

Ref: 24043
26 August, 2026



NZSki Limited

RE: e3s 24043 –Remarkables Upgrade and Doolans Expansion TEcIA Stakeholder Response (ORC)

1 Purpose

NZSki received preliminary feedback from the Otago Regional Council (ORC) relating to a draft version of the Terrestrial Ecological Impact Assessment (TEcIA; dated 10 April 2026) associated with the proposed Remarkables Upgrade and Doolans Expansion; the TEcIA was subsequently updated prior to lodgement. Following lodgement, two Teams meeting on the 4th August 2026 were held with ORC. This memo has been prepared in response to matters highlighted by ORC's expert(s) in their review of the draft TEcIA, and matters raised in the meetings and subsequently received 'RFI Response Tracking Table' document. Matters of discussion include wetlands (Section 2.1), effects management (Section 2.2), and wetland compensation (Section 2.3).

2 Matters of Discussion

2.1 Wetlands

Table 10 in the EcIA indicates that all wetland vegetation is considered Very High value.

The magnitude of effect is proposed as being low (due to a small proportion of the wetland extent in the area being affected). This is calculated on the wetland vegetation loss.

e3s response – The two comments above are understood to be observations that restate information contained in the TEcIA; accordingly, no further response is required.

Does the assessment of magnitude include the area of wetland reclamation associated with the multiple wetland crossings and potential hydrological changes?

e3s response – Yes. Loss of wetland extent is considered and assessed prior to and following any mitigation within Section 6.2 of the TEcIA. The effects of fragmentation and hydrological connectivity are assessed in Section 6.3 of the TEcIA.

Table 12 in the EcIA: Magnitude of Effect thresholds are based on percentages of the ecological district. The following questions regarding the table and thresholds arise:

- **What percentage of the ED is the learning area?**

e3s response – The training data represents 3.39 % of the ED above 1100 m (i.e. areas of comparable ecological values) and 1.51% of the total ED.

- **What confidence is applied to the learning area being representative?**

e3s response – In acknowledgement of the limitations of the Random Forest model, the following actions were undertaken to manage bias associated with the training data and its position within the Ecological District; noting that this helped improve the overall accuracy of the output data.

- Use of training data to extrapolate percent of occurrence within coarsened vegetation classes (e.g. wetlands) are acknowledged to introduce bias in the presence of a wetland subclass. Therefore, percentage of vegetation communities lost within the ED is presented at two levels, the Singers and Rogers ecosystem types and the mapped vegetation communities resulting from e3s data.
- Assessment of individual units by expert interpretation via aerial imagery of areas beyond the surveyed training data area and manual correction and/or re-running of models based upon correction data.
- Splitting of Random Forest analysis across two representative elevations (>1500 and 1500-1100 m asl) where specific ecological communities are restricted. Therefore, limiting the over-estimation of vegetation communities that only occur within one elevational range.
- Use of wetness index, DEM slope analysis, and flow accumulation modelling for identifying tarns and wetlands (which were overlaid and compared against model outputs rather than incorporated directly into the model).

While these measures improved the overall accuracy of the modelling, the resulting output does not present a perfect representation of all vegetation

types; rather, it provides a tool for quantifying the relative extent of individual vegetation types across the Ecological District. The Random Forest output was not intended to independently define final ecological unit boundaries; rather, it forms one component of a broader assessment process, and its outputs have been considered alongside other evidence. Accordingly, this output should be interpreted as one of several inputs used to inform the magnitude of effect. Additional considerations include expert interpretation, local ecological knowledge, comprehensive field studies within the study area, and comparison to data sets and aerial imagery displaying similar vegetation classes.

- **What percentage of the ED is the whole development area?**

e3s response – Refer Section 6.9 of the TEcIA. The proposed works account for 0.04 % of the Ecological District above 1100 metres and 0.018 % of the total ED.

- **How are cumulative and effects of past activities accommodated in the table?**

e3s response – Cumulative effects are irrelevant to establishing the thresholds for magnitude of effect of an activity. Cumulative effects are assessed as a separate effect and are addressed within the cumulative effects Section of the TEcIA (refer to Section 6.9 of the TEcIA).

- **What is the basis for the thresholds for the magnitude of effect?**

e3s response – The basis are the established criteria within the EIANZ guidelines. Specific reference to the criteria is provided within the rationale column of Table 12 within the TEcIA.

Translocation of 'at risk' and 'threatened' wetland plants is proposed mitigation in Table 18. However, it is unclear as to where, these would be translocated to as the remaining natural wetlands are vegetated such that there is a low likelihood of suitable receiving locations. Please clarify the translocation receiver site and provide evidence as to its suitability.

e3s response – Where wetland plant translocations are required, small plugs will be removed from proposed disturbance areas and placed within the nearest equivalent wetland type occupied by bare ground, exotic species, or Not Threatened species.

The wetland delineation protocols (MfE 2022) have been used, however, the following comments are made in this regard:

- ***The tools have largely been used for the identification/classification of wetlands and not delineation.***

e3s response – e3s acknowledge that the scale of Figures 11 and 20 of the TEcIA may make it difficult to fully appreciate the locations of the quadrats and rapid assessment sites and thus realise that delineation has occurred. Wetland assessments were undertaken along transects extending from within the wetland to identify the transition between wetland and upland environments, including the point at which this change occurred. Limited assessment locations were required along the transect (i.e. one in each vegetation community) as the wetlands were generally dominated by OBL and FACW species with a clear and abrupt change in vegetation due to the underlying hydrology and associated geology. The wetland boundary was then mapped using a number of desktop and onsite methods (refer Section 2.3.2 of the TEcIA). This is in line with the wetland delineation protocols.

- ***The vegetative tool has been used, but it is limited by the plant species list provided in the tool. The applicant ecologists have provided their own classification for the plants. This requires further evidence to support the regional classification of these species (I am aware that many have been assigned the classification provided in the online NZ Plant Conservation Network). In situations where vegetation classification is challenging, it is advised that more reliance on hydrology and soils should be applied.***

e3s response – Only one species (*Chionochloa macra*) was assigned a provisional wetland indicator status rating by e3s (refer to Section 2.3.2 of the TEcIA). This was assigned a rating due to the species being highly comparable in its ecological niche to that of *Chionochloa rigida*, while generally occupying different elevations ranges. Assigning a justified rating greatly aided in delineating the wetland boundaries. The rating of FACU was assigned based upon the New Zealand wetland plant indicator status ratings 2021 (Clarkson et al., 2021). As suggested by the reviewer, wetland soil and hydrology were assessed at all locations including rapid test locations (refer to Section 2.3.2).

There are field datasheets for the assessments, however there are no photographs to support findings, particularly useful for instances where soil colour is in the low chroma group, but has been determined non wetland.

e3s response – Please refer to Attachment 1 of this memo for quadrat photographs.

During my site visit, the wetland cores taken were all of peat-based wetlands. The applicant ecologist commented on lack of mottles, however, these are unlikely to be found in peat. Photographs would assist in ensuring wetland soil identification had been undertaken accurately.

e3s response – The peat wetlands within the study area are underlain by mineral-derived sediments, deposited through glaciation and subsequent natural erosion; common within the alpine-subalpine zone of the Southern Alps. Many of the soil profiles exhibit reduced conditions and redoximorphic features (occasionally presenting as mottling) within the mineral B-horizon, reflecting prolonged seasonal saturation, as shown in Table 4 of the TEcIA. Please refer to Attachment 1 of this document for quadrat photographs.

It is unclear why Figure 8 (EcIA) has two altitudinal areas and with similar colours for the same classifications, it is difficult to interpret.

e3s response – Section 6.1.3 of the TEcIA provides additional information regarding the elevational cut offs of vegetation types and fundamental shifts in vegetation composition. For this reason, they have been classified separately but depicted as the same overarching vegetation type in Figure 8.

Figure 20 (EcIA) shows wetlands and wetland assessment locations. The scale and symbology makes it difficult to assess. It would also be useful to overlay the proposed works on this map (although it is done in Figure 26, this is also difficult to assess).

e3s response – Additional larger scale figures have been produced below for ease of interpretation (see Figure 1 – Figure 4).

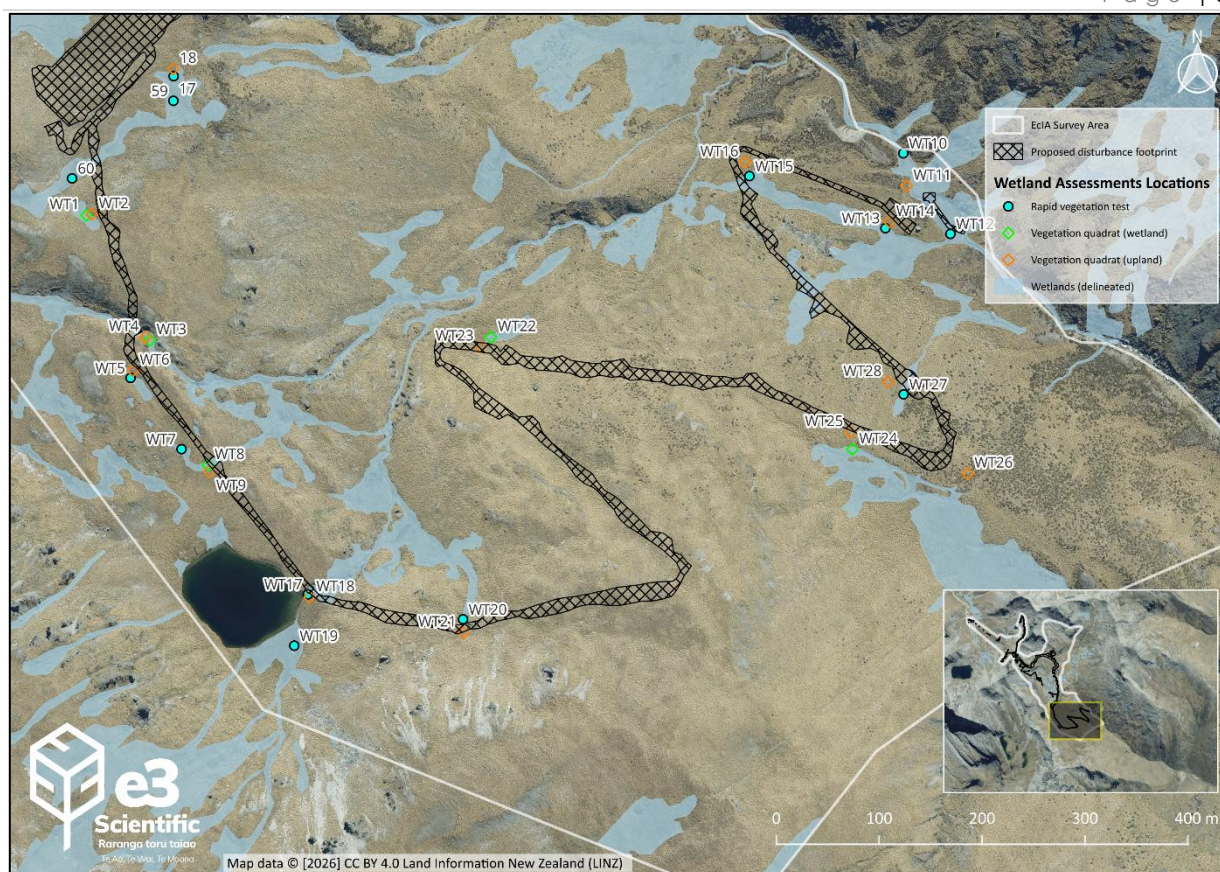


Figure 1: Wetland delineation (south-east extent).

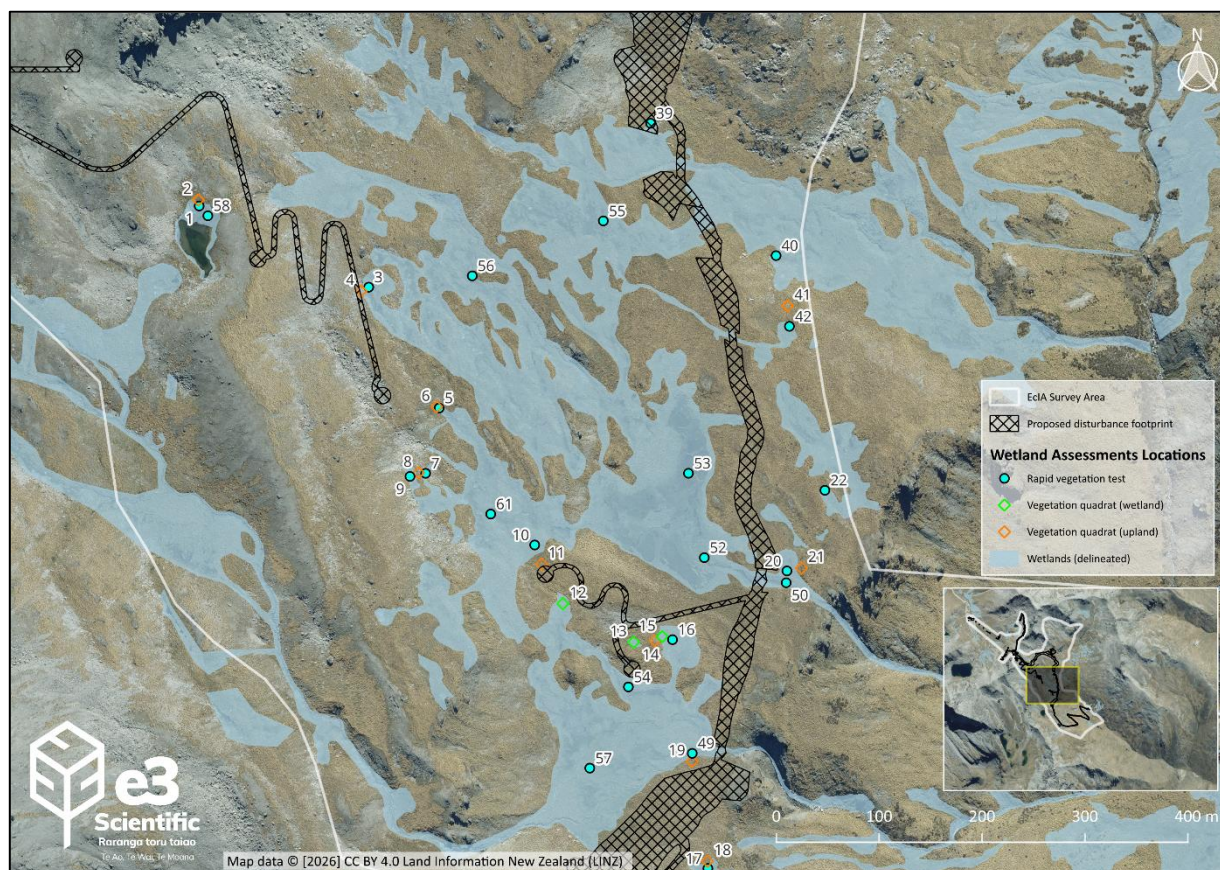


Figure 2: Wetland delineation (central-east extent).

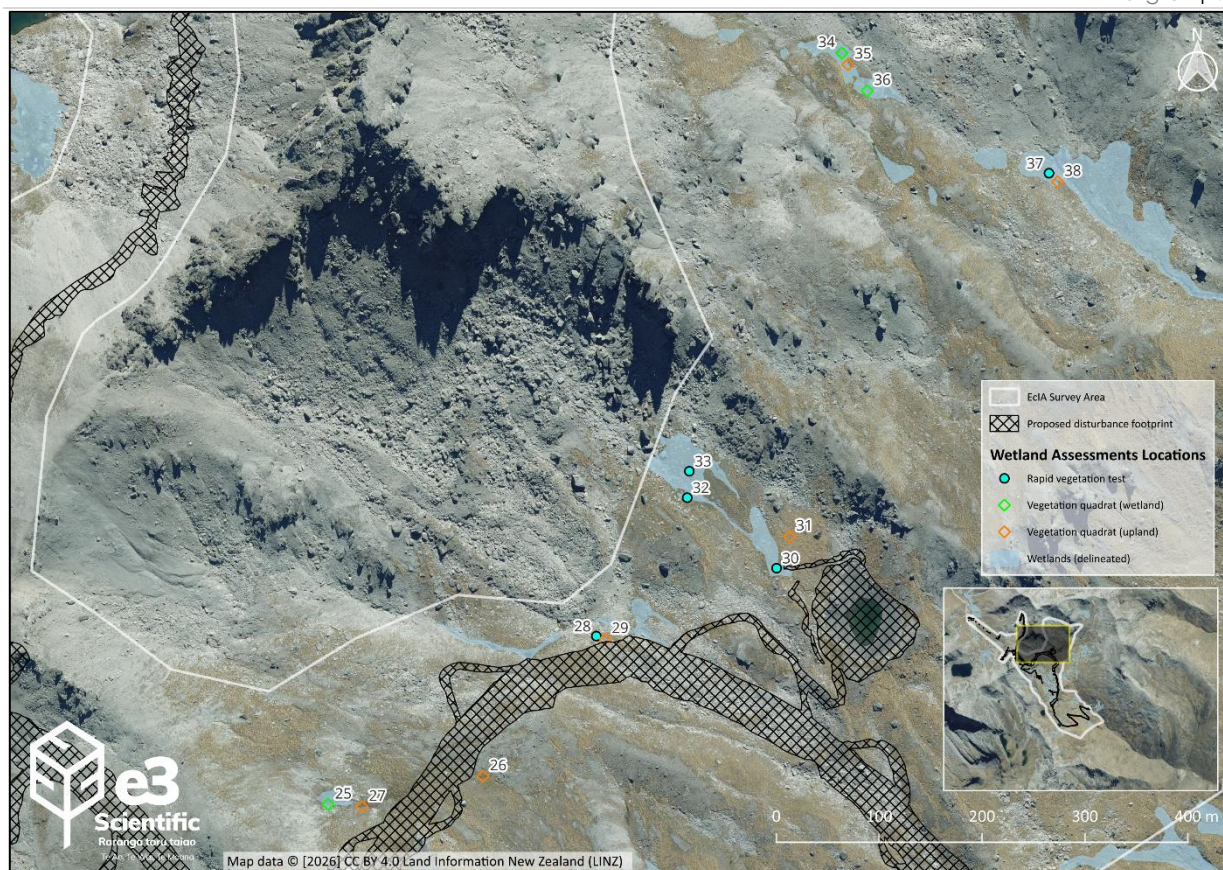


Figure 3: Wetland delineation (north-east extent).

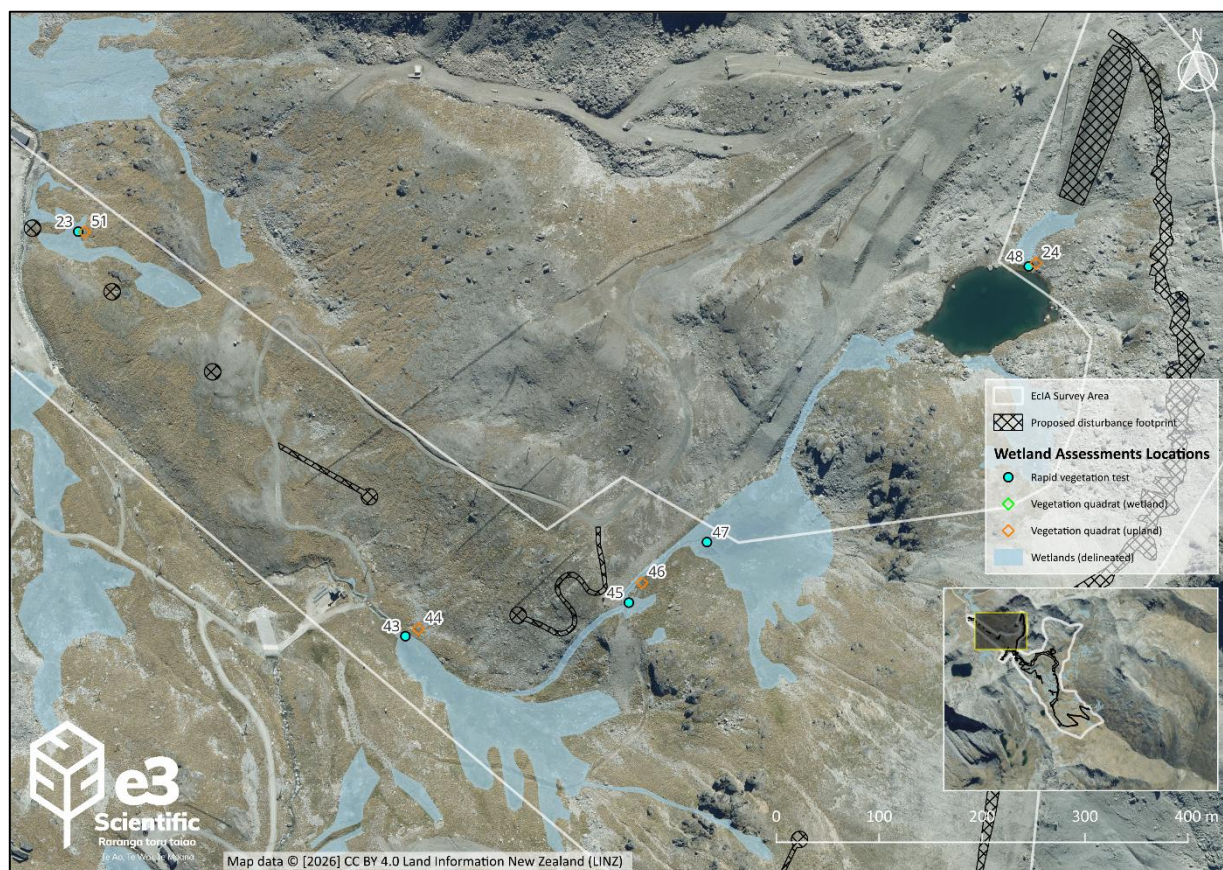


Figure 4: Wetland delineation (west extent).

Despite the wetland delineation, it is understood that wetlands were mapped using aerial imagery. The following comments are in relation to this:

e3s response – Refer Section 2.3.2 of the TEcIA. Extensive on ground mapping was undertaken with a handheld GPS, continuous soil probe, vegetation, and hydrological visual assessments, alongside GIS analysis, including but not limited to; DEM, hydrological flow accumulation modelling, and analysis of multiple years of aerial images.

- ***There is a comment (EcIA) that imagery from 2017 – 2019 was used (7 to 9 years old) as the 2025 imagery does not cover the complete site area. What effects is this likely to have on the modelling and wetland delineation accuracy?***

e3s response – The comment regarding use of 2017 – 2019 was in reference to the Random Forest (RF) analysis. RF analysis requires continuous or highly comparable aerial imagery to not introduce additional uncertainty within areas of contiguous visual features. By merging different light and seasonal conditions depicted within different aerial dates, this could limit the desired accuracy of the output data. Regardless, given the slow rate of change within alpine systems and the lack of anthropogenic disturbance the wetland boundaries are highly unlikely to have changed.

- ***There could be discussion on past assessments (eg. Image 19) on the extent/overlap of the assessed wetlands.***

e3s response – The relevant information from the Conservation Consultancy reports (Simpson, 2018; Simpson, 2021) is summarised within Section 3.1.5 of the TEcIA. No official wetland delineation of onsite wetlands was undertaken in conjunction with these botanical surveys. Therefore, wetland and by extension other vegetation community boundaries were not well defined and are subsequently not relied upon in the assessment.

- ***Wetland edges close to any proposed works could have been accurately delineated.***

e3s response – All wetland boundaries within the mapped study area have been accurately delineated as per the wetland delineation protocols. Wetland edges in close proximity to proposed works were mapped using a handheld GPS and further supported by GIS analysis as noted above.

There are at least seven locations (maps limit assessment) where the proposed works will bisect or occur within a wetland. There is little information on how the effects will be managed apart from ecological assessment and certification of plans.

- ***Designs and approaches for each wetland crossing should be provided in this effects assessment. It is not considered appropriate to defer this assessment to post consent. They need to be demonstrated that they have a better than reasonable chance of success.***

e3s response – e3s acknowledges the reviewers concerns. However, three design options for the stream/wetland crossings are provided in the 'Tracks, Stream Crossings and Stormwater Freshwater Ecological and Hydrological Impact Assessment' report (e3Scientific Ltd, 2026d). Within the TEcIA, the magnitude of effects and subsequent level of effects assume a specific outcome from the management plan based on the mitigation measures detailed in Table 18 of the TEcIA. The Terrestrial Ecology Management Plan (TEMP) is expected to represent the mitigation measures of Table 18 and the proposed consent conditions, thus the residual effects can be understood via Table 18, the proposed consent conditions, and the TEMP. Where the design specifications do not indicate the design has a better than reasonable chance of successfully achieving the required outcomes the design should not be endorsed by the Hydrologist and Ecologist and works cannot be undertaken.

- ***The potential adverse effects for the proposed works in the specific wetlands need to be assessed and effects management actions provided (acknowledging that the report does mention sediment).***

e3s response – The effects of the proposed wetland disturbance are limited to direct loss of extent (refer to Section 6.2 of the TEcIA), fragmentation (refer to Section 6.3), sedimentation (refer to Section 6.5), and habitat loss (refer to Table 15 within Section 6.6). Table 18 of the TEcIA addresses feasible management action within the 'Mitigation/Avoidance Measure' column and replicated as recommendations in Section 8 of the TEcIA. Where management measures are not feasible or do not reduce the magnitude of effect to Low, residual effects are noted to be incurred as a result of the specific effect.

In a number of locations wetlands are in either close proximity to or are crossed by the proposed works. The proposed mitigation is for "All wetland and stream crossing

designs will be reviewed by a Hydrologist and Ecologist and approved prior to any works commencing and be inspected once complete to ensure the design is implemented correctly and is functioning as anticipated. Checks will ensure ecological and hydrological function is maintained; checks will be undertaken immediately after completion and again 12 months later by a Hydrologist and Ecologist."

- ***This effectively is putting the effects assessment into the consent***

e3s response – The effects assessment has been undertaken prior to and in consideration of the implementation of mitigation measures (refer Section Sections 6 and 7 of the TEclA). Additionally, as stated above, three design options for the stream/wetland crossings are provided in the 'Tracks, Stream Crossings and Stormwater Freshwater Ecological and Hydrological Impact Assessment' report (e3Scientific Ltd, 2026d). Furthermore, the magnitude of effects and subsequent level of effects assume a specific outcome from the management plan based on the mitigation measures detailed in Table 18 of the TEclA. The Terrestrial Ecology Management Plan (TEMP) is expected to represent the mitigation measures of Table 18 and the proposed consent conditions, thus the residual effects can be understood via Table 18, the proposed consent conditions, and the TEMP. Where the design specifications do not indicate the design has a better than reasonable chance of successfully achieving the required outcomes the design will not be endorsed by the Hydrologist and Ecologist and works cannot be undertaken.

- ***No methods, targets or any specifics are provided as to what these assessments may be.***

e3s response – The TEclA states that "[wetland and stream crossings will] be inspected once complete to ensure the design is implemented correctly and is functioning as anticipated", as well as "checks will ensure ecological and hydrological function is maintained". e3s understands that the method by which this is assessed is detailed in the Terrestrial Ecology Management Plan (TEMP).

After discussion in the Teams meeting (4th August), the recommendations of the TEclA for wetland monitoring have been updated to detail that:

- At each wetland crossing location photo monitoring points and vegetation quadrats (recording species cover) will be established both up and downstream to monitor ecological change in wetland vegetative composition.

- ii. Monitoring will be undertaken on an annual basis for 3 years and then biennially for a further 4 years. The monitoring shall be undertaken by a suitably qualified and experienced ecologist. Where monitoring identifies an adverse effect on the ecological function or composition attributable to the proposed works, the mechanism of effect must be remediated and monitoring restarted.

- ***There are no details on how adverse effects to streams and wetlands are to be minimized or quantified.***

e3s response – Streams were not assessed as part of the TEcIA. Additional avoidance steps of High – Very High ecological values have been undertaken throughout the development of the final alignment with iterations detailed within Part A Section 1.3.4 "Design evolution of the Project" of the Substantive Application. Specific design measures are also detailed in Part A, Sections 3.3.4, 3.4.1, 3.5.2, 3.5.4, 3.5.6.2, and 3.6.1.1 of the Substantive Application, with consideration also detailed throughout the "Construction Management Framework" (refer to Part B-26 of the application). Thus, options for avoidance or minimisation of the trail alignment were already exhausted prior to the assessment of effect within the TEcIA. Residual effects (effects with a level of effect greater than Low) are detailed within Table 18 of the TEcIA. Relevant avoidance measures have been described at the beginning of Section 6 of the TEcIA. e3s understands that further document detailing multidisciplinary avoidance measures undertaken by the project is being produced by NZSki and will be provided to ORC. Avoidance measures have been described at the beginning of Section 6 of the TEcIA.

- ***There is no clarity if the ecologist and hydrologist are engaged by the Council or applicant.***

e3s response – This is outside the scope of e3s' services relating to the TEcIA. However, Mitchell Daysh have advised e3s, given this is within a proposed consent condition, they will therefore be engaged by NZSki (see condition ECO.33).

- ***What would happen if checks indicated that there were adverse effects, particularly after the proposed works? There is no outcome from any check results.***

e3s response – Should the checks indicate that implementation of the proposed mitigation measures were not successfully undertaken or that the design is not fulfilling the requirements set out by consent condition, the Applicant would be non-compliant with the consent condition(s). Where this occurs, it must be remediated to be compliant.

It is unclear the extent of wetland that will be lost either directly through the works or indirectly through the alteration of the hydrology.

e3s response – The direct and total loss of wetland is the same as the vegetation loss attributed to the different wetland types (refer to Table 14 of the TEClA); wetland loss is specifically detailed as both individual communities and cumulatively. The mitigation requires the retention of hydrology and therefore the assessment does not expect any loss wetland via alteration of hydrology.

- ***The extent of wetland lost should be in the residual adverse effects table.***

e3s response – Refer to row two of Table 18 (Section 7). All wetland types are included as direct loss. Further, indirect effects, such as fragmentation and sedimentation and habitat loss are also represented within the residual effect table.

- ***Wetland loss should be considered as an adverse effect to be assessed (and not lumped with general vegetation loss).***

e3s response –Wetlands are specifically described as different wetland types and have been presented as individual communities and cumulatively in regard to loss (m²). Accounting for wetland loss as a different or additional adverse effect would in turn double the direct removal of functional habitat.

2.2 Effects Management

Avoidance is stated to be included through an iterative design process by avoiding the most sensitive ecological values, however, it is uncertain as to how this had been achieved. For example:

e3s response – As above, avoidance steps of High – Very High ecological values have been undertaken throughout the development of the final alignment with iterations

detailed within Part A Section 1.3.4 "Design evolution of the Project" of the Substantive Application. Specific design measures are also detailed in Part A, Sections 3.3.4, 3.4.1, 3.5.2, 3.5.4, 3.5.6.2, and 3.6.1.1 of the Substantive Application, with consideration also detailed throughout the "Construction Management Framework" (refer to Part B-26 of the application). Additional options for avoidance or minimisation of the trail alignment were already exhausted prior to the assessment of effect within the TEcIA. Relevant avoidance measures have been described at the beginning of Section 6 of the TEcIA. e3s understands that further document detailing multidisciplinary avoidance measures undertaken by the project is being produced by NZ Ski and will be provided to ORC.

- ***Mapping of the ecological values (wetlands) is on aerial images, but the works are reported to be more detailed.***

e3s response – As above, refer Section 2.3.2 of the TEcIA. Extensive on ground mapping was undertaken with a handheld GPS and continuous soil, vegetation and hydrological assessments, alongside GIS analysis, including but not limited to: DEM, and hydrological flow accumulation modelling analysis of multiple years of aerial images.

- ***The recommendations seek to avoid ecological values indicating there is still assessments required.***

e3s response – Discussion of avoidance terminology is appropriately discussed within the sequence of the effects management hierarchy. Avoidance subsequent to the assessment of effects is limited to fauna species that are highly mobile and would require specific mitigatory survey prior to works commencing, as discussed within the recommendations. Further mention of avoidance of ecological values within the recommendations does not occur.

- ***It remains unclear as to the need for more than 2km steep track, associated earthworks and wetland effects to the water pump and location. Alternatives, such as airlift could be explored.***

e3s response – Alternative water take options were discussed in the Water Take AEE (e3scientific, 2026).

The access track to the water take was carefully considered and optioneered before arriving at the submitted design. More direct, steeper routes were

considered, which would have resulted in less areas of disturbance and potentially less stream crossings. However, those routes would have been very difficult to construct and operationally hard/impossible to utilise. Vehicular access to the intake is required for maintenance and inspections therefore an accessible grade is needed to allow for this rather than a steeper direct route or temporary route. Co-locating the combined trench and access track means less disturbance than two differing routes. The final proposed route best balances constructability, operational usability, and avoided or minimised disturbance of high value ecological areas.

- ***There is no discussion or mention of the 4 stream crossings that are required for the earthworks (roading and services).***

e3s response – This has not been assessed within the TEcIA as it is specifically a freshwater ecosystem. The relevant document had not been prepared at the time of review but has since been prepared, please refer to the 'Tracks, Stream Crossings and Stormwater Freshwater Ecological and Hydrological Impact Assessment' report (e3Scientific Ltd, 2026d). Further, the types of crossing options proposed are discussed in the Stantec report (Stantec New Zealand, 2025).

- ***The proposed requirement to lay buried services to the proposed pump station and weir could be reviewed against using existing reservoirs on the Rastus Burn area and for this to be pumped over the ridgeline to the Doolans, utilising already earthworked areas.***

e3s response – Alternative water take options were specifically discussed within the Water Take Assessment of Effects (refer Section 5.7 (e3Scientific Ltd, 2026d)): "Taking of additional flow from Lake Alta or the Rastus Burn was not considered viable due to the current water take in that catchment. Additionally, this would not be culturally sensitive due to water being sourced from one catchment and transferred to another."

Alternative sites were investigated for the proposed water take within Doolans Creek, however there was insufficient flow higher in the catchment to provide an adequate sustainable take."

- ***Avoiding adverse effects of stream and wetland crossing (eg. Bridges or directional drilling) has not been presented or assessed.***

e3s response – Avoidance steps of High – Very High ecological values have been undertaken throughout the development of the final alignment with iterations detailed within Part A Section 1.3.4 "Design evolution of the Project" of the Substantive Application. Specific design measures are also detailed in Part A, Sections 3.3.4, 3.4.1, 3.5.2, 3.5.4, 3.5.6.2, and 3.6.1.1 of the Substantive Application, with consideration also detailed throughout the "Construction Management Framework" (refer to Part B-26 of the application). Thrust boring/directional drilling in conjunction with bridges capable of supporting construction machinery was explored during internal preliminary multidisciplinary discussions. However, this was not considered a viable option given the schist bedrock geology of the site. Relevant avoidance measures have been described at the beginning of Section 6 of the TEcIA. e3s understands that further document detailing multidisciplinary avoidance measures undertaken by the project is being produced by NZSki and will be provided to ORC.

The application should also assess the site against the SNA criteria of the NPS:IB.

e3s response – The TEcIA assesses all of the vegetation communities and associated faunal values against NPS-IB Significance criteria (refer to Section 5.2 of the TEcIA).

The residual adverse effects should be further quantified to enable a robust assessment in terms of ecological equivalency with the offset and compensation plans.

e3s response – See comments regarding wetland offsetting and compensation in Section 2.3 below.

The precautionary approach (NPS:IB clause 3.7) should be set out in the application assessments, such that where there is uncertainty, or data deficiencies, and potential harm, these are appropriately managed.

e3s response – It is unclear as to what uncertainty, data deficiencies, or potential harm the reviewer is referring to, further clarification is required to provide a response

2.3 Wetland Compensation

There is no ecological modelling or assessment to demonstrate to what extent of any offset or compensation is required for the proposed works (eg. 4450m² tarn; XXm² riparian habitat; etc.).

e3s response – Refer to Section 7.1 of the TEclA. e3s notes credible opportunities for offsetting within a harsh alpine environment have not been identified. This is because neighbouring subalpine and alpine areas contain relatively undisturbed vegetation and habitats that are unlikely to benefit from implementation of offsetting measures.

Preparation of an offsetting/compensation package and modelling was not within the scope of e3s' work.

There is an indication that the applicant has chosen not to pursue offset, but rather compensation. Whilst the compensation package is unknown at this point, the following comments are made:

- ***Best practice and industry standard methods are used to assess the values and potential values of streams and wetlands. Any compensation is addressed through robust ecological modelling such that both loss of value and extent are demonstrated to be accounted for.***
- ***Effects management must address both loss of extent and value of wetlands, and tarns (and streams if required).***
- ***The effects management hierarchy is applied sequentially. Offset requirements are to demonstrate no net loss and preferentially net gain (NPS:FM and NPS:IB). Compensation should therefore exceed these measures.***
- ***Offsets apply to residual adverse effects that genuinely cannot be avoided, minimised, or remedied (eg. Loss of extent and value) and compensation is a last resort for residual effects where offsetting is not achievable.***

e3s response – Preparation of an offset/compensation package and modelling was not within the scope of e3s' work. Until the package is presented it cannot be determined whether residual effects will be adequately offset/compensated for. Without which, a significant overall Net Loss of ecological values is expected to occur.

The ORC 'RFI Response Tracking Table' Q7: Prior to construction, the boundaries of wetlands within 10 m of the planned track should be marked out. Who will mark the wetland boundaries, noting that the majority of the wetlands have only been delineated using remote tools. It is recommended that this includes a requirement to

delineate wetlands by a suitably experienced ecologist and provide buffers/setbacks to the wetland edges.

e3s response: The wetlands within proximity of the earthworks footprint have already been accurately delineated under the Wetland Delineation Protocols (Ministry for the Environment, 2022). The TEClA has been updated to recommend the following (as a condition): Prior to construction, a suitable qualified and experienced ecologist should physically mark out the wetland edge and setbacks utilising delineated boundaries, and indicators of onsite vegetation, soils and hydrology.

The ORC 'RFI Response Tracking Table' Q21: The loss of stream and wetland extent and value is considered significant prior to offset and compensation. The sequential application of the effects management hierarchy must be followed with sound evidence to move to the next sequential step.

e3s response: The avoidance and mitigation measures are detailed in the TEClA (with further avoidance measures detailed in sections as noted in response above). Further effects management (i.e. offset/compensation package and modelling) was not within the scope of e3s' work.

3 References

- Clarkson, B. R., Fitzgerald, N. B., Champion, P. D., Forester, L., & Rance, B. (2021). *New Zealand wetland plant indicator status ratings 2021*. Manaaki Whenua - Landcare Research.
- e3Scientific. (2026c). *Remarkables Ski Area Upgrade and Doolans Expansion - Terrestrial Ecological Impact Assessment*. May 2026.

Attachment 1: Vegetation Quadrats

Quadrat number: 2 (upland)

Vegetation:



Soils:



Quadrat number: 4 (upland)

Vegetation:

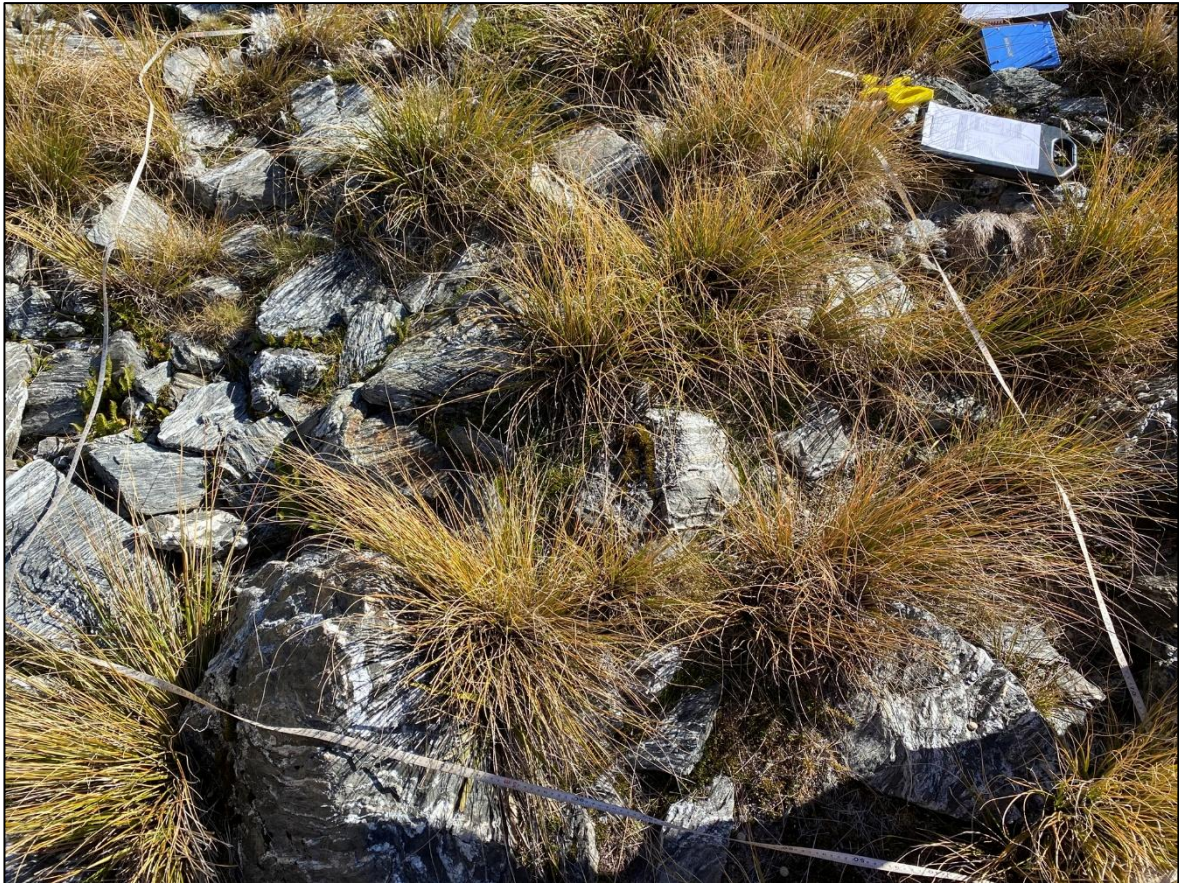


Soils:

N/A (Rock)

Quadrat number: 6 (upland)

Vegetation:



Soils:



Quadrat number: 8 (upland)

Vegetation:



Soils:



Quadrat number: 11 (upland)

Vegetation:



Soils:



Quadrat number: 12 (wetland)

Vegetation:



Soils:



Quadrat number: 13 (wetland)

Vegetation:



Soils:



Quadrat number: 14 (upland)

Vegetation:



Soils:



Quadrat number: 15 (wetland)

Vegetation:



Soils:



Quadrat number: 18 (upland)

Vegetation:



Soils:



Quadrat number: 19 (upland)

Vegetation:



Soils:



Quadrat number: 21 (upland)

Vegetation:



Soils:



Quadrat number: 24 (upland)

Vegetation:



Soils:



Quadrat number: 25 (wetland)

Vegetation:



Soils:



Quadrat number: 26 (upland)

Vegetation:



Soils:



Quadrat number: 27 (upland)

Vegetation:



Soils:



Quadrat number: 29 (upland)

Vegetation:



Soils:



Quadrat number: 31 (upland)

Vegetation:



Soils:



Quadrat number: 34 (wetland)

Vegetation:



Soils:



Quadrat number: 35 (upland)

Vegetation:



Soils:



Quadrat number: 36 (wetland)

Vegetation:



Soils:



Quadrat number: 38 (upland)

Vegetation:



Soils:



Quadrat number: 41 (upland)

Vegetation:



Soils:



Quadrat number: 44 (upland)

Vegetation:



Soils:



Quadrat number: 46 (upland)

Vegetation:



Soils:



Quadrat number: 51 (upland)

Vegetation:



Soils:



Quadrat number: WT1 (wetland)

Vegetation:



Soils:



Quadrat number: WT2 (upland)

Vegetation:



Soils:



Quadrat number: WT3 (wetland)

Vegetation 2 m² (4x1 m):



Soils:



Quadrat number: WT4 (upland)

Vegetation:



Soils:



Quadrat number: WT6 (upland)

Vegetation:



Soils:



Quadrat number: WT8 (wetland)

Vegetation:



Soils:



Quadrat number: WT9 (upland)

Vegetation:



Soils:



Quadrat number: WT11 (upland)

Vegetation:



Soils:



Quadrat number: WT14 (upland)

Vegetation:



Soils:



Quadrat number: WT16 (upland)

Vegetation:

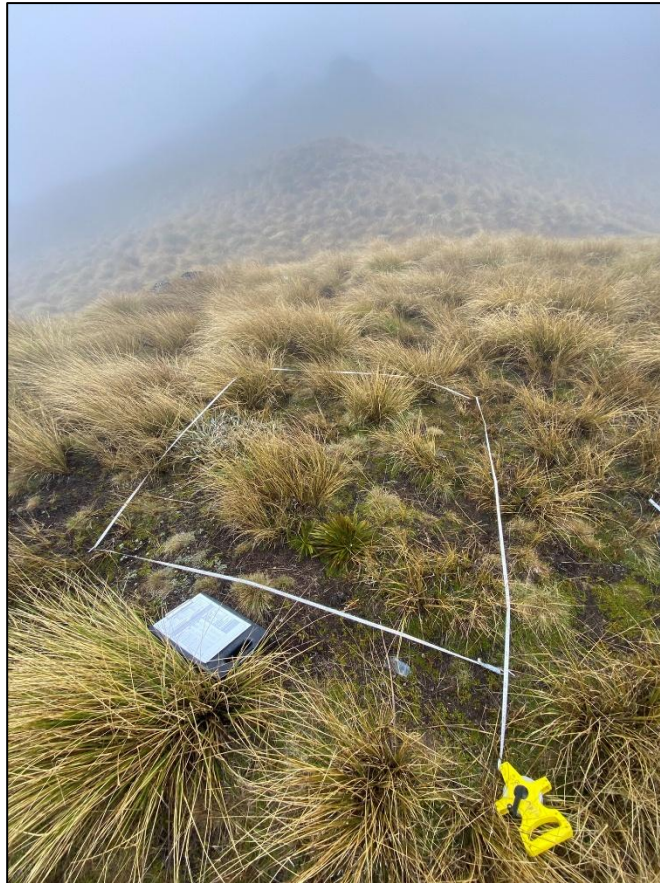


Soils:



Quadrat number: WT18 (upland)

Vegetation:



Soils:



Quadrat number: WT21 (upland)

Vegetation:



Soils:



Quadrat number: WT22 (wetland)

Vegetation:



Soils:



Quadrat number: WT23 (upland)

Vegetation:



Soils:



Quadrat number: WT24 (wetland)

Vegetation:



Soils:



Quadrat number: WT25 (upland)

Vegetation:



Soils:



Quadrat number: WT26 (upland)

Vegetation:

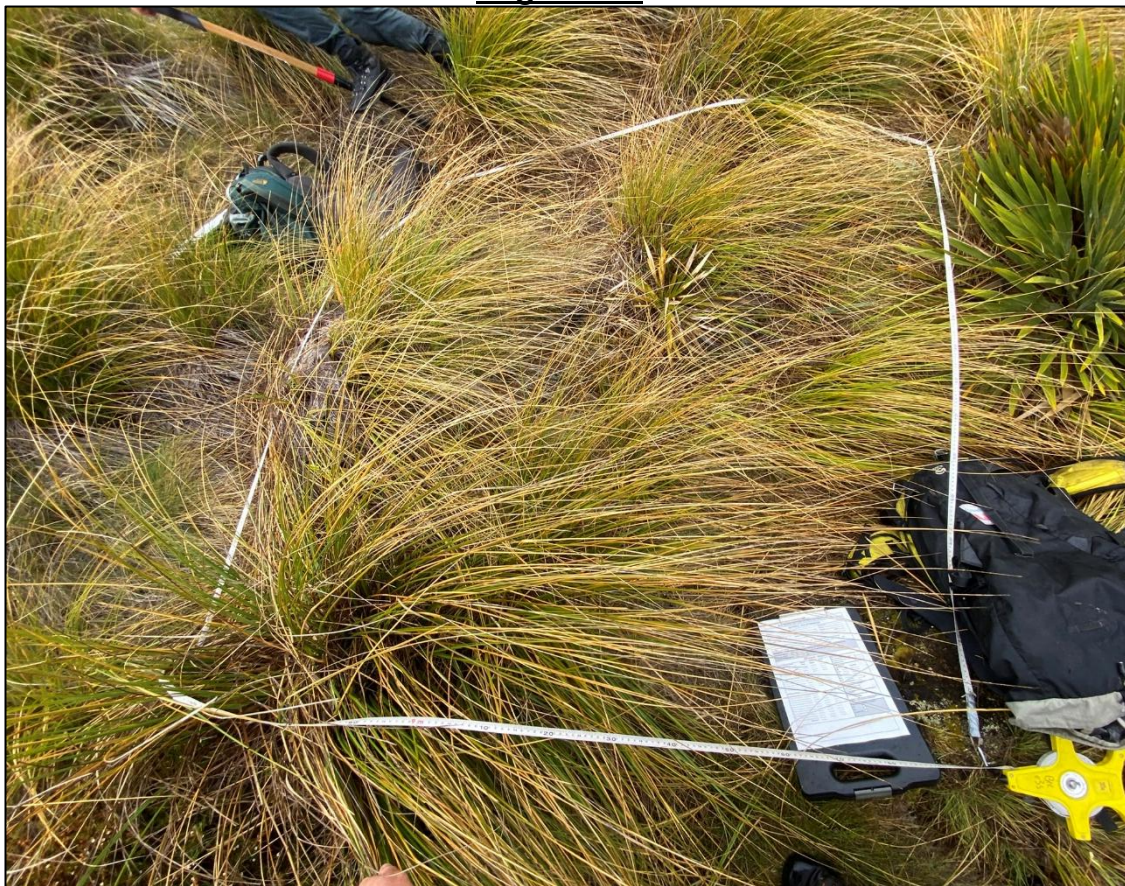


Soils:



Quadrat number: WT28 (upland)

Vegetation:



Soils:



