Peer Review – Darfield Solar Farm & Battery Storage AEE

Contract Report No. 7422

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Wildlands

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Contract Report No. 7422

February 2025

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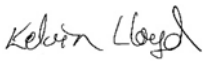

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Contents

1.0 Introduction

Selwyn District Council (SDC) is processing resource consent application (RC245775) that has been lodged by Darfield Solar and Energy Storage Ltd (**the applicant**) to construct, operate and maintain a solar farm and battery energy storage facility at 1352 Homebush Road, Darfield. The site is comprised of two land parcels (Lot 1 DP 434071 and Lot 2 DP 60325) covering approximately 154 hectares of rural farmland around 2 kilometres north of Darfield.

An Assessment of Ecological Effects (AEE) was prepared by Ecological Solutions Limited and submitted with the consent application. SDC asked Wildlands Consultants Limited (Wildlands), to peer review the AEE and provide commentary on the appropriateness of the methods used, assumptions made and reliability of the conclusions, as well as identify any information gaps, and if required provide recommendations for additional mitigation measures and/or consent conditions.

2.0 Project scope

The scope for the AEE peer review was a two-step process conducted as follows:

Step 1:

a) Determine whether further information was required to complete the peer review and provide clear parameters of the information being requested.

Step 2:

a) A written review of the application and the assessment of ecological effects including any further information supplied, with specific comment on the suitability of the methodology used and the assumptions made and the reliability of any conclusions.

b) A conclusion as to the adverse effects of the proposal, and the level of those effects (within Wildlands areas of expertise).

c) Suggestions as to additional mitigation measures/conditions required.

3.0 Relevant documents

The primary focus of this review is the Assessment of Ecological Effects (AEE) report prepared by Ecological Solutions, authored by Owen Woodward and reviewed Richard Montgomerie, hereafter referred to as 'the report' and referenced as follows:

- Woodward, O. and Montgomerie, R. (2024) Darfield Agrivoltaic Facility Assessment of Ecological Effects. Ecological Solutions Environmental Consultants, pp 25 (Appendix 11).

Following the completion of step 1, a Section 92 (s92) response letter was summitted by Ecological Solutions on behalf of the applicant, which was reviewed in conjunction with the AEE report, hereafter referred to as the 's92 response letter', and referenced as follows:

- Woodward, O. (2024). Darfield Solar – Section 92 Response to Items 7, 8, 9 and 10 Ecological Solutions Environmental Consultants (13 December 2024), pp 7

In undertaking our assessments, we have relied upon various other pieces of information that are cited in the text of this document. Additional documents reviewed or partly reviewed were:

- Lucas, C. (2024) Darfield Solar and Energy Storage Project Preliminary Site Investigation. Babbage eTrack No: 200048456, pp 29 (Darfield PSI Rev3 – Appendix 03).
- Appendix 7 Darfield Solar & Energy Storage – Proposed District Consent Conditions.
    - Regarding: Point 18 "At least 30 working days prior to installation of any culverts, the consent holder shall submit to SDC for certification a NFMP. The NFMP shall set out measures to prevent injury/mortality to fish during installation of the culverts, and to provide for fish passage post-installation. All works to install culverts shall be undertaken in accordance with the certified NFRP.".
- Appendix 05 Scheme Plans DAR-001 to 004 Rev10.pdf – Regarding: culvert placement.
- Mansergh, D. and Burge, L. (2024) Darfield Agrivoltaic Development Landscape, Natural Character and Visual Assessment Report. Mansergh Graham Landscape Architects Ltd report 240826, pp 83 (Appendix 10).
    - Regarding: Freshwater recommended mitigation: 10m setback of the proposal and implementation of erosion and sediment control plans and proposed new culvert design, to avoid and/ or mitigate adverse effects of earthworks on the water race (potential indigenous fish habitat) within the site.
    - Regarding: Mitigation planting and species selection (Appendix five: Mitigation plan)
- Wheatley, G. and Rynd, B. (2024) Engineering & Infrastructure Report. CKL report A23288, pp 15 (Appendix 12).
    - Regarding: 5.2.1 Two new culverts and 5.2.2 unknown number of existing culverts.
- Raynes, J. and Rynd, B. (2024) Stormwater Management Plan. CKL report A2388, pp 15. (Appendix 13)
- SDC online information1 and Environment Canterbury online mapping data2 relating to this scheme and other parts on the site also reviewed.
- James A. 2011. Sites of high ecological value Malvern and Ellesmere Water Race Scheme. Prepared for the Selwyn District Council EOS Ecology Report NO. 10016-SDC01-02, EOS Ecology Christchurch

Other than those sources of information we have referred also to:

Malvern Water Race Scheme

The proposed Agrivoltaic site is a part of the greater Waimakariri River catchment and contains a single artificial watercourse that is a part of the Malvern Water Race scheme. Water is redirected from the Kowai River into this race system for stock watering purposes. Precipitation/stormwater from surface runoff across the site is retained through soakage onsite (Lucas 2024).

4.0 Review

4.1 Step 1: Requested further information

After the completion of step 1, a request for further information (**RFI**) was made in relation to vegetation, avifauna, freshwater and herpetofauna matters (request items 7 – 10) as follows:

[1] https://www.selwyn.govt.nz/services/water/water-race

[2] https://ecanmaps.ecan.govt.nz/portal/home/webmap/viewer.html?useExisting=1&layers=3b13357a5cb443dba38ec9fb88e88270

- **Vegetation**
  No vascular plant species list, or vegetation habitat descriptions were provided in the report.

    7. *Please provide a complete vegetation species list and descriptions of the habitats present.*

- **Avifauna**
  Avifauna survey results were limited to birds with conservation status (e.g a national level threat ranking). However, all but two indigenous and some introduced birds are protected under the Wildlife Act and need to be considered in the effects assessment.

    8. *Please provide a full list of bird species found in the desktop survey and an assessment of the likelihood of these species being present at the site.*

- **Freshwater**
  One composite eDNA sample was taken from the watercourse is not an appropriate method to assess the indigenous fauna that may be utilising the race as habitat (e.g., longfin eel). The applicant used environmental DNA (eDNA) following Wilderlab's protocols for collection and preservation. However, a single composite sample is not able to reflect a watercourse's biodiversity (Smith et al. 2024). Environmental DNA has significant limitations to its use, especially when used incorrectly, and is not intended to replace conventional fish survey methods (NIWA 2023, Cawthron 2020).

    9. *Please provide results from fish surveys (either as a standalone methodology), or in combination with eDNA metabarcoding, following the 6-replicate methodology*

- **Herpetofauna (lizards)**
  There has been no assessment made of the species that could be potentially present on site. There appears to be remnant habitat present on site, although limited in extent.

    10. *Please provide evidence of an assessment of species potentially present within the area, and surveys for lizards or justification as to why this is not necessary at the site. Surveys should be undertaken using DOC approved methods by an appropriately qualified and permitted herpetologist.*

RFI questions and **s92 letter responses** are highlighted throughout this review in **bold.**

4.2 Step 2: Review of Ecological Solutions' Assessment of Environmental Effects

This review focuses on sections 2 – 7 of the Ecological Solutions report as follows:

- 2.0 Ecological Context
- 3.0 Methodology
- 4.0 Terrestrial Ecology
- 5.0 Freshwater Habitats
- 6.0 Assessment of Ecological Values
- 7.0 Assessment of Effects

4.3 Ecological Context

The ecological context provided (in Section 2) is brief and relies largely on the Ecological District description and Environment Canterbury (ECan) designations on the nearby Waimakariri River, but is considered adequate for the site and environs.

The results of a Land Cover Database (LCDB) search are displayed in the introduction but not referenced further. Another metric for analysing the ecological context of this site would be the Threatened Environment Classification[3], as this site is located on Acutely Threatened land (< 10% indigenous cover left), making any remnant indigenous cover significant.

4.4 Methodology

4.4.1 Terrestrial Ecology

- In Section 3.1.1 Vegetation, the methods used for vegetation desktop and site assessment are not comprehensive, but are considered adequate for the site.

- In Section 3.1.3 Herpetofauna, the methods used for the desktop survey describe a 5 km radius database search[4], but the results list nearest lizard record at 8 km. Therefore, it is apparent that the search was widened. There was no time range specified for the records obtained (i.e. whether these were recent or historic records; nor when the database was accessed). There was no attempt to determine the potential species that could be present within the site, or present within the surrounding area, which can provide additional context and justification to a limited database search.

- The Darfield area is not well surveyed for lizards (herpetofauna) and even a 10 km radius database search is not considered adequate for this site. The search would also need to account for geographic barriers, such as the Waimakariri River. If records are limited within a given area, desktop survey methods should utilise a wider range of resources other than the herpetofauna database. Other resources that should be consulted include iNaturalist, published reports, relevant literature (Van Winkel et al., 2019) and historic aerial imagery, which shows a long history of potential lizard habitat on the site (up until at least 2010).

- In Section 3.1.4 Bats, the methods used for bat desktop and site assessment are comprehensive for a site of this nature and potentially excessive. Bats and/or bat habitat is not present in this area and they are not considered further in this review.

4.4.2 Freshwater Ecology

- In Section 3.2.1 Wetlands, the methods described are considered appropriate for the site.

- In Section 3.2.3 Watercourses, the methods describe desktop database searches (New Zealand Freshwater Fish Database (NZFFD) and Wilderlab's public database) and a site survey (the collection one composite eDNA sample). There are limitations due to the site survey as follows:

    - The use of environmental DNA (eDNA) using Wilderlab's protocols for collection and preservation. eDNA detects species-specific DNA fragments present in the

[3] Threatened Environment Classification, uses three national databases (Land Environments New Zealand, LENZ; Land Cover Database, LCDB; protected areas network, PAN) to rank Threatened environments in categories 1 to 5. https://www.landcareresearch.co.nz/tools-and-resources/mapping/threatened-environment-classification/

[4] The DOC database should be correctly referred to as the DOC Bioweb Database for Herpetofauna.

environment, but in aquatic systems, its possible that the DNA present was transported there after the organism's death, leading to false positives. In addition, the samples taken may not contain DNA fragments of present species with low abundance, leading to false negatives (Roussel *et al.* 2015).

- Therefore, the "One composite eDNA sample was taken from the watercourse within the site that held sufficient surface water to provide an indication as to the fish species present and assist with the assessment of ecological values." is not an appropriate method to assess the indigenous fauna that may be utilising the race as habitat (e.g., longfin eel).

An **RFI** was sent for the above information gaps identified in the freshwater ecology survey methods (refer Section 4.1). The **s92** response letter supplied by the applicant failed to address the identified issues with the survey methods for freshwater. In full the s92 response was:

"Fish surveys were not deemed necessary due to the low level of effects of the proposed activity on the water race present."

Without knowing what species are present the level of effect cannot be assessed. To correct for these issues, it is recommended that either fish surveys be used as a standalone methodology or in combination with eDNA metabarcoding, following the 6-replicate methodology (Smith et al. 2024).

4.4.3 Assessment of Ecological Values

- In Section 3.3 Assessment of Ecological Values, the methods used follow standard methodology from the Ecological Impact Assessments Guidelines (EcIAG, Roper-Lindsay et al. 2018). While not a statutory framework it is considered generally adequate for this assessment and it is noted that an assessment against Canterbury Regional Policy Statement (CPPS 2013, which is a statutory assessment), is also included in the methods. However, there is a potential issue using the EcIAG methods to determine the ecological values of an artificial waterway. Experience has shown that assigning values is the most subjective step of the EcIAG framework. This method is unlikely to be a fair estimation of the race's actual habitat value as it is not a natural waterway.

    - To correct for this: It would be better to describe the habitats observed and provide detailed pictures of all of the natural and manmade components present (e.g., aquatic vegetation, riparian zones, bank angles, and culverts).

- In section 3.4 Canterbury Regional Policy Statement, the methods describe a site assessment using the CRPS significance criteria (CRPS, Appendix 3). This is considered best practice and the Partially Operative Selwyn District Plan includes the same significance criteria.

- In Section 3.5 Assessment of Environmental Effects. The methods described in this section follow the EcIAG (Roper-Lindsay et al. 2018), effects assessment methodology, providing detail on application and calculating the magnitude of effect and overall level of effect. There are issues with the use of the EcIAG methods. Foremost been that the EIANZ guidelines have no statutory status and have not been endorsed by Councils (including ECan and SDC), the Ministry for the Environment, the Department of Conservation, or the New Zealand Ecological Society.

An alternative method for the assessment of effects would be to conduct it in reference to statutory documents including the RMA and any relevant provisions of National Environmental Standards (NES), National Policy Statements (NPS), as well as regulations within the relevant Regional Policy Statement (e.g. CRPS) and District Plan.

4.5 Terrestrial Ecology

Vegetation

- In Section 4.1 Vegetation, no vascular plant species list, or vegetation habitat descriptions were provided in the report.

An **RFI** was sent for the above information gaps identified in the vegetation results (refer Section 4.1). To amend this, the applicant provided further information in the **s92** letter response on the habitats and a complete vegetation species list (as an appendix). The habitat descriptions and species list supplied were brief, but considered adequate for the site.

Avifauna

- In Section 4.2 Avifauna, the survey results were limited to birds with conservation status (e.g a national level threat ranking). With the exception being the six species observed on the site during the survey. However, all but two indigenous and some introduced birds are protected under the Wildlife Act and need to be considered in the effects assessment.

- The report makes the assumption that '*as the site comprises homogenous and heavily modified grazed pasture and rotational crops it does not provide suitable* [avifauna] *habitat*'. However, one of the indigenous birds observed on the site South Island fantail/pīwakawaka (*Rhipidura fuliginosa* ssp*. fuliginosa*), is known to breed in modified habitats like those on the site (e.g. exotic hedgerows and pasture, Powlesland, R.G. 2013). Many indigenous birds will also forage and sometimes nest in pasture including At Risk South Island pied oystercatcher (*Haematopus finschi*), identified in the desktop survey.

An **RFI** was sent for the above information gaps identified in the avifauna results (refer Section 4.1). The applicant provided further information in the **s92** letter response including the full list of bird species found in the desktop survey and a list of bird species potentially present (s92 response, Table 1), but no assessment of the 'likelihood' of the species been present based on their habitat preferences. The list of species potentially present also did not include South Island fantail (which was observed on the site).

Herpetofauna

- In Section 4.3 Herpetofauna, there has been no assessment made of the species that could potentially be present on site.

- The report correctly identifies that the pampas (*Cortaderia selloana*) hedgerow on the site may provide habitat for skinks. However, we do not consider that the eucalyptus wood pile (identified off site) provides any habitat for lizards due to the relative isolation from any other habitats, as well as the apparent temporary nature of the wood pile.

- Although the extent of lizard habitat is very limited, the site has a history of forestry with conifer trees been grown on the eastern, Loes Road part of the property (Lot 1 DP 434071) for over 70 years. Historic imagery indicates that this forest block was poorly maintained through much of this period, with numerous, dead and fallen trees, and canopy gaps occupied by scrub and rank grass, which are highly likely to have provided habitat for lizards.

An **RFI** was sent for the above information gaps and the gaps identified in the methods (outline in Section 4.4.1 above). However, the **s92** response letter supplied by the applicant failed to address these issues. In full the response stated:

- *"A walk-through survey of the site found habitat on site to be unsuitable for lizards, as described in Section 4 of the Assessment of Environmental Effects."*

While it is agreed that the potential habitat values for lizards are low, the report is somewhat contradictory in its assessments. Section 4.3 of the report states that:

'*The pampas (Cortaderia selloana) hedgerow may provide habitat for skink although this is unlikely given the surrounding habitat is extremely modified and does not provide adequate refugia for skink to colonise from.'*

Section 7.2.4 (discussed further below) also states:

'*clearance of vegetation and earthworks during construction could potentially impact lizards…'.*

As there is the potential for lizard habitat to be present on the site, it is recommended that lizard surveys be undertaken in the potentially suitable habitat (e.g. pampas grass) using DOC approved methods by an appropriately qualified and permitted herpetologist prior to works commencing.

4.6 Freshwater Habitats

- In Section 5.1 Artificial Watercourses, the report describes the race as shallow and containing poor quality habitat in May 2024. There is no mention of the potential for improved habitat status at other times of the year (e.g., is there possibly better seasonal aquatic habitat in spring/late winter).

- The report also describes the race as 2.3 km long and ranging in width from 0.5-1.5 metres but there is no documentation of the existing culverts. However, the Wheatly and Rynd report states the culverts are between 225 and 300 mm in size. This is potentially undersized for a watercourse of this size that indigenous fish may use to move across the landscape.

    - To correct for this: the existing culverts should be assessed to ensure they comply with the NIWA New Zealand Fish Passage Guidelines. While the race may not be protected habitat – maintaining fish passage is a minimal consideration that should be provided for.

- In Section 5.2 Fish Fauna, it is unclear form the text and table caption whether the results on Table 4 are from NZFFD or Wilderlab or both. Paragraph one states "The NZFFD and Wilderlab public database does however hold relevant records for 14 species within the 'catchment' (Selwyn water race network) as shown in Table 4." But Table 4's title reads "NZFFD records upstream and downstream of the site.".

    - To correct for this: add the methods and dates of capture documented (e.g., do the eDNA results comply with the 6-replicate methodology and when were the NZFFD results recorded).

- In Table 4, there are 14 species freshwater species documented in the wider 'catchment' of races. Importantly, six At Risk, Declining and one Threatened - Nationally Critical fish (Canterbury mudfish, *Neochanna burrowsius*) is documented. Although this habitat is unsuitable for many of the species, the presence/absence of the canterbury mudfish should be confirmed by a fish survey.

4.7 Terrestrial Ecological Values

- In Section 6.1.1 Vegetation, the report correctly identify that the vegetation values are low to very low, which was confirmed with additional information supplied in the s92 response.

- In Section 6.1.2 Avifauna, the assessment that the 'site contains very little suitable habitat for native birds', is considered correct given the highly modified nature of the site. However, modified habitats can still provide foraging and breeding habitat to indigenous birds including At Risk species identified in the desktop survey. As foraging habitat, the values would still be low given the abundance of similar habitat in the surrounding landscape, but if At Risk species were found to be breeding on the site this would likely change.

- In Section 6.1.3 Herpetofauna, the assessment that the site has 'negligible value for lizards', based on the available habitat, might be correct. However, there is some potential habitat and there has been no targeted lizard surveys, therefore the lizard values remain unknown and this assessment is presumptive at this stage.

- In Section 6.2 Freshwater Ecological Values, the assessment that ecological values of the water race are low are likely to be correct, as it is artificial water race. However, the sampling methods used (e.g. one eDNA sample and EcIAG habitat evaluation) are not considered adequate to confirm this assumption. An EOS ecology report on the Malvern Water race scheme (prepared for SDC, James 2011), found 11 sites of 'high' ecological value and 7 sites of 'moderate' value. The freshwater ecological values cannot be confirmed until an adequate freshwater fish survey is undertaken. Therefore, the assessment of 'low' freshwater ecological value is presumptive at this time.

- In Section 6.3 Canterbury Regional Policy Statement, the assessment that the site is not significant und the CRPS ecological significance criteria, is likely correct, but (as noted above) there is currently insufficient evidence to confirm this assessment.

4.8 Assessment of effects – terrestrial environments

- In Section 7.2.1 Vegetation Clearance, this report is somewhat vague on what vegetation will be cleared, but in the introduction (Section 1.3) it states that 'it is proposed to continue grazing the site with sheep' and that 'minimal vegetation clearance is required during construction and this is limited to exotic trees.' Therefore, it is assumed that internal hedgerows and hedgerows or trees that are likely to shade the solar panels will be removed. As noted above the ecological values of vegetation on the site are not clear based on the information presented, but they are likely very low (as vegetation) and therefore, the effect of vegetation loss is likely correctly assessed as 'very low' without mitigation and none is proposed for the effects on vegetation.

- However, landscape and visual mitigation planting is proposed (Mansergh and Burge 2024). This mitigation planting selection includes incorrect species names (e.g. *Coprosma cotoneaster*, which is not a species), cultivator type species (e.g. *Olearia lineata* 'Dartonii') and species not native to Canterbury or the South Island (e.g. *Pittosporum ralphii* North Island species - known to naturized).
  - It is recommended that this planting list is reviewed and revised to include correct and appropriate indigenous species for the Canterbury High Plains Ecological District.

- In Section 7.2.2 Effects on Avifauna and Habitat, the report correctly identifies that vegetation clearance or trimming can adversely affect indigenous birds if undertaken during the breeding season. However, there is no assessment of the likelihood of bird species being present within the different habitats on the site (in either the report or s92 letter response). This makes it difficult to assess the effects and the breeding season listed (September-February inclusive), may apply to fantails, but it does not correlate with South Island pied oystercatcher, or several other species (assessed as potentially present), which can start breeding in August. Additionally, South Island pied oystercatcher will breed in grassland not hedgerows, therefore effects should include construction related activities, not just vegetation clearance. All indigenous birds, except spur-winged plover (*Vanellus miles*) and black-backed gull (*Larus domincanus*) are protected under the Wildlife Act and the effects need to assessed in relation to this.

- In Section 7.2.3 Bird Strike, the report assesses that the risk of bird strike mortality from solar farms is not currently well understood in New Zealand, but is likely to be lower than other built structures (e.g. building windows, roads, power lines). This is considered a reasonable assessment given most of the research to date has been conducted overseas. The 'lake effect' hypothesis (water birds mistaking solar panels for waterbodies and colliding), is also discussed along with possible alternative causes of collision (e.g. incidental), which also need further research. From this discussion the report extrapolates that:

  > *As habitat on site or in the immediate surroundings is unsuitable for birds of conservation value and the site is not considered to be beneath a significant flyway for water associate birds, we consider it to be* [sic] *the effect to be very low in this instance.*

There are some issues with this conclusion including:

- Being a lower bird strike risk than other high risk built structures does not necessarily mean the effect is 'low'.

- The site is within 3 kilometres of a the Waimakariri – a braided river of international significance, which provides habitat to Threatened and At Risk bird species, including species that are associated with water bodies. These include tūturiwhatu/banded dotterel (*Charadrius bicinctus*), ngutu pare/wrybill (*Anarhynchus frontalis*), tarapirohe/black-fronted tern (*Chlidonias albostriatus*), tarāpuka/black-billed gull (*Chroicocephalus bulleri*). And there has been no assessment of the potential migration and foraging routes flown by birds utilising this river habitat.

- In Section 7.2.4 Effects on Herpetofauna and Habitat, the report acknowledges that lizards could be potentially affected by vegetation clearance and earthworks, but no surveys have been undertaken to determine whether they are present or not. The author also considers lizard habitats are negligible and therefore unlikely to be present, which somewhat contradicts the above assessment. If indigenous lizards are present within habitats at the site, this will likely cause disturbance, injury or harm to lizards. Indigenous lizards are protected under the Wildlife Act (1953) and it is important to consider effects from development in relation to lizards and the implications under the Wildlife Act.

- Table 6[5] in the report lists 'no effect' to herpetofauna (lizards) from the proposed facility, but the statement in 7.2.4 contradicts this, as it implies clearance of vegetation and earthworks during construction '*could potentially impact lizards*'. This should be addressed, noting that no further recommendations for surveys or mitigation are proposed for lizards at the site.

  - To correct this: it is recommended that at a minimum, surveys should be undertaken at the site to determine whether lizards are present and if present, effects on them should be managed.

4.9 Assessment of effects – freshwater environments

- The report does not discuss any ecological effects related to the proposed Stormwater Management Plan (e.g., the discharge of construction phase stormwater or operational phase stormwater to land). Nor did it go into detail about the effects associated with the current culverts or the two proposed new culverts. The culvert diameters (old and new) range from 225-300 mm (Raynes and Rynd 2024). The proposed culverts, as a minimum, should comply with the NIWA (Franklin et al., 2018) and the Freshwater Fisheries Act of 1983. While the race may not be protected habitat as a result of its artificial nature – maintaining fish passage is a minimal consideration that should be provided for.

- The conclusions and suggestions are standard (e.g., a fish management plan and fish salvage prior to installation of new culverts), but lack the necessary information to confirm the true ecological value of the race as aquatic habitat and inform those plans. For example, the ecological value of the race would increase significantly should Canterbury mudfish be found there during a fish survey and defishing/salvage methods would target mudfish.

5.0 Summary of assessment of ecological effects.

5.1 Conclusion of adverse effects of the proposal, and the level of those effects

Ecological Solutions have not appropriately assessed all the current ecological values of the site and potential impacts from the development. This is a result of information gaps and inappropriate methods including:

- No assessment of the likelihood of avifauna been present and species that may potentially breed (or attempt to breed) on the site (particularly in the grassland habitats).
- Lack of adequate information to assess the effects on lizards (e.g. no targeted lizard surveys have been undertaken).
- Unsuitable methods to assess freshwater values of the water race (e.g., the EcIAG and one eDNA sample).
- The ecological impacts of stormwater on the freshwater ecosystems has not been evaluated in the AEE.
- The ecological impacts of the existing and two proposed new culverts has not been evaluated in the AEE.

[5]The report has two Table 6's, this comment is in relation to "Table 6: Overall level of effects on ecological values for the proposed Agrivoltaic Facility before and after mitigation assessed at the Ecological District scale."

5.2 Recommendations as to additional mitigation measures/conditions required.

Vegetation

It is suggested that mitigation planting proposed in the Landscape, Natural Character and Visual Assessment Report (Mansergh and Burge 2024), is reviewed and revised to include correct and appropriate indigenous species for the Canterbury High Plains Ecological District.

Avifauna

Disturbance to avifauna can be minimised by undertaking the proposed works outside of the avifauna breeding season from August to February (inclusive). If works must occur during the avifauna breeding season, a site survey should be conducted by a suitably qualified and experienced avifauna ecologist within eight days prior to the works commencing to determine whether indigenous birds and non-indigenous birds that are protected under the Wildlife Act (1953) are present. If breeding birds are present, the suitably qualified and experienced ecologist should advise of a setback buffer from the nest site and works should not commence within buffers, until any chicks present have fledged.

Herpetofauna

A targeted lizard survey is suggested within suitable habitat on the site. Surveys should be undertaken using DOC approved methods by an appropriately qualified and permitted herpetologist, during the lizard active season (October-April), prior to any site clearance or development works. If lizards are present all potential ecological effects should be managed in accordance with Wildlife Act (1953) and the RMA.

Freshwater

It is unable to be determined if any additional mitigation measures or conditions for freshwater management are required at this time due the existing information gaps highlighted in this review.

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