

**12 December 2025**

By e-mail: [REDACTED]

**Re: FTAA\_2508\_1097 Applicant Response to Panel Minute 1**

Dear June,

Please see below our detailed written responses to the questions raised by the panel in Minute 1, with the questions [10-28] from the Minute replicated for ease of reference. We would be happy to answer additional questions and provide further detail on any aspect if required.

## **1 Mana Whenua issues**

[10] It is necessary to understand exactly what the Applicant has done to engage mana whenua, which groups, and what are the important issues raised through that engagement or through any other due diligence the Applicant has undertaken. A summary of interchanges and consultation would be helpful.

### **Response**

*Lodestone made initial contact with Justin Tipa and Gail Tipa in January 2024. Justin is currently the Kaiwhakahaere of Te Rūnanga o Ngāi Tahu (TRoNT) and his Papatipu Rūnaka, Te Rūnanga o Moeraki. More recently, Lodestone has been engaging with TRoNT, Te Rūnanga o Waihao, Te Rūnanga o Moeraki (including Aukaha Limited), and Te Rūnanga o Arowhenua (including Aoraki Environmental Consultancy Limited (AECL)).*

*The key mana whenua feedback to date has been that Rūnanga wished to understand the proposal clearly, visit the site, and then meet collectively to determine their position.*

*In response, Lodestone and Haldon Station have:*

- provided detailed project information (including maps and video walk-throughs);*
- held a full site hui on 5 June 2024 attended by representatives of Arowhenua, Waihao, Aukaha;*
- held a full site hui on 19 November 2025 attended by representatives of Arowhenua, Waihao, Moeraki, TRoNT;*
- provided regular updates to representatives of Arowhenua, Waihao, Moeraki, TRoNT, and*
- committed to ongoing information sharing and early engagement outside the formal fast-track timelines so that any issues can be discussed directly rather than first appearing in written comments.*

*The presentation provided a detailed timeline of events, interactions and engagements.*

[11] Please advise what responses have been provided to date to any issues raised. It is necessary for there to be an understanding of how mana whenua rights and interests have been considered and accommodated.

**Response**

*To date, no specific concerns about adverse effects on cultural sites, mahinga kai or other rights and interests within the solar farm footprint have been raised with us. We understand that Rūnanga intend to meet independently and then come back to us, and we have made it clear that we welcome that kōrero at any time during and/or following the consenting process.*

[12] It is important for the Panel to understand the Applicant's view at this point and their understanding of key issues for mana whenua. Are there any nohanga sites in that area? Are mahinga kai there?

**Response**

*During the most recent site visit on the 19<sup>th</sup> of November when Lodestone and Haldon Station hosted representatives from Te Rūnanga ō Ngāi Tahu (TRoNT), Te Rūnanga ō Waihao, Te Rūnanga ō Moeraki, and Te Rūnanga ō Arowhenua we visited the nohoanga site closest to the project site. This site is located outside of the project boundary beyond the Haldon Arm Campground, refer Figure 1. Based on observations from the site visit and discussion with mana whenua, it is understood the nohoanga site is infrequently used.*

*The solar farm would not impact the use or enjoyment of the site.*

*The mana whenua representatives noted that the nohoanga site could be improved and more frequent use encouraged with the provision of upgraded facilities. This is something that Lodestone indicated it is willing to assist and work with mana whenua on.*

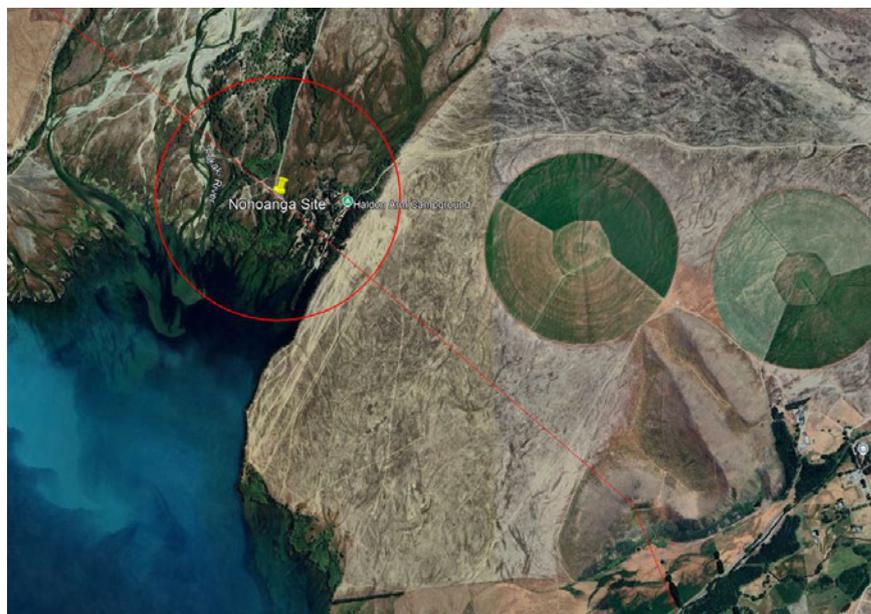


Figure 1: Location of the nearest Nohoanga Site

*No mahinga kai areas or resources have been identified either prior to or during the visit within or near the solar farm footprint. The site is a modified outwash terrace without waterways, wetlands, or indigenous vegetation communities typically associated with cultural harvest.*

Lodestone understands that broader cultural landscape views remain important to Ngāi Tahu and awaits further feedback following their planned internal hui.

## 2 RMA issues

[13] Are any concessions from the Department of Conservation (DoC) or wildlife permits required? What progress, if any, has been made?

### **Response**

*The project is located on privately owned station land, not on public conservation land, so no concession is required from the Department of Conservation.*

*A Wildlife Act authority may be required in future if any handling or relocation of protected fauna (for example, lizards) is needed. Our current survey and assessment approach has been discussed with DOC. If survey results or construction methodologies indicate that a Wildlife Act approval is required, we will apply for it via the standard Wildlife Act process and will work with DOC to ensure appropriate conditions.*

[14] What leases are in place or are being proposed? Does the lease duration trigger a subdivision consent under section 218 of the RMA?

### **Response**

*Lodestone holds an Option to Lease for a 35-year term over part of Haldon Station. Because the term does not exceed 35 years, the arrangement does not constitute a subdivision under s218 of the RMA. The Option to Lease includes no right of renewal.*

*If, in future, the parties negotiated an extension that extended beyond 35 years, subdivision consent will be sought (if required) under the RMA or replacement legislation.*

[15] Operational stormwater discharge consent for the substation area – given this is a higher risk activity, where is the point of discharge, what treatment and mitigation is proposed, and what is the discharge standard?

### **Response**

*We expect that to satisfy the discharge to ground process outlined in Section 5.2.1 of our Substantive Application, the substation and associated hardstand areas will be designed so that stormwater is either:*

- *directed to bunded containment (for transformer/oil risk areas) and then discharged through oil filtration into adjacent soakage pits.*
- *discharged to ground via infiltration/soakage in adjacent swales or infiltration basins sized to regional design storms.*

*There is no discharge to surface water and the system will be designed to meet Canterbury Regional Council's requirements for high-risk areas, ensuring containment of contaminants and attenuation of peak flows. Detailed design will accompany engineering certification.*

[16] In terms of dust, there is not a draft management plan with the application. What is the proposed management regime? If this is to include the use of water for dust suppression purposes, where is that water to be sourced? Similarly, the fire comments say there will be access to water - what is the likely source of this?

**Response**

*The site is remote and sparsely populated, so there are no nearby sensitive human receptors. Dust effects on the environment more generally will be managed in accordance with the measures adopted in the relevant management plans, required as proposed conditions of resource consent.*

*Construction dust will be managed primarily through staging of earthworks, use of stabilised access tracks, and limiting activities that generate significant dust in dry, windy conditions.*

*The proposed Canterbury Regional Council consent conditions include:*

- *Condition 7 - specific dust mitigation measures must be confirmed as part of the Erosion and Sediment Control Plan (ESCP).*
- *Condition 9(j) - details of best practicable options to be applied to mitigate dust and sediment discharge beyond the site must be included as part of the ESCP.*
- *Condition 14 - submission of a Dust Management Plan (DMP) (prepared by a suitably qualified person) to Canterbury Regional Council for certification to confirm that the DMP provides the means to ensure dust generating activities will be managed to avoid, remedy or mitigate adverse effects on the environment (including through the use of best practicable dust control measures) and complies with the requirements of Schedule 2 of the Canterbury Air Regional Plan.*

*If dust suppression within the site is required, water will be sourced from existing farm water infrastructure and/or temporary onsite storage, without the need for new surface water extraction.*

*In our proposed consent conditions for Mackenzie District Council, we have also proposed condition 40 which requires that we must adopt all reasonable and practicable measures to prevent any dust caused by operations on the site from causing:*

- a) *an effect that is noxious, dangerous, offensive or objectionable at or beyond the site; or*
- b) *material damage to the National Grid transmission lines which cross the consent area*

*For firefighting, the proposal is to utilise existing irrigation infrastructure (pivot supply) and/or dedicated onsite storage as the primary water source, in consultation with Fire and Emergency New Zealand during detailed design.*

*The provision and location of an onsite water supply for firefighting will be confirmed as part of the Emergency Management Plan (EMP), which is required by condition 35 of the proposed Mackenzie District Council consent conditions. The EMP must be prepared in consultation with Fire and Emergency New Zealand (FENZ). Condition 35 requires FENZ to approve the EMP prior to commencing construction.*

[17] What, if any, anti reflective coating is proposed to be used? Do these contain any per-and polyfluoroalkyl substances (PFAS)?

**Response**

*Modern utility-scale modules (e.g., LONGi, Trina) use silicon-based PECVD anti-reflective coatings integrated into the glass. These coatings are not PFAS-derived. Preliminary technical material confirms that no PFAS-based AR coatings are proposed; final validation will be provided once the preferred module series is selected.*

[18] Given the proximity of the Twizel airport to the site, what assessment of glare for aircraft has been undertaken? Are any mitigation measures proposed? Has there been any consultation with the airport and/or the Civil Aviation Authority?

**Response**

*Pūkaki-Twizel Aerodrome is approximately 15 km from the Haldon Solar site. The Haldon Solar site is not located under Pūkaki Airport’s Flight Protection Area in the District Plan.*

*New Zealand CAA has no specific glint and glare standard for solar farms, so we have considered international practice. In Alberta, aerodromes generally only trigger assessment within about 4 km of a solar site, and UK CAA-supported guidance typically focuses on distances within 5-10 km of an aerodrome. On that basis, Haldon Solar lies well beyond the distances at which glint and glare assessments are normally required. The aerodrome is also a low-intensity facility rather than a busy commercial airport.*

*Given the distance, aircraft height, and low reflectivity of modern panels, we consider there is no realistic prospect of harmful glint or glare effects on aviation. No separate assessment has therefore been undertaken, and no issues have been raised with us by the aerodrome or CAA. If the Panel wishes, we can provide a short technical note illustrating the distance and approach geometry.*



Figure 2 - International standards applied to Twizel airport

[19] There is an adjacent solar farm fast-track application, and at least one other possible nearby. Have cumulative effects been considered?

**Response**

Lodestone acknowledges the Panel's request for a substantive response to cumulative effects and has expanded its assessment accordingly. Our response covers:

1. Legal and procedural context,
2. Landscape and visual cumulative effects,
3. Ecological cumulative effects,
4. Cultural landscape considerations, and
5. Electricity system and economic cumulative effects.

**1. Legal and procedural context**

We are aware that a substantive application for The Point Solar Farm was lodged on 1 September 2025 and determined as complete by the Environmental Protection Authority (EPA) on 16 October 2025. The Point is located approximately 2 - 3km to the west of the Haldon Solar site, across the Pūkaki River.

We are also aware of the Balmoral Station Solar Array (a listed project under the FTAA) and the Twizel and Grampians Solar Farms (both of which are referred projects under the FTAA). As at the date of this letter, no substantive applications have been lodged for those projects.

The substantive application for Haldon Solar was also lodged on 1 September 2025, but was determined to be complete by the EPA first, i.e. on 22 September 2025. At the time that the substantive application for Haldon Solar was lodged, none of other solar farms proposed in the Mackenzie Basin | Te Manahuna had been granted resource consent under the RMA or the FTAA. That remains the case.

It is well established under the RMA that the cumulative effects do not include the effects of a proposal in combination with the effects of proposed activities for which resource consent has not yet been granted.<sup>1</sup> Cumulative effects encompass the effects of a proposal in combination with the effects of activities which already form part of the existing environment, as defined by the Court of Appeal in *Queenstown Lakes District Council v Hawthorn Estate Limited*.<sup>2</sup> That definition includes the environment as might be modified in future by the implementation of resource consents which have been granted and are likely to be implemented. It does not include the environment as might be modified by resource consents which have not yet been granted.

As resource consents for The Point and the other proposed solar farms the Mackenzie Basin | Te Manahuna have not been granted under either the FTAA or the RMA, the effects generated by those activities do not form part of the existing environment for the purposes of assessing the actual and potential effects of Haldon Solar. For that reason, we did not provide any assessments of the potential cumulative effects of Haldon Solar in conjunction with the other solar farms proposed in the Mackenzie Basin | Te Manahuna.

Departing from this established approach could create significant and unintended consequences for contemporaneous applications. For example, treating all potential solar farm proposals as if they already formed part of the existing environment could lead different FTAA decision-makers to conclude that none should be approved, regardless of their relative merits

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<sup>1</sup> *Rodney District Council v Gould* [2006] NZRMA 217 (HC)

<sup>2</sup> *Outstanding Landscape Protection Society Inc v Hastings District Council* [2007] ELHNZ 114, W24/2007 at [50] - [53]; citing *Queenstown Lakes District Council v Hawthorn Estate Limited* (2006) 12 ELRNZ 299 at [84].

*or the fact that sequential consideration may well allow some proposals to be accommodated. Such an outcome would be inconsistent with both the purpose of the FTAA and the established principles under the RMA.*

*Clearly however, where the effects of solar farm proposals have been assessed against the relevant criteria under the FTAA and have been granted, it is appropriate that those proposals form part of the existing environment against which subsequent proposals are assessed. Cumulative effects are therefore likely to be a very relevant consideration for subsequent applications in the Mackenzie Basin.*

*Notwithstanding, to assist the Panel given its particular interest in this matter, we have provided some preliminary analysis below of the potential cumulative effects of Haldon Solar as if The Point Solar Farm (as described in the substantive application for that proposal) formed part of the existing environment.*

*We have also commissioned Boffa Miskell to undertake an assessment of the cumulative effects on the surrounding landscape (accounting for Haldon Solar and The Point). We expect to be able to provide that assessment by the end of January 2026.*

*We recognise that the potential cumulative effects of solar farms within the Mackenzie Basin | Te Manahuna is also a matter of particular importance to mana whenua, and we remain committed to engaging with mana whenua in relation to that matter.*

*For completeness, we do not consider that it is possible or indeed appropriate for any assessment of cumulative effects to extend to solar farms for which a substantive application or resource consent application has not yet been lodged. In absence of those applications, the specific location, design and layout of those proposals are not yet known; the particular values of the receiving environment have not yet been considered; and the adverse effects of those proposals on those values have not been assessed.*

## **2. Landscape and visual cumulative effects**

*The Point Solar Farm is located immediately north of the confluence of the Ōhau, Twizel, Pukaki and Tekapo Rivers, Lake Benmore and the Ōhau C Power Station. The rivers are some 10 – 20m below the site of The Point, separated by steep escarpment faces. As identified above, the potential cumulative effects of Haldon and The Point can be addressed in further detail by Boffa Miskell. By way of preliminary comment:*

*The topography at The Point is generally more elevated than the Haldon Solar Project Site, however given the proximity it is considered likely that there will be opportunities for at least parts of the two developments to be viewed together which may lead to cumulative effects. When compared with the Haldon Solar Project, The Point is located closer and more visible from accessible public viewpoints.*

*There is potential for both solar farms to be visible together in views from more remote locations to the east such as Haldon Road and Haldon Arm Road. From this direction, the Haldon Solar Project will appear closer but oblique to the viewer, rather than in the central foreground while development of the Point will be more distant and elevated. In views from locations to the northwest such as SH8, it is likely that the Haldon Solar Farm Project will be screened by The Point as it will appear in the foreground and the Haldon Solar Project Site is at a lower elevation.*

*From close locations to the south and southwest such as such as viewpoints on McAughtries Road to the dam lookout and Lake Benmore Ōhau C Campground at the northern end of Falston Road, there is potential for the Haldon Solar Project to be seen together with The Point but more distant and smaller in appearance. Cumulatively, the presence of solar farms will be*

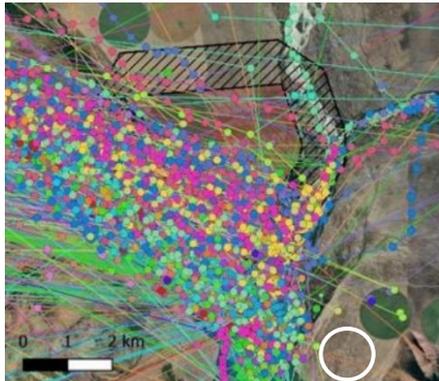
evident in the wider Sub-Basin landscape including from remote or elevated locations many of which are on private leasehold land with limited public access.

Overall, there is potential for cumulative landscape and visual effects within the **moderate** range when considering effects of the two projects together, particularly from these more accessible views in which The Point will appear in the foreground and more visually prominent. There is also potential for landscape and visual effects of The Point to be identified and mitigated however that is not the purpose of this assessment and may be addressed separately within the Point application.

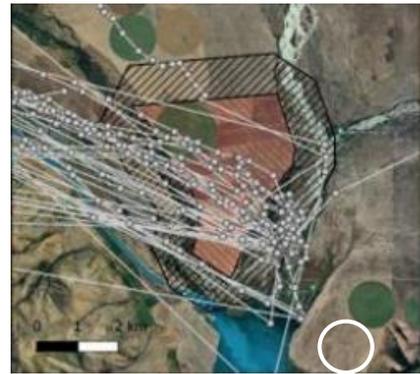
### 3. Ecological cumulative effects

Cumulative ecological effects across the Basin are limited because each project affects different ecological values:

- Plants/invertebrates:**  
 Vegetation and invertebrate assemblages on dryland terraces are site-specific, highly modified, and not connected across the Basin. Effects at Haldon cannot combine with effects at The Point or other proposals.
- Birds:**  
 DOC telemetry shows significant bird movement between The Point and Nova, but not to Haldon, which sits outside the braided-river flight triangle. Haldon is approximately identified with the white circle in the figure below:



3 - DOC - Tracks of 49 black-fronted terns around the proposed sites



4 - DOC - Track black-fronted tern TAG 9451



5 - DOC - Examples of black-fronted terns feeding or resting over ort



6 - DOC - Track black-fronted tern TAG 9404

Therefore, there is no plausible cumulative pathway for displacement or collision risk.

- Habitat values:**  
 Each project occurs on previously modified land. There is no shared or regionally significant habitat type being jointly reduced.

#### Conclusion:

Cumulative ecological effects are **negligible** because the ecological value systems differ, and pathways for compounding effects do not exist.

#### **4. Cultural cumulative effects**

*To date, representatives of mana whenua have not identified any specific cultural sites or mahinga kai areas within or adjacent to the Haldon footprint.*

*Broader cultural landscape considerations are best expressed directly by mana whenua and we await further feedback following our recent visit.*

*Lodestone remains committed to engaging with Te Rūnanga ō Waihao, Te Rūnanga ō Moeraki, and Te Rūnanga ō Arowhenua (and AECL and Aukaha) in relation to those considerations and how they may be affected by Haldon.*

#### **5. Electricity system and economic cumulative effects**

*This is an important and often overlooked constraint.*

*Across New Zealand:*

- *Over 12,000 MW of solar is consented or announced<sup>3</sup>.*
- *Less than 1,000 MW is currently under construction or operating.*
- *Based on overseas trends<sup>4</sup> and local industry consensus, a conversion rate of <20% for announced or consented projects to operational status is typical. This implies that NZ will deliver less than 2,500 MW of solar over the next decade.*

*Further:*

- *The Mackenzie Basin grid can host only a limited number of large-scale generators without significant transmission curtailment as available transmission capacity gets used by the first projects built.*
- *Coincident generation will have a depressing effect on nodal prices and hence be detrimental to the economics of future projects.*
- *Large solar projects are customer-driven. Securing long-term demand for >300 GWh/year is challenging and is a natural constraint on build-out.*
- *Projects without customers cannot reach financial close, even if consented and so will not get built.*

*The likelihood that all Basin proposals will be built is extremely low. Economic and grid constraints operate as natural limits on cumulative development.*

#### **Overall conclusion on cumulative effects**

*Based on:*

- *landscape separation and experiential distance;*
- *differing ecological value systems; and strong economic and grid constraints,*

*there is no realistic scenario where cumulative effects on landscape and ecological values from Haldon Solar (in conjunction with The Point) materially affects the environment beyond the discrete, manageable effects of individual projects.*

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<sup>3</sup> Refer <https://www.transpower.co.nz/connections/whats-latest-grid-connections> and also based on other known distributed generation solar projects.

<sup>4</sup> Refer to [https://emp.lbl.gov/sites/default/files/2024-04/Queued%20Up%202024%20Edition\\_R2.pdf](https://emp.lbl.gov/sites/default/files/2024-04/Queued%20Up%202024%20Edition_R2.pdf) slide 27 for background info in the United States.

### 3 Landscape Issues

[20] How does the Applicant see the wider landscape of the Mackenzie Basin ONL (Outstanding Natural Landscape) evolving at present - recognising the pressures associated with:

- a) Farming in general;
- b) Farm intensification;
- c) Other forms of development within the Basin (including the Waitaki HEPS, Twizel, Tekapo and tourism-related development);
- d) The spread of wilding conifers;
- e) The depauperate state of much of the Basin, impacted by the likes of rabbits and ragwort.

#### **Response**

*The Mackenzie Basin ONL continues to face cumulative pressure from changes in farming practices, wilding conifers, tourism growth, and the progressive loss of indigenous dryland ecosystems.*

*In terms of evolution, much of this landscape has been extensively modified with pastoral farming dominating the broader Basin context since the mid-1800s, followed by large-scale hydro-electric infrastructure implement from the 1950s (Te Ao Mārama / Lake Benmore, canals, power stations, transmission lines) and more recent pockets of intensification (e.g. centre-pivot irrigation near Haldon) adding greener, geometric patterns into an otherwise semi-arid tawny coloured grassland setting.*

*Haldon Station has acted as a long-term steward of this landscape for nearly four decades, investing in ecological care, pest control, and wetland restoration in partnership with Ngāi Tahu. The Station deliberately sought a land use that would provide positive economic contribution without further **ongoing degradation of recognised landscape values, including through** land intensification. A solar farm achieves that goal by managing effects associated with intensified farming while enabling pest suppression, soil stabilisation, and long-term land management improvements.*

*Within that broader ONL context, the Haldon Solar proposal is a low-visibility, low-impact activity located beneath an existing transmission corridor and on already-degraded dryland, offering limited environmental effects and economic benefits compared to reasonably foreseeable alternatives.*

[21] Could the Applicant outline its original proposals for the mitigation of landscape effects, explaining its decisions on screen planting around parts of the solar farm?

#### **Response**

*Lodestone's siting methodology follows four steps:*

1. **Site well** – prioritise locations that are naturally screened, low-visibility, and low-value ecologically.
2. **Design practically** – optimise layout, setbacks, and spacing to minimise effects and integrate with existing landform.
3. **Engage early** – work with landowners, iwi, councils, and DOC to understand issues before formal design is finalised.
4. **Mitigate/manage only where needed** – apply screening, buffers, groundcover management or restoration in response to identified effects.

*At Haldon, we approached the site with initial scepticism because of the Basin's recognised landscape sensitivity. However, on arrival it was clear that this site met Lodestone's siting criteria because it is:*

- *set well back from the lakeshore,*
- *shielded by established landforms and station vegetation,*
- *accessed by a long, quiet public road with minimal visibility,*
- *an already modified landscape beneath an existing transmission line.*

*Early concepts included screening as is standard at other Lodestone sites, but the natural screening of the site (provided through the setbacks, established landforms and vegetation and relative isolation) meant this was precautionary rather than necessary.*

*For that reason, we incorporated meaningful setbacks from Lake Benmore and Haldon Arm Road, established row spacing for groundcover management, and committed to rabbit-proof fencing and pest control to improve the ecological baseline.*

[22] Could the applicant and Boffa Miskell Ltd explain the rationale for changing from this planting / screening approach to adopting larger open space buffers around the solar farm with no planting (ie. expand on the 'site characterisation and analysis process' discussed under Recommendations in section 6 of BML's report)?

**Response**

*Decisions about planting were a direct outcome of the site characterisation and analysis work set out in the Boffa Miskell report.*

*Further assessment by Boffa Miskell confirmed that new perimeter planting would appear discordant within the context of the underlying characteristics and values expressed within this open, semi-arid tawny coloured landscape. In visual terms, the effect of introducing additional screen planting was considered more conspicuous than effective integration of the low-lying arrays themselves. Given the Basin's climate, long-term plant survival without mechanical watering is not plausible, and would introduce further ongoing interventions inconsistent with retaining natural character.*

*Open space buffers therefore provide a more sympathetic and contextually appropriate mitigation response. They maintain and reinforce the openness and legibility of the fluvio-glacial outwash surface in and around the proposed arrays and ensure that the solar farm will remain well integrated in what are very limited views. Where visible, the extent of setbacks has been carefully defined to ensure the existing lakeside vegetation and shelterbelt established along the southern boundary remain visible beyond the solar farm from Haldon Arm Road and integrated in middle distance views that maintain the broader mountain backdrop beyond. In essence, this approach maintains the openness of the landscape while visually integrating the array within the immediate setting of existing modification that avoids the need for introducing non-characteristic vegetation*

## 4 Ecology Issues

[23] Please provide further information on the suite of nationally threatened or at-risk flora or fauna that are potentially present but that were not detected.

### **Response**

*Baseline surveys identified a short list of nationally threatened or At-Risk species that could theoretically occur on the Haldon outwash terrace based on regional records. These include dryland herbs such as New Zealand mousetail (*Myosurus minimus*), *Lepidium* spp., and a small number of associated species; two widespread skink species; and an undescribed ground wētā known from the adjacent Tekapo terraces.*

*Neither AgScience nor DOC detected meaningful populations of these species within the solar footprint despite targeted searches and over 100 survey/recce plots. This indicates that, if present at all, they occur at very low density, with their main populations located in the extensive surrounding outwash surfaces and conservation areas.*

*These species have nevertheless been included in the effects assessment and in the design of follow-up fieldwork.*

[24] Please provide additional commentary on the adequacy of survey methodology and level of effort and the corresponding likelihood that the full suite of notable flora or fauna was detected – noting that many species are cryptic and/or only present seasonal.

### **Response**

*The baseline ecology survey was “one of the most intensive dryland surveys undertaken” in the Basin occurring over 11 days in October/November 2024. It included:*

- *51 stratified randomised vegetation plots,*
- *nested quadrats for fine-scale cover estimation,*
- *10 bird count stations,*
- *pitfall traps and sand pads for nocturnal fauna, and*
- *systematic walking searches across the site.*

*This provides a robust and unbiased dataset for a modified dryland site of this type. We acknowledge that some dryland species are seasonal or cryptic; therefore, the assessment adopts a precautionary approach and does not assume absence where habitat is marginally suitable.*

*Given the degraded condition of the terrace and the combined AgScience and DOC effort, the likelihood that a material population within the footprint was overlooked is assessed as very low, while remaining uncertainty is being addressed through follow-up targeted surveys.*

[25] Please comment on the assessment of effects methodology and how conclusions on the level of effect were reached in relation to impacts on nationally threatened or at risk flora and fauna, with particular focus on:

- a) How the assessment factored in the likely or potential presence of nationally threatened or at risk species;
- b) How the interplay between threat status and magnitude of effects was addressed to arrive at a level of effect;
- c) Whether the potential for impacts associated with the exclusion of livestock and rabbit proof fence were considered, particularly for:
  - nationally at-risk plants susceptible to moisture changes and competition from exotic weeds, and
  - threatened birds that utilise farmland, particularly where adjacent to braided rivers or lakes.
- d) How the assessment factored in uncertainty and the level of risk versus consequence for nationally threatened or at risk birds, particularly for black stilt.

**Response**

(a) **Factoring in likely/potential presence** - *The assessment began with regional species lists and screened the solar footprint for potential habitat. Where At-Risk species were not detected but could occur sparsely, the assessment assumed possible presence and evaluated effects accordingly.*

(b) **Threat status vs magnitude of effect** - *Threat status was recognised as increasing species value; however, magnitude of ecological effect is driven by:*

- the **highly modified** nature of the vegetation (indigenous cover <0.1%);
- the **small footprint** relative to thousands of hectares of similar or better habitat nearby; and
- the **very low densities** at which At-Risk species occur.
- Under the EIANZ framework, negligible magnitude applied to negligible-moderate ecological value results in an overall **Very Low** effect.

(c) **Effects of stock exclusion and rabbit-proof fencing** - *Enclosure data on the same landform shows that removing grazing does not restore indigenous communities; rather, exotic herbs dominate. Any risk of exotic dominance is addressed through active groundcover management (mowing or short-duration grazing) and targeted weed control.*

*For birds, the dry, stony terrace does not provide significant foraging or breeding habitat, including for species associated with braided river systems. Stock and rabbit exclusion is therefore unlikely to change values for threatened birds.*

(d) **Uncertainty and risk vs consequence for nationally threatened birds**, particularly black stilt - *The solar site contains no suitable habitat for black stilt or other braided-river specialists. No stilts were recorded during surveys. Given the absence of habitat pathways and abundant alternative habitat in nearby rivers and irrigated land, the probability of any effect is extremely low. Any uncertainty is addressed by adopting a conservative effects classification and integrating emerging knowledge from Lodestone's broader bird-interaction work.*

[26] In broad terms please provide comment on how the application has demonstrated best endeavours to ensure the protection and maintenance of habitat that meets criteria for ecological

significance in accordance with the relevant policies and objectives in the Canterbury Regional Policy Statement.

**Response**

The application demonstrates best endeavours through:

- **Avoidance:** locating the solar farm on a **highly modified outwash terrace**, avoiding wetlands, lake margins, seepages and intact dryland communities.
- **Footprint refinement:** limiting panel cover to ~40%, retaining an ~20 ha panel-free transmission corridor, and applying setbacks to avoid microhabitats with potential significance.
- **Targeted protection:** committing to avoid, manage or translocate (via seed) any At-Risk plants identified through DOC survey results. Note that in the absence of the solar farm, there will be no viable pathway for enhancement or protection of this land and values will continue to be lost.
- **Enhancement:** using the transmission corridor and potentially the setback from Haldon Arm Road for on-site restoration of native dryland species, and supporting continuation of the Haldon-Ngāi Tahu wetland restoration project.

Collectively, these measures avoid significant vegetation where it exists and improve the condition of locally important habitats associated with the wider Haldon landholding.

[27] In addition, please outline potential options for addressing ecological effects, including (but not limited to) trade-up compensation, should this be considered necessary.

**Response**

Feedback to date – including from DOC – indicates that the ecological effects of solar farms on dryland flora, invertebrates and micro-habitats are poorly documented in New Zealand, and that overseas studies show effects to be generally modest, often with neutral or positive responses where shading increases soil moisture and reduces stress on some native forbs. Given this uncertainty, the recommended approach is to manage effects adaptively rather than prescriptively.

Lodestone therefore proposes a **monitor → then respond** framework:

- **Monitor:** Use permanent plots and targeted surveys to track groundcover, At-Risk plant locations, lizard/invertebrate sign, and micro-habitat changes in and adjacent to the array.
- **Assess:** Compare results to expected patterns for this highly modified terrace and to reference plots in grazed and ungrazed areas.
- **Respond:** Apply proportionate management (e.g., weed control, supplementary seeding, or short-duration grazing) if monitoring indicates an ecological need.

If the Panel considers that additional measures are appropriate, Lodestone identifies the following in-kind, on-site enhancement options:

**Primary enhancement areas (preferred)**

1. **Transmission Corridor (~20 ha)**
  - Seed collection and sowing for At-Risk plants (e.g., *Lepidium* spp., *Raoulia* spp., potentially *Myosurus minimus* where suitable);
  - Creation of rock piles and refugia for lizards and dryland invertebrates;
  - Targeted weed/pest management;
  - Maintaining open ground conditions through mowing or short-duration Merino grazing if required.
2. **Haldon Arm Road Setback Area (~20 - 25 ha)**

- This area lies between the solar farm and Haldon Arm Road and will also remain free from panel development.
- It provides a second opportunity for dryland restoration, including selective weed reduction, protection of indigenous moss/lichen patches, and supplementary sowing of appropriate dryland species.
- It also functions as an additional buffer between the road corridor and the solar array, allowing ecological enhancement without operational constraints.

**Secondary options (if monitoring shows a need)**

- Small predator-exclusion exclosures in moist grassland patches outside the array where lizards or At-Risk plants are most likely to concentrate.
- Additional targeted management around confirmed locations of At-Risk species.

**Tertiary options (only if required by the Panel)**

- Contribution to or expansion of the Haldon-Ngāi Tahu wetland restoration project, or
- Targeted weed/pest work in nearby dryland conservation areas containing the same species assemblages.

Given the **Very Low** level of ecological effect reported in the Ecological Impact Assessment, Lodestone does not consider compensation to be necessary. However, the combination of:

- a structured monitor → respond framework, and
- enhancement opportunities within the transmission corridor and the Haldon Arm Road setback area,

ensures that any ecological values requiring support can be identified early and strengthened in a way that is practical, proportionate, and ecologically relevant to the affected environment.

[28] Has there been or is there proposed to be any further ecology work undertaken to support the application since lodgement.

**Response**

Yes. Since lodgement, further ecological work has been undertaken or initiated, including:

- **DOC and ECAN surveys** identifying isolated At-Risk plants and additional habitat features.
- **Expanded lizard surveys** (ACOs and pitfall trapping) confirming lizard sign near pylons and refining habitat understanding.
- **Follow-up flora work** by AgScience, including revisiting DOC's *Lepidium* locations for verification and seed collection.
- Development of a **long-term monitoring programme** using the established permanent plots on site, with proposed five-yearly re-measurement.
- Engagement with specialist invertebrate expertise to address any residual uncertainties.

These steps are intended to give the Panel confidence in the baseline information and to support a practical, adaptive management approach. The results of this additional work will be complete prior to the end of January and provided to the panel.

Kind regards,



**Daniel Cunningham**  
General Manager, Development