Appendix F

Groundwater Impact Assessment

RILEY

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Email: riley@riley.co.nz

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Project No:	240065	**Page**	1	of	2
Project:	Vineway Ltd				
Calc:	JLB	**Date:**	13 January 2025		
Check:	CDG	**Date:**	15 January 2025		
Description:	Calculation of settlement due to groundwater drawdown and extent of the drawdown (Stage 1)				

Inputs:

1. From review of investigation data and groundwater level monitoring adopt a GWL at 3m depth within the surficial soil mantle, which is consistent with gwl data excluding MH01. MH01 is excluded because of its location within a slump mass it is likely that the gwl in the upper piezo is not representative of the overall gwl within the surficial soils. Drawdown within the non-compressible rock materials is not considered. GWL monitoring sheet below

..\Groundwater Monitoring\Groundwater Monitoring.xlsx

2. For the northern boundary adopt a 9m thick surficial soil mantle based on MH02, for the eastern and southern boundaries adopt 8m depth based on MH06.
3. Typical undrained shear strength along the northern boundary is 50-100kPa, along the eastern and southern boundaries the typical value is >100kPa. Therefore adopt m_v = 0.067MN/m^2 for the northern boundary (for Cu=50kPa) and for the eastern and southern boundaries adopt m_v = 0.033MN/m^2. These values are considered to be conservative. Mv (MN/m^2) is calculated as 1/(300 x Cu) x 1000
4. Max cuts for calculation 9m (northern boundary), 8m (northern portion of eastern boundary), 5m (southern portion of eastern boundary and southern boundary).
5. A permeability of 1 x 10^{-7}m/s is considered appropriate for the silty clay/clayey silt type materials present.

Table 1: Calculated GW drawdown induced settlements

Location	Maximum Boundary Cut	Maximum Groundwater drawdown	Maximum calculated Settlement
Northern boundary	9m	6m	14mm
Northern part of eastern boundary and eastern part of northern boundary	8m	5m	<5mm
Southern of eastern boundary and southern boundary	5m	2m	<5mm

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Description: Calculation of settlement due to groundwater drawdown and extent of the drawdown (Stage 1)

See excel sheets for settlement calculation at address below.

T:\2024 Jobs\240065 Russell Road, Silverdale\4.0 DESIGN-INVEST\4.1 Geo\24.01.13 GW Drawdown Calculations

Using Sichardt formula from CIRIA 113, 1986 and CIRIA C515 2000, calculate the extent of groundwater drawdown.

$R_0=C*h*k^{0.5}$ calculation of distance from max drawdown to zero drawdown.

C=2000 to 3000
K=1 x 10^{-7}m/s
h_{max}=6m

R_0=3.8m to 5.7m drawdown effect is therefore considered to be contained within the site. Toe of the northern batter at maximum height is approximately 14m from the northern boundary. At the eastern end of the northern boundary the batter extends up to the boundary but the calculated drawdown settlement is <5mm so effect is considered to be negligible.

Accordingly, groundwater drawdown is considered to not have an adverse effect on the adjacent structures or development.

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Project No:	240065	**Page**	3	of	2
Project:	Vineway Ltd				
Calc:	JLB	**Date:**	13 January 2025		
Check:	CDG	**Date:**	15 January 2025		
Description:	Calculation of settlement due to groundwater drawdown and extent of the drawdown (Stage 1)				

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Project No:	240065	**Page**	1	of	2
Project:	Vineway Ltd				
Calc:	JLB	**Date:**	28 January 2025		
Check:	CDG	**Date:**	29 January 2025		
Description:	Calculation of settlement due to groundwater drawdown and extent of the drawdown (Stage 2)				

Inputs:

1. From review of investigation data and groundwater level monitoring adopt a conservative GWL at 2m depth within the surficial soil mantle, which is consistent with the shallowest gwl data. Drawdown within the non-compressible rock materials is not considered for the purpose of calculating in settlements. GWL monitoring sheet at link below.

..\Groundwater Monitoring\Groundwater Monitoring.xlsx

2. For the western boundary adopt a 4m thick surficial soil mantle based on TP53. For the north east corner adopt a rock depth of 3.5m (TP25), for the south eastern boundary adopt a depth of 5.2m (TP35 and TP36) and for the southern boundary adopt 8m depth (eg base of cut as rock was not encountered along the southern boundary).
3. Typical undrained shear strength along the western boundary is 40-85kPa, along the northern and eastern boundaries the typical value is 70-100kPa and for the southern boundary 50-100kPa. Therefore adopt m_v = 0.083MN/m^2 for the western boundary (for Cu=40kPa), for the northern and eastern boundaries adopt m_v = 0.048MN/m^2 (for Cu=70kPa), and for the southern boundary adopt m_v = 0.067MN/m^2 (for Cu=50kPa) . These values are considered to be conservative. Mv (MN/m^2) is calculated as 1/(300 x Cu) x 1000
4. Max cuts for calculation 14m (western boundary), 12m (northern portion of eastern boundary), 9m (southern portion of eastern boundary), and 8m (southern boundary).
5. A permeability of 1 x 10^{-6}m/s is considered appropriate as an average for the sandy silt/clayey silt type materials present.

Table 1: Calculated GW drawdown induced settlements

Location	Maximum Boundary Cut	Maximum Groundwater drawdown	Maximum calculated Settlement
Western boundary	14m	2m*	<5mm
Northern part of eastern boundary	12m	1.5m*	<5mm
Southern part of eastern boundary	9m	3.2m*	<5mm

Southern boundary	8m	6m*	14mm

*Maximum groundwater drawdown is taken as the shallower of the depth to rock of the base of the boundary cut.

See excel sheets for settlement calculation at address below.

T:\2024 Jobs\240065 Russell Road, Silverdale\4.0 DESIGN-INVEST\4.1 Geo\24.01.13 GW Drawdown Calculations\Stage 2

Using Sichardt formula from CIRIA 113, 1986 and CIRIA C515 2000, calculate the extent of groundwater drawdown.

$R_0=C*h*k^{0.5}$ calculation of distance from max drawdown to zero drawdown.

C=2000 to 3000
K=1 x 10^{-6}m/s
h_{max}=6m (southern)

R_0=12m to 18m for the southern boundary, while for the western, northern and eastern boundaries the R_0 is up to 6.4m to 9.6m (southern part of eastern boundary) indicates that the groundwater drawdown is likely to be contained within the site. In any case the calculated settlement at the point of maximum drawdown for the western, northern and eastern boundaries is <5mm and is considered to be negligible. For the southern boundary the maximum drawdown is indicated to occur approximately 25m from the boundary. Even though up to 14mm of settlement is calculated to occur, it is unlikely to extend beyond the site boundary.

Accordingly, groundwater drawdown is considered to not have an adverse effect on the adjacent structures or development.

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Tel: 03 379 4402
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Description:	Calculation of settlement due to groundwater drawdown and extent of the drawdown (Stage 2)

Appendix G

Proposed Geotechnical Consent Conditions

Proposed Geotechnical Related Consent Conditions

1. The placement and compaction of fill material, construction of geogrid reinforced slopes, retaining walls and subsoil drainage works must be supervised by a suitably qualified engineering professional. In supervising the works, the suitably qualified engineering professional must ensure that they are constructed and otherwise completed in accordance with the recommendations contained within the Riley Consultants Ltd Geotechnical Investigation Report (ref:240065-F, dated 31 January 2025), relevant engineering code of practice and detailed plans forming part of the application.

   Certification from a suitably qualified engineering professional responsible for supervising the works must be provided to Council, confirming that the works have been completed in accordance with condition XX [condition reference], within ten (10) working days following completion. Written certification must be in the form of a geotechnical completion report, or any other form acceptable to the council.

2. All earthworks must be managed to ensure that they do not lead to any uncontrolled instability or collapse either affecting the site or adversely affecting any neighbouring properties. In the event that such collapse or instability does occur, it must immediately be rectified.

Groundwater Drawdown

3. All excavation, dewatering, retaining structures and works associated with diversion of taking of groundwater, shall be designed, constructed and maintained so as to avoid damage to buildings, structures and services on the site or adjacent properties, unless otherwise agreed in writing with the asset owner.

4. At least 10 days prior to commencement of dewatering a Groundwater and Settlement Monitoring and Contingency Plan (GSMCP) prepared by a (SQEP), shall be submitted to Council for written approval. Any later proposed amendment of the GSMCP shall also be submitted to Council for written approval.
5. All construction, dewatering, monitoring and contingency actions shall be carried out in accordance with the approved GSMCP. No bulk excavation (that may affect groundwater levels) or other dewatering activities shall commence until the GSMCP is approved in writing by the Council.

Section 224(c) conditions

General Geotechnical

6. The consent holder must construct the earthworks, geogrid reinforced soils slopes, retaining walls and subsoil drainage in accordance with the recommendations of the Riley Consultants Ltd Geotechnical Investigation Report (ref:240065-F, dated 31 January 2025) to ensure the site is stable and suitable for development. The consent holder must provide a Geotechnical Investigation Report from a suitably qualified engineering professional to confirm that Lots XXX are stable and suitable for development when applying for a certificate under section 224(c) of the RMA.

Geotechnical Reports

7. A Geotechnical Completion Report from a suitably qualified and experienced geo-professional must be provided to confirm that Lots XXX to XXX are stable and suitable for development when applying for a certificate under section 224(c) of the RMA.

   Development on Lots XXX to XXX must be undertaken in accordance with the recommendations of this Geotechnical Completion Report.

   The preceding paragraph must be registered as a consent notice on the record(s) of title to be issued for Lot(s) XXX to ensure that it is complied with

on a continuing basis. The specific name and date of the Geotechnical Completion Report provided must be referenced in the consent notice.

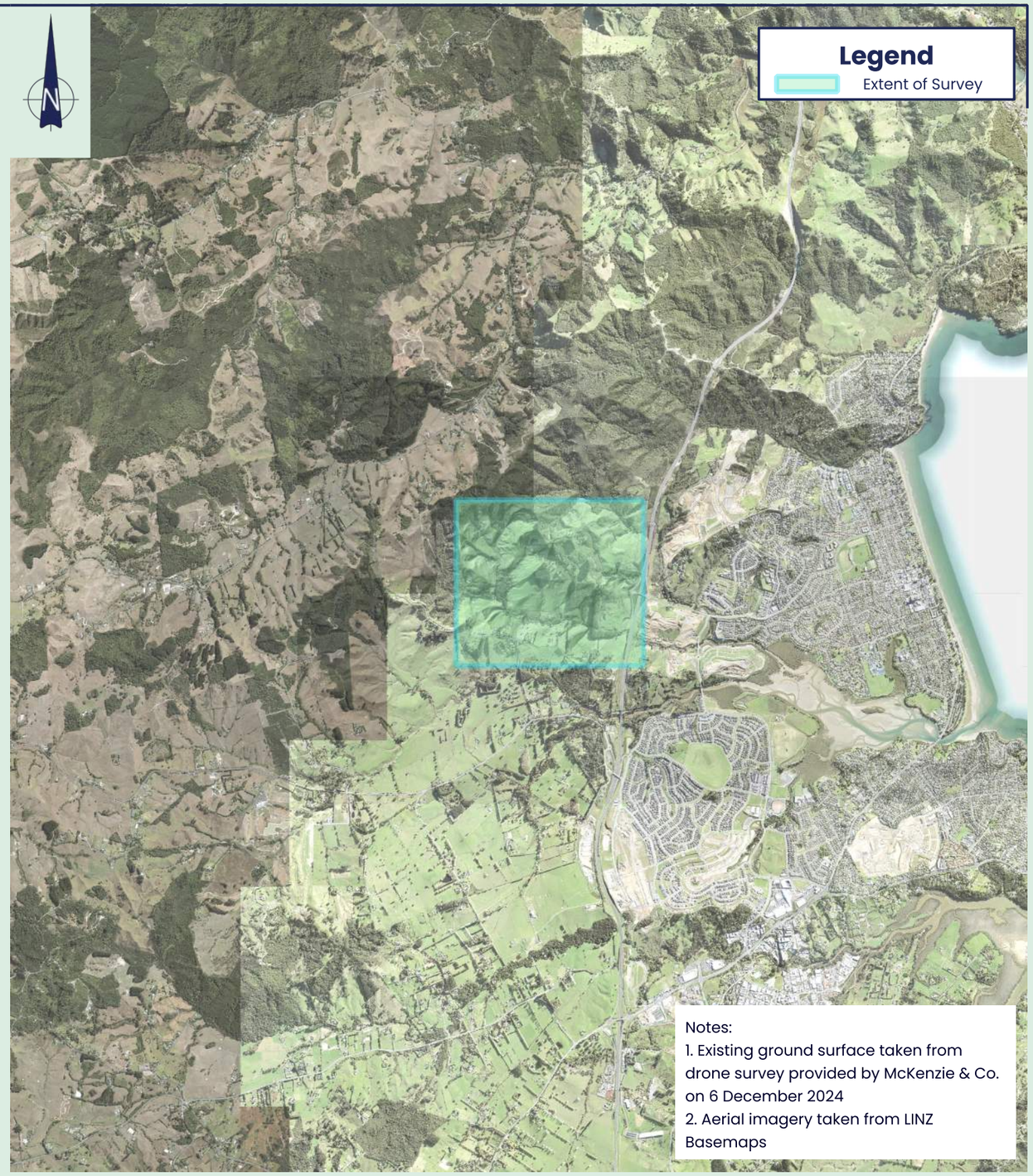
Appendix H

Riley Sketches: 240065-SK001; SK100 to SK174

FOR INFORMATION/NOT FOR CONSTRUCTION

Vineway Ltd
Russell Road, Wainui - Delmore
Drawing List

Sketch Number	Sketch Title	Revision
001	Drawing List and Locality Plan	A
100	Overview Site Plan	A
110	Site Plan - Sheet 1 of 15	A
111	Site Plan - Sheet 2 of 15	A
112	Site Plan - Sheet 3 of 15	A
113	Site Plan - Sheet 4 of 15	A
114	Site Plan - Sheet 5 of 15	A
115	Site Plan - Sheet 6 of 15	A
116	Site Plan - Sheet 7 of 15	A
117	Site Plan - Sheet 8 of 15	A
118	Site Plan - Sheet 9 of 15	A
119	Site Plan - Sheet 10 of 15	A
120	Site Plan - Sheet 11 of 15	A
121	Site Plan - Sheet 12 of 15	A
122	Site Plan - Sheet 13 of 15	A
123	Site Plan - Sheet 14 of 15	A
124	Site Plan - Sheet 15 of 15	A
130	Approximate Extent of Rock Cuts at Finished Level	A
131	Geological Map	A
140	Remedials Oveview Plan	A
141	Remedials Plan - Sheet 1 of 4	A
142	Remedials Plan - Sheet 2 of 4	A
143	Remedials Plan - Sheet 3 of 4	A
144	Remedials Plan - Sheet 4 of 4	A
160	Cross Sections - A & B	A
161	Cross Sections - C & D	A
162	Cross Sections - E & F	A
163	Cross Sections - G & H	A
164	Cross Sections - I & J	A
165	Cross Sections - K & L	A
166	Cross Sections - M & N	A
167	Cross Sections - O & P	A
168	Cross Sections - Q & R	A
169	Cross Sections - S & T	A
170	Cross Sections - U & V	A
171	Cross Sections - W & X	A
172	Cross Sections - Y & Z	A
173	Cross Sections - AA & AB	A
174	Cross Sections - AC & AD	A



Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 6 December 2024
2. Aerial imagery taken from LINZ Basemaps

Locality Plan

SCALE: 1:50000

Scale: 1:50000 (A3)
0 1,000 2,000 3,000 4,000 m

Project Number: 240065 | Drawn by jcels | Date printed: 31/01/2025 | Scale: 1:50000

made with QGIS

RILEY

Vineway Ltd
Russell Road, Wainui - Delmore
Drawing List and Locality Plan

Sketch: 240065-SK001 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

FOR INFORMATION/NOT FOR CONSTRUCTION

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

Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co., on 06 December 2024
2. Existing ground surface outside of the site boundary taken from LINZ DEM 2016-2018
3. Aerial imagery taken from LINZ Basemaps
4. Property data taken from LINZ Data Service
5. Proposed lots development provided by McKenzie & Co., dated 08 January 2025

Project Number: 240065 | Drawn by jcels | Date printed: 31/01/2025 | Scale: 1:7500

made with QGIS

RILEY

Vineway Ltd
Russell Road, Wainui - Delmore
Overview Site Plan

Sketch: 240065-SK100 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

FOR INFORMATION/NOT FOR CONSTRUCTION

Legend

- Hand Auger
- Test Pits
- Machine Holes
- Existing Major Contours (5m Interval)
- Existing Minor Contours (1m Interval)
- Site Boundary
- Property Boundaries
- Reeds
- Depression
- Mound
- Hummocky
- Soil Creep
- Scarp
- Scarp (Inferred)
- Scarp (Assumed)
- Top of Slope
- Bottom of Slope
- Benching
- Water Course
- Ridge Line
- Contact
- Gully
- Lineation

HA143, TP39, HA18, HA01, TP44, HA142, HA141, HA140, TP01, HA139, TP40

Q 168, Q 168, H 163

Scale: 1:1000 (A3)
0, 20, 40, 60, 80 m

Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Existing ground surface outside of the site boundary taken from LINZ DEM 2016-2018
3. Aerial imagery taken from LINZ Basemaps
4. Property data taken from LINZ Data Service
5. Geomorphology mapped by Riley Consultants' Geologists during site walkovers on 08 April 2024 and 08 November 2024

Project Number: 240065 | Drawn by jcels | Date printed: 31/01/2025 | Scale: 1:1000

made with QGIS

RILEY

Vineway Ltd
Russell Road, Wainui - Delmore
Site Plan - Sheet 1 of 15

Sketch: 240065-SK110 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

FOR INFORMATION/NOT FOR CONSTRUCTION

Legend

- Hand Auger
- Test Pits
- Machine Holes
- Existing Major Contours (5m Interval)
- Existing Minor Contours (1m Interval)
- Site Boundary
- Property Boundaries
- Reeds
- Depression
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Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Existing ground surface outside of the site boundary taken from LINZ DEM 2016-2018
3. Aerial imagery taken from LINZ Basemaps
4. Property data taken from LINZ Data Service
5. Geomorphology mapped by Riley Consultants' Geologists during site walkovers on 08 April 2024 and 08 November 2024

Scale: 1:1000 (A3)

Project Number: 240065 | Drawn by jcels | Date printed: 31/01/2025 | Scale: 1:1000

RILEY

Vineway Ltd
Russell Road, Wainui - Delmore
Site Plan - Sheet 2 of 15

Sketch: 240065-SK111 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

FOR INFORMATION/NOT FOR CONSTRUCTION

Legend

- Hand Auger
- Test Pits
- Machine Holes
- Existing Major Contours (5m Interval)
- Existing Minor Contours (1m Interval)
- Site Boundary
- Property Boundaries
- Reeds
- Depression
- Mound
- Hummocky
- Soil Creep
- Scarp
- Scarp (Inferred)
- Scarp (Assumed)
- Top of Slope
- Bottom of Slope
- Benching
- Water Course
- Ridge Line
- Contact
- Gully
- Lineation

Scale: 1:1000 (A3)

0 20 40 60 80 m

Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Existing ground surface outside of the site boundary taken from LINZ DEM 2016-2018
3. Aerial imagery taken from LINZ Basemaps
4. Property data taken from LINZ Data Service
5. Geomorphology mapped by Riley Consultants' Geologists during site walkovers on 08 April 2024 and 08 November 2024

Project Number: 240065 | Drawn by jcels | Date printed: 31/01/2025 | Scale: 1:1000

RILEY

Vineway Ltd
Russell Road, Wainui - Delmore
Site Plan - Sheet 3 of 15

Sketch: 240065-SK112 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

FOR INFORMATION/NOT FOR CONSTRUCTION

Legend

- Hand Auger
- Test Pits
- Machine Holes
- Existing Major Contours (5m Interval)
- Existing Minor Contours (1m Interval)
- Site Boundary
- Property Boundaries
- Reeds
- Depression
- Mound
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- Ridge Line
- Contact
- Gully
- Lineation

Scale: 1:1000 (A3)

0 20 40 60 80 m

Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Existing ground surface outside of the site boundary taken from LINZ DEM 2016-2018
3. Aerial imagery taken from LINZ Basemaps
4. Property data taken from LINZ Data Service
5. Geomorphology mapped by Riley Consultants' Geologists during site walkovers on 08 April 2024 and 08 November 2024

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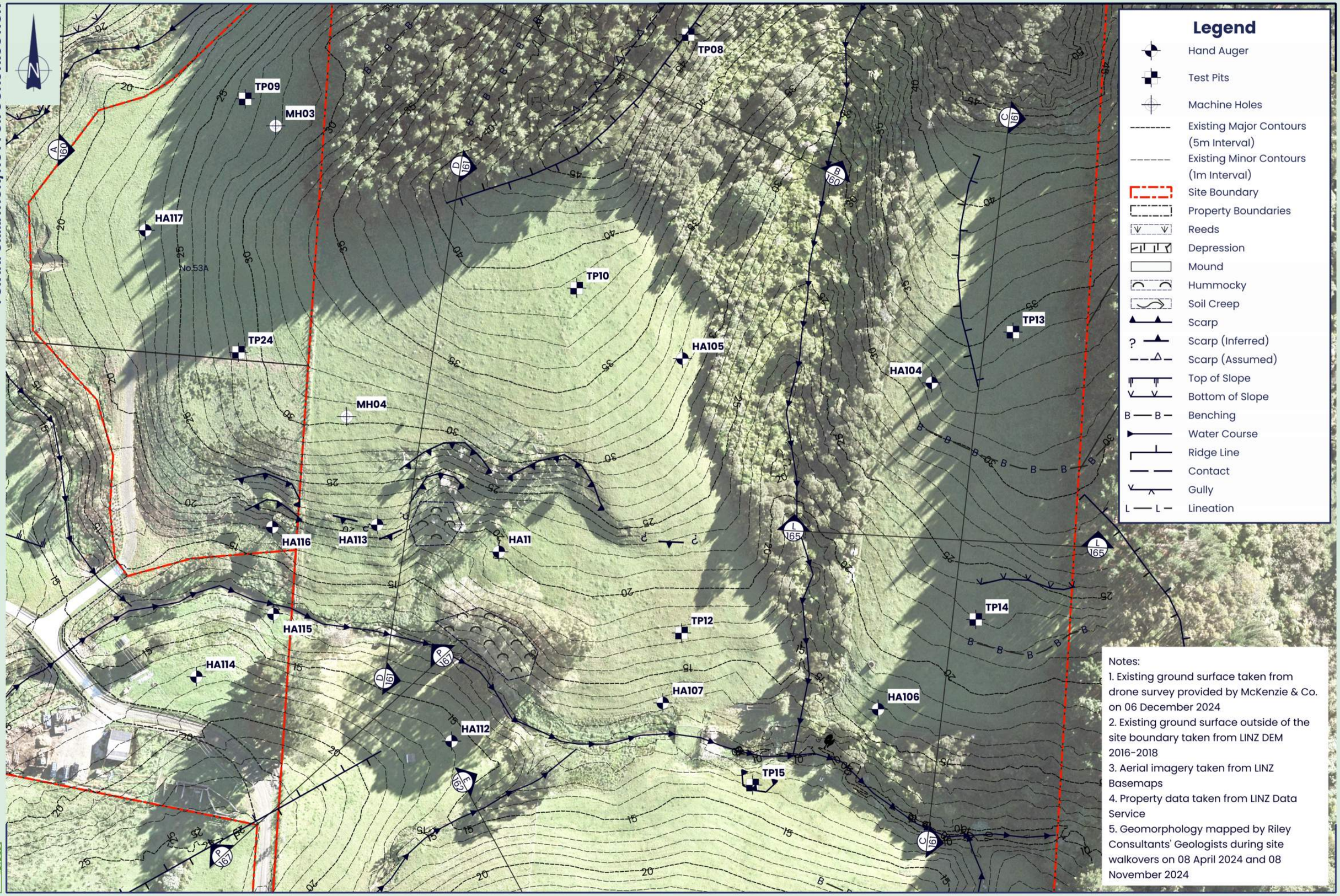
Vineway Ltd
Russell Road, Wainui - Delmore
Site Plan - Sheet 4 of 15

Sketch: 240065-SK113 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

FOR INFORMATION/NOT FOR CONSTRUCTION



Legend

- Hand Auger
- Test Pits
- Machine Holes
- Existing Major Contours (5m Interval)
- Existing Minor Contours (1m Interval)
- Site Boundary
- Property Boundaries
- Reeds
- Depression
- Mound
- Hummocky
- Soil Creep
- Scarp
- Scarp (Inferred)
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Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Existing ground surface outside of the site boundary taken from LINZ DEM 2016-2018
3. Aerial imagery taken from LINZ Basemaps
4. Property data taken from LINZ Data Service
5. Geomorphology mapped by Riley Consultants' Geologists during site walkovers on 08 April 2024 and 08 November 2024

Scale: 1:1000 (A3)
0 20 40 60 80 m

Project Number: 240065 | Drawn by jcels | Date printed: 31/01/2025 | Scale: 1:1000

RILEY

Vineway Ltd
Russell Road, Wainui - Delmore
Site Plan - Sheet 5 of 15

Sketch: 240065-SK114 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

FOR INFORMATION/NOT FOR CONSTRUCTION

Legend

- Hand Auger
- Test Pits
- Machine Holes
- Existing Major Contours (5m Interval)
- Existing Minor Contours (1m Interval)
- Site Boundary
- Property Boundaries
- Reeds
- Depression
- Mound
- Hummocky
- Soil Creep
- Scarp
- Scarp (Inferred)
- Scarp (Assumed)
- Top of Slope
- Bottom of Slope
- Benching
- Water Course
- Ridge Line
- Contact
- Gully
- Lineation

Scale: 1:1000 (A3)
0 20 40 60 80 m

Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Existing ground surface outside of the site boundary taken from LINZ DEM 2016-2018
3. Aerial imagery taken from LINZ Basemaps
4. Property data taken from LINZ Data Service
5. Geomorphology mapped by Riley Consultants' Geologists during site walkovers on 08 April 2024 and 08 November 2024

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RILEY

Vineway Ltd
Russell Road, Wainui - Delmore
Site Plan - Sheet 6 of 15

Sketch: 240065-SK115 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

FOR INFORMATION/NOT FOR CONSTRUCTION

Legend

- Hand Auger
- Test Pits
- Machine Holes
- Existing Major Contours (5m Interval)
- Existing Minor Contours (1m Interval)
- Site Boundary
- Property Boundaries
- Reeds
- Depression
- Mound
- Hummocky
- Soil Creep
- Scarp
- Scarp (Inferred)
- Scarp (Assumed)
- Top of Slope
- Bottom of Slope
- Benching
- Water Course
- Ridge Line
- Contact
- Gully
- Lineation

Scale: 1:1000 (A3)

0 20 40 60 80 m

Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Existing ground surface outside of the site boundary taken from LINZ DEM 2016-2018
3. Aerial imagery taken from LINZ Basemaps
4. Property data taken from LINZ Data Service
5. Geomorphology mapped by Riley Consultants' Geologists during site walkovers on 08 April 2024 and 08 November 2024

Project Number: 240065 | Drawn by: jcels | Date printed: 31/01/2025 | Scale: 1:1000

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RILEY

Vineway Ltd
Russell Road, Wainui - Delmore
Site Plan - Sheet 7 of 15

Sketch: 240065-SK116 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

FOR INFORMATION/NOT FOR CONSTRUCTION

N

HA146
TP36
HA145
TP37
TP38
HA144
HA17
TP21
T169
S169

Legend

- Hand Auger
- Test Pits
- Machine Holes
- Existing Major Contours (5m Interval)
- Existing Minor Contours (1m Interval)
- Site Boundary
- Property Boundaries
- Reeds
- Depression
- Mound
- Hummocky
- Soil Creep
- Scarp
- Scarp (Inferred)
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- Contact
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Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Existing ground surface outside of the site boundary taken from LINZ DEM 2016-2018
3. Aerial imagery taken from LINZ Basemaps
4. Property data taken from LINZ Data Service
5. Geomorphology mapped by Riley Consultants' Geologists during site walkovers on 08 April 2024 and 08 November 2024

Scale: 1:1000 (A3)
0 20 40 60 80 m

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Project Number: 240065 | Drawn by jcels | Date printed: 31/01/2025 | Scale: 1:1000

RILEY

Vineway Ltd
Russell Road, Wainui - Delmore
Site Plan - Sheet 8 of 15

Sketch: 240065-SK117 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

FOR INFORMATION/NOT FOR CONSTRUCTION

Scale: 1:1000 (A3)

0 20 40 60 80 m

Legend

- Hand Auger
- Test Pits
- Machine Holes
- Existing Major Contours (5m Interval)
- Existing Minor Contours (1m Interval)
- Site Boundary
- Property Boundaries
- Reeds
- Depression
- Mound
- Hummocky
- Soil Creep
- Scarp
- Scarp (Inferred)
- Scarp (Assumed)
- Top of Slope
- Bottom of Slope
- Benching
- Water Course
- Ridge Line
- Contact
- Gully
- Lineation

Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Existing ground surface outside of the site boundary taken from LINZ DEM 2016-2018
3. Aerial imagery taken from LINZ Basemaps
4. Property data taken from LINZ Data Service
5. Geomorphology mapped by Riley Consultants' Geologists during site walkovers on 08 April 2024 and 08 November 2024

Project Number: 240065 | Drawn by: jcels | Date printed: 31/01/2025 | Scale: 1:1000

made with QGIS

RILEY

Vineway Ltd
Russell Road, Wainui - Delmore
Site Plan - Sheet 9 of 15

Sketch: 240065-SK118 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

FOR INFORMATION/NOT FOR CONSTRUCTION

Scale: 1:1000 (A3)

0 20 40 60 80 m

HA147 TP34 HA16 TP35 HA146 TP36 HA145 TP37

Legend

- Hand Auger
- Test Pits
- Machine Holes
- Existing Major Contours (5m Interval)
- Existing Minor Contours (1m Interval)
- Site Boundary
- Property Boundaries
- Reeds
- Depression
- Mound
- Hummocky
- Soil Creep
- Scarp
- Scarp (Inferred)
- Scarp (Assumed)
- Top of Slope
- Bottom of Slope
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- Water Course
- Ridge Line
- Contact
- Gully
- Lineation

Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Existing ground surface outside of the site boundary taken from LINZ DEM 2016-2018
3. Aerial imagery taken from LINZ Basemaps
4. Property data taken from LINZ Data Service
5. Geomorphology mapped by Riley Consultants' Geologists during site walkovers on 08 April 2024 and 08 November 2024

made with QGIS

Project Number: 240065 | Drawn by jcels | Date printed: 31/01/2025 | Scale: 1:1000

RILEY

Vineway Ltd
Russell Road, Wainui - Delmore
Site Plan - Sheet 10 of 15

Sketch: 240065-SK119 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

FOR INFORMATION/NOT FOR CONSTRUCTION

Scale: 1:1000 (A3)
0 20 40 60 80 m

Legend

- Hand Auger
- Test Pits
- Machine Holes
- Existing Major Contours (5m Interval)
- Existing Minor Contours (1m Interval)
- Site Boundary
- Property Boundaries
- Reeds
- Depression
- Mound
- Hummocky
- Soil Creep
- Scarp
- Scarp (Inferred)
- Scarp (Assumed)
- Top of Slope
- Bottom of Slope
- Benching
- Water Course
- Ridge Line
- Contact
- Gully
- Lineation

Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Existing ground surface outside of the site boundary taken from LINZ DEM 2016-2018
3. Aerial imagery taken from LINZ Basemaps
4. Property data taken from LINZ Data Service
5. Geomorphology mapped by Riley Consultants' Geologists during site walkovers on 08 April 2024 and 08 November 2024

Project Number: 240065 | Drawn by jcels | Date printed: 31/01/2025 | Scale: 1:1000

made with QGIS

RILEY

Vineway Ltd
Russell Road, Wainui - Delmore
Site Plan - Sheet 11 of 15

Sketch: 240065-SK120 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

FOR INFORMATION/NOT FOR CONSTRUCTION

N

HA162
HA161
HA159
TP42
HA163
TP43
HA164
HA19
HA160
TP41
HA165
AB 173
AA 173
R 163

Legend

- Hand Auger
- Test Pits
- Machine Holes
- Existing Major Contours (5m Interval)
- Existing Minor Contours (1m Interval)
- Site Boundary
- Property Boundaries
- Reeds
- Depression
- Mound
- Hummocky
- Soil Creep
- Scarp
- Scarp (Inferred)
- Scarp (Assumed)
- Top of Slope
- Bottom of Slope
- Benching
- Water Course
- Ridge Line
- Contact
- Gully
- Lineation

Scale: 1:1000 (A3)
0 20 40 60 80 m

Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Existing ground surface outside of the site boundary taken from LINZ DEM 2016-2018
3. Aerial imagery taken from LINZ Basemaps
4. Property data taken from LINZ Data Service
5. Geomorphology mapped by Riley Consultants' Geologists during site walkovers on 08 April 2024 and 08 November 2024

Project Number: 240065 | Drawn by jcels | Date printed: 31/01/2025 | Scale: 1:1000

made with QGIS

RILEY

Vineway Ltd
Russell Road, Wainui - Delmore
Site Plan - Sheet 12 of 15

Sketch: 240065-SK121 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

FOR INFORMATION/NOT FOR CONSTRUCTION

N

TP49
TP50
HA20
TP46
TP48
TP47
HA157
TP45
HA162
HA15

Legend

- Hand Auger
- Test Pits
- Machine Holes
- Existing Major Contours (5m Interval)
- Existing Minor Contours (1m Interval)
- Site Boundary
- Property Boundaries
- Reeds
- Depression
- Mound
- Hummocky
- Soil Creep
- Scarp
- Scarp (Inferred)
- Scarp (Assumed)
- Top of Slope
- Bottom of Slope
- Benching
- Water Course
- Ridge Line
- Contact
- Gully
- Lineation

Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Existing ground surface outside of the site boundary taken from LINZ DEM 2016-2018
3. Aerial imagery taken from LINZ Basemaps
4. Property data taken from LINZ Data Service
5. Geomorphology mapped by Riley Consultants' Geologists during site walkovers on 08 April 2024 and 08 November 2024

Scale: 1:1000 (A3)
0 20 40 60 80 m

made with QGIS

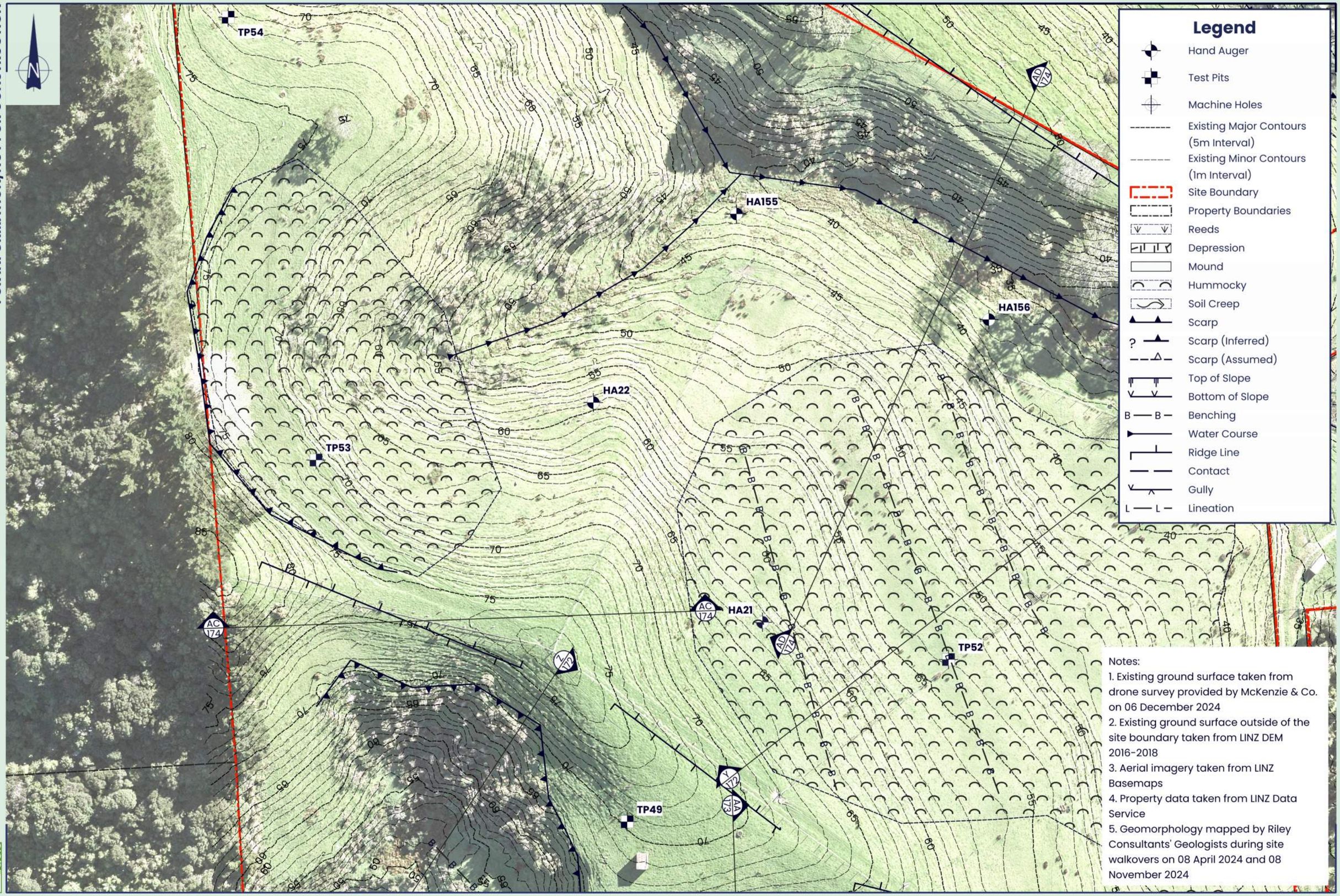
Project Number: 240065 | Drawn by: jcels | Date printed: 31/01/2025 | Scale: 1:1000

RILEY

Vineway Ltd
Russell Road, Wainui - Delmore
Site Plan - Sheet 13 of 15

Sketch: 240065-SK122 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

FOR INFORMATION/NOT FOR CONSTRUCTION



Scale: 1:1000 (A3)
0 20 40 60 80 m

made with QGIS

Project Number: 240065 | Drawn by jcels | Date printed: 31/01/2025 | Scale: 1:1000

RILEY

Vineway Ltd
Russell Road, Wainui - Delmore
Site Plan - Sheet 14 of 15

Sketch: 240065-SK123 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

FOR INFORMATION/NOT FOR CONSTRUCTION

N

Scale: 1:1000 (A3)
0 20 40 60 80 m

Legend

- Hand Auger
- Test Pits
- Machine Holes
- Existing Major Contours (5m Interval)
- Existing Minor Contours (1m Interval)
- Site Boundary
- Property Boundaries
- Reeds
- Depression
- Mound
- Hummocky
- Soil Creep
- Scarp
- Scarp (Inferred)
- Scarp (Assumed)
- Top of Slope
- Bottom of Slope
- Benching
- Water Course
- Ridge Line
- Contact
- Gully
- Lineation

HA153
HA152
HA151
HA154
TP30
TP54
TP31

Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Existing ground surface outside of the site boundary taken from LINZ DEM 2016-2018
3. Aerial imagery taken from LINZ Basemaps
4. Property data taken from LINZ Data Service
5. Geomorphology mapped by Riley Consultants' Geologists during site walkovers on 08 April 2024 and 08 November 2024

Project Number: 240065 | Drawn by jcels | Date printed: 31/01/2025 | Scale: 1:1000

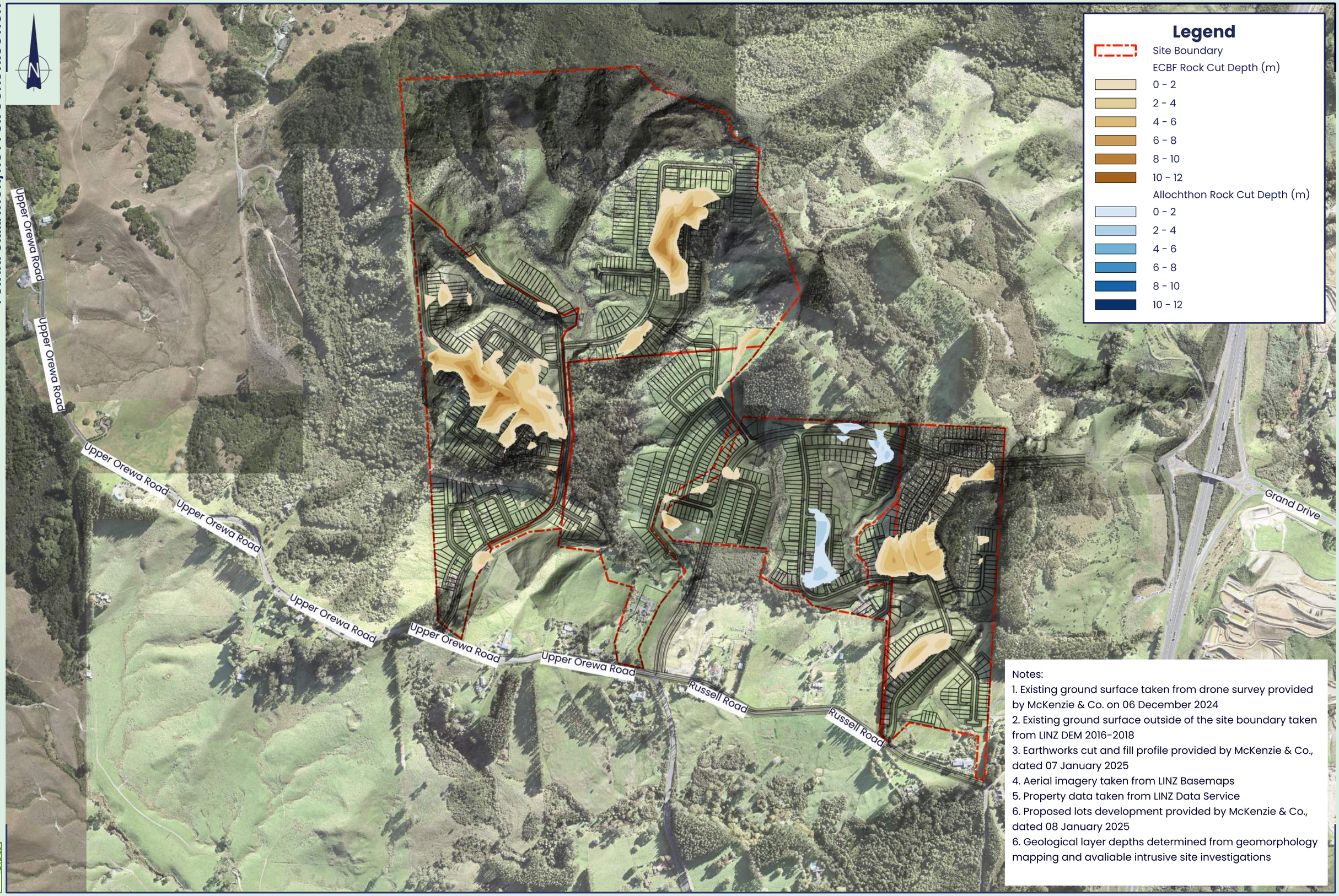
made with qgis

RILEY

Vineway Ltd
Russell Road, Wainui - Delmore
Site Plan - Sheet 15 of 15

Sketch: 240065-SK124 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

FOR INFORMATION/NOT FOR CONSTRUCTION



Legend

- Site Boundary
- ECBF Rock Cut Depth (m)
  - 0 - 2
  - 2 - 4
  - 4 - 6
  - 6 - 8
  - 8 - 10
  - 10 - 12
- Allochthon Rock Cut Depth (m)
  - 0 - 2
  - 2 - 4
  - 4 - 6
  - 6 - 8
  - 8 - 10
  - 10 - 12

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

Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Existing ground surface outside of the site boundary taken from LINZ DEM 2016-2018
3. Earthworks cut and fill profile provided by McKenzie & Co., dated 07 January 2025
4. Aerial imagery taken from LINZ Basemaps
5. Property data taken from LINZ Data Service
6. Proposed lots development provided by McKenzie & Co., dated 08 January 2025
6. Geological layer depths determined from geomorphology mapping and avaliable intrusive site investigations

made with QGIS

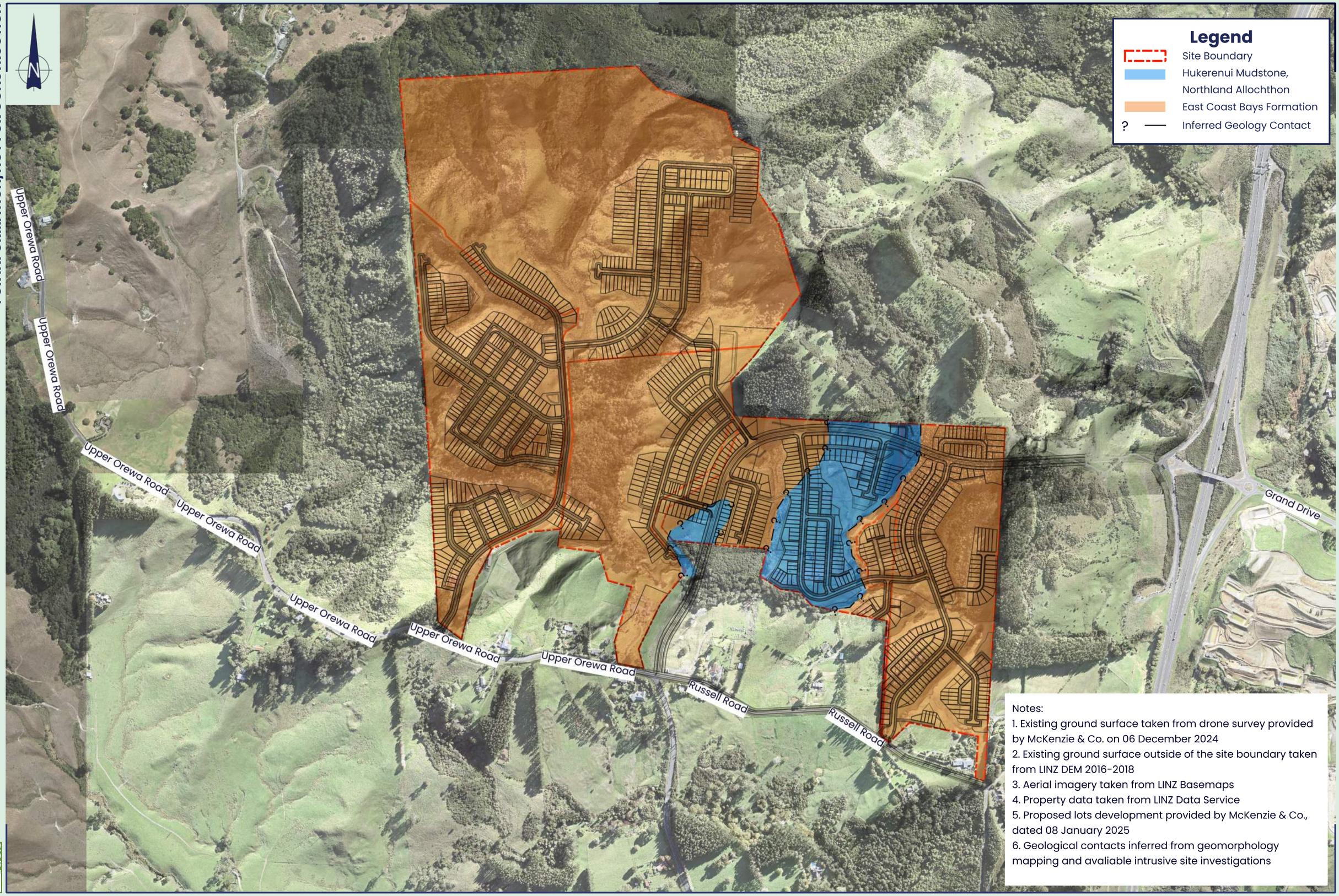
Project Number: 240065 | Drawn by jcels | Date printed: 31/01/2025 | Scale: 1:7500

RILEY

Vineway Ltd
Russell Road, Wainui - Delmore
Approximate Extent of Rock Cuts at Finished Level

Sketch: 240065-SK130 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

FOR INFORMATION/NOT FOR CONSTRUCTION



Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Existing ground surface outside of the site boundary taken from LINZ DEM 2016-2018
3. Aerial imagery taken from LINZ Basemaps
4. Property data taken from LINZ Data Service
5. Proposed lots development provided by McKenzie & Co., dated 08 January 2025
6. Geological contacts inferred from geomorphology mapping and avaliable intrusive site investigations

made with QGIS

Project Number: 240065 | Drawn by: jcels | Date printed: 31/01/2025 | Scale: 1:7500

RILEY

Vineway Ltd
Russell Road, Wainui - Delmore
Geological Map

Sketch: 240065-SK131 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

FOR INFORMATION/NOT FOR CONSTRUCTION

Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Existing ground surface outside of the site boundary taken from LINZ DEM 2016-2018
3. Earthworks cut and fill profile provided by McKenzie & Co., dated 07 January 2025
4. Aerial imagery taken from LINZ Basemaps
5. Property data taken from LINZ Data Service

Project Number: 240065 | Drawn by jcels | Date printed: 31/01/2025 | Scale: 1:7500

made with QGIS

RILEY

Vineway Ltd
Russell Road, Wainui - Delmore
Remedials Oveview Plan

Sketch: 240065-SK140 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

FOR INFORMATION/NOT FOR CONSTRUCTION

RILEY

Vineway Ltd
Russell Road, Wainui - Delmore
Remedials Plan - Sheet 1 of 4

Sketch: 240065-SK141 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

FOR INFORMATION/NOT FOR CONSTRUCTION

N

Legend

- Proposed Major Contours (5m Interval)
- Proposed Minor Contours (1m Interval)
- Existing Major Contours (5m Interval)
- Existing Minor Contours (1m Interval)
- Shear Key
- Retaining Wall
- Palisade Wall
- MSE Slope
- Counterfort Drains
- Soil Nails

Huanui Drive

Russell Road

Upper Orewa Road

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

Notes:
1. This sketch shows the indicative extent of poposed stabilisation enhancement measures. Final extent and configuration subject to detailed design and confirmation on site. For further details, refer to Riley report ref. 240065-F, Table 8 and 9, and Appendix E
2. For details on stability enhancement measures required between platforms, refer to 240065-F Section 5.1.6
3. The maximum gradient of the ground upslope of a proposed retaining wall is 18°
4. Existing ground surface taken from drone survey provided by McKenzie & Co. on 6 December 2024
5. Existing ground surface outside of the site boundary taken from LINZ DEM 2016-2018
6. Earthworks cut and fill profile provided by McKenzie & Co., dated 07 January 2025
7. Aerial imagery taken from LINZ Basemaps
8. Property data taken from LINZ Data Service

Project Number: 240065 | Drawn by: jcels | Date printed: 31/01/2025 | Scale: 1:2500

made with QGIS

RILEY

Vineway Ltd
Russell Road, Wainui - Delmore
Remedials Plan - Sheet 2 of 4

Sketch: 240065-SK142 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

FOR INFORMATION/NOT FOR CONSTRUCTION

Notes:
1. This sketch shows the indicative extent of poposed stabilisation enhancement measures. Final extent and configuration subject to detailed design and confirmation on site. For further details, refer to Riley report ref. 240065-F, Table 8 and 9, and Appendix E
2. For details on stability enhancement measures required between platforms, refer to 240065-F Section 5.1.6
3. The maximum gradient of the ground upslope of a proposed retaining wall is 18°
4. Existing ground surface taken from drone survey provided by McKenzie & Co. on 6 December 2024
5. Existing ground surface outside of the site boundary taken from LINZ DEM 2016-2018
6. Earthworks cut and fill profile provided by McKenzie & Co., dated 07 January 2025
7. Aerial imagery taken from LINZ Basemaps
8. Property data taken from LINZ Data Service

Project Number: 240065 | Drawn by jcels | Date printed: 31/01/2025 | Scale: 1:2500

RILEY

Vineway Ltd
Russell Road, Wainui - Delmore
Remedials Plan - Sheet 3 of 4

Sketch: 240065-SK143 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

FOR INFORMATION/NOT FOR CONSTRUCTION

N

Legend

- Proposed Major Contours (5m Interval)
- Proposed Minor Contours (1m Interval)
- Existing Major Contours (5m Interval)
- Existing Minor Contours (1m Interval)
- Shear Key
- Retaining Wall
- Palisade Wall
- MSE Slope
- Counterfort Drains
- Soil Nails

Notes:

1. This sketch shows the indicative extent of poposed stabilisation enhancement measures. Final extent and configuration subject to detailed design and confirmation on site. For further details, refer to Riley report ref. 240065-F, Table 8 and 9, and Appendix E
2. For details on stability enhancement measures required between platforms, refer to 240065-F Section 5.1.6
3. The maximum gradient of the ground upslope of a proposed retaining wall is 18°
4. Existing ground surface taken from drone survey provided by McKenzie & Co. on 6 December 2024
5. Existing ground surface outside of the site boundary taken from LINZ DEM 2016-2018
6. Earthworks cut and fill profile provided by McKenzie & Co., dated 07 January 2025
7. Aerial imagery taken from LINZ Basemaps
8. Property data taken from LINZ Data Service

Upper Orewa Road

Scale: 1:2500 (A3)

0 60 120 180 240 m

made with QGIS

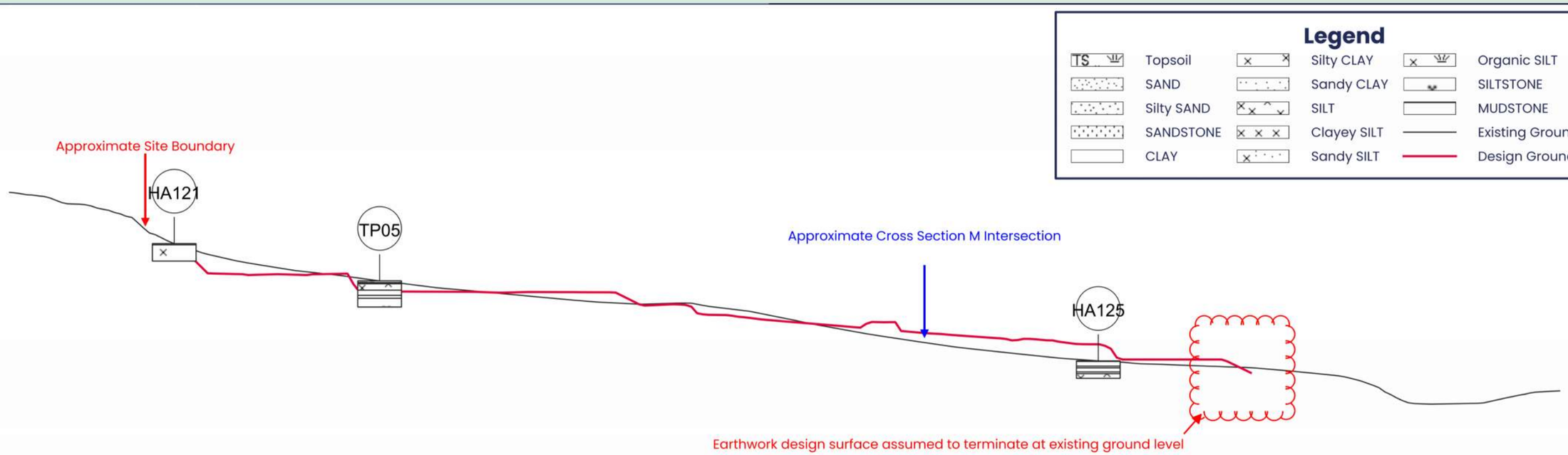
Project Number: 240065 | Drawn by: jcels | Date printed: 31/01/2025 | Scale: 1:2500

RILEY

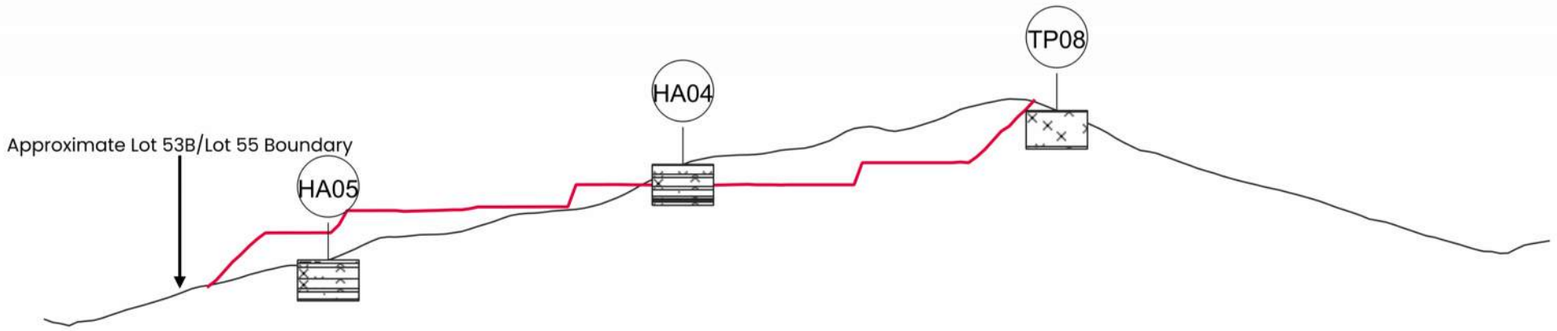
Vineway Ltd
Russell Road, Wainui - Delmore
Remedials Plan - Sheet 4 of 4

Sketch: 240065-SK144 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

FOR INFORMATION/NOT FOR CONSTRUCTION



SECTION A
SCALE: 1:750
112



SECTION B
SCALE: 1:750
114

Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Earthworks cut and fill profile provided by McKenzie & Co., dated 07 January 2025
3. Cross sections include site investigation boreholes within a 20m corridor of the section line. Boreholes are projected prependicularly onto the existing ground level
4. Quantitative stability analyses of design ground level cross sections are detailed in Riley report ref. 240065-F. Refer to Appendix E for ground model and slope stability outputs. A summary of the results and required remedial measures is presented in Table 8 and 9, 240065-F

Scale: 1:1 (A3)
0 0.02 0.04 0.06 0.08 m

made with QGIS

RILEY

Vineway Ltd
Russell Road, Wainui - Delmore
Cross Sections - A & B

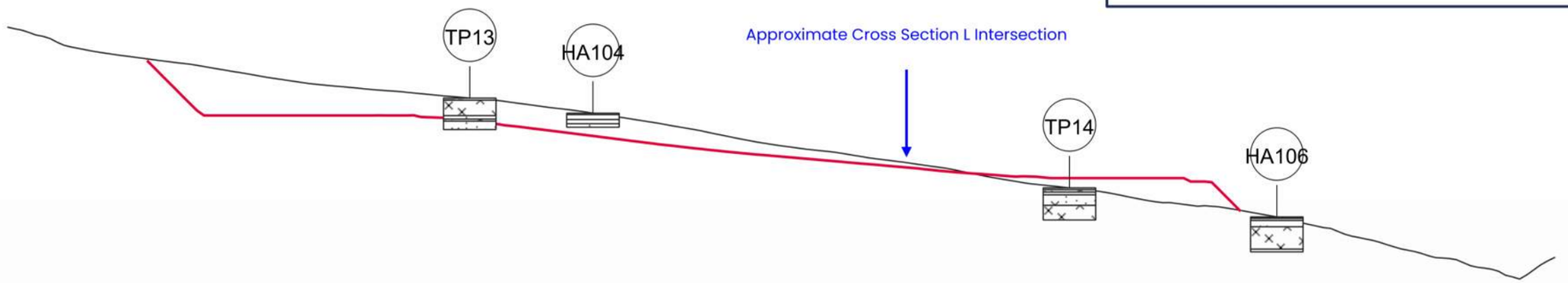
Sketch: 240065-SK160 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

Project Number: 240065 | Drawn by: jcels | Date printed: 31/01/2025 | Scale: 1:1

FOR INFORMATION/NOT FOR CONSTRUCTION

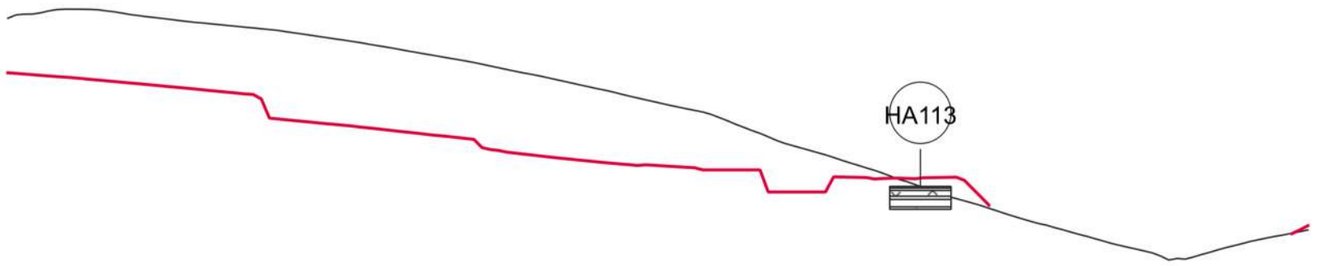
Legend

TS	Topsoil		Silty CLAY		Organic SILT
	SAND		Sandy CLAY		SILTSTONE
	Silty SAND		SILT		MUDSTONE
	SANDSTONE		Clayey SILT		Existing Ground Level
	CLAY		Sandy SILT		Design Ground Level



SECTION C 114

SCALE: 1:750



SECTION D 114

SCALE: 1:750

Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Earthworks cut and fill profile provided by McKenzie & Co., dated 07 January 2025
3. Cross sections include site investigation boreholes within a 20m corridor of the section line. Boreholes are projected prependicularly onto the existing ground level
4. Quantitative stability analyses of design ground level cross sections are detailed in Riley report ref. 240065-F. Refer to Appendix E for ground model and slope stability outputs. A summary of the results and required remedial measures is presented in Table 8 and 9, 240065-F
5. All batters steeper than 1v in 4h will require further geotechnical input during detailed design

Scale: 1:1 (A3)
0 0.02 0.04 0.06 0.08 m

made with QGIS

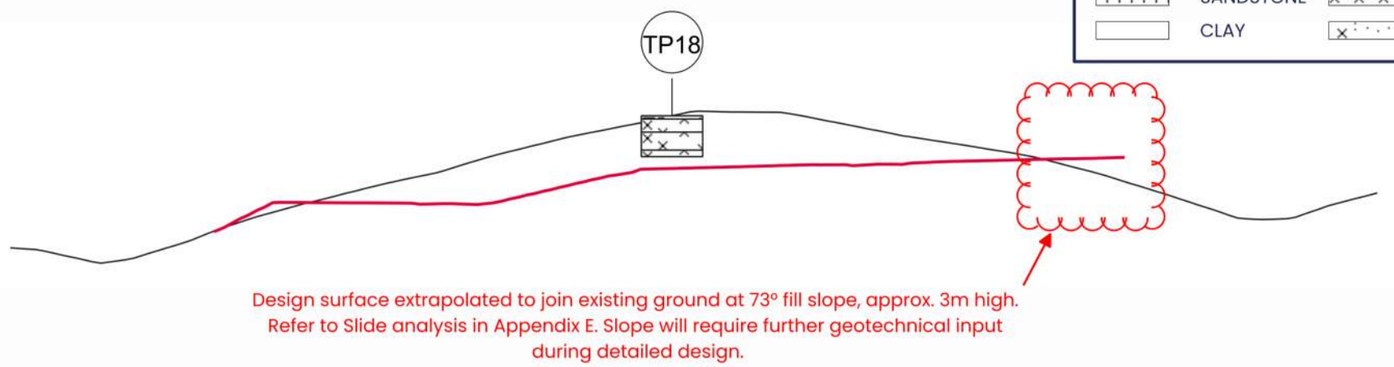
RILEY

Vineway Ltd
Russell Road, Wainui - Delmore
Cross Sections - C & D

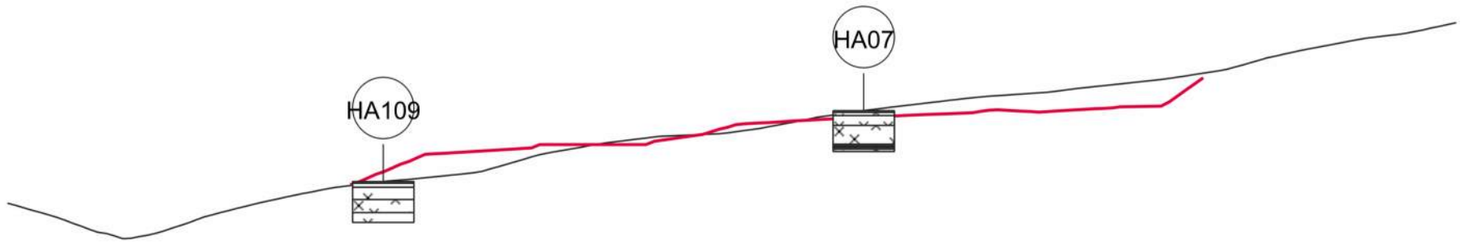
Sketch: 240065-SK161 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

Project Number: 240065 | Drawn by: jcels | Date printed: 31/01/2025 | Scale: 1:1

FOR INFORMATION/NOT FOR CONSTRUCTION



SECTION E
SCALE: 1:750
115



SECTION F
SCALE: 1:750
116

Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Earthworks cut and fill profile provided by McKenzie & Co., dated 07 January 2025
3. Cross sections include site investigation boreholes within a 20m corridor of the section line. Boreholes are projected prependicularly onto the existing ground level
4. Quantitative stability analyses of design ground level cross sections are detailed in Riley report ref. 240065-F. Refer to Appendix E for ground model and slope stability outputs. A summary of the results and required remedial measures is presented in Table 8 and 9, 240065-F
5. All batters steeper than 1v in 4h will require further geotechnical input during detailed design

Scale: 1:1 (A3)
0 0.02 0.04 0.06 0.08 m

made with QGIS

Project Number: 260065 | Drawn by: jcels | Date printed: 31/01/2025 | Scale: 1:1

RILEY

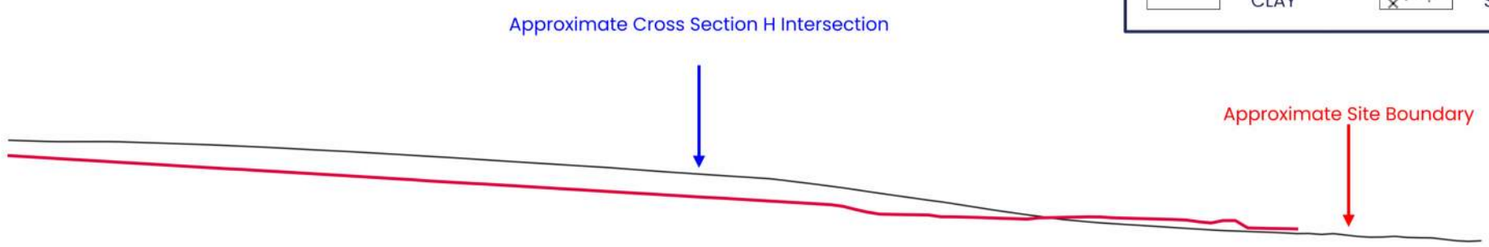
Vineway Ltd
Russell Road, Wainui - Delmore
Cross Sections - E & F

Sketch: 260065-SK162 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

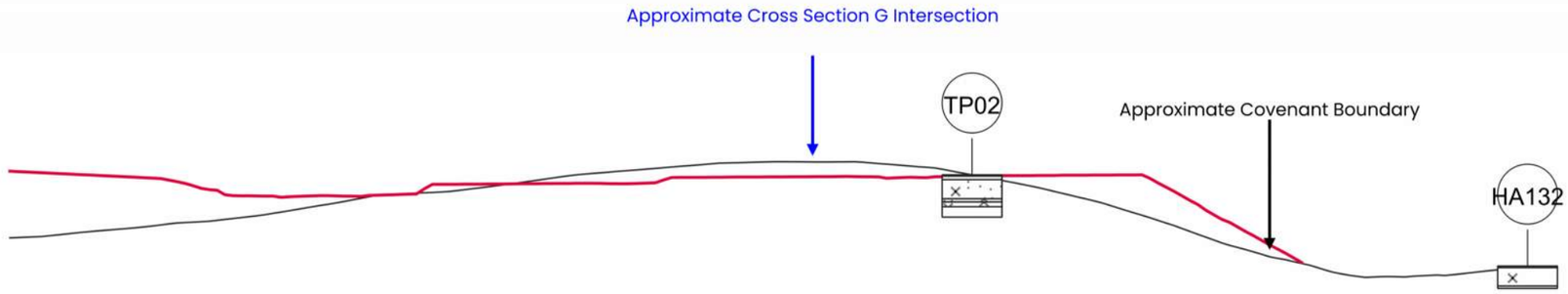
FOR INFORMATION/NOT FOR CONSTRUCTION

Legend

TS	Topsoil		Silty CLAY		Organic SILT
	SAND		Sandy CLAY		SILTSTONE
	Silty SAND		SILT		MUDSTONE
	SANDSTONE		Clayey SILT		Existing Ground Level
	CLAY		Sandy SILT		Design Ground Level



SECTION G 113
SCALE: 1:500



SECTION H 113
SCALE: 1:750

Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Earthworks cut and fill profile provided by McKenzie & Co., dated 07 January 2025
3. Cross sections include site investigation boreholes within a 20m corridor of the section line. Boreholes are projected prependicularly onto the existing ground level
4. Quantitative stability analyses of design ground level cross sections are detailed in Riley report ref. 240065-F. Refer to Appendix E for ground model and slope stability outputs. A summary of the results and required remedial measures is presented in Table 8 and 9, 240065-F

Scale: 1:1 (A3)
0 0.02 0.04 0.06 0.08 m

made with QGIS

RILEY

Vineway Ltd
Russell Road, Wainui - Delmore
Cross Sections - G & H

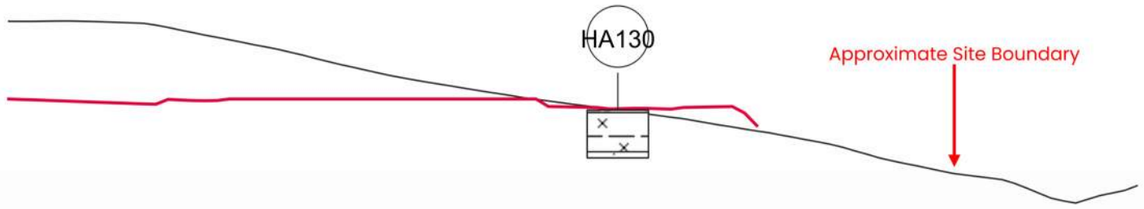
Sketch: 240065-SK163 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

Project Number: 240065 | Drawn by: jcels | Date printed: 31/01/2025 | Scale: 1:1

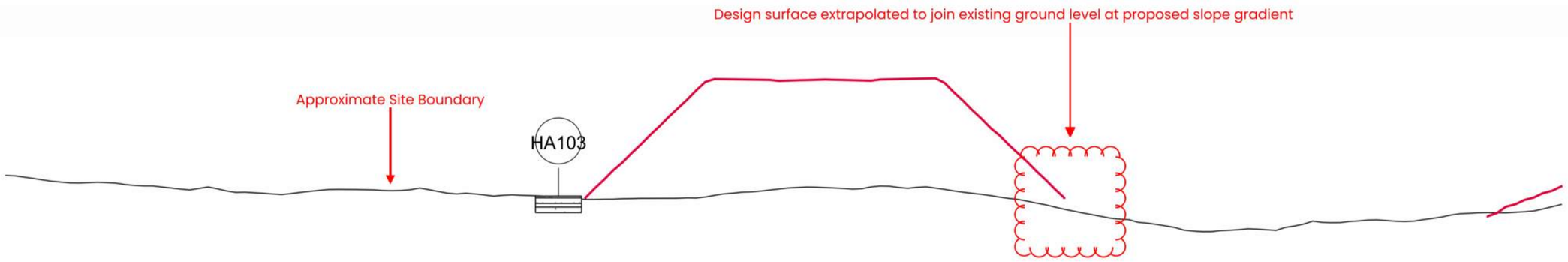
FOR INFORMATION/NOT FOR CONSTRUCTION

Legend

TS	Topsoil		Silty CLAY		Organic SILT
	SAND		Sandy CLAY		SILTSTONE
	Silty SAND		SILT		MUDSTONE
	SANDSTONE		Clayey SILT		Existing Ground Level
	CLAY		Sandy SILT		Design Ground Level



SECTION I 113
SCALE: 1:500



SECTION J 112
SCALE: 1:500

Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Earthworks cut and fill profile provided by McKenzie & Co., dated 07 January 2025
3. Cross sections include site investigation boreholes within a 20m corridor of the section line. Boreholes are projected prependicularly onto the existing ground level
4. Quantitative stability analyses of design ground level cross sections are detailed in Riley report ref. 240065-F. Refer to Appendix E for ground model and slope stability outputs. A summary of the results and required remedial measures is presented in Table 8 and 9, 240065-F

Scale: 1:1 (A3) 0 0.02 0.04 0.06 0.08 m

made with QGIS

RILEY

Vineway Ltd
Russell Road, Wainui - Delmore
Cross Sections - I & J

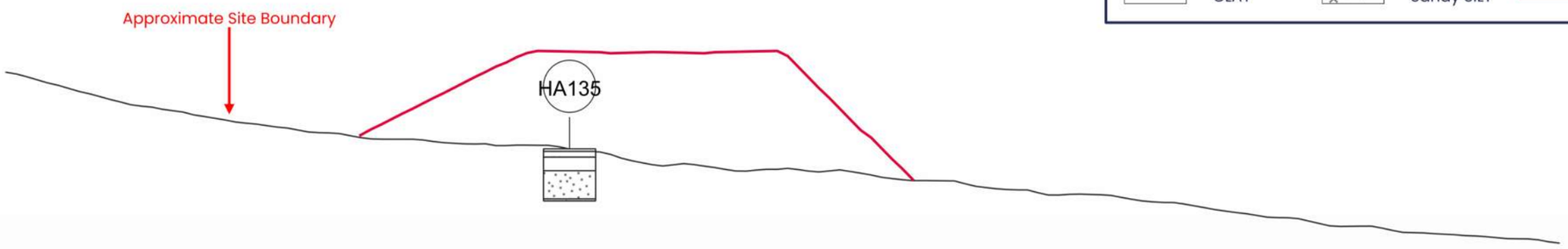
Sketch: 240065-SK164 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

Project Number: 240065 | Drawn by: jcels | Date printed: 31/01/2025 | Scale: 1:1

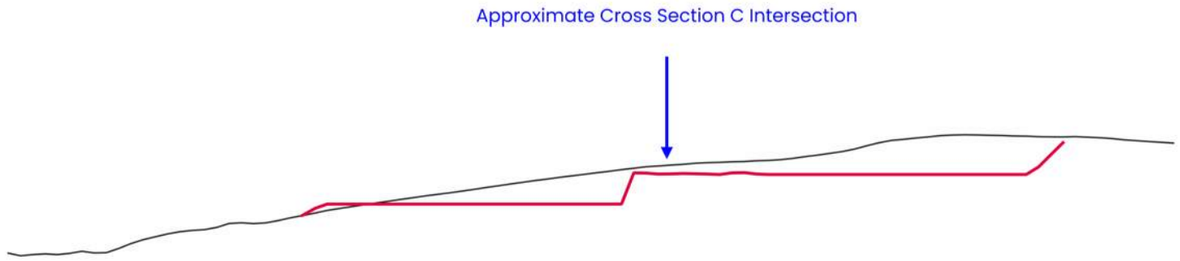
FOR INFORMATION/NOT FOR CONSTRUCTION

Legend

TS	Topsoil		Silty CLAY		Organic SILT
	SAND		Sandy CLAY		SILTSTONE
	Silty SAND		SILT		MUDSTONE
	SANDSTONE		Clayey SILT		Existing Ground Level
	CLAY		Sandy SILT		Design Ground Level



SECTION K
SCALE: 1:500



SECTION L
SCALE: 1:500

Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Earthworks cut and fill profile provided by McKenzie & Co., dated 07 January 2025
3. Cross sections include site investigation boreholes within a 20m corridor of the section line. Boreholes are projected prependicularly onto the existing ground level
4. Quantitative stability analyses of design ground level cross sections are detailed in Riley report ref. 240065-F. Refer to Appendix E for ground model and slope stability outputs. A summary of the results and required remedial measures is presented in Table 8 and 9, 240065-F
5. All batters steeper than 1v in 4h will require further geotechnical input during detailed design

Scale: 1:1 (A3) 0 0.02 0.04 0.06 0.08 m

made with QGIS

Project Number: 240065 | Drawn by: jcels | Date printed: 31/01/2025 | Scale: 1:1

RILEY

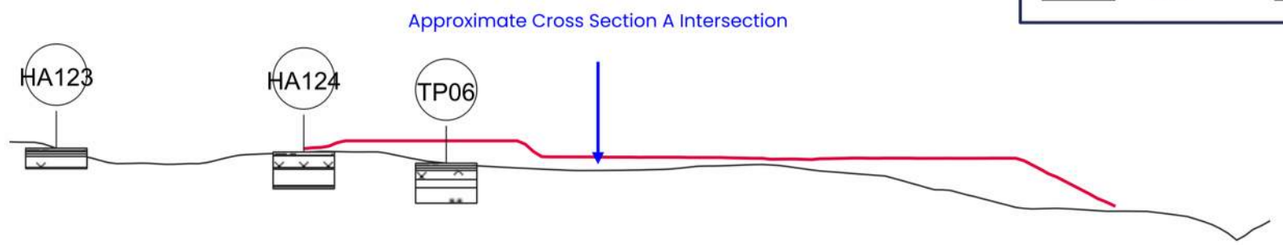
Vineway Ltd
Russell Road, Wainui - Delmore
Cross Sections - K & L

Sketch: 240065-SK165 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

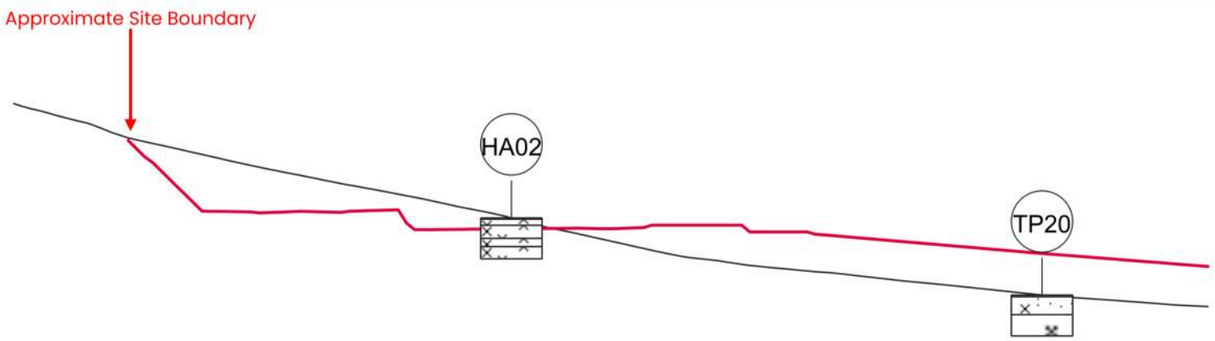
FOR INFORMATION/NOT FOR CONSTRUCTION

Legend

TS	Topsoil		Silty CLAY		Organic SILT
	SAND		Sandy CLAY		SILTSTONE
	Silty SAND		SILT		MUDSTONE
	SANDSTONE		Clayey SILT		Existing Ground Level
	CLAY		Sandy SILT		Design Ground Level



SECTION M 112
SCALE: 1:750



SECTION N 111
SCALE: 1:750

Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Earthworks cut and fill profile provided by McKenzie & Co., dated 07 January 2025
3. Cross sections include site investigation boreholes within a 20m corridor of the section line. Boreholes are projected prependicularly onto the existing ground level
4. Quantitative stability analyses of design ground level cross sections are detailed in Riley report ref. 240065-F. Refer to Appendix E for ground model and slope stability outputs. A summary of the results and required remedial measures is presented in Table 8 and 9, 240065-F
5. All batters steeper than 1v in 4h will require further geotechnical input during detailed design

Scale: 1:1 (A3) 0 0.02 0.04 0.06 0.08 m

Project Number: 240065 | Drawn by: jcels | Date printed: 31/01/2025 | Scale: 1:1

made with QGIS

RILEY

Vineway Ltd
Russell Road, Wainui - Delmore
Cross Sections - M & N

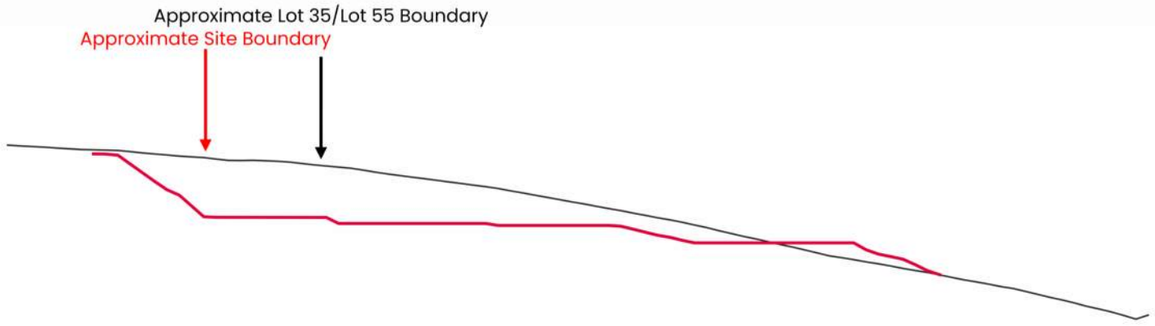
Sketch: 240065-SK166 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

FOR INFORMATION/NOT FOR CONSTRUCTION

Legend

TS	Topsoil		Silty CLAY		Organic SILT
	SAND		Sandy CLAY		SILTSTONE
	Silty SAND		SILT		MUDSTONE
	SANDSTONE		Clayey SILT		Existing Ground Level
	CLAY		Sandy SILT		Design Ground Level

SECTION O
SCALE: 1:500
112



SECTION P
SCALE: 1:500
115

Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Earthworks cut and fill profile provided by McKenzie & Co., dated 07 January 2025
3. Cross sections include site investigation boreholes within a 20m corridor of the section line. Boreholes are projected prependicularly onto the existing ground level
4. Quantitative stability analyses of design ground level cross sections are detailed in Riley report ref. 240065-F. Refer to Appendix E for ground model and slope stability outputs. A summary of the results and required remedial measures is presented in Table 8 and 9, 240065-F
5. All batters steeper than 1v in 4h will require further geotechnical input during detailed design

Scale: 1:1 (A3)
0 0.02 0.04 0.06 0.08 m

made with QGIS

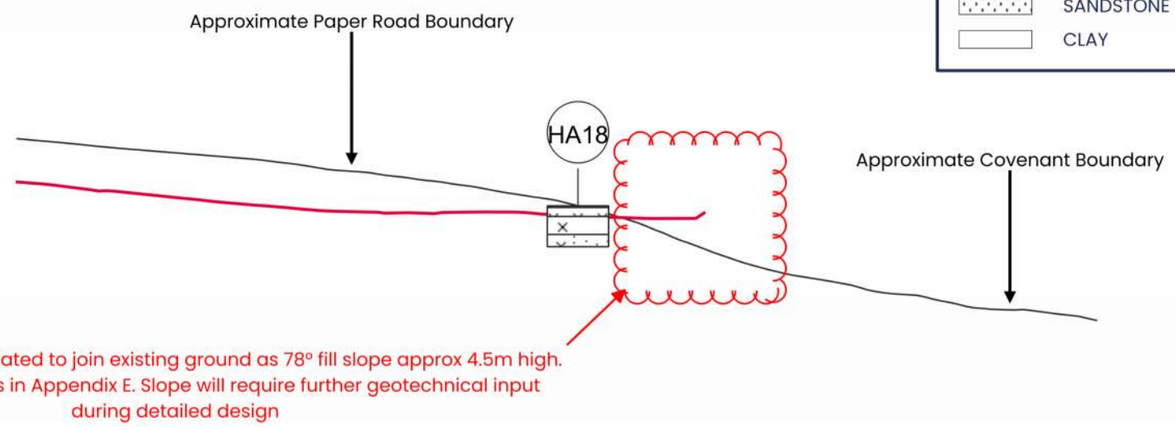
Project Number: 240065 | Drawn by: jcels | Date printed: 31/01/2025 | Scale: 1:1

RILEY

Vineway Ltd
Russel Road, Wainui - Delmore
Cross Sections - O & P

Sketch: 240065-SK167 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

FOR INFORMATION/NOT FOR CONSTRUCTION



SECTION Q / 110
SCALE: 1:750

SECTION R / 122
SCALE: 1:750

Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Earthworks cut and fill profile provided by McKenzie & Co., dated 07 January 2025
3. Cross sections include site investigation boreholes within a 20m corridor of the section line. Boreholes are projected prependicularly onto the existing ground level
4. Quantitative stability analyses of design ground level cross sections are detailed in Riley report ref. 240065-F. Refer to Appendix E for ground model and slope stability outputs. A summary of the results and required remedial measures is presented in Table 8 and 9, 240065-F

Scale: 1:1 (A3) 0 0.02 0.04 0.06 0.08 m

Project Number: 240065 | Drawn by: jcels | Date printed: 31/01/2025 | Scale: 1:1

made with QGIS

RILEY

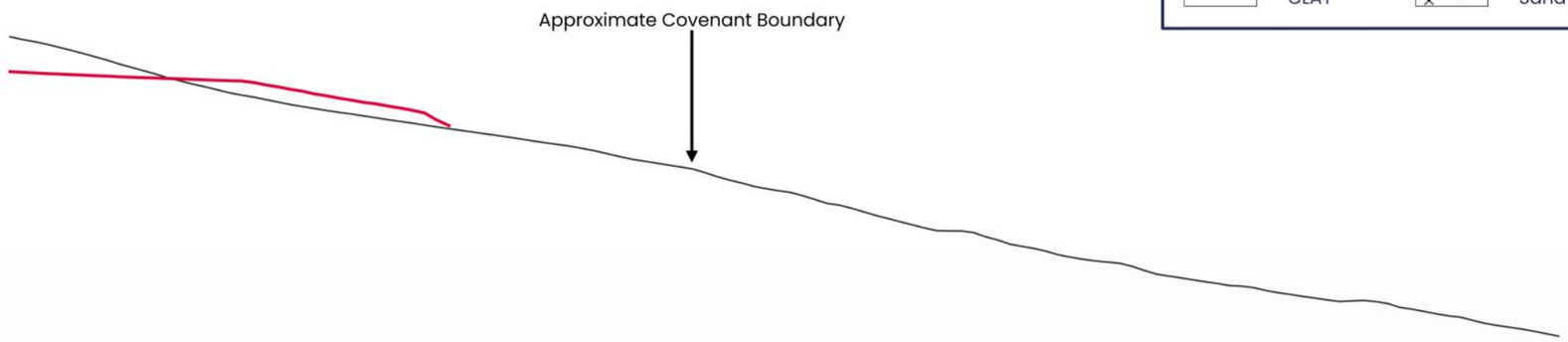
Vineway Ltd
Russell Road, Wainui - Delmore
Cross Sections - Q & R

Sketch: 240065-SK168 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

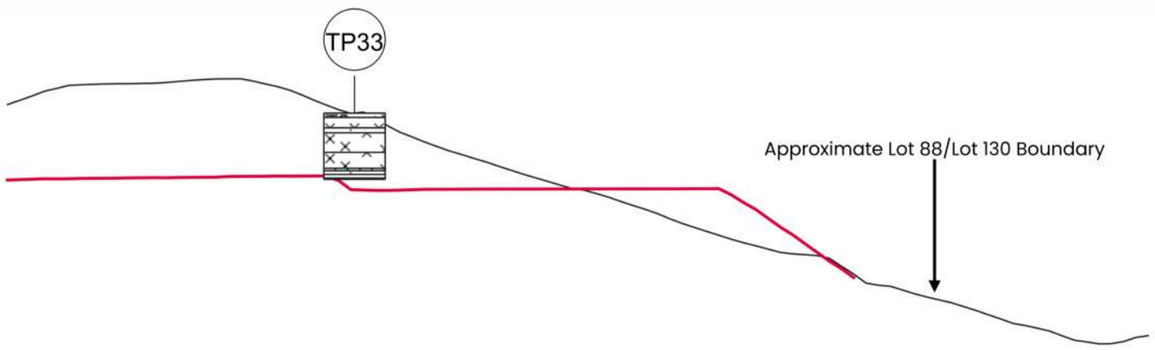
FOR INFORMATION/NOT FOR CONSTRUCTION

Legend

TS	Topsoil		Silty CLAY		Organic SILT
	SAND		Sandy CLAY		SILTSTONE
	Silty SAND		SILT		MUDSTONE
	SANDSTONE		Clayey SILT		Existing Ground Level
	CLAY		Sandy SILT		Design Ground Level



SECTION S 117
SCALE: 1:500



SECTION T 118
SCALE: 1:500

Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Earthworks cut and fill profile provided by McKenzie & Co., dated 07 January 2025
3. Cross sections include site investigation boreholes within a 20m corridor of the section line. Boreholes are projected prependicularly onto the existing ground level
4. Quantitative stability analyses of design ground level cross sections are detailed in Riley report ref. 240065-F. Refer to Appendix E for ground model and slope stability outputs. A summary of the results and required remedial measures is presented in Table 8 and 9, 240065-F

Scale: 1:1 (A3)
0 0.02 0.04 0.06 0.08 m

made with QGIS

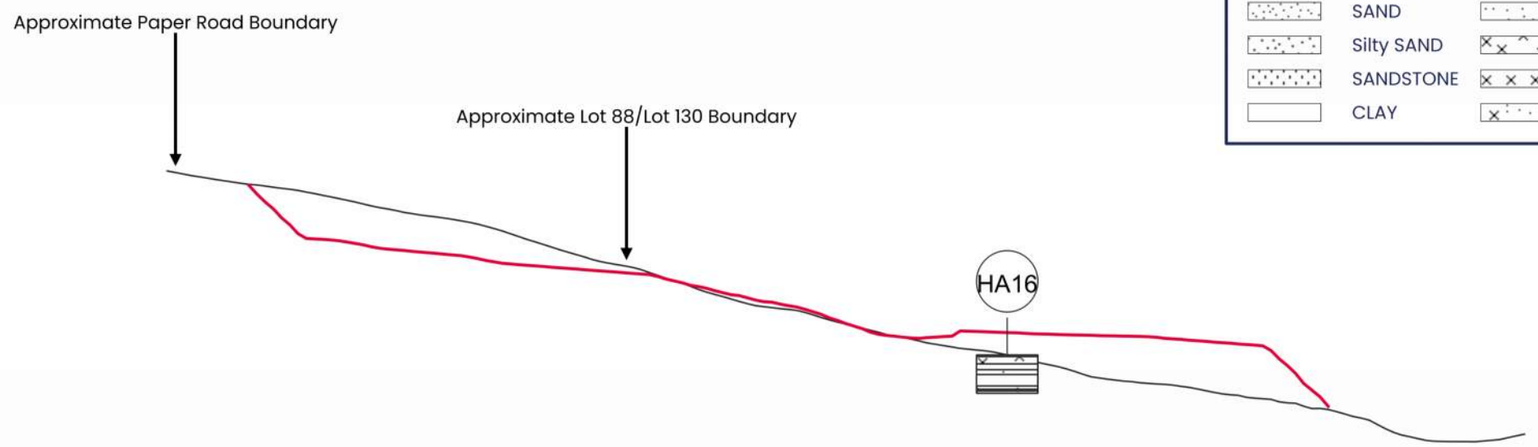
RILEY

Vineway Ltd
Russell Road, Wainui - Delmore
Cross Sections - S & T

Sketch: 240065-SK169 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

Project Number: 240065 | Drawn by: jcels | Date printed: 31/01/2025 | Scale: 1:1

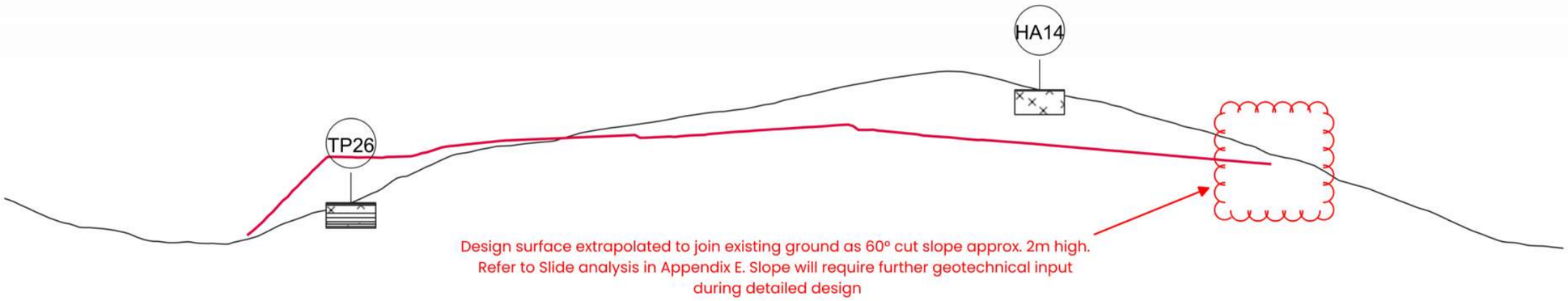
FOR INFORMATION/NOT FOR CONSTRUCTION



Legend

TS Topsoil	Silty CLAY	Organic SILT
SAND	Sandy CLAY	SILTSTONE
Silty SAND	SILT	MUDSTONE
SANDSTONE	Clayey SILT	Existing Ground Level
CLAY	Sandy SILT	Design Ground Level

SECTION U / 119
SCALE: 1:750



SECTION V / 120
SCALE: 1:1000

Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Earthworks cut and fill profile provided by McKenzie & Co., dated 07 January 2025
3. Cross sections include site investigation boreholes within a 20m corridor of the section line. Boreholes are projected prependicularly onto the existing ground level
4. Quantitative stability analyses of design ground level cross sections are detailed in Riley report ref. 240065-F. Refer to Appendix E for ground model and slope stability outputs. A summary of the results and required remedial measures is presented in Table 8 and 9, 240065-F

Scale: 1:1 (A3) 0 0.02 0.04 0.06 0.08 m

made with QGIS

Project Number: 240065 | Drawn by: jcels | Date printed: 31/01/2025 | Scale: 1:1

RILEY

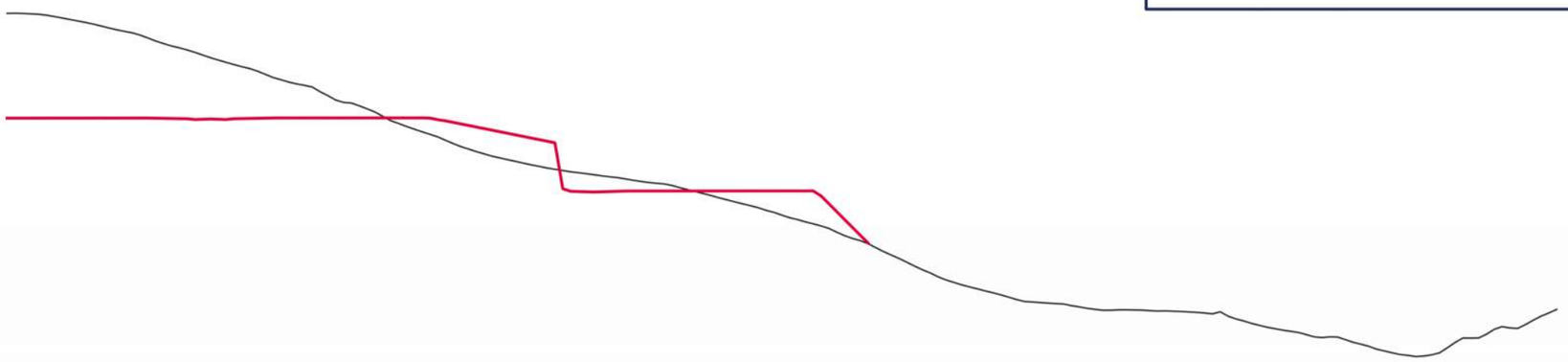
Vineway Ltd
Russell Road, Wainui - Delmore
Cross Sections - U & V

Sketch: 240065-SK170 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

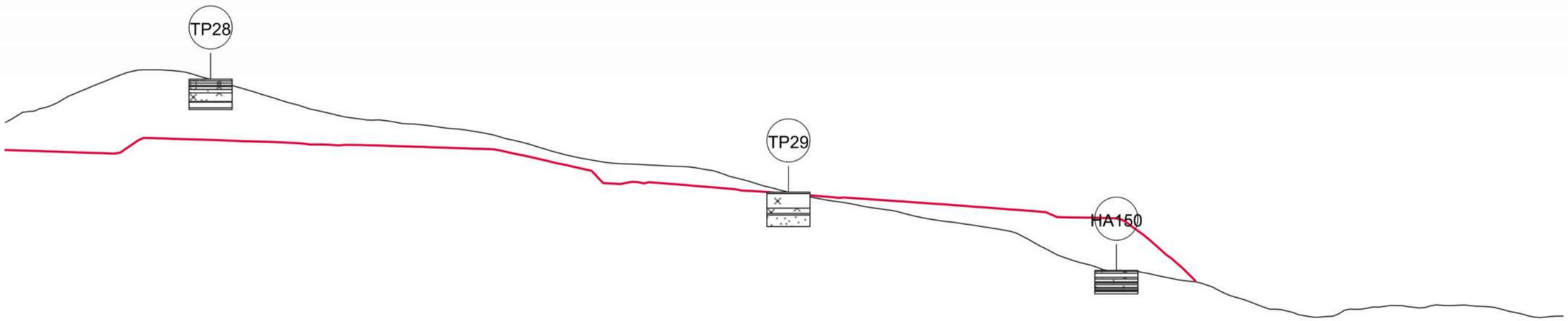
FOR INFORMATION/NOT FOR CONSTRUCTION

Legend

TS	Topsoil		Silty CLAY		Organic SILT
	SAND		Sandy CLAY		SILTSTONE
	Silty SAND		SILT		MUDSTONE
	SANDSTONE		Clayey SILT		Existing Ground Level
	CLAY		Sandy SILT		Design Ground Level



SECTION W 120
SCALE: 1:750



SECTION X 118
SCALE: 1:750

Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Earthworks cut and fill profile provided by McKenzie & Co., dated 07 January 2025
3. Cross sections include site investigation boreholes within a 20m corridor of the section line. Boreholes are projected prependicularly onto the existing ground level
4. Quantitative stability analyses of design ground level cross sections are detailed in Riley report ref. 240065-F. Refer to Appendix E for ground model and slope stability outputs. A summary of the results and required remedial measures is presented in Table 8 and 9, 240065-F

Scale: 1:1 (A3) 0 0.02 0.04 0.06 0.08 m

made with QGIS

Project Number: 240065 | Drawn by: jcels | Date printed: 31/01/2025 | Scale: 1:1

RILEY

Vineway Ltd
Russell Road, Wainui - Delmore
Cross Sections - W & X

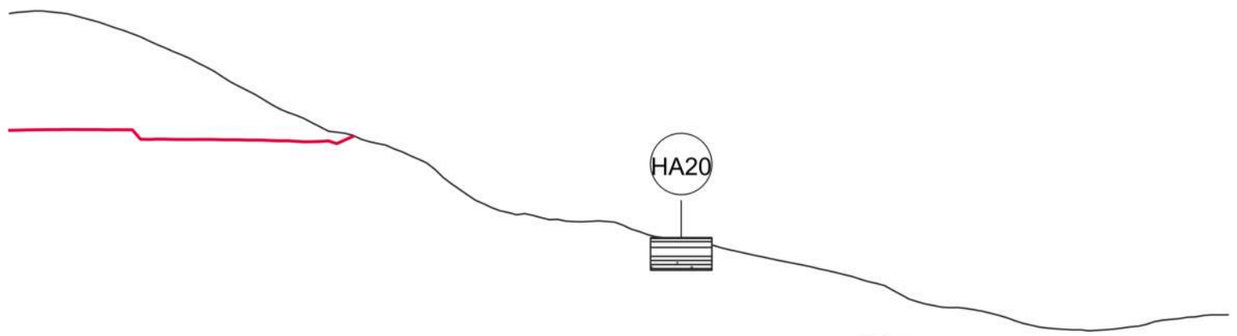
Sketch: 240065-SK171 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

FOR INFORMATION/NOT FOR CONSTRUCTION

Legend

TS	Topsoil		Silty CLAY		Organic SILT
	SAND		Sandy CLAY		SILTSTONE
	Silty SAND		SILT		MUDSTONE
	SANDSTONE		Clayey SILT		Existing Ground Level
	CLAY		Sandy SILT		Design Ground Level

SECTION Y 123
SCALE: 1:750



SECTION Z 122
SCALE: 1:750

Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Earthworks cut and fill profile provided by McKenzie & Co., dated 07 January 2025
3. Cross sections include site investigation boreholes within a 20m corridor of the section line. Boreholes are projected prependicularly onto the existing ground level
4. Quantitative stability analyses of design ground level cross sections are detailed in Riley report ref. 240065-F. Refer to Appendix E for ground model and slope stability outputs. A summary of the results and required remedial measures is presented in Table 8 and 9, 240065-F

Scale: 1:1 (A3) 0 0.02 0.04 0.06 0.08 m

Project Number: 240065 | Drawn by: jcels | Date printed: 31/01/2025 | Scale: 1:1

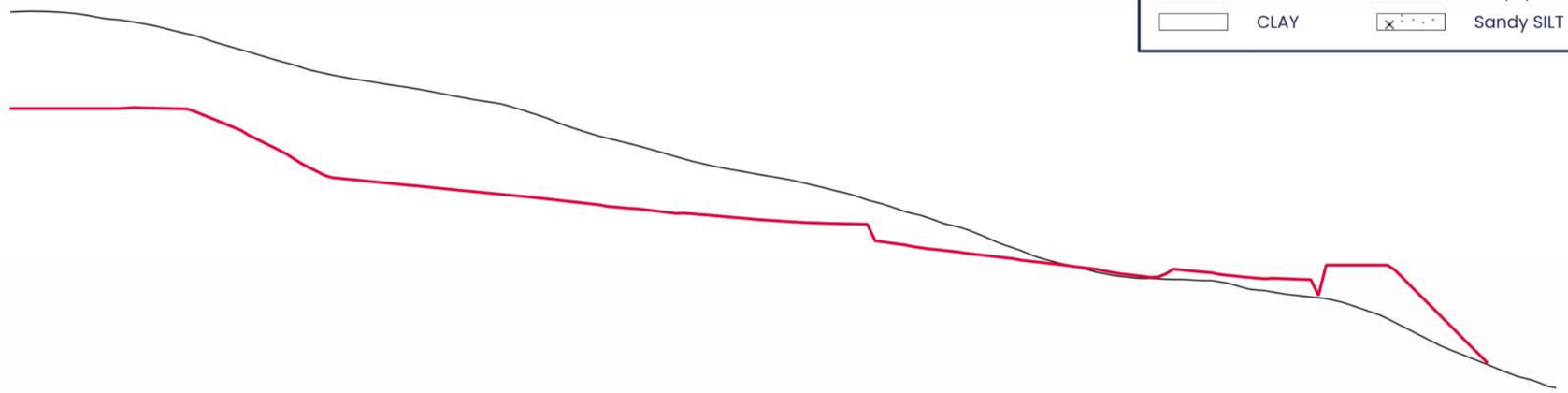
made with QGIS

RILEY

Vineway Ltd
Russell Road, Wainui - Delmore
Cross Sections - Y & Z

Sketch: 240065-SK172 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

FOR INFORMATION/NOT FOR CONSTRUCTION

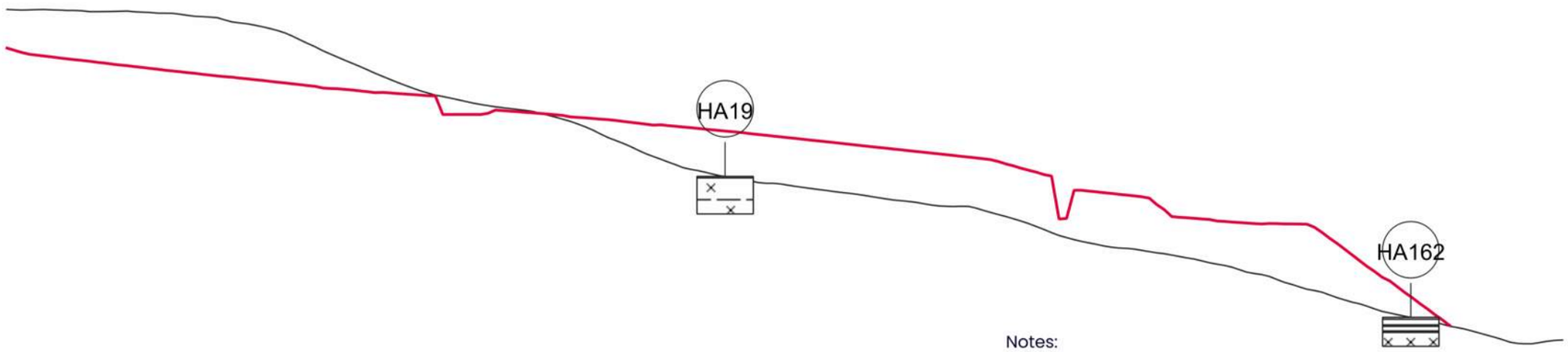


Legend

TS	Topsoil		Silty CLAY		Organic SILT
	SAND		Sandy CLAY		SILTSTONE
	Silty SAND		SILT		MUDSTONE
	SANDSTONE		Clayey SILT		Existing Ground Level
	CLAY		Sandy SILT		Design Ground Level

SECTION AA
SCALE: 1:750
122

Scale: 1:1 (A3)
0
0.02
0.04
0.06
0.08 m



SECTION AB
SCALE: 1:750
121

Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Earthworks cut and fill profile provided by McKenzie & Co., dated 07 January 2025
3. Cross sections include site investigation boreholes within a 20m corridor of the section line. Boreholes are projected prependicularly onto the existing ground level
4. Quantitative stability analyses of design ground level cross sections are detailed in Riley report ref. 240065-F. Refer to Appendix E for ground model and slope stability outputs. A summary of the results and required remedial measures is presented in Table 8 and 9, 240065-F

made with QGIS

RILEY

Vineway
Russell Road, Wainui - Delmore
Cross Sections - AA & AB

Sketch: 240065-SK173 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025

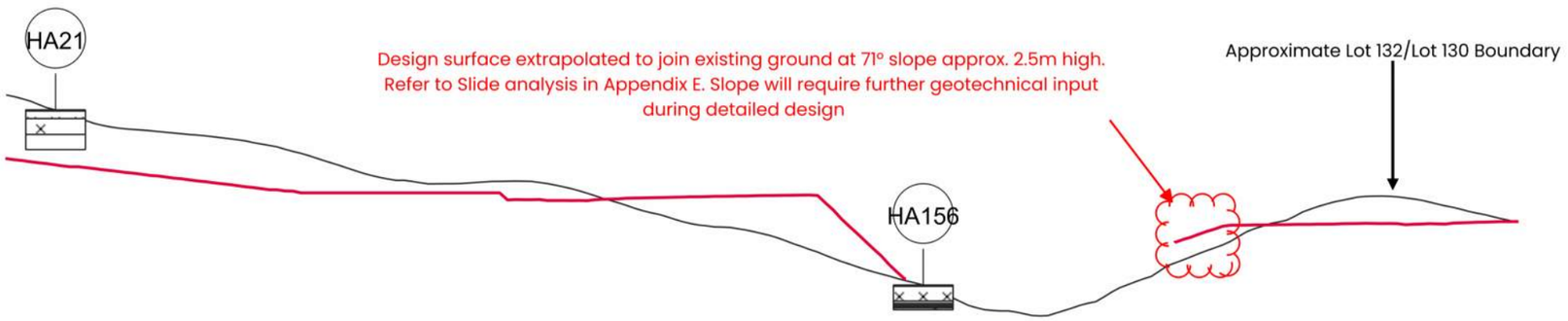
Project Number: 240065 | Drawn by: jcels | Date printed: 31/01/2025 | Scale: 1:1

FOR INFORMATION/NOT FOR CONSTRUCTION

Legend

TS	Topsoil		Silty CLAY		Organic SILT
	SAND		Sandy CLAY		SILTSTONE
	Silty SAND		SILT		MUDSTONE
	SANDSTONE		Clayey SILT		Existing Ground Level
	CLAY		Sandy SILT		Design Ground Level

SECTION AC 123
SCALE: 1:750



SECTION AD 123
SCALE: 1:750

Notes:
1. Existing ground surface taken from drone survey provided by McKenzie & Co. on 06 December 2024
2. Earthworks cut and fill profile provided by McKenzie & Co., dated 07 January 2025
3. Cross sections include site investigation boreholes within a 20m corridor of the section line. Boreholes are projected prependicularly onto the existing ground level
4. Quantitative stability analyses of design ground level cross sections are detailed in Riley report ref. 240065-F. Refer to Appendix E for ground model and slope stability outputs. A summary of the results and required remedial measures is presented in Table 8 and 9, 240065-F

Scale: 1:1 (A3) 0 0.02 0.04 0.06 0.08 m

made with QGIS

Project Number: 240065 | Drawn by: jcels | Date printed: 31/01/2025 | Scale: 1:1

RILEY

Vineway
Russell Road, Wainui - Delmore
Cross Sections - AC & AD

Sketch: 240065-SK174 (Rev A)
Drawn By JAC | Checked By JLB
Approved By BB | 31/01/2025