

# NCC Slope Instability Overlay – Post-August 2022 Severe Weather Event Review

Prepared for Nelson City Council  
Prepared by Beca Limited

3 May 2023



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## Appendices

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### Appendix A – Revised Slope Stability Map Overlay

## Revision History

Revision N°	Prepared By	Description	Date
1	Sarah Barrett	DRAFT	20/04/2023
2	Sarah Barrett	FINAL	03/05/2023

## Document Acceptance

Action	Name	Signed	Date
Prepared by	Sarah Barrett		03/05/2023
Reviewed by	Paul Horrey		03/05/2023
Approved by	Paul Horrey		03/05/2023
on behalf of	Beca Limited		

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## Executive Summary

Nelson City Council (NCC) have commissioned Beca (Beca Ltd) to compare slope instability observed following the August 2022 severe weather event with the regional slope instability overlay produced by Beca (2021). The slope instability overlay identifies land potentially susceptible to slope instability and run-out and is subdivided into three tiers and a run-out zone that reflect varied susceptibilities and anticipated impacts. The comparison is intended to consider whether the observed types and distribution of slope instability following the August 2022 event align with the assigned susceptibility and definitions of the tier sub-categories.

Areas impacted by slope instability and run-out from the August 2022 extreme weather event were identified from a review of publicly available post-event datasets, datasets provided by NCC and GNS, and observations from Nelson-based Beca Engineering Geologists. Minor updates to the methodology tree used to assess the tiers of slope instability and run-out are recommended to account for the observed post-August 2022 damage. The proposed changes include consideration of adjacent land with similar types and extents of slope instability observed and/or reported, and areas with slope instability reported and/or mapped in the post-August 2022 datasets. The observed extents and types of damage were found to be in general agreement with the boundaries and assigned tiers of the slope instability overlay. Minor changes to the overlay recommended based on the revised methodology tree are summarised in Table 0-1 and are shown in Appendix A. No changes are recommended to the definitions of the tier sub-categories as a result of this assessment. The revisions are considered a refinement of the Beca (2021) slope instability overlay following the severe rainfall event and this report should be read in conjunction with the Beca (2021) assessment report. The output of this assessment has been reviewed by the SI-TAG facilitated by NCC.

Table 0-1: Recommended changes to the slope instability overlay considering observations made following August 2022 severe weather event.

Area	Observed Damage	Existing Tier	Recommendation
Thistlede/ Glen Road	Cracking extending to ridgeline with evidence of slope creep reported.	N/A	Added to Tier III
Wakapuaka	Abandoned sea cliffs shed debris onto road.	Tier III	Change to Tier II
Marybank	Extent of shallow instability suggests landslide deposits may be more widespread than mapped.	Tier III	Change to Tier II
Atawhai near Tītoki Reserve	Run-out of solid debris extended beyond existing run-out zone.	N/A	Add area to run-out zone
Brooklands	Shallow instability above mapped earthflows suggesting deposits extend further upslope.	Tier III	Incorporate upslope area to Tier II area
Walters Bluff/	Abandoned sea cliff with evidence of shallow instability.	Tier III	Change to Tier II
Nelson South near Hospital	Shallow instability on slopes >20 degrees	N/A	Add to Tier II
Tāhunanui; northern gully	Evidence of deep cracking along northern margin of slump core.	Tier II	Move to Tier I
Tāhunanui sea cliffs above Rocks Road	Shallow instability along abandoned sea cliff	Tier III	Move to Tier II
Bishopdale	Evidence of deep-seated and earthflows.	Tier III	Move to Tier II



# 1 Introduction

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Nelson City Council (NCC) have commissioned Beca (Beca Ltd) to compare slope instability observed following the August 2022 severe weather event with the regional slope instability overlay produced by Beca (2021). The comparison is intended to consider whether the observed types and distribution of slope instability features align with the assigned susceptibility and definitions of the Tier sub-categories of the overlay. Our assessment considered the following aspects as outlined in our proposal dated 14 November 2022:

- Review post-event datasets to identify the distribution and type of slope instability features that occurred during the storm event.
- Comparison of the observed post-event damage with the slope instability overlay and consideration of areas that warrant re-consideration of the categorisation of slope instability (Tiers 1-3) and run-out zones, and/or amendment to the definitions of the Tier categories.

The output of our assessment is a revised slope instability susceptibility and run-out map. The output has been reviewed by the Slope Instability – Technical Advisory Group (SI-TAG) which comprises local geotechnical experts. The SI-TAG was first convened by NCC in 2021 to provide technical input and advice on the slope instability hazard overlay and mapping, and on potential planning approaches that could be applied within defined areas. This report should be read in conjunction with the previous Beca (2021) assessment report.

## 1.1 August 2022 severe weather event

The Nelson region was impacted by a severe storm event between the 16 to 19 August 2022 which was classified as a 1-in-120-year rain event by the National Institute of Water & Atmospheric Research (NIWA). The prolonged intense rainfall caused slope failures on hillslopes across the Nelson region resulting in damage to residential dwellings and local infrastructure. Damage was particularly noted within the Tāhunanui Slump, along with farmland and new subdivisions on hillslopes within the Marybank and Atawhai areas (Massey et al., 2022).

## 1.2 Slope instability overlay

The regional slope instability susceptibility assessment completed for the Nelson region by Beca (2021) identified areas potentially susceptible to slope instability and run-out in general accordance with AGS (2007a). The assessment included an inventory of slope instability features supplemented with a literature review on the locations and failure mechanisms of previous slope instability. As a result of discussions with the SI-TAG, the areas were further subdivided into three tiers that reflect varied susceptibilities and anticipated impacts from slope instability, and a run-out zone. Classification of the Tier categories include:

- Tier I – Area of known active instability with previous slope failures impacting residential properties. This includes land within the existing NRMP Tāhunanui Slump Core Slope Risk overlay and overlying portion of the NRMP Tāhunanui Fringe Slope Risk within the head scarp of the Tāhunanui Slump.
- Tier II – Areas identified as having elevated susceptibility to slope instability including mapped landslide deposits, land with geomorphic evidence of deep-seated instability or earthflows >25m wide, abandoned sea cliffs, and slopes underlain by geologic units known to have elevated susceptibility to instabilities.
- Tier III – Areas identified as susceptible to slope instability based on the geologic and geomorphic setting and/or with previous records of slope instability failure including. This includes slopes > 35 degrees and slopes between 20 and 35 degrees with evidence of previous slope instability, slopes with failure records in the NCC database, and land up to 100 m downslope of mapped active faults.

## 2 Areas impacted by slope instability following August 2022

Areas impacted by slope instability and run-out during the August 2022 extreme weather event were identified from a review of the post-event datasets listed in Table 2-1. The review was completed in ArcGIS at a scale of 1:5,000 and aimed to identify the general types and extents of slope instability and run-out. Run-out zones were identified as the extent of solid soil and rock debris not the maximum downslope extent of silt-rich water. The review was supplemented with post-event observations and experience from Beca Engineering Geologists who assisted in the Civil Defence rapid response.

Table 2-1: Summary of post-event datasets considered in our review

Data Source	Use	Limitations
Hill-shade Model derived from post-event LiDAR with 1m resolution.	<ul style="list-style-type: none"> <li>• Geomorphic evidence of slope instability identified from engineering judgement (i.e. scarps and toe bulges).</li> <li>• Boundaries of instability identified from geomorphology.</li> </ul>	<ul style="list-style-type: none"> <li>• Accuracy of model may be impacted by vegetation.</li> <li>• Subtle topographic variation may be difficult to observe due to aspect, shading, and overall relief of the slope.</li> <li>• Does not show deep seated failures (i.e. Tāhunanui Slump), nor areas of creep.</li> </ul>
Post-event aerial imagery with 0.15m pixel resolution	<ul style="list-style-type: none"> <li>• Debris and scarps associated with slope failures identifiable in aerial imagery including downslope extent of debris.</li> </ul>	<ul style="list-style-type: none"> <li>• Difficult to determine the extent of debris compared to muddy water.</li> <li>• Does not show evidence for deep seated movement.</li> </ul>
CDEM Rapid Response Data	<ul style="list-style-type: none"> <li>• Identifies sites visited following the 2022 Severe Storm Event.</li> <li>• Assessments completed to determine whether the building can be occupied, multiple assessments sometimes completed per property.</li> </ul>	<ul style="list-style-type: none"> <li>• Records all visited sites including those with no observed damage.</li> <li>• Reports do not always identify the scale nor type of movement or damage.</li> <li>• Point data does not identify the type nor scale of damage to the property or surrounding area.</li> </ul>
NCC Slips affecting roads, maintained parks, and asset damage to parks.	<ul style="list-style-type: none"> <li>• Identifies NCC sites impacted by slope instability and run-out.</li> <li>• Comments identify proposed remediation.</li> </ul>	<ul style="list-style-type: none"> <li>• Point data does not identify the type nor scale of damage to the property or surrounding area.</li> <li>• Not clear whether record relates to slope instability or run-out.</li> </ul>
GeoNet Landslide Response Report (Massey et al., 2022)	<ul style="list-style-type: none"> <li>• Text and photographs identifies suburbs and parts of the region with evidence of slope failures.</li> </ul>	<ul style="list-style-type: none"> <li>• Report does not identify full extent of areas impacted by slope instability across hillslopes.</li> <li>• Maximum downslope extent of solid debris difficult to determine.</li> </ul>
Draft Post-event Landslide Inventory <sup>1</sup>	<ul style="list-style-type: none"> <li>• Identifies areas with mapped instability and run-out as observed by GNS Science.</li> </ul>	<ul style="list-style-type: none"> <li>• Only captures shallow instability.</li> <li>• Unclear what is captured by the runout zone (i.e. debris vs muddy water).</li> <li>• Mapping does not cover the whole study area.</li> <li>• Dataset has not yet been peer reviewed,</li> </ul>

<sup>1</sup>Draft dataset supplied for this assessment. Inventory currently being peer-reviewed prior to public issue.

## 2.1 Areas identified as impacted by slope instability

The review of post-event datasets identified the following general areas within the Nelson study area that were impacted by slope instability during the August 2022 event:

- Areas of mapped shallow instabilities were generally clustered on slopes >35 degrees. Areas at the toe of these slopes were locally impacted by run-out and included damage to residential properties and NCC assets. Localised shallow instabilities were mapped on slopes between 25 to 35 degrees and generally corresponded with hillslopes with geomorphic evidence of previous instability as identified by Beca (2021). Debris run-out was typically characterised by silt rich fluidised flows.
- Marybank and Atawhai – hillslopes >20 degrees and mapped as deep-seated landslide deposits in the regional 1:250,000 geologic map (QMap; Rattenbury et al., 1998) exhibited widespread shallow instability particularly in the head scarps as observed in the aerial imagery and recorded in GNS landslide inventory. Rapid assessments indicate run-out locally impacted residential properties. The head scarps of the deep-seated landslides and adjacent slopes with consistent geomorphology exhibited similar extents and distributions of shallow instabilities. No movement was detected on the deep-seated landslides.
- Tāhunanui - An extensive scarp formed along the head scarp of the Tāhunanui slump core below Princes Drive. Deep seated movement impacting multiple residential properties was recorded in this area. Shallow slope failures were additionally observed along the abandoned sea cliff along Tāhunanui Drive and near Port Nelson.
- Abandoned sea cliffs at Walters Bluff, along Queen Elizabeth Drive, and along Wakapuaka Road exhibited evidence for shallow slope instability. NCC records and rapid assessments indicate the run-out locally impacted the road and residential properties below the abandoned sea cliffs.



### 3 Comparison with existing overlay

The Beca (2021) slope instability overlay is intended to identify areas potentially susceptible to slope instability. Triggers for slope movement may include rainfall, earthquakes, physical and/or chemical weathering, and land development. The methodology tree used in the assessment considered the range of types, extents, and scales of slope instabilities features, and the various triggering mechanisms. The three tiers are intended to reflect variations in susceptibilities of hillslopes across the region. Commentary on the observed damage in each of the tiers following the August 2022 event is outlined in Table 3-1. The summary is subdivided into areas based on the steps outlined in the methodology tree used in the Beca (2021) assessment.

Table 3-1: Summary of observed damage with slope susceptibility tiers

Tier	Area	Observed Damage	Comment
I – Areas of known active instability	Tāhunanui Slump	Deep seated movement around Grenville Terrace and shallow head scarp frttering observed beneath Princes Drive impacting multiple residential properties. Complex shallow and deep movement observed in the northern gully of the slump.	Scale and type of movement indicates area warrants specific consideration.
II – Areas of elevated susceptibility to slope instability	Mapped landslide deposits/ deep seated landslide deposits	Localised to extensive shallow instability observed particularly in head scarp; no evidence of re-activation of deep-seated features.	Reactivation of deep-seated landslides may occur during seismic events and/or due to development. Type of movement poses an elevated risk.
	Abandoned sea cliffs	Widespread slope failures observed on these slopes; downslope impacts of run-out on dwellings and infrastructure.	Damage observed along these slopes post-August 2022 indicate they pose an elevated risk due to over-steepened slope profile and weathering.
	Land with slopes >10° and underlain by Marsden Coal Measures	Localised evidence of shallow instability and run-out.	Geologic units at slope angles known to pose an elevated risk of instability. No variation in performance observed on these slopes following August 2022 however these slopes have previously been documented to have elevated susceptibility from earthworks during development.
Land with slopes >15 ° and underlain by Bishopdale Conglomerate			
III – Areas susceptible to slope instability	Slopes >35 degrees including setback distances from ridgelines	Widespread evidence of shallow instability generally confined to soil/rock interface (between 1-5m deep).	Slope susceptibility dependant on soil thickness, rock type, and aspect. Trigger expected to be heavy rainfall. Unfeasible to subdivide/ refine susceptibility of these slopes without further assessment.

Slopes between 20-35 degrees with evidence of previous slope instability	Re-activation of pre-existing shallow instability features generally confined to soil/rock interface (between 1-5m deep). Some new shallow instability formed on surrounding slopes with consistent geometries.	Areas considered susceptible to shallow instability of similar scales and extents in the future. Trigger expected to be heavy rainfall.
Land with failure records in NCC database	Areas documented as previously impacted by global slope failures in NCC records observed to be impacted during August 2022 event (similar trends in rapid response points).	Area likely to be impacted by instabilities of similar scales and extents during future high rainfall events.
Land within 100m downslope of mapped faults	Localised shallow instability observed on these slopes.	Trigger is likely to be fault movement and/or due to increased weathering in shattered rock. Unlikely to be severely impacted by rainfall. Area still considered susceptible to slope instability.

## 4 Recommended changes to slope instability overlay

Comparison of the observed extents and severity of slope instability following the August 2022 severe weather event with the slope instability overlay indicates that the definitions of the tiers are generally in agreement with the observed damage. Recommended amendments to the methodology tree used to assess the tiers of slope susceptibility are outlined in red in Figure 4-1, and amendments to the run-out assessment methodology are shown in Figure 4-2. These changes account for post-event observed damage.

Recommended changes to the slope instability susceptibility overlay based on the revised methodology trees are summarised in Table 4-1 and are shown in Appendix A. Listed areas correspond with areas named in Appendix A and are listed from north to south. The corresponding map series in Appendix A are listed for each area in Table 4-1.

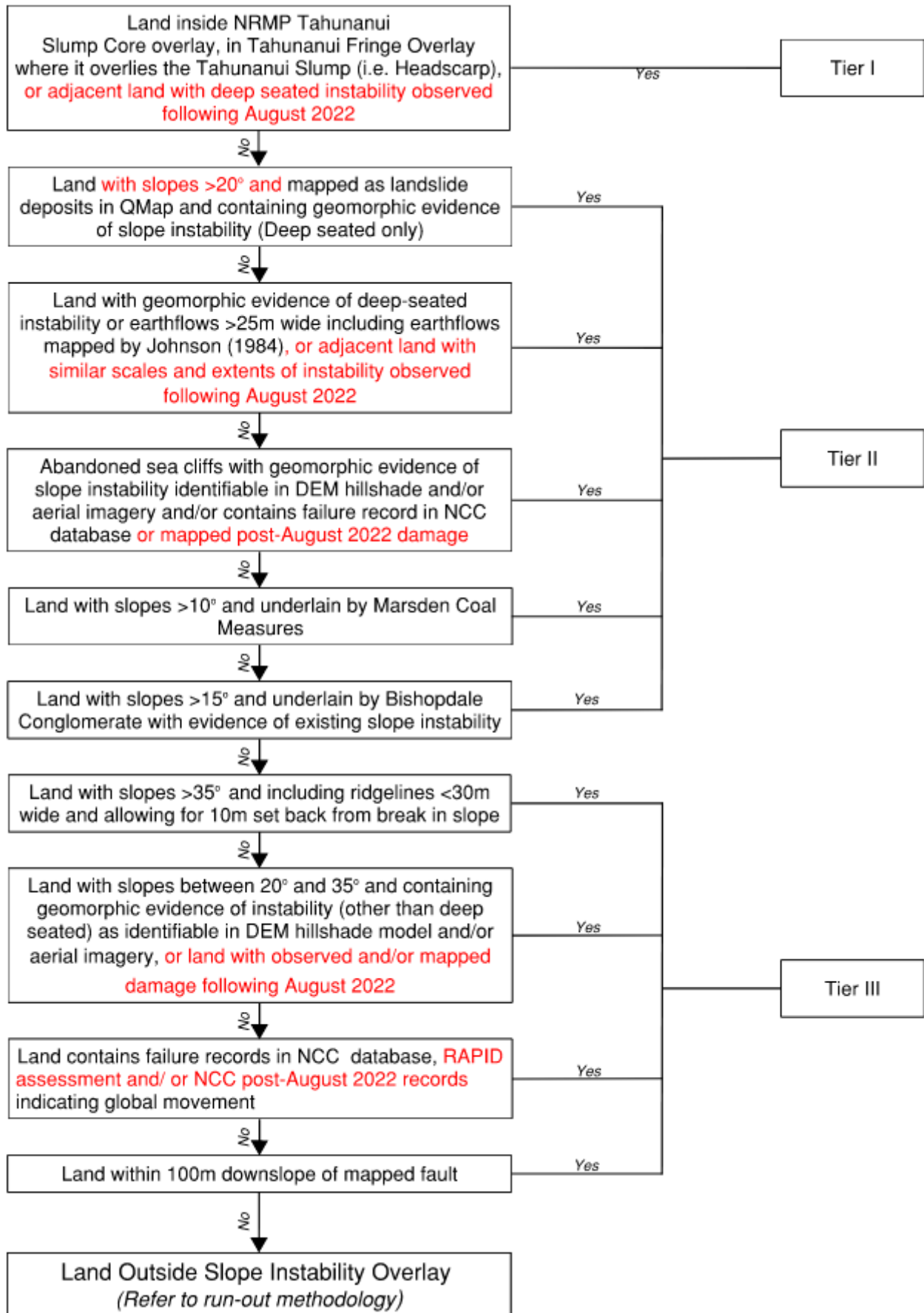


Figure 4-1: Revised methodology tree for identifying land susceptible to slope instability



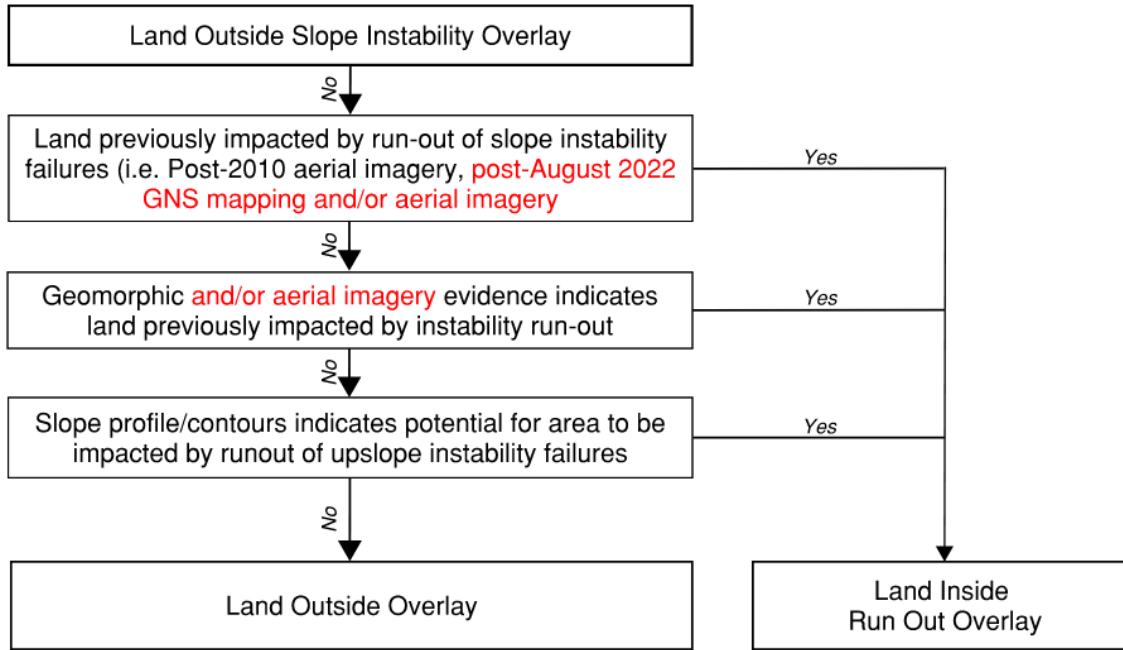


Figure 4-2: Revised methodology tree for identifying land susceptible to run out of solid debris.

Table 4-1: Recommended changes to the slope instability susceptibility overlay considering observations made following August 2022 severe weather event.

Area	Observed Damage	Existing Tier	Recommendation	Map
Thistledo/ Glen Road	Cracking extending to ridgeline with evidence of slope creep reported in RAPID assessment and observed in post-event aerial imagery.	N/A	Added to Tier III.	B9
Wakapuaka	Abandoned sea cliffs above Wakapuaka Road observed to have shed debris onto road.	Tier III	Change to Tier II to be consistent with surrounding abandoned sea cliffs.	C8
Marybank	Distribution and extent of shallow instability consistent with that observed on adjacent slopes with mapped landslide deposits (QMap). Damage suggests landslide deposits may be more widespread than mapped and may reflect limitations in the scale of geologic mapping (1:250,000).	Tier III	Change area of consistent damage to Tier II to match adjacent slope with similar morphology.	D7 - E7
Atawhai near Titoki Reserve	Run-out of solid debris extends to edge of farm track beneath existing run-out zone.	N/A	Add area to run-out zone.	F7
Brooklands	Head scarp of instabilities appear to extend above earthflows mapped by Johnson (1984). Damage and slope morphology appears consistent with that observed in the mapped earthflows suggesting earthflows extend further upslope.	Tier III	Incorporate area to Tier II area to reflect area with similar geomorphic conditions and observed damage.	G6 - G7
Walters Bluff	Abandoned sea cliff with evidence of shallow instability observed in aerial imagery and reported in RAPID assessments following August 2022.	Tier III	Change to Tier II to reflect abandoned sea cliff with evidence of slope instability.	G6 – H6
Tāhunanui sea cliffs above Rocks Road	Shallow instability observed along abandoned sea cliff	Tier III	Move to Tier II to reflect abandoned sea cliff with evidence of slope instability.	I3 – H4
Tāhunanui; northern gully along slump core	Evidence of deep cracking likely associated with deep seated instability observed along northern margin of the Tāhunanui slump core.	Tier II	Move to Tier I as deep-seated movement consistent with that observed in slump core.	I3
Nelson South near Hospital	Shallow instability observed on slopes >20 degrees following August 2022 storm.	N/A	Add to Tier II as evidence of shallow instability on a slope >20 degrees.	J4
Bishopdale	Evidence of deep-seated instability and earthflows >25m wide with evidence of recent movement during August 2022 event.	Tier III	Move to Tier II as deep-seated and earthflows with recent movement.	J4 - K4

## 5 Assumptions and limitations

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The review of the Beca (2021) slope instability and run-out overlay was completed as a desk-top assessment at a scale of 1:5,000 and considered publicly available datasets, data supplied by NCC and GNS Science for the purposes of this assessment, and observations from Nelson-based Beca Engineering Geologists. Limitations of the datasets used in the assessment are outlined in Table 2-1. Additional limitations of the datasets that Beca are aware of include:

- LiDAR –Beca understands that the initial dataset supplied for the assessment by LINZ contained errors relating to classification and tile alignment.
- GNS Landslide Mapping – the supplied dataset contains features mapped remotely by GNS Science. Beca understands that the dataset is currently being reviewed and ground-truthed by Stantec which may result in features being added, removed, and/or re-positioned.

The assessment assumed that the datasets accurately record the locations of slope instability and associated damage observed following the August 2022 event. The use of multiple datasets and cross-checking with observations shown in the aerial imagery limited the impact of potential errors and/or inconsistencies in each of the datasets. Recommendations on revisions to the overlay may be reconsidered once peer review of the GNS landslide mapping has been completed. The revised overlay is considered a refinement of the Beca (2021) slope instability overlay following the severe rainfall event and is not considered a replacement for site-specific assessments. The overlay has not been refined nor revised to consider alternative triggers for slope instability.



## Applicability

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*This report has been prepared by Beca Ltd (Beca) on the specific instructions of the Nelson City Council (Client). It is solely for our Client's use for the purpose for which it is intended in accordance with the agreed scope of work. Any use or reliance by any person contrary to the above, to which Beca has not given its prior written consent, is at that person's own risk.*

*Should you be in any doubt as to the applicability of this report and/or its recommendations for the proposed development as described herein, and/or encounter materials on site that differ from those described herein, it is essential that you discuss these issues with the authors before proceeding with any work based on this document.*

*In preparing this report Beca has relied on key information including the following:*

- *Beca (2021) slope instability map which includes consideration of the datasets listed in the report.*
- *Hill-shade Model derived from post-event LiDAR with 1m resolution supplied by LINZ. LiDAR captured for Nelson City Council, Tasman District Council, Waka Kotahi NZ Transport Agency and the National Emergency Management Agency by Aerial Surveys Ltd between 23 August 2022 and 6 September 2022. Datasets generated by Aerial Surveys Ltd and their subcontractors.*
- *Post-event ortho-rectified aerial imagery with 0.15m pixel resolution available from LINZ. Orthophotography within the Tasman, Nelson City and Marlborough District captured between the 23rd August 2022 and 6th September 2022 for Nelson City Council, Tasman District Council and Waka Kotahi by Aerial Surveys Ltd.*
- *CDEM Rapid Response Data supplied by NCC*
- *NCC Slips affecting roads, maintained parks, and asset damage to parks. Dataset supplied by NCC*
- *GeoNet Landslide Response Report (Massey et al., 2022)*
- *GNS Post-event Landslide Inventory supplied by GNS Science*

*Unless specifically stated otherwise in this report, Beca has relied on the accuracy, completeness, currency and sufficiency of all information provided to it by, or on behalf of, the Client, including the information listed above, and has not sought independently to verify the information provided.*

*This report should be read in full, having regard to all stated assumptions, limitations and disclaimers. No part of this report shall be taken out of context and, to the maximum extent permitted by law, no responsibility is accepted by Beca for the use of any part of this report in any context, or for any purpose, other than that stated herein.*

## References

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Australian Geomechanics Society, 2007a. Guideline for Landslide Susceptibility, Hazard and Risk Zoning for Land Use Planning, Journal and News of the Australian Geomechanics Society, 42 (1): 13- 36.

Beca, 2021. NCC Slope Instability Overlay Report, Report prepared for Nelson City Council by Beca Limited, Christchurch, New Zealand.

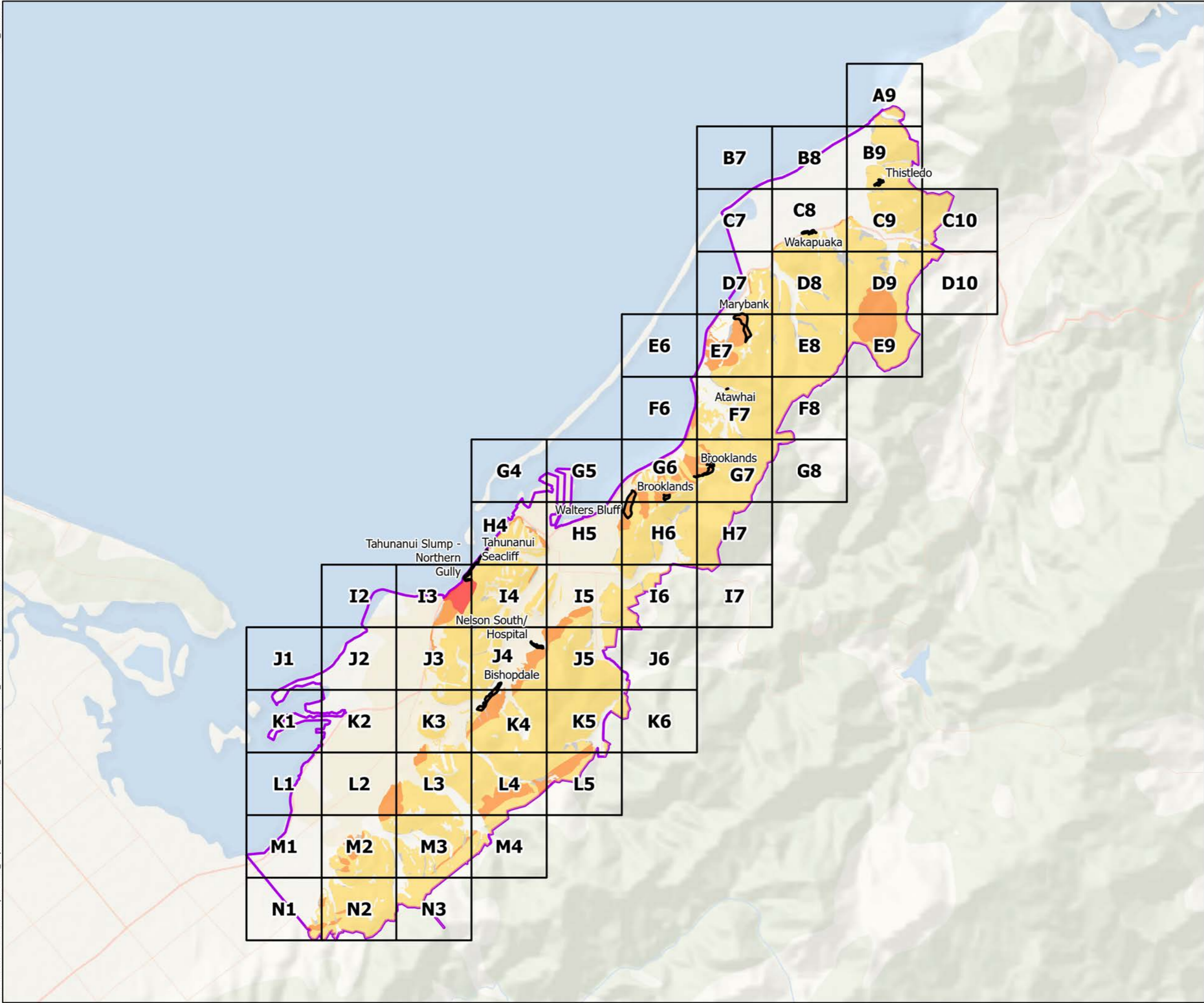
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Massey, C.I., Townsend, D.B., Leith, K., Rosser, B.J., Farr, J., 2022. GeoNet landslide response: Nelson Tasman District, 16-19 August 2022. Lower Hutt (NZ). GNS Science, 24 p. GNS Science Report 2022/58)

Rattenbury, M.S.; Cooper, R.A.; Johnston, M.R. (compilers) 1998: Geology of the Nelson area: scale 1:250,000. Lower Hutt: Institute of Geological & Nuclear Sciences Limited. Institute of Geological & Nuclear Sciences 1:250,000 geological map 9. 67 p. + 1 folded map.

# A

## Appendix A – Revised Slope Stability Map Overlay



### Nelson Slope Instability Susceptibility Areas

#### Legend

- Study Area
  - Areas potentially susceptible to slope instability
  - Slope Susceptibility Tier I
  - Slope Susceptibility Tier II
  - Slope Susceptibility Tier III
  - Areas Susceptible to Debris Run-out
  - Revised Areas
- For full definitions of the tiers of slope instability, please refer to Beca report 'NCC Slope Instability Overlay Report' 3201163-349031543-880.

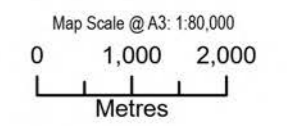


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Revision	Author	Verified	Approved	Date
3	TCS	BDJ	PJH	02/05/2023
2	TCS	BDJ	PJH	20/04/2023
1	TCS	BDJ	PJH	04/04/2023

Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-Overview**







# Nelson Slope Instability Susceptibility Areas

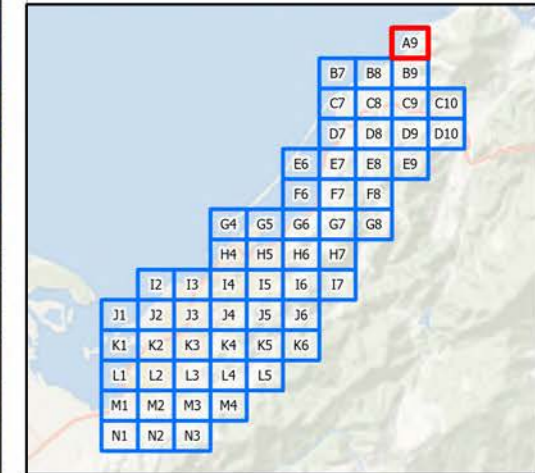
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## Legend

- Study Area
- NZ Property Titles
- Areas potentially susceptible to slope instability
- Slope Susceptibility Tier I
- Slope Susceptibility Tier II
- Slope Susceptibility Tier III
- Areas Susceptible to Debris Run-out
- Revised Areas

For full definitions of the tiers of slope instability, please refer to Beca report 'NCC Slope Instability Overlay Report' 3201163-349031543-880.

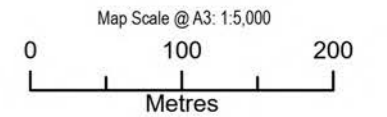


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Revision	Author	Verified	Approved	Date
3	TCS	BDJ	PJH	02/05/2023
2	TCS	BDJ	PJH	20/04/2023
1	TCS	BDJ	PJH	04/04/2023



Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review**

Drawing No: **GIS-3201163-03-A9**





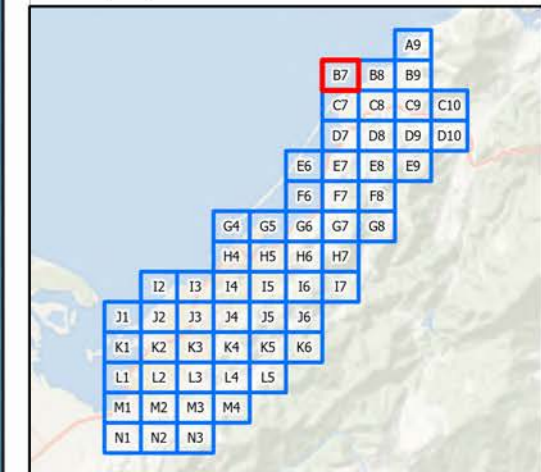


# Nelson Slope Instability Susceptibility Areas

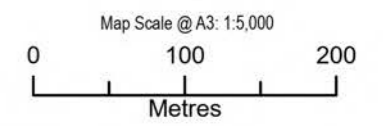
## Legend

- Study Area
- NZ Property Titles
- Areas potentially susceptible to slope instability
- Slope Susceptibility Tier I
- Slope Susceptibility Tier II
- Slope Susceptibility Tier III
- Areas Susceptible to Debris Run-out
- Revised Areas

For full definitions of the tiers of slope instability, please refer to Beca report 'NCC Slope Instability Overlay Report' 3201163-349031543-880.



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1	TCS	BDJ	PJH	04/04/2023



Client:	<b>Nelson City Council</b>	Discipline:	<b>GIS</b>
Project:	<b>NCC Slope Instability Overlay Post-August 2022 Review</b>	Drawing No:	<b>GIS-3201163-03-B7</b>







# Nelson Slope Instability Susceptibility Areas

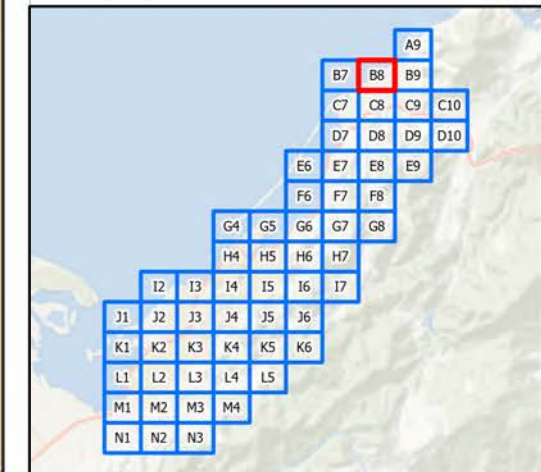
Sheet B8

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## Legend

- Study Area
- NZ Property Titles
- Areas potentially susceptible to slope instability
- Slope Susceptibility Tier I
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- Revised Areas

For full definitions of the tiers of slope instability, please refer to Beca report 'NCC Slope Instability Overlay Report' 3201163-349031543-880.

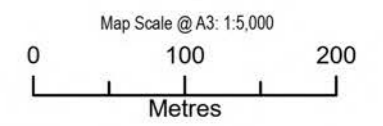


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Revision	Author	Verified	Approved	Date
3	TCS	BDJ	PJH	02/05/2023
2	TCS	BDJ	PJH	20/04/2023
1	TCS	BDJ	PJH	04/04/2023



Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-B8**







## Nelson Slope Instability Susceptibility Areas

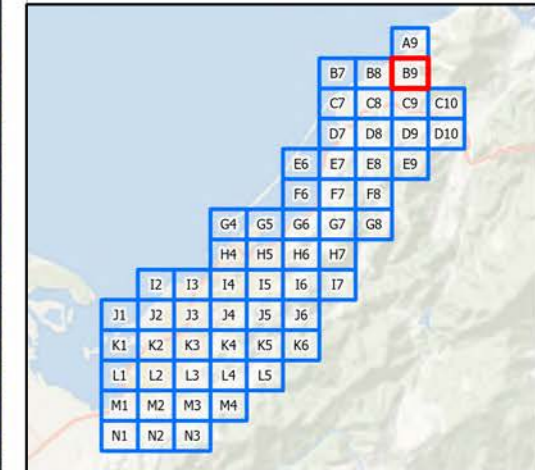
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### Legend

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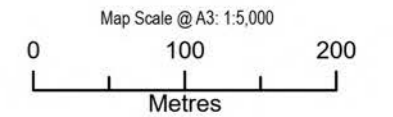


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Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review**

Drawing No: **GIS-3201163-03-B9**







# Nelson Slope Instability Susceptibility Areas

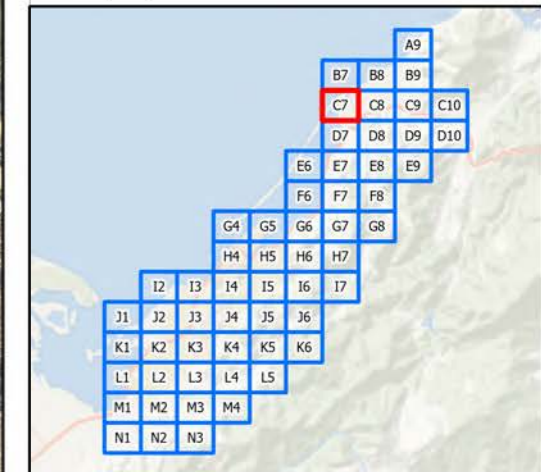
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## Legend

- Study Area
- NZ Property Titles
- Areas potentially susceptible to slope instability
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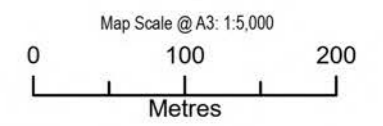


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Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-C7**







# Nelson Slope Instability Susceptibility Areas

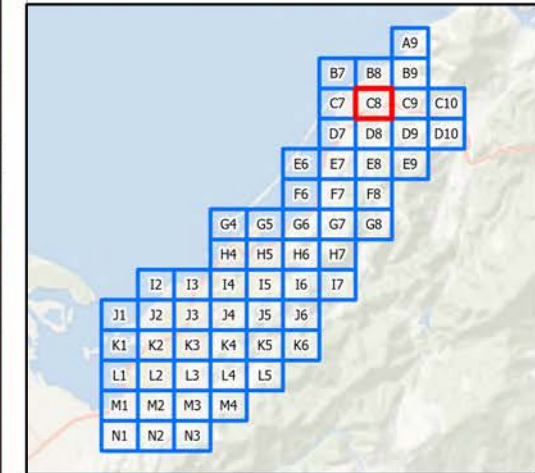
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## Legend

- Study Area
- NZ Property Titles
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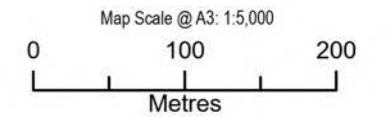


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Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review**

Drawing No: **GIS-3201163-03-C8**







# Nelson Slope Instability Susceptibility Areas

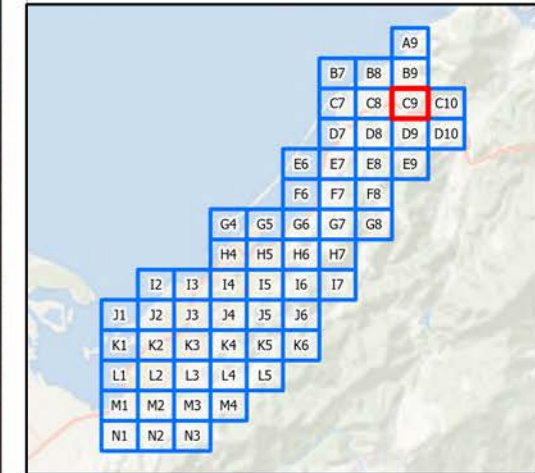
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## Legend

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- NZ Property Titles
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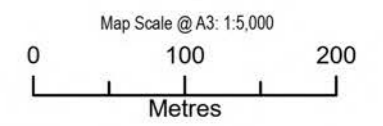


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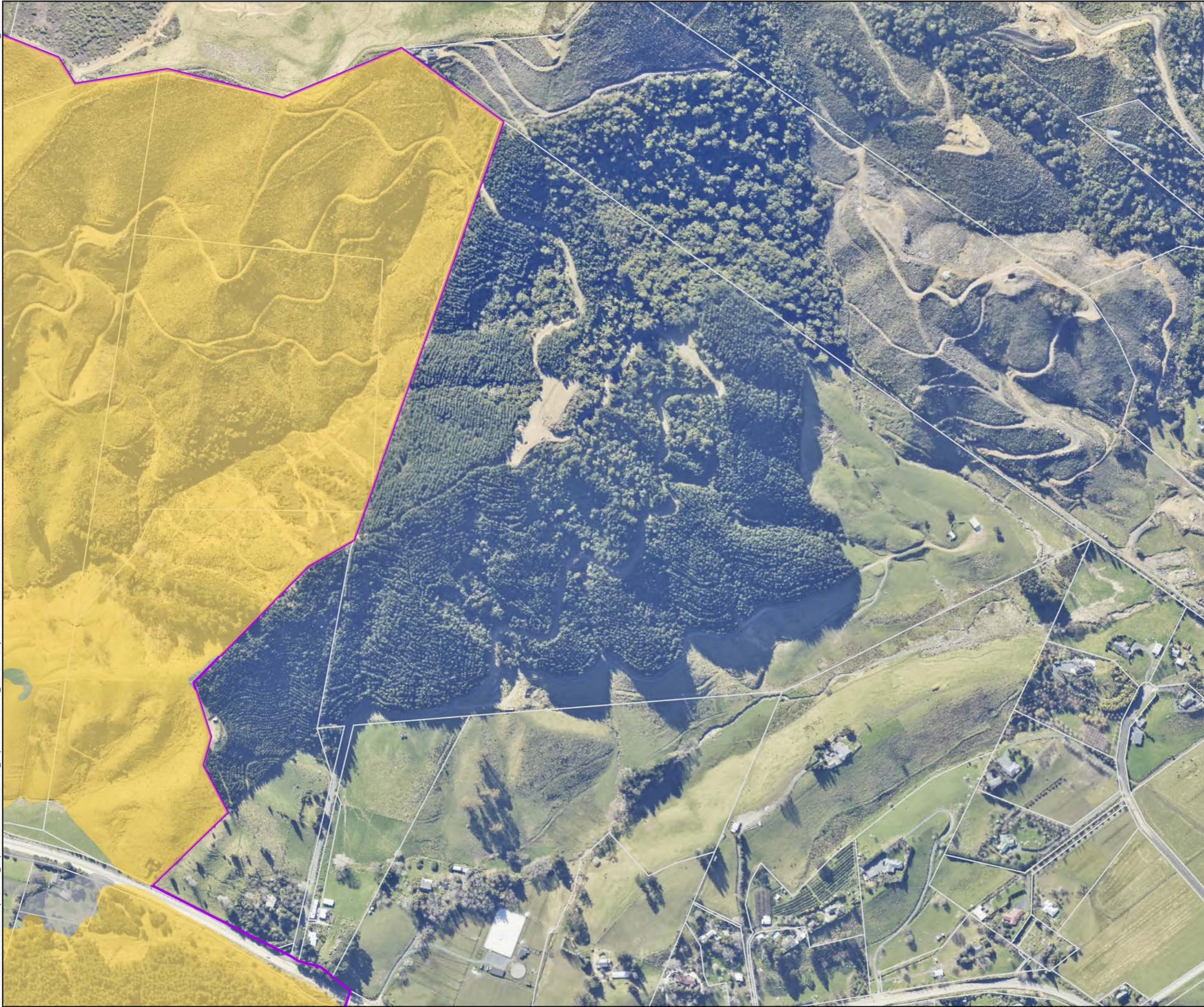


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Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-C9**







# Nelson Slope Instability Susceptibility Areas

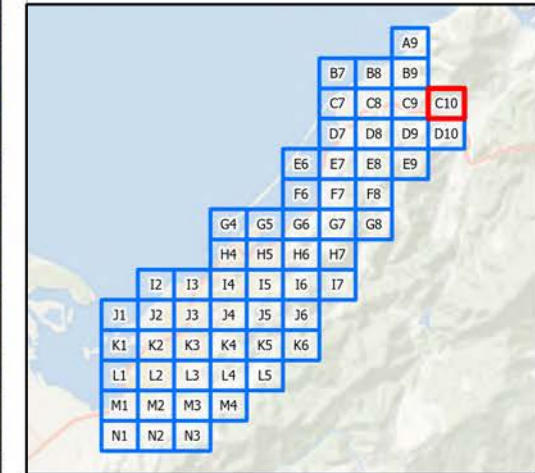
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## Legend

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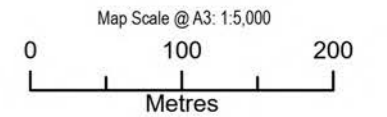


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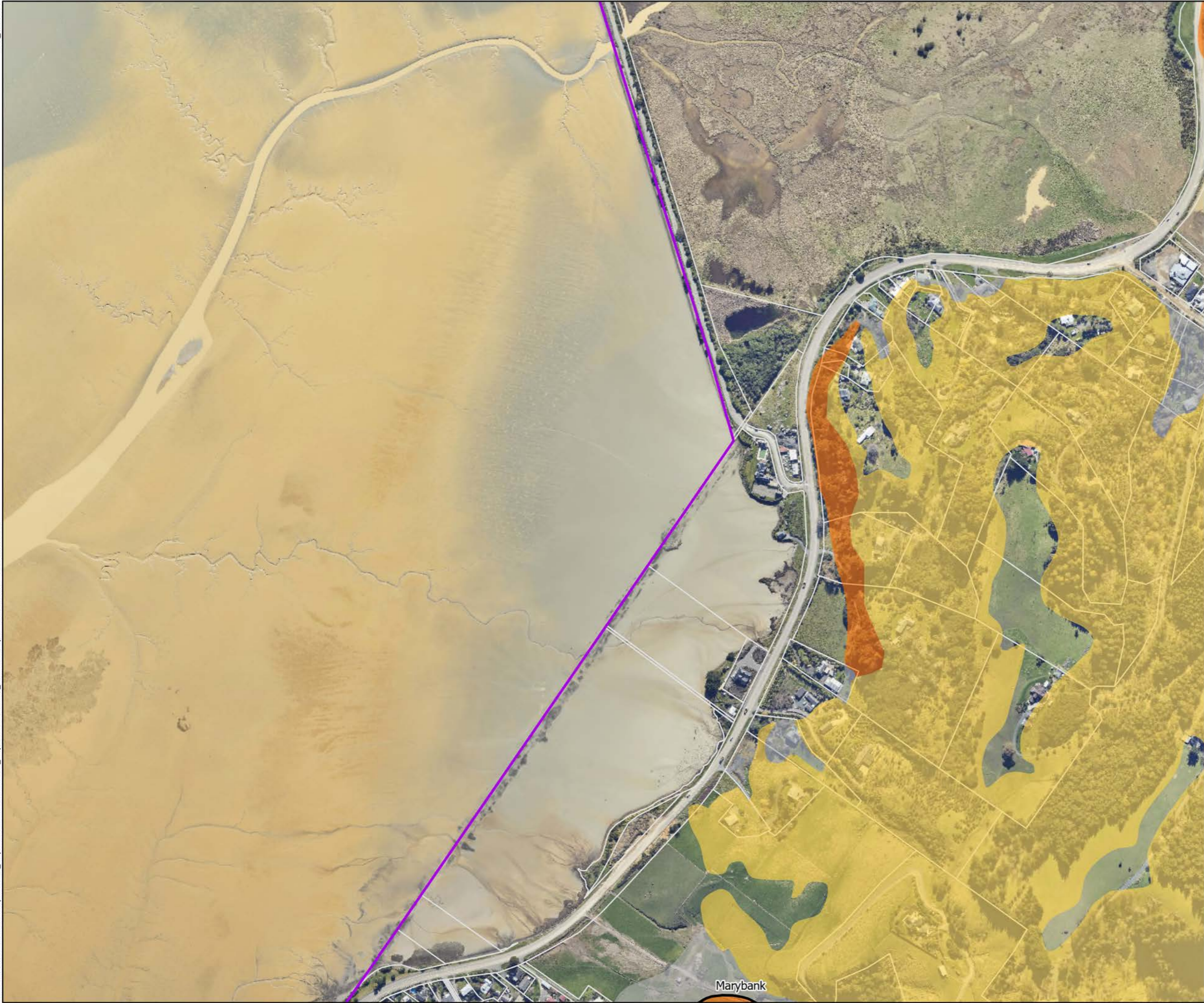
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Client:	<b>Nelson City Council</b>	Discipline:	<b>GIS</b>
Project:	<b>NCC Slope Instability Overlay Post-August 2022 Review</b>	Drawing No:	<b>GIS-3201163-03-C10</b>





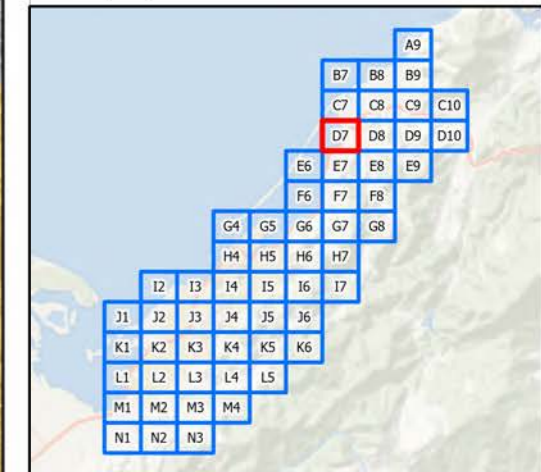


# Nelson Slope Instability Susceptibility Areas

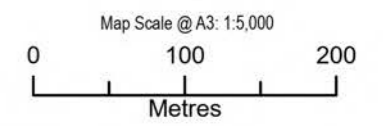
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Client:	<b>Nelson City Council</b>	Discipline:	<b>GIS</b>
Project:	<b>NCC Slope Instability Overlay Post-August 2022 Review</b>	Drawing No:	<b>GIS-3201163-03-D7</b>



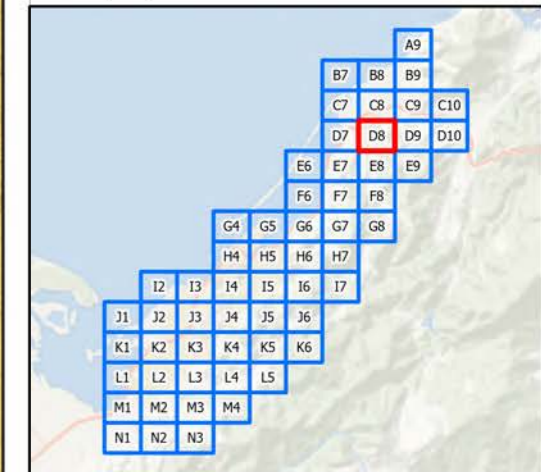




# Nelson Slope Instability Susceptibility Areas

## Legend

- Study Area
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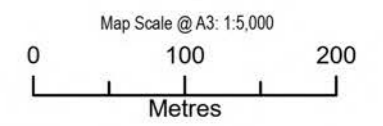


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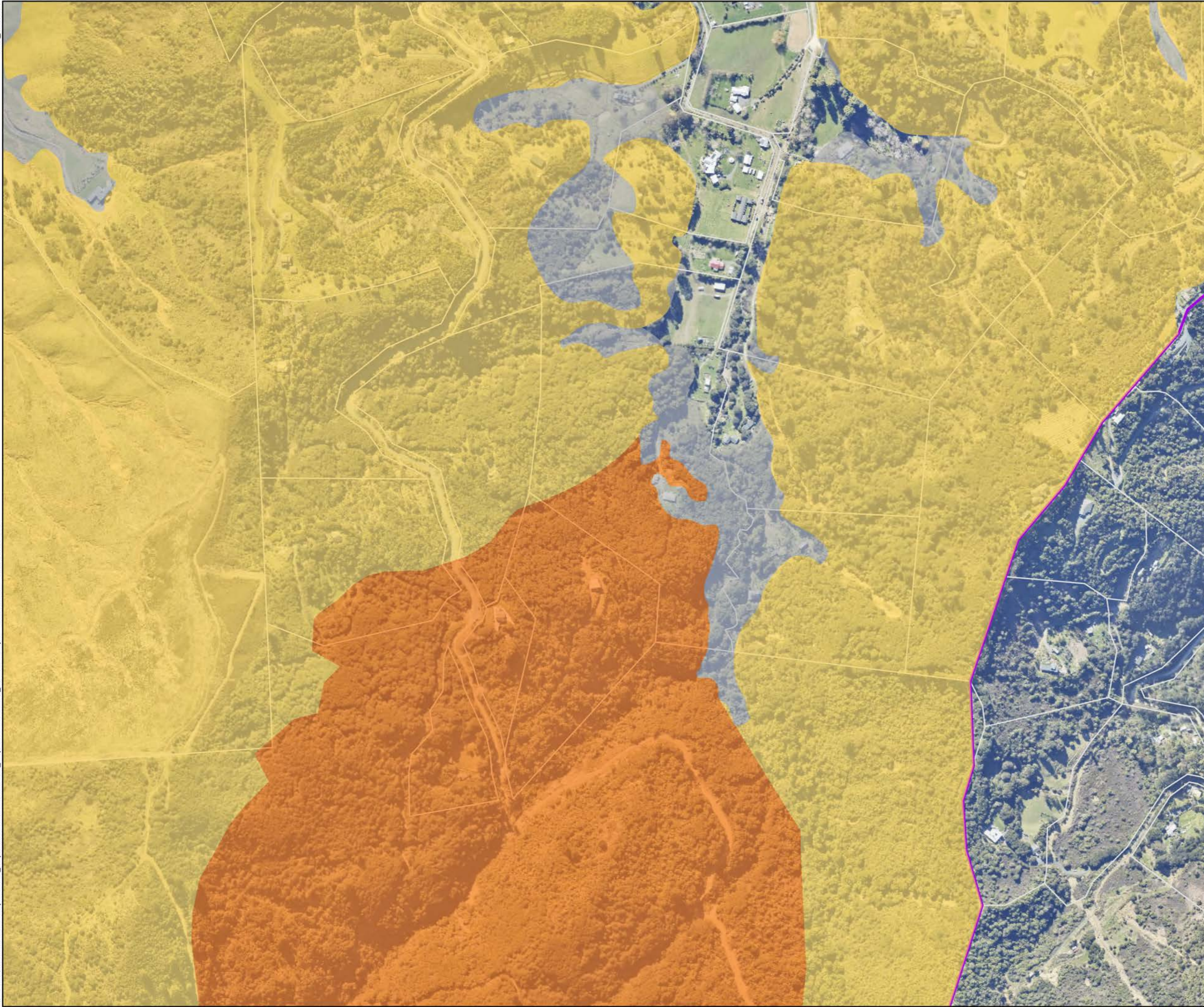


Client:	<b>Nelson City Council</b>	Discipline:	<b>GIS</b>
Project:	<b>NCC Slope Instability Overlay Post-August 2022 Review</b>	Drawing No:	<b>GIS-3201163-03-D8</b>



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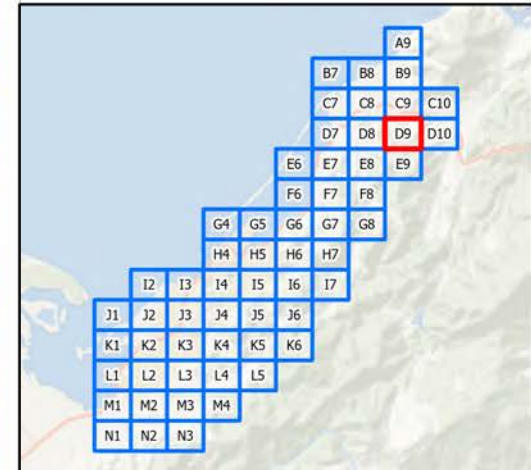


# Nelson Slope Instability Susceptibility Areas

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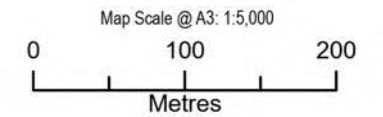


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Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-D9**







# Nelson Slope Instability Susceptibility Areas

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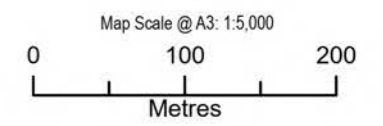


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Client:	<b>Nelson City Council</b>	Discipline:	<b>GIS</b>
Project:	<b>NCC Slope Instability Overlay Post-August 2022 Review</b>	Drawing No:	<b>GIS-3201163-03-D10</b>



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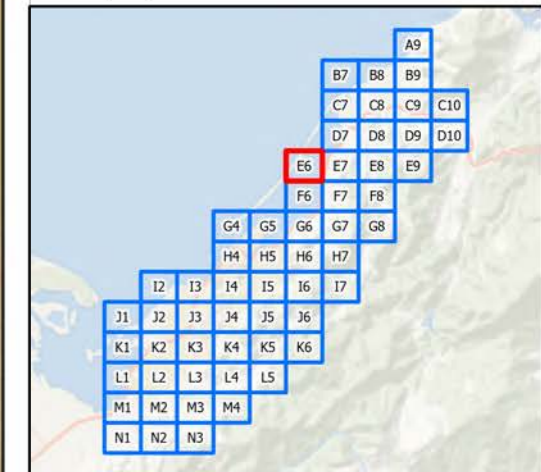


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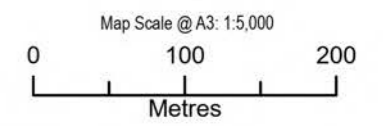
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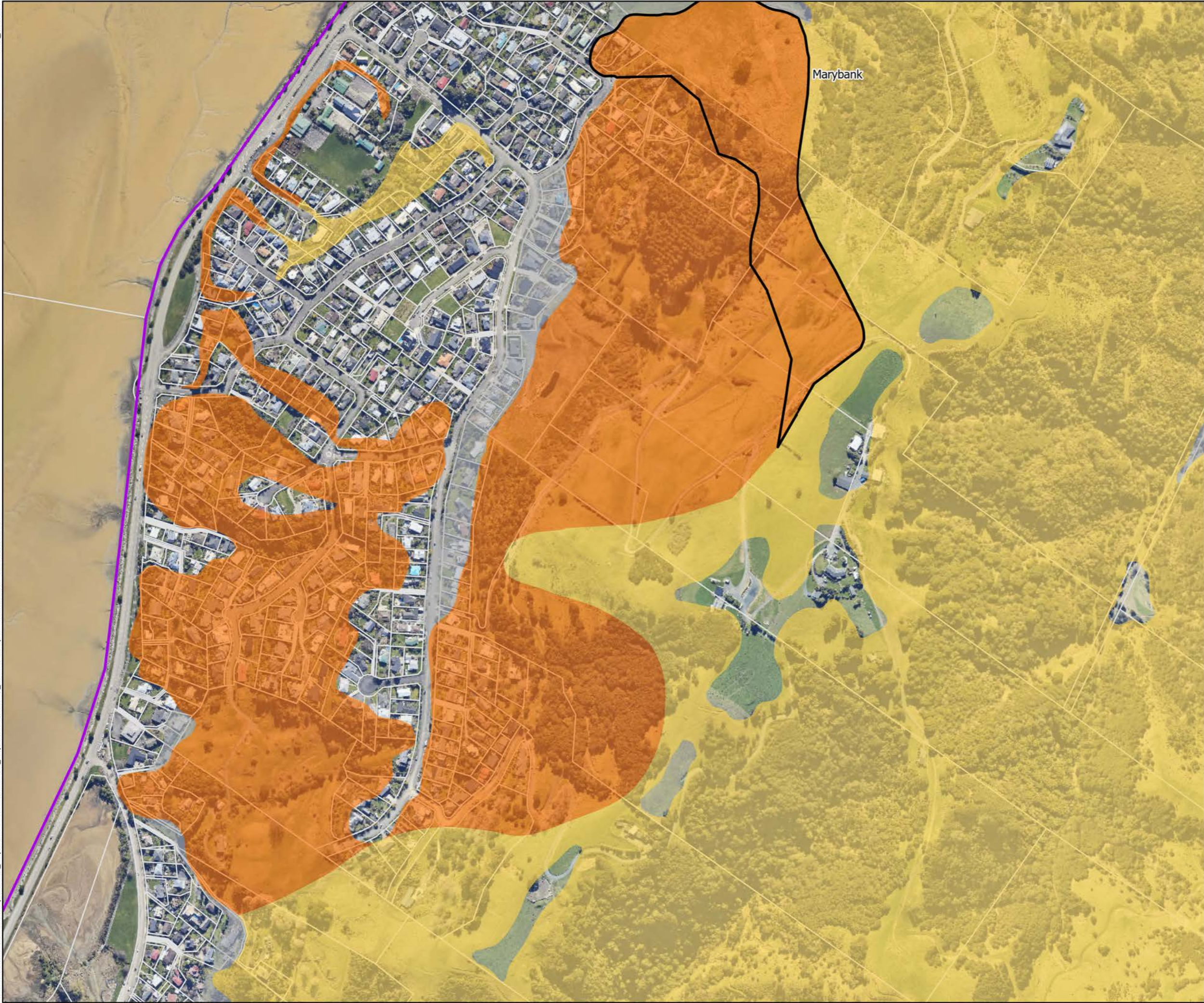
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Client:	<b>Nelson City Council</b>	Discipline:	<b>GIS</b>
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### Nelson Slope Instability Susceptibility Areas

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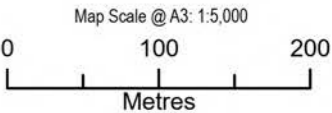


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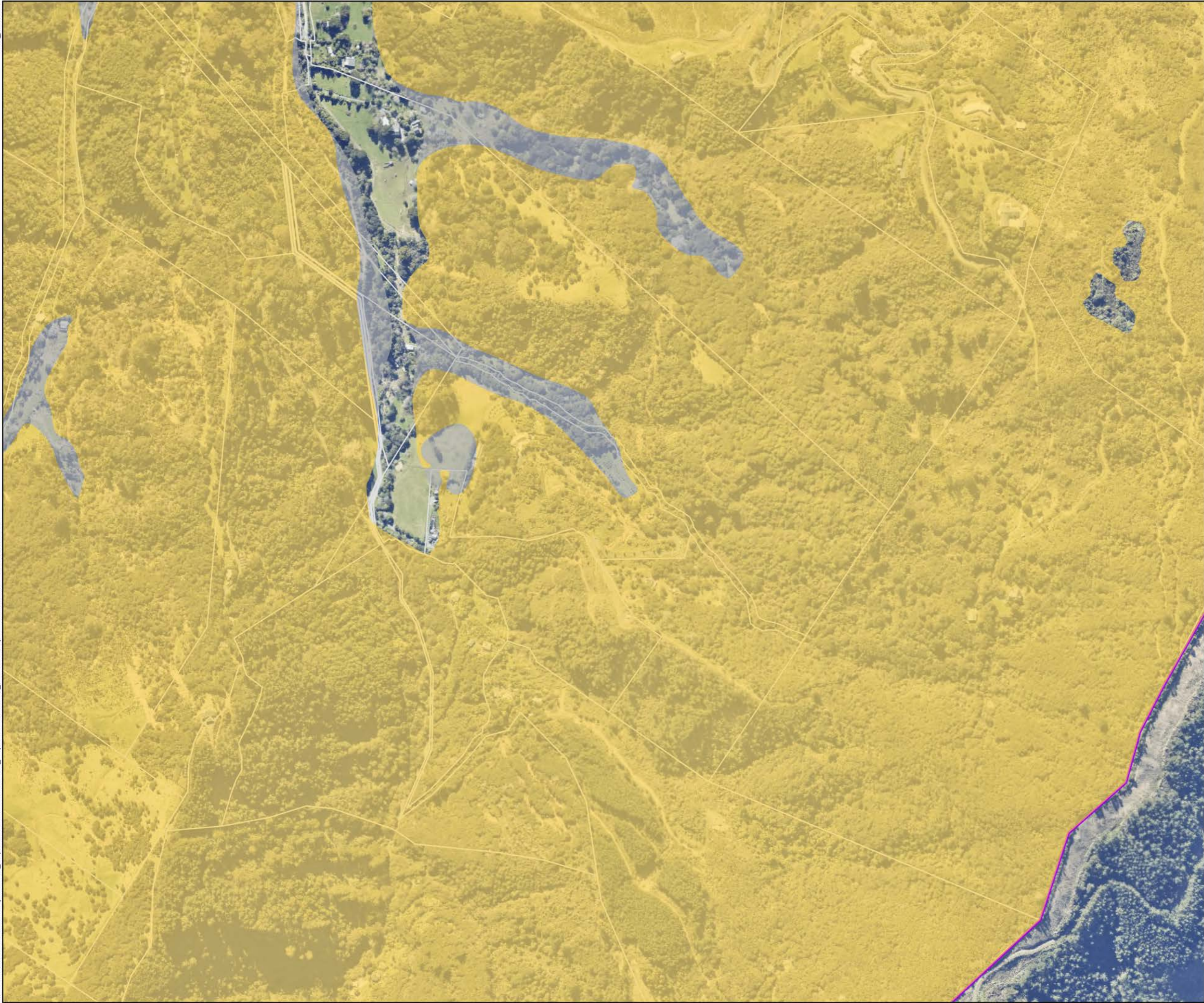


Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-E7**





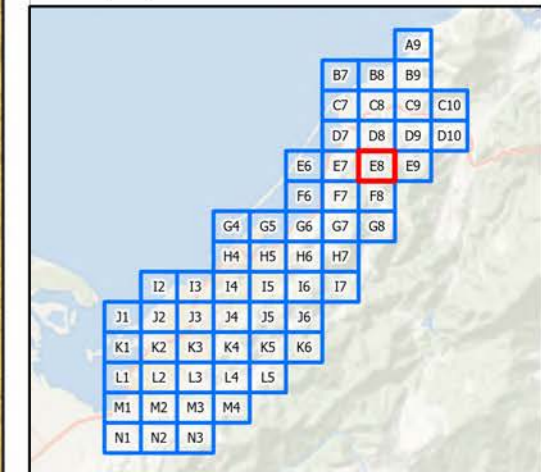


# Nelson Slope Instability Susceptibility Areas

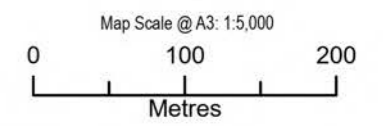
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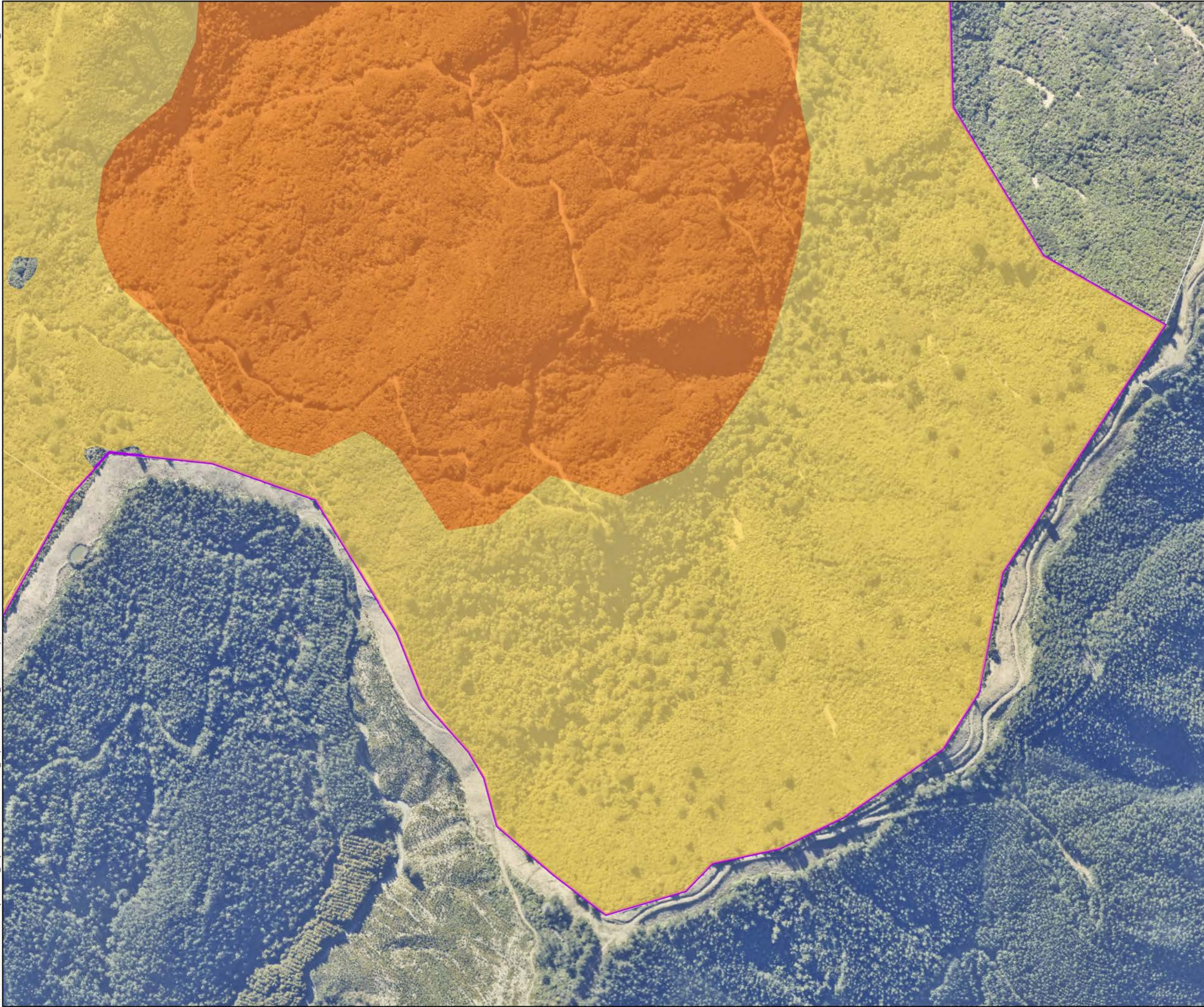
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Client:	<b>Nelson City Council</b>	Discipline:	<b>GIS</b>
Project:	<b>NCC Slope Instability Overlay Post-August 2022 Review</b>	Drawing No:	<b>GIS-3201163-03-E8</b>





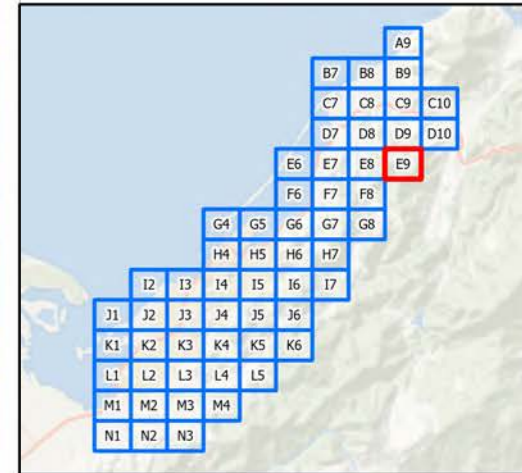


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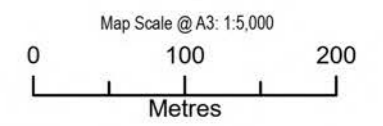


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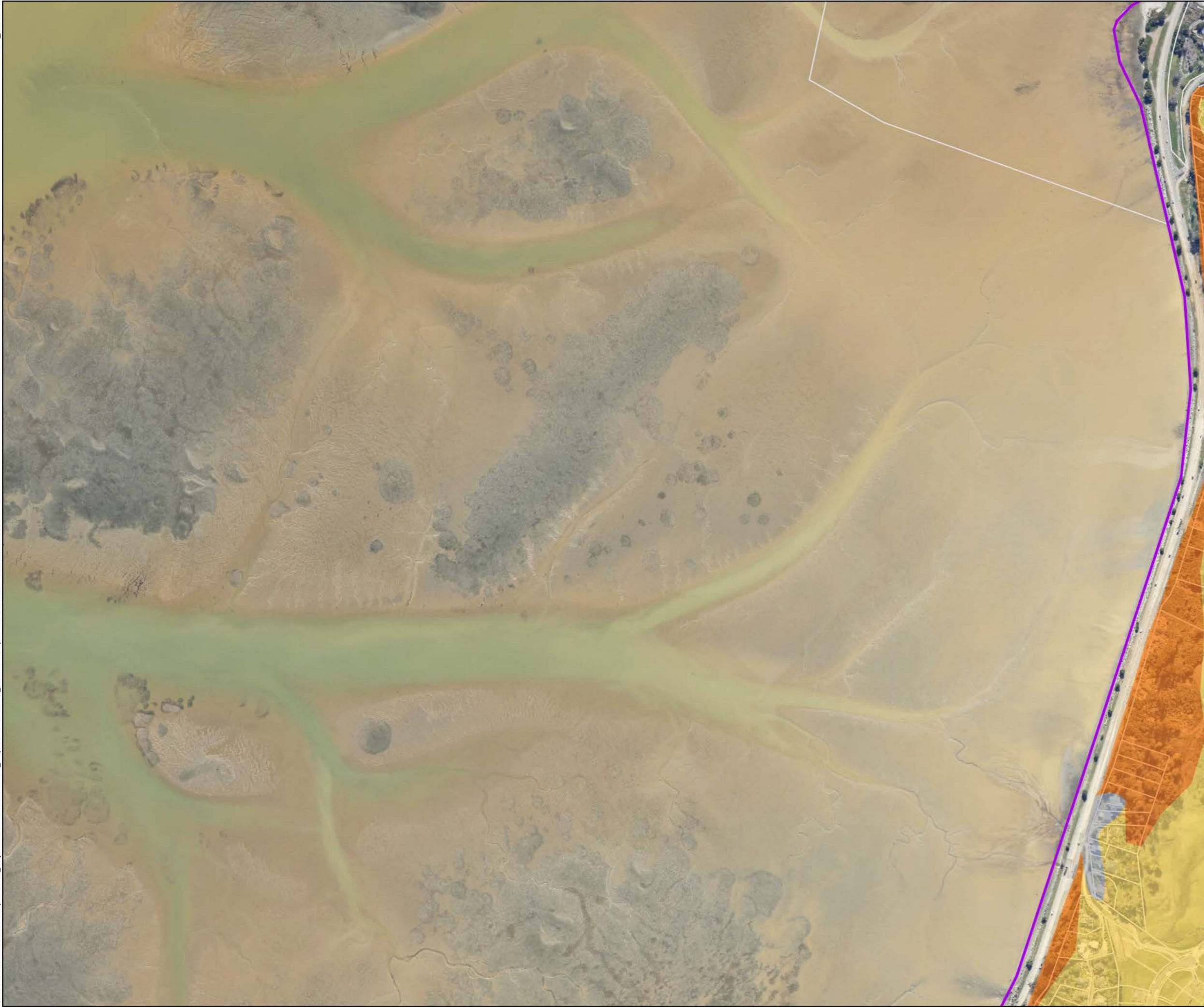


Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-E9**







# Nelson Slope Instability Susceptibility Areas

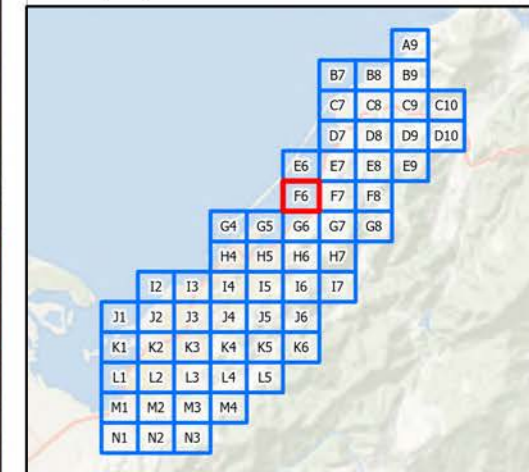
Sheet F6

Page 18 of 59

## Legend

- Study Area
- NZ Property Titles
- Areas potentially susceptible to slope instability
  - Slope Susceptibility Tier I
  - Slope Susceptibility Tier II
  - Slope Susceptibility Tier III
  - Areas Susceptible to Debris Run-out
- Revised Areas

For full definitions of the tiers of slope instability, please refer to Beca report 'NCC Slope Instability Overlay Report' 3201163-349031543-880.

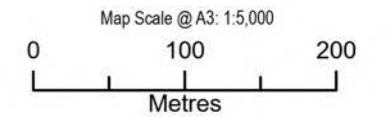


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3	TCS	BDJ	PJH	02/05/2023
2	TCS	BDJ	PJH	20/04/2023
1	TCS	BDJ	PJH	04/04/2023



Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-F6**







# Nelson Slope Instability Susceptibility Areas

Sheet F7

Page 19 of 59

## Legend

- Study Area
- NZ Property Titles
- Areas potentially susceptible to slope instability
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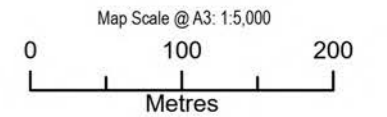


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Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-F7**





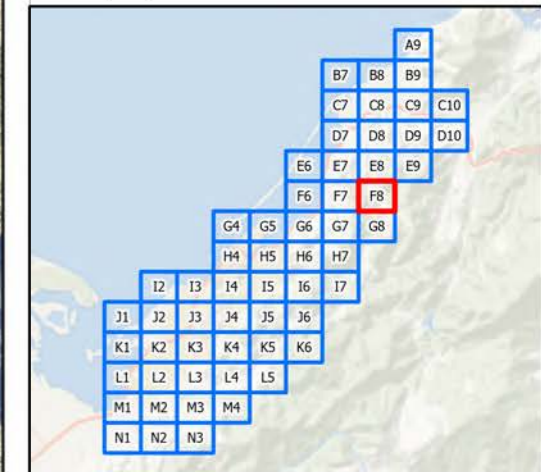


# Nelson Slope Instability Susceptibility Areas

## Legend

- Study Area
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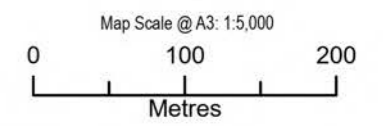


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Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-F8**





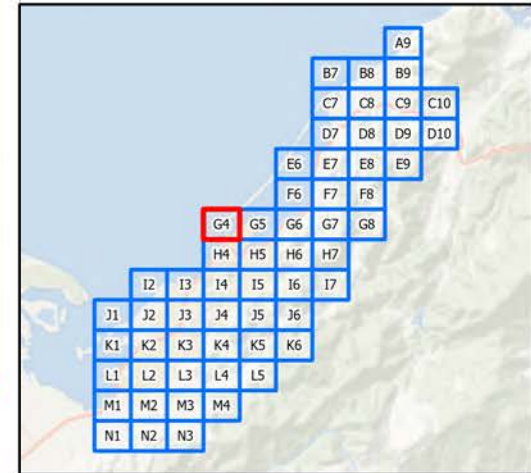


# Nelson Slope Instability Susceptibility Areas

## Legend

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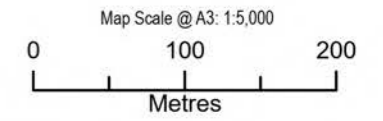


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Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-G4**





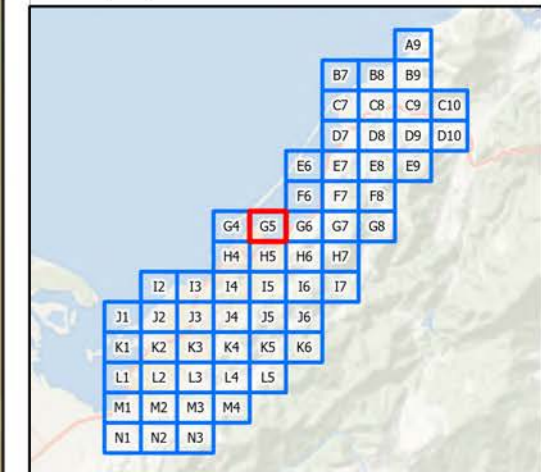


# Nelson Slope Instability Susceptibility Areas

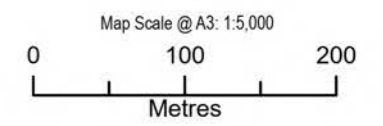
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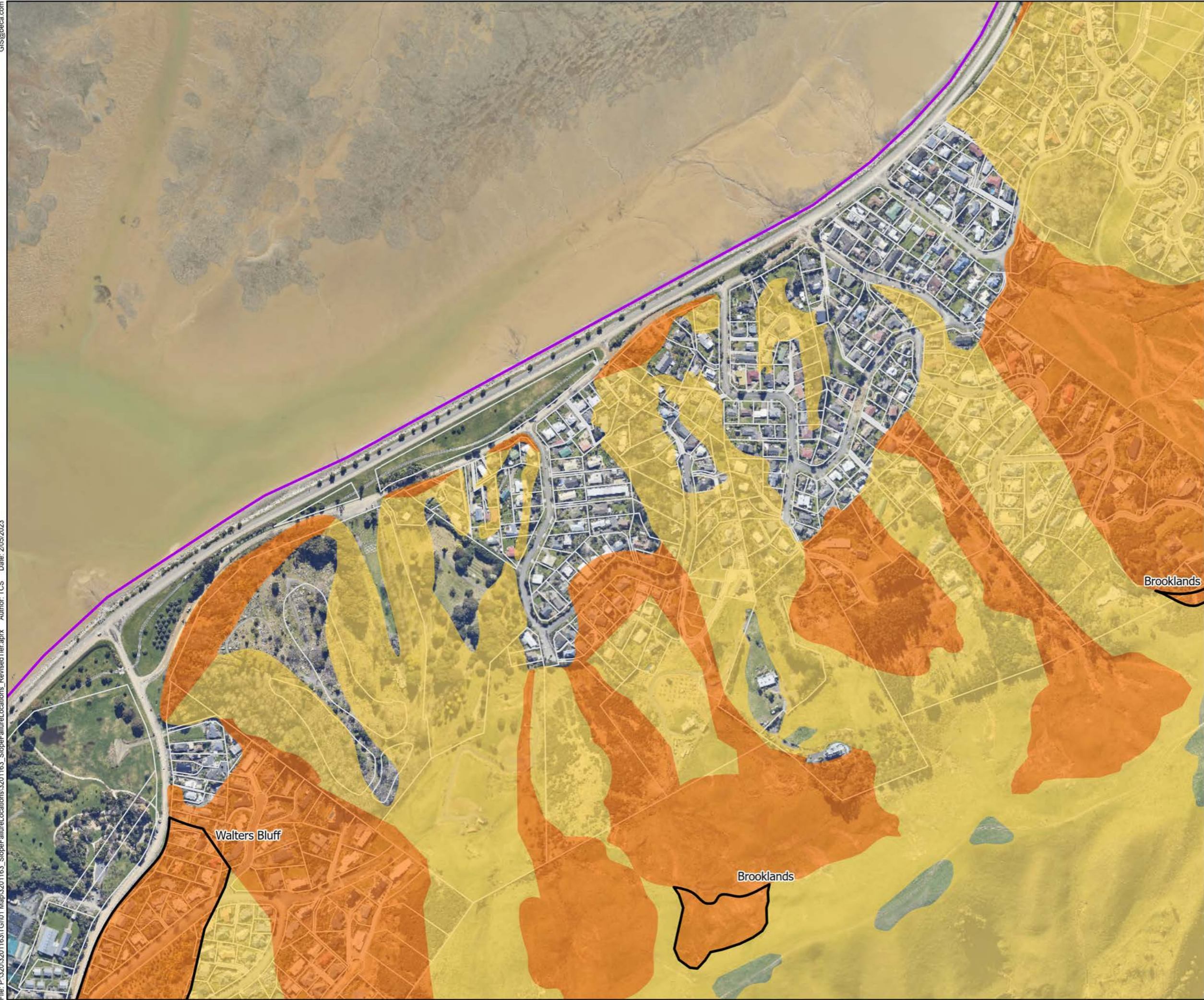


Client:	<b>Nelson City Council</b>	Discipline:	<b>GIS</b>
Project:	<b>NCC Slope Instability Overlay Post-August 2022 Review</b>	Drawing No:	<b>GIS-3201163-03-G5</b>



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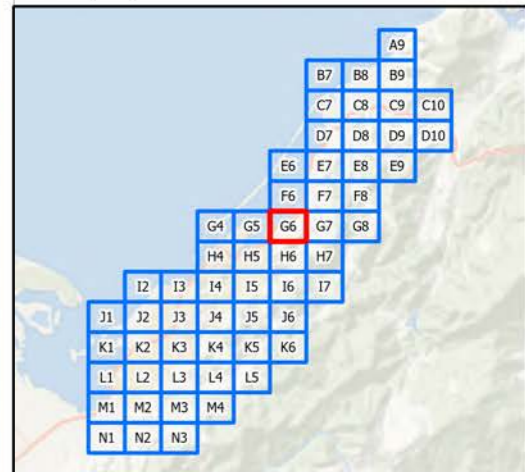


### Nelson Slope Instability Susceptibility Areas

#### Legend

- Study Area
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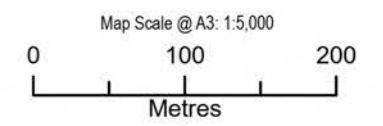


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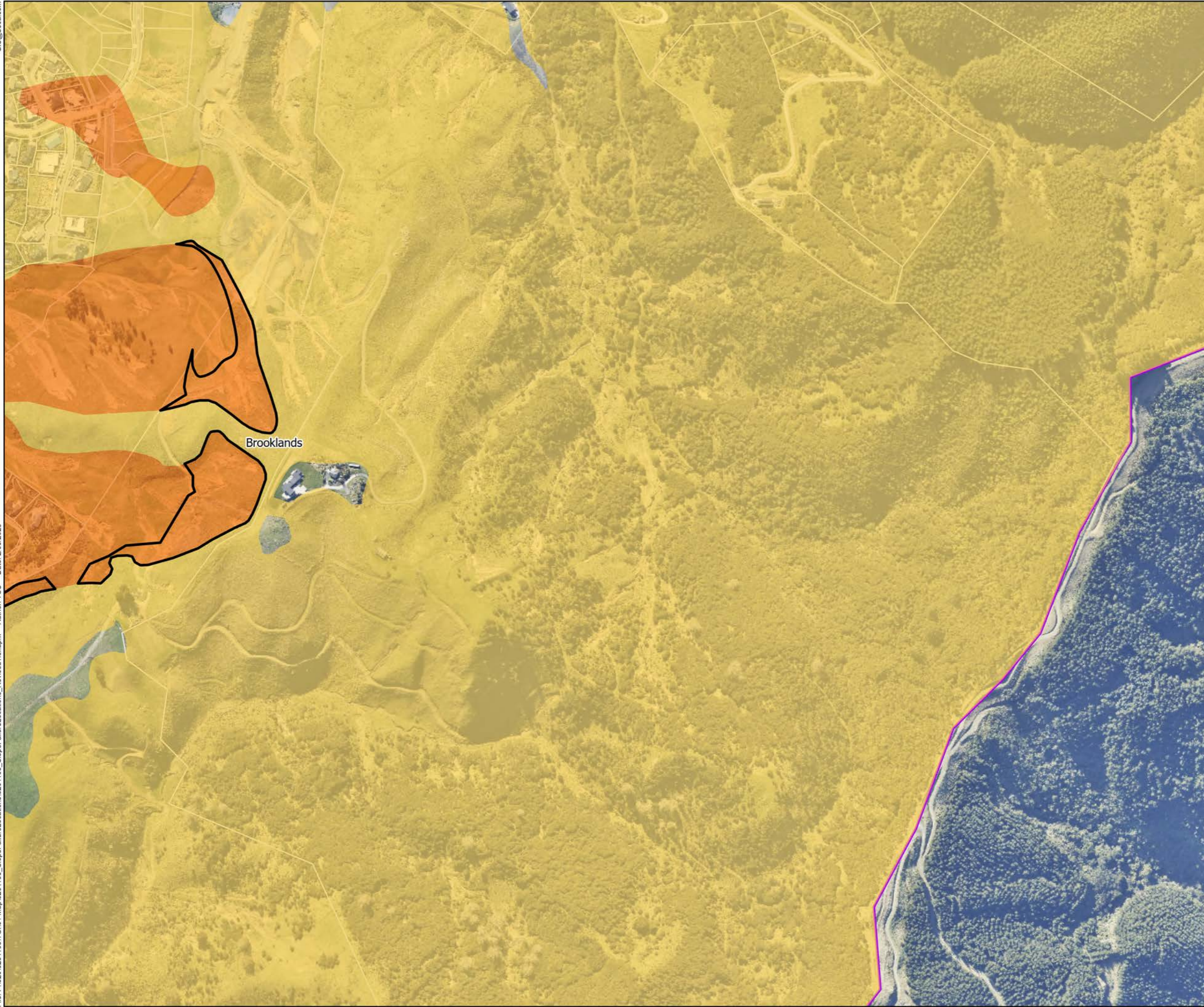


Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-G6**





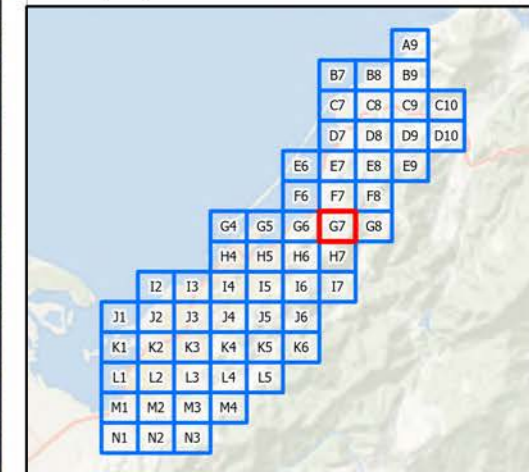


### Nelson Slope Instability Susceptibility Areas

#### Legend

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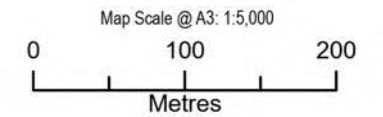


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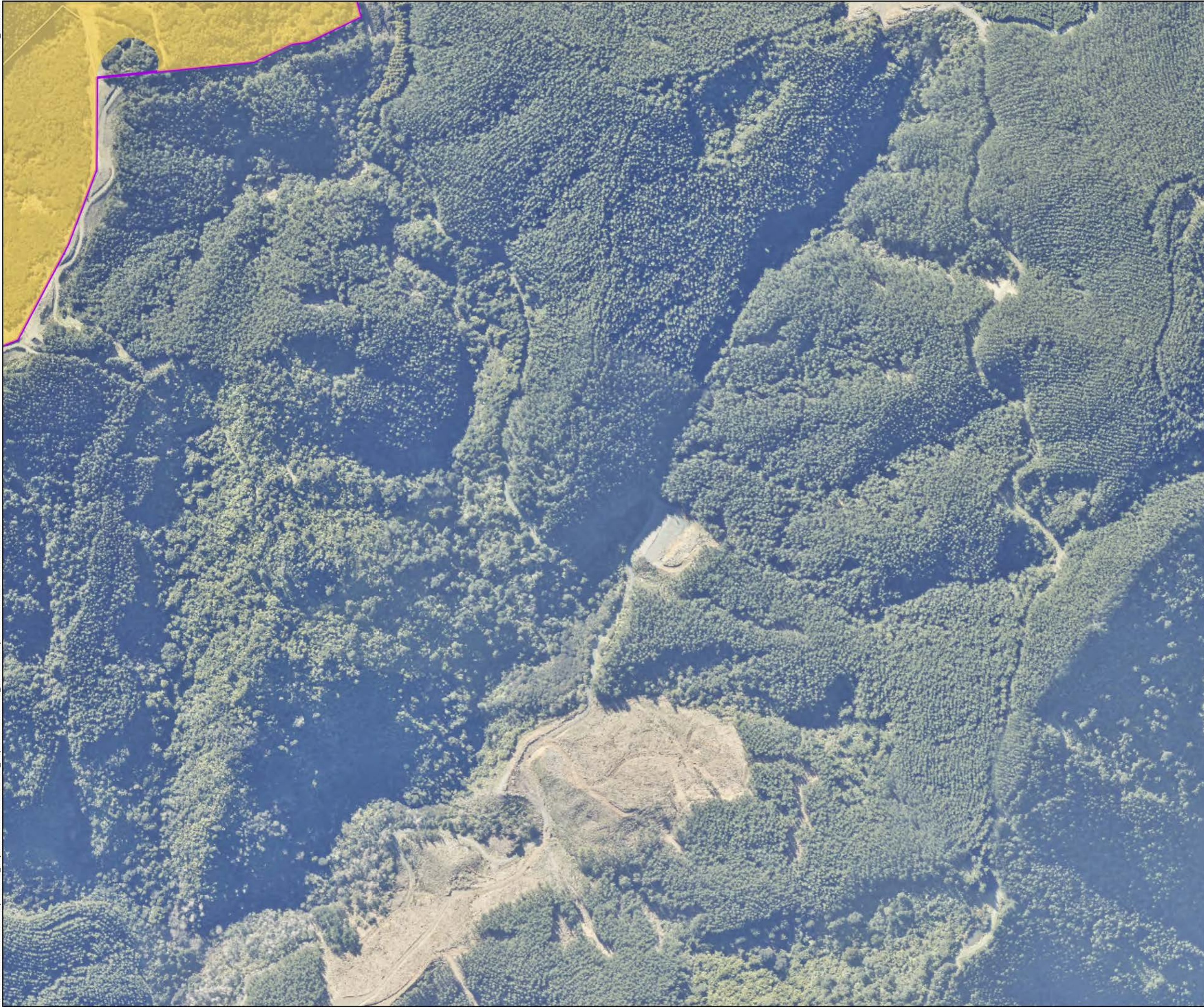


Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-G7**







# Nelson Slope Instability Susceptibility Areas

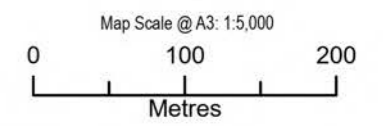
## Legend

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- Slope Susceptibility Tier III
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Client:	<b>Nelson City Council</b>	Discipline:	<b>GIS</b>
Project:	<b>NCC Slope Instability Overlay Post-August 2022 Review</b>	Drawing No:	<b>GIS-3201163-03-G8</b>





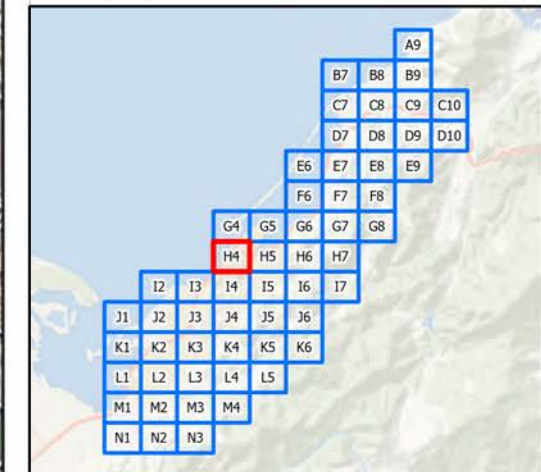


# Nelson Slope Instability Susceptibility Areas

## Legend

- Study Area
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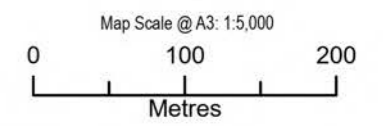


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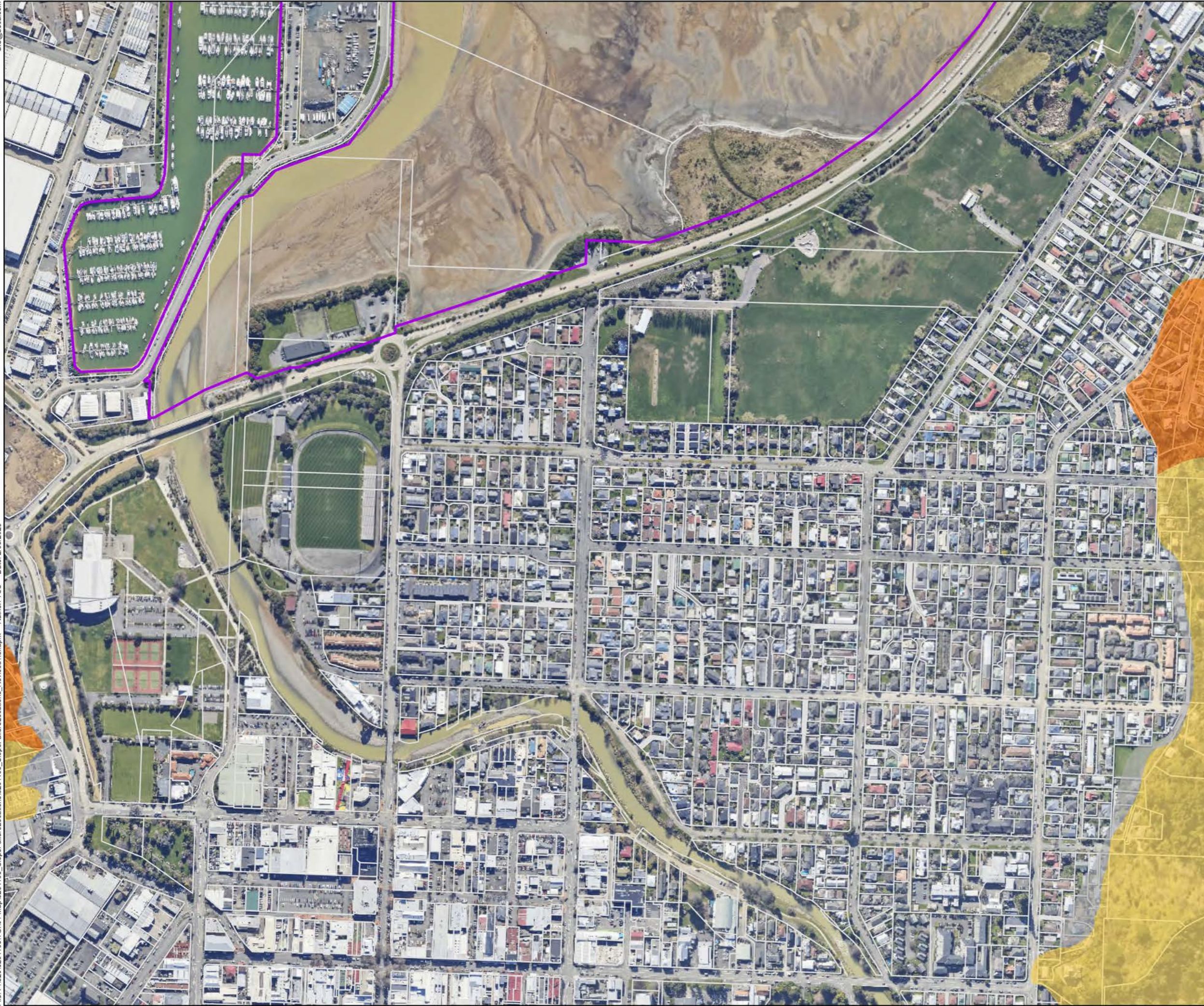
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3	TCS	BDJ	PJH	02/05/2023
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1	TCS	BDJ	PJH	04/04/2023



Client:	Nelson City Council	Discipline:	GIS
Project:	NCC Slope Instability Overlay Post-August 2022 Review	Drawing No:	GIS-3201163-03-H4







# Nelson Slope Instability Susceptibility Areas

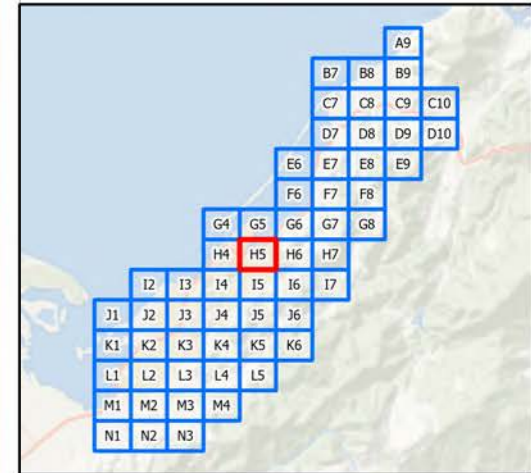
Sheet H5

Page 27 of 59

## Legend

- Study Area
- NZ Property Titles
- Areas potentially susceptible to slope instability
- Slope Susceptibility Tier I
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- Slope Susceptibility Tier III
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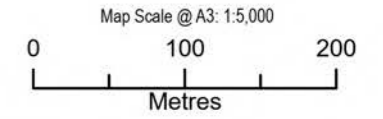


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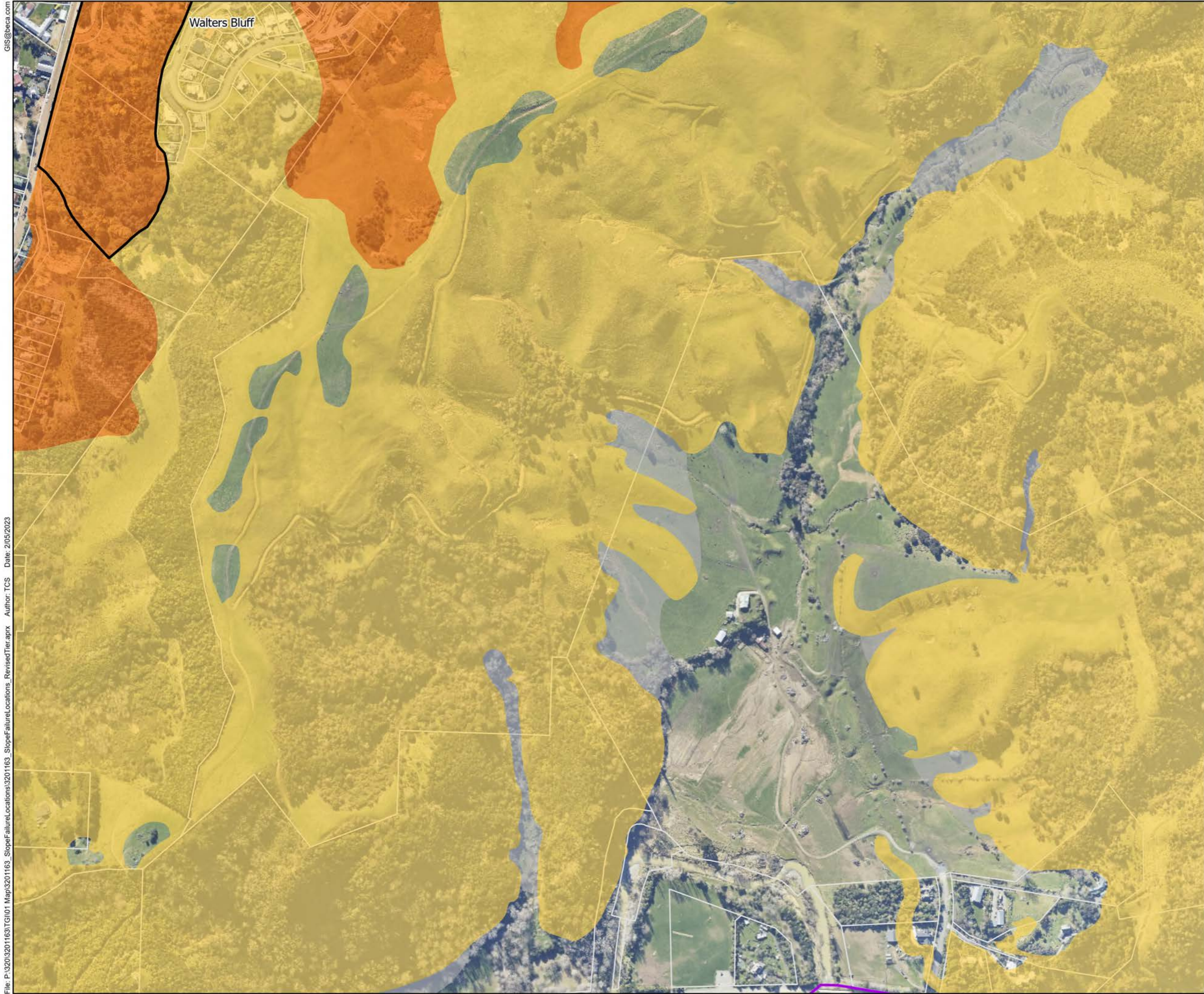


Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-H5**



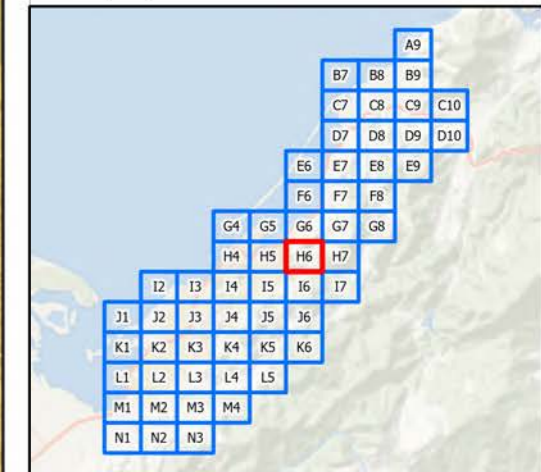




# Nelson Slope Instability Susceptibility Areas

## Legend

- Study Area
  - NZ Property Titles
  - Areas potentially susceptible to slope instability
  - Slope Susceptibility Tier I
  - Slope Susceptibility Tier II
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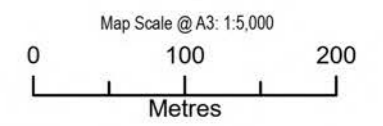


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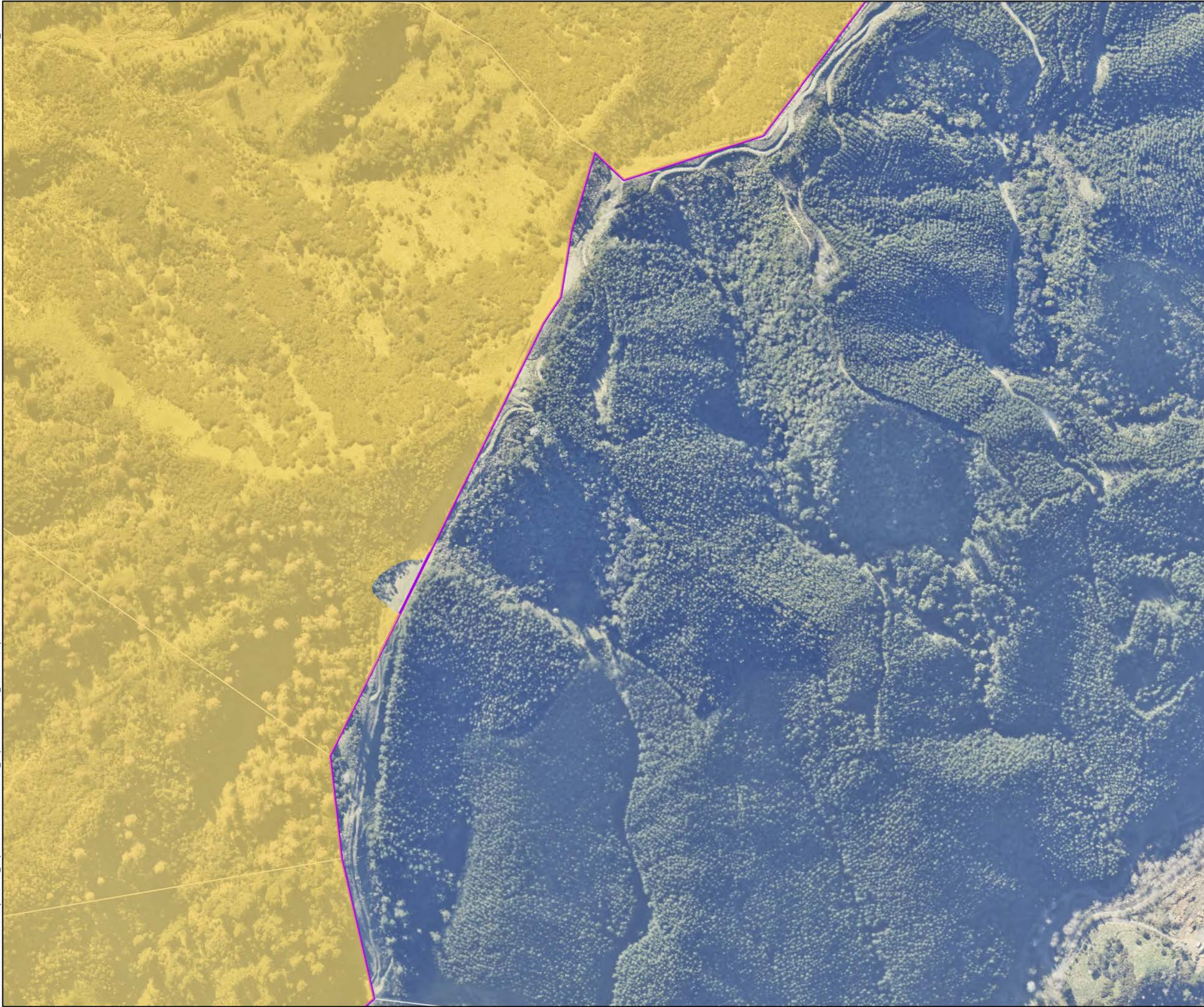
Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-H6**



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## Nelson Slope Instability Susceptibility Areas

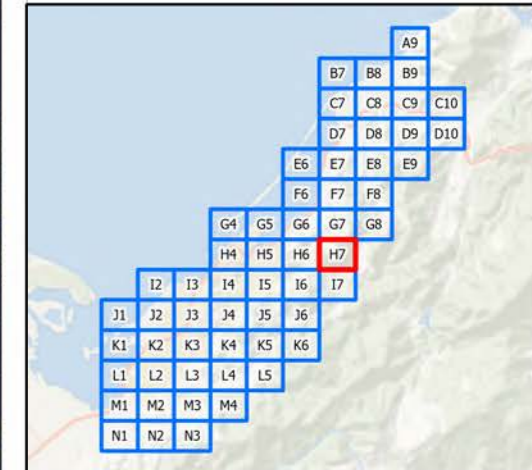
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### Legend

- Study Area
- NZ Property Titles
- Areas potentially susceptible to slope instability
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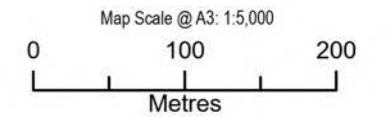


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Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-H7**





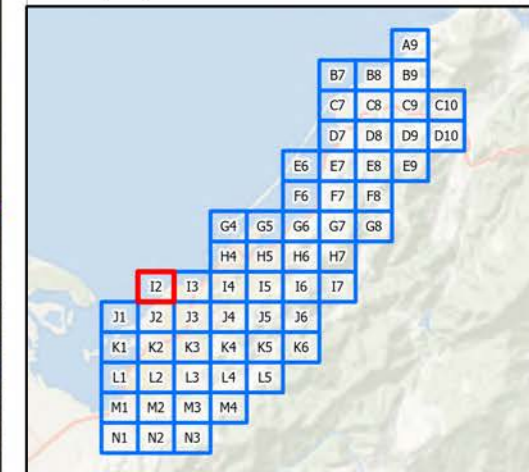


# Nelson Slope Instability Susceptibility Areas

## Legend

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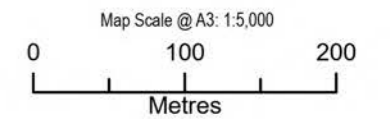


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Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-I2**





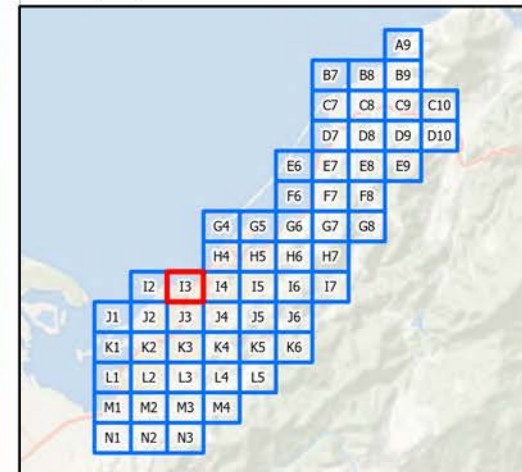


### Nelson Slope Instability Susceptibility Areas

#### Legend

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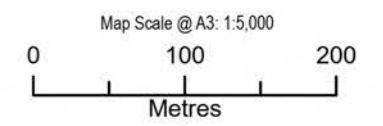


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Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-I3**



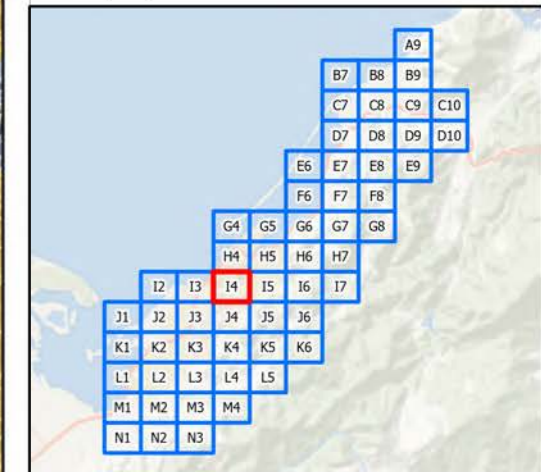




# Nelson Slope Instability Susceptibility Areas

## Legend

- Study Area
  - NZ Property Titles
  - Areas potentially susceptible to slope instability
  - Slope Susceptibility Tier I
  - Slope Susceptibility Tier II
  - Slope Susceptibility Tier III
  - Areas Susceptible to Debris Run-out
  - Revised Areas
- For full definitions of the tiers of slope instability, please refer to Beca report 'NCC Slope Instability Overlay Report' 3201163-349031543-880.

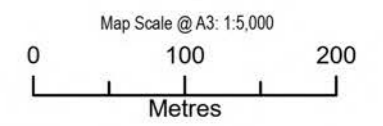


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1	TCS	BDJ	PJH	04/04/2023

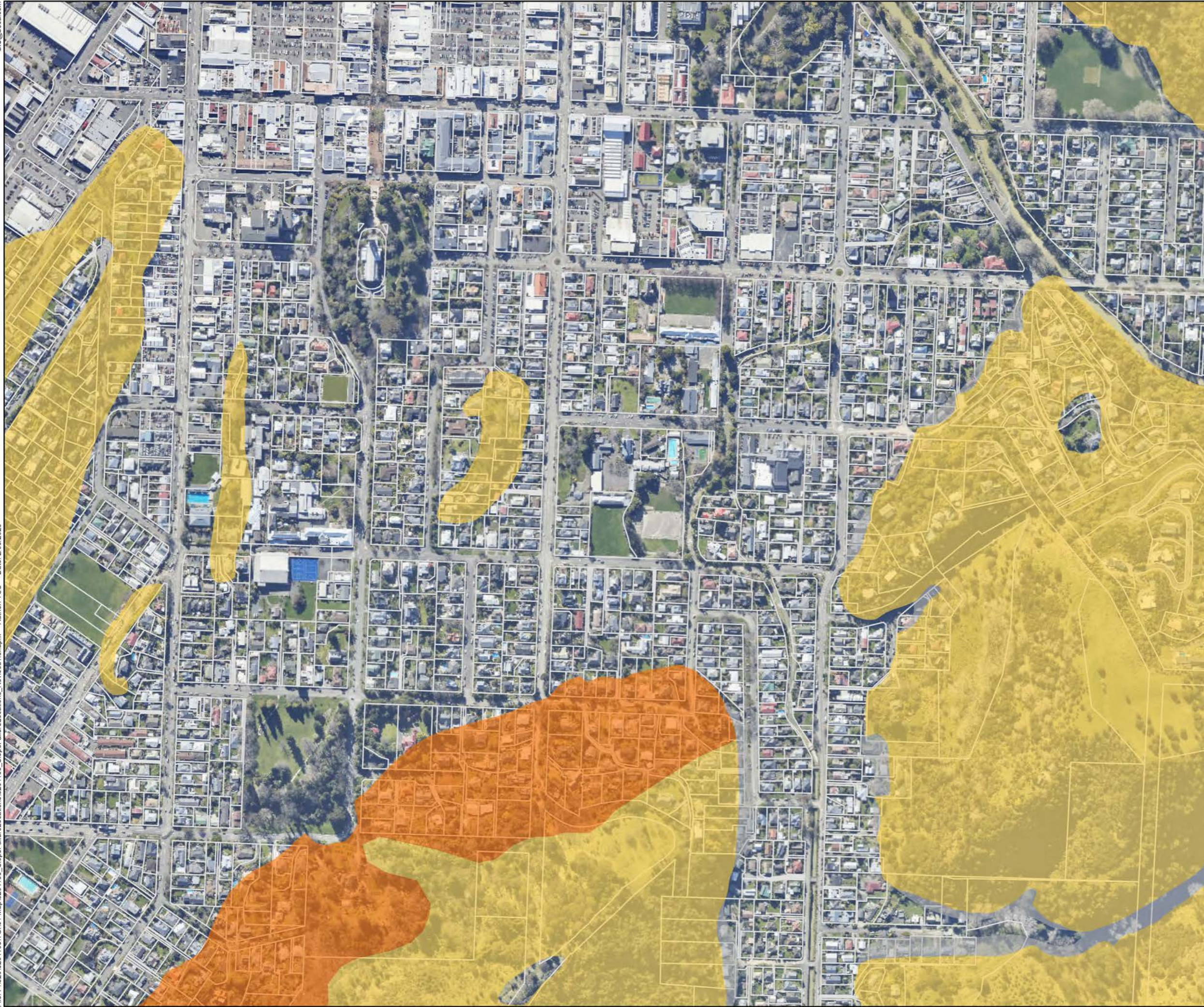
Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-14**



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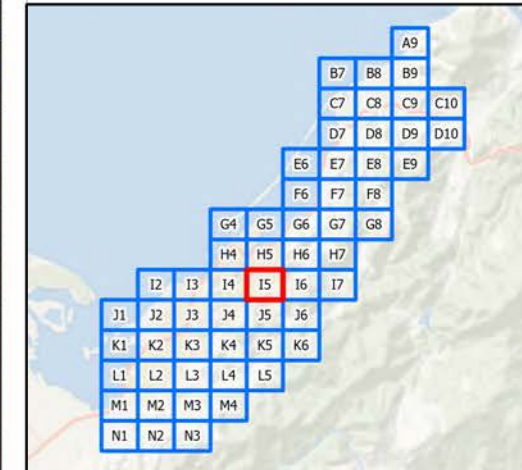


# Nelson Slope Instability Susceptibility Areas

## Legend

- Study Area
- NZ Property Titles
- Areas potentially susceptible to slope instability
- Slope Susceptibility Tier I
- Slope Susceptibility Tier II
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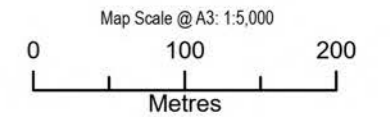


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Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-15**







# Nelson Slope Instability Susceptibility Areas

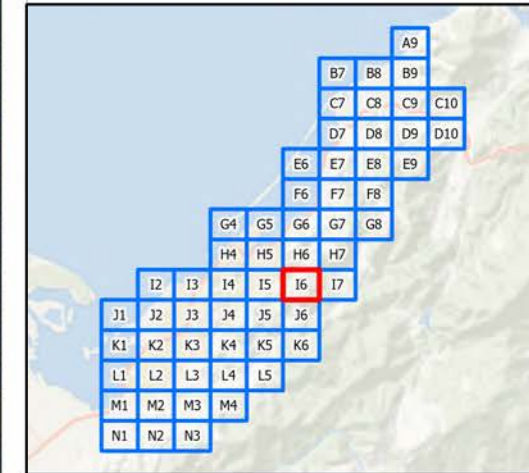
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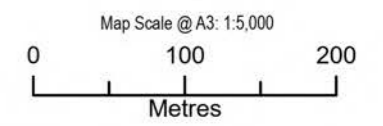
## Legend

- Study Area
- NZ Property Titles
- Areas potentially susceptible to slope instability
- Slope Susceptibility Tier I
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1	TCS	BDJ	PJH	04/04/2023



Client:	<b>Nelson City Council</b>	Discipline:	<b>GIS</b>
Project:	<b>NCC Slope Instability Overlay Post-August 2022 Review</b>	Drawing No:	<b>GIS-3201163-03-16</b>





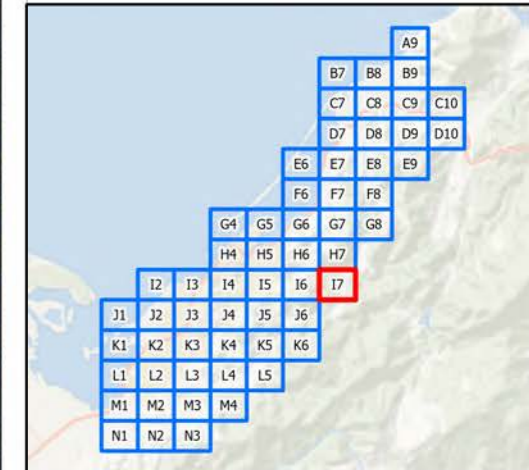


# Nelson Slope Instability Susceptibility Areas

## Legend

- Study Area
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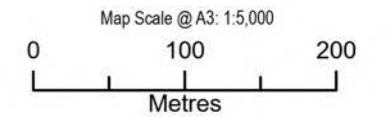


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Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review**

Drawing No: **GIS-3201163-03-17**







# Nelson Slope Instability Susceptibility Areas

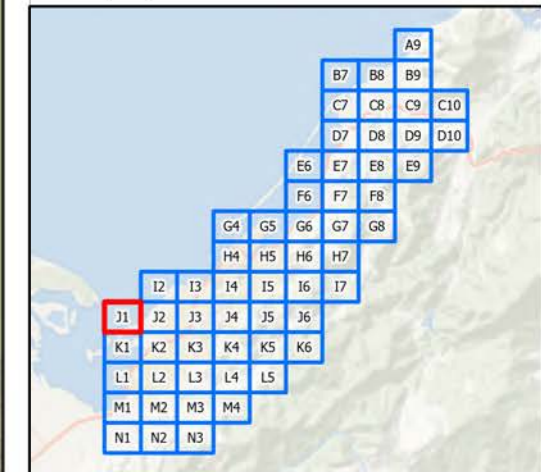
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## Legend

- Study Area
- NZ Property Titles
- Areas potentially susceptible to slope instability
- Slope Susceptibility Tier I
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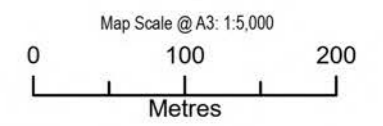


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Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review**

Drawing No: **GIS-3201163-03-J1**







# Nelson Slope Instability Susceptibility Areas

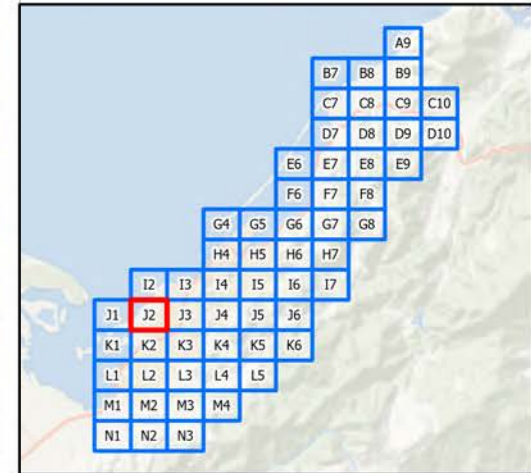
Sheet J2

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## Legend

- Study Area
- NZ Property Titles
- Areas potentially susceptible to slope instability
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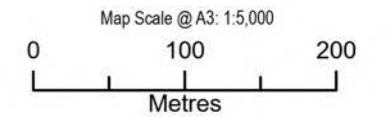


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Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-J2**



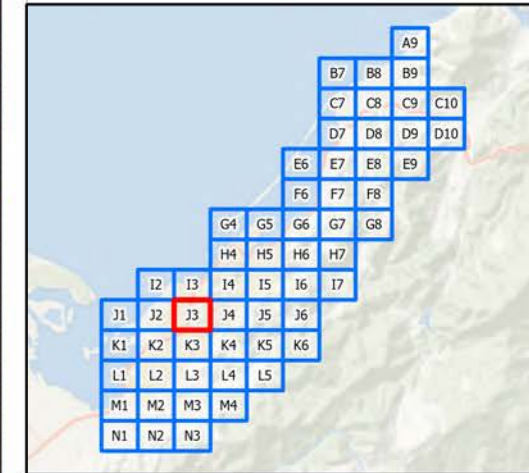




# Nelson Slope Instability Susceptibility Areas

## Legend

- Study Area
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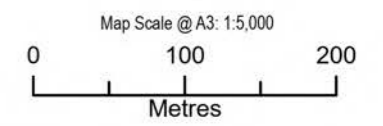


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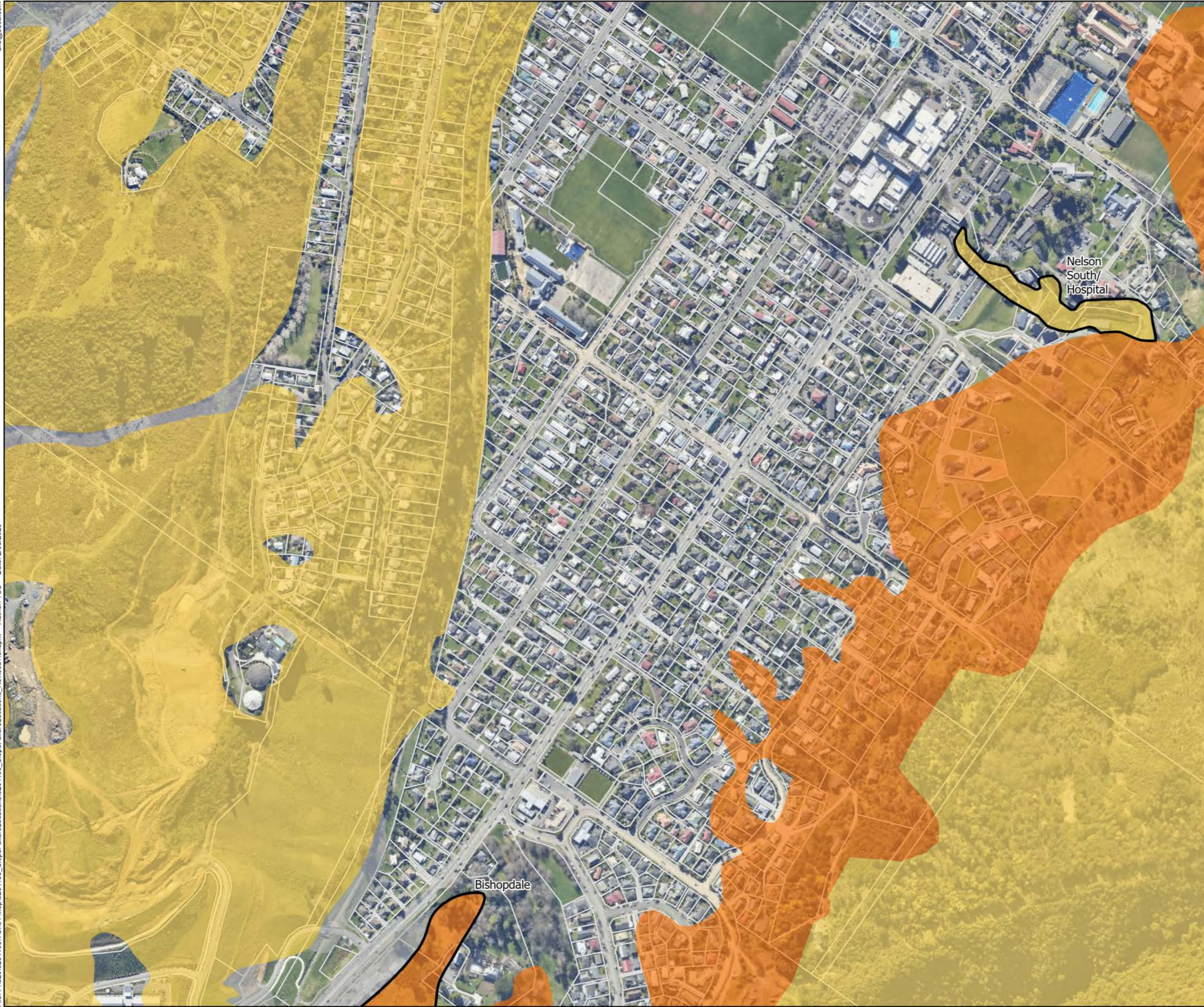


Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-J3**







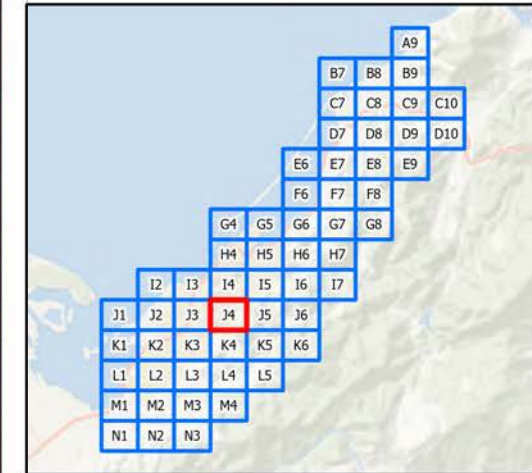
# Nelson Slope Instability Susceptibility Areas

Sheet J4

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## Legend

- Study Area
  - NZ Property Titles
  - Areas potentially susceptible to slope instability
  - Slope Susceptibility Tier I
  - Slope Susceptibility Tier II
  - Slope Susceptibility Tier III
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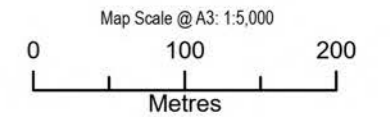


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Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-J4**



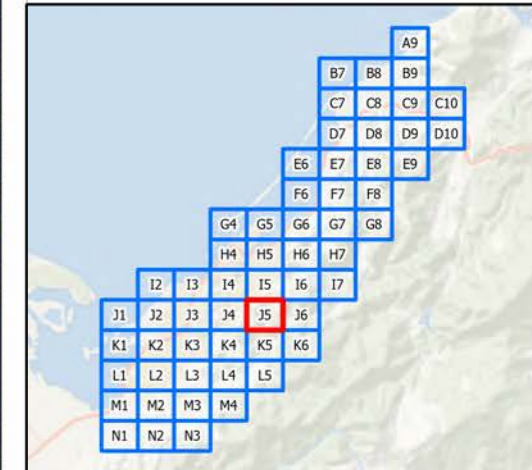




# Nelson Slope Instability Susceptibility Areas

## Legend

- Study Area
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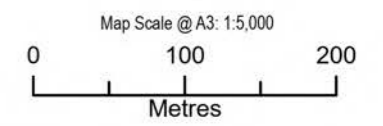


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Client:	<b>Nelson City Council</b>	Discipline:	<b>GIS</b>
Project:	<b>NCC Slope Instability Overlay Post-August 2022 Review</b>	Drawing No:	<b>GIS-3201163-03-J5</b>







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 GIS@beca.com

## Nelson Slope Instability Susceptibility Areas

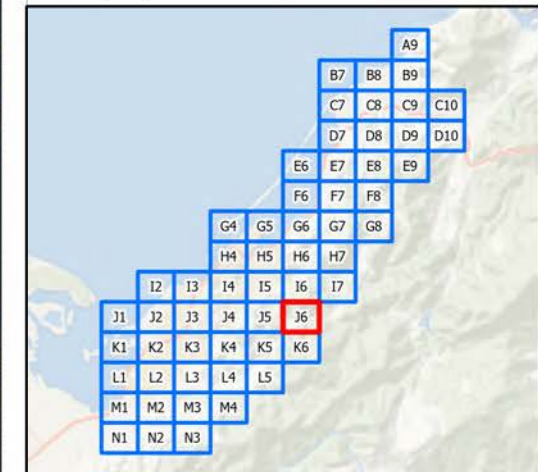
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### Legend

- Study Area
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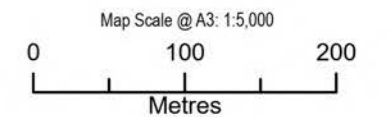


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1	TCS	BDJ	PJH	04/04/2023



Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-J6**







# Nelson Slope Instability Susceptibility Areas

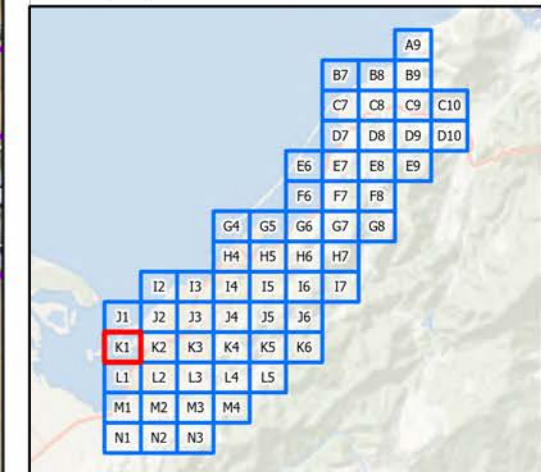
Sheet K1

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## Legend

- Study Area
- NZ Property Titles
- Areas potentially susceptible to slope instability
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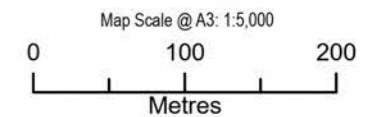


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Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-K1**







# Nelson Slope Instability Susceptibility Areas

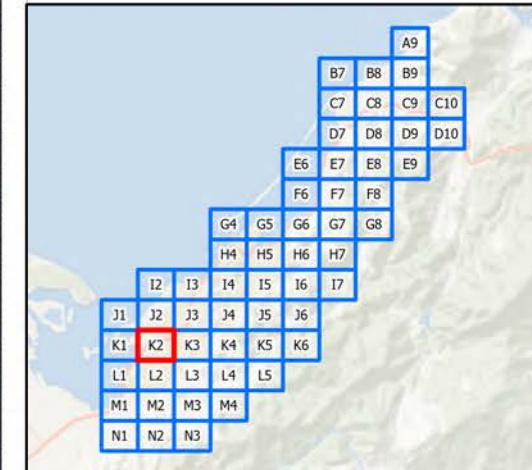
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## Legend

- Study Area
- NZ Property Titles
- Areas potentially susceptible to slope instability
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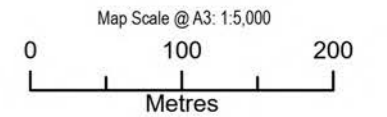


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1	TCS	BDJ	PJH	04/04/2023



Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-K2**



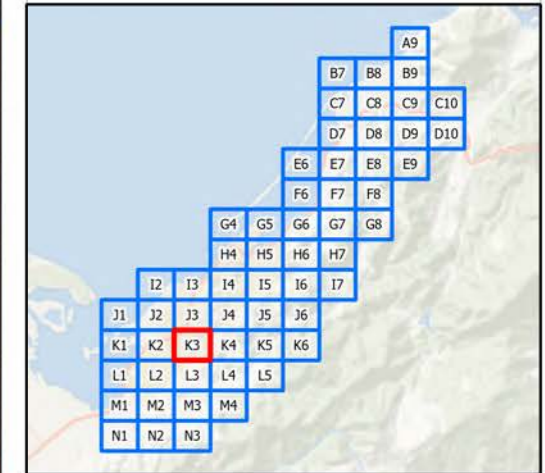




# Nelson Slope Instability Susceptibility Areas

## Legend

- Study Area
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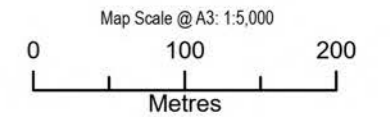


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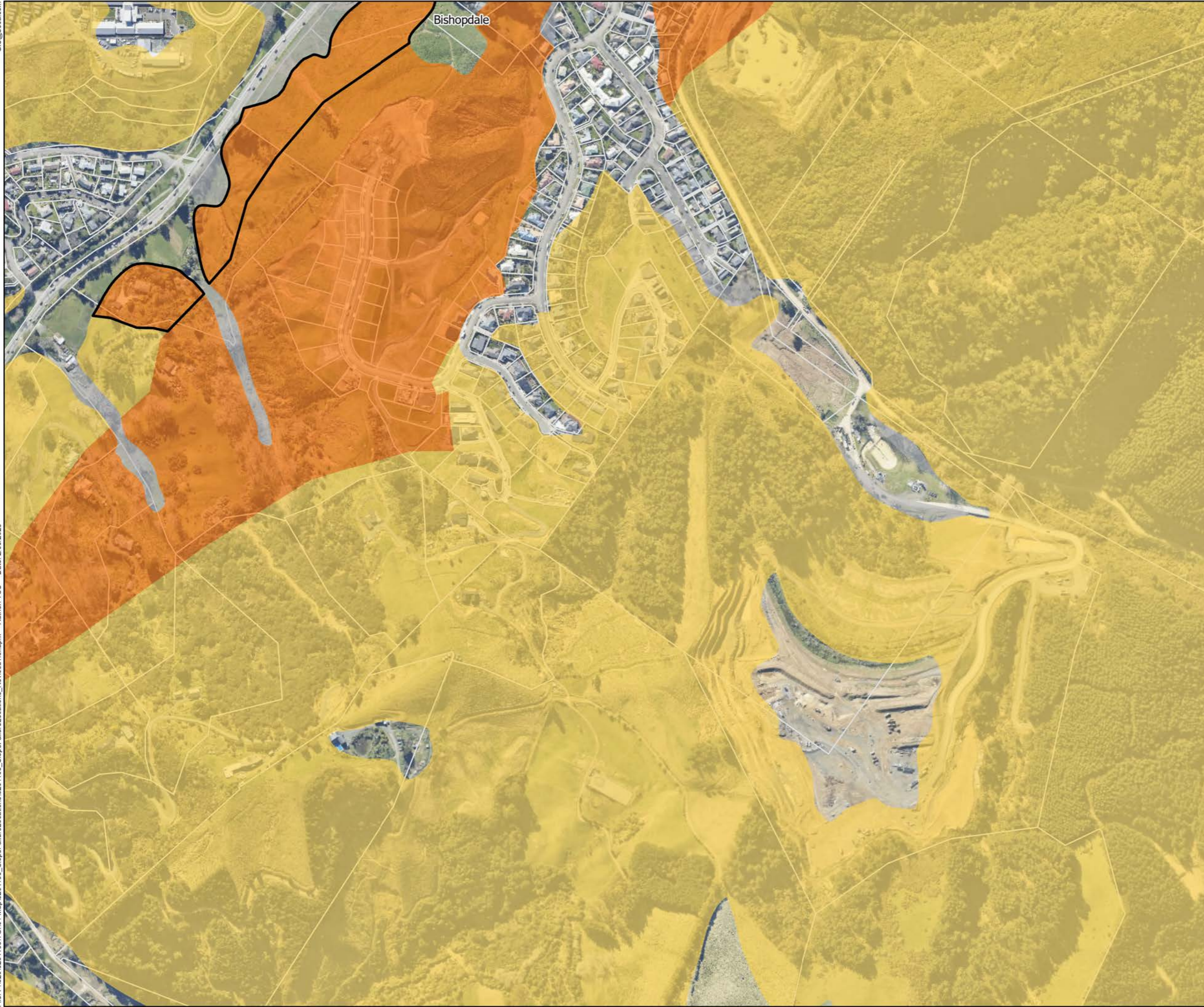


Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-K3**





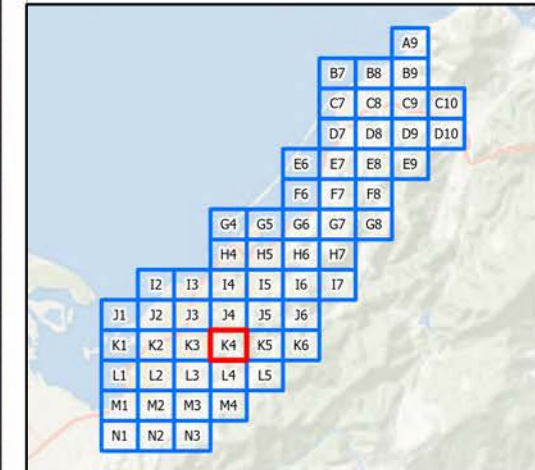


# Nelson Slope Instability Susceptibility Areas

## Legend

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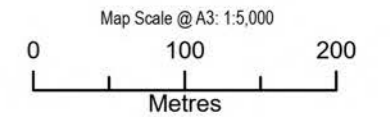


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Client:	<b>Nelson City Council</b>	Discipline:	<b>GIS</b>
Project:	<b>NCC Slope Instability Overlay Post-August 2022 Review</b>	Drawing No:	<b>GIS-3201163-03-K4</b>







# Nelson Slope Instability Susceptibility Areas

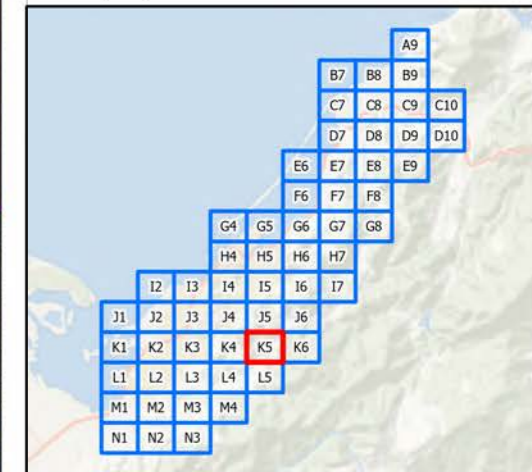
Sheet K5

Page 46 of 59

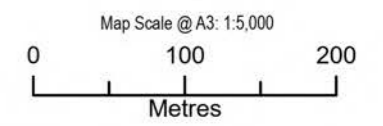
## Legend

- Study Area
- NZ Property Titles
- Areas potentially susceptible to slope instability
- Slope Susceptibility Tier I
- Slope Susceptibility Tier II
- Slope Susceptibility Tier III
- Areas Susceptible to Debris Run-out
- Revised Areas

For full definitions of the tiers of slope instability, please refer to Beca report 'NCC Slope Instability Overlay Report' 3201163-349031543-880.



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Revision	Author	Verified	Approved	Date
3	TCS	BDJ	PJH	02/05/2023
2	TCS	BDJ	PJH	20/04/2023
1	TCS	BDJ	PJH	04/04/2023



Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-K5**







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 GIS@beca.com

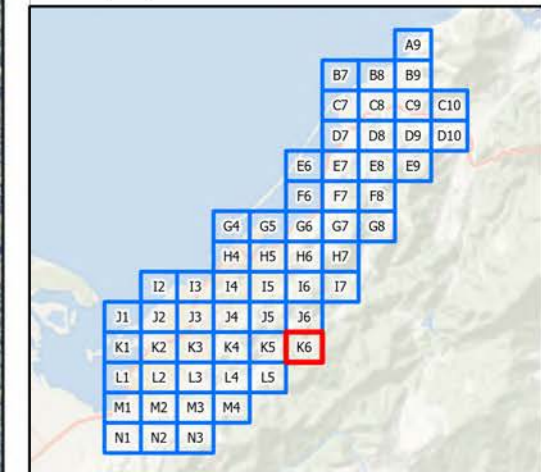
## Nelson Slope Instability Susceptibility Areas

Sheet K6 Page 47 of 59

### Legend

- Study Area
- NZ Property Titles
- Areas potentially susceptible to slope instability
- Slope Susceptibility Tier I
- Slope Susceptibility Tier II
- Slope Susceptibility Tier III
- Areas Susceptible to Debris Run-out
- Revised Areas

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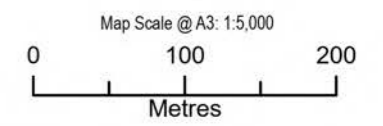


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Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-K6**





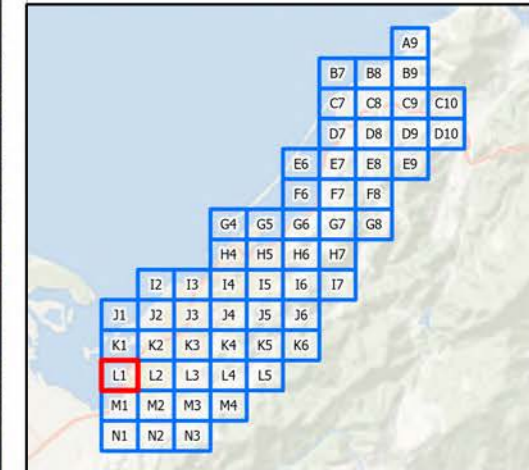


# Nelson Slope Instability Susceptibility Areas

## Legend

- Study Area
- NZ Property Titles
- Areas potentially susceptible to slope instability
  - Slope Susceptibility Tier I
  - Slope Susceptibility Tier II
  - Slope Susceptibility Tier III
  - Areas Susceptible to Debris Run-out
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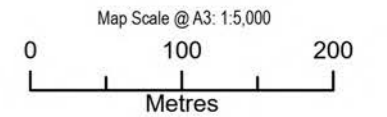


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Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-L1**







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## Nelson Slope Instability Susceptibility Areas

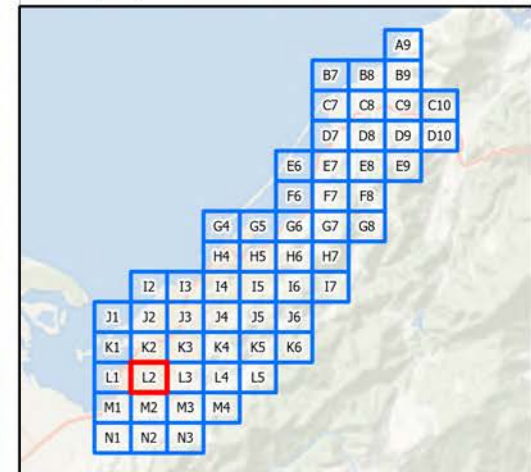
Sheet L2

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### Legend

- Study Area
- NZ Property Titles
- Areas potentially susceptible to slope instability
- Slope Susceptibility Tier I
- Slope Susceptibility Tier II
- Slope Susceptibility Tier III
- Areas Susceptible to Debris Run-out
- Revised Areas

For full definitions of the tiers of slope instability, please refer to Beca report 'NCC Slope Instability Overlay Report' 3201163-349031543-880.



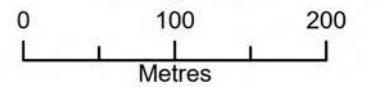
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Map Scale @ A3: 1:5,000



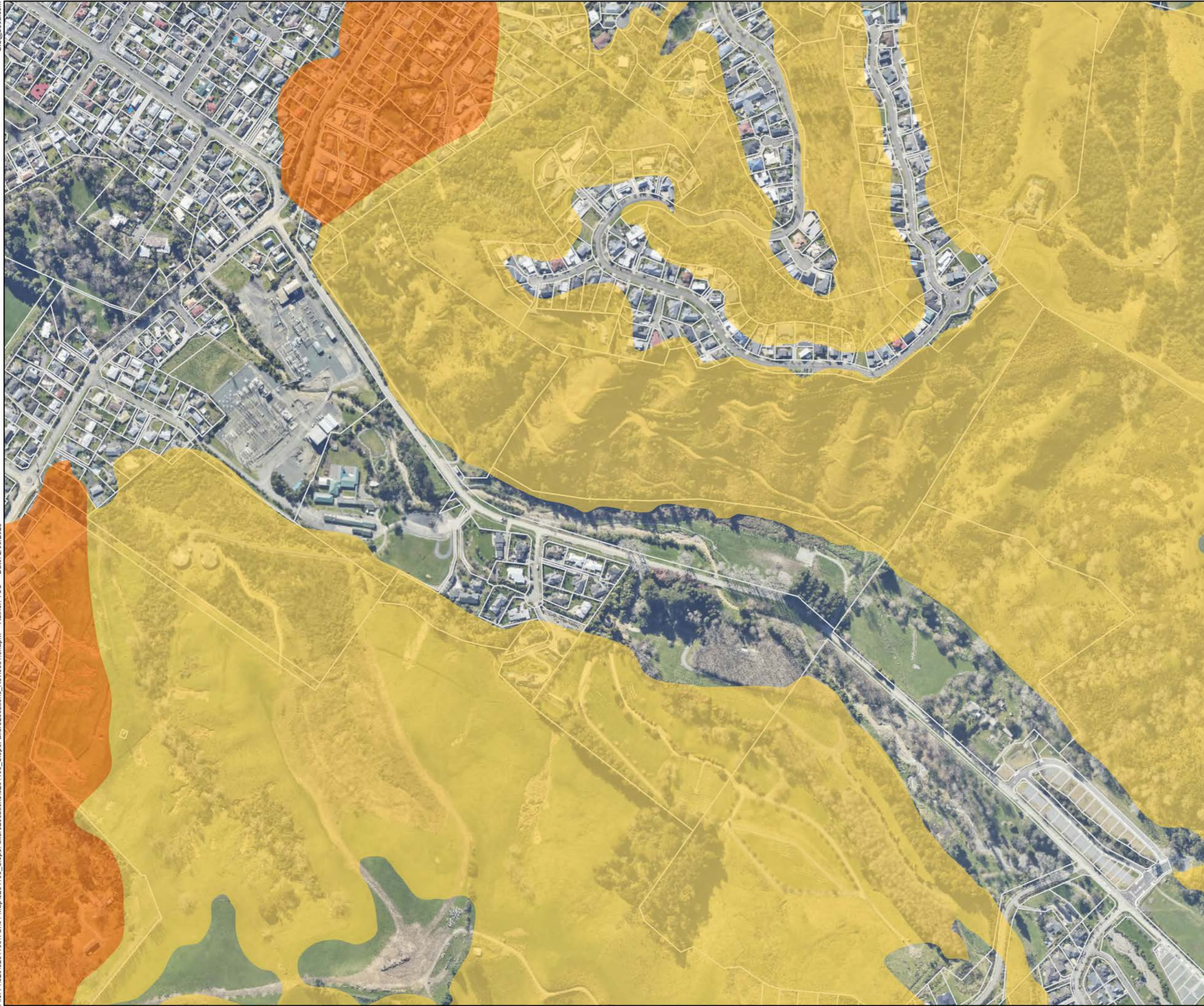
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3	TCS	BDJ	PJH	02/05/2023
2	TCS	BDJ	PJH	20/04/2023
1	TCS	BDJ	PJH	04/04/2023



Client:	<b>Nelson City Council</b>	Discipline:	<b>GIS</b>
Project:	<b>NCC Slope Instability Overlay Post-August 2022 Review</b>	Drawing No.:	<b>GIS-3201163-03-L2</b>







# Nelson Slope Instability Susceptibility Areas

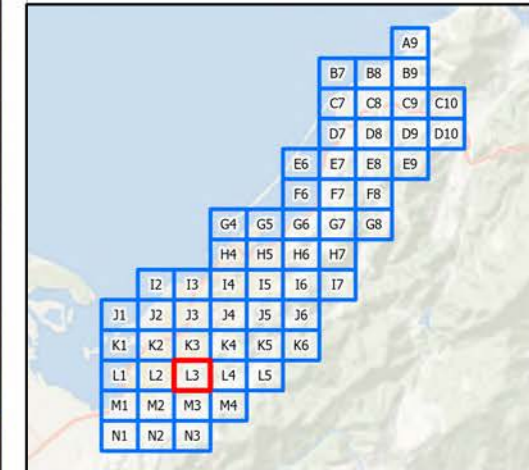
Sheet L3

Page 50 of 59

## Legend

- Study Area
- NZ Property Titles
- Areas potentially susceptible to slope instability
- Slope Susceptibility Tier I
- Slope Susceptibility Tier II
- Slope Susceptibility Tier III
- Areas Susceptible to Debris Run-out
- Revised Areas

For full definitions of the tiers of slope instability, please refer to Beca report 'NCC Slope Instability Overlay Report' 3201163-349031543-880.

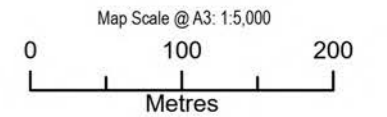


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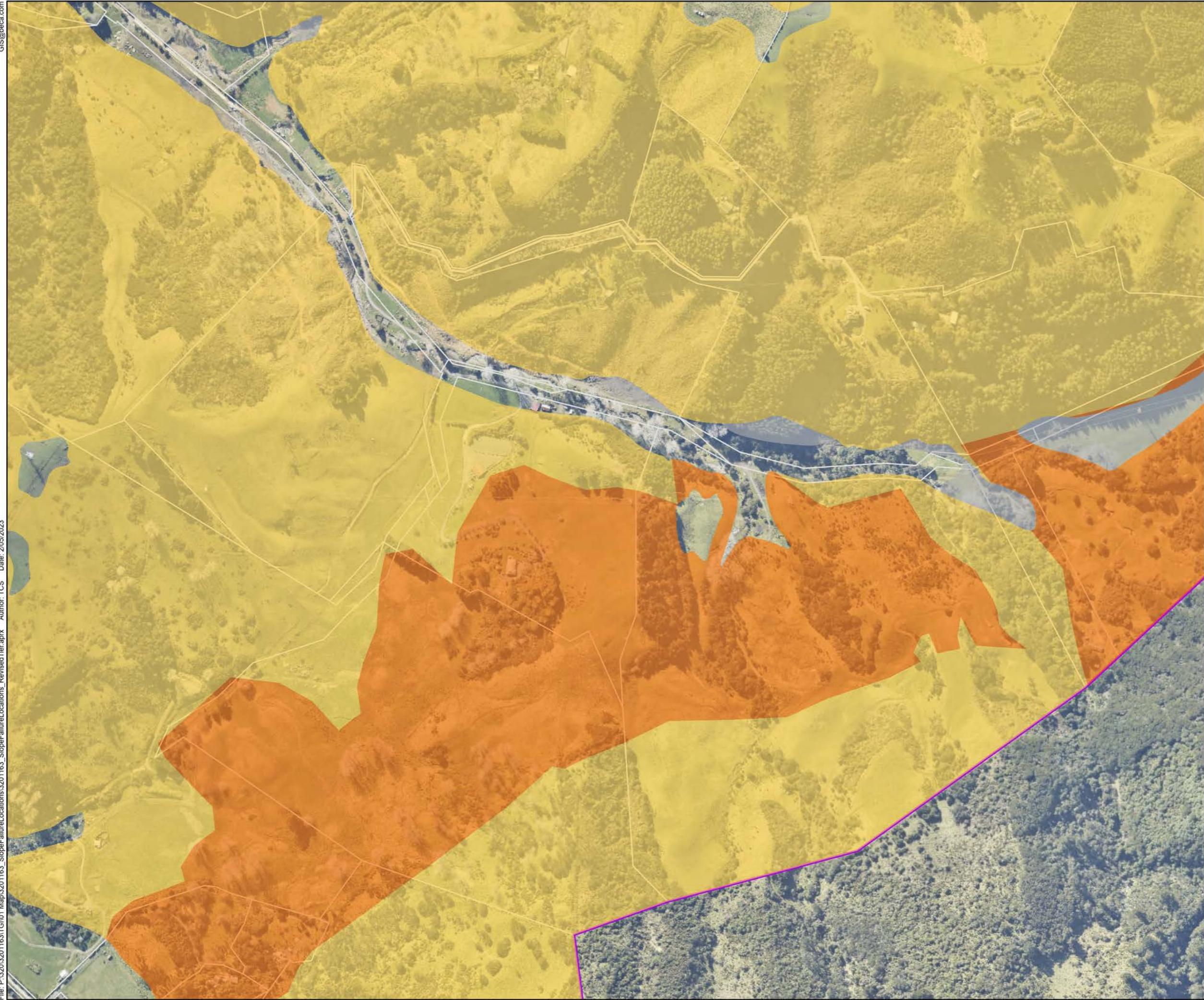


Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-L3**







# Nelson Slope Instability Susceptibility Areas

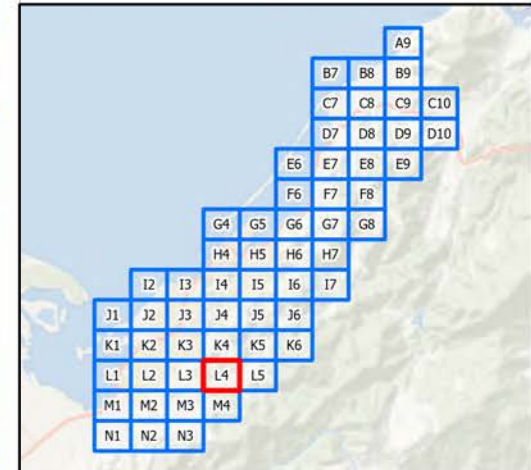
Sheet L4

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## Legend

- Study Area
- NZ Property Titles
- Areas potentially susceptible to slope instability
- Slope Susceptibility Tier I
- Slope Susceptibility Tier II
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- Areas Susceptible to Debris Run-out
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For full definitions of the tiers of slope instability, please refer to Beca report 'NCC Slope Instability Overlay Report' 3201163-349031543-880.

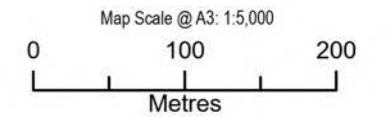


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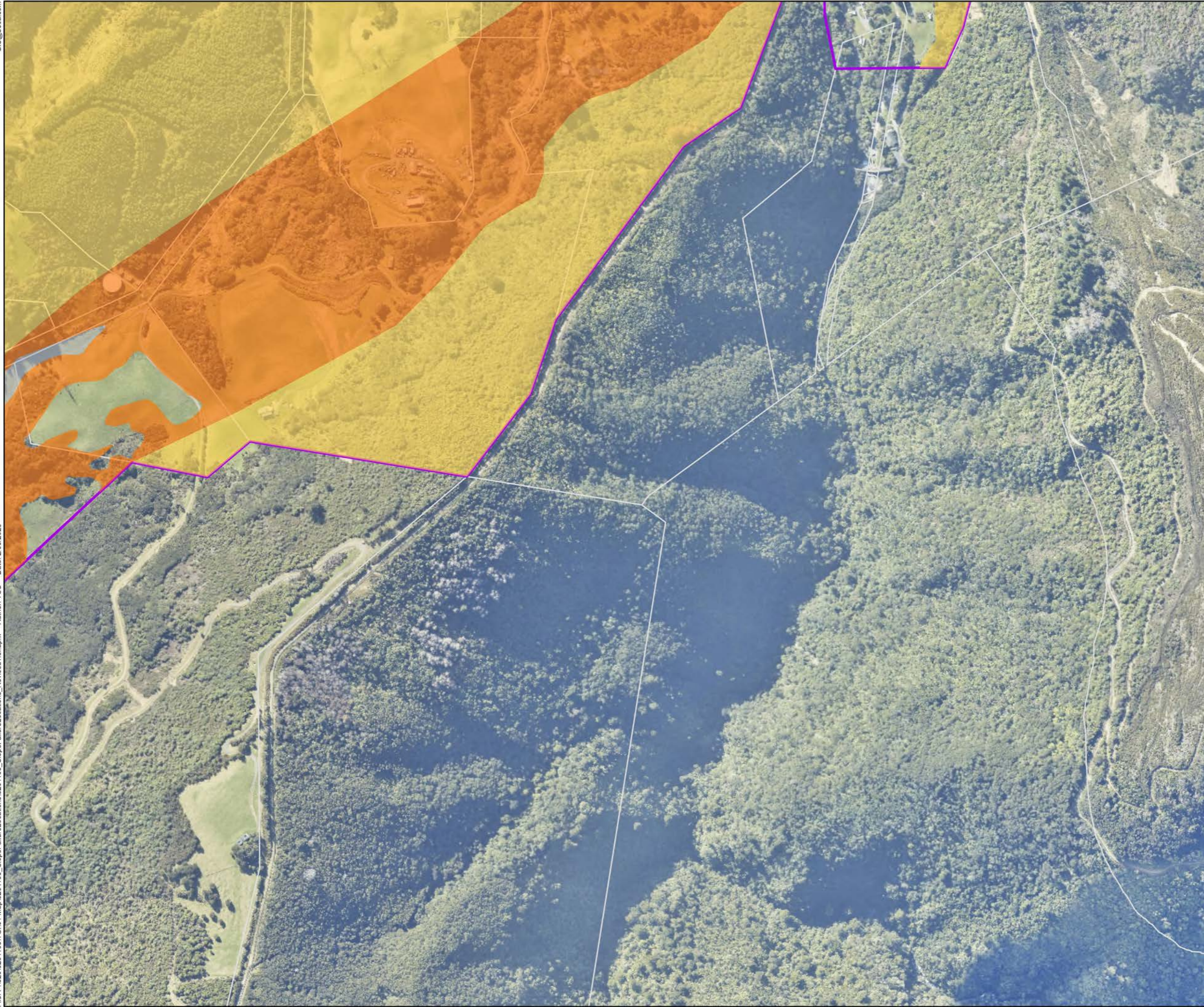


Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-L4**







# Nelson Slope Instability Susceptibility Areas

## Legend

- Study Area
- NZ Property Titles
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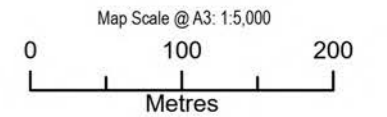


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Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-L5**





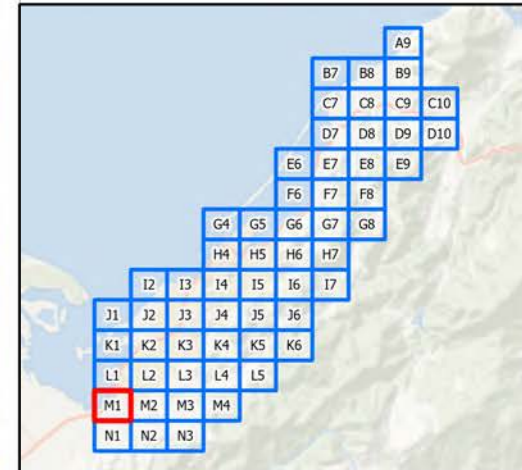


# Nelson Slope Instability Susceptibility Areas

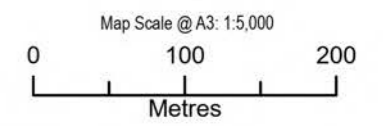
## Legend

- Study Area
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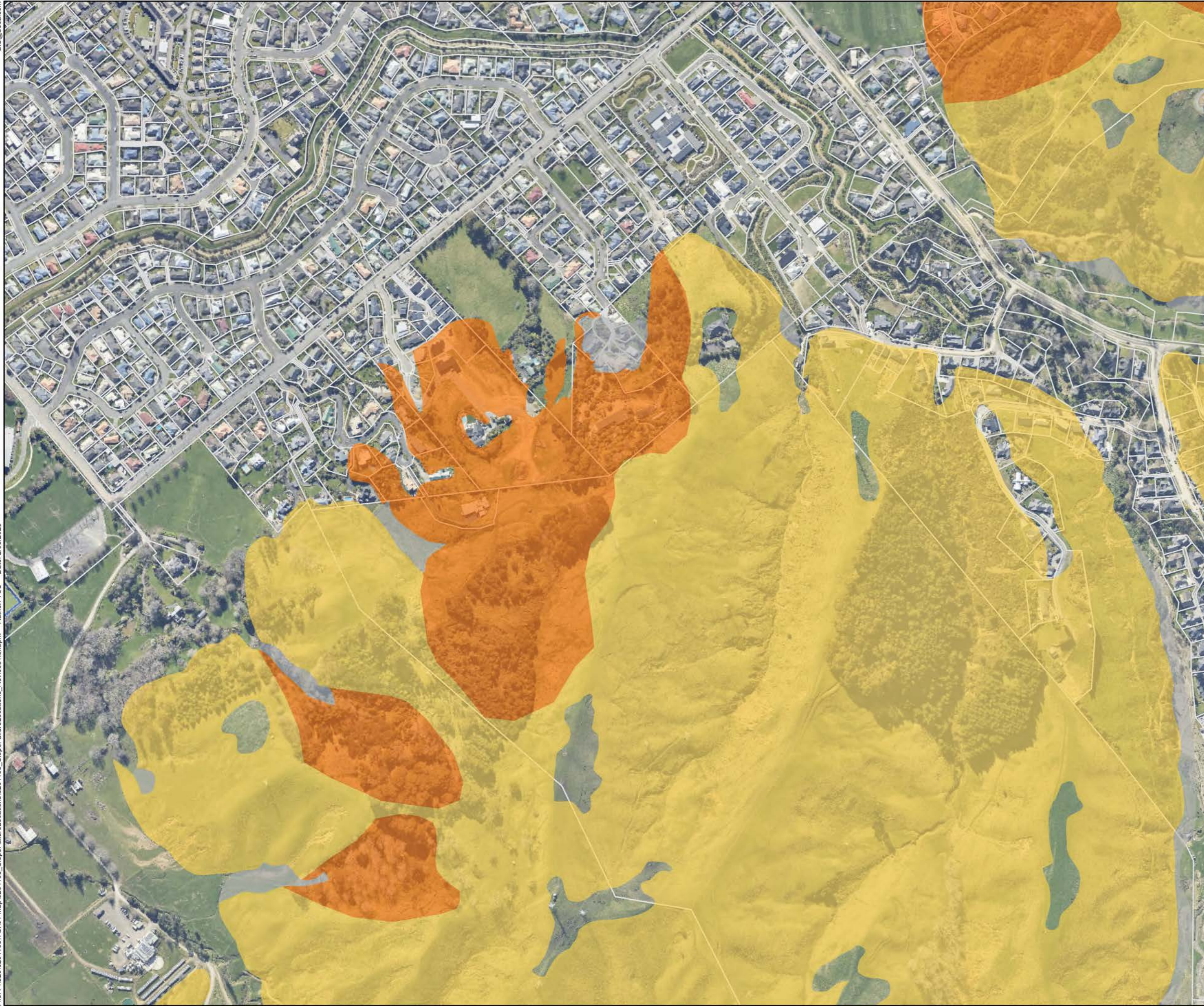
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3	TCS	BDJ	PJH	02/05/2023
2	TCS	BDJ	PJH	20/04/2023
1	TCS	BDJ	PJH	04/04/2023



Client:	<b>Nelson City Council</b>	Discipline:	<b>GIS</b>
Project:	<b>NCC Slope Instability Overlay Post-August 2022 Review</b>	Drawing No:	<b>GIS-3201163-03-M1</b>



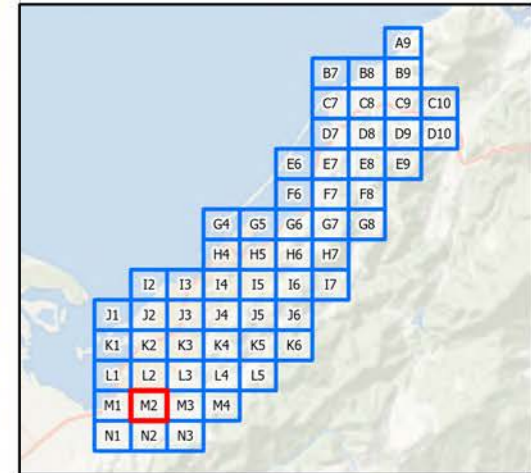




# Nelson Slope Instability Susceptibility Areas

## Legend

- Study Area
  - NZ Property Titles
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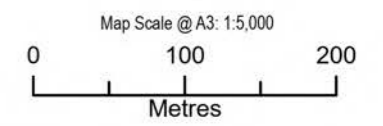


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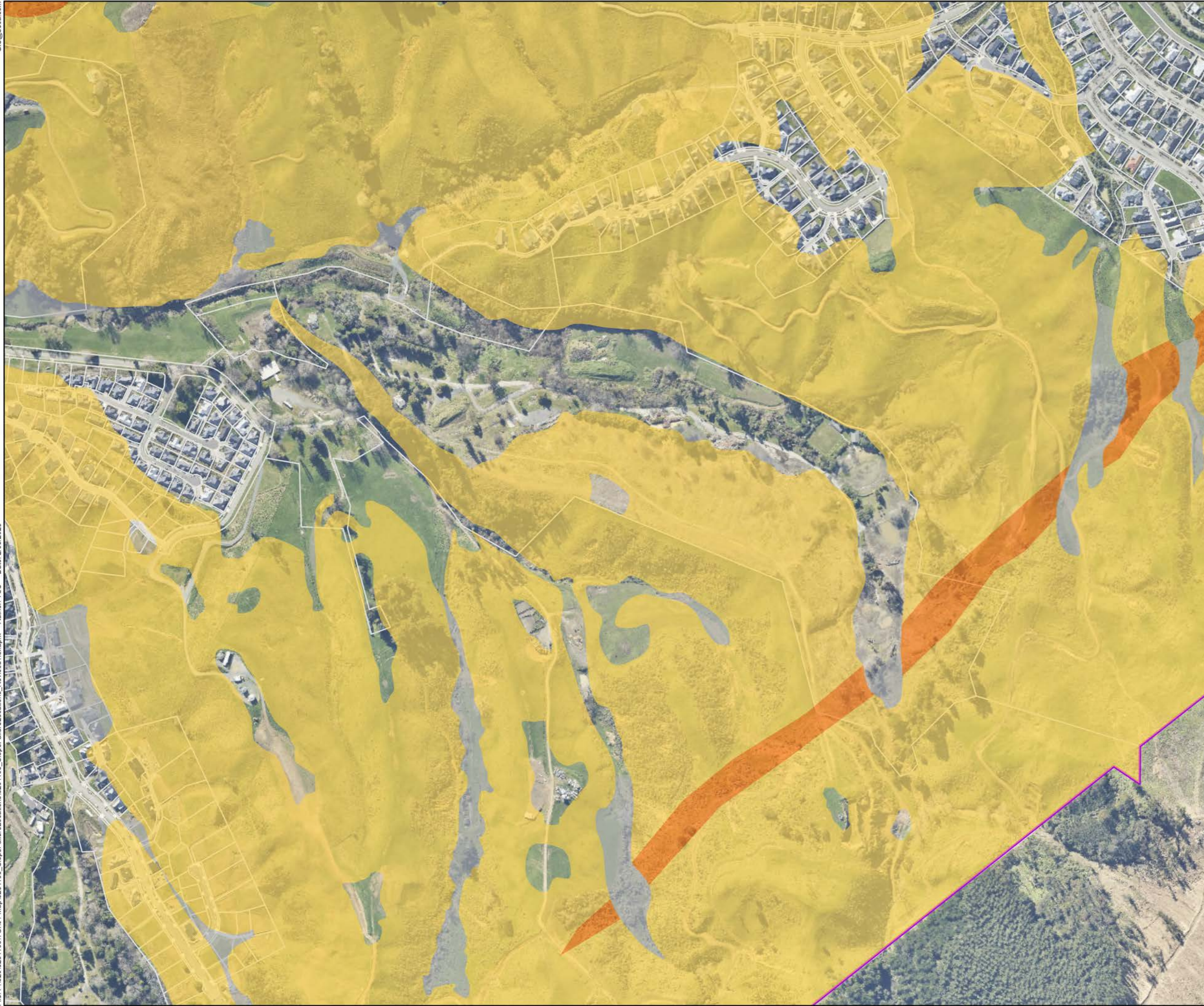
Revision	Author	Verified	Approved	Date
3	TCS	BDJ	PJH	02/05/2023
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1	TCS	BDJ	PJH	04/04/2023



Client:	<b>Nelson City Council</b>	Discipline:	<b>GIS</b>
Project:	<b>NCC Slope Instability Overlay Post-August 2022 Review</b>	Drawing No:	<b>GIS-3201163-03-M2</b>



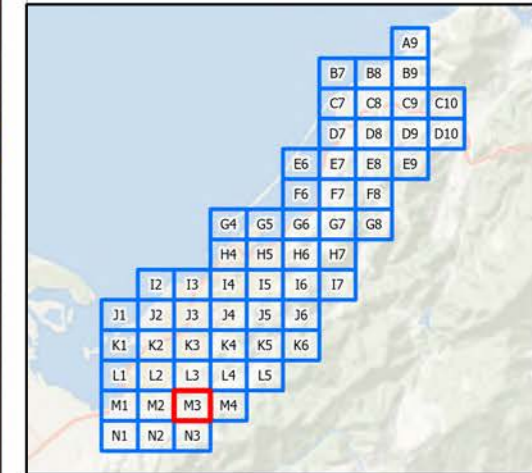




# Nelson Slope Instability Susceptibility Areas

## Legend

- Study Area
  - NZ Property Titles
  - Areas potentially susceptible to slope instability
    - Slope Susceptibility Tier I
    - Slope Susceptibility Tier II
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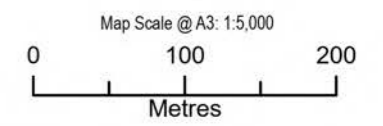


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Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-M3**







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 GIS@beca.com

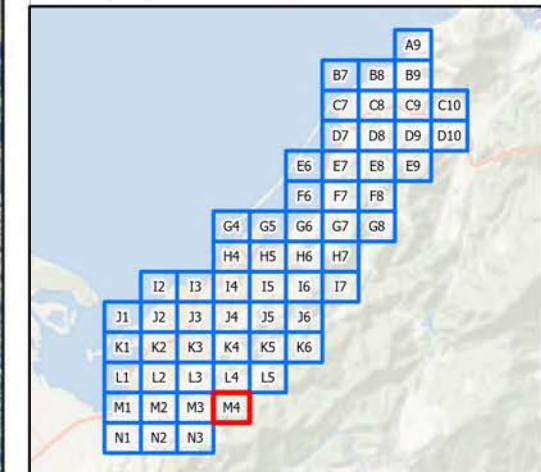
## Nelson Slope Instability Susceptibility Areas

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### Legend

- Study Area
- NZ Property Titles
- Areas potentially susceptible to slope instability
- Slope Susceptibility Tier I
- Slope Susceptibility Tier II
- Slope Susceptibility Tier III
- Areas Susceptible to Debris Run-out
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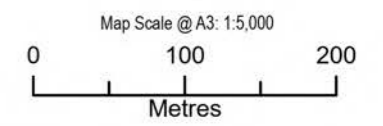


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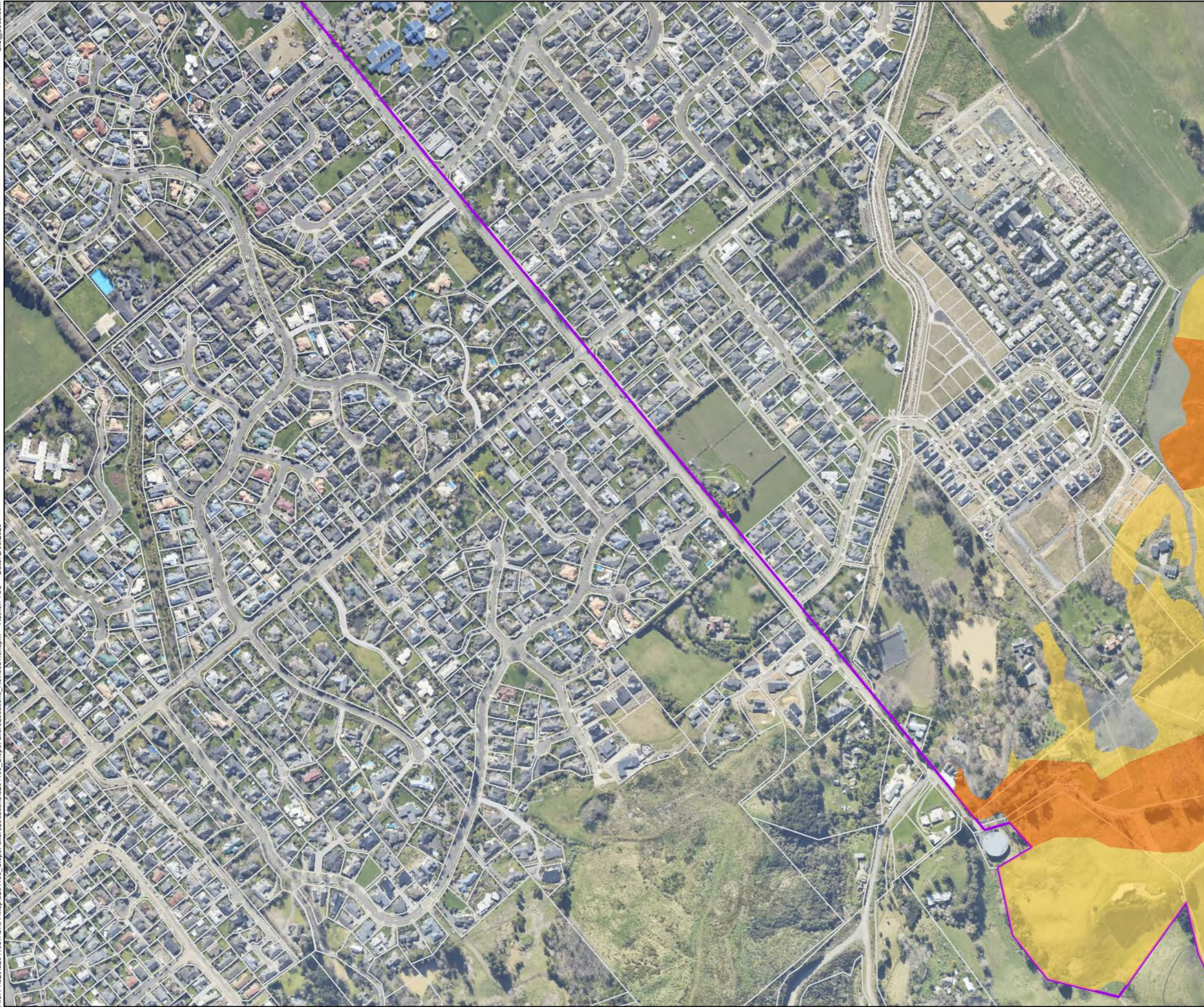


Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-M4**







# Nelson Slope Instability Susceptibility Areas

## Legend

- Study Area
  - NZ Property Titles
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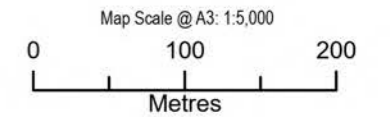


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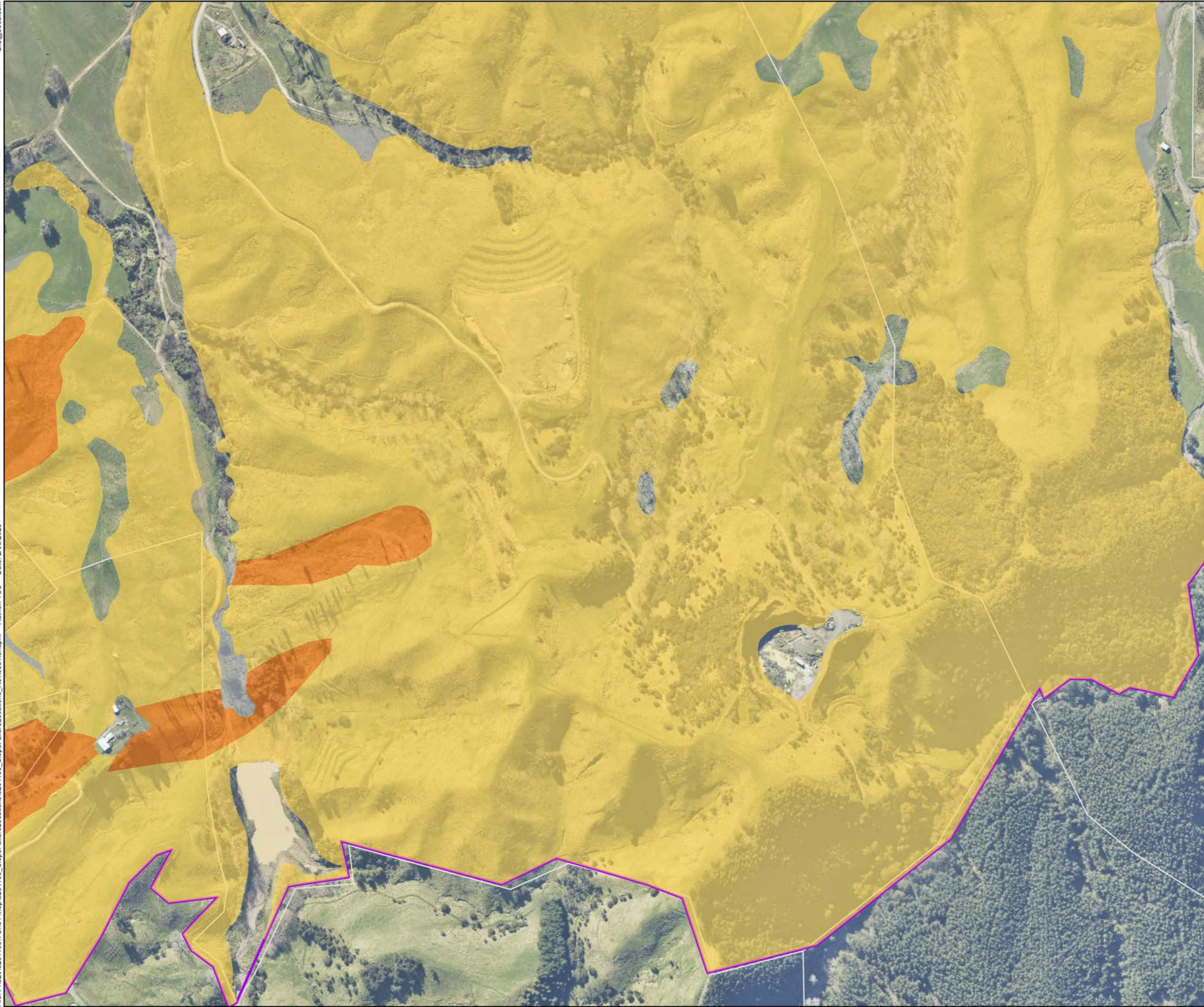


Client: **Nelson City Council** Discipline: **GIS**

Project: **NCC Slope Instability Overlay Post-August 2022 Review** Drawing No: **GIS-3201163-03-N1**





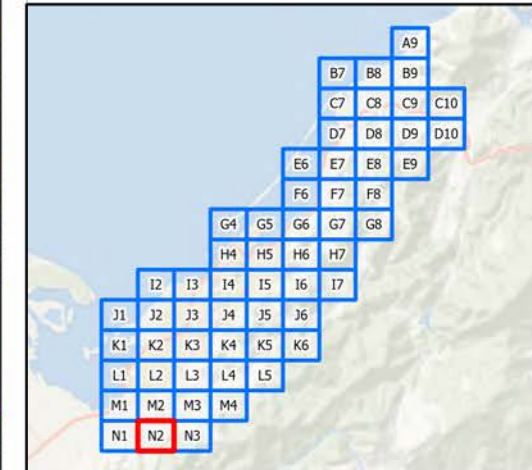


# Nelson Slope Instability Susceptibility Areas

## Legend

- Study Area
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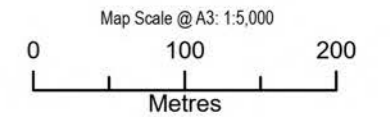


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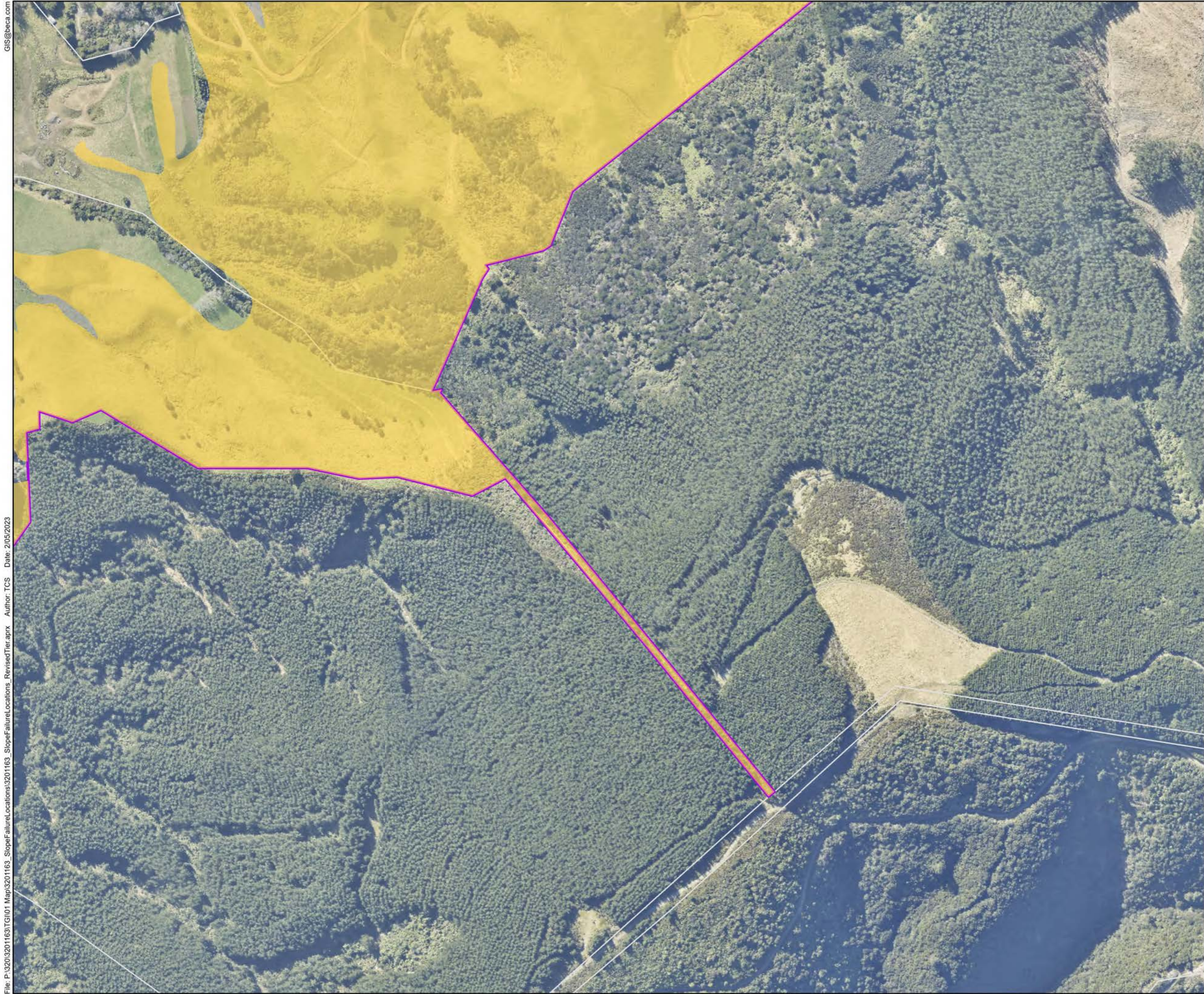
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Client:	<b>Nelson City Council</b>	Discipline:	<b>GIS</b>
Project:	<b>NCC Slope Instability Overlay Post-August 2022 Review</b>	Drawing No:	<b>GIS-3201163-03-N2</b>





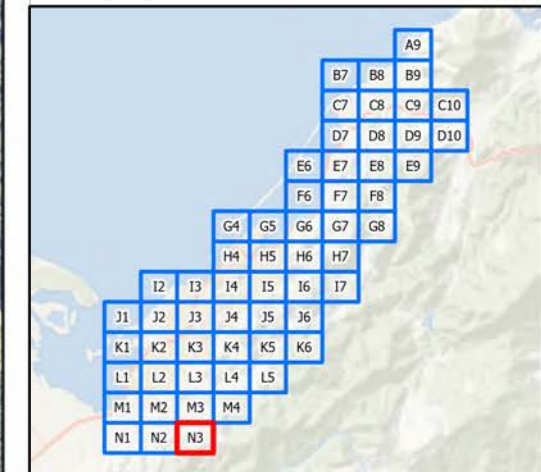


# Nelson Slope Instability Susceptibility Areas

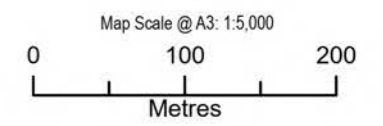
## Legend

- Study Area
- NZ Property Titles
- Areas potentially susceptible to slope instability
- Slope Susceptibility Tier I
- Slope Susceptibility Tier II
- Slope Susceptibility Tier III
- Areas Susceptible to Debris Run-out
- Revised Areas

For full definitions of the tiers of slope instability, please refer to Beca report 'NCC Slope Instability Overlay Report' 3201163-349031543-880.



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