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Landscape Assessment Report

Proposed Solar Farm
Nova Energy Ltd, Mackenzie Basin

1 May 2026

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1 Introduction

1.1 Purpose and Scope

Rough Milne Mitchell Landscape Architects (**RMM**) has been engaged by Nova Energy Ltd (**the Applicant**) to assess the actual and potential landscape and visual effects of a proposed 565ha solar farm, located within Lot 3 DP422901, State Highway 8 (**SH8**), Twizel (**the site**), which is approximately 868ha in area.

The site is accessed from SH8, 830m south of Ostler Road, Twizel, via the existing Sol Quarry accessway. The site is approximately 9km long and on average 1.2km wide, narrowing to its southeast point. It is situated between the Twizel River to the northeast, the Ōhau River to the southwest, the confluence of these two rivers to the southeast and SH8 to the northwest, refer to **Figure 1** below.

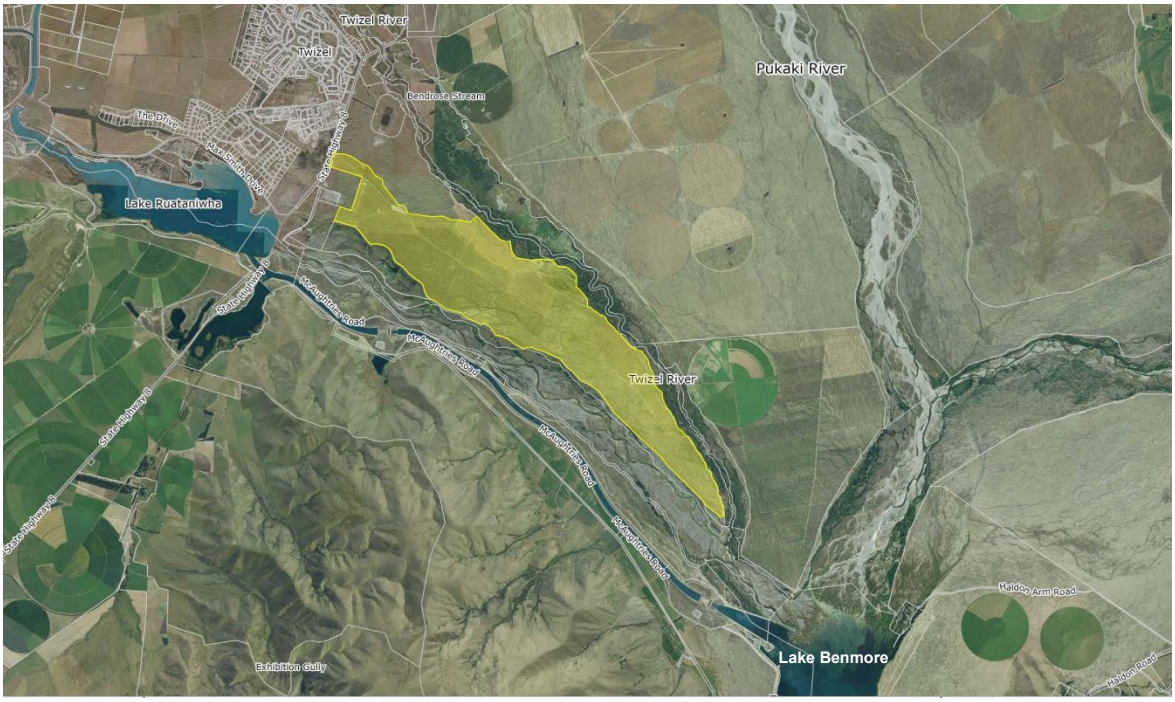

Figure 1. The site locations, immediately east of Twizel township situated between Twizel River and Ōhau River, within the Mackenzie Basin, as highlighted in yellow.

The Mackenzie District Plan (**MDP**) has been going through a rolling review over the past three years. Under the MDP, the site is zoned General Rural Zone (**GRUZ**), is within the Mackenzie Basin Outstanding Natural Landscape (**ONL**) and is within an area of high and medium visual vulnerability, refer to **GA Sheet 13**.

The Renewable Electricity Generation (REG) and Infrastructure Chapters are now Operative. The REG chapter takes precedence in the MDP when assessing renewable electricity generation activities, refer to REG Chapter - Table 1. Subsequently, under REG-R7 resource consent is required as a *discretionary activity* because the proposed solar farm is a renewable electricity generation activity located within an ONL.

Other consent requirements apply to the proposal, which are identified within the Resource Consent Application and Assessment of Environmental Effects (**AEE**) Report.

The Landscape Assessment Report (**LAR**) is structured as follows:

- A description of the proposal.
- An outline of the relevant policy provisions within the Mackenzie District Plan.
- The identification and description of the receiving environment and the Site's landscape attributes and values and landscape character.
- An assessment of the actual and potential landscape, natural character and visual effects, including cumulative effects.
- An assessment against the relevant statutory provisions.
- Recommendations.
- Conclusion.

This report is accompanied by:

- **Appendix 1 -** The Relevant MDP Policy Provisions.
- **Appendix 2 -** Graphic Attachment (**GA**). The GA contains plans of the proposed solar farm, solar panels and ancillary structures, exemplar images of similar solar farms in Aotearoa New Zealand and Australia, maps and aerial images of the site location, the identification of the receiving environment, the relevant MDP planning maps and photographs of the site taken from the surrounding public places.
- **Appendix 3 -** Visual Simulations prepared by Virtual View Ltd, a company that specialises in preparing 3D visualisations. Ten visual simulations have been prepared which directly correspond the viewpoint location photographs in Appendix 1.

1.2 Code of Conduct

As per the Fast-track Approval 2024: Panels Conveners' Practice and Procedure Guidance[1], Mr Paul Smith (Author) and Ms Nikki Smetham (Peer Reviewer), record that they have read and agree to and abide by the Environment Court's Code of Conduct for Expert Witnesses as specified in the Environment Court's Practice Note 2023. This Landscape Assessment Report and its accompanied Graphic Attachment is within their area of expertise, except where the report states that they rely upon the reports of other experts. Both Mr Smith and Ms Smetham have not omitted to consider any material facts known to them that might alter or detract from the conclusions reached.

1.3 Methodology

The methodology and terminology used in this report has been informed by the Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines[2].

The site and its surrounds were visited on 25 June 2024. This site visit was undertaken to assist in understanding the landscape character and values within the receiving environment and assessing the proposal's actual and potential landscape and visual effects.

[1] Fast-track Approval 20024: Panels Conveners' Practice and Procedure Guidance. 22 July 2025. 4.1(h).

[2] 'Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines'. Tuia Pita Ora New Zealand Institute of Landscape Architects, July 2022.

This LAR is tailored to suit the nature of the proposed solar farm and its context, including the framework of the governing legislation. The statutory documents containing provisions relevant to the proposed solar farm are found in the Fast-track Approvals Act 2025, the Resource Management Act 1991 (**RMA**), the National Policy Statement for Renewable Electricity Generation – December 2025 (**NPS-REG**), and the MDP.

The Applicant commissioned a peer review of this LAR by Patch Landscape Architects, that will form part of the Application. RMM reviewed the Patch Peer Review, and the authors have met to discuss the two reports, as part of preparing this LAR.

Figure 2 below is the TTatM Guidelines seven-point rating scale that is used in this LAR and a comparative scale between the seven-point scale and the RMA terminology.

Figure 2. The TTatM Guidelines seven-point landscape and visual effects rating scale and a comparative scale of degree of effects.

2 The Proposal

2.1 Description of the Proposal

Resource consent is sought for a solar farm development within the 868ha site located east of Twizel township between the Twizel River, Ōhau River, SH8 and Lake Benmore. The overall extent of the solar farm is approximately 565ha. It will generate approximately 310.8 megawatts peak (**MWp**), which is approximately the equivalent to the powering of 75,000 homes annually.

2.1.1 Site Selection

In terms of Aotearoa New Zealand's transition to sustainable energy, the proposed solar farm, being located alongside the Mackenzie / Waitaki hydro lakes / canals, poses a unique opportunity to generate power during the day, thereby providing the opportunity for the hydro lakes to store water during the day, increasing the capacity and flexibility of the network to provide additional power at night to meet periods of high demand. Given the global warming crisis, as the climate changes and droughts become more common, there is a high risk that the nearby hydro lakes will not be able to provide continuous power and power outages throughout Aotearoa New Zealand will become more likely / increasingly frequent.[3] Therefore, the proposed solar farm's co-location with the hydro power scheme will assist in providing a more resilient power generation system for Aotearoa New Zealand.

[3] https://www.ecan.govt.nz/get-involved/news-and-events/2024/record-low-water-levels-across-waitaha-canterbury/

This site has been chosen as a suitable location for a solar farm due its operational requirements. Primarily, this is because the site is immediately southeast of the Twizel Substation that can accommodate the large amount of power that will be generated from the solar farm.

In addition, the site and the Mackenzie Basin receives above average sunlight hours / irradiance within Aotearoa New Zealand[4] at 2,500 hours (as recognised in the MDP REG Chapter[5]) and is co-located with the extensive Hydro Power Scheme, that contributes to the Basin's character. Also, the site is relatively flat and accessible, therefore minimal land disturbance / earthworks is required to install the panels and associated development.

2.1.2 Solar Farm - Extent

The overall extent of the solar farm has been limited to 565ha within the 868ha site for the following reasons, and as illustrated on **GA Sheets 3, 4 and 9**:

- The solar farm is contained to the northwest by an approximate 4-5m tall escarpment face, located approximately 1km east of SH8. The escarpment descends northwest to southeast, away from SH8. This escarpment assists with visually screening the solar farm when viewed from SH8.
- As a whole, the solar farm is setback 20m from rivers / streams and 20m from all property boundaries.
- The solar farm is excluded from a large portion of the northern section of the site. This is because the solar farm avoids the natural inland wetlands including being setback 100m from these wetlands and areas containing significant vegetation including being setback 10 - 35m from these areas.
- The solar farm is excluded from areas along the southern side of the site so it is setback 100m from the Ruataniwha Wetland, areas containing significant vegetation including being setback 10 – 35m from these areas, and being setback 20m from the southern boundary to avoid potential shading effects on 'at-risk' plant species and the dryland habitats they are found in along the terrace edge, both within and outside the site.

2.1.3 Solar Panels

A One Panel (**1P**) Single Axis Tracking system is proposed (refer to **GA Sheet 5**.) A 1P system which comprises of a solar table one panel wide (2.4m x 1.3m), up to 87 panels long, that run north - south across the site. There will be a minimum 5m wide gap between each row of panels, measured when the panels are parallel with the ground's surface. Overall, there will be approximately 446,000 solar panels situated on approximately 5,700 solar tables within the site.

When multiplying the size and number of solar panels (excluding operation and management buildings, inverters, switchyard and transmissions lines) the proposal will result in a site coverage of approximately 150ha or 18% of the 868ha site. Refer to **GA Sheet 3**.

The solar tables are steel structures, and each table is attached to the ground by 11 steel poles, centralised along its length. Each table structure is designed to move so the solar panels pivot east to west towards the sun's rays as the sun moves through the sky. In the early morning the solar panels will face east, for the majority of the day the solar panels will be more or less horizontal / parallel to the grounds surface and at the end of the day the solar panels will face west.

[4] https://niwa.co.nz/climate-and-weather/mean-monthly-sunshine-hours

[5] PC26 - REG Chapter, Decision Version. Page 21.

When parallel with the ground's surface, the solar panels stand approximately 1.85m above ground level. When the solar tables are tilted as far east or west as possible, on a 60-degree angle, the top of the solar panel will stand approximately 2.8m tall with the bottom approximately 0.8m above ground level. Refer to **GA Sheet 5.**

The solar tables are designed to avoid internal shading, which means the pivot is restricted to prevent the solar panels facing as far east or west as possible. Instead, each table will 'back track' so they start and finish their daily cycle in a semi-tilted position rather than full tilt to prevent shading. Full tilt being a position they do not spend much time in, and overnight, they will have a rest angle of no less than 5 degrees.

2.1.4 Power Conversion Unit - Integrated Inverter/Transformer/Control Gear

Sixty-four central inverters will be located within the site, as illustrated on **GA Sheet 3**. The purpose of the inverters is to convert the direct current (**DC**) from the solar panels to an alternating current (**AC**) so the solar power can be transferred into the grid.

Each inverter is situated within a 20-foot shipping container frame, which is approximately 6.0m long, 2.4m wide and 2.9m high. The container frames and all parts of the inverter that can be painted will be finished in a dark, natural and recessive colour within the hues of greys, greens and browns which have a light reflectance value (**LRV**) of less than 30%. If any part of a transformer or other structure that is externally visible cannot meet the light reflectance value requirement, the consent holder shall submit written justification to the Consent Authority for certification prior to installation.

Inverters will be located within specific parts of the site, so they are as efficient as possible. Also, they will be situated within the central part of the site where the solar tables assist in visually screening them from view. In particular, when potentially seen from the west.

2.1.5 Transmission Line

Two 33kV overhead transmission line will extend through the site's central spine, alongside the main accessway to Transpower's Twizel Substation. The transmission line will, for the most part be 10.6m tall, comprising of a 3m wide horizontal rail and three power cables. Two approximately 250m long stretches of transmission line will be 15.2m tall. These are located immediately east of the Twizel Substation and where the line traverses the escarpment face. Refer to **GA Sheets 3 and 6**. The transmission line will provide the necessary connection to transport the power sourced from the solar farm to the main grid connection.

A switchyard directly associated with the 33kV transmission line will be located at the western end of the site, where the transmission line exits the site and crosses third party land to connect to the Twizel Substation. The switchyard will contain a switch room, control room and Harmonic filters. The control room will be 6m x 4m and 3m tall. The switch room will be 16m x 6.8m and 5m tall. Both buildings will be finished in dark, natural and recessive colours within the hues of greys, greens and browns which have a LRV of less than 30%.

2.1.6 Access

The existing accessway off SH8 will be upgraded, so the entry point is immediately south of the exiting gravel track, includes turning bays along SH8 and is sealed for approximately the first 40m. The upgraded accessway will be formed to Waka Kotahi standards.

The alignment of the accessway within the site will vary from its current alignment, so people accessing the solar farm do not need to travel near the existing quarry. The new alignment ascends / descends the escarpment face 220m west of the quarry, where an existing 1,200m^2 area of exposed earth is located. Refer to **GA Sheet 3**.

Upgrades to the existing roughly formed farm tracks within the site may occur if the current tracks will be inaccessible in inclement weather. Upgrades to the tracks will likely consist of a compacted gravel surface.

2.1.7 Operations and Management Area

An Operations and Management Area will be located on the lower terrace immediately west of the solar arrays, and immediately south of the main accessway. The Operations and Management Area will contain a site office, including toilets / washrooms and a warehouse / workshop. . The site office will be 12.7m x 12.1m and 6.2m tall. The warehouse / workshop will be 12.6m x 16.2m and 9m tall. Both buildings will be finished in dark, natural and recessive colours within the hues of greys, greens and browns which have a LRV of less than 30%.

2.1.8 Fencing

The existing 1.2m tall post-and-wire fence will be maintained around the perimeter of the site.

2.1.9 Earthworks

Earthworks will consist of:

- Constructing the accessway tracks throughout the site, and levelling areas for the Operations and Management Buildings and the construction office and laydown area.
- Trenching for the cables associated with the solar panels and inverters. All excavated material will remain on site. For reference, the solar tables will be attached to poles that are driven into the earth, therefore no earthworks are required for the poles.
- Levelling areas within two specific parts of the site, approximately 8ha in area where existing undulations require minor corrections, so the landform does not interfere within the tilting solar panels.

2.1.10 Water Tanks

Four 30,000L water tanks will be located in strategic firefighting locations throughout the site. The water tanks will be finished in dark, natural and recessive colour within the hues of greys, greens and browns which have a light reflectance value (**LRV**) of less than 30%., so they do not stand out amongst the solar farm development. One rainwater harvest tank, that accords with the above colouring condition will be located beside the warehouse/ workshop.

2.1.11 Land Management

As discussed above in Section 2.1.2, the extent of the solar farm has been determined through the on-site analysis, report and recommendations of the project technical team, including Wildlands. The solar farm has been designed to avoid notable plant species and habitats, and wetlands[6], as illustrated on **GA Sheets 4 and 9.** This is to ensure that the proposed solar farm's potential adverse effects on the wetlands, significant indigenous vegetation and Threatened and At Risk plants will be minimised.[7] As per the above the solar farm development will:

- Avoid identified areas of significant indigenous vegetation, wetland habitats, Threatened or At-Risk plant populations, and areas of high-quality lizard habitat. This includes setting the solar

[6] Wildland Consultants. (2026). *Assessment of potential ecological effects of the proposed Nova Energy Solar Farm near Twizel*. Wildland Consultants Contract Report No. 6620a. Prepared for Nova Energy. 82pp. Section 13.1.1 & 13.1.2, Page 70.

[7] Ibid. Section 13.1.1 & 13.1.2, Page 70.

farm 100m from wetlands,10 - 35m from areas of significant vegetation to avoid shading effects on 'at-risk' plant species found along the terrace edge.

- Avoid grasshopper habitats to the extent practicable and enhance grasshopper habitat around the edge of the site.

It is proposed that the project will comply with Lizard, Biosecurity, Terrestrial Invertebrate, Avifauna and Pest Mammal Management Plans to assist with avoiding, remedying and mitigating potential adverse effects, as summarised in Table 11.[8] . As assessed in the Wildlands Report "*Many of the potential adverse effects can be managed effectively through avoidance, which has been incorporated into the project layout. However, additional effects management, such as habitat enhancement, salvage and translocation, pest mammal control, and the implementation of management plans, is required to manage other potential adverse ecological effects"*[9]. … with "*Most effects will be less than minor after management, with some reduced to negligible and two effects (ongoing disturbance of avifauna and reduction of invertebrate habitat quality due to shading) conservatively reduced to minor"* [10]*.*

The land under the panels will continue to be intermittently grazed during operation of the solar plant. Wildlands have informed RMM that the ongoing grazing will adequately maintain grass cover, so it does not take over the 'at risk' plants and their habitats.

2.1.12 Landscape Mitigation

The LAR that formed part of the FTAA referral application recommended an approximate 20m wide band of native vegetation along the site's southwest and northeast borders. The purpose of the recommended native vegetation was to assist with screening the proposed solar farm from the lower portions of McAughtries Road, the Ōhau River Four-Wheel Drive Track around the perimeter of the Site, the eastern end of the Twizel River Trail and the farm base area within Glencairn Station. When seen from the other, few public places the landscape mitigation would visually screen the solar farm's hard edge and slightly reduce the amount of visible built form, noting that the solar farm would continue to be seen from elevated viewing locations i.e. Ōhau B and C Power Stations.

Ecological survey work has been undertaken on site for the past 3 summers (including the 25/26 summer) to understand the potential adverse effects of the recommended landscape mitigation planting on the dryland habitats, in particular where the 'at risk' plants are located along the terrace.

Wildlands recommend that the proposed native plants would have significant adverse effects on the 'at risk' plants and the dryland habitats along the terrace edges due to shading effects, that would result from the way in which the native plants will alter this important dryland habitat. Due to this, Wildlands have advised that the significant adverse effects on the dryland habitat outweigh the positive biodiversity outcomes the landscape mitigation will have.

The purpose of the recommended native vegetation was to assist with screening the proposed solar farm from the lower portions of McAugtries Road, the Ōhau River Four-Wheel Drive Track around the permitter of the Site, the eastern end of the Twizel River Trail and the farm base area within Glencairn Station. When seen from the other, few public places the landscape mitigation would visually screen the solar farms hard edge and slightly reduce the amount of visible built form, noting that the solar farm would continue to be seen from elevated viewing locations i.e. Ōhau B and C Power Stations.

[8] Ibid. Section 13, Page 68.

[9] Ibid. Section 14, Page 86.

[10] Ibid. Section 14, Page 87.

Due to the above, whilst proposed landscaping may reduce the potential degree of adverse visual effects from some locations, protecting the biodiversity and dryland habitat values is most appropriate in this instance. Therefore, the recommended landscape mitigation vegetation has been removed from the proposal.

3 Relevant Policy Provisions

3.1 National Policy Statement for Renewable Electricity Generation – Dec 2025

The NPS-REG sets out one objective and eight policies to enable the sustainable management of renewable electricity generation under the RMA. The NPS-REG objective and Policy F, as included below is relevant to the proposed solar farm (underlined for emphasis).

2.1 Objective

(1) The objective of this National Policy Statement is to:

a) ensure the national, regional and local benefits of REG are provided for;

b) enable REG capacity and output to significantly increase;

c) enable REG to support the social, economic and cultural wellbeing of people and communities, and for their health and safety;

d) enable REG to provide greater security of electricity supply and resilience to supply disruptions to all people and communities;

e) enable REG to support achieving New Zealand's emission reduction target and implementation of the emissions reduction plan under the Climate Change Response Act 2002; and

f) ensure REG is developed and operated in a safe, efficient and effective manner while managing the adverse effects from or on REG activities.

***Policy F:** Enabling and managing the effects of REG assets and activities on the environment*

(1) Decision-makers must enable REG assets and activities in all locations and environments.

(2) Where REG assets and activities are proposed to locate in or are likely to have adverse effects on environments and values provided for in section 6 of the Act, the provisions of this policy must be read alongside other relevant national direction, regional policy statements and regional and district plans.

(3) Where (2) does not apply, the adverse effects of REG assets and activities must be, where practicable, avoided, remedied or mitigated.

(4) Decision-makers must have particular regard to the use of adaptive management measures.

(5) When considering any residual adverse effects of REG assets and activities that cannot be avoided, remedied or mitigated, decision-makers shall have regard to offsetting measures or

environmental compensation, including measures or compensation that benefit the local environment and community affected.

3.2 Mackenzie District Plan

The MDP has been going through a rolling District Plan Review process over the past three years. At a district wide scale, the Strategic Direction for the Natural Environment chapter recognises that "*The District contains many natural resources of importance. These include (but are not limited to): resources valued by mana whenua for mahika kai; the Aoraki Mackenzie International Dark Sky Reserve; outstanding natural features and landscapes; indigenous biodiversity; renewable energy resources and the District's wetlands, lakes and rivers and their margins."*

Regarding this, the MDP recognises the importance of protecting these values as they contribute to the "*District character and identity and its desirability as a place to live in and visit* as they contribute *to the community's environmental, social, cultural and economic well-being*." This is achieved through the Natural Environment Objective, as included below.

Chapter: NE – Natural Environment

NE-O1 Natural Environment

The values of the natural environment, including those that make the District unique, contribute to its character, identity and well-being, or have significant or outstanding intrinsic values, are recognised and provided for, and where appropriate protected and enhanced. This includes, but is not limited to, values associated with the following important natural resources:

1. *mahika kai resources;*
2. *night sky darkness;*
3. *outstanding natural features and landscapes;*
4. *significant indigenous biodiversity; and*
5. *water bodies and their margins.*

More specifically, the REG Chapter takes precedence when assessing renewable electricity generation activities, and under REG – Table 1, the Natural Features and Landscapes (**NFL**) objectives and policies are not applicable / do not need to be considered when assessing REG activities. This highlights that renewable electricity generation is more anticipated in the Mackenzie Basin ONL than would be the case if the NFL chapter applied. The focus of an assessment is therefore on the REG chapter, and in particular on REG-O2 and REG-P6 which are most relevant to the project.

Chapter: REG – Renewable Electricity Generation

The introduction of the REG Chapter recognises the renewable energy development pressure on the Mackenzie Basin stating that "…*There is also increasing interest in solar power generation in the District, due to the high amount of irradiance, particularly in Te Manahuna / the Mackenzie Basin.*

The NPS-REG directs that the development, operation, maintenance and upgrading of both new and existing renewable electricity generation activities is provided for, in order to increase the proportion of electricity generated from renewable energy sources, thereby displacing use of non-renewable energy sources and reducing carbon emissions. These activities often have a functional need or operational need to be in a particular location, but can have adverse effects on the environment, particularly in areas which have important natural values or mana whenua values. This chapter provides direction on how renewable electricity generation activities are to be provided for, while appropriately managing the potential adverse effects of these activities."

(Underlined for emphasis).

REG-O2 - Adverse Effects

The adverse effects of renewable electricity generation activities are managed.

REG-P6 - Other Renewable Electricity Generation Activities – Within areas of significant indigenous vegetation and significant habitats of indigenous fauna, ONLs, ONFs, riparian areas and SASM or on highly productive land

Provide for renewable electricity generation activities (not otherwise specified in REG-P3 and REG-P4) within areas of significant indigenous vegetation and significant habitats of indigenous fauna, Outstanding Natural Landscapes, Outstanding Natural Features, Sites and Areas of Significance to Māori, riparian areas, or within area of Highly Productive Land, where:

1. *there is a functional need or operational need for the activity to be in that location;*
2. *adverse effects on the values of the area are avoided as far as practicable, including through site, route or method selection, design measures and other management methods;*
3. *adverse effects on the values of the area that cannot be avoided are remedied or mitigated, where practicable;*
4. *other adverse effects (that do not affect the values of the area) are avoided, remedied or mitigated as far as practicable;*
5. *regard is had to any proposed offsetting measures or environmental compensation (including considering Policy 4 in Section 19 and Appendix Z), where there are significant residual adverse effects that cannot be avoided, remedied or mitigated; and*
6. *particular regard is had to the practical constraints associated with renewable electricity generation activities, including the:*
   a.location and efficient use of existing electricity generation, transmission and distribution infrastructure; and
   b.the need to locate the renewable electricity generation activity where the renewable energy resource is located.
7. *following application of 1-6 above, consideration is given to whether the benefits of the activity outweigh any significant residual adverse effects on the values of the area.*

(Underlined for emphasis).

Under REG chapter, the proposed solar farm requires resource consent as a *discretionary activity* under REG-R7 because it is not a small-scale renewable electricity generation activity, is not otherwise listed and will be located within an ONL. As a *discretionary activity* this assessment, assesses the actual and potential landscape and visual effects of the proposed solar farm on the outstanding landscape values of the Mackenzie Basin.

The MDP objectives and policies that are relevant to the proposed solar farm are included in Appendix 1. The assessment of landscape and visual effects in Section 6 take these objectives and policies into consideration.

4 Landscape Description

4.1 Extent of the Receiving Environment

The site and the receiving environment are situated within and form part of the Mackenzie Basin, the largest intermontane basin in Aotearoa New Zealand. The receiving environment takes in the southern part of the Mackenzie Basin, including and between the southern end of Lake Pukaki, the eastern face of the Ben Ōhau Range, Ōhau River, Lake Ruataniwha, the eastern face of the Benmore Range, the northern end of Lake Benmore, and Grays Hill and the Mary Range that are east of Lake Pukaki and the Pukaki River, as illustrated on **GA Sheet 10**.

With reference to Mr Graham Densem's Landscape Character Maps, the receiving environment is comprised of the 'South Basin', 'Twizel', and 'Rhoborough', the southern end of 'Pukaki' and the western half of 'Benmore', as illustrated on **GA Sheet 12**.

4.2 Description of the Receiving Environment

The Mackenzie Basin is a glacially derived landscape composed of fluvioglacial outwash deposits of the Otira glaciation. Google earth and Canterbury Maps aerial imagery illustrates that the underlying outwash plain landform remains relatively intact. The soils within this wider area vary between moderately deep to shallow with varied thicknesses of loess over alluvial gravels on the outwash terraces.

Remnant vegetation on the outwash plains within the South Basin would have included short tussock and matagouri scrub.[11] Land use is predominantly in the form of grazing and traditional farming practices including topdressing and pivot irrigation. The increase in exotic pasture and reduction in dryland vegetation over the past 30 years has been identified as impacting on the landscape character of the outwash plain.[12]

The site is located on the outwash plain between the Ben Ōhau Range and Lake Pukaki to the north, and the Benmore Range and Lake Benmore to the south. At a broad scale, this outwash plain is a recognisable, very large and relatively flat area of land, despite the large-scale modifications to the basin created by the Upper Waitaki hydro-electric power scheme. The Tekapo, Pukaki, Twizel and Ōhau Rivers[13] traverse the outwash plain flowing south to feed into Lake Benmore and then into the Waitaki River.

At a smaller scale, the site is situated on the outwash plain that is bounded by the incised Twizel and Ōhau Rivers, and their confluence prior to Ōhau River converging on Lake Benmore. These braided rivers are located some 10 – 20m below the outwash plain that the site is situated on, separated by steep escarpment faces or small terraces stepping down to the rivers. The Twizel River, Ōhau River, Pukaki River and Lake Benmore are classified as Sites of Natural Significance and Sites and Areas of Significance to Māori - Waterbodies and Ancient Trails.

[11] Graham Densem Landscape Architects Ltd. November 2007. The Mackenzie Basin Landscape Study: Character and Capacities.

[12] Ibid.

[13] The District Plan has identified the Tekapo / Pukaki Rivers and the Ōhau River as Sites of Natural Significance. The District Plan has not identified the Twizel River as a Site of Natural Significance.

The water flow of these four braided rivers is relatively low, as it is controlled by spillways at Lake Tekapo, Pukaki and Ruataniwha, with most water being diverted along the Ōhau and Pukaki Canals.

The ecological context of the receiving environment and site is described in detail in the Wildlands Report[14]. In brief, the Wildlands Report outlines that:

- Pasture now occupies much of the Pukaki Ecological District.
- Areas of significant indigenous vegetation, wetland habitats, threatened and 'at-risk' plant species, and areas of high-quality lizard habitat have primarily been identified around the periphery of the terrace. These plant species only occur within the Mackenzie Basin dryland habitats that are rare at a national scale, are at risk of decline and therefore are sensitive to change.
- The adjacent braided riverbeds have been identified as a historically rare ecosystem type[15] and are naturally uncommon on a national basis. The rivers provide important habitat to a number of bird species and rare insects and are under active restoration as part of a 'Project River Recovery'.
- The Lake Ruataniwha Conservation Area surrounds much of the proposed solar farm site, made up of several discrete areas of land. One area lies along most of the Twizel River side of the proposed solar farm site, with another area on the Ōhau River.[16]
- An area along the Ōhau River is identified as a Site of Natural Significance in the Mackenzie District Plan, primarily for its avifauna habitat values, as well as areas of wetland. It extends along the Ōhau river from Lake Benmore into, and including, parts of Lake Ruataniwha and its margins. There are two locations where this area overlaps with the boundary of the proposed solar farm property.[17]

The Ōhau and Pukaki Canals, which form part of the wider Upper Waitaki hydro-electrical scheme, flow from Lake Pukaki and Lake Ōhau into Lake Ruataniwha and then extend south along the toe of the Benmore Range into Lake Benmore, the largest man-made lake in Aotearoa New Zealand.

The Twizel Substation is located at the top end of the Ōhau Canal, just off SH8, southeast of Twizel and within close proximity to the site. The Ōhau B and Ōhau C Power Stations, consisting of the large dams, buildings and substations are located along this canal. Several 220kv National Grid transmission lines are located throughout this southern part of the Mackenzie Basin, south of Lake Tekapo connecting the Benmore Dam, and the Ōhau A, B and C Power Stations with the Twizel Substation and substations throughout the South Island. The hydro power scheme contributes to the character of the Mackenzie Basin landscape and is an identifiable element within this ONL.

Twizel township, which was created to house the workers constructing the hydro-electrical scheme, is situated on the outwash plain immediately north of Lake Ruataniwha. Twizel is accessed from SH8 and since the construction of the hydro-electrical scheme, Twizel township has become a service and tourist town. It is the largest town within the Mackenzie District and has a growing population and growing footprint. This is reflected in the updated residential zoning in the MDP, which provides for an extension of residential zoning near the SH8 and Max Smith Drive intersection and an approximate

[14] Wildland Consultants. (2026). *Assessment of potential ecological effects of the proposed Nova Energy Solar Farm near Twizel*. Wildland Consultants Contract Report No. 6620a. Prepared for Nova Energy. 82pp.

[15] Ibid. Page 86.

[16] ibid. Page 5 and Figure 2, Page 7.

[17] ibid. Figure 2, Page 7 and Page 8.

12ha Industrial Zone adjacent to the oxidation ponds and east of SH8. Overall, Twizel township and its surrounds is, and is anticipated to be, the most developed area within the Mackenzie Basin.

The Mackenzie Basin is primarily experienced from SH8, which traverses the basin past the hydro lakes and townships at Tekapo and Twizel. It is an important scenic tourist route affording extensive views across the basin.

Twizel and the numerous campgrounds (Lake Benmore – Ōhau C, Benmore Views, Falstone, and Haldon Arm) within the receiving environment are well situated as a base for the large number of the recreational opportunities in its vicinity.

Recreational activities include camping / caravanning, rowing and water skiing on Lake Ruataniwha and Lake Benmore, salmon fishing in the lakes, rivers and canals, skiing at Ōhau and Round Hill Ski fields, and mountain biking on the Alps to Ocean Trail and numerous other local trails.

The clean, dry and dark sky is a recognised feature of the basin and consequently the Mackenzie Basin has been designated as a Dark Sky Reserve by DarkSky International.[18]

As previously mentioned, between 1991 and 2020 the Mackenzie Basin received approximately 2,500 hours of sunshine annually[19] and in 2022 it received 2,464 hours of sunshine[20]. It was the fifth sunniest place in Aotearoa New Zealand in 2022 and is commonly thought of as one of the sunniest places in the South Island, along with Blenheim and Nelson.

A Cultural Effects Assessment (Manawhenua Report) has been prepared for the purposes of providing input and feedback on the cultural impacts of the solar project. Sections 4 and 5 of the Manawhenua Report describes the relationship Papatipu Rūnaka have with Te Manahuna/Mackenzie Basin, and the site and its surrounds. In doing so it highlights the cultural importance of this landscape with Kāi Tahu and Papatipu rūnaka's history and relationship with the land dating back many centuries. The detail of the Manawhenua Report is not repeated here, other than to highlight that the rivers were key travel routes and were sources of kai for many centuries. These rivers have been severely impacted by the Waitaki Hydro Scheme, with Kai Tahu identify that there is only two remaining areas of importance near the Site, referred to as "Para Arero" and "Kahuika".[21]

"*Para Arero was a kāika nohoaka (traditional areas of communal living on tribal lands) and kāika mahika kai site. Located approximately halfway down the southern boundary of the application site and situated between the property boundary and the Ōhau River braid tuna (eels) and turnips were gathered and harvested for the winter months.***"** [22]

"At the southern point of the application site is Kahuika a kāika (a small settlement) located at the junction of the Ōhau, Pūkaki and Takapō Rivers where mahika kai such as tuna (eels) and turnips were gathered." [23]

[18] https://darksky.org/what-we-do/international-dark-sky-places/all-places/

[19] https://niwa.co.nz/climate-and-weather/mean-monthly-sunshine-hours

[20] https://niwa.co.nz/sites/niwa.co.nz/files/2022_Annual_Climate_Summary_FINAL_v3.pdf

[21] Manawhenua Report, Prepared By: Aoraki Environmental Consultancy Limited and Aukaha (1997) Limited on behalf of Te Rūnanga o Arowhenua, Te Rūnanga o Moeraki and Te Rūnanga o Waihao. February 2025. Pages 5 – 8.

[22] Ibid. Page 7.

[23] Ibid. Page 7 - 8.

"These sites and many others in the area indicate the connection and association of Kāi Tahu whānui, including rock art sites and urupā. As such, they hold the memories, traditions, and stories of Kāi Tahu tīpuna. Development in the area, particularly the hydro schemes, has severely impacted these sites, and there is concern that further development in the area poses risks to what remains." [24]

4.3 Description of the Site

The site includes the majority of the long and narrow outwash plain bounded by the incised Twizel River to the northeast, Ōhau River to the southwest, the confluence of these rivers to the southeast and SH8 to the northwest. The site is accessed from SH8, 830m south of Ostler Road, Twizel, via the existing Sol Quarry accessway.

The landform within the site is generally flat, with the topography gradually descending northwest to southeast, with an approximate 40m elevation difference across the site. An approximate 5m tall escarpment face extends east to west through the sites northwestern end, with the very western end of the escarpment situated 200m south of Transpower's Twizel Substation. The scarp face descends northwest to southeast with most of the site (and the proposed solar farm) being situated on a separate, lower terrace to the one SH8 is situated on.

Sol Quarry's consented quarry (RM180173) which allows for the extraction of 100,000m^3 of material and a small extraction pit are located along the scarp face within the northwestern side of the site.

This accessway within the site has been formed to accommodate quarrying vehicles and truck and trailer units between SH8 and the Sol Quarry. The accessway descends the scarp face immediately east of the quarry. The formation changes to a rough farm access track and extends northwest to southeast through the approximate centre of the site, to the site's southeast corner / point.

The vegetation and habitats found within the site are described and mapped in detail in the Wildlands Report[25]. In brief, the Wildlands Report outlines that:

- The majority of the terrace has been modified by farming practices as it comprises Browntop-sweet vernal-clover grassland and Haresfoot trefoil-sweet vernal- grassland, areas marked 3 and 8 on Figure 6 [26]
- The important indigenous biodiversity values within the site include the following, most of which are located on the margins of the site.
  - *"Wetland habitats.*
  - *Seven plant species classified as At Risk or Threatened.*
  - *Eight Threatened and nine At Risk avifauna species may be present at the site.*
  - *Three lizard species have been confirmed at the site. Three additional At Risk and one Threatened lizard species may also occur at the site.*
  - *Two Threatened and one At Risk - Declining terrestrial invertebrate species."* [27]

[24] Ibid. Page 8.

[25] Wildland Consultants. (2026). *Assessment of potential ecological effects of the proposed Nova Energy Solar Farm near Twizel*. Wildland Consultants Contract Report No. 6620a. Prepared for Nova Energy. 82pp. Page 25.

[26] ibid. Page 9.

[27] ibid. Page 86.

- *The site is classified entirely as a 'critically under protected' land environment, with more than 30% indigenous vegetation left and less than 10% indigenous vegetation protected.*[28]

Overall, the ecological values on-site vary considerably. Most of the site has a cover of exotic pasture with these areas having low value, and the less developed margins and scarp face within the site are important habitat for indigenous plants, avifauna, lizards, and invertebrates.

The National Grid Transmission Line between the Twizel and Islington (Christchurch) Substation extend east to west through the northwestern end of the site, on the upper terrace.

Regarding the above, the site forms part of the expansive views over the Mackenzie Basin floor. As the site is predominantly devoid of built form, it contributes to the Mackenzie Basin's 'openness and vastness'[29] and the long open views to the Southern Alps and other mountains encircling the basin.

From a desktop analysis and on-site investigations, the site is visible from the below mentioned public places, refer to **GA Sheets 14 and 15**.

- State Highway 8.
- Old Iron Bridge Road.
- McAughtries Road.
- Falston Road.
- The Twizel River Trail.
- Twizel and Ōhau Rivers.
- Lake Benmore and the Lake Benmore – Ōhau C Campground.
- Ben Ōhau – Greta Track.
- The Benmore Range Easement Track.

Additionally, it may be seen from Glencairn Station, a high-country station accessed off McAughtries Road, west of the Ōhau Canal and the site.

Regarding the above list, as the site is relatively flat and has a very limited amount of verticality (built form or trees), it is evident that the site is not overly prominent from these locations. In other words, the viewer focus is drawn to the distant mountains, rivers, lakes, or areas of visual interest i.e., the power stations.

The amenity values experienced when travelling along the public roads and within these private places are described below in Section 6 of this LAR.

4.4 Landscape Values of the Receiving Environment

The landscape values of the receiving environment (physical, perceptual and associative) form the baseline, along with the MDP policy provisions, for an assessment of landscape and visual effects. The landscape values of the receiving environment (including the site) stem from its past and present landscape attributes (landform, landcover and land use). The landscape values that are relevant to an assessment of the proposed solar farm are listed below.

[28] ibid, Page 21

[29] MDP NFL-O2.1.a.

The receiving environment, which forms part of the southern extent of the Mackenzie Basin subzone in which the site is situated has been identified as an ONL. Its distinct landscape character stems from its geological uniqueness as an intermontane basin, wildness, seasonal colouring, open character of the vast basin landscape enclosed by the encompassing mountain ranges, and glacial erratic / evidence of glaciation. These landscape attributes, contribute to the landscape values being:

- Its distinctive Mackenzie Country landscape character with its unique, natural, and visual qualities of the high-mountain basin environment.
- The high degree of ecological values that stem from the dryland habitats (herbs, shrubland and tussock grasslands) and the significant and 'at risk' native plant species within the Basin.
- Its openness and vastness and the long open views to the Southern Alps and other mountains encircling the basin. This stems from the vast landform scale of the basin, lack of trees and houses and other structures throughout the rural environment, with development limited and clustered in small areas and the undeveloped lakesides and SH8 roadside**.**
- The highly legible landscape features throughout the basin, including the moraines, roche moutonnée, valleys, terraces, fans, glacial erratic and outwash plains.
- The high degree of aesthetic and experiential values afforded by the highly legible, glacially derived basin and expansive sky, large scale of the landforms including the river valleys and enclosing mountains, the scenic outlook over Lake Pukaki and Lake Tekapo to the distant mountains including Aoraki Mt Cook, the vivid turquoise blue water colour of the glacial lakes, the golden tussock-laden slopes which surround the basin and transient values contributed by the strong seasonal changes and seasonal vegetation colour.
- The high degree of shared and recognised values that are evident through works by artists and writers inspired by the landscape, being nationally important for tourism, astronomy and the plentiful recreational opportunities that are provided.
- The high degree of cultural associated values, that stem from Kāi Tahu and papatipu rūnaka history and association with the land.
- The high associated values with the history and identity of the Waitaki hydro-electrical scheme including the Ōhau and Pukaki Canals, Lake Benmore and Twizel township.

At a local scale, the site adds to most of above-mentioned landscape values. However, the outwash plain that the site is situated on has been modified through cultivation for agricultural cropping and grazing stock e.g. the greening effect has occurred on site. Also, it contains a gravel quarry operation and a small part of the National Grid transmission line. Notwithstanding the farming modifications to landcover, a high degree of ecological values relating to drylands habitats are situated around the periphery of the terrace where significant and 'at risk' native plant species remain.. The existing development within the site is sparse, low lying or somewhat transparent (transmission towers) and continues to provide for long open views over the basin to the enclosing mountain ranges, including to Aoraki Mt Cook.

4.5 Mackenzie District Plan – Landscape Values

In addition to the above, MDP planning maps[30] outline the Sites of Natural Significance, Scenic Viewing Areas and Scenic Grassland Schedules and areas of Visual Vulnerability. The relevant parts of MPD are included below.

[30] https://mackenzie.isoplan.co.nz/review/property/8523219/0/99?_t=property

4.5.1 Sites of Natural Significance

Although the site is not identified as a site of Natural Significance, it lies immediately adjacent to the Ōhau River Sites of Natural Significance. Small areas extend into the site along its southwestern side.

The adjacent Ōhau River, and nearby Tekapo / Pukaki Rivers and Lake Benmore have been identified as Sites of Natural Significance. The below inserts describing these Sites of Natural Significance are from the District Plan.

"11 - Ōhau River (Tekapo, Pukaki, Ōhau riverbeds); SSWI (Lake Ruataniwha), (Ruataniwha Springs), (Ōhau River); WERI: Ruataniwha area includes an artificial lake with shallow margins planted with shrubs for common bird species and a spring fed stream. Parts of lake heavily used for recreation. Both areas used for cross-fostering of black stilt chicks. Springs provide excellent waterfowl habitat, with Australasian bittern, black stilt and other waders breeding. The Ōhau is a braided river of gravel flats and islands. Wrybill breeding area and black stilt feeding and wintering area."[31]

"*45 - Tekapo/Pukaki Rivers (Tekapo/Pukaki and Ōhau Riverbeds); SSWI (Tekapo River); (Pukaki River Ponds); WERI: Wide, braided alluvial riverbeds providing important habitat for waterfowl, waders, passerines and aquatic and terrestrial insect fauna. Breeding areas for black stilts, banded dotterels, black fronted terns, black backed gulls and wrybills. Native and introduced fish species occur in high numbers. A series of artificial ponds on margin of Pukaki River also provide a habitat for waterfowl and waders.*

46 - Lake Benmore - Largest artificial lake in New Zealand. Deltas of Ōhau, Twizel, Pukaki and Tekapo Rivers provide important wildlife habitat. The shallow margins, mudflats and willows are also important to waterbirds. The area is important as an overwintering and feeding area for black stilt and heavily utilised by many other waterbird species. Some islands are habitats for threatened lizards and plants."[32]

4.5.2 Areas of Significance to Māori - Waterbodies and Ancient Trails

The Ōhau River (SASM 46) and Twizel River (SASM 35) are identified as Areas of Significance to Māori - Waterbodies and Ancient Trails. The below inserts describing these Areas of Significance to Māori are from the MDP.

"The Ōhau River flows from Lake Ōhau into Lake Benmore in Te Manahuna/Mackenzie District. Prior to the creation of Lake Benmore in the 1960s as part of the Waitaki River hydroelectricity development, the Ōhau River flowed directly into the Waitaki River. It was part of the extensive network of traditional travel routes through Te Manahuna/Mackenzie District. In particular, the Ōhau River provided direct access from the Waitaki Valley to Lake Ōhau, which was an important kāinga mahika kai."

"Whakatipu is the Māori name for the Twizel River, which flows into the Ōhau River in Te Manahuna/Mackenzie District. Water is central to all Māori life. It is a taoka left by ancestors to provide and sustain life. Water plays a unique role in the traditional economy and cultural of Kāi Tahu. Without water no living thing, plant, fish, or animal can survive. Waterbodies such as the Whakatipu/Twizel River represent the blood vessels that supply nourishment to all living things. Waterbodies and the resources they support, determines the siting of kāika, identity and the

[31] Mackenzie District Plan. Appendix I – Sites of Natural Significance: Mackenzie District. Page 3.

[32] Mackenzie District Plan. Appendix I – Sites of Natural Significance: Mackenzie District. Page 7.

rhythm of lives. The traditional values and controls regarding water are included in the spiritual and practices (tikaka) of Ngā Rūnaka."

4.5.3 Scenic Viewing Areas and Scenic Grassland Schedules

The MDP planning maps identify the location, extent and describe the Scenic Viewing Areas and Scenic Grassland within the district.

The site is not located adjacent to or in proximity of a Scenic Viewing Area, therefore it does not interfere with the views gained from these identified areas. Also, the site is not within a Scenic Grassland Area.

4.5.4 Visual Vulnerability to Development

The visual vulnerability mapping in the MDP dates back to Mr Graham Densem's 2007 Landscape Study. This Landscape Study, at a Basin wide level identified the landscapes' ability to absorb (or not) development, primarily subdivisions and housing.[33]

The site forms part of the South Basin which has primarily been identified as having a high degree of visual vulnerability to development. There are two small areas of medium visual vulnerability within the northern and southern parts of the Site, refer to **GA Sheet 13**. The boundaries of these areas are poorly mapped as they do not align with topographical edges. However, it is clear that these two areas relate to land associated with the Ōhau River, beyond the proposed Solar Farm, therefore are not taken into consideration when considering the visual vulnerability of the terrace itself.

High Visual Vulnerability:

Areas of high visual vulnerability can be summarised as:

- *the wide basins;*
- *lakes and lakesides, including shorelines and lakeside hill and mountain flanks;*
- *raised mountain ranges, hills and isolated mountains;*
- *river corridors;*
- *extensive areas and intact sequences of native plant communities particularly areas of continuous natural grassland, low development levels and visual vividness.*

As part of the processing of Plan Change 13, Mr Densem prepared the "Intensification and Outstanding Natural Landscape: Landscape Management of the Mackenzie Basin in Light of Court Decisions"[34] evidence. Mr Densem's Evidence provides further assistance in understanding the areas and values (largely visual)[35] of identified as having high visual vulnerability and how to maintain the ONL values of these areas.

[33] The Mackenzie Basine Landscape: Character and Capacities. November 2007. Page 8. Para 1.11.

[34] Mackenzie District Plan Change 13. Intensification and Outstanding Natural Landscape: Landscape Management of the Mackenzie Basin in Light of Court Decisions. November 2015.

[35] Ibid. Page 1, final bullet point.

5 Potential Issues

The proposed solar farm will result in an approximate 565ha solar farm, which is smaller in area when compared with the existing development within Twizel township, being approximately 740ha in area.

It will consist of long low-lying rows of solar panels running north to south through the site and their associated buildings, switchyard inverters, water tanks, accessway and 33kv powerline within the Mackenzie Basin ONL, located between the Twizel and Ōhau Rivers, immediately northwest of Lake Benmore, Aotearoa New Zealand's largest manmade lake.

The potential adverse landscape and visual effects arising from the proposed solar farm may include the following:

- Effects on the distinctive Mackenzie Country landscape character with its unique, natural and visual qualities of the high mountain environment.
- Effects on the openness and vastness of the Mackenzie Basin, including the long open views.
- Effects on the legibility of the outwash plain and the sense of landform continuity.
- Effects on the degree of naturalness, including the areas with high ecological values.
- Effects on the high degree of aesthetic and experiential values, visual coherence – seasonal vegetation colour, dramatic views that reflect transient values (snow cover, vegetation colour, weather, low light, wildflowers/lupins, lake colours), in particular the scenic outlook from SH8.
- Effects on the shared and recognised (associative) values of the Mackenzie Basin.

6 Assessment of Landscape and Visual Effects

6.1 Assessment of Visibility and Visual Effects

Whether the proposal is considered appropriate is determined by what the MDP anticipates and the visual effects on the receiving environment and whether the landscape values attributed to this setting are retained or whether, if adversely affected, effects can be satisfactorily avoided, remedied or mitigated. In general, landscape values experienced visually include a scenic outlook (views over a rural landscape), the high legibility, visual coherence of the broader landscape and the views to the distant mountains.

"A visual effect is a kind of landscape effect. It is a consequence for landscape values as experienced in views. Visual effects are a subset of landscape effects. A visual assessment is one method to help understand landscape effects." [36] Regarding this, the actual and potential adverse effects on visual

[36] 'Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines'. Tuia Pita Ora New Zealand Institute of Landscape Architects, July 2022. Page 135.

amenity have been assessed first because they determine the key effects on perceptual landscape values and contribute to the landscape effects assessment overall conclusions.

The significance of the visual effect is influenced by the visibility, distance, duration of the view, the scale, nature and duration of the proposal, its overall visual prominence, the context in which it is seen, and the size of the viewing audience. Also, it must bear in mind that the NPS-REG and MDP REG Chapter anticipates an increased presence of renewable energy generation within the Mackenzie Basin.

As mentioned above, a desktop analysis and on-site investigations found that the proposed solar farm is potentially visible from the below public places or publicly accessible places.

- State Highway 8
- Old Iron Bridge Road
- McAughtries Road
- Falston Road
- Lake Benmore and the Lake Benmore – Ōhau C Campground
- The Twizel River Trail
- Ōhau River Four-Wheel
- Ben Ōhau – Greta Track
- The Benmore Range Easement Track

Also, it may be seen from Glencairn Station, a high-country station accessed off McAughtries Road, immediately west of the Ōhau Canal and the site.

Twenty-three panorama photographs representing the views towards the site from the surrounding public places are included in the **GA**. Additionally, ten visual simulations have been prepared by Virtual View Ltd, in accordance with best practice guidelines to illustrate what the proposed solar farm will look like, when seen from these representative viewpoints.

A Glint and Glare Analysis Study[37] has been prepared by ITP Renewables that has assessed the actual and potential glare on road users and other receptors that may result from the solar farm. The Glint and Glare Analysis Study assessed the proposed solar panels having a rest angle 0 degrees (parallel to ground) and a rest angle of 5 degrees.

The report concluded that with a rest angle of 0 degrees, "*8 observation points and 4 routes received green glare, while 3 road routes received yellow glare. Yellow glare has the potential to cause after image to observers, while green glare has low potential to cause after image.*" [38] Then with a rest angle of 5 degrees, the report concluded that "*This analysis did not identify any green or yellow glare effects, indicating that this approach provides effective mitigation*" [39].

[37] ITP Renewables. Glint and Glare Study – Final Report. Revision 3. November 2024.

[38] ibid. November 2024. Page 5.

[39] ibid. November 2024. Page 5.

The Applicant is proposing a condition of consent which will stipulate that the solar panels, at the start and end of the day will be no less than 5 degrees so no glare will be experienced from the surrounding public places.

6.1.1 State Highway 8 – Viewpoints 1 - 7

Viewpoint Location Photographs 1 – 7 on **GA Sheets 16 – 19** represent the views over the Mackenzie Basin towards the site and the proposed solar farm that are gained from SH8. Visual simulation from Viewpoint 3, 5 and 7 have been prepared to assist in understanding how visible the proposed solar farm will be from SH8.

These seven viewpoint locations representing the view from SH8 are from:

- Viewpoint 1 – Ruataniwha Road – 2.4kms from the solar farm.
- Viewpoint 2 – Ostler Road – 2.0kms from the solar farm.
- Viewpoint 3 – South of the entry into the site – 1.4kms from the solar farm
- Viewpoint 4 – Twizel Substation – 1.0kms from the solar farm
- Viewpoint 5 – Max Smith Drive – 1.3kms from the solar farm
- Viewpoint 6 – Lake Ruataniwha – 1.4kms from the solar farm
- Viewpoint 7 – Pukaki Canal Bridge – 1.5kms from the solar farm

A high degree of amenity is experienced when travelling north and south, through the Mackenzie Basin along SH8. This is due to the broad, open, and relatively uninterrupted sweeping views over the glacially fed lakes, including their memorable turquoise blue colour, the seasonal presence of flowering lupins, and the predominately dryland grass clad outwash plains contained by the distant ring of steep often snow-capped mountains. Whilst NFL-P6[40] is not relevant to this assessment, this policy provision recognises the importance of the amenity experienced from SH8 as it seeks to protect / maintain the outlook gained from.

When travelling along the highway between Lake Ruataniwha and Tekapo, the townships of Tekapo and Twizel, the Pukaki Airport, the hydro canals, dam infrastructure and substations, and the National Grid power lines reduce the naturalness of the Mackenzie Basin as perceived by a road user. Despite this, these elements remain subservient to the vastness and openness of the basin that is experienced.

Extent of Visibility and Visual Effects

The more distant half to two thirds of the solar farm is potentially seen when road users are travelling north and facing east from the 650m stretch of SH8 between Old Iron Bridge Road and the entry to the site, represented by **Viewpoint 3**. Also, the majority of the solar farm is potentially seen when road users are travelling north and facing east from the 500m stretch of SH8 between the Lake Ruataniwha Dam and Max Smith Drive, represented by **Viewpoints 5 and 7**. The solar farm is not seen from these two stretches of road by south bound road users because it will be outside their field of view.

[40] NFL-P6 - Views from State Highways and Tourist Roads

Apart from these two short stretches of SH8, the proposed solar farm will not be seen from the remainder of SH8 due to intervening topography, development, and / or vegetation.

When travelling north at 100km/h, equivalent to 28m/second along the state highway the solar farm will be briefly seen for a total of approximately 30 seconds, noting the view is terminated early as the solar farm is outside road users primary and peripheral fields of view the further north they travel.

When seen the solar farm will draw the eye as it is dark in colour and siting just above the outwash plain, being somewhat of a juxtaposition to the outwash plains lighter brown / green ground cover. This level of development will also reduce the perceived sense of naturalness over this outwash plain. Albeit a dryland landscape under / around the panels will be visually maintained, which contributes to the Basins aesthetic values.

These potential adverse visual effects will be reduced by the low-lying nature of the solar farm as the views over the outwash plain will not be reduced, with the willow trees along the Twizel River, the distant outwash plains and enclosing mountains still being seen. It will also be seen in the context of large-scale power generating infrastructure including the Twizel Substation, Lake Ruataniwha, the Ōhau Canal and the dam that road users cross to divert water into the canal, and the National Grid transmission lines, all of which assists with absorbing the proposal into the site.

Also, the views towards Lake Ruataniwha and Ben Ōhau, facing away from the site are photo worthy, and the entry to Twizel township also draws the eye. Therefore, whilst the solar farm is potentially seen from these two short stretches of road, there are a number of other impressive and visually interesting views that draw the eye. Therefore, it is likely that there will be a sizable number of road users that do not notice the proposal.

Due to the above, the proposed solar farm will have a **moderate degree** of adverse visual effects when seen from these two stretches of SH8.

6.1.2 Old Iron Bridge Road – Viewpoints 8 - 9

Old Iron Bridge Road is accessed from SH8 and provides access to the Twizel Substation and descends to a DOC facility dedicated to protecting and managing bird life, Ōhau River, and a small unnamed lake within the Ōhau River confines, popular for swimming, paddle boarding etc.

The two viewpoint locations representing the view from Old Iron Bridge Road are from:

- Viewpoint 8 – Twizel Substation – 1.5kms from the solar farm
- Viewpoint 9 - Ōhau River – 1.5kms from the solar farm

A moderate-high degree of amenity is experienced when travelling along Old Iron Bridge Road. Unlike most areas, the views from this road, in particular over the outwash plains are regularly interrupted by the substation and mature stands of exotics, and from the lower portion of road, they are confined to the Ōhau River and distant mountains. However, the overall sense of vastness and openness is still experienced, and the power generation infrastructure remains subservient to the overall grandeur of the basin.

Extent of Visibility and Visual Effects – Upper Terrace

When travelling north or south along the elevated stretch of Old Iron Bridge Road, a fleeting view towards the distant half of the solar farm will be gained within the periphery of the view from a short 400m stretch of road between the substation and the terrace edge.

When briefly seen, the solar farm and overhead powerlines will not appear out of place being seen in close proximity of the Twizel Substation, National Grid transmission lines and the Ōhau Canal.

Notably, the powerlines will be visually lost behind and amongst the substation infrastructure. Also, it will not interfere with views over the outwash plain to the surrounding mountains. The most noticeable visual difference will be the change to the landcover and its colouring as the darker colouring of the panels will be noticeable amongst the brown / green grass cover. Whilst visually different, the solar farm's sinuous ribbon appearance following the terraces natural landform pattern visually mitigates what could otherwise be a rectangular grid like appearance. Overall, the proposed solar farm will have a **low degree** of adverse visual effects when experienced from this stretch of road.

The land on the terrace alongside Old Iron Bridge Road is not within the site. Therefore, there is no opportunity for landscape mitigation to screen the distant half of the solar farm, nor is it necessary given the distance it is seen at.

Extent of Visibility and Visual Effects – Lower Terrace

The majority of the solar farm will be screened from the lower stretch of Old Iron Bridge Road (not including the gravel track alongside the Ōhau River). This is because the viewing angle coupled with the solar farm being set 50m from the terrace edge will screen most of it from view.. The small portions of panels that may be seen, may draw the eye as an additional piece of energy infrastructure within the landscape and will interfere with a small portion of the cohesive appearance of the escarpment. However, these panels will be seen behind three National Grid and three local grid power lines, alongside the Transpower Twizel Substation and in close proximity of the Lake Ruataniwha Dam. All of which provide visual context of this landscape containing large scale power generating infrastructure, which assists with absorbing the proposal into the site. Also, whilst the southern edge of the solar farm is seen, its low-profile design being 1.85m tall and horizontal nature means that it will not interfere with views of the adjacent river or to the surrounding mountains. Therefore, the proposal will have a **very low to low degree** of adverse effect on the amenity experienced from this stretch of road.

6.1.3 McAughtries Road – Viewpoints 10 – 20

Viewpoint Location Photographs 10 – 18 on **GA Sheets 21 – 26** represent the views over the Ōhau Canal towards the site and the proposed solar farm that are gained from McAughtries Road. Visual simulations from Viewpoints 11, 12, 14, 17, 18 and 20 have been prepared to assist in understanding how visible the proposed solar farm will be from this road.

These three viewpoint locations representing the view from McAughtries are from:

- Viewpoint 10 – NZMCA Campsite – 1.5kms from the solar farm.
- Viewpoint 11 – Eastern end under the powerlines – 1.3kms from the solar farm.
- Viewpoint 12 – Ōhau B Power Station – 900m from the solar farm.
- Viewpoint 13 – Ōhau B Power Station – facing away from the solar farm.
- Viewpoint 14 – Immediately east of Ōhau B Power Station – 700m from the solar farm.
- Viewpoint 15 – Opposite the Salmon Farm, western end – 900m from the solar farm.
- Viewpoint 16 – Opposite the Salmon Farm, eastern end – 1.1kms from the solar farm.
- Viewpoint 17 – Near the Glencairn Station Accessway – 1.3kms from the solar farm.
- Viewpoint 18 – Near the Glencairn Station Accessway – 1.3kms from the solar farm.
- Viewpoint 19 – Near the Ōhau C Power Station – 1.4kms from the solar farm.
- Viewpoint 20 – Ōhau C Power Station – 1.4kms from the solar farm.

McAughtries Road is not a public road as it is located within a private parcel of land associated with the Ōhau Canal, which is owned by Meridian Energy Ltd. However, this road appears to be public and is publicly accessible because it has a street sign and does not have any gates at its access point off SH8 to deter the public. Also, it is popular/well used providing the only vehicle access connection to Falstone Road (a public road), and Lake Benmore - Ōhau C, Benmore Views and Falston campgrounds, and access to multiple fishing locations along the Canal. Therefore, for the purpose of this assessment it is considered a public place.

A high degree of amenity is experienced when travelling along McAughtries Road, alongside the Ōhau Canal. This is due to the broad, open, and relatively uninterrupted views over the Mackenzie Basin, including the tranquil and reflective Ōhau Canal, albeit a man-made structure all of which is contained by the steep and enclosing mountain backdrop of the Grampian Mountains and Kirkliston Range.

When travelling along McAughtries Road, the nearby Twizel township, and the power generating structures including the hydro canal and the two large power stations, dam infrastructure and associated substations, and the National Grid transmission lines contribute to the power generating landscape character and reduce the perceived naturalness of the Mackenzie Basin. However, these elements remain subservient to the vastness and openness of the basin that is experienced. Also, the open and irrigated paddock land immediately west of McAughtries Road and the verdant green and intensively managed grass within the site does not contribute to dryland land cover and the perceptual values of the ONL.

Extent of Visibility and Visual Effects - Elevated Areas

The proposed solar farm will be most readily visible from the upper 2.2km stretch of McAughtries Road, northwest of the Ōhau B Power Station represented by **Viewpoints 10 – 12**, also from the 900m stretch of road near Ōhau C Power Station, represented by **Viewpoint 20**. This is because these two stretches of McAughtries Road are elevated above the site allowing clear views over parts of the solar farm in which the width / depth of the solar farm can be seen.

The expansiveness of the solar farm and the amount of built form it will introduce to the landscape will draw the eye and a road users' attention away from the wider basin. It will also reduce the perceived naturalness of the basin from these two stretches of road, which will adversely affect the visual amenity that road users currently experience. Albeit the naturalness within the site has already been reduced due to landcover modification by pasture.

The low-profile nature of the solar panels means that the entire solar farm, and the way in which topography and vegetation interrupt the view towards the site means that they will not be seen from any one vantage point, and in most instances will appear as a thin horizontal sliver of development on this outwash plain. When seen, the solar farm will draw the eye as it contrasts with the existing lighter brown / green ground cover due to its dark colour. This level of development will also reduce the perceived sense of naturalness over this outwash plain. Albeit a dryland landscape under / around the panels will be visually maintained, which contributes to the Basin's aesthetic values. Also, with reference to scale, the 10.6m tall transmission line appears very small and transparent from these distant locations, backdropped by the terrace itself or the willow trees. Most notably the proposed transmission line is dwarfed by the National Grid transmission line immediately beyond the Twizel River. Regarding this, the solar farm will not interfere with views over the site of the wider Mackenzie Basin and the surrounding mountains including Aoraki, to the point that the willow trees that line the Pukaki / Tekapo Rivers are seen.

The solar farm will only form part of the view from this road, and it will not interrupt the view to the south or west towards Lake Benmore or the Benmore Range. Also, the extent of the solar farm is well

contained to the outwash plain between the Ōhau and Twizel Rivers, and therefore it will not be perceived as expanding beyond the site, to the east, west and south.

At a wider scale, the proposal will be seen alongside the Ōhau Hydro Canal, its associated power stations dams and substations, an array of National Grid transmission lines extending across the basin and Lake Benmore, being Aotearoa New Zealand's largest man-made lake. These power generating elements, along with the associated knowledge of Mackenzie Basin being one of the sunniest locations in the country will contribute to the rationale of the solar farm in this location. This will assist with reducing the degree of potential adverse visual effects.

Overall, the proposed solar farm will have a **moderate to moderate-high degree** of adverse visual effects when seen from these two more elevated stretches of McAughtries Road.

Extent of Visibility and Visual Effects – Between Ōhau B and C Power Stations

The southern edge of the proposed solar farm is intermittently seen from the 6.5km lower stretch of McAughtries Road between the Ōhau B and Ōhau C Power Stations, as illustrated on the Visual Simulations for Viewpoints 14, 17 and 18. This is because the elevation of this stretch of road is slightly below or generally level with the site.

When intermittently seen from this stretch of McAughtries Road, road users will see the hard southern edge of the solar farm as they travel alongside it for approximately 6.5kms. Whilst they cannot see it in its entirety, they will be able to perceive its size and scale, along with the elevated views from both ends of this road. Therefore, the size and scale of the development and its adverse effects on the perceived naturalness of the terrace are the key factors in contributing to the adverse visual effects.

These adverse effects will, in part be mitigated by the power generating infrastructure that the solar farm will be seen alongside and the fact that the proposal does not impede on the open and expansive views gained over the basin and to the surrounding mountains, being a key contributor to the amenity gained.

Overall, the proposed solar farm will have a **low-moderate to moderate degree** of adverse visual effects when seen from this 6.5km stretch of McAughtries Road.

6.1.4 Falston Road – Viewpoints 21 and 22

Viewpoint Location Photographs 21 – 22 on **GA Sheets 27** represent the views over the top end of Lake Benmore towards the site and the proposed solar farm that are gained when travelling north along Falston Road. The upper stretch of road is relatively flat, therefore a visual simulation from Viewpoint Location 21 has been prepared to assist in understanding how visible the proposed solar farm will be from this road.

These two viewpoint locations represent the view from Falston Road are from:

- Viewpoint 21 - McAughtries Road and Falston Road Intersection – 2kms from the solar farm.
- Viewpoint 22 - 45 Degree Corner along Falston Road – 2.8kms from the solar farm.

Falston Road is accessed off the southern end of McAughtries Road and provides access to Benmore Views and Falston campgrounds, and Peak Valley Station.

A high degree of amenity is experienced when travelling north along Falston Road, alongside Lake Benmore. This is due to the lakeside setting, including the boating activities that take place on its surface and the sense of openness of the Mackenzie Basin provided by distant and enclosing mountain backdrop, including views to Aoraki Mount Cook.

Similar to when travelling along McAughtries Road, the nearby hydro canal, the Ōhau C Power Station and the National Grid transmission lines contribute to the power generating landscape in which a road user is located and reduce the perceived naturalness of the Mackenzie Basin. However, these elements remain subservient to the vastness and openness of the basin and the amenity provide by the lake.

Extent of Visibility and Visual Effects

The southern corner of the site is seen, with the majority of the site obscured by the landform containing the canal.

As illustrated on Visual Simulation 21, the very southern extent of the solar farm will be seen at approximately 2kms away. The southern edge of the 1.85m tall panels standing above the escarpment will be recognisable. The size and extent of the solar farm will not be perceived from this location as a road user is situated at a lower elevation to the site, which assists with mitigating the potential adverse effects. The solar farm will be seen to the immediate right of the Ōhau C substation, in the midground of the view, beyond the incised and vegetated Ōhau River corridor, backdropped by the distant mountains, including Aoraki, which is further to a viewer's right-hand side. Therefore, it will not be seen on a skyline, which reduces its potential prominence. Also, similar to all other viewpoints, the low-lying nature of the solar farm will not interfere / screen the views to the surrounding mountains, therefore it will adversely affect these views or reduce to the perceived vastness of the Mackenzie Basin.

As mentioned above, the potential visual effects resulting from seeing the proposal, can be mitigated by locating mitigation vegetation along the southern boundary of the site that can reach approximately 3m tall. This screening vegetation, when mature could screen the solar farm from view, and similarly not impact on the views to the surrounding mountains and would appear in keeping with the large swathes of mature vegetation at the northern edge of Lake Benmore and the confluence of the Ōhau and Tekapo Rivers.

Overall, the proposed solar farm will have a **low to low-moderate degree** of adverse visual effects when seen from Falston Road.

6.1.5 Lake Benmore and the Lake Benmore – Ōhau C Campground – Viewpoint 23

Viewpoint Photograph 23 on **GA Sheet 28** represents the view from McAughtries Road facing north, alongside the top end of Lake Benmore, between the Ōhau C Power Station and the Lake Benmore – Ōhau C Campground.

Similar to the surrounding areas, a high degree of visual amenity is gained from this stretch of road and from the surface of Lake Benmore. This is due to the lake's setting, enclosed by the open mountainsides to the east and the Benmore Range to the west, and the long ranging views to the Southern Alps and Aoraki to the north. The sense of openness of the Mackenzie Basin is perceived and contributes to a lake users' amenity by the view of the distant mountains (Southern Alps) to the north.

Extent of Visibility and Visual Effects

As illustrated on Viewpoint Photograph 23, and when compared with the nearby Viewpoint Photographs 21 and 22, the terrace and its surrounding escarpment faces that the solar farm will be located on are not seen from this stretch of road and Lake Benmore. This is due to intervening landform and vegetation. Therefore, the proposed solar farm will **not** result in adverse visual effects.

6.1.6 The Twizel River Trail

The Twizel River and the Twizel River Trail run in a northwest to southeast direction adjacent to the site's northeast boundary.

The river and its margins are physically intact, the landcover has been modified containing willow trees and other exotic vegetation, but overall retains a relatively high level of natural character. The Twizel River Trail enables access and enjoyment of the river itself as well as the banks and terraces of its margins. The river corridor is valued by locals and tourists alike for its natural amenity, recreational values (fly fishing, walking and mountain biking).

Extent of Visibility and Visual Effects – Western 3kms

The Twizel River Trail is accessed beside the accessway to the Twizel oxidation ponds, opposite Ruataniwha Road, refer to **Viewpoint 1**. It follows the true right-hand side of the river (same side as the site) and extends for 12kms south-east of SH8 to the confluence with the Ōhau River.

The trail was damaged during a large rain event in 2022, which has made it near on impassable approximately 4kms from the state highway. This is due to the Twizel River bursting its banks and the trail being submerged in knee deep water. Due to this, it is likely that fewer people currently use this trail. However, given the community aspirations for more mountain biking it is likely that this trail will be reinstated.

The initial 3kms of the trail vary between being located on the elevated terrace north of the site, and being located alongside the river itself, that is below and separated from the terrace by an approximately 3 - 4m high scarp face. The more distant parts of the solar farm will be seen from the approximately 1.5kms of trail on the elevated terrace, with the terrace edge screening the nearby parts of the solar farm. The solar farm will not be seen from the stretch of trail alongside the river, due to the escarpment face screening it from view.

When seen from the initial 1.5kms of trail from the terrace, the solar farm will be a noticeable, but distant element within the landscape, being seen some 5-6kms away or more. Its prominence will come from its dark colouring, contrasting with the existing light brown / green grass and overall size consisting of a large area of development. Subsequently, the solar farm will also detract from the current open character that is afforded by the pastoral use of the site and how this contributes to the openness of the South Basin area within the Mackenzie Basin. However, the solar panels will be low lying in the landscape, and therefore will not affect the long-range views towards Lake Benmore, or the surrounding mountains, including Aoraki towards the northeast. Also, the solar farm will not be perceived as impeding on a trail user because the visible parts of the solar farm are quite some distance away. Due to this, the proposed solar farm will have a **low degree** of adverse visual effects when seen from the initial, elevated, 1.5km stretch of the Twizel River Trail.

Mitigation vegetation that could screen the proposed solar farm from the initial (northern) stretch of the river trail would be required to be located along the terrace edge, east of the quarry within the site. A band of mitigation vegetation on this open outwash terrace would appear as contrived and out of place due to the way in which it would extend through a central portion of the terrace and would reduce the long ranging views currently gained. Therefore, this mitigation vegetation is not proposed as it would perceptually result in a higher degree of adverse effects than the proposal.

Extent of Visibility and Visual Effects – Central 7kms

The central 7kms of the trail, north of the site is mostly situated alongside the river, where the trail is located amongst the mature riverside vegetation, and below and separated from the terrace by the scarp face. Also, the solar farm is situated some 50 - 400m from the terrace edge, therefore the solar farm will not be seen on the terrace edge, and overall will not be seen, or at best will be difficult to

distinguish from this stretch of track. Therefore, the proposed solar farm will **not** result in adverse visual effects when seen from the majority of the Twizel River Trail, most notably, being the stretch alongside the river itself.

Extent of Visibility and Visual Effects – Eastern 2kms

The final 2kms of the trail is situated on the same terrace and alongside the solar farm in which it will be clearly seen. It will be a prominent element, that will interfere and detract from the views to the west over the narrowest part of the site towards the nearby Benmore Range. Due to the trail alignment, it will not impede on views to Lake Benmore, nor will it impact on the open views to the east over the South Basin area within the Mackenzie Basin towards the distant mountain range of the Southern Alps, including Aoraki. Due to this, and the likelihood that the number of trail users reduces on sections further along the trail, i.e. people not travelling the full length of track, the proposed solar farm will have a **low-moderate degree** of adverse visual effects.

6.1.7 Ōhau River Four-Wheel Drive Track

A gravel four-wheel drive track is located along the southwest side of the site, immediately northeast of the Ōhau River, on the same terrace as the solar farm. This four-wheel drive track provides access to the Ōhau River and Twizel River confluence. There is a river crossing at the confluence, where more capable vehicles can connect onto a wider network of trails that provide access alongside the Pukaki and Tekapo rivers. These gravel tracks are within land parcels owned by Meridian Energy, albeit they are accessible to the public. It is likely that it is a relatively small user group who use these tracks as they are not public places and are not advertised by DOC[41] as a place for four-wheel driving.

The amenity experienced when travelling along these four-wheel drive tracks is high and very similar to the amenity gained from McAughtries Road.

Extent of Visibility and Visual Effects – Western 2.8kms

The majority of the four-wheel drive track is located on the terrace and situated immediately south of the solar farm. The exception to this, is the western 2.8kms of track between Old Iron Bridge Road and the terrace. In this instance the four-wheel drive track is situated where it is at a lower elevation to the site where topography will screen the majority of the solar farm from view, because the panels are approximately 50m from the terrace edge.. The small amount of panels that may be seen will appear as an additional piece of energy infrastructure within the landscape, and will slightly interfere with the cohesive appearance of the escarpment, noting only a small amount of panels may be seen. In this regard, the panels will not appear out of place being seen in close proximity of the Twizel Substation, National Grid transmission lines and the Ōhau Canal. Also, they will not interfere with views of the adjacent river or to the surrounding mountains. Therefore, the proposal will have a **very low to low degree** of adverse effect on the amenity of four-wheel drive track users along this stretch of track.

Extent of Visibility and Visual Effects – Eastern 6kms

When traveling along the remaining 6kms of track adjacent to the site, the solar farm will be a noticeable element within the landscape, being seen within 20m or so of the track. It will be a prominent element, that will interfere and detract from the views to the east towards the mountains, including Aoraki. In doing so it will detract from the current open character that is afforded by the pastoral use of the site and how this contributes to the open space values of the South Basin area

[41] https://www.doc.govt.nz/globalassets/documents/parks-and-recreation/activity-finder/four-wheel-driving/4wd-in-mackenzie-waitaki.pdf

within the Mackenzie Basin. Due to this, the proposed solar farm will have a **moderate degree** of adverse visual effects when seen from the nearby stretch of the four-wheel drive track.

6.1.8 Ben Ōhau – Greta Track

The Greta Track is a 16km loop track providing access to the top of Ben Ōhau (1522masl), on the northern side of Lake Ōhau. This track is used by people walking (6-7 hours) and mountain biking (4-5 hours).[42] The below assessment from this track is based on desktop research and on-site investigations, but not first-hand experience of the trail.

There is no firm data on the number of people who walk or cycle this trail. However, when comparing it to other nearby trails, Strava heat map[43] illustrates it as being used half as much as the Alps to Ocean Trail, more similar to the number of people walking the Te Araroa Trail west of Lake Ōhau.

A high degree of amenity is experienced from the top of Ben Ōhau, including the ridgeline that the Greta Track extends along. This is due to the elevated and expansive 360^0 views gained over the South Basin within the Mackenzie Basin, including Twizel, Lake Ruataniwha, the canal system, Lake Ōhau and the open plains within the Waitaki District. All of which is visually enclosed by the distant Mountain Ranges.

Extent of Visibility and Visual Effects

The majority of the solar farm will be seen directly across SH8 from Twizel township and Lake Ruataniwha from the elevated stretch of the trail along the ridgeline, where clear and open views over the basin can be gained, noting that the southern end of the solar farm will be screened by the Benmore Range. Visibility of the southern end of the solar farm will be screened from view as a trail user ascends the track to the west toward the Ben Ōhau Peak, in which some foreground screening is also afforded by adjacent topography. Only the northern half of the solar farm is visible prior to going around the peak of Ben Ōhau. The solar farm is not seen once beyond this approximately 3km stretch of trail.

When seen at 14.3kms away, the solar farm will replace the green pasture within the site and appear as a large dark object / singular mass sitting on top of the landscape, well contained to the terrace by the dark green (not light brown / green) coloured vegetation lining both its side. The solar farm's size and extent will draw the eye when facing east, and will lie adjacent to the Twizel township, being the largest development area in the basin, and will form a relatively small part of the overall view gained to the southeast from this trail. Also, it will not impact on the views gained to the southwest or west.

Similar to most other surrounding public places, the proposal will also be seen alongside the hydro power scheme, and the National Grid transmission lines extending across the basin. These power generating elements, along with the associated knowledge of Mackenzie Basin being one of the sunniest locations in the country contributes to the rational of the solar farm in this location.

The key mitigation factors that reduce the potential degree of adverse visual effects resulting from the solar farm are the low number of people who gain this view, the distance in which the solar farm is seen, the solar farm forming a relatively small part of the overall view, it being seen from short stretch of the overall trail, and it being seen in conjunction with Twizel township and the large scale hydro power scheme.

[42] https://www.doc.govt.nz/parks-and-recreation/places-to-go/canterbury/places/ruataniwha-conservation-park/things-to-do/tracks/greta-track/

[43] https://www.strava.com/heatmap#12.19/169.95178/-44.24283/hot/all

Overall, the proposed solar farm will have a **low-moderate degree** of adverse visual effects when seen from this elevated 3km stretch of Greta Track situated on Ben Ōhau.

6.1.9 The Benmore Range Easement Track

The Benmore Range Easement Track, accessed south of the Wairepo Arm provides access up and along the Benmore Range ridgeline to 1756masl. The below assessment from this track is based on desktop research and on-site investigations, but not first-hand experience of the trail.

Information found on the DOC website describes this track as difficult, infrequently used and is not listed on any DOC brochures as an advertised walk to do. Information regarding the Benmore Range Easement Track appears relatively limited. Information on Strava and Strava Heat Map illustrates that fewer than 10 people have recorded their use of the trail, and further the trail does not show up as a 'Strava Segment'[44] being a common way to illustrate a popular track.

Similar to the elevated view from Ben Ōhau, a high degree of amenity is experienced from the elevated ridgeline along the Benmore Range. This is due to the elevated and expansive views gained over the majority of the Mackenzie Basin and part of the open plains within the Waitaki District, including Lake Ōhau, straight down Lake Pukaki to Aoraki - Mt Cook, Lake Tekapo, Lake Benmore, Twizel township and the majority of the canal system and its hydro power scheme, Tekapo, Pukaki, Twizel and Ōhau Rivers, and the outwash plains they separate. All of which is visually enclosed by the surrounding mountain ranges.

Extent of Visibility and Visual Effects

The proposed 565ha solar farm will be clearly seen at the toe of the mountainside and at a distance of approximately 4kms from a relatively small part of the elevated stretch of the Benmore Range Easement Track.

Similar to the view from Ben Ōhau, the solar farm will replace the view of the pasture grass within the site and appear as a large, dark object / singular mass on the landscape contained to the terrace's well defined edges. It will not result in a loss of dryland grass colour due to the current 'greener' pastoral activities that it will replace, noting there is some seasonal variation. However, unlike the distant views from the Greta Track, in this instance, as it is seen from closer proximity a person will understand the more nuanced details and layout of the solar farm.

The size and extent of built form will draw the eye when facing east and downwards in which it will detract from the open character of the Mackenzie Basin. However, its location in this view, being at the toe of the mountainside and given the scale of view assists in mitigating its potential effects. This is because a person will easily look over the solar farm when enjoying the more broad, open and distant views to the north and east over the basin.

When seen at the toe of the slope, the solar farm will be seen alongside the hydro power scheme, with the majority of the canals, dams and power generating infrastructure being seen from this elevated area. extending across the basin. When seeing the proposal alongside these power generating elements, along with the associated knowledge of Mackenzie Basin being one of the sunniest locations in the country will contribute to the rational of the solar farm in this location.

When taking in the overall outlook, from this track, the solar farm will not form part of the view when facing west or south towards Lake Ōhau, Benmore Dam and Otematata.

[44] www.strava.com

Overall, the proposed solar farm will have a **low-moderate to moderate degree** of adverse visual effects when seen from the elevated section along the Benmore Range Easement Track.

6.1.10 Glencairn Station

Glencairn Station is located immediately west of McAughtries Road and takes in the east facing slopes of the Benmore Range. The dwellings and farm base area are accessed off McAughtries Road, and are highlighted on Viewpoint Location Plan 2, refer to **GA Sheet 15**. Whilst the dwellings are close to Viewpoints 17 and 18, the dwellings are slightly elevated above the road by approximately 10 – 15m, therefore their outlook to the north, east and south is more akin to the slightly more elevated views from Ōhau B and C Power Stations. Noting that this is a private property and RMM have not been to this property to undertake this assessment.

Similar to McAughtries Road, the residents and farm workers at Glencairn Station gain a high degree of amenity from their dwellings. This is due to the broad, open, and relatively uninterrupted views over the Mackenzie Basin, including the tranquil and reflective Ōhau Canal, albeit a man-made structure all of which is contained by the steep and enclosing mountain backdrop of the Grampian Mountains and Kirkliston Range. As residents of a high-country station (not commonly on-sold), they will have a more intimate relationship with the landscape, i.e., likely to have higher associative values and will be sensitive to any changes to the landscape (positive or adverse) they are familiar with.

Extent of Visibility and Visual Effects

The majority of the proposed solar farm extending approximately 9km long northwest to southeast will be seen in the foreground of the northeast through to the southeast facing views gained from the dwellings and sheds within Glencairn Station. Subsequently, the overall expansiveness and the amount of built form that the solar farm will introduce will draw the eye, will be relatively prominent and will reduce the perceived naturalness of the basin, which will adversely affect the visual amenity that is currently gained.

The low-lying nature of the solar panels means that the solar farm will appear as a thin sliver of development sitting on top of the outwash plain enclosed and following the terraces natural curved edges, enclosed by the Ōhau and Twizel rivers. The dark colouring of the panels will visually contrast with the existing lighter brown / green ground cover of the wider basin. The 10.6m tall transmission line will appear as a very small and transparent structure, backdropped by the terrace itself or the willow trees, therefore, will not overtly contribute to the potential degree of adverse effects. Most notably the proposed transmission line is dwarfed by the National Grid transmission line immediately beyond the Twizel River. Regarding this, the solar farm will not interfere with views over the site of the wider Mackenzie Basin and the surrounding mountains including Aoraki, to the point that the willow trees that line the Pukaki / Tekapo Rivers are seen.

At a wider scale, the proposal will be seen alongside the Ōhau Hydro Canal, its associated power stations, dams and substations, an array of National Grid transmission lines extending across the Basin and Lake Benmore, being Aotearoa New Zealand's largest dammed lake. These power generating elements / characteristics, Twizel township's history (built to accommodate the Waitaki Hydro workers) contributes to the Basin's historic associative values and the high irradiance are all landscape attributes that contribute the Basin's associative values and subsequently assist with the perceptual rationale of a solar farm in this location. These power generating characteristics assist with reducing the degree of potential adverse visual effects.

Overall, the proposed solar farm will have a **moderate to moderate-high degree** of adverse visual effects when seen from Glencairn Station.

6.1.11 Summary of Visual Effects

Below is a summary of the above visual effects assessment resulting from the proposed solar farm:

- State Highway 8: **Moderate**
- Old Iron Bridge Road – Upper Terrace: **Low**
- Old Iron Bridge Road – Lower Terrace: **Very low to low**
- McAughtries Road – Elevated Areas: **Moderate to moderate-high**
- Mcaughtries Road – Between Ōhau B and C Power Stations: **Low-moderate to moderate**
- Falston Road: **Low to low-moderate**
- Lake Benmore and the Lake Benmore – Ōhau C Campground: **Nil**
- The Twizel River Trail – Western 3kms: **Low**
- The Twizel River Trail – Central 7kms: **Nil**
- The Twizel River Trail – Eastern 2kms: **Low-moderate**
- Ōhau River Four-Wheel Drive Track – Western 2.8kms: **Very low to low**
- Ōhau River Four-Wheel Drive Track – Eastern 6kms: **Moderate**
- Ben Ōhau - Greta Track: **Low-moderate**
- Benmore Range Easement Track: **Low-moderate to moderate**
- Glencairn Station: **Moderate to moderate-high**

In summary, the proposed solar farm is located within the southern part of the Mackenzie Basin where there it may will be seen from the nearby public roads, four-wheel drive tracks, the Twizel River Trail, and distant elevated vantage points from DOC tracks. It will form part of the views gained as people travel through this part of the Basin, in particular from McAughtries Road, being the private, yet publicly accessible road providing access to Lake Benmore and its adjacent Campgrounds. Therefore, whilst it will be seen, it will not be experienced for a long period of time.

Importantly, the solar farm will not be seen from nearby Twizel township, Lake Ruataniwha, Lake Benmore or its adjoining campgrounds. In saying this, whilst people will be aware of the proposed solar farm's location, it will not form a part of their view / outlook from the key locations that they choose to live, holiday and recreate.

6.2 Assessment of Landscape Effects

"A landscape effect is an outcome for a landscape value. … Change itself is not an effect: landscapes change constantly. It is the implications of change on landscape values that is relevant." [45]

6.2.1 Physical Effects

The proposed solar farm is situated over 565ha of land within the Mackenzie Basin and will inevitably introduce elements of built form within the site replacing the natural and rural character within the site with a semi-industrial and renewable power generation character that will adversely affect the Mackenzie Basin's ONL values.

[45] 'Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines'. Tuia Pita Ora New Zealand Institute of Landscape Architects, July 2022. Page 135.

The solar farm will be situated on the relatively flat topography of an outwash plain between the Ōhau and Twizel rivers. Earthworks associated with the solar farm will consist of creating new access tracks throughout the site, placing cables underground in which the landform and land cover will be immediately reinstated, levelling the ground where undulations may restrict the panels' ability to tilt east to west and pile driving the supporting pole structures of each solar table into the ground. Poles are not concreted in situ.

These changes to landform are limited to two distinct areas totalling approximately 8ha is area. Therefore, are very small, can be manipulated by ploughing / levelling and will subsequently have a very low degree of adverse effects on the legibility of the outwash plain. This is because the majority of the site is flat, therefore there are only few places where such works need to occur, and notably large parts of the site have been tilled and the overall landform with the site remains intact. When seen, the low-profile nature of the solar farm, being approximately 1.85m tall, will be in keeping with the outwash plain's flat topography. Therefore, the landform's legibility, consisting of a flat terrace surrounded by steep scarp faces will remain evident and intact from beyond the site. Additionally, if the solar farm becomes redundant, the solar table structures will be relatively easy to dismantle. The piles holding up each solar table can be pulled out of the ground because they are not concreted in situ and the site would return to rural land that could be used for rural activities. The concept of reversibility (not to be mistaken with a temporary effect) is a key aspect contributing to the reduction of landscape effects.

The solar farm, as its name suggests, is a method of farming a readily available resource within the Mackenzie Basin being the 5th sunniest place within Aotearoa New Zealand. Much like the current agricultural land use of the site, it will specialise in its task. Similar to a farm and the way paddocks and stock-lanes are carefully arranged, the solar farm has been arranged to optimise the best yield from the site. Whilst visually different, the solar farm's sinuous ribbon appearance following the terrace's natural landform pattern visually mitigates what could otherwise be a rectangular grid like appearance, noting that the majority of the viewing audiences will see the solar farm from more than 1 - 2kms away.

The proposal, along with the management plans that have been be prepared by Wildlands will focus on the management of activities within the sites of natural significance, areas containing significant indigenous vegetation, in particular along the terrace edges and natural inland wetlands within the site, outside the footprint of the solar farm, as recommended in the Wildlands Report[46], refer to **GA Sheets 4 and 9**. As mentioned above, it is clearly evident that the key ecological habitats are situated on the periphery of the terrace, where the landform changes and microclimates occur, and where the agricultural land use has been less intensive with less disturbance to these habitats.

Wildlands have advised that the solar farm layout should avoid development in the identified areas of ecological value, including the previously recommended landscape planting. This has been done. It is important to recognise that the proposal will maintain the dryland habitats that these 'at risk' native plants are situated resulting in better protection than the status quo. This is because permitted farming activities can result in the further degradation of these dryland habitats. The Management Plans that Wildlands have prepared outline specific ways that the development will be undertaken to avoid and mitigate potential adverse effects on the ecological values within the site. They also outline ecological restoration / habitat enhancement that is intended to positively contribute to the ecological values within the site and / or offset any adverse ecological effects. Subsequently, the ecological restoration activities will positively contribute to the landscape's physical values.

[46] Wildland Consultants. (2026). *Assessment of potential ecological effects of the proposed Nova Energy Solar Farm near Twizel*. Wildland Consultants Contract Report No. 6620a. Prepared for Nova Energy. 82pp.

One of the key characteristics of the Mackenzie Basin's rural landscapes is its open natural basin character, encircled by steep mountain ranges. The very low rainfall has resulted in extensive drylands, affording a high visual coherence with memorable and dramatic scenic values. The lack of built form is also a notable quality of the Basin, which is mostly clustered in discreet areas and therefore conveys high natural character. This is in part due to the prevalence of large farms / stations, landholdings and the defined Farm Base Areas within the MDP also adding a remote quality to the experience of traversing the Basin.

Within the receiving environment, the amount of built form will reduce the open character of the 'South Basin'[47] area, which is approximately 21,500ha in area. The 565ha solar farm will be situated on approximately 2.6% of the land. Even though the solar farm is large in area, it will form a relatively small part of the receiving environment. Also, the reduction in open character will not impact on the wider basin as the solar farm is proposed to be located within an area confined by two rivers and the associated topography of these features will provide some visual mitigation. Also, as assessed above, the solar farm will only be seen from a small viewing catchment based around the site, therefore it will not adversely affect the perceived open space from most public places beyond 5kms away, including the state highway.

The MDP clearly recognises that there is ahigh amount of interest for renewable energy development within the Mackenzie Basin due to the high amount of irradiance, particularly in Te Manahuna / the Mackenzie Basin and the functional / operational need to potentially to co-locate with the large-scale hydro-electric power stations that contributes to the Basin's power generating landscape characteristics. Whilst recognising this type of development, there is an expectancy of an increase in renewables within the Basin as to give effect to the NPS-REG. As alluded to above, a key constraint to the location of solar farms is proximity to and the ability to connect to the National Grid. This means that when analysing the location of large areas of flat land and the location of the National Grid transmission lines on **GA Sheet 10** solar farms are most likely to be located within the southern part of the basin.

As mentioned, the solar farm has been located in close proximity and will connect into the Twizel Substation, a key piece of infrastructure for this development, and is situated within close proximity of Twizel township and the Ōhau B and C power stations. At a district wide scale, this is the most developed part of the Mackenzie Basin. Therefore, whilst the proposed solar farm is within the broader ONL of the Mackenzie Basin, the existing surrounding development assists with absorbing it into the receiving environment and the wider Mackenzie Basin. In contrast, this may not be the case within other parts of the basin such as east of and between Lake Pukaki, SH8, Tekapo River and the Rollesby Range (refer to **GA Sheet 10**) which do not contain large scale power generating structures.

6.2.2 Associative Effects

The Waitaki Hydro Scheme is the largest hydro power scheme in Aotearoa New Zealand which contributes to the associative values and character of the Mackenzie Basin.

The solar farm will introduce another renewable energy power source to this landscape. Regarding these associative values and the solar farm being situated in close proximity to the Ōhau Canal, Ōhau B and C Power Stations and alongside Lake Benmore, being the largest manmade lake in Aotearoa New Zealand. Therefore, in this instance, the co-locating of the solar farm within a concentrated part of the existing energy infrastructure within the basin assists in reducing its potential adverse landscape effects.

[47] Graham Densem Landscape Architects Ltd. November 2007. The Mackenzie Basin Landscape Study: Character and Capacities. Map 4 - Page 16.

As mentioned above, the Mackenzie Basin is one of the sunniest places in the country, with over 2,500 hours of bright sunshine every year. Due to the basin's sunny nature and long summer days, a solar farm will be in keeping with this natural resource and these associative values.

At a wider scale, the solar farm will assist in retaining the associated values of the dammed Tekapo, Pukaki, Ōhau, Ruataniwha and Benmore Lakes and their recreational uses. This is because the solar farm will contribute a daytime power source, potentially relieving demand pressure on the hydro scheme. In doing so, the lake levels may be maintained at a higher level for longer[48] especially during the dry summer and winter months and during droughts, which are predicted to become more frequent as our climate continues to change. In doing so, the solar farm may assist with maintaining the amenity values contributed by high lake levels.

The Manawhenua Report has identified that Papatipu rūnaka are concerned that the proposal along with all other development that has taken place within the Mackenzie Basin will erode the ability of whānau to recognise the landscape of their tīpuna. Whilst they recognise this, Papatipu Rūnaka have discussed potential restoration and matauranga Māori projects with the Applicant that will assist with maintaining the mauri of the land.

6.2.3 Perceptual Effects

As outlined in the MDP, the site is within an area of high visual vulnerability, which indicates a low capacity to absorb change. This means that any changes to the character of the landscape are likely to be easily noticed and not easily mitigated.

The visibility and resulting adverse visual effects of the proposed solar farm has been assessed above in Section 6.1. In summary, the proposed solar farm will be seen from a relatively small viewing catchment all situated near the site, except for the top of Ben Ōhau.

The potential adverse effects will be of a 'more than minor degree' (but not significant) from SH8, McAughtries Road, the Ōhau River Four-Wheel Drive Track, the top of Ben Ōhau and Benmore Range, and Glencairn Station. From all other locations, the proposal will have a 'minor' or 'less than minor' degree of adverse visual effects. Also, importantly, the solar farm will not be seen from nearby Twizel township, Lake Ruataniwha, Lake Benmore or its adjoining campgrounds. Therefore, whilst people will be aware of the proposed solar farms location, it will not form a part of their outlook from the key locations that they choose to live, holiday and recreate.

Unlike a dwelling or residential development, large portions of the solar farm, in particular the solar panels, will be seen as sitting lightly and just above ground level at 1.85m tall. Within this expansive landscape this will appear very low in height. When visible, this is highlighted by a person's ability to see across the solar farm to the existing willow trees and other exotic vegetation lining the Twizel River, located on the far side of the outwash plain and views to the surrounding mountains will not be obstructed. Therefore, the solar farm does not interfere with the open and long ranging views over the Mackenzie Basin.

The visible changes arising from the solar farm will inevitably result in a change of character within the site, from that of an open rural pastoral character to a predominately semi-industrial and renewable power generation character, with underlying pastoral use that will continue to contribute to the rural character. In addition to the open character of the site, the site's aesthetic values also stem from its relatively flat topography, and the steep scarp faces that dramatically descend to the

[48] This point is to be read on face value and does not hypothesis the need to alter the minimum lake level limits.

adjacent rivers. Because the solar farm sits so low on the site, the visual coherence of this landform will remain intact.

Also, the solar farm will be seen as directly associated with power generation in the fifth sunniest location in Aotearoa New Zealand[49]. Therefore, the power generation aspect of the solar farm will be perceived as in keeping with the large-scale hydro canals and the irradiance of the basin.

Overall, the proposed solar farm will be seen from a relatively small viewing catchment all situated near the site, except for the top of Ben Ōhau / the Greta Track. The potential adverse effects will be of a 'more than minor degree', but not significant from SH8, McAughtries Road, the Ōhau River Four-Wheel Drive Track, the top of the Benmore Range, and Glencairn Station. From all other locations, potential adverse effects will be 'minor' or 'less than minor'.

6.2.4 Summary of Landscape Effects

In summary, the proposed solar farm by itself, due to its size and scale will have a **moderate to moderate-high** degree of adverse landscape effects on the Mackenzie Basin's outstanding natural landscape values. These adverse landscape effects will be slightly reduced by the ecological enhancement activities recommended by Wildlands.

Overall, the proposal will have a **low-moderate to moderate degree** of adverse landscape effects on the Mackenzie Basin's outstanding landscape values.

7 Conclusion

A 565ha solar farm is proposed to be located within Lot 3 DP422901. The site is approximately 868ha in area, is accessed via a private gravel road off SH8, and located between the Twizel and Ōhau Rivers, immediately north of the confluence of these two rivers.

The solar farm will introduce another renewable energy power source to this landscape. At a site-specific level, the solar farm will be located within close proximity to a concentrated area of the existing hydro energy infrastructure. This co-locating will assist in reducing the solar farm's potential adverse landscape effects. Additionally, at a national level, the Mackenzie Basin is one of the sunniest places in the country. Due to this, a solar farm will be in keeping with this natural resource and these associative values.

Positive landscape effects resulting from the solar farm include:

- Remedying the greening effect within the site that has resulted from the current agricultural land use activities.
- Enhancing the ecological values within the site and avoiding or mitigating any other adverse ecological effects by maintaining the dryland habitats containing 'at risk' native plants around the periphery of the terrace. Also, by avoiding and being well setback from wetlands and other areas of significant vegetation.

[49] https://niwa.co.nz/sites/niwa.co.nz/files/2022_Annual_Climate_Summary_FINAL_v3.pdf

- Assisting with maintaining the aesthetic and associated values of the hydro lakes including Tekapo, Pukaki, Ōhau, Ruataniwha and Benmore Lakes and their recreational uses.

Regarding visibility and visual effects, the proposed solar farm will be seen from a relatively small viewing catchment all situated near the site, being SH8, Old Iron Bridge Road, McAughtries Road, Falston Road, The Twizel River Trail, the Ōhau River four-wheel drive track, the Benmore Range and Glencairn Station. The exception to this is the top of the Greta Track on Ben Ōhau.

The proposed solar farm will sit relatively lightly on the site meaning that it does not alter the landform of the outwash plain, therefore maintaining its legibility in part. This means that the outwash patterns discernible on the land will remain, albeit these patterns will be obscured by the solar panels, therefore affecting the degree of legibility in that regard. At a slightly wider scale, the legibility of the wider outwash plain landform and its scarp faces will remain intact. The size and scale of built form will result in adverse effects on the open character of the South Basin, which forms part of the Mackenzie Basin and contributes to its unique and outstanding character. However, the low-profile nature of the solar farm components will not interfere with or obscure long-distance views to the mountain ranges enclosing the basin.

Overall, the proposal will have a **low-moderate to moderate degree** of adverse landscape effects on the Mackenzie Basin's outstanding landscape values.

8 Appendix 1: The Relevant Policy Provisions

8.1 Mackenzie District Plan

8.1.1 Strategic Direction Chapter: NE – Natural Environment

NE-O1 Natural Environment

The values of the natural environment, including those that make the District unique, contribute to its character, identity and well-being, or have significant or outstanding intrinsic values, are recognised and provided for, and where appropriate protected and enhanced. This includes, but is not limited to, values associated with the following important natural resources:

1. mahika kai resources;
2. night sky darkness;
3. outstanding natural features and landscapes;
4. significant indigenous biodiversity; and

8.1.2 *5. water bodies and their margins.*Renewable Electricity Generation Chapter

REG-O1 - General Output

The output from renewable electricity generation activities in the District for national, regional and local use is increased to support achievement of the New Zealand Government's national target for renewable electricity generation.

REG-O2 Adverse Effects

The adverse effects of renewable electricity generation activities are managed.

REG-P1 Benefits

Recognise and provide for the national, regional, and local benefits of renewable electricity generation activities and assets, including avoiding, reducing, or displacing greenhouse gas emissions.

REG-P6 - Other Renewable Electricity Generation Activities – Within areas of significant indigenous vegetation and significant habitats of indigenous fauna, ONLs, ONFs, riparian areas and SASM or on highly productive land

Provide for renewable electricity generation activities (not otherwise specified in REG-P3 and REG-P4) within areas of significant indigenous vegetation and significant habitats of indigenous fauna, Outstanding Natural Landscapes, Outstanding Natural Features, Sites and Areas of Significance to Māori, riparian areas, or within area of Highly Productive Land, where:

1. *there is a functional need or operational need for the activity to be in that location;*
2. *adverse effects on the values of the area are avoided as far as practicable, including through site, route or method selection, design measures and other management methods;*
3. *adverse effects on the values of the area that cannot be avoided are remedied or mitigated, where practicable;*
4. *other adverse effects (that do not affect the values of the area) are avoided, remedied or mitigated as far as practicable;*

5. *regard is had to any proposed offsetting measures or environmental compensation (including considering Policy 4 in Section 19 and Appendix Z), where there are significant residual adverse effects that cannot be avoided, remedied or mitigated; and*

6. *particular regard is had to the practical constraints associated with renewable electricity generation activities, including the:*
   a. location and efficient use of existing electricity generation, transmission and distribution infrastructure; and
   b. the need to locate the renewable electricity generation activity where the renewable energy resource is located.

7. *following application of 1-6 above, consideration is given to whether the benefits of the activity outweigh any significant residual adverse effects on the values of the area*