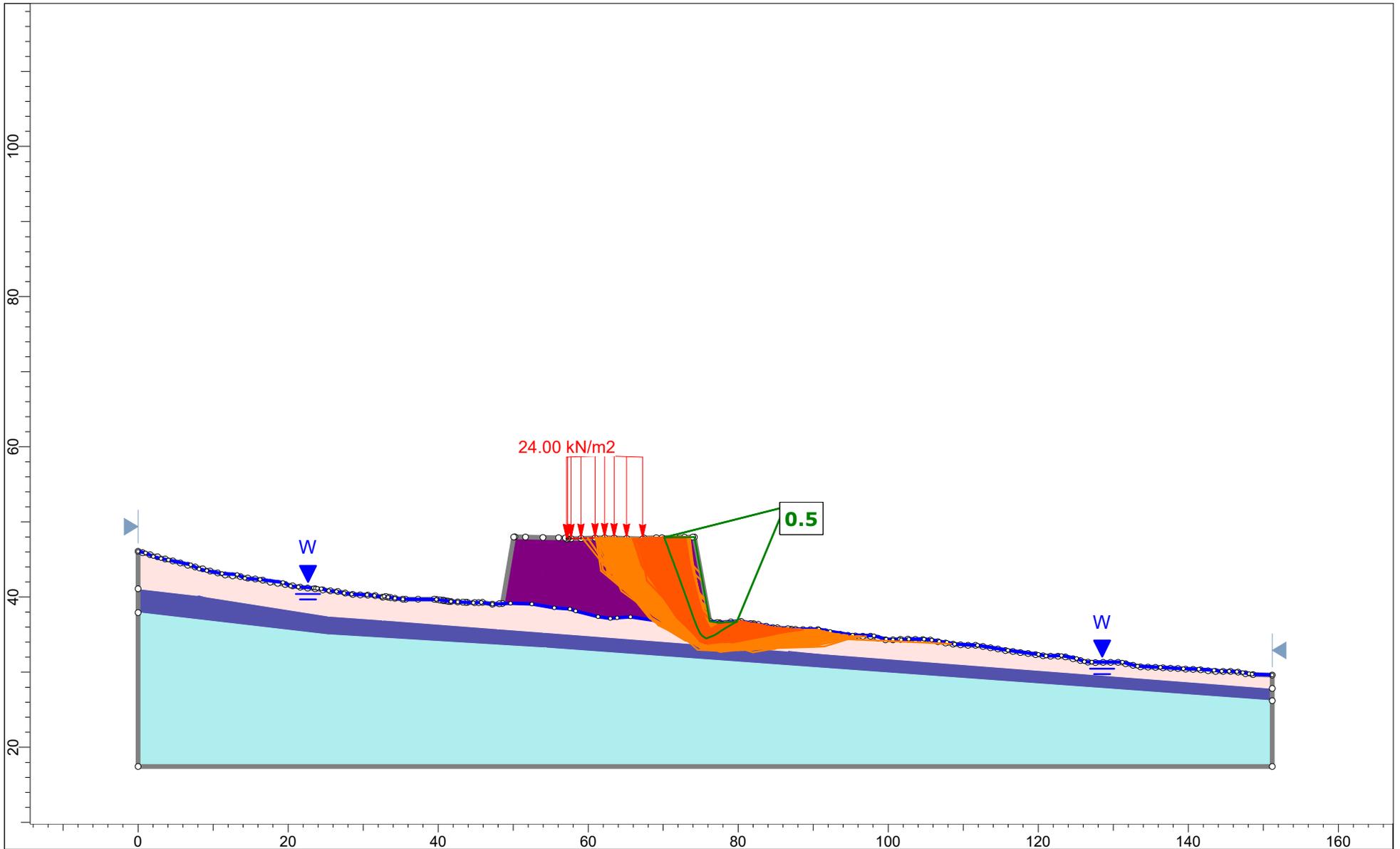
SLIDEINTERPRET 9.038

<i>Project</i>	240065 - Russell Road, Waunui		
<i>Group</i>	Section K - Proposed GL (L-R)	<i>Scenario</i>	Extreme (Worst Case)
<i>Drawn By</i>	LKB	<i>Company</i>	Riley Consultants Ltd
<i>Date</i>	19/12/2025	<i>File Name</i>	Section K.sldm



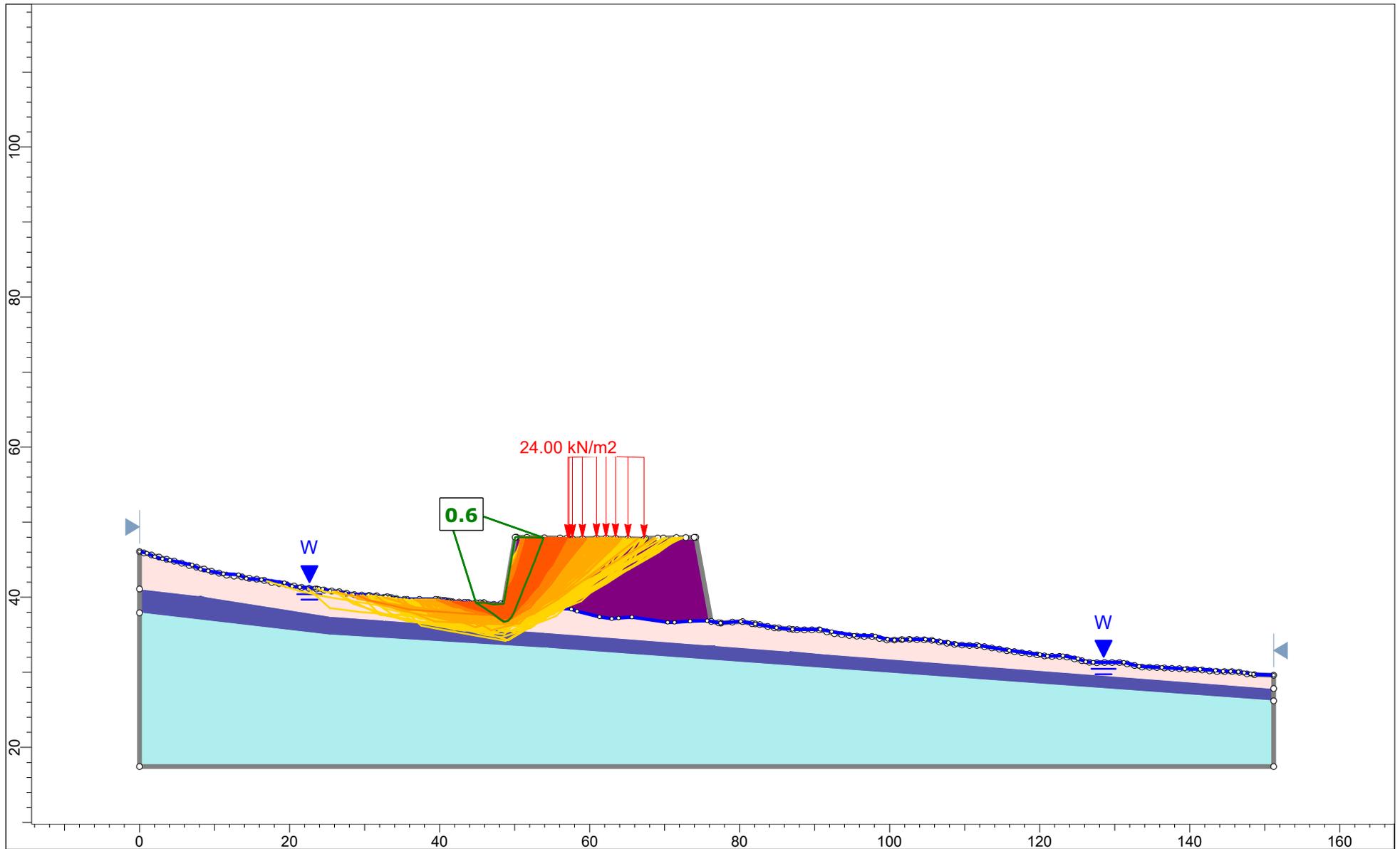
SLIDEINTERPRET 9.038

<i>Project</i>	240065 - Russell Road, Waunui		
<i>Group</i>	Section K - Proposed GL (L-R)	<i>Scenario</i>	Seismic (0.19g)
<i>Drawn By</i>	LKB	<i>Company</i>	Riley Consultants Ltd
<i>Date</i>	19/12/2025	<i>File Name</i>	Section K.sldm



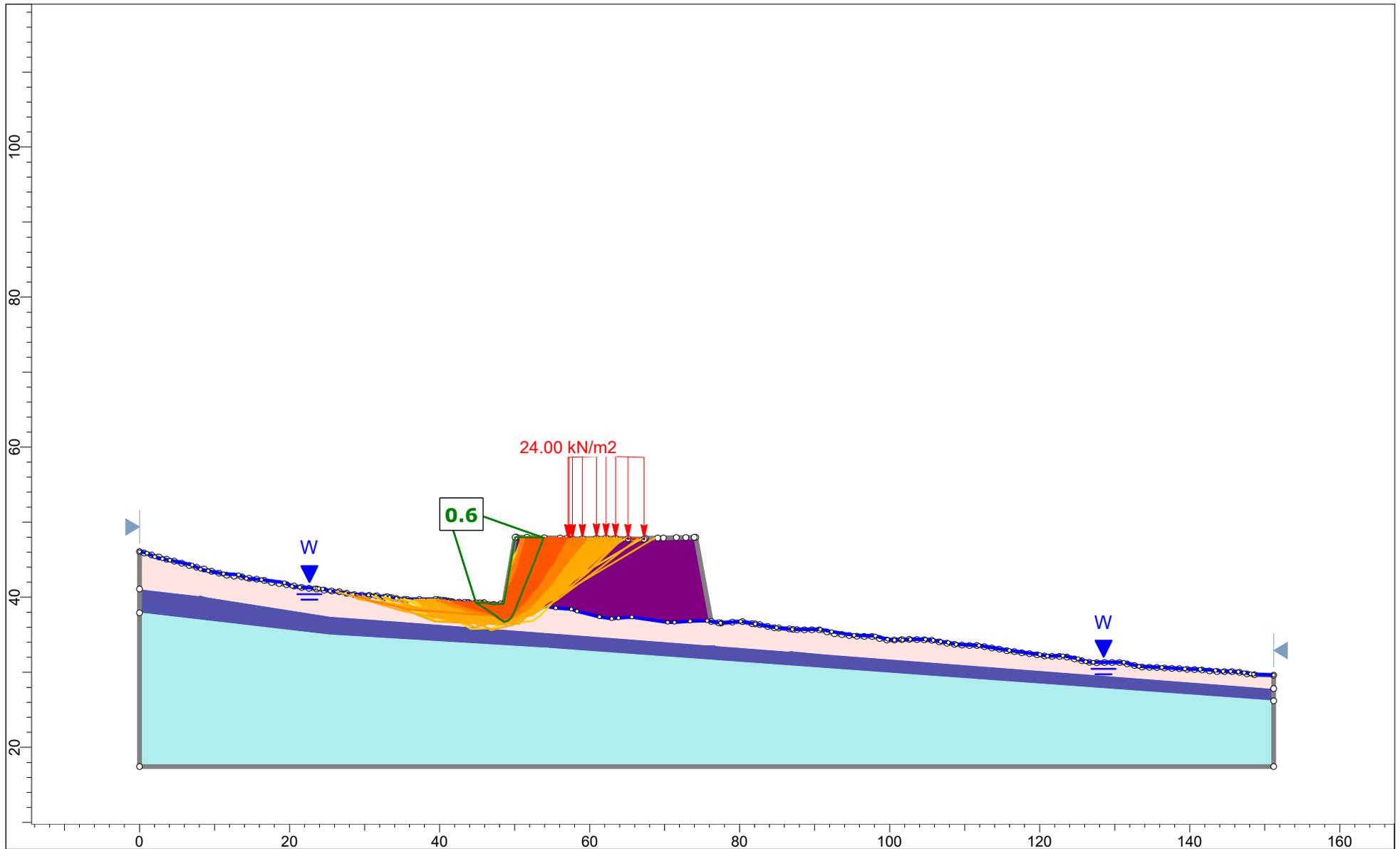
SLIDEINTERPRET 9.038

<i>Project</i>	240065 - Russell Road, Waunui		
<i>Group</i>	Section K - Proposed GL (L-R)	<i>Scenario</i>	Extreme (50% saturation)
<i>Drawn By</i>	LKB	<i>Company</i>	Riley Consultants Ltd
<i>Date</i>	19/12/2025	<i>File Name</i>	Section K.sldm



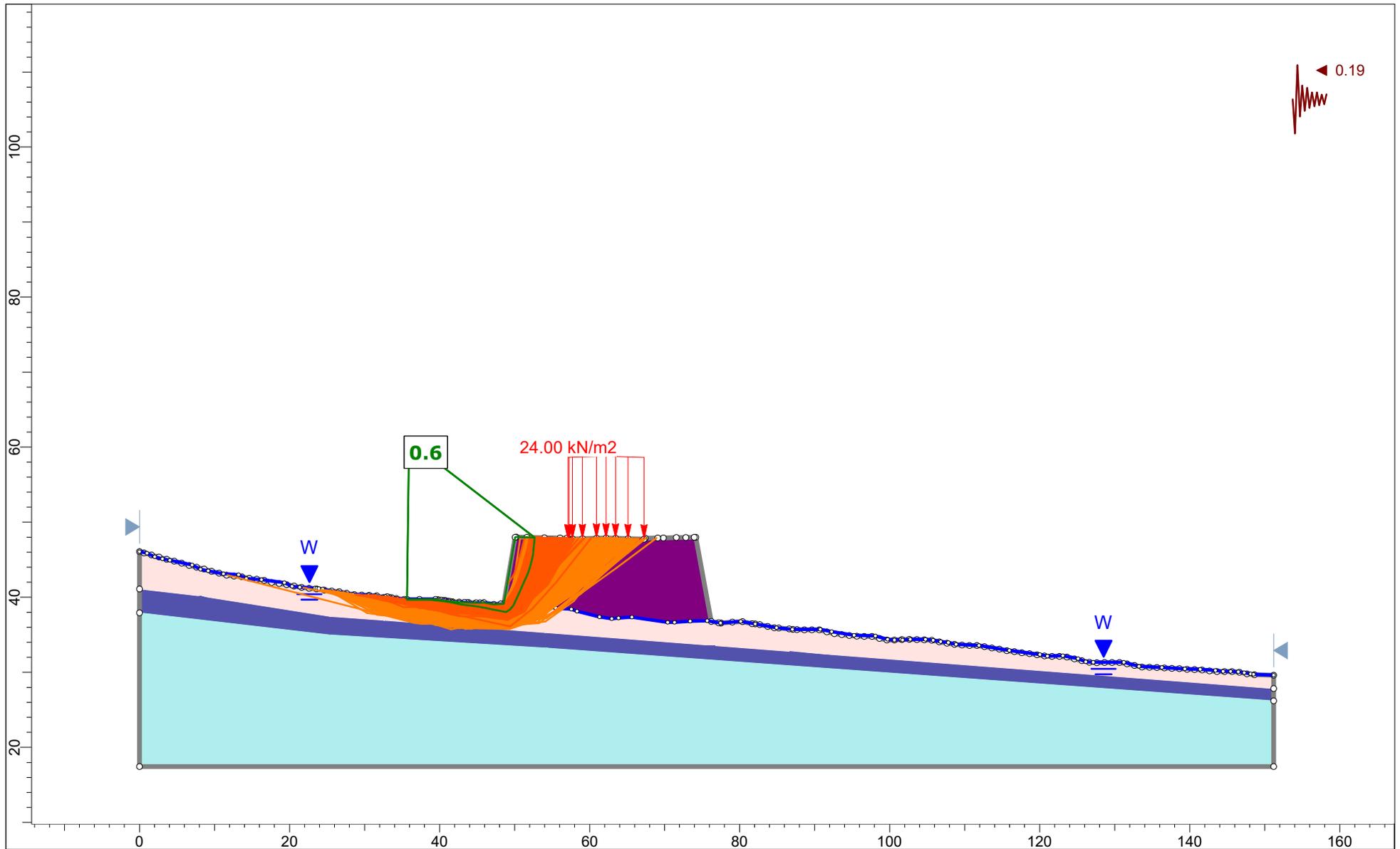
SLIDEINTERPRET 9.038

<i>Project</i>	240065 - Russell Road, Waunui		
<i>Group</i>	Section K - Proposed GL (R-L) - Master Scenario	<i>Scenario</i>	Normal (Measured GW)
<i>Drawn By</i>	LKB	<i>Company</i>	Riley Consultants Ltd
<i>Date</i>	19/12/2025	<i>File Name</i>	Section K.sldm



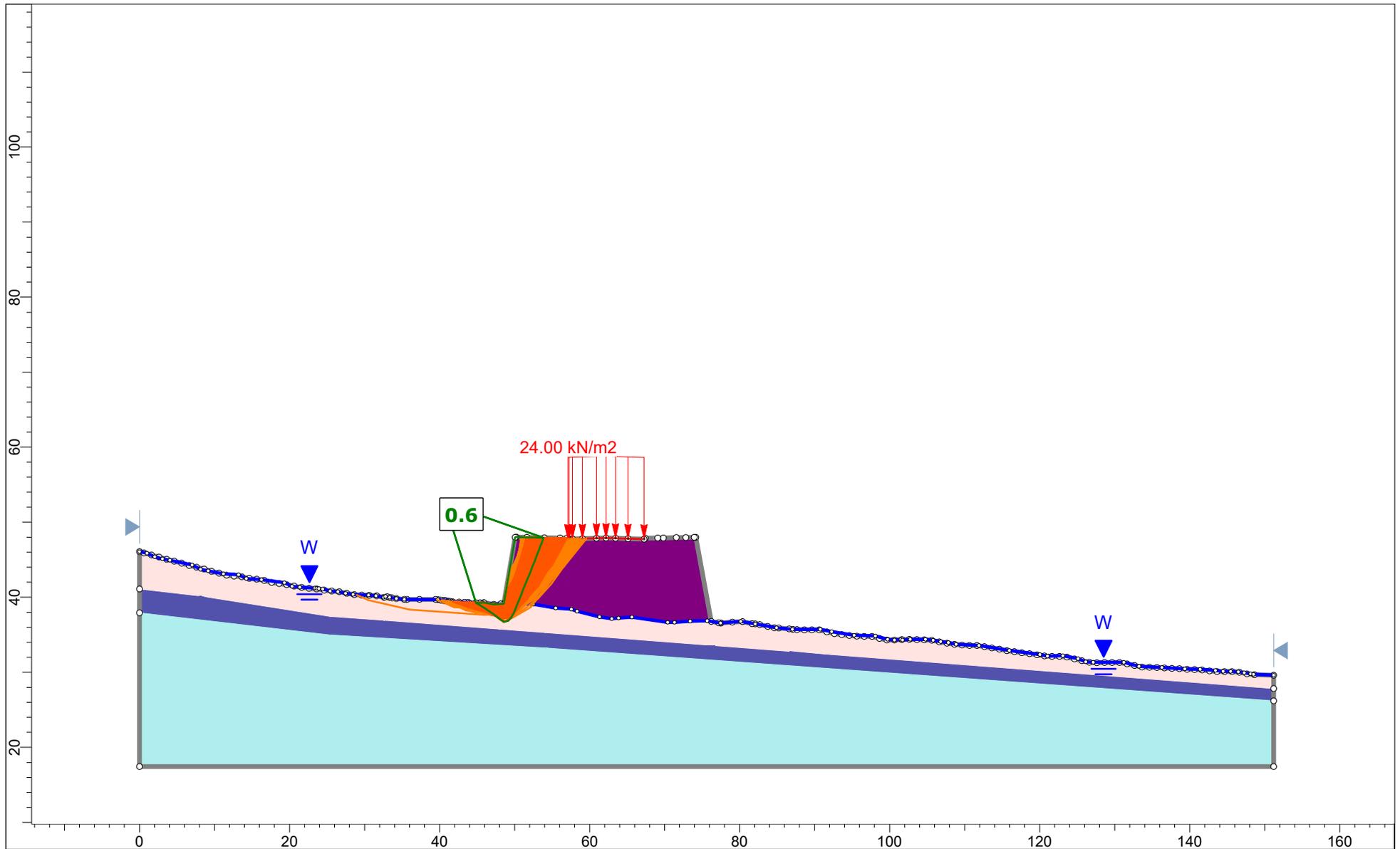
SLIDEINTERPRET 9.038

<i>Project</i>		240065 - Russell Road, Waunui	
<i>Group</i>	Section K - Proposed GL (R-L) - Master Scenario	<i>Scenario</i>	Extreme (Worst Case)
<i>Drawn By</i>	LKB	<i>Company</i>	Riley Consultants Ltd
<i>Date</i>	19/12/2025	<i>File Name</i>	Section K.sldm



SLIDEINTERPRET 9.038

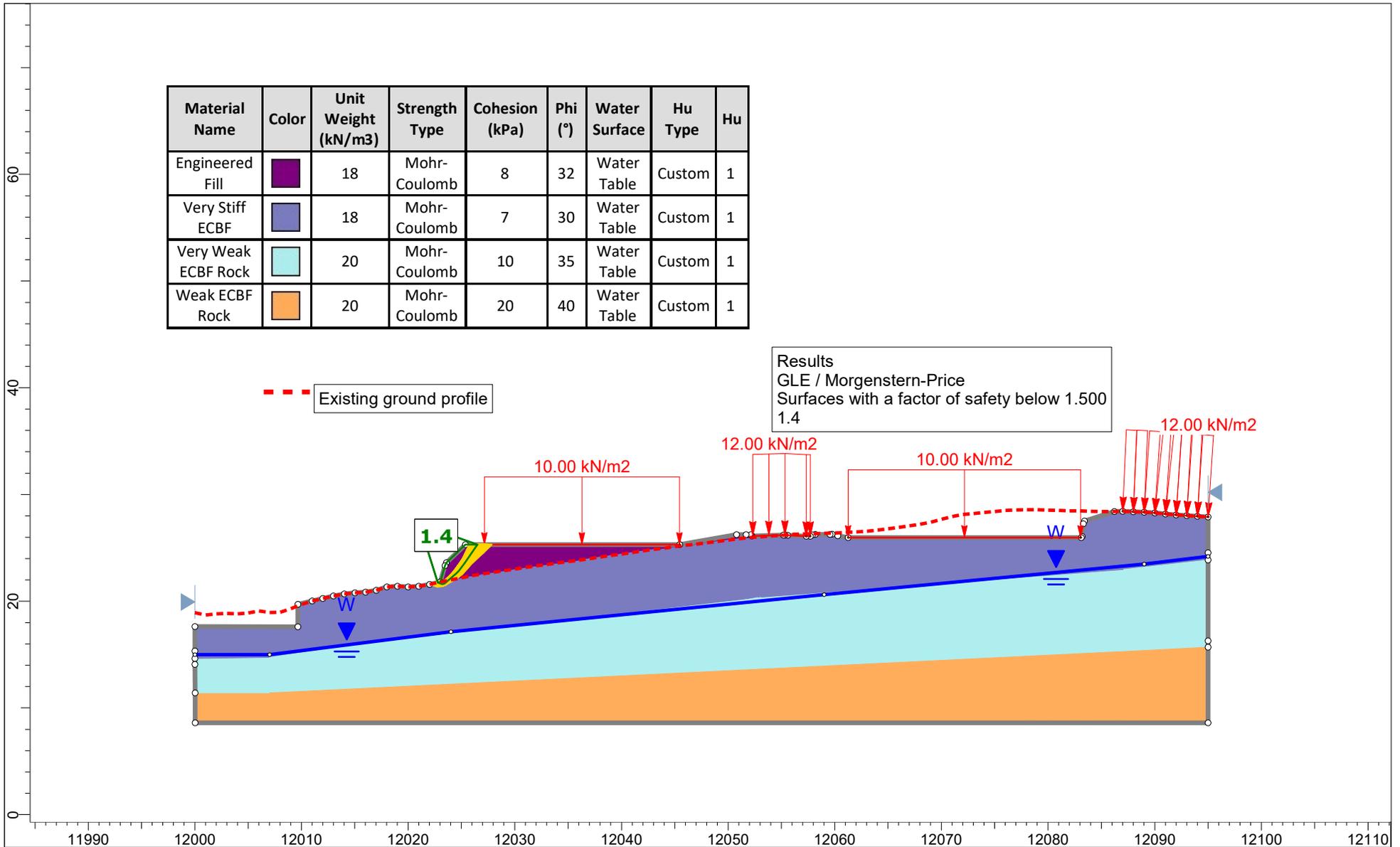
<i>Project</i>		240065 - Russell Road, Waunui	
<i>Group</i>	Section K - Proposed GL (R-L) - Master Scenario	<i>Scenario</i>	Seismic (0.19g)
<i>Drawn By</i>	LKB	<i>Company</i>	Riley Consultants Ltd
<i>Date</i>	19/12/2025	<i>File Name</i>	Section K.sldm



SLIDEINTERPRET 9.038

<i>Project</i>		240065 - Russell Road, Waunui	
<i>Group</i>	Section K - Proposed GL (R-L) - Master Scenario	<i>Scenario</i>	Extreme (50% saturation)
<i>Drawn By</i>	LKB	<i>Company</i>	Riley Consultants Ltd
<i>Date</i>	19/12/2025	<i>File Name</i>	Section K.sldm

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
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

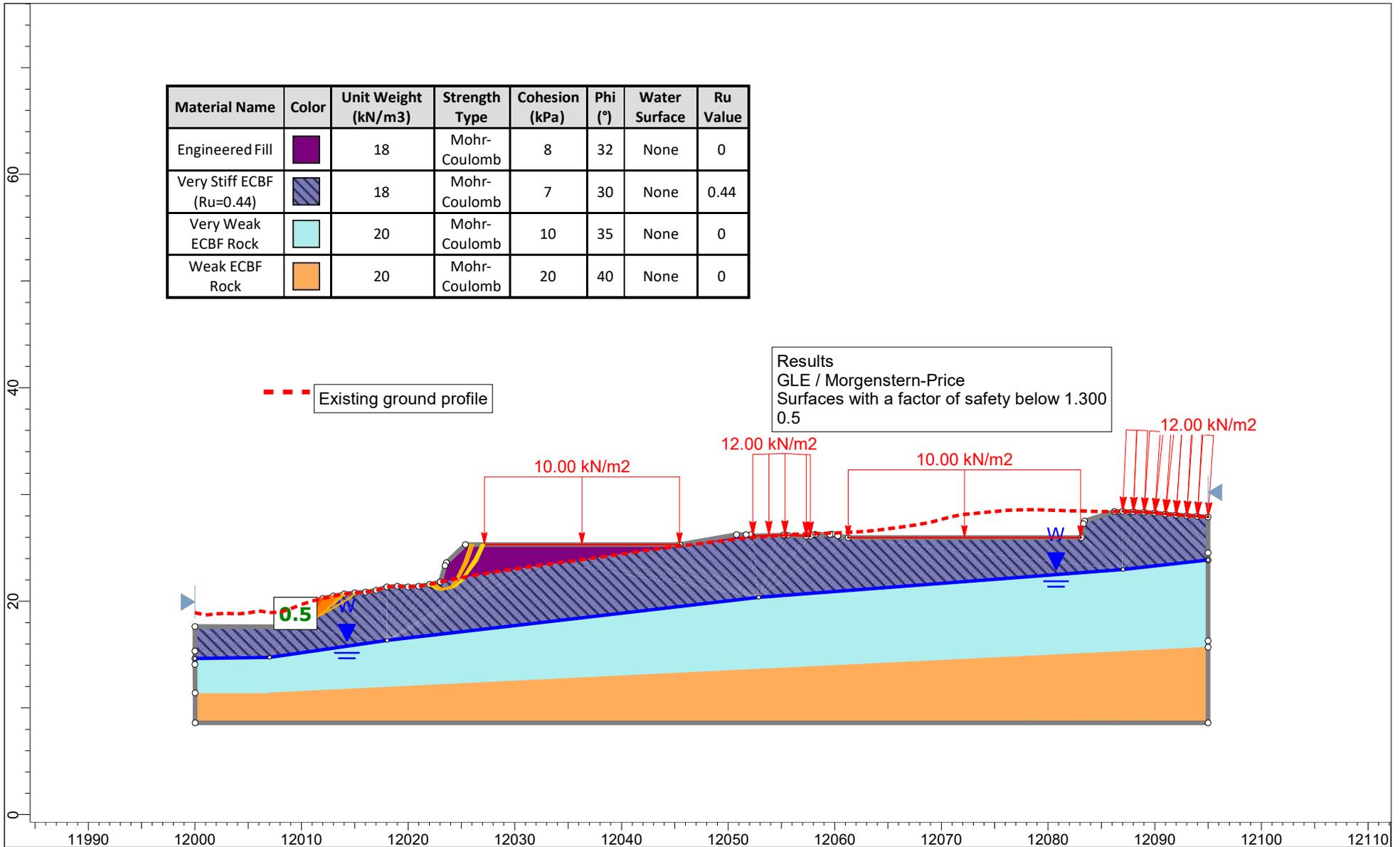


Results
GLE / Morgenstern-Price
Surfaces with a factor of safety below 1.500
1.4



Project	240065 - Russell Road, Waunui		
Group	Section L - proposed GL	Scenario	Normal (Measured GW)
Drawn By	AB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section L (AB).slmd

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

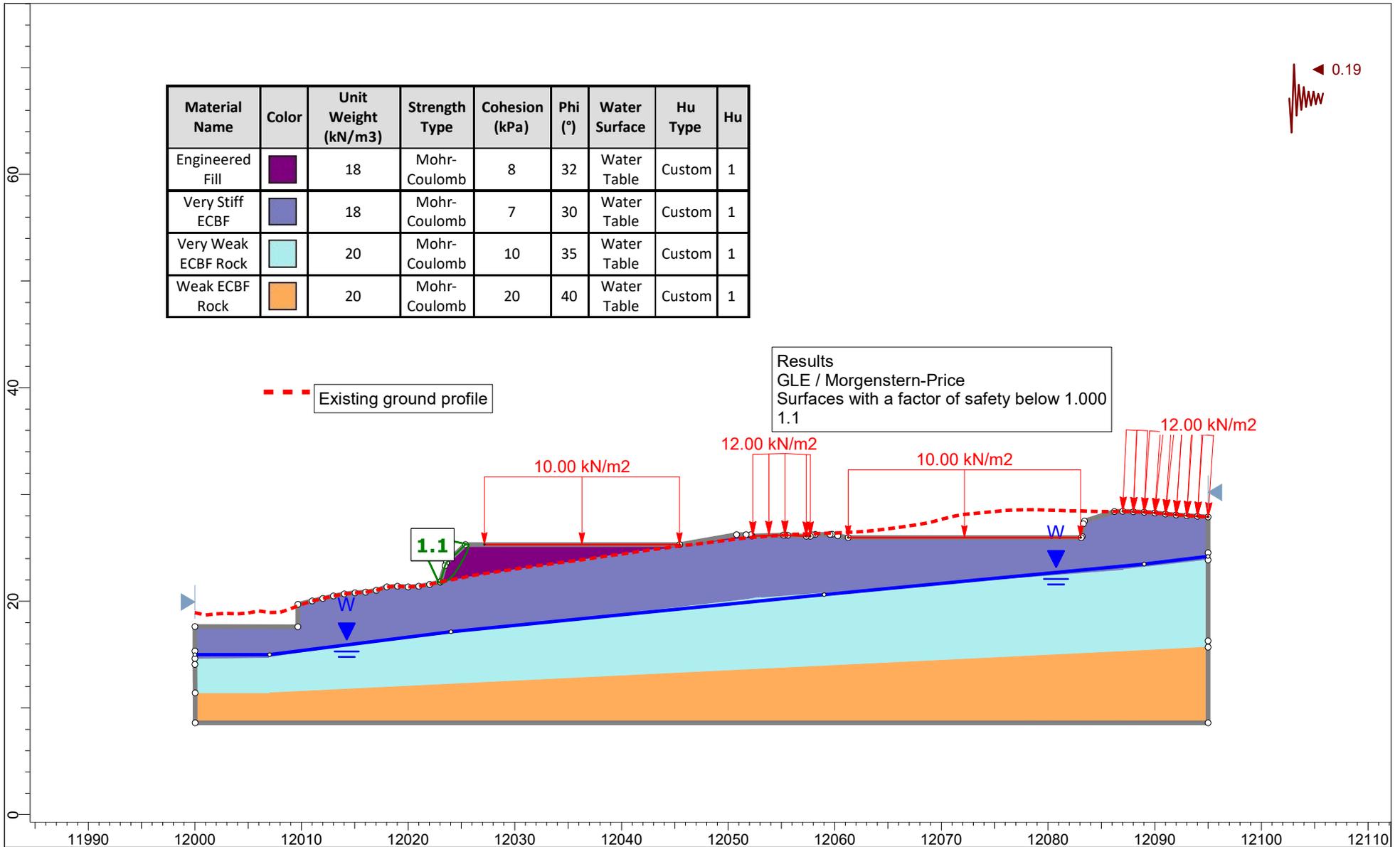


Results
GLE / Morgenstern-Price
Surfaces with a factor of safety below 1.300
0.5



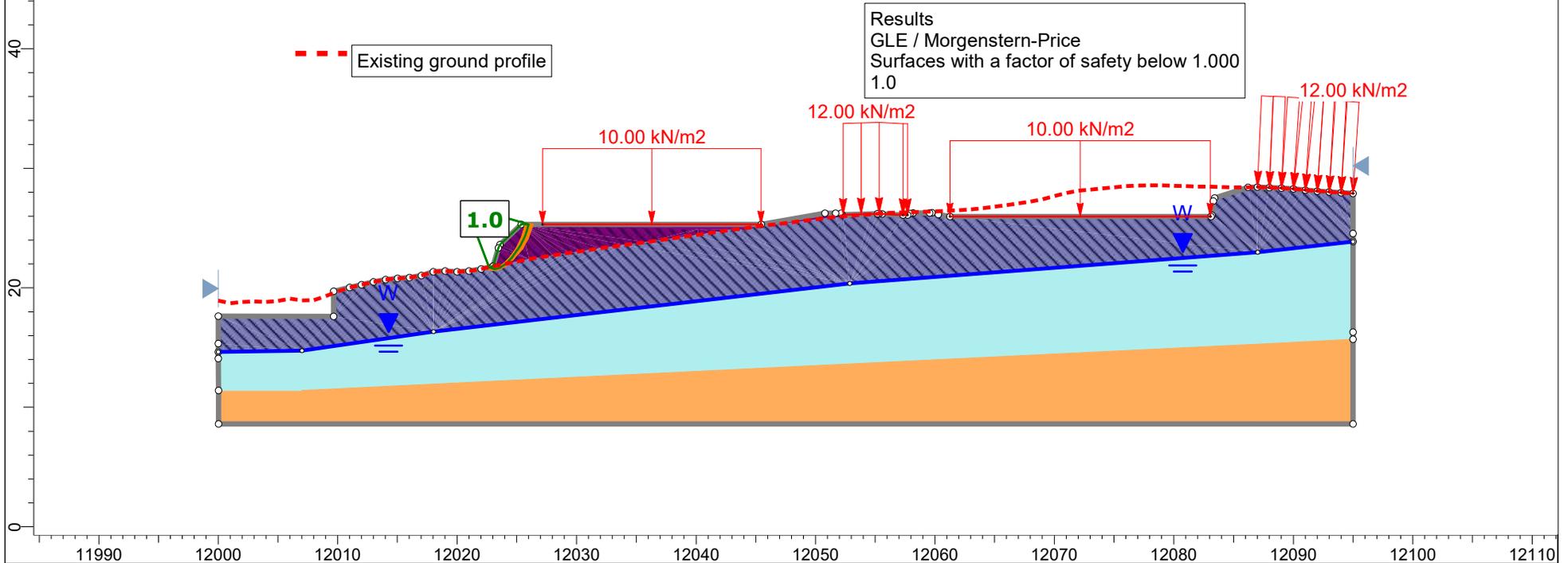
Project	240065 - Russell Road, Waunui		
Group	Section L - proposed GL	Scenario	Extreme (Worst Credible GW)
Drawn By	AB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section L (AB).slmd

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
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



Project	240065 - Russell Road, Waunui		
Group	Section L - proposed GL	Scenario	Seismic (0.19g)
Drawn By	AB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section L (AB).slmd

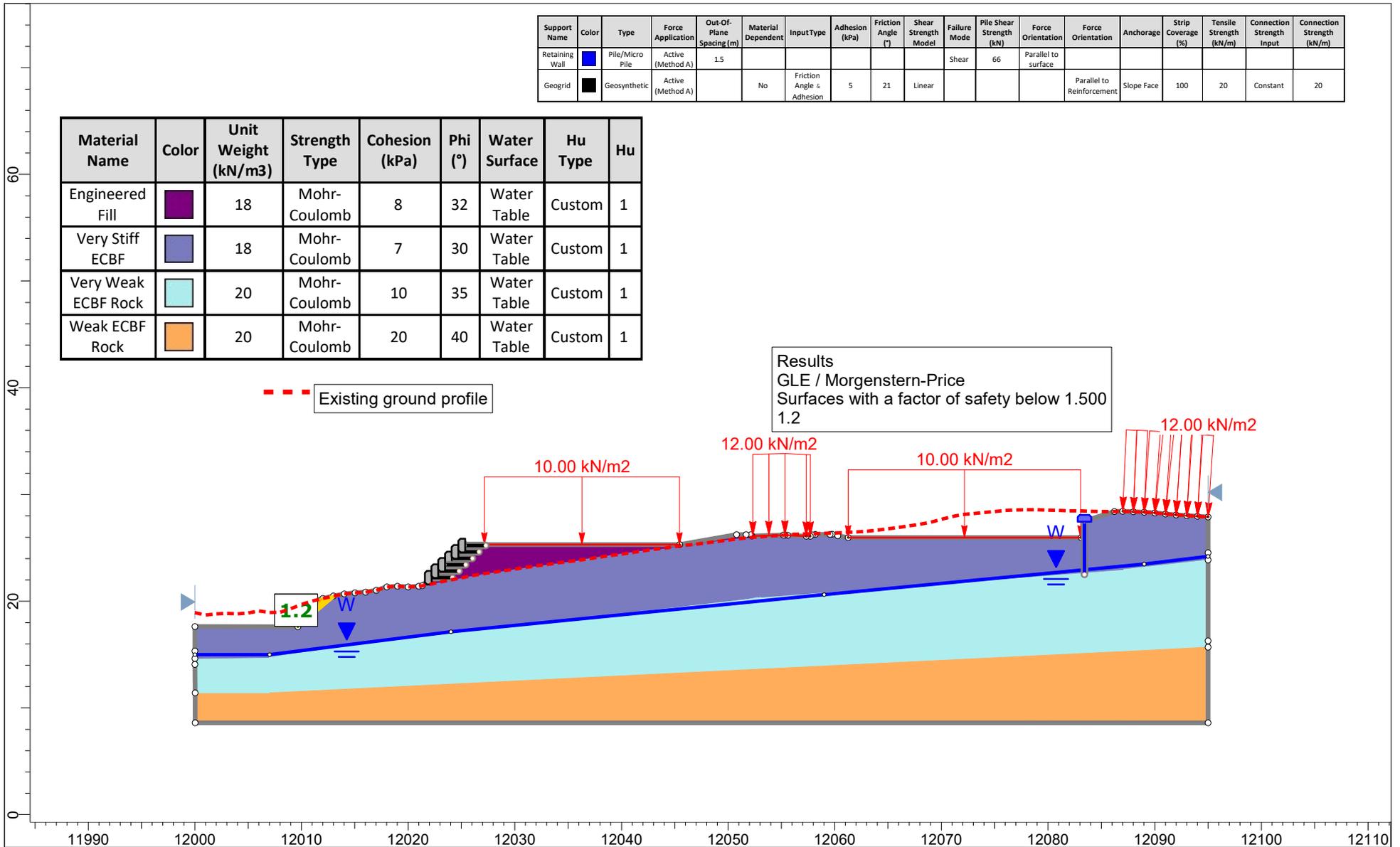
Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
Engineered Fill		18	Mohr-Coulomb	8	32	None	0
Very Stiff ECBF (Ru=0.44)		18	Mohr-Coulomb	7	30	None	0.44
Very Weak ECBF Rock		20	Mohr-Coulomb	10	35	None	0
Weak ECBF Rock		20	Mohr-Coulomb	20	40	None	0
Engineered Fill - 50% saturation		18	Mohr-Coulomb	8	32	None	0.27



Project	240065 - Russell Road, Waunui		
Group	Section L - proposed GL	Scenario	Extreme (50% saturation)
Drawn By	AB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section L (AB).slmd

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)
Retaining Wall	Blue	Pile/Micro Pile	Active (Method A)	1.5						Shear	66	Parallel to surface						
Geogrid	Black	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/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	Water Table	Custom	1
Very Stiff ECBF	Blue-Gray	18	Mohr-Coulomb	7	30	Water Table	Custom	1
Very Weak ECBF Rock	Cyan	20	Mohr-Coulomb	10	35	Water Table	Custom	1
Weak ECBF Rock	Orange	20	Mohr-Coulomb	20	40	Water Table	Custom	1



Results
GLE / Morgenstern-Price
Surfaces with a factor of safety below 1.500
1.2

	Project		240065 - Russell Road, Waunui	
	Group		Section L - erosions & remedials	Scenario
	Drawn By		AB	Company
	Date		19/12/2025	File Name
			Normal (Measured GW)	Riley Consultants Ltd
			Section L (AB).slmd	

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)
Retaining Wall	Blue	Pile/Micro Pile	Active (Method A)	1.5						Shear	66	Parallel to surface						
Geogrid	Black	Geosynthetic	Active (Method A)		No	Friction Angle & Adhesion	5	21	Linear			Parallel to Reinforcement	Slope Face	100	20	Constant	20	

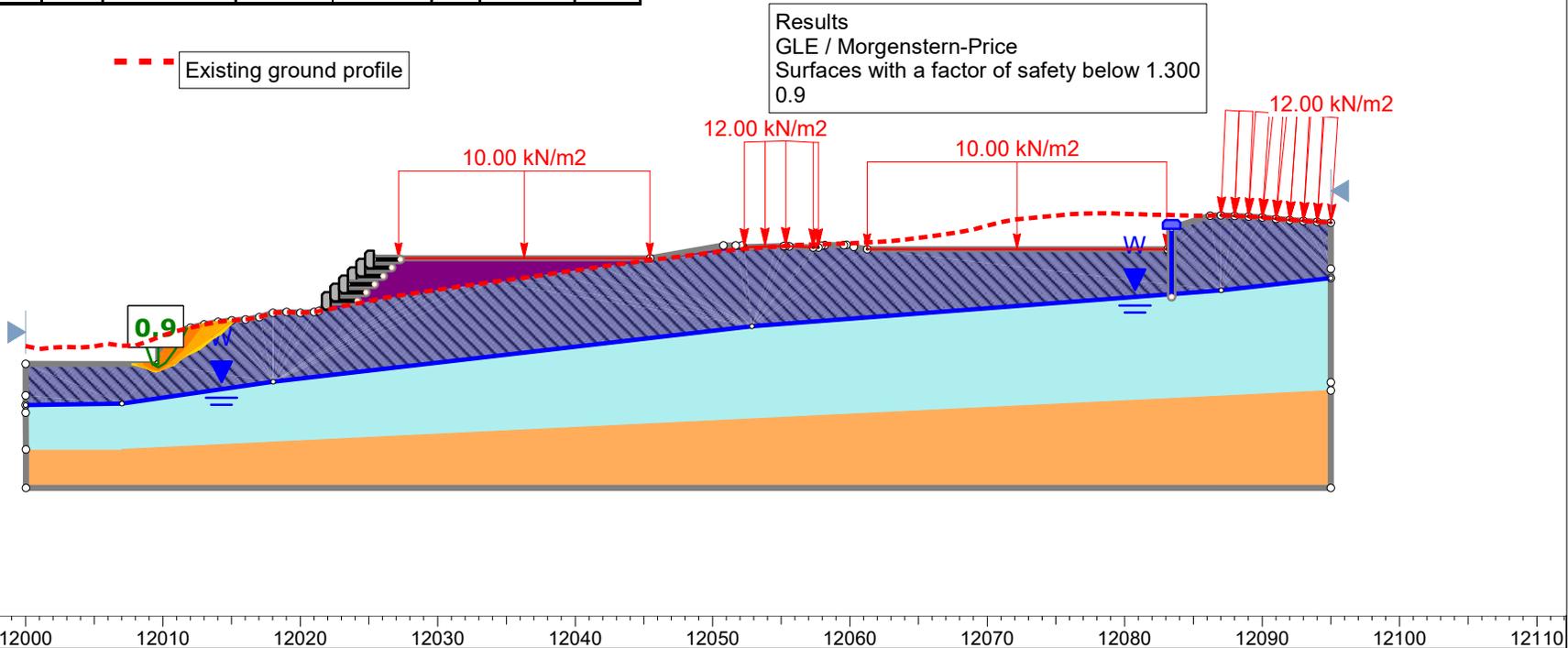
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	None	0
Very Stiff ECBF (Ru=0.44)	Blue Hatched	18	Mohr-Coulomb	7	30	None	0.44
Very Weak ECBF Rock	Light Blue	20	Mohr-Coulomb	10	35	None	0
Weak ECBF Rock	Orange	20	Mohr-Coulomb	20	40	None	0

60

40

20

0



Results
GLE / Morgenstern-Price
Surfaces with a factor of safety below 1.300
0.9



Project	240065 - Russell Road, Waunui		
Group	Section L - erosions & remedials	Scenario	Extreme (Worst Credible GW)
Drawn By	AB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section L (AB).slmd

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)
Retaining Wall	Blue	Pile/Micro Pile	Active (Method A)	1.5						Shear	66	Parallel to surface						
Geogrid	Black	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/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	Water Table	Custom	1
Very Stiff ECBF	Blue-Gray	18	Mohr-Coulomb	7	30	Water Table	Custom	1
Very Weak ECBF Rock	Cyan	20	Mohr-Coulomb	10	35	Water Table	Custom	1
Weak ECBF Rock	Orange	20	Mohr-Coulomb	20	40	Water Table	Custom	1

60

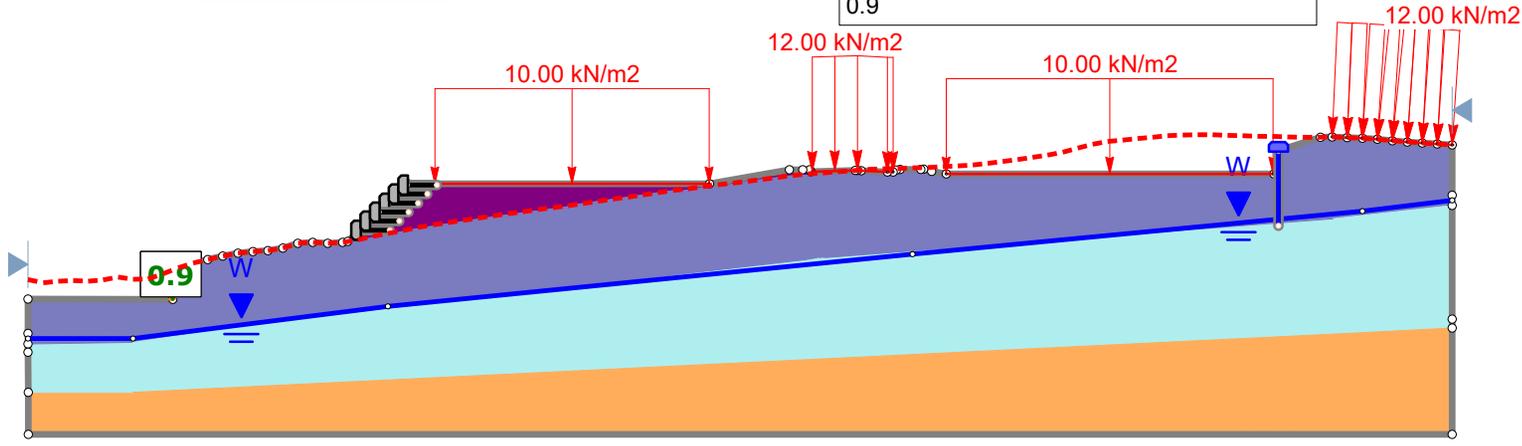
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20

0

--- Existing ground profile

Results
GLE / Morgenstern-Price
Surfaces with a factor of safety below 1.000
0.9



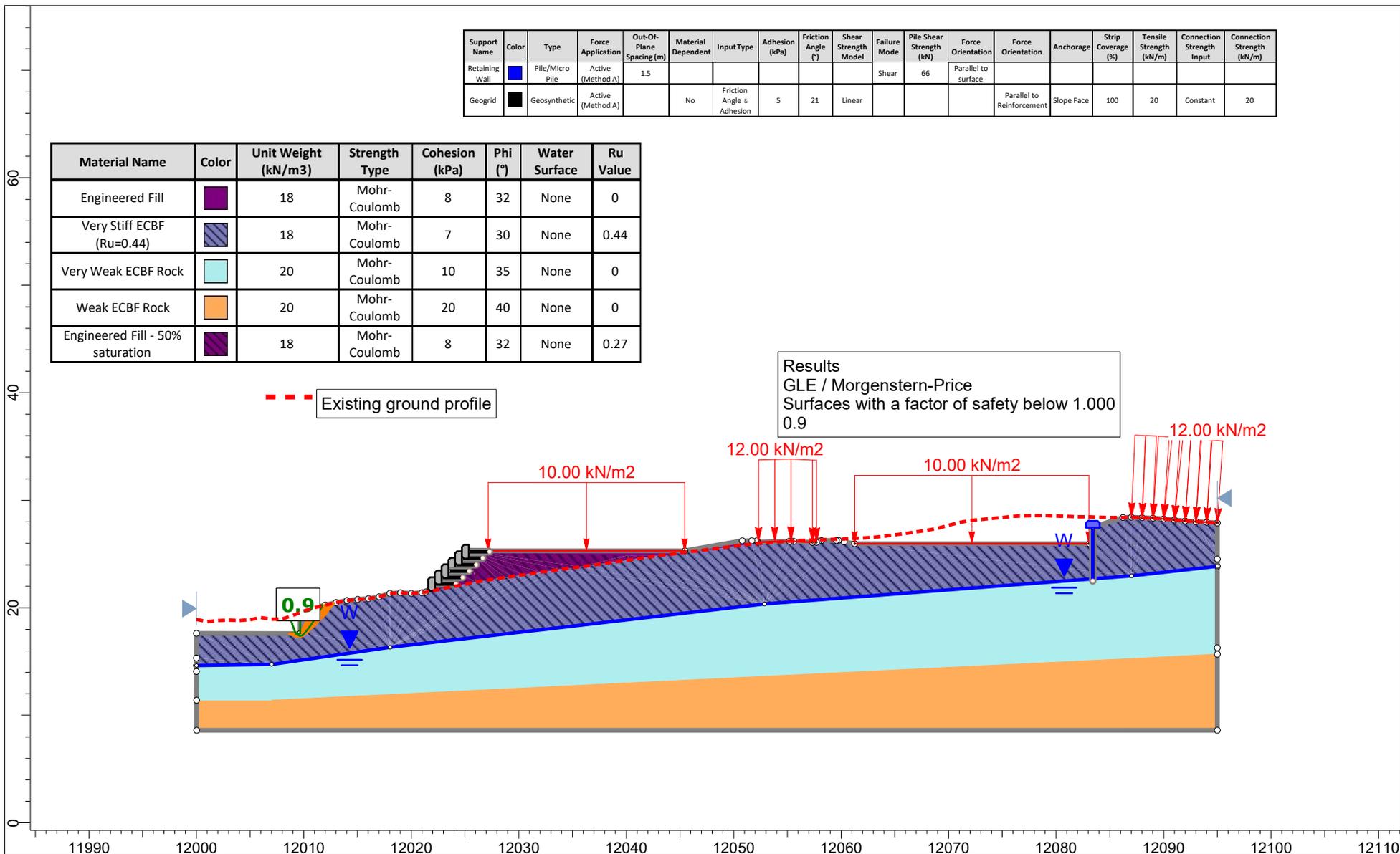
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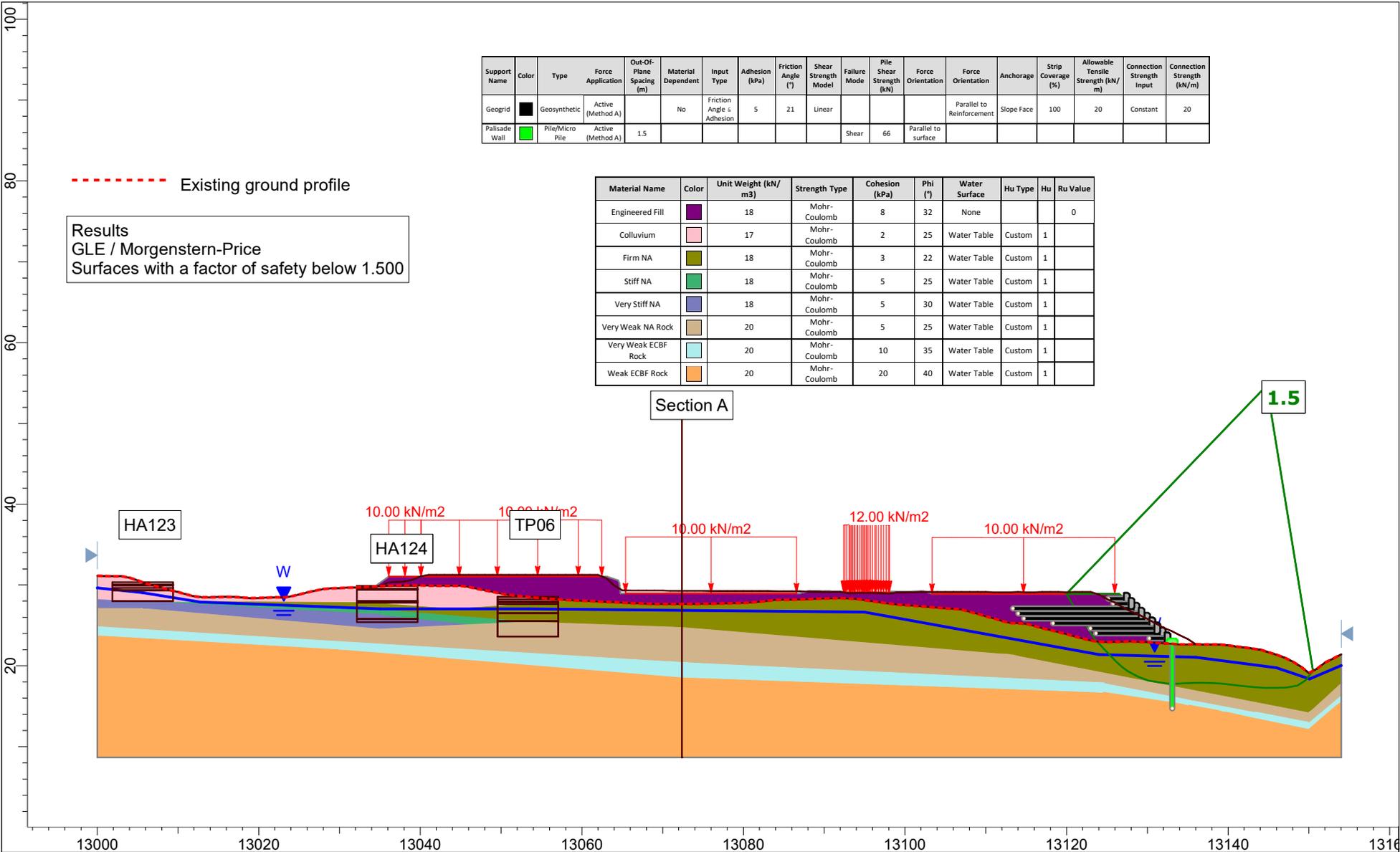
Project	240065 - Russell Road, Waunui		
Group	Section L - erosions & remedials	Scenario	Seismic (0.19g)
Drawn By	AB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section L (AB).slmd

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)
Retaining Wall	Blue	Pile/Micro Pile	Active (Method A)	1.5						Shear	66	Parallel to surface						
Geogrid	Black	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	Ru Value
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	None	0
Very Stiff ECBF (Ru=0.44)	Blue Hatched	18	Mohr-Coulomb	7	30	None	0.44
Very Weak ECBF Rock	Light Blue	20	Mohr-Coulomb	10	35	None	0
Weak ECBF Rock	Orange	20	Mohr-Coulomb	20	40	None	0
Engineered Fill - 50% saturation	Purple	18	Mohr-Coulomb	8	32	None	0.27



	Project		240065 - Russell Road, Waunui	
	Group		Section L - erosions & remedials	Scenario
	Drawn By		AB	Company
	Date		19/12/2025	File Name
			Extreme (50% saturation)	Riley Consultants Ltd
				Section L (AB).slmd



Results
GLE / Morgenstern-Price
Surfaces with a factor of safety below 1.500

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 (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid	Black	Geosynthetic	Active (Method A)		No	Friction Angle & Adhesion	5	21	Linear			Parallel to Reinforcement	Slope Face	100	20	Constant	20	
Palisade Wall	Green	Pile/Micro Pile	Active (Method A)	1.5					Shear	66	Parallel to surface							

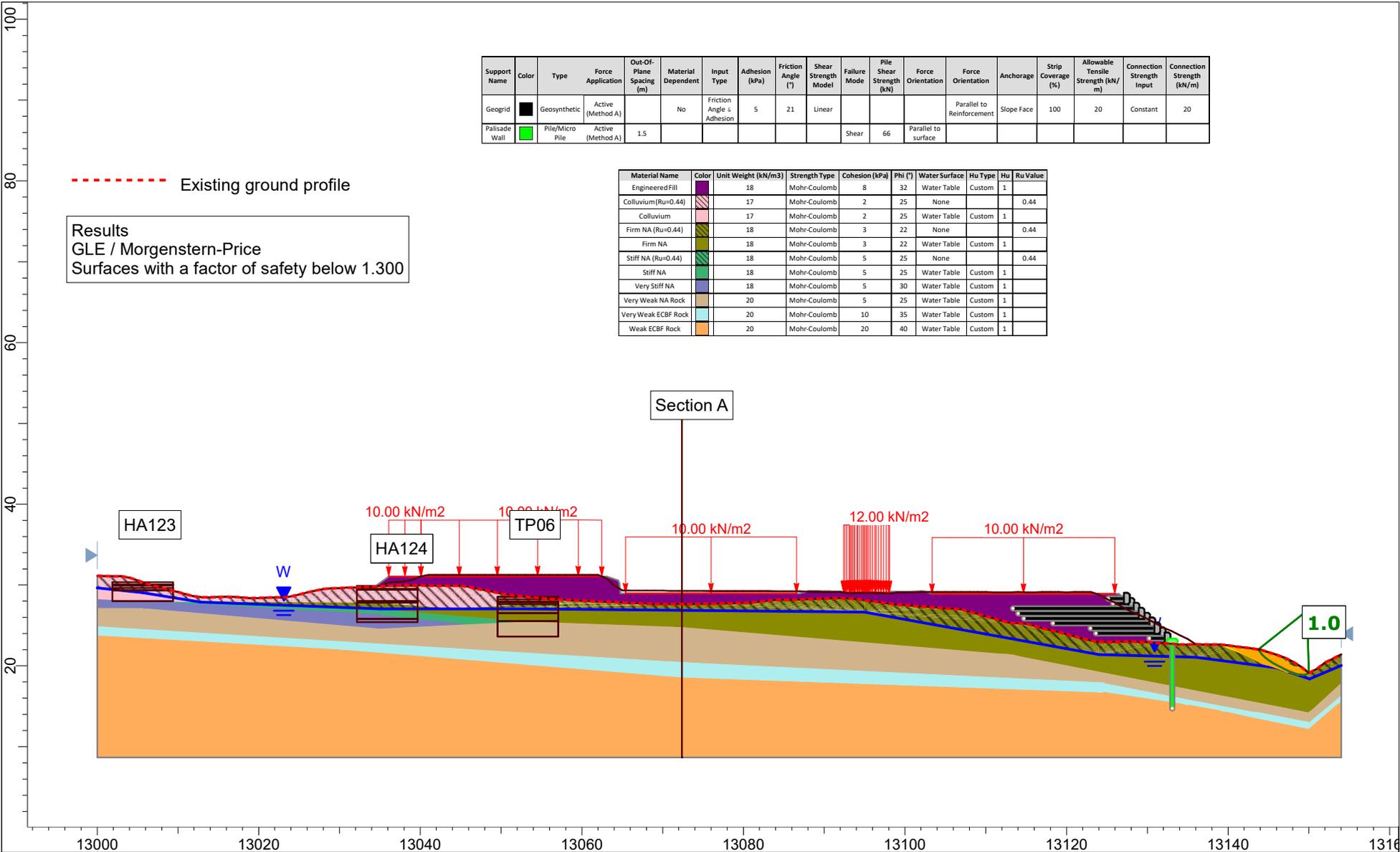
Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	None			0
Colluvium	Pink	17	Mohr-Coulomb	2	25	Water Table	Custom	1	
Firm NA	Green	18	Mohr-Coulomb	3	22	Water Table	Custom	1	
Stiff NA	Light Green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

Section A

1.5



Project	240065 - Russell Road, Waunui		
Group	Section M - Proposed GL & Remedials	Scenario	Normal (Measured GW)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section M.sldm



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 (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid	Black	Geosynthetic	Active (Method A)		No	Friction Angle & Adhesion	5	21	Linear			Parallel to Reinforcement	Slope Face	100	20	Constant	20	
Palisade Wall	Green	Pile/Micro Pile	Active (Method A)	1.5					Shear	66	Parallel to surface							

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

Project 240065 - Russell Road, Waunui

Group Section M - Proposed GL & Remedials

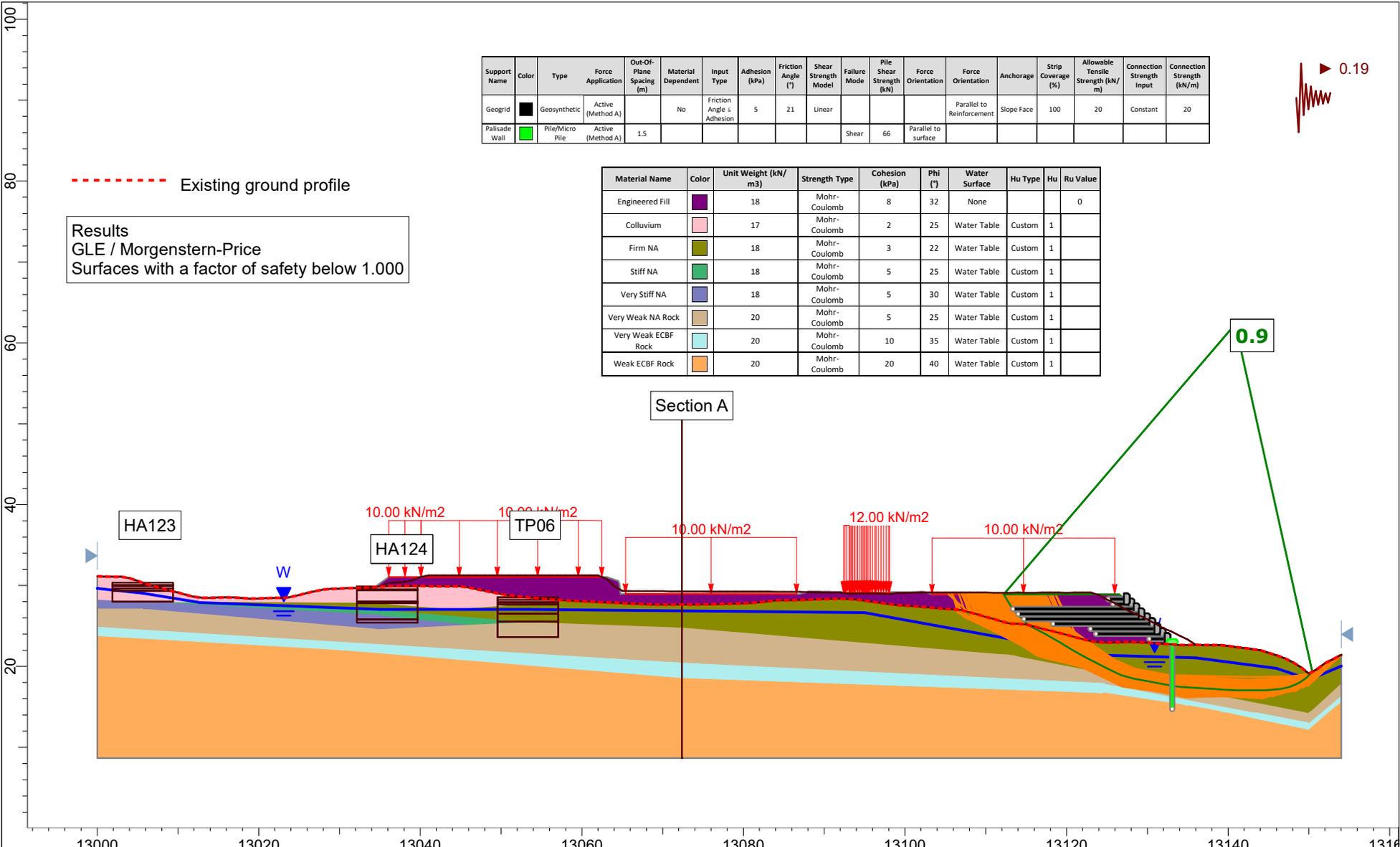
Drawn By LKB

Date 19/12/2025

Scenario Extreme (Worst Credible GW)

Company Riley Consultants Ltd

File Name Section M.sldm



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 (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid	Black	Geosynthetic	Active (Method A)		No	Friction Angle & Adhesion	5	21	Linear			Parallel to Reinforcement	Slope Face	100	20	Constant	20	
Palisade Wall	Green	Pile/Micro Pile	Active (Method A)	1.5					Shear	66	Parallel to surface							

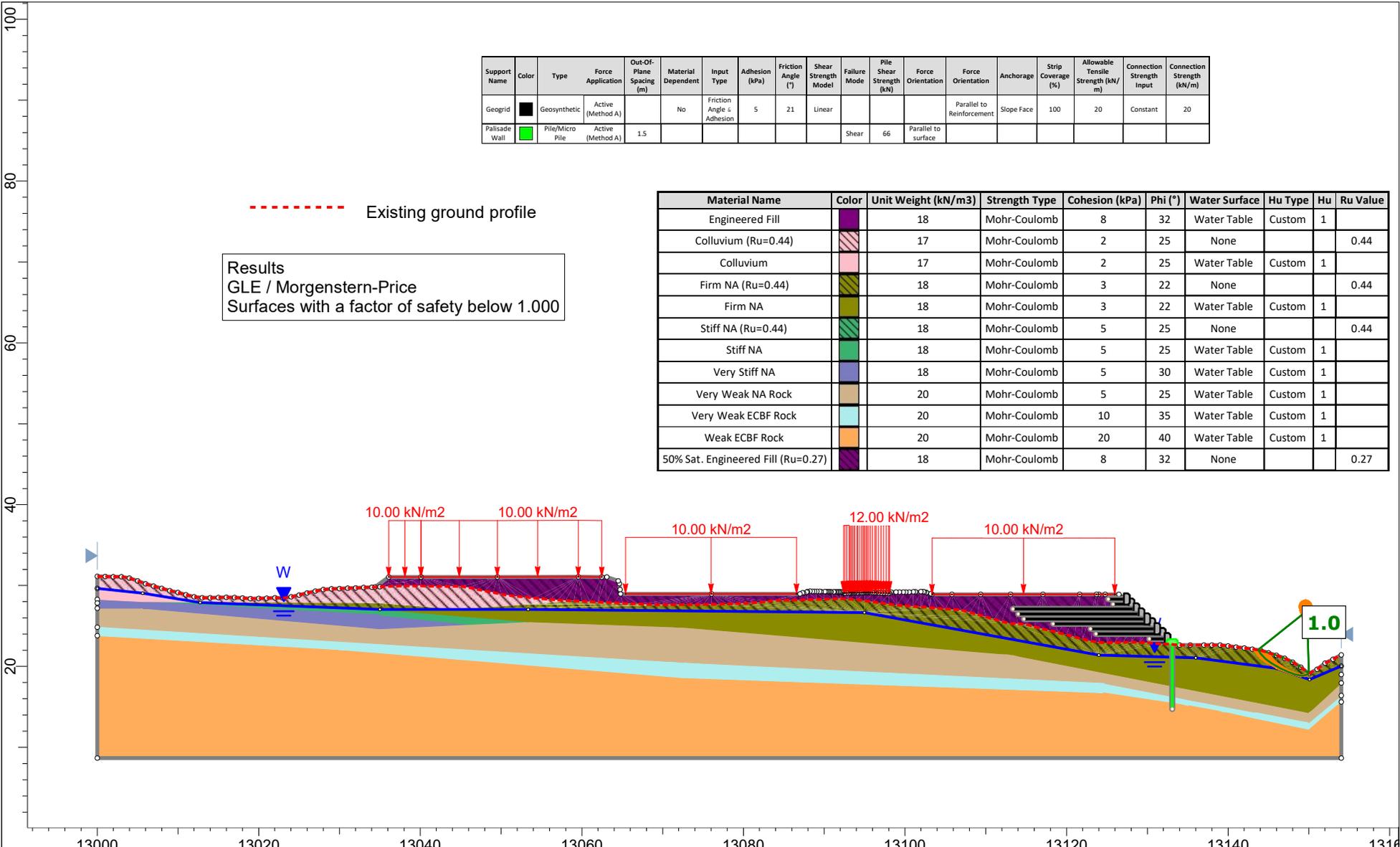


Results
GLE / Morgenstern-Price
Surfaces with a factor of safety below 1.000

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



Project	240065 - Russell Road, Waunui		
Group	Section M - Proposed GL & Remedials	Scenario	Seismic (0.19g)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section M.sldm



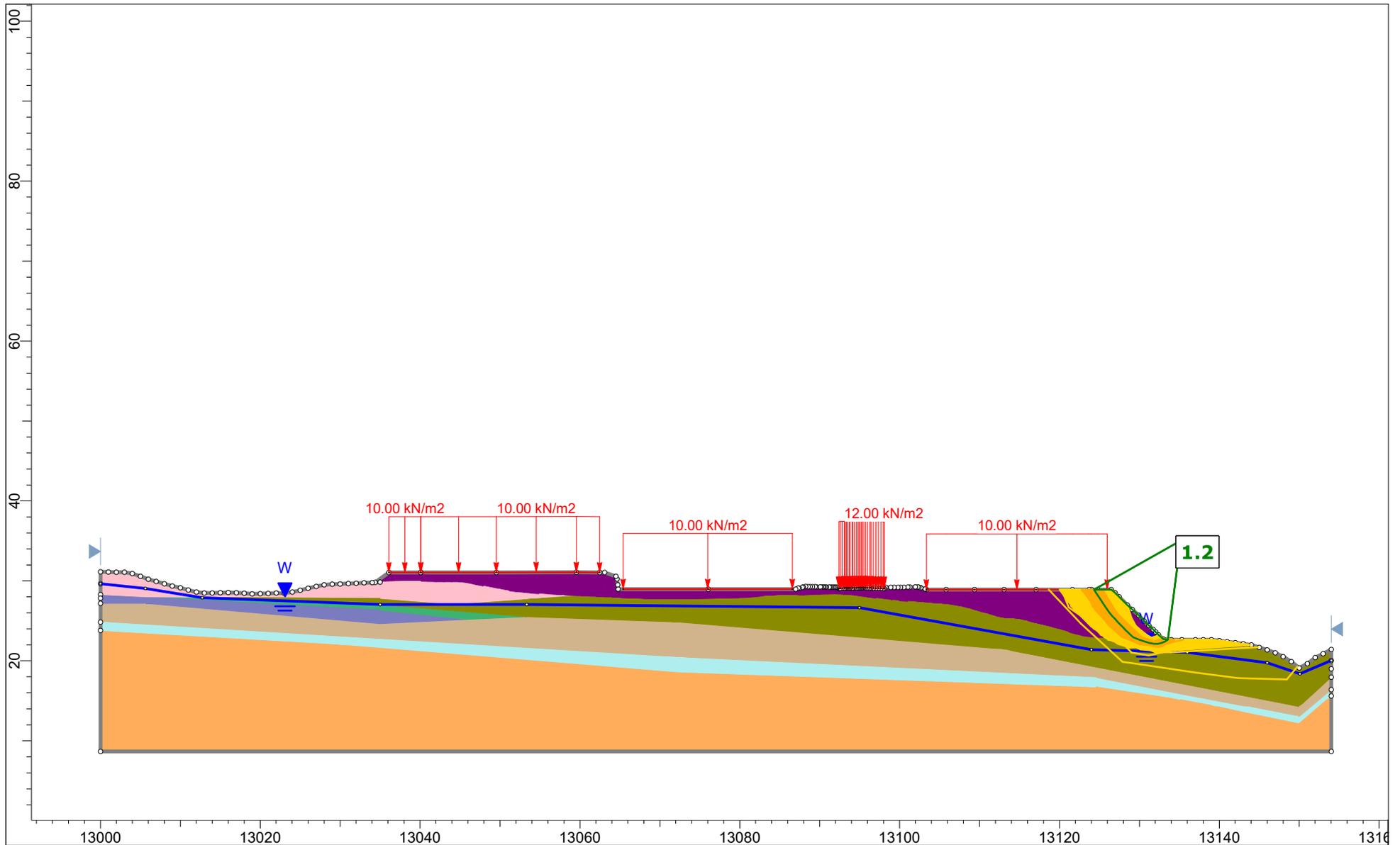
Results
GLE / Morgenstern-Price
Surfaces with a factor of safety below 1.000

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 (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid	Black	Geosynthetic	Active (Method A)		No	Friction Angle & Adhesion	5	21	Linear			Parallel to Reinforcement	Slope Face	100	20	Constant	20	
Palisade Wall	Green	Pile/Micro Pile	Active (Method A)	1.5					Shear	66	Parallel to surface							

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	Water Table	Custom	1	
Colluvium (Ru=0.44)	Pink	17	Mohr-Coulomb	2	25	None	Custom	1	0.44
Colluvium	Light Pink	17	Mohr-Coulomb	2	25	Water Table	Custom	1	
Firm NA (Ru=0.44)	Green	18	Mohr-Coulomb	3	22	None	Custom	1	0.44
Firm NA	Light Green	18	Mohr-Coulomb	3	22	Water Table	Custom	1	
Stiff NA (Ru=0.44)	Dark Green	18	Mohr-Coulomb	5	25	None	Custom	1	0.44
Stiff NA	Light Green	18	Mohr-Coulomb	5	25	Water Table	Custom	1	
Very Stiff NA	Blue	18	Mohr-Coulomb	5	30	Water Table	Custom	1	
Very Weak NA Rock	Brown	20	Mohr-Coulomb	5	25	Water Table	Custom	1	
Very Weak ECBF Rock	Light Blue	20	Mohr-Coulomb	10	35	Water Table	Custom	1	
Weak ECBF Rock	Orange	20	Mohr-Coulomb	20	40	Water Table	Custom	1	
50% Sat. Engineered Fill (Ru=0.27)	Purple	18	Mohr-Coulomb	8	32	None	Custom	1	0.27

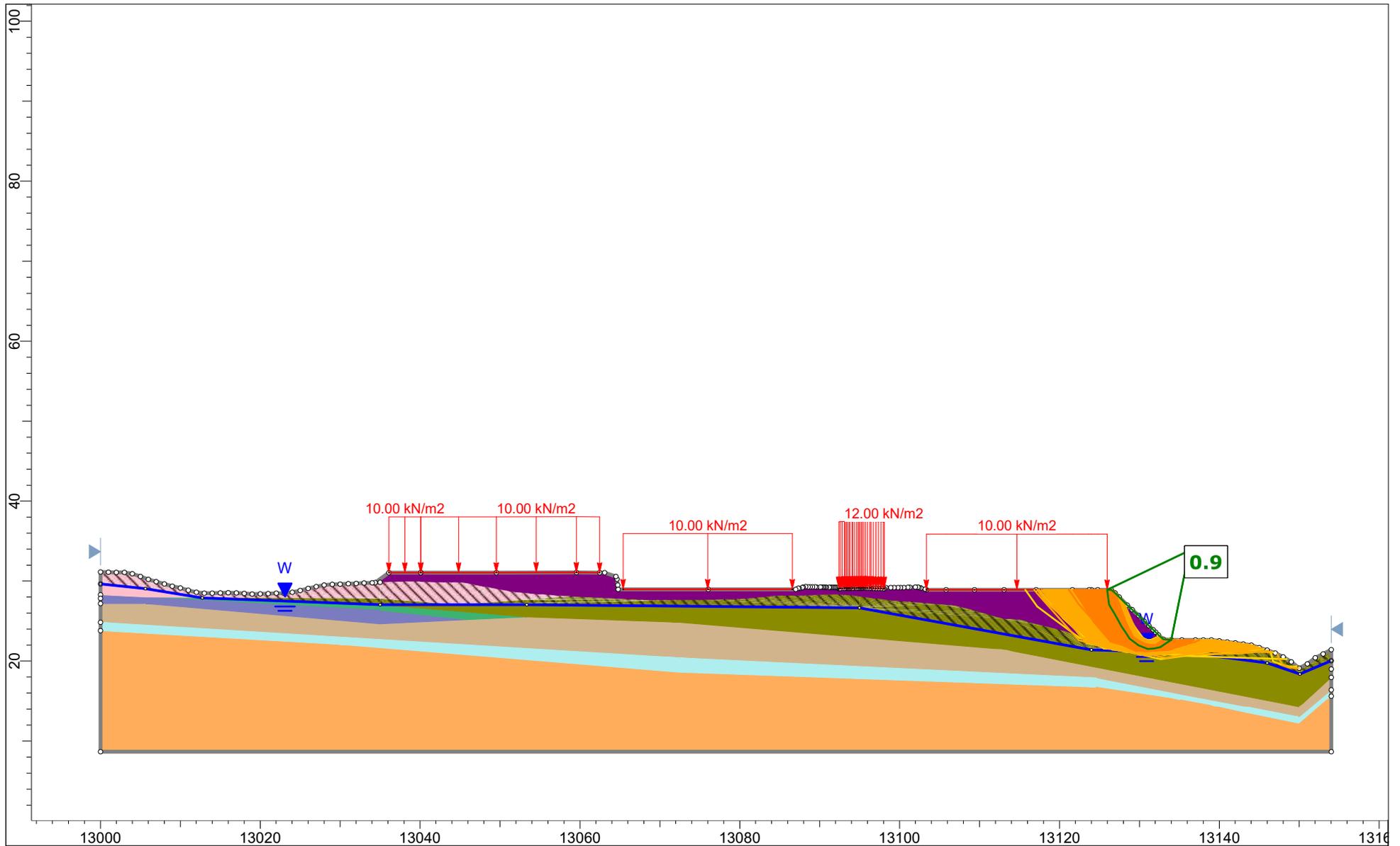


Project	240065 - Russell Road, Waunui		
Group	Section M - Proposed GL & Remedials	Scenario	Extreme (50% Fill Saturation)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section M.sldm



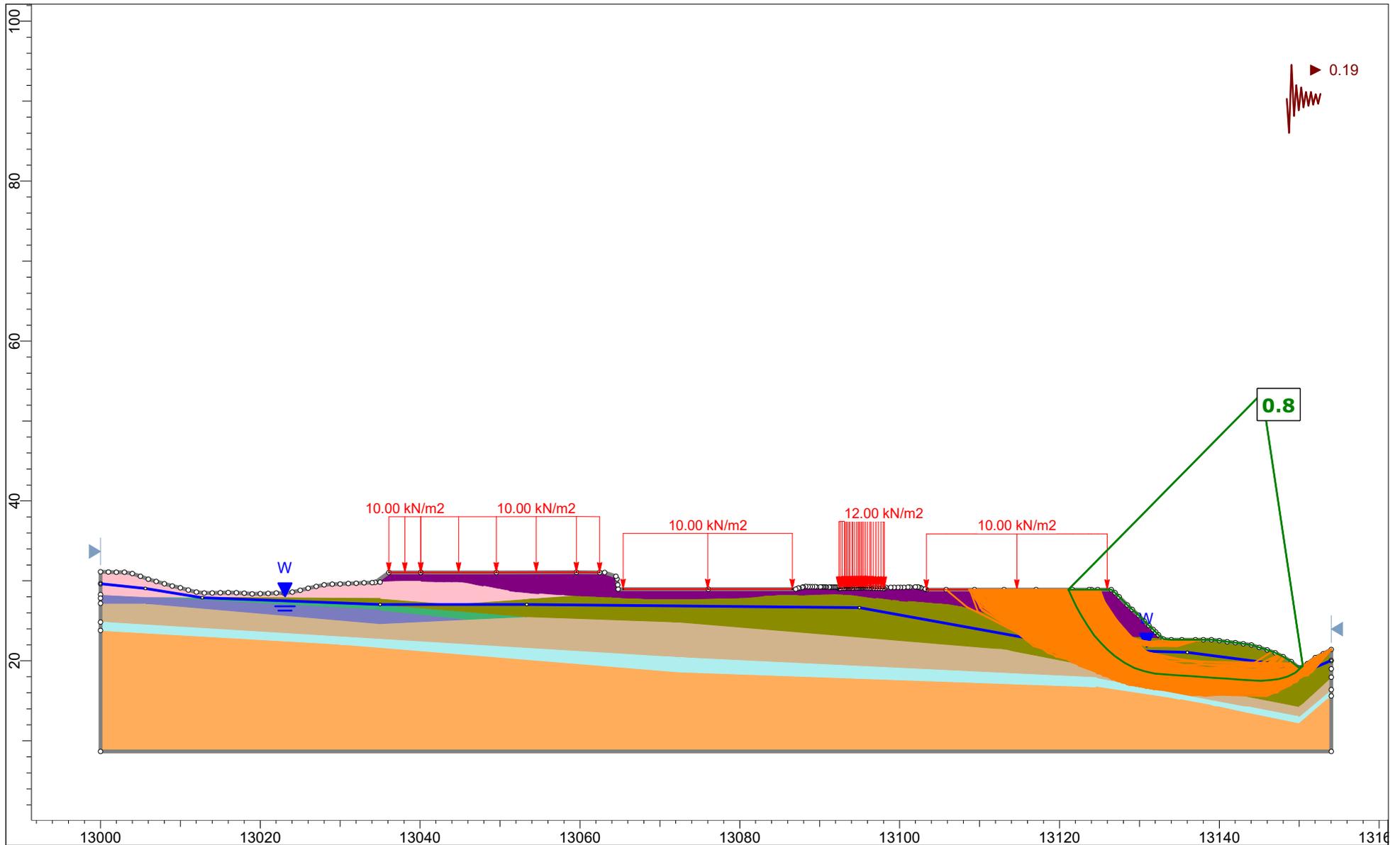
SLIDEINTERPRET 9.038

<i>Project</i>	240065 - Russell Road, Waunui		
<i>Group</i>	Section M - Proposed GL	<i>Scenario</i>	Normal (Measured GW)
<i>Drawn By</i>	LKB	<i>Company</i>	Riley Consultants Ltd
<i>Date</i>	19/12/2025	<i>File Name</i>	Section M.sldm



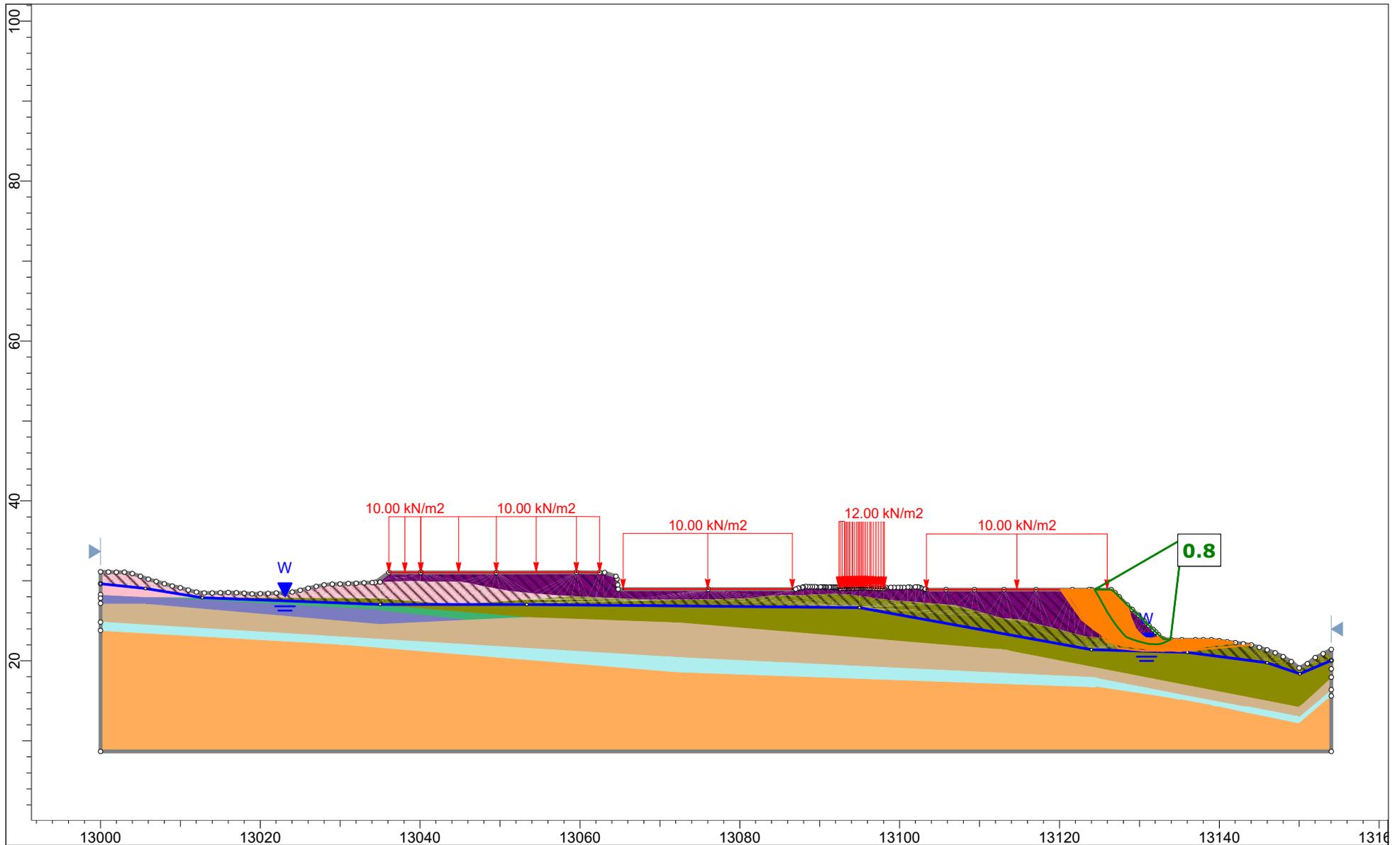
SLIDEINTERPRET 9.038

<i>Project</i>	240065 - Russell Road, Waunui		
<i>Group</i>	Section M - Proposed GL	<i>Scenario</i>	Extreme (Worst Credible GW)
<i>Drawn By</i>	LKB	<i>Company</i>	Riley Consultants Ltd
<i>Date</i>	19/12/2025	<i>File Name</i>	Section M.sldm



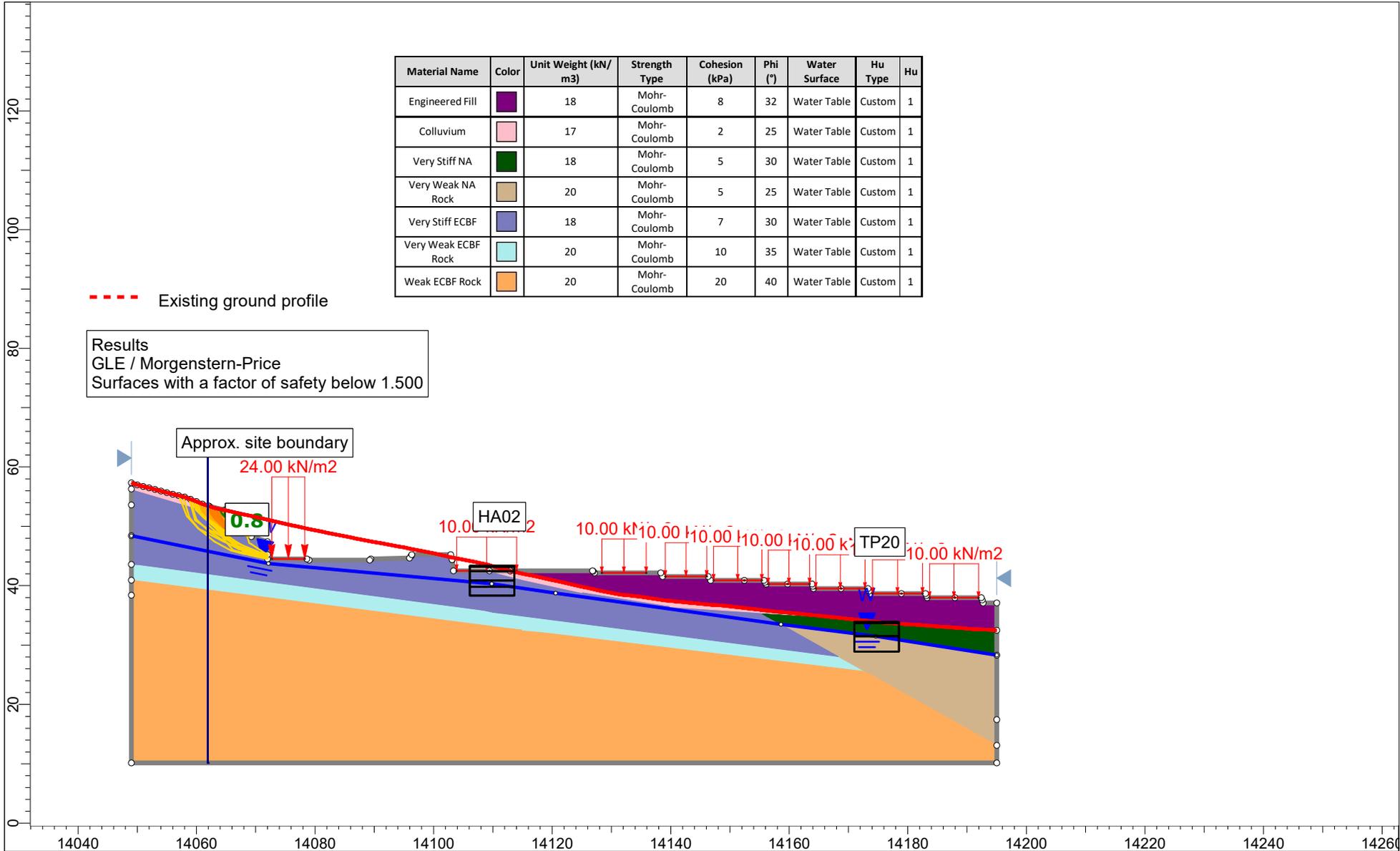
SLIDEINTERPRET 9.038

Project	240065 - Russell Road, Waunui		
Group	Section M - Proposed GL	Scenario	Seismic (0.19g)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section M.sldm



SLIDEINTERPRET 9.038

<i>Project</i>	240065 - Russell Road, Waunui		
<i>Group</i>	Section M - Proposed GL	<i>Scenario</i>	Extreme (50% Fill Saturation)
<i>Drawn By</i>	LKB	<i>Company</i>	Riley Consultants Ltd
<i>Date</i>	19/12/2025	<i>File Name</i>	Section M.sldm

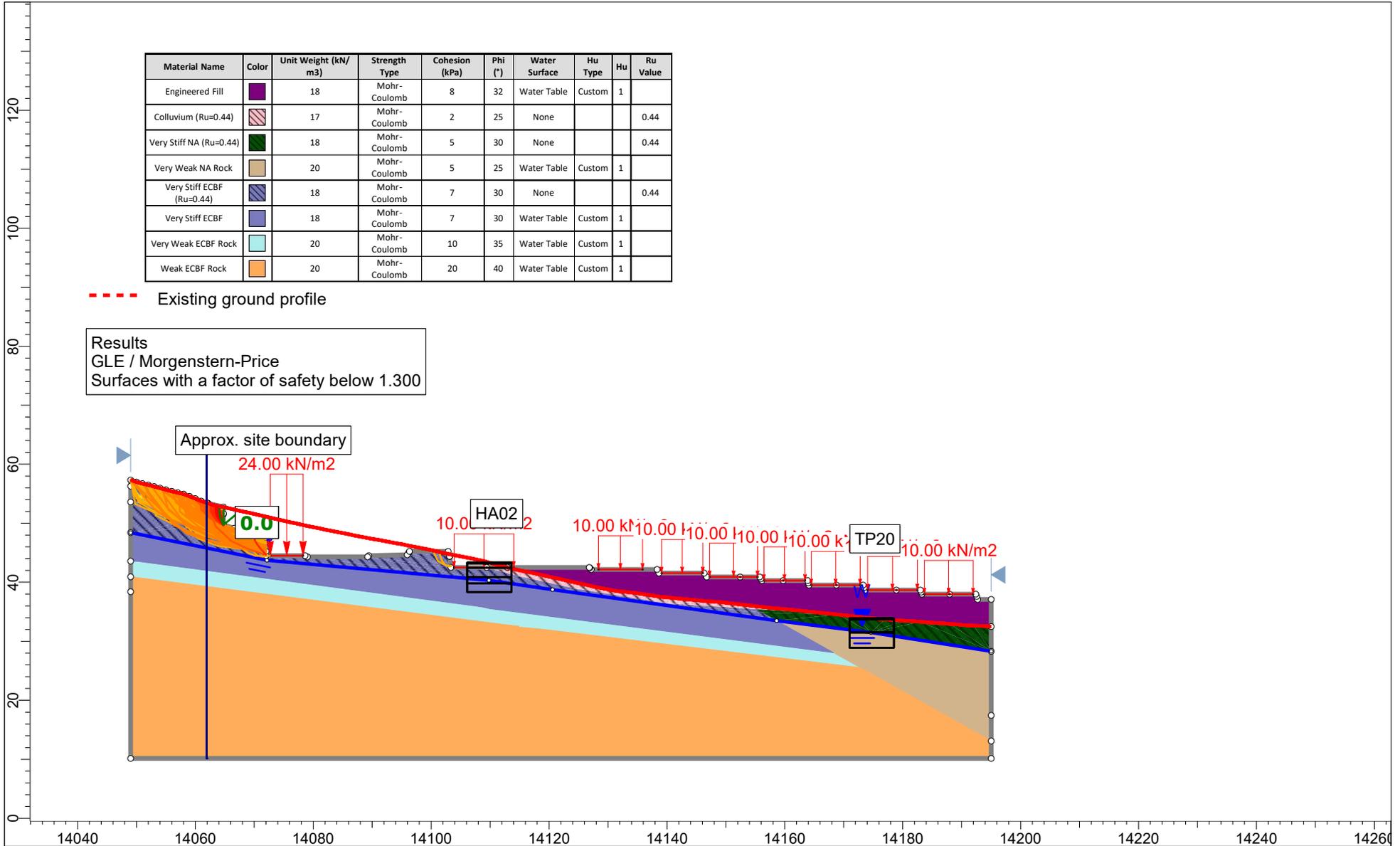


Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Engineered Fill	Dark Purple	18	Mohr-Coulomb	8	32	Water Table	Custom	1
Colluvium	Pink	17	Mohr-Coulomb	2	25	Water Table	Custom	1
Very Stiff NA	Dark Green	18	Mohr-Coulomb	5	30	Water Table	Custom	1
Very Weak NA Rock	Tan	20	Mohr-Coulomb	5	25	Water Table	Custom	1
Very Stiff ECBF	Blue	18	Mohr-Coulomb	7	30	Water Table	Custom	1
Very Weak ECBF Rock	Light Blue	20	Mohr-Coulomb	10	35	Water Table	Custom	1
Weak ECBF Rock	Orange	20	Mohr-Coulomb	20	40	Water Table	Custom	1

Results
GLE / Morgenstern-Price
Surfaces with a factor of safety below 1.500



Project		240065 - Russell Road, Waunui	
Group	Section N - Proposed G	Scenario	Normal (Measured GW)
Drawn By	AB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section N (AB).slmd

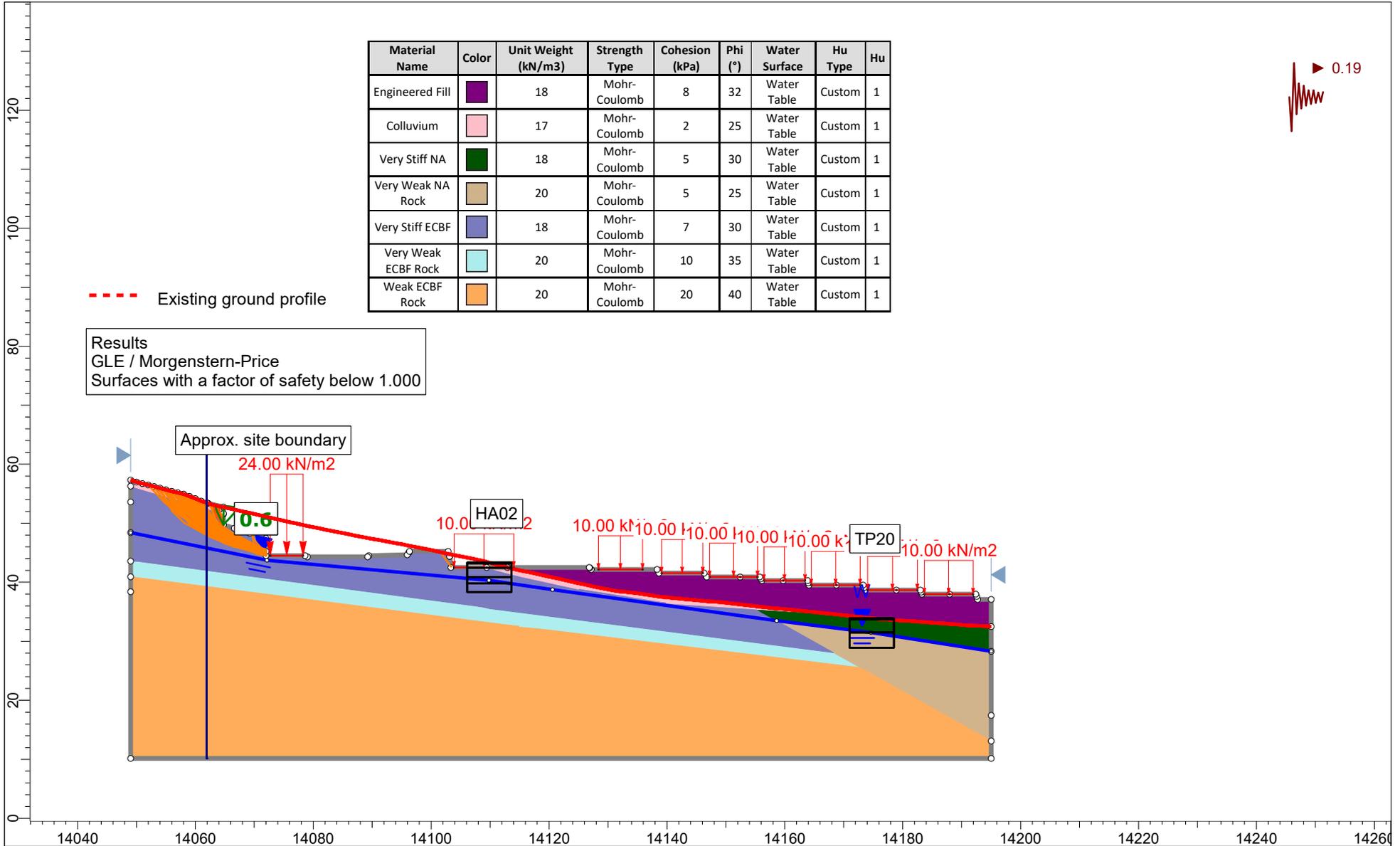


Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Engineered Fill	[Purple]	18	Mohr-Coulomb	8	32	Water Table	Custom	1	
Colluvium (Ru=0.44)	[Hatched]	17	Mohr-Coulomb	2	25	None			0.44
Very Stiff NA (Ru=0.44)	[Green]	18	Mohr-Coulomb	5	30	None			0.44
Very Weak NA Rock	[Brown]	20	Mohr-Coulomb	5	25	Water Table	Custom	1	
Very Stiff ECBF (Ru=0.44)	[Blue Hatched]	18	Mohr-Coulomb	7	30	None			0.44
Very Stiff ECBF	[Blue]	18	Mohr-Coulomb	7	30	Water Table	Custom	1	
Very Weak ECBF Rock	[Light Blue]	20	Mohr-Coulomb	10	35	Water Table	Custom	1	
Weak ECBF Rock	[Orange]	20	Mohr-Coulomb	20	40	Water Table	Custom	1	

--- Existing ground profile

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

	Project		240065 - Russell Road, Waunui	
	Group	Section N - Proposed G	Scenario	Extreme (Worst Credible GW)
	Drawn By	AB	Company	Riley Consultants Ltd
	Date	19/12/2025	File Name	Section N (AB).slmd



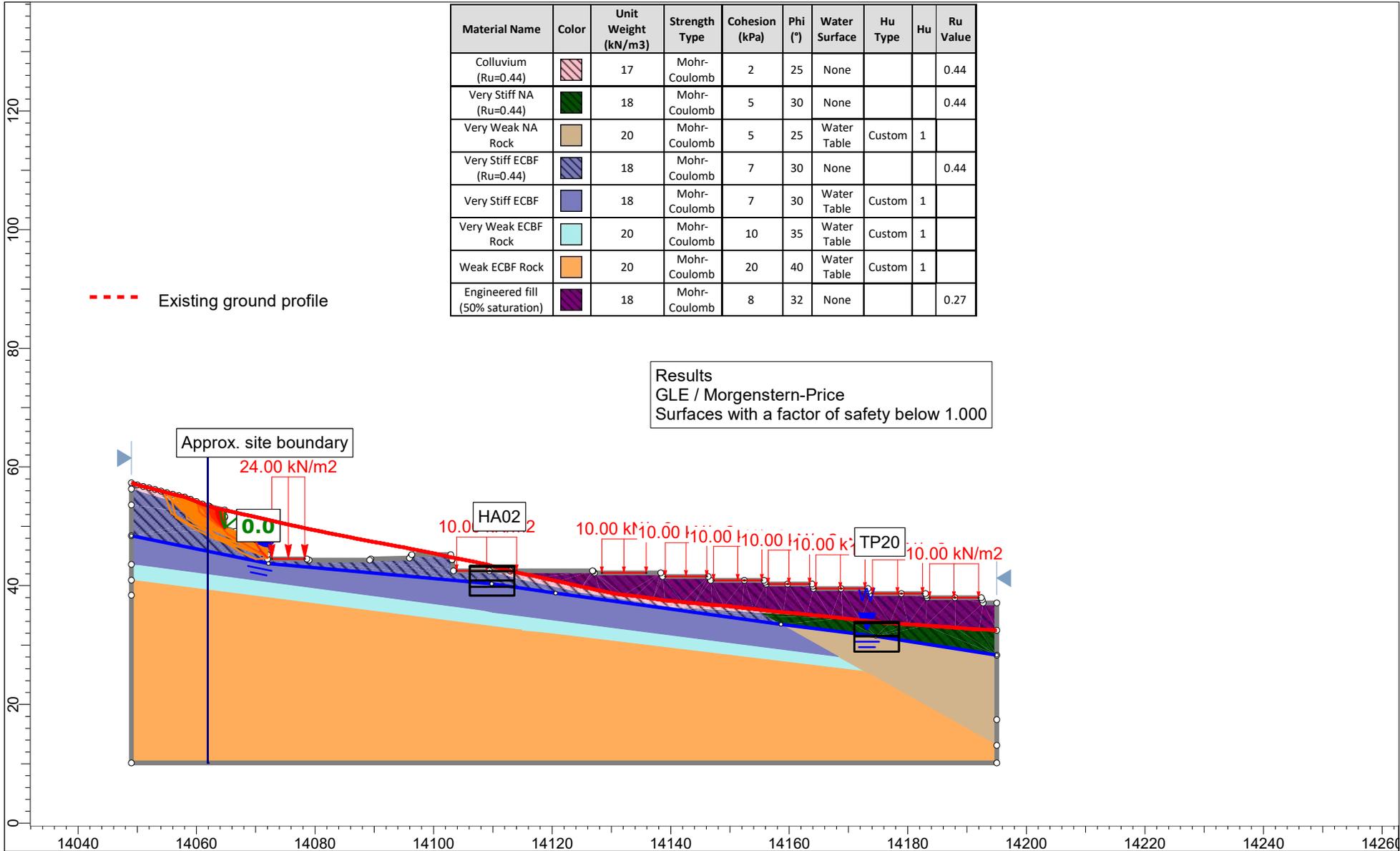
Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	Water Table	Custom	1
Colluvium	Pink	17	Mohr-Coulomb	2	25	Water Table	Custom	1
Very Stiff NA	Green	18	Mohr-Coulomb	5	30	Water Table	Custom	1
Very Weak NA Rock	Brown	20	Mohr-Coulomb	5	25	Water Table	Custom	1
Very Stiff ECBF	Blue	18	Mohr-Coulomb	7	30	Water Table	Custom	1
Very Weak ECBF Rock	Cyan	20	Mohr-Coulomb	10	35	Water Table	Custom	1
Weak ECBF Rock	Orange	20	Mohr-Coulomb	20	40	Water Table	Custom	1

▶ 0.19

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



Project		240065 - Russell Road, Waunui	
Group	Section N - Proposed G	Scenario	Seismic (0.19g)
Drawn By	AB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section N (AB).slmd

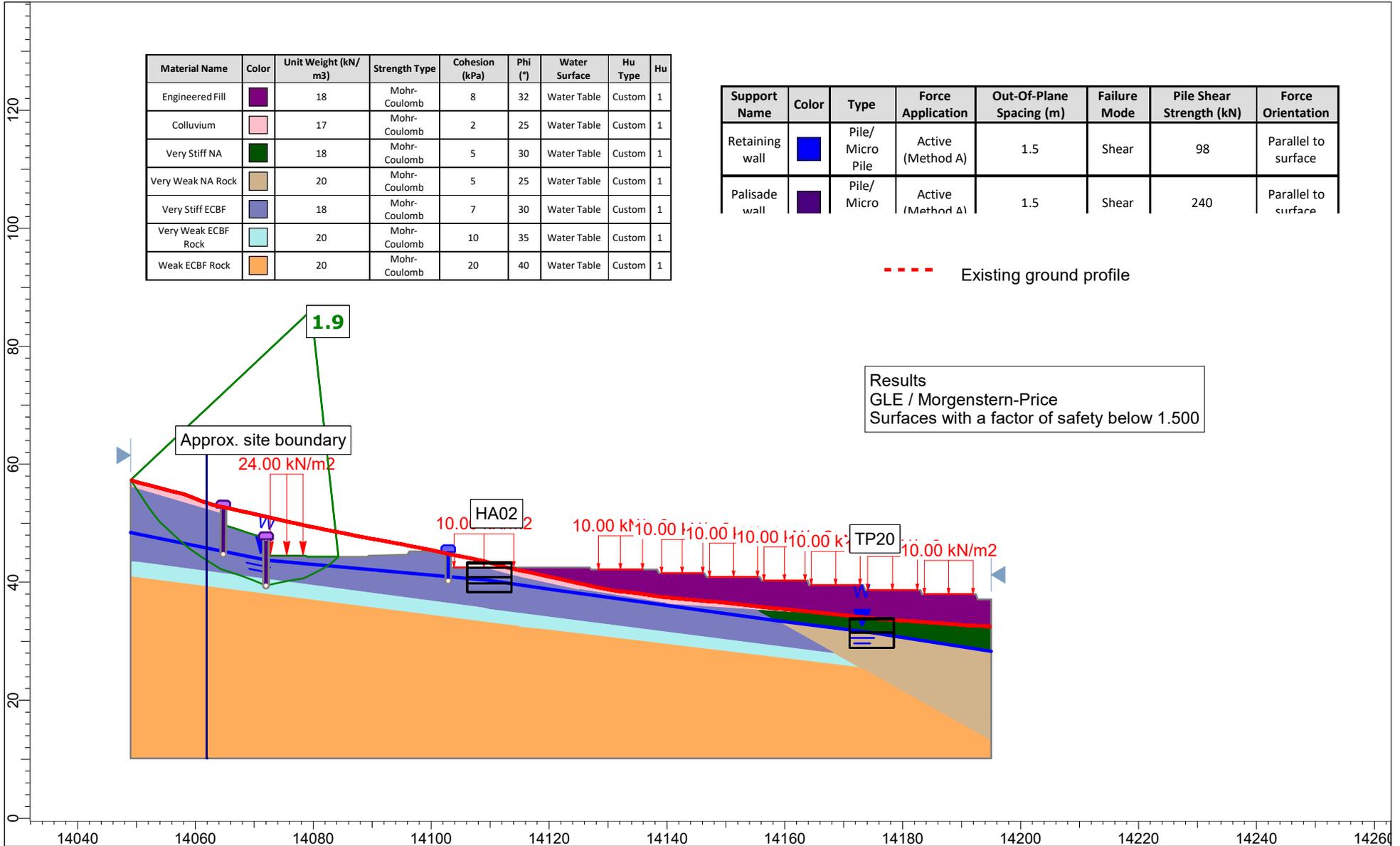


Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Colluvium (Ru=0.44)		17	Mohr-Coulomb	2	25	None			0.44
Very Stiff NA (Ru=0.44)		18	Mohr-Coulomb	5	30	None			0.44
Very Weak NA Rock		20	Mohr-Coulomb	5	25	Water Table	Custom	1	
Very Stiff ECBF (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	
Engineered fill (50% saturation)		18	Mohr-Coulomb	8	32	None			0.27

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



Project		240065 - Russell Road, Waunui	
Group	Section N - Proposed G	Scenario	Extreme (50% saturation fill)
Drawn By	AB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section N (AB).slmd



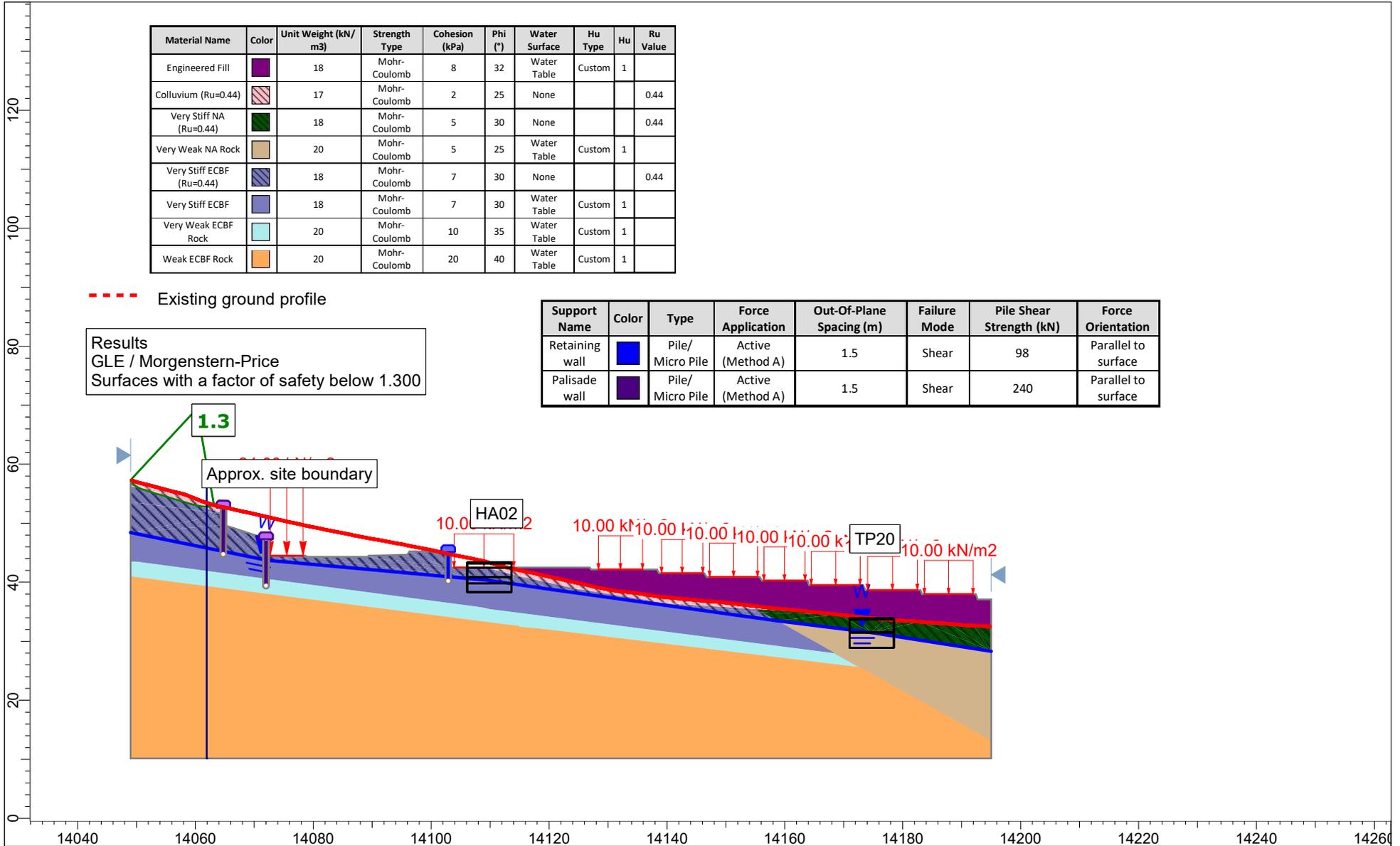
Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Engineered Fill	Dark Purple	18	Mohr-Coulomb	8	32	Water Table	Custom	1
Colluvium	Pink	17	Mohr-Coulomb	2	25	Water Table	Custom	1
Very Stiff NA	Dark Green	18	Mohr-Coulomb	5	30	Water Table	Custom	1
Very Weak NA Rock	Tan	20	Mohr-Coulomb	5	25	Water Table	Custom	1
Very Stiff ECBF	Blue-Gray	18	Mohr-Coulomb	7	30	Water Table	Custom	1
Very Weak ECBF Rock	Light Blue	20	Mohr-Coulomb	10	35	Water Table	Custom	1
Weak ECBF Rock	Orange	20	Mohr-Coulomb	20	40	Water Table	Custom	1

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (m)	Failure Mode	Pile Shear Strength (kN)	Force Orientation
Retaining wall	Blue	Pile/Micro Pile	Active (Method A)	1.5	Shear	98	Parallel to surface
Palisade wall	Dark Purple	Pile/Micro	Active (Method Δ)	1.5	Shear	240	Parallel to surface

--- Existing ground profile

Results
GLE / Morgenstern-Price
Surfaces with a factor of safety below 1.500

	Project		240065 - Russell Road, Waunui	
	Group		Section N - Proposed GL & Remedials	Scenario
	Drawn By		AB	Company
	Date		19/12/2025	File Name
			Normal (Measured GW)	Riley Consultants Ltd
			Section N (AB).slmd	



Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Engineered Fill	[Purple]	18	Mohr-Coulomb	8	32	Water Table	Custom	1	
Colluvium (Ru=0.44)	[Hatched]	17	Mohr-Coulomb	2	25	None			0.44
Very Stiff NA (Ru=0.44)	[Green]	18	Mohr-Coulomb	5	30	None			0.44
Very Weak NA Rock	[Tan]	20	Mohr-Coulomb	5	25	Water Table	Custom	1	
Very Stiff ECBF (Ru=0.44)	[Blue-Gray]	18	Mohr-Coulomb	7	30	None			0.44
Very Stiff ECBF	[Blue]	18	Mohr-Coulomb	7	30	Water Table	Custom	1	
Very Weak ECBF Rock	[Light Blue]	20	Mohr-Coulomb	10	35	Water Table	Custom	1	
Weak ECBF Rock	[Orange]	20	Mohr-Coulomb	20	40	Water Table	Custom	1	

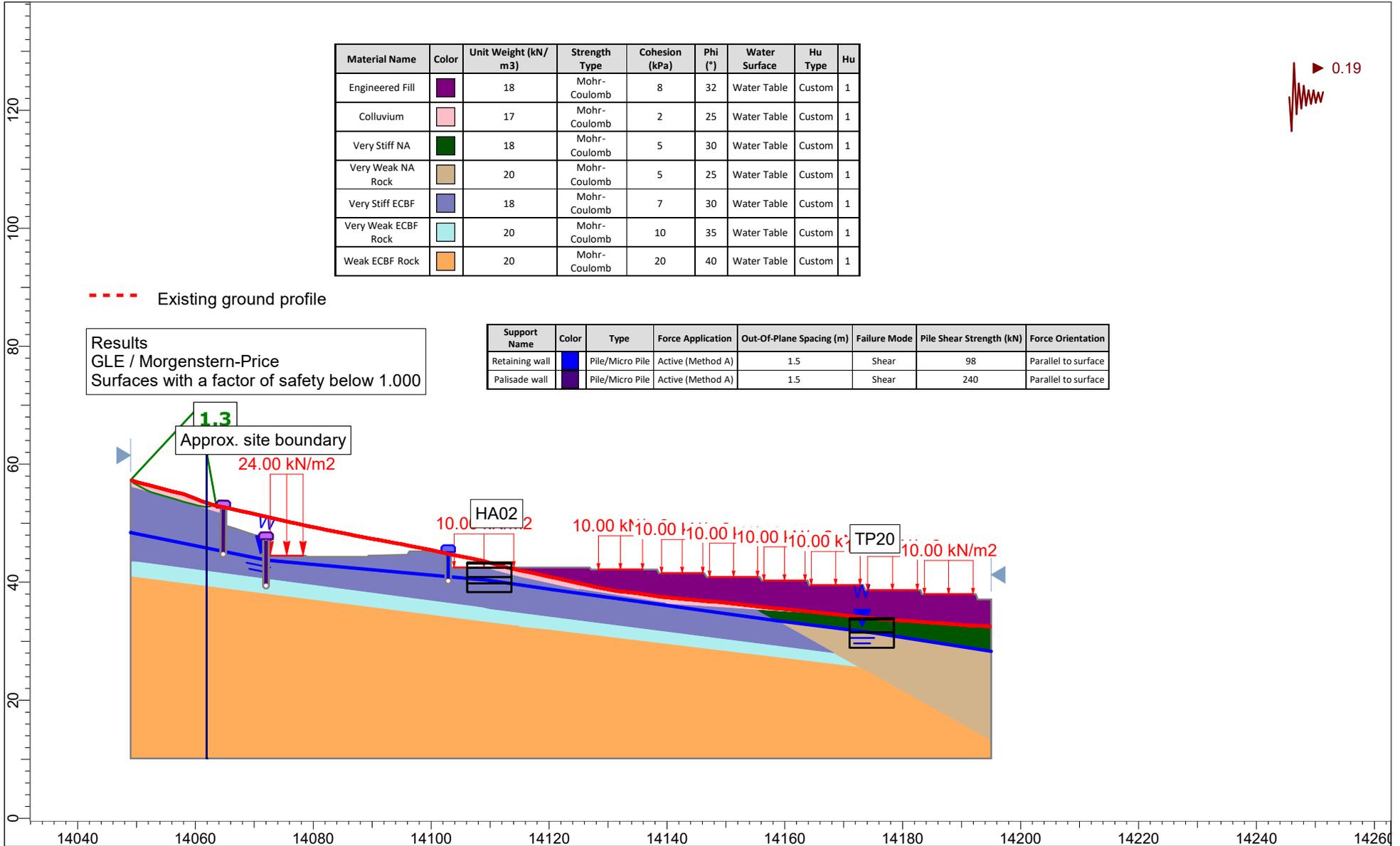
--- Existing ground profile

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

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (m)	Failure Mode	Pile Shear Strength (kN)	Force Orientation
Retaining wall	[Blue]	Pile/Micro Pile	Active (Method A)	1.5	Shear	98	Parallel to surface
Palisade wall	[Purple]	Pile/Micro Pile	Active (Method A)	1.5	Shear	240	Parallel to surface



Project		240065 - Russell Road, Waunui	
Group	Section N - Proposed GL & Remedials	Scenario	Extreme (Worst Credible GW)
Drawn By	AB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section N (AB).slmd



Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	Water Table	Custom	1
Colluvium	Pink	17	Mohr-Coulomb	2	25	Water Table	Custom	1
Very Stiff NA	Green	18	Mohr-Coulomb	5	30	Water Table	Custom	1
Very Weak NA Rock	Brown	20	Mohr-Coulomb	5	25	Water Table	Custom	1
Very Stiff ECBF	Blue	18	Mohr-Coulomb	7	30	Water Table	Custom	1
Very Weak ECBF Rock	Cyan	20	Mohr-Coulomb	10	35	Water Table	Custom	1
Weak ECBF Rock	Orange	20	Mohr-Coulomb	20	40	Water Table	Custom	1



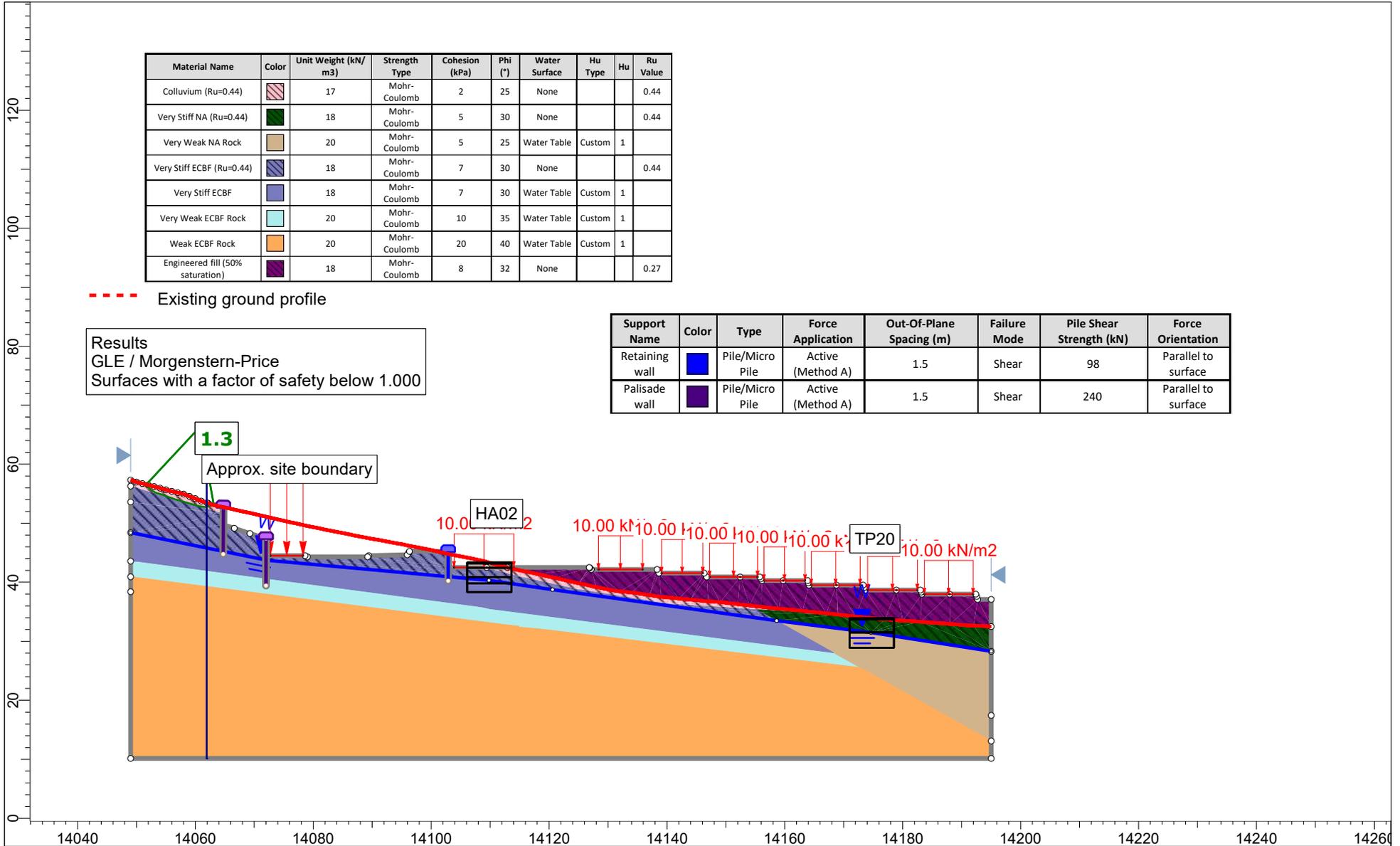
--- Existing ground profile

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

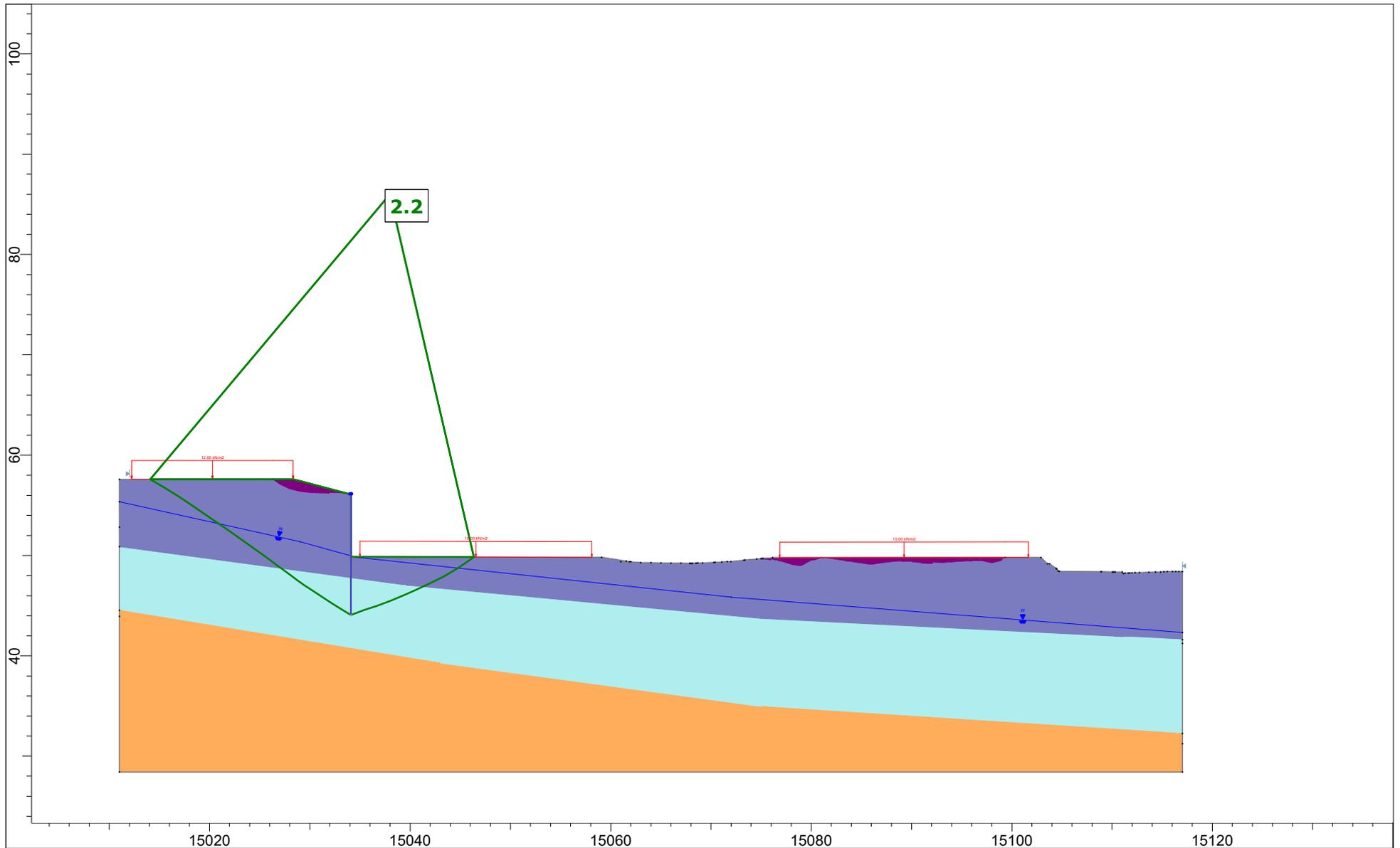
Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (m)	Failure Mode	Pile Shear Strength (kN)	Force Orientation
Retaining wall	Blue	Pile/Micro Pile	Active (Method A)	1.5	Shear	98	Parallel to surface
Palisade wall	Purple	Pile/Micro Pile	Active (Method A)	1.5	Shear	240	Parallel to surface



Project	240065 - Russell Road, Waunui		
Group	Section N - Proposed GL & Remedials	Scenario	Seismic (0.19g)
Drawn By	AB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section N (AB).slmd

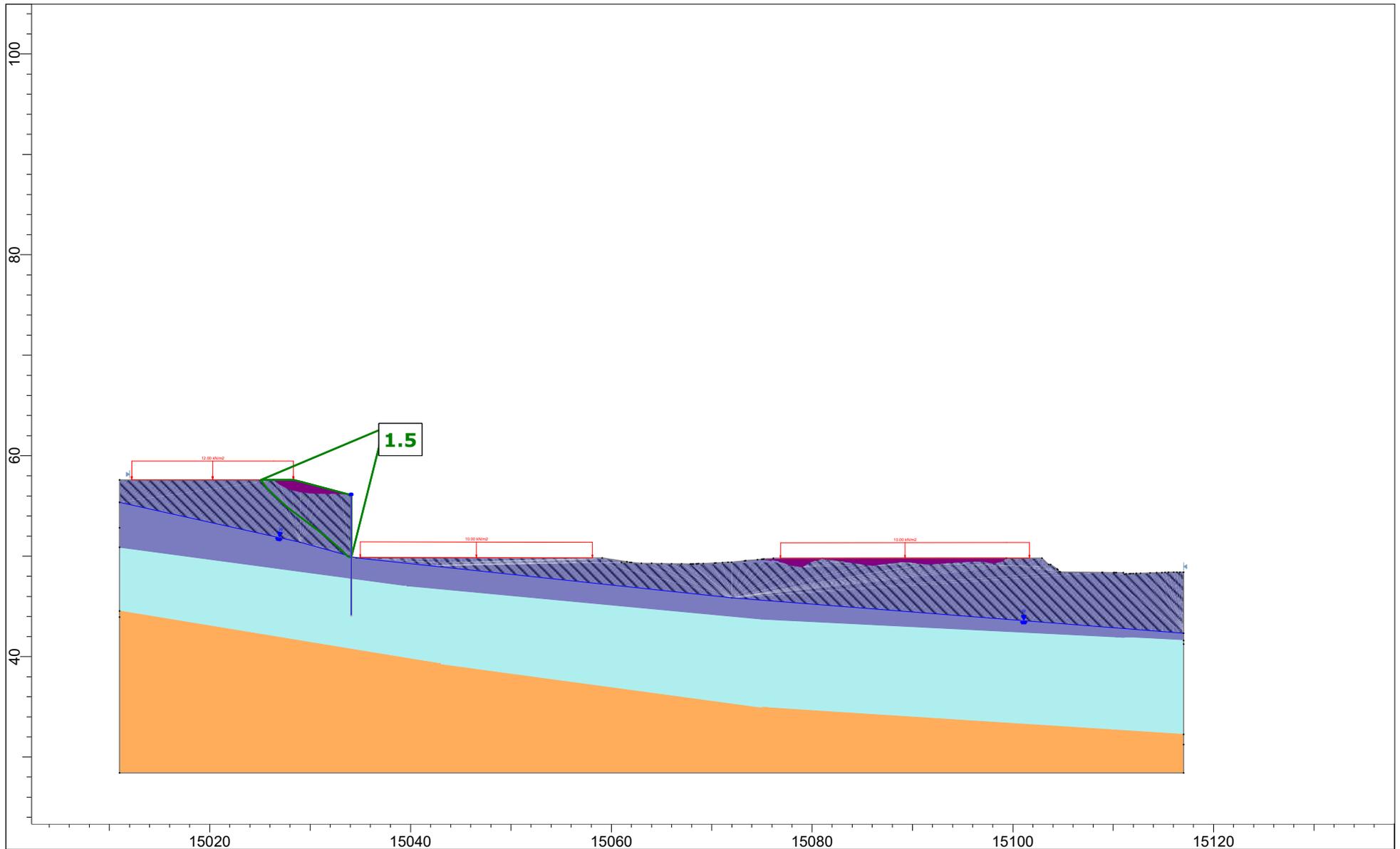


	Project		240065 - Russell Road, Waunui	
	Group		Section N - Proposed GL & Remedials	Scenario
	Drawn By		AB	Company
	Date		19/12/2025	File Name
			Extreme (50% saturation fill)	Riley Consultants Ltd
				Section N (AB).slmd



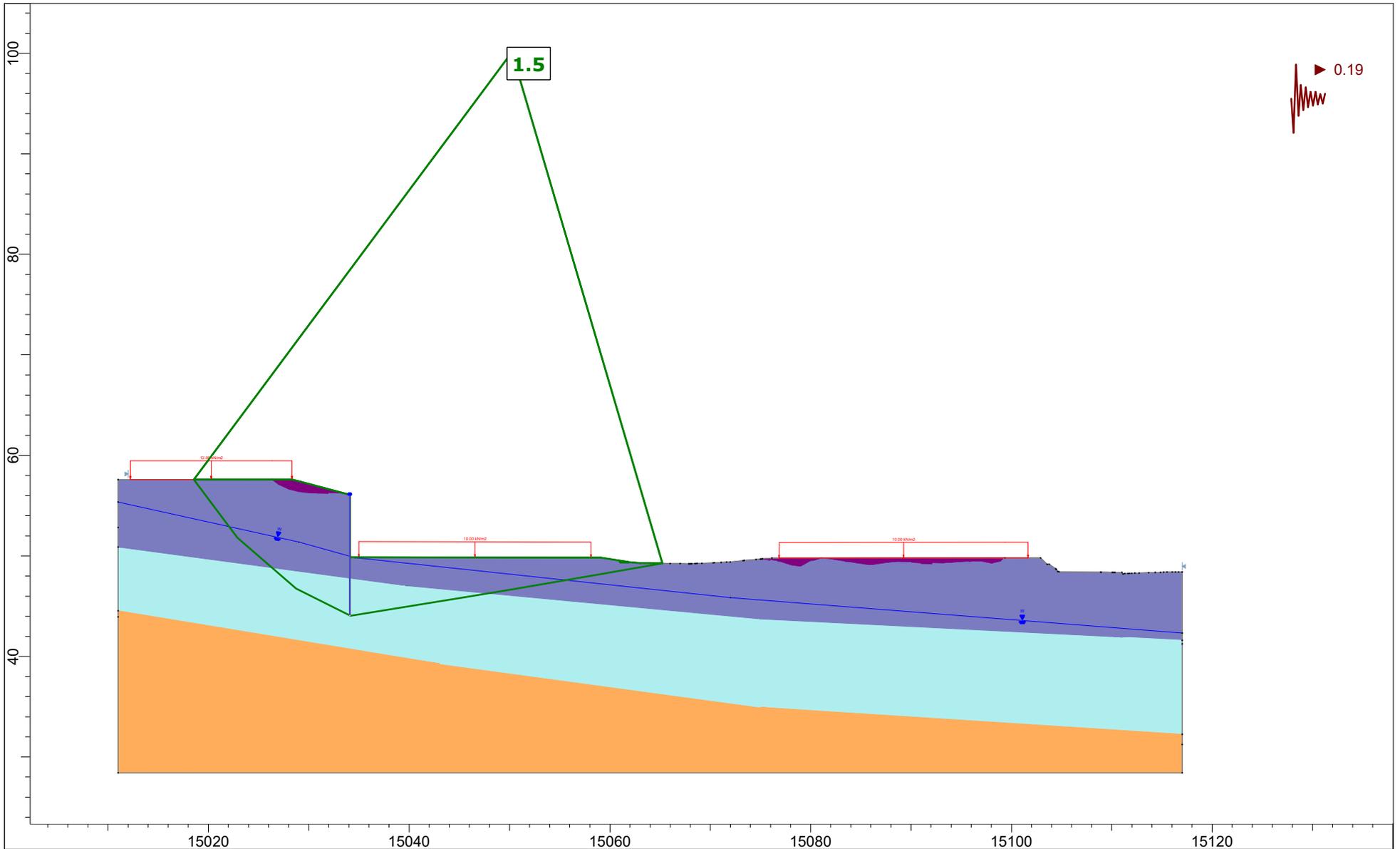
SLIDEINTERPRET 9.038

<i>Project</i>		240065 - Russell Road, Waunui	
<i>Group</i>	Section O - Proposed GL & remedials	<i>Scenario</i>	Normal (Measured GW)
<i>Drawn By</i>	LKB	<i>Company</i>	Riley Consultants Ltd
<i>Date</i>	19/12/2025	<i>File Name</i>	Section O.sldm



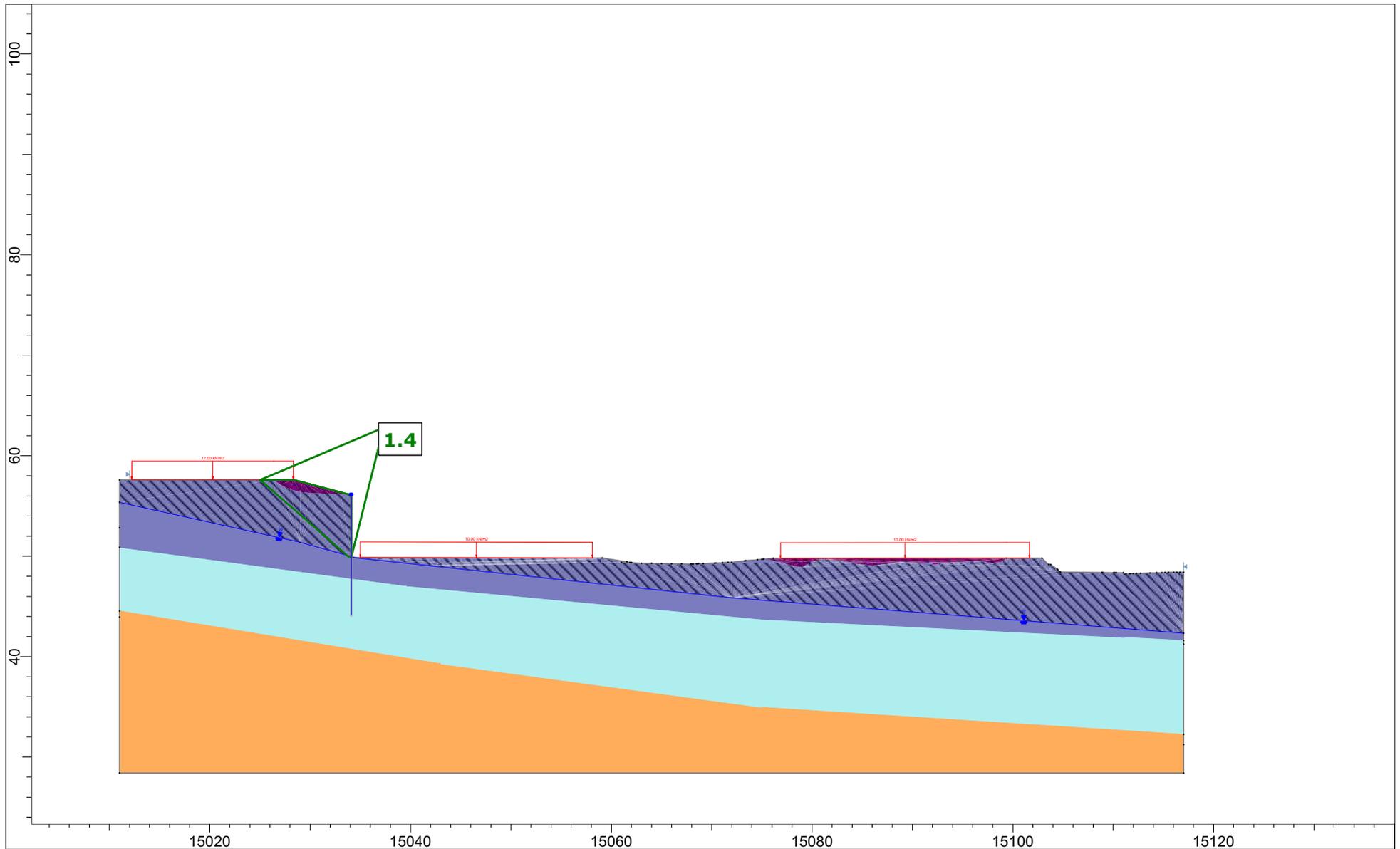
SLIDEINTERPRET 9.038

<i>Project</i>	240065 - Russell Road, Waunui		
<i>Group</i>	Section O - Proposed GL & remedials	<i>Scenario</i>	Extreme (Worst Credible GW)
<i>Drawn By</i>	LKB	<i>Company</i>	Riley Consultants Ltd
<i>Date</i>	19/12/2025	<i>File Name</i>	Section O.sldm



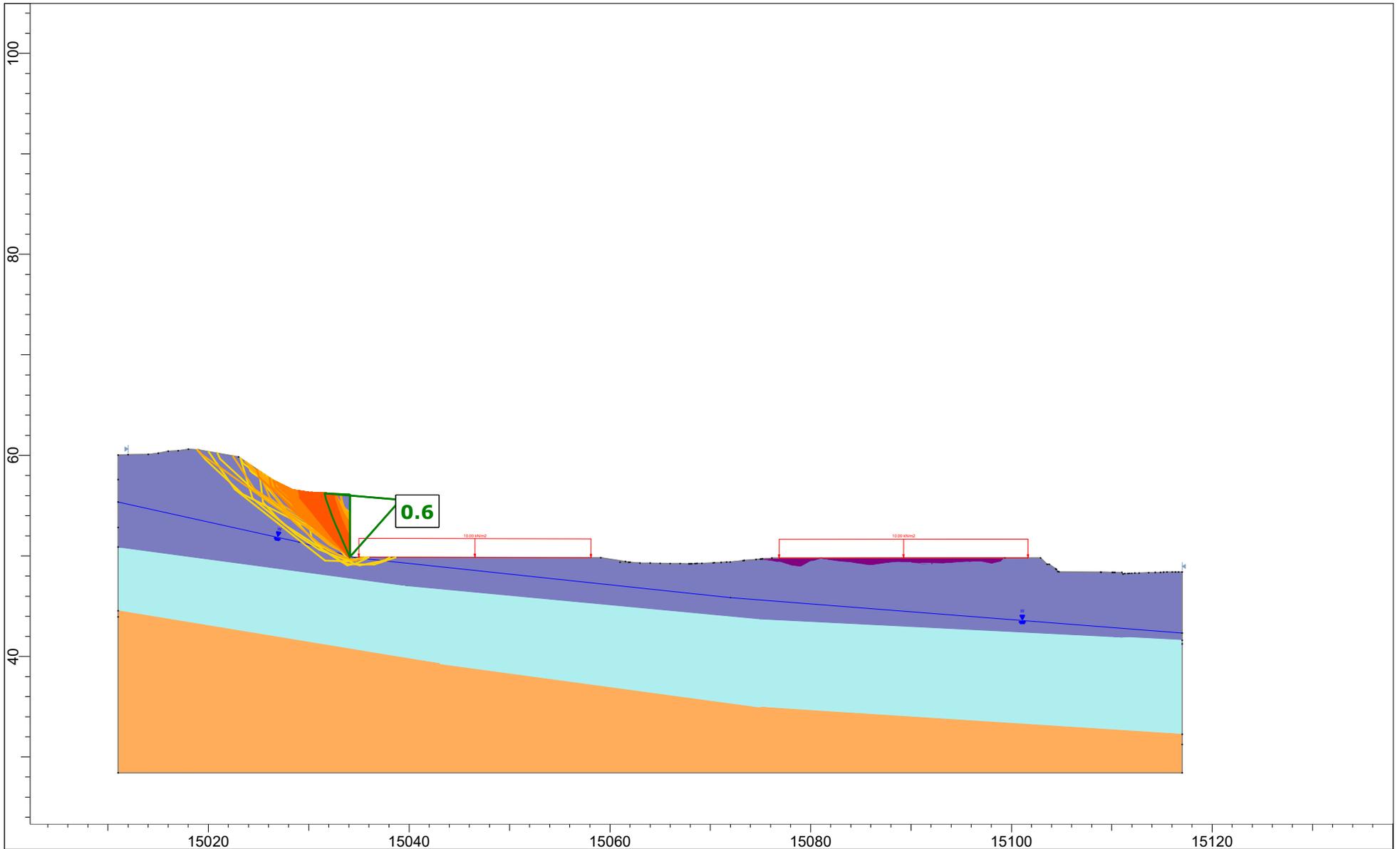
SLIDEINTERPRET 9.038

<i>Project</i>	240065 - Russell Road, Waunui		
<i>Group</i>	Section O - Proposed GL & remedials	<i>Scenario</i>	Seismic (0.19g)
<i>Drawn By</i>	LKB	<i>Company</i>	Riley Consultants Ltd
<i>Date</i>	19/12/2025	<i>File Name</i>	Section O.sldm

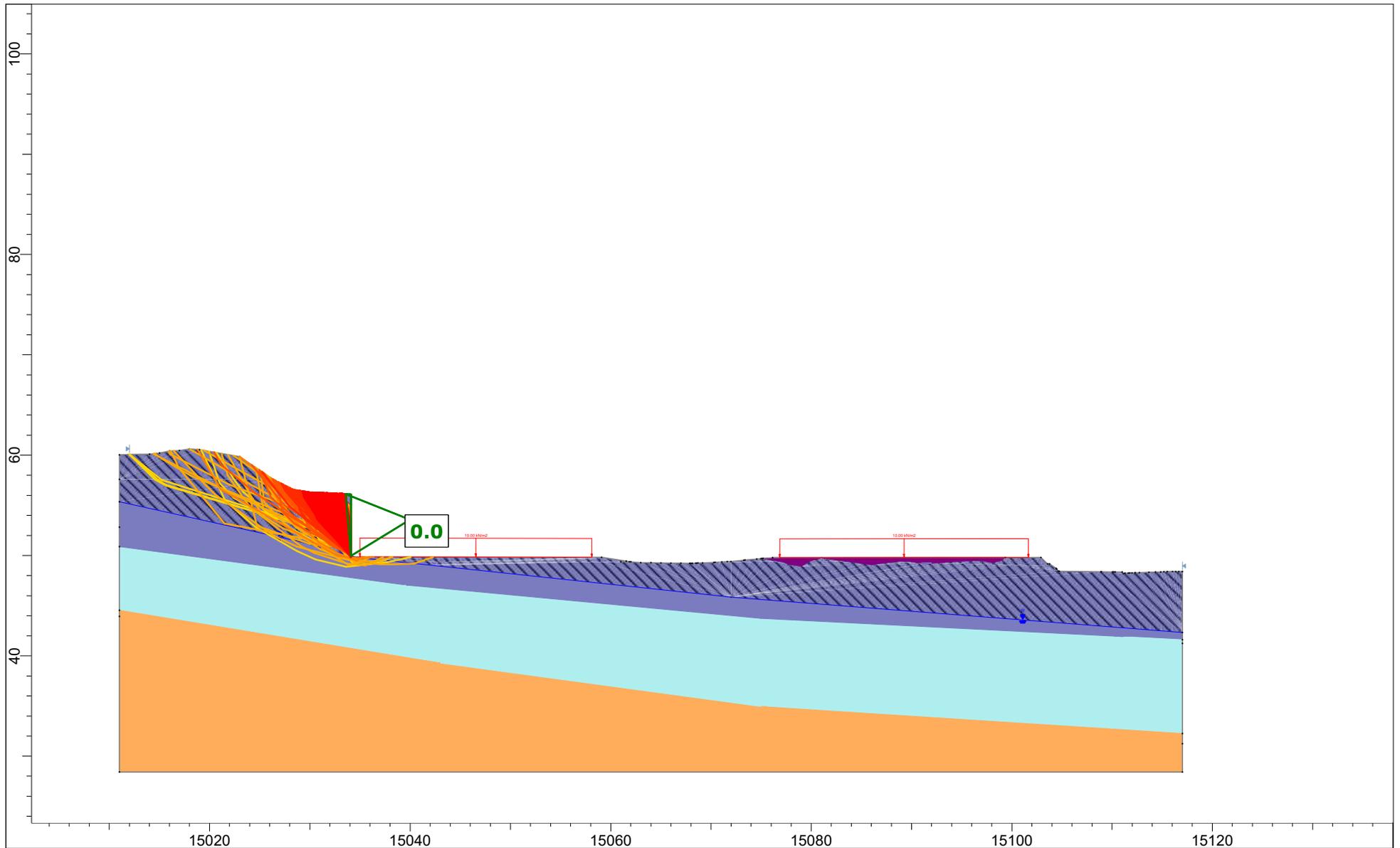


SLIDEINTERPRET 9.038

<i>Project</i>	240065 - Russell Road, Waunui		
<i>Group</i>	Section O - Proposed GL & remedials	<i>Scenario</i>	Extreme (50% fill saturation)
<i>Drawn By</i>	LKB	<i>Company</i>	Riley Consultants Ltd
<i>Date</i>	19/12/2025	<i>File Name</i>	Section O.sldm

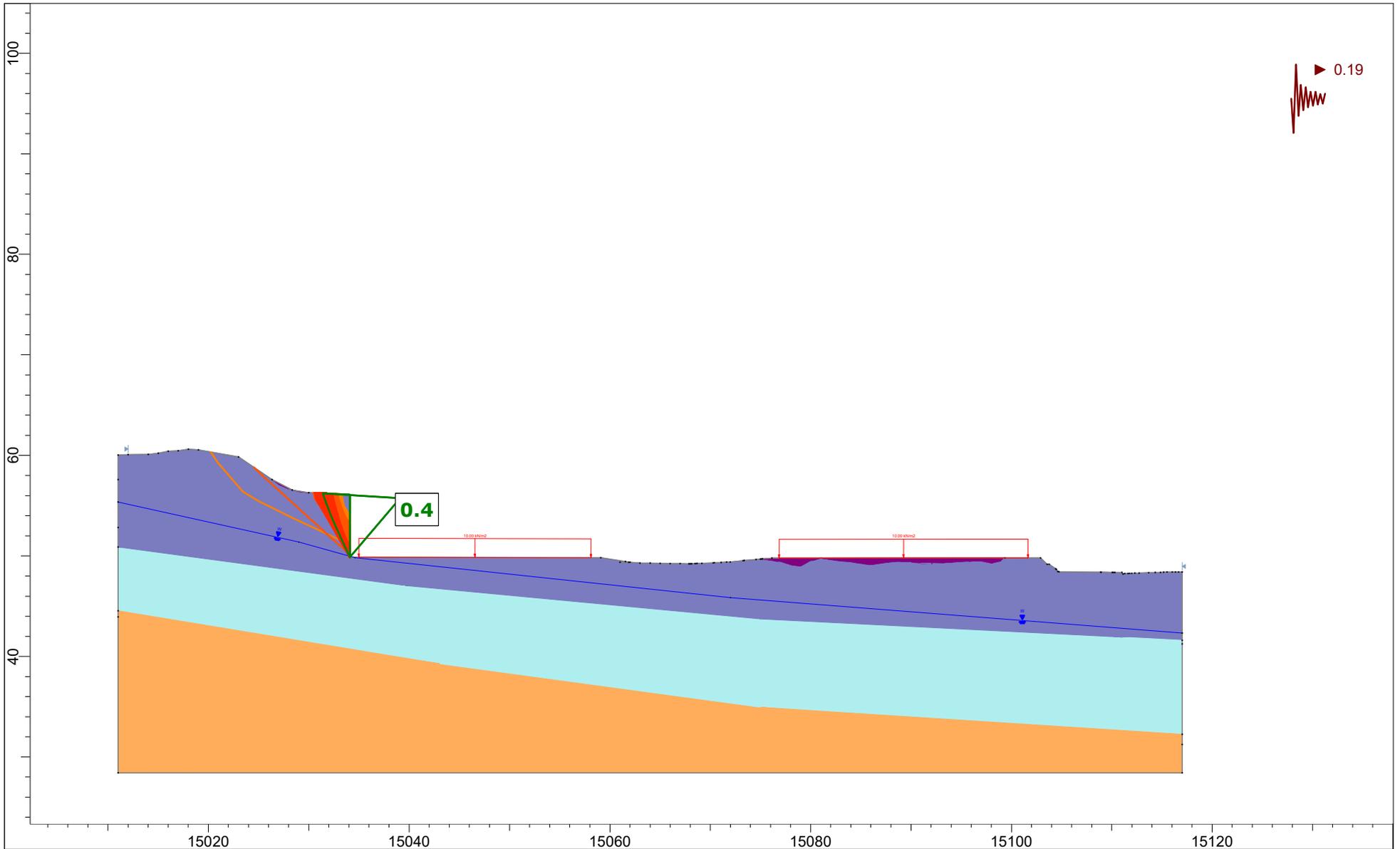


	<i>Project</i> 240065 - Russell Road, Waunui		
	<i>Group</i> Section O - Proposed GL	<i>Scenario</i> Normal (Measured GW)	
	<i>Drawn By</i> LKB	<i>Company</i> Riley Consultants Ltd	
	<i>Date</i> 19/12/2025	<i>File Name</i> Section O.sldm	

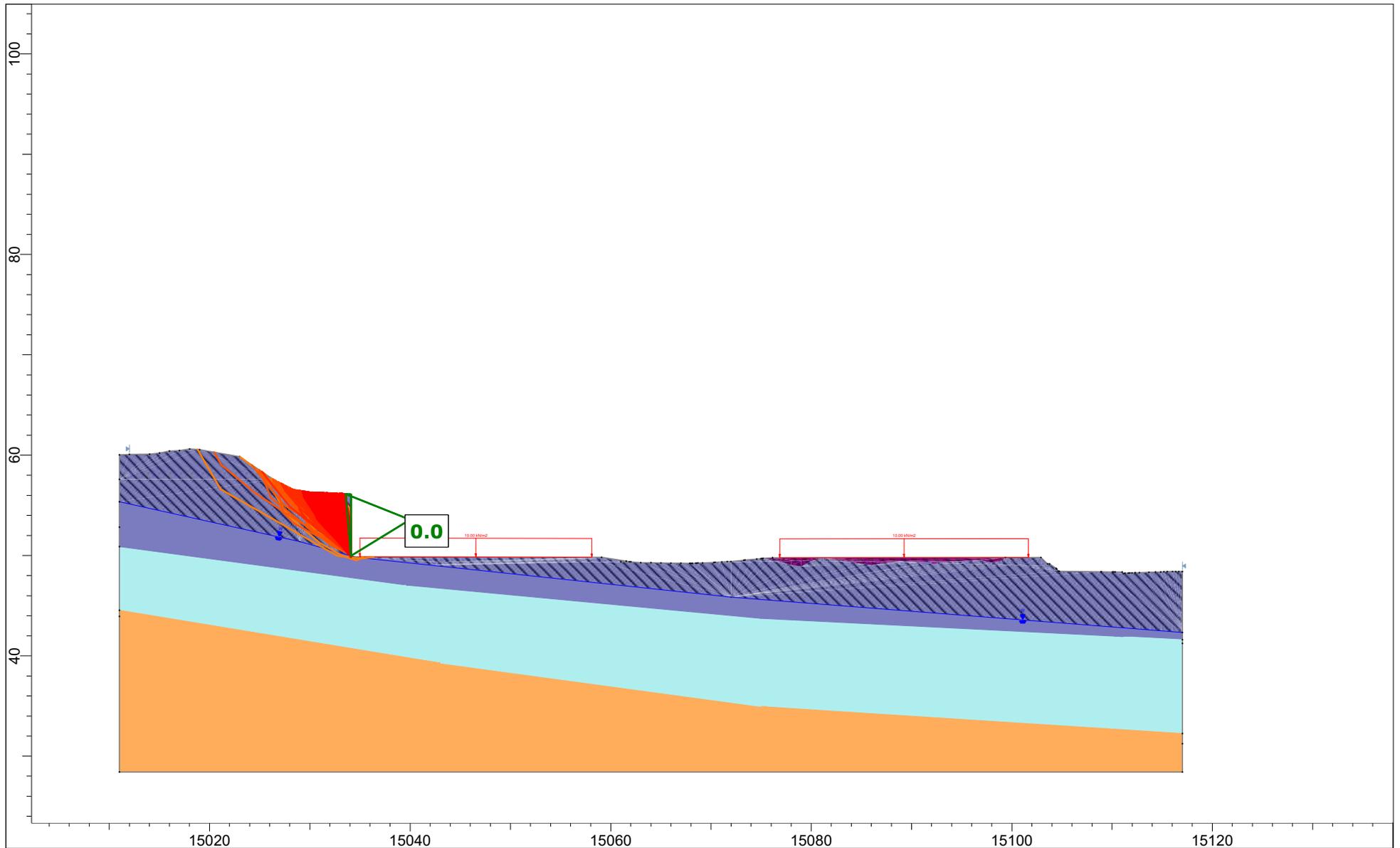


SLIDEINTERPRET 9.038

<i>Project</i>	240065 - Russell Road, Waunui		
<i>Group</i>	Section O - Proposed GL	<i>Scenario</i>	Extreme (Worst Credible GW)
<i>Drawn By</i>	LKB	<i>Company</i>	Riley Consultants Ltd
<i>Date</i>	19/12/2025	<i>File Name</i>	Section O.slm



	<i>Project</i> 240065 - Russell Road, Waunui		
	<i>Group</i> Section O - Proposed GL	<i>Scenario</i> Seismic (0.19g)	
	<i>Drawn By</i> LKB	<i>Company</i> Riley Consultants Ltd	
	<i>Date</i> 19/12/2025	<i>File Name</i> Section O.sldm	



SLIDEINTERPRET 9.038

<i>Project</i>	240065 - Russell Road, Waunui		
<i>Group</i>	Section O - Proposed GL	<i>Scenario</i>	Extreme (50% fill saturation)
<i>Drawn By</i>	LKB	<i>Company</i>	Riley Consultants Ltd
<i>Date</i>	19/12/2025	<i>File Name</i>	Section O.sldm

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 (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid	Black	Geosynthetic	Active (Method A)		No	Friction Angle & Adhesion	5	21	Linear				Parallel to Reinforcement	Slope Face	100	20	Constant	20
Retaining wall	Pink	Pile/Micro Pile	Active (Method A)	1.5						Shear	66	Parallel to surface						

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	None			0
Stiff ECBF	Dark Purple	18	Mohr-Coulomb	5	28	Water Table	Custom	1	
Stiff ECBF (Ru=0.55)	Dark Purple	18	Mohr-Coulomb	5	28	None			0.55
Very Stiff ECBF	Blue-Gray	18	Mohr-Coulomb	7	30	Water Table	Custom	1	
Very Stiff ECBF (Ru=0.55)	Blue-Gray	18	Mohr-Coulomb	7	30	None			0.55
Very Weak ECBF Rock	Light Blue	20	Mohr-Coulomb	10	35	Water Table	Custom	1	
Trench Drainage Material (Ru=0.55)	Checkered	20	Mohr-Coulomb	0.1	28	Water Table	Custom	1	

--- Existing ground profile

Results
GLE / Morgenstern-Price
Surfaces with a factor of safety below 1.500

60

40

20

0

Approx. site boundary

10.00 kN/m2 10.00 kN/m2 10.00 kN/m2

1.5

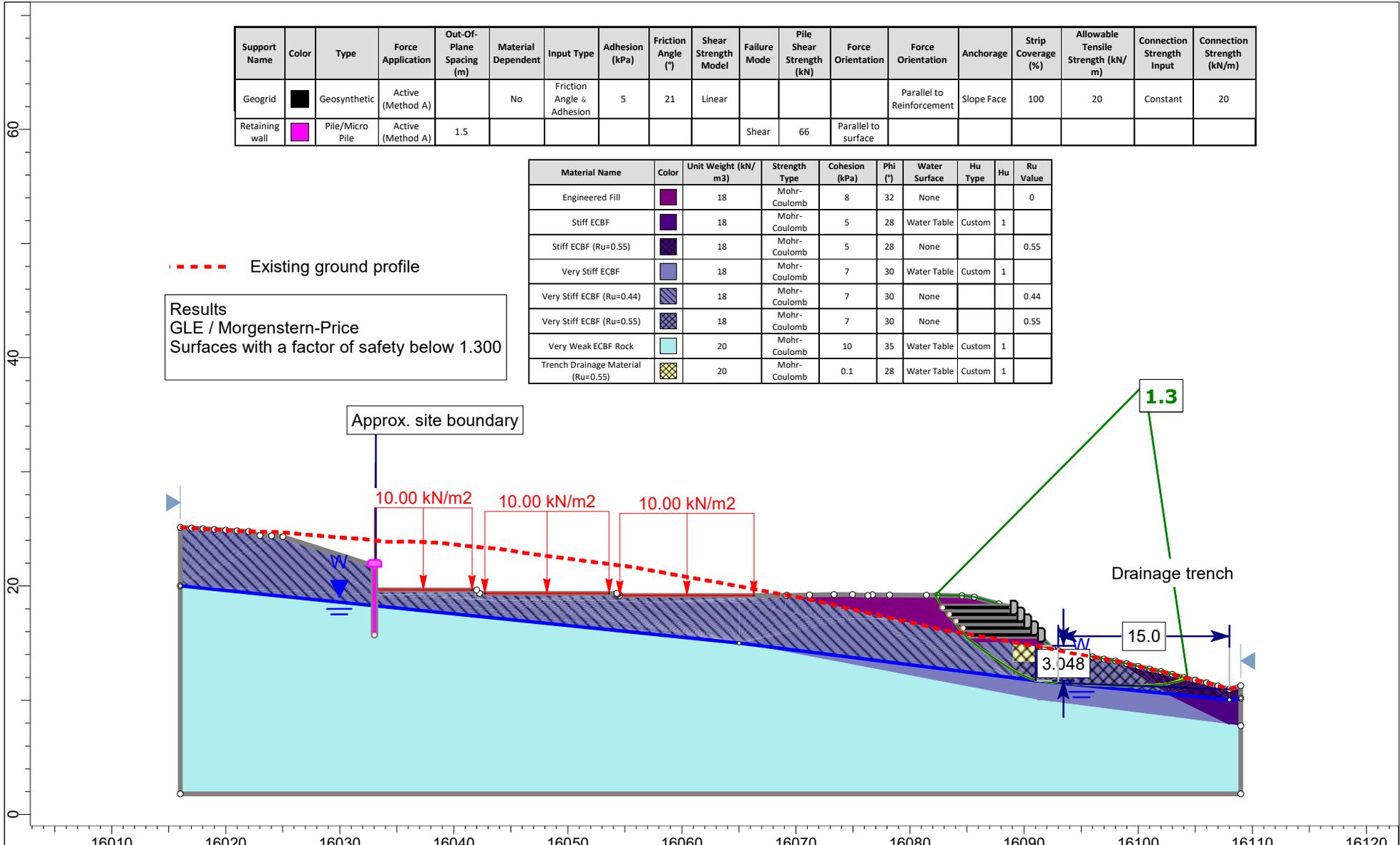
Drainage trench

15.0

16010 16020 16030 16040 16050 16060 16070 16080 16090 16100 16110 16120



Project	240065 - Russell Road, Waunui		
Group	Section P - Proposed GL & Remedials	Scenario	Normal (Measured GW)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section P.sldm



--- Existing ground profile

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 (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid	Black	Geosynthetic	Active (Method A)		No	Friction Angle & Adhesion	5	21	Linear				Parallel to Reinforcement	Slope Face	100	20	Constant	20
Retaining wall	Pink	Pile/Micro Pile	Active (Method A)	1.5						Shear	66	Parallel to surface						

Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Engineered Fill	Dark Purple	18	Mohr-Coulomb	8	32	None			0
Stiff ECBF	Medium Purple	18	Mohr-Coulomb	5	28	Water Table	Custom	1	
Stiff ECBF (Ru=0.55)	Dark Purple	18	Mohr-Coulomb	5	28	None			0.55
Very Stiff ECBF	Light Purple	18	Mohr-Coulomb	7	30	Water Table	Custom	1	
Very Stiff ECBF (Ru=0.44)	Light Purple	18	Mohr-Coulomb	7	30	None			0.44
Very Stiff ECBF (Ru=0.55)	Dark Purple	18	Mohr-Coulomb	7	30	None			0.55
Very Weak ECBF Rock	Light Blue	20	Mohr-Coulomb	10	35	Water Table	Custom	1	
Trench Drainage Material (Ru=0.55)	Checkered	20	Mohr-Coulomb	0.1	28	Water Table	Custom	1	



Project	240065 - Russell Road, Waunui		
Group	Section P - Proposed GL & Remedials	Scenario	Extreme (Worst Credible GW)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section P.sldm

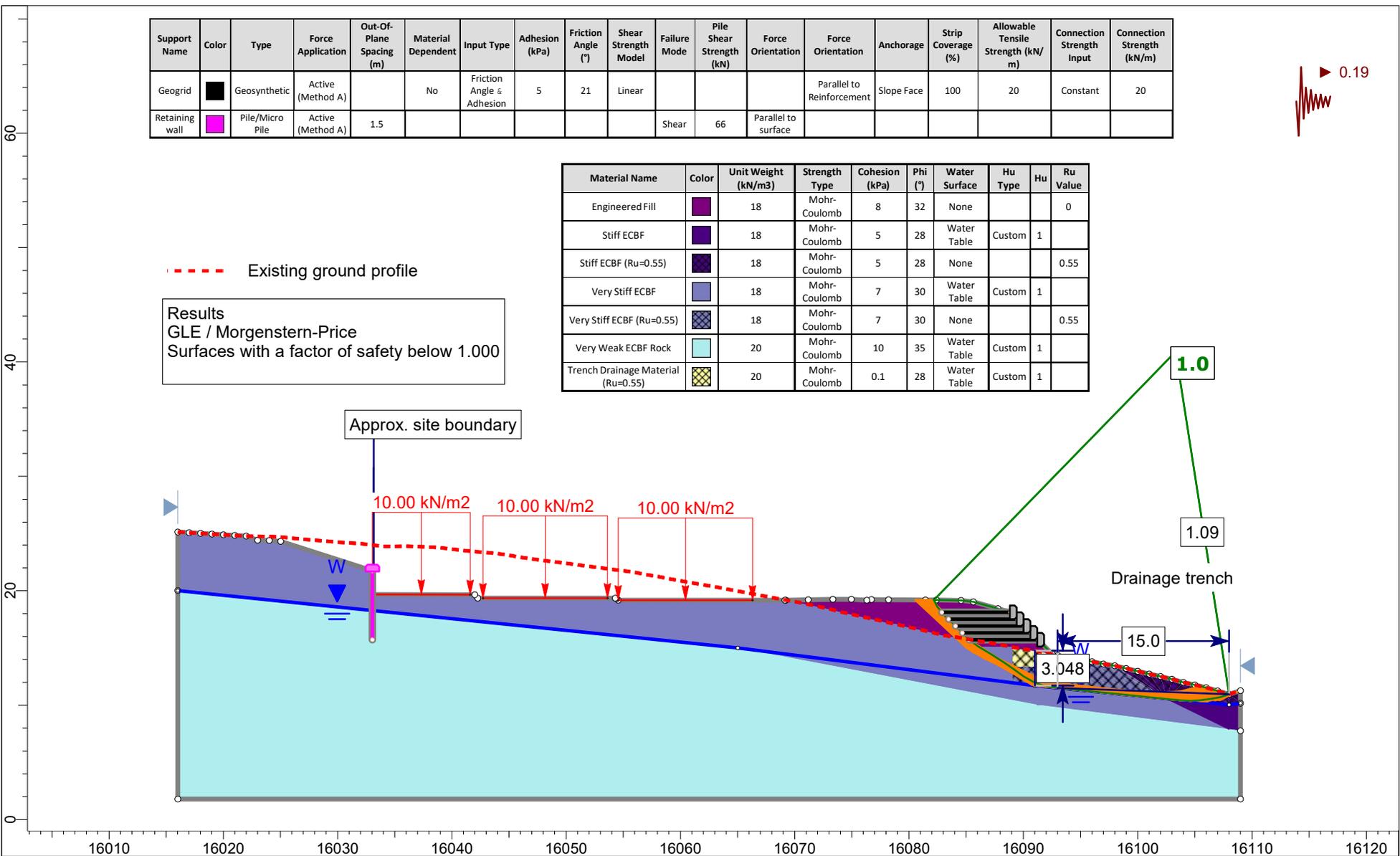
Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (m)	Material Dependent	Input Type	Adhesion (kPa)	Friction Angle (°)	Shear Strength Model	Failure Mode	Pile Shear Strength (kN)	Force Orientation	Force Orientation	Anchorage	Strip Coverage (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid	Black	Geosynthetic	Active (Method A)		No	Friction Angle & Adhesion	5	21	Linear				Parallel to Reinforcement	Slope Face	100	20	Constant	20
Retaining wall	Pink	Pile/Micro Pile	Active (Method A)	1.5						Shear	66	Parallel to surface						

▶ 0.19

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Engineered Fill	Dark Purple	18	Mohr-Coulomb	8	32	None			0
Stiff ECBF	Medium Purple	18	Mohr-Coulomb	5	28	Water Table	Custom	1	
Stiff ECBF (Ru=0.55)	Dark Blue	18	Mohr-Coulomb	5	28	None			0.55
Very Stiff ECBF	Light Blue	18	Mohr-Coulomb	7	30	Water Table	Custom	1	
Very Stiff ECBF (Ru=0.55)	Dark Blue with X	18	Mohr-Coulomb	7	30	None			0.55
Very Weak ECBF Rock	Light Cyan	20	Mohr-Coulomb	10	35	Water Table	Custom	1	
Trench Drainage Material (Ru=0.55)	Yellow with X	20	Mohr-Coulomb	0.1	28	Water Table	Custom	1	

--- Existing ground profile

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



	Project		240065 - Russell Road, Waunui	
	Group	Section P - Proposed GL & Remedials	Scenario	Seismic (0.19g)
	Drawn By	LKB	Company	Riley Consultants Ltd
	Date	19/12/2025	File Name	Section P.sldm

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 (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid	Black	Geosynthetic	Active (Method A)		No	Friction Angle & Adhesion	5	21	Linear				Parallel to Reinforcement	Slope Face	100	20	Constant	20
Retaining wall	Pink	Pile/Micro Pile	Active (Method A)	1.5						Shear	66	Parallel to surface						

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Stiff ECBF	Dark Purple	18	Mohr-Coulomb	5	28	Water Table	Custom	1	
Stiff ECBF (Ru=0.55)	Dark Purple	18	Mohr-Coulomb	5	28	None			0.55
Very Stiff ECBF	Medium Purple	18	Mohr-Coulomb	7	30	Water Table	Custom	1	
Very Stiff ECBF (Ru=0.44)	Medium Purple	18	Mohr-Coulomb	7	30	None			0.44
Very Stiff ECBF (Ru=0.55)	Medium Purple	18	Mohr-Coulomb	7	30	None			0.55
Very Weak ECBF Rock	Light Blue	20	Mohr-Coulomb	10	35	Water Table	Custom	1	
Trench Drainage Material (Ru=0.55)	Yellow-Black	20	Mohr-Coulomb	0.1	28	Water Table	Custom	1	
Engineered fill (50% saturation)	Dark Purple	18	Mohr-Coulomb	8	32	None			0.27

60

40

20

0

--- Existing ground profile

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

Approx. site boundary

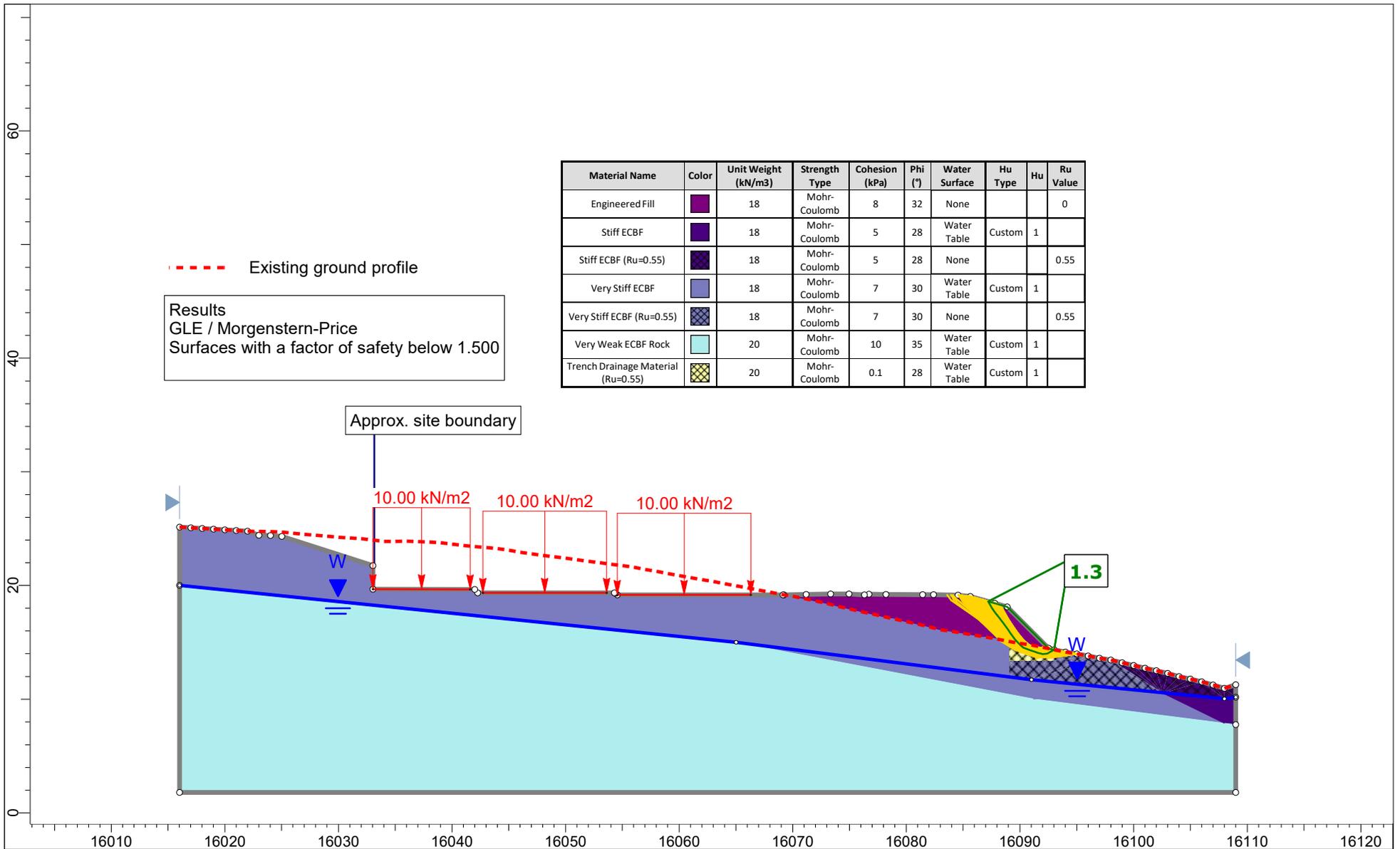
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1.3

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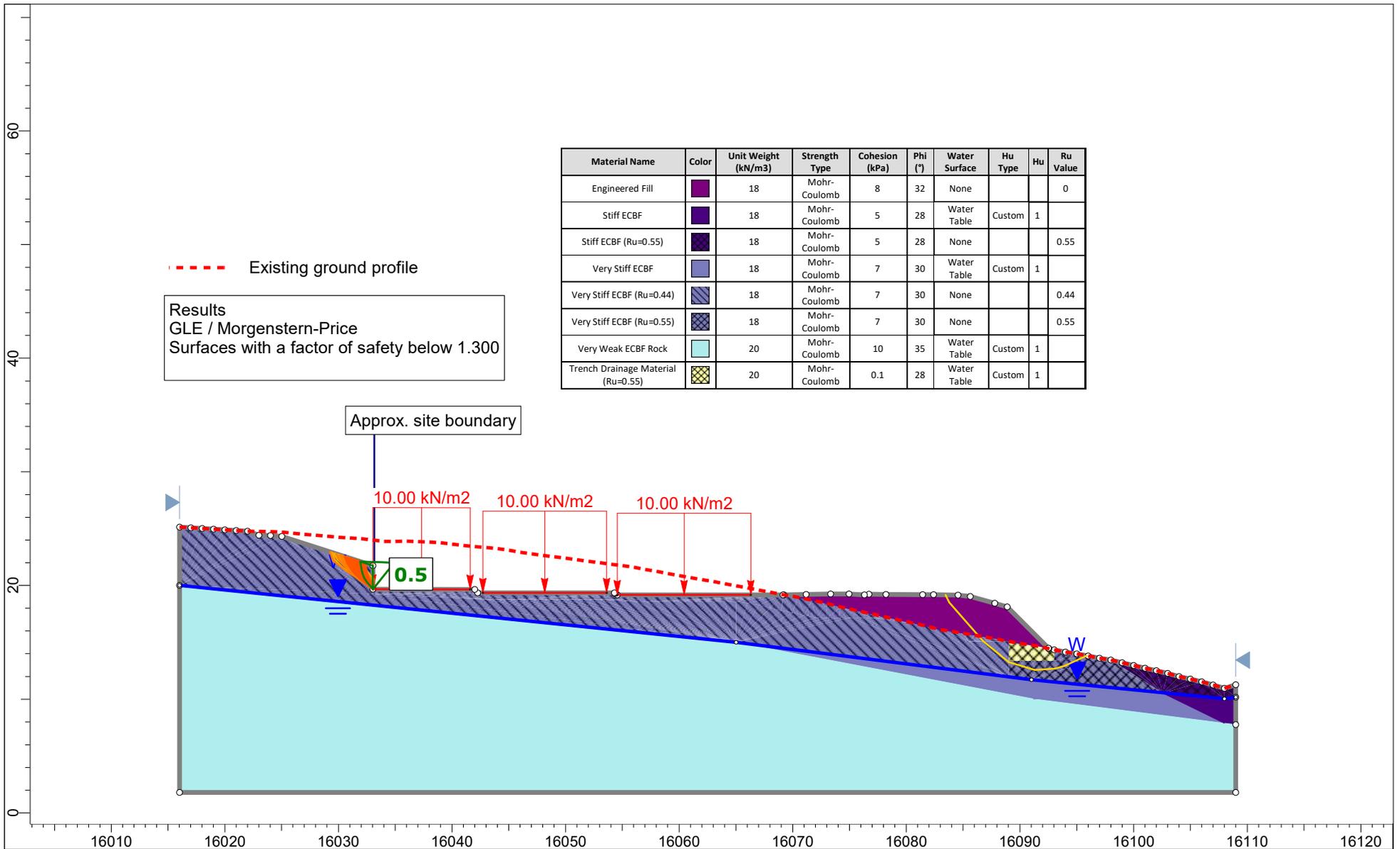


Project	240065 - Russell Road, Waunui		
Group	Section P - Proposed GL & Remedials	Scenario	Extreme (50% fill saturation)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section P.sldm

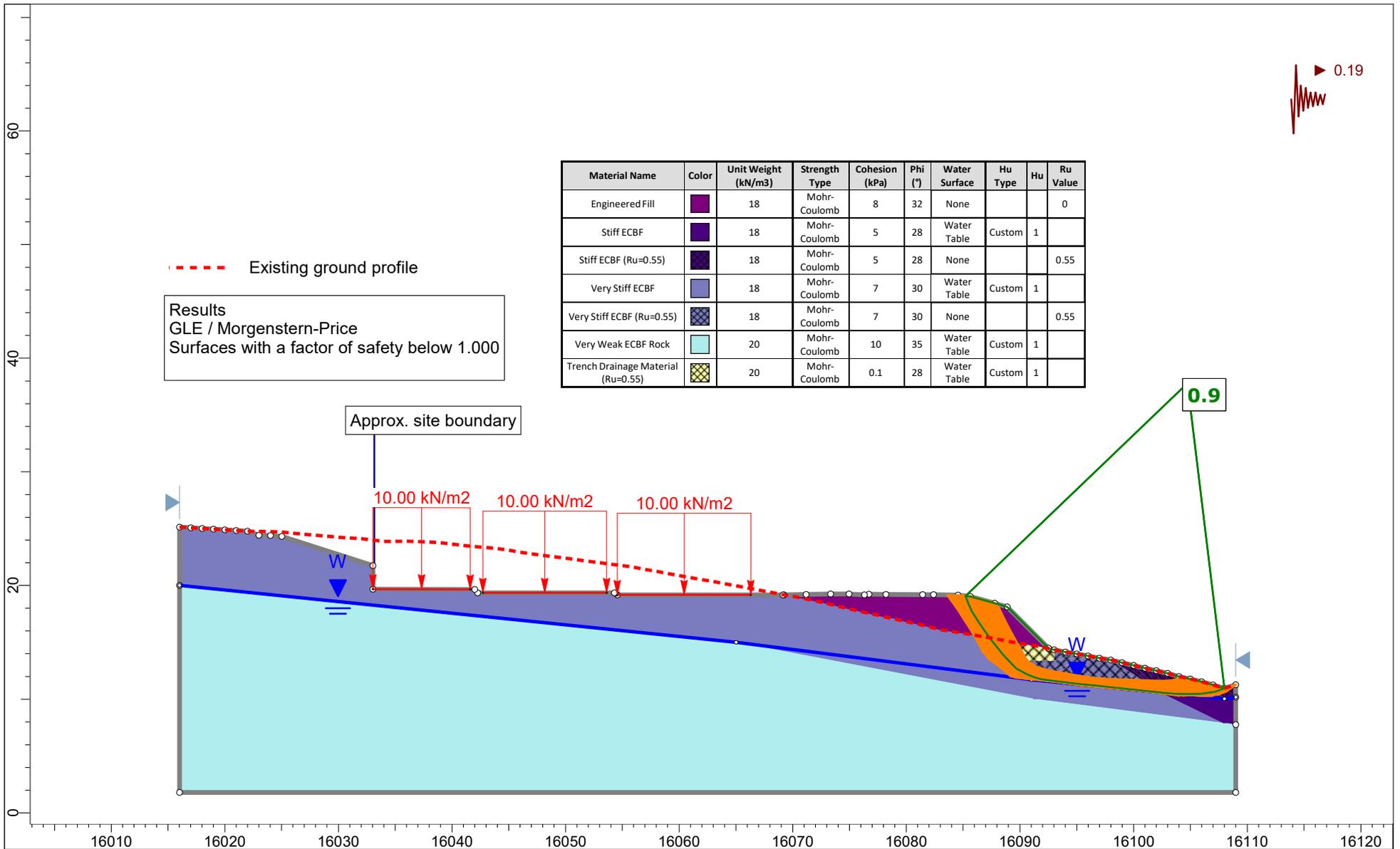


Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Engineered Fill		18	Mohr-Coulomb	8	32	None			0
Stiff ECBF		18	Mohr-Coulomb	5	28	Water Table	Custom	1	
Stiff ECBF (Ru=0.55)		18	Mohr-Coulomb	5	28	None			0.55
Very Stiff ECBF		18	Mohr-Coulomb	7	30	Water Table	Custom	1	
Very Stiff ECBF (Ru=0.55)		18	Mohr-Coulomb	7	30	None			0.55
Very Weak ECBF Rock		20	Mohr-Coulomb	10	35	Water Table	Custom	1	
Trench Drainage Material (Ru=0.55)		20	Mohr-Coulomb	0.1	28	Water Table	Custom	1	

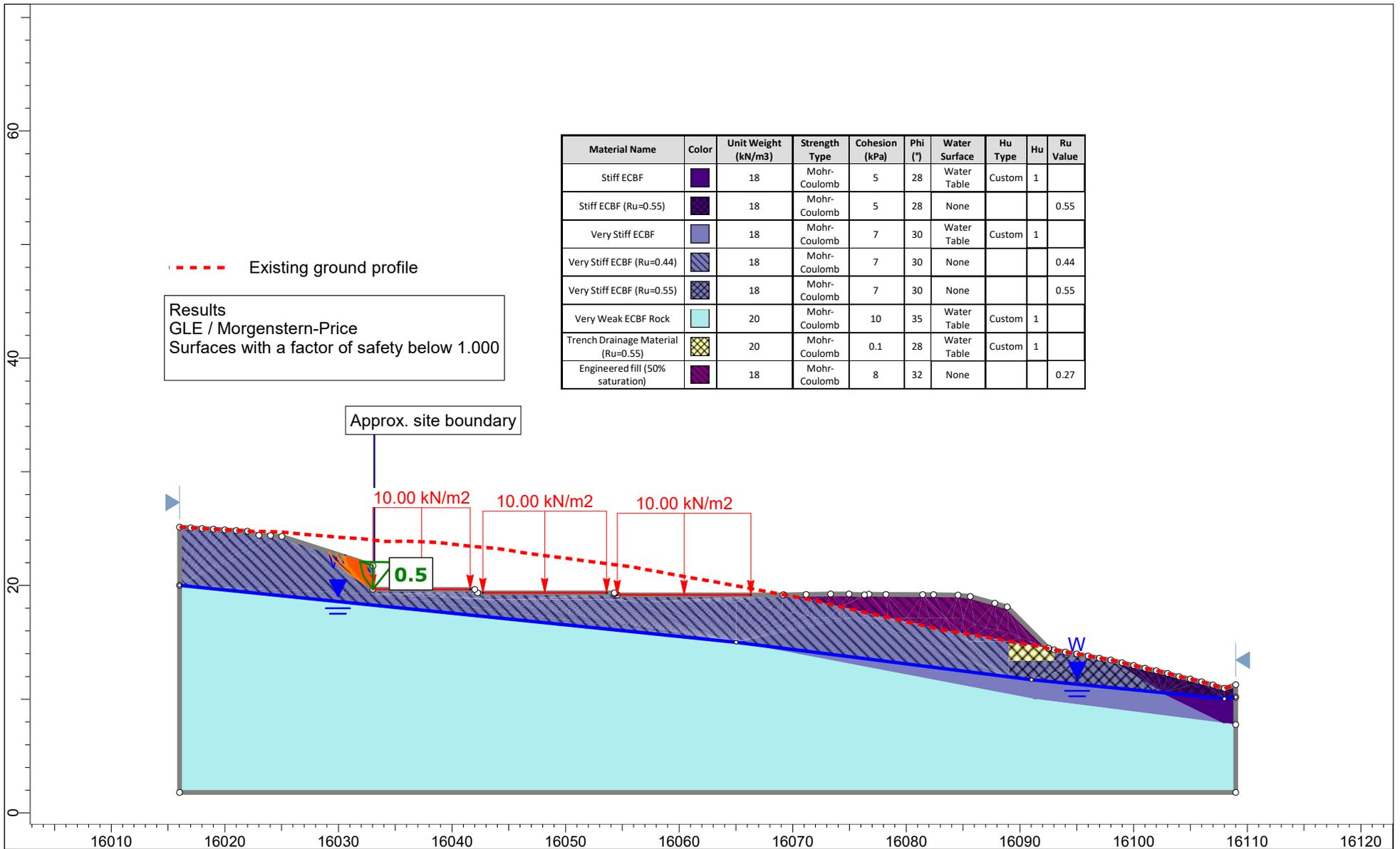
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	Group		Section P - Proposed GL	Scenario
	Drawn By		LKB	Company
	Date		19/12/2025	File Name
				Normal (Measured GW)
				Riley Consultants Ltd
				Section P.sldm



	Project		240065 - Russell Road, Waunui	
	Group		Section P - Proposed GL	Scenario
	Drawn By		LKB	Company
	Date		19/12/2025	File Name
			Extreme (Worst Credible GW)	
			Riley Consultants Ltd	
			Section P.sldm	



	Project		240065 - Russell Road, Waunui	
	Group		Section P - Proposed GL	Scenario
	Drawn By		LKB	Company
	Date		19/12/2025	File Name
			Seismic (0.19g)	
			Riley Consultants Ltd	
			Section P.slmd	



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	
Stiff ECBF (Ru=0.55)		18	Mohr-Coulomb	5	28	None			0.55
Very Stiff ECBF		18	Mohr-Coulomb	7	30	Water Table	Custom	1	
Very Stiff ECBF (Ru=0.44)		18	Mohr-Coulomb	7	30	None			0.44
Very Stiff ECBF (Ru=0.55)		18	Mohr-Coulomb	7	30	None			0.55
Very Weak ECBF Rock		20	Mohr-Coulomb	10	35	Water Table	Custom	1	
Trench Drainage Material (Ru=0.55)		20	Mohr-Coulomb	0.1	28	Water Table	Custom	1	
Engineered fill (50% saturation)		18	Mohr-Coulomb	8	32	None			0.27

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

Approx. site boundary

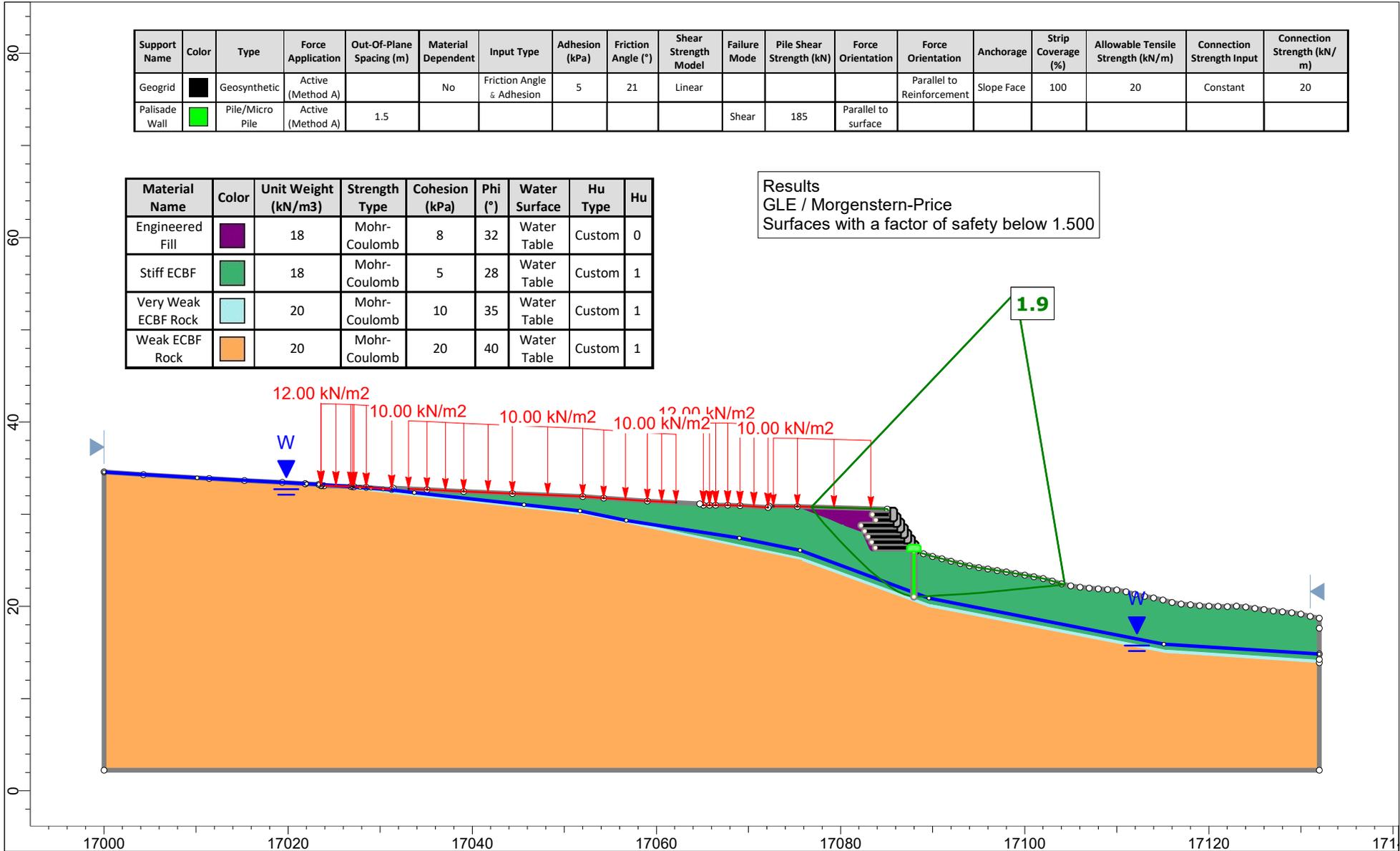
10.00 kN/m2 10.00 kN/m2 10.00 kN/m2

0.5

W



Project	240065 - Russell Road, Waunui		
Group	Section P - Proposed GL	Scenario	Extreme (50% fill saturation)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section P.sldm



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 (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid	Black	Geosynthetic	Active (Method A)		No	Friction Angle & Adhesion	5	21	Linear				Parallel to Reinforcement	Slope Face	100	20	Constant	20
Palisade Wall	Green	Pile/Micro Pile	Active (Method A)	1.5						Shear	185	Parallel to surface						

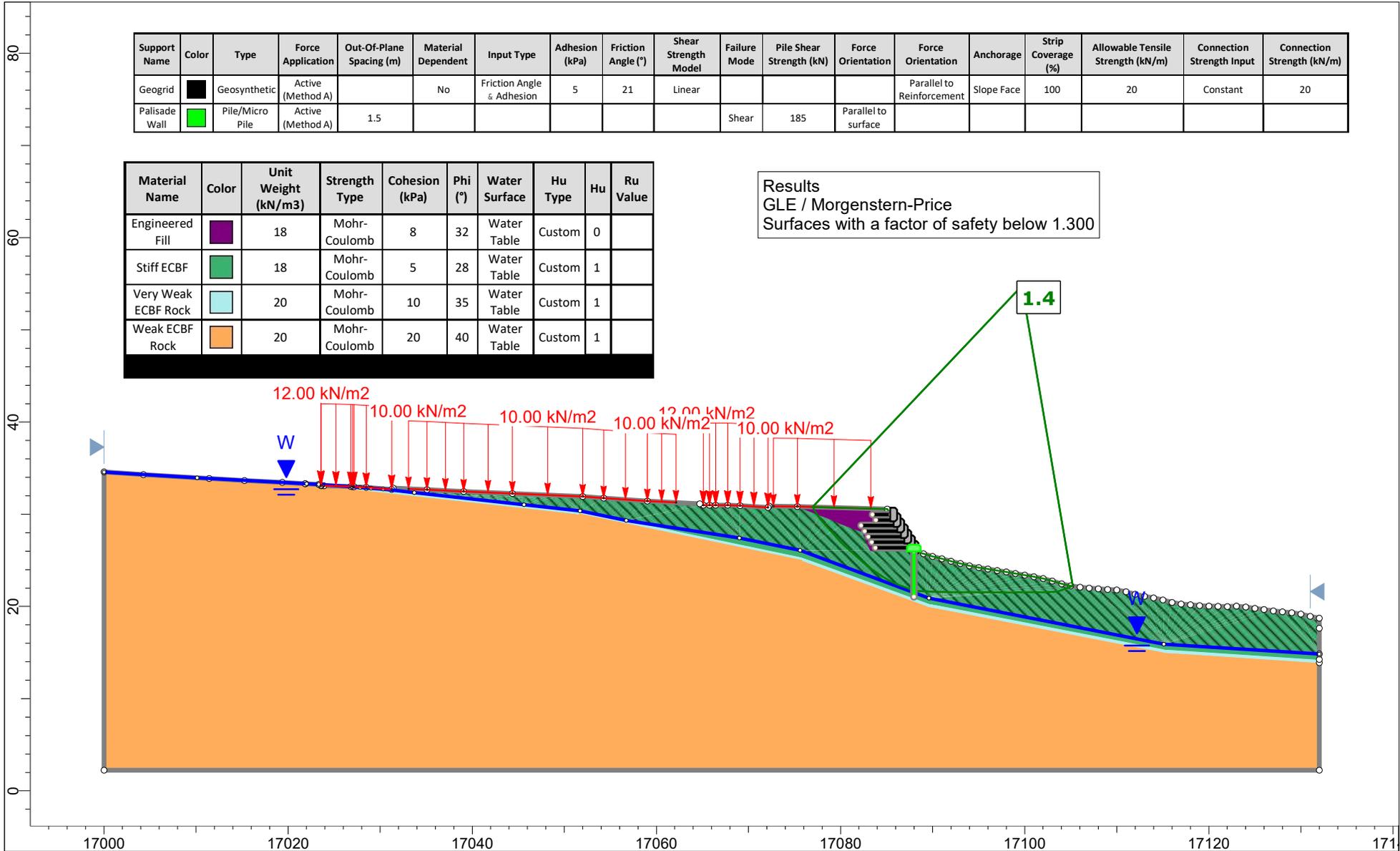
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	Water Table	Custom	0
Stiff ECBF	Green	18	Mohr-Coulomb	5	28	Water Table	Custom	1
Very Weak ECBF Rock	Light Blue	20	Mohr-Coulomb	10	35	Water Table	Custom	1
Weak ECBF Rock	Orange	20	Mohr-Coulomb	20	40	Water Table	Custom	1

Results
GLE / Morgenstern-Price
Surfaces with a factor of safety below 1.500

1.9



	Project		240065 - Russell Road, Waunui	
	Group	Section Q - Proposed GL & remedials	Scenario	Normal (Measured GW)
	Drawn By	LKB	Company	Riley Consultants Ltd
	Date	19/12/2025	File Name	Section Q.slm



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 (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid	Black	Geosynthetic	Active (Method A)		No	Friction Angle & Adhesion	5	21	Linear				Parallel to Reinforcement	Slope Face	100	20	Constant	20
Palisade Wall	Green	Pile/Micro Pile	Active (Method A)	1.5						Shear	185	Parallel to surface						

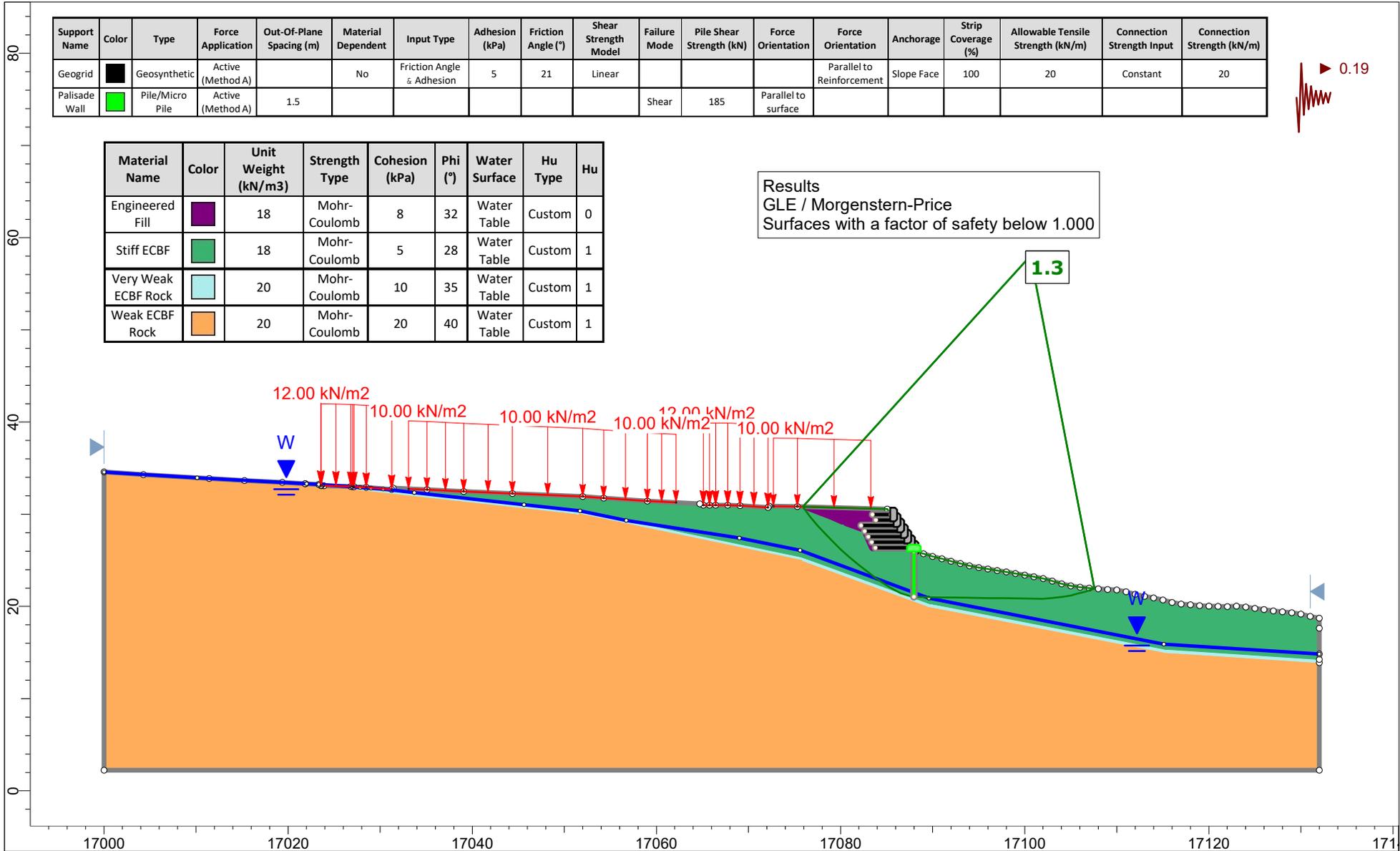
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	Water Table	Custom	0	
Stiff ECBF	Green	18	Mohr-Coulomb	5	28	Water Table	Custom	1	
Very Weak ECBF Rock	Light Blue	20	Mohr-Coulomb	10	35	Water Table	Custom	1	
Weak ECBF Rock	Orange	20	Mohr-Coulomb	20	40	Water Table	Custom	1	

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

1.4



Project	240065 - Russell Road, Waunui		
Group	Section Q - Proposed GL & remedials	Scenario	Extreme (Worst Credible GW)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section Q.sldm



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 (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid	Black	Geosynthetic	Active (Method A)		No	Friction Angle & Adhesion	5	21	Linear				Parallel to Reinforcement	Slope Face	100	20	Constant	20
Palisade Wall	Green	Pile/Micro Pile	Active (Method A)	1.5						Shear	185	Parallel to surface						

Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	Water Table	Custom	0
Stiff ECBF	Green	18	Mohr-Coulomb	5	28	Water Table	Custom	1
Very Weak ECBF Rock	Light Blue	20	Mohr-Coulomb	10	35	Water Table	Custom	1
Weak ECBF Rock	Orange	20	Mohr-Coulomb	20	40	Water Table	Custom	1

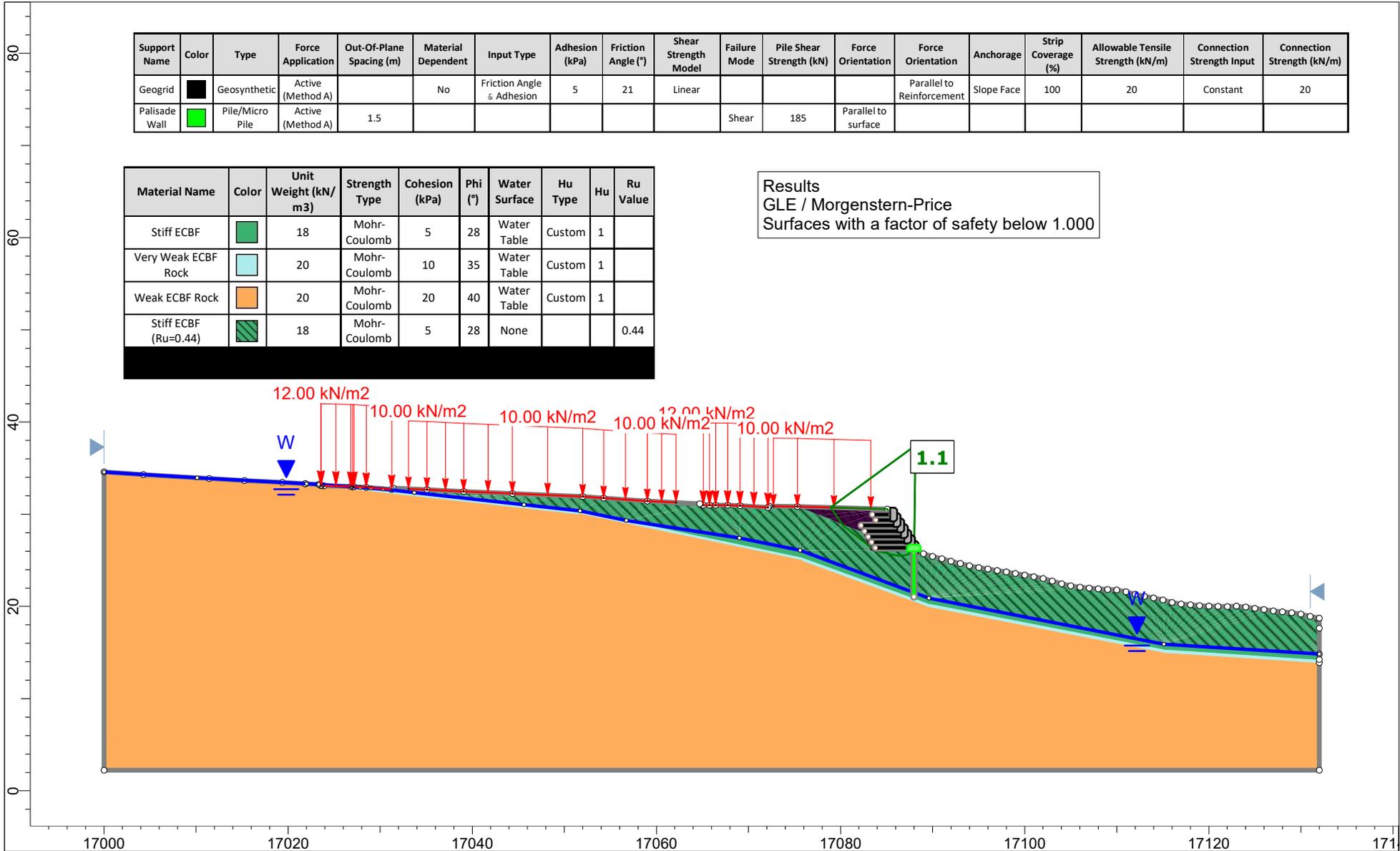
Results
GLE / Morgenstern-Price
Surfaces with a factor of safety below 1.000

1.3

▶ 0.19



Project		240065 - Russell Road, Waunui	
Group	Section Q - Proposed GL & remedials	Scenario	Seismic (0.19g)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section Q.sldm

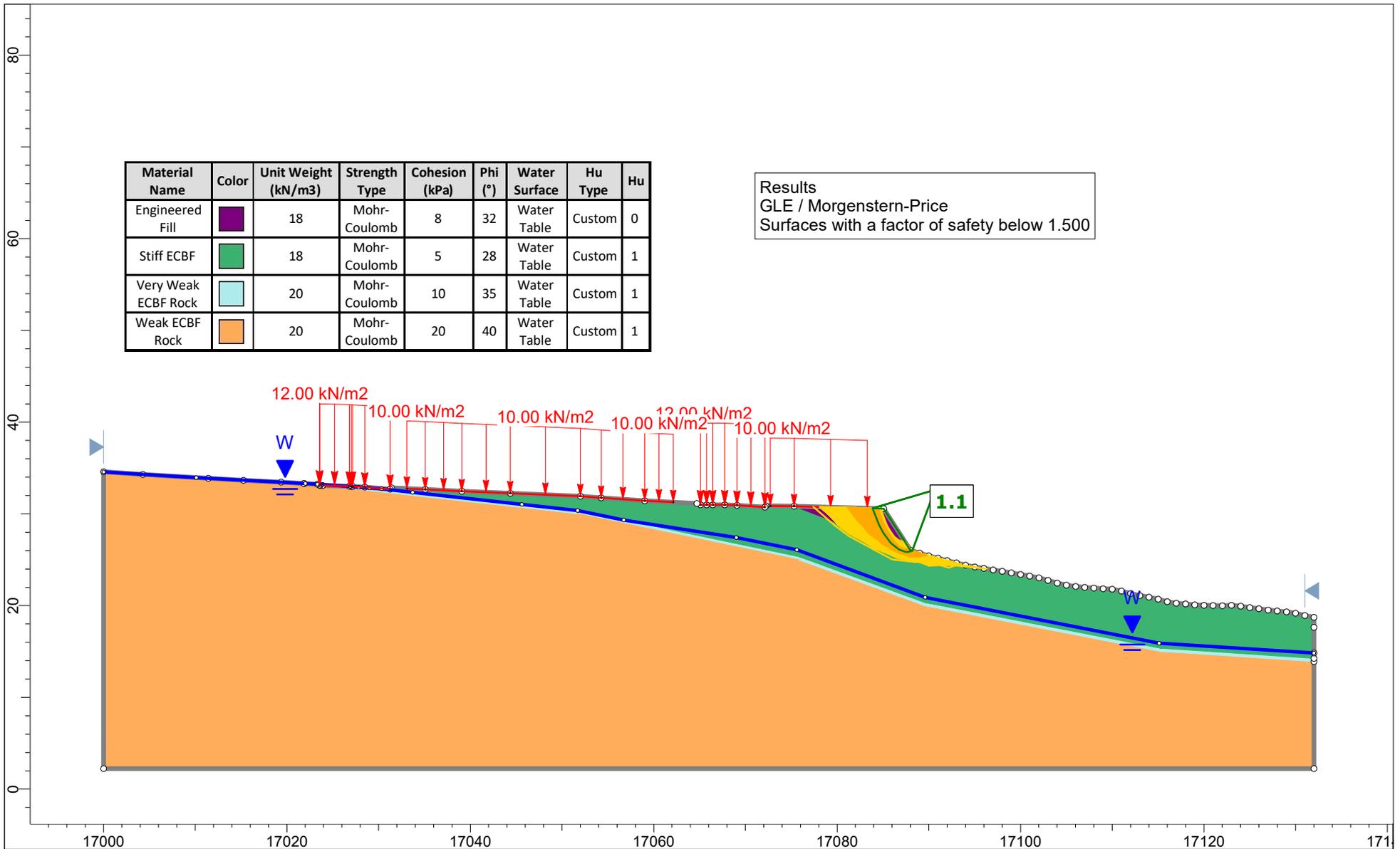


Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (m)	Material Dependent	Input Type	Adhesion (kPa)	Friction Angle (°)	Shear Strength Model	Failure Mode	Pile Shear Strength (kN)	Force Orientation	Force Orientation	Anchorage	Strip Coverage (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid	Black	Geosynthetic	Active (Method A)		No	Friction Angle & Adhesion	5	21	Linear				Parallel to Reinforcement	Slope Face	100	20	Constant	20
Palisade Wall	Green	Pile/Micro Pile	Active (Method A)	1.5						Shear	185	Parallel to surface						

Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Stiff ECBF	Green	18	Mohr-Coulomb	5	28	Water Table	Custom	1	
Very Weak ECBF Rock	Light Blue	20	Mohr-Coulomb	10	35	Water Table	Custom	1	
Weak ECBF Rock	Orange	20	Mohr-Coulomb	20	40	Water Table	Custom	1	
Stiff ECBF (Ru=0.44)	Green with Diagonal Lines	18	Mohr-Coulomb	5	28	None			0.44

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

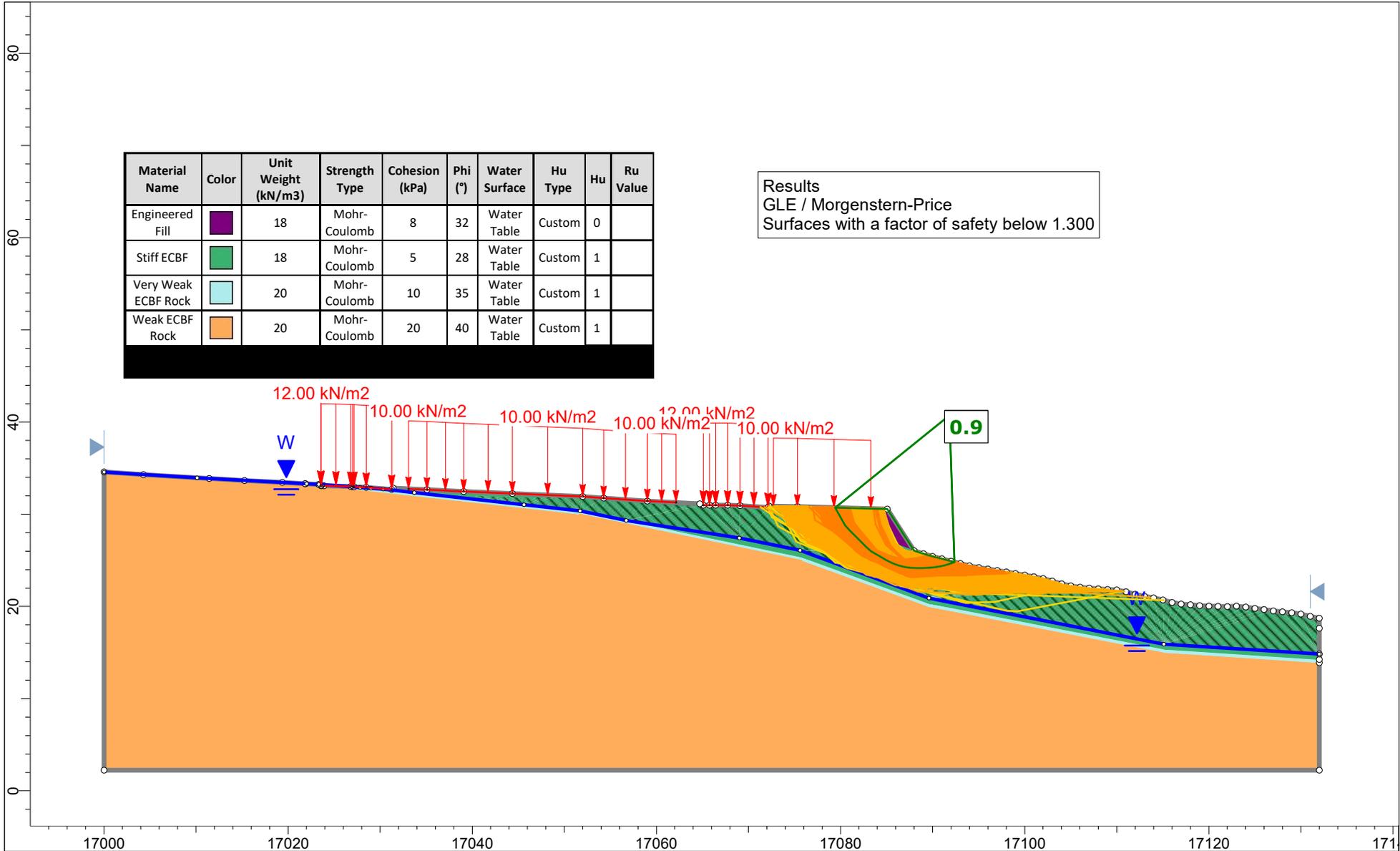
	Project		240065 - Russell Road, Waunui	
	Group		Section Q - Proposed GL & remedials	Scenario
	Drawn By		LKB	Company
	Date		19/12/2025	File Name
			Extreme (50% fill saturation)	Riley Consultants Ltd
			Section Q.slm	



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Engineered Fill	■	18	Mohr-Coulomb	8	32	Water Table	Custom	0
Stiff ECBF	■	18	Mohr-Coulomb	5	28	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

Results
GLE / Morgenstern-Price
Surfaces with a factor of safety below 1.500

	Project		240065 - Russell Road, Waunui	
	Group		Section Q - Proposed GL	Scenario
	Drawn By		LKB	Company
	Date		19/12/2025	File Name
			Normal (Measured GW)	
			Riley Consultants Ltd	
			Section Q.slm	

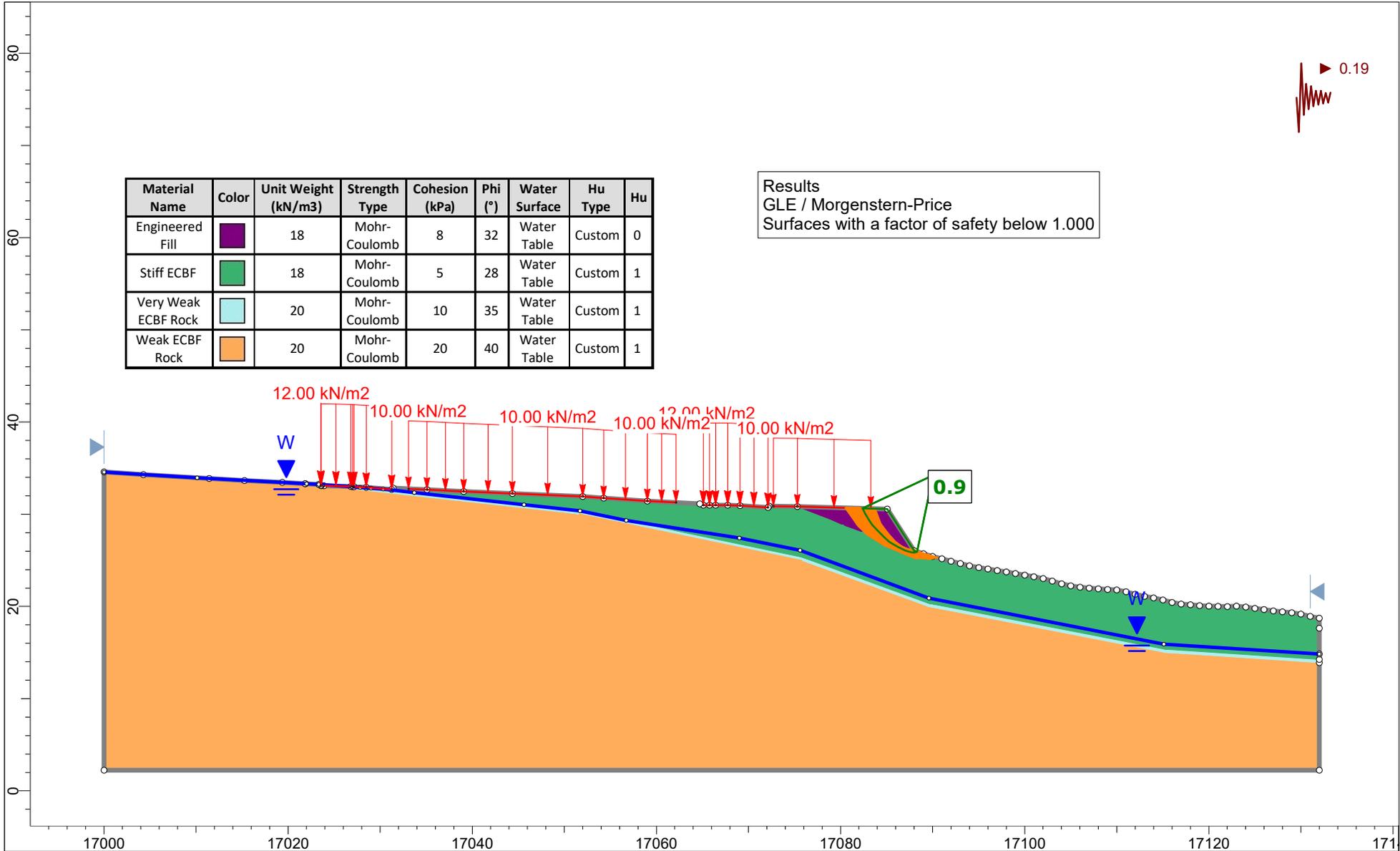


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	Water Table	Custom	0	
Stiff ECBF	Green	18	Mohr-Coulomb	5	28	Water Table	Custom	1	
Very Weak ECBF Rock	Light Blue	20	Mohr-Coulomb	10	35	Water Table	Custom	1	
Weak ECBF Rock	Orange	20	Mohr-Coulomb	20	40	Water Table	Custom	1	

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



Project	240065 - Russell Road, Waunui		
Group	Section Q - Proposed GL	Scenario	Extreme (Worst Credible GW)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section Q.slm

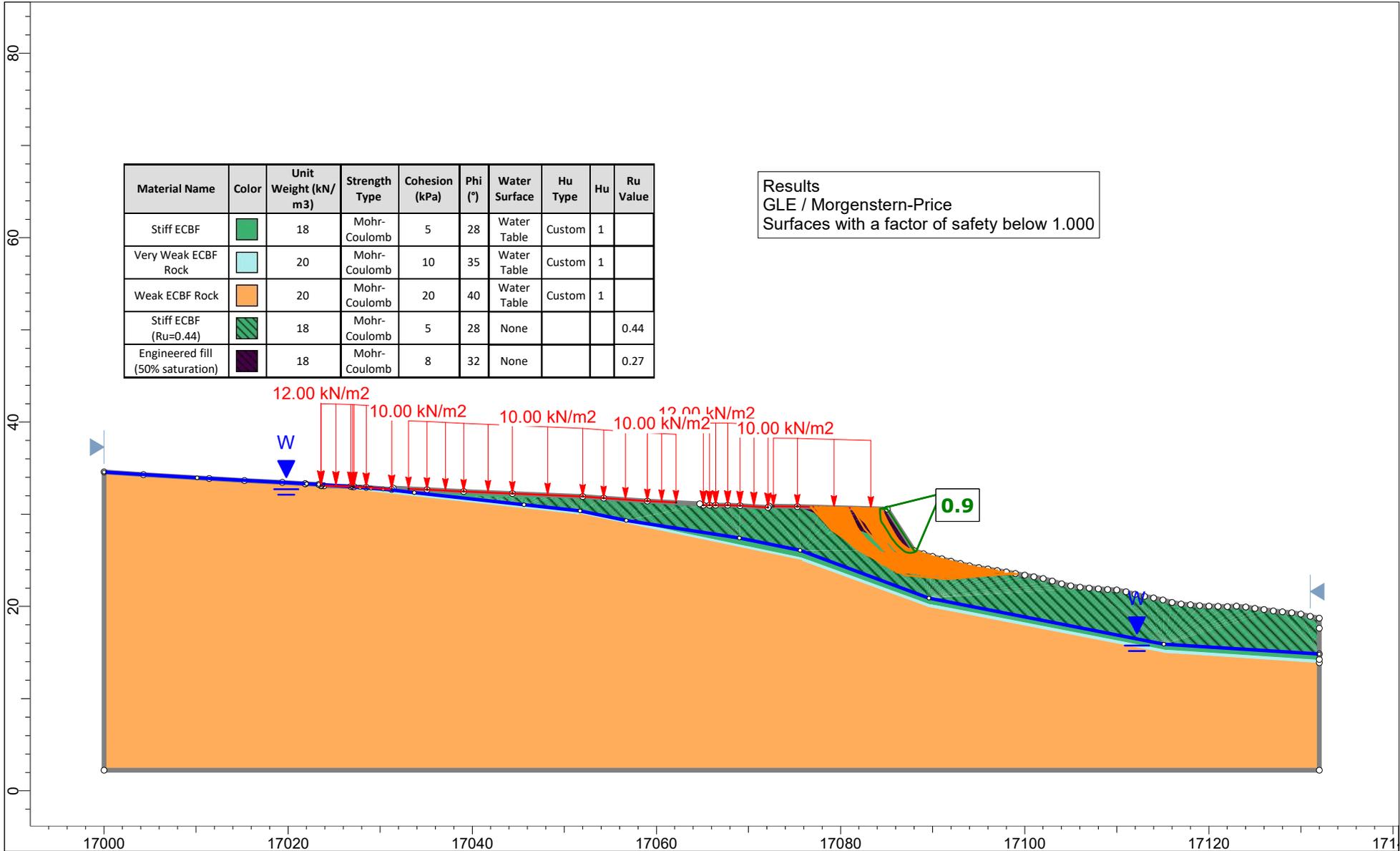


Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Engineered Fill	■	18	Mohr-Coulomb	8	32	Water Table	Custom	0
Stiff ECBF	■	18	Mohr-Coulomb	5	28	Water Table	Custom	1
Very Weak ECBF Rock	■	20	Mohr-Coulomb	10	35	Water Table	Custom	1
Weak ECBF Rock	■	20	Mohr-Coulomb	20	40	Water Table	Custom	1

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



Project	240065 - Russell Road, Waunui		
Group	Section Q - Proposed GL	Scenario	Seismic (0.19g)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section Q.sldm



Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Stiff ECBF	Green	18	Mohr-Coulomb	5	28	Water Table	Custom	1	
Very Weak ECBF Rock	Light Blue	20	Mohr-Coulomb	10	35	Water Table	Custom	1	
Weak ECBF Rock	Orange	20	Mohr-Coulomb	20	40	Water Table	Custom	1	
Stiff ECBF (Ru=0.44)	Green Hatched	18	Mohr-Coulomb	5	28	None			0.44
Engineered fill (50% saturation)	Purple	18	Mohr-Coulomb	8	32	None			0.27

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

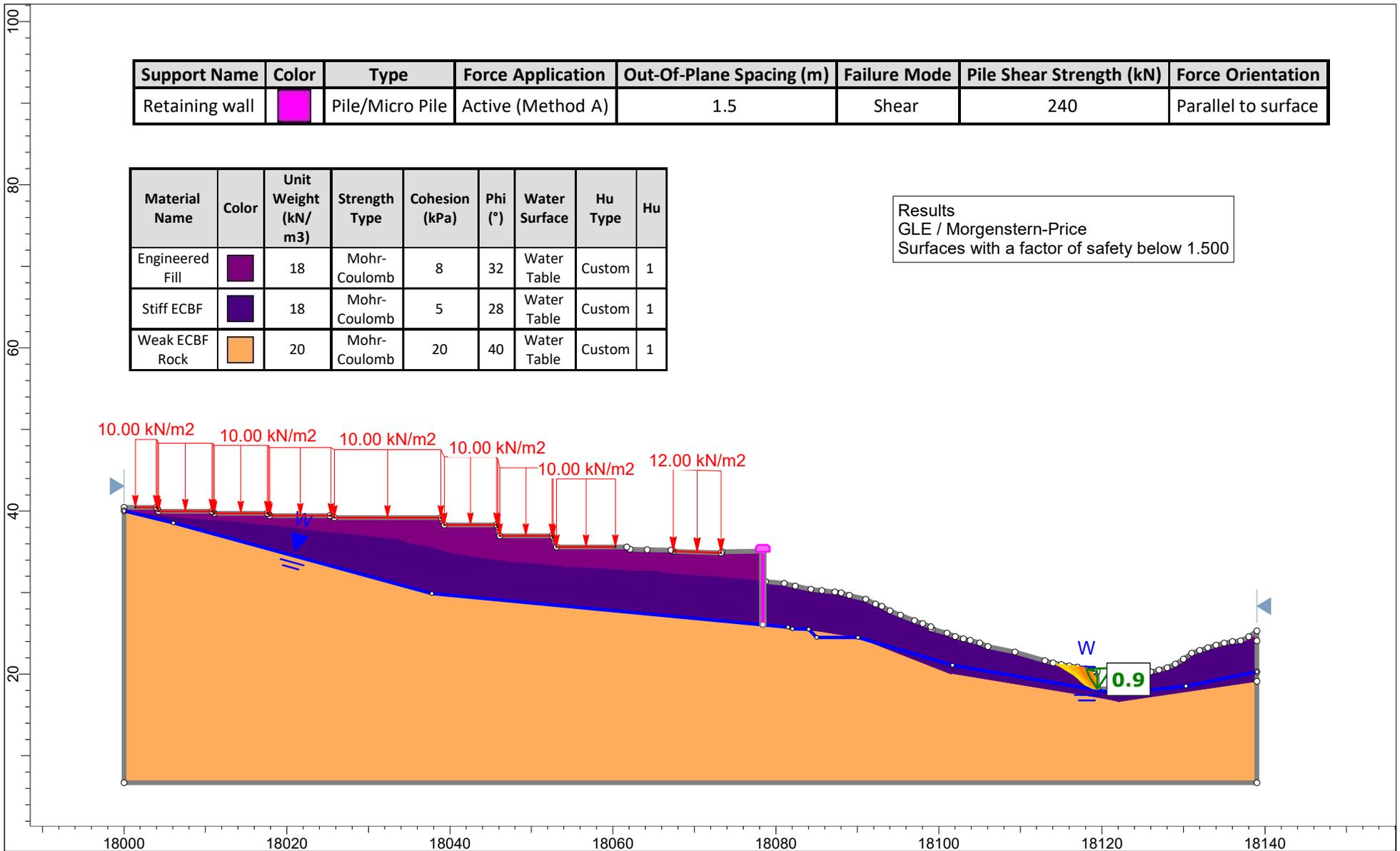


Project	240065 - Russell Road, Waunui		
Group	Section Q - Proposed GL	Scenario	Extreme (50% fill saturation)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section Q.sldm

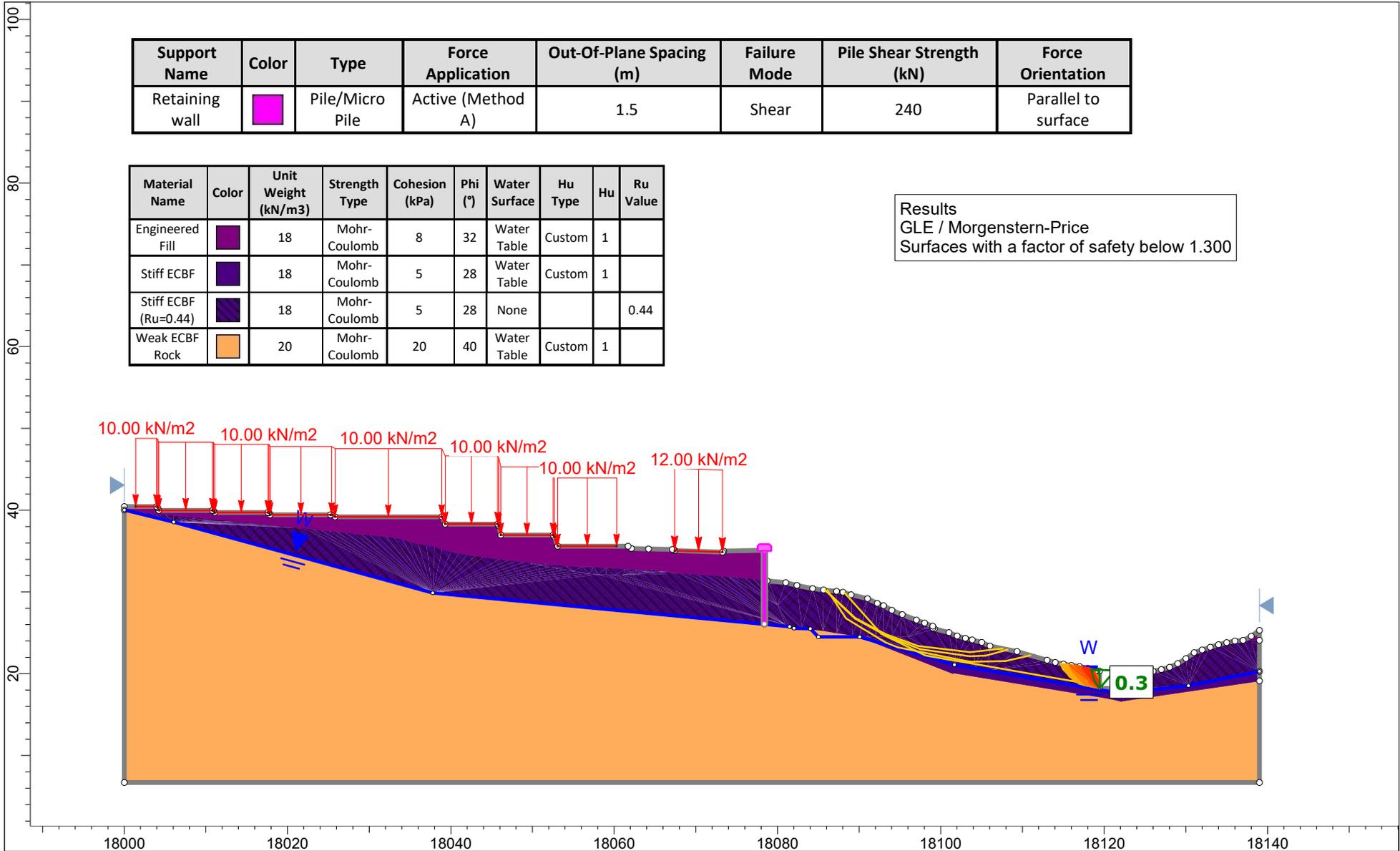
Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (m)	Failure Mode	Pile Shear Strength (kN)	Force Orientation
Retaining wall		Pile/Micro Pile	Active (Method A)	1.5	Shear	240	Parallel to surface

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
Weak ECBF Rock		20	Mohr-Coulomb	20	40	Water Table	Custom	1

Results
GLE / Morgenstern-Price
Surfaces with a factor of safety below 1.500



RILEY <small>SLIDEINTERPRET 9.038</small>	Project		240065 - Russell Road, Waunui	
	Group		Section R - Proposed GL & remedials	Scenario
	Drawn By		LKB	Company
	Date		19/12/2025	File Name
			Normal (Measured GW)	
			Riley Consultants Ltd	
			Section R.sldm	

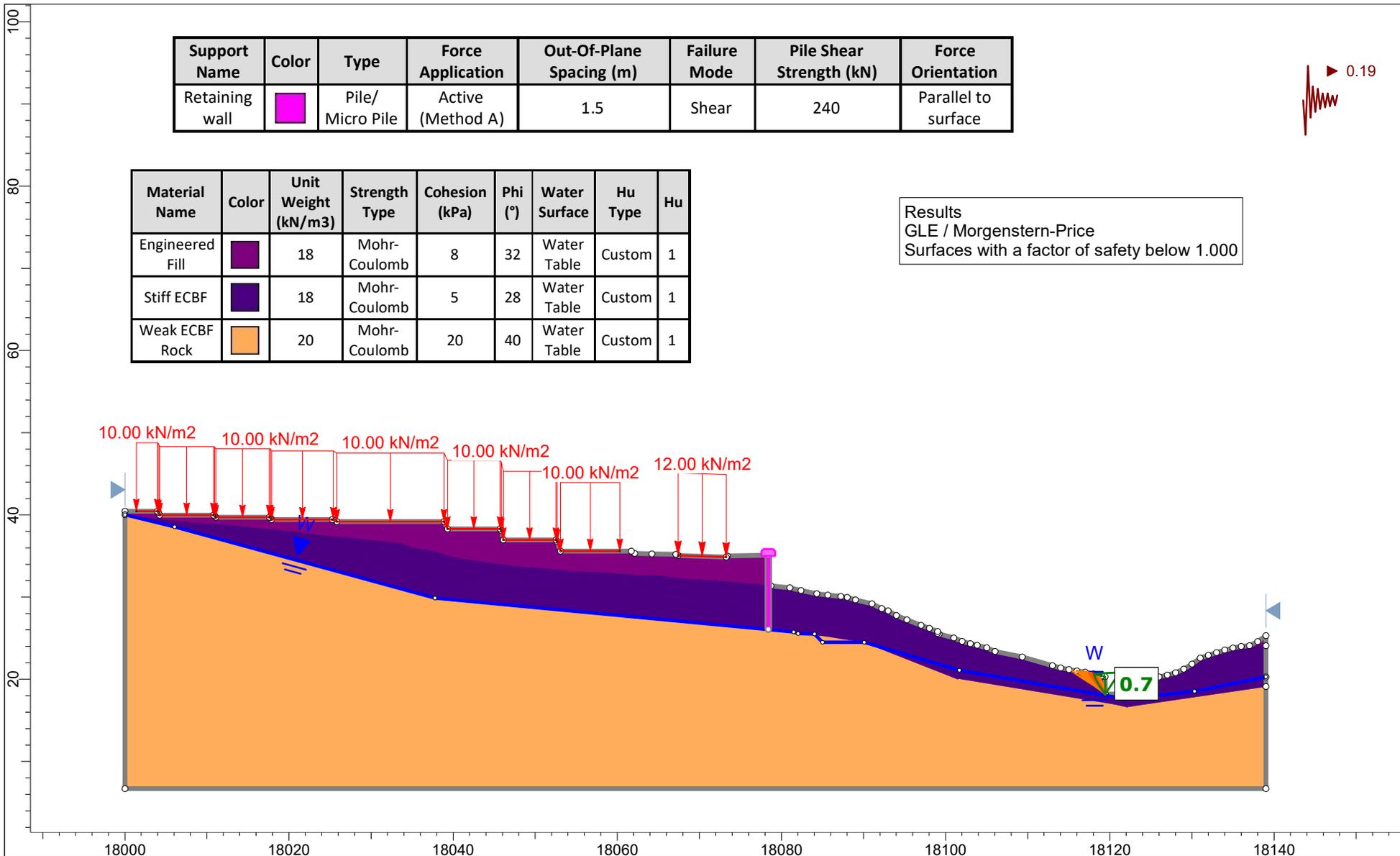


Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (m)	Failure Mode	Pile Shear Strength (kN)	Force Orientation
Retaining wall		Pile/Micro Pile	Active (Method A)	1.5	Shear	240	Parallel to surface

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	Water Table	Custom	1	
Stiff ECFB		18	Mohr-Coulomb	5	28	Water Table	Custom	1	
Stiff ECFB (Ru=0.44)		18	Mohr-Coulomb	5	28	None			0.44
Weak ECFB Rock		20	Mohr-Coulomb	20	40	Water Table	Custom	1	

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

	Project		240065 - Russell Road, Waunui	
	Group		Section R - Proposed GL & remedials	Scenario
	Drawn By		LKB	Company
	Date		19/12/2025	File Name
				Extreme (Worst Credible GW)
				Riley Consultants Ltd
				Section R.sldm

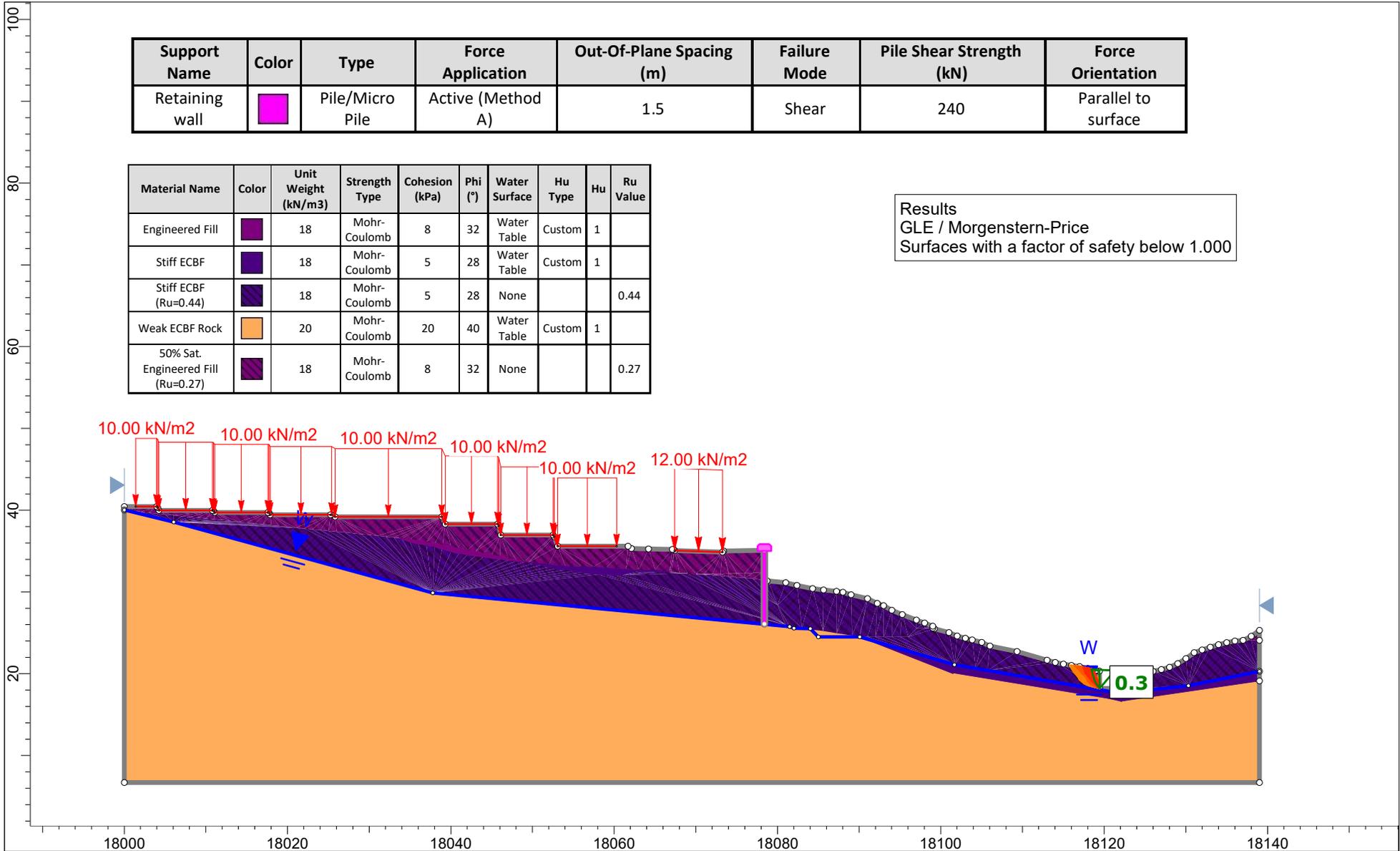


Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (m)	Failure Mode	Pile Shear Strength (kN)	Force Orientation
Retaining wall	█	Pile/ Micro Pile	Active (Method A)	1.5	Shear	240	Parallel to surface

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
Weak ECBF Rock	█	20	Mohr-Coulomb	20	40	Water Table	Custom	1

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

	Project		240065 - Russell Road, Waunui	
	Group		Section R - Proposed GL & remedials	Scenario
	Drawn By		LKB	Company
	Date		19/12/2025	File Name
			Seismic (0.19g)	Riley Consultants Ltd
			Section R.sldm	

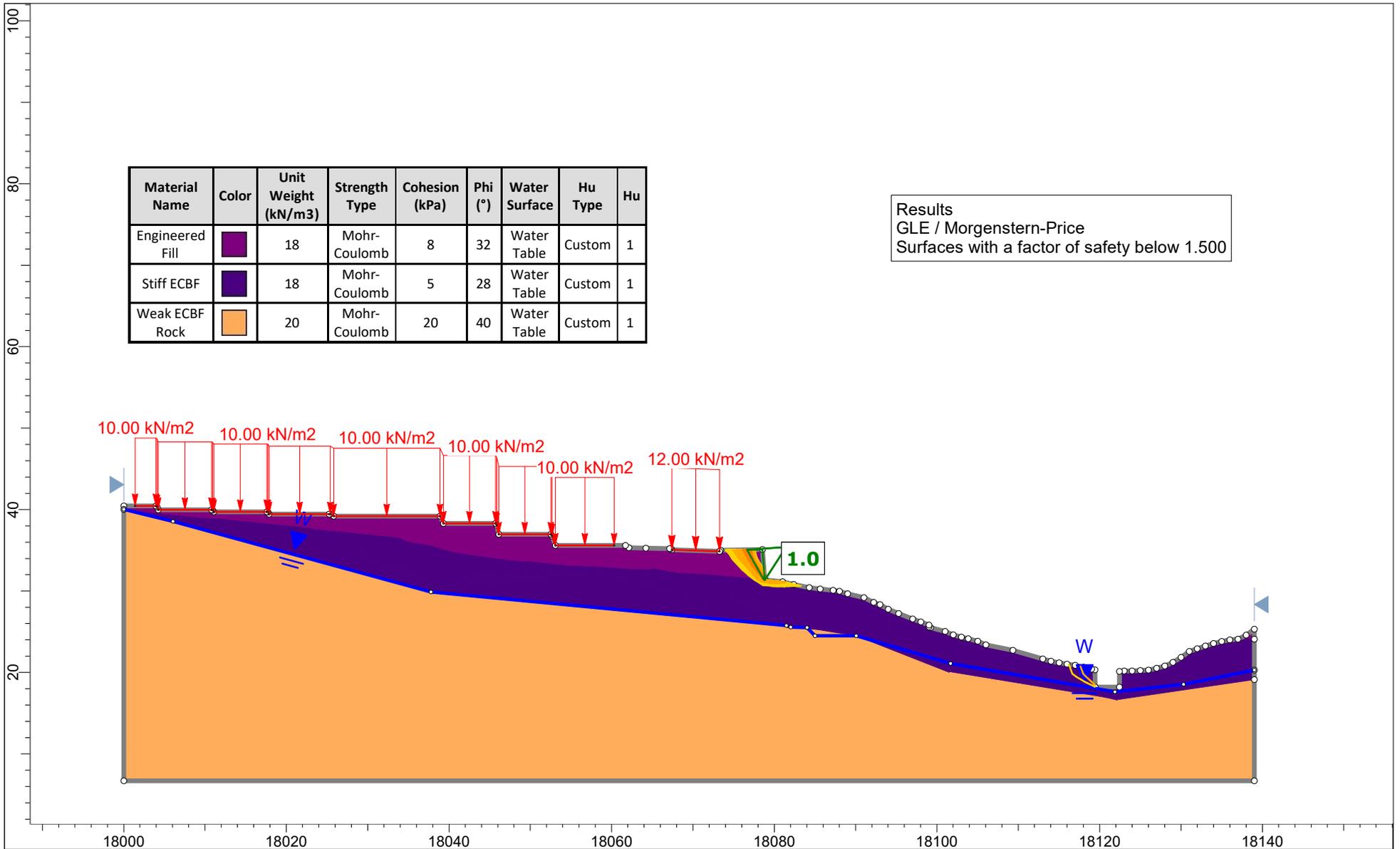


Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (m)	Failure Mode	Pile Shear Strength (kN)	Force Orientation
Retaining wall		Pile/Micro Pile	Active (Method A)	1.5	Shear	240	Parallel to surface

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	Water Table	Custom	1	
Stiff ECBF		18	Mohr-Coulomb	5	28	Water Table	Custom	1	
Stiff ECBF (Ru=0.44)		18	Mohr-Coulomb	5	28	None			0.44
Weak ECBF Rock		20	Mohr-Coulomb	20	40	Water Table	Custom	1	
50% Sat. Engineered Fill (Ru=0.27)		18	Mohr-Coulomb	8	32	None			0.27

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

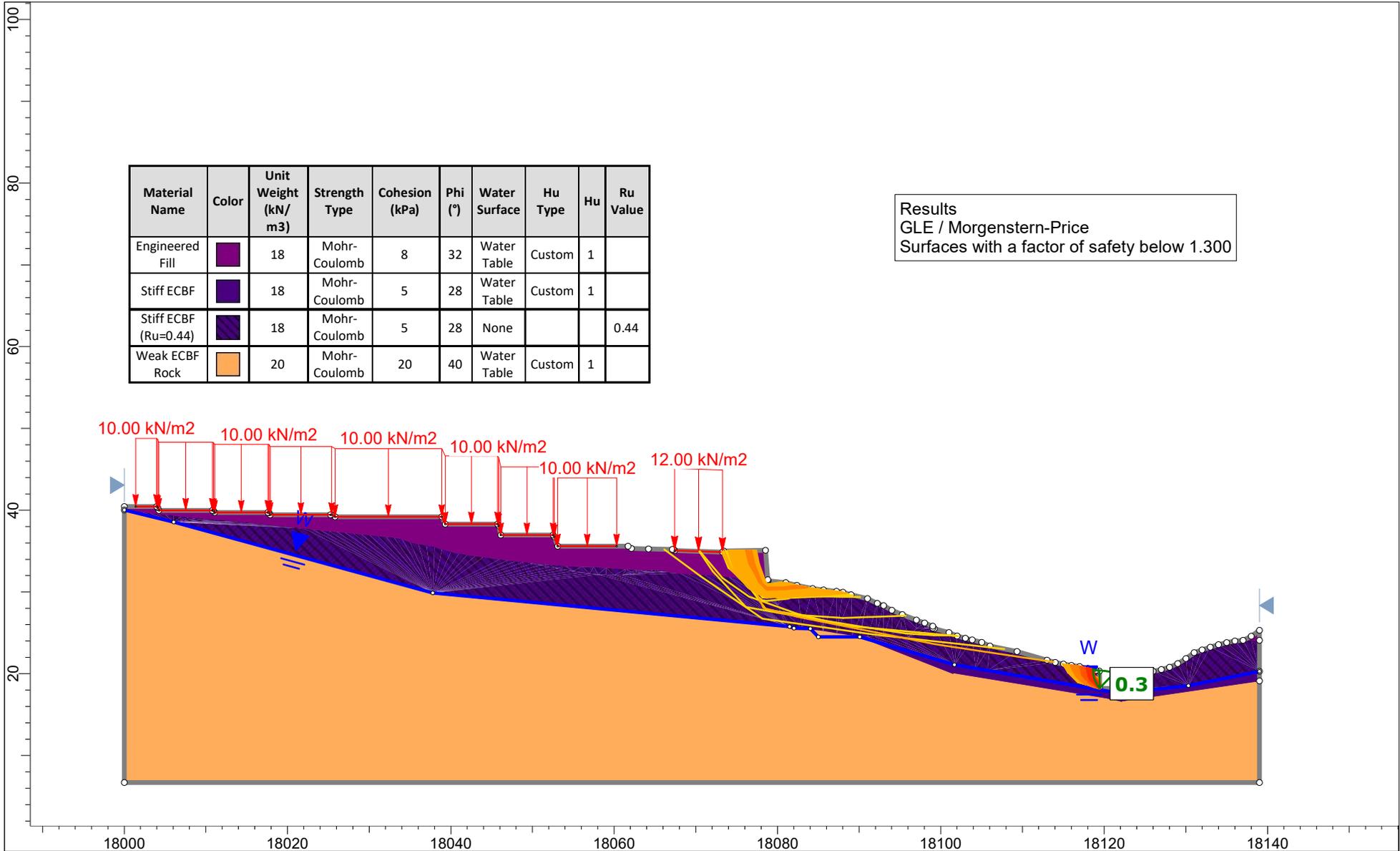
	Project		240065 - Russell Road, Waunui	
	Group		Section R - Proposed GL & remedials	Scenario
	Drawn By		LKB	Company
	Date		19/12/2025	File Name
				Section R.slmd



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
Weak ECBF Rock		20	Mohr-Coulomb	20	40	Water Table	Custom	1

Results
GLE / Morgenstern-Price
Surfaces with a factor of safety below 1.500

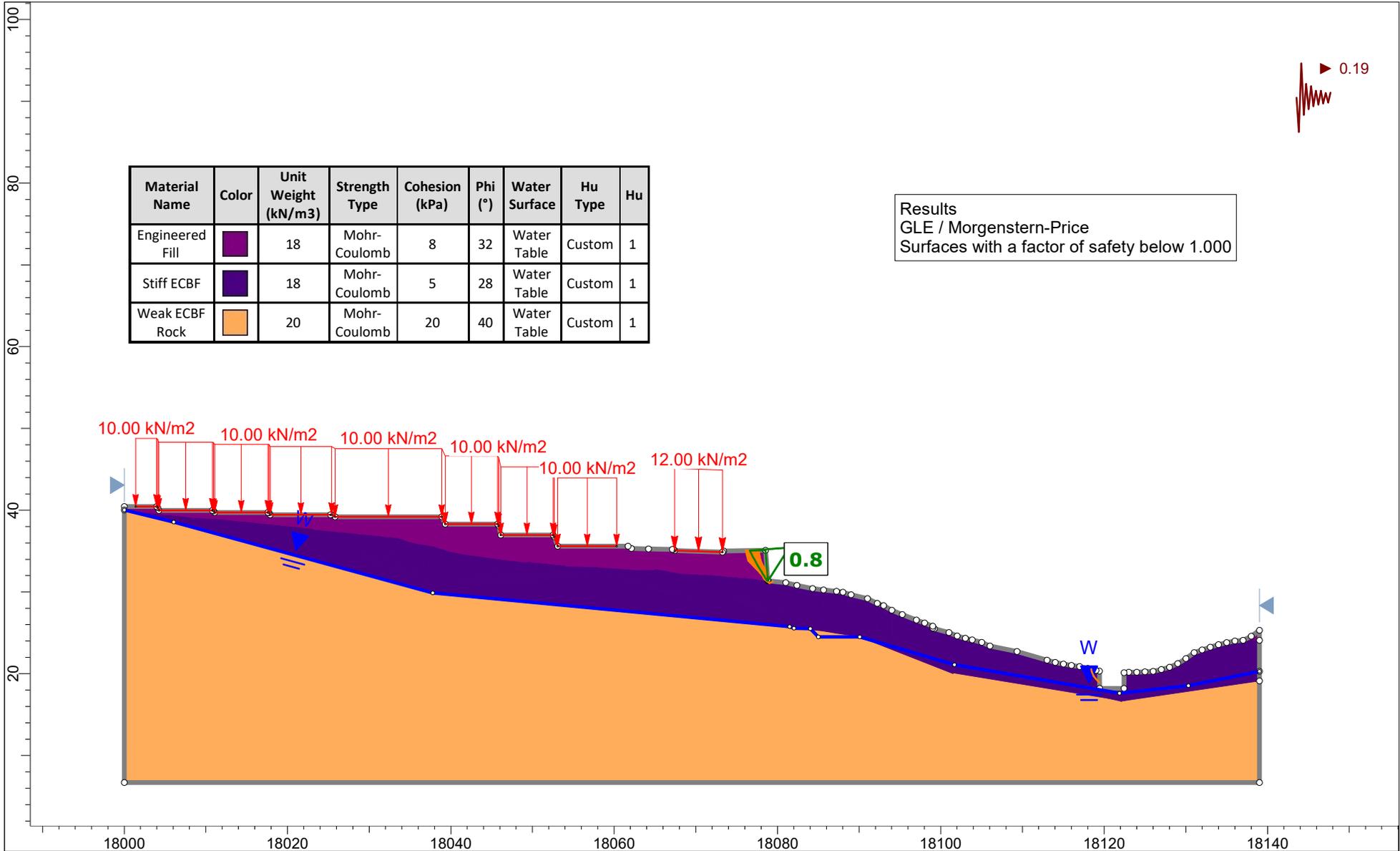
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	Group		Section R - Proposed GL	Scenario
	Drawn By		LKB	Company
	Date		19/12/2025	File Name
			Normal (Measured GW)	
			Riley Consultants Ltd	
			Section R.sldm	



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	Water Table	Custom	1	
Stiff ECBF	■	18	Mohr-Coulomb	5	28	Water Table	Custom	1	
Stiff ECBF (Ru=0.44)	■	18	Mohr-Coulomb	5	28	None			0.44
Weak ECBF Rock	■	20	Mohr-Coulomb	20	40	Water Table	Custom	1	

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

	Project		240065 - Russell Road, Waunui	
	Group		Section R - Proposed GL	Scenario
	Drawn By		LKB	Company
	Date		19/12/2025	File Name
			Extreme (Worst Credible GW)	
			Riley Consultants Ltd	
			Section R.slm	

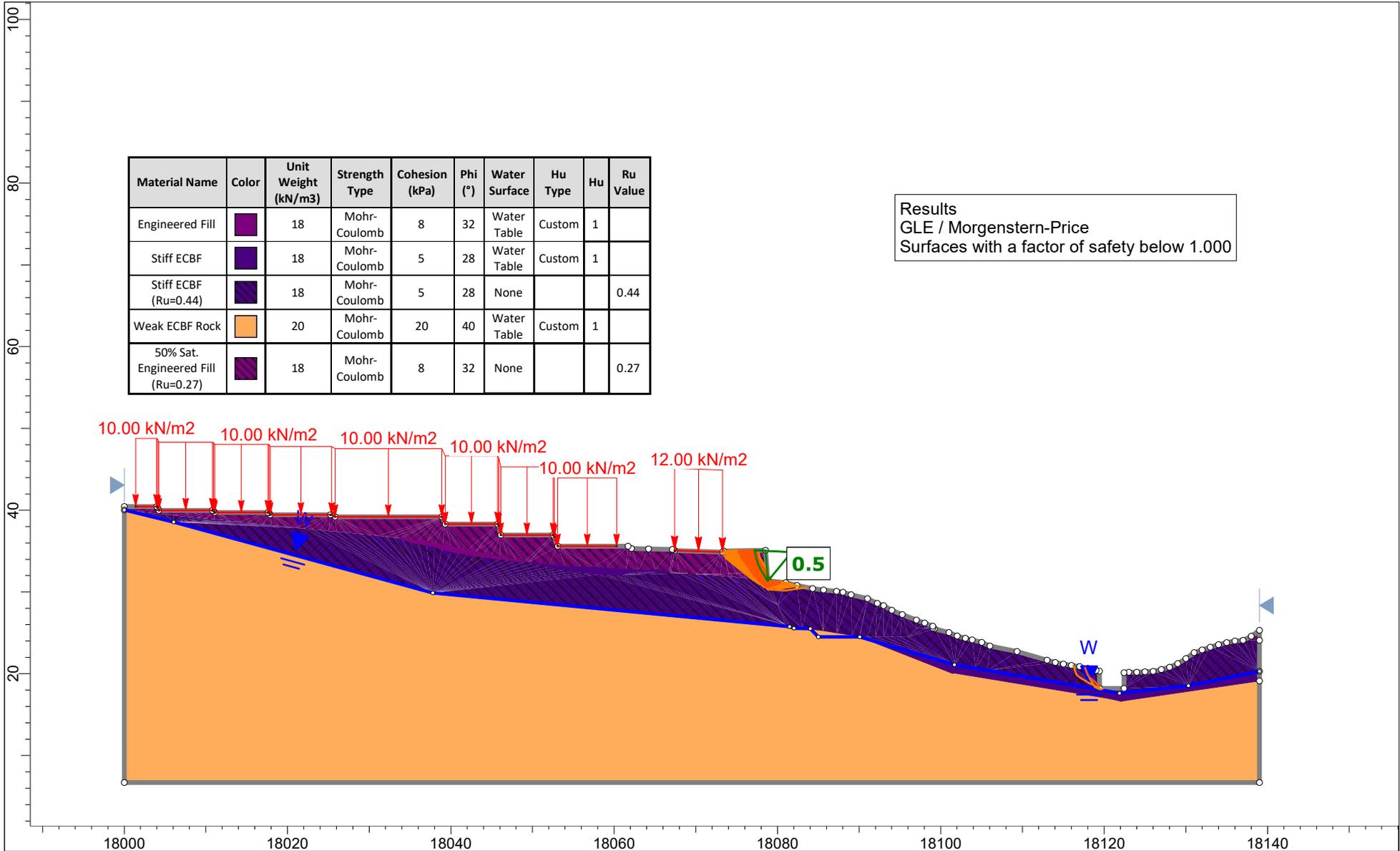


Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Engineered Fill	Light Purple	18	Mohr-Coulomb	8	32	Water Table	Custom	1
Stiff ECBF	Dark Purple	18	Mohr-Coulomb	5	28	Water Table	Custom	1
Weak ECBF Rock	Orange	20	Mohr-Coulomb	20	40	Water Table	Custom	1

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



Project	240065 - Russell Road, Waunui		
Group	Section R - Proposed GL	Scenario	Seismic (0.19g)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section R.sldm

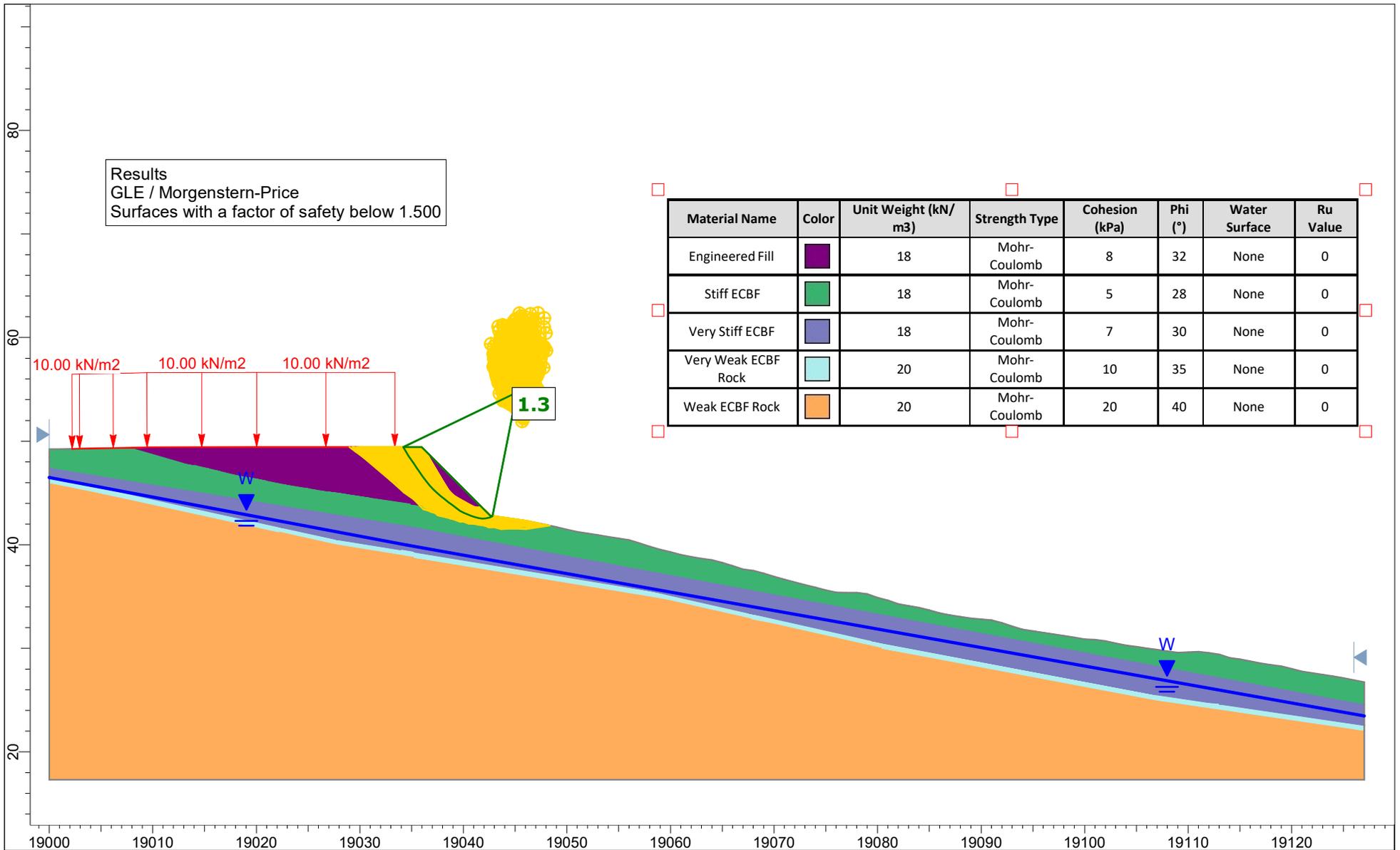


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Engineered Fill		18	Mohr-Coulomb	8	32	Water Table	Custom	1	
Stiff ECBF		18	Mohr-Coulomb	5	28	Water Table	Custom	1	
Stiff ECBF (Ru=0.44)		18	Mohr-Coulomb	5	28	None			0.44
Weak ECBF Rock		20	Mohr-Coulomb	20	40	Water Table	Custom	1	
50% Sat. Engineered Fill (Ru=0.27)		18	Mohr-Coulomb	8	32	None			0.27

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



Project	240065 - Russell Road, Waunui		
Group	Section R - Proposed GL	Scenario	Extreme (50% Fill Saturation)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section R.sldm

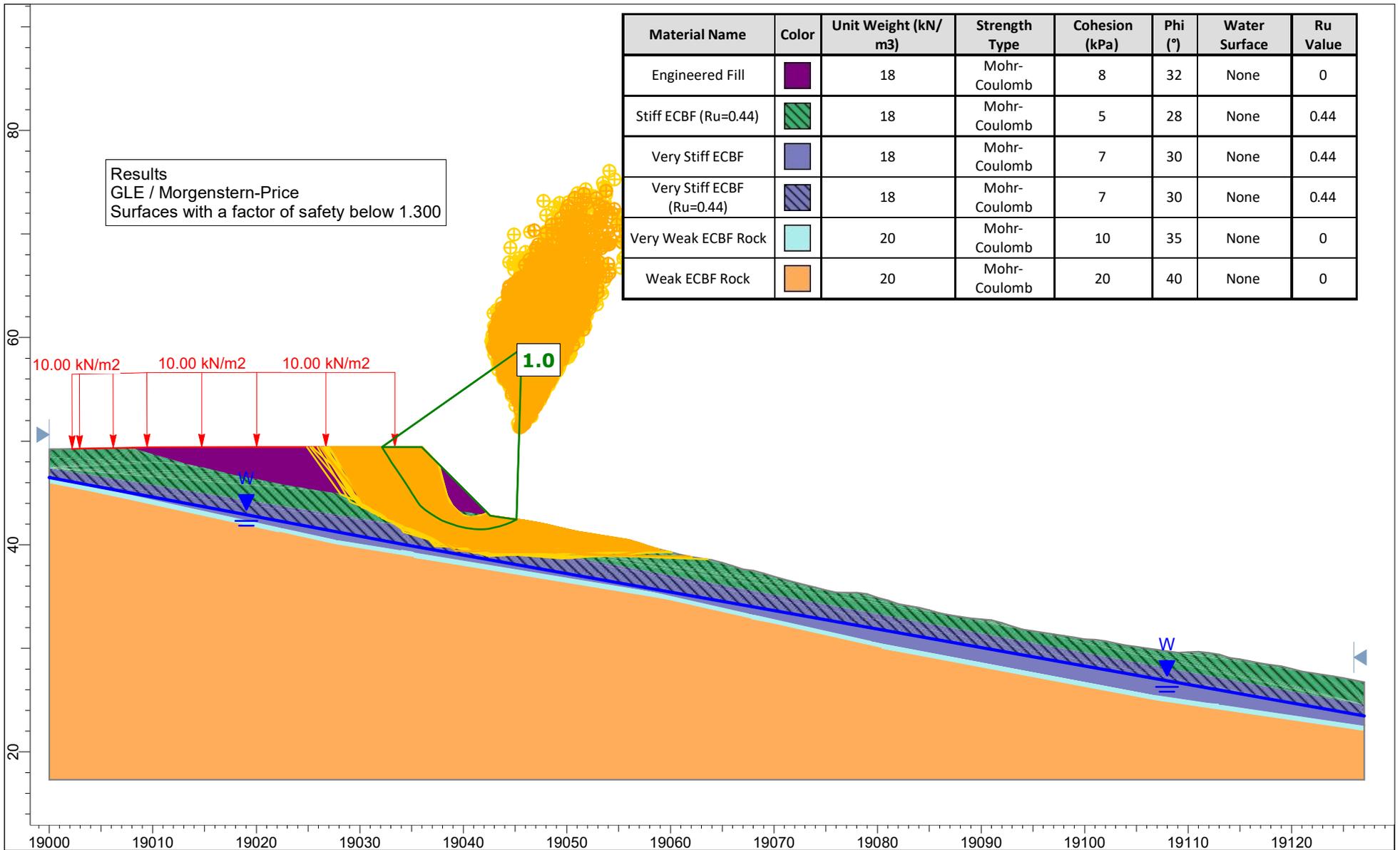


Results
GLE / Morgenstern-Price
Surfaces with a factor of safety below 1.500

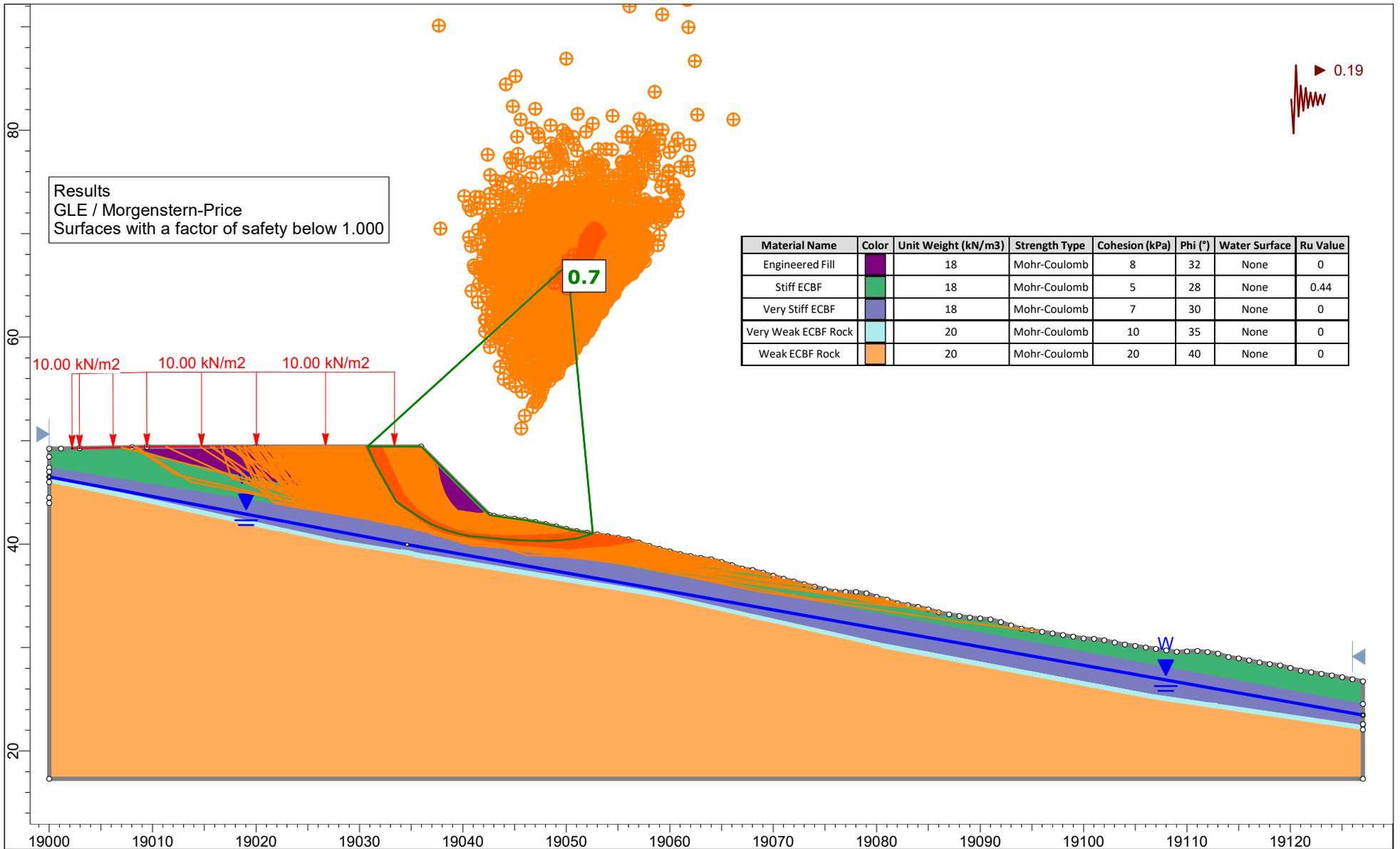
Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	None	0
Stiff ECBF	Green	18	Mohr-Coulomb	5	28	None	0
Very Stiff ECBF	Purple	18	Mohr-Coulomb	7	30	None	0
Very Weak ECBF Rock	Light Blue	20	Mohr-Coulomb	10	35	None	0
Weak ECBF Rock	Orange	20	Mohr-Coulomb	20	40	None	0



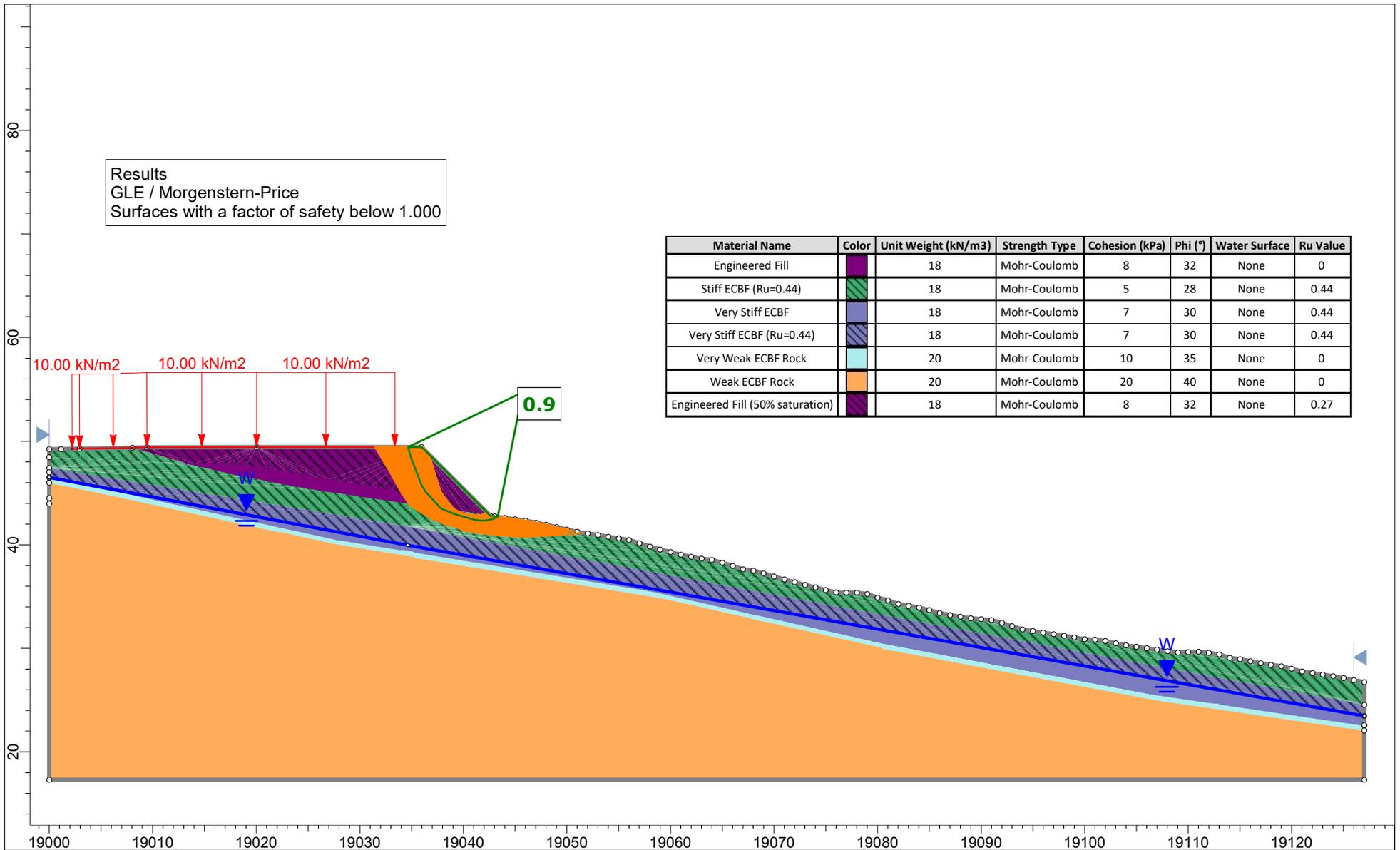
Project		240065 - Russell Road, Waunui	
Group	Section S - Proposed GL	Scenario	Normal (Measured GW)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section S.sldm



	Project		240065 - Russell Road, Waunui	
	Group		Section S - Proposed GL	Scenario
	Drawn By		LKB	Company
	Date		19/12/2025	File Name
			Extreme (Worst Credible GW)	
			Riley Consultants Ltd	
			Section S.sldm	



	Project		240065 - Russell Road, Waunui	
	Group	Section S - Proposed GL	Scenario	Seismic (0.19g)
	Drawn By	LKB	Company	Riley Consultants Ltd
	Date	19/12/2025	File Name	Section S.slmd



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

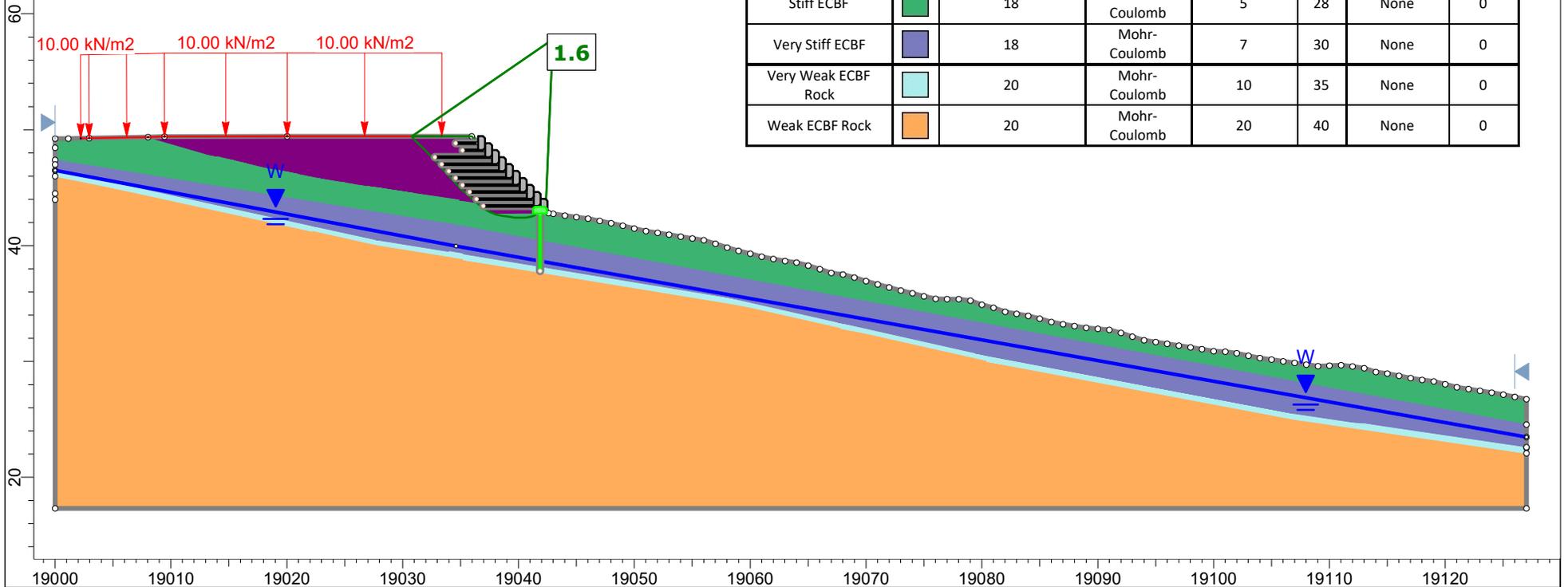
Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
Engineered Fill	[Purple]	18	Mohr-Coulomb	8	32	None	0
Stiff ECBF (Ru=0.44)	[Green]	18	Mohr-Coulomb	5	28	None	0.44
Very Stiff ECBF	[Blue]	18	Mohr-Coulomb	7	30	None	0.44
Very Stiff ECBF (Ru=0.44)	[Dark Blue]	18	Mohr-Coulomb	7	30	None	0.44
Very Weak ECBF Rock	[Light Blue]	20	Mohr-Coulomb	10	35	None	0
Weak ECBF Rock	[Orange]	20	Mohr-Coulomb	20	40	None	0
Engineered Fill (50% saturation)	[Dark Purple]	18	Mohr-Coulomb	8	32	None	0.27

	Project		240065 - Russell Road, Waunui	
	Group		Section S - Proposed GL	Scenario
	Drawn By		LKB	Company
	Date		19/12/2025	File Name
				Section S.slmd

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 (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid	Black	Geosynthetic	Active (Method A)		No	Friction Angle & Adhesion	5	21	Linear				Parallel to Reinforcement	Slope Face	100	20	Constant	20
Palisade Wall	Green	Pile/Micro Pile	Active (Method A)	1.5						Shear	640	Parallel to surface						

Results
GLE / Morgenstern-Price
Surfaces with a factor of safety below 1.500

Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	None	0
Stiff ECBF	Green	18	Mohr-Coulomb	5	28	None	0
Very Stiff ECBF	Blue	18	Mohr-Coulomb	7	30	None	0
Very Weak ECBF Rock	Cyan	20	Mohr-Coulomb	10	35	None	0
Weak ECBF Rock	Orange	20	Mohr-Coulomb	20	40	None	0

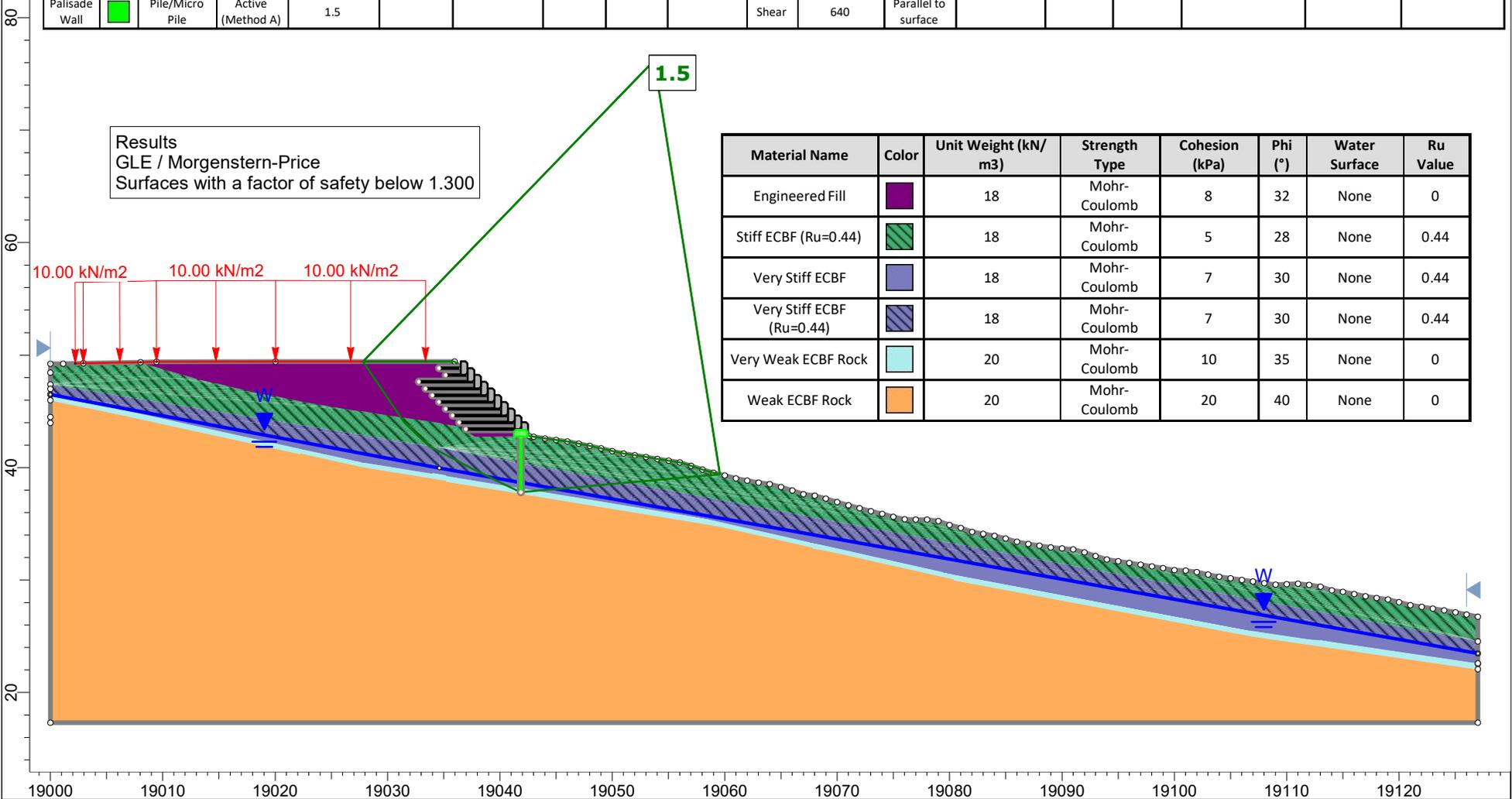


Project	240065 - Russell Road, Waunui		
Group	Section S - Proposed GL & remedials	Scenario	Normal (Measured GW)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section S.slmd

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 (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid	Black	Geosynthetic	Active (Method A)		No	Friction Angle & Adhesion	5	21	Linear				Parallel to Reinforcement	Slope Face	100	20	Constant	20
Palisade Wall	Green	Pile/Micro Pile	Active (Method A)	1.5						Shear	640	Parallel to surface						

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

Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	None	0
Stiff ECBF (Ru=0.44)	Green diagonal	18	Mohr-Coulomb	5	28	None	0.44
Very Stiff ECBF	Blue diagonal	18	Mohr-Coulomb	7	30	None	0.44
Very Stiff ECBF (Ru=0.44)	Dark blue diagonal	18	Mohr-Coulomb	7	30	None	0.44
Very Weak ECBF Rock	Light blue	20	Mohr-Coulomb	10	35	None	0
Weak ECBF Rock	Orange	20	Mohr-Coulomb	20	40	None	0



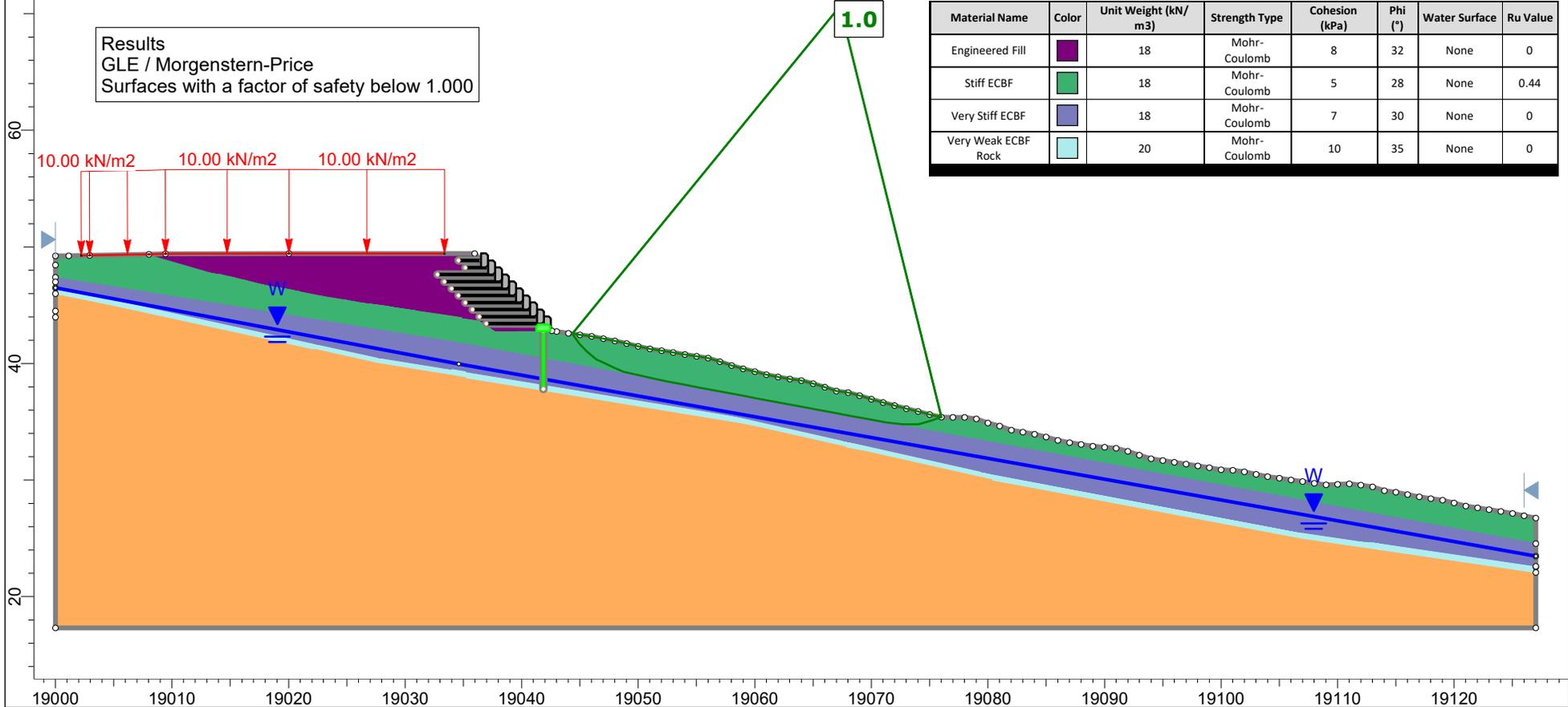
	Project		240065 - Russell Road, Waunui	
	Group		Section S - Proposed GL & remedials	Scenario
	Drawn By		LKB	Company
	Date		19/12/2025	File Name
				Section S.sldm

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 (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid	Black	Geosynthetic	Active (Method A)		No	Friction Angle & Adhesion	5	21	Linear				Parallel to Reinforcement	Slope Face	100	20	Constant	20
Palisade Wall	Green	Pile/Micro Pile	Active (Method A)	1.5						Shear	640	Parallel to surface						

0.19

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

Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	None	0
Stiff ECBF	Green	18	Mohr-Coulomb	5	28	None	0.44
Very Stiff ECBF	Blue	18	Mohr-Coulomb	7	30	None	0
Very Weak ECBF	Cyan	20	Mohr-Coulomb	10	35	None	0
Rock	Orange						

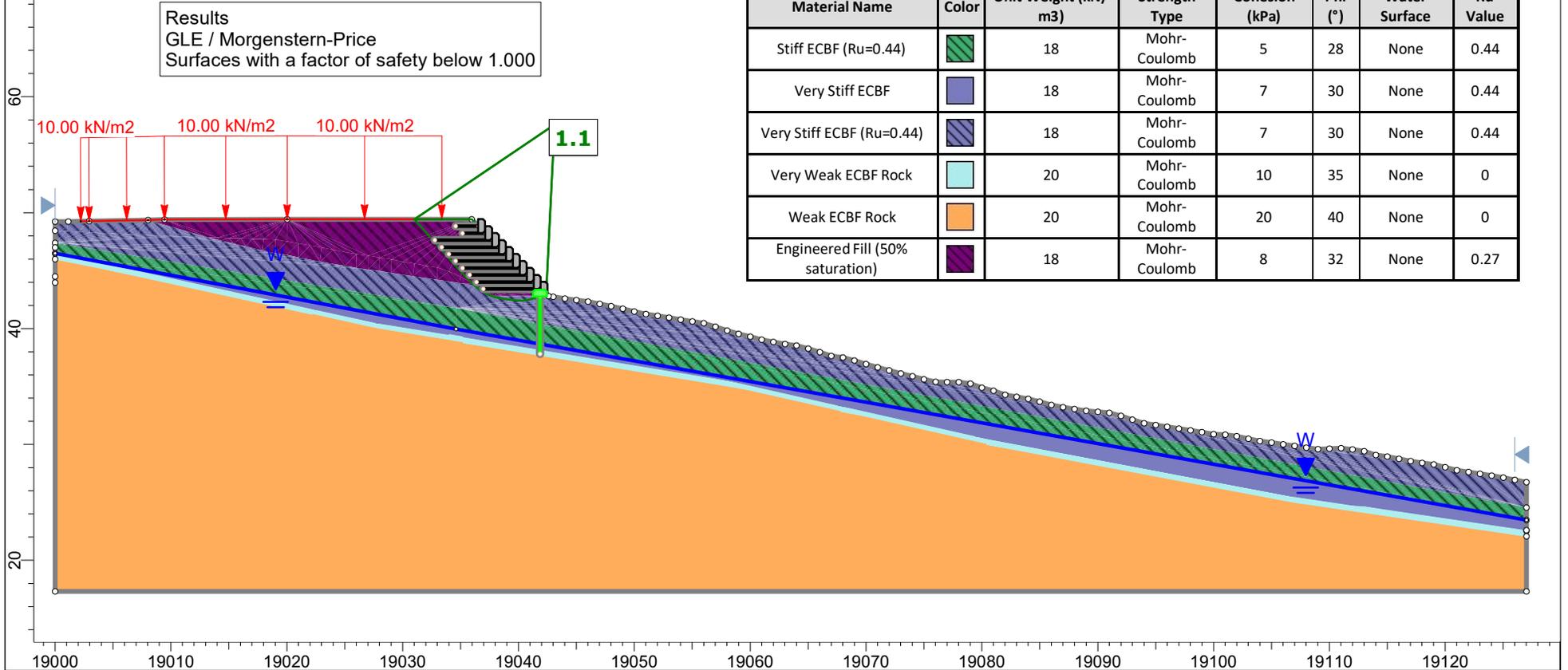


Project	240065 - Russell Road, Waunui		
Group	Section S - Proposed GL & remedials	Scenario	Seismic (0.19g)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section S.slmd

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 (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid	Black	Geosynthetic	Active (Method A)		No	Friction Angle & Adhesion	5	21	Linear				Parallel to Reinforcement	Slope Face	100	20	Constant	20
Palisade Wall	Green	Pile/Micro Pile	Active (Method A)	1.5						Shear	640	Parallel to surface						

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

Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Ru Value
Stiff ECBF (Ru=0.44)	Green diagonal lines	18	Mohr-Coulomb	5	28	None	0.44
Very Stiff ECBF	Blue diagonal lines	18	Mohr-Coulomb	7	30	None	0.44
Very Stiff ECBF (Ru=0.44)	Blue diagonal lines	18	Mohr-Coulomb	7	30	None	0.44
Very Weak ECBF Rock	Light blue	20	Mohr-Coulomb	10	35	None	0
Weak ECBF Rock	Orange	20	Mohr-Coulomb	20	40	None	0
Engineered Fill (50% saturation)	Purple	18	Mohr-Coulomb	8	32	None	0.27



	Project		240065 - Russell Road, Waunui	
	Group	Section S - Proposed GL & remedials	Scenario	Extreme (50% saturated fill)
	Drawn By	LKB	Company	Riley Consultants Ltd
	Date	19/12/2025	File Name	Section S.slmd

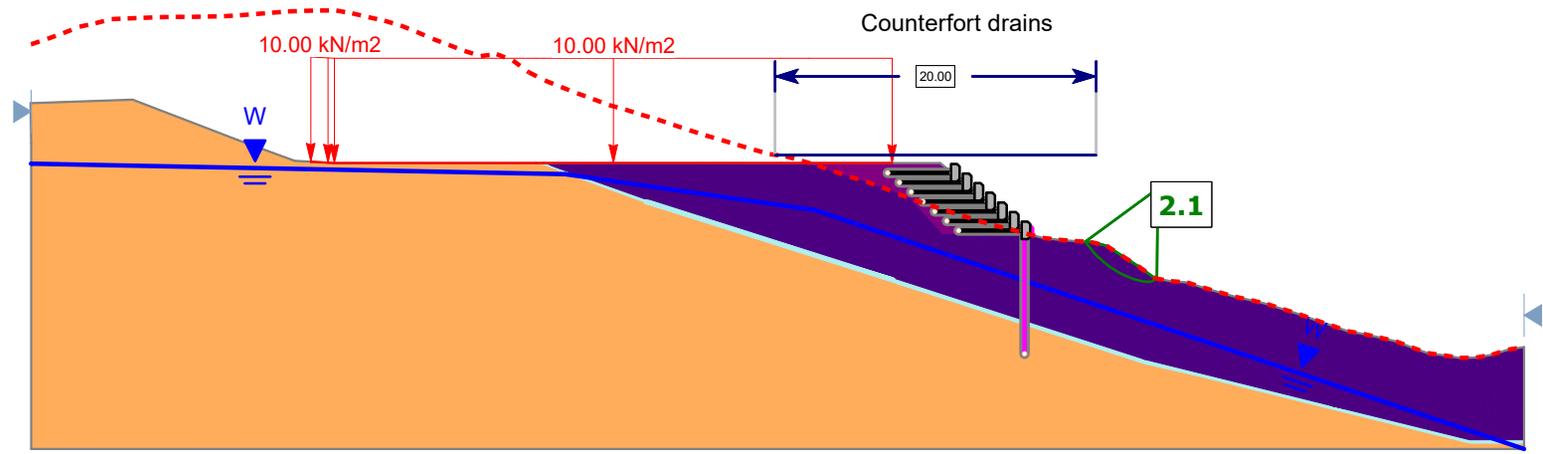
Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (m)	Material Dependent	Input Type	Adhesion (kPa)	Friction Angle (°)	Shear Strength Model	Failure Mode	Pile Shear Strength (kN)	Force Orientation	Force Orientation	Anchorage	Strip Coverage (%)	Allowable Tensile Strength (kN/m)	Connection Strength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

--- Existing ground profile

Results
GLE / Morgenstern-Price
Surfaces with a factor of safety below 1.500

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

80
60
40



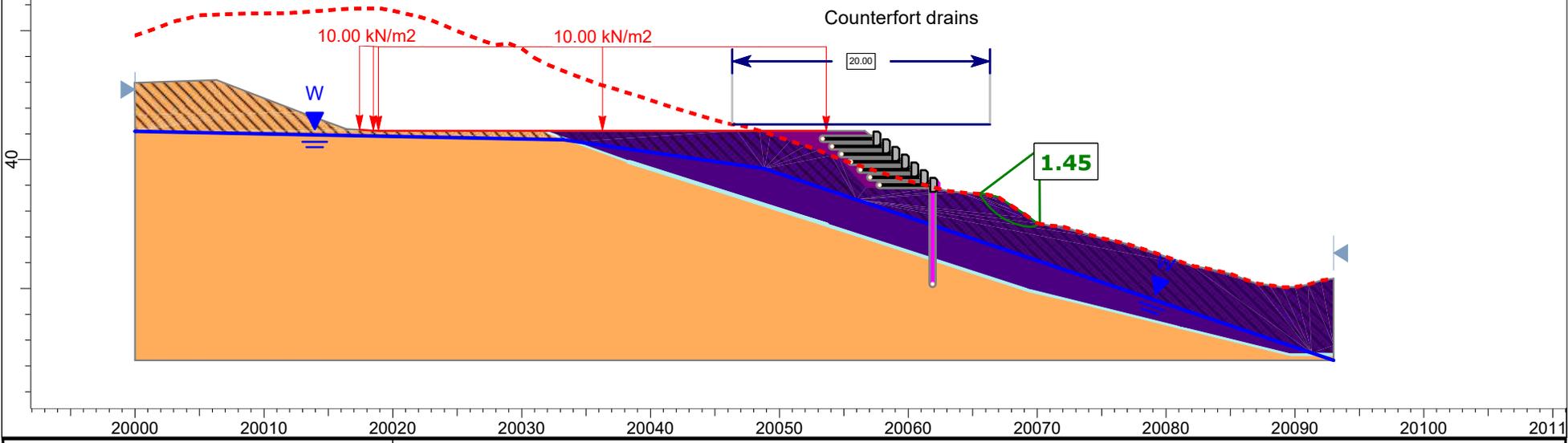
Project	240065 - Russell Road, Waunui		
Group	Section T - Proposed GL & Remedials	Scenario	Normal (Measured GW)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section T.sldm

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 (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid	Black	Geosynthetic	Active (Method A)		No	Friction Angle & Adhesion	5	21	Linear				Parallel to Reinforcement	Slope Face	100	20	Constant	20
Palisade wall	Pink	Pile/Micro Pile	Active (Method A)	1.5						Shear	280	Parallel to surface						

--- Existing ground profile

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

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



	Project		240065 - Russell Road, Waunui	
	Group	Section T - Proposed GL & Remedials	Scenario	Extreme (Worst Credible GW)
	Drawn By	LKB	Company	Riley Consultants Ltd
	Date	19/12/2025	File Name	Section T.sldm

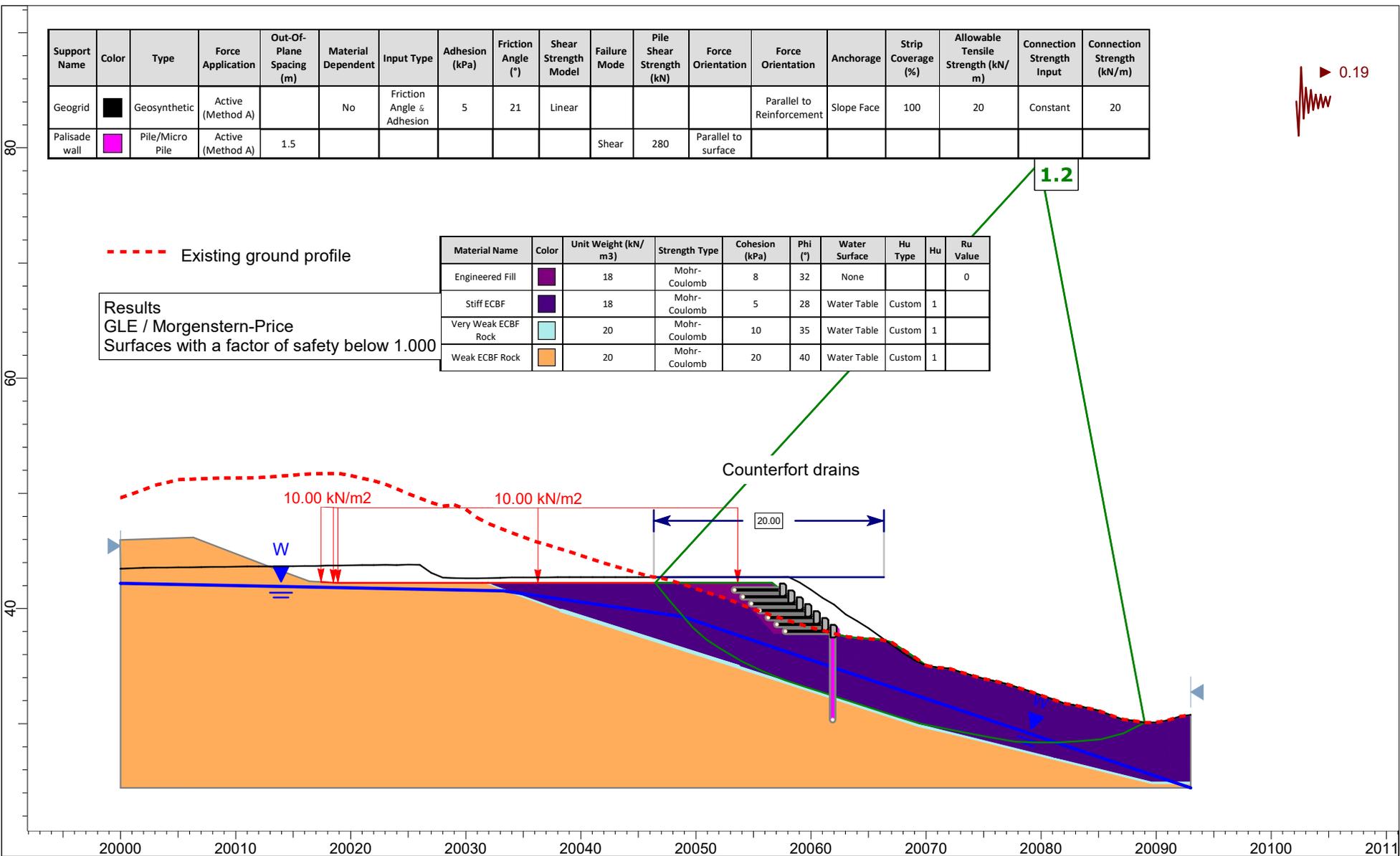
Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (m)	Material Dependent	Input Type	Adhesion (kPa)	Friction Angle (°)	Shear Strength Model	Failure Mode	Pile Shear Strength (kN)	Force Orientation	Force Orientation	Anchorage	Strip Coverage (%)	Allowable Tensile Strength (kN/m)	Connection Strength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



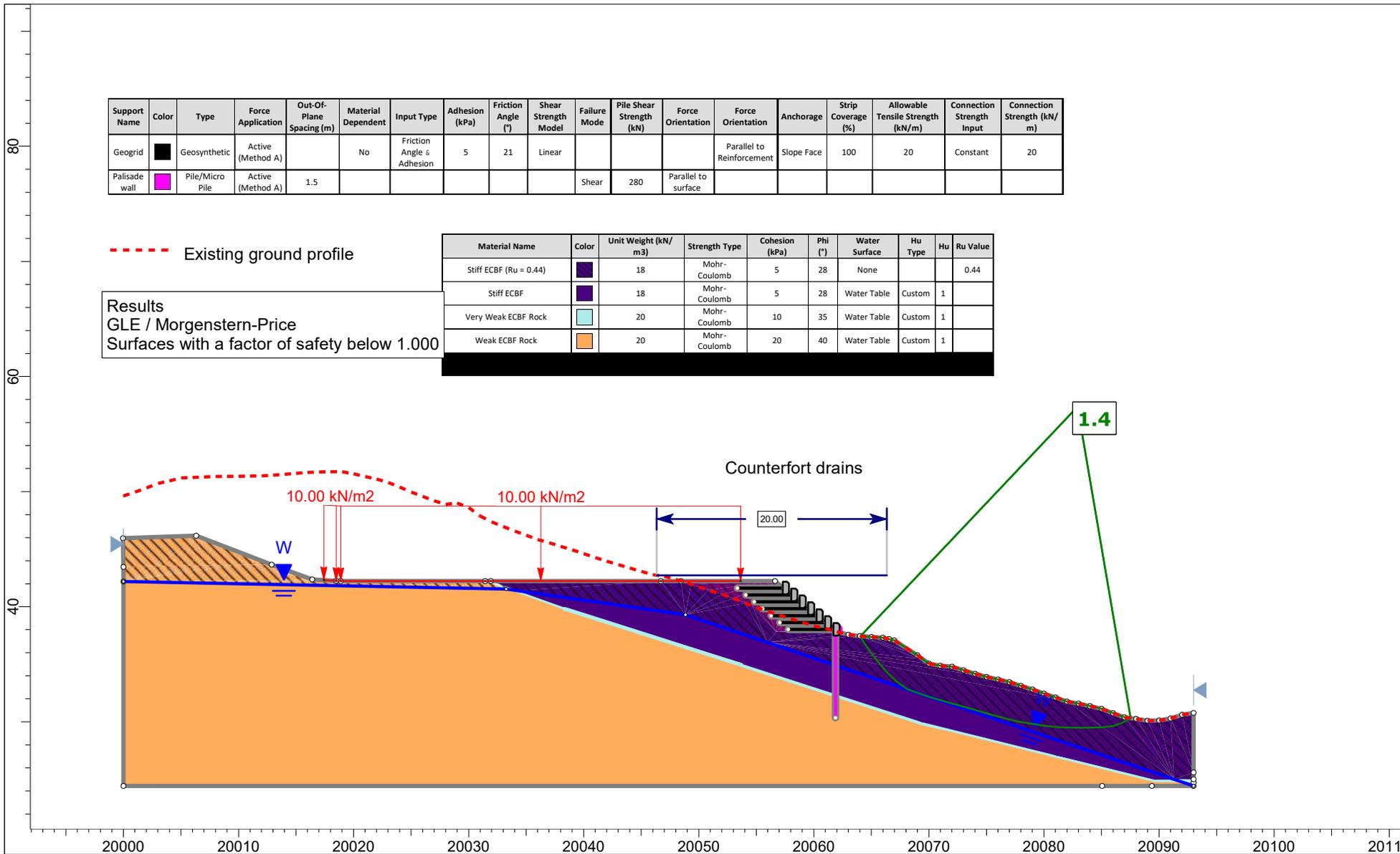
--- Existing ground profile

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

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



	Project		240065 - Russell Road, Waunui	
	Group	Section T - Proposed GL & Remedials	Scenario	Seismic (0.19g)
	Drawn By	LKB	Company	Riley Consultants Ltd
	Date	19/12/2025	File Name	Section T.sldm



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 (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid	Black	Geosynthetic	Active (Method A)		No	Friction Angle & Adhesion	5	21	Linear			Parallel to Reinforcement		Slope Face	100	20	Constant	20
Palisade wall	Pink	Pile/Micro Pile	Active (Method A)	1.5						Shear	280	Parallel to surface						

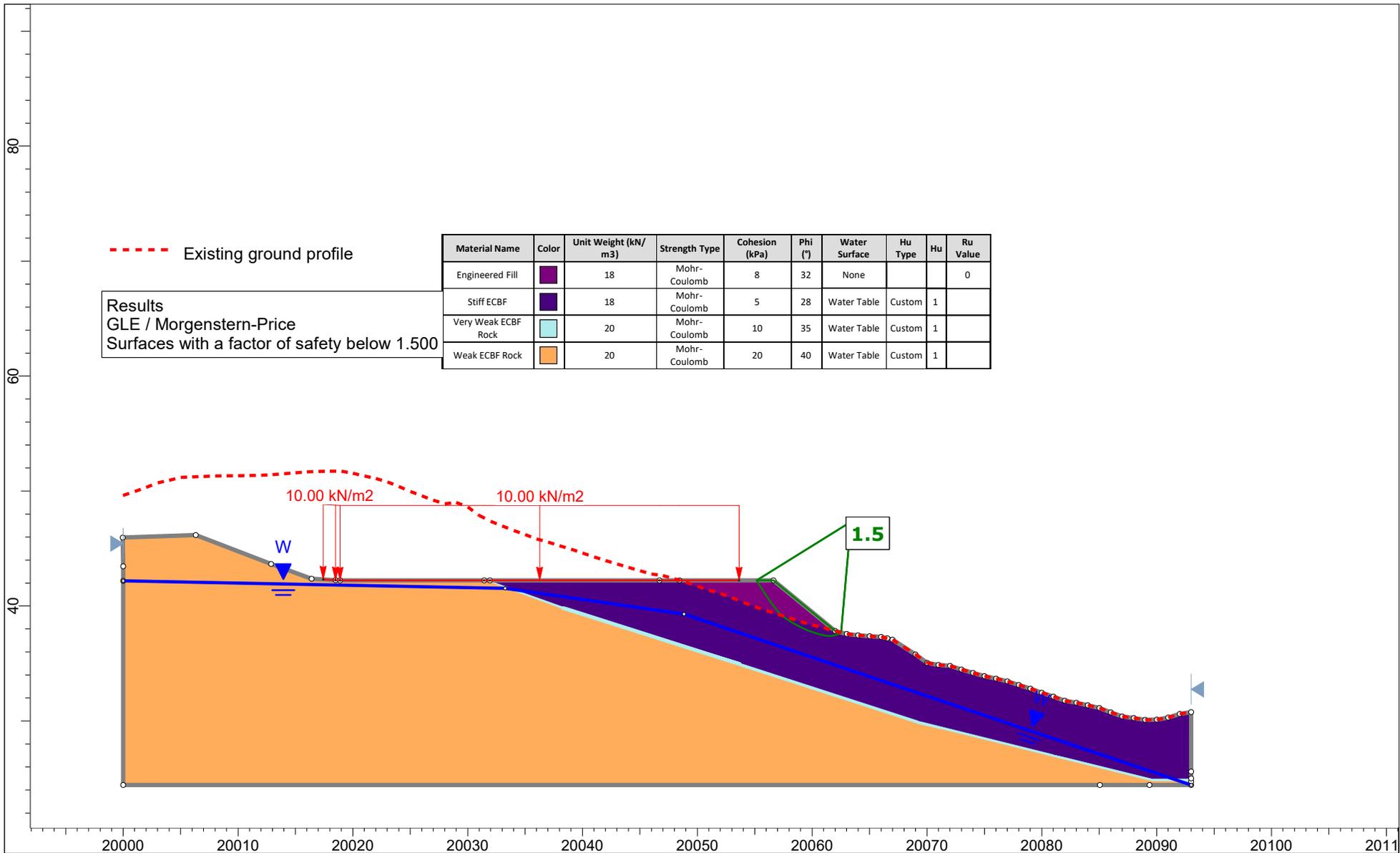
--- Existing ground profile

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

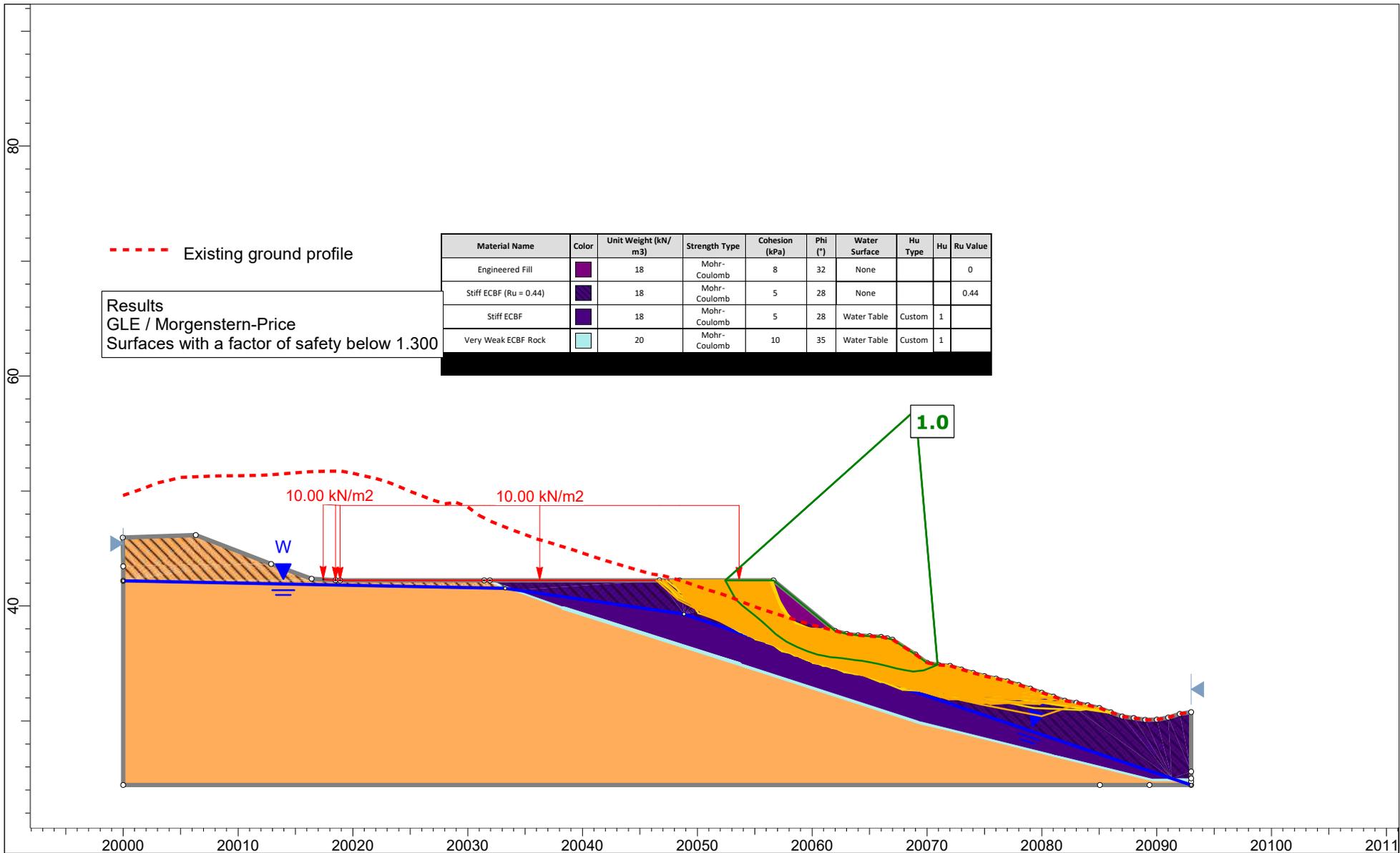
Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Stiff ECBF (Ru = 0.44)	Dark Purple	18	Mohr-Coulomb	5	28	None			0.44
Stiff ECBF	Purple	18	Mohr-Coulomb	5	28	Water Table	Custom	1	
Very Weak ECBF Rock	Light Blue	20	Mohr-Coulomb	10	35	Water Table	Custom	1	
Weak ECBF Rock	Orange	20	Mohr-Coulomb	20	40	Water Table	Custom	1	



Project	240065 - Russell Road, Waunui		
Group	Section T - Proposed GL & Remedials	Scenario	Extreme (50% fill saturation)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section T.sldm



	Project		240065 - Russell Road, Waunui	
	Group		Section T - Proposed GL	Scenario
	Drawn By		LKB	Company
	Date		19/12/2025	File Name
			Normal (Measured GW)	
			Riley Consultants Ltd	
			Section T.sldm	



--- Existing ground profile

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

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

1.0

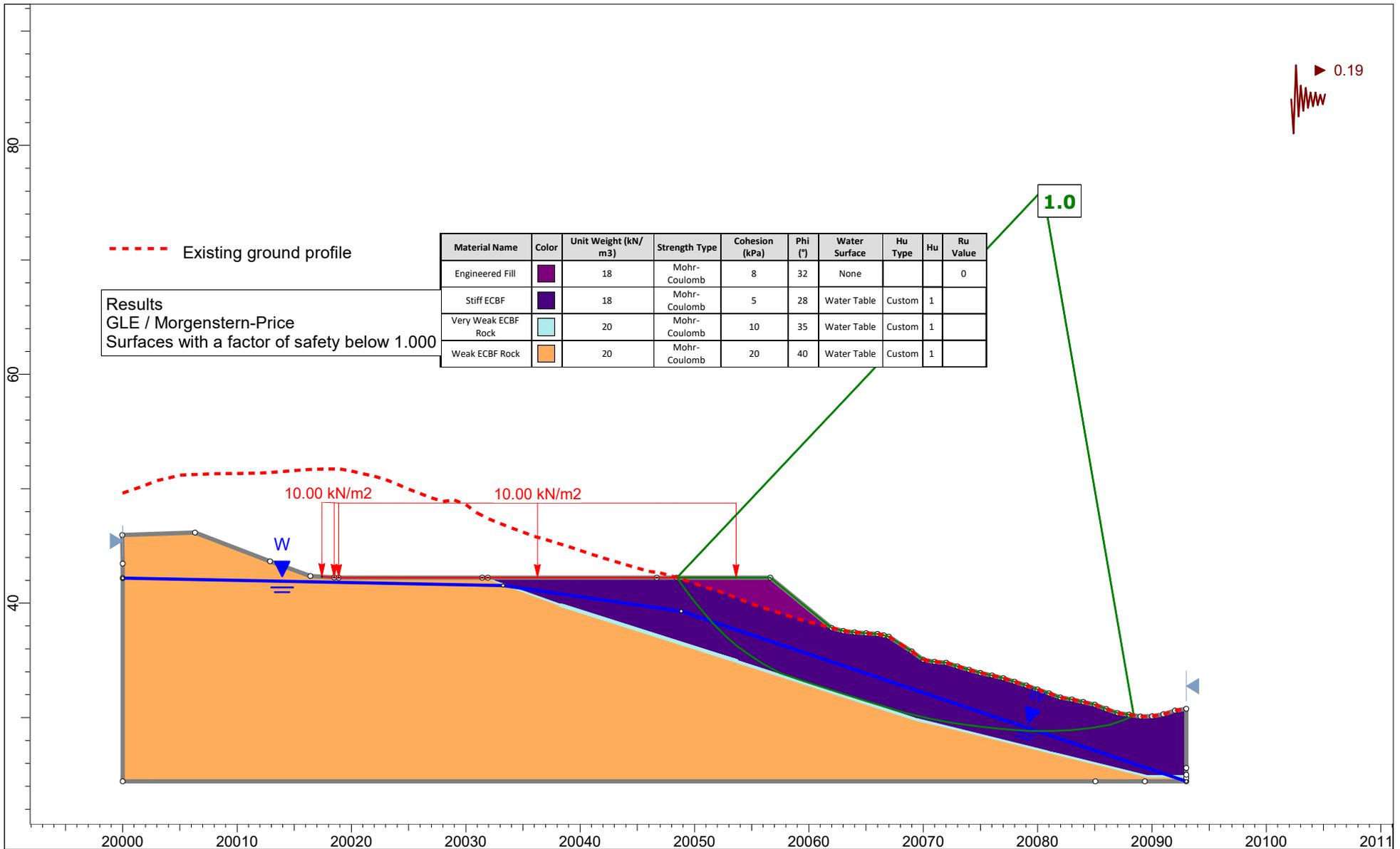
10.00 kN/m²

10.00 kN/m²

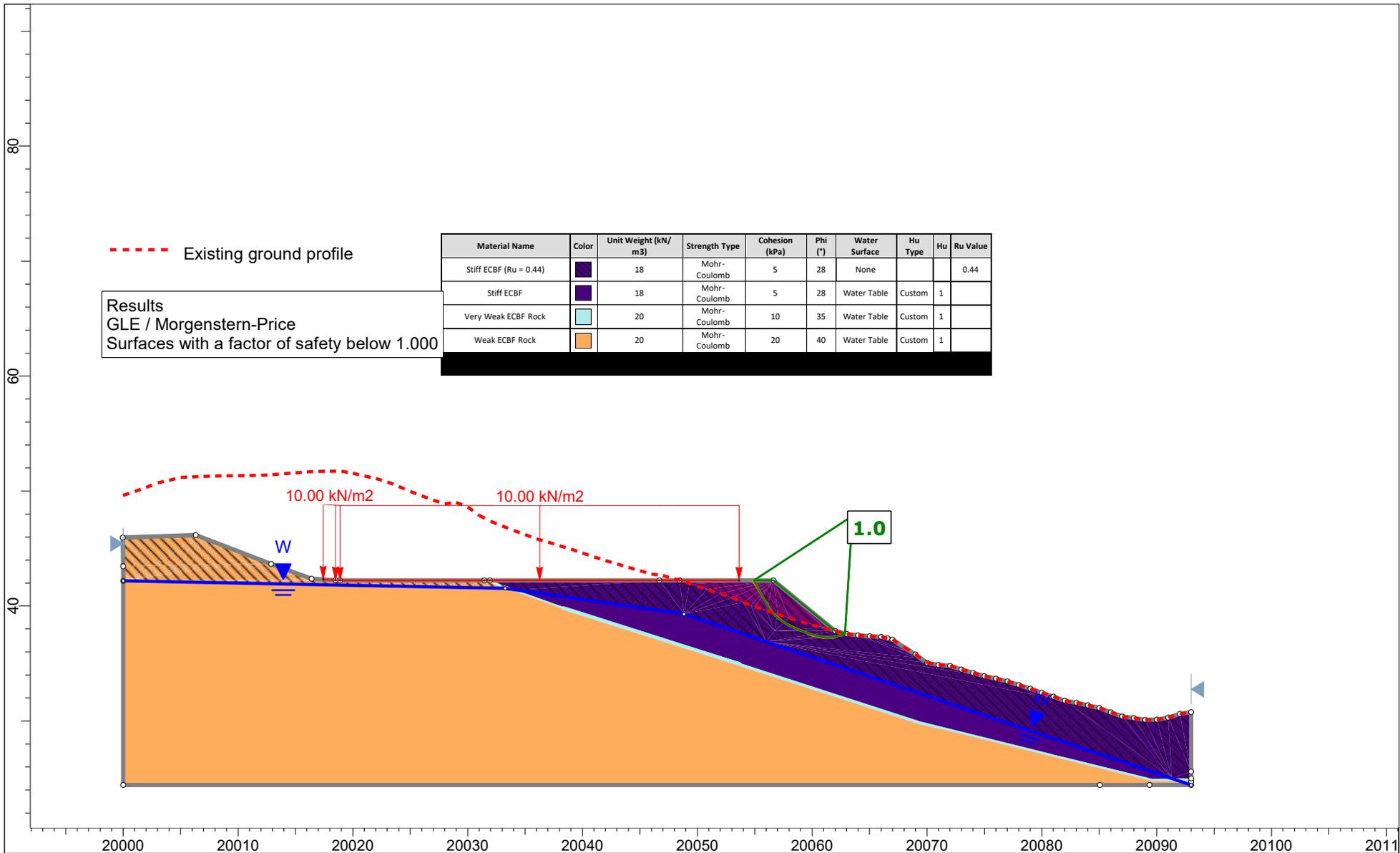
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Project	240065 - Russell Road, Waunui		
Group	Section T - Proposed GL	Scenario	Extreme (Worst Credible GW)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section T.sldm



	Project		240065 - Russell Road, Waunui	
	Group		Section T - Proposed GL	Scenario
	Drawn By		LKB	Company
	Date		19/12/2025	File Name
			Seismic (0.19g)	Riley Consultants Ltd
			Section T.sldm	



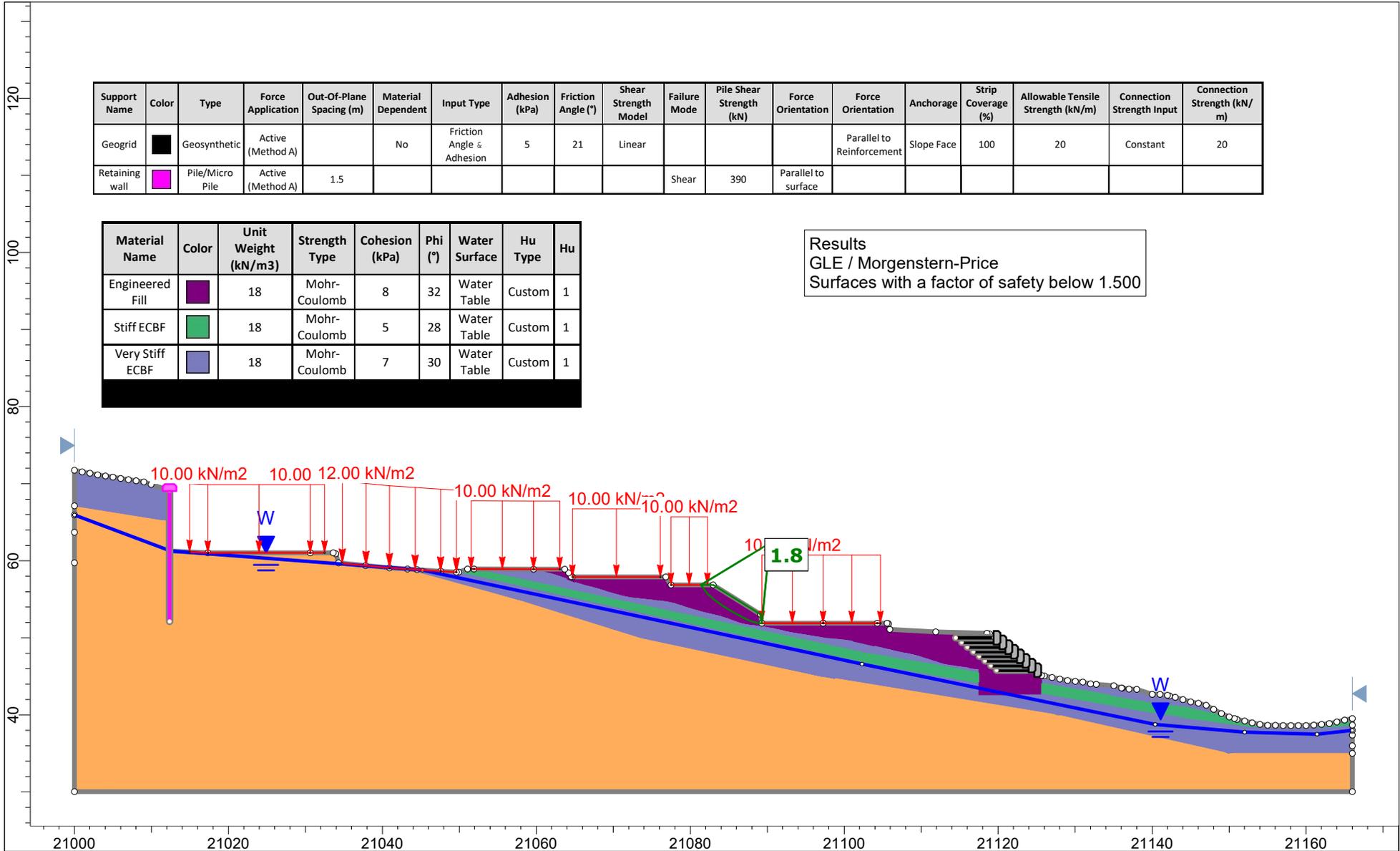
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Results
GLE / Morgenstern-Price
Surfaces with a factor of safety below 1.000

Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
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 Weak ECBF Rock		20	Mohr-Coulomb	10	35	Water Table	Custom	1	
Weak ECBF Rock		20	Mohr-Coulomb	20	40	Water Table	Custom	1	



Project	240065 - Russell Road, Waunui		
Group	Section T - Proposed GL	Scenario	Extreme (50% fill saturation)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section T.sldm

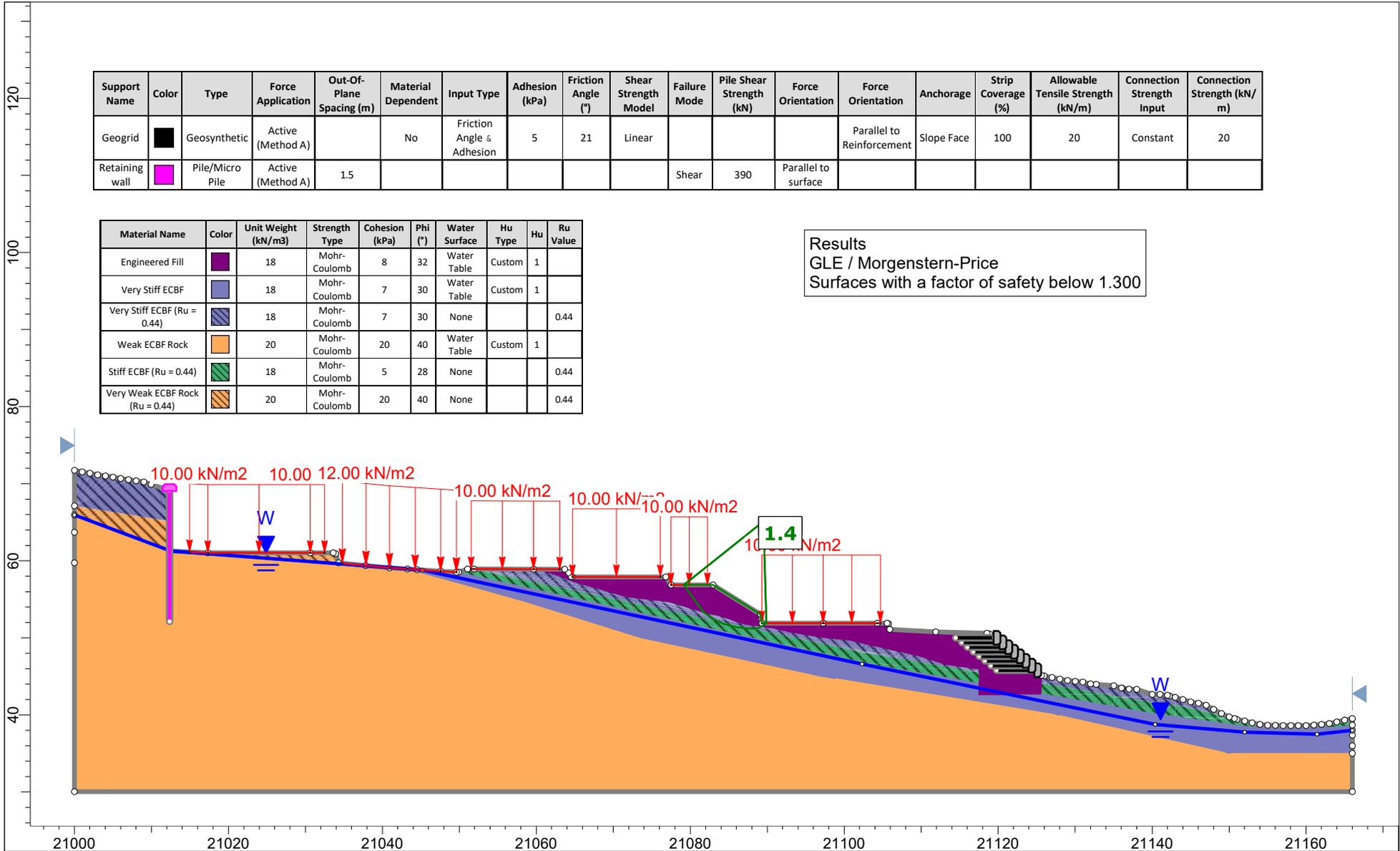


Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (m)	Material Dependent	Input Type	Adhesion (kPa)	Friction Angle (°)	Shear Strength Model	Failure Mode	Pile Shear Strength (kN)	Force Orientation	Force Orientation	Anchorage	Strip Coverage (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid	Black	Geosynthetic	Active (Method A)		No	Friction Angle & Adhesion	5	21	Linear				Parallel to Reinforcement	Slope Face	100	20	Constant	20
Retaining wall	Pink	Pile/Micro Pile	Active (Method A)	1.5						Shear	390	Parallel to surface						

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	Water Table	Custom	1
Stiff ECBF	Green	18	Mohr-Coulomb	5	28	Water Table	Custom	1
Very Stiff ECBF	Blue	18	Mohr-Coulomb	7	30	Water Table	Custom	1

Results
GLE / Morgenstern-Price
Surfaces with a factor of safety below 1.500

	Project		240065 - Russell Road, Waunui	
	Group		Section U - Proposed GL & Remedials	
	Scenario		Normal (Measured GW)	
	Company		Riley Consultants Ltd	
Drawn By		LKB		
Date		19/12/2025		
File Name		Section U.sldm		

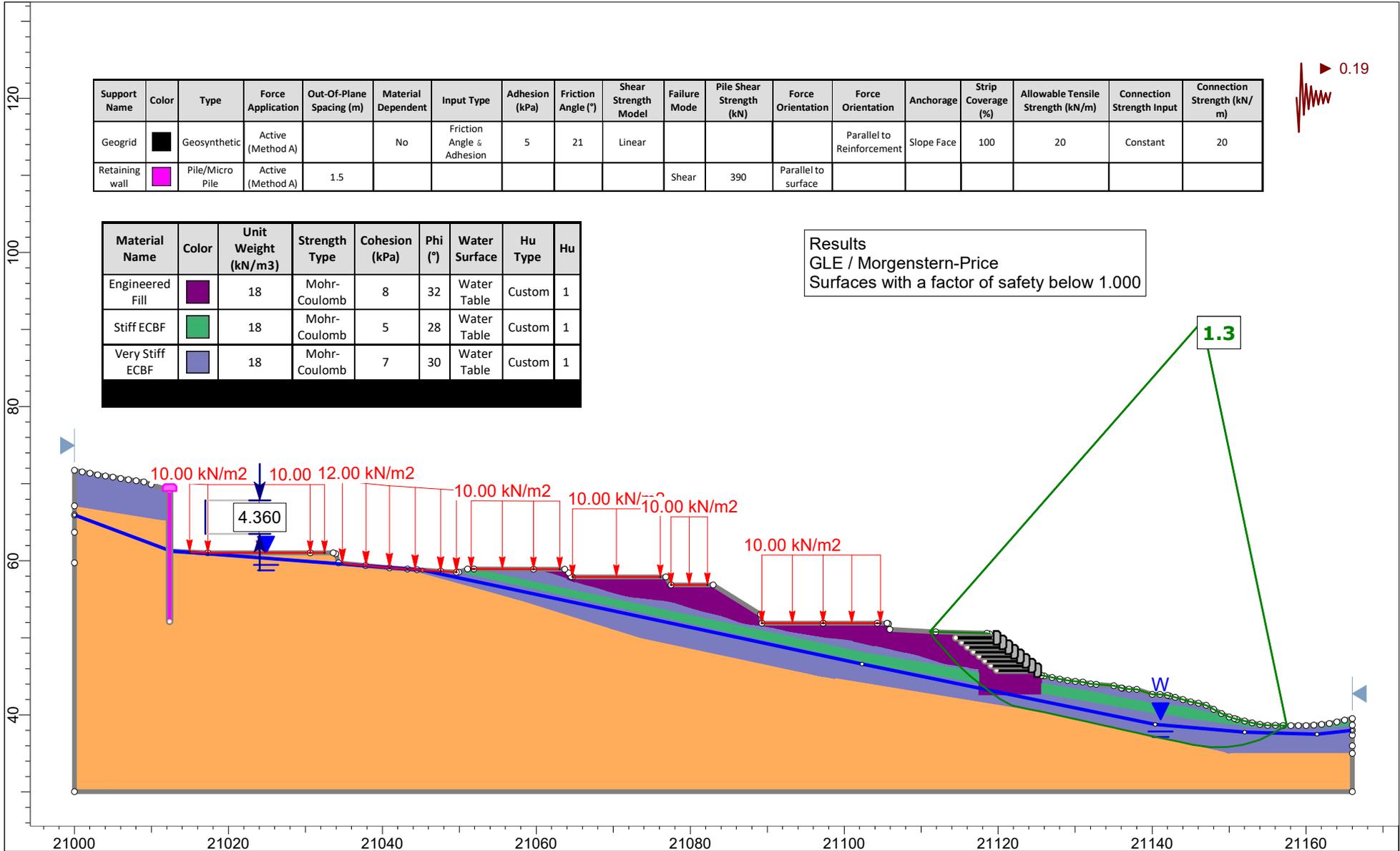


Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (m)	Material Dependent	Input Type	Adhesion (kPa)	Friction Angle (°)	Shear Strength Model	Failure Mode	Pile Shear Strength (kN)	Force Orientation	Force Orientation	Anchorage	Strip Coverage (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid	Black	Geosynthetic	Active (Method A)		No	Friction Angle & Adhesion	5	21	Linear				Parallel to Reinforcement	Slope Face	100	20	Constant	20
Retaining wall	Pink	Pile/Micro Pile	Active (Method A)	1.5						Shear	390	Parallel to surface						

Material Name	Color	Unit Weight (kN/m³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	Water Table	Custom	1	
Very Stiff ECBF	Blue	18	Mohr-Coulomb	7	30	Water Table	Custom	1	
Very Stiff ECBF (Ru = 0.44)	Blue with diagonal lines	18	Mohr-Coulomb	7	30	None			0.44
Weak ECBF Rock	Orange	20	Mohr-Coulomb	20	40	Water Table	Custom	1	
Stiff ECBF (Ru = 0.44)	Green with diagonal lines	18	Mohr-Coulomb	5	28	None			0.44
Very Weak ECBF Rock (Ru = 0.44)	Orange with diagonal lines	20	Mohr-Coulomb	20	40	None			0.44

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

	Project		240065 - Russell Road, Waunui	
	Group		Section U - Proposed GL & Remedials	Scenario
	Drawn By		LKB	Company
	Date		19/12/2025	File Name
			Extreme (Worst Credible GW)	Riley Consultants Ltd
			Section U.sldm	

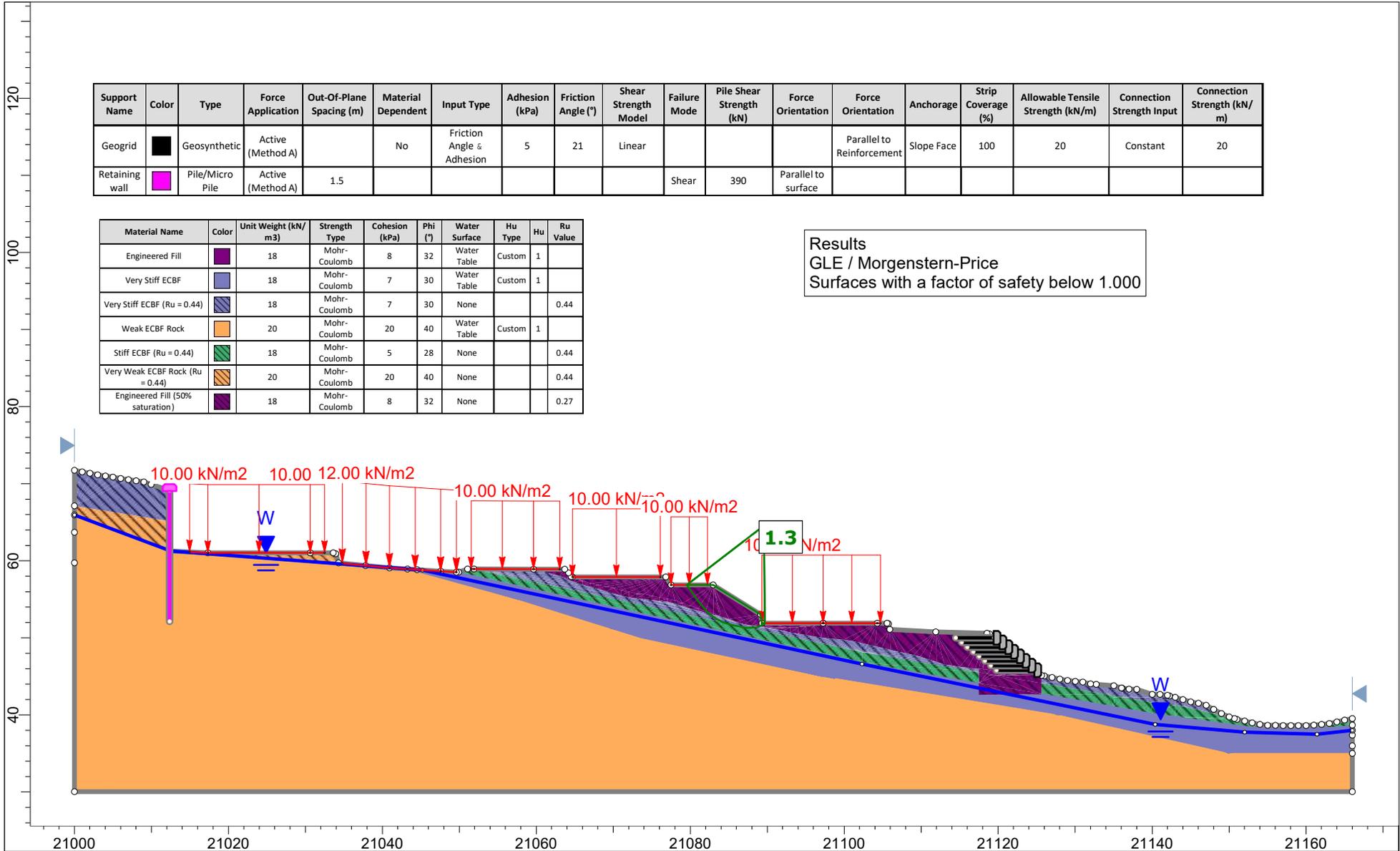


Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (m)	Material Dependent	Input Type	Adhesion (kPa)	Friction Angle (°)	Shear Strength Model	Failure Mode	Pile Shear Strength (kN)	Force Orientation	Force Orientation	Anchorage	Strip Coverage (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid	Black	Geosynthetic	Active (Method A)		No	Friction Angle & Adhesion	5	21	Linear				Parallel to Reinforcement	Slope Face	100	20	Constant	20
Retaining wall	Pink	Pile/Micro Pile	Active (Method A)	1.5						Shear	390	Parallel to surface						

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	Water Table	Custom	1
Stiff ECBF	Green	18	Mohr-Coulomb	5	28	Water Table	Custom	1
Very Stiff ECBF	Blue	18	Mohr-Coulomb	7	30	Water Table	Custom	1

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

	Project		240065 - Russell Road, Waunui	
	Group		Section U - Proposed GL & Remedials	Scenario
	Drawn By		LKB	Company
	Date		19/12/2025	File Name
			Seismic (0.19g)	Riley Consultants Ltd
			Section U.slmld	

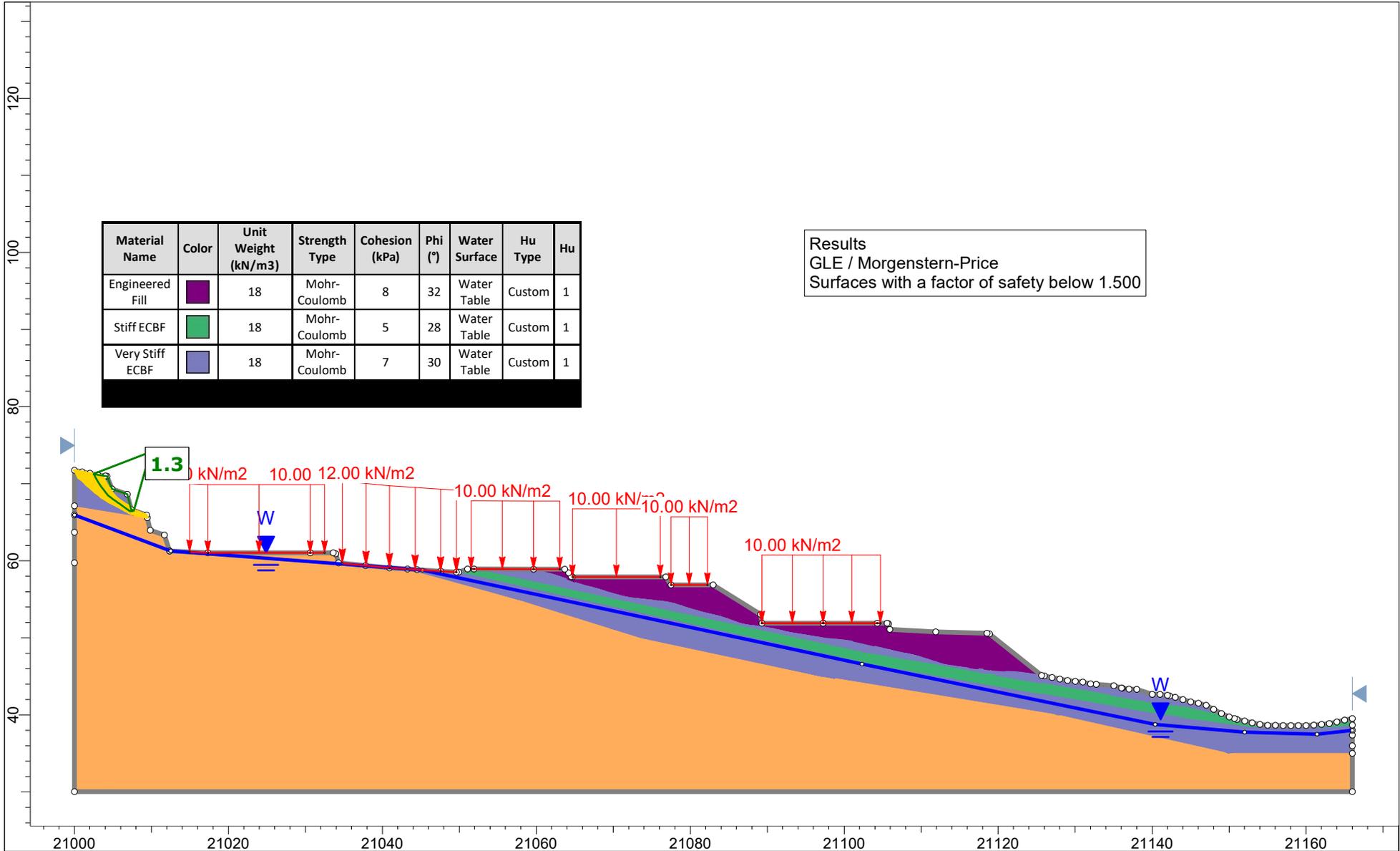


Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (m)	Material Dependent	Input Type	Adhesion (kPa)	Friction Angle (°)	Shear Strength Model	Failure Mode	Pile Shear Strength (kN)	Force Orientation	Force Orientation	Anchorage	Strip Coverage (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid	Black	Geosynthetic	Active (Method A)		No	Friction Angle & Adhesion	5	21	Linear				Parallel to Reinforcement	Slope Face	100	20	Constant	20
Retaining wall	Pink	Pile/Micro Pile	Active (Method A)	1.5						Shear	390	Parallel to surface						

Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	Water Table	Custom	1	
Very Stiff ECBF	Blue	18	Mohr-Coulomb	7	30	Water Table	Custom	1	
Very Stiff ECBF (Ru = 0.44)	Blue with diagonal lines	18	Mohr-Coulomb	7	30	None			0.44
Weak ECBF Rock	Orange	20	Mohr-Coulomb	20	40	Water Table	Custom	1	
Stiff ECBF (Ru = 0.44)	Green with diagonal lines	18	Mohr-Coulomb	5	28	None			0.44
Very Weak ECBF Rock (Ru = 0.44)	Orange with diagonal lines	20	Mohr-Coulomb	20	40	None			0.44
Engineered Fill (50% saturation)	Purple	18	Mohr-Coulomb	8	32	None			0.27

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

	Project	240065 - Russell Road, Waunui	
	Group	Section U - Proposed GL & Remedials	Scenario Extreme (50% fill saturation)
	Drawn By	LKB	Company Riley Consultants Ltd
	Date	19/12/2025	File Name Section U.sldm

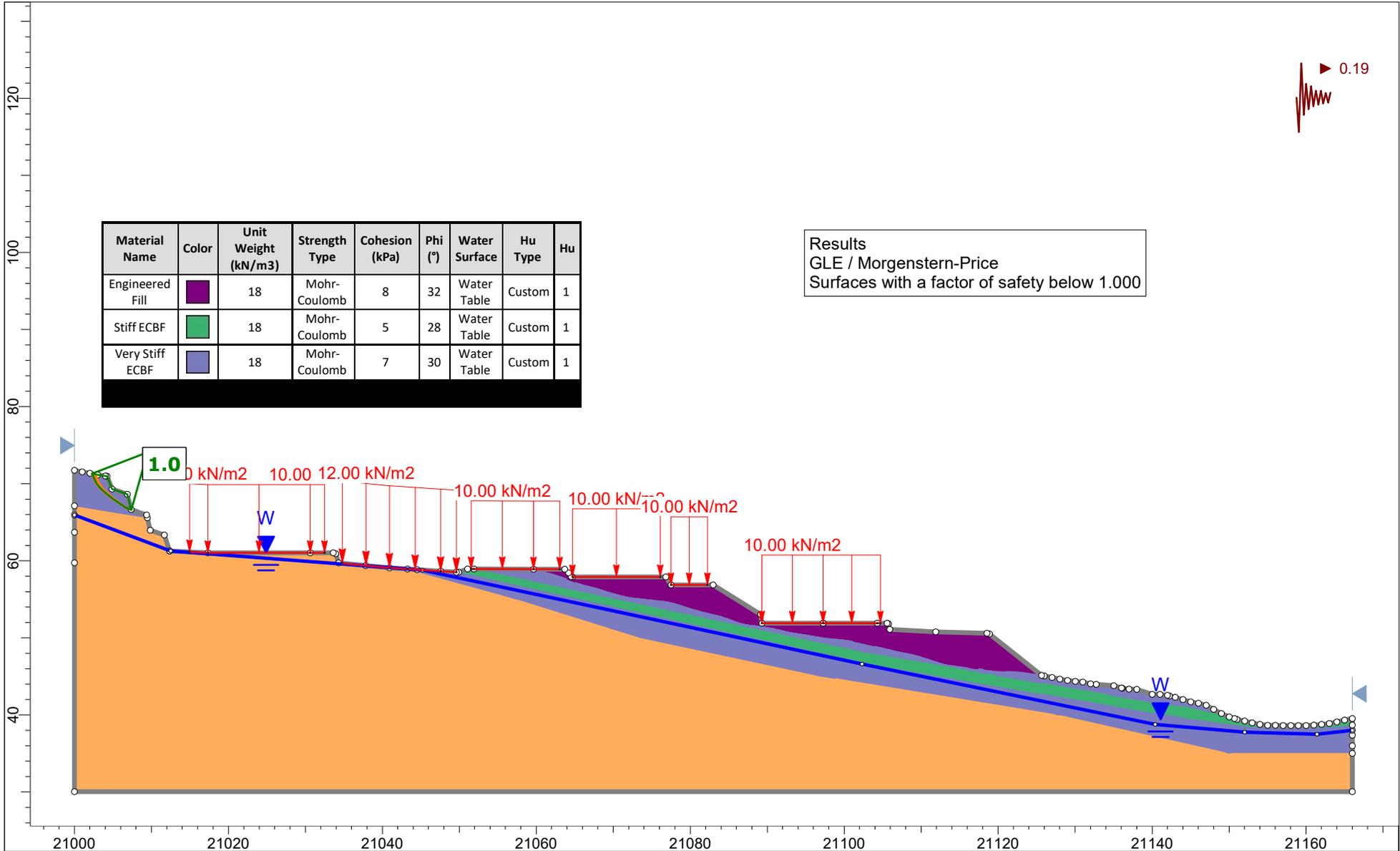


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	Water Table	Custom	1
Stiff ECBF	Green	18	Mohr-Coulomb	5	28	Water Table	Custom	1
Very Stiff ECBF	Blue	18	Mohr-Coulomb	7	30	Water Table	Custom	1

Results
GLE / Morgenstern-Price
Surfaces with a factor of safety below 1.500



Project	240065 - Russell Road, Waunui		
Group	Section U - Proposed GL	Scenario	Normal (Measured GW)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section U.sldm

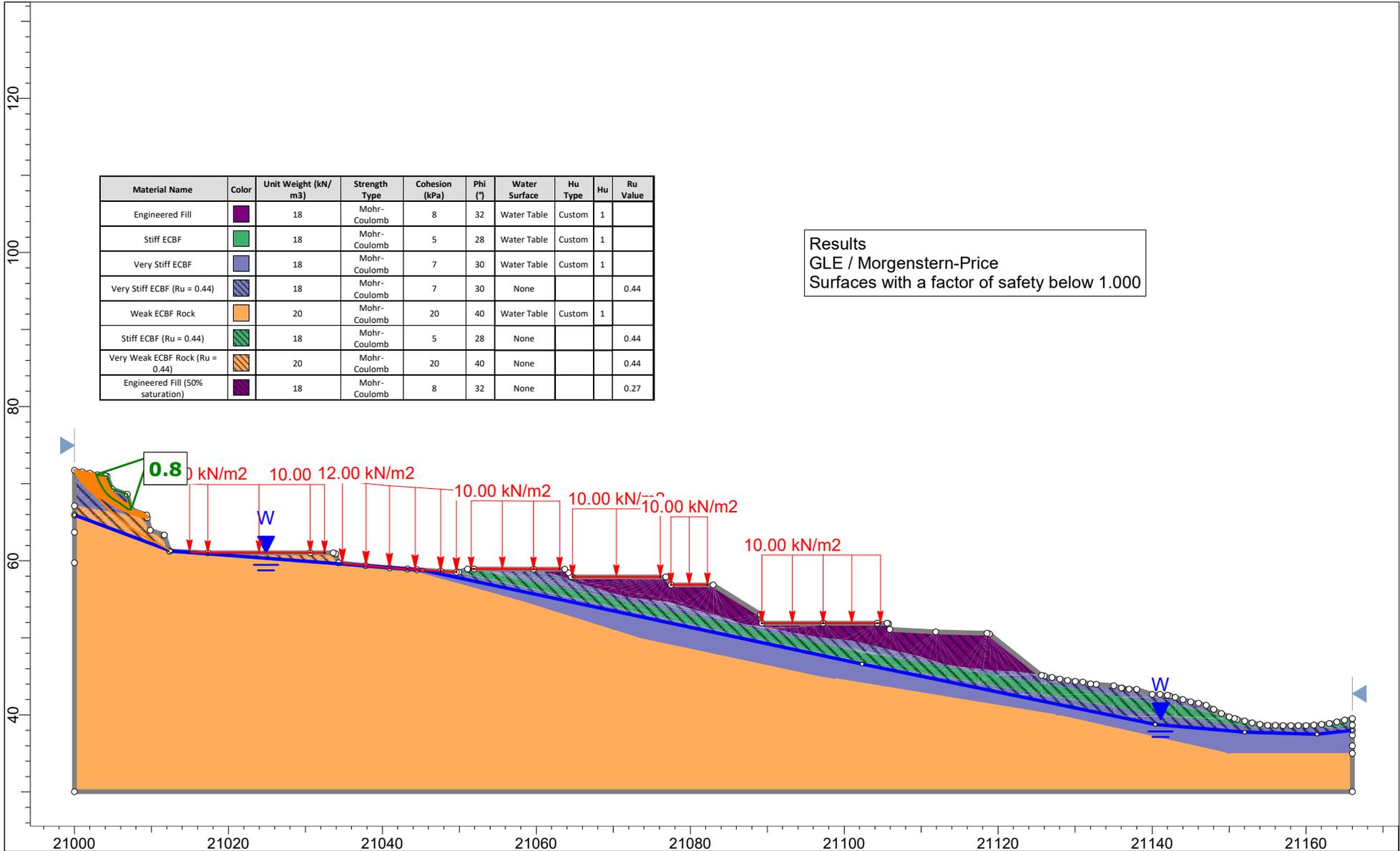


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	Water Table	Custom	1
Stiff ECBF	Green	18	Mohr-Coulomb	5	28	Water Table	Custom	1
Very Stiff ECBF	Blue	18	Mohr-Coulomb	7	30	Water Table	Custom	1

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



Project	240065 - Russell Road, Waunui		
Group	Section U - Proposed GL	Scenario	Seismic (0.19g)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section U.sldm

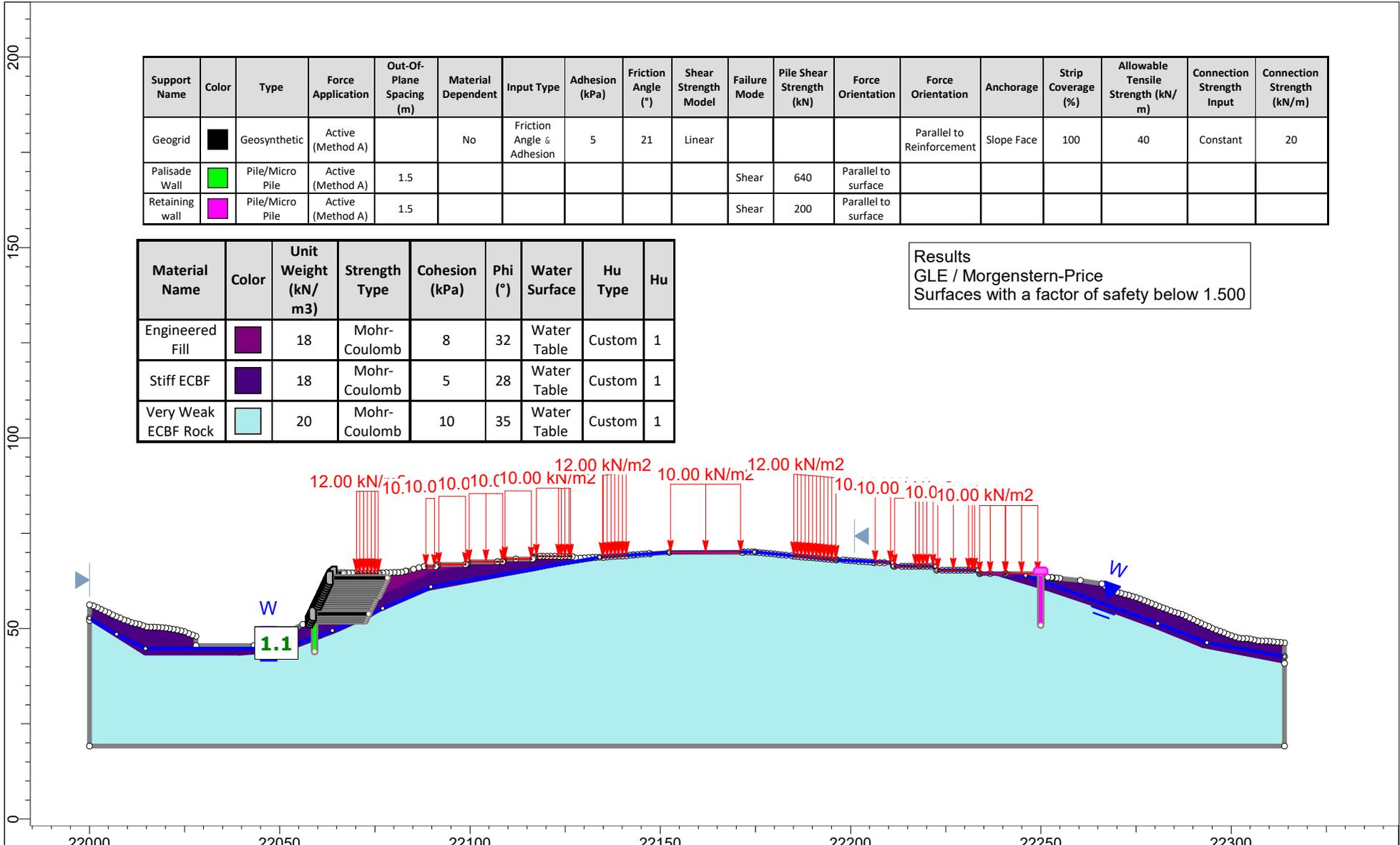


Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Engineered Fill	Orange	18	Mohr-Coulomb	8	32	Water Table	Custom	1	
Stiff ECBF	Green	18	Mohr-Coulomb	5	28	Water Table	Custom	1	
Very Stiff ECBF	Blue	18	Mohr-Coulomb	7	30	Water Table	Custom	1	
Very Stiff ECBF (Ru = 0.44)	Blue with diagonal lines	18	Mohr-Coulomb	7	30	None			0.44
Weak ECBF Rock	Orange with diagonal lines	20	Mohr-Coulomb	20	40	Water Table	Custom	1	
Stiff ECBF (Ru = 0.44)	Green with diagonal lines	18	Mohr-Coulomb	5	28	None			0.44
Very Weak ECBF Rock (Ru = 0.44)	Orange with diagonal lines	20	Mohr-Coulomb	20	40	None			0.44
Engineered Fill (50% saturation)	Orange with diagonal lines	18	Mohr-Coulomb	8	32	None			0.27

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



Project	240065 - Russell Road, Waunui		
Group	Section U - Proposed GL	Scenario	Extreme (50% fill saturation)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section U.sldm



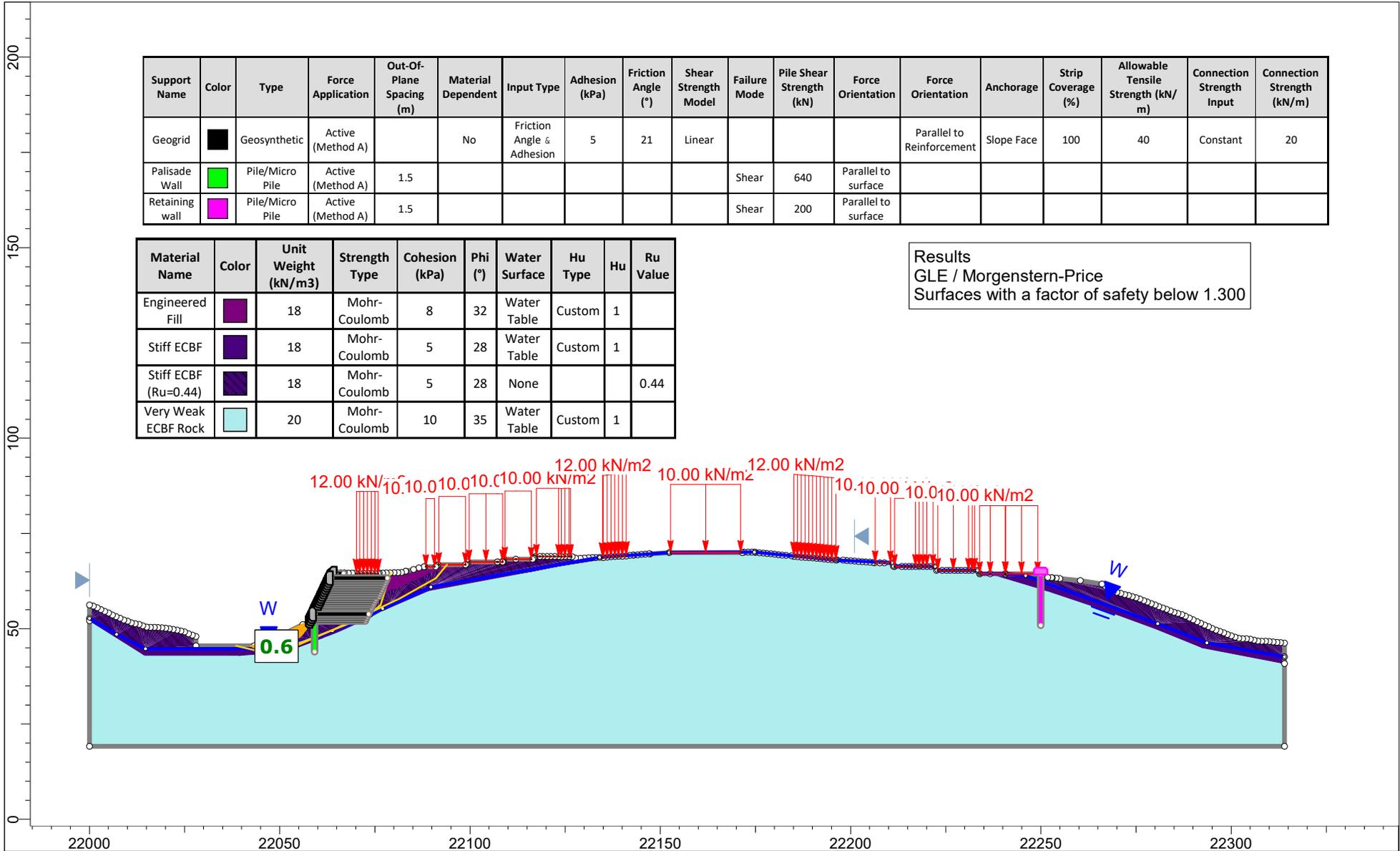
Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (m)	Material Dependent	Input Type	Adhesion (kPa)	Friction Angle (°)	Shear Strength Model	Failure Mode	Pile Shear Strength (kN)	Force Orientation	Force Orientation	Anchorage	Strip Coverage (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid	Black	Geosynthetic	Active (Method A)		No	Friction Angle & Adhesion	5	21	Linear				Parallel to Reinforcement	Slope Face	100	40	Constant	20
Palisade Wall	Green	Pile/Micro Pile	Active (Method A)	1.5						Shear	640	Parallel to surface						
Retaining wall	Pink	Pile/Micro Pile	Active (Method A)	1.5						Shear	200	Parallel to surface						

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	Water Table	Custom	1
Stiff ECBF	Dark Purple	18	Mohr-Coulomb	5	28	Water Table	Custom	1
Very Weak ECBF Rock	Light Blue	20	Mohr-Coulomb	10	35	Water Table	Custom	1

Results
GLE / Morgenstern-Price
Surfaces with a factor of safety below 1.500



Project		240065 - Russell Road, Waunui	
Group	Section V - Proposed GL & remedials (R-L)	Scenario	Normal (Measured GW)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section V.slmd

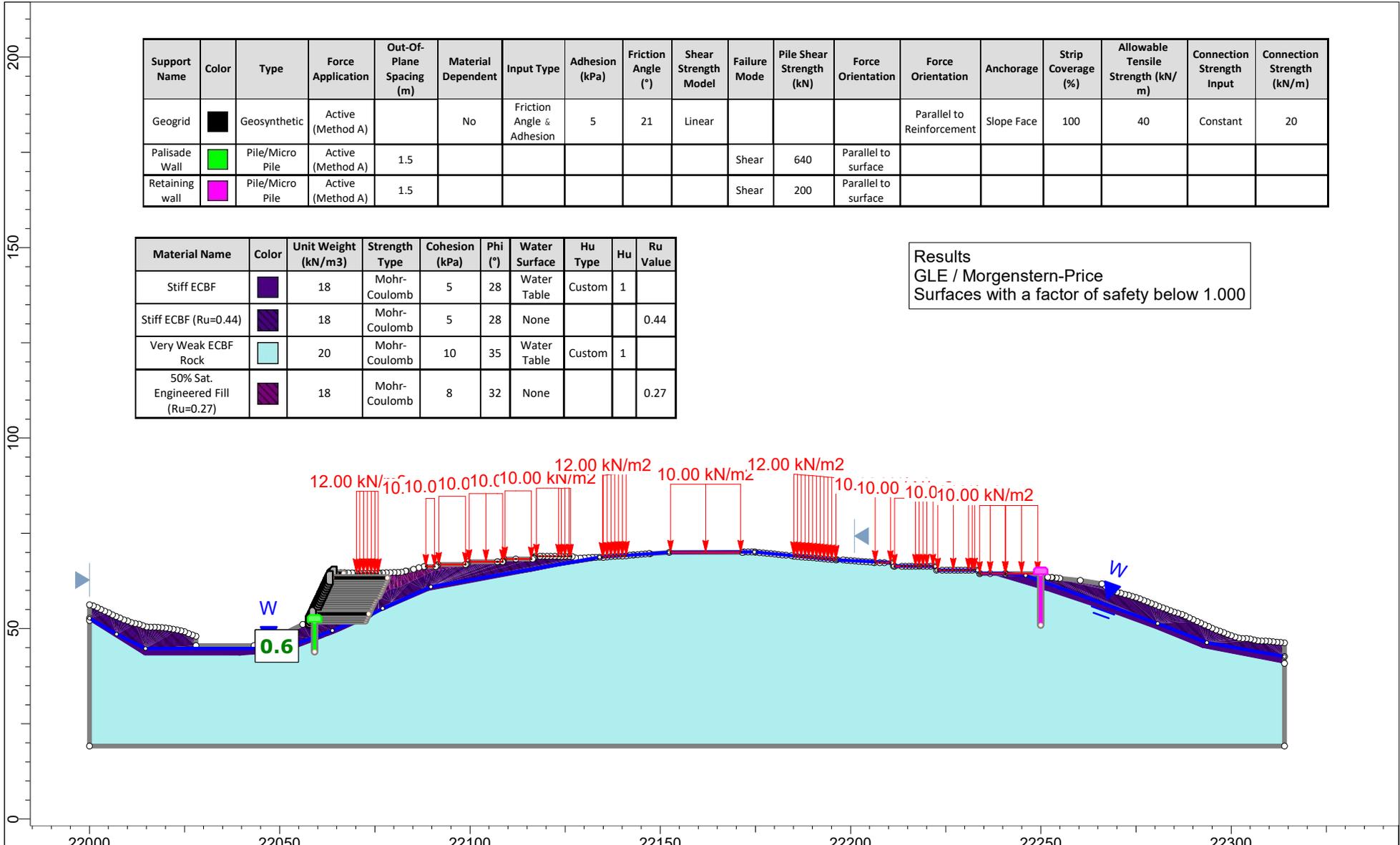


Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (m)	Material Dependent	Input Type	Adhesion (kPa)	Friction Angle (°)	Shear Strength Model	Failure Mode	Pile Shear Strength (kN)	Force Orientation	Force Orientation	Anchorage	Strip Coverage (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid	Black	Geosynthetic	Active (Method A)		No	Friction Angle & Adhesion	5	21	Linear				Parallel to Reinforcement	Slope Face	100	40	Constant	20
Palisade Wall	Green	Pile/Micro Pile	Active (Method A)	1.5						Shear	640	Parallel to surface						
Retaining wall	Pink	Pile/Micro Pile	Active (Method A)	1.5						Shear	200	Parallel to surface						

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

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

	Project		240065 - Russell Road, Waunui	
	Group		Section V - Proposed GL & remedials (R-L)	Scenario
	Drawn By		LKB	Company
	Date		19/12/2025	File Name
			Extreme (Worst Case GW)	Riley Consultants Ltd
				Section V.sldm



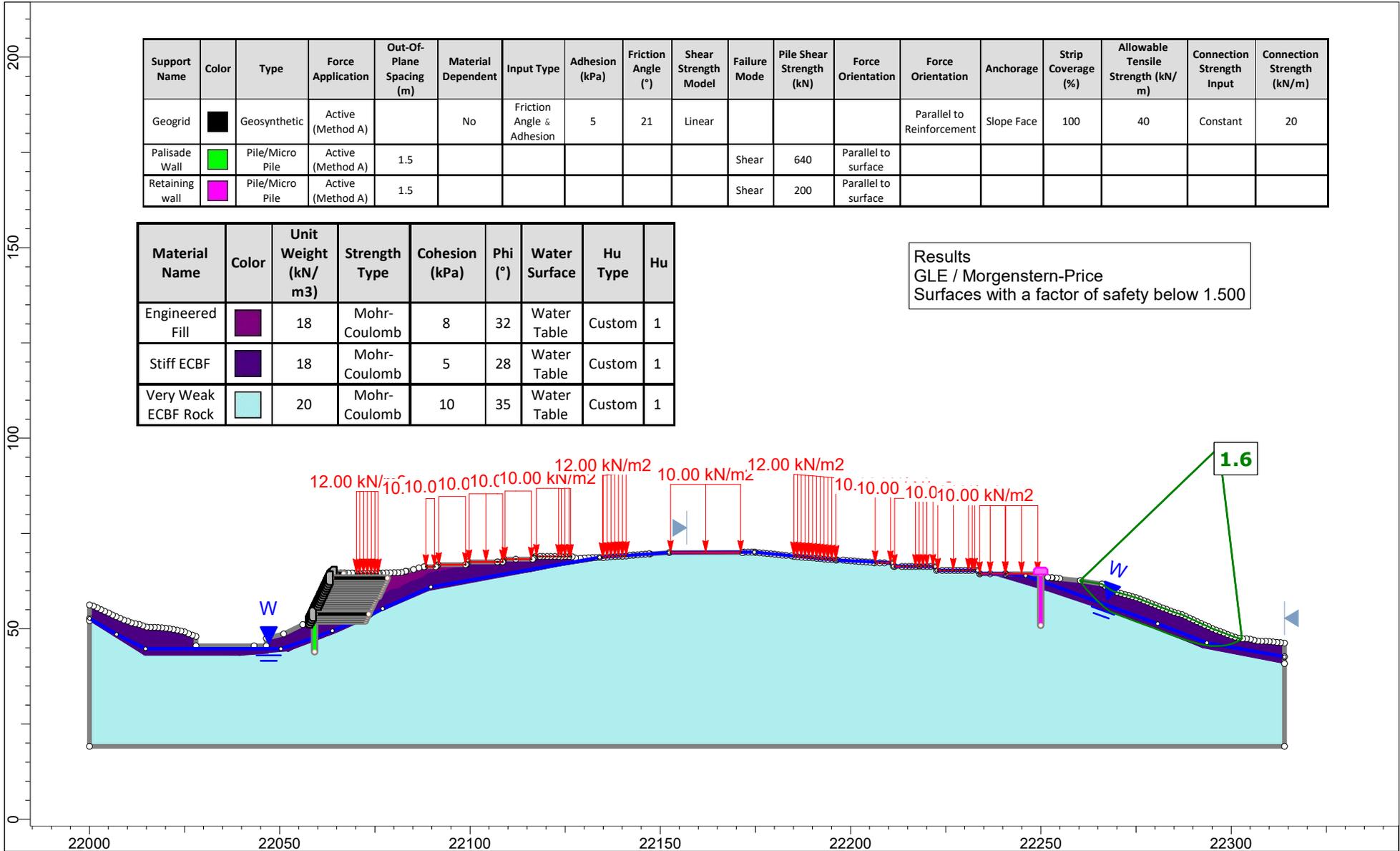
Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (m)	Material Dependent	Input Type	Adhesion (kPa)	Friction Angle (°)	Shear Strength Model	Failure Mode	Pile Shear Strength (kN)	Force Orientation	Force Orientation	Anchorage	Strip Coverage (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid	Black	Geosynthetic	Active (Method A)		No	Friction Angle & Adhesion	5	21	Linear				Parallel to Reinforcement	Slope Face	100	40	Constant	20
Palisade Wall	Green	Pile/Micro Pile	Active (Method A)	1.5						Shear	640	Parallel to surface						
Retaining wall	Purple	Pile/Micro Pile	Active (Method A)	1.5						Shear	200	Parallel to surface						

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Stiff ECBF	Dark Purple	18	Mohr-Coulomb	5	28	Water Table	Custom	1	
Stiff ECBF (Ru=0.44)	Dark Purple	18	Mohr-Coulomb	5	28	None			0.44
Very Weak ECBF Rock	Light Blue	20	Mohr-Coulomb	10	35	Water Table	Custom	1	
50% Sat. Engineered Fill (Ru=0.27)	Dark Purple	18	Mohr-Coulomb	8	32	None			0.27

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



Project	240065 - Russell Road, Waunui		
Group	Section V - Proposed GL & remedials (R-L)	Scenario	Extreme (50% Fill Saturation)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section V.slmd



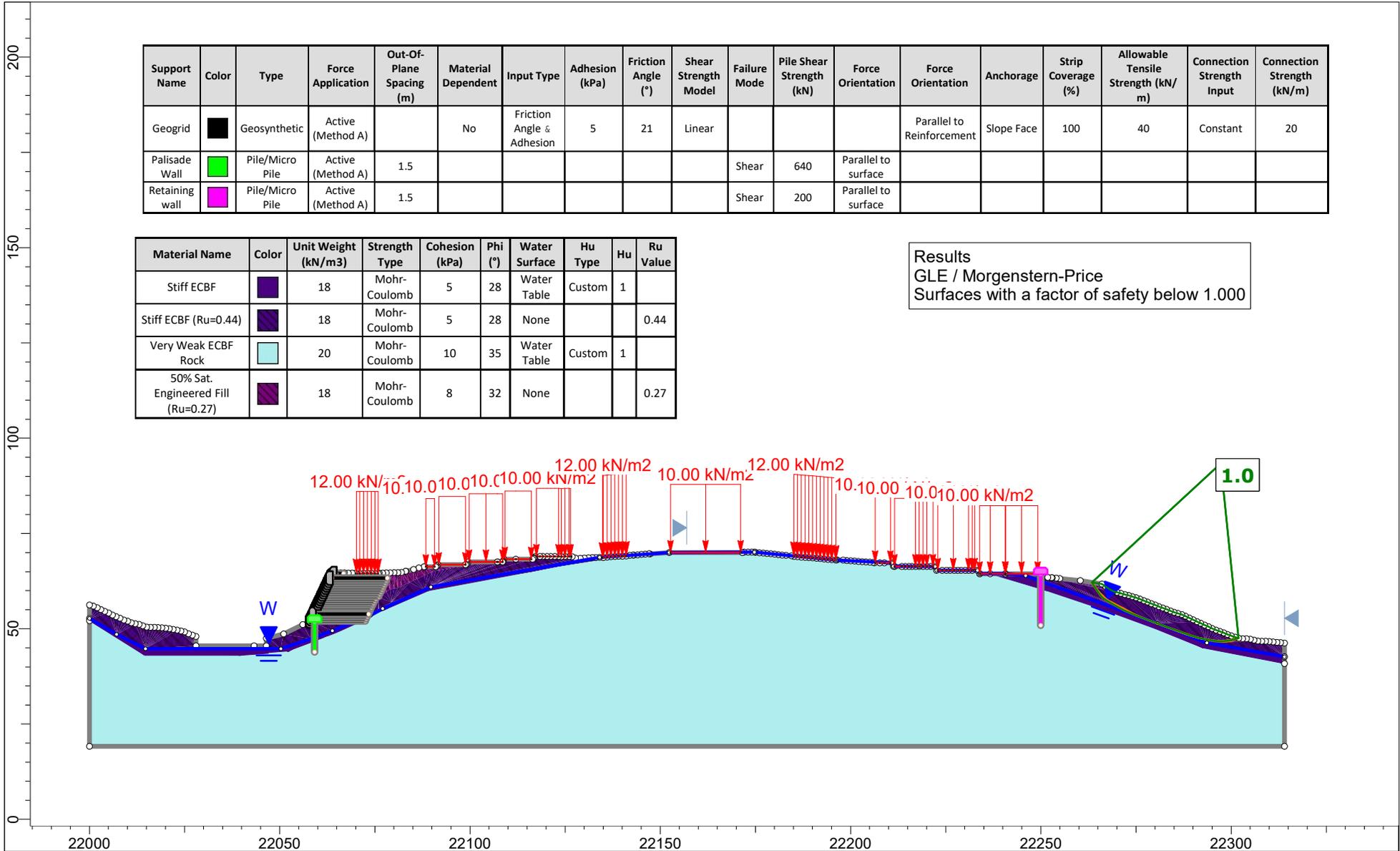
Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (m)	Material Dependent	Input Type	Adhesion (kPa)	Friction Angle (°)	Shear Strength Model	Failure Mode	Pile Shear Strength (kN)	Force Orientation	Force Orientation	Anchorage	Strip Coverage (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid	Black	Geosynthetic	Active (Method A)		No	Friction Angle & Adhesion	5	21	Linear				Parallel to Reinforcement	Slope Face	100	40	Constant	20
Palisade Wall	Green	Pile/Micro Pile	Active (Method A)	1.5						Shear	640	Parallel to surface						
Retaining wall	Pink	Pile/Micro Pile	Active (Method A)	1.5						Shear	200	Parallel to surface						

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Engineered Fill	Purple	18	Mohr-Coulomb	8	32	Water Table	Custom	1
Stiff ECBF	Dark Purple	18	Mohr-Coulomb	5	28	Water Table	Custom	1
Very Weak ECBF Rock	Light Blue	20	Mohr-Coulomb	10	35	Water Table	Custom	1

Results
GLE / Morgenstern-Price
Surfaces with a factor of safety below 1.500



Project		240065 - Russell Road, Waunui	
Group	Section V - Proposed GL & remedials (L-R)	Scenario	Normal (Measured GW)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section V.sldm

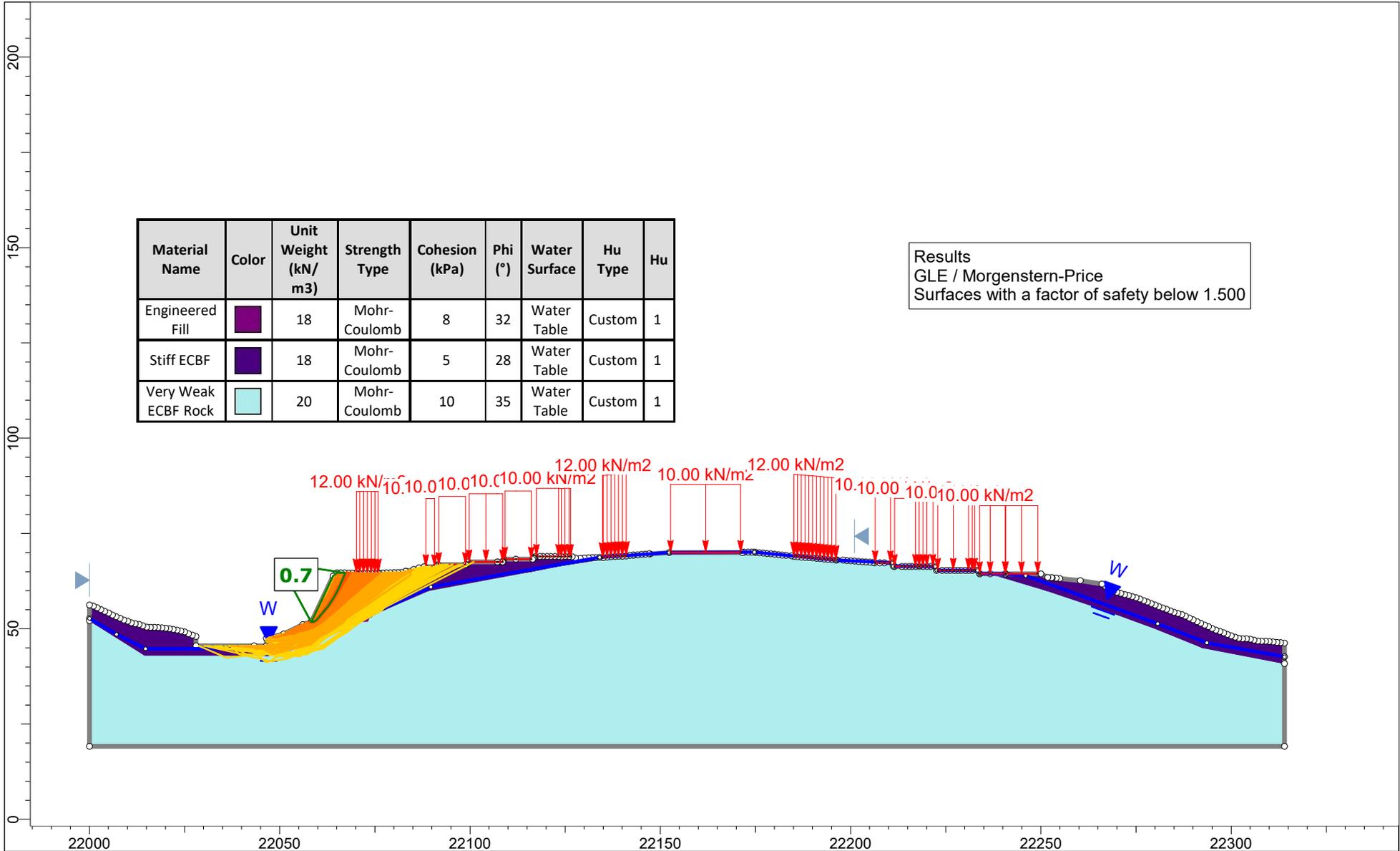


Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (m)	Material Dependent	Input Type	Adhesion (kPa)	Friction Angle (°)	Shear Strength Model	Failure Mode	Pile Shear Strength (kN)	Force Orientation	Force Orientation	Anchorage	Strip Coverage (%)	Allowable Tensile Strength (kN/m)	Connection Strength Input	Connection Strength (kN/m)
Geogrid	Black	Geosynthetic	Active (Method A)		No	Friction Angle & Adhesion	5	21	Linear				Parallel to Reinforcement	Slope Face	100	40	Constant	20
Palisade Wall	Green	Pile/Micro Pile	Active (Method A)	1.5						Shear	640	Parallel to surface						
Retaining wall	Pink	Pile/Micro Pile	Active (Method A)	1.5						Shear	200	Parallel to surface						

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Stiff ECBF	Purple	18	Mohr-Coulomb	5	28	Water Table	Custom	1	
Stiff ECBF (Ru=0.44)	Dark Purple	18	Mohr-Coulomb	5	28	None			0.44
Very Weak ECBF Rock	Light Blue	20	Mohr-Coulomb	10	35	Water Table	Custom	1	
50% Sat. Engineered Fill (Ru=0.27)	Dark Purple	18	Mohr-Coulomb	8	32	None			0.27

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

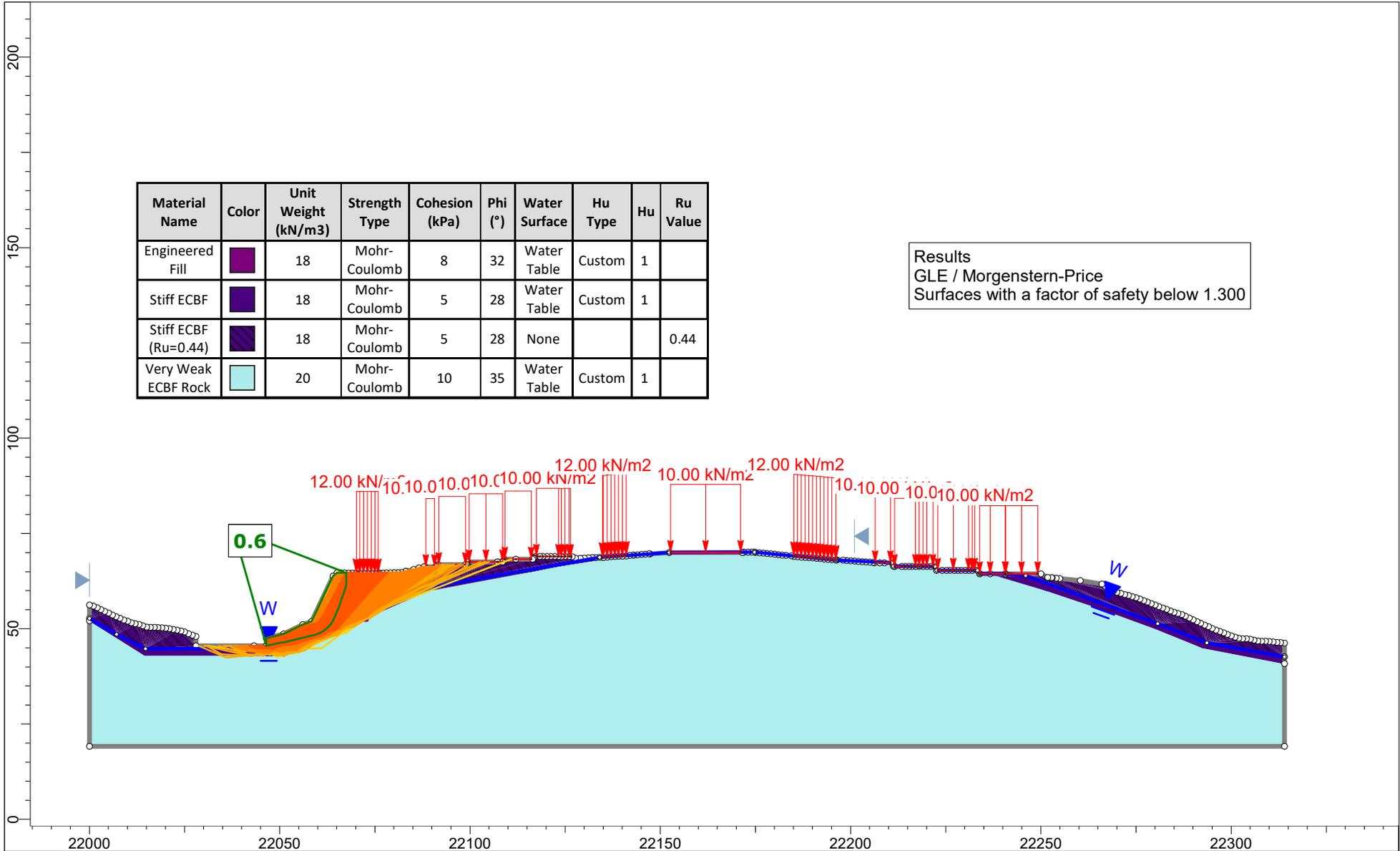
	Project		240065 - Russell Road, Waunui	
	Group	Section V - Proposed GL & remedials (L-R)	Scenario	Extreme (50% Fill Saturation)
	Drawn By	LKB	Company	Riley Consultants Ltd
	Date	19/12/2025	File Name	Section V.sldm



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

Results
GLE / Morgenstern-Price
Surfaces with a factor of safety below 1.500

	Project		240065 - Russell Road, Waunui	
	Group		Section V - Proposed GL (R-L)	Scenario
	Drawn By		LKB	Company
	Date		19/12/2025	File Name
			Normal (Measured GW)	
			Riley Consultants Ltd	
			Section V.slm	

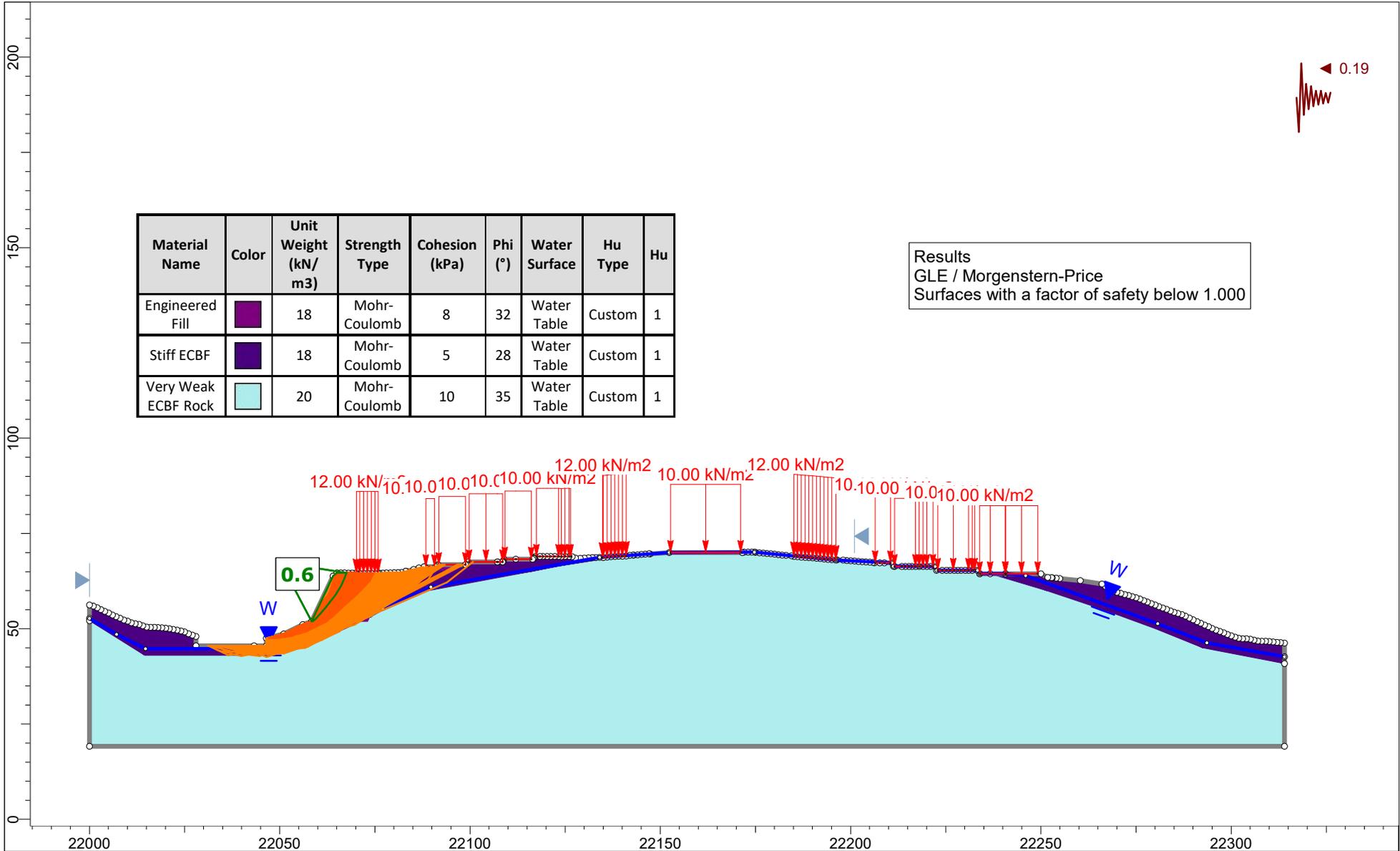


Material Name	Color	Unit Weight (kN/m ³)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Engineered Fill		18	Mohr-Coulomb	8	32	Water Table	Custom	1	
Stiff ECBF		18	Mohr-Coulomb	5	28	Water Table	Custom	1	
Stiff ECBF (Ru=0.44)		18	Mohr-Coulomb	5	28	None			0.44
Very Weak ECBF Rock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

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



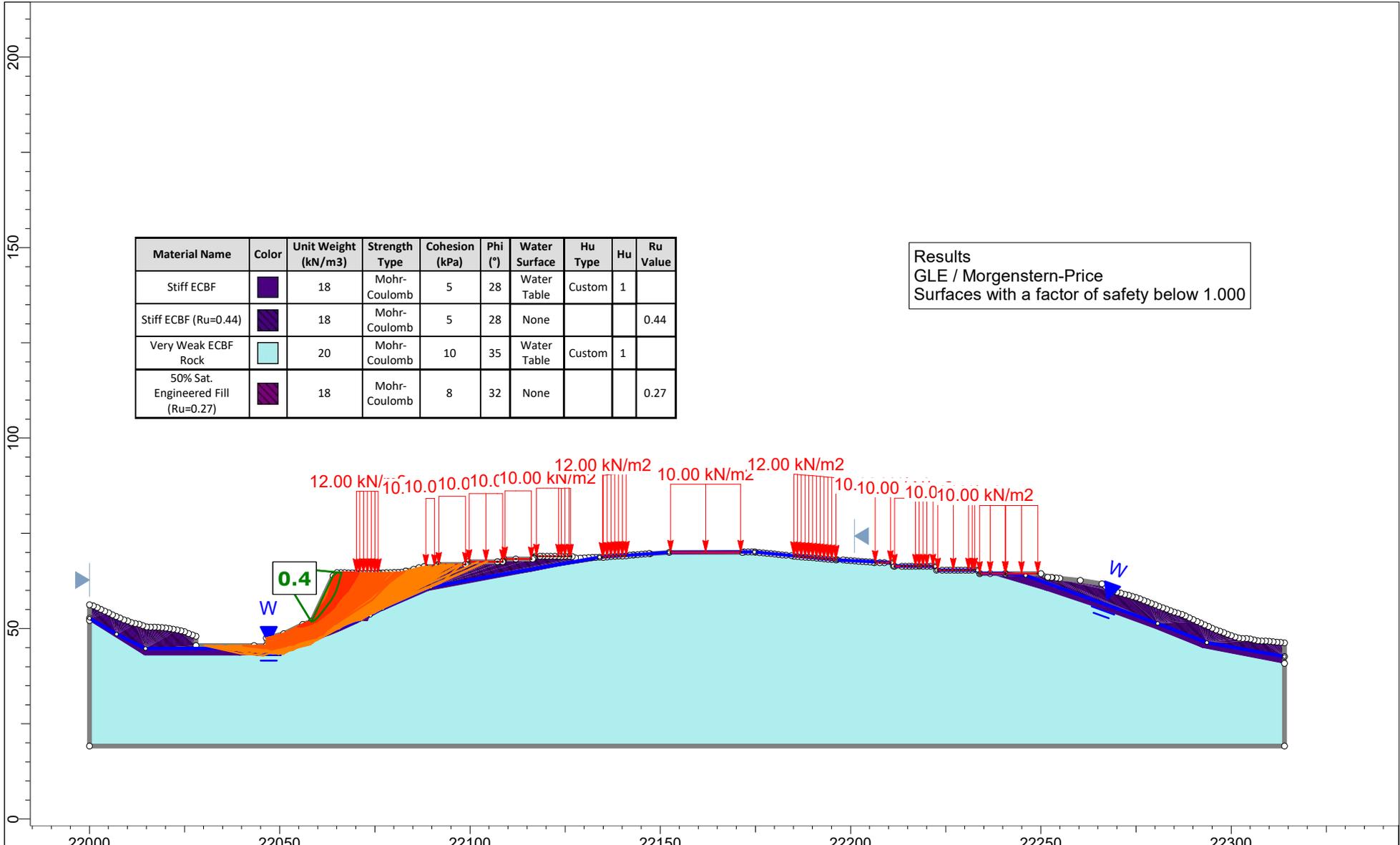
Project	240065 - Russell Road, Waunui		
Group	Section V - Proposed GL (R-L)	Scenario	Extreme (Worst Case GW)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section V.slm



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

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

	Project		240065 - Russell Road, Waunui	
	Group		Section V - Proposed GL (R-L)	Scenario
	Drawn By		LKB	Company
	Date		19/12/2025	File Name
			Seismic (0.19g)	
			Riley Consultants Ltd	
			Section V.slmd	



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Stiff ECBF	Dark Purple	18	Mohr-Coulomb	5	28	Water Table	Custom	1	
Stiff ECBF (Ru=0.44)	Dark Purple	18	Mohr-Coulomb	5	28	None			0.44
Very Weak ECBF Rock	Light Blue	20	Mohr-Coulomb	10	35	Water Table	Custom	1	
50% Sat. Engineered Fill (Ru=0.27)	Dark Purple	18	Mohr-Coulomb	8	32	None			0.27

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



Project	240065 - Russell Road, Waunui		
Group	Section V - Proposed GL (R-L)	Scenario	Extreme (50% Fill Saturation)
Drawn By	LKB	Company	Riley Consultants Ltd
Date	19/12/2025	File Name	Section V.slm