

Response to the Section 46 Completeness Reports (Vegetation) for the Proposed Nova Energy Solar Farm, Twizel

Contract Report No. 6620d†

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Prepared for:	Nova Energy	Reviewed and approved for release by:  Nick Goldwater Senior Principal Ecologist
Author:	Roland Payne	
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1.0 Introduction

Nova Energy is proposing to develop a solar energy farm on c.866 hectares of land located east of Twizel in the Mackenzie District, South Canterbury. The application is being considered under the Fast-track Approvals Act 2024 (FTAA).

Nova Energy previously commissioned Wildland Consultants (Wildlands) to undertake an Assessment of Ecological Effects (AEE; Wildlands 2026) of the project and prepare a suite of ecological management plans to address potential adverse effects.

The Department of Conservation (DOC) and Canterbury Regional Council (CRC) have now reviewed the combined AEE and ecological management plans. These reviews include comments on vegetation-related matters including remaining areas of contention and suggested solutions.

This memo provides a response to vegetation related matters in both the DOC¹ and CRC² reviews.

2.0 Canterbury Regional Council Comments

Methods of ecological surveys

CRC comments: Vegetation – the survey effort or coverage is not well described by the AEE. No track log is provided, no plot-based surveys/recce plots appear to have been used, nor any surveys conducted in spring to identify spring-annuals. Potential data deficiencies. What additional species may occur at this site? Could *Lepidium solandri* occur within proposed disturbance footprints?

The recent AEE provides further details explaining how the wider area was searched with a zigzag search pattern. No track log of survey effort was provided, so presumably not recorded. Would plot based recce method provide further information? And consider if Spring annuals were potentially missed due to survey timing (Dec-Jan) – although I note some orchids were recorded.

Wildlands’ response: There has been a thorough and detailed search of both the footprint and perimeter of the site. Survey methods comprised a walk-through survey with detailed investigation and description of all the different habitats encountered, which is in line with the ‘variable-area approach’ detailed in the recce method expanded manual for describing New Zealand vegetation (Hurst et al. 2022). This method was used as it is faster and allows the data collector to target individual habitats (including small microhabitats) that could potentially be missed by using plot-based survey methods.

Habitat for indigenous spring annual plants is not present within the solar farm footprint, which has been heavily modified by agricultural practices (i.e. grazing and drill seed cultivation). There is limited spring annual habitat around the margins of the site, however, the species known from the area

¹ Department of Conservation advice for EPA compliance assessment 17 June 2026

² Canterbury Regional Council completeness report (17 June 2026): Attachment 5: Indigenous Biodiversity Technical Advice



(e.g. *Ceratocephala pungens*, *Myosotis brevis*, *Myosurus minimus*) would still be present in mid-December and would have been recorded during surveys if they occurred at the site.

Although a track log was not provided in the AEE, this data was largely recorded and is presented in Appendix 1.

CRC comments: There is an apparent opportunity to align the invertebrate drone (UAV-survey) mapped habitat patches with the vegetation mapping. The UAV-surveys mapped habitat more finely, identifying discrete areas of 'short-stature vegetation mixed with bare ground and/or stones' (Figure 11) which would seem to provide better resolution to the mapping of vegetation types shown in Figure 6.

Wildlands' response: The UAV surveys were used to map low-stature vegetation, which could provide habitat to invertebrates (i.e. grasshoppers), but within the solar farm footprint at the site this does not correspond with areas where indigenous vascular plants are present. Low-stature vegetation is present within the (heavily modified) footprint of the site and these areas (mapped as grasshopper habitat) comprise depleted exotic herbfield and grassland. Dead vegetation described in the UAV methodology was found to be dried exotic hare's foot trefoil. Because the UAV mapping could only identify vegetation stature (e.g. low/high) and bare ground, rather than individual species, there is no relationship between UAV mapped invertebrate habitat and indigenous vegetation within the solar farm footprint (only on the margins). This means there is little value in attempting to refine indigenous vegetation mapping at the site using UAV surveys. Additionally, the distribution of indigenous vegetation at the site is already well understood and is confined to the marginal areas excluded from the solar farm footprint.

Outwash plains habitat

CRC comments: The effects of the proposal on outwash plain ecosystems as a whole have not been considered. While assessment of individual taxa groups provides useful information on how each may be affected by the proposal, it is also important to consider the effects on the ecosystem as a whole. Ultimately, the proposal will result in the loss of an area of irreplaceable habitat within a naturally uncommon ecosystem [or rather a loss of ecosystem intactness/function]. Such loss in the context of ongoing biodiversity loss should be avoided. Particularly where alternative sites for solar farms exist.

While the AEE identifies inland outwash gravels/outwash plains as a historically rare ecosystem and assesses effects on component ecological values, it does not appear to separately assess the effects of the proposal on the outwash plain ecosystem as an integrated ecological unit. The outwash plain landform would remain beneath the solar farm; however, construction, earthworks, panel shading, altered microclimate, stormwater effects, vehicle movements, pest plant risks, and changes in grazing management may result in further modification and partial functional loss of the ecosystem values associated with that landform. This is relevant because the ecological value of outwash plains is not limited to mapped indigenous vegetation or confirmed records of Threatened and At Risk fauna, but also includes the physical habitat mosaic, sparse dryland vegetation structure, bare gravels, thermal environment, connectivity, and habitat function for specialist dryland species.

Wildlands' response: It is acknowledged that the proposed solar farm is on a late Otiran inland outwash gravel landform that can support an 'originally rare/naturally uncommon' ecosystem. However, within the proposed solar farm footprint, this ecosystem has been heavily modified through agricultural conversion, grazing, and cultivation. The outwash plain at the site is now a homogenised habitat dominated by exotic grass and herbaceous weed species, as cultivation has redistributed topsoil and gravels and homogenised the original dryland mosaic. The outwash plain within the footprint has already been almost entirely lost and we consider it unlikely that this habitat would recover without intervention.



Indigenous plant species were only recorded around margins of the solar farm footprint where terrace edge habitat persists, despite the extensive modification of the adjacent plain. This is because it has a unique terrace edge micro-habitat, isolated from the habitats on the plain. The proposed setback from these edges and comprehensive monitoring and management proposed will ensure these habitats are preserved and enhanced.

Effects and effects management

CRC comments: The AEE states that based on the layout design provided to Wildland Consultants in November 2024, indigenous vegetation is excluded from the panel area. Nevertheless, the AEE appears to imply that changes to vegetation might occur due to panel shading altering microclimates near indigenous vegetation – this requires clarification [Clarified by vegetation management plan; provision of set-backs; Conditions 12 & 13 preconstruction surveys for threatened plants for avoidance].

Wildlands' response: As noted above this issue has been resolved by the provision of setbacks from threatened plants in the BVMP (Section 2.1) and AEE (Section 13.1.1).

CRC comments: Rare plants including mat daisy and dwarf broom located within the panel area may be lost, the AEE recommends further survey to be conducted once panel layout/construction details are confirmed to better inform what is currently considered a 'minor' adverse effect. [Conditions 12 & 13 preconstruction surveys for threatened plants to enable avoidance – although pre-construction surveys not apparent in BVMP³].

Wildlands' response: We note that DOC identified some rare plants at the southeastern end of the site on the boundary of the solar farm footprint. However, the site has been extensively surveyed and the potential presence of rare plants within the development area is considered to be negligible based on the findings of these surveys. The preconstruction survey was suggested as a precautionary measure to cover timelapse between AEE surveys and construction.

Remaining areas of contention and their significance

Remaining areas of contention and solutions and/or conditions sought by CRC and responses from Wildlands are summarised in Tables 1 and 2.

³ Biosecurity and Vegetation Management Plan.

**Table 1 – Issues raised and solutions offered by CRC, and responses and Wildlands’ response.**

Issue Area	Issue and Explanation	CRC Solution	Wildlands’ Response
AEE – indigenous vegetation	Potential data deficiencies exist for indigenous vegetation values at the site. A spring survey might inform the site’s indigenous vegetation values & thereby inform effects management. <i>Might <i>Lepidium solandri</i> occur at the site?</i> The UAV-mapped invertebrate habitat patches, particularly areas of short-stature vegetation mixed with bare ground and/or stones, may provide finer-scale habitat information than the broad vegetation mapping. Aligning these mapped habitat patches with vegetation mapping could improve the understanding of dryland plant values and potential effects.	Undertake a spring botanical survey to address potential data deficiencies for indigenous vegetation values at the site.	The site has been well-surveyed and we do not consider that there are any data deficiencies regarding indigenous vegetation values at the site. <i>Lepidium solandri</i> is not present on the site but may occur outside the site. A final preconstruction survey has been suggested as a consent condition as a precautionary measure to cover the possibility that vegetation on the site may change over time. It also acknowledges the potential time lag between the ecological assessment date and the start of construction. This survey is proposed as a precautionary measure, not because of any lack of understanding of the site's existing vegetation values.
Eco-sourcing planting material	The lizard management plan states that every effort will be made to source the plants in the lists provided but the final plantings undertaken will depend on the availability of plants at nurseries. This approach is repeated in the BVMP (section 6.3). It is understandable that not all plant material might be available at any time. However, it is better to either wait or forgo the planting altogether than plant inappropriate plant material or species.	Only eco-sourced indigenous plant material is to be used. Edit Condition 34(b)iii Edit where referred to in management plan(s).	The Pukaki Ecological District contains a limited number of eco-sourcing sites. It is suggested that wider Mackenzie Basin area, which includes Pukaki, Omarama and Tekapo ecological districts is used for eco-sourcing to ensure the best quality dryland sites are used, while protecting the ecology of the Mackenzie Basin.

**Table 2 – Proposed conditions and recommendations by CRC and responses from Wildlands**

Proposed Condition Number	Issue	CRC Recommendation	Wildlands Response
Conditions 12 & 13	BVMP does not align to proposed conditions. Conditions require further pre-construction botanical survey to confirm no Threatened and At Risk flora will be shaded by the panels. This survey effort is not apparent within the BVMP which currently only describes post-construction monitoring survey plots & transects.	Edit BVMP to include provision for botanical survey requirements of proposed conditions 12 & 13. And include non-vascular plants and lichens.	Section 5.1 of the draft BVMP has been amended to include the pre-construction survey to confirm no Threatened and At Risk vascular plants will be shaded by the panels. Section 5.3 and 5.4 of the draft BVMP have been amended to include non-vascular plants and lichens in the vegetation surveying and monitoring methods.
Condition 34(a)(iii)	Eco-sourcing issue. The condition requires eco-sourcing of native plant material but only 'where practicable'.	Edit to require eco-sourcing of plant material.	Edit to require eco-sourcing from the Mackenzie Basin.
Condition 34	In order to achieve the objective stated in Condition 32, the BVMP must include requirement for measures for the monitoring and surveillance of Threatened and At Risk indigenous plant species. Subclause (e) directs for steps should declines in these species be observed. But not the actual monitoring detailed in the BVMP. These should include for rare native plants both quantitative survey methods including permanent plots (minimum 30) and transect surveys (see section 5.1 of the BVMP).	Add a sub clause for an additional matter the BVMP needs to address - Measures for the monitoring and surveillance of Threatened and At Risk indigenous plant species throughout the life of the project including quantitative survey methods - permanent plots (minimum 30) and transect surveys.	This is already addressed in Section 5 of BVMP.



3.0 Department of Conservation

DOC comments: There are significant occurrences of threatened plants around the perimeter of the site, which will require either further survey to confirm their locations and appropriate management; or protection through increased setbacks. (We understand this was Nova's intent, but it is not confirmed by the application documents).

Wildlands' response: Threatened and At Risk plants outside the site have not been surveyed, but they are known to be present. Nova has taken a precautionary approach to habitats outside the site; instead of focusing on individual locations of plants, the entire perimeter has been treated as potential habitat for Threatened and At Risk plants. Setbacks from habitat for Threatened and At Risk plants outside the site have been applied, with a minimum setback of 20 metres from property boundaries. In places where shade modelling has identified possible shadowing of Threatened and At Risk plants within a 35-metre set back has been applied.

DOC comments: To avoid edge effects on threatened plants outside the site perimeter, the applicant should undertake a cross-check of the locations of restoration and enhancement areas with threatened plant information.

Wildlands' response: Section 5.3.2 of the Terrestrial Invertebrate Management Plan (TIMP) and section 7.3.2 of the Lizard Management Plan (LMP) have been updated with the condition that plantings for fauna enhancement will not occur within five metres of any Threatened or At Risk plant species. No restoration planting is proposed for any other effects management.

DOC comments: The applicant should also provide a monitoring plan for effects on vegetation, which is currently absent. This should be statistically robust, and include response measures that would apply if trigger thresholds are reached.

Wildlands' response: Section 5 of the BVMP submitted with the consent application specifies monitoring which is to be undertaken pre and post construction. Qualitative and quantitative surveys will be undertaken by a suitably qualified ecologist. Quantitative surveys include statistically robust transect surveys, which extend from the solar panels and beyond the site, targeting Threatened plants and their habitats. Response measures and triggers are also included in the BVMP.

DOC comments: On the vegetation surveys beyond the site – how many and where would the permanent plots outside the site be? And for the transects we'd expect more quadrats sampled closer to the start of the transect, e.g. in a geometric series.

Wildlands' response: Section 5 of the BVMP has been significantly updated to align with the methods used in Walker (2020) for monitoring edge effects on low-relief topography in Canterbury. Specifically, these includes:

- Updated monitoring design to include Before-After Control-Impact (BACI) design.
- How the transect monitoring sites will be selected (at both impact and control site if available).
- Spacing of monitoring plots along transect using a log series to sample more plots closer to the start of the transect.
- The use of a 1m² and 4m² monitoring plots to measure different variables.
- An extended length of transects to measure any effects that occur off site.

DOC comments: In regard to the triggers for adaptive management, we are interested in ecosystem changes, not just in the couple of species that their plots and transects happen to intersect, so there would need to be a number of more specific triggers, including for changes along the transects.



Wildlands' response: The following monitoring and data collection of ecosystem changes are included in Section 5.4.2 of the BVMP (transect monitoring):

- Measurement of the percentage cover of all vascular and non-vascular plant species up to 50 cm high (groundcover) within each 1 m² plot.
- Percentage cover of all species >2 m tall (i.e. tall shrubs) will be recorded in a 4 m² plot centred on the middle of the 1 m² plot.
- Data on all Threatened and At Risk plant species present within 4 m² plots including:
 - A photo showing condition of plant (for future comparison).
 - General condition of plant scored from 1-5 (1 being very unhealthy and 5 being very healthy).
 - A GPS waypoint and plot diagram showing the location of plant/s (within the plot).
 - Immediate and potential threats (e.g. weeds, browse, human activities, no immediate threats).
 - Management actions (if any).
 - Soil moisture readings (taken in the centre of each 1 m² plot)

Section 5.5 of the BVMP details how data collected will be used to inform adaptive management triggers. Specifically, if a detectable increase in pest plants and ecological weeds occurs, or if a trend of increasing dominance of pasture grasses is observed, Nova will ensure additional control effort occurs at the site. Similarly, if a new ecological weed or pest plant occurs at the site and is not being managed, Nova will ensure contractors are aware of the issue and will control the spread of the plant.

If an outward spread of exotic grasses and/or ecological weeds, and/or a decline in Threatened or At Risk plants, are detected in data gathered from the permanent vegetation monitoring transects and/or a decline in Threatened or At Risk plants is observed by the ecologist during qualitative surveys, a response will be triggered in accordance with the conditions of the resource consent. In brief, this response will comprise one or more of the following actions:

1. Compare and analyse transect data from the impact and control site (if available) for environmental trends.
2. Additional pest plant/ecological weed or exotic grass management.
3. Additional pest animal management.
4. Changes to the sheep grazing regime.
5. Restriction of operational tracking panel angle(s) on rows close to boundary (to reduce shading effects).
6. Decommission/remove panels at edges (to increase setbacks).

As each measure is implemented, additional monitoring will be undertaken to assess the success of the measure and the need for additional management.

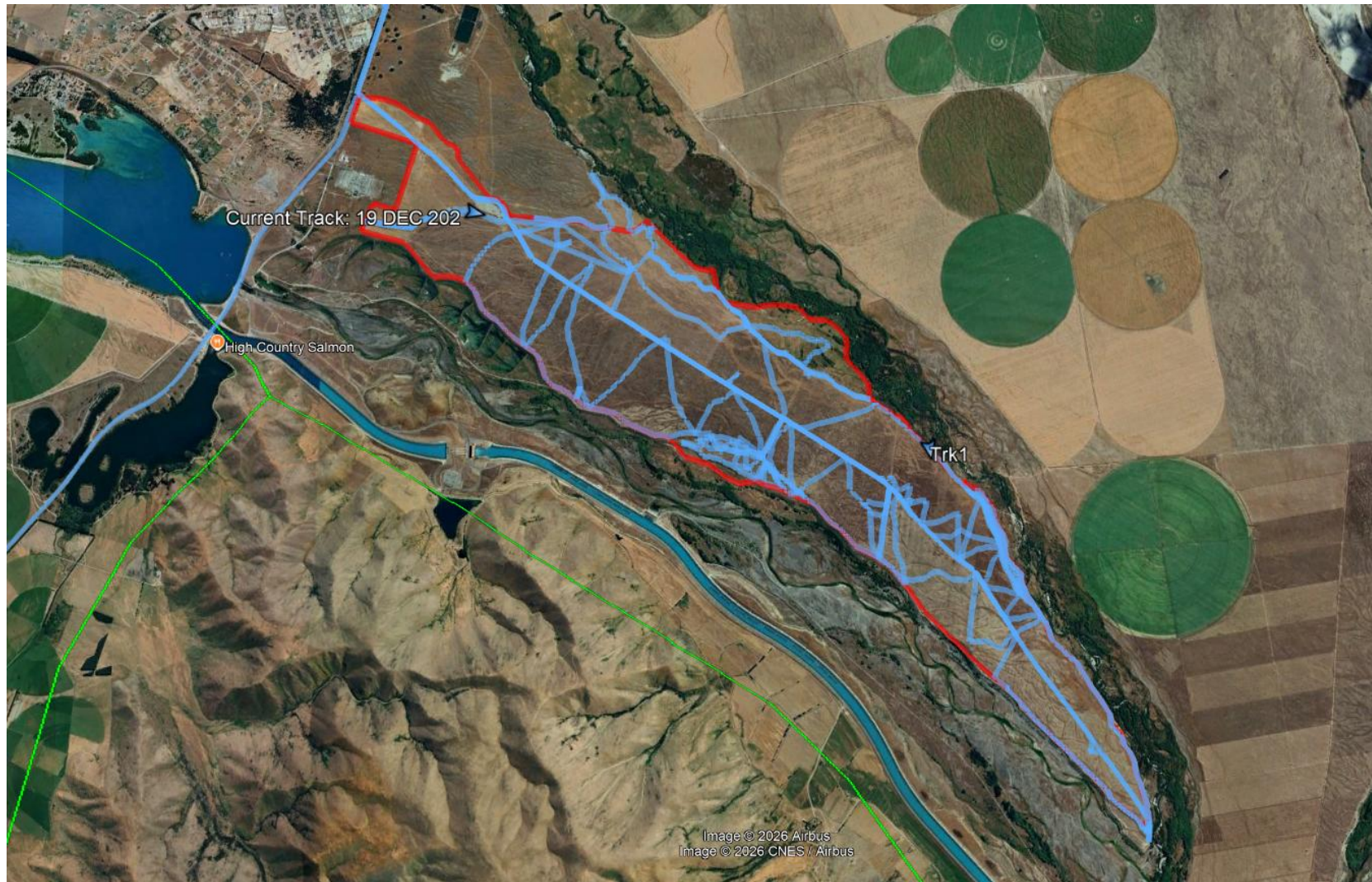
References

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- Walker, S. (2020). Measured edge effects on indigenous grassland and shrubland vegetation on low-relief topography in Canterbury. Manaaki Whenua – Landcare Research, Contract Report LC3866. Prepared for Canterbury Regional Council (Environment Canterbury)
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Appendix 1

GPS Track logs



Track logs (blue lines) of vegetation surveys undertaken in 2022 and 2024. The track log of the 2024 survey is incomplete (one day of survey data is missing). During this day (where the tracklog is missing) the southeastern tip of the site and other gaps were traversed in a similar crisscross pattern. The red line indicates the Nova site boundary.