Revised Nelson Fault Deformation Overlay

Prepared for Nelson City Council
Prepared by Beca Limited

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Revision History

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Definitions

Fault – A fault is a fracture in the earth's crust. Faults allow blocks of ground on either side to move relative to each other. These are often delineated by a line drawn on a map.

Fault deformation – Buckling or creasing of the ground surface due to fault movement.

Fault rupture – Ripping or tearing of the ground surface following movement on a fault.

Fault zone – The three-dimensional network of interconnected fractures and sheared rock representing the surficial expression of a fault caused by past movement. The fault zone can vary in width along the length of a fault and is often represented as a line or strip on a map.

Anticipated fault deformation width – The area around a fault on the ground surface where fault deformation or rupture is anticipated to occur following *future* movement on a fault. This incorporates the fault and fault zone.

Fault deformation overlay – Identifies a zone on the ground surface where fault deformation or fault rupture could potentially occur if there is future movement on a fault. The location of where this deformation or rupture would occur within the overlay is dependent on anticipated fault deformation width, dataset accuracy and fault location confidence. In this report, the overlay incorporates the fault, the fault zone, fault deformation and the anticipated fault deformation width/fault rupture.

LiDAR – Light detection and ranging.

Metadata – data that describes other data, providing a structured reference that helps to sort and identify attributes of the information it describes.

Set-back – The minimum distance measured from a fault/fault zone to a proposed development.

The term fault deformation overlay replaces the term's fault hazard overlay, fault hazard overlay and fault rupture overlay used in previous NCC fault hazard studies.

Figure 1 and 2 demonstrate these definitions.

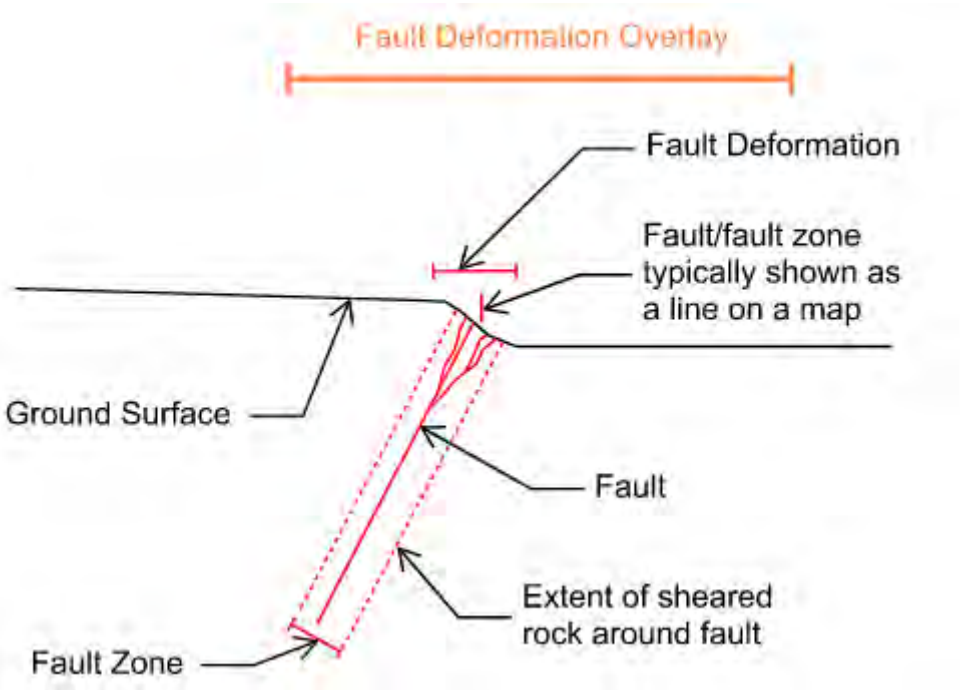

Figure 1: Typical cross section through a fault zone.

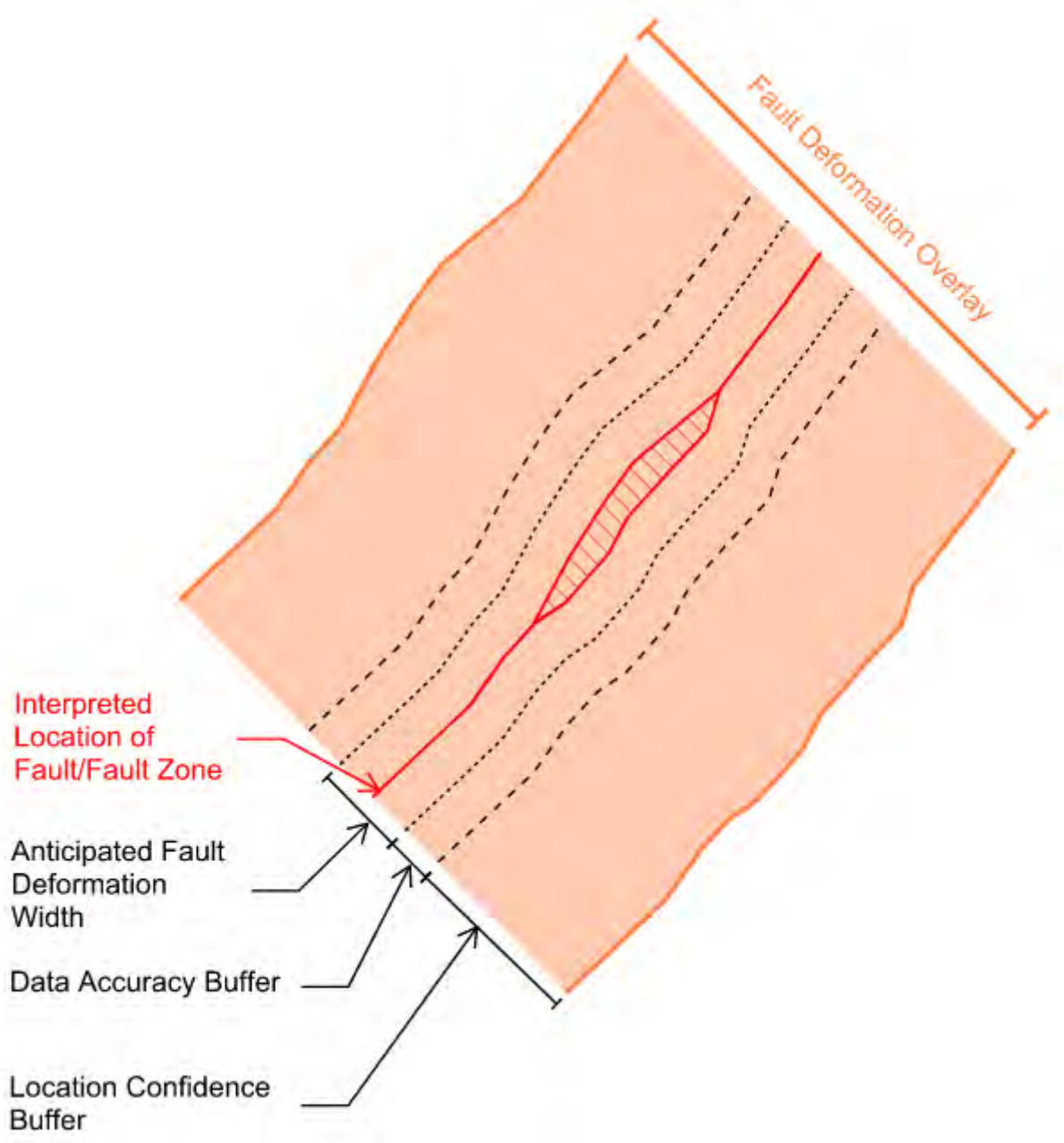

Figure 2: Plan view of fault deformation overlay.

Executive Summary

Beca Ltd has been commissioned by the Nelson City Council (NCC) to revise the existing fault rupture overlays in the Nelson Region to reflect the current knowledge of fault locations. The purpose of the overlays is to identify where faults could potentially deform or rupture the ground surface to inform requirement for additional geotechnical assessment. Such assessment (by suitably qualified geo-professionals) is to define the fault's location, provide expert opinion on whether development of land close to the faults should occur and advise any additional constraints or measures to be considered.

For the purposes of this report, we have replaced the terms 'fault hazard overlay', 'fault hazard corridor' and 'fault rupture corridor' previously adopted by NCC with 'fault deformation overlay'. The fault deformation overlay represents the surface extent of deformation or ground rupture that may occur due to future movement on a fault.

The faults considered in this study include Flaxmore, Waimea, Eighty-Eight, Jenkins, Whangamoa, Bishopdale, Grampian and Hira Faults. These faults are reactivated reverse faults with vertical uplift on their eastern sides and have limited horizontal displacements. Previous exposures of the Flaxmore and Waimea fault zones show the typical zone of fault deformation is up to 5m either side of a fault with a maximum fault deformation width of 9m observed in fault trenches.

The revisions to the fault deformation overlays have been completed in a geographic information system (GIS) where datasets were loaded into a geospatial database. The revisions have followed Step 1 and 2 of the Ministry for the Environment (MfE) guidelines on 'Planning for Development of Land on or Close to Active Faults' (Kerr et al. 2003), a risk-based planning approach. Revisions to the fault deformation overlay were completed using the different datasets to constrain the location of faults. Sources include existing NCC consent data (where provided), geological field mapping, hill-shade model and contours, historic aerial imagery, New Zealand Geotechnical Database (NZGD) and published geological maps. An anticipated fault deformation width was then defined, and allowance for the dataset accuracy was applied. A buffer zone was then applied to the fault based on engineering judgement and confidence in the fault's location. The scale of the mapping completed was typically 1:5,000 to 1:10,000.

Sections of the revised fault deformation overlays where the fault is less defined (as presented in Appendix A) can be addressed using two options. Option 1 would involve having two separate types of the fault deformation overlay, one showing the revised fault deformation overlay, and the other showing less well-defined Fault Awareness Areas with appropriate rules for each area. Option 2 would involve continuing with a single fault deformation overlay but have separate rules relating to the specific sections of the revised overlays that are less defined, similar to the current rules that apply between Seymour Avenue and Cambria Street.

Based on the revisions to the fault deformation overlay, we have made suggestions as to potential wording of rules that could be applied to the overlay. These rules could include keeping continuity of the terms used to describe faults, refinement of the 5m set-back rule to clarify where the 5m is taken from and adjusting the wording of the rules based on the preference for Option 1 or 2.

1 Introduction and Scope

Beca Ltd has been commissioned by the Nelson City Council (NCC) to revise the existing fault rupture overlays using industry practice to reflect the current knowledge of fault locations in the region. The purpose of the overlays is to identify areas of potential fault rupture or deformation that may require additional assessment when developing land on or close to known active faults. This report summarises the methodology and revisions completed to the existing fault rupture overlay, as outlined in the service order dated 27 May 2021. Our scope is described below:

- Updating the fault rupture overlays for the Flaxmore, Waimea, Eighty-Eight, Jenkins, Whangamoa, Bishopdale, Grampian and Hira Faults. Areas identified as requiring updating were presented in Table 4.1 of Beca, 2021.
- Review the existing fault rupture overlay widths to assess whether they can be revised in places (some areas are currently 300m wide).
- Revise existing fault rupture overlays to be continuous.
- Provide a review on the Draft Nelson Plan fault rupture overlay rules based on nearby New Zealand council's examples and on international practice.

For the purposes of this report, we have renamed the 'fault hazard overlay', 'fault hazard corridor' and 'fault rupture corridor' to the 'fault deformation overlay' as this better describes the way a fault may deform the ground surface following an earthquake.

2 Faulting in the Nelson region

The Waimea-Flaxmore Fault System (WFFS) extends from St Arnaud at Lake Rotoiti in the south, through to the Whangamoa Valley and Nelson Ranges to the north and then offshore to beyond D'Urville Island. The major faults of the WFFS are generally north east striking, south east dipping reverse faults. The region is currently under east-west compression resulting in uplift of the Port Hills, Grampians, and Barnicoat Ranges by this fault system. The Hira, Grampian and Bishopdale faults are generally east-west striking short faults that connect between the Flaxmore and Waimea Faults. The Bishopdale, Flaxmore and Whangamoa Faults have segments with surface traces (i.e., visible on the ground) due to recent (Holocene) movement.

The faults have a reverse sense of movement, consistent with reverse reactivation of normal faults that occurred approximately 19-20 million years ago (Ghisetti, Johnston & Wopereis, 2019). These faults have mainly vertical displacements, with some evidence of minor horizontal movement on the Flaxmore Fault at Bishopdale (Ghisetti, Johnston & Wopereis, 2019). Because of the tectonic history of the region, the majority of the faults (with the exception of the Bishopdale and the Whangamoa Faults) have different geological units on either side. This change in lithology allows the location of these faults to be constrained.

3 Methodology

3.1 General

As discussed in Beca, 2021, NCC have adopted Step 1 and 2 of the Ministry for the Environment (MfE) guidelines on 'Planning for Development of Land on or Close to Active Faults' (Kerr et al. 2003), Risk Based planning approach. This involves identifying active faults in the region and creating fault avoidance zones around these faults (or fault deformation overlays as now referred to). NCC have addressed the other steps

in the MfE risk-based approach by adopting a regulatory approach. This is achieved by applying rules around activities that require consent within the existing fault rupture overlay in their Nelson Resource Management Plan (NRMP).

Work completed by Johnston and Nicol, 2013 and later updated by Johnston, 2019, identified the active faults or potentially active faults near urban areas in the region that were assessed to require fault avoidance zones and are included in the existing fault rupture overlay. The faults that are included in the existing fault rupture overlays are shown in Figure 3. We have reviewed the inclusion of these faults in the revised fault deformation overlay and agree that they should remain. This report and its appendices present revised fault deformation overlays.

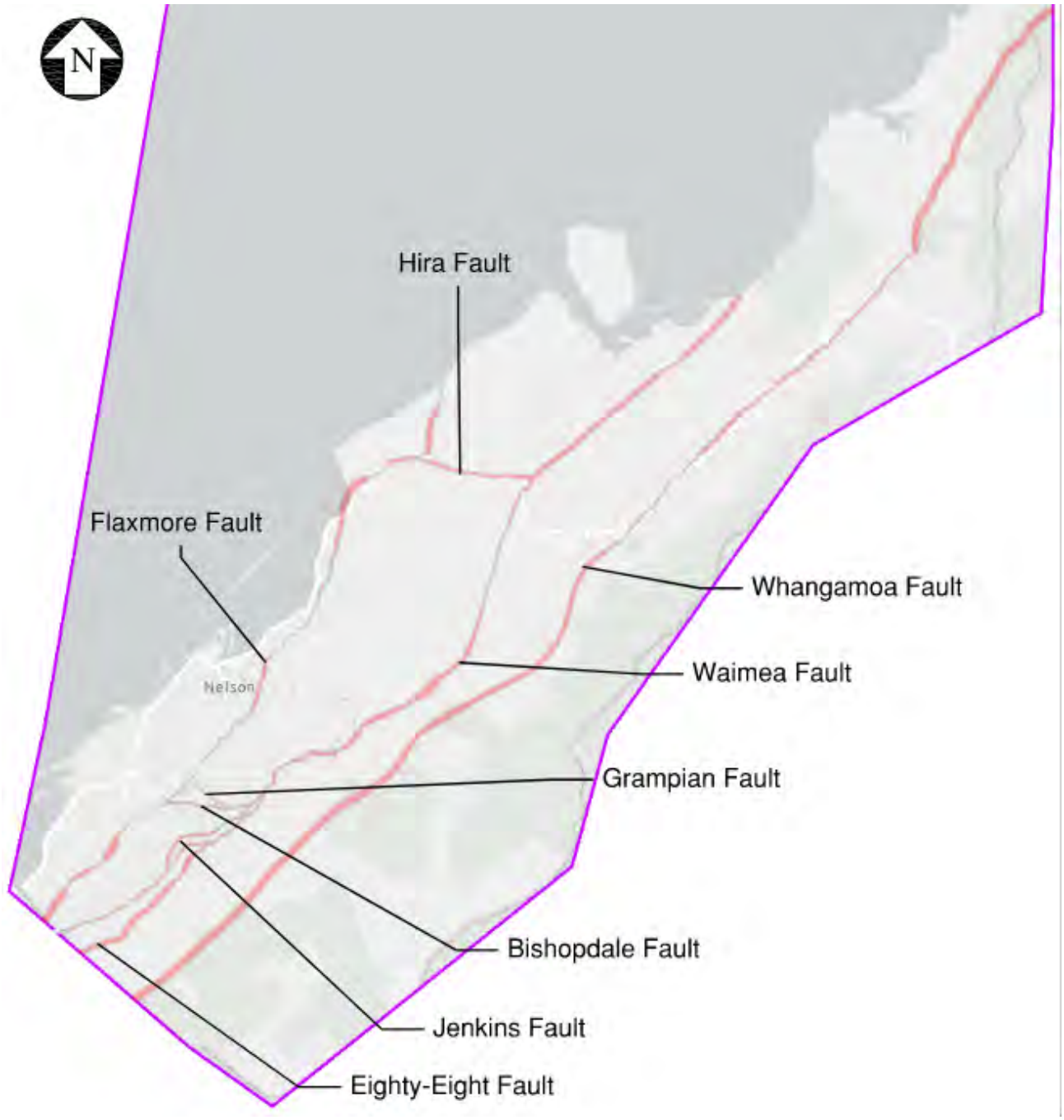

Figure 3: Existing faults included in the revised fault deformation overlay.

The Tahunanui Fault is excluded from the fault deformation overlay provided in this report. This fault is inferred to exist along the western toe of the Tahunanui Hills, however its location is poorly defined and there

is insufficient data available to justify including it in the list of faults warranting a fault deformation overlay in the Nelson Plan.

3.1.1 Fault Deformation Overlay Revision Process

The fault deformation overlays were created in geographic information system (GIS) software, ArcGIS Pro. Revisions required to the existing fault rupture overlay were completed using the different datasets available (described below) to constrain the location of the fault in a particular area. The anticipated fault deformation width was then defined, and allowance for the dataset accuracy was applied. A buffer zone was then applied to the fault based on engineering judgement, confidence of the fault's location and information constraining its location to derive the revised fault deformation overlays.

3.2 Data Sets Used for Fault Deformation Overlay Revisions

3.2.1 Existing Nelson Resource Consent Data

NCC provided Beca with information held by NCC on properties that had submitted consent documents potentially containing information related to the existing fault rupture overlay. Some of the documents held information on specific properties where a fault had been physically located, as required by the current Nelson Resource Management Plan (NRMP) rules. Others contained geotechnical investigations or geological information that potentially constrained the location of a fault. The available documents were reviewed and assessed to determine whether refinement of the existing fault rupture overlay could be completed where not previously refined by Johnston, 2019.

The limitations of this dataset are that the documents were typically property specific with limited spatial cover. Also, there were a number of records where no geotechnical reports were available.

3.2.2 Field Mapping of Faults and Geology Outcrops

Beca staff have completed geotechnical investigations and geological mapping within the Nelson region in the past and this local knowledge was used to constrain the locations of faults.

Geotechnical investigations and/or geologic mapping identifies the different geological units (lithologies) in the region and as previously discussed, these lithologies are typically separated by a fault. This allows the location of the fault to be constrained. This in combination with geomorphic evidence on the ground surface and topographic changes allow fault locations to be constrained.

3.2.3 Hill-Shade Model and Digital Elevation model (DEM)

A hill-shade model derived from the digital elevation model (DEM) with 1m resolution and 2m elevation contours was used to constrain fault locations. When reviewing the hill-shade model and contours, the location of a fault can be constrained if it has recently ruptured or deformed the ground surface and the ground surface has not been significantly altered by recent activities such as land development, infrastructure, and farming. Some of the landforms remain evident in the hill-shade model and where present (in areas requiring revision), these have been used to constrain the location of the faults.

The DEM and subsequent hill-shade models were generated from LiDAR flown between 2008-2015.

Some limitations of this data include:

(i) the accuracy of the models may be impacted by vegetation cover and;

(ii) subtle topographic variation may be difficult to observe due to aspect, shading, and overall relief of the slope.

3.2.4 Historic Aerial Photography

We reviewed aerial photography from 2020, 1940's, 1970's and 1980's to help constrain the location of some faults. The historic imagery shows the land prior to anthropogenic alteration where evidence of fault deformation can be observed. We did not carry out stereoscopic review of these photographs.

Limitations associated with use of historic aerial imagery can include difficultly locating features in black and white imagery and also the extents of identifiable fault features do not always align with features identified in other datasets (i.e., hill-shade models). Also, the process of georeferencing the aerial photography will have minor inaccuracies associated with it. These inaccuracies have been included in the dataset accuracy buffer described in section 3.3.3.

3.2.5 New Zealand Geotechnical Database (NZGD)

Publicly available geotechnical investigation data on the New Zealand Geotechnical Database (NZGD) was reviewed when completed in close proximity to faults within the region. Where these geotechnical investigations constrained the location of a fault, this was used to revise the fault deformation overlay.

The limitation associated with the investigation data is its reliance on the interpretation by other geo-professional of the geological units or fault zone encountered and also the accuracy of positioning (often hand GPS was used to locate these which typically have an accuracy of ±5m).

3.2.6 Published Geological Maps

We reviewed the recently revised Nelson Urban Geological map by Johnston, Ghisetti and Wopereis, 2021; the regional 1:250,000 Geological Map by Rattenbury et al. 1998 (QMap), the Dun Mountain 1:50,000 Geological Map by Johnston, 1981 and the Rai Valley 1:50,000 geological map by Johnston 1993. Scale is important when completing fault mapping. In regard to building on or adjacent to active faults, particularly in developed and developing areas, it is not appropriate to use features mapped at scales of 1:50,000 (or larger) to create fault deformation overlays, because the location of the actual fault is not considered accurate enough. In the absence of conclusive evidence or where considerable uncertainty of specific fault locations exist, we have digitised the line displaying the fault from these maps or used engineering judgement based on the datasets available and applied a buffer to these areas based on the inherent uncertainty of the fault location.

3.3 Creating the Revised Fault Deformation Overlay

The following steps were followed to revise the fault deformation overlay.

3.3.1 Step 1: Fault Location

In areas requiring revisions, the location of the fault/fault zone at the ground surface was interpreted based on the respective dataset (described in section 3.2) used. The line depicting the location of the fault/fault zone within the deformation overlays have not been presented in the outputs for this report. These lines have been excluded as the intention is to identify that the fault is located within this overlay and that this fault could potentially deform or rupture the ground surface somewhere within this overlay. The overlay is to inform the requirement for additional geotechnical assessment (by suitably qualified geo-professionals) to define the faults location and plan safe development of land close to the faults.

3.3.2 Step 2: Anticipated Fault Deformation Widths

The faults related to this study are typically well defined with limited geographic fault deformation as defined in the MfE guidance (Kerr et al. 2003). Based on in-house knowledge of exposures of the Flaxmore, Waimea and Bishopdale faults, the typical zone where fault deformation could occur (including the fault zone) is up to 5m either side of a fault, typically with more deformation on the downthrown side of the fault where 'softer'

rock is present. Investigations of the Flaxmore Fault at Bishopdale has identified a zone where deformation could occur of up to 9m. Based on this evidence, a 5m buffer either side of the interpreted fault location has been applied. This results in an anticipated fault deformation width of approximately 10m.

3.3.3 Step 3: Dataset Accuracy

The line delineating the interpreted location of a fault has been created in the GIS based on the respected dataset used. Those datasets have minor inaccuracy associated with them caused by georeferencing, geographic coordinate variations and inherent inaccuracies associated with map resolution. This will cause minor variations in the actual fault locations identified (typically accurate to ± 5m). Field mapping and outcrop data collected by Beca staff in the past that has been used on this project has been digitised into the GIS. There will be inherent inaccuracies associated with this data from the physical locations plotted on the plan through to the manual transfer of this data from maps into the GIS. The accuracy of this field mapping and outcrop data is expected to be similar to the other inaccuracies presented in the digital data (i.e., ± 5m). We have therefore applied a further ±5m buffer to the anticipated fault deformation width of each fault to account for dataset inaccuracies.

3.3.4 Step 4: Fault Location Confidence and Set-Back Distance

The confidence we have in the actual location of the fault, based on the datasets used is the biggest driver of the width of the fault deformation overlay. The confidence in fault location can be seen as a spectrum depending on the quality and density of information used. Where finding the physical location of a fault is the most accurate, digitising the centre line of a fault based on the line presented on a geological map is the least accurate. Table 1 summarises the confidence of the fault location based on the information used and makes allowance for the dataset accuracy, capturing uncertainty described above.

Table 1: Summary of Revised Fault Deformation Overlay Widths

Information source	Description	Location Confidence*	Anticipated Fault Deformation Width	Revised Fault Deformation Overlay Widths
Published Geological Maps/Areas of less defined fault location	Inferred location of fault defined by line drawn on geological map or location of the fault is uncertain	± 70-120m	± 5m	150-250m
Hill-shade model/ contours and aerial imagery	Fault location based on surface expression of fault or short connecting segments of defined fault location	± 25-35m	± 5m	60-80m
Field mapping and NZGD information	Fault location based on detailed fault mapping and outcrops or geology/fault zones constrained by geotechnical investigations	± 10-45m**	± 5m	30-100m
Physical location of the fault	Fault location based on detailed surveying and physical location of the fault by trenching/ investigations	± 5m***	± 5m	20m

Notes:
* Location confidence includes the ±5m data accuracy buffer of dataset and the 20m set-back (where applicable).

** Field mapping location confidence is a width range based on density of outcrops mapped constraining the fault location.
*** No 20m set-back applied as physical location identified, dataset accuracy and fault deformation width applied only.

The MfE guidance says that a minimum buffer zone of 20m either side of a known fault or fault deformation should be applied but acknowledges that where detailed fault studies have been completed that show fault deformation is less extensive than 20m, this zone may be reduced.

Where a fault is physically located, the confidence we have in its location is high. Evidence from fault trenching has revealed that the reverse faults in the Nelson Region have narrower fault deformation widths than strike slip or normal faults, which generally have wider fault zone widths in other parts of New Zealand. Therefore, revised fault deformation overlay widths have been applied that consider the location confidence and the anticipated fault deformation width with no 20m set-back distance applied, as physical location of the fault is considered as a detailed fault study under the MfE guidance.

Where field mapping/geological outcrops and NZGD investigations have been completed, there are areas where a fault location has been constrained well by closely spaced outcrops (high density) of different geology either side of a fault and others where outcrop locations are wider spaced (low density) or variations in topography have been used to constrain fault locations. In areas where the fault location is well constrained (high density data), we considered this a detailed fault study and therefore have narrower overlay widths. Where information is widely spaced (lower density data), the location confidence decreases, and therefore the overlays widen accordingly to account for the uncertainty.

Where the hill-shade/contours or aerial imagery have been used to define a fault's location, the level of confidence in its location varies depending on whether there is surface expression or whether this evidence has been removed or disturbed by recent natural or anthropogenic activities/processes (i.e., farming/development or alluvial processes). Where the fault is well defined on the ground surface, the fault deformation width and minimum location confidence (including the 20m set-back either side of inferred fault location) has been applied. Where a fault's location is not apparent from the topography (e.g., under narrow alluvial valleys), the location confidence decreases, and overlay width widens accordingly to reflect the location uncertainty.

In areas where the revised fault deformation overlay widths change over short distances or connect with the existing fault rupture overlay, these have been merged into one another using engineering judgement and the confidence of the fault location using the available dataset.

3.3.5 Existing Fault Rupture Overlay

In areas where no new information was available to constrain a fault's location, the existing location and width of the existing fault rupture overlay remain unaltered from that presented in Johnston, 2019.

3.4 Less Defined Sections of Fault Deformation Overlay

There are some lengths of faults within the revised areas that are poorly defined or where there is significant uncertainty around the specific fault location. These sections typically occur where a fault is deeply buried beneath overlying soil, thick alluvium, or landslides, where no surface expression of the fault is observable on the ground surface or where the small-scale geological maps are the only available evidence of the fault's location. These less defined areas are typically where existing fault rupture overlays are being linked together or extended to create the now continuous fault deformation overlays. In these areas, we have digitised the central point of the line presented on the published geological map or used the available datasets to interpret a fault's location and a buffer has been applied that reflects the uncertainty. In these areas, we consider two options are available to address the uncertainty in the fault location.

3.4.1 Option 1: Fault Awareness Area (FAA)

Barrell et al. 2015 has described the use of Fault Awareness Areas (FAA) as presented below:

Fault mapping at between 1:35,000 and 1:250,000 scale is not detailed enough to delineate Fault Avoidance Zones around the faults, nor for directly applying the MfE Guidelines (Kerr, 2003) to manage the fault rupture hazard. For faults mapped at 1:35,000 to 1:250,000 scale, a Fault Awareness Area around the fault is recommended.

A Fault Awareness Area highlights that an active fault is known, or suspected, to be present, but existing mapping is not accurate enough to be sure of its exact location. In contrast, a Fault Avoidance Zone (as defined in the MfE guidelines) is based on fault mapping of sufficient detail and accuracy to justify the restriction of certain types of development within a well-defined area.

The intent of a Fault Awareness Area is that it is sufficiently large to encompass the full range of plausible locations of the active fault. This means that within a Fault Awareness Area, it is expected that some parts of the area may be subject to a fault rupture hazard, but other parts of the area will be away from the hazard. By itself, a Fault Awareness Area does not provide a defensible basis for controlling or restricting development, because the nature and extent of fault hazard is not specifically defined or documented. Rather, the Fault Awareness Area flags that there is a potential hazard to look for and provides a focus area where more detailed mapping and assessment could, if needed, be undertaken to define Fault Avoidance Zones.

FAAs have been used elsewhere in New Zealand in similar scenarios to that presented here. Table 2 describes how councils have used these FAAs elsewhere in New Zealand.

Table 2: Summary of FAA use for councils around NZ

Council	Use	Reference
Kaikōura District Council	Council have included these areas in their district plan review and have completed community engagement on these.	Litchfield et al. 2019
Manawatū District Council	Information on these areas have been released to the public and will likely be incorporated into the council's district plan.	Langridge & Morgenstern, 2019
Taupō District Council	These areas are in the process of being built into the council's district plan and council have held drop-in sessions with public to discuss these.	Litchfield et al. 2020

These FAAs are one way of communicating that a fault is present but is not located accurately enough to restrict certain activities. Although Barrell et al. 2015 discuss that no controls or restrictions should be applied to development in these FAAs, they do provide comment that some proposed activities within the FAAs should be restricted. NCC may consider it appropriate to keep these areas separate from the revised fault deformation overlays and apply specific rules similar to those already in place between Seymour Avenue and Cambria Street under REr.73.1 b. or have specific requirements for structures that have a Building Importance Category (BIC) of 2b, 3 or 4 as presented in Figure 4.

Building Importance Category (BIC)	Description	Examples
1	Structures presenting a low degree of hazard to life and other property	Structures with a total floor area of les than 30m^2 Farm buildings, isolated structures, towers in rural situations Fences, masts, walls, in-ground swimming pools
2a	Residential timber-framed construction	Timber framed single-story dwellings
2b	Normal structures and structures not in other categories	Timber framed houses of plan area of more than 300 m^2 Houses outside the scope of NZS 3604 "Timber Framed Buildings" Multi-occupancy residential, commercial (including shops), industrial, office and retailing buildings designed to accommodate less than 5000 people and also those less than 10,000 m^2 gross area. Public assembly buildings, theatres and cinemas of less than 1000 m^2 Car parking buildings
3	Structures that, **as a whole, may** contain people in crowds or contents of high value to the community or pose **risks to people in crowds**	Emergency medical and other emergency facilities not designated as post disaster facilities Buildings where more than 300 people can congregate in one area Buildings and facilities with primary school, secondary school or day care facilities with capacity greater than 250 Buildings and facilities with capacity greater than 500 for colleges or adult education facilities Health care facilities with a capacity of 50 or more residents but not having surgery or emergency treatment facilities Airport terminals, principal railway stations, with a capacity of more than 250 people Any occupancy with an occupancy load greater than 5000 Power generating facilities, water treatment and waste water treatment facilities and other public utilities not included in Importance Category 4 Buildings and facilities not included in Importance Category 4 containing hazardous materials capable of causing hazardous conditions that do not extend beyond the property boundaries
4	**Structures with special post disaster functions**	Buildings and facilities designated as essential facilities Buildings and facilities with special post-disaster function Medical emergency or surgical facilities Emergency service facilities such as fire, police stations and emergency vehicle garages Utilities required as backup for buildings and facilities of importance level 4 Designated emergency shelters Designated emergency centres and ancillary facilities Buildings and facilities containing hazardous materials capable of causing hazardous conditions that extend beyond the property boundaries.

Figure 4: Building Importance Categories (taken from Kerr et al. 2003).

3.4.2 Option 2: Existing allowance in NRMP for areas of less defined fault location

There is an existing rule in the active NRMP that addresses areas of less defined fault locations (where information is lacking or precisely locating the fault may be difficult such as, fault buried below recent alluvial sediments) but acknowledges that some restrictions to development should be applied. The rule says:

'no setback is required in the portion of the Fault Hazard Overlay between Seymour Avenue, and Cambria Street for any building used for residential purposes which are not more than 7.5m in height and designed for the permanent occupation of fewer than 20 persons'.

Including these less defined fault overlay areas within the revised fault deformation overlay with the same rules applied could be rolled over into the Draft Nelson Plan rules, however, specific wording describing the location of each of these relevant sections of the less defined overlay would need to be added.

3.5 Fault Deformation Overlay Revisions

The sections of the fault deformation overlay that have been revised are presented in Appendix A. These maps also present the existing fault rupture overlay where it remains unchanged, and the less defined sections of overlays as previously discussed.

Appendix B presents a comparison between the revised fault deformation overlay and the existing overlay.

Appendix C presents the specific changes completed to each of the existing fault rupture overlays during this revision.

4 Planning Considerations

4.1 5m set-back from identified fault locations

Table 3 describes the current set-back rules from a fault's location described by adjacent councils and some examples internationally.

Table 3: Set-back distances from faults used by neighbouring councils and internationally.

Council/location	Set-back distance from fault	Reference
Tasman District Council	20m for Alpine Fault, east of St Arnaud 10m for Waimea-Flaxmore Fault system between St Arnaud and east boundary of Richmond 5m for Waimea-Flaxmore Fault system north of Wairoa River	Tasman Resource Management Plan, refer section 18.13
Marlborough District Council	20m	Langridge and Ries, 2016
California	15m	Bray, 2009
Taiwan	10 - 20 times the net vertical displacement on the fault	Kelson, 2004

Based on our review of these set-back examples, it may be broadly acceptable to NCC to continue the application of the 5m set-back for development close to faults within the region, providing the 5m set-back is applied from the edge of the defined fault zone. The fault zone is located within the extents of the fault deformation overlay and will likely need to be located by a suitably qualified and experienced geotechnical engineer or engineering geologist. The minimum 5m set-back should be measured from the proposed finish ground level of the building foundation, where the fault zone is exposed or where the fault could project to the finished ground surface. This is particularly important in areas where fill is to be constructed above an identified fault, as the thickness of fill will affect where the fault could propagate to the finished ground surface. The offset should allow for this uncertainty and could potentially be based on the thickness of fill placed. The fault zone location should be identified and accurately measured (ideally to an accuracy of no less than ±500mm) and 5m set-back applied with a similar level of accuracy. If the fault zone has not been exposed/defined and only lithology has been used to constrain the fault's location, then the suitably qualified and experienced geotechnical engineer or engineering geologist will need to provide confidence that the

proposed development is located outside the fault zone, otherwise this setback should be increased to at least 10m from the point where the lithology was encountered.

4.2 General wording of rules

The wording within the rules may be updated to keep continuity of the terms used to describe a fault. This would likely involve changing the words, fault, fault trace or fault line to fault zone. Wording as described in section 4.1 may also be included. NCC may wish to include the following definitions of what fault zone and fault deformation overlay mean in the Draft Whakamahere Whakatū Nelson Plan:

> ***Fault zone*** *is the network of interconnected fractures representing the surficial extent of a fault. The fault zone includes the fault and the zone where clay filled shears and highly fractured rock are present that could deform/rupture or have sympathetic movement in an earthquake event. For the purposes of rule NH-R25, the precise location of a fault zone will have been determined by a suitably qualified and experienced geotechnical engineer or engineering geologist.*
>
> ***Fault deformation overlay i****dentifies a zone on the ground surface where fault deformation or fault rupture could potentially occur if there is future movement on a fault. The location of where this deformation or rupture would occur within the overlay is dependent on anticipated fault deformation width, dataset accuracy and fault location confidence. The overlay incorporates the fault, the fault zone, fault deformation and the anticipated fault deformation width/fault rupture that could occur if movement was to occur on a fault.*

Based on these definitions, NCC may consider adopting the below wording to incorporate into NH-R25 as follows:

Permitted

Erection, extension, or alteration of a building in the Fault Deformation Overlay is permitted provided the building is set back at least 5m from the fault zone when measured from the finished ground level of the building foundation.

No setback is required in the portion of the Fault Zone Overlay between Seymour Avenue and Cambria Street for any building used for residential purposes which are not more than 7.5m in height and designed for the permanent occupation of fewer than 20 persons [Review depending on option 1 or option 2 selection].

Restricted Discretionary

Activities that contravene a permitted condition are a restricted discretionary activity. Discretion restricted to hazard avoidance or mitigation measures (the application must be accompanied by a geotechnical assessment from a suitably qualified and experienced geotechnical engineer or engineering geologist). Resource consent applications for restricted discretionary activities will be considered without notification or obtaining the written consent of neighbours.

Once a decision is made on whether Option 1 or 2 is preferable to NCC for less defined sections of the overlay, then suitable wording should be incorporated into existing rules or new rules created to apply to these areas.

5 Recommendations

Based on the findings of this report it is recommended that the existing fault rupture overlays for Nelson Region be revised to the fault deformation overlay presented in Appendix A of this report.

Along sections of less defined fault deformation overlay NCC may wish to consider the following options:

- Option 1: Adopt the approach of having two separate areas of the fault deformation overlay, one showing the defined areas of the revised fault deformation overlay, and the other showing Fault Awareness Areas with appropriate rules for each area, or;
- Option 2: Continue with a single fault deformation overlay but have separate rules relating to the specific sections of the revised fault deformation overlays that are less defined, similar to the current rules applying between Seymour Avenue, and Cambria Street.

NCC may wish to review the proposed wording of NH-R25 rules presented in Section 4 and apply them to the Draft Whakamahere Whakatū Nelson Plan.

6 Assumptions and Limitations

The revisions to the fault deformation overlay have been revised based on current knowledge of the fault locations and datasets available at the time of the revision. Additional new information on fault locations may become available in the future or be held in internal records of local geo-professionals that were not available at the time of this revision. The revisions proposed in this report should therefore be considered a snapshot in time and further revisions may be required in the future when more information becomes available.

The overlays are not a replacement for site-specific assessments. Mapping of the fault rupture overlay was completed at a scale of:

(i) 1:5,000 to 1:10,000 where datasets allowed, or

(ii) smaller (i.e., 1:50,000 to 1:250,000) in areas where geological maps were used to assess a fault's location or where there is significant uncertainty in a fault's location (as described in Option 1 and 2).

It is intended that any subsequent application of the overlays is at a scale consistent with this.

Assumptions and limitations of our assessment are outlined below.

- This revision to the fault deformation overlay follows the MfE guidance as described in Step 1 and 2 presented in Kerr et al. 2003.
- The revisions are based on the datasets used in this assessment and as such are limited by these and their accuracy. Limitations of the datasets considered in our assessment are outlined in section 3.2.
- The accuracy in the location of the overlay is a function of the manual process by which mapping was completed, the scale at which mapping was conducted, and the accuracy of the datasets applied and current knowledge on the fault's location in the region or observations of a fault locations in the datasets used.
- Fault rupture during earthquakes along local active faults in the Nelson City area may result in regional land tilting (potentially affecting land drainage), uplift / subsidence, and large ground accelerations (including a high vertical acceleration) which could cause land instability and damage to structures across the wider Nelson region, beyond the fault deformation overlays.

7 Recommendations for Future Work

Additional work may be undertaken by NCC as a future exercise to refine the locations and extents of the fault deformation overlay.

7.1 Additional steps to verify areas of fault deformation overlay

The overlays set out in this report have been prepared from a desk study only. While we consider this appropriate for the intended regional planning purpose, further refinement of the fault deformation overlay could be completed as a future exercise from field mapping, ground investigations or obtaining new information from local geo-professionals. This step may be applicable for developed areas where limited information is currently available on the fault locations (i.e., sections identified as less defined sections of overlay in Appendix A).

7.2 Geo-referencing of geotechnical site plans where faulting investigations are undertaken

To assist in future revisions of the fault deformation overlays, Council may wish to request geo-referenced site plans accompany geotechnical reports where fault investigations are undertaken. This should include geo-referencing of the fault/fault zone, all fault trenches, test pits and boreholes.

Council may wish to have an appropriate rule(s) in the Nelson Plan that requires land developers or subdividers (and their geotechnical consultants) to provide these geo-referenced plans.

8 Acknowledgements

We acknowledge the assistance of Dr Mike Johnston a local geologist with expert knowledge of Nelson geology and faults in discussions with Beca staff regarding the location of the faults in Nelson urban area.

We also acknowledge and appreciate the input of the external reviewer of this report Mr Paul Denton of Geo-logic Limited. Paul is experienced in the geology and faults of Nelson urban area and he provided the peer review of the methodology used in this report on behalf of Nelson City Council.

9 Applicability

This report has been prepared by Beca on the specific instructions of our 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.

10 References

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A

Appendix A – Revised Nelson Fault Deformation Overlay Maps

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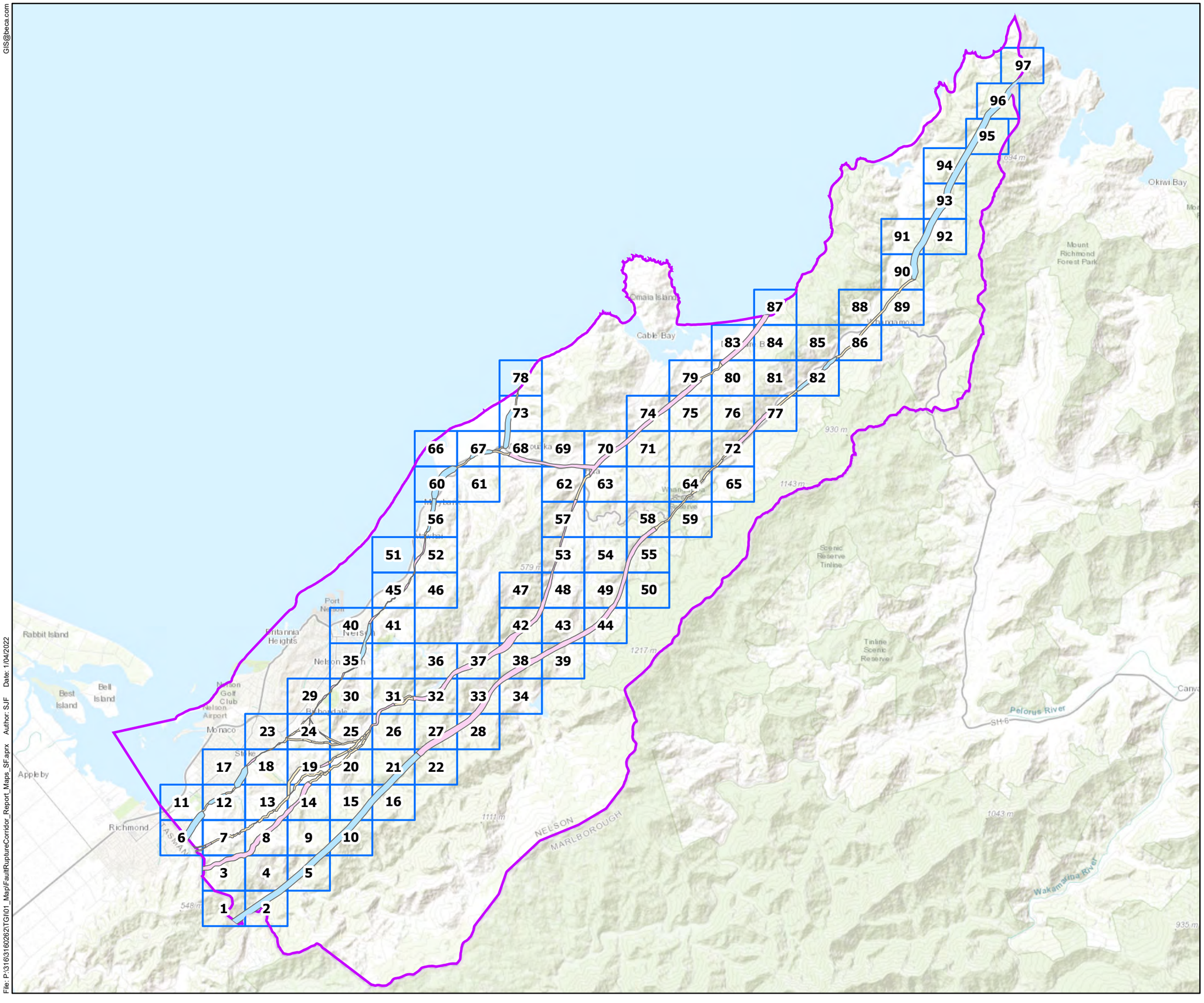

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Nelson City Council
Revised Fault Deformation Overlay

Overview Map 1

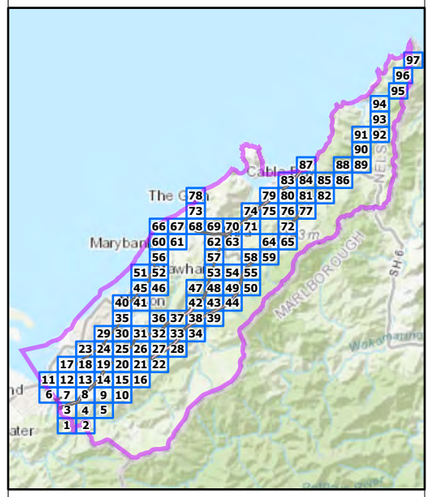
Legend

- Study Area

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



Map intended for distribution as a PDF document.
Scale may be incorrect when printed.
The updates to the fault deformation Overlay have been updated based on current knowledge of the faults location and datasets available at the time of the updates.
Datasets include existing Nelson Council Consent data (where provided), field mapping of faults and geology outcrops, hill-shade model and contours, historic aerial imagery, NZGD and published geological maps. Overlay was created based on engineering judgement, taking into consideration, anticipated deformation widths of faults, dataset accuracy and confidence on fault location.

This map contains data derived in part or wholly from sources other than Beca, and therefore, no representations or warranties are made by Beca as to the accuracy or completeness of this information.

Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:140,000

0 2,500 5,000

Metres

Revision	Author	Verified	Approved	Date
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4	SJF	BDJ2	DC	6/12/2021
3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

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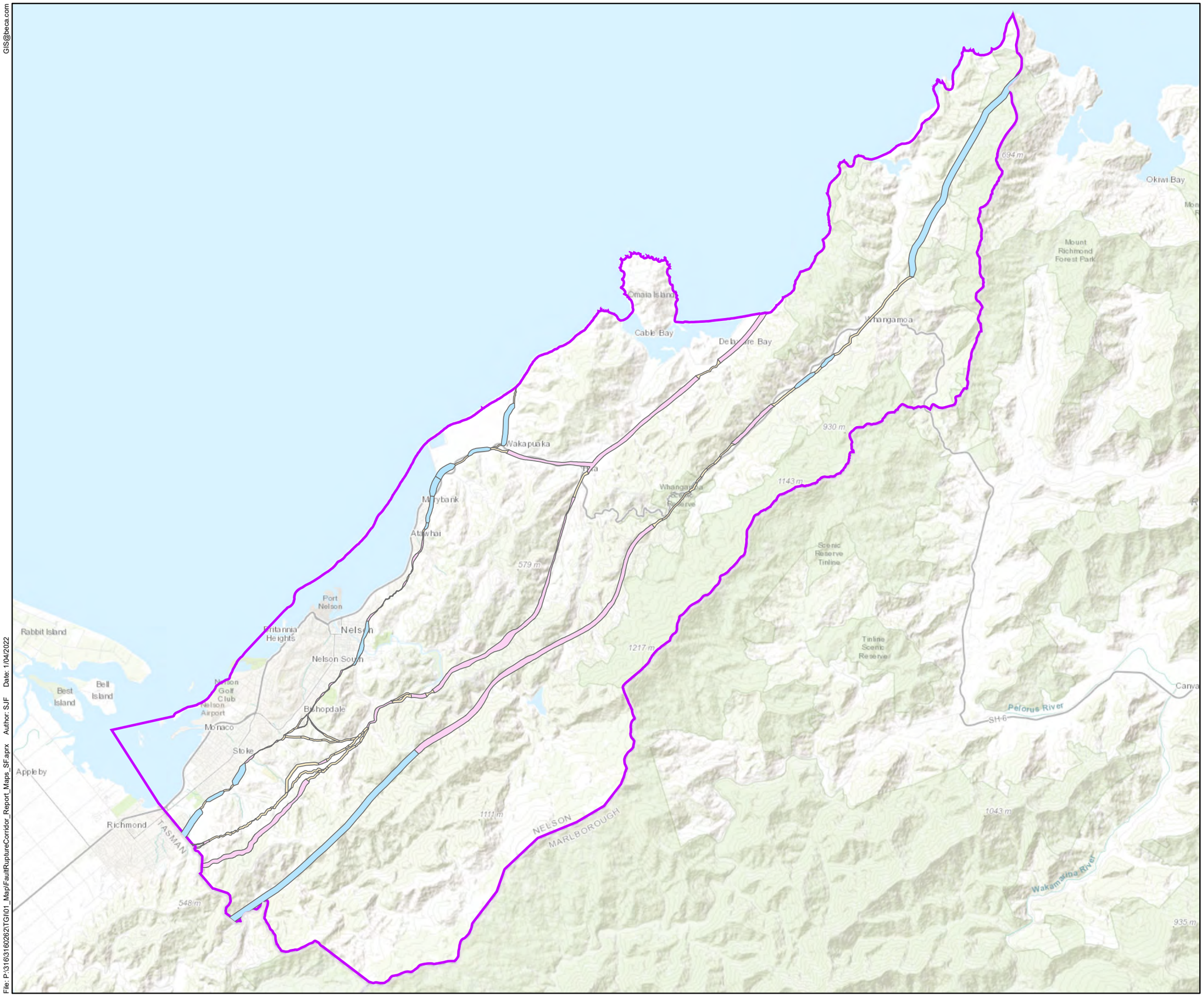
Client: **Nelson City Council**	*Discipline:* **GIS**
Project: **NCC Revised Fault Deformation Overlay**	*Drawing No:* **GIS-3160262-01**

Beca



GIS@beca.com

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Nelson City Council
Revised Fault Deformation Overlay

Overview Map 2

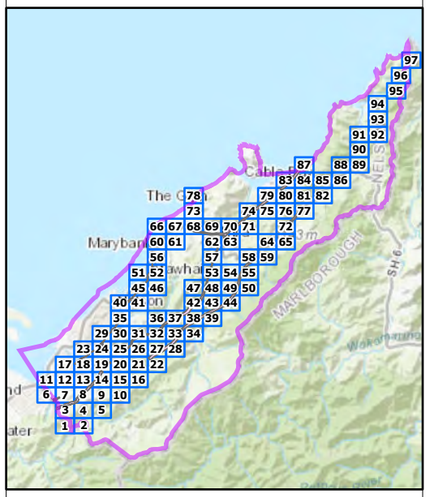
Legend

- Study Area

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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2	SJF	BDJ2	DC	07/07/2021

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Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-02**

Beca

Nelson City Council
Revised Fault Deformation Overlay

Map : 1 | Page 1 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
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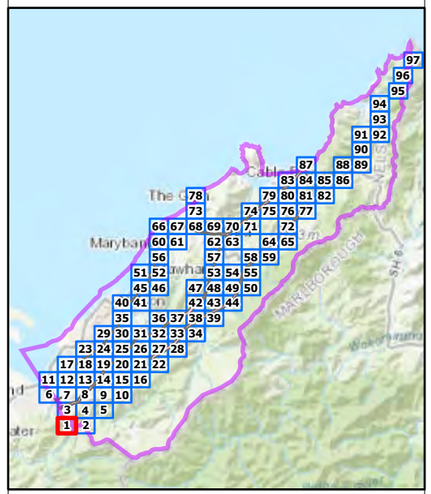

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Metres

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Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -1**

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Nelson City Council
Revised Fault Deformation Overlay

Map : 2 | Page 2 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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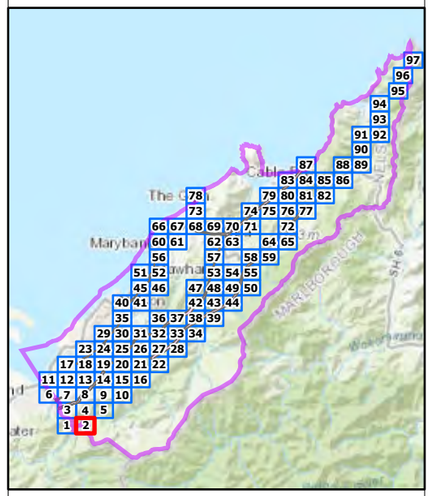

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Map Scale @ A3: 1:5,000

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Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -2**

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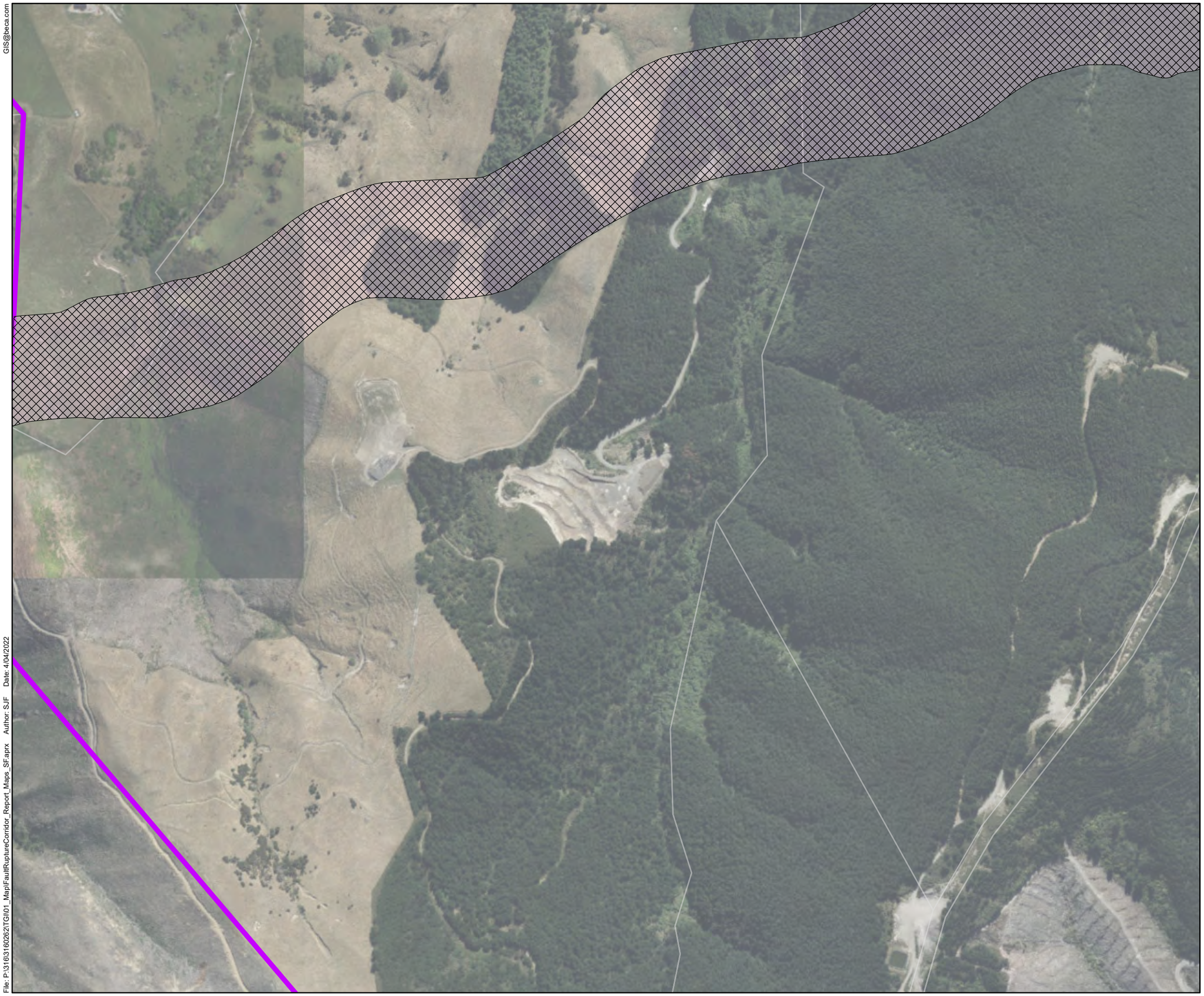

Nelson City Council
Revised Fault Deformation Overlay

Map : 3 | Page 3 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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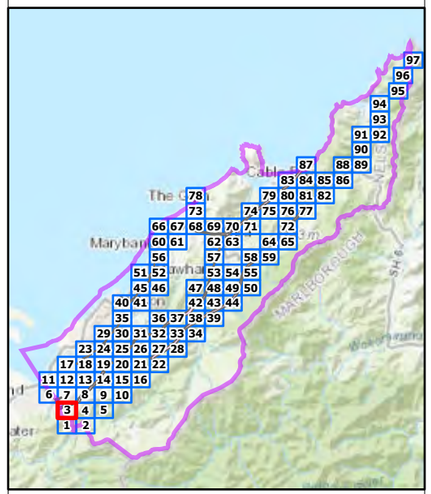

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Aerials sourced from Nelson City Council - Flown Sep 2020

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Metres

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Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -3**

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Nelson City Council
Revised Fault Deformation Overlay

Map : 4 | Page 4 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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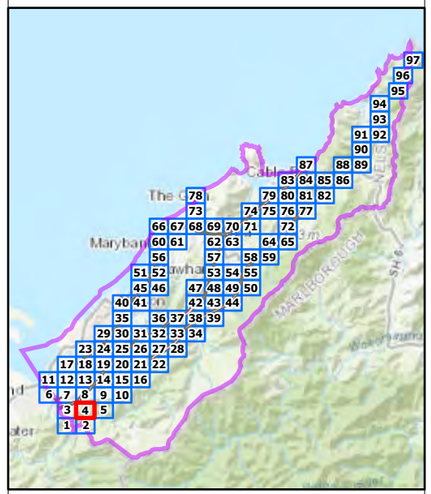

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Aerials sourced from Nelson City Council - Flown Sep 2020

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Metres

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Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -4**

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Nelson City Council
Revised Fault Deformation Overlay

Map : 5 | Page 5 of 97

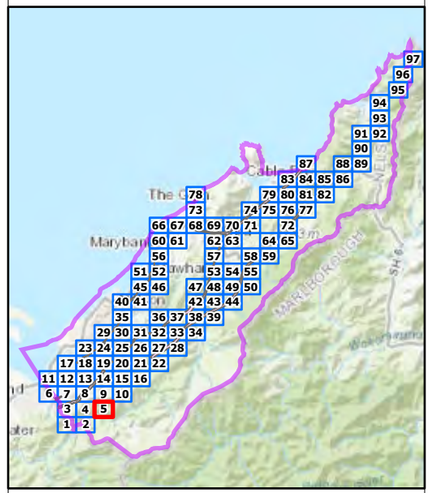
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200

Metres

Revision	Author	Verified	Approved	Date
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4	SJF	BDJ2	DC	6/12/2021
3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -5**

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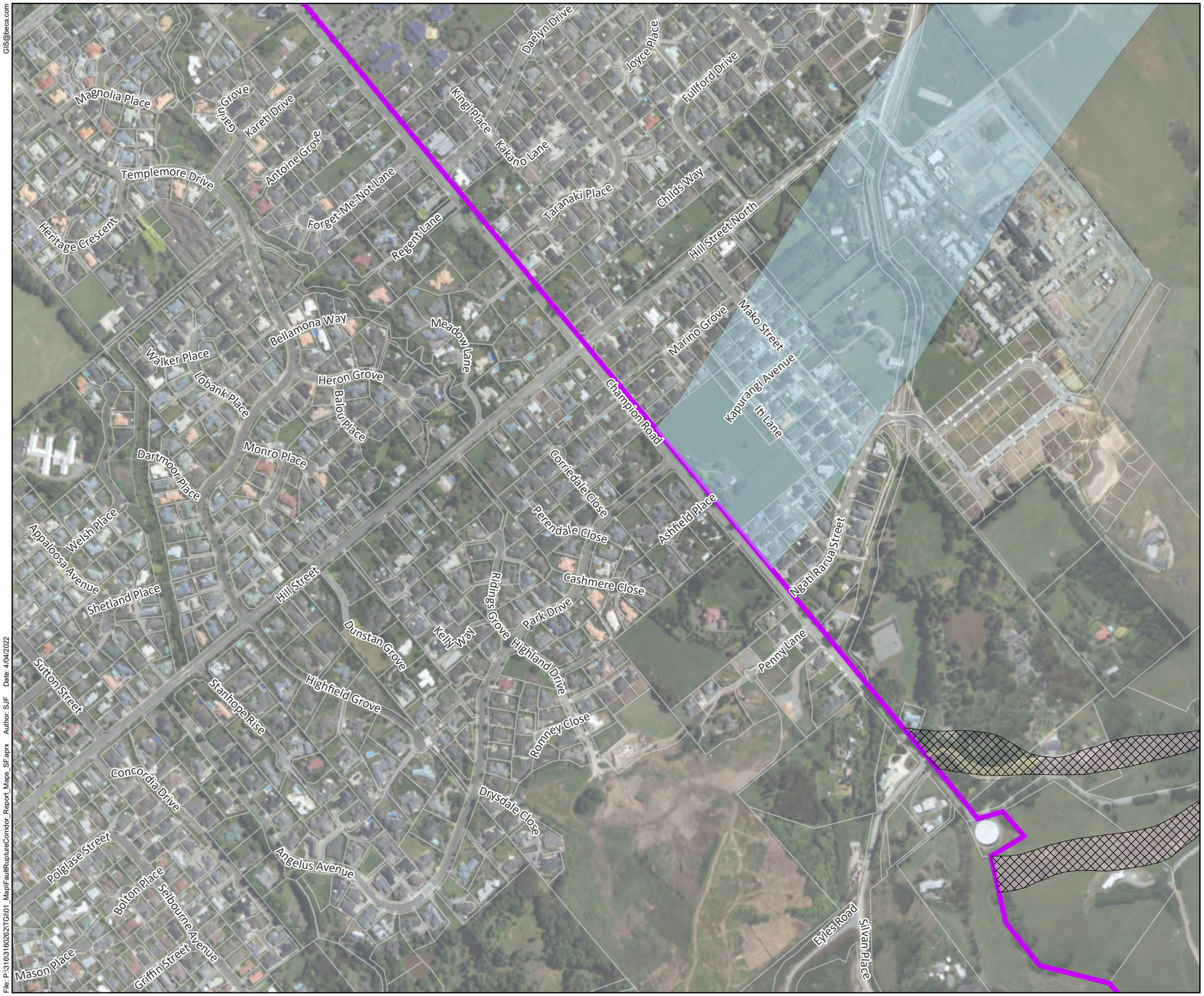

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Nelson City Council
Revised Fault Deformation Overlay

Map : 6	Page 6 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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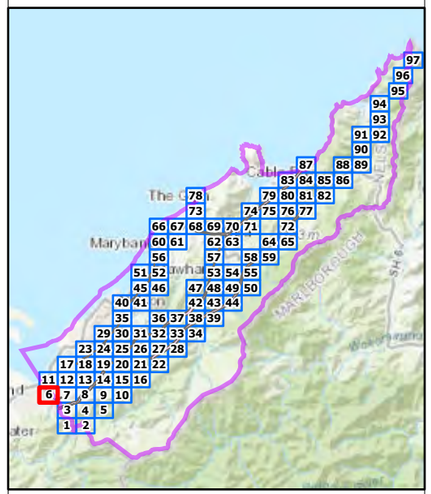

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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200

Metres

Revision	Author	Verified	Approved	Date
5	SJF	Sarah B	DC	24/03/2022
4	SJF	BDJ2	DC	6/12/2021
3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

N

Client:	Discipline:
Nelson City Council	GIS
Project: NCC Revised Fault Deformation Overlay	**Drawing No:** GIS-3160262-MS02 -6

Beca

Nelson City Council
Revised Fault Deformation Overlay

Map : 7 | Page 7 of 97

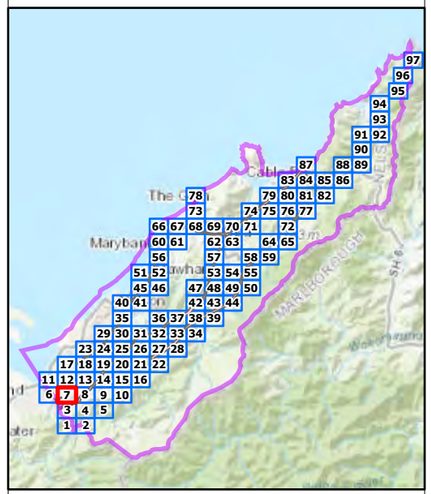
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Map Scale @ A3: 1:5,000

0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

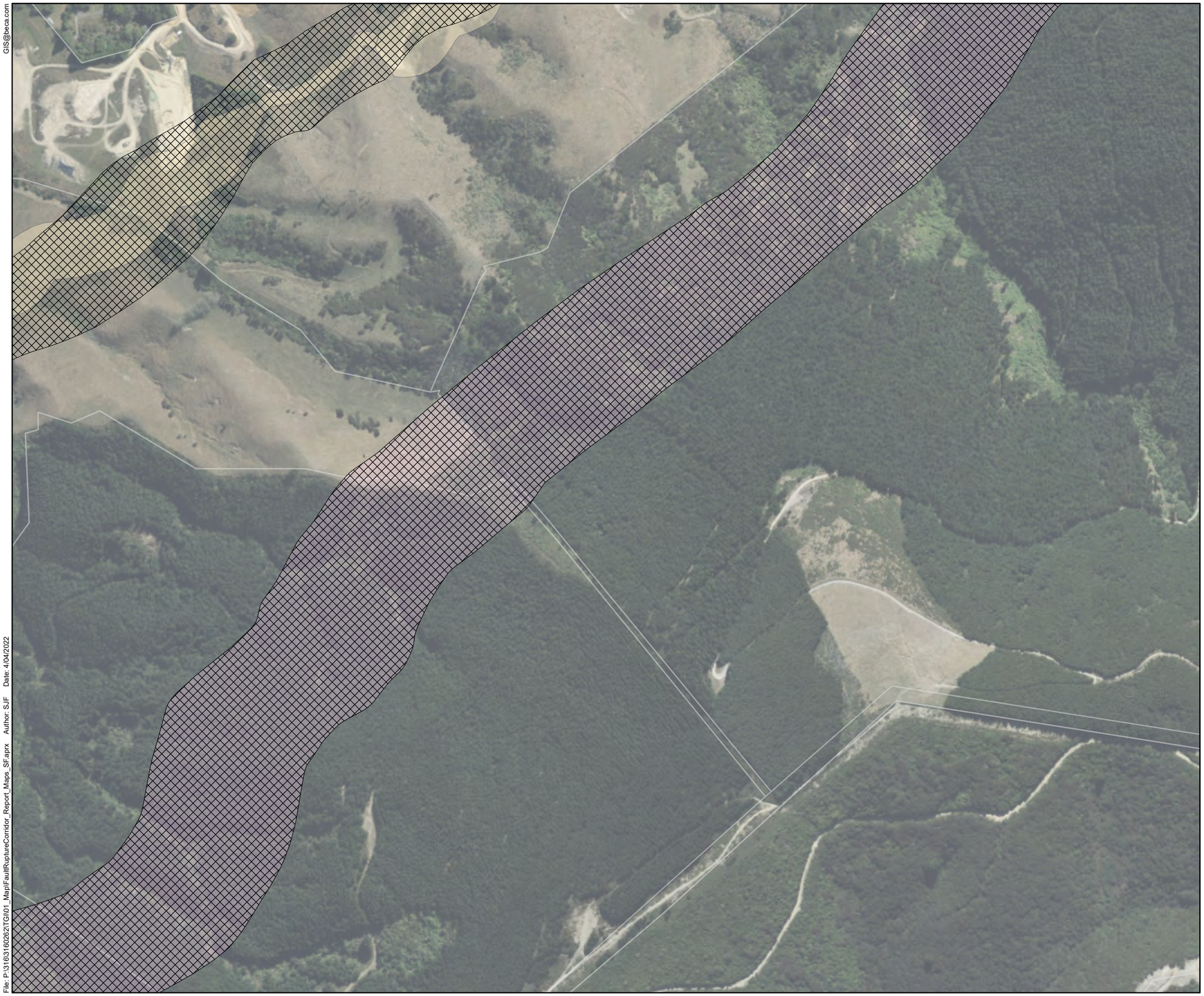
Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -7**

Beca

GIS@beca.com

File: P:\316\31602626TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022



Nelson City Council
Revised Fault Deformation Overlay

Map : 8 | Page 8 of 97

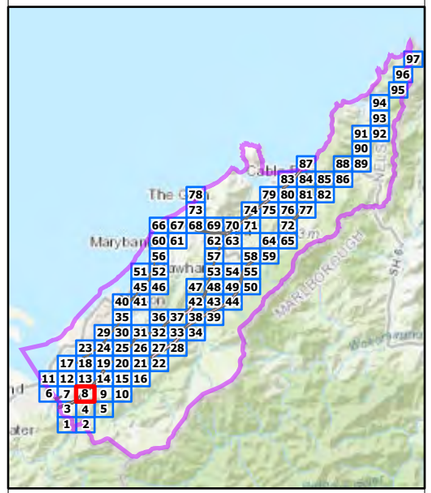
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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0 100 200
Metres

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -8**

Beca

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File: P:\3161\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 9 | Page 9 of 97

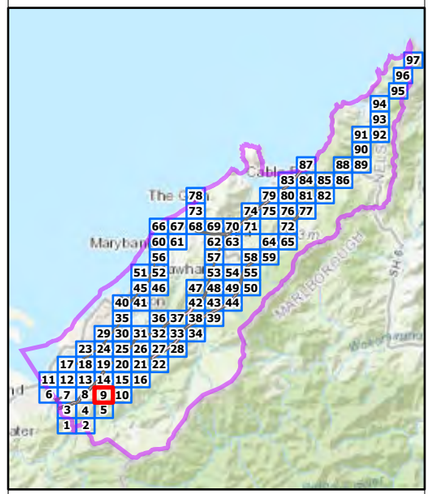
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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0 100 200

Metres

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -9**

Beca

GIS@beca.com

File: P:\316\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 10 | Page 10 of 97

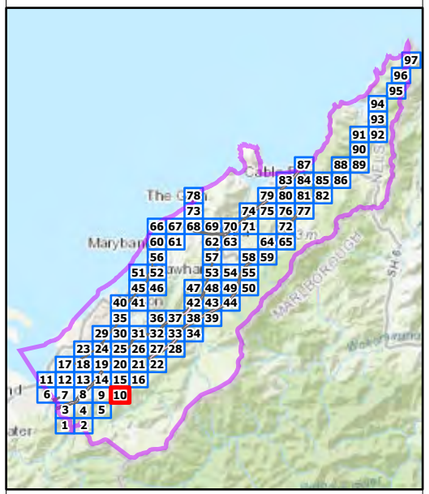
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Map Scale @ A3: 1:5,000

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Metres

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -10**

Beca

GIS@beca.com

File: P:\3161\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

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Nelson City Council
Revised Fault Deformation Overlay

Map : 11 | Page 11 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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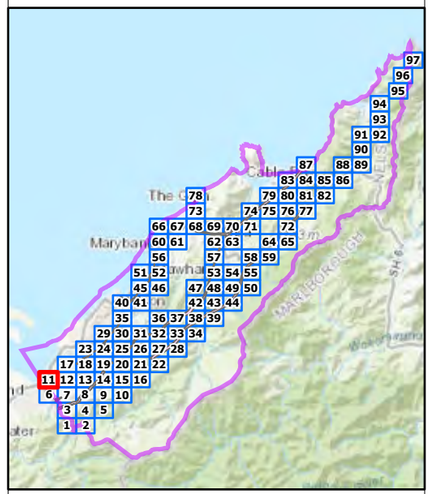
Ref:3160262-472476811



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0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -11**

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File: P:\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

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File: P:\316\316262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 12	Page 12 of 97

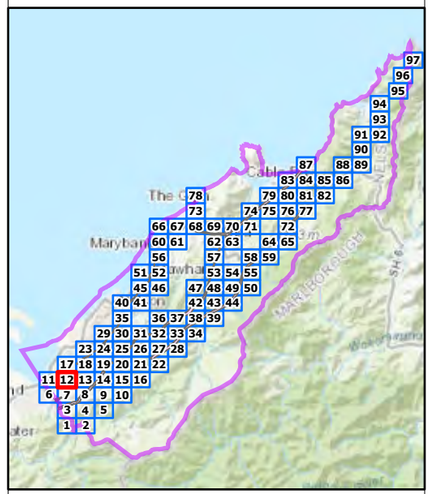
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to Beca report 'Revised Nelson Fault Deformation Overlay' Ref:3160262-472476811



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0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client:	Discipline:
Nelson City Council	GIS
Project: NCC Revised Fault Deformation Overlay	**Drawing No:** GIS-3160262-MS02 -12

Beca

GIS@beca.com

File: P:\316\316262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 13	Page 13 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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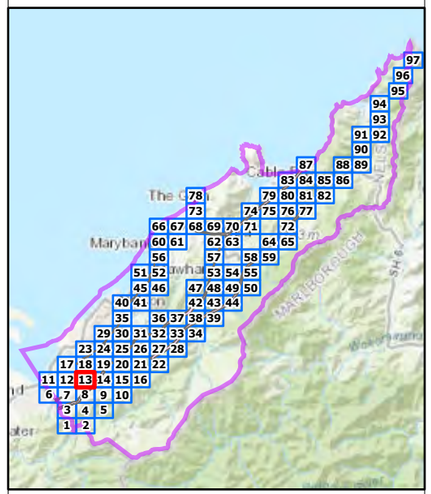
Ref:3160262-472476811



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Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client:	Discipline:
Nelson City Council	GIS
Project: NCC Revised Fault Deformation Overlay	**Drawing No:** GIS-3160262-MS02 -13

Beca

Nelson City Council
Revised Fault Deformation Overlay

Map : 14 | Page 14 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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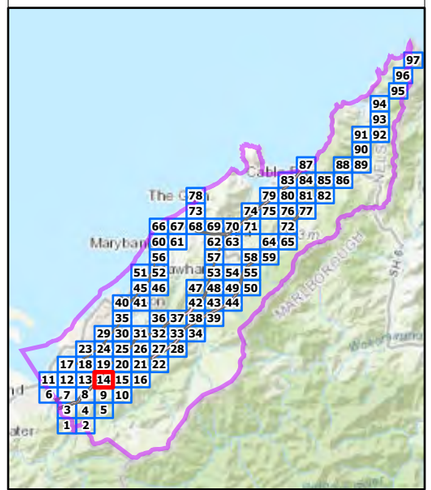
Ref:3160262-472476811



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Metres

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -14**

Beca

GIS@beca.com

File: P:\316\3160262\TG\I01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 15 | Page 15 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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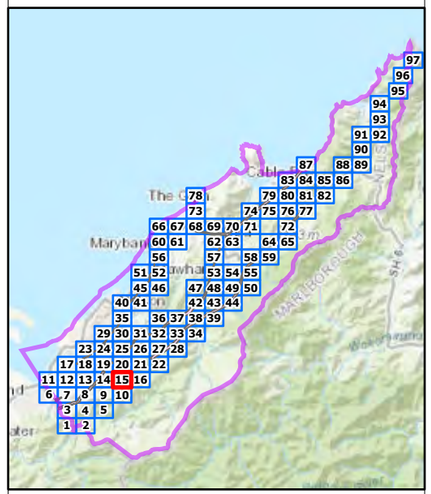
Ref:3160262-472476811



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0 100 200

Metres

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -15**

Beca

GIS@beca.com

File: P:\316\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 16 | Page 16 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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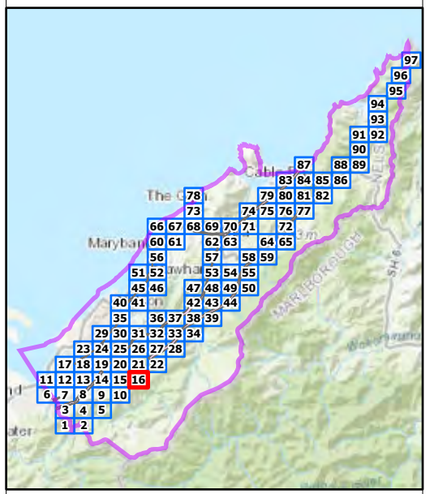
Ref:3160262-472476811



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Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -16**

Beca

GIS@beca.com

File: P:\316\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

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Nelson City Council
Revised Fault Deformation Overlay

Map : 17	Page 17 of 97

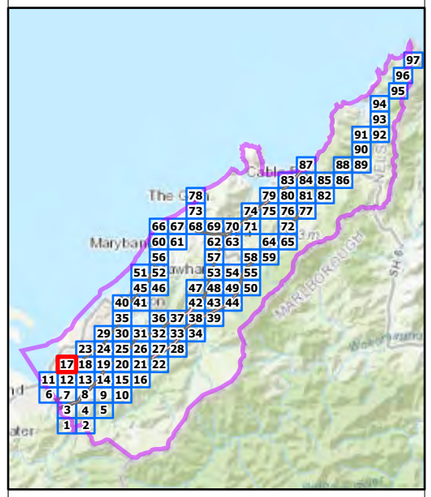
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to Beca report 'Revised Nelson Fault Deformation Overlay' Ref:3160262-472476811



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Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client:	Discipline:
Nelson City Council	GIS
Project: NCC Revised Fault Deformation Overlay	**Drawing No:** GIS-3160262-MS02 -17

Beca

File: P:\316\3160262\TG\I01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

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Nelson City Council
Revised Fault Deformation Overlay

Map : 18	Page 18 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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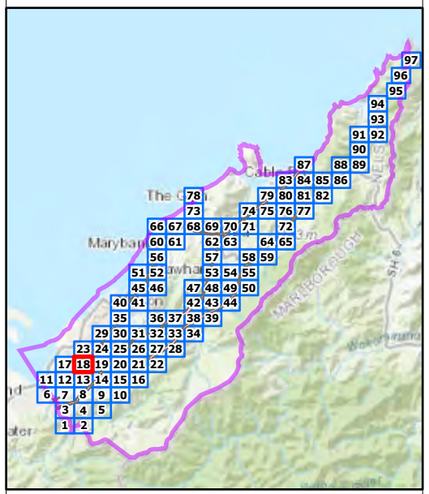

Map intended for distribution as a PDF document.
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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200

Metres

Revision	Author	Verified	Approved	Date
5	SJF	Sarah B	DC	24/03/2022
4	SJF	BDJ2	DC	6/12/2021
3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -18**

Beca

GIS@beca.com

File: P:\3161\316026\2TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 19	Page 19 of 97

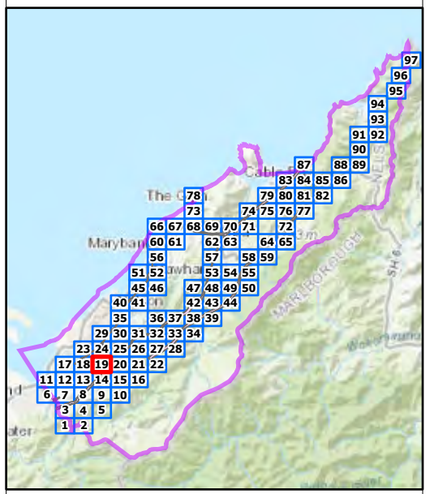
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -19**

Beca

Nelson City Council
Revised Fault Deformation Overlay

Map : 20 | Page 20 of 97

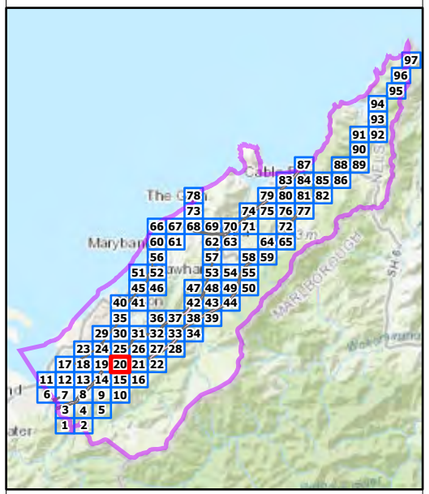
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Aerials sourced from Nelson City Council - Flown Sep 2020

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0 100 200
Metres

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5	SJF	Sarah B	DC	24/03/2022
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3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -20**

Beca

GIS@beca.com

File: P:\316\316026\2TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

GIS@beca.com

Nelson City Council
Revised Fault Deformation Overlay

Map : 21 | Page 21 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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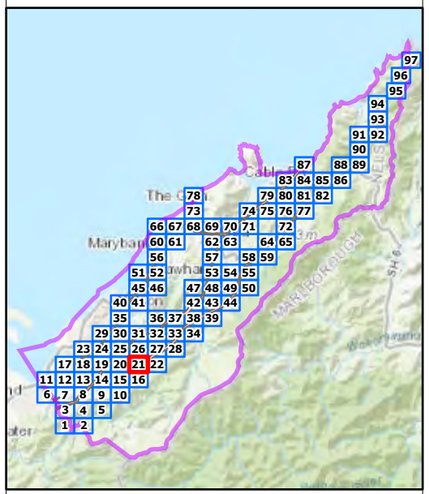
Ref:3160262-472476811



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Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -21**

Beca

File: P:\3161\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

GIS@beca.com

Nelson City Council
Revised Fault Deformation Overlay

Map : 22 | Page 22 of 97

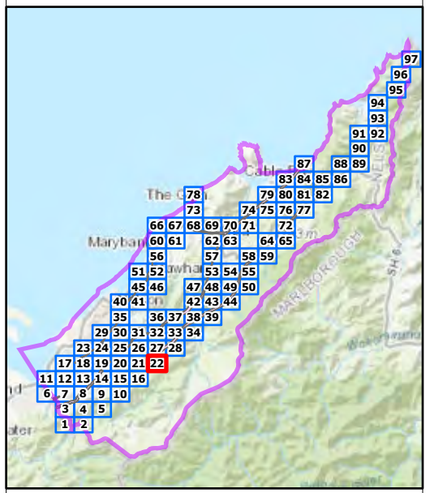
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200
Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -22**

Beca

File: P:\3160262TGN\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

GIS@beca.com

File: P:\3161\31602621GIS\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 23	Page 23 of 97

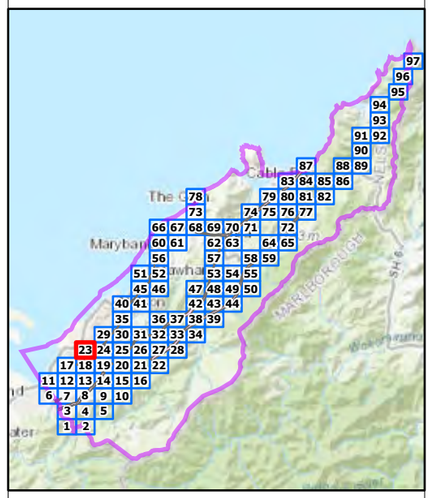
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Map Scale @ A3: 1:5,000

0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client:	Discipline:
Nelson City Council	GIS
Project: NCC Revised Fault Deformation Overlay	**Drawing No:** GIS-3160262-MS02 -23

Beca

GIS@beca.com

File: P:\3161\316260262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 24	Page 24 of 97

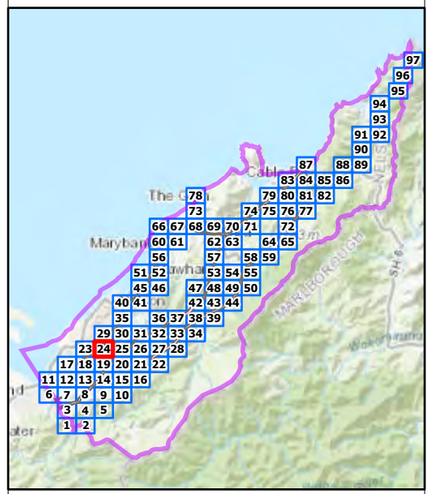
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client:	Discipline:
Nelson City Council	**GIS**
Project: **NCC Revised Fault Deformation Overlay**	*Drawing No:* **GIS-3160262-MS02 -24**

Beca

GIS@beca.com

Date: 4/04/2022 Author: SJF File: P:\316\316262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx

Nelson City Council
Revised Fault Deformation Overlay

Map : 25 | Page 25 of 97

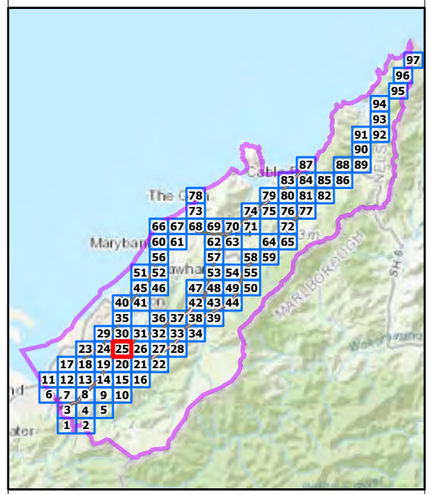
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to Beca report 'Revised Nelson Fault Deformation Overlay' Ref:3160262-472476811



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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200

Metres

Revision	Author	Verified	Approved	Date
5	SJF	Sarah B	DC	24/03/2022
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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -25**

Beca

Nelson City Council
Revised Fault Deformation Overlay

Map : 26 | Page 26 of 97

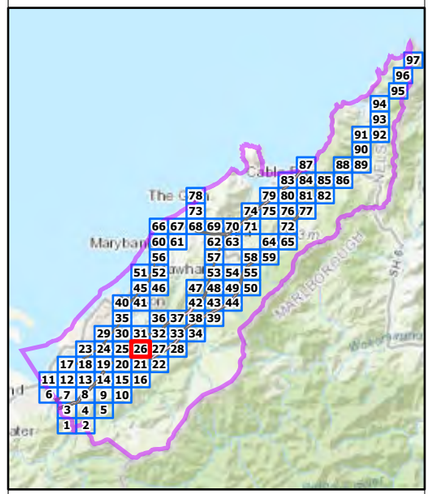
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Map Scale @ A3: 1:5,000

0 100 200

Metres

Revision	Author	Verified	Approved	Date
5	SJF	Sarah B	DC	24/03/2022
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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

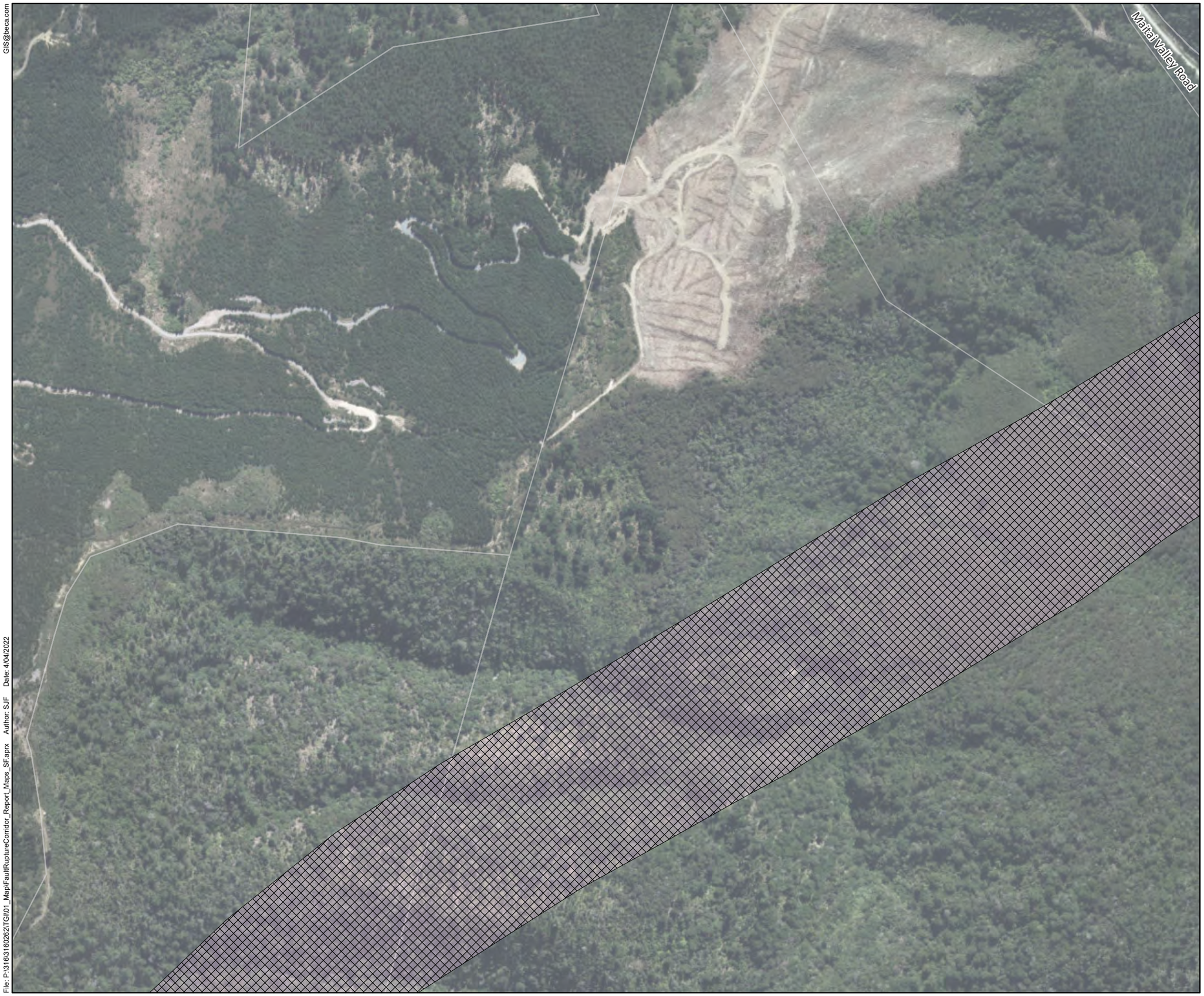
Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -26**

Beca

GIS@beca.com

File: P:\316\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022



Nelson City Council
Revised Fault Deformation Overlay

Map : 27 |

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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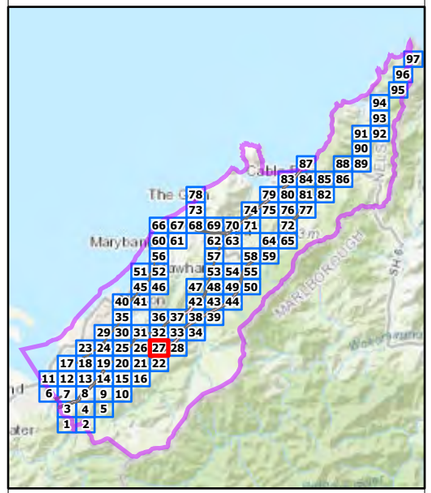
Ref:3160262-472476811



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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

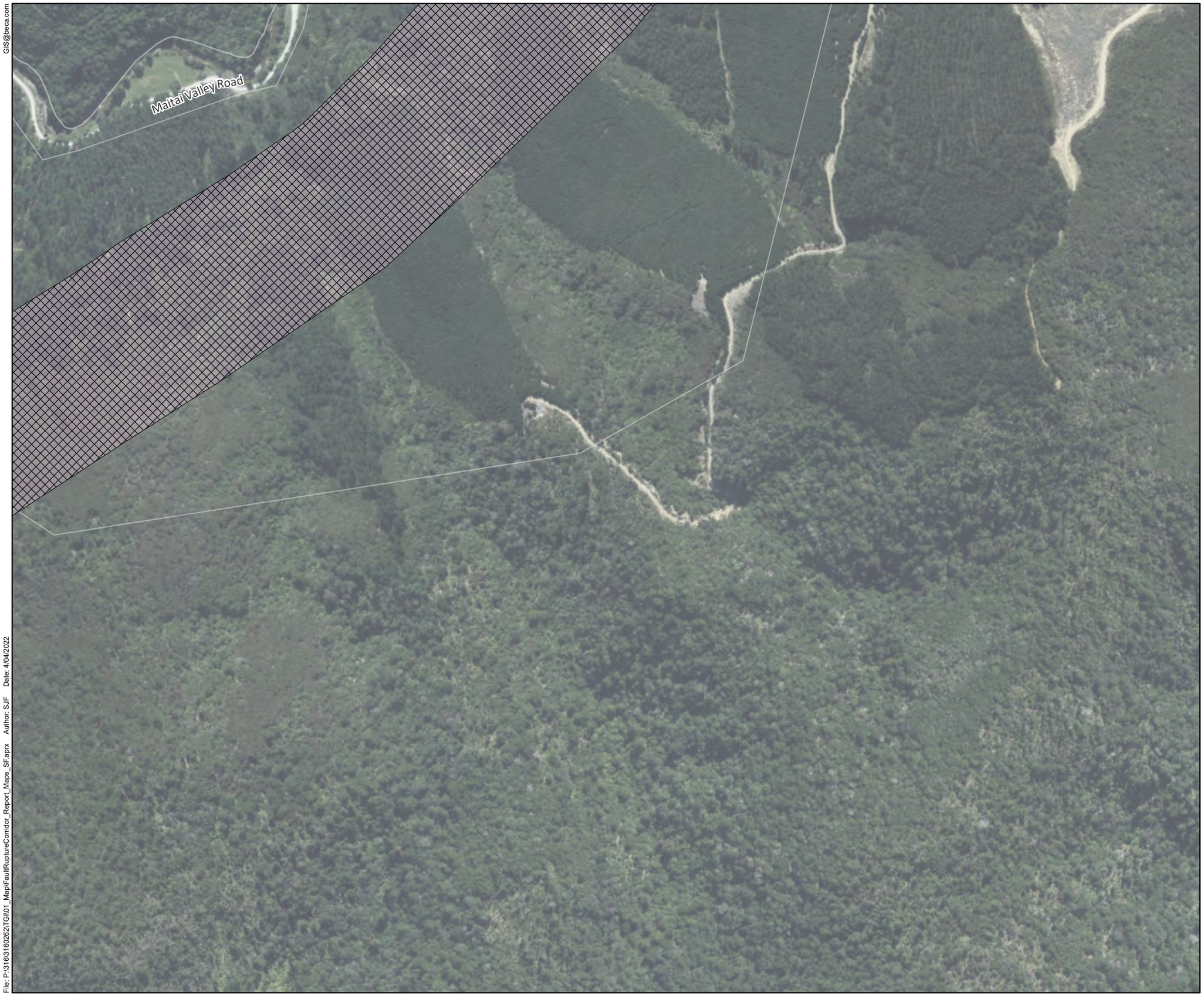
Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -27**

Beca

GIS@beca.com

File: P:\316\3160262TGN\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022



Nelson City Council
Revised Fault Deformation Overlay

Map : 28 | Page 28 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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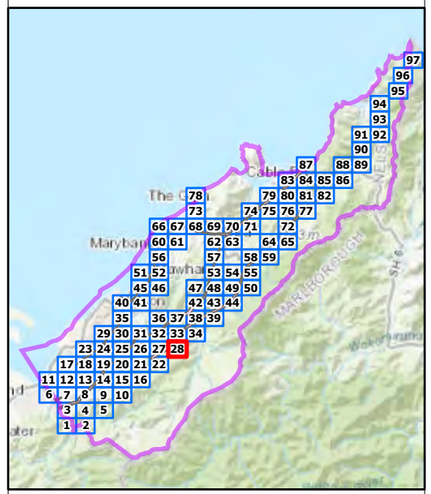
Ref:3160262-472476811



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Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -28**

Beca

GIS@beca.com

File: P:\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

File: P:\316\316262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

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Nelson City Council
Revised Fault Deformation Overlay

Map : 29	Page 29 of 97

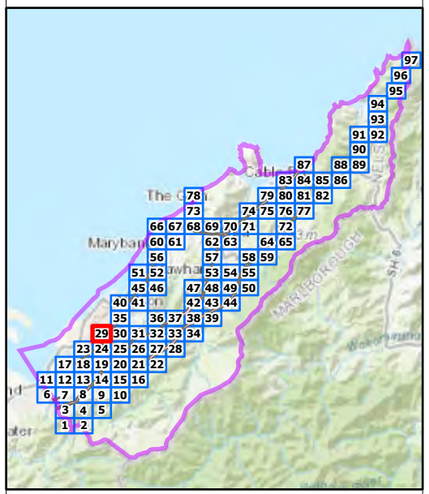
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Aerials sourced from Nelson City Council - Flown Sep 2020

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0 100 200

Metres

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3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

N

Client:	Discipline:
Nelson City Council	GIS
Project: NCC Revised Fault Deformation Overlay	**Drawing No:** GIS-3160262-MS02 -29

Beca

Nelson City Council
Revised Fault Deformation Overlay

Map : 30	Page 30 of 97

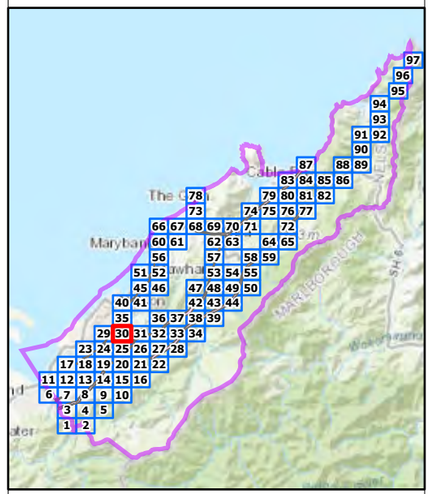
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200

Metres

Revision	Author	Verified	Approved	Date
5	SJF	Sarah B	DC	24/03/2022
4	SJF	BDJ2	DC	6/12/2021
3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

N

Client:	Discipline:
Nelson City Council	GIS
Project: NCC Revised Fault Deformation Overlay	**Drawing No:** GIS-3160262-MS02 -30

Beca

GIS@beca.com
Date: 4/04/2022
Author: SJF
File: P:\316\316262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx

Nelson City Council
Revised Fault Deformation Overlay

Map : 31 | Page 31 of 97

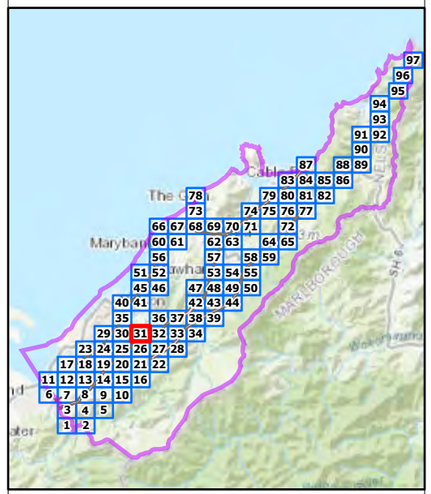
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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0 100 200

Metres

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3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

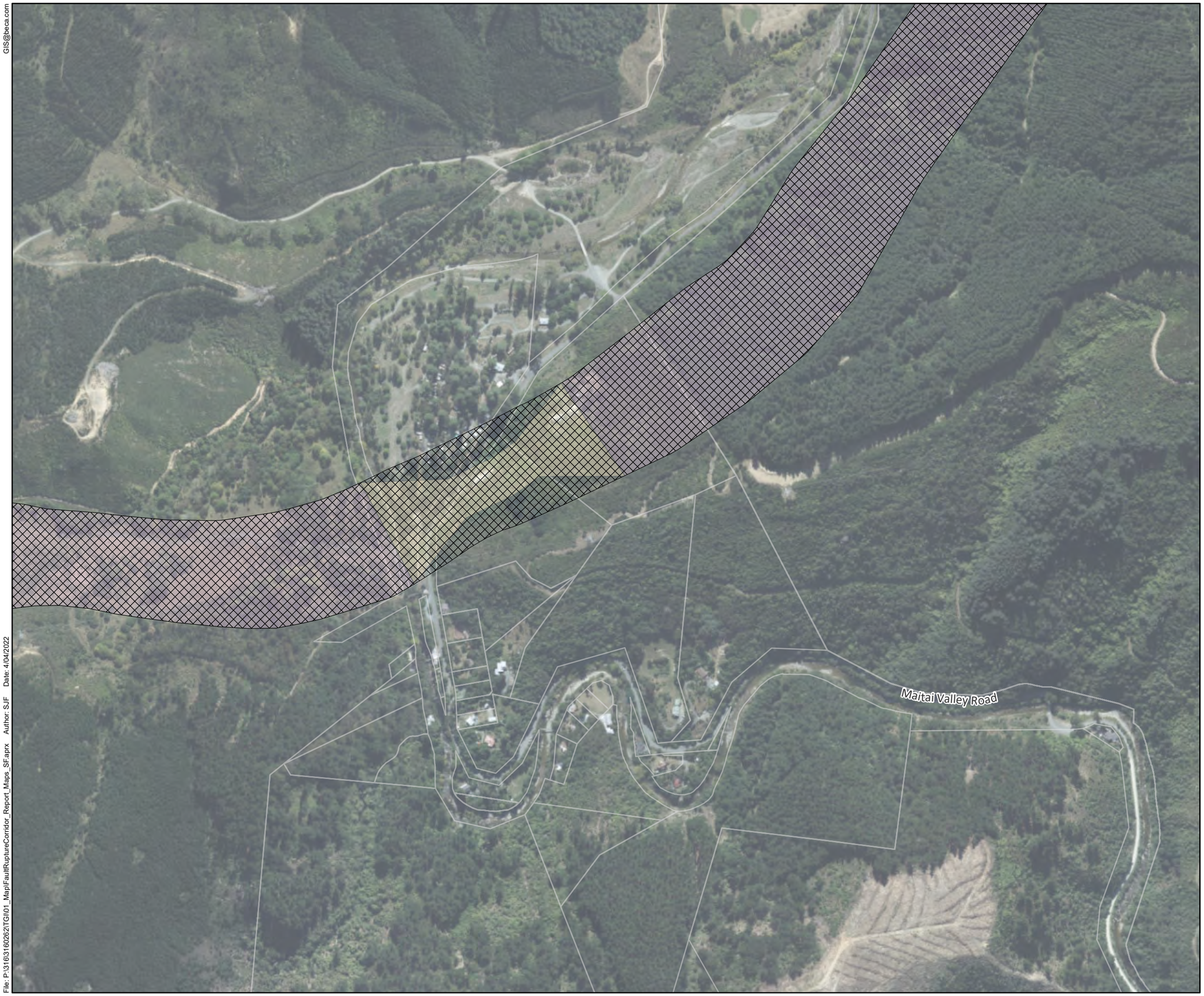
Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -31**

Beca

GIS@beca.com

File: P:\3160262TGN\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022



Nelson City Council
Revised Fault Deformation Overlay

Map : 32 |

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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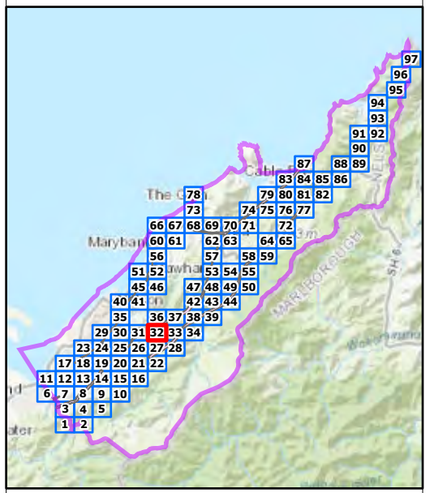
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -32**

Beca

GIS@beca.com

File: P:\316\316262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

GIS@beca.com

File: P:\316\316062\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 33	Page 33 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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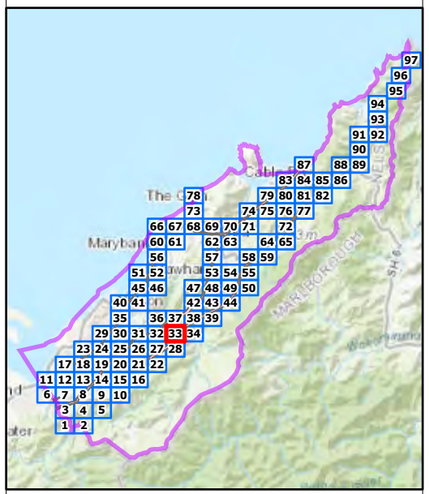

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2	SJF	BDJ2	DC	07/07/2021

N

Client:	Discipline:
Nelson City Council	GIS
Project: NCC Revised Fault Deformation Overlay	**Drawing No:** GIS-3160262-MS02 -33

Beca

Nelson City Council
Revised Fault Deformation Overlay

Map : 34 | Page 34 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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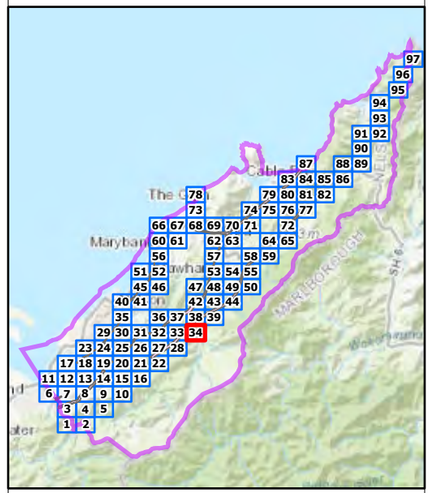
Ref:3160262-472476811



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0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

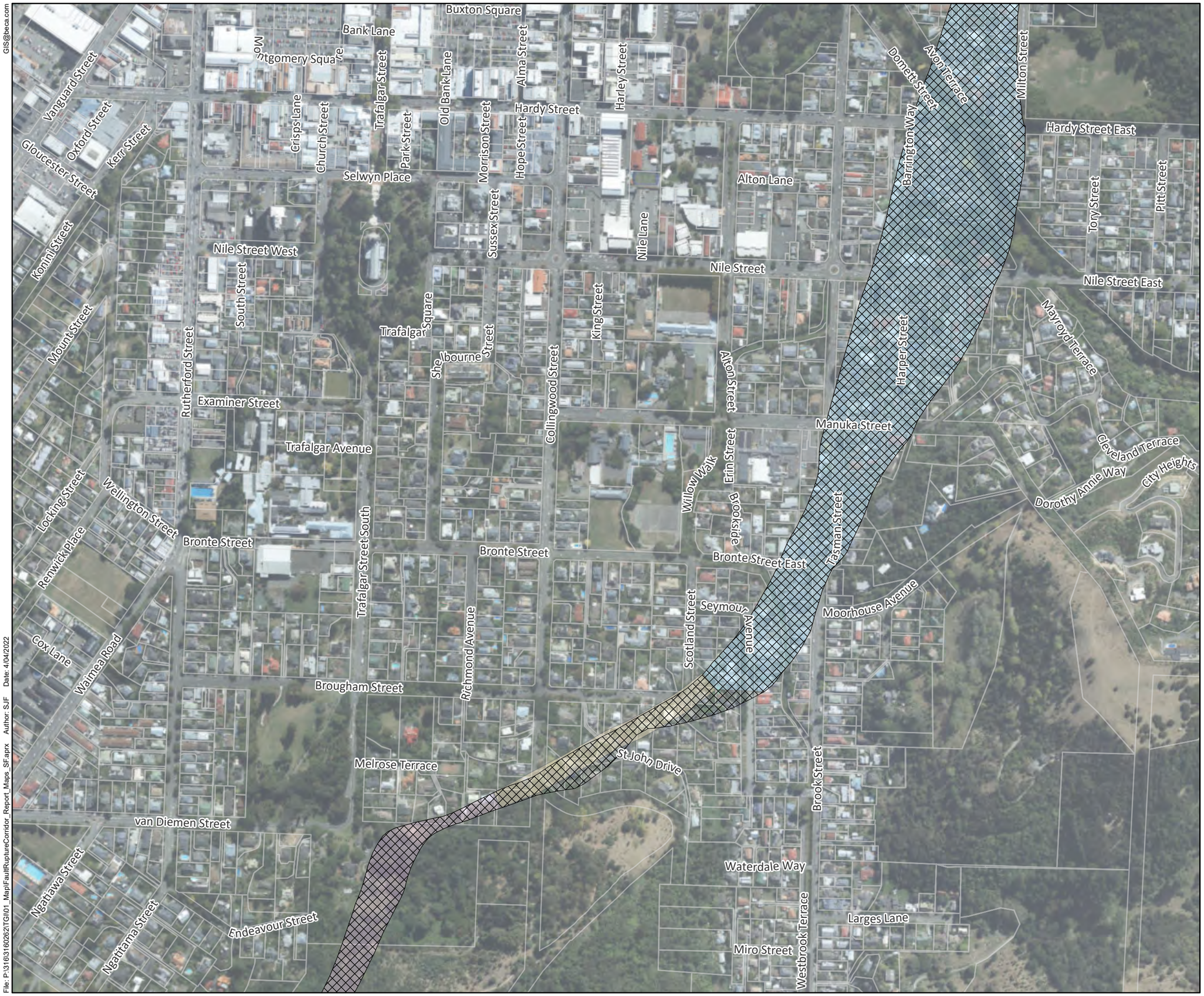
Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -34**

Beca

GIS@beca.com

File: P:\3161\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022



GIS@beca.com

Date: 4/04/2022 Author: SJF

File: P:\3161\31602622TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx

Nelson City Council
Revised Fault Deformation Overlay

Map : 35	Page 35 of 97

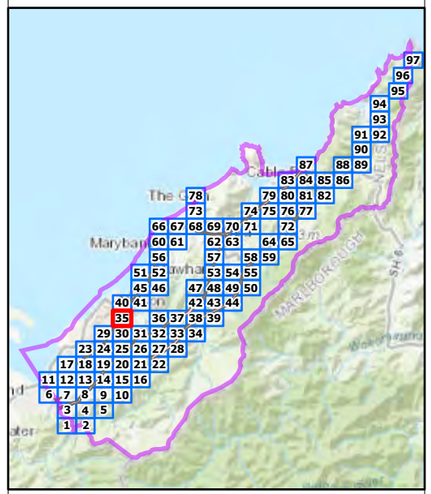
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to Beca report 'Revised Nelson Fault Deformation Overlay' Ref:3160262-472476811



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0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -35**

Beca

Nelson City Council
Revised Fault Deformation Overlay

Map : 36 |

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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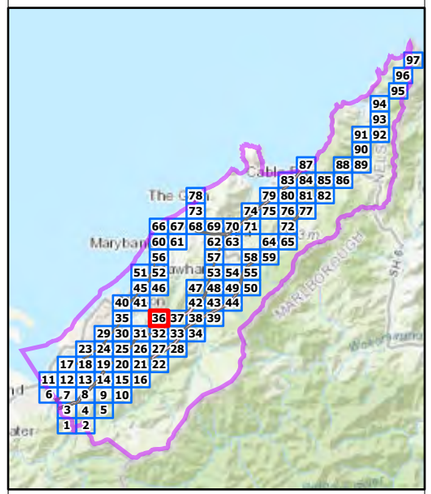
Ref:3160262-472476811



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Map Scale @ A3: 1:5,000

0 100 200

Metres

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5	SJF	Sarah B	DC	24/03/2022
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3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

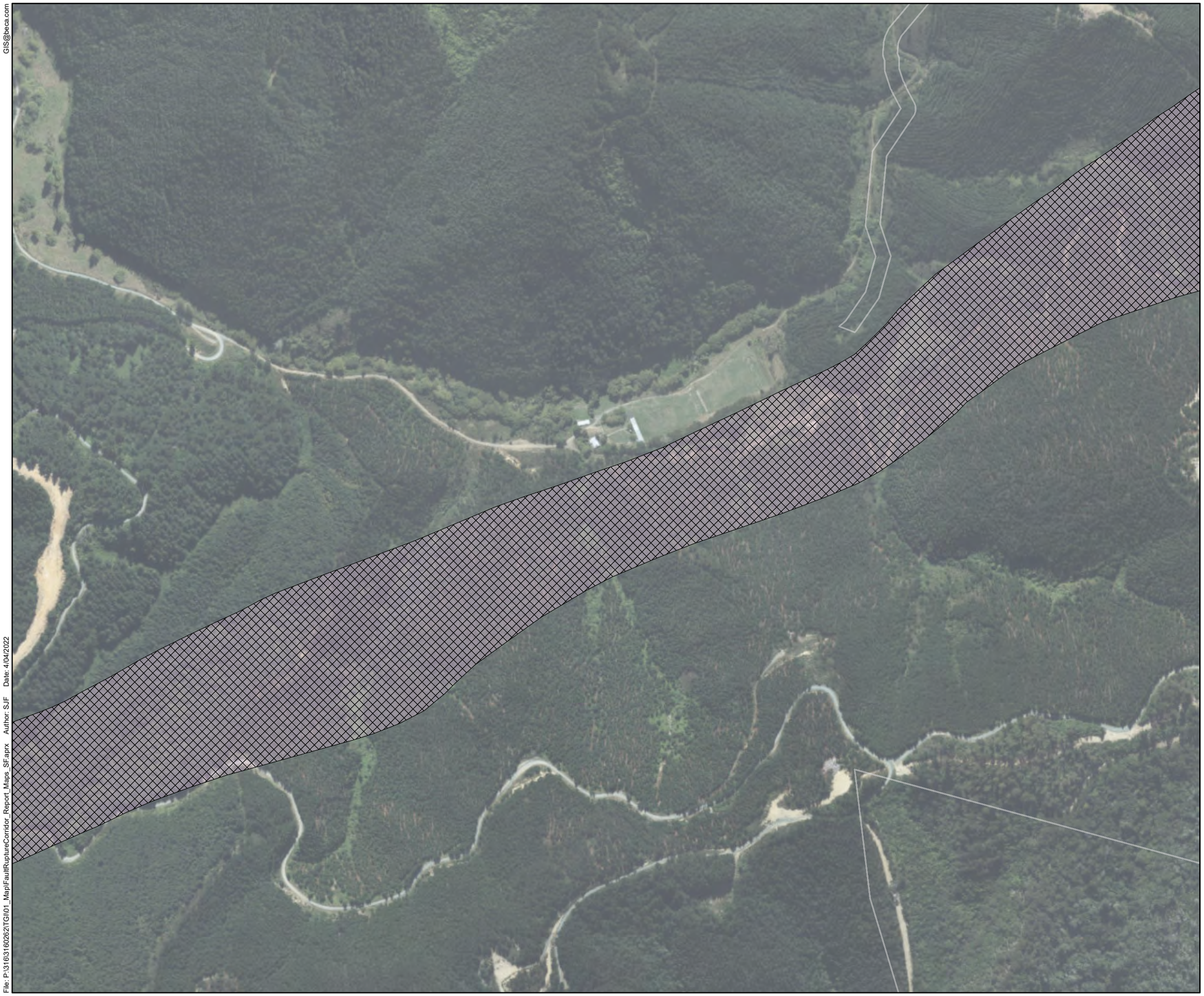
Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -36**

Beca

GIS@beca.com

File: P:\316\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022



Nelson City Council
Revised Fault Deformation Overlay

Map : 37 | Page 37 of 97

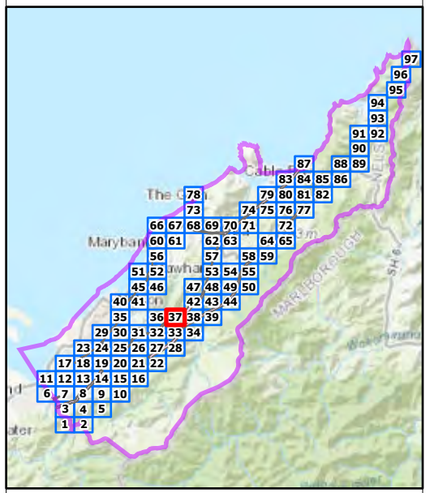
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -37**

Beca

GIS@beca.com

File: P:\316\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 38 | Page 38 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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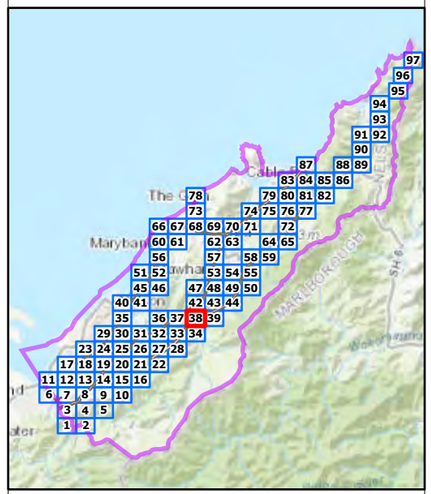

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Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -38**

Beca

GIS@beca.com

File: P:\316\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 39 | Page 39 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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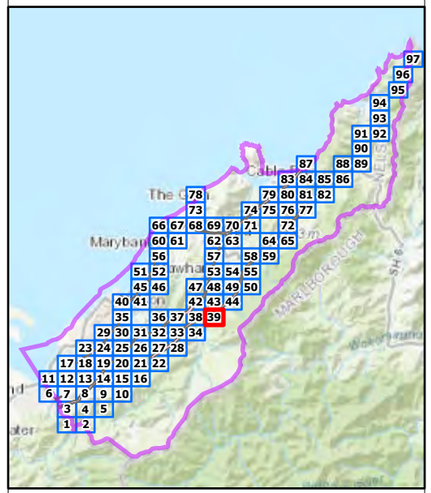
Ref:3160262-472476811



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Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -39**

Beca

GIS@beca.com

File: P:\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

GIS@beca.com

Nelson City Council
Revised Fault Deformation Overlay

Map : 40 | Page 40 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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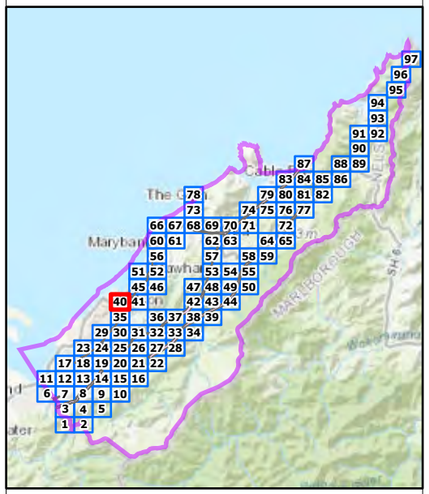

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Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -40**

Beca

File: P:\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 41 | Page 41 of 97

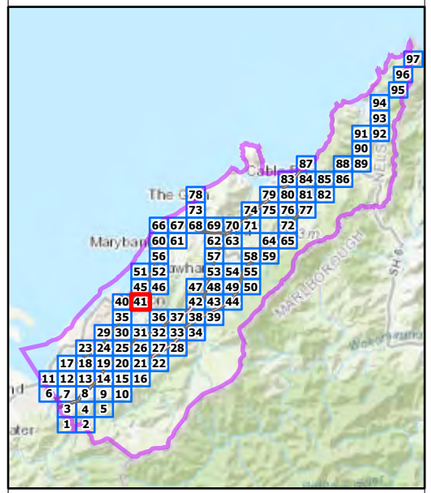
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Metres

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4	SJF	BDJ2	DC	6/12/2021
3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -41**

Beca

GIS@beca.com

File: P:\3161\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

GIS@beca.com

Nelson City Council
Revised Fault Deformation Overlay

Map : 42 | Page 42 of 97

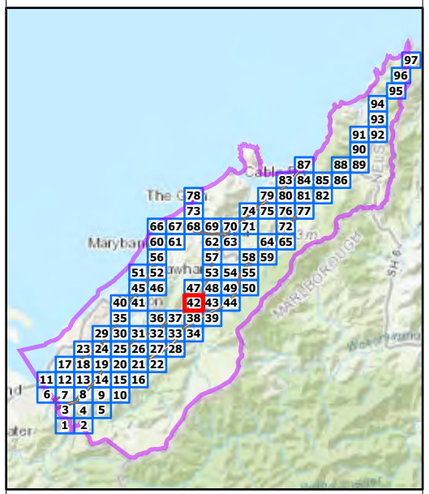
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



Map intended for distribution as a PDF document.
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Overlay was created based on engineering judgement, taking into consideration, anticipated deformation widths of faults, dataset accuracy and confidence on fault location.

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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200
Metres

Revision	Author	Verified	Approved	Date
5	SJF	Sarah B	DC	24/03/2022
4	SJF	BDJ2	DC	6/12/2021
3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -42**

Beca

File: P:\316\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 43 | Page 43 of 97

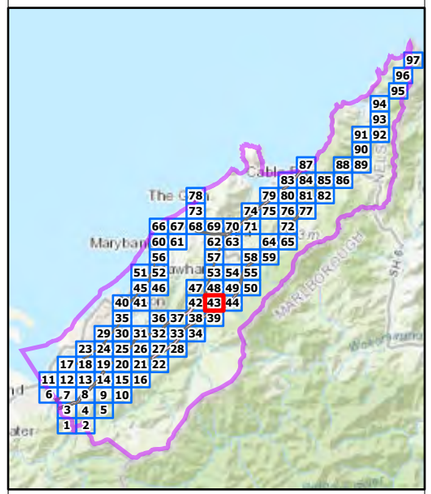
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

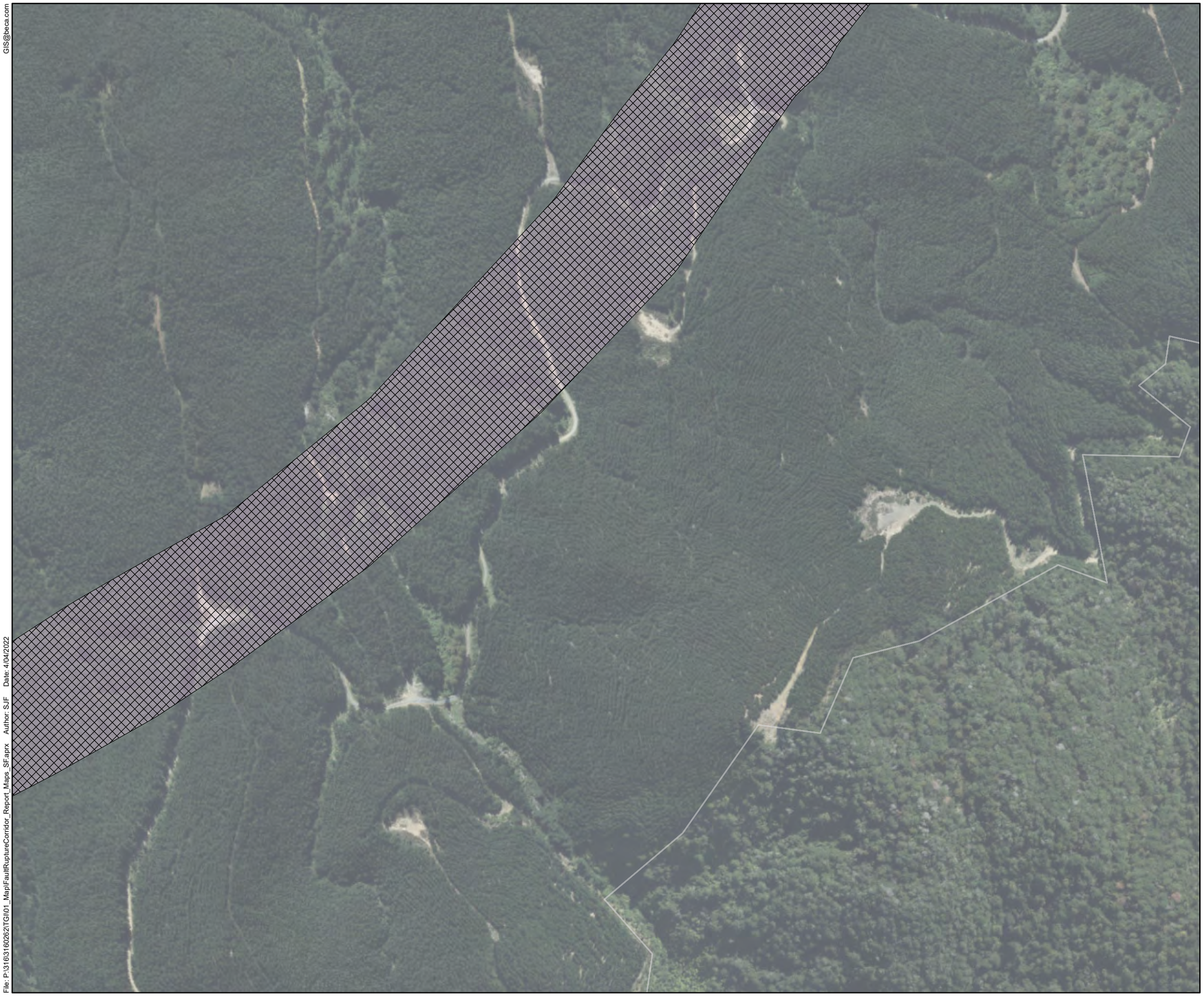
Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -43**

Beca

GIS@beca.com

File: P:\316\316026\2TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022



Nelson City Council
Revised Fault Deformation Overlay

Map : 44 | Page 44 of 97

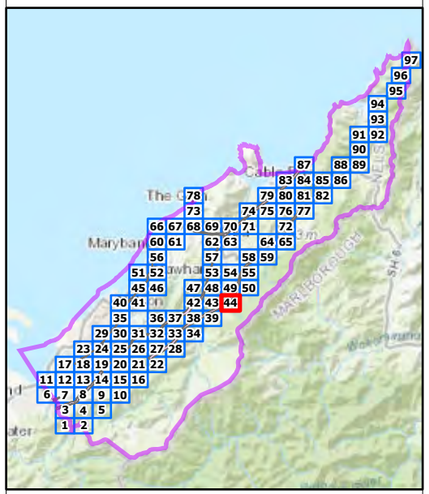
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Map Scale @ A3: 1:5,000

0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -44**

Beca

GIS@beca.com

File: P:\316\316026\2TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

GIS@beca.com

Nelson City Council
Revised Fault Deformation Overlay

Map : 45 | Page 45 of 97

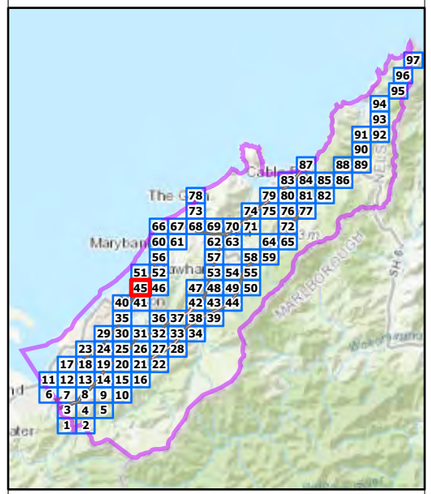
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -45**

Beca

File: P:\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 46	Page 46 of 97

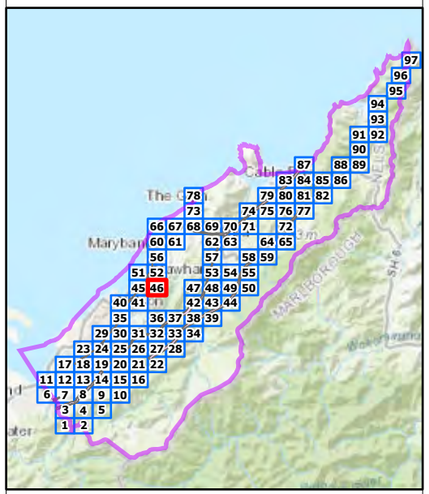
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

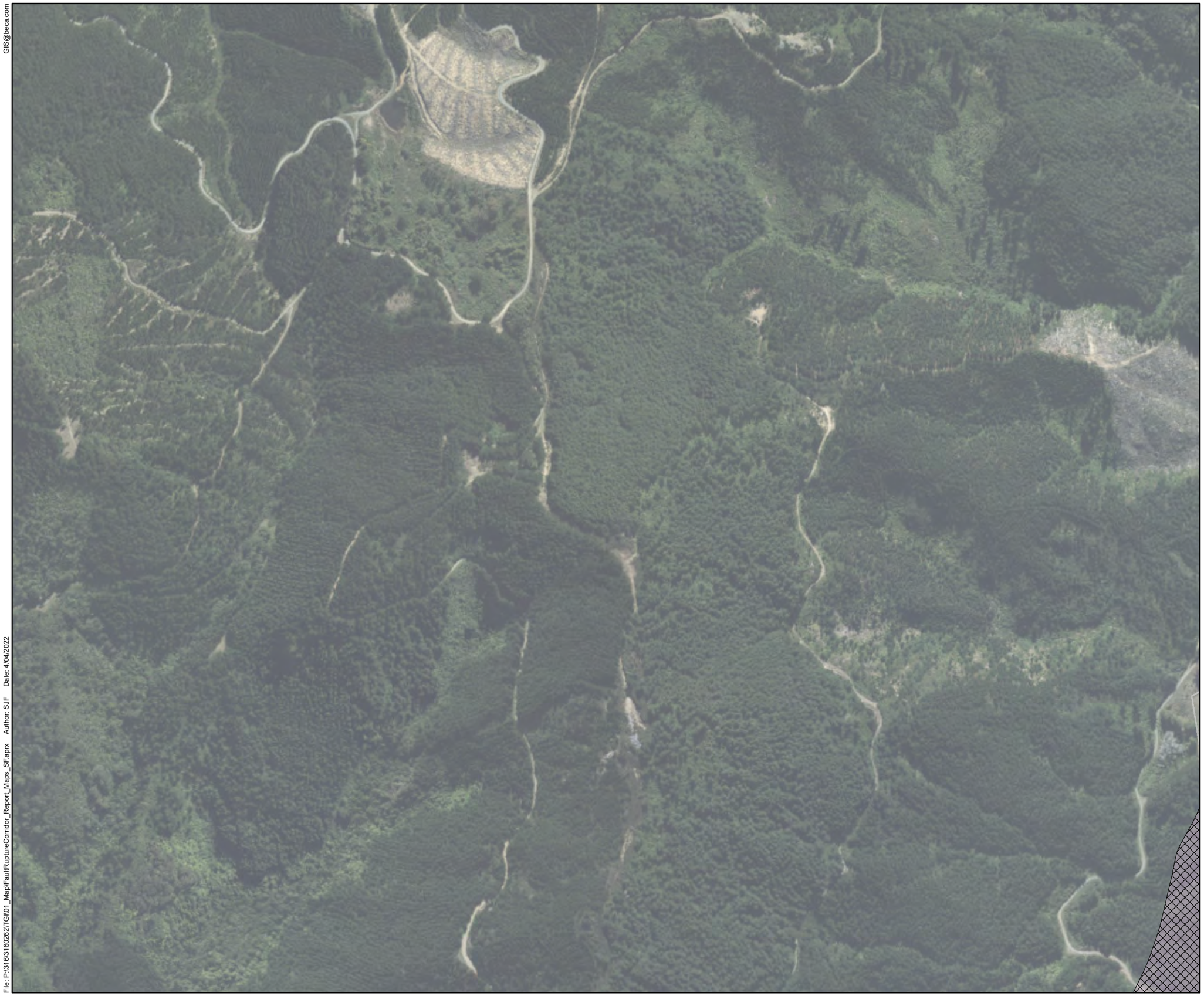
Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -46**

Beca

GIS@beca.com

File: P:\316\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022



Nelson City Council
Revised Fault Deformation Overlay

Map : 47 | Page 47 of 97

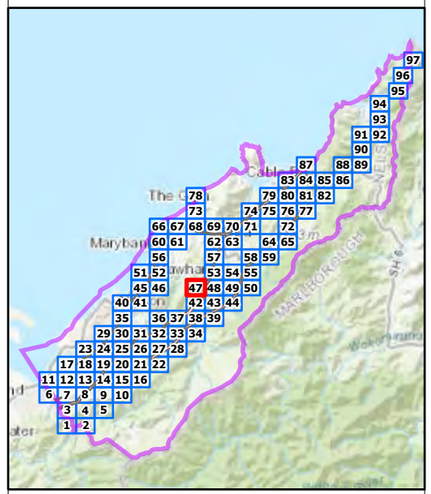
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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0 100 200

Metres

Revision	Author	Verified	Approved	Date
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3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -47**

Beca

GIS@beca.com

File: P:\316\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 48 | Page 48 of 97

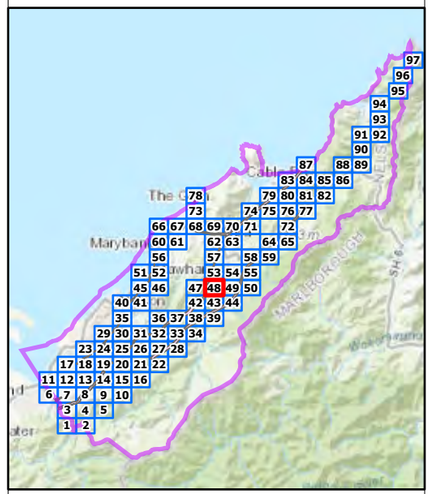
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200
Metres

Revision	Author	Verified	Approved	Date
5	SJF	Sarah B	DC	24/03/2022
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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -48**

Beca

GIS@beca.com

File: P:\316\316026\2TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 49 | Page 49 of 97

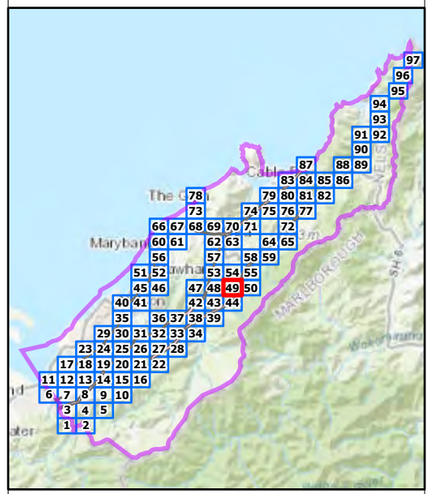
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Metres

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -49**

Beca

GIS@beca.com

File: P:\316\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

GIS@beca.com

File: P:\316\316062\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 50	Page 50 of 97

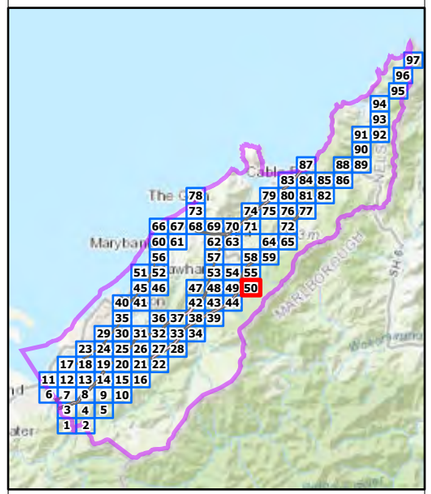
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -50**

Beca

Nelson City Council
Revised Fault Deformation Overlay

Map : 51	Page 51 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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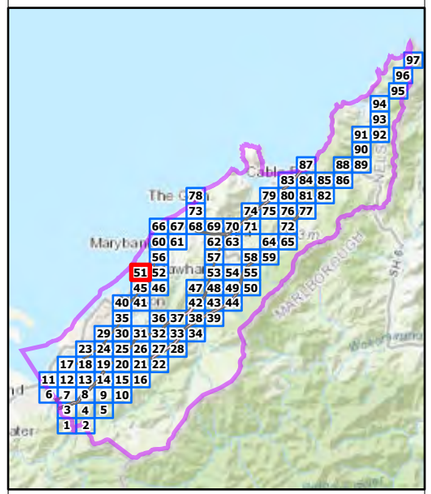
Ref:3160262-472476811



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Metres

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -51**

Beca

GIS@beca.com

File: P:\316\316026\2TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

GIS@beca.com

File: P:\3161\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 52	Page 52 of 97

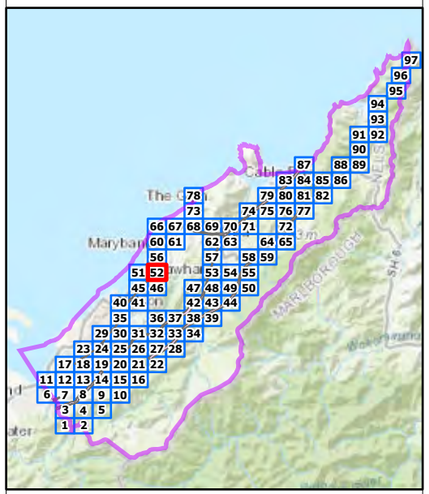
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to Beca report 'Revised Nelson Fault Deformation Overlay' Ref:3160262-472476811



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Map Scale @ A3: 1:5,000

0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client:	Discipline:
Nelson City Council	GIS
Project: NCC Revised Fault Deformation Overlay	**Drawing No:** GIS-3160262-MS02 -52

Beca

GIS@beca.com

Nelson City Council
Revised Fault Deformation Overlay

Map : 53 | Page 53 of 97

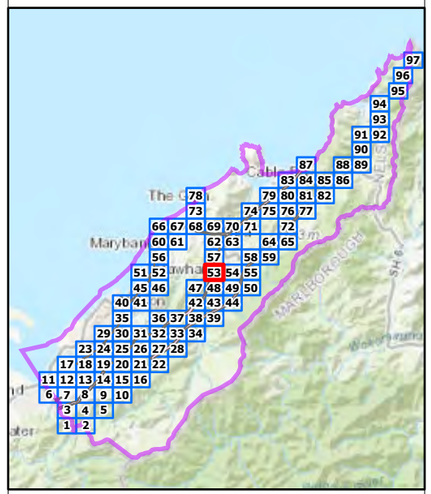
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200
Metres

Revision	Author	Verified	Approved	Date
5	SJF	Sarah B	DC	24/03/2022
4	SJF	BDJ2	DC	6/12/2021
3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -53**

Beca

File: P:\316\31602626TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

GIS@beca.com

Nelson City Council
Revised Fault Deformation Overlay

Map : 54 | Page 54 of 97

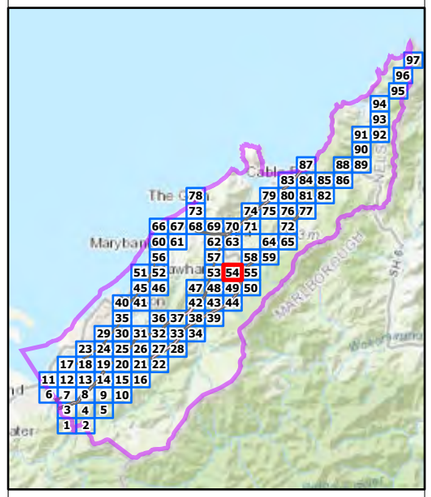
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200
Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

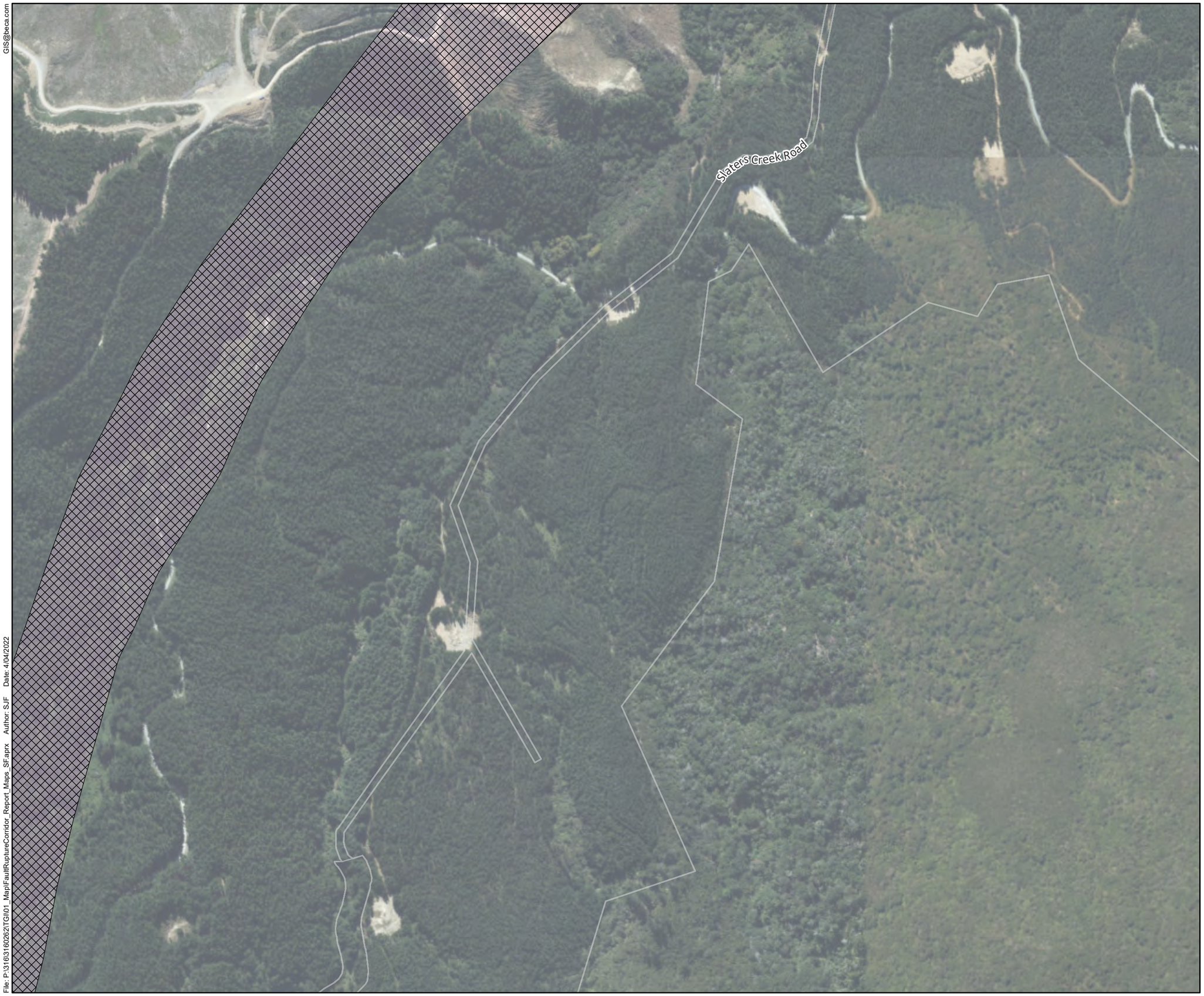
Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -54**

Beca

File: P:\316\3160262\TG\I01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022



GIS@beca.com

File: P:\316\316262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 55	Page 55 of 97

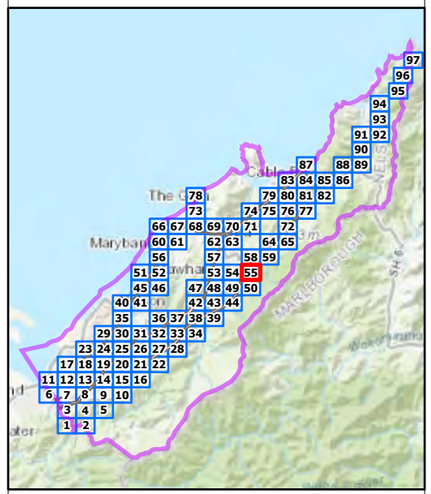
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client:	Discipline:
Nelson City Council	**GIS**
Project: **NCC Revised Fault Deformation Overlay**	*Drawing No:* **GIS-3160262-MS02 -55**

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File: P:\316\316262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 56	Page 56 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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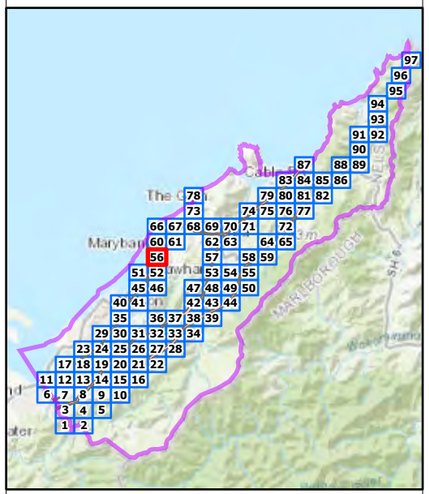
Ref:3160262-472476811



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0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -56**

Beca

GIS@beca.com

File: P:\316\316262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 57	Page 57 of 97

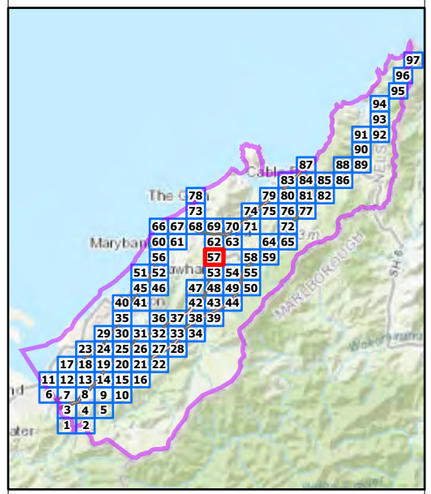
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Map Scale @ A3: 1:5,000

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Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client:	Discipline:
Nelson City Council	GIS
Project: NCC Revised Fault Deformation Overlay	**Drawing No:** GIS-3160262-MS02 -57

Beca

Nelson City Council
Revised Fault Deformation Overlay

Map : 58 | Page 58 of 97

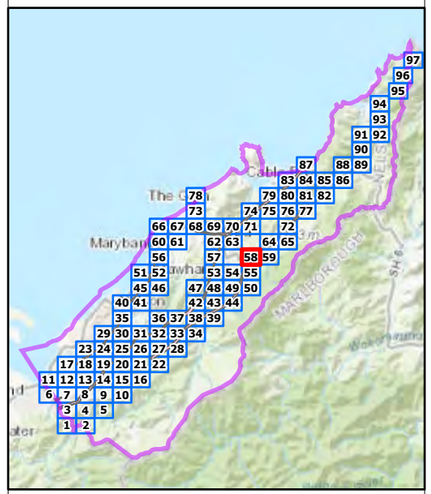
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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0 100 200
Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -58**

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GIS@beca.com

File: P:\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 59 | Page 59 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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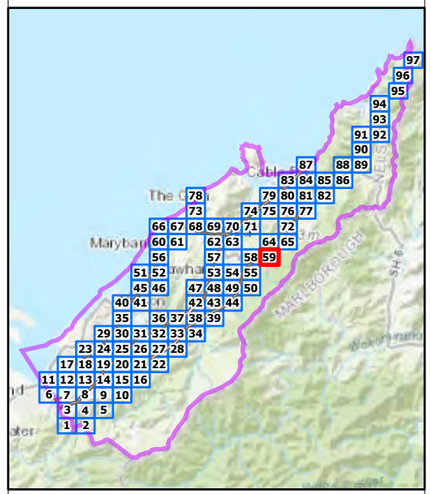
Ref:3160262-472476811



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0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -59**

Beca

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File: P:\316\316026\2GTGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

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Nelson City Council
Revised Fault Deformation Overlay

Map : 60	Page 60 of 97

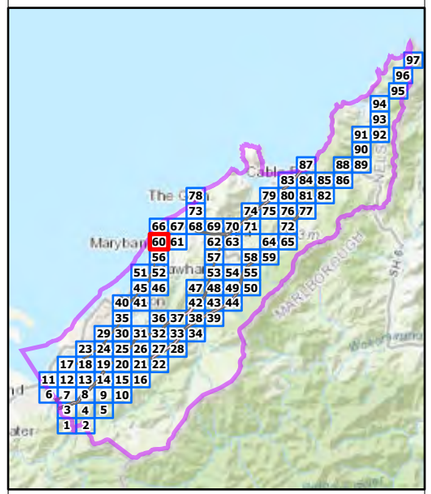
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200

Metres

Revision	Author	Verified	Approved	Date
5	SJF	Sarah B	DC	24/03/2022
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N

Client:	Discipline:
Nelson City Council	GIS
Project: NCC Revised Fault Deformation Overlay	**Drawing No:** GIS-3160262-MS02 -60

Beca

File: P:\31\31602621TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

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Nelson City Council
Revised Fault Deformation Overlay

Map : 61	Page 61 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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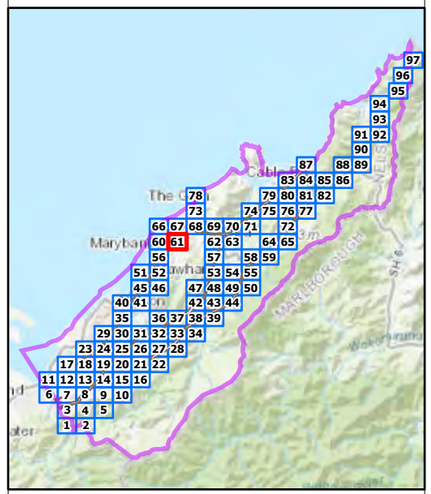
Ref:3160262-472476811



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0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -61**

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File: P:\316\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

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Nelson City Council
Revised Fault Deformation Overlay

Map : 62	Page 62 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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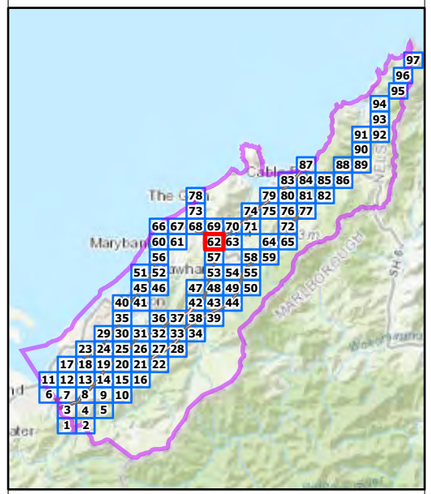
Ref:3160262-472476811



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0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -62**

Beca

File: P:\316\316262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

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Nelson City Council
Revised Fault Deformation Overlay

Map : 63	Page 63 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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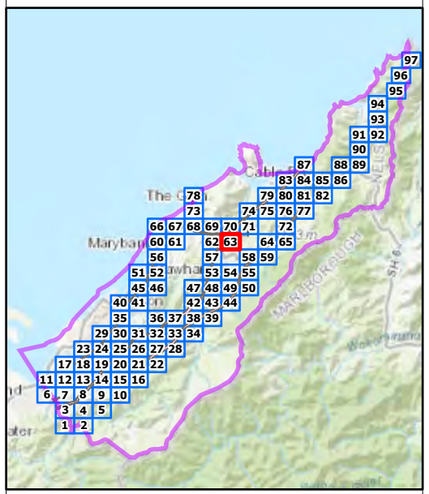

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Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -63**

Beca

GIS@beca.com

Nelson City Council
Revised Fault Deformation Overlay

Map : 64	Page 64 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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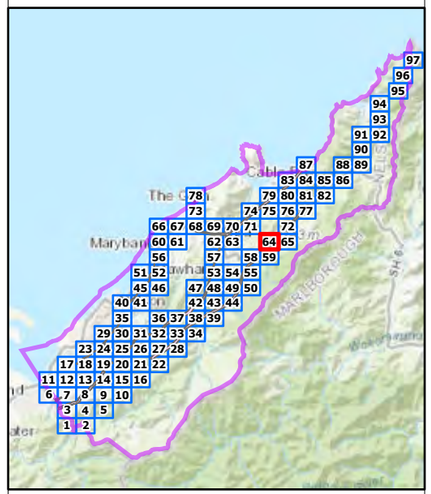
Ref:3160262-472476811



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Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client:	Discipline:
Nelson City Council	**GIS**
Project: **NCC Revised Fault Deformation Overlay**	*Drawing No:* **GIS-3160262-MS02 -64**

Beca

File: P:\316\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 65 | Page 65 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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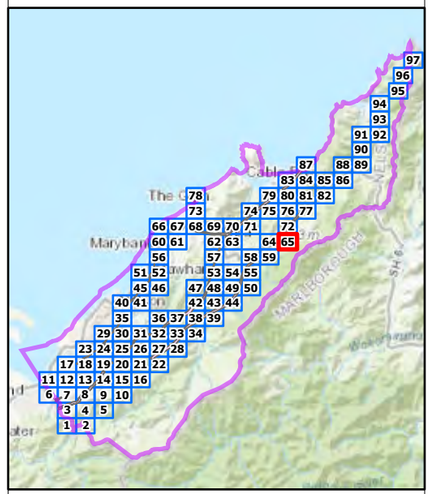
Ref:3160262-472476811



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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200
Metres

Revision	Author	Verified	Approved	Date
5	SJF	Sarah B	DC	24/03/2022
4	SJF	BDJ2	DC	6/12/2021
3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -65**

Beca

GIS@beca.com

File: P:\3161\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 66 |

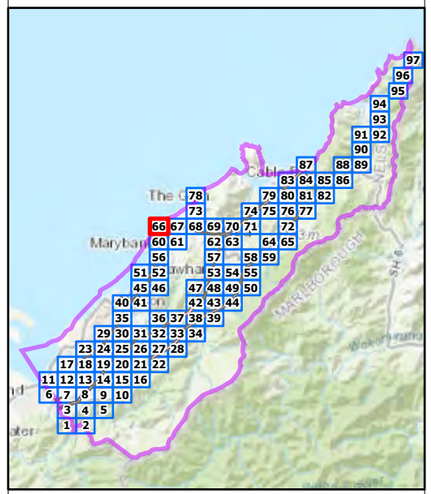
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Map Scale @ A3: 1:5,000

0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -66**

Beca

GIS@beca.com

File: P:\3161\316026262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 67 | Page 67 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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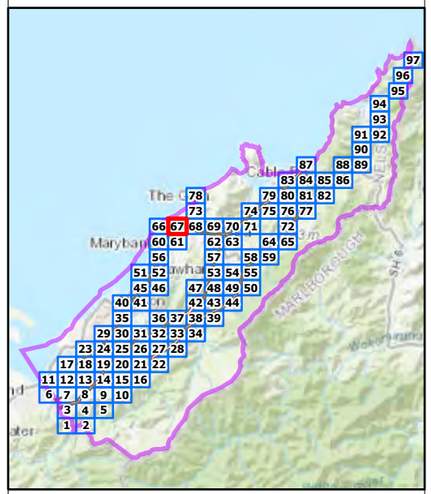
Ref:3160262-472476811



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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

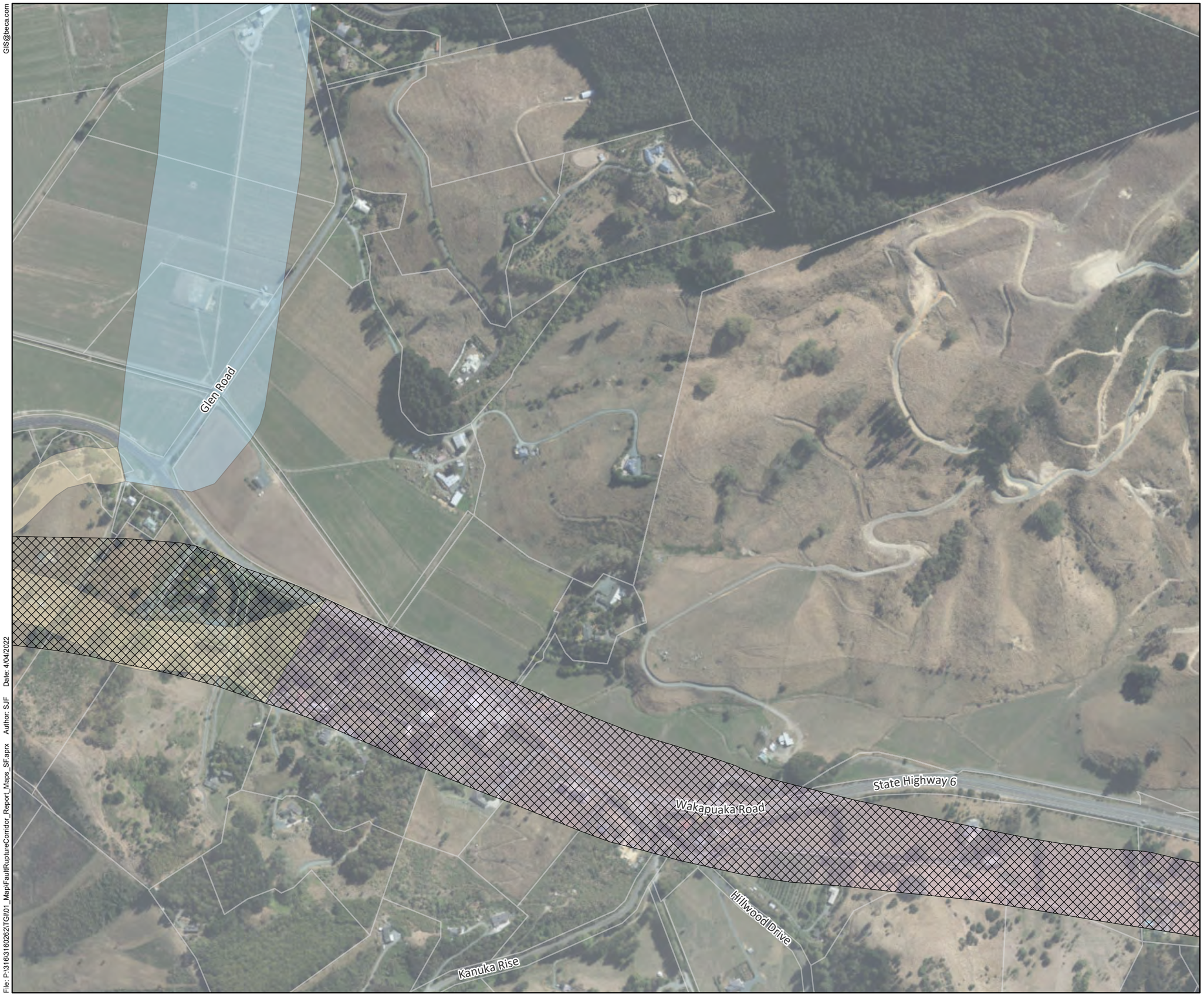
Drawing No: **GIS-3160262-MS02 -67**

Beca

GIS@beca.com

File: P:\316\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

GIS@beca.com



Nelson City Council
Revised Fault Deformation Overlay

Map : 68 |

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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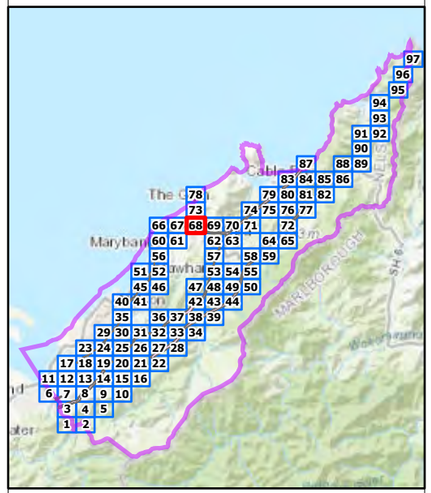
Ref:3160262-472476811



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Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -68**

Beca

File: P:\31\31602626TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

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File: P:\3161\31602621TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 69	Page 69 of 97

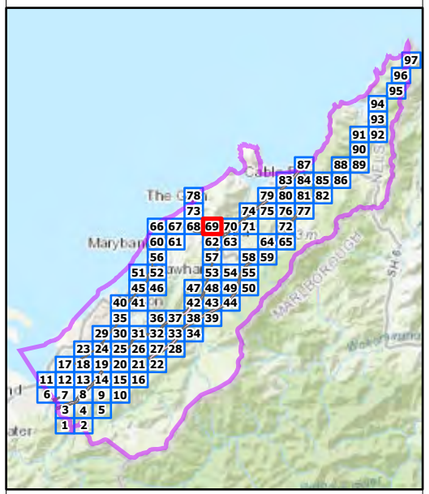
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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0 100 200
Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -69**

Beca

GIS@beca.com

File: P:\316\316026\2TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 70	Page 70 of 97

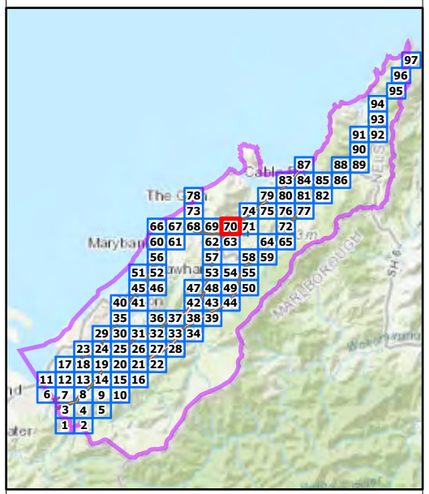
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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0 100 200
Metres

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2	SJF	BDJ2	DC	07/07/2021

N

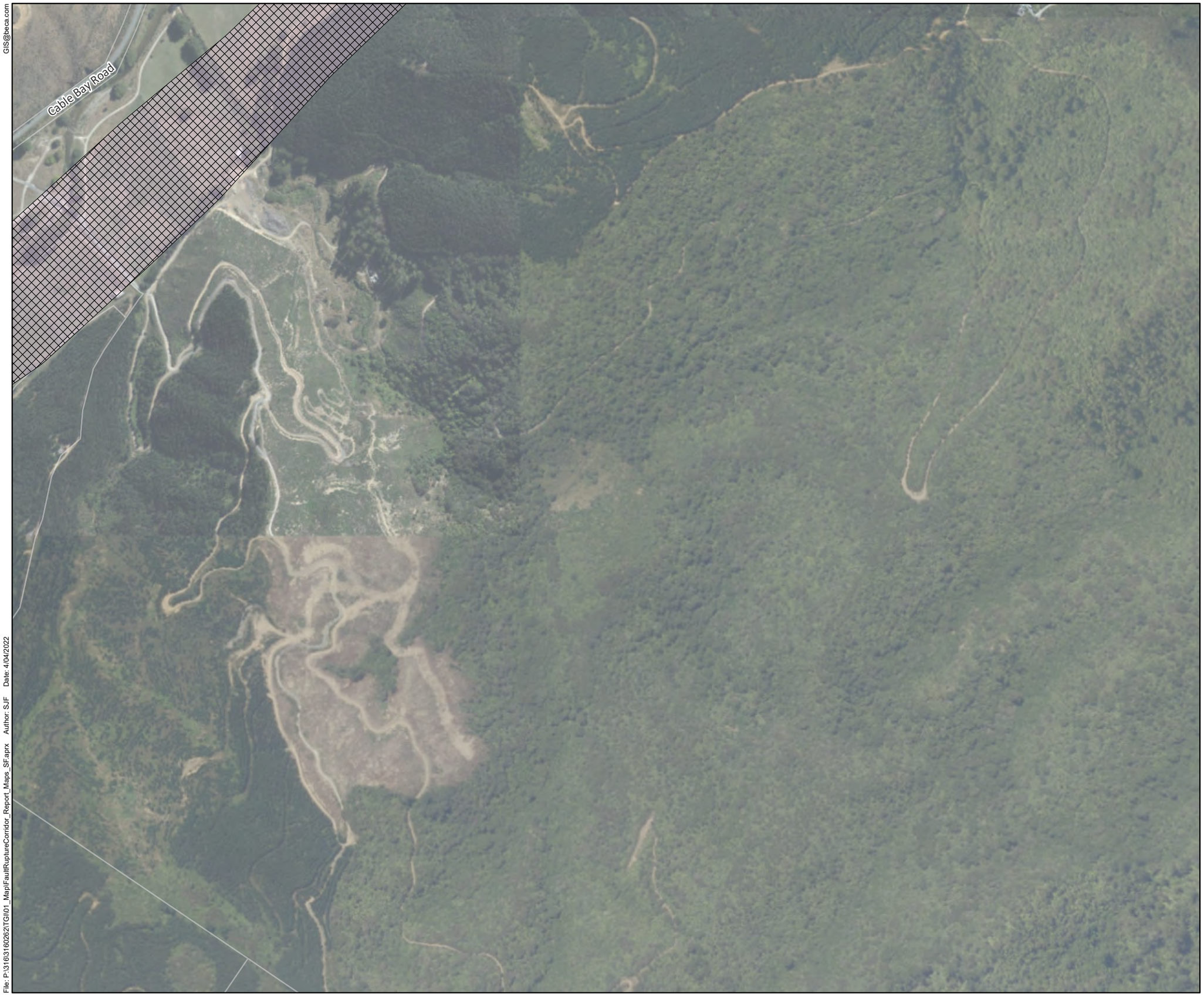
Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -70**

Beca



Nelson City Council
Revised Fault Deformation Overlay

Map : 71 | Page 71 of 97

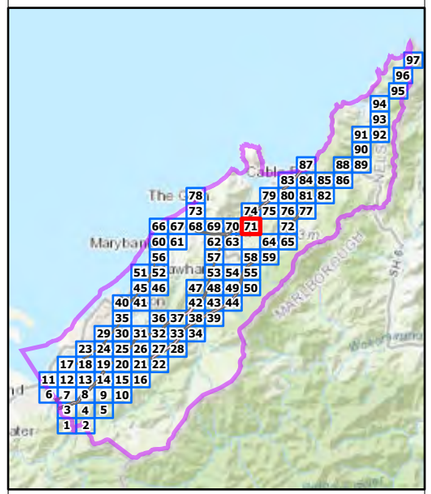
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Map Scale @ A3: 1:5,000

0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -71**

Beca

GIS@beca.com

File: P:\3161\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 72 | Page 72 of 97

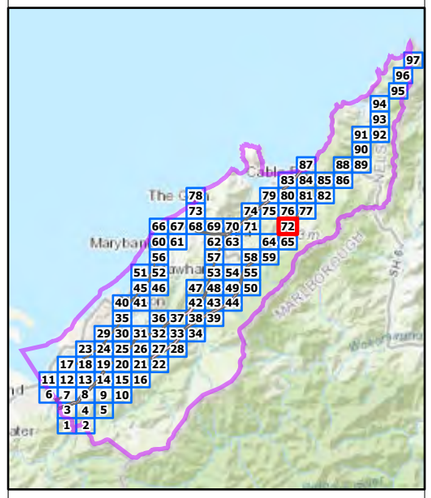
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Map Scale @ A3: 1:5,000

0 100 200
Metres

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5	SJF	Sarah B	DC	24/03/2022
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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -72**

Beca

GIS@beca.com

File: P:\316\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 73 | Page 73 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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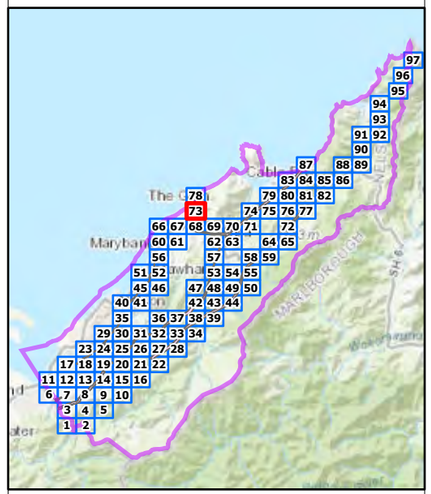
Ref:3160262-472476811



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0 100 200

Metres

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -73**

Beca

GIS@beca.com

File: P:\316\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 74 | Page 74 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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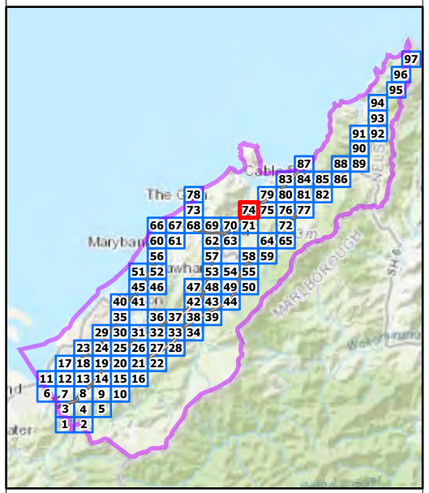
Ref:3160262-472476811



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Aerials sourced from Nelson City Council - Flown Sep 2020

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0 100 200

Metres

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -74**

Beca

GIS@beca.com

File: P:\316\316026\2TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

GIS@beca.com

Nelson City Council
Revised Fault Deformation Overlay

Map : 75 | Page 75 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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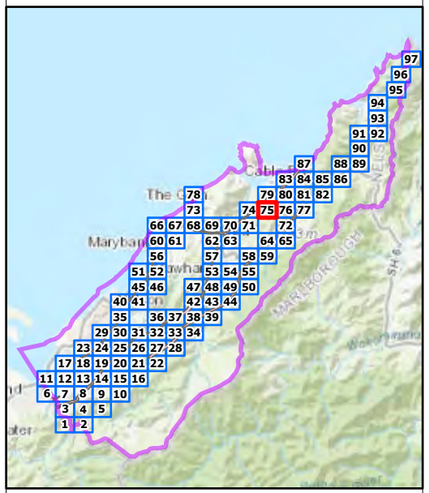
Ref:3160262-472476811



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Metres

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -75**

Beca

File: P:\3161\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

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File: P:\316\316262TGN\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 76	Page 76 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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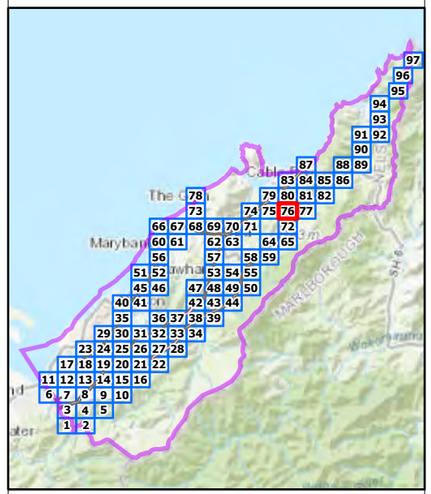
Ref:3160262-472476811



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Map Scale @ A3: 1:5,000

0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

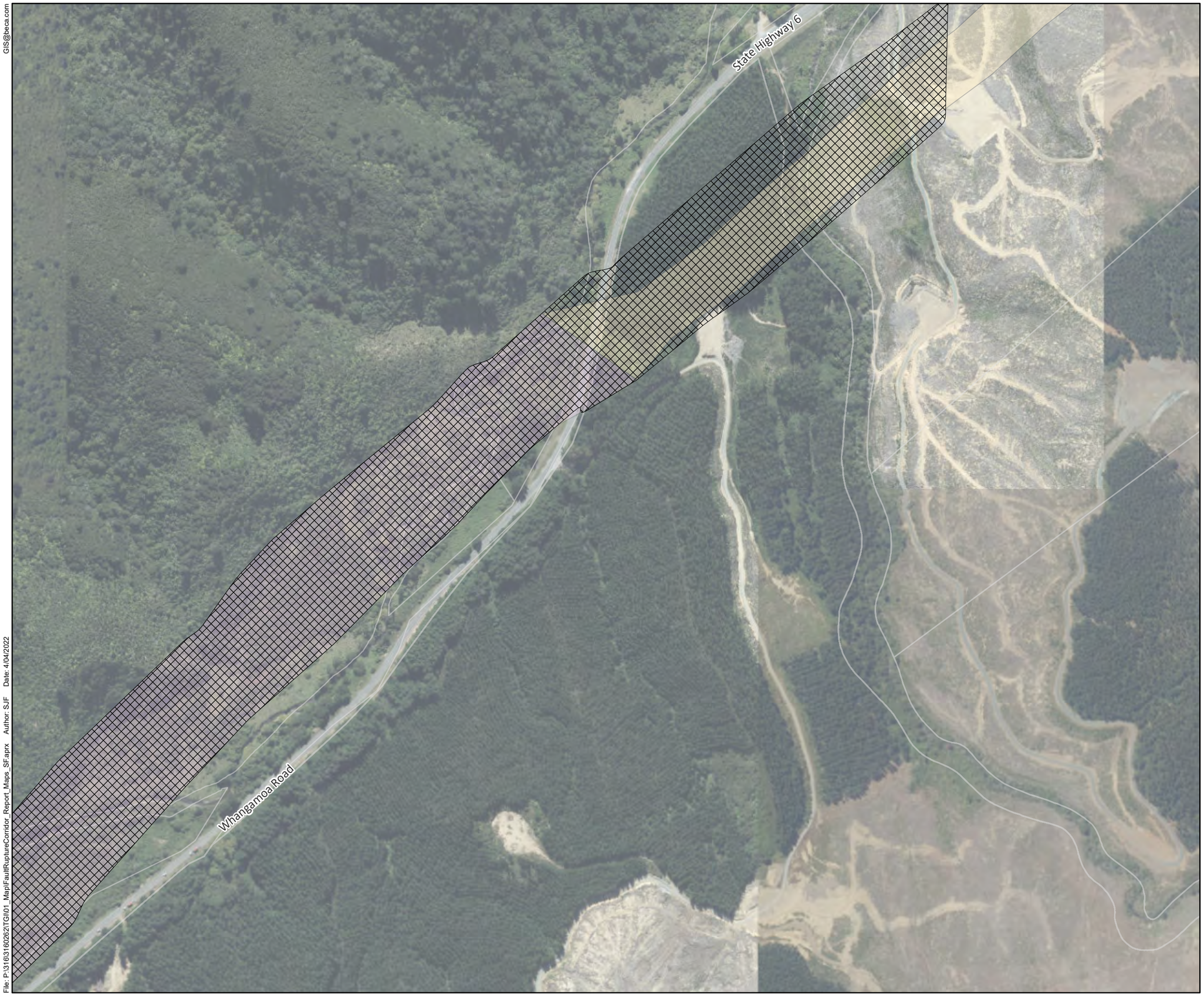
Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -76**

Beca



Nelson City Council
Revised Fault Deformation Overlay

Map : 77	Page 77 of 97

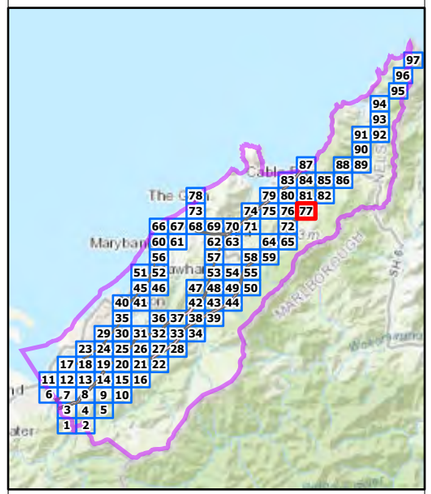
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200

Metres

Revision	Author	Verified	Approved	Date
5	SJF	Sarah B	DC	24/03/2022
4	SJF	BDJ2	DC	6/12/2021
3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -77**

Beca

GIS@beca.com

File: P:\3161\31602622TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 78 | Page 78 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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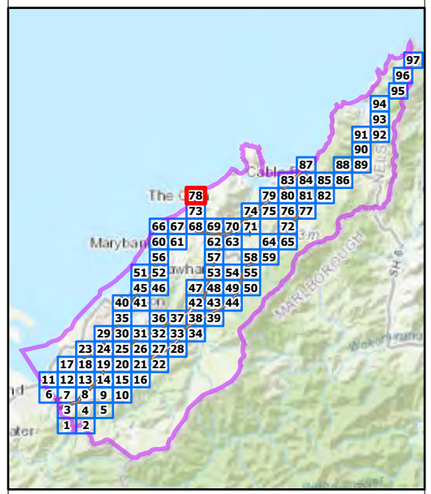
Ref:3160262-472476811



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0 100 200
Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -78**

Beca

GIS@beca.com

File: P:\31\63160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

GIS@beca.com

File: P:\3160262\TG\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 79	Page 79 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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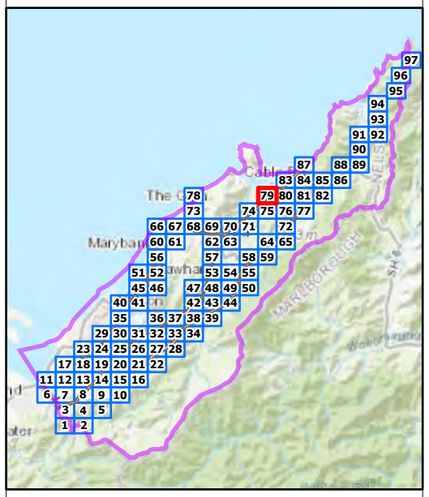

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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -79**

Beca

Nelson City Council
Revised Fault Deformation Overlay

Map : 80 | Page 80 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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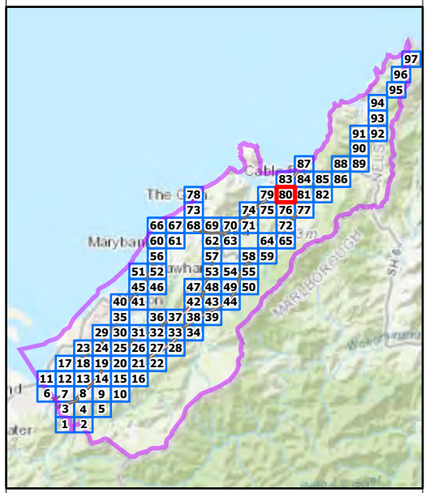
Ref:3160262-472476811



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Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -80**

Beca

GIS@beca.com

File: P:\3161\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 81 |

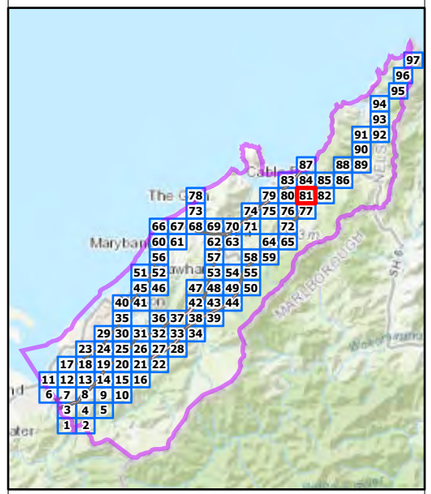
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Map Scale @ A3: 1:5,000

0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

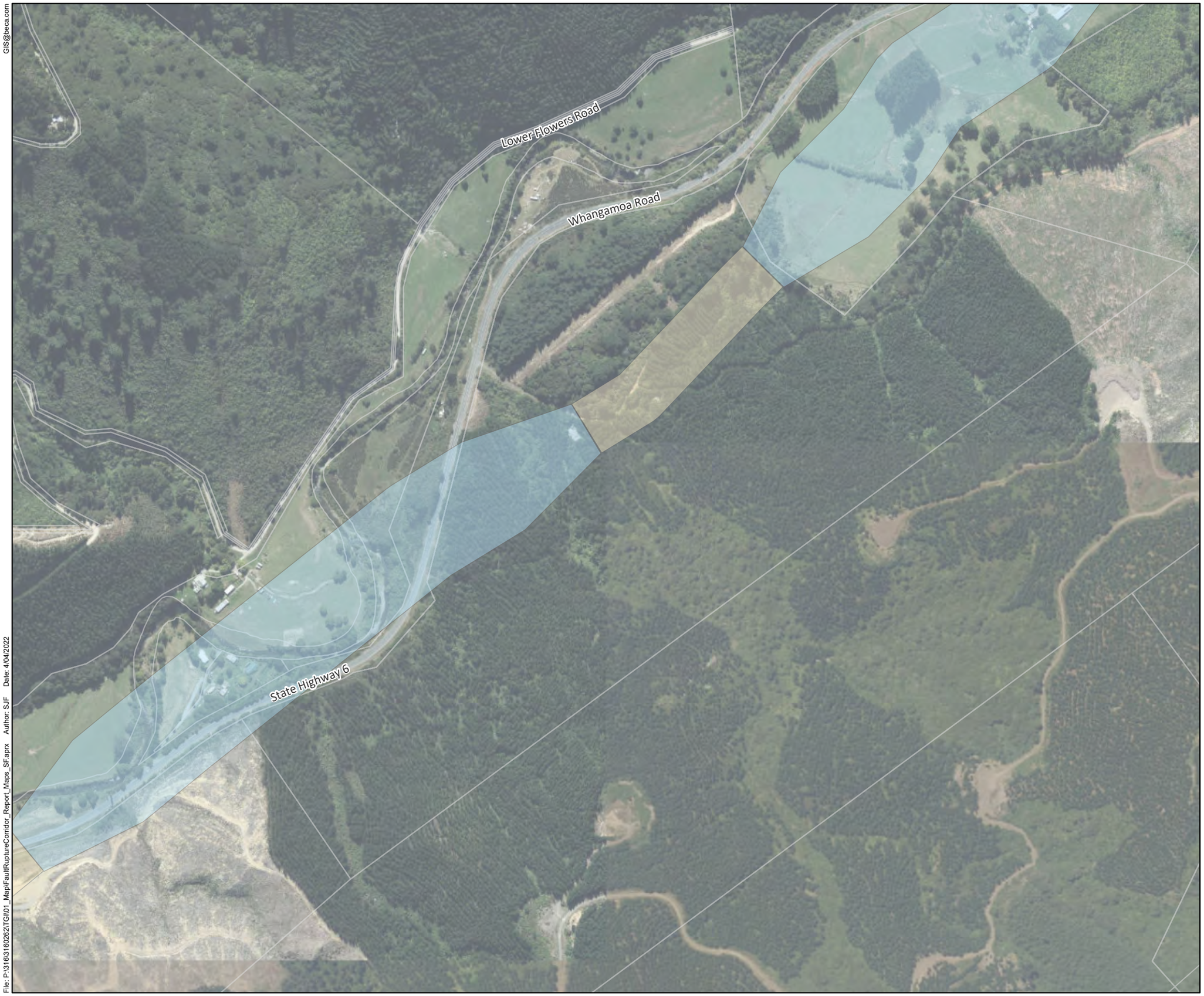
Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -81**

Beca

GIS@beca.com

File: P:\3161\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022



Nelson City Council
Revised Fault Deformation Overlay

Map : 82 | Page 82 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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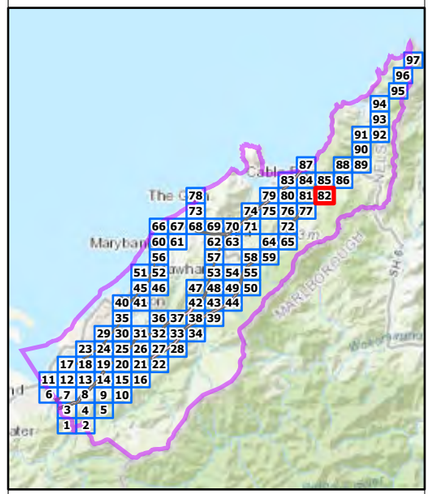
Ref:3160262-472476811



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0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -82**

Beca

GIS@beca.com

File: P:\316\316026\2TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

GIS@beca.com

Nelson City Council
Revised Fault Deformation Overlay

Map : 83 | Page 83 of 97

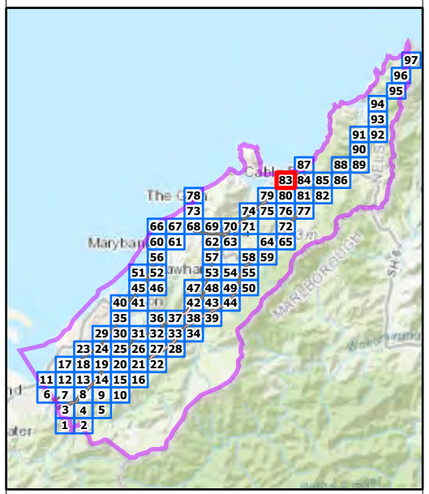
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -83**

Beca

File: P:\3161\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 84 | Page 84 of 97

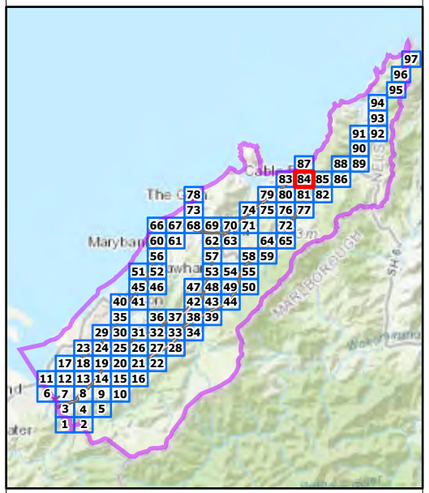
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Metres

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -84**

Beca

GIS@beca.com

File: P:\3161\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

GIS@beca.com

File: P:\316\316262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 85	Page 85 of 97

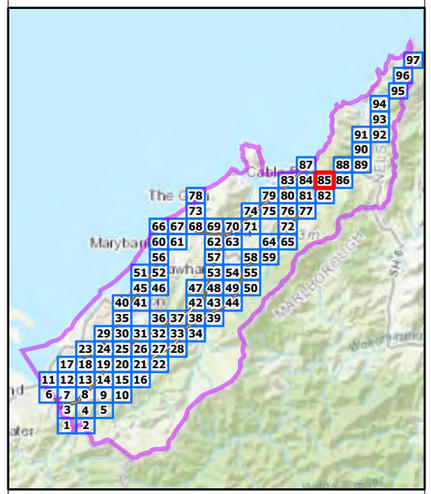
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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0 100 200
Metres

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -85**

Beca

GIS@beca.com

File: P:\3161\31602626TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 86	Page 86 of 97

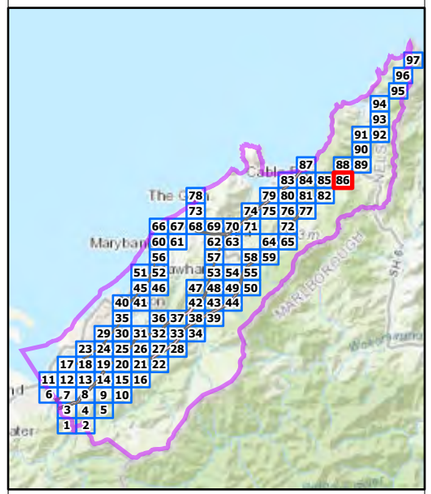
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Map Scale @ A3: 1:5,000

0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -86**

Beca

GIS@beca.com

Nelson City Council
Revised Fault Deformation Overlay

Map : 87	Page 87 of 97

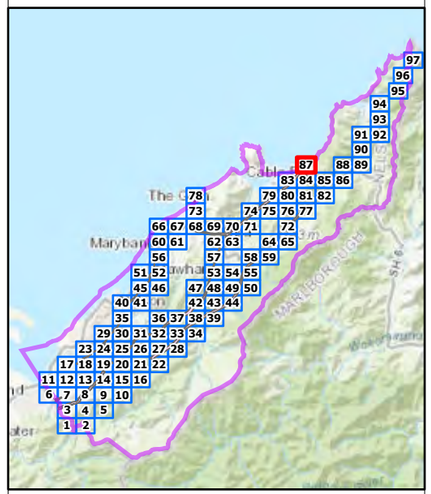
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -87**

Beca

File: P:\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 88	Page 88 of 97

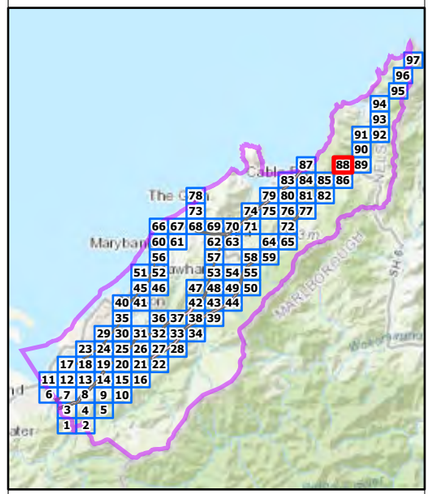
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Metres

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N

Client:	Discipline:
Nelson City Council	GIS
Project: NCC Revised Fault Deformation Overlay	**Drawing No:** GIS-3160262-MS02 -88

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GIS@beca.com

File: P:\3161\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 89	Page 89 of 97

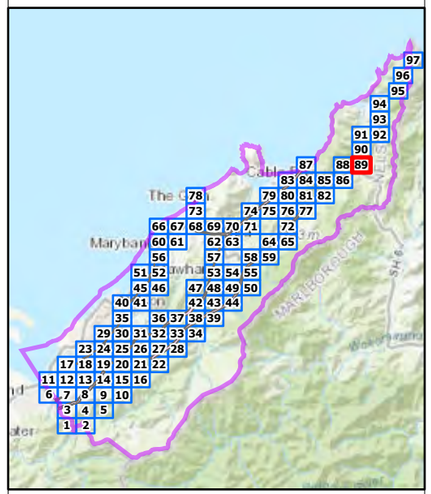
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200

Metres

Revision	Author	Verified	Approved	Date
5	SJF	Sarah B	DC	24/03/2022
4	SJF	BDJ2	DC	6/12/2021
3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -89**

Beca

GIS@beca.com

File: P:\3161\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 90	Page 90 of 97

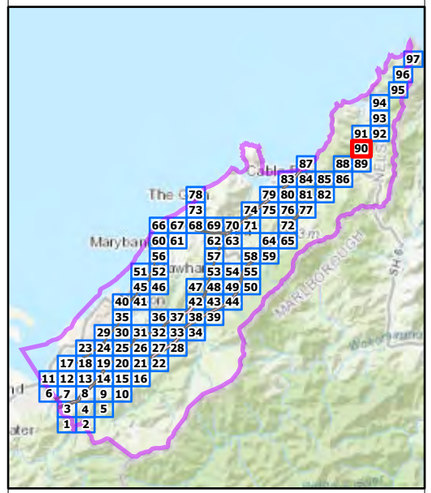
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Map Scale @ A3: 1:5,000

0 100 200
Metres

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3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -90**

Beca

GIS@beca.com

File: P:\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 91	Page 91 of 97

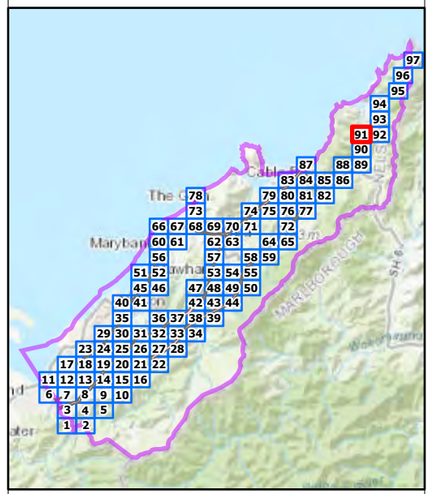
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Map Scale @ A3: 1:5,000

0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -91**

Beca

GIS@beca.com

File: P:\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

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Nelson City Council
Revised Fault Deformation Overlay

Map : 92 | Page 92 of 97

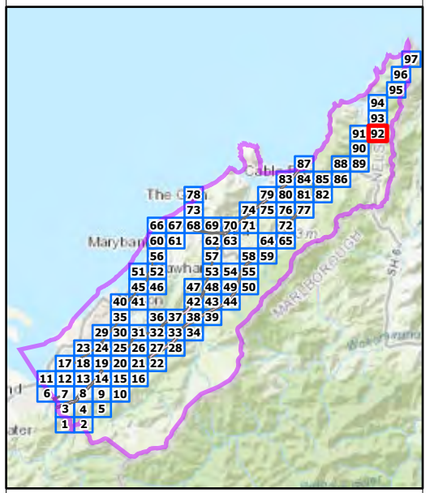
Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200
Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -92**

Beca

File: P:\316\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 93	Page 93 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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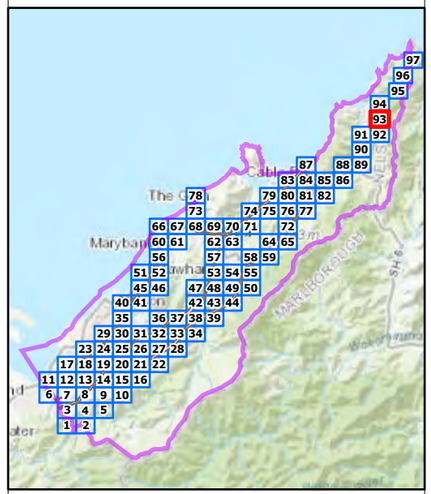
Ref:3160262-472476811



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Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -93**

Beca

GIS@beca.com

Date: 4/04/2022 Author: SJF

File: P:\3161\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx

Nelson City Council
Revised Fault Deformation Overlay

Map : 94 | Page 94 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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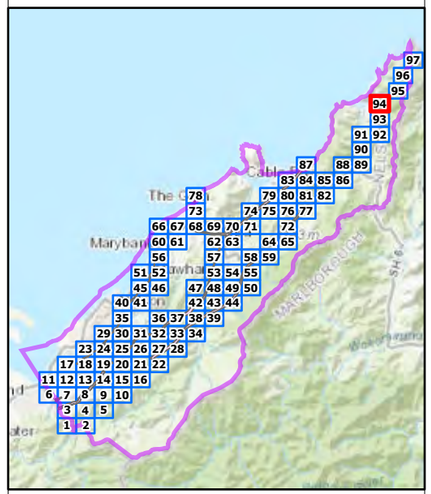

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0 100 200
Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

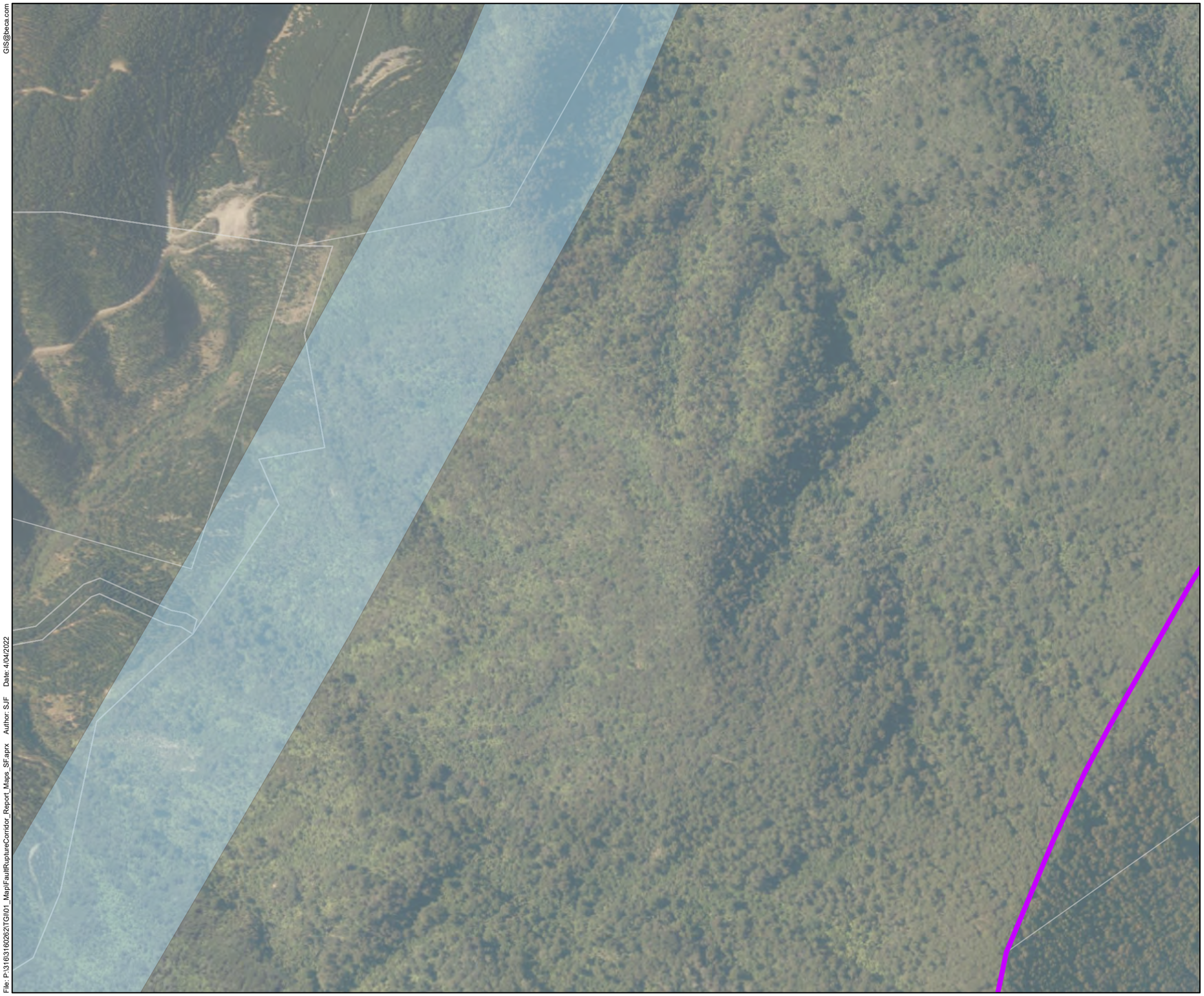
Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -94**

Beca

GIS@beca.com

File: P:\3161\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022



Nelson City Council
Revised Fault Deformation Overlay

Map : 95 | Page 95 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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Beca report 'Revised Nelson Fault Deformation Overlay'
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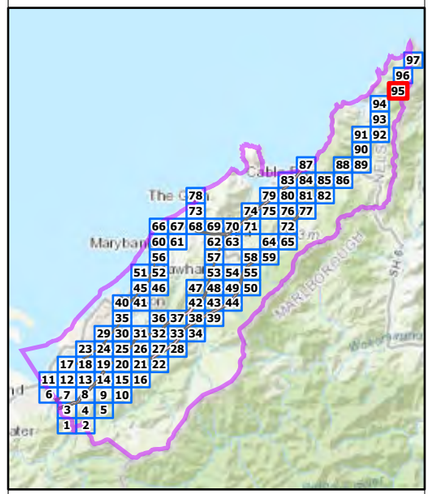

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0 100 200

Metres

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -95**

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GIS@beca.com

File: P:\3161\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 96	Page 96 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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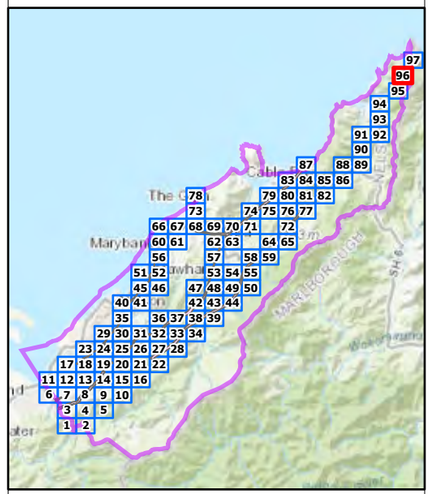
Ref:3160262-472476811



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Metres

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -96**

Beca

GIS@beca.com

File: P:\316\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

GIS@beca.com

Nelson City Council
Revised Fault Deformation Overlay

Map : 97 | Page 97 of 97

Legend

- Study Area
- Existing Fault Rupture Overlay

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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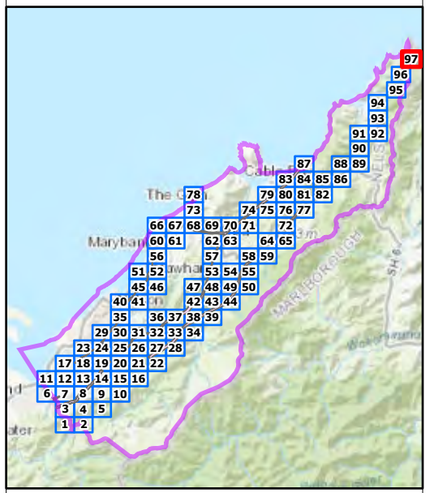

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0 100 200

Metres

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS02 -97**

Beca

File: P:\3161\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

B

Appendix B – Fault Deformation Overlay Revisions Compared to Existing Overlay

Nelson City Council
Revised Fault Deformation Overlay

Map : 1 | Page 1 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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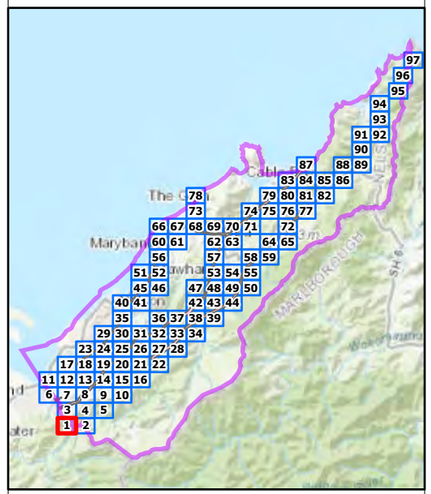
Ref:3160262-472476811



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0 100 200

Metres

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -1**

Beca

GIS@beca.com

File: P:\316\316262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 2 | Page 2 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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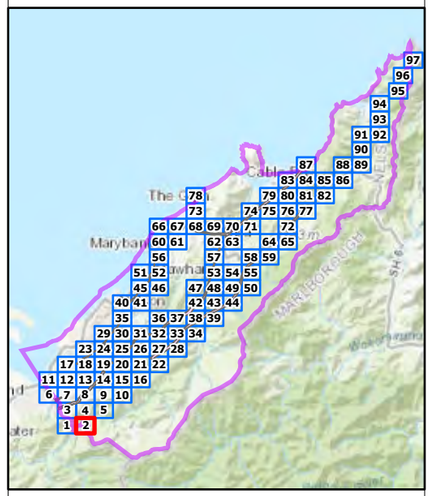

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0 100 200
Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

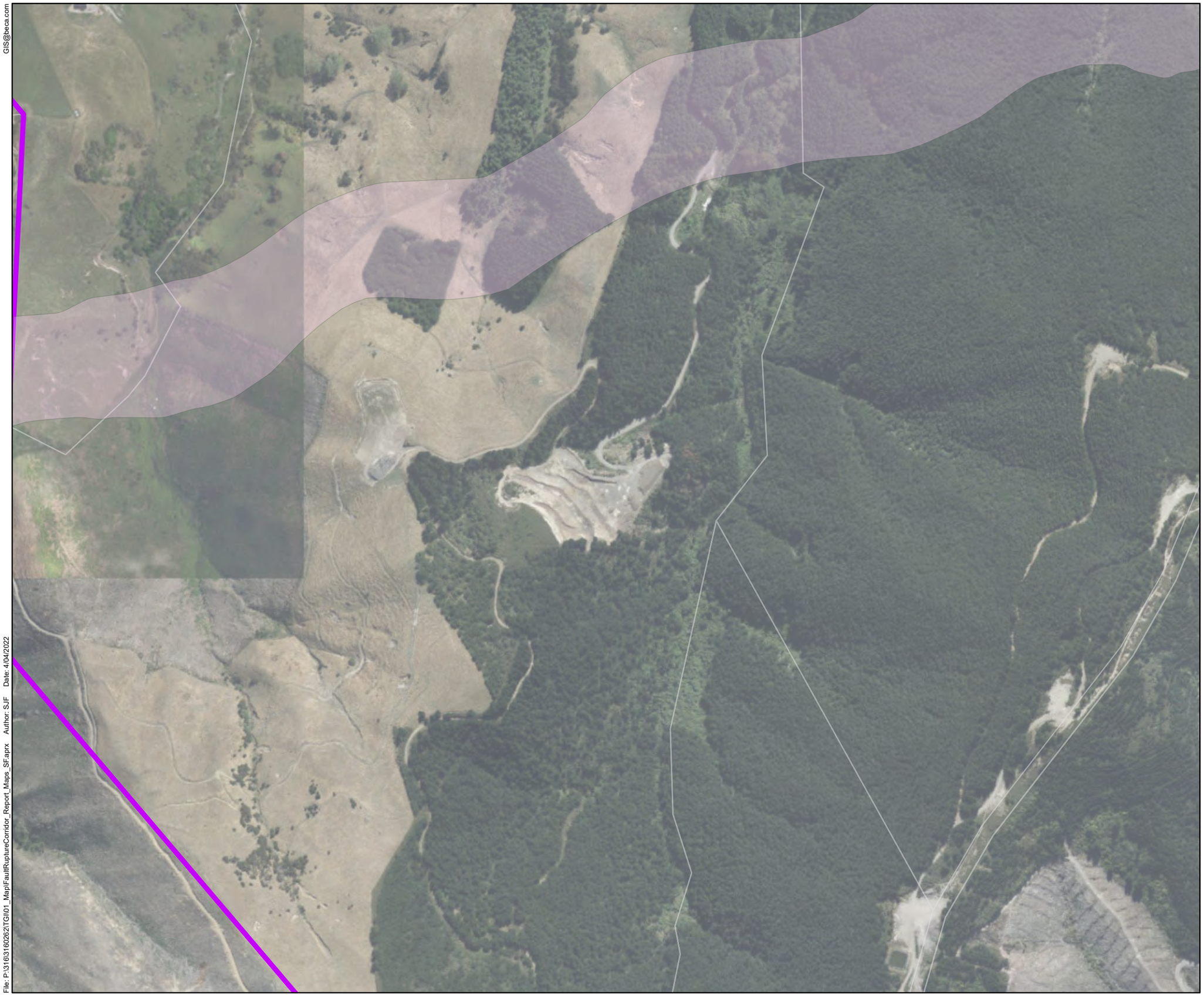
Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -2**

Beca

GIS@beca.com

File: P:\316\3160262\TG\I01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022



Nelson City Council
Revised Fault Deformation Overlay

Map : 3 | Page 3 of 97

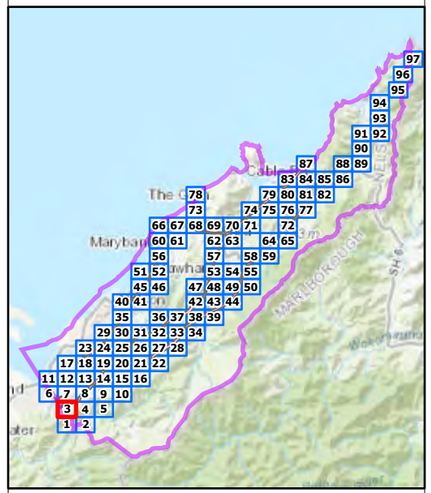
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Metres

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Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -3**

Beca

GIS@beca.com

File: P:\316\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 4	Page 4 of 97

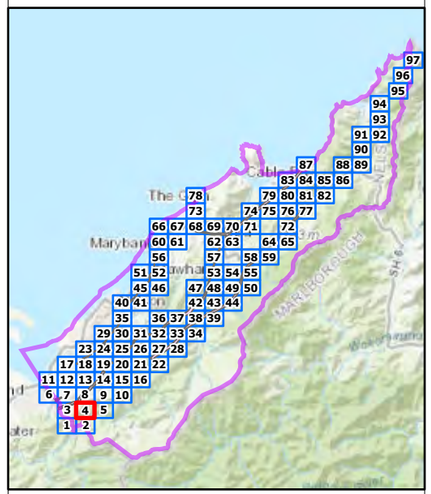
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



Map intended for distribution as a PDF document.
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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200
Metres

Revision	Author	Verified	Approved	Date
5	SJF	Sarah B	DC	24/03/2022
4	SJF	BDJ2	DC	6/12/2021
3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -4**

Beca

GIS@beca.com

File: P:\316\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 5 | Page 5 of 97

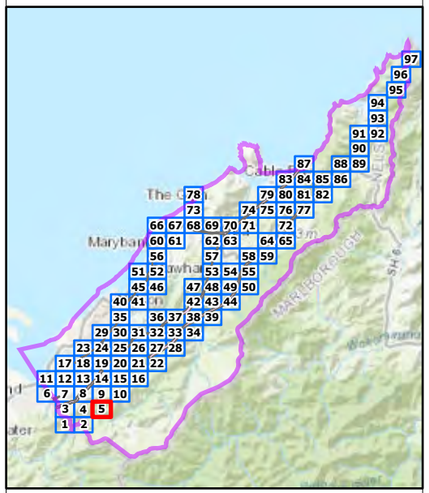
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -5**

Beca

GIS@beca.com

File: P:\316\316026\2TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

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File: P:\316\316026\2TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 6	Page 6 of 97

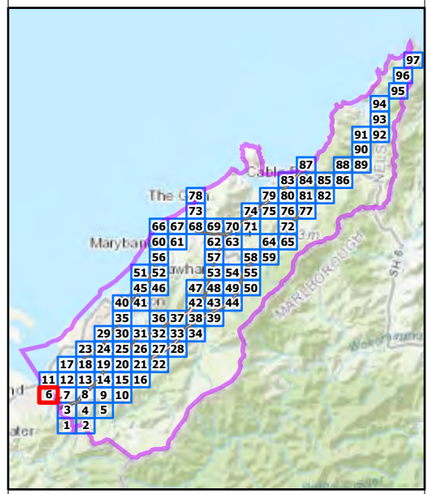
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Metres

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N

Client:	Discipline:
Nelson City Council	GIS
Project: NCC Revised Fault Deformation Overlay	**Drawing No:** GIS-3160262-MS01 -6

Beca

Nelson City Council
Revised Fault Deformation Overlay

Map : 7 | Page 7 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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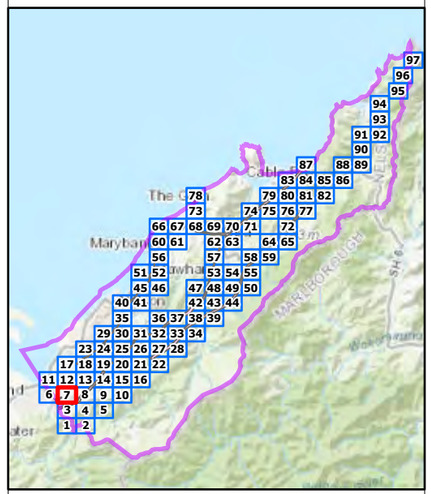
Ref:3160262-472476811



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Metres

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -7**

Beca

GIS@beca.com

File: P:\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

GIS@beca.com

Nelson City Council
Revised Fault Deformation Overlay

Map : 8	Page 8 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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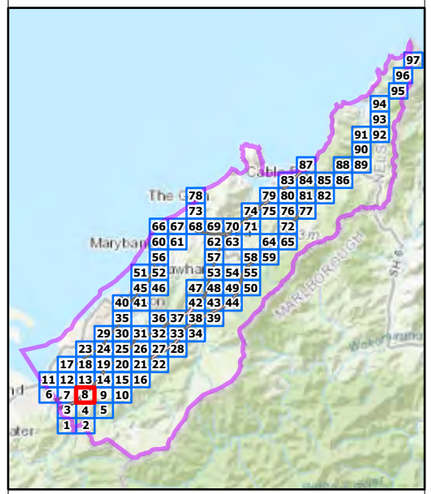
Ref:3160262-472476811



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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -8**

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File: P:\3161\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 9 | Page 9 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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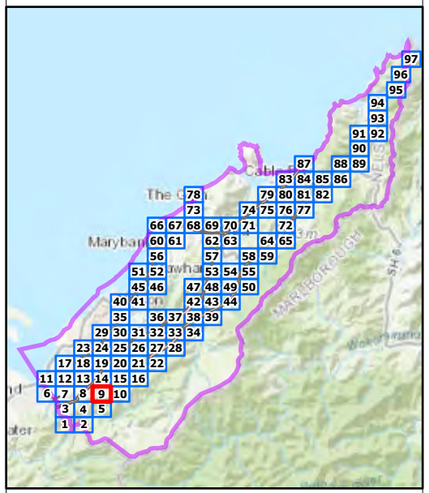
Ref:3160262-472476811



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Metres

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -9**

Beca

GIS@beca.com

File: P:\316\316262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 10 | Page 10 of 97

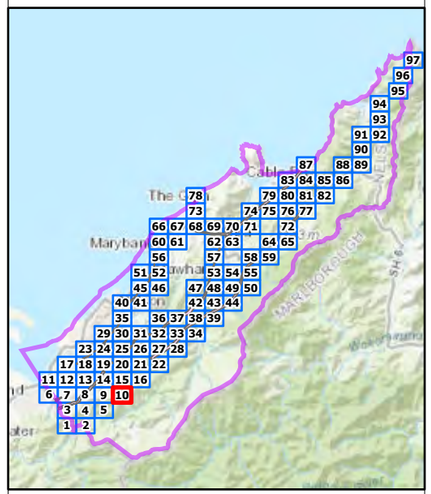
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Metres

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -10**

Beca

GIS@beca.com

File: P:\3161\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

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Nelson City Council
Revised Fault Deformation Overlay

Map : 11 | Page 11 of 97

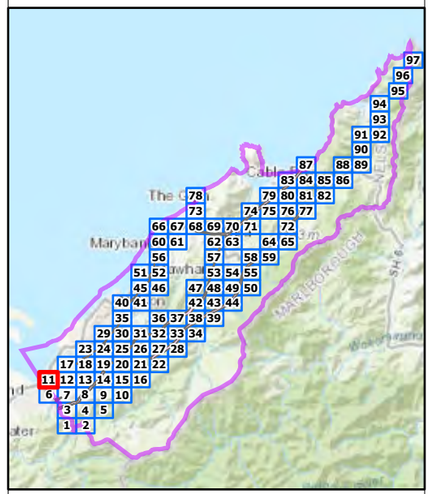
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Map Scale @ A3: 1:5,000

0 100 200

Metres

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -11**

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File: P:\316\316262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 12	Page 12 of 97

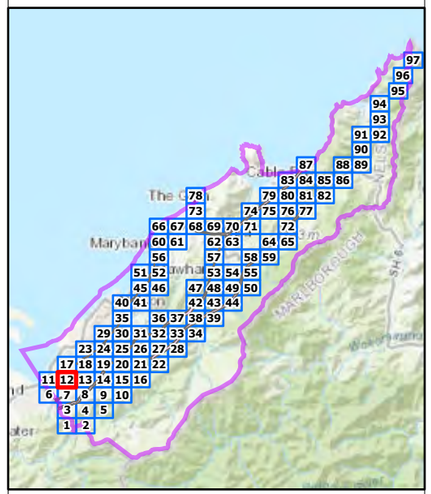
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to Beca report 'Revised Nelson Fault Deformation Overlay' Ref:3160262-472476811



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Metres

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -12**

Beca

GIS@beca.com

File: P:\3161\316262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 13	Page 13 of 97

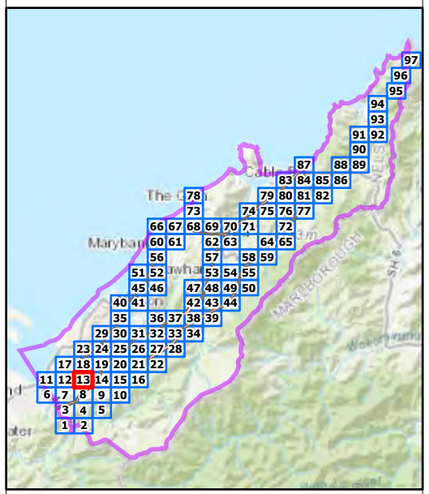
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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N

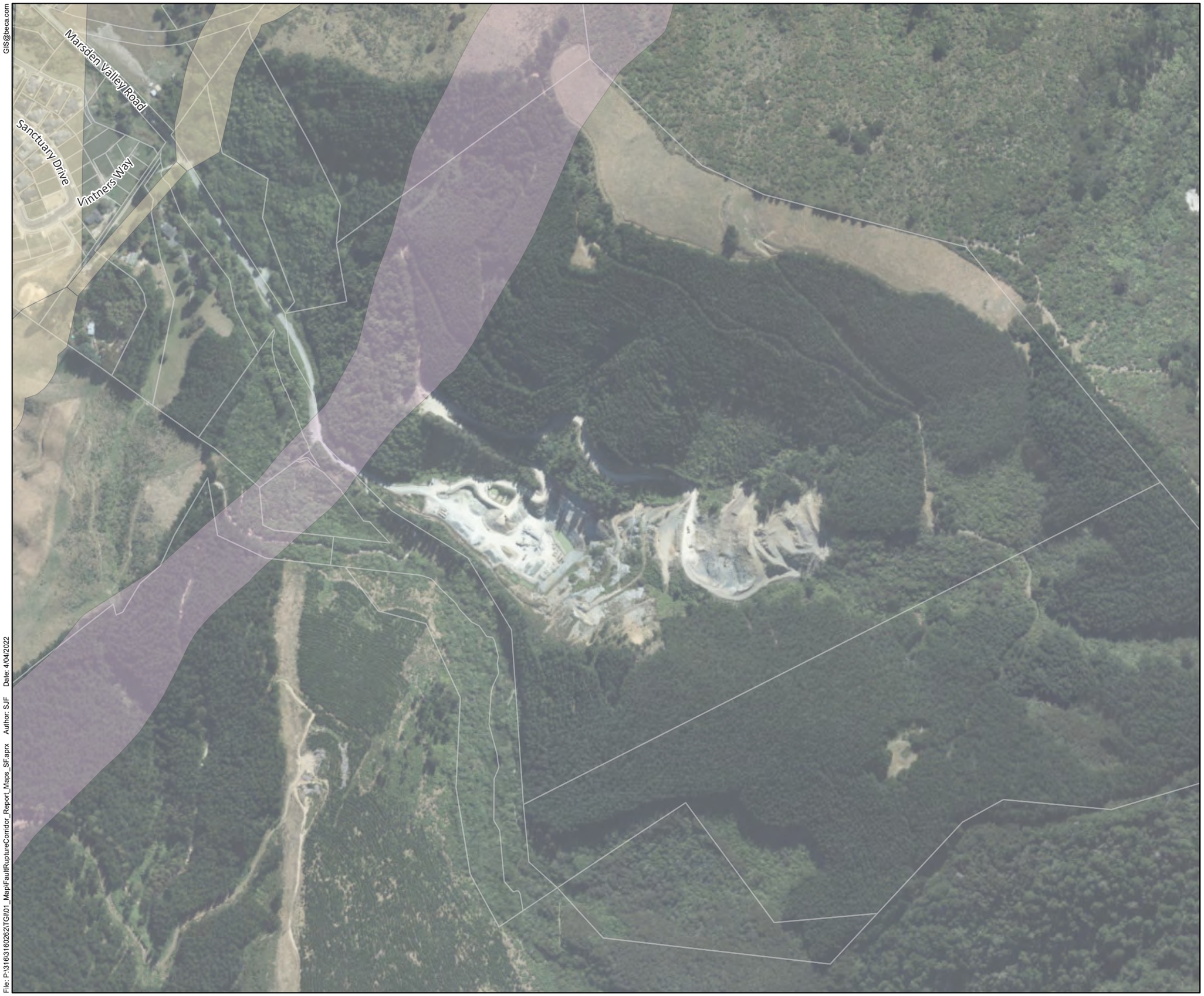
Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -13**

Beca



Nelson City Council
Revised Fault Deformation Overlay

Map : 14 | Page 14 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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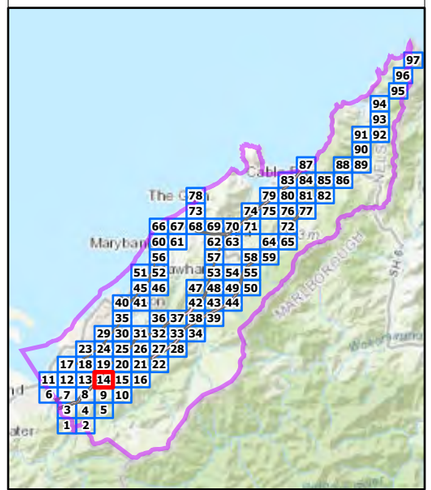
Ref:3160262-472476811



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Metres

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -14**

Beca

GIS@beca.com

File: P:\316\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 15 | Page 15 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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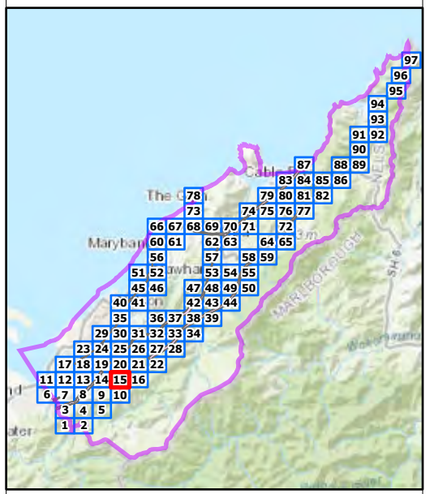

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -15**

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Nelson City Council
Revised Fault Deformation Overlay

Map : 16 | Page 16 of 97

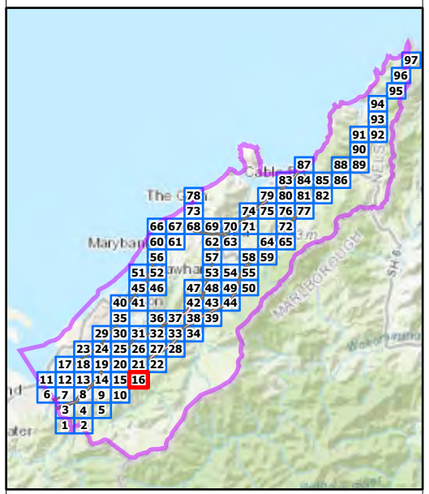
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



Map intended for distribution as a PDF document.
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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200
Metres

Revision	Author	Verified	Approved	Date
5	SJF	Sarah B	DC	24/03/2022
4	SJF	BDJ2	DC	6/12/2021
3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -16**

Beca

GIS@beca.com

File: P:\3161\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

GIS@beca.com

File: P:\3160262\TG\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 17	Page 17 of 97

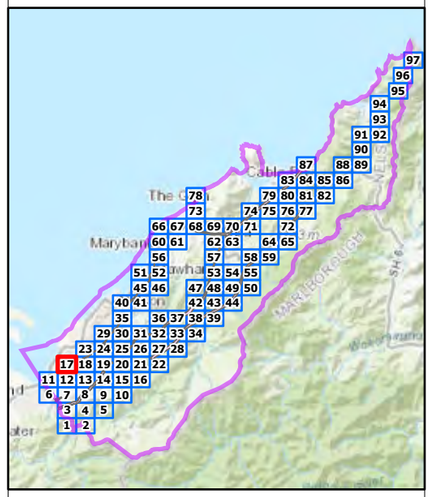
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to Beca report 'Revised Nelson Fault Deformation Overlay' Ref:3160262-472476811



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0 100 200

Metres

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3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

N

Client:	Discipline:
Nelson City Council	GIS
Project: NCC Revised Fault Deformation Overlay	**Drawing No:** GIS-3160262-MS01 -17

Beca

GIS@beca.com

File: P:\316\316026\2TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 18	Page 18 of 97

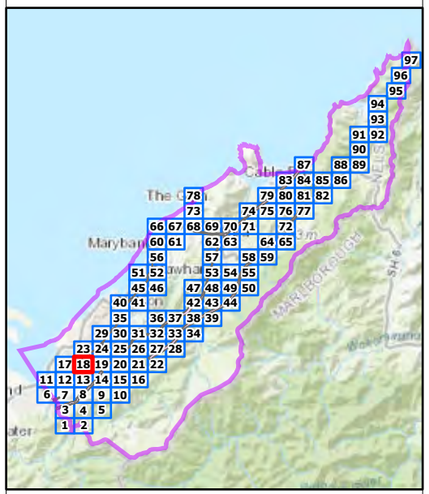
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -18**

Beca

GIS@beca.com

File: P:\3161\316026\2TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 19	Page 19 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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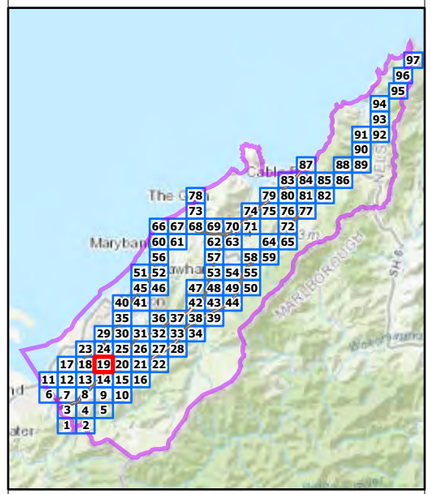
Ref:3160262-472476811



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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -19**

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Nelson City Council
Revised Fault Deformation Overlay

Map : 20	Page 20 of 97

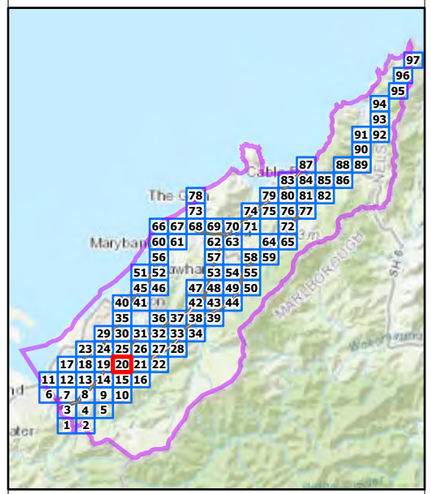
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -20**

Beca

GIS@beca.com

File: P:\316\316026262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

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File: P:\3161\31602662TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 21	Page 21 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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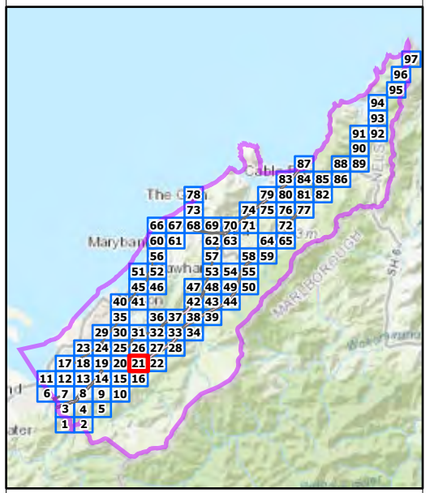
Ref:3160262-472476811



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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -21**

Beca

GIS@beca.com

Nelson City Council
Revised Fault Deformation Overlay

Map : 22 | Page 22 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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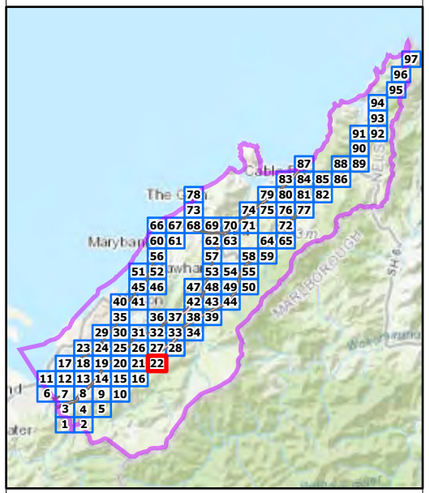
Ref:3160262-472476811



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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -22**

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File: P:\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

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File: P:\3161\316026\2TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 23	Page 23 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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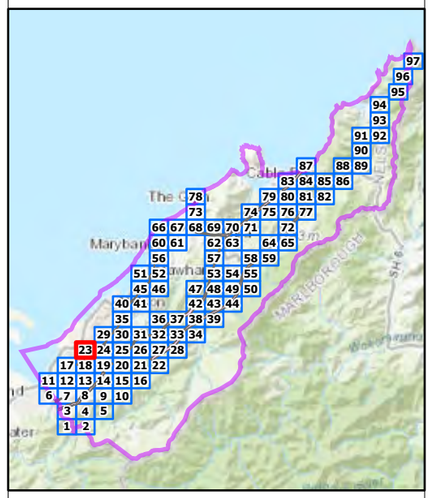

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N

Client:	Discipline:
Nelson City Council	GIS
Project: NCC Revised Fault Deformation Overlay	**Drawing No:** GIS-3160262-MS01 -23

Beca

GIS@beca.com

Nelson City Council
Revised Fault Deformation Overlay

Map : 24	Page 24 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
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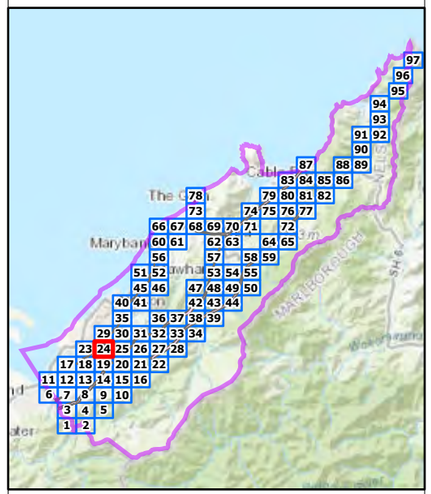

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Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -24**

Beca

Date: 4/04/2022 Author: SJF File: P:\3161\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx

Nelson City Council
Revised Fault Deformation Overlay

Map : 25	Page 25 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
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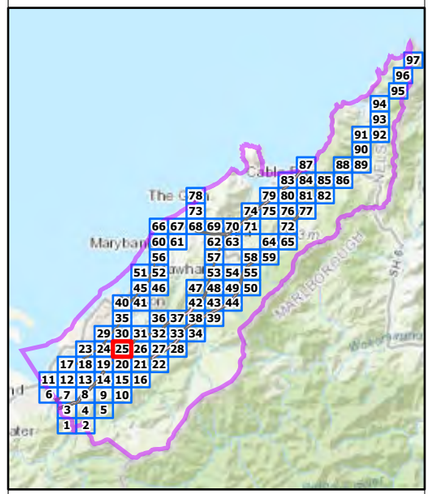

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Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -25**

Beca

GIS@beca.com

File: P:\316\316262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 26 | Page 26 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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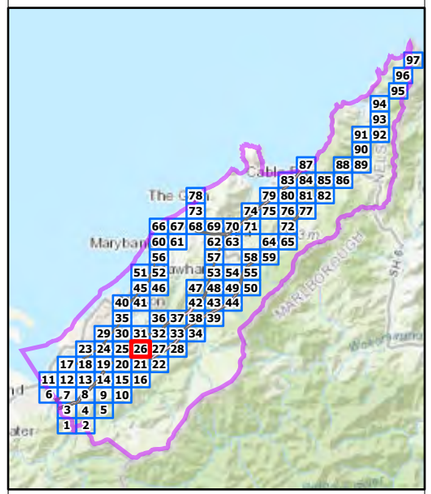

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N

Client: **Nelson City Council**

Discipline: **GIS**

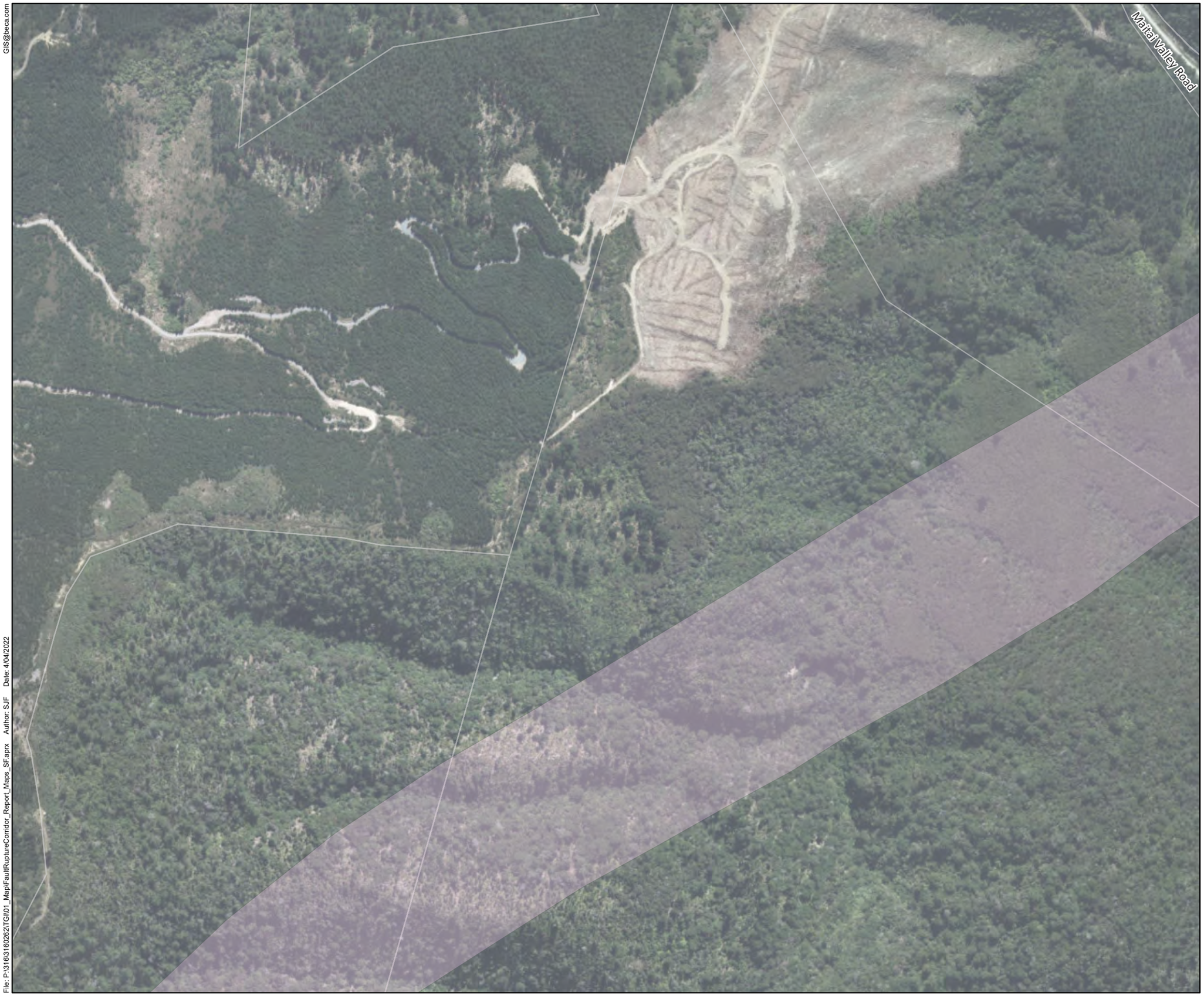
Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -26**

Beca

GIS@beca.com

File: P:\316\316262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022



GIS@beca.com

File: P:\3161\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 27	Page 27 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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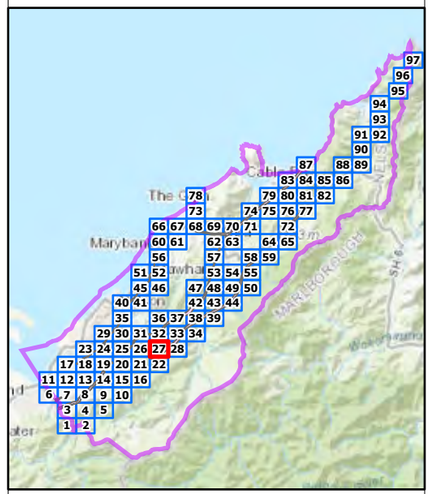
Ref:3160262-472476811



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N

Client:	Discipline:
Nelson City Council	GIS
Project: NCC Revised Fault Deformation Overlay	**Drawing No:** GIS-3160262-MS01 -27

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GIS@beca.com

File: P:\316\316062\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 28	Page 28 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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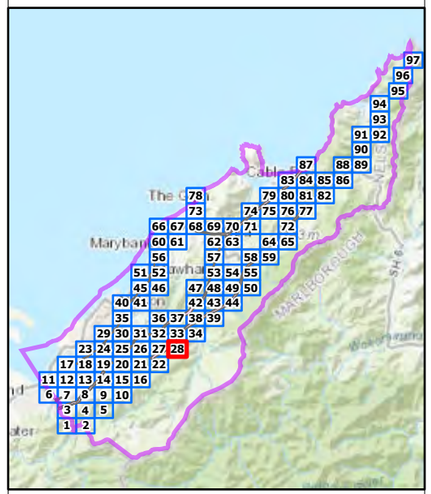
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



Map intended for distribution as a PDF document.
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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200

Metres

Revision	Author	Verified	Approved	Date
5	SJF	Sarah B	DC	24/03/2022
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3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -28**

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GIS@beca.com

Nelson City Council
Revised Fault Deformation Overlay

Map : 29	Page 29 of 97

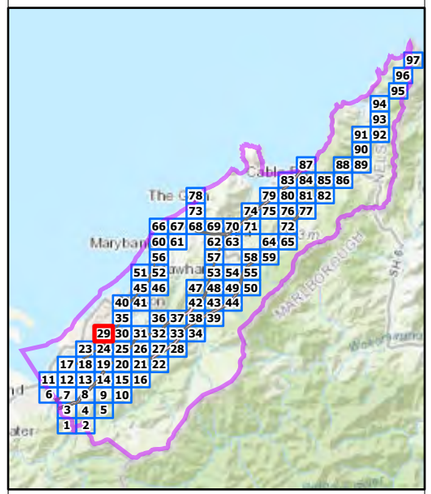
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client:	Discipline:
Nelson City Council	GIS
Project: NCC Revised Fault Deformation Overlay	**Drawing No:** GIS-3160262-MS01 -29

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File: P:\3161\31602626TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

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File: P:\316\316262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 30	Page 30 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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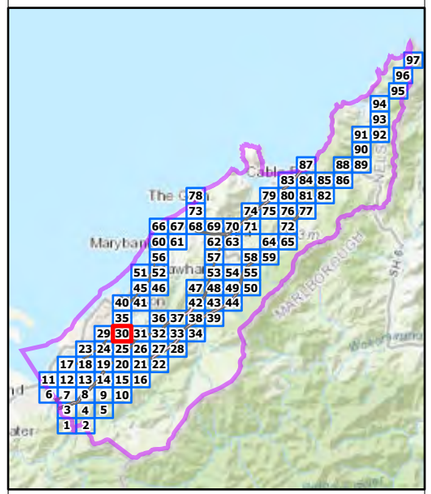
Ref:3160262-472476811



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N

Client:	Discipline:
Nelson City Council	GIS
Project: NCC Revised Fault Deformation Overlay	**Drawing No:** GIS-3160262-MS01 -30

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Nelson City Council
Revised Fault Deformation Overlay

Map : 31	Page 31 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
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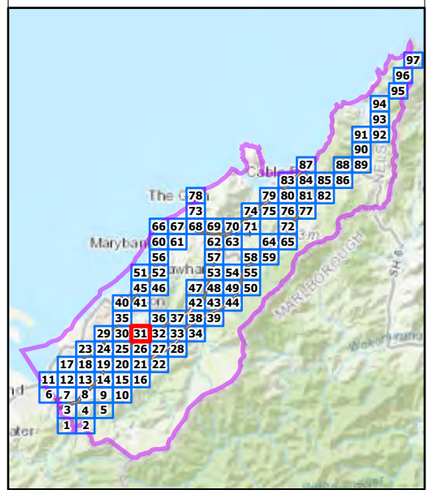

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Metres

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N

Client:	Discipline:
Nelson City Council	GIS
Project: NCC Revised Fault Deformation Overlay	Drawing No: GIS-3160262-MS01 -31

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File: P:\316\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

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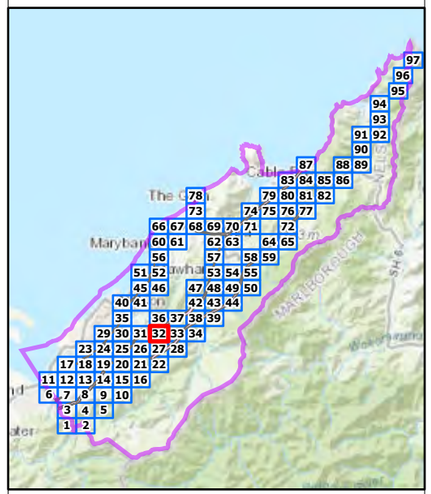

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -32**

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File: P:\316\316262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 33 | Page 33 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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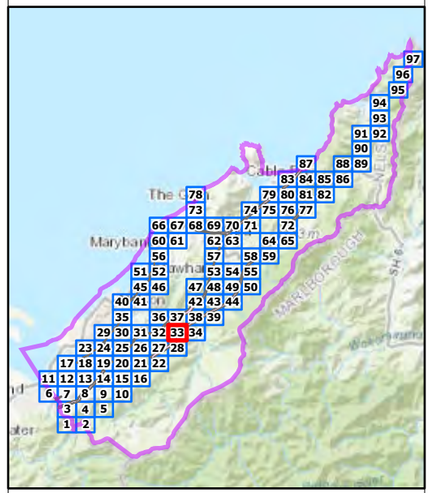

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -33**

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File: P:\31\i\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

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Nelson City Council
Revised Fault Deformation Overlay

Map : 34	Page 34 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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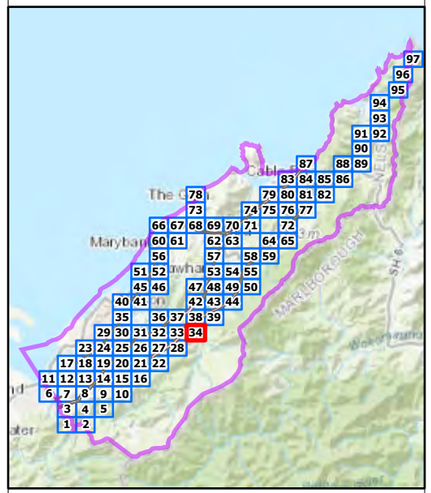

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -34**

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Nelson City Council
Revised Fault Deformation Overlay

Map : 35 | Page 35 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
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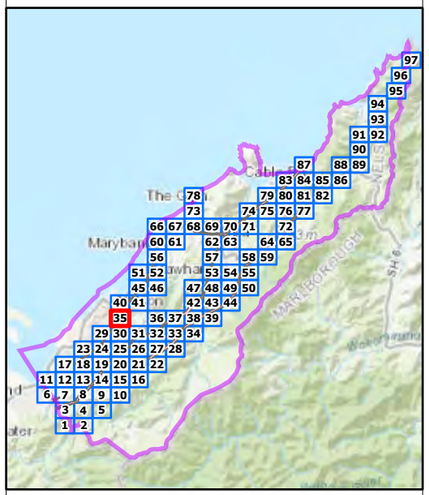

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -35**

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File: P:\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
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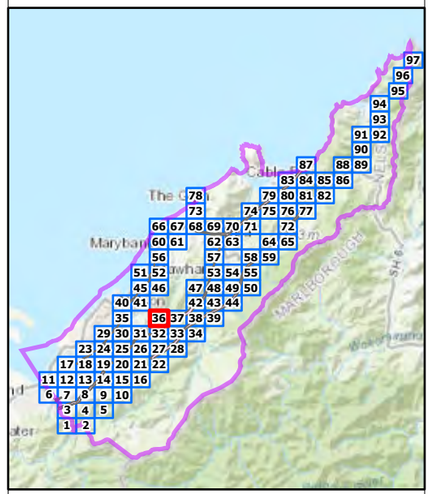

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -36**

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File: P:\316\316262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 37	Page 37 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
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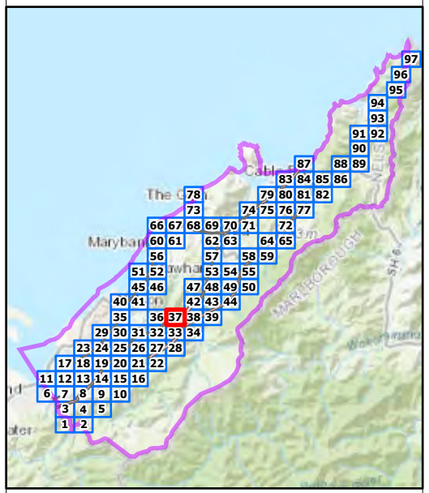

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -37**

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File: P:\316\316262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 38 | Page 38 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
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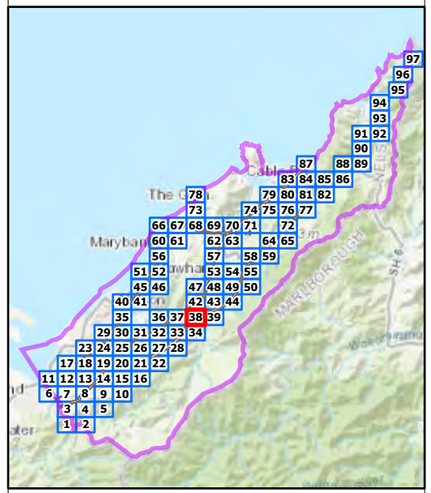

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -38**

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File: P:\316\316262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 39 | Page 39 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
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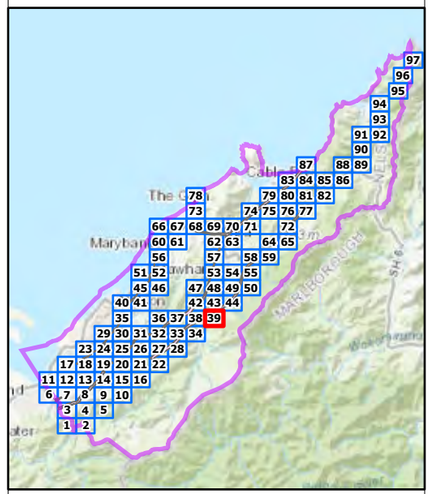

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -39**

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Nelson City Council
Revised Fault Deformation Overlay

Map : 40 | Page 40 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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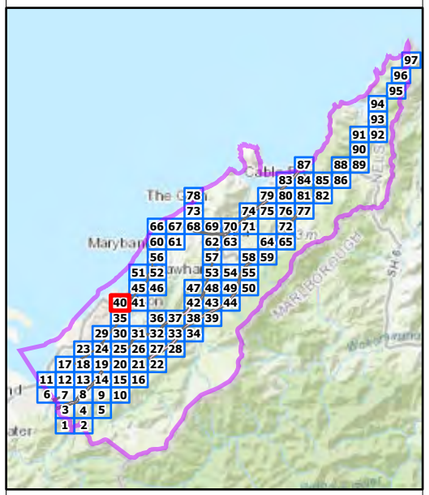

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Metres

Revision	Author	Verified	Approved	Date
5	SJF	Sarah B	DC	24/03/2022
4	SJF	BDJ2	DC	6/12/2021
3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -40**

Beca

File: P:\316\316262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

GIS@beca.com

File: P:\3161\316026\2TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 41	Page 41 of 97

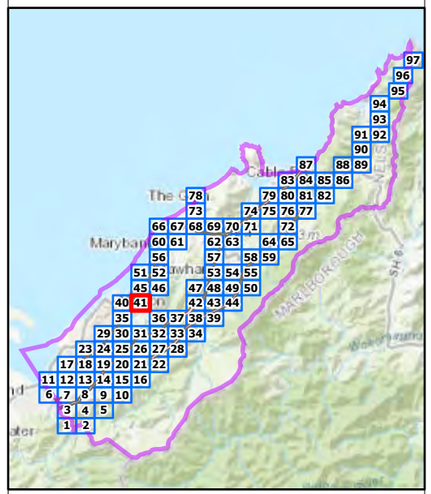
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



Map intended for distribution as a PDF document.
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Overlay was created based on engineering judgement, taking into consideration, anticipated deformation widths of faults, dataset accuracy and confidence on fault location

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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200

Metres

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5	SJF	Sarah B	DC	24/03/2022
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2	SJF	BDJ2	DC	07/07/2021

N

Client:	Discipline:
Nelson City Council	**GIS**
Project: **NCC Revised Fault Deformation Overlay**	*Drawing No:* **GIS-3160262-MS01 -41**

Beca

Nelson City Council
Revised Fault Deformation Overlay

Map : 42	Page 42 of 97

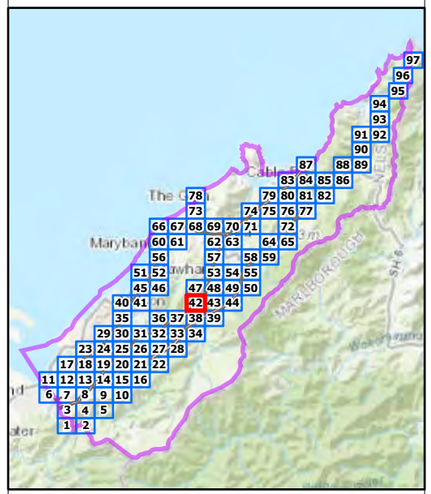
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -42**

Beca

GIS@beca.com

File: P:\316\316262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

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Nelson City Council
Revised Fault Deformation Overlay

Map : 43 | Page 43 of 97

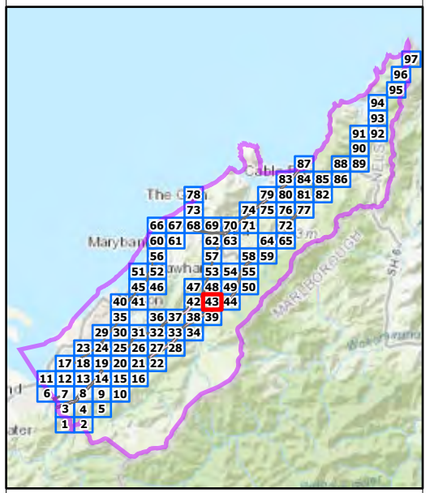
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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0 100 200

Metres

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N

Client: **Nelson City Council**

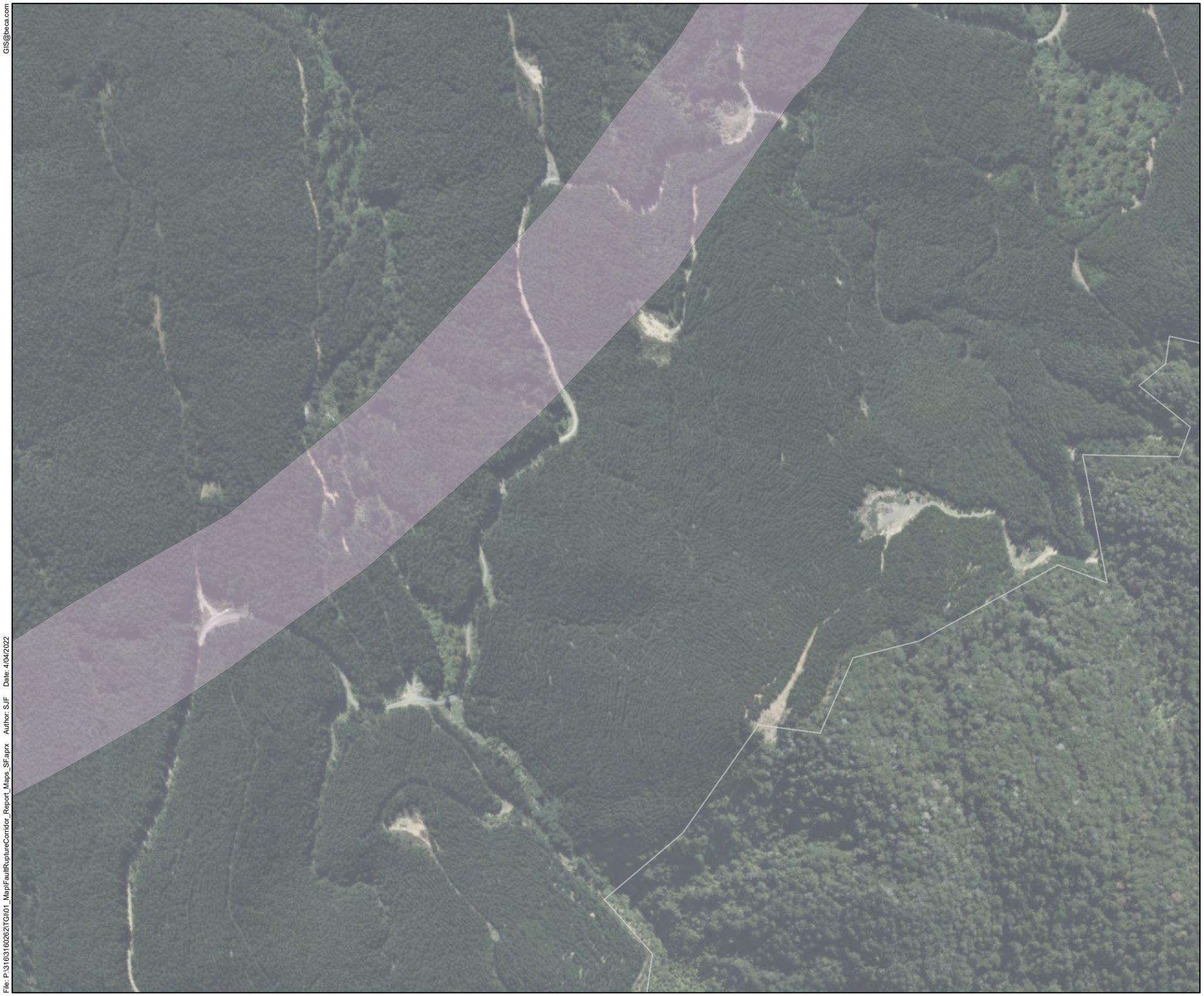
Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -43**

Beca

File: P:\316\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022



Nelson City Council
Revised Fault Deformation Overlay

Map : 44 | Page 44 of 97

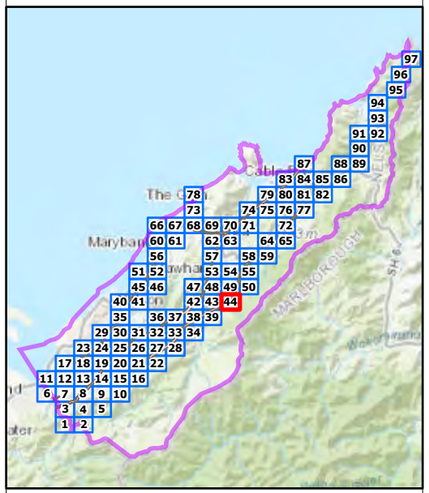
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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0 100 200

Metres

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3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -44**

Beca

GIS@beca.com

File: P:\316\316262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

GIS@beca.com

Date: 4/04/2022 Author: SJF

File: P:\3161\31602626TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx

Nelson City Council
Revised Fault Deformation Overlay

Map : 45	Page 45 of 97

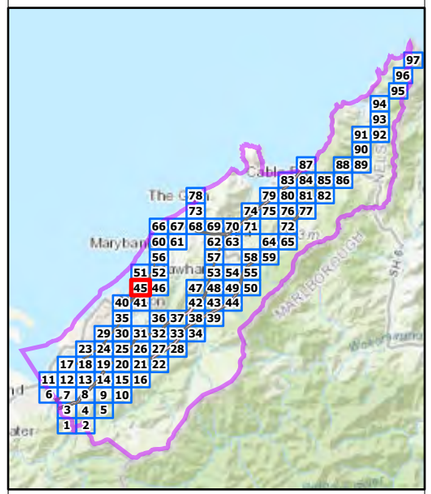
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Map Scale @ A3: 1:5,000

0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -45**

Beca

GIS@beca.com

File: P:\316\316262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 46	Page 46 of 97

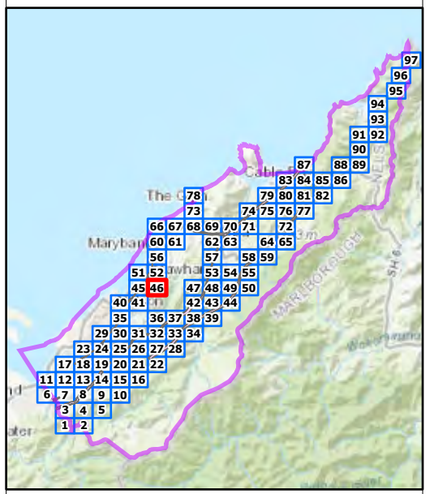
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Map Scale @ A3: 1:5,000

0 100 200
Metres

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2	SJF	BDJ2	DC	07/07/2021

N

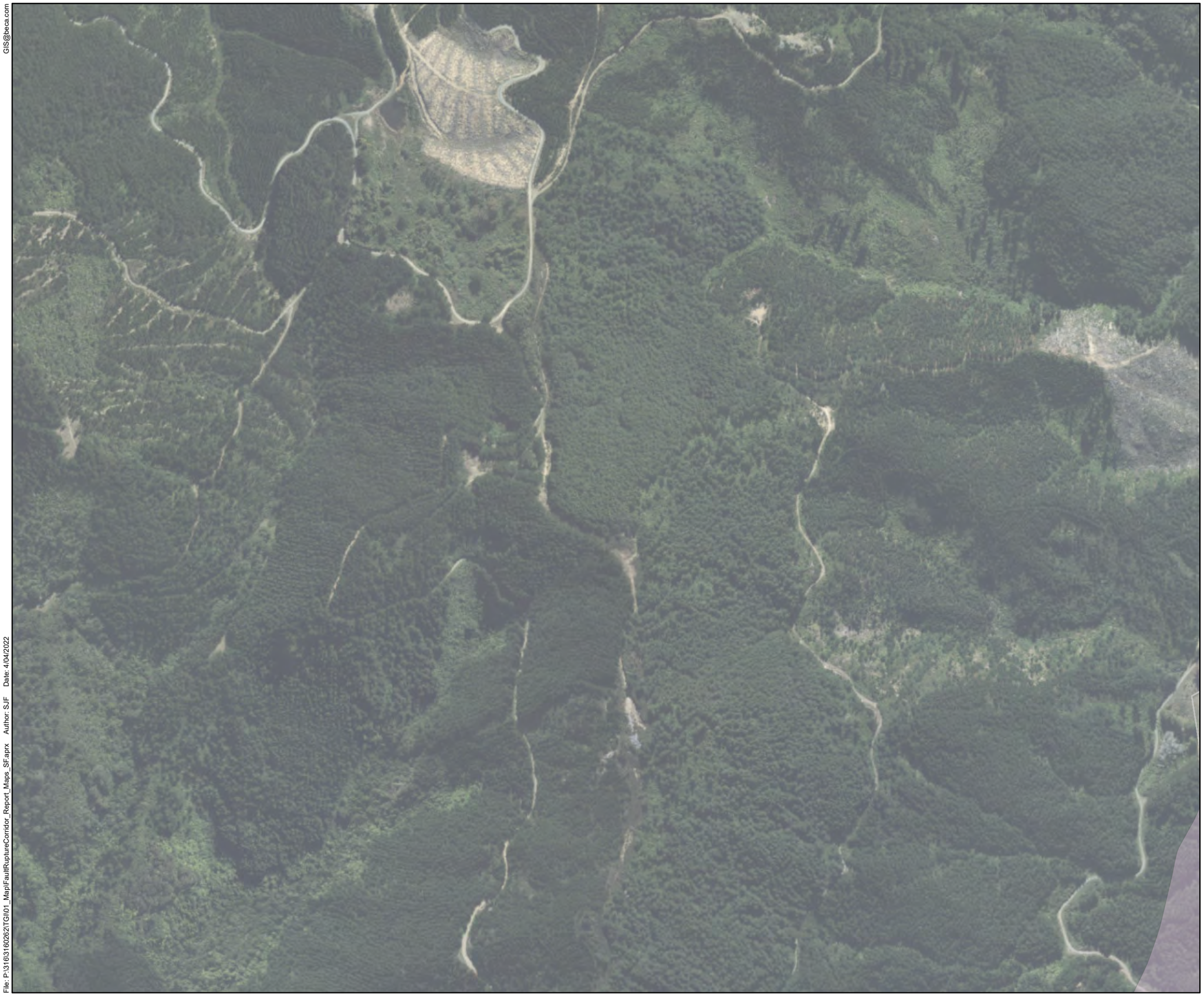
Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -46**

Beca



GIS@beca.com

File: P:\316\316262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 47	Page 47 of 97

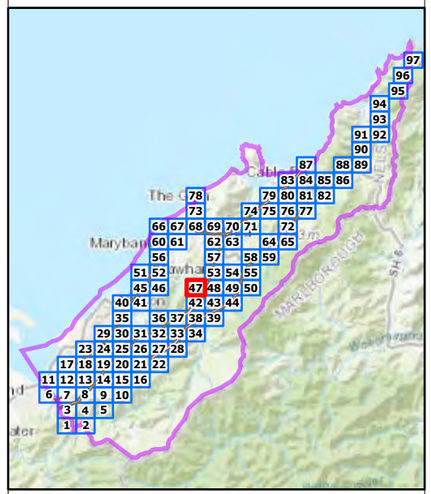
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -47**

Beca

Nelson City Council
Revised Fault Deformation Overlay

Map : 48	Page 48 of 97

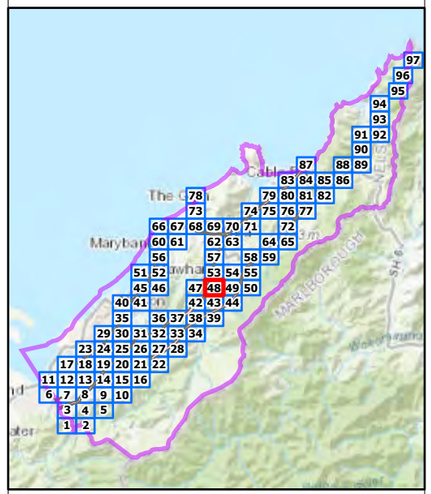
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client:	Discipline:
Nelson City Council	**GIS**
Project: **NCC Revised Fault Deformation Overlay**	*Drawing No:* **GIS-3160262-MS01 -48**

Beca

GIS@beca.com
Date: 4/04/2022
Author: SJF
File: P:\316\316262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx

Nelson City Council
Revised Fault Deformation Overlay

Map : 49	Page 49 of 97

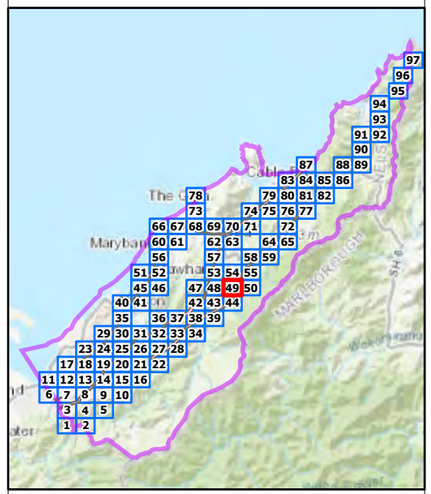
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Aerials sourced from Nelson City Council - Flown Sep 2020

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0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -49**

Beca

GIS@beca.com

File: P:\316\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

GIS@beca.com

File: P:\316\316062\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 50	Page 50 of 97

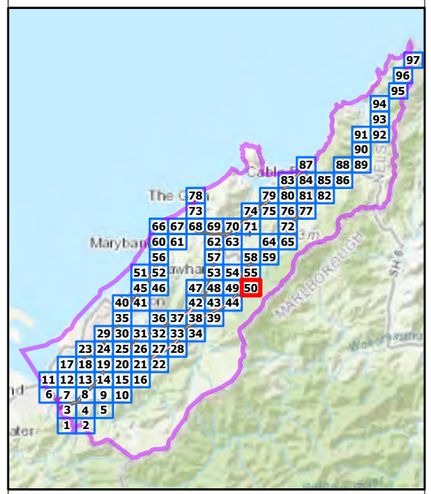
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200

Metres

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -50**

Beca

GIS@beca.com

File: P:\316\316026\2TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 51	Page 51 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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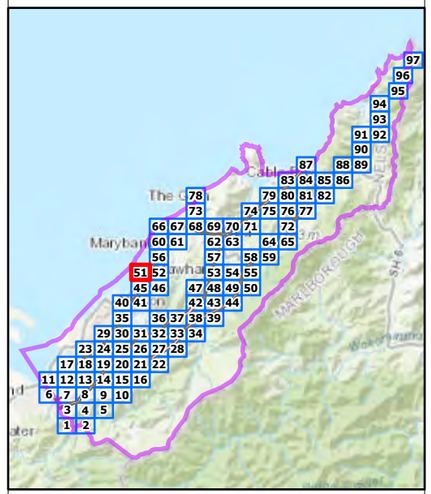
Ref:3160262-472476811



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Map Scale @ A3: 1:5,000

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Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -51**

Beca

GIS@beca.com

Nelson City Council
Revised Fault Deformation Overlay

Map : 52	Page 52 of 97

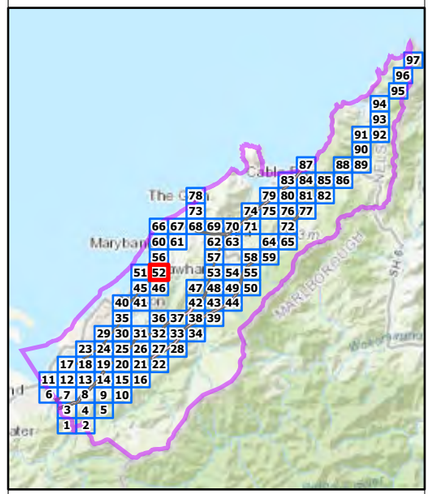
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Metres

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5	SJF	Sarah B	DC	24/03/2022
4	SJF	BDJ2	DC	6/12/2021
3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -52**

Beca

File: P:\3160262\GIS\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

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Nelson City Council
Revised Fault Deformation Overlay

Map : 53	Page 53 of 97

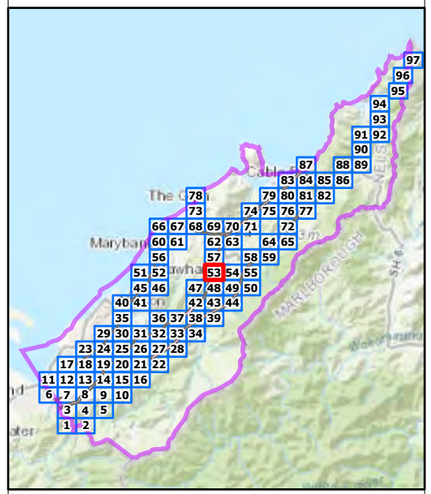
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



Map intended for distribution as a PDF document.
Scale may be incorrect when printed.
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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200

Metres

Revision	Author	Verified	Approved	Date
5	SJF	Sarah B	DC	24/03/2022
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3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -53**

Beca

File: P:\316\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

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Teal Valley Road

Nelson City Council
Revised Fault Deformation Overlay

Map : 54 | Page 54 of 97

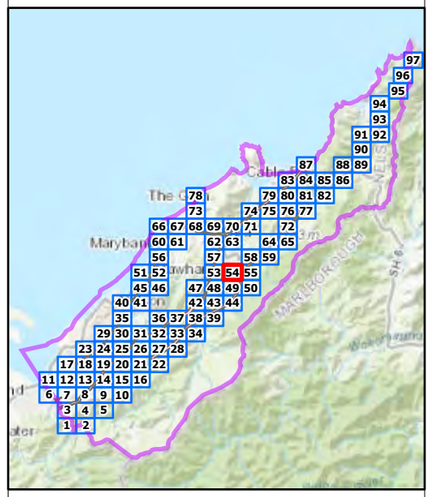
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200
Metres

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3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

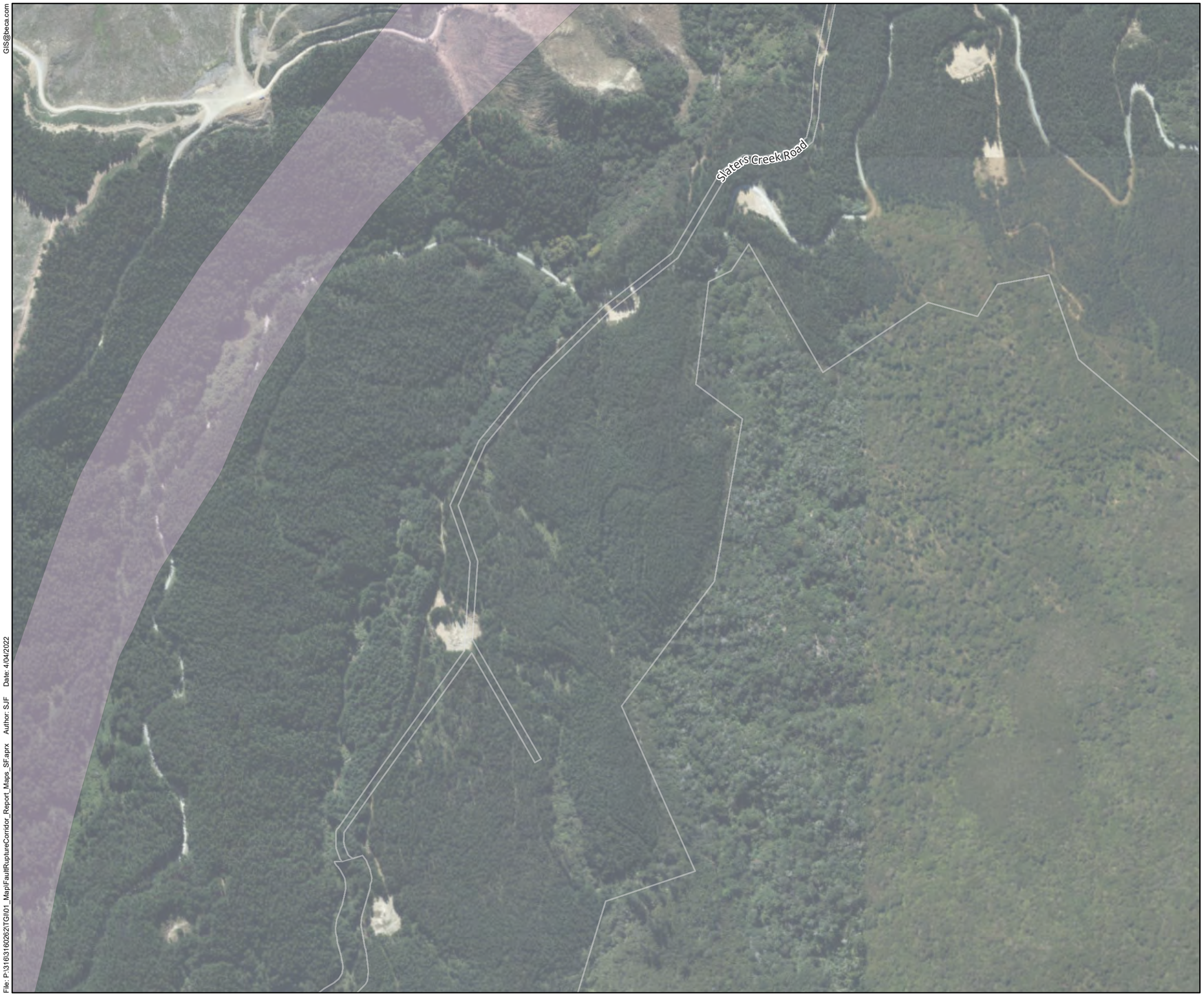
Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -54**

Beca

File: P:\316\3160262\TG\I01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022



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File: P:\316\316262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 55	Page 55 of 97

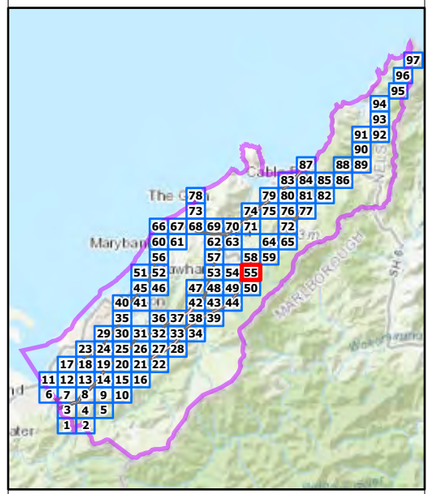
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Map Scale @ A3: 1:5,000

0 100 200

Metres

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5	SJF	Sarah B	DC	24/03/2022
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2	SJF	BDJ2	DC	07/07/2021

N

Client:	Discipline:
Nelson City Council	**GIS**
Project: **NCC Revised Fault Deformation Overlay**	*Drawing No:* **GIS-3160262-MS01 -55**

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GIS@beca.com

File: P:\316\316262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 56	Page 56 of 97

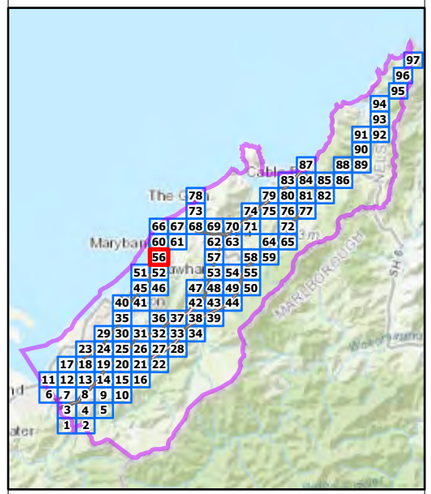
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



Map intended for distribution as a PDF document.
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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -56**

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File: P:\316\316262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 57	Page 57 of 97

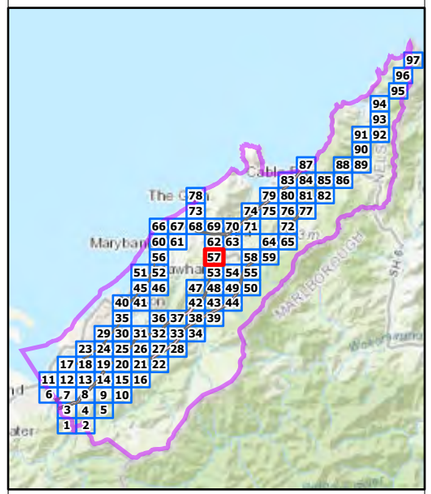
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Map Scale @ A3: 1:5,000

0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client:	Discipline:
Nelson City Council	GIS
Project: NCC Revised Fault Deformation Overlay	**Drawing No:** GIS-3160262-MS01 -57

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Nelson City Council
Revised Fault Deformation Overlay

Map : 58 | Page 58 of 97

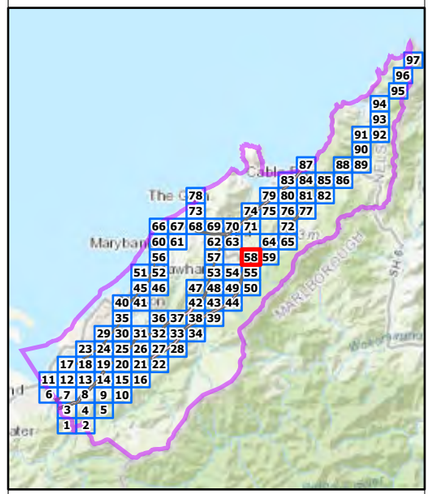
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Map Scale @ A3: 1:5,000

0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -58**

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File: P:\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 59 | Page 59 of 97

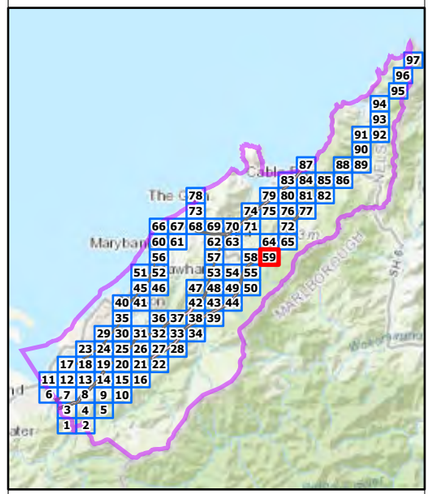
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200

Metres

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5	SJF	Sarah B	DC	24/03/2022
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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -59**

Beca

GIS@beca.com

File: P:\316\316026\2GTGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

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Nelson City Council
Revised Fault Deformation Overlay

Map : 60	Page 60 of 97

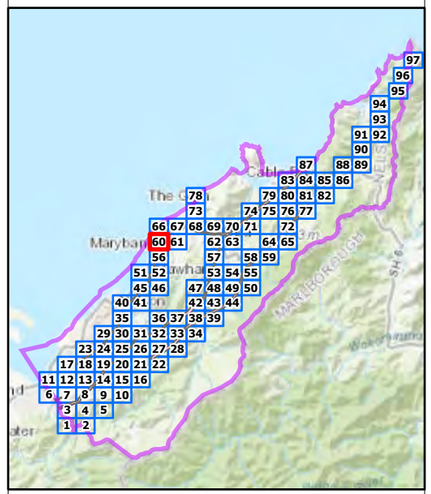
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Map Scale @ A3: 1:5,000

0 100 200

Metres

Revision	Author	Verified	Approved	Date
5	SJF	Sarah B	DC	24/03/2022
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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -60**

Beca

File: P:\3161\31602621TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

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Nelson City Council
Revised Fault Deformation Overlay

Map : 61	Page 61 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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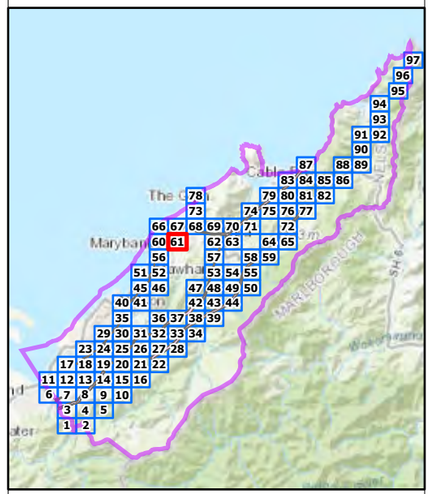
Ref:3160262-472476811



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0 100 200

Metres

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3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

N

Client:	Discipline:
Nelson City Council	GIS
Project: NCC Revised Fault Deformation Overlay	**Drawing No:** GIS-3160262-MS01 -61

Beca

File: P:\316\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 62	Page 62 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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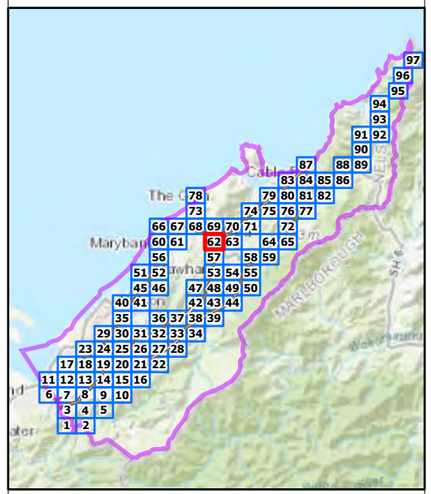
Ref:3160262-472476811



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Aerials sourced from Nelson City Council - Flown Sep 2020

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0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client:	Discipline:
Nelson City Council	GIS
Project: NCC Revised Fault Deformation Overlay	**Drawing No:** GIS-3160262-MS01 -62

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File: P:\316\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 63 | Page 63 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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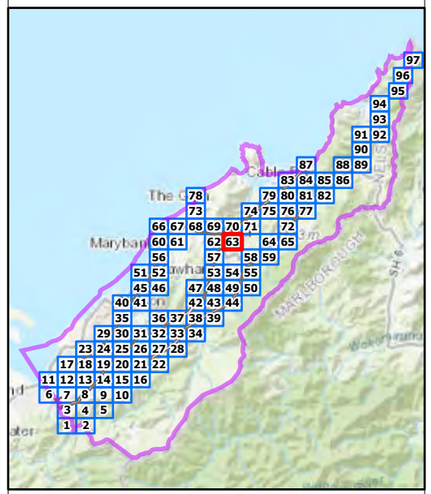
Ref:3160262-472476811



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Map Scale @ A3: 1:5,000

0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -63**

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GIS@beca.com

File: P:\316\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 64 | Page 64 of 97

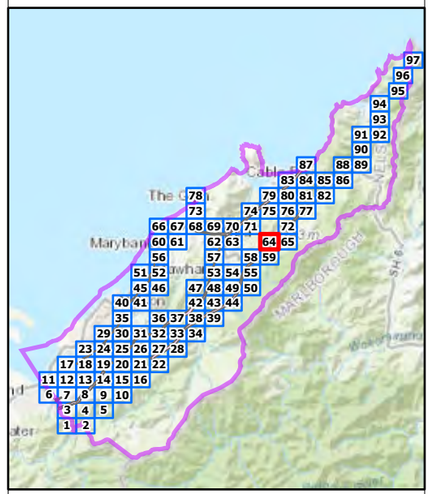
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -64**

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File: P:\3161\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 65	Page 65 of 97

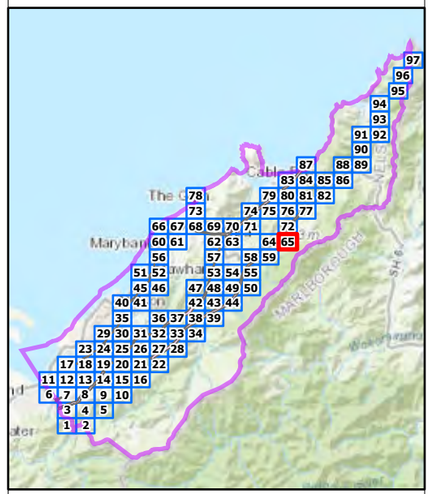
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



Map intended for distribution as a PDF document.
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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200

Metres

Revision	Author	Verified	Approved	Date
5	SJF	Sarah B	DC	24/03/2022
4	SJF	BDJ2	DC	6/12/2021
3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -65**

Beca

GIS@beca.com

File: P:\316\316026\2TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

GIS@beca.com

File: P:\3161\31602621TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 66	Page 66 of 97

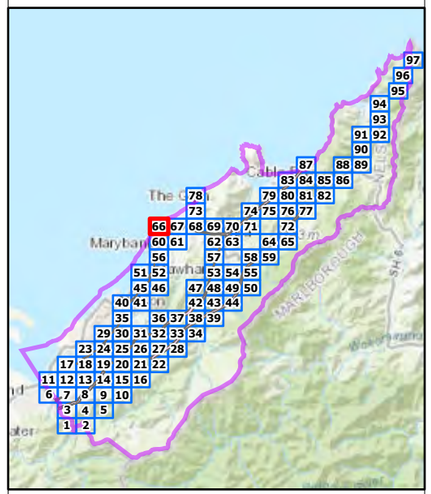
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Map Scale @ A3: 1:5,000

0 100 200

Metres

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -66**

Beca

Nelson City Council
Revised Fault Deformation Overlay

Map : 67 | Page 67 of 97

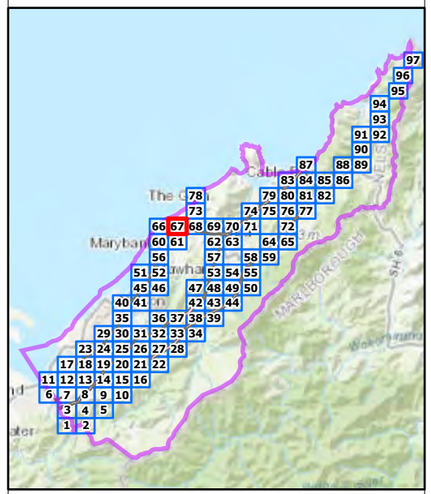
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -67**

Beca

GIS@beca.com

File: P:\316\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

GIS@beca.com

Glen Road

Wakapuaka Road

State Highway 6

Hillwood Drive

Kanuka Rise

Nelson City Council
Revised Fault Deformation Overlay

Map : 68	Page 68 of 97

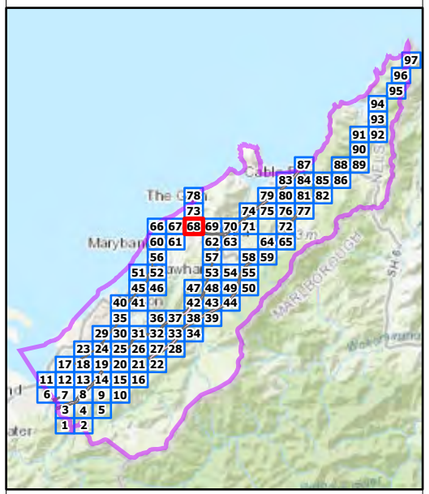
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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0 100 200

Metres

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3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -68**

Beca

File: P:\3161\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

GIS@beca.com

Date: 4/04/2022 Author: SJF

File: P:\316\316026\2TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx

Nelson City Council
Revised Fault Deformation Overlay

Map : 69	Page 69 of 97

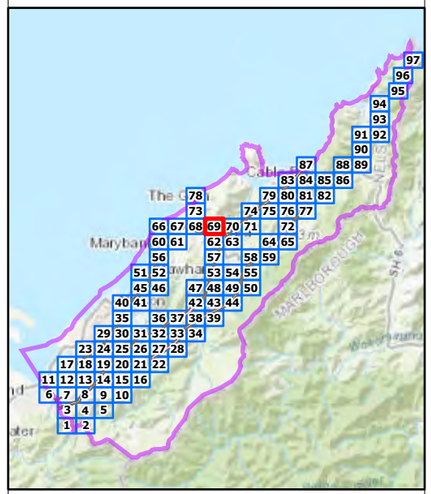
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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0 100 200
Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -69**

Beca

GIS@beca.com

File: P:\3161\316026\2TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 70	Page 70 of 97

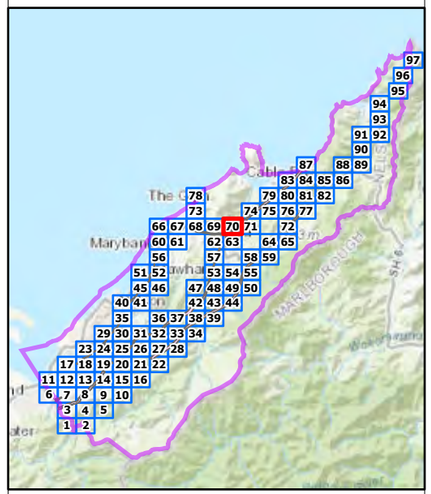
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

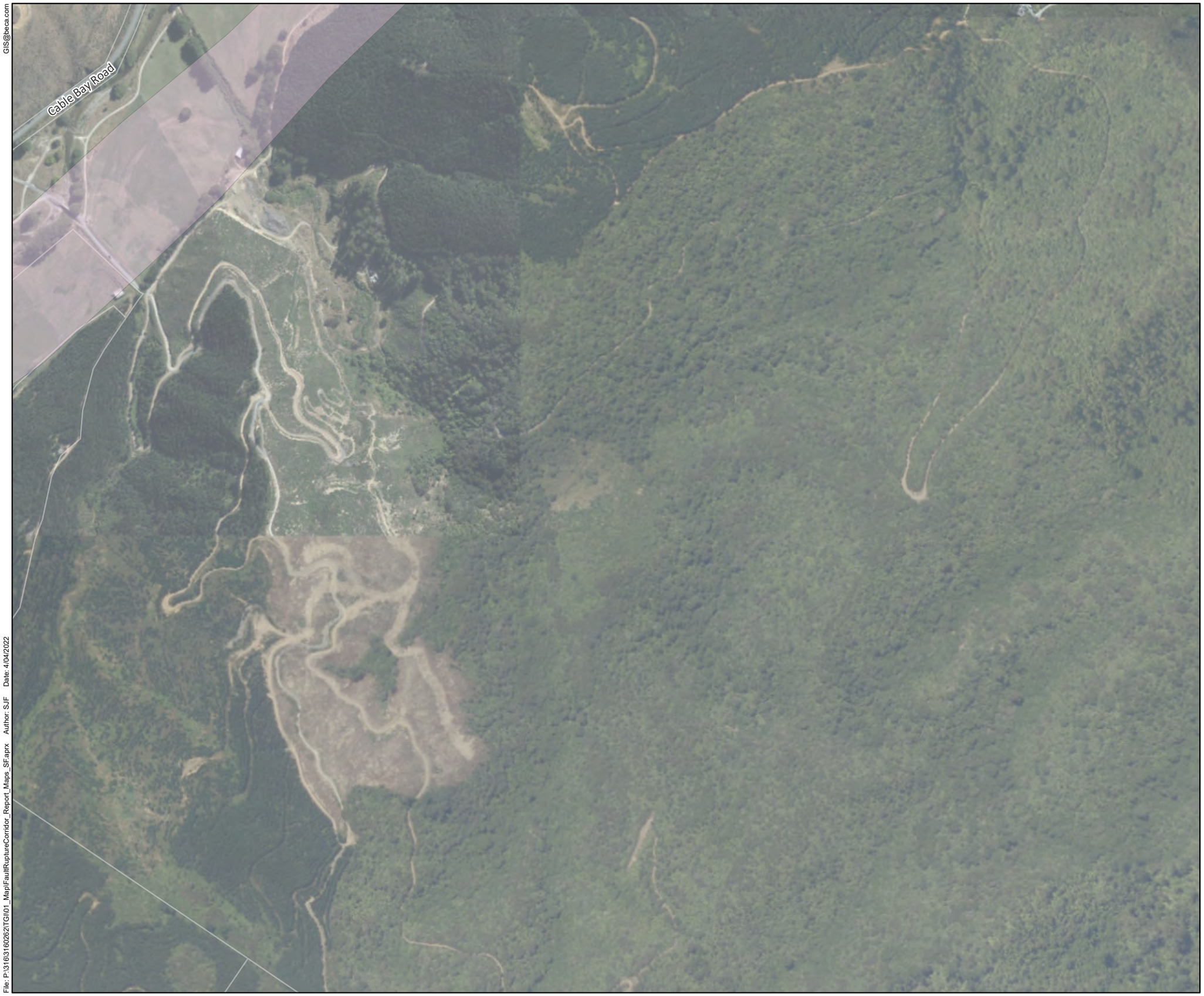
Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -70**

Beca



GIS@beca.com

File: P:\3161\316026\2TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 71	Page 71 of 97

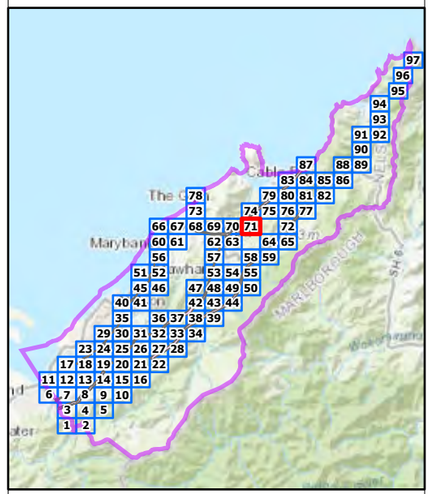
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -71**

Beca

Nelson City Council
Revised Fault Deformation Overlay

Map : 72	Page 72 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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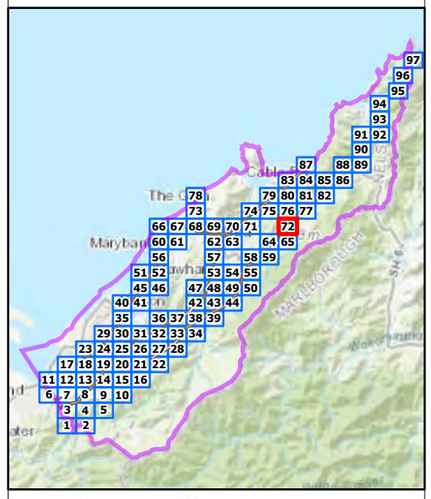
Ref:3160262-472476811



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0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -72**

Beca

GIS@beca.com

File: P:\316\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 73	Page 73 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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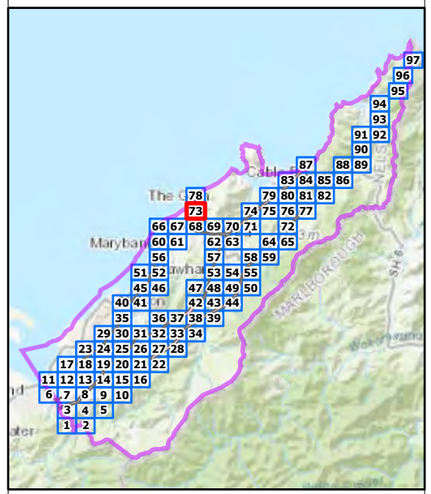
Ref:3160262-472476811



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0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -73**

Beca

GIS@beca.com

File: P:\316\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 74 | Page 74 of 97

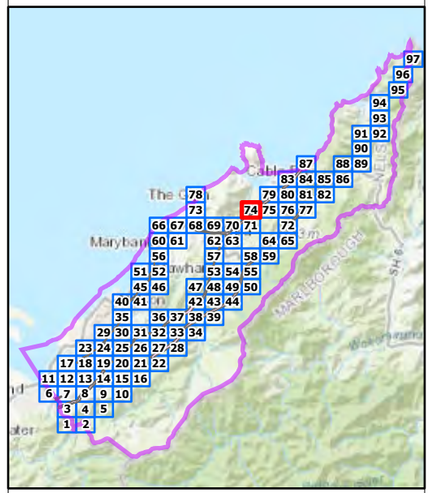
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -74**

Beca

GIS@beca.com
Date: 4/04/2022
Author: SJF
File: P:\3161\316026\2TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx

GIS@beca.com

Nelson City Council
Revised Fault Deformation Overlay

Map : 75 | Page 75 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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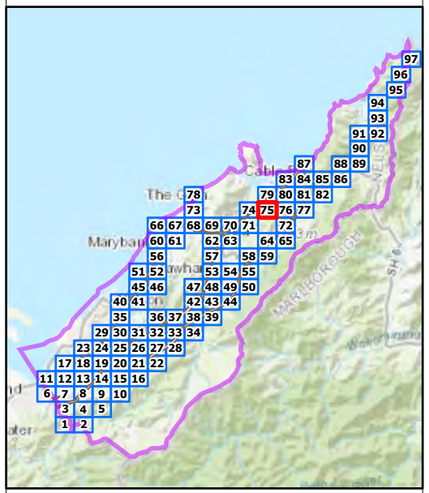

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Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -75**

Beca

File: P:\3161\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

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File: P:\316\316062\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 76	Page 76 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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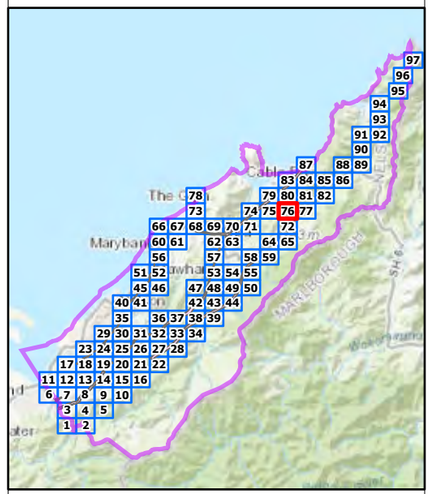

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Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -76**

Beca

Nelson City Council
Revised Fault Deformation Overlay

Map : 77	Page 77 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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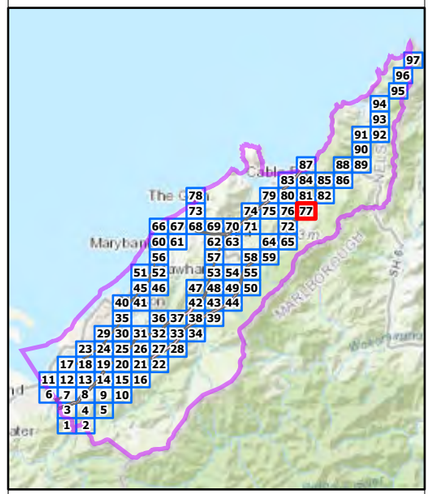

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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200

Metres

Revision	Author	Verified	Approved	Date
5	SJF	Sarah B	DC	24/03/2022
4	SJF	BDJ2	DC	6/12/2021
3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -77**

Beca

GIS@beca.com

File: P:\3161\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 78	Page 78 of 97

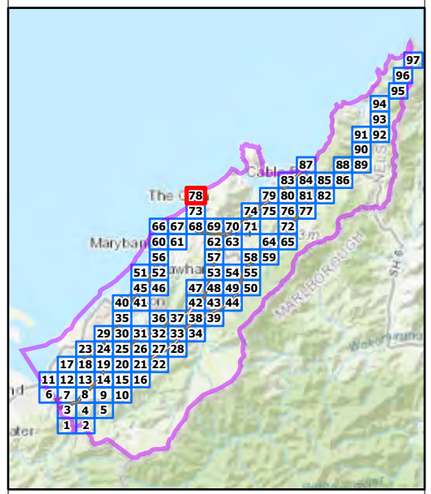
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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0 100 200

Metres

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -78**

Beca

GIS@beca.com

File: P:\3161\31602626TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

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File: P:\3161\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 79	Page 79 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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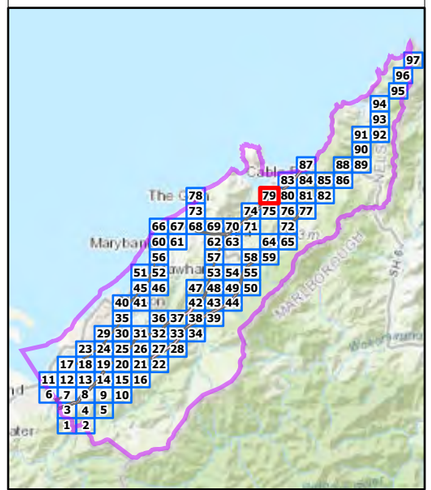

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0 100 200
Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client:	Discipline:
Nelson City Council	**GIS**
Project: **NCC Revised Fault Deformation Overlay**	*Drawing No:* **GIS-3160262-MS01 -79**

Beca

Nelson City Council
Revised Fault Deformation Overlay

Map : 80 | Page 80 of 97

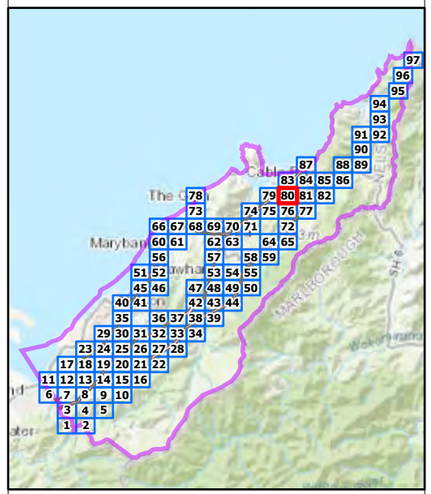
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -80**

Beca

GIS@beca.com

File: P:\3161\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

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File: P:\3161\316126262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 81	Page 81 of 97

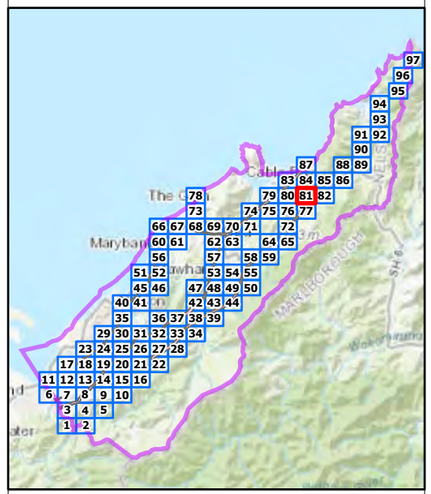
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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Metres

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2	SJF	BDJ2	DC	07/07/2021

N

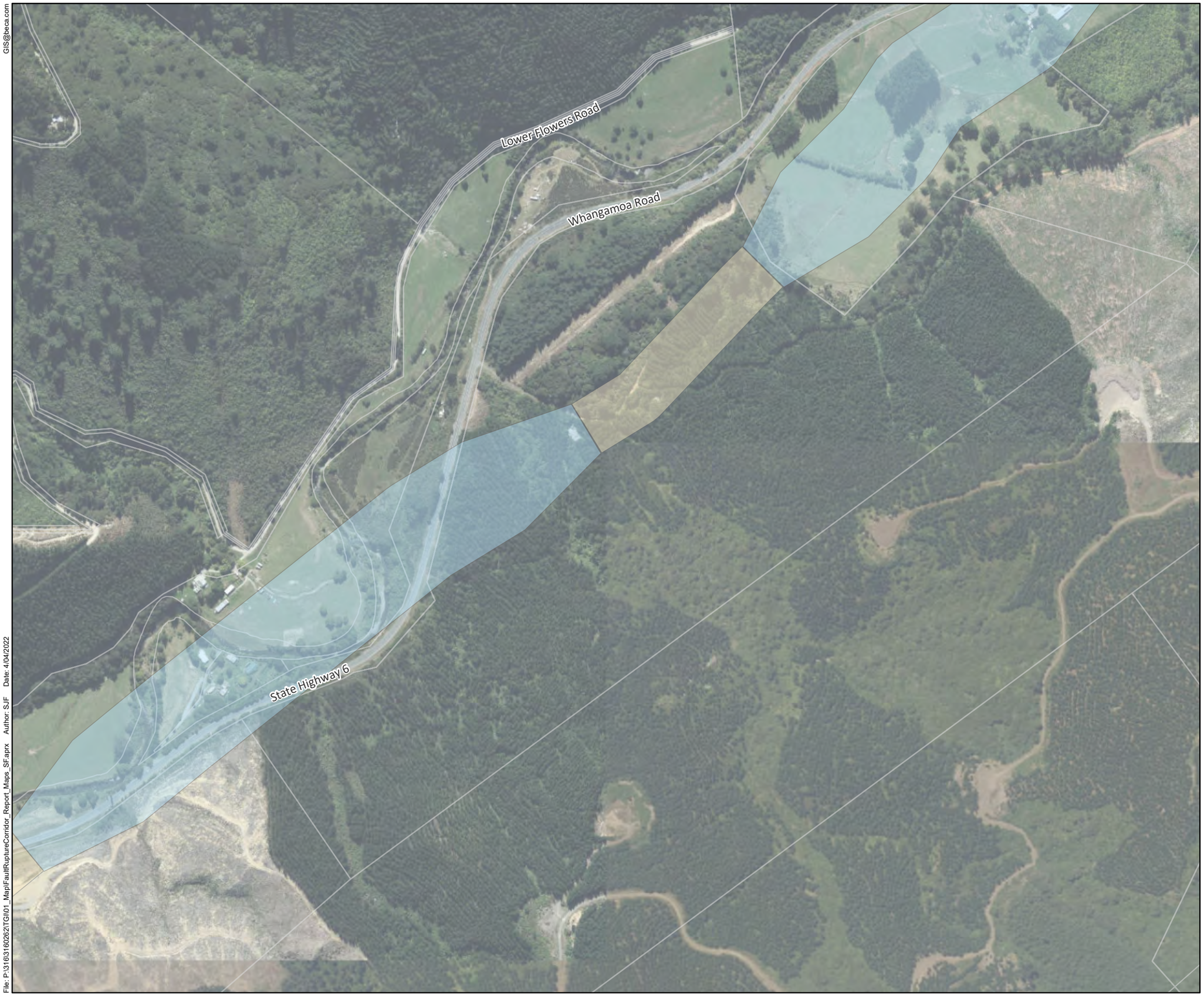
Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -81**

Beca



GIS@beca.com

Date: 4/04/2022 Author: SJF

File: P:\316\316262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx

Nelson City Council
Revised Fault Deformation Overlay

Map : 82	Page 82 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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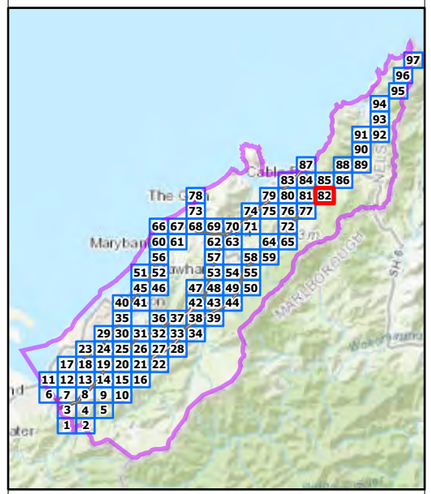
Ref:3160262-472476811



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0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -82**

Beca

Nelson City Council
Revised Fault Deformation Overlay

Map : 83 | Page 83 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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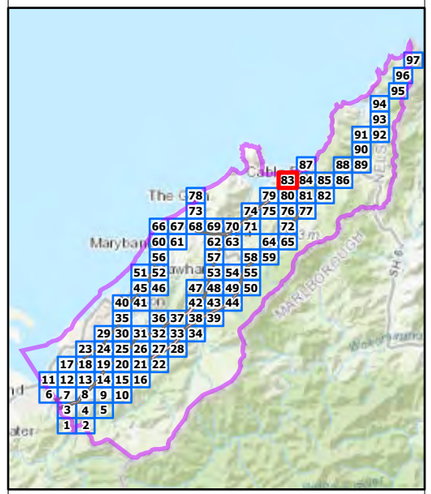
Ref:3160262-472476811



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0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

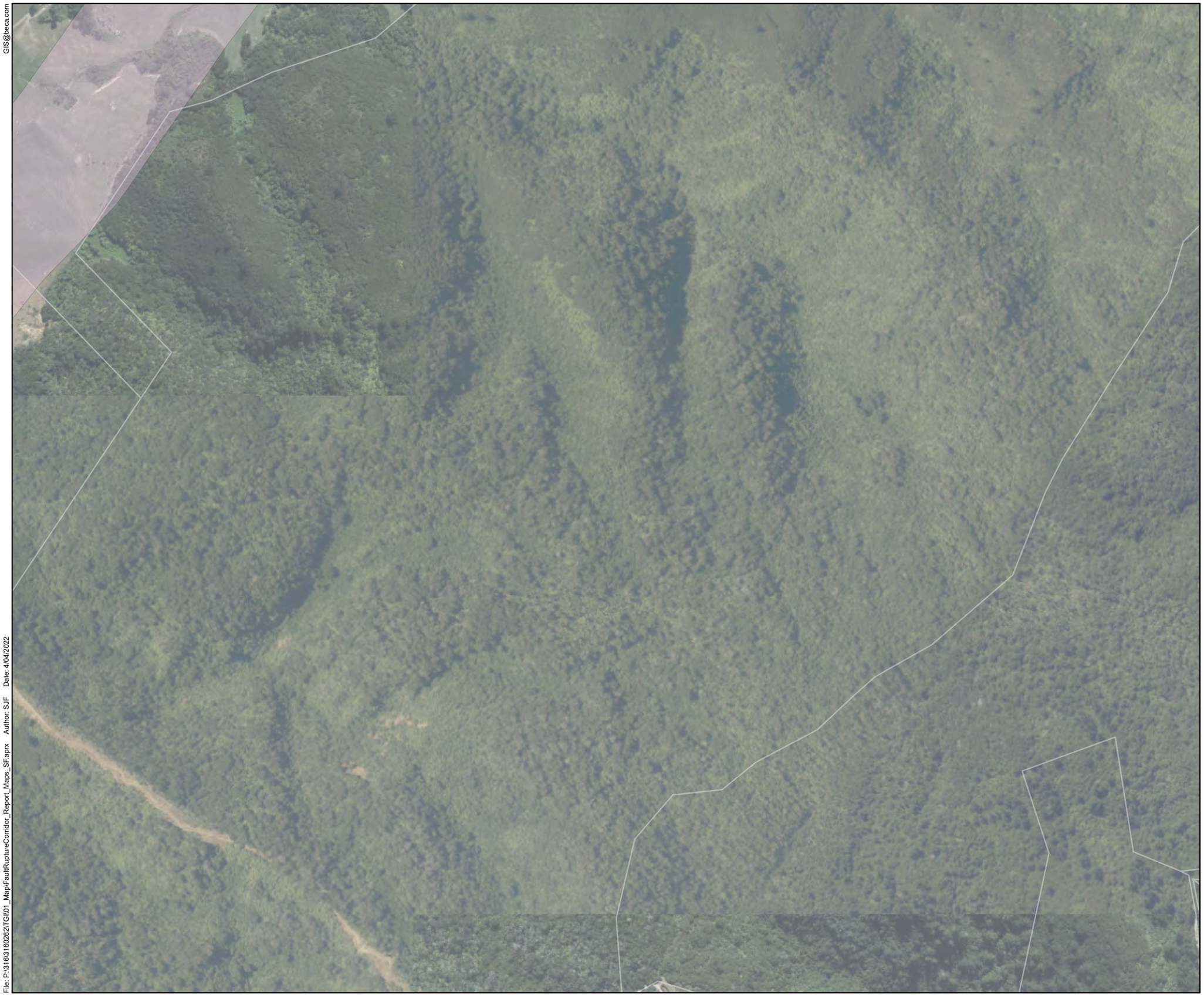
Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -83**

Beca

GIS@beca.com

File: P:\3161\3160262\TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022



Nelson City Council
Revised Fault Deformation Overlay

Map : 84 | Page 84 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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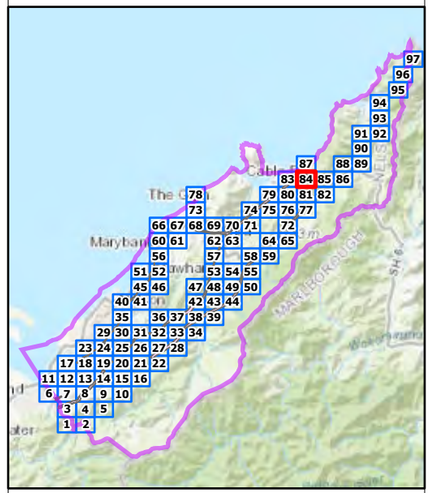
Ref:3160262-472476811



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0 100 200

Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -84**

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GIS@beca.com

File: P:\3161\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

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Nelson City Council
Revised Fault Deformation Overlay

Map : 85	Page 85 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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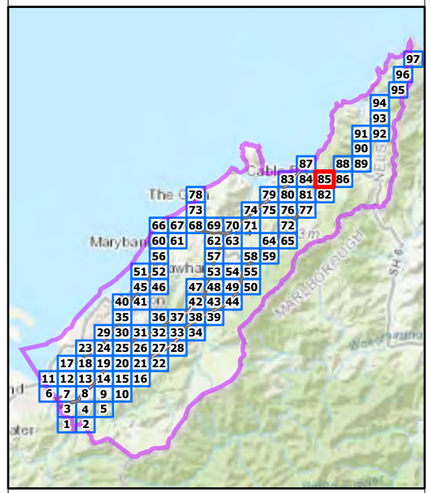
Ref:3160262-472476811



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Metres

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2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -85**

Beca

GIS@beca.com

File: P:\3161\31602626TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 86	Page 86 of 97

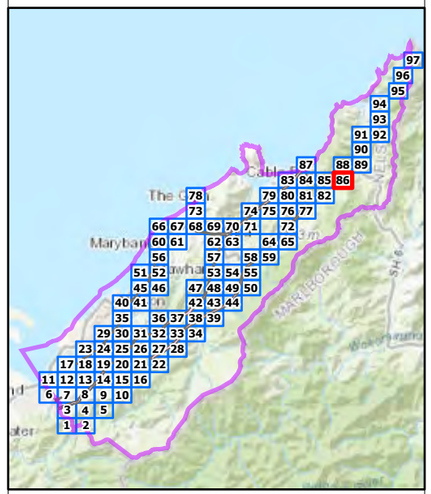
Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -86**

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Nelson City Council
Revised Fault Deformation Overlay

Map : 87	Page 87 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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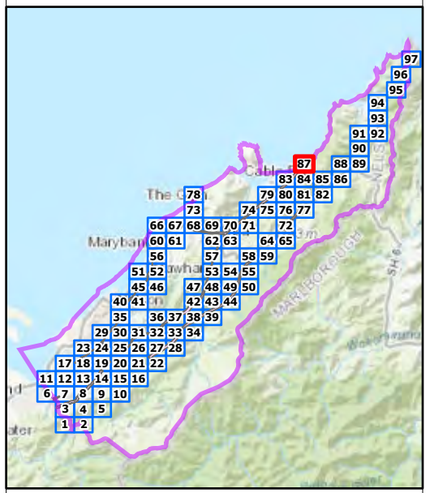
Ref:3160262-472476811



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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -87**

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Nelson City Council
Revised Fault Deformation Overlay

Map : 88	Page 88 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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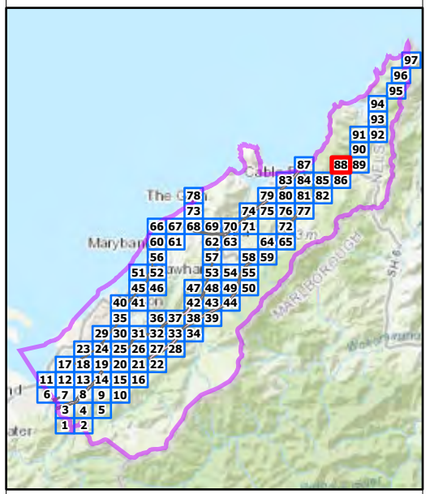

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Metres

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -88**

Beca

GIS@beca.com

File: P:\316\316026\2TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 89	Page 89 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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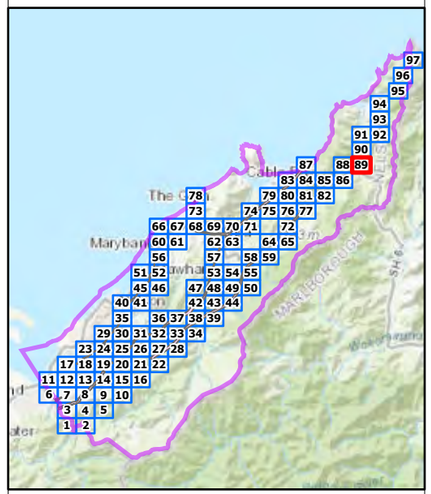
Beca report 'Revised Nelson Fault Deformation Overlay'
Ref:3160262-472476811



Map intended for distribution as a PDF document.
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Aerials sourced from Nelson City Council - Flown Sep 2020

Map Scale @ A3: 1:5,000

0 100 200

Metres

Revision	Author	Verified	Approved	Date
5	SJF	Sarah B	DC	24/03/2022
4	SJF	BDJ2	DC	6/12/2021
3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -89**

Beca

Nelson City Council
Revised Fault Deformation Overlay

Map : 90	Page 90 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

For full definitions of overlays, please refer to
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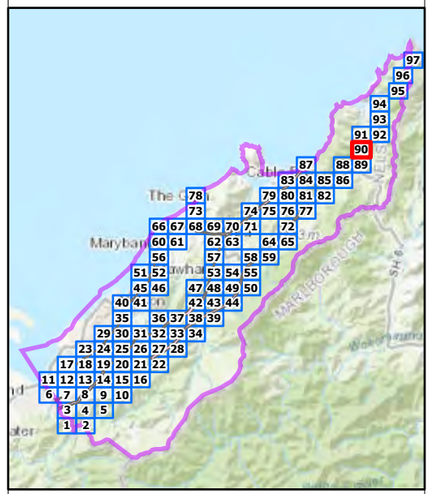
Ref:3160262-472476811



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Map Scale @ A3: 1:5,000

0 100 200
Metres

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3	SJF	BDJ2	DC	29/07/2021
2	SJF	BDJ2	DC	07/07/2021

N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -90**

Beca

GIS@beca.com

File: P:\3161\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 91	Page 91 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
- Revised Section of Existing Fault Rupture Overlay
- Existing Section of Fault Rupture Overlay

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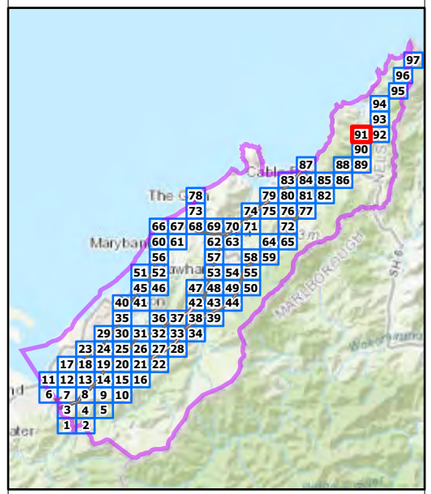

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Metres

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -91**

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File: P:\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

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Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

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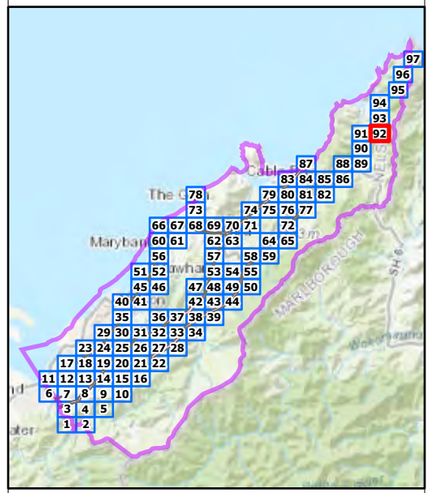

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -92**

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Nelson City Council
Revised Fault Deformation Overlay

Map : 93	Page 93 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

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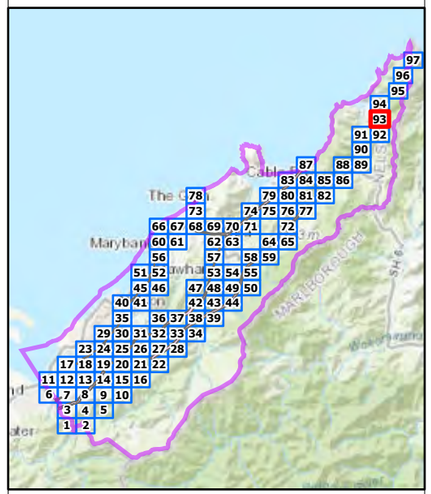

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -93**

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GIS@beca.com

Date: 4/04/2022 Author: SJF

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Nelson City Council
Revised Fault Deformation Overlay

Map : 94	Page 94 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
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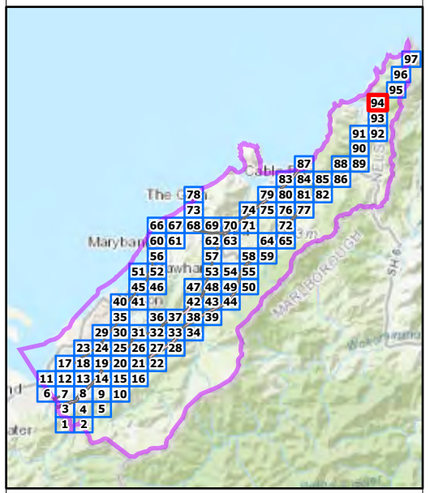

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Metres

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -94**

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File: P:\3160262TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

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File: P:\3161\31602622TGI\01_Map\FaultRuptureCorridor_Report_Maps_SF.aprx Author: SJF Date: 4/04/2022

Nelson City Council
Revised Fault Deformation Overlay

Map : 95	Page 95 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
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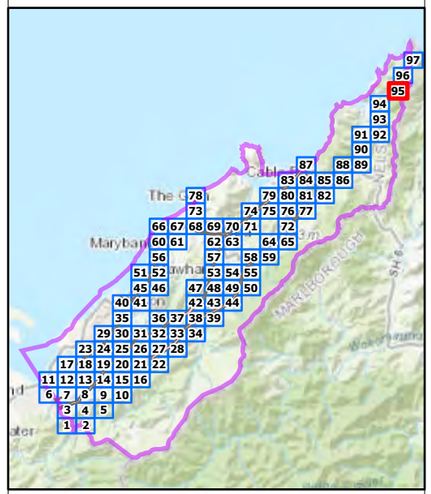

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N

Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -95**

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Nelson City Council
Revised Fault Deformation Overlay

Map : 96	Page 96 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
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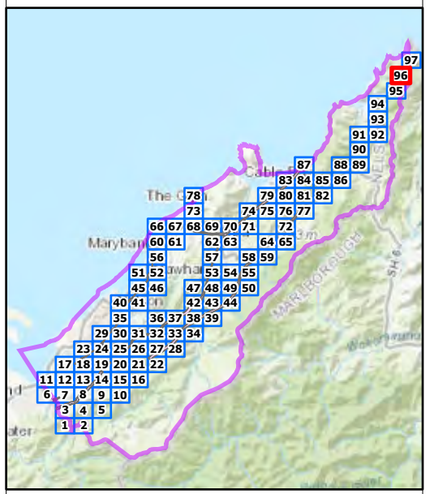

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Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -96**

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Nelson City Council
Revised Fault Deformation Overlay

Map : 97	Page 97 of 97

Legend

- Study Area
- NZ Property Titles

Fault Deformation Overlay

- Less Defined Section of Overlay
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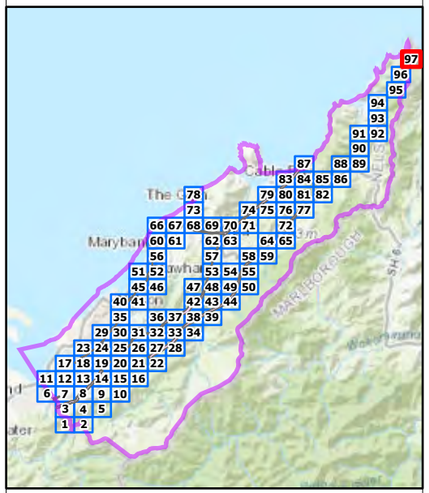

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Client: **Nelson City Council**

Discipline: **GIS**

Project: **NCC Revised Fault Deformation Overlay**

Drawing No: **GIS-3160262-MS01 -97**

Beca

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C

Appendix C – Specific Revisions Completed on Fault Deformation Overlays

Flaxmore Fault

Address/Location	Change Comments	Source of Information
Champion Road to Oakland Scarp	Centreline of geological mapped line used to create overlay. Suitable buffer applied to allow for less defined section of fault	Published Geological Map
Oakland Scarp (Saxton Road East)	Overlay created based on topographic evidence of fault location	Hill-shade model
Oakland Scarp to Ashdonleigh Grove	Centreline of geological mapped line used to create overlay. Suitable buffer applied to allow for less defined section of fault	Published Geological Map
Ashdonleigh Grove to Piwakawaka Drive	Overlay created based on topographic evidence of fault location and field mapping	Hill-shade model and field mapping
Orphanage Stream	Geological outcrops and test pits constraining fault location allowing narrower overlay width to be created	Field Mapping
Ngawhatu Road	Overlay created based on surface expression of fault identified in historic aerial imagery	Aerial Imagery
25 Enner Glynn Road	Fault location constrained and overlay width adjusted. Plans attached to consent record used to adjust overlay width. Overlay location to the north of site revised based on topographic evidence of fault location	Resource consent information and hill-shade model
Ngawhatu Road to Songer Street	Overlay created based on knowledge from geological map. Suitable buffer applied to allow for less defined section of fault	Published Geological Map
Francois Way	Geological outcrops constraining fault location allowing existing overlay width and location to be refined	Field Mapping
Francois Way to Bishopdale Avenue	Geological outcrops and topographic change constraining fault location allowing existing overlay width and location to be refined	Hill-shade model and field mapping
Melrose Terrace to Seymour Avenue	Geological outcrops constraining fault location	Field Mapping

	allowing existing overlay width and location to be refined	
Seymour Avenue to Iwa Road (included from existing fault rupture overlay)	Section of existing fault rupture overlay incorporated into Less Defined Section of Overlay, given its uncertainty described in the existing NRMP rules	Existing Overlay
46 Davies Drive, Nelson: Lot 60 DP 17700	Fault location constrained and overlay width adjusted based on deformation width and data uncertainty. Fault zone identified on plans attached to consent record used to adjust overlay width.	Resource consent information
NZGD borehole in reserve on Bay View Road	Fault location identified in borehole allowing overlay width to be narrowed. Fault zone encountered in borehole at depth. Approximate dip angle of fault zone used to project fault to ground surface.	NZGD
Wastney Terrace Outcrops	Fault location constrained and overlay width adjusted. Outcrops of geology mapped, and information reviewed from Maxwell, 2020 which constrain the fault location. Also, the changes in topography have been used to constrain the location of the fault.	Published literature, field mapping and hill-shade
Wastney Terrace north through to State Highway 6	Overlay created based on knowledge from geological map, outcrops of geology mapped and topography. Suitable buffer applied to allow for less defined section of fault	Published Geological Map, field mapping and hill-shade
State Highway 6 to Todds Valley	Overlay created based on knowledge from geological map. Suitable buffer applied to allow for less defined section of fault	Published geological map
Todds Valley North East Hills	Geological outcrops constraining fault location allowing narrower overlay width to be created	Field Mapping
SH6/Whakapuaka Road	Overlay created based on field mapping in this location to constrain the fault's location between two more well constrained fault locations. Low confidence of fault location and	Field Mapping – Low confidence

	suitable buffer applied to allow for less defined section of fault	
Hills at southern end of Glen Road	Geological outcrops constraining fault location allowing narrower overlay width to be created	Field Mapping
Glen Road	Overlay created based on field mapping in this location to constrain the fault's location between two more well constrained fault locations. Low confidence of fault location and suitable buffer applied to allow for less defined section of fault	Field Mapping – Low confidence
Hills adjacent to Athol Street	Geological outcrops constraining fault location allowing existing overlay width and location to be refined	Field Mapping
27 Clifford Avenue, Nelson: Lot 11 DP 510734	No revision required as this was actually included in 2019 update.	Resource consent information
34 Newman Drive, Nelson: DP 13259 Lot 20	No revision required as borehole information did not provide enough conclusive evidence to narrow overlay.	Resource consent information
Cawthron Institute 98 & 100 Halifax St East: Pt Lot 2 DP2400	No revision required as borehole information did not provide enough conclusive evidence to narrow overlay.	Resource consent information/NZGD
Bills Drive/Marie Place in Bishopdale	No revision required as investigation information did not provide enough conclusive evidence to narrow overlay.	NZGD

Waimea Fault

Address/Location	Change Comments	Source of Information
205 Champion Road	Fault location constrained and overlay width adjusted. Plans attached to consent record used to adjust overlay width.	Resource consent information
Raine Farm to Stag Ridge Subdivision	Geological outcrops constraining fault location allowing existing overlay width and location to be refined	Field mapping
Stag Ridge – Fault Trenching	Fault physically located in three fault trench locations allowing overlay width to be refined. Location inferred between fault	Fault Trenching/Field Mapping - Physical location

	trench locations by hill-shade and site walkover.	
Stag Ridge to Falcon Ridge Way	Geological outcrops and topographic evidence constraining fault location allowing existing overlay width and location to be refined	Field mapping and hill-shade
Falcon Ridge Way to Marsden Valley Road	Fault physically located at two locations allowing overlay width to be refined.	Field Mapping/ investigations - Physical location
Marsden Valley Road to Jenkins Creek	Geological outcrops, topographic evidence and aerial imagery constraining fault location allowing existing overlay width and location to be refined	Field Mapping/hill-shade/Aerial Imagery
Jenkins Creek to Brook Stream	Geological outcrops and topographic evidence constraining fault location allowing existing overlay width and location to be refined	Hill-shade model and field mapping
Brook Stream	Geological outcrops constraining fault location allowing existing overlay width to be refined	Field Mapping
Brook Stream to Cummins Creek	Geological outcrops and topographic evidence constraining fault location allowing existing overlay width and location to be refined	Hill-shade model and field mapping
Tantragee Saddle	Investigations, geological outcrops and topographic evidence constraining both branches of the Waimea Fault in this location allowing existing overlay width and location to be refined	Investigations, hill-shade model, and field mapping
493 Maitai Valley Road, Nelson: Pt Lot 2 DP 7690	Overlay width refined from outcrop information in consent records, reviewed in conjunction with hill-shade model to constrain overlay width.	Resource consent information and hill-shade model
Test pits and mapping in Hira near shop	Test pits identified geological units that indicate fault location is to north east of current location. Overlay width and location to be refined	NZGD
Cable Bay, end of Maori Pa Road	Visible scarp present in hill-shade model allowing overlay width and location to be refined	Hill-shade model

Eighty-Eight Fault

Address/Location	Change Comments	Source of Information
Marsden Valley Farm to Jenkins Creek	Geological outcrops constraining fault location allowing existing overlay width to be refined	Field Mapping

Jenkins Fault

Address/Location	Change Comments	Source of Information
Marsden Valley to Jenkins Creek	Geological outcrops constraining fault location allowing existing overlay width and location to be refined	Field Mapping
Enner Glynn Steel Reservoir	Geological outcrops constraining fault location allowing existing overlay width and location to be refined	Field Mapping
Jenkins Creek to Brook Stream	Overlay width narrowed based on topographic evidence of fault location and field mapping	Hill-shade model and Field Mapping
Brook Stream to Cummins Creek	Geological outcrops constraining fault location allowing existing overlay width and location to be refined	Field Mapping

Bishopdale Fault

Address/Location	Change Comments	Source of Information
Enner Glynn Road to York Valley Landfill	Existing overlay narrowed based on surface expression of fault identified in hill-shade model	Hill-shade model
York Valley Landfill to Market Road Quarry	Existing overlay narrowed based on surface expression of fault identified in hill-shade model and historic aerial imagery. Eastern end of overlay adjusted to merge with Grampian fault based to outcrop evidence	Hill-shade model/Aerial Imagery

Grampian Fault

Address/Location	Change Comments	Source of Information
York Valley Landfill to Market Road Quarry	Existing overlay width adjusted based on surface expression of fault identified in hill-shade model and outcrop evidence	Hill-shade model and Field Mapping

Whangamoa Fault

Address/Location	Change Comments	Source of Information
Aniseed Valley Road to southern end of existing overlay	Centreline of geological mapped line used to create overlay. Suitable buffer applied to allow for less defined section of fault	Published geological map
Slaters Creek, past Whangamoa River Bridge along SH6	Visible scarp present in hill-shade model allowing overlay width and location to be refined	Hill-shade model
Graham Stream	Visible scarp present in hill-shade model allowing overlay width and location to be refined and new overlay to be created	Hill-shade model
Lower Flowers Road	Centreline of geological mapped line used to create overlay as in flat alluvial area. Suitable buffer applied to allow for less defined section of fault	Published geological map
Lower Flowers Road to Collins River	Visible scarp present in hill-shade model allowing overlay to be created	Hill-shade model
Collins River to northern boundary of Nelson Region	Centreline of geological mapped line used to create overlay. Suitable buffer applied to allow for less defined section of fault	Published geological map

Hira Fault

Address/Location	Change Comments	Source of Information
Southern end of Glen Road	Geological outcrops constraining fault location allowing existing overlay width to be refined	Field Mapping and Hill-shade