

FAST-TRACK APPROVALS ACT 2024

APPLICATION FOR RESOURCE CONSENTS AND WILDLIFE ACT APPROVALS

Twizel Solar Plant, Lot 3 DP 422901,
State Highway 8

for Nova Energy

Rev B - 05/06/2026

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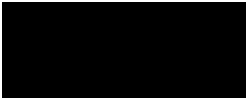

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EXECUTIVE SUMMARY

The purpose of this application is to seek resource consents and Wildlife Act Approvals from the Environmental Protection Authority (EPA) on behalf of the applicant, Nova Energy Limited (Nova), for the installation and operation of a solar farm on the 868 ha site legally described as Lot 3 DP 422901 located on State Highway 8, Twizel (the Project).

The Project will generate up to 300 megawatts (MW) of renewable electricity which will connect to the National Grid via the Transpower Twizel Substation. The Project will create enough electricity to power approximately 75,000 homes annually. The development is proposed as a single-stage construction project. The existing (dry-stock) farming activities occurring on site are intended to continue during operation of the solar project, albeit at a reduced scale.

The Project is strategically located on a site with a number of characteristics that make it suitable for large scale solar development including high solar irradiation, close proximity to the National Grid, flat topography and low productive land class values.

Nova made a referral application for the Project in April 2025 under the Fast-track Approvals Act 2024 (FTAA). The Minister for Infrastructure notified Nova on 07 August 2025 that the referral application had been accepted and Nova was eligible to submit a substantive application for the Project under the FTAA.

The application seeks resource consents under the Mackenzie District Plan and the Canterbury Regional Plan to undertake the following activities:

- a. Land use consents for the project construction, operation and maintenance of the solar farm activity;
- b. Stormwater discharge consents (construction and operation); and
- c. Land use consent for undertaking earthworks over an aquifer.

The application also seeks Wildlife Act Approvals to hold, catch, handle or release lizards and to handle and hold Threatened and At Risk avifauna as part of the development of the Project.

Consistency with the Purpose of the FTAA

The purpose of the Act is to facilitate the delivery of infrastructure and development projects with significant regional or national benefits. In accepting the referral application, the Minister of Infrastructure has acknowledged that the Project is an infrastructure project that would have significant regional or national benefits. The benefits of the Project include the delivery of renewable electricity generation which could power approximately 75,000 households annually and the creation of approximately 315 jobs during peak construction. The Project is entirely consistent with the purpose of the Act and does not involve any ineligible or competing activities.

Summary Assessment of the Regulatory Framework and Engagement

Along with the Project's alignment with the purpose of the FTAA, the Project also directly aligns with the purpose of the Climate Change Response (Zero Carbon) Amendment Act 2019 (CCRAA), and New Zealand's second emissions reduction plan 'Our Journey Towards Net Zero', to contribute to the global effort under the Paris Agreement to limit the global average temperature increase to 1.5° Celsius above pre-industrial levels, and to allow New Zealand to prepare for, and adapt to, the effects of climate change.

The Project is consistent with all relevant National Policy Statements:

- National Policy Statement for Renewable Energy Generation (NPSREG): The Project directly supports the overall objective of the NPSREG to enable the safe, efficient expansion of renewable electricity generation to deliver national benefits, strengthen energy security, support community wellbeing, and help meet New Zealand's emissions targets while managing adverse effects;
- National Policy Statement for Freshwater Management (NPSFM): The Project avoids impacts on freshwater ecological values and will give effect to Te Mana o te Wai;
- National Policy Statement for Natural Hazards (NPSNH): The Project manages natural hazard risk by using a risk-based proportionate approach; and
- National Policy Statement for Electricity Networks: The Project recognises the presence and operational requirements of the elements of the National Grid that traverse the application site and avoids incompatible activities within the transmission corridor.

The Project is considered to be consistent with all other relevant provisions of the regulatory framework noting the following:

- Relevant objectives and policies in the Mackenzie District Plan anticipate the development of renewable electricity generation activities; and
- The Canterbury Regional Policy Statement (CRPS) recognises the Project as regionally significant infrastructure and directly promotes the use and development of renewable electricity generation.

The Project is considered to be consistent with the outcomes sought under the following relevant Treaty Legislation documents and iwi management plans:

- Ngāi Tahu Claims Settlement Act 1998
- Ngāi Tahu 2025 – Iwi Management Plan
- Waitaki Iwi Management Plan 2019
- Iwi Management Plan of Kati Huirapa 1992

Nova has proactively engaged with a number of stakeholders including Mana Whenua, Mackenzie District Council and Environment Canterbury, the Department of Conservation, Transpower, Meridian Energy, the New Zealand Transport Agency / Waka Kotahi, Fire and Emergency New Zealand and surrounding landowners which has informed the Project. Nova is committed to ongoing engagement and building mutually positive long-term relationships beyond the consent process.

Summary Assessment of Environmental Effects

The Project will have significant and direct positive effects and benefits in providing for the development of new regionally or nationally significant infrastructure powering up to 75,000 households annually, increasing the supply of renewable electricity, creating up to 315 jobs during construction and supporting climate change mitigation.

Any actual and potential adverse effects on the environment are considered to be appropriately avoided, remedied or mitigated for the following reasons:

- The nature and scale of the Project will transform the character of the site from a rural landscape to a landscape containing energy infrastructure. Renewable electricity generation is, however, an existing element of the character within this part of the Mackenzie Basin, is anticipated in the Mackenzie District Plan and landscape effects will be avoided, remedied or mitigated as far as practicable. The solar plant will maintain dry stock farming on the site retaining an element of primary production;
- The Project will not result in any significant adverse landscape and visual effects;
- Potential nuisance-related amenity effects are able to be suitably managed during both construction and operation phases;
- Areas of indigenous values have been identified, largely around the margins of the site, and the Project has been designed to avoid these areas with buffers maintained around them. Conditions of consent and ecological management plans, including monitoring and adaptive management measures, are proposed to manage any residual effects on ecological values;
- A number of positive biodiversity benefits will result through implementation of ecology conditions and management plans providing for lizard and terrestrial invertebrate habitat enhancement and long-term biosecurity and pest management across the site;
- Nova will adhere to a solar panel rest angle of no less than 5 degrees which will avoid any adverse effects of glint and glare from the panels;
- Project infrastructure design, natural hazard mitigation works and operational controls will suitably manage natural hazard risk related to flooding and geohazards, resulting in generally low risk across the site using the NPSNH matrix;
- Potential adverse effects resulting from hydro inundation, erosion and sediment runoff and stormwater runoff will be appropriately managed through design controls and adherence to certified management plans;
- Potential risk to human health associated with electric and magnetic fields (EMFs) is low with all electrical equipment to be designed to New Zealand standards;
- An archaeological assessment has found that there is a low risk of encountering archaeological features during construction. The potential for archaeological discovery during site development works will be suitably managed through adherence to an Archaeological Management Plan and Discovery Protocol;
- Nova has proactively engaged with mana whenua. A Manawhenua report has been prepared which has informed the Project, including mitigation measures and proposed consent conditions which provide for mana whenua to exercise kaitiakitanga;
- Safe and efficient access will be provided with the proposed vehicle access point to State Highway 8 (SH 8) to meet NZ Transport Agency (Waka Kotahi) design standards. Operational movements will be infrequent and construction traffic will be managed through a traffic management plan; and
- The Project will not result in any significant cumulative effects on the surrounding environment.

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1 INTRODUCTION

1.1 Purpose

The purpose of this application is to obtain resource consents and Wildlife Act Approvals from the Environmental Protection Authority (the EPA) under the Fast-track Approvals Act 2024 (FTAA) or 'the Act'. The applicant, Nova Energy Ltd (Nova), seeks approvals for the installation and operation of a solar plant on the existing 868 ha dry stock farm site on the property legally described as Lot 3 DP 422901, located on State Highway 8, Twizel.

The Project comprises the construction, commissioning and operation of the solar plant, associated infrastructure and connection to the National Grid. The Project will generate up to 300 megawatts (MW) of renewable electricity, connected to the 220 kilovolt (kV) National Grid via power transformers and associated equipment located at the Transpower Twizel Substation. Power transformers and associated equipment within the Twizel Substation will be addressed separately and does not form part of this application.

The 300 MW development is proposed in one stage. The proposal is described in detail in section 4 of this report. It is expected that the Project will be constructed and commissioned over an approximate three-year period. Once the site is commissioned the life cycle is expected to be at least 30 years. Nova seeks a 10-year lapse period and regional consents with 35-year terms.

1.2 Project Context - Transitioning to a Low Emissions Economy

On 13 November 2019 New Zealand became the first country in the world to make a legally binding commitment to limit global warming to within 1.5 degrees Celsius of pre-industrial levels by enacting the Climate Change Response (Zero Carbon) Amendment Act 2019. New Zealand has potential to achieve the set emission reduction goals as it already has over 80 per cent renewable electricity generation and is likely to have more by 2035. The rest of the country's energy needs are however met from a mix of both domestic and imported fossil fuels. *He Pou a Rangī the Climate Change Commission - Ināia tonu nei: a low emissions future for Aotearoa Report 2021* represents the Commission's final advice to the government. The report states that (our **emphasis**):

*Displacing fossil fuels with electricity is an essential part of the transition **and will require major expansion of the electricity system**. Wind, geothermal and solar power can meet the expected growth in demand from electrifying transport and heat to 2050 while keeping electricity affordable¹.*

The report also recommends that Aotearoa needs to maximise the use of electricity as a low emissions fuel and that more non-renewable generation such as solar will need to be built to further reduce the emissions of the electricity system. *Our Journey Towards Net Zero*, New Zealand's second emissions reduction plan, contains eight policies. Electrify New Zealand – Enable more renewable energy projects – is one of the eight policies within the reduction plan.

MBIE's latest projections from July 2024 anticipate that, in the most likely scenario, total electricity demand will increase by 57 per cent from 2023 to 2050 as a result of population and economic growth and the shift towards electrification. This will require a very significant increase in electricity

¹ He Pou a Rangī the Climate Change Commission | Ināia tonu nei: a low emissions future for Aotearoa, Page 93

generation capacity. MBIE predicts that solar generation capacity will need to increase more than 11-fold by 2050, requiring the development of many more solar farms.² Regions with high solar resources, available land, and proximity to existing transmission infrastructure, will play an important role in enabling this expansion.

The Project directly supports New Zealand's transition to a low emissions economy, providing for renewable energy generation and expansion of the electricity system.

1.3 Details of Authorised Person and Property Details

1.3.1 The Applicant

Nova Energy Ltd
c/- BTW Company Limited
PO Box 551
New Plymouth

Attention: Trent Lynch / Cam Twigley
[REDACTED]

Nova Energy Limited, a wholly owned subsidiary of Todd Corporation (Todd), owns and operates electricity generation assets across New Zealand. Nova is investing in renewable solar power generation to contribute to New Zealand's present and future electricity demand increases and to provide an affordable and reliable energy supply to all New Zealanders as part of the transition to a lower emissions economy.

1.3.2 Application Site Summary

Table 1.1: Application Site Summary

Owner	NGL Farms Limited
Legal Descriptions:	Lot 3 DP 422901
Records of Title:	489342
Site Area:	868.11932 hectares
Valuation ID:	0739103600
Zone:	General Rural Zone
MDP Special Notations:	Sites of Natural Significance (Ōhau River), Sites of Significance to Māori (Whakatipu/Twizel River SASM35 and Ōhau River SASM46), Outstanding Natural Landscape (Te Manahuna / Mackenzie Basin Subzone), Transmission Lines (220kV National Grid), Flight Protection Area (Pukaki), Noise Control Boundary Overlay (State Highways), Areas of Visual Vulnerability (High), Areas of Visual Vulnerability (Medium), Flood Hazard Assessment Overlay, Liquefaction Assessment Overlay, Hydro Inundation Hazard Overlay

² MBIE, Electricity Demand and Generation Scenarios: Results Summary, July 2024.

1.3.3 Record of Title

The application site is held in one Record of Title summarised in Table 1.2 below. None of the listed interests prevent the proposal from proceeding. A copy of the Record of Title and relevant legal interests registered on the title is provided in attachment 3.1. The site is currently in the ownership of NGL Farms Ltd, a subsidiary of The Todd Corporation.

Table 1.2: Summary of Record of Title

Title	Date Issued	Legal Description	Area (ha)	Notable Interests
489342	20 November 2014	Lot 3 DP 422901	868.1193	<ul style="list-style-type: none"> ▪ Gazette Notice 817132 – State Highway 8 Limited Access Road Declaration <ul style="list-style-type: none"> ○ Declares part of State Highway 8 (Twizel–Omarama Road) to be a limited access road under the Public Works Amendment Act 1963. ○ Restricts the creation of new vehicle access points to the state highway without approval from the relevant road authority. ▪ Gazette Notice 6023274.5 – Land Declared Held for Conservation Purposes <ul style="list-style-type: none"> ○ Declares specified Crown land parcels in the Lake Ruataniwha area as being held for conservation purposes under section 7(1) of the Conservation Act 1987. ○ A statutory interest reflecting conservation status of related land; it does not of itself authorise or prohibit activities on the subject freehold land but informs the broader statutory context. ▪ Subject to Part IVA Conservation Act 1987 <ul style="list-style-type: none"> ○ Makes the land subject to conservation management provisions arising from Crown pastoral tenure review outcomes. ○ Ensures ongoing recognition of conservation values established through the tenure review process. ▪ Subject to section 11 Crown Minerals Act 1991 <ul style="list-style-type: none"> ○ Reserves Crown ownership of minerals and provides for Crown access and rights relating to prospecting, exploration, and mining. ○ A standard statutory interest that does not of itself authorise surface works without further approvals. ▪ Easement Instrument 7584791.3 – Rights of Way (in gross) for Conservation Management and Public Access <ul style="list-style-type: none"> ○ Grants rights of way in gross in favour of the Crown for conservation management purposes and for public access. ○ Enables pedestrian and management access along defined easement areas while retaining private ownership.

				<ul style="list-style-type: none"> ▪ Easement Concession / Deed of Easement 7584791.4 – Appurtenant Easement for Farm Management, Stock Access and Water Conveyance <ul style="list-style-type: none"> ○ Grants an appurtenant easement in favour of adjoining land for farm management access and the conveyance of water, including irrigation infrastructure. ○ Provides lawful access and servicing arrangements associated with pastoral and farming activities. ▪ Consent Notice 9877186.4 – Section 221 Resource Management Act 1991 <ul style="list-style-type: none"> ○ Imposes ongoing subdivision-related restrictions, including building line restrictions and vegetation controls beneath electricity lines. ○ Ensures limitations continue to apply to future owners to manage reverse sensitivity and infrastructure safety effects. ▪ Easement Instrument 9906693.2 – Right (in gross) to Convey Electricity (Meridian Energy Limited) <ul style="list-style-type: none"> ○ Grants Meridian Energy Limited rights to convey electricity across defined parts of the land and to maintain transmission infrastructure. ○ Includes restrictions on buildings, planting, and earthworks within the easement corridor to protect transmission assets. ▪ Easement Instrument 9906693.3 – Right (in gross) to Monitor Groundwater (Meridian Energy Limited) <ul style="list-style-type: none"> ○ Provides Meridian Energy Limited with rights to access the land to monitor groundwater via observation wells and associated equipment. ○ Facilitates environmental monitoring associated with hydro electric generation and water management. ▪ Land Covenant in Easement Instrument 9906693.4 <ul style="list-style-type: none"> ○ Establishes restrictive covenants over defined areas to protect ecological values, including prohibitions on structures, tracks, and planting. ○ Ensures long term protection of identified flora and fauna values through binding land use restrictions. ▪ Encumbrance 9906693.5 – Encumbrance to High Country Rosehip Orchards Limited <ul style="list-style-type: none"> ○ Secures performance of specific obligations through a rentcharge mechanism, including obligations relating to transmission line setbacks and associated infrastructure matters. ○ Operates as a private enforcement mechanism rather than granting occupation or use rights.
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A review of the Record of Title confirms that the registered interests on the site do not preclude or constrain the proposal from proceeding. The identified easements, covenants and consent notice relate primarily to matters such as conservation management and public access, farm management and stock access, electricity conveyance and monitoring, and compliance with existing regulatory controls. The project has been designed to recognise and accommodate these interests where relevant, and none impose restrictions that would prevent the construction, operation or maintenance of the project. Where applicable, the proposal either avoids affected areas or can coexist with the exercise of those interests without conflict. Accordingly, the registered interests do not impede the granting or implementation of the approvals sought.

1.3.4 Site Selection

There are a number of relevant locational, operational and technical matters that mean that the project has an operational need to locate on the site. The site demonstrates a range of elements that make it suitable for large scale solar, including:

The Solar Irradiation of the Site: The site is located in one of the best areas in New Zealand for high solar irradiation, making it an excellent opportunity for solar development. The typical range of solar irradiance in New Zealand is 700 – 1650kWh/m² with the Twizel site being approximately 1530kWh/m² (see Figure 3.3 below);

Transmission Access and Capacity: The site is located near Transpower's Twizel substation, with available capacity on the 220kV National Grid to export renewable solar generation. The benefits of a site location near the National Grid substation include shorter connection lines that reduce transmission line thermal energy losses and construction costs;

The Topography of the Site: The property is largely flat land with a gentle south easterly slope (away from Twizel township), that does not require extensive earthworks;

Parcel Size: The land area available provides the Project with economies of scale, reducing the cost of the electricity produced. A large plant size is required to recoup the investment of connecting to the high voltage transmission network;

Site Geology: A geotechnical assessment has identified that the site is underlain by generally unweathered, variable mixtures of gravel/sand/silt/clay suitable for installing solar plant infrastructure;

Low Hazard Risk: The application site features mapped areas of hydro inundation which can be actively managed by avoiding the majority of the inundation areas with infrastructure that encroaches the hydro inundation overlay limited to non-habitable buildings/structures designed to safely operate in, and be resilient to, any hydro-inundation effects. Flood and geohazard risks on the site have generally been assessed as low to medium risk;

Access: The property has direct and safe access from State Highway 8, limiting construction and operational traffic on local road networks;

Low Population Density: The area predominantly comprises large scale farming blocks in the General Rural Zone (GRZ) with a low population density that minimises potential amenity effects of the development; and

Low Productive Land Capability: Land that is considered suitable for solar generation often shares many aspects that are desirable for agriculture, creating competition. In the case of the Twizel site the land use classification is LUC Class 6 (Non-arable). Land use class is measured on a scale of 1 – 8, with 1 being most productive, therefore the land at LUC Class 6 is unlikely to sustain multiple productive uses.

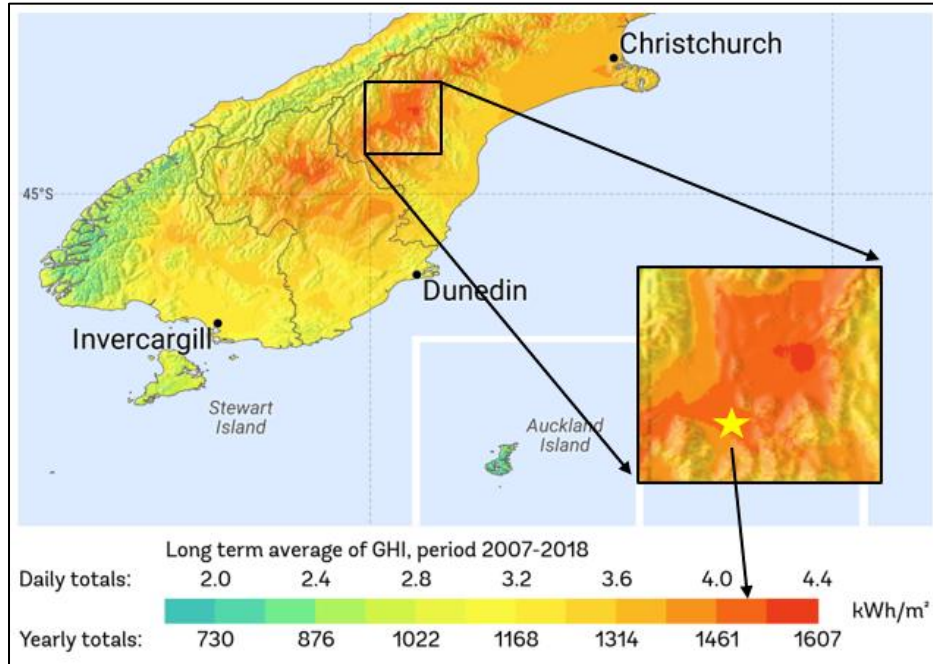


Figure 1.1: Solar Irradiance profile – Twizel site³

In summary, there is an operational need for the Project to locate and operate in the proposed location because of a range of technical, logistical and operational characteristics and constraints.

1.4 Referral Application

Nova was notified by the Minister of Infrastructure on 07 August 2025 that its referral application under the Act had been accepted and that Nova is authorised to lodge a substantive application for the project under section 27(2) of the Act. A copy of the decision letter is included as attachment 3.

1.5 Summary of Approvals Required

1.5.1 Summary of District Consenting Requirements

Mackenzie District Plan

The Project has been assessed against the Mackenzie District Plan (MDP) in Table 1.3: below. A full MDP rules assessment, including a summary of definitions relevant to the proposal, is provided in attachment 3.6.

³ The World Bank (2019), Global Solar Atlas 2.0 Solar resource data: Solargis, Solar resource map Global Horizontal Irradiation, <<https://globalsolaratlas.info/download/new-zealand>>, viewed 3 December 2024.

Table 1.3: Summary of MDP Consent Requirements

Rule	Parameter	Summary
REG – Renewable Electricity Generation		
REG-R7	Any Renewable Electricity Generation Activities Not Otherwise Listed including associated clearance of indigenous vegetation and earthworks for roads and access tracks	The proposed solar plant is not a small-scale renewable electricity generation activity, is not otherwise listed and will be located within an ONL. Discretionary Activity.
NH – Natural Hazards		
NH-R4	New Critical Infrastructure in a Flood Hazard Assessment Overlay	Activity Status: PER Where: It is located outside a High Flood Hazard Area as stated in a Flood Hazard Assessment issued in accordance with NH-S1; and The Flood Hazard Assessment is provided to Council. The solar farm infrastructure is new critical infrastructure which is located within a Flood Hazard Assessment Overlay. A Flood Hazard Risk Assessment has been completed and a small part of the solar array and part of the access road will be located within a High Flood Hazard Area. Restricted Discretionary Activity
NH-R5	Natural Hazard Mitigation Works	Activity Status: PER Where: The works are: 1. The maintenance or operation of any existing natural hazard mitigation works, or 2. The upgrading or establishment of new natural hazard mitigation works administered by a Regional Council or Territorial Authority that maintain or reinstate the pre-existing level of protection. Note: The earthworks provisions in Earthworks Chapter shall not apply to any activity permitted under NH-R5. The mitigation works recommended in the Flood Hazard Risk Assessment and Stormwater Management Plan are new natural hazard works which will not be administered by a Regional Council or Territorial Authority. Restricted Discretionary Activity

Summary Activity Status

Overall, after applying the bundling principle, resource consent is required as a **Discretionary Activity**.

1.5.2 Summary of Regional Consenting Requirements

Under the Canterbury Land and Water Regional Plan (CLWRP) the project is recognised as Nationally and Regionally Significant Infrastructure. The following resource consents are required for the Project and are applied for jointly with the district consents set out in this application.

- CLWRP:
 - Discharge Consent (to land): Construction phase stormwater
 - Discharge Consent (to land): Operational stormwater discharge
 - Land Use Consent: Earthworks over a confined or semi-confined aquifer

Table 1.4: Summary of CLWRP Consent Requirements

Rule	Parameter	Summary
Rule 5.94A	<p>Construction Phase Stormwater Discharge:</p> <p>The discharge of construction-phase stormwater from a reticulated stormwater system to a surface waterbody, or onto or into land in circumstances where a contaminant may enter groundwater or surface water.</p>	<p>Will not comply:</p> <ul style="list-style-type: none"> - The proposed area of disturbed land is not within a High Soil Erosion Risk area <u>but will exceed two hectares.</u> - All construction-phase stormwater will soak to ground and will not be discharged to a river or lake. - The proposed discharge will not result in an increase in flow in any receiving waterbody. - The discharge is not from, into or onto contaminated or potentially contaminated land. - The discharge does not contain any hazardous substances. - The proposed discharge will not occur within a Community Drinking-water Protection zone. <p>Non-compliance with the conditions of this rule is subject to the activity status set out Rule 5.94B.</p>
Rule 5.94B	<p>The discharge of construction-phase stormwater, other than into or from a reticulated stormwater system, into a surface waterbody, or onto or into land in circumstances where a contaminant may enter groundwater or surface water, that does not meet one or more of the conditions of Rule 5.94A is a restricted discretionary activity.</p>	<p>Will not comply:</p> <ul style="list-style-type: none"> - The proposal does not meet one of the conditions of Rule 5.94A – Restricted Discretionary
Rule 5.96	<p>Operational Phase Stormwater Discharge not discharged from a Reticulated Stormwater System onto or into land where contaminants may enter groundwater.</p>	<p>Will not comply:</p> <ul style="list-style-type: none"> - The stormwater discharge may enter groundwater and will be from land not used for residential, educational or rural activities <p>Non-compliance with the conditions of this rule is subject to the activity status set out Rule 5.97.</p>
Rule 5.97	<p>Operational Phase Stormwater Discharge that does not meet one or more of the conditions of Rule 5.95 or Rule 5.96</p>	<p>Will not comply:</p> <ul style="list-style-type: none"> - The proposal does not meet one of the conditions in Rule 5.96 – Discretionary.

Rule	Parameter	Summary
Rule 5.175	<p>Earthworks:</p> <p>Over an unconfined or semi-confined aquifer:</p> <ul style="list-style-type: none"> - The volume of material excavated is less than 100 m³; or - The volume of material excavated is more than 100 m³ and: - There is more than 1 m of undisturbed material between the deepest part of the excavation and the seasonal high water table level; and <p>The excavation does not occur within 50 m of any surface waterbody.</p>	<p>Will not comply:</p> <ul style="list-style-type: none"> - Earthworks will exceed 100 m³, however, data on the groundwater environment indicates there will be at least 1 m of undisturbed material between the deepest part of the excavation and the seasonal high-water table. However, groundwater depths can be variable and seasonally influenced so Nova acknowledge a potential non-compliance and conservatively seek consent under rule 5.176 - No earthworks will take place within 50 m of any surface waterbody. <p>Non-compliance with the conditions of this rule is subject to the activity status set out in Rule 5.176.</p>
Rule 5.176	<p>The use of land to excavate material that does not comply with one or more of the conditions of Rule 5.175 is a restricted discretionary activity.</p>	<p>Will not comply:</p> <ul style="list-style-type: none"> - The proposal may not meet one of the conditions in Rule 5.175 therefore consent is applied for as a precautionary measure – Restricted Discretionary.

1.5.3 Wildlife Act Approvals

A Wildlife Act Approval (WA) is sought under the FTAA due to the necessity to hold, catch, handle or release lizards as part of the development of the Project. The WA seeks permission to:

- Catch and handle lizards on-site (in accordance with the Incidental Discovery Protocol in the Lizard Management Plan);
- Translocate any incidentally discovered lizards; and
- Incidentally injure or kill lizards as part of vegetation clearance and construction, following managing this risk as much as possible.

A WA is also sought to handle and hold Threatened and At-Risk birds in the event that the discovery of bird carcasses on the site requires investigation to determine the species of bird and/or the circumstances of the bird's death. This authority is not strictly necessary to enable the Project but is sought to enable a comprehensive and robust assessment to be undertaken of the causes of mortality, in the event of a bird death.

DOC is the administering agency for these approvals. The relevant attachments for this application are the Lizard Management Plan, Avifauna Management Plan and the Assessment of Potential Ecological Effects (see attachments 3.12, 3.13 and 2.14 respectively). Additionally, draft conditions for the WA's are included as attachment 3.3.

An assessment of the information requirements for a WA as set out in Schedule 7, clause 2 of the FTAA is provided in section 9 of this report.

1.5.4 Other Consents and Approvals

Works proposed within the Transpower operated Twizel Substation do not form part of this consent application. A Grid Connection Concept Design Report has been commissioned by Transpower and prepared by Electronet for works within the Twizel Substation with both Nova and Transpower having new assets within the boundaries of the substation. Nova will have two transformers which will each receive one of the two 33 kV circuits via a 33 kV bay. Transpower has agreed that the Nova-owned transformers and 33 kV equipment can be located within the substation, in accordance with the Concept Design Report to meet Transpower's requirements (refer section 4.4.6 Grid Connection).

Nova and Transpower are in agreement that if consents are required for works within the substation, they will be lodged separately to the application for the solar plant and line connection.

The works that Transpower will be responsible for will be undertaken under the existing MDP designation TPR-4 which has a designated purpose as an Electricity Substation. These works may require an Outline Plan to be submitted to MDC by Transpower.

The works that Nova is responsible for will likely be undertaken in accordance with rule INF-R6 of the MDP as a permitted activity. Written consent will also be required from Transpower under section 176(1)(b) of the Resource Management Act. Nova has discussed this process with Transpower and Transpower are supportive in principle, subject to reviewing detailed design information to be developed during ongoing grid connection studies and design works with Transpower.

It is not anticipated that any consents will be required under the CLWRP as there will not be any change to the substation's stormwater discharge. The storage of transformer oil and any other hazardous substances would be a permitted activity under rule 5.181 of the CLWRP and will not require consent under the Hazardous Activities and New Organisms Act and associated regulations.

The National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NESCS) will be a relevant consideration in respect of earthworks within and around the substation as the substation is considered a HAIL activity. The NESCS has permitted thresholds for soil disturbance activities. Earthworks design will be confirmed at consent stage. If consent is required, the earthworks activity will be assessed as either a restricted discretionary or discretionary activity. Applications under the NESCS for soil disturbance activities are typically processed on a non-notified basis as the effects for consideration relate to effects on human health, primarily to those undertaking the earthworks activities. These effects are typically managed by Site Management Plans.

1.5.5 Existing Resource Consents

Existing resource consents associated with an operational quarry, groundwater bores and an automated weather station on the site are summarised in Table 1.5 below. The quarry activity is

located on a different part of the site and will continue to operate until expiry. It is not affected by the proposed solar project.

Table 1.5: Summary of Existing Resource Consents

Type and Number	Authority	Consent Holder	Consent Description	Status
Land Use Consent – RM210021	MDC	Sol Screening and Crushing Limited	Extract, Process and Stockpile 100,000 m ³ Of Gravel Over a Five-Year Period	Granted: 03/06/2021
Land Use Consent – CRC132701	ECan	Rosehip Orchards NZ Limited	To install two bores.	Granted: 15/01/2013 Expiry date: 15/01/2016 NB: ECan has confirmed this consent has been exercised and remains active
Land Use Consent - RM220073	MDC	TGL Farms Ltd	Installation and operation of an automated weather station	Granted 19/06/2022

1.6 Documents Included in the Application

The documents and information in Table 1.6 below are attachments submitted in support of the applications.

Table 1.6: Supporting Information

Attachment No	Drawings	Author/Source	Date
1	Concept Design Drawings	BTW Company	19 February 2026
1.1	Twizel Indicative Layout Drawing	Aurecon	17 March 2026
1.2	Adjacent Landowners and Properties Plans	BTW Company	29 April 2026
Assessment Reports		Author/Source	Date
2	Economic Assessment	Insight Economics	15 April 2026
2.1	Manawhenua Report	Aoraki Environmental Consultancy, Aukaha and Te Rūnanga o Ngāi Tahu	May 2026
2.2	Geotechnical Assessment	Engineering Design Consultants	1 September 2025

2.3	NPS-Natural Hazards Assessment	Engineering Design Consultants	23 April 2026
2.4	Archaeological Assessment	Absolute Archaeology	30 April 2026
2.5	Acoustic Assessment	Marshall Day Acoustics	26 March 2026
2.6	Glint and Glare Assessment	ITP Renewables	April 2026
2.7	Preliminary Site Investigation – Contaminated Land	BTW Company	19 December 2025
2.8	Landscape Assessment	Rough Milne Mitchell Landscape Architects	1 May 2026
2.9	Appendix 2: Graphic Attachment to Landscape Assessment Report	Rough Milne Mitchell Landscape Architects	1 May 2026
2.10	Appendix 3: Visual Simulations	Rough Milne Mitchell Landscape Architects	1 May 2026
2.11	Landscape Assessment Peer Review	Patch	03 June 2026
2.12	Additional Lizard, Vegetation, and Invertebrate Surveys of a Proposed Twizel Solar Farm	Wildlands	5 April 2024
2.13	Tekapo Ground Wētā Tracking Tunnel Survey	Wildlands	9 May 2024
2.14	Assessment of Potential Ecological Effects of the proposed Nova Energy Solar Farm Near Twizel	Wildlands	March 2026
2.15	Integrated Framework	Wildlands	April 2026
2.16	Integrated Traffic Assessment	BTW Company	29 May 2026
2.17	Flood Hazard Risk Assessment	BTW Company	21 April 2026
Other Supporting Documents/Information		Author/Source	Date
3	Referral Letter	Fast-track - Te Kāwanatanga o Aotearoa New Zealand Government	Undated

3.1	Record of Title	LINZ	15 April 2026
3.2	Proposed Conditions of Consent (Resource Consents)	Nova	Undated
3.2A	Proposed Mana Whenua Conditions	Nova	Undated
3.3	Proposed conditions (Wildlife Act Approvals)	Nova	Undated
3.4	Erosion and Sediment Control Plan	BTW Company	09 April 2026
3.5	Stormwater Management Plan	BTW Company	24 March 2026
3.6	Statutory Planning Rules Assessment	BTW Company	Undated
3.7	Statutory Planning Policy Assessment	BTW Company	Undated
3.8	Archaeological Management Plan	Absolute Archaeology	30 April 2026
3.9	Biosecurity and Vegetation Management Plan	Wildlands	March 2026
3.10	Pest Mammal Management Plan	Wildlands	March 2026
3.11	Terrestrial Invertebrate Management Plan	Wildlands	March 2026
3.12	Lizard Management Plan	Wildlands	March 2026
3.13	Avifauna Management Plan	Wildlands	March 2026
3.14	Consultation Register	Nova	Undated
3.14A	Consultation Summary	Nova	Undated
3.15	Consultation Response Meridian Energy	Meridian Energy	5 May 2026
3.16	Notices received from MDC and ECan	MDC and ECan	10 March 2026
3.17	Schedules of Management Plan Conditions and Adaptive Management Conditions	Nova	Undated
3.18	Letter from NGL Farms Ltd	NGL Farms Ltd	29 May 2026

2 REQUIREMENTS OF THE FTAA

2.1 Compliance with Section 43(1) and 46 (Scope of Application)

Section 46 of the Act specifies the requirements for the EPA to decide whether a substantive application is complete and within scope. Compliance with this section is addressed in the EPA application forms.

This Project is supported by the information required under section 43 of the Act (see section 2.7 below for a description of how the Project is consistent with the purposes of the Act) and Schedule 5. This application is also supported by the information listed in Table 1.6 above.

2.1.1 Landowner Approval

The owner of the application site is NGL Farms Limited, a related company of the applicant Nova. A confirmation letter from NGL Farms Limited approving the use of the site for the activity and providing Nova with access to the site for the purpose of carrying out the Project is included as attachment 3.18.

2.1.2 Compliance with Section 43(1)(c) (ineligible activities)

Section 43(1)(c) of the Act requires the applicant to demonstrate that the project does not involve any ineligible activities as set out in Clause 5. This matter has been addressed in the EPA application form. In summary, this project does not involve any ineligible activities.

2.1.3 Information Requirements Specified by the Minister (section 43(1)(e))

The Notice of Decision on Nova's referral application (included as attachment 3) specified the following:

- Nova Energy Limited is the person authorised to lodge a substantive application for the project under section 27(2).
- The following information must be submitted with the substantive application lodged for the project (s27(3)(b)(ii)):
 - (i) A summary of consultation with Te Runanga o Ngāi Tahu, relevant papatipu rūnanga and their representatives since referral, outlining concerns raised regarding Ngāi Tahu settlement principles, statutory acknowledgments, nohoanga, and taonga species, and explaining how this has informed the substantive application.

The application has been lodged by Nova Energy Limited. A summary of consultation addressing the above matters has been provided in attachments 3.14 and 3.14A.

2.2 Compliance with Section 30 of the Act (Identification of Existing Resource Consent for Same Activity)

Nova does not hold an existing resource consent for the activity using the same natural resource. Therefore, section 30 requires Nova to notify in writing each consent authority that has jurisdiction

over an area where the resource consent approval would apply, prior to lodging the substantive application. A consent authority that receives this notice must by written notice advise Nova:

- (a) of any existing resource consent to which section 124C(1)(c) or 165ZI of the Resource Management Act 1991 would apply if the approval were to be applied for as a resource consent under that Act; or
- (b) that there are no existing resource consents of that kind.

In this case Nova has notified MDC and ECan and they have both confirmed that there is no existing resource consents of the kind outlined above. Notices from MDC and ECan are included as attachment 3.16. In accordance with section 30(6)(b), Nova have lodged the resource consent applications within 3 months of the date of the earliest notice received.

2.3 Whether the Application is a Priority Project (section 43(1)(h))

The application has not been identified as a priority project at this stage.

2.4 Previous and Existing Approvals (section 13(4)(u))

None of the activities that are involved in the Project, or that are substantially the same as those involved in the Project, have been the subject of an application or a decision under a specified Act.

2.5 Climate Change and Natural Hazards (section 13(4)(v))

A description of whether and how the Project would be affected by climate change and natural hazards is provided in section 5 of the application.

2.6 Compliance Matters (section 13(4)(x))

Nova is committed to developing projects in a compliant manner, always striving to meet or exceed consented baselines. It establishes comprehensive protocols and policies to ensure its staff, contractors and other personnel are acutely aware of its regulatory and legal obligations. There has been one instance Nova is aware of (from review of its records) where an abatement notice was issued, however work was undertaken in response to ensure compliance. Nova engages collaboratively with local authorities and other stakeholders to ensure compliance at all levels for its projects.

A Notice of Direction from Canterbury Regional Council, reference number B25S004, dated 14 May 2025, was received by NGL Farms Limited. Details of the Notice of Direction are:

1. Under section 122 (2) of the Biosecurity Act 1993 you are directed to comply with the following rule(s) included in the Canterbury Regional Pest Management Plan:

6.4.6 All occupiers within the Hill and High Country Zone as shown on Map 4 in Appendix 4 shall eliminate broom infestations that cover up to 50 square metres in area on the land that they occupy. For the purpose of this rule, eliminate means the permanent preclusion of the plant's ability to set viable seed. The provisions of this rule do not apply when broom is present as a hedge on a property boundary provided that the top and sides are trimmed

each year after flowering but before seed set to minimise seeding. A hedge is any single row extending horizontally for a minimum continuous length of 50 metres.

6.4.7 All occupiers within the Hill and High Country Zone as shown on Map 4 in Appendix 4 shall eliminate gorse infestations on their land within 10 metres of an adjoining property boundary. The provisions of this rule do not apply when gorse is present as a hedge on a property boundary provided that the top and sides are trimmed each year after flowering but before seed set to minimise seeding. A hedge is any single row extending horizontally for a minimum continuous length of 50 metres.

Any breach of these rules creates an offence under section 154N(19) of the Act.

By undertaking the following works and measures:

(a) Eliminate all gorse and broom plants within 10 metres of adjoining property boundaries as per the above rules.

(b) Eliminate all scattered and isolated gorse and broom plants as per the above rules.

You must comply with this direction before 31 October 2025.

Nova confirms the works under the Notice of Direction were completed on Wednesday, 29 October 2025.

Canterbury Regional Council staff were due to inspect the works during the week of Monday 26 January 2026.

2.7 Consistency with Purpose of the Act

The purpose of the Act is to facilitate the delivery of infrastructure and development projects with significant regional or national benefits. In accepting the referral application, the Minister of Infrastructure has acknowledged that the Project is an infrastructure project that would have significant regional or national benefits. The significant regional or national benefits of the Project are as follows:

- The Project will deliver renewable electricity generation which could power approximately 75,000 households annually;
- The Project will increase the supply of renewable electricity, which has the potential benefit of easing wholesale electricity prices;
- The Project will create approximately 315 jobs during peak construction; and
- The Project will support climate change mitigation, including the reduction or removal of greenhouse gas emissions by establishing a new renewable energy source.

The Project is considered to be entirely consistent with the purpose of the Act.

3 SITE AND RECEIVING ENVIRONMENT

3.1 Application Site

3.1.1 Site Location and Extent

The application site is located on Tekapo-Twizel Road, State Highway 8, Twizel, approximately 825 m south of Ostler Road, which is a primary road for accessing the Twizel township from the State Highway (Figure 3.1). The application site is located directly opposite the southern extent of the Twizel township. The application site is located within the jurisdiction of MDC and ECan.

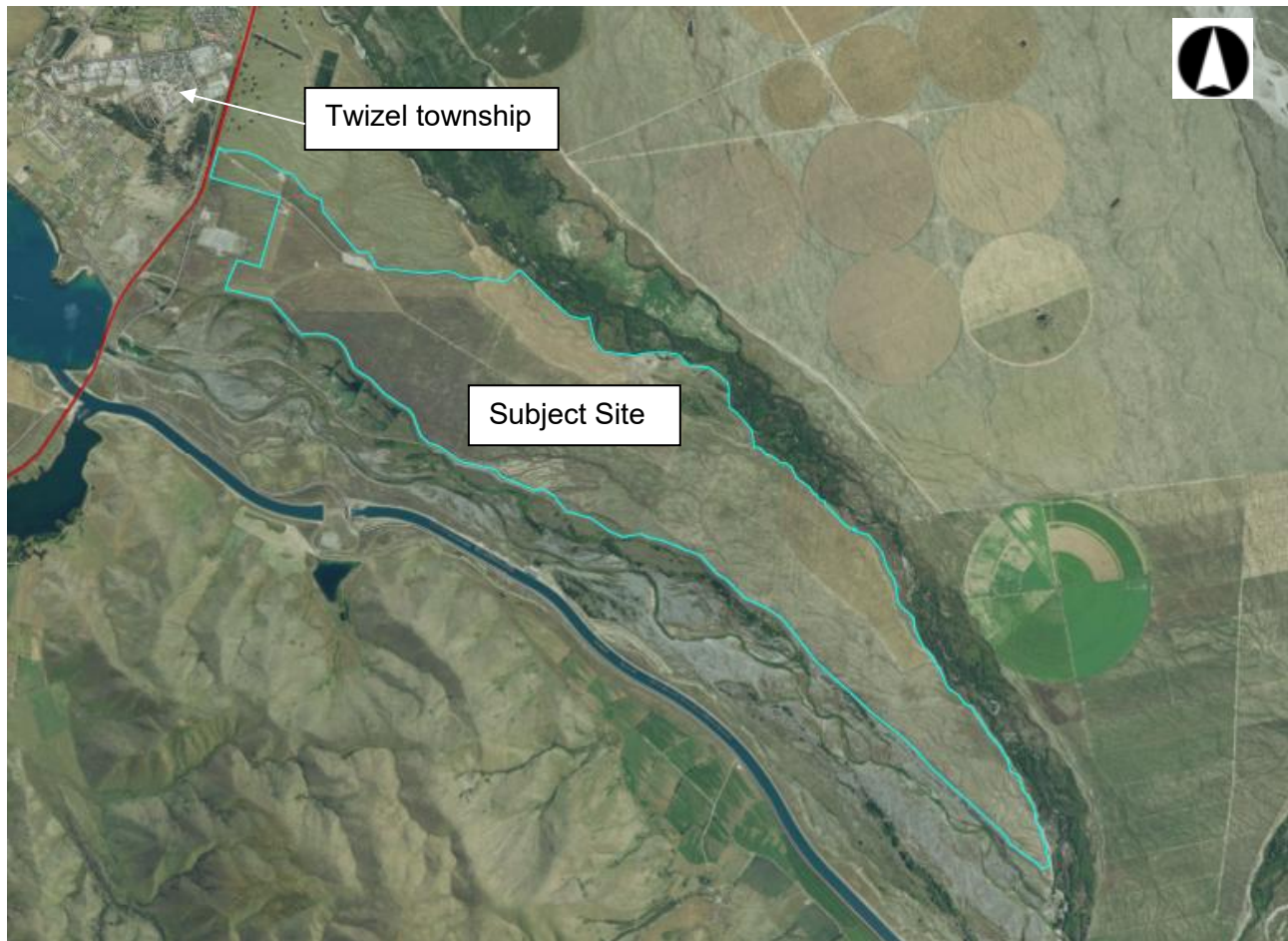


Figure 3.1: Application site location (outlined in blue) (base image source: ECan, 2021)

As set out in section 1.3.3, the 868 ha application site area is contained within one Record of Title (Figure 3.1).

3.1.2 Access

There is one existing access point to the site from SH 8 at the westernmost extent of the site. The existing vehicle access was constructed for the purpose of farming operations, with an internal track running through the centre of the site. The transport environment is described further in Section 3.9 below.



Figure 3.2: Existing access point to SH 8 (base image source: Google Maps, 2023)

3.1.3 Topography

The application site topography forms a long area of flat to gently sloping pastoral land that is effectively bordered by the Twizel River to the north-east and Ōhau River to the southwest (Figure 3.3). Elevations across the site range from 400 – 440 m above sea level (asl) (Figure 3.3). The site gently slopes towards the southeast direction. Lake Ruataniwha is located close to the western end of the site on the opposite side of SH8. The site is bound between the Twizel River located along the northern side of the site and the Ōhau River located along the southern side of the site. Both rivers run in a southeast direction parallel to the site. These rivers join approximately 500 m away from the southeast tail end of the site to further fall into Lake Benmore. The southern tip of the site effectively forms the convergence of these two rivers and the northern tip of Lake Benmore (described further in section 3.4).

The site is not comprised of land classified as Land Use Class 1-3 under the Land Use Capability system and is therefore not classed as Highly Productive Land in terms of the National Policy Statement for Highly Productive Land.

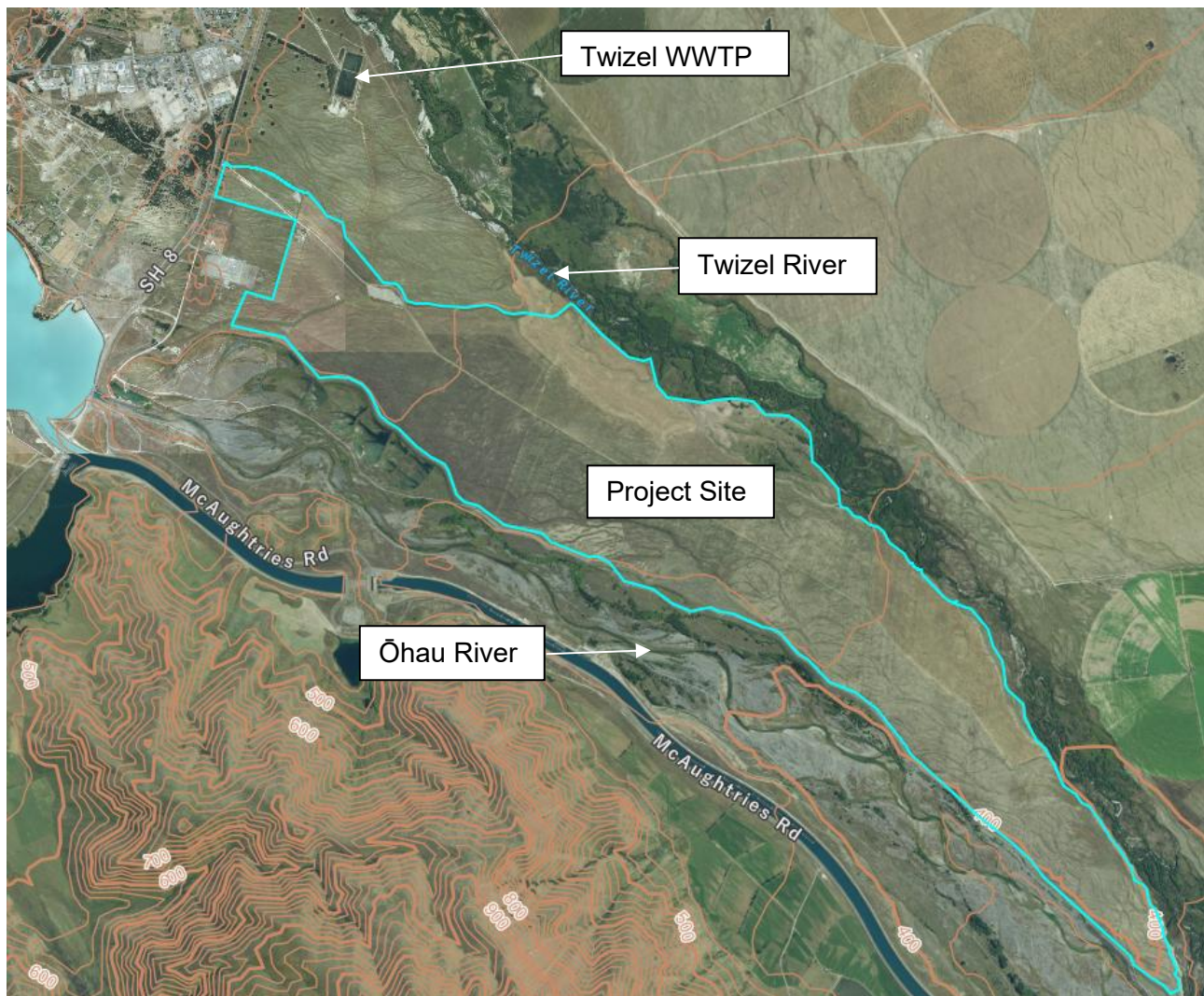


Figure 3.3: Application site elevation layer (source: ECan, 2021)

3.1.4 Land Use

The site is currently operating as an operational dry stock farm under a farm lease arrangement with a small gravel quarry also operating out of the northern end of the site. Current surface cover is approximately 85% in grasslands, red glover, and ryecorn.

There are three water bores located on the application site (BZ15/5013, BZ15/5014 and H38/0023), shown in Figure 3.4, the status of each bore is included in Table 3.1. Water bore BZ15/5014 is currently in use for stock water supply. An additional bore, owned by Meridian Energy Ltd (Meridian), is located on the site for groundwater monitoring purposes. An access easement agreement is in place for Meridian to access this bore.

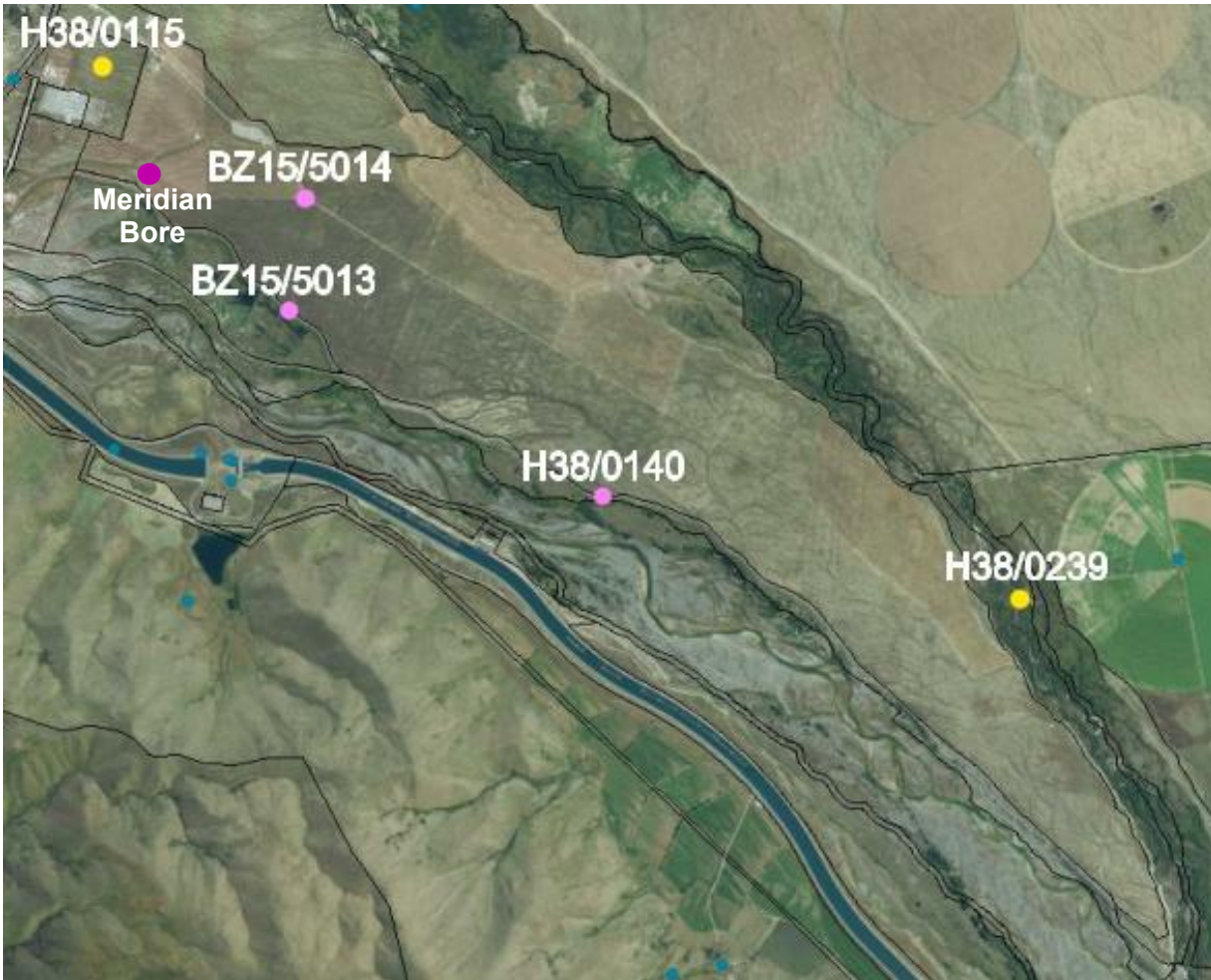


Figure 3.4: Groundwater bores on subject site. Pink = within site. Yellow = within approximately 250m from site boundary (sourced from ecan.govt.nz)

Table 3.1: Application site bore information (Environment Canterbury Regional Council)

No.	Status		Depth (m)	Diameter (mm)	Use	Link
BZ15/5013	Active		20	150	Water Level Observation	http://ecan.govt.nz/data/well-search/welldetails/?WellNo=BZ15/5013
BZ15/5014	Active		17.5	50	Stock water supply	http://ecan.govt.nz/data/well-search/welldetails/?WellNo=BZ15/5014
H38/0140	Not used		7.5	64	Water Level Observation	http://ecan.govt.nz/data/well-search/welldetails/?WellNo=H38/0140

3.2 Surrounding Land Use

The proposal is located within the South Basin which forms part of the wider Mackenzie Basin, an Outstanding Natural Landscape. 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 has been cultivated which has led to a widespread distribution of improved pasture species across the site. The Landscape Assessment provided in attachment 2.8 provides a full description of the landscape surrounding the application site.

The Twizel wastewater treatment and disposal plant is located within Lot 1 DP 487658 (MDC-owned land), situated approximately 750 m north of the nearest boundary of the site (Figure 3.3).

The Twizel Substation is located approximately 650 m to the west of the subject site at its nearest point. Vacant land on Lot 1 DP 341333 owned by Meridian Energy lies between the application site and the substation. The DOC Kakī (Black Stilt) Recovery Programme is located approximately 150 m from the westernmost point of the subject site.

Opposite the entrance to the subject site is a contiguous parcel of land that is approximately 87.9 ha of undeveloped greenfield land that is zoned Low Density Residential, Large Lot Residential, and with the Commercial Visitor Accommodation Precinct overlay. It is expected this land will be developed to form part of the Twizel township for the above purposes in the future.

Further beyond the site is the Waitaki Electric project. Lake Ruataniwha is approximately 950 m west of the application site with the Ruataniwha Dam located approximately 1.8 km south of the site entrance on SH 8. Lake Ruataniwha conveys flow downstream to the Ōhau River via the Ruataniwha Dam and the Ōhau Hydro Canal. The canal conveys water to the Ōhau B Power Station, and subsequently the Ōhau C Power Station 7.3 km downstream of Ōhau B. The Ōhau River runs mostly parallel from the southern site boundary which sits between the application site and the Ōhau Hydro Canal.

Ōhau B is located approximately 820 m southwest of the application site with Ōhau C located approximately 1.24 km south of the application site.

3.2.1 Proposed Solar Projects

Nova is aware of a number of proposed solar projects that are proposed in the Mackenzie Basin. Two large scale projects, Haldon Solar (220 MW) and The Point Solar Farm (420 MW), are proposed to be located to the east/south-east of Nova's site. Applications for both projects are currently being determined by expert panels under the FTAA process and do not yet form part of the receiving environment for the Twizel Solar Project.

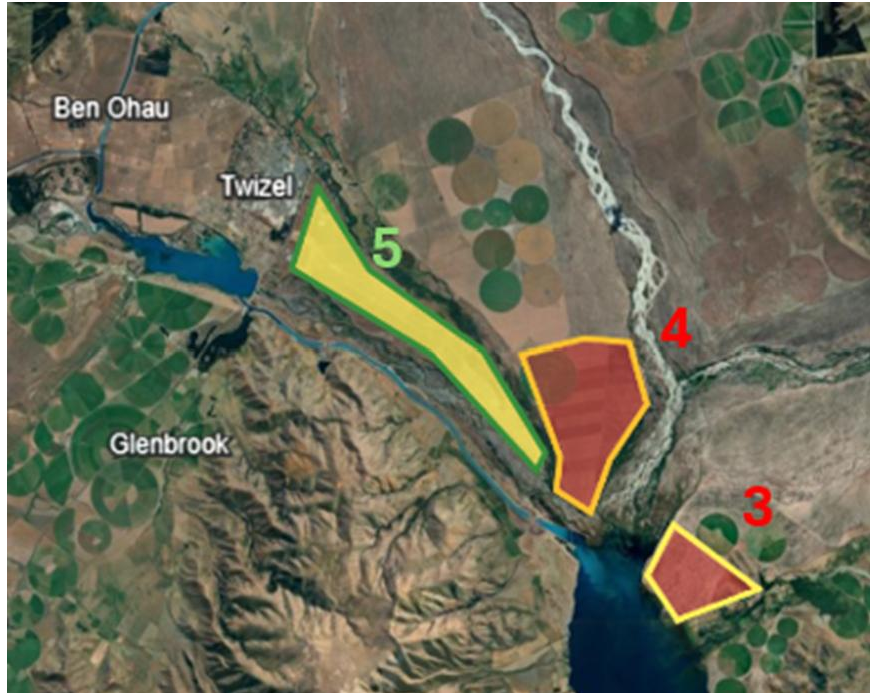


Figure 3.5: Haldon Solar (3), The Point Solar Farm (4) and the Twizel Solar Project (5)

3.3 MDP Zoning, Overlays and Notations

3.3.1 Zoning

The application site and surrounding area is located within the General Rural Zone under the MDP (Figure 3.6), described as follows in the Introduction to the General Rural Zone:

The General Rural Zone encompasses the majority of the District. The land resource making up this zone is a major contributor to the economic, social and cultural wellbeing of the District.

The purpose of the General Rural Zone is to enable a range of primary production activities, as well as other compatible activities that rely on or support the natural resources within rural areas of the District, including tourism and conservation along with those activities that have an operational need or functional need to locate in the zone.

The character of the zone varies, but is distinctly rural with open grasslands, pastoral farming, and areas of forestry with an overall low density of built form. To recognise and maintain the existing character, the zone has been separated into different areas to manage residential density, most notably through the Eastern Plains Specific Control Area where greater densities of development are anticipated.

The General Rural Zone includes a range of environments including hill and high country, downlands and plains, each with their own associated landscapes, vegetation and ecosystems. The General Rural Zone also has areas of highly productive land, which are important for primary production purposes. It also includes areas with important values such

as Outstanding Natural Landscapes, Outstanding Natural Features, Sites of Natural Significance and Sites and Areas of Significance to Māori. The majority of Te Manahuna / the Mackenzie Basin is identified as an Outstanding Natural Landscape. Activities in this area are managed through the district-wide Natural Features and Landscapes chapter in Part 2 of the District Plan, which apply in addition to the provisions set out below.

The site and surrounding area are considered to be generally consistent with the General Rural Zone description, typically featuring open grassland areas, pastoral farming and low density built form.

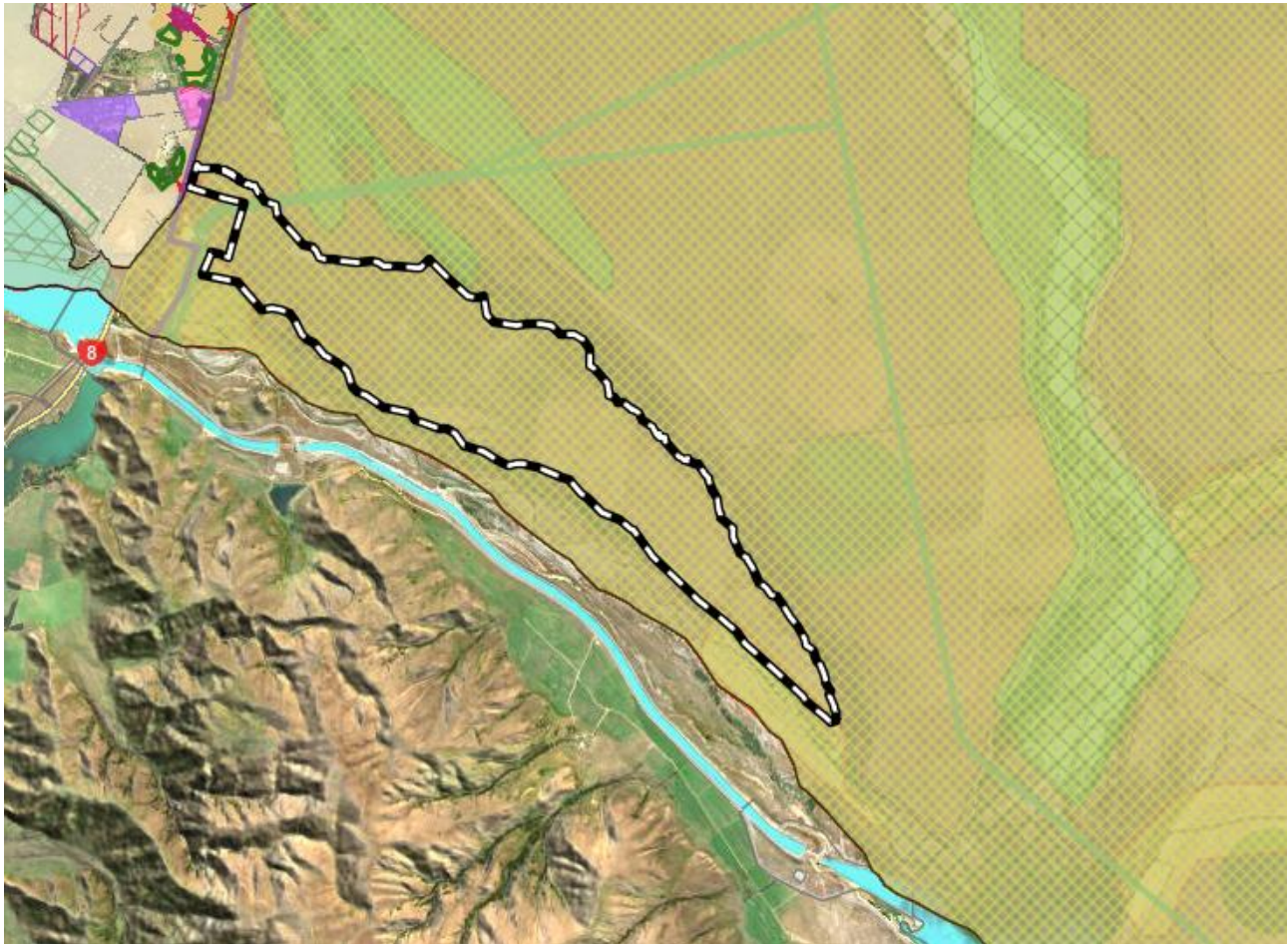


Figure 3.6: MDP Planning Map

3.3.2 Overlays

The following MDP overlays affect the site, or are in close proximity to the site, and are described in further detail below:

- Sites of Natural Significance (Ōhau River SONS11);
- Sites of Significance to Māori (Whakatipu/Twizel River SASM35 and Ōhau River SASM46);
- Outstanding Natural Landscape (Te Manahuna / Mackenzie Basin Subzone);

- Transmission Lines (220kV National Grid);
- Flight Protection Area (Pukaki);
- Noise Control Boundary Overlay (State Highways);
- Areas of Visual Vulnerability (High);
- Areas of Visual Vulnerability (Medium);
- Flood Hazard Assessment Overlay;
- Liquefaction Assessment Overlay; and;
- Hydro Inundation Hazard Overlay

A full set of MDP planning maps that apply to the application site are provided in the Statutory Planning Rules Assessment in attachment 3.6.

Sites of Natural Significance

Figure 3.7 demonstrates the extent of the Site of Natural Significance (SNA) – Ōhau River SNA SONS11 running between the southern boundary and the Ōhau River. The SNA extends into the site at three locations for a total area of approximately 5.58 ha of SNA across the site. The Ōhau River SNA is described as:

“RAP P-15 (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 springfed stream. Parts of lake are 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.”

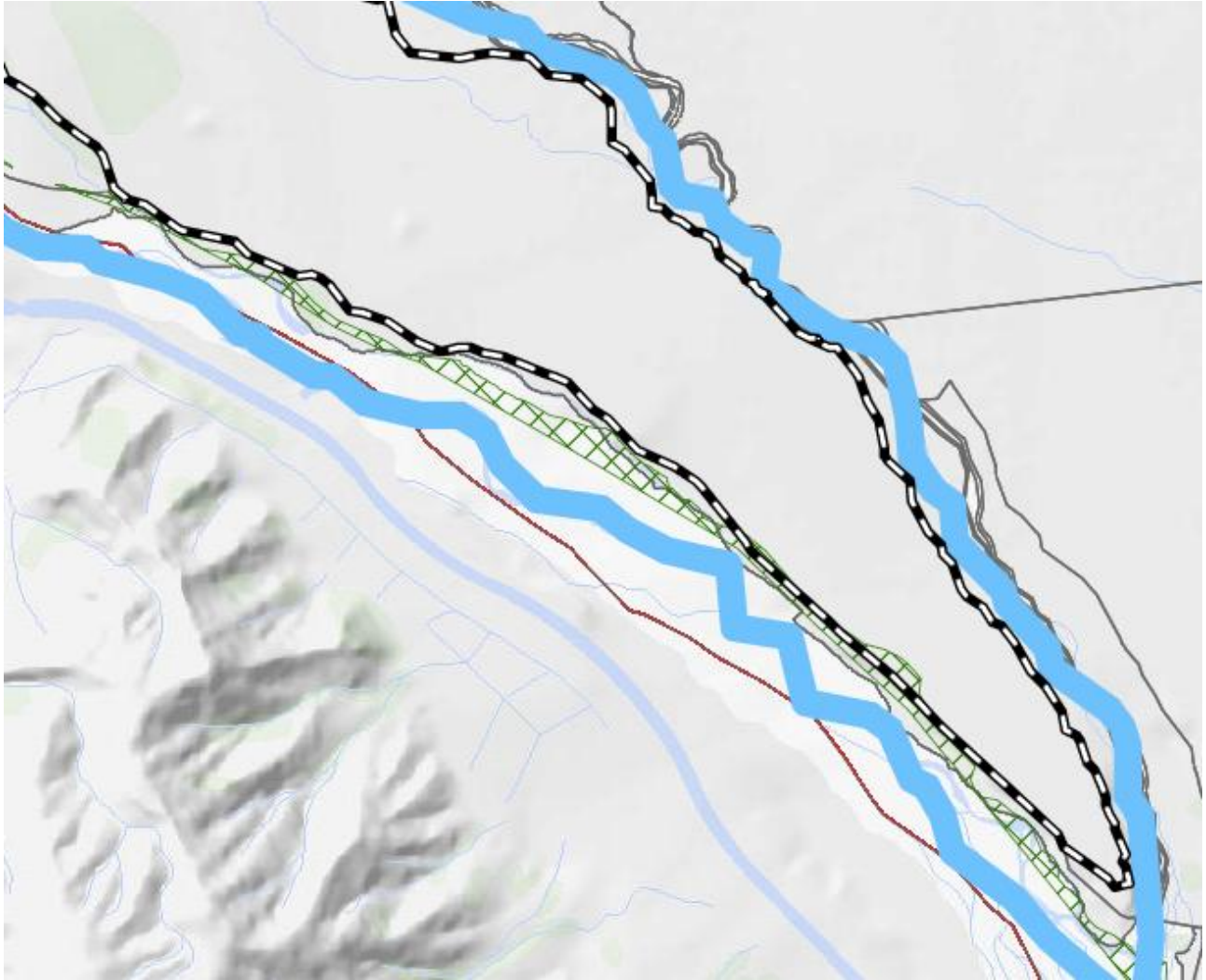


Figure 3.7: Sites of Natural Significance (in green) across the subject site

Sites of Significance to Māori (SASM)

Both the Whakatipu/Twizel River (SASM35) and the Ōhau River (SASM46), which border the site, are listed in Table 2-Waterbodies of SASM-SCHED1 in the MDP.

Outstanding Natural Landscape (Te Manahuna / Mackenzie Basin)

The Outstanding Natural Landscape (Te Manahuna / Mackenzie Basin Subzone) (ONL) covers the entirety of the site.

Figure 3.8 below indicates the extent of the Mackenzie Basin ONL.

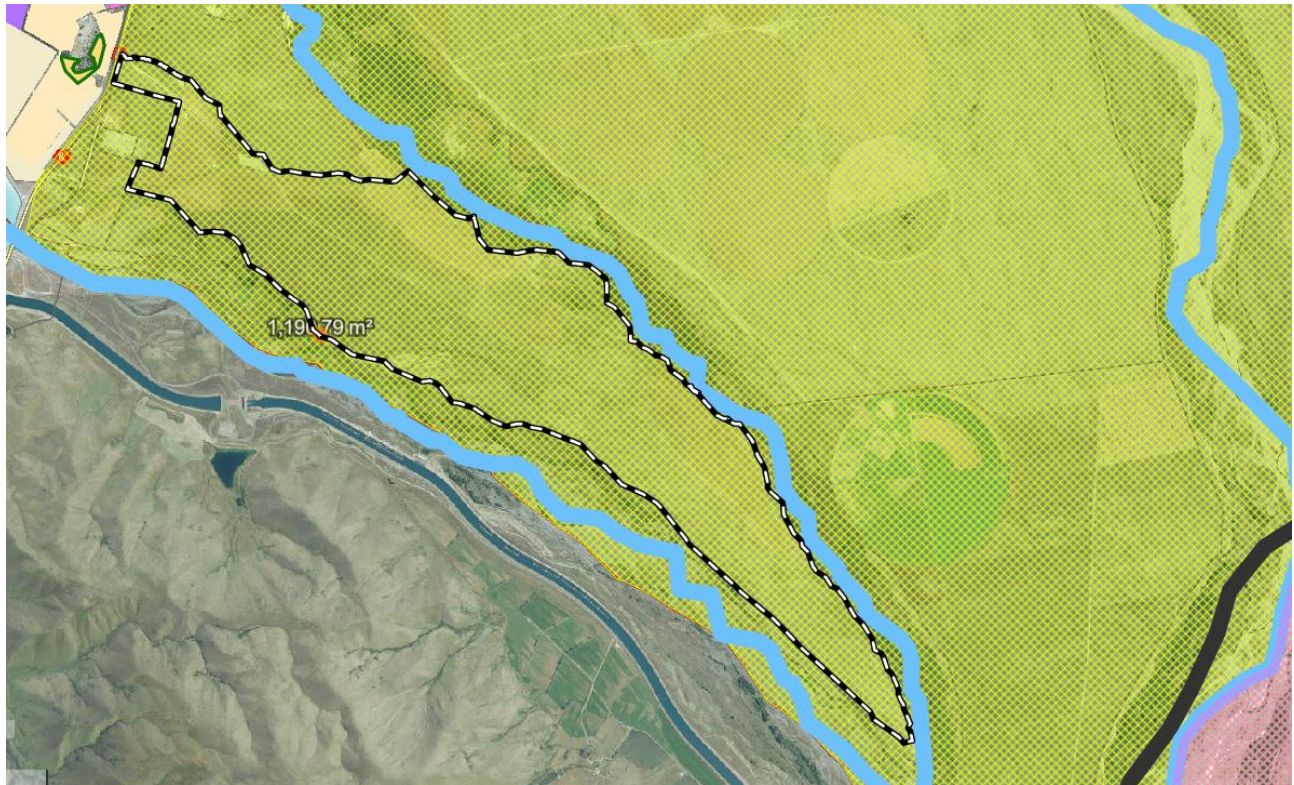


Figure 3.8: Mackenzie Basin ONL (in green hatch)

Electricity Transmission Lines

Figure 3.9 and Figure 3.10 illustrate two sets of Transpower 220 kV transmission lines traversing the western extent of the site and connecting to the Twizel Substation. Three Transpower transmission towers are located on the site. TWZ-DEV-A0717 is located approximately 15 m from the application site boundary with the Twizel Substation and CHH-TWZ-A0003 is located to the north, straddling the boundary between the application site and the Twizel Substation. TWZ-DEV-A0176 is located further to the north-east straddling the boundary between the application site and Lot 2 DP 487658, the Road Metals Holdings Ltd property.

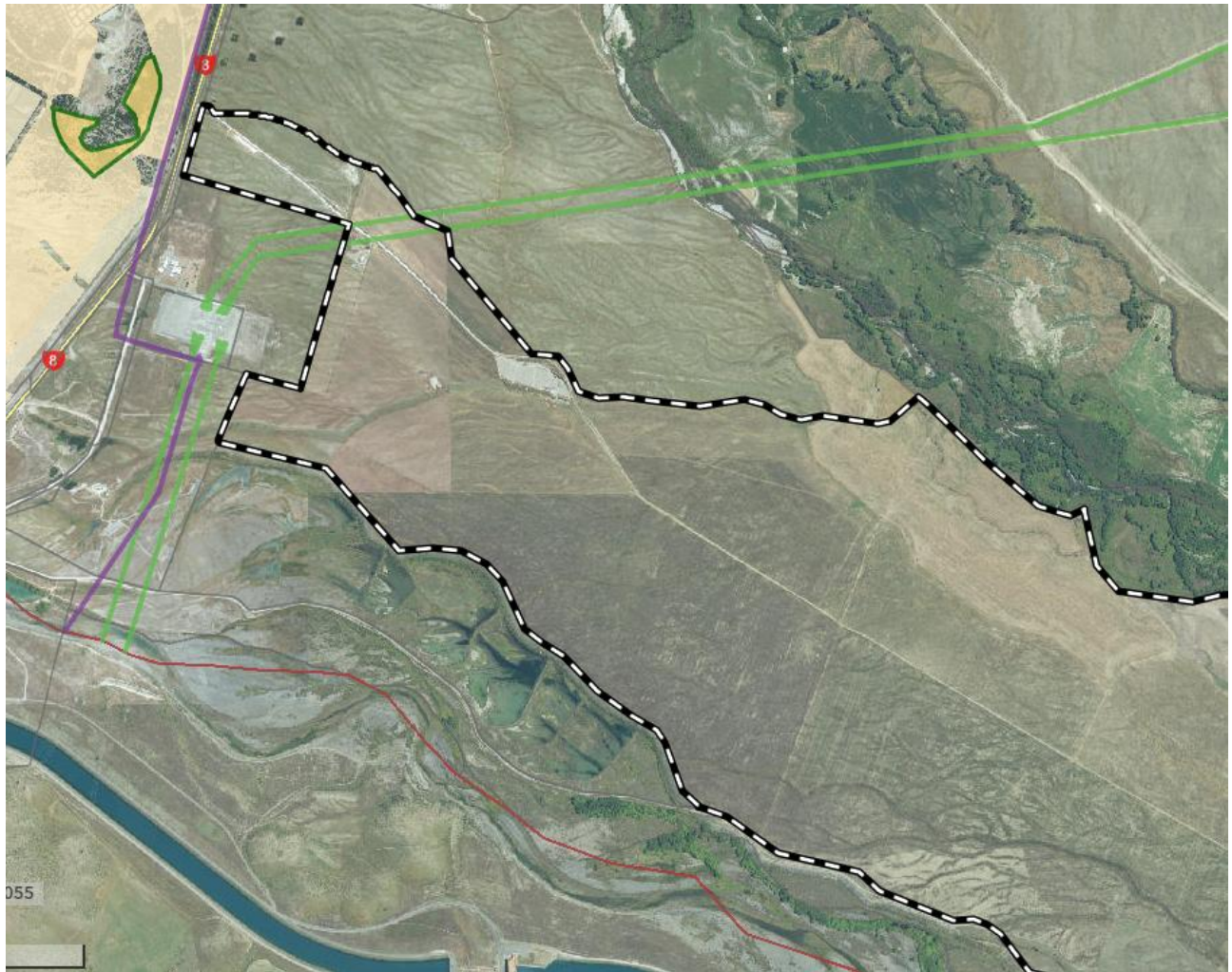


Figure 3.9: Transpower Electricity Transmission Lines (in green)



Figure 3.10: Transpower lines and towers mapped across the subject site.

Areas of Visual Vulnerability

The site is covered by areas of High and Medium Visual Vulnerability as shown in Figure 3.11 below. The MDP recognises that within the ONL there will be areas with greater capacity to absorb different or more intensive use and development. The MDP uses a scale of low – medium – high with high visual vulnerability representing those areas with less ability to absorb development.

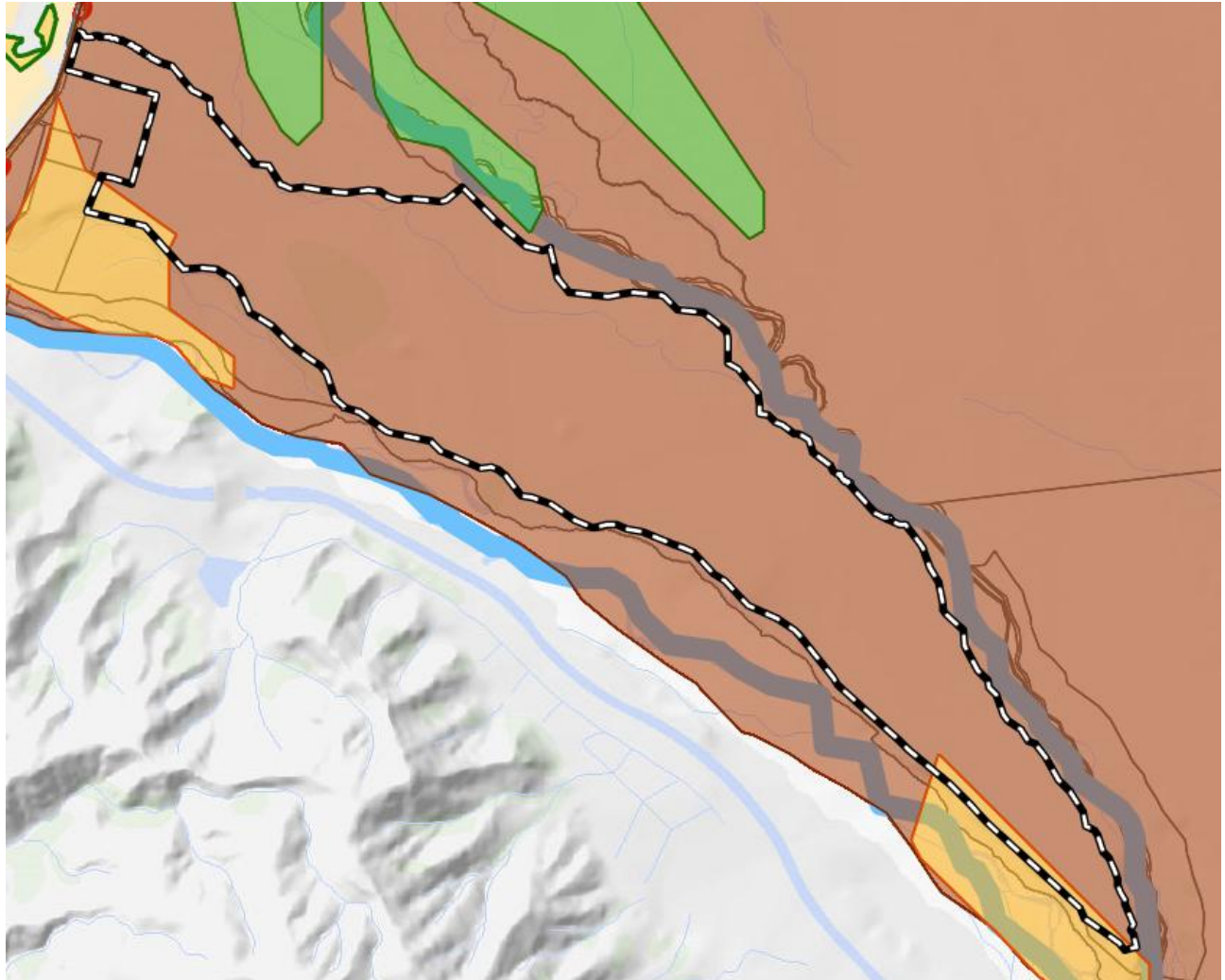


Figure 3.11: MDP Areas of Visual Vulnerability (yellow = medium, red = high).

3.4 Water Catchment

The application site is located in the Upper Waitaki Catchment / Upper Waitaki Zone. The CLWRP describes the Upper Waitaki Catchment as follows⁴:

The Upper Waitaki catchment is the most distinctive and largest of New Zealand's high inland basins. The landscape is almost completely derived from glacial activity with features ranging from alpine ice fields and active glaciers with fresh terminal moraines and lakes, to immense valley moraines, braided river plains and extensive intact sequences of basin floor features of moraine and outwash plains. These latter features are the most extensive in New Zealand.

As discussed, the Ōhau River and Twizel River border the site to the south and north respectively. The Ōhau River exits Lake Ōhau and has been historically dammed, with it now a significantly

⁴ Environment Canterbury (ECan), Canterbury Land and Water Regional Plan (operative), Section 15 Waitaki and South Coastal Canterbury.

smaller river due to the Ōhau Canal taking water from the river for hydro-electric generation. The Twizel River has its headwaters in the Ben Ohau Range and has a length of approximately 30 km. The confluence of the two rivers is at the southeastern corner of the site before entering Lake Benmore.

The site is elevated from the surrounding riverbeds along the northern and southern boundaries. At the western end of the site is another terrace that crosses the site creating a distinct upper and lower plateau to the site. These escarpments provide habitat for a number of native flora and fauna species (discussed further in Section 3.5 below).

The application site catchment area is bounded by SH 8 and the Twizel and Ōhau Rivers which converge at the southwestern end of the site before entering the head of Lake Benmore and the Waitaki River. The catchment area is approximately 1200 ha, and the distance from SH 8 to the bottom of the site is approximately 9 km. The site is without any formalised drainage system infrastructure or watercourses.

During light and minor rainfall events generally, runoff is captured at the source and discharged directly to ground. During heavier larger periods of rainfall it is expected stormwater runoff will follow site grading and concentrate in the low points of the historic river braids.

The LINZ topographic map indicates a stream course running from an oxidation pond north of the site, southwards into the site (Figure 3.12). This appears to be historic but could be associated with the oxidation pond. Site visits have determined no evidence of a flowing stream with the feature potentially functioning as an overland flow path during rainfall events.

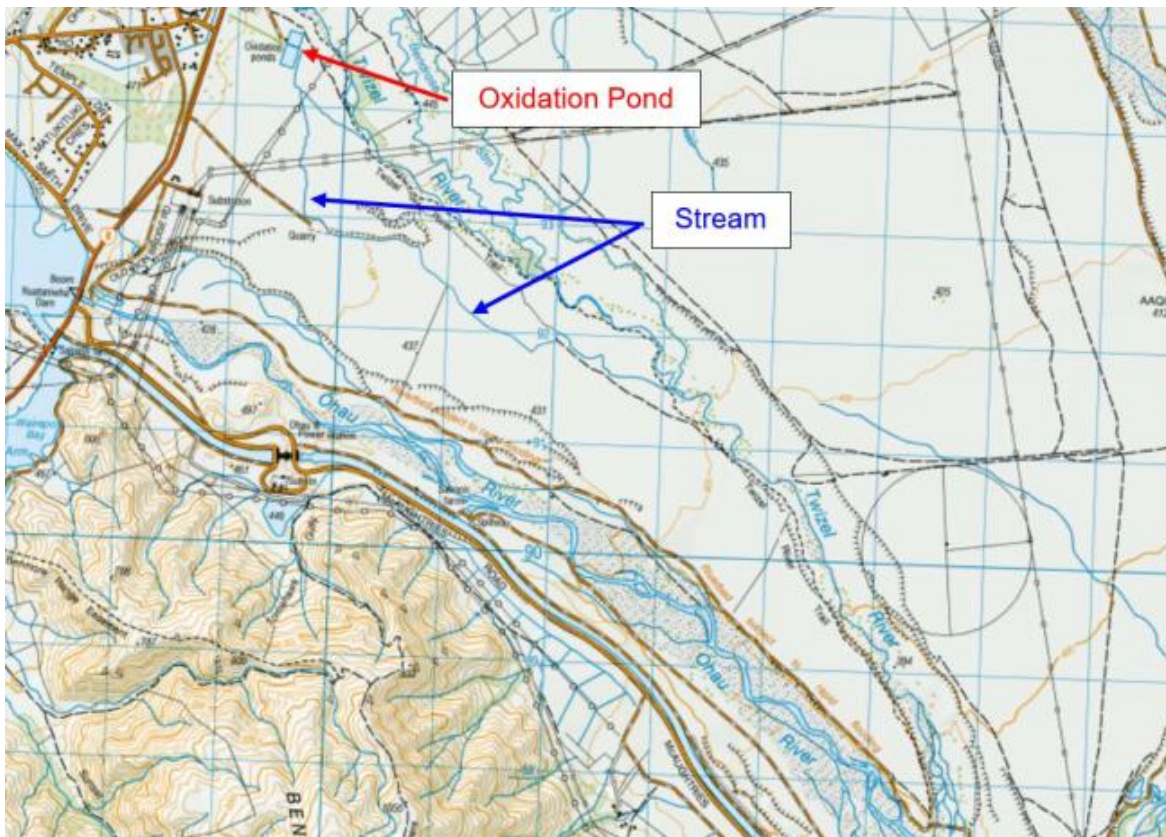


Figure 3.12: LINZ topographic image showing the stream running through the site, originating from the oxidation pond

3.4.1 Groundwater

Groundwater in the Upper Waitaki is hydraulically connected to surface water, including braided rivers, springs, wetlands, and lakes. The CLWRP and Waitaki Catchment Water Allocation Regional Plan manage groundwater in the Upper Waitaki as a hydraulically connected component of the wider catchment, requiring that abstraction does not cause long-term declines in levels or artesian pressure, does not compromise groundwater-fed surface waters or ecosystems, and does not result in declining groundwater quality, with allocation limited and nutrient losses tightly controlled to protect high-value alpine and lake environments.

Depth to groundwater is variable over the catchment and within specific basins. Wetlands and springs are generally associated with shallow groundwater including those associated with the Grays, Ahuriri, Twizel and Ōhau Rivers.

The larger groundwater storage areas, semi-confined or unconfined aquifers are found in the Tekapo and Twizel basins. All groundwater in the Waitaki upper catchment flows into Lake Benmore as indicated by the hatched groundwater allocation zone shown in Figure 3.13 below.

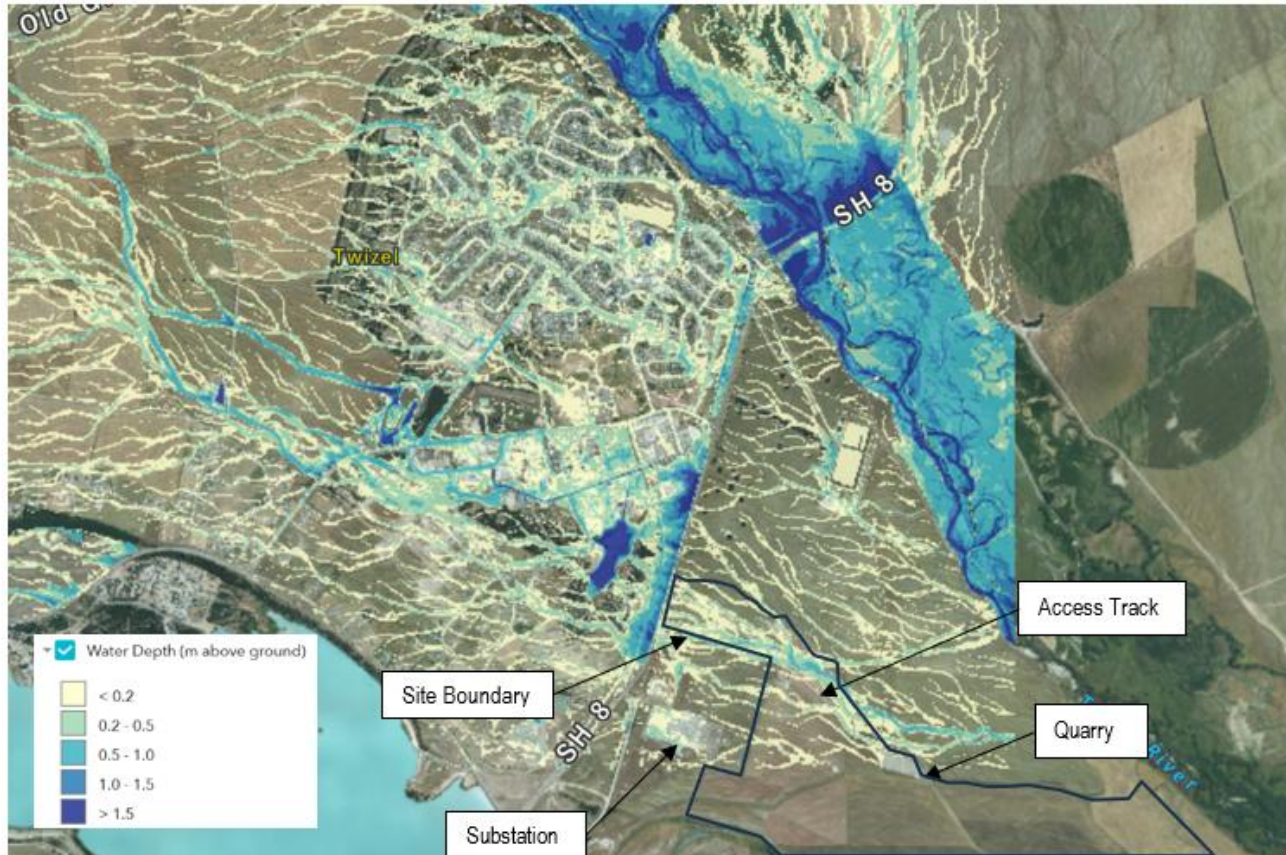


Figure 3.14: Flood Model Depth Results 500 year ARI (Source ECan Maps 2023)

The localised catchment contributing to and including the site is described in the Flood Hazard Risk Assessment as ~1200 ha, extending from State Highway 8 (SH8) to the lower parts of the site (approx. 9 km). The site has no reticulated stormwater network and stormwater conveyance is predominantly overland.

Under typical conditions, runoff from Twizel township is intercepted by SH8 and the township stormwater network and discharged to the Twizel River; however, in larger rainfall events runoff can overtop SH8 and move across the site along overland flow paths.

These overland flows generally track through historic braided channels across the site before spilling toward the surrounding riverbeds at the site margins.

3.4.3 Hydro Inundation Overlay

As a result of the hydroelectric stations within the District that are part of the Waitaki Power Scheme, there is a risk, that in the unlikely event of a failure, potential areas of inundation could occur. The areas within the District subject to risk from such failures are mapped within the MDP Hydro Inundation Hazard Overlay.

A map of the Hydro Inundation overlay is provided in the Statutory Planning Rules Assessment found in attachment 3.6 with the overlay impacting the site across the northern boundary and

bordering the southern boundary where there is potential for the site to experience inundation in the unlikely event of a dam or canal breach.

3.5 Ecological Values

An Ecological Assessment of potential ecological effects has been undertaken by Wildlands (attachment 2.14). It includes ecological surveys of vegetation, habitats, plants, lizards, birds, and terrestrial invertebrates across the site. This is supported by an Integrated Framework document to assist the Panel which demonstrates the full package of ecological work undertaken and the interrelationship between the documents (see attachment 2.15).

The site is located within the Pukaki Ecological District of the Mackenzie Basin and is bounded by the Ōhau River to the south and the Twizel River to the north, both of which are braided river systems recognised as naturally rare and nationally threatened ecosystems. The wider landscape has been extensively modified through cultivation and grazing; however, the site retains significant indigenous biodiversity values, primarily concentrated on its margins.

There are number of DOC conservation areas surrounding the subject site. These non-contiguous conservation areas collectively form the Lake Ruataniwha Conservation Area. Figure 3.15 below maps the conservation areas relative to the site.

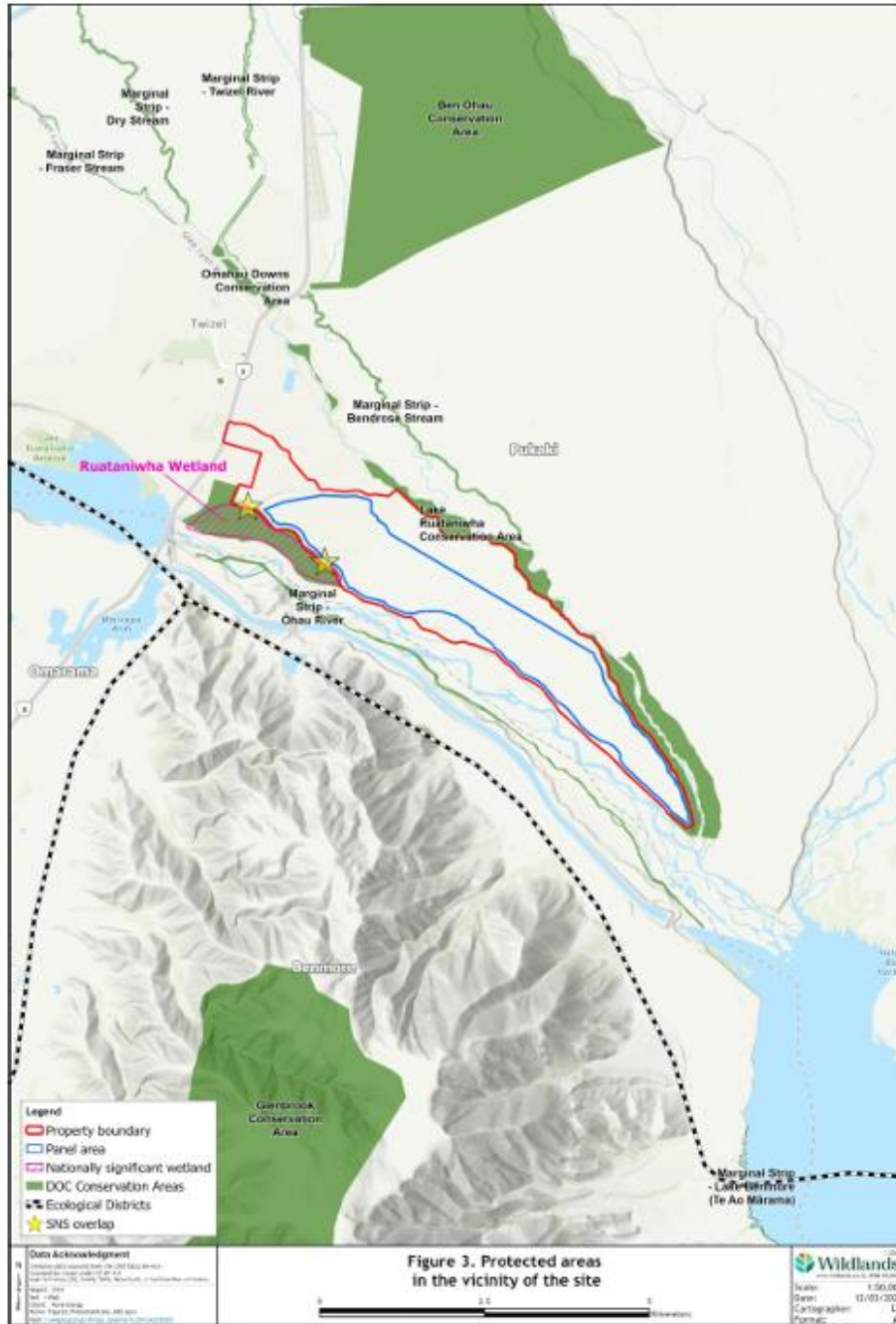


Figure 3.15: Protected areas relative to the subject site (source: Wildlands, 2026).

3.5.1 Vegetation and Habitat Values

A total of 15 vegetation and habitat types were identified across the site. The central portion is dominated by exotic improved pasture, while indigenous and semi-indigenous habitats occur mainly around the site margins, including scarp herbfield and grassland, old river terraces, flood channel shrubland, and wetlands.

Using the Canterbury Regional Policy Statement (CRPS) criteria, 13 of the 15 habitat types located around the site margins were assessed as ecologically significant, largely due to their role in supporting Threatened and At Risk fauna, the presence of Threatened or At Risk plant species, and their association with rare ecosystem types such as ephemeral wetlands and inland outwash gravels.

All indigenous vegetation types present are considered to have high ecological value, reflecting their limited extent within the Mackenzie Basin and their importance for maintaining remaining biodiversity values in a highly modified landscape.

3.5.2 Flora Values

Surveys recorded 27 indigenous and 68 exotic vascular plant species. Seven indigenous plant taxa present at the site are classified as Threatened or At Risk, including one Threatened – Nationally Vulnerable species and six At Risk – Declining species. These plants are largely associated with scarp habitats, old river terraces, and indigenous herbfields located on the margins of the site.

3.5.3 Avifauna Values

Desktop and field assessments indicate that the site and its immediate surrounds support eight Threatened and nine At Risk bird species, with two Threatened and five At Risk species confirmed during field surveys. The site provides foraging, roosting, and potential breeding habitat, particularly for open-habitat and braided-river species, and functions as part of a wider network of high-value habitats associated with the Ōhau and Twizel river systems and nearby wetlands.

3.5.4 Lizard Values

Three indigenous lizard species were confirmed on site, including two At Risk – Declining species and one Not Threatened species. Lizard habitat occurs across much of the site, with high- and moderate-quality habitat associated with scarp herbfields, old river terraces, and rock piles, and lower-quality habitat within cultivated pasture. These populations form part of wider Mackenzie Basin lizard populations that are under ongoing pressure from habitat loss, land-use change, and predation.

3.5.5 Terrestrial Invertebrate Values

The site supports high-value terrestrial invertebrate habitat, including two Threatened and one At Risk species: Tekapo ground wētā (Threatened – Nationally Endangered), minute grasshopper (Threatened – Nationally Vulnerable), and Otago short-horned grasshopper (At Risk – Declining). The most important habitats for these species occur on old river terraces and outwash gravels, which are recognised as naturally rare ecosystem types.

3.5.6 Freshwater and Riparian Environments

Although no permanent waterways occur within the development footprint, the site is closely associated with the Ōhau and Twizel braided rivers and adjacent wetlands, which support Threatened and At Risk indigenous fish species and provide regionally and nationally significant aquatic and riparian habitat, particularly for avifauna.

There are four wetland areas identified across the site, with one being an ephemeral wetland. The Ruataniwha Wetland borders the application site to the west/north-west as shown in Figure

3.15. The complete vegetation and habitats within the site boundaries are illustrated in Figure 3.16 below and in the Wildlands Assessment of Potential Ecological Effects (attachment 2.14).

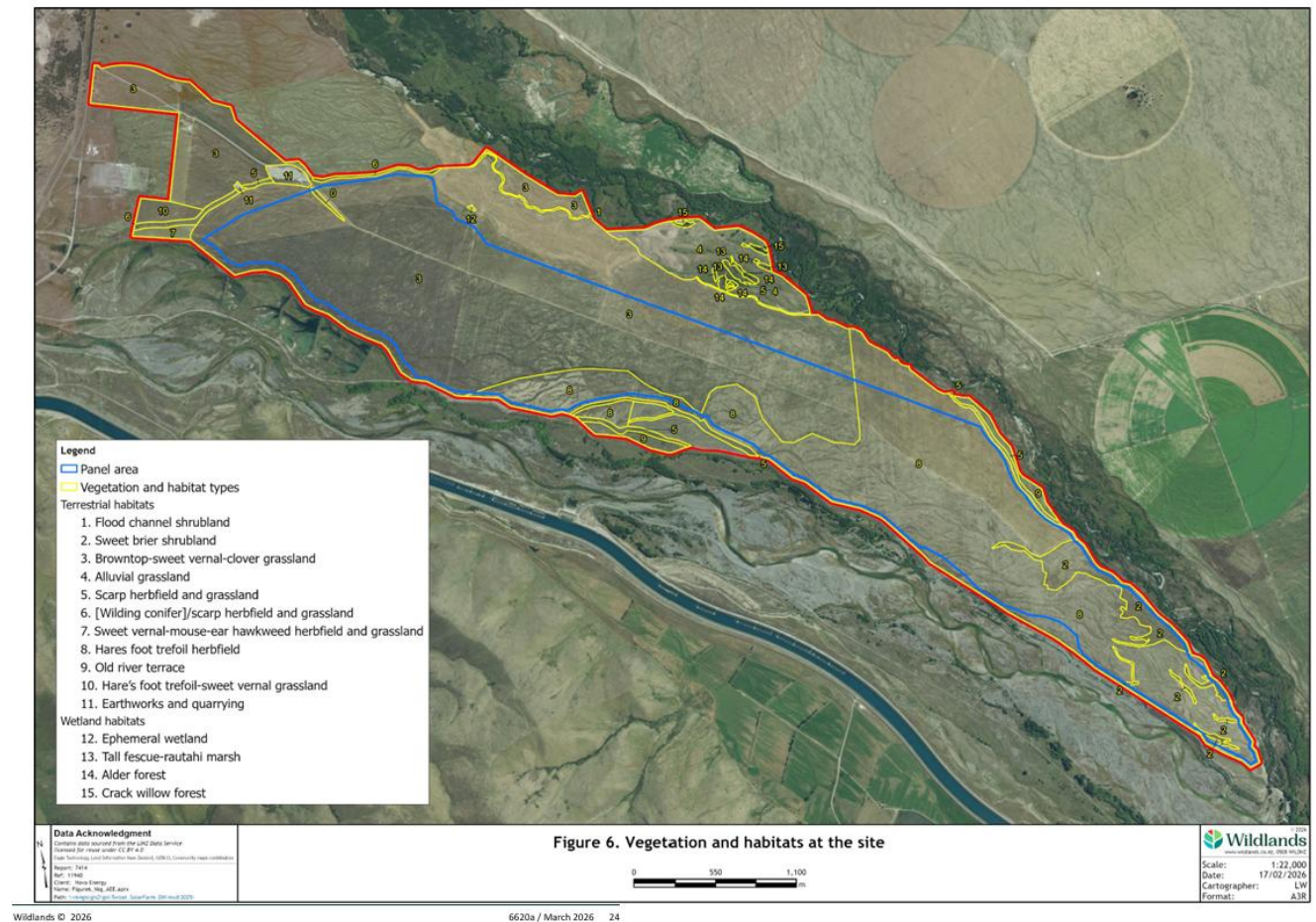


Figure 3.16: Vegetation and habitats within the site (source: Wildlands, 2024).

3.6 Cultural Heritage and Archaeology

3.6.1 Mana Whenua

Kāi Tahu Whānui are the iwi who hold mana whenua over a large proportion of Te Waipounamu. Te Rūnanga o Ngāi Tahu (Kāi Tahu) is the mandated iwi authority established by Kāi Tahu Whānui under section 6 of the Te Rūnanga o Ngāi Tahu Act 1996 to protect the beneficial interests of all members of Kāi Tahu Whānui.

Papatipu Rūnanga map (Figure 3.17) illustrates the location of the three hapū / papatipu rūnaka who have traditional associations with the area as identified in the Manawhenua Report included as attachment 2.1. These hapū / papatipu rūnaka are set out below along with their stated boundaries.

- Te Rūnanga o Arowhenua (Yellow):

- The takiwa of Te Runanga o Arowhenua (Arowhenua) centres on Arowhenua and extends from Rakaia to Waitaki, sharing interests with Ngāi Tuahuriri ki Kaiapoi between Hakatere and Rakaia, and thence inland to Aoraki and the Main Divide.
- Te Rūnanga o Waihao (Green):
 - The takiwa of Te Runanga o Waihao (Waihao) centres on Wainono, sharing interests with Te Runanga o Arowhenua to Waitaki, and extends inland to Omarama and the Main Divide.
- Te Runanga o Moeraki (Blue):
 - The takiwa of Te Runanga o Moeraki (Moeraki) centres on Moeraki and extends from Waitaki to Waihemo and inland to the Main Divide.

These three hapū / paptipu rūnaka are recognised as holding mana whenua status over the takiwā.

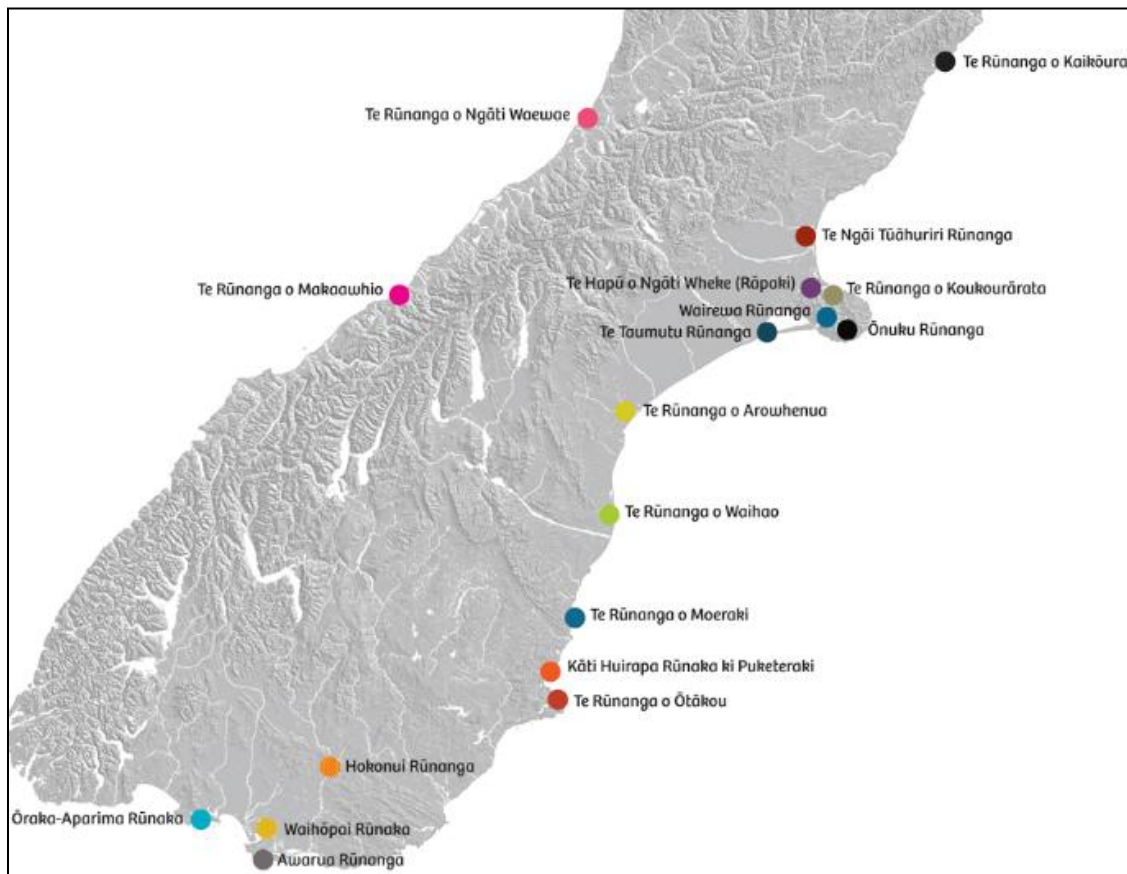


Figure 3.17: Te Rūnanga o Ngāi Tahu Papatipu Rūnanga Map

3.6.2 Relationship of Papatipu Rūnaka to Te Manahuna and the Application Site

A Manawhenua report was commissioned by Nova at an early stage of Project development. The report provided input and feedback on the cultural impacts of the Project and this, together with

ongoing consultation with mana whenua, has informed the way in which the Project design and application have been refined. Consultation with mana whenua has been ongoing. The Manawhenua report has recently been updated (May 2026) to reflect further project information, environmental assessments and management plans that have been shared with mana whenua, amongst other updates. The report has been prepared by Aoraki Environmental Consultancy Limited, Aukaha (1997) and Te Rūnanga o Ngāi Tahu on behalf of Te Rūnanga o Arowhenua, Te Rūnanga o Moeraki and Te Rūnanga o Waihao (attached as Attachment 2.1).

The report identifies that the Aoraki area is of immense cultural, spiritual and traditional significance to Kāi Tahu Whānui. Aoraki is at the heart of Kāi Tahu creation traditions and is central to their whakapapa and identity. Aoraki is the most sacred of Kāi Tahu tūpuna (ancestors), from whom mana whenua descend. For further information on the relationship and mana whenua values and interests please refer to the Manawhenua report provided in attachment 2.1.

3.6.3 Ngāi Tahu Claims Settlement Act 1998

Subclause 5((1)(i) of Schedule 5 requires a consent application to provide:

- information about any Treaty settlements that apply in the area covered by the consent application, including—
 - (i) identification of the relevant provisions in those Treaty settlements; and
 - (ii) a summary of any redress provided by those settlements that affects natural and physical resources relevant to the project or project area.

The relevant Treaty settlement is the Ngāi Tahu Claims Settlement Act 1998. The Act includes the following principles and provisions:

- The Crown's settlement offer provided formal apology to acknowledge that Ngāi Tahu suffered grave injustices that significantly impaired its economic, social and cultural development.
- The Crown expressed its profound regret and apologised unreservedly for the suffering and hardship caused to Ngāi Tahu. The Apology also served to confirm the validity of the Ngāi Tahu Claims, which had been borne by seven generations.
- The Settlement provided for cultural redress to Ngāi Tahu which was aimed at restoring the ability of Ngāi Tahu to give practical effect to its kaitiaki responsibilities. The Cultural Redress elements of the Crown's Settlement Offer aimed to restore Ngāi Tahu's ability to give practical effect to their kaitiaki responsibilities.
- Ownership and control was offered by the Crown in the form of:
 - Return of ownership of Pounamu to Ngāi Tahu
 - Specific Sites:
 - Arapura Valley: The creation of the Waitaiki Historic Reserve to be vested, at no cost, in the Mawhera Incorporation which will administer this land under the Reserves Act.

- Rarotoka: Transfer of the freehold title, exempt from marginal strip requirements, to Te Rūnanga o Ngāi Tahu and a 500 metre Fisheries Area has been created around the island.
- Whenua Hou: Codfish Island Nature Reserve has been changed to the Whenua Hou Nature Reserve. Crown provided Te Rūnanga o Ngāi Tahu with a Deed of Recognition (DoR) over Whenua Hou as well as a Statutory Acknowledgment (SA). Both of these statutory instruments recognise the Ngāi Tahu association with Whenua Hou and provide for the ongoing recognition of that association.
- Crown Tītī Islands: Transfer of the freehold title, exempt from marginal strip requirements, to Te Rūnanga o Ngāi Tahu at no cost to the tribe. The islands are managed by Rakiura Māori as if they were a nature reserve. An administering body, made up of ten Rakiura Māori, has been appointed to control and manage the islands.
- Wāhi Taonga: the return to Ngāi Tahu of Tutaepatu (Woodend Lagoon) and financial compensation to restore the environment of the lagoon.
- High Country Stations:
 - Elfin Bay, Greenstone and Routeburn stations purchased by the Crown and subsequently transferred to Ngāi Tahu at market value with their intention to gift the mountain tops to the nation in recognition of their conservation values. The bulk of the remaining area of bush, mountain lands and the Maroroa Valley – comprising about 90% of the total area were to be leased back in perpetuity to the Department of Conservation at a peppercorn rental for conservation purposes. Ngāi Tahu retains a right to veto any commercial activities on these lands.

None of the above-mentioned sites are located in proximity to the application site.

The Settlement also provides for nohoanga entitlements. A nohoanga entitlement is a renewable statutory entitlement that the Crown creates and grants to Te Rūnanga o Ngāi Tahu over certain Crown-owned land in the Ngāi Tahu claim area, for the purpose of allowing members of Ngāi Tahu Whānui to temporarily occupy land close to waterways on a non-commercial basis so they can access waterways for lawful fishing and gathering of other natural resources.

The closest nohoanga entitlements to Nova's site are sites 6, 9 and 10 in Schedule 95 of the Settlement. Site 6 is located alongside the Haldon Camping Ground, approximately 3.5 km to the east of Nova's site. Sites 9 and 10 are located on the opposite side of SH8 to Nova's site, approximately 4 km to the west. Mana whenua has stated to Nova during consultation that not all nohoanga sites are publicly documented, and that there may be other culturally significant sites in closer proximity to the Nova site.

The settlement legislation also provided the Crown's acknowledgement of statements of association (a statutory acknowledgement). Those statutory acknowledgment areas relevant to the application site are addressed in the next section.

3.6.4 Statutory Acknowledgements

There are no statutory acknowledgement areas over the application site or adjoining the boundaries. The Manawhenua report references Lakes Ōhau and Benmore as being statutory acknowledgement areas within the wider project area with great significance to mana whenua. Figure 3.18 below demonstrates the site's location with regard to the nearest statutory acknowledgement area - Lake Benmore, approximately 2.5 km from the southern end of the site.

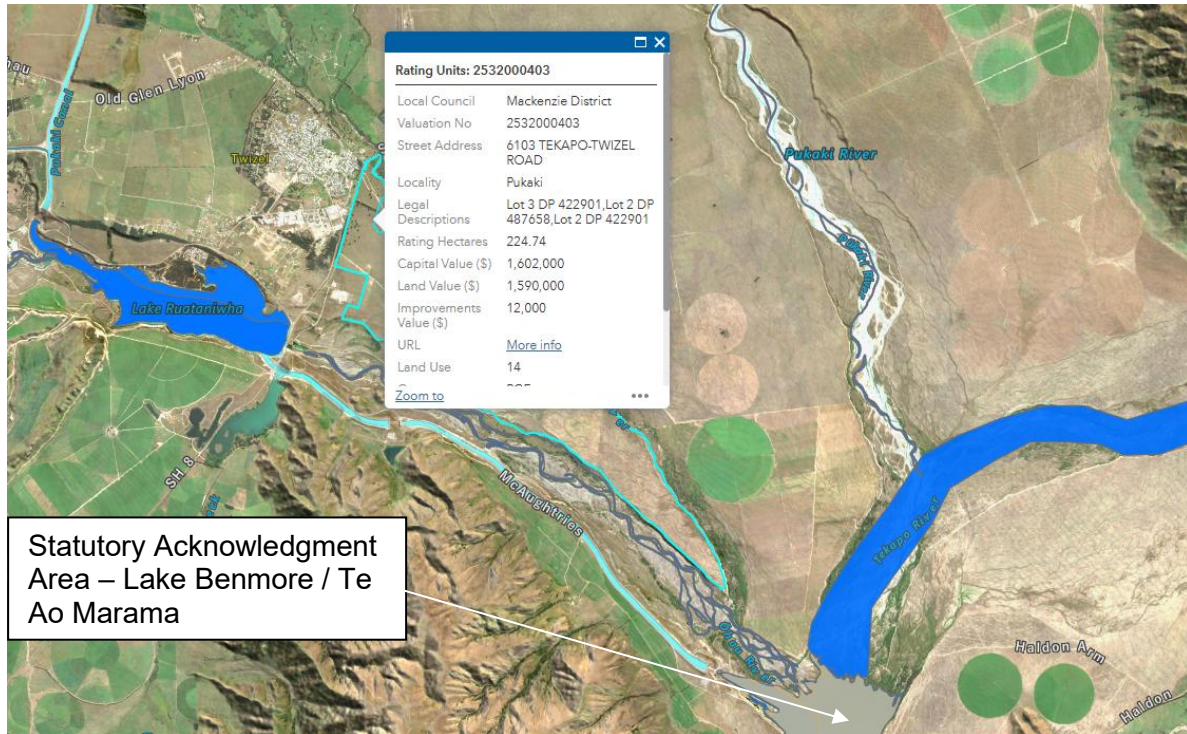


Figure 3.18: Statutory Acknowledgement Area(s) in Brown (Source: Environment Canterbury /TroNT mapping project, 2006)

3.6.5 Listed Sites of Historic Value and Heritage Sites

There are no sites of Historic Value or Heritage Sites identified in the MDP planning maps on, or within a one-kilometre radius of, the application site. Environment Canterbury /TroNT mapping identifies the Ōhau River as a Rūnanga Sensitive Areas – Mahinga kai. The location of the Ōhau River relative to the site is set out in Section 3.4 above.

Both the Whakatipu/Twizel River and the Ōhau River are identified in the MDP as SASM.

3.6.6 Other Sites of Cultural Significance

The Manawhenua report identifies two sites of cultural significance in close proximity to the application site that are still relatively untouched by the introduction of the hydro scheme and a change in river flows. These are “Para Arero” and “Kahuika”.

Para Arero is a kāika nohoaka (traditional area of communal living on tribal lands) and kāika mahika kai (traditional food gathering) 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.

To the south-east 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.

3.6.7 Archaeology

An Archaeological Assessment has been undertaken by Absolute Archaeology Ltd and is provided in attachment 2.4. The Archaeological Assessment does not identify any archaeological sites on the application site, concluding the likelihood of archaeological discovery to be low.

Archaeological matters are considered further in Section 5.12.

3.7 Light Environment

Night-time light in the area is generally low. There is no form of commercial or industrial lighting on the site that creates light pollution.

The application site is located within the Aoraki Mackenzie International Dark Sky Reserve which was designated an International Dark Sky Reserve by the International Dark Sky Association in 2012. It is an internationally recognised area of high astronomical observability of celestial objects. Low levels of lighting pollution contribute to observability at night. The application site is located close to the reserve's southern boundary.

3.8 Noise Environment

The quarry on the application site, and traffic movements along SH8 are the most significant noise sources in the surrounding environment. Other notable intermittent noise-generating activities are the quarry and farming activities.

3.9 Transport Environment

The existing transport environment is described in detail in the Integrated Traffic Assessment (ITA) provided in attachment 2.16. The ITA has assessed the site in light of the proposed development with notable transport features of the site set out below.

The application site is currently accessed via an established vehicle accessway on SH 8. The posted speed limit on SH 8 at the site entrance is 100 km/hr. The existing vehicle accessway was previously upgraded for the purpose of meeting safety standards required as part of the development of the quarry located on the site. Internal tracks extending from the accessway to other areas through the site are illustrated in Figure 3.19 below.

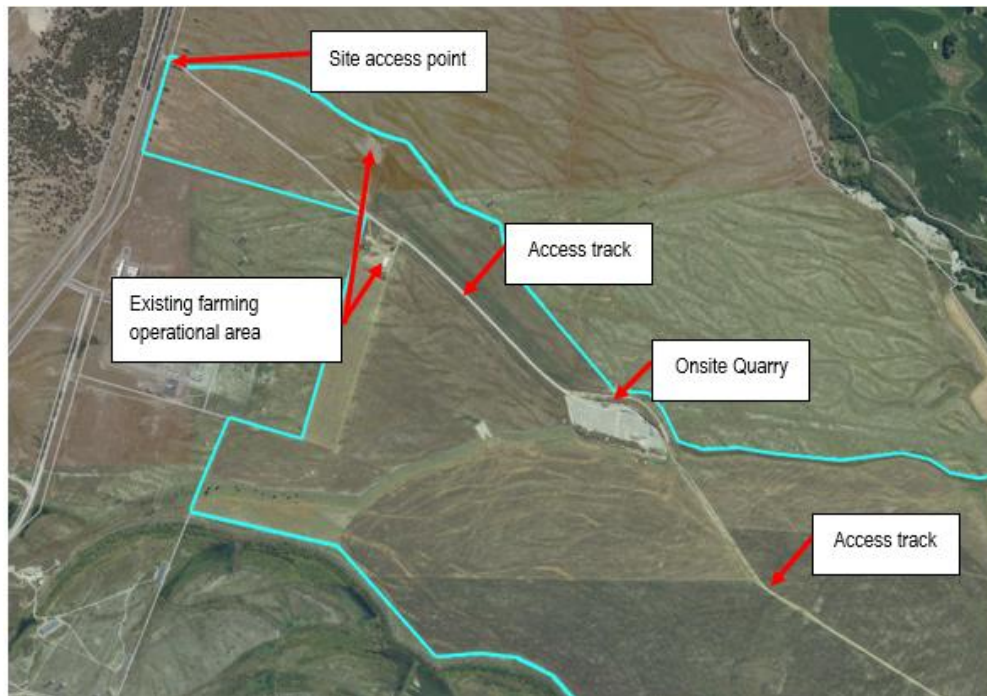


Figure 3.19: Existing transport environment

Traffic on SH 8 adjacent to the site is reported as 3945 annual average daily traffic (AADT), with 18.5% Heavy Commercial Vehicles (HCV) (Mobile Roads) (Dec 2023). This equates to approximately 730 HCV movements on the road per day.

Current traffic generated from the site can be primarily attributed to the quarry which is subject to consented traffic limits of 40 vehicle movements per day, which equates to a maximum of 20 vehicles entering the site and 20 vehicles exiting the site. The footprint of the quarry is outside of the planned works area for the solar farm. Additional vehicle movements may occur in support of the farming activities on site.

At the site location, SH 8 is a rural sealed two-lane, two-way road with lane widths typically 3.5 m, and total seal width of 8 to 8.5 m. The road corridor generally consists of sealed shoulders 0.5 m wide, with pavement formation to a feathered edge and table drain on each side of the road.

There are no dedicated cycle/pedestrian facilities on either SH 8 adjacent to the site, which is typical within this rural setting. The Twizel River Trail (shared use track) follows the Twizel River along the north of the site, noting access off SH 8 is more than 2 km away from the site entrance. The Alps to Ocean cycle trail crosses SH 8 at Ruataniwha Road and continues on north Figure 3.20.

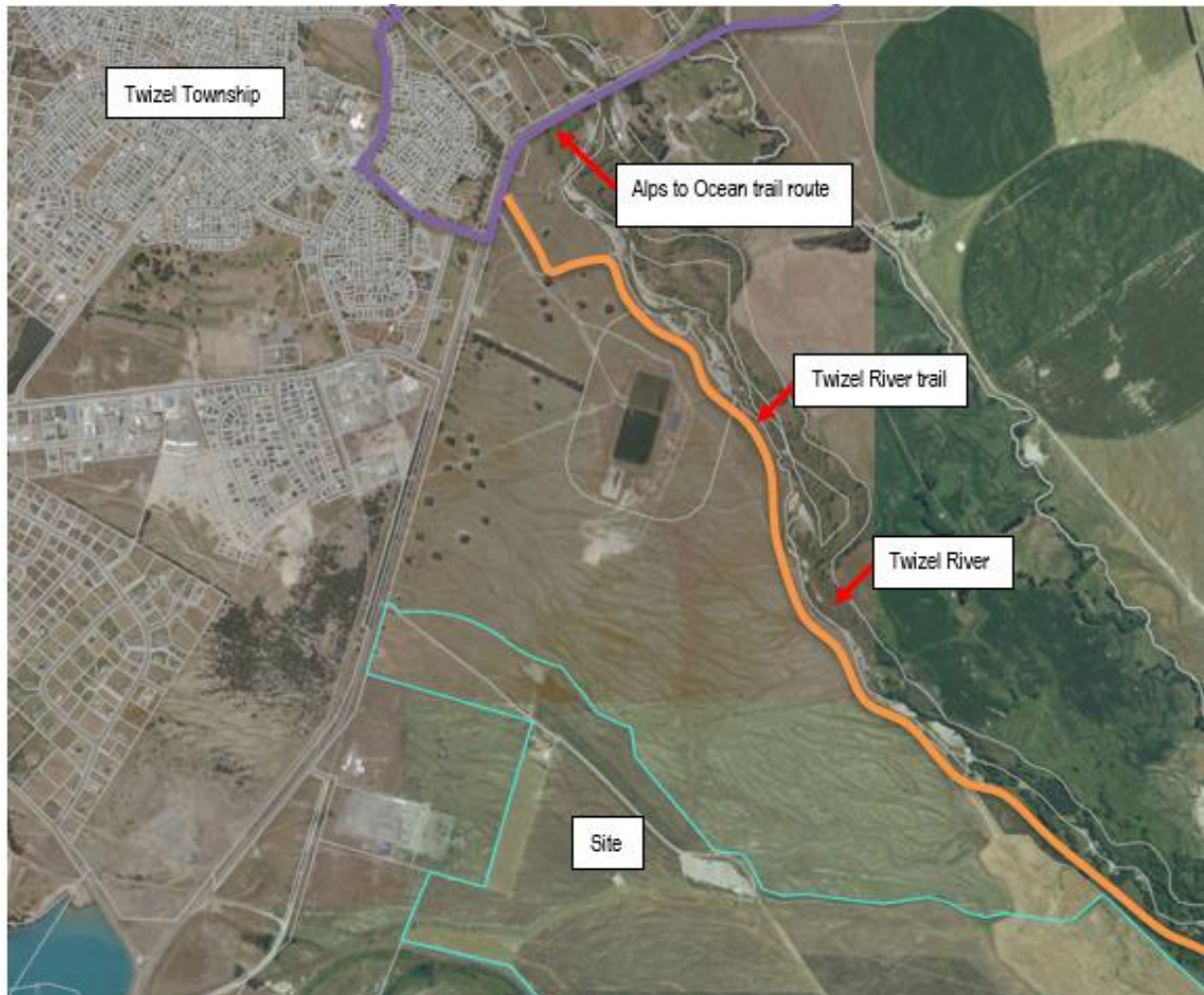


Figure 3.20: Twizel River Trail and Alps to Ocean trail route relative to the subject site (outlined in blue)

3.10 Geotechnical

A geotechnical assessment of the site and an NPS-Natural Hazards Assessment has been undertaken by Engineering Design Consultants Ltd (EDC) provided as attachments 2.3 and 2.2 respectively.

Geological mapping of the site has identified the following:

- The site is underlain by Late Pleistocene river deposits, comprising '*Generally unweathered; variable mixtures of gravel/sand/silt/clay forming extensive terraces or planes*' (Q2a); and
- Parts of the site, toward the northern and southern rivers, may be underlain by Holocene river deposits, comprising '*Generally unweathered; variable loose gravel/sand/silt in active flood plains*' (Q1a).

Photos of the quarry cuts provide an example of the gravelly nature of the soils and of note indicate areas with frequent cobbles and boulders (Figure 3.21).

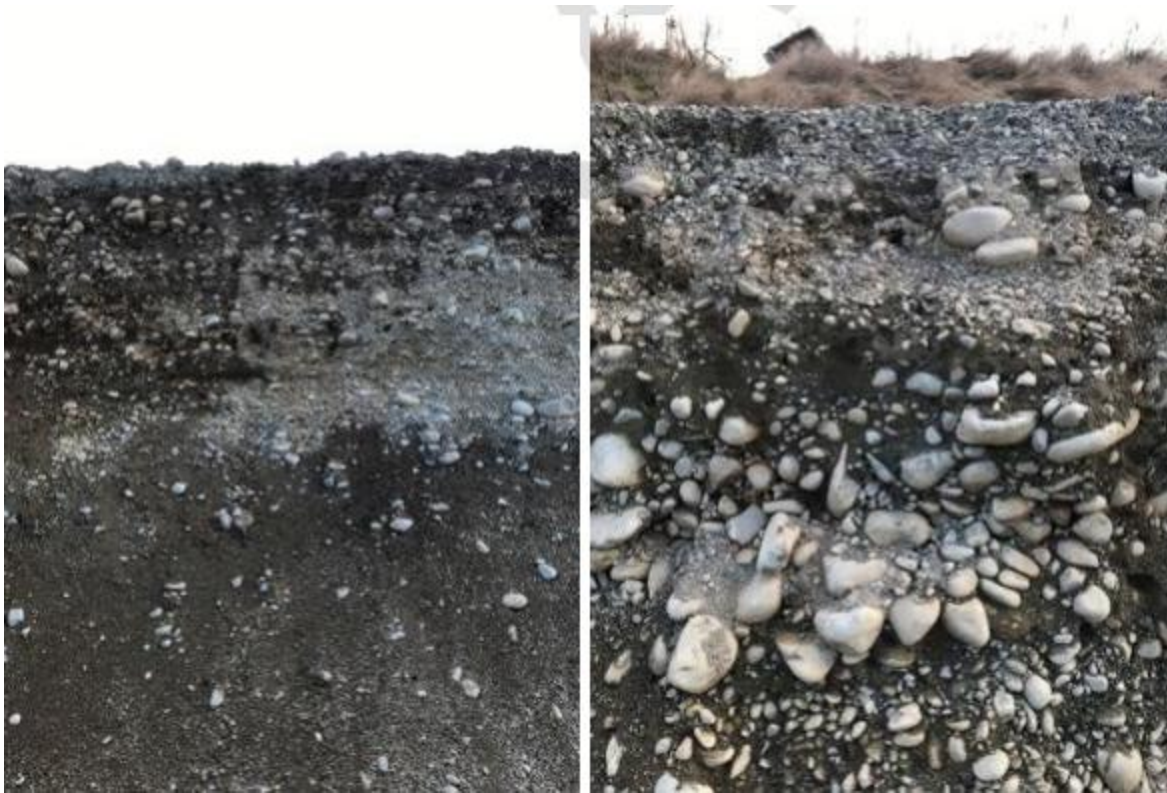


Figure 3.21: On-site quarry cuts showing site geology

Overall, geohazards have been summarised as the following:

- The 'Waimata, Mackenzie and part Waitaki liquefaction susceptibility (2008)' map layer indicates that the site is located within an area as having 'very low' risk of liquefaction. The areas close to the Twizel River to the north, and the Ōhau River, to the south, are shown to be at a 'low' risk of liquefaction
- Despite the site having rivers to the north and south significant erosion is not evident on the historical aerials however cannot be discounted during flood events.
- Despite steep slopes forming boundaries to much of the eastern two-thirds of the site, the historical aerials do not indicate evidence of significant slope collapse on these slopes. This evident stability is likely due to the dense granular, and likely free draining, nature of the soils. However, the risk of slope instability is an important consideration.
- The site is in an area subject to seismic activity, though there are no active faults recorded on the site and therefore the risk of fault rupture on the site is low.
- Groundwater is not generally expected to be within the upper 5.0 m of ground, though it is possible in the lower-lying area to the north of the site.

The assessment concludes that geotechnically, the site is generally suitable for development.

3.11 Soil Contamination

A PSI (attachment 2.7) has been undertaken in accordance with the requirements of the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NESCS) and Ministry for the Environment (MfE) Contaminated Land Management Guidelines No. 1 – Reporting on Contaminated Sites in New Zealand (CLMG No. 1).

The ECan Listed Land Use Register (LLUR) online map was accessed on 2nd October 2024. The site was not registered in the ECan LLUR therefore there is no ECan record of Hazardous Activities and Industries List (HAIL) activity associated on the site. MDC records do not identify any record of HAIL activity associated with the site. The LLUR was accessed again on 20th April 2026 and there have been no changes to the above.

The site is located adjacent to a power sub-station and the activities conducted in that sub-station are listed as HAIL B 4. However, the sub-station site is outside the application site and it is highly unlikely that this HAIL activity has impacted the soils on the application site.

The PSI also notes that areas on the site were used as part of a dairy farm and use of cadmium derived fertilizers is possible to have occurred on the site. The accumulation of cadmium is listed as HAIL I. The PSI notes that through the historical image review, it can be confirmed that some areas of the site were used for farming only after 2015 and there is a voluntary limit established by the Fertilizer Association on the use of cadmium in farming since early 1995. The cadmium report generated by the Ministry of Primary Industries (2008) presents a national map of New Zealand showing the topsoil cadmium levels; and soils in the Twizel region are shown to be between 0 – 0.25 mg/kg making it highly unlikely for the soils at the site to exceed the cadmium levels of NESCS commercial/industrial standards. As such, the PSI concluded that this activity is not considered a HAIL.

4 PROPOSAL

The following section provides an overview of the proposal from construction through to decommissioning and site rehabilitation. The application site is to be developed in general accordance with the plans and information submitted with this application.

4.1 Consent Structure

Resource consents are sought under the MDP and the CLWRP for:

- a. Project construction, operation and maintenance of the solar plant activity (MDP); and
- b. Stormwater discharge and earthworks consents (CLWRP).

The Statutory Planning Rules Assessment in attachment 3.6 provides a full assessment of the rules of the MDP and CLWRP and consents required. Nova anticipates separate consents will be issued for these activities (if consents were to be granted) with Nova as the consent holder.

Nova will assume responsibility for the construction of the solar farm (under consent conditions). Works within the Transpower substation will be the subject of separate consent applications (if required).

Nova seeks a 10-year lapse date period and a 35-year term for the resource consents.

As outlined in section 1.5.3, Wildlife Act approvals are also sought for the Project.

4.2 Conditions of Consent

Proposed conditions of consent are provided as attachment 3.2. Nova has shared some draft consent conditions with stakeholders but has yet to receive any feedback. Nova welcomes stakeholder feedback on conditions through the FTAA process and the opportunity to review draft conditions of consent through the FTAA process, prior to any final decisions being made.

Proposed conditions for the Wildlife Act approvals are also proposed in attachment 3.3.

4.3 Project Overview

The Project comprises the construction, commissioning and operation of a solar plant and associated infrastructure at the site and connection to the National Grid at the Twizel substation.

The site layout for the solar plant is included in Figure 4.1 below and attachment 1.1 and in the Concept Design Drawings included as attachment 1.

Solar PV (photovoltaic) is a method of power generation converting solar radiation into direct current electricity (DC) using semiconductors. The solar panels absorb light to produce DC electricity. The solar panels are connected together by cables and solar-specific connectors, creating a string of usually between 20 to 30 panels. These strings connect to an inverter that converts the DC electricity into an alternating current (AC) flow of electricity. Central inverters produce a medium voltage (MV) output of 33 kV. The inverters are connected in circuits to convey electricity to the substation, via two 33kV overhead transmission lines, where transformers step

up the voltage to the grid voltage of 220 kV. A simplified illustration of this process is included Figure 4.2.

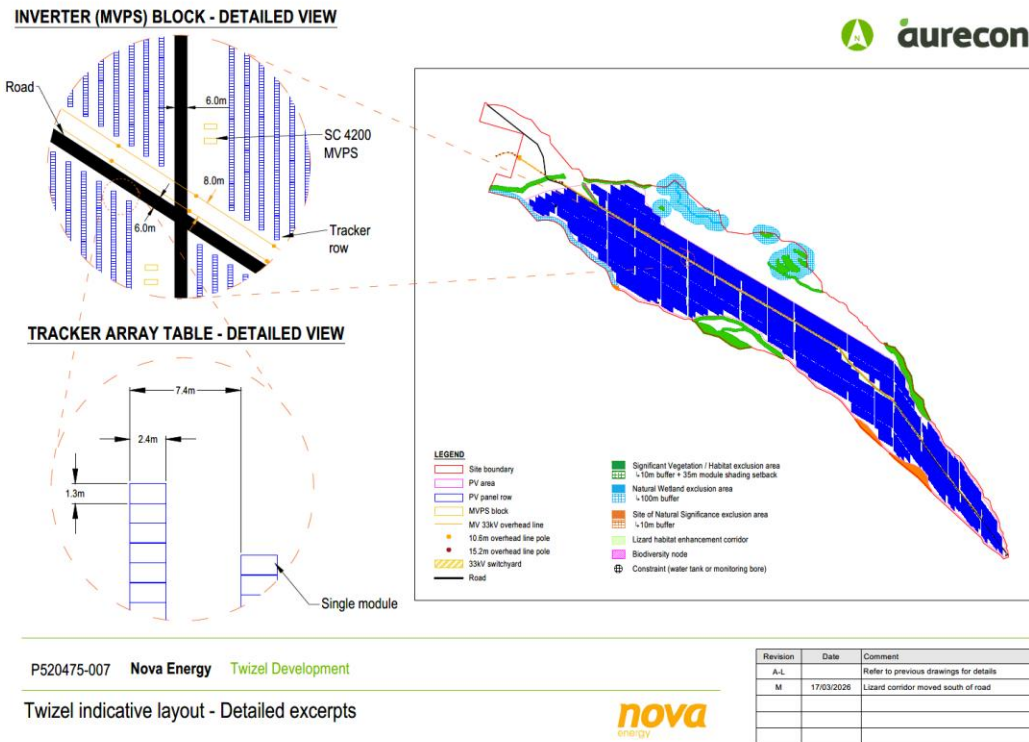


Figure 4.1: Proposed layout (source: Nova 2024, Rev M)

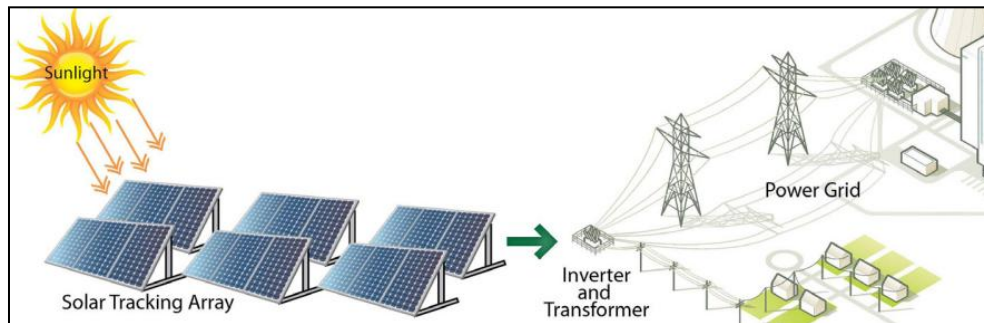


Figure 4.2: Illustration of grid-tied solar PV power plant system⁵

⁵ Image reference: Shining Light on a Bright Opportunity DEVELOPING SOLAR ENERGY ON ABANDONED MINE LANDS, U.S. Environmental Protection Agency Office of Superfund Remediation and Technology Innovation (OSRTI), p. 3, December 2011, viewed 5 December 2024, <<https://semspub.epa.gov/work/11/176032.pdf>>.

4.3.1 Key Project Development Works

Key project development works are summarised in two phases below, being civil works followed by solar plant construction. Collectively, these works will be undertaken in a single continuous stage.

Civil Works

- Construction of internal tracks with a central main track, connected to a network of service tracks providing access to central inverters;
- Earthworks for trenching of 33 kV sub-circuits, PV Panel DC cabling and other communications and plant control cabling, minor cut and fill activity to adjust contours for panel installation may also be required. An Erosion and Sediment Control Plan has been prepared in support of the consent applications (included as attachment 3.4);
- The general design, construction and operational requirements for stormwater management during civil works will include aspects such as:
 - Swale drains to direct stormwater flows and link with existing farm drainage where possible;
 - Retention and sediment settlement ponds, where required, to control discharge flow rates and sediment concentrations;
 - Culverts under the site access tracks, if required; and
 - Natural hazard mitigation works which includes some of the above works.

Plant Construction

The construction of the solar plant requires the installation of support structures (piling) followed by the attachment of solar panels, which are then cabled to the inverters. The inverters are connected to the main transmission lines, which provide a connection to main transformers located at the Transpower Twizel substation. In summary, plant construction involves the following:

- Installation and operation of ground-mounted solar panels on a solar PV tracking system, mounted with single pile foundations. Piling will be similar in methodology to farm fencing installation activities;
- Once the physical panels are installed and secured to their structure, the electrical cabling of panels to the other electrical components and subsequently to inverters;
- Inverters will be mounted on driven piles and raised from ground level and connected to Low Voltage (LV) and High Voltage (HV) connections;
- The HV circuits connecting the inverters (up to six circuits expected) will run on overhead poles and terminate at a new 33 kV switchyard within appropriately rated switchgear panels, with electrical equipment to provide protection, control and isolation functions. The switchyard has a total footprint of ~ 220 m² and will be gravelled with localised concrete foundations for a power conditioning structure. The switchyard will contain a control room of ~ 24 m² and a switchroom of ~ 110 m² installed on pole foundations. The HV circuits will be combined to form two feeder circuits on the output side of the switchyard, to connect with the substation;

- The two feeder circuits from the switchyard will connect to the two main 220/33 kV transformers in the Transpower Twizel substation. The transmission connection also includes the configuration and connection of 220 kV equipment to bus A and bus B on the National Grid and the connection of 33 kV main transmission lines from the solar plant; and
- Construction of a permanent workshop building of 350 m² and an operations and maintenance building of 155 m² including 3 waters infrastructure and parking to provide facilities to support the ongoing operation of the Project.

Temporary Facilities for Construction Management

Temporary facilities will be established on-site to support construction activities. These will include the following:

- Construction site management offices;
- Temporary construction power supply;
- Toilets and washroom facilities, plumbed to waste storage tank systems for routine servicing, emptying and disposal at an appropriate off-site authorised facility;
- Laydown area;
- Parking; and
- Signage.

Details of the above facilities are in the Concept Design Drawings provided as attachment 1.

4.3.2 Management Plans, Monitoring Plans, Sampling Programmes, Reporting and Audits

The proposed conditions of consent require the Project to operate under a series of environmental management plans, monitoring plans, sampling programmes and require compliance reporting and an independent ecological audit. Some of these requirements relate to construction activities and some relate to operational phases. The proposed conditions and documents required encapsulate the recommendations in the expert assessments submitted in support of the application.

Specific requirements of the proposed conditions of consent are as follows:

- Construction Environmental Management Plan
- Construction Traffic Management Plan
- Erosion and Sediment Control Plan
- Stormwater Management Plan
- Archaeological Management Plan
- Soil Monitoring Plan
- Natural Hazard/Stormwater Mitigation Works Plan
- Annual Ecological Compliance Report
- Independent Audit

- Emergency Hydro Inundation Response and Evacuation Plan
- Ecological Management Plans
 - Biosecurity and Vegetation Management Plan
 - Pest Mammal Management Plan
 - Terrestrial Invertebrate Management Plan
 - Lizard Management Plan
 - Avifauna Management Plan
 - Bird Collision Management Plan (if required)
- Decommissioning Plan (to be prepared)

Draft versions of the majority of these plans have been submitted with the consent application. The remaining plans will be prepared after consent has been granted, in accordance with the conditions of consent. Specifically, it is proposed to prepare the Construction Environmental Management Plan, Construction Traffic Management Plan, Natural Hazards/Stormwater Mitigation Works Plan, Soil Monitoring Plan Programme and Emergency Hydro Inundation Response and Evacuation Plan after consent has been granted, as they need to be further informed by detailed design and developed in consultation with the contractors engaged to deliver the Project and other key stakeholders. The Decommissioning Plan will be prepared at the appropriate time prior to decommissioning of the site. The Bird Collision Management Plan (if required) will be prepared in consultation with mana whenua rūnaka and DOC. The plans already prepared as draft versions are provided as attachments 3.8 - 3.13).

To assist the Expert Panel, a table is included as attachment 3.17 which identifies the key features of each management plan condition. Attachment 3.17 also contains a separate table which identifies all management plan conditions that provide for adaptive management and sets out the key components of the proposed adaptive management approach.

4.3.3 Staging of Development

The 300 MW Project is proposed to be constructed across a single continuous stage and will take approximately two years.

Once commissioned, the solar plant life cycle is expected to be at least 30 years. When the plant exceeds its life cycle, either targeted replacement/re-powering or plant decommissioning will be undertaken.

4.3.4 Site Transition – Dry-Stock Farm to Solar Farm

Farming activities currently occurring on the application site will cease during construction. Dry-stock farming and cropping activities will recommence once the solar plant is operational in a manner that is consistent with concurrent operation of the solar plant on the site.

4.3.5 Employment

The Project will support the development of the solar industry in the district, region and New Zealand as a whole. Each phase of the Project will create a range of jobs through project development, contracting, financing, construction and operation.

Construction and Development Phase

Including direct and indirect (supply-chain) effects, the Economic Assessment (see attachment 3) estimates:

Around 570 FTE-years of employment, equivalent to approximately 285 people employed full-time for two years.

Employment is distributed across:

- Planning, design, and consenting: ~7 FTEs over two years;
- Civil works and infrastructure provision: ~58 FTEs; and
- Construction and installation: ~220+ FTEs

The construction phase is estimated to generate:

- \$51 million in wages and salaries; and
- A one-time regional GDP boost of approximately \$85 million

Operational Phase

Once fully operational, the solar plant is expected to support long-term, stable employment, comprising:

- 8 permanent FTE roles (approximately 4 on-site operations and maintenance, and 4 off-site management and administration); and
- Around 12 FTEs in contracted support services, such as maintenance, inspection, vegetation management, and specialist servicing.

In total, the operational phase is expected to sustain:

- Around 18–20 FTEs per year;
- Annual GDP of approximately \$3.7–4.1 million; and
- \$1.6–1.8 million per year in wages and salaries

4.4 Site Layout, Design and Features

4.4.1 Site Layout Design Process

The site layout has been informed through a number of constraints mapping exercises as part of the Project development. Sensitive features have been identified, and the site layout has been designed accordingly to avoid, remedy or mitigate potential adverse effects of the Project.

Sensitive areas and features across the site comprise the following areas.

Indigenous Vegetation on Site Margins

Uncultivated outwash plains, scarp herbfield/grassland and old river terraces around the site edges support At-Risk and Threatened plants, lizards and invertebrates and are ecologically significant.

Scarps and Terrace Edges

Stony scarp systems contain the highest lizard habitat values and important dryland plant and invertebrate communities.

Wetlands and Riparian Margins

An ephemeral wetland and marsh areas, plus areas of the site bordering the Twizel and Ōhau rivers, are sensitive due to wetland values, avifauna use and downstream freshwater ecology.

Key Invertebrate Habitat Areas

Old river terraces and western/southern margins provide important habitat for minute grasshopper, Otago short-horned grasshopper and Tekapo ground wētā.

Avifauna Context Areas

Adjacent braided rivers, wetlands and the nearby kakī/black stilt breeding area are sensitive to disturbance, even though they are outside the development footprint.

Key minimum setbacks that apply to the Project are:

- 20 m setback from all boundaries;
- 10 m setback from Sites of Natural Significance and 10 - 35 m from ecologically significant flora and Threatened and At Risk vegetation to avoid shading effects;
- 20 m setback from rivers and streams;
- 100 m setback from natural inland wetlands;
- Compliance with all setbacks specified in the New Zealand Code of Practice for Electrical Safe Distances 2001; and
- During the avifauna breeding season (1 July – 1 March);
 - a 75 m setback from any construction machinery or power tools and the Ōhau River and river delta; and
 - a 100 m setback from the use of any construction machinery or power tools and the Twizel River and river delta.

The full site layout is set out in the site plans provided as attachment 1.

4.4.2 Site Lighting

The Project will not require any form of comprehensive lighting as part of the construction or operation.

Construction will generally only occur during daylight hours with no lighting required to facilitate the construction phase other than low level security lighting. Similarly, the requirement for lighting during operation will be limited to providing for maintenance and servicing of the solar farm. This lighting will be localised to the area subject to maintenance and will be minimised using all practical measures such as diffusers and/or screens to minimise any effects.

Accessing the site at night will require vehicles with headlights and there will be no need to artificially light the access tracks across the site.

The only other form of lighting is expected to be the central inverters which may feature built-in low levels of control system lighting; however this can be shielded if required.

4.4.3 Site Access and Internal Tracks

Development of the site will require upgrading of the existing vehicle accessway off SH 8 and the formation of internal access tracks as shown in Figure 4.3 and Figure 4.4.

To provide for the internal roading hierarchy on the site, it is proposed to upgrade the existing accessway at its current location. The accessway will tie-in to a 6 m wide main access track. The quarry access will extend from this track to enable the continued operation of the quarry. The main access will also provide a main trunk for other unformed access routes through the site. All traffic related to the solar project will access the site via the upgraded vehicle accessway.

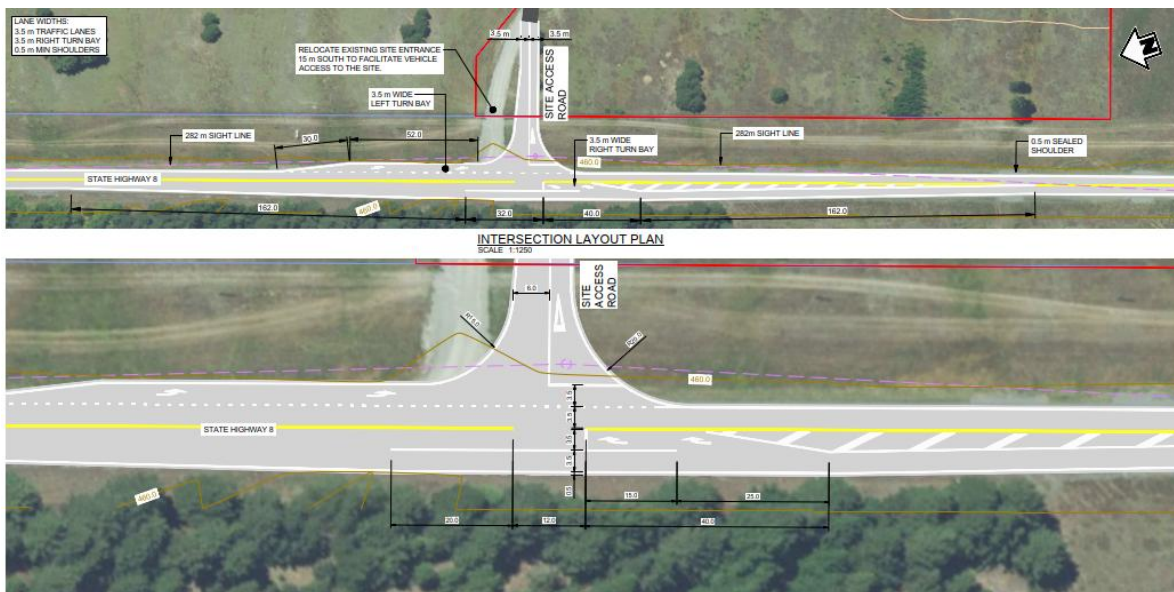


Figure 4.3: Proposed site access and SH 8 upgrade (source: BTW, 2024)

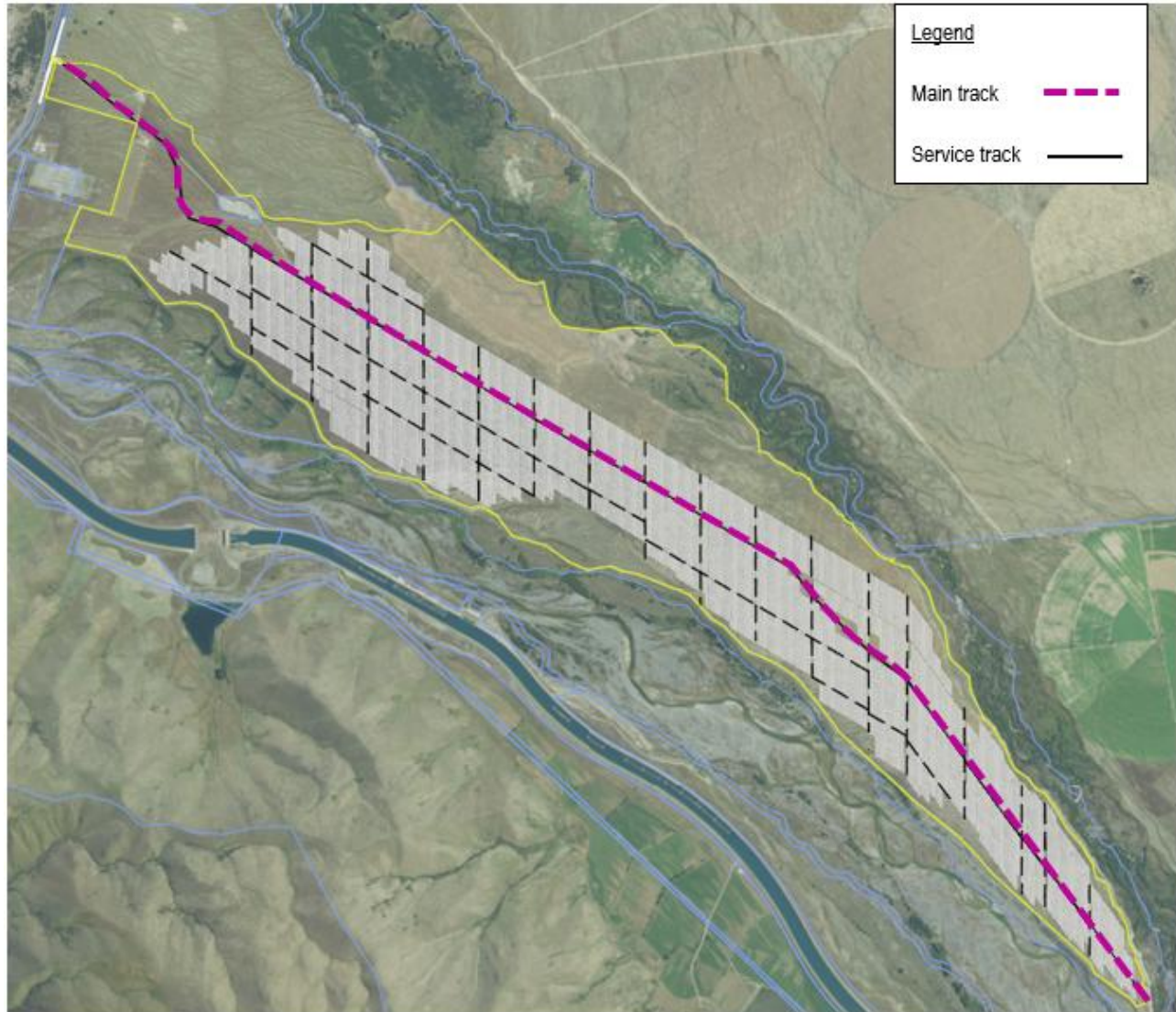


Figure 4.4: Proposed internal tracks (source: BTW, 2024)

Internal tracks will provide access to central inverters and solar panels. All internal tracks are proposed to be unsealed and will be at least 5 m wide. Civil engineering detailed design will take into account expected load ratings, intersection safety, turning bays, surface materials and dust minimisation.

Internal track construction will utilise locally sourced materials, where possible, to reduce external traffic movement impacts and carbon emissions. Materials imported to site will be stockpiled in allocated areas to minimise any visual, dust and sedimentation impacts.

The exact route of site traffic within the wider State Highway Network is not yet known, as it depends on which Port the equipment is delivered to. Port options are Timaru or Lyttelton (from the north) or Dunedin (from the south). Timaru would likely be the optimum choice for distance

and quality of the road network. Despite this it is expected that most traffic will enter and exit the site from the north (Twizel direction).

Anticipated construction traffic volumes and operational traffic volumes are detailed in Section 4.5.10 and Section 4.6 respectively.

Access to the quarry operation will be maintained during and post-construction. It is anticipated that a temporary site access management plan will need to be created to ensure that the quarry can safely be accessed and continue operation during construction. This will be prepared and provided as part of the CTMP.

Once construction is complete the quarry and solar operations will share the main track for the first 900 m from SH 8 before splitting into separate access tracks

The quarry operation is expected to continue at its consented traffic limits (maximum of 40 movements per day).

4.4.4 Solar Panels

Solar Panel Layout

For this Project, a ground-mounted solar PV tracking system (tracker) is proposed. The tracker is a single-axis east-west tracking system that supports the PV panels. Operation of the tracker is automated to tilt PV panels to the east in the morning and progressively index towards the west in the evening to follow the angle of the sun during the day.

The ground-mounted tracking system components include the solar panel which absorbs light energy to produce DC electricity. The solar panels will be connected by cables to create a string of 29 panels. Multiple strings are combined and connected to an inverter that converts DC into AC electricity. It is proposed to use central inverters that will produce a HV output of 33 kV. Multiple inverters are connected in a 33 kV sub-circuit, which then connect to the main 33 kV transmission lines at various locations depending on the number and configuration of 33 kV sub-circuits required.

Solar Panel Framing and Mounting

It is proposed to use a single-pile foundation for the mounting system that can be adjusted in height and follow the terrain within areas of varying topography. The panel framing structure is installed directly on top of the ground piles (foundation). The choice of the foundation solution will be made based on geotechnical investigations with the likely options being driven or screw piles. These piles are installed in the ground at the depth providing optimal strength (typical depth range 2 – 4 m).

The Project proposes a tracking system in a 1P configuration (single panels vertically mounted). A typical mounting arrangement for a 1P configuration is illustrated in Figure 4.5 below.

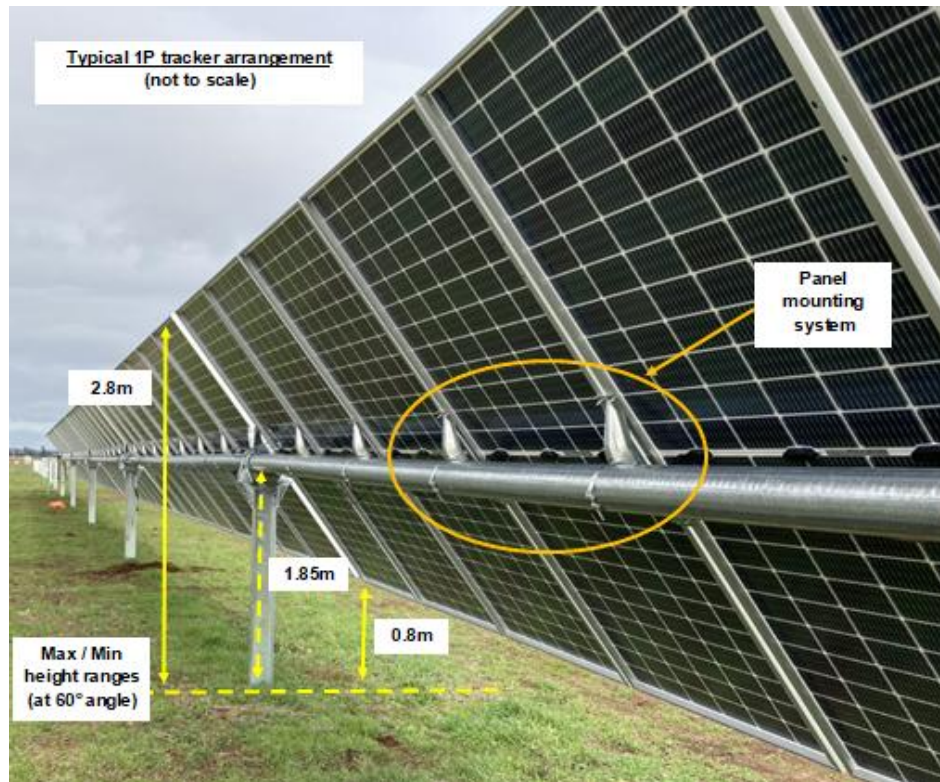


Figure 4.5: Typical panel operational heights and panel mounting arrangement (source: Nova, 2024)

Solar Panel Reflectivity

Solar panels utilise sunlight to produce energy, meaning the more light that is absorbed the less light reflects away and consequently more power is generated. Essentially, panels are made to absorb as much of the sunlight as possible and to have low reflectivity.

The potential reflectivity of solar panels generally is described in detail in the Glint and Glare Assessment (attachment 2.6), which records that the reflectance of solar panels is broadly similar to that of water and less reflective than bare soil or vegetation.

Solar panels are covered with an anti-reflection glass and anti-reflection coating (layer) to optimise energy production and reduce light reflection. Light reflection that is visible to the human eye at a 10 m distance from the panels represents only 2.5% of the incoming sunlight, even for the most reflective angles⁶. The proposed panels will be orientated in a north to south alignment, with an ability to rotate through a range of 60 degrees from horizontal in the east to west axis to capture the sun path in a normal plane. The panel tracking means that generally the panels are aimed perpendicular (as best possible) toward the sun, meaning that any potential reflection is limited, with the angle of incidence (angle of the sun's rays on the panel surface) to remain as close to 0° as possible. The surface of the panels also enables a diffuse reflection of the light, meaning the very low light reflection will be even less perceptible.

⁶ Wahl, W, 2019, 'Reflectivity of LONGi Solar PV modules', LONGi Solar Technologie GmbH, viewed 5 December 2024, <https://www.solarmarkt.ch/herstimg/10-Solarmodule/Longi_Solar/KE_EN_Longi_solar-reflectivity.pdf>

The Glint and Glare Assessment identified the potential for glare to be experienced by drivers along Mcaughtries Road and SH 8. The report recommended that the rest angle of the trackers be maintained at no less than 5° in order to avoid this effect. Nova has proposed to adopt the 5° rest angle recommendation as part of the application.

Solar Array Composition

The major components in a solar array are PV modules, cables and Mounting Structures.

The PV Modules proposed are Bifacial, measuring 2.4m long x 1.3m wide. This type of module is encapsulated between glass on both sides, which makes up about 85% of the module weight. The photovoltaic cells are encapsulated between sheets of EVA (Ethylene Vinyl Acetate) and supported within an aluminium frame contributing 10% to 12% of the module weight. The PV cells make up the remaining 3% to 5% of the weight.

The Mounting Structures will be made of Galvanised steel, and the cables are insulated single core copper.

4.4.5 Inverters

As set out above, inverters are required to convert the DC electricity into AC. Approximately 74 inverters, with a 20-foot shipping container footprint configuration and approximate dimensions of 5.9 m (L) x 2.4 m (W) x 2.7 m (H), will be installed throughout the application site. Figure 4.6 demonstrates a typical inverter package which includes a transformer. Each transformer holds approximately 1,800 litres of transformer oil. Inverters will be designed to protect against oil spills during transport, installation and operation. This may include options such as double-skinned transformer tanks plus drip trays at fill and drain points or bunding systems incorporating hydrocarbon traps within the foundation design.



Figure 4.6: Central inverter package (source: SMA⁷)

4.4.6 Grid Connection

The grid connection will be developed in conjunction with Transpower (the Grid Owner and the System Operator) to comply with Grid Owner and System Operator requirements and relevant industry standards.

The transmission line and grid connection arrangement proposed for the Project is summarised as follows:

- (a) Central inverters connected by 33 kV buried sub-circuits (anticipated 21 sub-circuits to connect 74 inverters);
- (b) The 33 kV sub-circuits connecting to (up to six) 33kV overhead feeder circuits running east to west across the site, to terminate at a new switchyard within appropriately rated switchgear panels, with electrical equipment to provide protection, control and isolation functions;
- (c) These feeder circuits will then be combined to form two feeder circuits on the output side of the switchyard, to connect to the Transpower Twizel substation (refer Figure 4.7);
- (d) The two feeder circuits from the switchyard are required to cross third party land (owned by Meridian Energy Limited) to access the Transpower substation. An 'agreement to easement' has been executed between the parties to enable this connection. The final easement area will be determined during design and construction. The indicative easement location is shown in Figure 4.8;
- (e) The two 33 kV main feeder circuits will terminate at two 220/33 kV power transformers located at the eastern end of the Transpower Twizel substation; and
- (f) The 220 kV output from each of the two transformers will be connected to separate 220 kV buses (bus A and bus B) on the National Grid, via the appropriate switchgear arrangements.

⁷ SMA Solar Technology AG n.d., *MEDIUM VOLTAGE POWER STATION*, viewed 5 December 2024, <<https://www.sma-america.com/products/system-solutions-packages/medium-voltage-power-station-4000-s2-us-4200-s2-us-4400-s2-us-4600-s2-us>>.

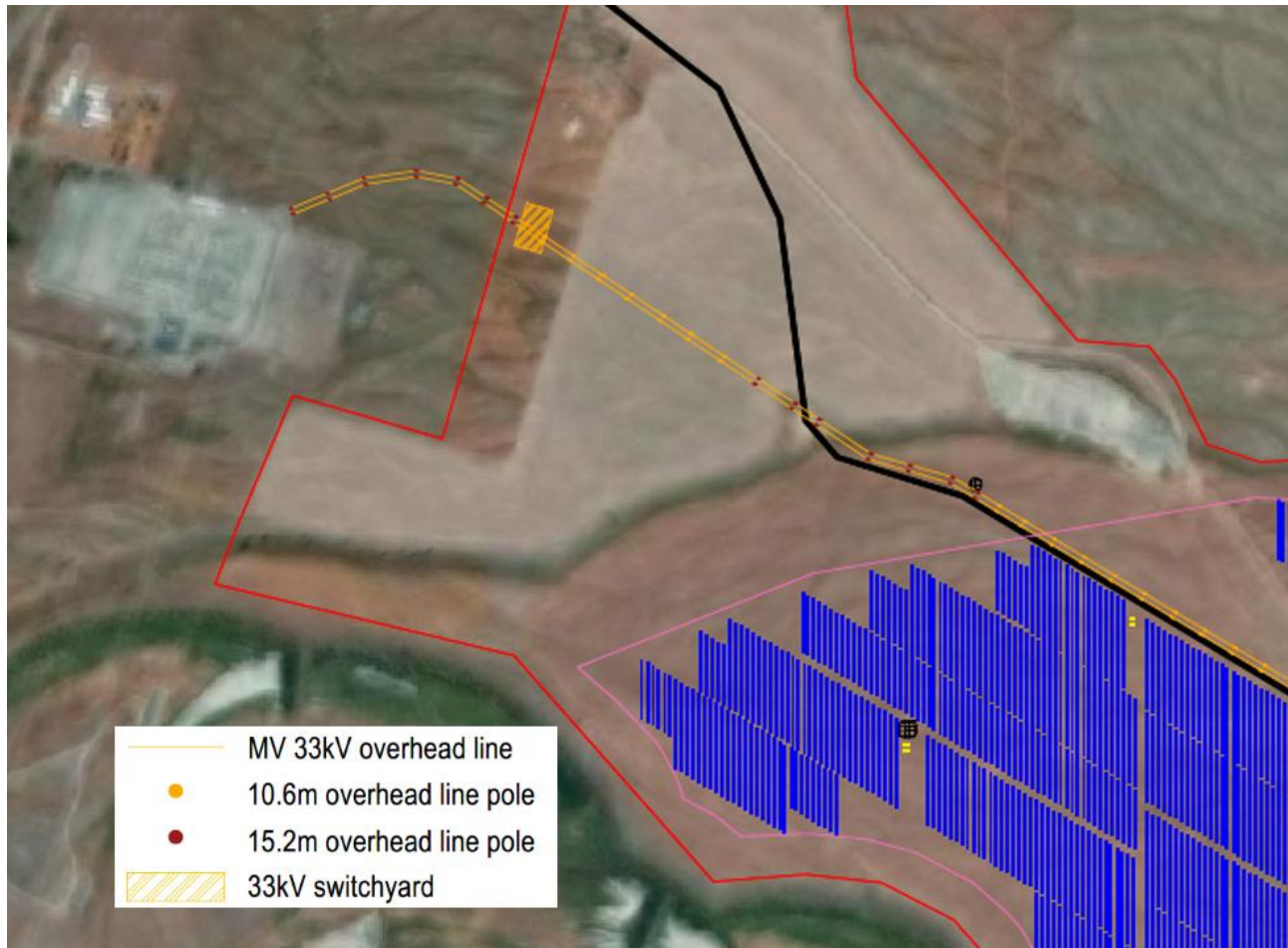


Figure 4.7: General arrangement of double pole 33kV transmission line (source: Nova, 2024)



Figure 4.8: Indicative main transmission line access easement area – in blue (source: Nova, 2024)

The Project proposes the installation of two 33 kV overhead transmission lines running near the centre of the solar development, from the east of the site to the power transformers located on the Transpower Twizel substation to the west of the site.

4.4.7 Substation Equipment and Grid Connection Arrangement

As discussed earlier in this report, the proposed works within the Twizel Substation do not form part of the Project for the purposes of the FTAA consent applications. As part of Nova's grid connection development with Transpower, a Concept Design Report (CDR) was commissioned by Transpower to investigate four potential connection and equipment location configurations, to identify Transpower's preferred option for ongoing grid connection design.

Transpower's preferred option locates Nova's power transformers and connection equipment towards the western side of the substation (shown in red Figure 4.9) to provide Transpower with future access options in existing bays.

Nova proposes installation of two power transformers to allow connection of the solar plant to each the two existing 220 kV bus arrangements (Bus A and Bus B).

The general equipment arrangement of Nova's connection is shown in red in Figure 4.9 below.



Figure 4.9: Equipment Arrangement within the Twizel Substation

4.4.8 Temporary and Permanent Buildings and Structures

Temporary buildings and amenities such as office, kitchen, storeroom, ablutions and parking will be installed for the construction phase within a laydown area to enable operations support (refer 4.3.1). Wastewater and greywater from these temporary facilities will be captured and disposed of offsite at an authorised facility i.e. no site discharges will occur.

A permanent operations and maintenance building and workshop (general purpose shed) will be established within the application site. The design of the operations and maintenance building and workshop will be confirmed at the time of detailed design but is expected to be of typical building design with a rural finish and will comply with the relevant permitted activity standards under the MDP. A permanent wastewater discharge will occur from the operations and maintenance building designed to comply with the permitted rules of the CLWRP with an estimated wastewater discharge volume per day of 0.4 m³ based on four permanent site staff.

Details of the above facilities along with a permanent switchyard are provided in the Concept Design Drawings provided as attachment 1.

4.5 Construction and Commissioning Works

4.5.1 Introduction

This section details the proposed civil and construction works. An overarching Construction Environment Management Plan (CEMP) will be developed, prior to engagement of civil and construction contractors. The CEMP will provide detail about how construction phase activity will be managed, with more specific environmental management measures detailed in other construction-related environmental management plans (e.g., the ESCP).

4.5.2 Civil Works

As outlined previously, construction is to occur in a single continuous phase. The order of construction will be confirmed through the development of the CEMP.

4.5.3 Security

Before plant installation can begin, existing paddock fences may need to be removed or relocated, in order to establish and manage construction areas within the existing farm, noting perimeter and main boundary fencing will remain in place where feasible.

The main objectives of the access and security demarcation design will be to ensure safety, equipment security and suitable construction access and ongoing quarry activities. A security system will be installed, including security cameras in key areas which will be determined based on design and construction management requirements.

Electrical equipment will be fenced to meet electrical safety standards, where required.

4.5.4 Earthworks

An Earthworks Plan is provided in the Concept Design drawings provided in attachment 1 and as illustrated in Figure 4.10 below.

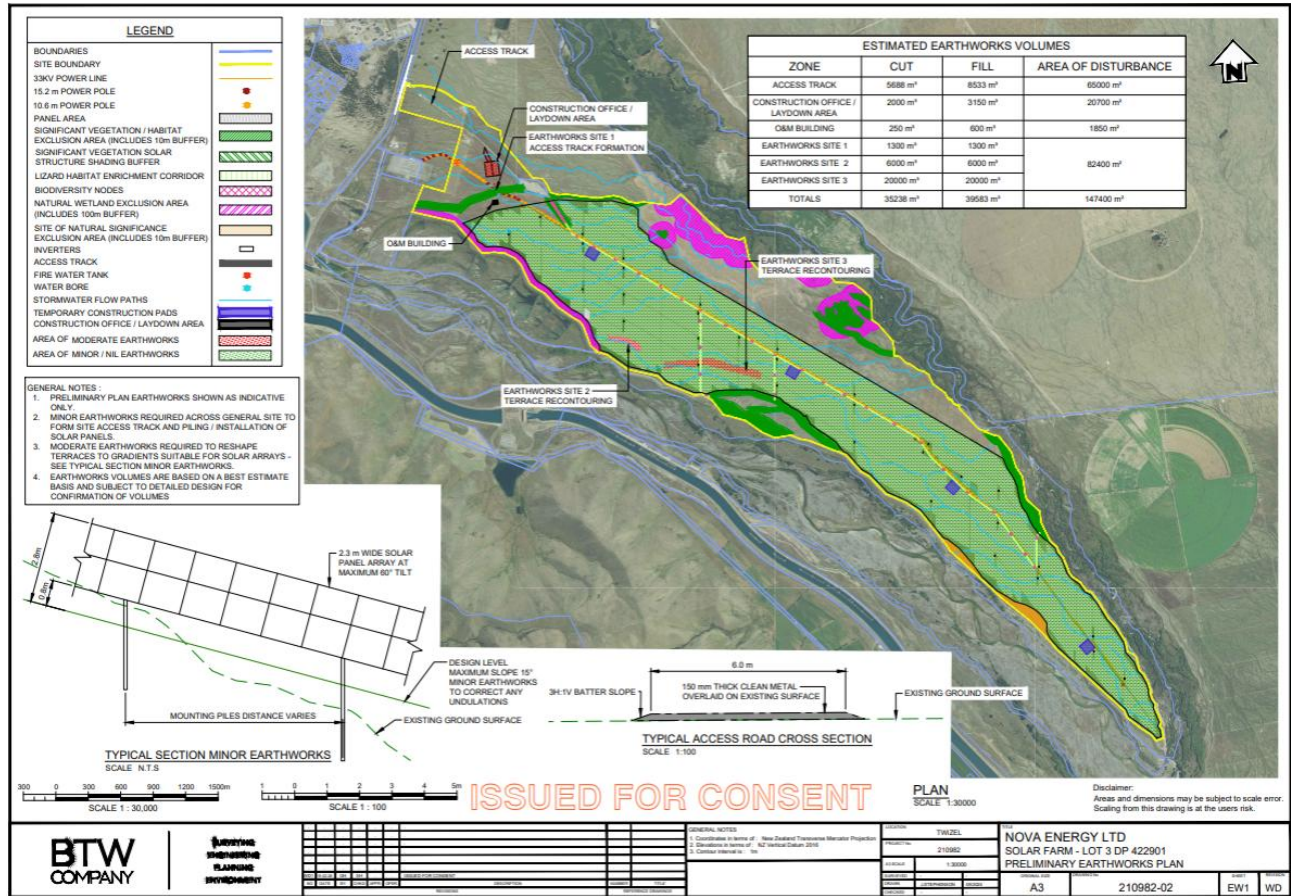


Figure 4.10: Earthworks Plan (source: BTW, 2026)

Earthworks associated with solar plant construction are specified in the ESCP provided in attachment 3.4.

The ESCP summarises proposed works (in general order) as follows:

- New main vehicle accessway off State Highway 8.
 - Road widening work on the east side of State Highway 8 including vegetation salvage, topsoil stripping, bank trimming, minor cut / fill to design levels, construction of table drains, placement and compaction of imported subbase, base course and pavement surfaces.
 - Road widening and vehicle accessway work on the west side of State Highway 8 including topsoil stripping, minor cut / fill to design grades, construction of table drains, construction of cut off drain, placement and compaction of imported subbase, base course and pavement surfaces.
- Laydown Area.

- Establishment of an area for storing of plant and equipment, site staff facilities and carparking, including stripping of topsoil to bund or dump area (to be nominated onsite). Cut and fill to design grades, subgrade soil may be adequate for all weather access or improvement layers from locally sourced materials or imported hardfill, where specified as well as construction of erosion and sedimentation controls for this specific area.
- Establish internal access track.
 - Divert the internal track access to the lower plateau thereby bypassing around the existing quarry to separate and maintain their operational access.
 - Internal access track construction, including stripping of topsoil, scraping and clearing of existing track surface, construction of swale drains, minor cut / fill to design grades, placement and compaction of metal or hardfill. Installation of drainage diversions where required.
- Undertake earthworks to create building platforms, smooth gradients for the inverters and solar array panels, switchyard, workshop and operations and maintenance buildings, adjust ephemeral channels to match.
 - Install cut and fill activity sedimentation and erosion controls
 - Site clearance including the stripping of topsoil to allocated stockpile area and wind rows
 - Channel earthworks and other general earthworks
- Staged solar plant installation, including cable trenching and piling, reconfiguration of dry stock farming operations.
 - Stabilisation of disturbed areas.
 - Placement of topsoil, applying grass seed or hydroseed, and maintenance of erosion and sediment control measures.
- Staged dis-establishment of site.

It is intended that an updated ESCP (based on the ESCP submitted in support of this application) will be submitted to ECan for certification prior to earthworks commencing.

Estimated Earthwork Quantities

Table 4.1: sets out the combined estimated earthwork quantities to undertake the activities summarised above:

Table 4.1: Anticipated Earthworks

Application Site	Cut	Fill	Area of Disturbance
Access Tracks	5,688 m ³	8,533 m ³	65,000 m ²
Moderate E/W zone A	1,300 m ³	1,300 m ³	82,400 m ²
Moderate E/W zone B	6,000 m ³	6,000 m ³	
Moderate E/W zone C	20,000 m ³	20,000 m ³	
Total	32,988 m³	35,833 m³	147,400 m²

All fill material to create design levels will be sourced from excavated/cut areas within the application site. Imported materials are expected to be required only for the subbase of the upgraded accessway and subbase of the widened SH 8. Some locally sourced hard fill may be required for establishing the main track however it is proposed to use onsite material where possible.

4.5.5 Laydown Area

As set out above, a primary temporary laydown area will be established on the application site for the duration of construction, to support materials storage, deliveries, and plant staging. Additional temporary construction pads will be established as required and relocated progressively to remain close to active work fronts. Four locations have been identified for these temporary construction pads which are shown in the Concept Design drawings. Temporary construction pad areas will be used for short-term storage of materials, small plant parking, and crew support, and will be removed/reinstated as construction progresses.

4.5.6 Erosion and Sediment Control

As above, an ESCP is submitted in support of the construction phase works provided as attachment 3.4. Section 6 of the ESCP sets out construction methodology, providing an overview of staging and sequencing of works.

Section 7 of the ESCP sets out erosion and sediment control practices under the following headings, noting that the Project design includes identified setbacks/buffers of undisturbed land from sensitive areas to provide an additional level of protection from erosion and sediment effects:

- Silt fences
- Diversion channels
- Setbacks
- Stabilisation of disturbed ground
- Sediment retention ponds
- Energy dissipation
- Dust management

- Stockpile and disposal site
- Dewatering
- Monitoring and maintenance.

As noted, these practices will be designed and implemented to follow the ECan Erosion and Sediment Control Toolbox.

4.5.7 Water Usage

Water usage during construction phase activity will be primarily associated with dust management and vehicle washdown where required. Water will be delivered by water truck and/or sourced from the existing bore on site. The bore usage will not exceed the permitted activity daily volume and maximum extraction rate under Rule 1 of the Waitaki Catchment Water Allocation Regional Plan of 10 m³ at a rate of no greater than 5 m/s.

Firefighting water supply tanks will be utilised on site with four 20,000 litre tanks proposed in the concept design. It is anticipated that firefighting water tanks will be installed early in the Project and filled from the bore, not exceeding the permitted water take limits, to be used as construction water storage, which will become firefighting water supply at the completion of construction.

4.5.8 Solar Panel Installation

Solar panels will be installed using the ground pile methodology as foundations (driven or screw piles) as set out in section 4.4.4 above. These piles will be installed in the ground at a depth providing optimal strength with an expected typical depth range of 2–4 m. Figure 4.11 demonstrates typical piling methodology, being similar in methodology to farm fencing installation activities. No open hole is created by this technique. Following installation of the piles for each row, the main beam can be attached to the top of the piles. Rafters and purlins are then installed on the main beam to support the panels and provide mechanical strength to withstand local weather conditions. Depending on the manufacturer's specifications, the tracking system and installation process may vary slightly.



Figure 4.11: Piling machines installing the structures (source: Nova, 2024)

4.5.9 Cable and Structure Installation

LV cable installation

Once the physical panels are installed and secured to their structure, the electrical cabling of panels to the other electrical components will commence. Earth cables and low-voltage DC cables will string the panels together and be combined into a junction box, typically installed at the end of panel rows. In parallel, cables with larger capacities will be installed in trenches to connect the junction boxes to the inverters.

Inverter and MV transformer installation

The inverters will be mounted on support piles, raised from ground level to simplify the cable installation and connection.

The installation of the prefabricated inverter and transformer units will be via crane lift and placement on the piles. Once placed and fixed, the connection of electrical equipment can then be undertaken.

The LV (DC) and HV (AC) connections will then be made to the input and output sections of the inverter, respectively.

HV Cable Installation

All HV cable installations will comply with New Zealand standards, predominantly AS/NZS3000 and meet the requirements of electrical inspectors to ensure electrical safety.

The 33 kV sub-circuit cables will be direct buried, in trenches (on a bed of low iron sand) between the central inverters and 33 kV main transmission lines. Once inverters are placed, the HV cables will be tested and terminated to the HV circuit breaker ring main system.

Transmission Connection

The transmission connection covers the installation of the two main 220/33 kV transformers in the Transpower Twizel substation.

The transmission connection also includes the configuration and connection of 220 kV equipment to bus A and bus B on the National Grid and the connection of 33 kV main transmission lines from the solar plant.

The main transformers will be shipped to site as a main unit containing the windings and core, plus ancillary equipment for construction in situ. Preparation of the transformer bay foundations and cable ducting systems will be undertaken prior to transformer shipment.

The main unit will be lifted and placed in position by specialist equipment movers due to the size and weight of the unit. Once in place, the ancillary equipment will be fitted and electrical connections made.

4.5.10 Transport

Construction traffic can be broken down into two main categories:

Civil Construction Traffic

Construction of the new site access, access tracks and other enabling earthworks.

Plant Installation Traffic

Installation of the solar farm plant itself including the transportation of all solar panels and related electrical equipment to site.

A Construction Traffic Management Plan (CTMP) will be developed prior to engagement of civil and construction contractors. The CTMP will set out management measures to include signage, sign in points, speed limits and vehicle priority measures. The Project team has engaged with NZTA / Waka Kotahi and the CTMP will be prepared in accordance with any requirements they have.

Construction of Access, Internal Tracks and Civil Enabling Works

Civil construction traffic includes traffic associated with the construction of the new accessways, site establishment works, and the movement of bulk materials onto site for track, laydown and trench bedding materials. Estimated movements are set out in the tables below.

Table 4.2: Anticipated traffic generation for civil construction

Activity	Totals	Daily Max	Daily average
Site Establishment and Access Way Construction	80 Truck and trailer units	15 Truck and trailer units	8 Truck and trailer units
Movement of Gravel and Sand Materials to Site*	1980 Truck and trailer units	25 Truck and trailer units	15 Truck and trailer units
Water for Dust Management	500 Water trucks	As required	As required

*assumes a conservative quantity of offsite imported gravel for road/track building and trench materials

Plant Installation Traffic

The table below provides a high-level estimate for traffic movements associated with the construction of the plant separate from civil works. These estimates include traffic movements by site staff.

Table 4.3: Estimated plant installation traffic volumes per stage

Activity	Total	Daily Max	Daily average
Plant installation	1280 Container trucks (40 ft)	10 trucks	5 trucks
Construction personnel on site	150 maximum on site at a time	80 vehicles	40 vehicles

4.5.11 Transport, Use and Storage of Hazardous Substances – Construction Phase

Hazardous substances will be transported, stored and used onsite during all phases of site construction and operation. Hazardous substances associated with construction phase activity include the following (noting containment method in brackets):

- Diesel fuel (fuel tank, bulk bunded tank);
- Engine oil (vehicle sump, bulk bunded tank); and
- Lubricants (flammable materials locker, drum on bunded pallet, double skinned intermediate bulk container (IBC)).

As noted, an overall CEMP will be prepared prior to the engagement of civil and construction contractors which will address use and storage of hazardous substances. The CEMP will be submitted to MDC for certification as a condition of consent.

Management of hazardous substances will comply with the Hazardous Substances and New Organisms Act 1996 (HSNO) and all relevant New Zealand Standards. Storage and use of hazardous substances will not occur within close proximity to waterways, noting the Project setbacks of 20 m from rivers and property boundaries and 100 m from natural wetlands which apply to all activities.

4.5.12 Commissioning

A number of commissioning stages are expected for the Project to include:

- Grid connection and livening of 220 kV bus (bus A and bus B);
- Testing of grid connection equipment and systems;
- Livening the main transformers and back feed 33kV substation equipment;
- Connection, testing and livening the main 33kV transmission line/s;
- 33kV sub-circuit connection to the main transmission line/s;
- PV system DC supply connection to central inverters;
- Central inverter AC system performance; and
- Generation exported to the grid.

The final two stages of the commissioning processes outlined above will be repetitive as PV stages are completed, connected, tested and commissioned.

All commissioning activities will be supported by an approved test and commissioning plan, under the control of a commissioning engineer and supported by an appropriately qualified and experienced engineering technical team.

The approved commissioning plans will ensure thorough testing and operation to meet all design specifications, New Zealand standards and Code requirements.

4.6 Operation

4.6.1 Overview

The operation of Nova assets will be predominantly via remote monitoring of integrated automation control systems from the Nova control room in New Plymouth. Routine checks and maintenance activities will be scheduled and completed on site by various Nova and contract staff as required based on operation and maintenance plans which will be developed post construction, in readiness for operation. Due to the nature of solar generation operation being in daylight hours only and plant control system design, the majority of plant operational issues are not expected to require after-hours response.

Operational control will be automated and remote monitoring of the plant provided by the Nova Operations team from the New Plymouth control room. Critical control functionality will be provided to the control room operators for manual intervention if required.

4.6.2 Start-Up

Plant start-up will be automatically controlled by the plant control systems and central inverter controllers. Energy export is enabled as the sun rises and strikes the panels tilted to the east, then automatic tracking adjusts the panel angle to follow the track of the sun throughout the day, with the panels tilted to the west at twilight.

4.6.3 Operational Control

Real time operational control of the Nova assets will be automated with remote monitoring of the plant via the Nova control room. An overarching SCADA (Supervisory Control and Data Acquisition system) will be utilised to control the inverter systems. Electric power output from the solar farm will naturally fluctuate with the intensity of sunlight. This control system maintains the quality, reliability, and stability of the electricity production, and allows critical control functionality to be executed by the control room operators should manual intervention be required.

4.6.4 Operational Staffing Requirements and Traffic Movements

In addition to remote monitoring staff, regular site presence will be required for operational checks, maintenance activities and general support services. Traffic movements associated with operation, maintenance and support of the solar farm are yet to be confirmed, however, estimated movements are set out in the table below.

Table 4.4: Operational traffic movement estimates

Item	Vehicle type	Times per week	Vehicle movement per 7 days
Operations	Light	10	20
	Medium	-	-
Maintenance	Light	10	20
	Medium	5	10
Support service	Light	5	10
	Medium	3	6
Total			66

As part of the solar plant operation, grazing activity is expected to occur on the site. Traffic associated with ongoing farm activities is expected to be infrequent and minimal.

Quarry vehicle movements are limited by consent conditions to a maximum of 40 movements per day. During the construction works for the upgrade of the accessway, access to the quarry will be maintained, and a temporary site access management plan will be created to ensure the site can be accessed and continue operation during construction.

4.6.5 Shutdown

The requirements for shutdown of Nova assets will be minimal as the plant will be generally offline and serviceable during overnight periods. Major shutdowns would only likely be required for annual maintenance of major equipment and substation components.

4.6.6 Maintenance

General maintenance tasks (preventative and corrective) will include routine checks and reactive repair of plant and equipment, as per maintenance management plans (to be developed) and plant failures if and when they occur.

4.6.7 Panel Cleaning

Panel cleaning may be required to remove dust and debris from the panel surfaces that blocks solar radiation from the PV cells (which gradually and temporarily reduces the panel performance and consequently lowers the solar farm output). Removal of soiling is also necessary for the safety of equipment as hard soiling blocking the sunshine completely can cause irreversible damage to the modules. Based on Nova's onsite weather station data, rainfall is expected to provide adequate rinsing of the panels to reduce manual panel cleaning requirements. Assuming rainfall rinsing of panels, the frequency of manual panel 'deep cleaning' to restore panel performance over their 30-year life cycle is expected to be once every 5 - 10 years, with the exception of some small-scale localised cleaning.

Due to the number of panels proposed for the plant, it is expected that a cleaning process utilising a tractor mounted system will be developed. Depending on the type of soiling the cleaning method may be either dry or wet cleaning,

Dry cleaning uses a soft bristle brush in rotary or sweeping action to remove soiling from the surface. In wet cleaning the use of fresh water will be preferred, in conjunction with a mild, non-abrasive, non-caustic detergent if required. This water is likely to be sourced from the on-site bore. The use of detergent will be varied as required depending on the soiling conditions. followed by agitation with a brush or similar and a water rinse. The water is expected to be dispersed to ground in minor volumes, similar to light rainfall. An estimate of detergent and water use requirements for a full clean of the solar panels is provided in the table below as a guideline for consent assessment purposes.

Some localised cleaning may be required for hard soiling such as bird droppings, the cleaning for hard soiling will also follow the same process as described above. For stubborn hard soiling such as lichen, a specialised bio-degradable agent may be required.

Table 4.5: Panel Cleaning Supplies Estimate

Item	Total Litres (5 – 10 yearly if required)
Detergent	1,000
Water	50,000

For a full panel clean, water take from the on-site bores would be managed within the permitted thresholds of the Waitaki Catchment Water Allocation Regional Plan i.e. 10 cubic metres per day at a rate not exceeding 5 litres per second. Water would be stored within the on-site water tanks and supplemented with deliveries from water tankers.

4.6.8 Water Usage

General water usage during operation (in addition to periodic panel cleaning) is expected to be minimal, being limited to use associated with general maintenance and staff facilities, serviced via a rainwater collection tank, which can be topped up by bore water supply or tanker delivery as and when required.

Firefighting water supply systems during operations will be monitored to ensure required levels are maintained. The firefighting water supply system will be topped up via bore water supply, not exceeding permitted limits. If bulk top up is required, this will be provided by water tanker delivery.

4.6.9 Stormwater Discharge

Stormwater management is required to provide suitable management of surface water runoff to support and enable the proposed development and to mitigate stormwater effects of the development on the receiving environment.

General Stormwater Design

A Stormwater Management Plan (SMP) is provided as attachment 3.5. The SMP is intended for resource consent purposes and to guide detailed design.

The SMP addresses the proposed stormwater approach for the application site, noting the ESCP addresses runoff and sediment discharge mitigation during construction.

Key design points from the SMP include the following:

- The natural gravelly soils are highly pervious and provide high rates of infiltration. As such, the site will be designed to minimise landform modifications and hardstand areas to maintain high infiltration rates;
- There is no existing formalised drainage system, infrastructure, or watercourses. The historic river braids are embedded within the finer grain of the site topography and form the basis of the existing site drainage system;
- During light and minor rainfall events generally, runoff is captured at the source and discharged directly to ground;
- During heavier periods of rainfall, it is expected that stormwater runoff will follow site grading and concentrate in the low points of the historic river braids; and
- The proposed solar plant seeks to minimise major landform modifications and utilises the natural site drainage system where possible. Where the proposed site access intercepts the natural drainage system it is expected onsite drainage infrastructure will be required to maintain a suitable level of service for the site access.

The SMP and Flood Hazard Risk Assessment include a catchment analysis which concludes that during major rainfall events (1% AEP peak flow rates), surface ponding and flow velocities would result that may require additional measures to be utilised during detailed design. These areas are mapped in Figure 4.12 below.

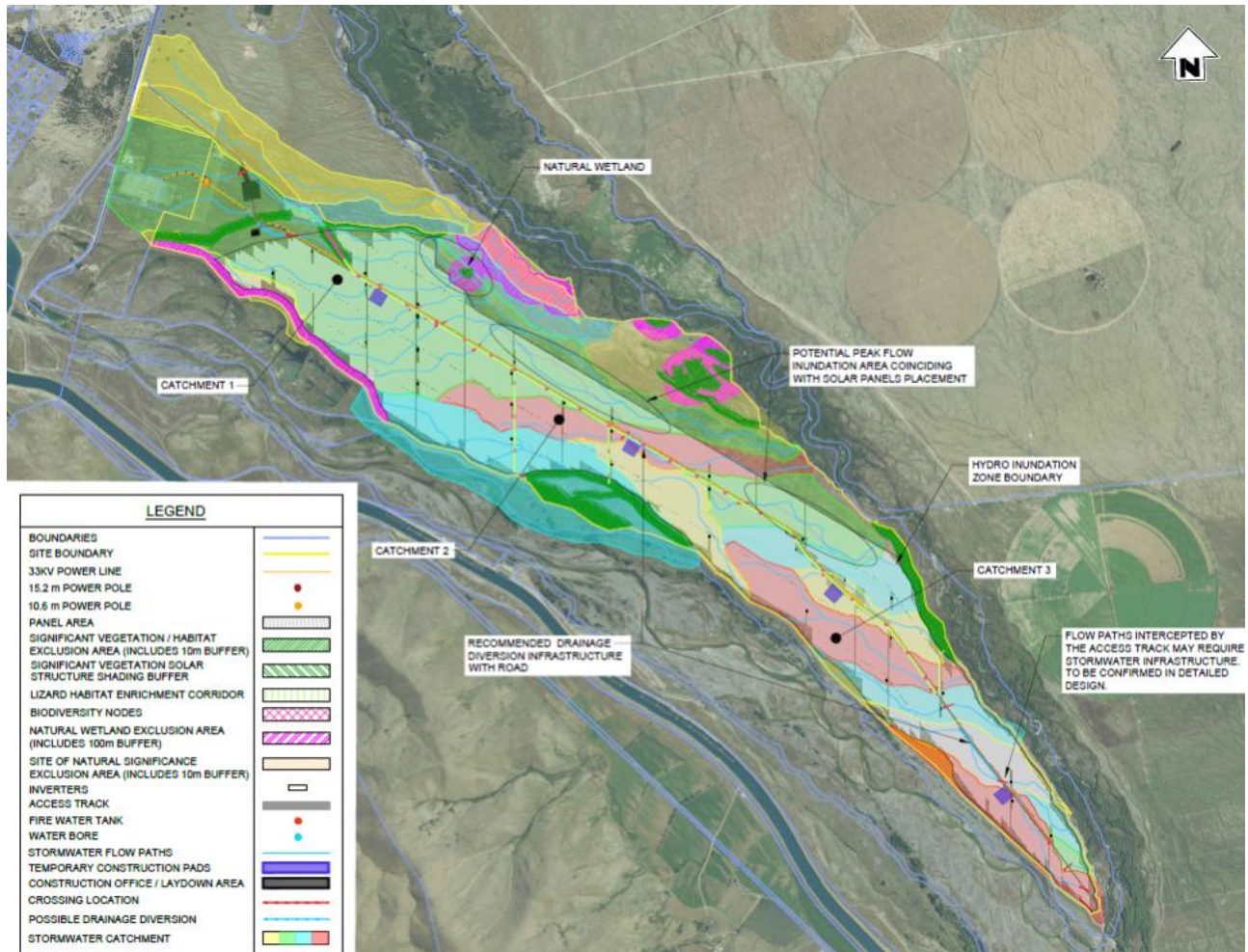


Figure 4.12: Catchment Areas and Potential Inundation Areas with controls (source: SMP, BTW, 2024)

A number of recommendations have been made in section 5 of the SMP which have, and will continue to, inform the design of the Project. These recommendations are as follows:

- Construction phase controls: All construction works should be undertaken in accordance with the ECan-certified Erosion and Sediment Control Plan (ESCP) to manage stormwater runoff and prevent sediment discharge to the receiving environment. The ESCP should be read alongside this SMP and supporting technical reports.*
- Detailed design drainage measures: At the detailed design stage, appropriate drainage infrastructure should be specified to manage changes to natural flow paths from site works (e.g. roads and infrastructure) and to mitigate erosion and sediment deposition during design storm events.*
- Protection of wetland hydrology: Site development within the catchment of natural inland wetlands should maintain existing hydrological regimes. The detailed design of roads, culverts, and drainage infrastructure should ensure no adverse changes to wetland hydrology.*

- *Ecological enhancement opportunities: Opportunities should be investigated for riparian planting and ecological enhancement in upstream wetland catchments to improve stormwater quality through additional treatment and filtration*

4.6.10 Transport, Use and Storage of Hazardous Substances – Operational Phase

As noted above, hazardous substances will be transported, stored and used onsite during both construction and operation phases in compliance with all relevant New Zealand standards and regulations.

Hazardous substances associated with operation phase activity are set out in Table 4.6 showing the substance, quantity and method of containment. Hazardous substances will be stored within operational equipment and surplus substances stored in the workshop.

Table 4.6: Operational phase hazardous substances

Hazardous Substance	Containment Method	Chemical ID	Total Quantity (L)
Transformer oil (Main transformers x 2) Located on Transpower Twizel substation which does not form part of this application.	Double skinned tank construction and / or Bunded foundation with hydrocarbon trap	Mineral oil	110,000 (2 x 55,000)
Transformer oil (Central inverters x 64)	Double skinned tank construction and / or Bunded foundation with hydrocarbon trap	Mineral oil	115,200 (64 x 1,800)
Detergent	Drum on bunded pallet Bunded tank Double skinned IBC	TBD	Up to 1000 (when required)
Lubricants (various)	Flammable materials locker Drum on bunded pallet Double skinned IBC	TBD	TBD

TBD = to be determined.

Nova will use hazardous substances approved under group standards and they will be used and stored in accordance with those relevant group standard controls ensuring compliance with the Hazardous Substances and New Organisms Act 1996.

4.7 Ecological Management

Wildlands Consultants has undertaken a number of site ecological surveys, prepared an ecological effects assessment for the Project and prepared a suite of ecological management plans which the Project will be constructed and operated in accordance with.

The Project has been designed, and the application developed, consistent with Wildlands' recommendations. Ecological assessment has materially influenced the solar plant design by:

- Confining the footprint to lower-value modified pasture and excluding high-value margins;

- Providing for setbacks from sensitive areas and features, including to avoid shading effects on high value areas;
- Using panel technology and layout (tracking arrays, anti-reflective panels, road spacing) to minimise shading and bird-strike risk;
- Incorporating ecological connectivity and enhancement features in the form of planted corridors and nodes to provide habitat for lizards and invertebrates and mitigate habitat fragmentation; and
- Providing for rigorous monitoring, adaptive management and compensation as a backstop.

Nova has adopted the ecological recommendations in the Project design and also incorporated recommendations into the proposed conditions of consent provided as attachment 3.2 and 3.3.

The application of these ecological principles is addressed in detail in Section 5 Assessment of Environmental Effects.

4.8 Landscape Management

A Landscape Assessment (including a Graphic Attachment and Visual Simulations) has been prepared by Rough Milne Mitchell Landscape Architects (RMM) and is provided as attachments 2.8, 2.9 and 2.10 respectively. The purpose of the Landscape Assessment is to describe the existing landscape character and values of the application site and its localised context and to assess the effects of the Project on landscape character and values.

The landscape assessment approach is described further in Section 5.4.2.

4.9 Decommissioning and Site Reinstatement

As noted, the solar plant life cycle is expected to be at least 30 years. When the plant exceeds its life cycle, either targeted replacement/re-powering will take place, or plant decommissioning will be undertaken. A proposed condition of consent is to prepare a Decommissioning Plan for approval and implementation, in the event of decommissioning.

Decommissioning of the solar plant will apply to all the elements of the system which include modules, electrical equipment, structures, and foundations. The management of waste would be undertaken in accordance with current local regulations.

Steps involved in dismantling the solar plant would include the following:

- Removal of PV modules from the structure to be stored and transported for recycling in specific centres (with the majority of solar farm materials recyclable);
- Dismantling of PV structures and foundations for recycling purpose; and
- Removal of electrical cables (open and backfill of trenches of buried cables).

Decommissioning works would be undertaken with appropriate measures/controls in place and in accordance with relevant industry standards. At the end of the decommissioning process, the site

would be rehabilitated (with due regard given to the potential re-use of infrastructure in support of future land-use activities). Rehabilitation will consider stripping of internal tracks created for the Project and levelling/backfilling of any excavation or trenching resulting from the dismantling of Project structures with adapted material. Restoration works would provide an opportunity for future land use. Proposed conditions of consent include the requirement for the Decommissioning Plan to be prepared in collaboration with mana whenua.

5 ASSESSMENT OF ENVIRONMENTAL EFFECTS

5.1 Environmental Effects Overview

Having regard to the matters outlined in clauses 6 and 7 of Schedule 5 of the FTAA, it is considered that the actual and potential environmental effects of the proposal relate to the following matters:

- Positive Effects/Benefits
- Effects On Water Quality
- Landscape and Visual Effects
- Ecological Effects
- Amenity Effects during Construction
- Glint and Glare Effects
- Natural Hazard Effects (Geohazards)
- Natural Hazard Effects (Flooding)
- Effects of Hydro Inundation
- Electric and Magnetic Field Effects
- Effects on Archaeology
- Cultural Effects
- Transport Safety and Efficiency Effects
- Noise Effects during Operation
- Cumulative Effects

5.2 Positive Effects/Benefits

The significant positive effects and benefits of the Project are outlined in the Economic Assessment provided as attachment 2. The following assessment relies on the findings of the Economic Assessment.

The Project will deliver significant regional and national economic benefits, comprising substantial short-term construction impacts, enduring operational benefits, and wider system-level benefits associated with renewable electricity generation, energy security, and market resilience.

5.2.1 Construction Phase Benefits

During the approximately two-year construction period, the Project is expected to generate a material increase in economic activity, particularly within the Canterbury region. The Project is estimated to:

- Contribute approximately \$85 million in one-time GDP (including flow-on effects);

- Support around 570 full-time equivalent (FTE) job-years, equating to approximately 285 people employed full-time for two years; and
- Generate approximately \$51 million in wages and salaries across the construction, civil works, professional services, and supply sectors.

These construction-phase benefits represent a significant injection of activity into the regional economy and support a broad range of industries, including construction services, civil engineering, engineering and professional services, manufacturing, and transport.

5.2.2 Operational Phase Benefits

Once operational, the Project will deliver ongoing and durable economic benefits over its expected operational life of at least 30 years. At full build-out, the Project is estimated to:

- Support approximately 20 permanent and contracted FTEs per year;
- Contribute around \$4 million per annum to GDP; and
- Generate approximately \$1.8 million per annum in wages and salaries.

These ongoing roles provide stable employment in a rural area of the Canterbury Region and contribute to regional GDP and capability building in renewable energy operations, maintenance, and asset management.

5.2.3 Contribution to Energy Security and Market Resilience

Beyond direct regional employment and GDP effects, the Project delivers wider economic benefits at a national level through contribution to New Zealand's electricity system. The Project will add approximately 300 MW of new renewable electricity generation capacity in a location with high solar irradiation and immediate access to existing transmission infrastructure. This additional capacity will:

- Provide power generation for approximately 75,000 homes annually;
- Support meeting forecasted growth in electricity demand driven by population growth and electrification;
- Reduce reliance on higher-cost and higher-emissions thermal generation, particularly during dry years and peak demand periods; and
- Enhance system resilience by complementing existing hydro generation in the Upper Waitaki catchment, effectively increasing the flexibility and storage value of existing hydro assets.

These system-level benefits have positive downstream economic implications for households and businesses at a national level through improved security of supply and reduced exposure to price volatility.

5.2.4 Wholesale and Retail Electricity Market Benefits

By increasing generation diversity and supply, the Project will contribute to improved competition in the wholesale electricity market. The introduction of large-scale, low marginal-cost solar generation will place downward pressure on wholesale prices over time and help moderate price volatility. These effects, while not readily quantifiable at a project level, will support more stable retail electricity prices and improved affordability for consumers and businesses.

5.2.5 Efficient Use of Land and Opportunity Cost

From an economic perspective, the Project represents an efficient use of land which currently supports low-intensity dry stock farming. Comparative analysis indicates that the economic value generated by the Project substantially exceeds the value of the most likely alternative rural production scenarios, even when rural production is assessed conservatively over long timeframes. The Project therefore represents a higher-value economic use of the site, with limited opportunity cost in terms of foregone rural production.

5.2.6 Summary of Positive Effects/Benefits

Overall, the Project is expected to deliver substantial and enduring economic benefits at both regional and national scales as per the above assessment. These benefits include significant short-term employment and GDP gains, long-term operational employment, improved energy security, enhanced market resilience, and efficient use of land and infrastructure. These significant national and regional benefits are considered to be of a greater magnitude than the potential adverse effects on the environment which can be appropriately avoided and mitigated as demonstrated in the following sections.

5.3 Effects on Water Quality

5.3.1 Potential Effects

Construction and operational phase activities create the potential for discharges to adversely affect water quality, freshwater ecology and associated waterbody values.

Construction phase earthwork activity and associated discharges have the potential to result in:

- Erosion caused by uncontrolled surface runoff over excavated surfaces;
- Sediment discharges caused by uncontrolled flow of turbid water from exposed excavated surfaces;
- Discharge of contaminants to waterbodies; and
- Contaminants entering groundwater.

Operational phase stormwater discharges have the potential to adversely affect water quality via uncontrolled erosion and sediment discharges from the driplines of panels.

The following assessment addresses potential construction and operational phase discharge effects on water quality in turn.

5.3.2 Construction Phase Effects

As noted in section 4, the Project includes setbacks from waterbodies i.e. (Ōhau and Twizel Rivers and wetlands) and identified sensitive areas and features, avoiding earthwork activities within the location of these areas and the potential for associated erosion and sediment effects.

The ESCP provided in attachment 3.4 details the erosion and sediment controls for avoiding and mitigating adverse effects during construction. The management and design of the erosion and sediment control measures have been assessed based on risk, area, and type of earthwork activities and have been designed in accordance with Erosion and Sediment Control Toolbox for Canterbury. The ESCP includes a risk matrix, identifying hazards, erosion and sediment control risks (to include probability, consequence and effect), and management/mitigation measures for each of the main civil works categories.

Construction phase controls to mitigate water quality effects include locating high sediment-generating activities away from sensitive areas (i.e., exclusion areas and areas requiring setbacks).

The relevant matters of discretion in the CLWRP for the proposed construction phase discharges are listed below. These matters provide guidance for assessment of the proposal, noting its overall discretionary status.

Canterbury Regional Plan Rule 5.94B matters of discretion:

1. *The actual and potential effects of the discharge on the quality of surface water, aquatic ecosystems, Ngāi Tahu cultural values; and*
2. *The actual and potential effects of the discharge on the quality and safety of human and animal drinking water; and*
3. *The actual and potential adverse environmental effects of the quantity of water to be discharged on the banks or bed of a waterbody or on its flood carrying capacity, and on the capacity of the network to convey that discharge; and*
4. *The potential benefits of the activity to the applicant, the community and the environment.*

The actual and potential adverse environmental effects of construction phase earthworks on the quality of surface water, aquatic ecosystems and Ngāi Tahu cultural values will be minimal.

The Project setbacks from waterbodies, and remediation of excavated sites immediately after activities have been completed in accordance with the ESCP, will ensure adverse effects from discharges on the quality of surface water and aquatic ecosystems are appropriately avoided or mitigated. The safety of human and animal drinking water will be unaffected.

Potential adverse effects on Ngāi Tahu values or on sites of significance to Ngāi Tahu will be managed through cultural monitoring and adherence to an Archaeological Management Plan.

As such, discharges during construction phase activity will be appropriately managed in accordance with an approved ESCP and CEMP to avoid, remedy or mitigate the potential for uncontrolled erosion, sediment and contaminant discharges (and in turn potential adverse effects on water quality).

The discharges associated with construction phase earthworks are an essential and unavoidable component of the project and therefore essential to ensure the benefits of the project to Nova, the community and the environment are realised.

5.3.3 Earthworks over Aquifers

ECan mapping notes that the application site sits over a semi-confined or unconfined aquifer. Earthworks over aquifers are regulated by the CLWRP and the proposed earthworks require consent under Rule 5.176 as a restricted discretionary activity.

The matters of discretion for these activities under Rule 5.176 in the CLWRP are:

The actual and potential adverse environmental effects on the quality of water in aquifers, rivers, lakes, wetlands; and

Any need for remediation or long-term treatment of the excavation; and

The protection of the confining layer and maintaining levels and groundwater pressures in any confined aquifer, including any alternative methods or locations for the excavation; and

The management of any exposed groundwater; and

Any adverse effects on Ngāi Tahu values or on sites of significance to Ngāi Tahu, including wāhi tapu and wāhi taonga.

Typical piling activity for the Project will be to a depth of between 2 - 4 m. The Geotechnical Assessment (attachment 2.2) notes that “*groundwater is not generally expected to be within the upper 5 m of ground*”. Therefore, the actual and potential adverse environmental effects on the quality of water in aquifers, rivers, lakes, wetlands will be avoided as a result of excavation activities as it is proposed to ensure that at least 1 m of disturbed material will be maintained between the deepest excavation point and the aquifer.

Excavated sites will be remediated immediately after activities have been completed, as set out in the ESCP. As discussed, the protection of the confining layer will be maintained by undertaking excavations with at least 1 m of disturbed material maintained which will also ensure that groundwater is avoided. Adverse effects on Ngāi Tahu values will be avoided through ESCP controls, adherence to the CEMP and ensuring that an Archaeological Management Plan (AMP) is implemented and adhered to during earthworks activities.

The proposed excavation activities and their consistency with the matters of discretion listed above, in conjunction with the ESCP, CEMP and AMP controls demonstrate that adverse effects of earthworks over aquifers will be appropriately avoided, remedied, or mitigated.

5.3.4 Operational Phase Stormwater Discharge Effects

The dripline from solar panels has the potential to concentrate stormwater discharges on the area under the panels. However, the dripline will not be uniform, as a result of panel-tracking changing the angle of the panels and thereby the direction of stormwater flows dripping off the panels. In addition, the existing vegetation cover across the site will be maintained to provide vegetative filtering of erosion and sediment impacts during rainfall events.

The Geotechnical Assessment (attachment 2.2) indicates that the site contains free-draining soils with estimated high-soakage rates, with the SMP (attachment 3.5) concluding that soakage is the appropriate method to manage stormwater effects. The SMP will inform detailed design for the Project and a condition of consent is proposed to ensure recommendations in the SMP are implemented by way of a Natural Hazards/Stormwater Mitigation Works Plan.

The Project will result in a minor increase in the total impermeable surface area as a result of the installation of the piles. However, sufficient total permeable area across the site remains to convey stormwater during rainfall events.

Overall, it is considered that operational phase activities are able to be appropriately managed to avoid, remedy or mitigate the potential for adverse effects on water quality.

5.3.5 Contaminant Leaching from Panels

The solar panels are encapsulated in Ethylene Vinyl Acetate (EVA) sheet and glass on both sides. The module manufacturer undertakes a Toxicity Characteristic Leaching Procedure (TCLP), forcing panel leakage to determine the presence and quantity of any toxic substances in test leakage. The modules are designed and sealed to endure the harsh outdoor environment and are not expected to have any contaminant concentrations from solar array runoff under normal operation conditions. No discharges of contaminants to the environment are expected from stormwater runoff from the panels.

Nova has proposed conditions of consent requiring a Soil Monitoring Plan to be submitted and certified by ECan and then implemented.

5.3.6 Nature of Discharge, Sensitivity of the Receiving Environment and Alternative Methods

Clause 6(c)(i) of Schedule 5 of the Act requires a description of the nature of the discharge and the sensitivity of the receiving environment to adverse effects and any possible alternative methods of discharge, including into any other receiving environment. These matters are assessed as follows:

- The nature of the proposed discharges relate to stormwater that will occur when there is rainfall at the site during both construction and operation phases. During construction, stormwater has the potential to pick up sediment from disturbed ground which is a contaminant that can adversely affect the quality of surface waterbodies and groundwater resources. During the operation phase stormwater running off solar panels and other infrastructure has the potential to result in erosion and scour which again can entrain sediment and affect surface waterbodies and groundwater resources. The proposed stormwater discharges are entirely necessary components of the Project, common to all solar projects with adverse effects that will be appropriately managed to ensure adverse effects are minimal;
- The receiving environment has a number of sensitive features including the areas of value specified in the Ecological Assessment and the Twizel and Ōhau rivers that are sensitive to adverse effects; and
- There are no alternative methods of discharge available to Nova or alternative receiving environments given the location and nature of the site and project.

5.3.7 Summary of Effects on Water Quality

In summary, the proposed construction and operational discharges will have no more than minor effects on water quality. Potential erosion, sediment and contaminant risks will be avoided or appropriately managed through setbacks, an approved ESCP, CEMP, SMP and AMP, with negligible risk to surface water, groundwater, aquatic ecosystems or Ngāi Tahu values. Overall, the Project's water quality effects are considered acceptable and well controlled.

5.4 Landscape and Visual Effects

5.4.1 Potential Effects

The Landscape Assessment has identified that the potential adverse landscape and visual effects of the proposal are as follows:

- 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.

5.4.2 Assessment Approach

The Landscape Assessment has used a methodology informed by Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines.

Visual Simulations of the solar farm have been prepared by Virtual View Ltd, a company that specialises in preparing 3D visualisations, in accordance with NZILA best practice guidelines. Ten visual simulations have been prepared which directly correspond to key viewpoint locations identified in the Landscape Assessment.

The Landscape Assessment has quantified landscape and visual effects of the proposal using a comparative scale to ascertain the degree of effects.

Very-Low	Low	Low-- Moderate	Moderate	Moderate-- High	High	Very-High
Less-than-Minor		Minor	More-than-Minor		Significant	

Figure 5.1: Comparative scale of degree of effects

██████████ of Patch Ltd has undertaken a peer review of RMM's Landscape Assessment which is provided in attachment 2.11.

5.4.3 Visual Effects

The Landscape Assessment has assessed the visual effects of the proposal from a number of different public viewpoints and one private viewpoint (being Cairn Station, to the south of the site). The results are summarised in the following table.

Table 5.1: Summary of Visual Effects

Location	Adverse visual effects
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

Location	Adverse visual effects
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

The adverse visual effects of the proposal range from very low (less than minor) to moderate-high (more than minor) with effects from elevated areas of Mcaughtries Road and from Glencairn Station being moderate-high (more than minor) but not reaching high-very high (significant).

5.4.4 Mitigation Measures

An earlier version of the Landscape Assessment (prepared for the FTAA referral stage) recommended an approximately 20 m wide band of native planting along the south-west and north-east boundaries of the site. The purpose of this planting was to soften the hard edge of the solar farm and provide partial visual screening from Mcaughtries Road, the Ōhau River four-wheel-drive track, sections of the Twizel River Trail and Glencairn Station.

After discussions with Project ecologists, this proposed planting was removed from the Project due to the potential significant adverse effects it would have on Threatened and At-Risk indigenous vegetation and the dryland habitats along the terrace edges. The Landscape Assessment concludes that this is appropriate because the mitigation planting would cause greater ecological harm than the visual benefits it would deliver and would therefore be inconsistent with effects management priorities for the site.

5.4.5 Summary of Visual Effects

The Project will result in visual effects that range from very low (less than minor) to moderate-high (more than minor) depending on location.

Effects are localised to a relatively small viewing catchment near the site and are not determined to be significant in RMA terms using the comparative scale.

The proposal will not be visible from Twizel township, Lake Ruataniwha, Lake Benmore or its main campgrounds, which are key sensitive and high-use locations. Long-range views across

the Mackenzie Basin and to surrounding mountain ranges, including Aoraki / Mt Cook, are retained. The Project will be visible from a limited number of nearby public and private viewpoints. While some effects exceed a minor threshold, they are not significant, are geographically contained, and are considered acceptable in the context of the Mackenzie Basin's existing renewable energy landscape and policy framework.

5.4.6 Landscape Effects

The Landscape Assessment finds that landscape effects arise from a localised reduction in perceived openness and naturalness within the site and its immediate surrounds. However, physical landscape effects are limited, as landform modification is minimal and largely reversible, the outwash terrace remains legible, and the solar panels are low-profile. The development occupies approximately 2.6% of the South Basin, and effects are geographically contained between two rivers within an already modified and infrastructure-rich part of the Basin.

The proposal avoids wetlands, terrace edges and areas of significant indigenous vegetation and incorporates low-profile design, setbacks and recessive colouring. As outlined above, landscape mitigation planting was intentionally excluded following ecological advice that planting would cause significant adverse effects on rare Mackenzie dryland habitats. Instead, effects are managed primarily through avoidance, design response and ecological management and enhancement measures, which modestly reduce overall landscape effects.

Overall, the Landscape Assessment finds that the Project will result in low-moderate to moderate adverse landscape effects that are more than minor but not significant. The Project does not undermine the defining landscape values of the Mackenzie Basin Outstanding Natural Landscape, including its openness, legibility and long-range views.

When assessed in the context of the Mackenzie Basin's established renewable energy landscape, proximity to existing generation and transmission infrastructure, strong avoidance and design measures, and the policy direction to enable renewable electricity generation, the landscape effects of the proposal are acceptable and appropriately managed.

5.4.7 Peer Review of Landscape Assessment

Steve Skelton of Patch Ltd was engaged to provide an independent peer review of the RMM Landscape Assessment. The peer review included a site visit and followed guidance provided in the New Zealand Institute of Landscape Architects Landscape Assessment Guidelines / Te Tangi a Te Manu.

The peer reviewer generally agrees with the assessment and conclusions of the Landscape Assessment. While there are small differences, these are limited to matters of process and emphasis rather than substance. In particular, there is a small difference between the experts on the appropriate weight to be attributed to views of Aoraki / Mt Cook but this does not result in any difference in overall conclusions. The peer review reached the following primary conclusions:

- The site is appropriately identified as part of an Outstanding Natural Landscape, and the proposal location and design are broadly appropriate within this context.
- The proposal will result in a localised change from open pastoral character to a more industrial character, but with limited effects on underlying landform and ecological values.

- Physical landscape effects on the wider basin are assessed as low to moderate, due to the low profile of the development and its containment within terrace landforms.
- Associative effects are assessed as positive or neutral overall, reflecting the co-location with existing hydro-generation infrastructure and continuation of the area's energy-generation narrative.
- Visual effects will vary by location, ranging from very low to moderate-high, with higher effects limited to localised viewpoints; however, overall visual effects are no more than moderate.

Overall, the peer review concludes that while some localised moderate to moderate-high visual effects will occur, the proposal will result in no more than moderate adverse effects on landscape character and visual amenity overall, consistent with the conclusions of the Landscape Assessment.

The peer reviewer made a recommendation that all transformers, water tanks, and other ancillary structures should be finished in natural, recessive colours (i.e. greys, greens and browns) with a light reflectance value (LRV) of less than 30%, to reduce visibility within the landscape. This recommendation excludes elements such as transmission poles, solar panels, and fencing.

This recommendation has been incorporated as a proposed condition of consent (MDC condition 82).

5.5 Ecological Effects

5.5.1 Assessment Approach

An Assessment of Potential Ecological Effects has been undertaken by Wildland Consultants Ltd, see attachment 2.14. The assessment is based on comprehensive desktop reviews and extensive field surveys undertaken between 2022 and 2024 and addresses effects on vegetation and habitats, flora, avifauna, lizards, terrestrial invertebrates, and freshwater fauna. The assessment incorporates the results of the surveys with additional surveys undertaken provided in separate documents provided as attachments 2.12 (Additional Lizard, Vegetation, and Invertebrate Surveys) and 2.13 (Tekapo Ground Wētā Tracking Tunnel Survey). An Integrated Framework document is provided as attachment 2.15 to assist the Panel. The framework identifies the full package of ecological work undertaken and the interrelationship between the documents to provide an integrated approach to the management of ecological effects.

The assessment also considers ecological significance under the Canterbury Regional Policy Statement, relevant provisions of the MDP, the National Policy Statement for Freshwater Management, and obligations under the Wildlife Act 1953.

5.5.2 Potential Effects

Without mitigation, the key potential adverse ecological effects associated with the Project would include:

- Loss or modification of indigenous vegetation and habitats located at the site margins.

- Disturbance to Threatened and At Risk avifauna during construction, including breeding disturbance.
- Risk of avifauna injury or mortality, including bird strike during operation.
- Disturbance, injury, or habitat loss for indigenous lizard populations.
- Loss, disturbance, or shading effects on habitats supporting notable terrestrial invertebrates, including Tekapo ground wētā and At Risk grasshopper species.
- Sedimentation or contamination risks to adjacent braided rivers and associated freshwater fauna during construction.
- Introduction or spread of pest plants and pest mammals.

Wildlands concludes that several of these effects, particularly avifauna disturbance, lizard habitat loss, invertebrate habitat modification, and sedimentation risks, would potentially be more than minor in the absence of appropriate effects mitigation/management.

5.5.3 Mitigation Measures

Avoidance

Avoidance has been the primary method used to manage ecological effects and has strongly influenced the Project layout. As ecological survey and assessment information has been received the solar plant layout has been revised to avoid ecologically significant flora and fauna. Key avoidance measures include:

- Locating solar panels entirely within exotic grassland and improved pasture.
- Excluding all known indigenous vegetation, wetlands, scarp habitats, river terraces, and identified significant habitats from the development footprint.
- Applying minimum setbacks as per the table below which include setbacks to ensure solar infrastructure does not shade ecologically significant flora and Threatened and At Risk plants:

Table 5.2: Setback / Buffer for Sensitive Features

Values	Setback / Buffer Distance
Sites of Natural Significance	10 m
Ecologically Significant Vegetation and Threatened and At Risk Plants	10-35 m

Values	Setback / Buffer Distance
Natural Inland Wetland	100 m
Rivers and streams	20 m
Ōhau River and river delta	75 m setback from the use of any construction machinery or power tools during the avifauna breeding season
Twizel River and river delta	100 m setback from the use of any construction machinery or power tools during the avifauna breeding season

- Avoiding high and moderate-quality lizard and terrestrial invertebrate habitats through solar panel layout refinement and shading analysis.

These measures ensure that areas of highest ecological value will be retained and protected.

Residual Adverse Effects

Residual ecological effects following the proposed avoidance approach relate to:

- Localised habitat loss in modified areas: Some loss of low-quality, exotic grassland habitat used by lizards, invertebrates and foraging birds remains unavoidable within the developed footprint. These habitats are widespread locally and of lower ecological value.
- Residual disturbance and mortality risk: Despite avoidance and design measures, a small residual risk of disturbance or mortality to lizards, invertebrates and avifauna remains during construction and operation, particularly from vehicle movements and earthworks.
- Habitat fragmentation effects: Some internal fragmentation of low-quality lizard and invertebrate habitat remains, although connectivity is largely maintained via retained margins and planned corridors.
- Shading and microclimatic change: Shading beneath solar panels may slightly reduce habitat quality for some lizard and invertebrate species within the panel area, though this mainly affects already degraded habitats.
- Avifauna operational effects: A residual, low risk of ongoing disturbance and bird strike remains, particularly for birds moving through or occasionally foraging within the site.

Mitigation, Management and Monitoring

Residual adverse ecological effects after avoidance measures will be addressed through a comprehensive suite of conditions and management plan commitments.

Habitat Loss and Disturbance (Lizards and Invertebrates)

Implementation of a certified Lizard Management Plan and specific proposed conditions of consent will provide for creation of lizard habitat corridors and biodiversity nodes, habitat enhancement planting, pest mammal control, and incidental discovery protocols. The lizard habitat corridors and biodiversity nodes will provide connectivity across the site and link retained high and moderate-quality habitats. Biodiversity nodes will include strategically placed rock piles and eco-sourced native planting to create refuges and basking sites.

Prior to commencement of construction, salvage and translocation protocols for Tekapo ground wētā and grasshopper species located within development areas, will be undertaken in accordance with a certified Terrestrial Invertebrate Management Plan. Habitat corridors and biodiversity nodes will also benefit terrestrial invertebrates.

Seasonal grazing management beneath the solar panels is proposed to maintain short-stature vegetation that supports lizards and invertebrates and avoids habitat degradation through rank grass growth. A condition of consent is proposed to secure the requirement for grazing beneath the panels.

Habitat Fragmentation

Providing connectivity at a site-wide scale to avoid isolation effects will support long-term viability of lizard and invertebrate populations. Continuous east-west and north-south lizard corridors are proposed to maintain movement pathways across the site. Retention of fence lines, riparian margins, and providing undeveloped buffers around the edges of the site will retain movement and dispersal routes for indigenous fauna. The habitat enhancement areas will be integrated to provide habitat for both lizards and invertebrates.

Shading and Microclimatic Effects

Shading beneath solar panels will result in minor microclimatic changes within the Project footprint. These potential adverse effects will be managed by tracking panel technology, reducing the duration and intensity of permanent shade, and active vegetation management, including grazing and weed control, to prevent changes to habitat which could reduce suitability for lizards or invertebrates. Residual shading effects are largely confined to already modified habitats.

Avifauna Disturbance and Mortality Risk

Timing and controls on construction activity are proposed including preconstruction bird surveys and buffer zones around active nests. Panel layout and design include additional spacing between panels, anti-reflective panels and tracking technology to mitigate against the 'lake effect' and bird strike risk. Disturbance, injury, or mortality of indigenous avifauna will be managed in accordance with a certified Avifauna Management Plan and a Wildlife Act Approval. The latter is sought in order to ensure that any deceased birds can be held for the purpose of comprehensive

assessment to determine causation. Bird monitoring is proposed incorporating carcass monitoring with consent conditions which establish mortality trigger thresholds for adaptive management responses including the requirement for a Bird Collision Management Plan, if trigger thresholds are reached. Adaptive management responses could include potential modification or removal of panels if required. Provision for compensation or off-site conservation support is provided for in the Avifauna Management Plan should adaptive management responses prove ineffective and residual avifauna effects occur.

Pest Management

Residual ecological effects are further mitigated through site-wide pest management. This includes the requirement for implementation of a certified Biosecurity and Vegetation Management Plan and a certified Pest Mammal Management Plan. Agrichemical spraying will be avoided with reliance on mechanical or targeted methods where control is required. Implementation of these management plans will prevent weed spread and manage pest plants and control cats, mustelids, hedgehogs, rodents, and lagomorphs. The plans will target protection of lizard, invertebrate, and ground-nesting bird habitats. Pest control delivers indirect but substantial biodiversity benefits and is deemed critical to ensuring mitigation effectiveness.

Freshwater Fauna

Any potential for residual adverse effects on freshwater fauna will be mitigated by adherence to a certified ESCP with strict erosion and sediment control measures to prevent sediment discharge into adjacent rivers and wetlands during construction. Exclusion of refuelling and hazardous activities from riparian areas will further mitigate the potential for adverse effects. Hazardous substances management controls in accordance with HSNO and associated regulations including spill response procedures will further manage and mitigate contamination risks.

Monitoring, Adaptive Management and Auditing

All mitigation measures are supported by long-term monitoring, adaptive management and auditing, including:

- Population monitoring and reporting for lizards, invertebrates, Threatened and At Risk plant populations and avifauna.
- Performance thresholds that, if triggered, require review and adjustment of management measures.
- Ongoing ecological oversight by suitably qualified ecologists and annual compliance reporting with provision for independent ecological auditing at least once every 3 years for the life of the Project.

This framework ensures residual effects remain appropriately managed and reported throughout construction and operation, with the ability to respond to unforeseen outcomes.

Compensation

The Wildlands report concludes that overall, effects on each ecological value can be reduced to a no more than minor level using avoidance measures and mitigation. Therefore, compensation is not relied upon to manage the effects of the Project. However, to provide an additional layer of certainty, Wildlands proposes requirements for the payment of compensation in the event that monitoring demonstrates that adverse effects have not been adequately addressed by the effects management measures proposed.

Compensation is therefore targeted, conditional, and contingency-based, and is proposed only for selected ecological values (avifauna, lizards and terrestrial invertebrates) where some uncertainty remains despite robust avoidance and mitigation measures being proposed.

For avifauna, compensation is proposed on a conditional basis if post-construction monitoring identifies unacceptable levels of avifauna mortality that cannot be adequately addressed through adaptive management measures (such as panel design modification, deterrents, or targeted panel removal).

If compensation is required, the quantum of compensation would be informed by Collision Risk Modelling and Population Viability Analyses and will vary by species, as proposed in the AMP. The AMP lists examples of where funding should go, including Project River Recovery, community predator-control/monitoring initiatives along braided rivers, GPS tracking in collaboration with DOC/universities, and MSc/PhD research grants to improve knowledge of affected species (especially in the Mackenzie Basin).

For lizards, if monitoring does not detect the desired population response, DOC will be notified and \$5,000 will be provided for lizard research and conservation in the Mackenzie Basin (potentially via SRARNZ or another agreed recipient). If areas identified for avoidance are inadvertently disturbed, the LMP requires additional habitat enhancement and immediate DOC notification, with further compensation measures for disturbance to lizards to be determined with DOC.

For terrestrial invertebrates, the TIMP provides a clearly defined contingency compensation mechanism for Threatened terrestrial invertebrates, specifically Tekapo ground wētā and At Risk grasshopper species. Compensation would be triggered only if monitoring demonstrates sustained population decline over multiple monitoring rounds and adaptive management and habitat enhancement measures have not been effective.

Compensation will be considered in the form of research funding being a grant of \$15,000 per annum for three years, plus site access to support research into invertebrate responses and effects mitigation. If a student is not available initially, the grant may be offered in subsequent years, and if not taken up after three years the funding would be directed to the New Zealand Entomological Society for targeted research into the conservation ecology and mitigation of these Tekapo ground wētā and At Risk grasshopper species.

5.5.4 Summary of Ecological Effects

With the implementation of the proposed avoidance and mitigation and management measures Wildlands conclude that:

- Adverse effects on ecologically significant indigenous vegetation and wetlands will be less than minor, and in many cases negligible.
- Adverse effects on avifauna, including bird strike risk, are expected to be no more than minor, with monitoring and adaptive management in place.
- Adverse effects on lizards are expected to be less than minor, with enhancement resulting in a net improvement in habitat connectivity and quality over time.
- Adverse effects on terrestrial invertebrates are expected to be no more than minor.
- Effects on freshwater ecosystems are expected to be less than minor, with erosion and sediment controls and spill controls properly implemented.
- Biosecurity risks will be effectively managed to prevent adverse long-term ecological outcomes.

Compensation is proposed as backstop for effects on avifauna, lizards and terrestrial invertebrates should monitoring demonstrate that adverse effects have not been adequately addressed by the effects management measures proposed.

5.6 Amenity Effects during Construction

5.6.1 Potential Effects

The Project activities create the potential for adverse amenity effects. These potential effects primarily relate to construction phase effects so the assessment focusses on this phase. Potential effects primarily concern the potential for nuisance effects associated with dust, noise, vibration, lighting, traffic movements and general levels of activity. These effects will be managed generally under a Construction Environmental Management Plan which is proposed to be submitted and certified through a condition of consent, as well as other specific management plans such as an ESCP. The following assessment considers potential nuisance-related amenity effects during construction.

5.6.2 Lighting

Construction-phase lighting will be limited to low-level security lighting only, where necessary, and managed to minimise light spill and glare. Construction will generally occur during daylight hours avoiding the need for lighting.

Operational lighting will be restricted to temporary, localised lighting used solely for maintenance or servicing activities. This lighting will only operate when required and will be confined to the immediate work area.

Mitigation measures will be applied to all necessary lighting, including the use of shielding, diffusers and/or screens, to ensure lighting effects beyond the site are minimised. Access tracks will not be artificially lit. Any night-time access will rely on vehicle headlights only.

The Project will meet MDP lighting performance standards listed under Light S1-S6 as:

- No lighting will be directed towards any adjacent roads, residential properties, or lakes;
- All outdoor lighting will be shielded to below the horizontal;
- Correlated colour temperature of outdoor lighting will not exceed 3000 K
- Only light-emitting diode (LED), low pressure sodium and high-pressure sodium light sources will be used.
- The maximum level of light spill from outdoor lighting will not exceed the horizontal or vertical illuminance levels on any adjoining site in the receiving zone set out in LIGHT - TABLE 1, excluding roads.

5.6.3 *Dust Nuisance*

With respect to potential dust nuisance, the ESCP sets out control measures to include the following:

- Internal roading specifications to reduce dust generation;
- Construction management (slow speed on surfaces to reduce dust generation);
- Use of water trucks for wetting down surfaces to manage dust and aeolian erosion;
- Rapid stabilisation of worked areas;
- Active management of on-site stockpiles/disposal sites; and
 - Cover with topsoil and grass seeded or hydroseeded immediately following completion of earthworks for that area; and/or
 - Provide temporary cover the disposal area with an erosion control blanket or regular watering of the fill surface as required during drier summer months.

The larger construction activities such as installation of transmission lines are located at significant distances from boundaries (discussed further below). This separation distance reduces the potential for dust nuisance affecting neighbouring properties.

Construction activity will occur over a period of 2 years and will be undertaken in a sequential manner over the ~ 565 ha development area. Construction works in any given area will typically be of limited duration. The main laydown area, switchyard, workshop and operations and maintenance buildings (being the most intensive construction work areas) are localised within the application site and significant distances from sensitive private and public receptors. Works on other areas of the application site will primarily involve installation of the solar panels. The piling methodology for solar panel installation works is similar to rural fencing activity.

Overall, while construction works and associated activity will occur over a period of 2 years, construction activity is able to be suitably managed through preparation and adherence to construction phase management plans such as the CEMP and ESCP which address dust management. It is considered that any adverse amenity effects associated with dust general will be location-specific, temporary, and able to be managed to an acceptable level.

5.6.4 Traffic Generation

As set out in Section 4, the Project will generate some heavy vehicle movements to and from the application site during construction phase activity.

Traffic effects, including effects on the transport network, are assessed in Section 5.14 below. However, an assessment of construction-related traffic effects on amenity is detailed below.

In assessing potential nuisance effects, the location of the application site and proposed access point is first noted. All construction traffic will access the application site via the access from SH 8. The access point is considered to be located at a suitable distance from any other activity that would result in traffic creating nuisance effects for neighbouring properties.

In terms of the type of vehicles, intensity, time of day and anticipated vehicle generation, construction traffic movements will be limited to standard daytime working hours (Monday to Saturday, excluding Sundays and public holidays) and will not affect night-time hours (and therefore will not impact on sleep patterns associated with potential vehicle noise and headlight impacts).

In the context of vehicle generation, the volume of construction traffic is not considered to be significant when compared to the background volume of traffic along SH 8. As noted in Section 3.9 of the ITA, the most recent traffic count for SH 8 (December 2023) recorded an ADDT of 3945 vehicles with approximately 730 Heavy Commercial Vehicles (HCV) per day – 18% HCV.

There will be an obvious increase in heavy vehicle movements within the application site during construction, however, construction traffic will be managed in accordance with a CTMP and heavy vehicle movements will be spread out over the course of any given day/week/month.

5.6.5 Noise and Vibration Effects

An Acoustic Assessment has been prepared by Marshall Day Acoustics (attachment 2.5). The assessment finds that noise effects during construction, primarily attributed to impact piling rigs, will only exceed 55 decibels (dB) beyond the site boundary at a limited distance (Figure 5.2). No sensitive activities are located within the 55 dB noise contour.

Construction noise effects can be appropriately managed to not create adverse effects beyond the site boundary and will comply with NZS6803:1999.

At the neighbouring DOC Kakī sanctuary, a piling noise level of 38 dB LAeq is predicted. This level would be barely noticeable, similar to the noise in a large unoccupied conference room or a library reading room, although the type of noise would be characterised by intermittent spikes in sound pressure level. This noise level readily complies with the night-time noise limit of 45 dB LAeq.

Marshall Day Acoustics has also assessed vibration during construction which is primarily generated through vibratory roller (if required) and impact piling. Given the setback distances to the closest residential dwelling are greater than 1,500 m, Marshall Day has no concerns with respect to construction vibration and compliance with German Standard DIN 41503:2016 “Vibrations in buildings – Part 3: Effects on structures” during construction. Marshall Day predict construction vibration would be imperceptible at all times at the DOC Kakī sanctuary.

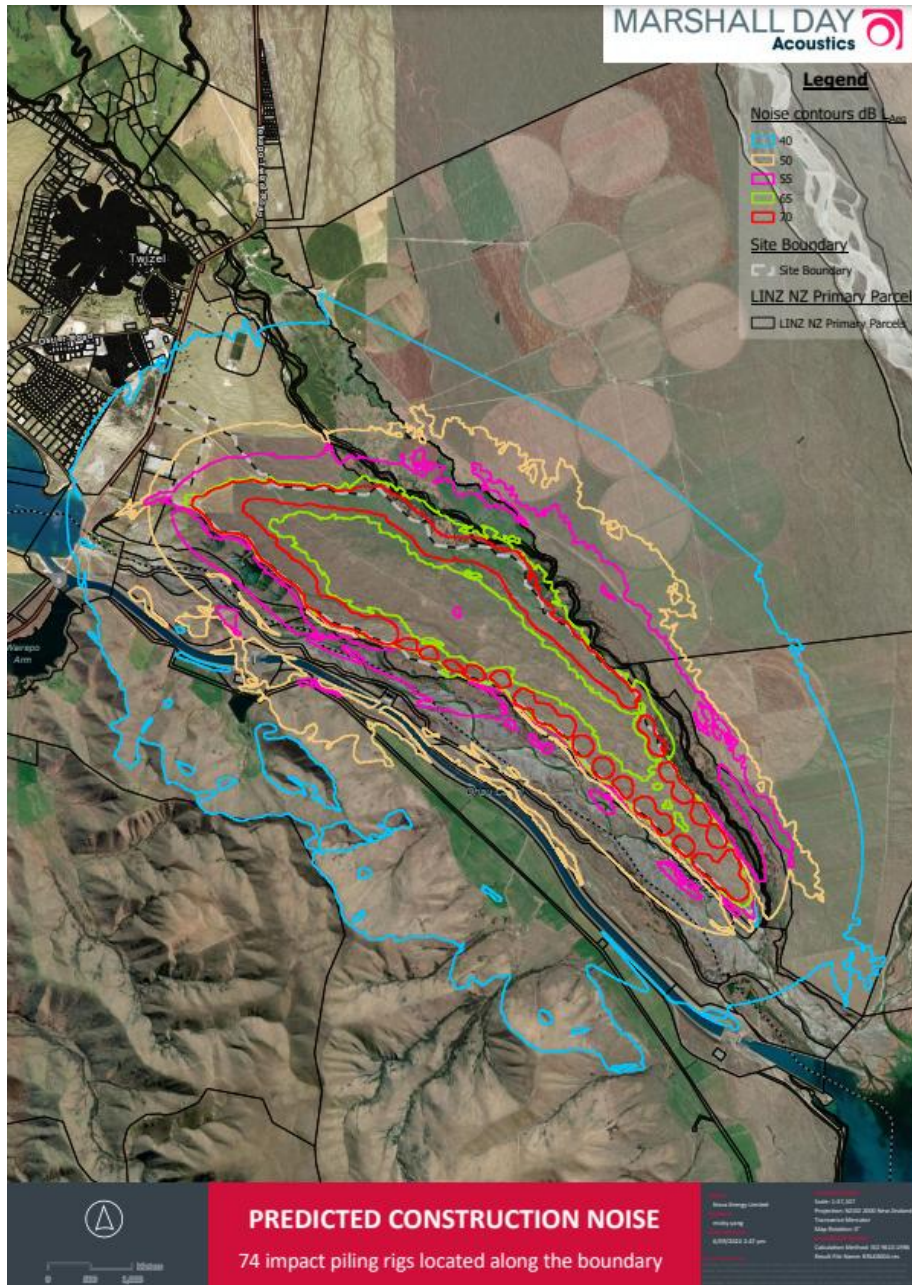


Figure 5.2: Anticipated Construction Noise mapping (source: Marshall Day, 2024)

Overall, it is considered that any potential nuisance effects associated with construction noise and vibration are able to be suitably managed through compliance with relevant noise and vibration standards.

5.6.6 Summary of Amenity Effects during Construction

Overall, the Project is considered to be relatively benign in terms of potential nuisance impacts during construction activities. Adherence to standards, such as those that apply to noise and

vibration, and adherence to the CEMP and other management plans, will ensure that any potential nuisance effects associated with construction activity will be appropriately managed.

5.7 Glint and Glare Effects

5.7.1 Potential Effects

Glint and glare are visual effects caused by the reflection of sunlight from smooth or reflective surfaces, including photovoltaic (PV) panels, toward an observer. Glint refers to a brief, momentary flash of reflected light, while glare refers to a more sustained reflection of brightness that may exceed ambient light levels. Potential effects of glint and glare can include visual distraction and, in some circumstances, temporary after-images that may affect visual comfort or safety. The significance of these effects depends on a range of factors, including the intensity and duration of reflected light, the distance and orientation of the reflective surface relative to the observer, the time of day and year, and the sensitivity of the receptor. In the context of solar farms, potential receptors typically include nearby dwellings, road users, and aviation activities. Modern PV panels are designed to absorb the majority of incoming sunlight and are treated with anti-reflective coatings, meaning they generally reflect less light than many common surfaces; however, glint and glare effects may still occur under certain geometric and lighting conditions, particularly during early morning or late evening periods.

5.7.2 Effects Assessment

A Glint and Glare assessment has been undertaken by ITP Renewables to evaluate the potential visual effects of reflected sunlight from the proposed Twizel Solar Plant on surrounding receptors. The assessment considers potential effects on residential observation points, local road users, and nearby flight paths. The assessment utilises an industry-recognised tool to simulate potential glare based on the location, orientation, and tracking behaviour of the solar panels, and assesses glare at one-minute intervals under conservative clear-sky conditions. The modelling assumes no existing vegetation or built screening unless explicitly included and therefore represents a conservative assessment of potential effects. The assessment is included as attachment 2.6.

The study assessed:

- 26 observation points, representing nearby dwellings, lookouts, and sensitive locations;
- Eight road routes, including State Highway 8, McAughtries Road, and local roads; and
- Two flight paths associated with the Pukaki–Twizel Airport.

Potential glare effects were classified as:

- Green glare (low potential to cause temporary after-image);
- Yellow glare (potential to cause temporary after-image);
- Red glare (potential to cause retinal damage); and
- Red glare is not expected from photovoltaic installations and was not identified in the assessment.

Results – Unmitigated Scenario

Modelling of potential effects without mitigation identified the following limited glare effects:

- Green glare was identified at 8 observation points and 4 road routes, generally of short duration and occurring in early morning or late evening during panel tracker backtracking periods.
- Yellow glare was identified on three road routes, primarily affecting McAughtries Road and sections of State Highway 8.

The most notable effects were:

- McAughtries Road, which experienced up to 12 minutes of yellow glare in a single day during parts of the year;
- State Highway 8, where both car and truck drivers experienced up to 6 minutes of yellow glare per day during limited seasonal periods; and
- Max Smith Drive, which experienced up to 3 minutes of yellow glare per day over a short seasonal window.

No observation points or routes experienced more than 12 minutes of yellow glare on any day, and no glare effects were identified on either of the assessed flight paths.

5.7.3 Glint and Glare Mitigation

Given the identified yellow glare effects on McAughtries Road and State Highway 8, potential mitigation was assessed by ITP Renewables. The preferred mitigation involves limiting the backtracking rest angle of the single-axis tracking system to no less than 5 degrees.

Modelling of this mitigation scenario demonstrates that:

- No green or yellow glare effects identified at any observation points, road routes, or flight paths; and
- The mitigation effectively eliminates all potential glare effects across the study area.

Nova has proposed a condition that all solar panels must have a rest angle no less than 5 degrees which avoids all glint and glare effects.

5.7.4 Summary of Glint and Glare Effects

With adherence to a consent condition requiring all solar panels to have a rest angle of no less than 5 degrees, all adverse effects from glint and glare will be avoided.

5.8 Natural Hazard Effects (Geohazards)

5.8.1 Approach

An NPS-Natural Hazards Risk Assessment has been prepared by EDC Engineering Design Consultants (see attachment 2.3). The assessment applies the NPS–NH risk-based framework (likelihood × consequence) and is based on the best available information available at the time of reporting including GNS QMAP geology, historic aerial photography via ECan GIS (1940s–present), regional liquefaction susceptibility mapping, the GNS Active Fault Database, nearby borehole/groundwater records, and MDP hazard overlays.

5.8.2 Effects Assessment

Geohazards that have the potential to affect the Project include landslips/slope stability, active faults/seismic shaking and liquefaction.

Overall, no natural hazard risks are assessed as “Very High” under the NPS–NH risk matrix requiring avoidance. Risks are generally Low, with some localised Medium to High risks (notably slope instability at steep boundary/terrace edges) that will be managed through a proportionate approach including avoidance/exclusion of higher-risk areas, conservative 20 m setbacks which have already been designed into the project layout, further site-specific confirmation at detailed design where any uncertainty remains, and appropriate seismic/foundation design.

Table 5.3: Risk Matrix Assessment for Geohazards

Hazard	Credible hazard scenario for the site	Likelihood level (NPS–NH Table 1)	Consequence level (NPS–NH Table 2)	Overall risk rating (NPS–NH risk matrix Figure 1)	Mitigation
Erosion	Fluvial erosion at river margins during extreme flood events	Unlikely	Minor (generally limited to margins, away from primary development areas)	Low, with potential localised Medium	Residual localised risk relates to steep river margins/toe erosion during extreme events; managed via 20 m setbacks from river margins and slope crests/steep boundary slopes
Slope instability / landslip	Instability of terrace edges or riverbank slopes affecting nearby infrastructure	Possible (ARI 50–100 years)	Moderate (localised damage possible if development encroaches on slope crests)	Medium; locally High over steep boundary slopes	Risk is managed by avoiding slope modification and maintaining setbacks from slope crests/steep boundary slopes (concept 20 m no-development offset; boundary slopes to be checked by a geotechnical professional at detailed design, noting the 1.5× slope-height concept).
Liquefaction	Localised liquefaction or settlement during strong	Unlikely (majority of site mapped very low susceptibility;	Minor (limited ground deformation expected in dense gravels)	Low	Site underlain predominantly by dense–very dense late Pleistocene outwash gravels; liquefaction-related damage expected to be

	seismic shaking	low susceptibility (limited near river margins)			minor/negligible over most of the site.
Seismic shaking / fault rupture	Strong ground shaking from regional earthquakes; no mapped active faults on the site (nearest active fault ~4 km west); fault rupture at the site not expected	Unlikely to Likely for strong shaking (depending on event return period); Very rare for fault rupture at site	Moderate (potential damage to infrastructure in a ULS event; low life-safety risk)	Medium for seismic shaking / Low for fault rupture	Seismic shaking is the dominant hazard and is managed through structural and foundation design in accordance with NZS 1170.5

5.8.3 Summary of Geohazard Effects

Based on the best available information, the site does not present “Very High” natural geohazard risk. Geohazard risks are generally Low, with localised Medium to High risks (notably steep boundary/terrace slopes) that can be appropriately managed through a proportionate approach, including avoidance/exclusion of higher-risk areas from the development footprint, conservative setbacks of 20 m from steep slopes and river/terrace edges and appropriate seismic/foundation design in accordance with Standards New Zealand Technical Specification 1170.5:2025 Structural Design Actions Part 5: Earthquake actions – New Zealand. In summary geohazard risks will be appropriately avoided, and where residual risks remain, they will be appropriately mitigated.

5.9 Natural Hazard Effects (Flooding)

5.9.1 Approach

As noted, resource consent is required from ECan for construction and operation-related stormwater discharges and project earthworks, requiring consideration of potential flooding and stormwater effects. Additionally, the site is located within the Flood Hazard Assessment Overlay which directs an assessment of flooding risk.

A Flood Hazard Risk Assessment has been prepared by BTW Company (see attachment 2.17). A Stormwater Management Plan has also been prepared by BTW Company which recommends methods for managing the effects of stormwater (see attachment 3.5).

To inform the Flood Hazard Risk Assessment, a site-specific 2D hydraulic flood model was developed using Infoworks ICM to assess flood depths and velocities across the site. The modelling considered storm events ranging from 2% to 0.2% AEP (50- to 500-year ARI) and applied a high-end climate change scenario (RCP 8.5, 2081–2100), consistent with the expected design life of the solar plant.

The model incorporated best available LiDAR topography, historic flow paths, and catchment characteristics, and assessed stormwater flooding behaviour across the development footprint. Flood hazard was assessed in accordance with both:

- The MDP; and
- The National Policy Statement for Natural Hazards 2025 (NPS-NH), using the Australian Rainfall and Runoff (2019) hazard classification framework.

5.9.2 Potential Effects

Site development works create the potential to alter site hydrology, impacting on flooding and stormwater patterns within the application site and surrounding area.

The application site is located on an elevated terrace between the Twizel River and the Ōhau River at the head of Lake Benmore. While both rivers are large braided systems, the development site itself is generally raised above instream flood levels. Flood risk at the site is primarily associated with stormwater and overland flow during extreme rainfall events, rather than river overtopping.

The modelling indicates that:

- Flooding across the site is generally shallow and low velocity, with the majority of the site classified as low flood hazard risk.
- Elevated flood depths and velocities are confined to narrow, localised areas associated with historic braided river channels.
- Less than 0.1% of the proposed solar plant area meets the MDP definition of a High Flood Hazard Area, primarily within short sections of the proposed access road and limited parts of the solar array.
- Flood velocities across most of the site are less than 1 m/s, with limited areas approaching higher velocities where flows are concentrated.

Under the NPS-NH framework, the site is predominantly classified as H1 (generally safe for people, vehicles and buildings) up to the 500-year ARI event, equating to a negligible to low risk. Small, highly localised areas shown in Figure 5.3 below are classified up to H4–H5 in extreme events without mitigation, representing a medium to high risk in those specific locations only.

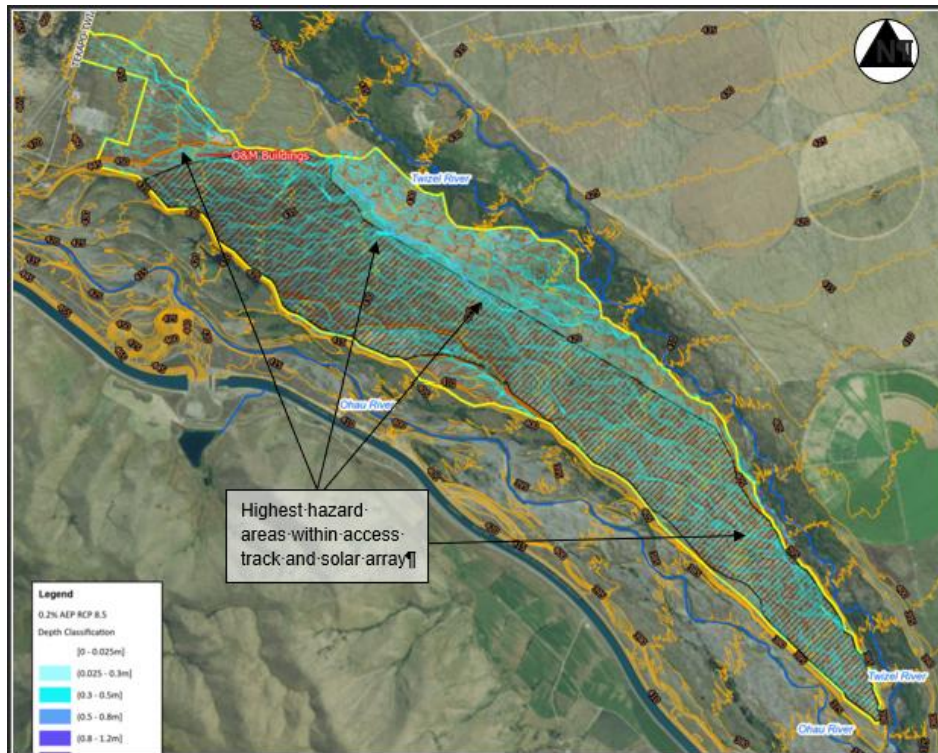


Figure 5.3: High Flood Hazard Areas (Source: BTW Flood Hazard Risk Assessment)

5.9.3 Mitigation Measures

A combination of design, physical mitigation and operational controls will be implemented to manage flood risk, including:

- Elevating natural hazard sensitive buildings (workshop and operations and maintenance building and temporary site offices) at least 300 mm above the 500-year ARI flood level.
- Solar panels are elevated above ground level on piles, with the ability to increase ground clearance to up to 1.85 m during severe weather events.
- Localised earthworks, culverts and drainage measures will be implemented during detailed design to disperse concentrated flows within historic braid areas, particularly at access routes. A condition of consent is proposed which requires that a Natural Hazard Mitigation/Stormwater Works Plan is submitted and certified by MDC prior to commencement of construction.
- Operational health and safety controls that restrict staff access to higher flood hazard areas during extreme rainfall events.

With these measures in place, the flood hazard risk in the affected areas is expected to reduce to low to medium, with no increase in flood risk to neighbouring or downstream properties. Conditions of consent are proposed to specify minimum finished floor levels for the proposed natural hazard sensitive buildings.

The natural hazard mitigation works proposed require consent under Rule NH-R5 of the MDP and therefore require specific consideration. The matters of discretion that apply under Rule NH-R5 are:

- a. *The effectiveness of any proposed natural hazard mitigation works and the alternative design options considered, including low impact design.*
- b. *Any adverse effects on the environment of any proposed mitigation measures.*
- c. *The extent to which the mitigation works transfer, or create, unacceptable hazard risk to other people, property or infrastructure*
- d. *The potential for the proposal to exacerbate natural hazard risk, including transferring risk to any other site*
- e. *Whether or not the work would be carried out under the supervision of either a Chartered Professional Engineer with experience in geotechnical engineering or a Professional Engineering Geologist (IPENZ registered)*

The proposed natural hazard mitigation works are minimal and localised interventions such as minor earthworks, small culverts and civil drainage works that will serve to disperse concentrated flows within the historic braid areas, particularly at access routes. These works are low impact design measures. The proposed works will be undertaken in accordance with the certified ESCP and SMP for the site which contain measures to avoid and minimise adverse effects on the environment. The mitigation works will not transfer, or create unacceptable hazard risk to other people, property or infrastructure or exacerbate natural hazard risk. The Natural Hazard/Stormwater Mitigation Works Plan proposed as a condition of consent includes a requirement for the work to be carried out under the supervision of either a Chartered Professional Engineer with experience in geotechnical engineering or a Professional Engineering Geologist (IPENZ registered).

5.9.4 Effects Summary

The Flood Hazard Risk Assessment and SMP demonstrate that the application site is generally suitable for development with respect to flood risk and on-site stormwater can be appropriately managed. Flooding is largely confined to historic braided channels, affects a very small proportion of the site, and can be appropriately managed through design, mitigation and operational controls. A Natural Hazard/Stormwater Mitigation Works Plan is proposed to ensure flooding and stormwater recommendations are incorporated in detailed design. Overall, the proposal is considered to achieve compliance with the MDP and to appropriately manage flood risk in accordance with the NPS-NH.

5.10 Effects of Hydro Inundation

5.10.1 Potential Effects

Nova is proposing to locate parts of the development within an area that overlaps the boundary of the MDP hydro inundation hazard overlay where it extends onto the site from the Twizel River boundary as per Figure 5.4 below. The hydro inundation hazard overlay relates to the Upper Waitaki Hydro-Electric Power Scheme, specifically the Lake Pūkaki / Pūkaki Canal system operated by Meridian Energy. Under emergency or abnormal operating conditions, water can be discharged into the Twizel River from the Pūkaki Canal / control structures associated with the Upper Waitaki scheme.

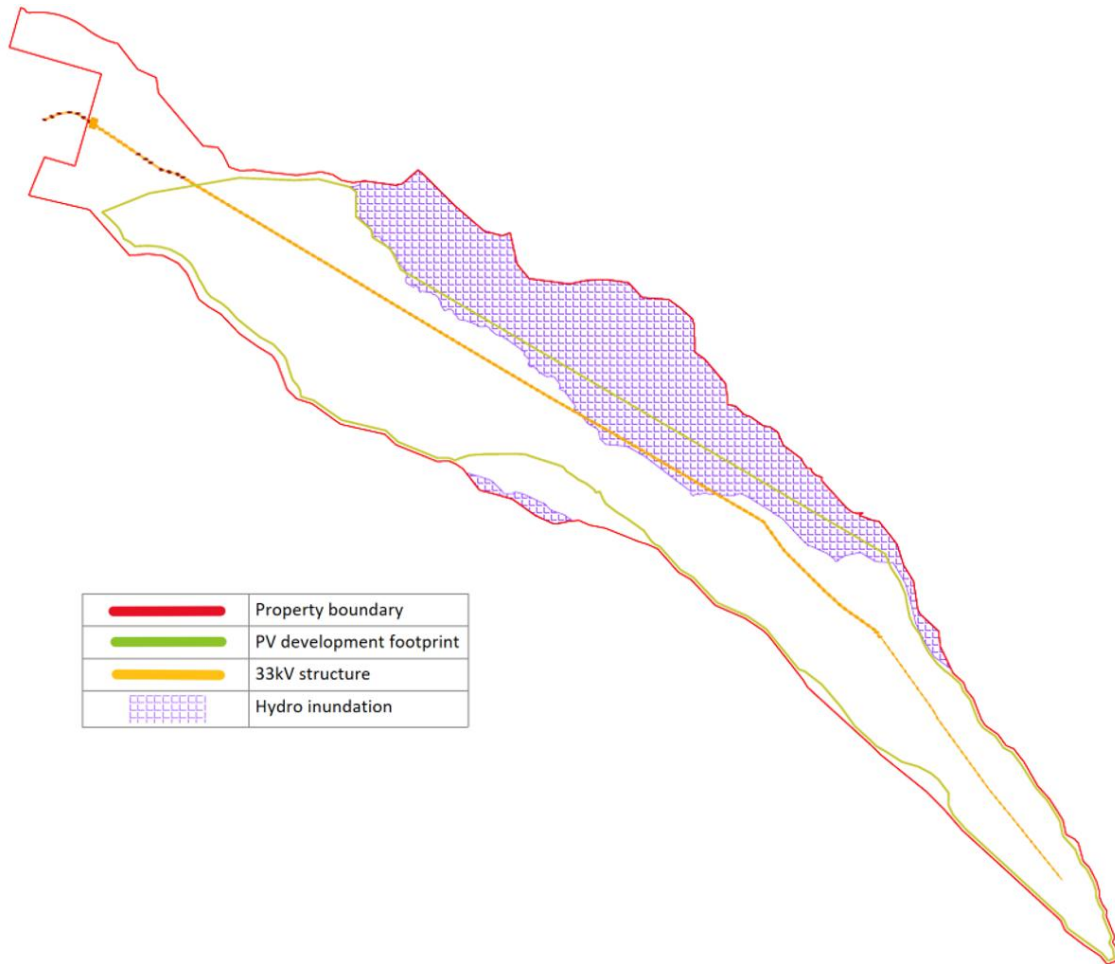


Figure 5.4: Project Encroachment on the Hydro Inundation Hazard Overlay

Potential effects from locating infrastructure within the hydro inundation hazard overlay include damage to equipment from flood waters and potential risk to people working in those areas during an event.

5.10.2 Effects Assessment

Locating part of the solar plant within the hydro inundation hazard overlay is considered appropriate for the following reasons:

- The topography at the margins of the hydro inundation hazard overlay, where equipment will be located, is relatively flat which will result in any inundation being slow moving and creating a shallow ponding effect before slowly receding, rather than a high volume of rapidly flowing water causing erosion, equipment damage and risk to people;
- Solar panels and associated automated tracking systems provide a minimum operational ground clearance of approximately 0.8 m which can be increased by adjusting (decreasing) the tilt angle of the panels, if additional clearance from ponding is required;

- Central inverters are proposed to be elevated 1 m above ground and will operate safely in the event of any water ponding under or around the inverter;
- Overhead and buried services will be unaffected by any surface ponding or seepage as water recedes;
- The access track and service tracks are expected to remain serviceable and will be undamaged; and
- No habitable buildings will be located within the hydro inundation hazard overlay.

Nova has discussed with Meridian Energy locating part of the Project within the hydro inundation hazard overlay. Meridian has confirmed they are comfortable with part of the Project being located within the hydro inundation hazard overlay – see attachment 3.15. Through the consultation with Meridian, Nova has agreed to propose a condition requiring the preparation and implementation of an Emergency Hydro Inundation Response and Evacuation Plan for the purposes of minimising the risk to life and property. The Plan would be prepared in consultation with Meridian Energy.

5.10.3 Summary of Hydro Inundation Effects

Overall, it is considered the adverse effects of potential hydro inundation will be appropriately avoided, remedied or mitigated through design and layout of plant equipment and the implementation of the Emergency Hydro Inundation Response and Evacuation Plan.

5.11 Effects on Human Health from Electric and Magnetic Fields

5.11.1 Potential Effects

Electric and magnetic fields (EMFs) associated with overhead and underground power lines carrying electricity create the potential to adversely affect human health. The Ministry of Health (MoH) guidance document⁸ notes that the strengths of fields decrease rapidly with increasing distance from the source and that the principal hazard with electrical equipment is fatal electric shock from direct contact with conductors. The MoH guidance notes that research into health risks from magnetic fields has found no persuasive evidence that the fields pose any health risks.

Further information on electric and magnetic fields is available on Transpower's website, at the following address:

https://static.transpower.co.nz/public/publications/resources/TPR%2014648%20EMF%20Fact%20Sheet%205_0.pdf?VersionId=G6HC.aZBFwGFidICSJIHeTEJ1gpewCEq

5.11.2 Effects Assessment

Given the distance to potential receivers, it is expected that the design of the switchyard, equipment and connection lines will comply with all relevant New Zealand standards and Transpower requirements. As set out in section 4.5.12, all commissioning activities will be supported by an approved test and commissioning plan to meet all design specifications, New

⁸ Ministry of Health. 2013. *Electric and Magnetic Fields and Your Health: Information on electric and magnetic fields associated with transmission lines, distribution lines and electrical equipment – 2013 edition*. Wellington: Ministry of Health.

Zealand standards and Electricity Code requirements. Any potential risk to human health in respect of EMFs is considered to be less than low, with any potential effects appropriately avoided or mitigated through adherence to design standards.

5.12 Effects on Archaeology

5.12.1 Potential Effects

Earthwork activity has the potential to disturb known or unknown archaeological sites resulting in a loss of associated heritage and cultural values.

5.12.2 Effects Assessment

Section 3 sets out the site context with respect to the potential for archaeological discovery. The Archaeological Assessment submitted in support of this application (attachment 2.4) finds that “no archaeological sites have been identified on the property” however, “cultural layers may be present beneath the ground surface in areas where works are proposed that may only become visible upon earthmoving disturbance.”

As a result, the Archaeological Assessment records that it is not necessary to gain an Archaeological Authority from Heritage New Zealand Pouhere Taonga Act to carry out the proposed works. The Project Archaeologist, on behalf of Nova, has confirmed this approach verbally with Heritage New Zealand Pouhere Taonga (HNZ) and at the time of preparing this report is awaiting written confirmation from HNZ.

The Archaeological Assessment makes the following conclusions and recommendations based on the significance of cultural sites of interest to iwi in the Ōhou Ōhau area (Section 12.2):

An archaeologist present an induction to earthmoving contractors and supervisors to aid in recognition of cultural material and/or sites that may be uncovered during the works;

A cultural monitor or an archaeologist be on site to monitor representative areas only of the following earthworks;

- *scraping of the new sections of the access track from the main highway and branch tracks to the new building structures*
- *trenching for cabling*
- *spoil from transmission pole and fence post holes*
- *sediment retention ponds*
- *re-contouring the terrace slope*
- *scraping platform for switchyard*
- *scraping platform for new Construction office/laydown area, earthworks for water tank placement and trenches for water supply, stormwater and wastewater treatment and disposal field*
- *scraping platform for new Operation and Maintenance building.*

An Archaeological Management Plan will guide the works with processes in place to be followed in the event cultural material/Taonga tūturu/Kōiwi tangata or archaeological historic features or artefacts become apparent during the project. Care and management on the recovery of Kōiwi tangata is to follow the Te Rūnanga o Ngāi Tahu Kōiwi tangata Policy (2019).

Conditions of consent are proposed by Nova to secure the above mitigation measures. Undertaking the Project earthworks in accordance with an AMP will appropriately mitigate the potential for adverse effects in the event of archaeological discovery.

5.12.3 Summary of Effects on Archaeology

There are no recorded archaeological sites that will be affected by the Project. The potential for adverse effects in the event of archaeological discovery during site development works will be suitably mitigated through adherence to an ADP and the above recommendations which are secured by way of proposed consent conditions.

5.13 Effects on Cultural Values

5.13.1 Engagement with Mana Whenua

Section 6, the Consultation Register (see attachment 3.14) and the Manawhenua report provide an overview of engagement to date with mana whenua including engagement since the FTAA referral decision. Nova has proactively engaged with mana whenua on the Project since 2021 and is committed to ongoing engagement to build long-term relationships beyond the consenting process.

5.13.2 Potential Effects

The Project has the potential to adversely affect Māori cultural values, interests and associations with the whenua, the upper Waitaki area and its resources.

Nova commissioned a Manawhenua report (February 2025), prior to the FTAA referral decision, for the purposes of providing mana whenua input and feedback on the cultural impacts of the Project to inform project design. The Manawhenua report has recently been updated (May 2026) and is included as attachment 2.1.

Potential adverse cultural effects identified in the Manawhenua report include:

- Loss of Connection to whenua;
- Effects on biodiversity from habitat modification, shading and altered ecological processes and grazing impacts;
- Effects on avifauna, particularly taoka species due to collision risk;
- Effects on water quality and hydrology; and
- Cumulative effects resulting from the development of multiple solar projects in Te Manahuna.

Recommended effects management responses within the Manawhenua report include:

- Establishment of a Kaitiaki Governance Group (KGG) providing for formal, ongoing governance between Nova and mana whenua, shared decision-making, monitoring, and management;

- Commitment to a Strategic Cultural Programme (SCP) covering monitoring, restoration and achieving cultural outcomes;
- Active mana whenua participation throughout the life of the Project;
- An integrated monitoring framework;
- Restoration and enhancement; and
- Access provisions to the site for cultural practices.

The Manawhenua report provides a recommended set of mana whenua conditions which provide mechanisms for the above effects management responses.

5.13.3 Nova's Response to Potential Cultural Effects raised in the Manawhenua Report

As set out in the Consultation Register and Summary, Nova has worked constructively with mana whenua to share detailed information regarding the Project and to understand the position taken by mana whenua on each issue. Each of the key issues raised is addressed below.

Effects on Biodiversity

Nova has engaged a number of ecology experts to assess actual and potential effects on biodiversity values, including taonga/taoka species identified in Schedule 97 of the Ngāi Tahu Claims Settlement Act 1998 and to recommend ways in which adverse effects can be avoided or mitigated. Outcomes and responses are detailed in section 5.5 of this report.

Cumulative Effects

Nova understands Ngāi Tahu and mana whenua rūnaka concerns over cumulative effects if other large scale solar projects proposed in Te Manahuna proceed. At the time of preparing this application no resource consents have been granted for any of these projects and therefore they do not form part of the environment. However, Nova is aware that this position may change during processing of the application and is committed to managing the effects of the Twizel Solar Project including any cumulative effects that may arise if other projects are approved. Nova remains open to future initiatives to address any potential cumulative effects. An assessment of cumulative effects is provided in section 5.16.

Effects on Water Quality and Hydrology

Effects on water quality and hydrology are assessed in sections 5.3 and 5.9. Nova recognises the cultural value of the Whakatipu/Twizel River and the Ōhau River and that these are identified as SASM in the MDP. The Project has been designed to avoid direct discharges of stormwater to these waterbodies and to ensure appropriate setbacks of activities from freshwater ecosystems including 20 m setbacks from rivers/streams and 100 m setbacks from natural inland wetlands. Project construction activities will operate in accordance with an ESCP with the objective of avoiding and minimising the adverse effects of erosion and sedimentation. The Project will also operate in accordance with an SMP with the objective of giving effect to Te Mana o Te Wai by prioritising the health and well-being of the receiving waterbodies and ecosystems.

Loss of Connection to Whenua

Nova acknowledges that landscape modification is an unavoidable impact of the Project. Nova understands that nohoanga sites exist in the locality and are part of an interconnected cultural landscape around Lakes Ōhau/Benmore and the Waitaki system with many sites already lost/compromised by hydro power development. Although the Project will not result in physical modification of these sites, Nova understands that Ngāi Tahu and mana whenua rūnaka are concerned that further development in the area introduces additional layers of landscape/visual change and other environmental pressures that may increase risk to remaining cultural sites/archaeological values and reduce cultural landscape legibility and connection. Nova is committed to working with mana whenua to ensure that the Project minimises impacts on these sites, including maintaining use of and access to these sites as far as practicable. Nova is also committed to identifying and realising opportunities to enable mana whenua participation in customs and traditional practises and to enable their role and responsibilities as kaitiaki of the whenua. The proposed KGG and SWP are mechanisms to secure a shared governance model for managing these impacts and a programme for delivering key Project outcomes.

Planting

Nova originally proposed planting along the northern and southern boundaries of the site and was open to receiving feedback from mana whenua and DOC on appropriate species. However, after receiving advice from Wildlands that the planting would have significant adverse effects from shading of dryland habitat and Threatened and At Risk indigenous plant species the planting has been removed from the proposal. Indigenous planting will be required in the lizard and terrestrial invertebrate enhancement areas and opportunities are provided in the LMP and TIMP for mana whenua input into developing these plans.

Environmental Monitoring

Nova is committed to working with mana whenua to develop ways in which mātauranga Māori can be incorporated into environmental monitoring programmes. The SCP proposed by mana whenua will provide opportunity for agreement on the nature of cultural monitoring of the Project and how this compliments other environmental monitoring proposed.

5.13.4 Mana Whenua Conditions of Consent

Ngāi Tahu and mana whenua rūnaka have prepared a draft set of consent conditions, appended to the Manawhenua report. These conditions reflect mana whenua expectations for governance, monitoring, and cultural outcomes associated with the Project with the key components being the establishment of a KGG and the development of a SCP.

Nova has reviewed the draft conditions and used these as a starting point for developing the mana whenua conditions that are included in the substantive application. Nova has refined and amended the wording of the conditions to ensure they are lawful, certain, enforceable, and capable of implementation by Nova/the consent holder.

Nova and Ngāi Tahu and mana whenua rūnaka have met to discuss the revised conditions. Ngāi Tahu and mana whenua rūnaka indicated they preferred their original version which has a broader scope and wording. While the parties have not yet reached agreement, Nova is committed to continuing to develop the conditions alongside mana whenua post submission of the application.

Changes will be aimed at better reflecting mana whenua intent where possible while retaining the necessary level of legal certainty and enforceability required for consent conditions.

Nova's mana whenua conditions are included as attachment 3.2A and have been provided as a separate document that is independent of the substantive set of proposed conditions, to allow Nova and mana whenua to refine them easily post lodgement of the application. Nova's intention is to incorporate the mana whenua conditions into the substantive set of conditions following further engagement with mana whenua post lodgement of the application.

Agreed Approach

Importantly, both Nova, Ngāi Tahu and mana whenua rūnaka share a common understanding that:

- The conditions included in the substantive application are not final, and
- Represent a starting point for further refinement through the consenting and post-lodgement process.

There is agreement that:

- Nova should lodge the substantive application with their draft mana whenua conditions;
- The parties will continue to work collaboratively following lodgement of the substantive application; and
- The objective is to progressively refine the conditions, with the intention of reaching an agreed position.

This reflects Nova's broader commitment to ongoing engagement and partnership with Ngāi Tahu and mana whenua rūnaka beyond lodgement and throughout the life of the Project.

Nova has proposed a number of other consent conditions that provide for mana whenua input, as part of the mitigation measures and conditions that seek to avoid, remedy or mitigate adverse effects on the environment more generally. These conditions are as follows:

- All management plans, monitoring plans, and sampling programmes must be prepared in consultation with mana whenua rūnaka prior to construction.
- Preparation and certification of an Archaeological Management Plan prior to construction and implementation of the Plan.
- Adherence to an Archaeological Discovery Protocol.
- Cultural inductions for all contractors integrated with construction management processes.

5.13.5 Summary of Effects on Cultural Values

Nova acknowledges the significance of the Project area to mana whenua and their roles and responsibilities as kaitiaki of the whenua. Nova has worked constructively with mana whenua

prior to lodgement of the application and is committed to ongoing engagement and to building long-term relationships during and beyond the consenting process.

Nova offers consent conditions to enable kaitiakitanga to be exercised and intends to continue to work with mana whenua post lodgement to further refine conditions to address potential adverse effects on cultural values.

5.14 Transport Safety and Efficiency Effects

5.14.1 Potential Effects

Vehicle movements associated with the construction and operation phases of the Project create the potential to adversely affect the safety and efficiency of the adjoining road network through increased traffic generation. As noted in the proposal description, all Project vehicles will access the application site via the existing access onto SH 8 which is proposed to be upgraded. In this respect, potential transport safety and efficiency effects primarily concern the State Highway network

The application site will continue to be used for dry stock farming purposes once the solar plant becomes operational. The Project will result in an increase in the intensity of vehicle movements from the application site during construction, however, once operating, only a minor increase in vehicle movements will occur compared to at present.

5.14.2 Assessment Approach

The Transport chapter is not applicable to renewable electricity generation activities and therefore an Integrated Transport Assessment (ITA) is not strictly directed by the MDP. However, an ITA has been prepared for the project to appropriately assess the effects of construction and operational traffic and is provided in attachment 2.16. The ITA has been prepared with due regard to feedback from NZTA / Waka Kotahi received to date. A summary of consultation with NZTA / Waka Kotahi is included in the Consultation Register. Records of communication with NZTA / Waka Kotahi are also attached as Appendix A in the ITA. The ITA adopts conservative assumptions, including assuming all construction materials are imported rather than sourced from the onsite quarry, and that containerised equipment is delivered via individual 40-foot container trucks.

5.14.3 Assessment of Construction Traffic Effects

Construction of the solar plant will occur over approximately two years and will generate the highest traffic volumes during the enabling works and solar panel installation phases. This includes traffic associated with accessway construction, internal tracks, laydown areas, bulk material delivery, and containerised solar equipment transport.

The assessment concludes that construction traffic volumes are manageable within the capacity of State Highway 8. Peak daily heavy vehicle movements will be intermittent and temporary. Adequate on-site queuing, loading and manoeuvring can be achieved without vehicles backing onto or disrupting the state highway network.

5.14.4 Mitigation for Construction Traffic Effects

Potential construction traffic effects will be appropriately mitigated through the preparation and implementation of a Construction Traffic Management Plan (CTMP), including route planning,

scheduling, coordination with Waka Kotahi NZTA, and temporary traffic management where required. Nova has proposed a condition of consent to capture this mitigation measure.

5.14.5 Assessment of Operational Traffic Effects

Once operational, the solar plant will generate low traffic volumes, primarily light vehicles associated with routine operations, maintenance, and farming activities (sheep grazing for vegetation management). Total operational traffic is estimated at approximately 100 vehicle movements per week, which is low relative to existing traffic volumes on State Highway 8 and comparable to existing farming activities. The ITA concludes that operational traffic effects will be less than minor and will not adversely affect the safety or efficiency of the surrounding road network.

5.14.6 Access Design and Safety

The Project includes upgrading the existing site access to a new permanent accessway off State Highway 8, designed to meet Waka Kotahi NZTA standards, including appropriate sight distances, separation from other access points, and a right-turn bay.

The ITA confirms that:

- Adequate sight distances (approximately 300 m) are achievable in both directions;
- The accessway location and geometry are appropriate for the expected vehicle types and volumes; and
- The access upgrade will improve overall access safety relative to the existing situation.

5.14.7 Driver Distraction, Glint and Glare Effects

Potential effects associated with solar panel glint and glare have been assessed using specialist glare assessment software. This includes assessment of glint and glare affecting drivers on the road network. The panels are set back at least 1,100 metres from State Highway 8, and views of the solar farm are distant and intermittent.

As previously outlined in the assessment of Glint and Glare section, a proposed panel backtracking limit angle of 5 degrees is sufficient to avoid adverse glare effects on State Highway 8 and Mcaughtries Road. Nova has proposed a condition to address this mitigation measure.

The ITA concludes that driver distraction effects will be negligible.

5.14.8 Summary of Traffic Effects

The ITA concludes that, with the proposed access upgrades and implementation of recommended traffic management measures:

- Construction traffic effects can be appropriately managed and mitigated;

- Operational traffic effects will be minimal;
- The project will not give rise to adverse effects on the safety or efficiency of State Highway 8 or the surrounding road network; and
- Traffic and transportation effects are no more than minor and acceptable in the context of the receiving environment.

5.15 Noise Effects during Operation

5.15.1 Potential Effects

The acoustic assessment undertaken by Marshall Day Acoustics evaluates noise generated by the operation of the solar plant. The assessment considers compliance with the operative noise provisions of the MDP and relevant New Zealand standards for environmental noise measurement and assessment.

The primary source of operational noise will be solar inverters located throughout the site.

No other significant noise sources are expected during day-to-day operation. The solar plant will only generate electricity during daylight hours. Accordingly, inverters will not operate overnight, and there will be no operational noise during periods of darkness.

5.15.2 Effects Assessment

Operational noise levels were predicted using a three-dimensional computer noise model developed in SoundPLAN, applying the ISO 9613-2 sound propagation methodology. Noise predictions were assessed against the relevant MDP limits for General Rural and Residential zoned receiving environments, in accordance with NZS 6801:2008 and NZS 6802:2008.

The assessment confirms that:

- Predicted operational noise levels readily comply with the applicable daytime noise limits at all receivers outside the site;
- During early morning operation (approximately 0600–0700 hours in summer), predicted noise levels also comply with night-time noise limits, even if a conservative Special Audible Characteristics (SAC) adjustment was applied; and
- As no generation occurs at night, the site will fully comply with night-time noise limits for the remainder of the night period.

There are no residential dwellings within approximately 1.5 kilometres of any operational noise source. Predicted noise levels at the nearest residential receivers and other sensitive locations are very low (generally well below 25 dB LAeq) and are not expected to be perceptible above existing ambient noise levels.

5.15.3 Summary of Operational Noise Effects

The assessment concludes that operational noise from the Project will be no more than minor, and in most cases negligible, at all receivers outside the site. Operational noise effects will comply with the MDP noise limits at all times, without the need for specific mitigation measures.

5.16 Cumulative Effects

In accordance with the established legal position,⁹ the “environment” embraces the existing environment and the future state of the environment as it might be modified by the utilisation of rights to carry out a permitted activity under a district plan. It also includes the environment as it might be modified by the implementation of resource consents which have been granted at the time a particular application is considered, where it appears that those resource consents will be implemented. The environment does not include the effects of resource consents that might be granted in the future.

This section considers the effects of the Project together with other existing activities in the surrounding environment, permitted activities and existing resource consents which might be implemented.

Resource consent applications for other development in the area which have not yet been determined do not form part of the environment and are not considered further in this section.

Permitted activities that can be undertaken within the General Rural Zone subject to compliance with permitted standards, include:

- Primary production and rural based activities;
- Residential activities (rural living);
- Buildings and structures;
- Small scale ancillary commercial activities;
- Rural industry activities;
- Tourism and visitor accommodation; and
- Conservation and forestry

A site’s location within the Mackenzie Basin ONL adds another layer of planning controls that further restrict the permitted baseline for a site. Demand for the above activities is considered to be low given the small local population and therefore future permitted activities do not have any significant bearing on a consideration of cumulative effects.

There are no developed or approved solar projects in the vicinity of the site which would contribute to cumulative effects. Nova is not aware of any other granted but unimplemented consents within

⁹ Queenstown Lakes DC v Hawthorn Estate Ltd (2006) 12 ELRNZ 299; [2006] NZRMA 424 (CA)

the receiving environment that would have material impacts on an assessment of cumulative effects.

Existing notable activities in the receiving environment include substantial renewable-energy and enabling infrastructure, particularly the Upper Waitaki / Waitaki Power Scheme assets and related transmission infrastructure. Key existing features and activities include:

- Lake Ruataniwha and the associated dam/canal system;
- Ōhau B and Ōhau C power stations: The Ōhau canal conveys water to the Ōhau B Power Station, and subsequently the Ōhau C Power Station, both are located close to the site;
- Hydro-modified river system context: The Ōhau River has been historically dammed and is now significantly smaller due to the Ōhau Canal taking water for hydro-electric generation; and
- The Twizel Substation and the Transpower National Grid 220 kV overhead power lines.

This existing development results in the application site being located within an area that is already characterised to a meaningful degree by existing renewable generation and associated infrastructure.

The following assessment focusses on potential cumulative effects related to landscape and visual effects, ecological effects and cultural effects. Given the well-established legal position on the environment, as outlined above, the potential for cumulative effects in the receiving environment arises because the Project sits within a landscape and catchment already modified by the Waitaki hydro-generation scheme and associated transmission infrastructure.

5.16.1 Potential Cumulative Landscape and Visual Effects

The Project introduces a new form of energy infrastructure over a large land area within the Mackenzie Basin, and the potential for cumulative effects arises primarily through additional 'layering' of visible energy infrastructure in a landscape that already contains hydro assets (canal, power stations) and transmission infrastructure (substation and transmission lines).

The landscape assessment concludes overall adverse effects are low-moderate to moderate, and notes the solar farm is not visible from key destination viewpoints including Twizel township, Lake Ruataniwha and Lake Benmore/campgrounds.

The Landscape Assessment finds that co-location of the Project with the existing Waitaki hydro scheme and grid infrastructure reduces the potential for an incremental layering effect that might otherwise be more pronounced if the same scale of development occurred in a less developed part of the Mackenzie Basin. The Landscape Assessment also notes that the Project is across an area of 565 ha and that within the defined South Basin receiving environment (~21,500 ha) it represents about 2.6% of that area. The Landscape Assessment finds that while the Project is large, it forms a relatively small part of the overall receiving environment, and that visibility is largely confined to a relatively small viewing catchment around the site. Based on the above factors, the Project is not expected to result in significant cumulative landscape and visual effects.

5.16.2 Potential Cumulative Ecological Effects

The Assessment of Ecological Effects concludes that, with the proposed avoidance measures (including substantial setbacks) and mitigation and enhancement measures including management plans with monitoring and adaptive management and restoration areas, ecological effects are expected to be no more than minor, which means the Project is unlikely to add materially to existing ecological pressures in a way that would generate significant cumulative effects. Implementation of the Pest Mammal Management Plan will potentially have wider ecological benefits beyond the application site.

5.16.3 Potential Cumulative Cultural Effects

Mana whenua rūnaka and Te Rūnanga o Ngāi Tahu have identified that potential cumulative cultural effects are not limited to the Project in isolation but relate to the incremental concentration of large-scale solar farms within Te Manahuna and the resulting layering of industrial-scale infrastructure across an ancestral landscape. They emphasise Te Manahuna is an area of enduring cultural and spiritual significance (including whakapapa, rangatiratanga and kaitiakitanga) and have requested that Te Manahuna be considered as a whole given the number of solar farms proposed in close proximity and the risk that cumulative change could undermine cultural associations and wellbeing.

Nova acknowledges the above as legitimate concerns for mana whenua rūnaka and Te Rūnanga o Ngāi Tahu. However, for the purposes of this application, they relate to a future development scenario that is not part of the cumulative-effects baseline for this assessment of environmental effects.

Against the existing baseline, which already includes extensive hydro-generation and transmission modification, the Project's incremental contribution to cultural effects is not considered to be of a scale or character that would combine with existing activities to become significant. The Landscape Assessment concludes the Project is not visible from key destination viewpoints including Twizel township, Lake Ruataniwha and Lake Benmore/campgrounds, which limits the potential for cumulative adverse effects on cultural landscape recognition from those public and culturally important settings. In addition, the Project's design and management approach is directed at avoiding cumulative cultural effects, including avoiding direct stormwater discharges to the Ōhau and Whakatipu/Twizel Rivers (SASM), applying setbacks from freshwater ecosystems and wetlands, and implementing erosion and sediment control and stormwater management to protect downstream receiving environments.

Nova explicitly recognises mana whenua concerns about cumulative effects and, while noting that other large-scale solar projects are not consented at the time of preparing this application, is committed to effective management of the Twizel Solar Project's effects and remains open to future initiatives should the broader development context change.

5.17 Monitoring of Environmental Effects

The Assessment of Ecological Effects recommends monitoring of the management of certain effects. Where monitoring of effects is recommended, Schedule 5 Clause 6(g) of the FTAA, requires a description of how the effects will be monitored and by whom. Table 5.4 below provides a summary of the monitoring proposed.

Table 5.4: Monitoring of Environmental Effects

Ecological Receptor	Monitoring Activity	Timing / Frequency	Responsible Person	Source (AEE / Plan)
Threatened & At Risk flora (panel-area verification)	Final walkover survey to confirm absence of Threatened or At Risk plants within the panel area	Once, post-consent and prior to construction	Suitably qualified and experienced ecologist (dryland flora specialist)	Ecological AEE
Threatened & At Risk flora	Vascular plant surveys (qualitative walkover + quantitative permanent plots) to assess abundance, condition, and spatial extent of Threatened and At Risk plants around site margins. Review of monitoring results to detect statistically significant decline or adverse trends	Every 3 years for life of project	Suitably qualified and experienced ecologist (dryland flora specialist)	BVMP
Pest plants / biosecurity	Pest plant surveillance, photopoints, mapping of infestations, and audit of biosecurity compliance	Ongoing; formal surveys every 3 years	Suitably qualified and experienced ecologist; weed contractors under ecologist oversight	BVMP
Avifauna (baseline)	Live bird surveys (abundance, behaviour, nesting activity)	Monthly for 6 months pre-construction	Suitably qualified and experienced ecologist (avifauna specialist)	AMP
Avifauna (construction)	Live bird monitoring during construction (breeding activity, behaviour, attraction to site)	Weekly for at least first year; weekly or fortnightly thereafter depending on activity	Suitably qualified and experienced ecologist (avifauna specialist)	AMP
Avifauna (operation)	Live bird monitoring post-construction	Fortnightly for minimum of 3 years post-construction	Suitably qualified and experienced ecologist (avifauna specialist)	AMP
Avifauna mortality	Systematic carcass searches to identify bird strike and other mortality	Monthly for 6 months pre-construction and for 3 years post-construction	Suitably qualified and experienced ecologist (avifauna specialist) operating under Wildlife Act Authority	AMP
Avifauna adaptive management	Assessment of mortality against trigger thresholds; investigation of causes	Ongoing; immediate review if trigger exceeded	Suitably qualified and experienced ecologist in consultation with DOC and MDC	AMP
Lizards – population monitoring	Standardised monitoring of lizard presence, abundance, and activity in enhancement areas and reference sites (ACOs, visual searches)	Years 1, 3, 5 and 7 post-construction	Suitably qualified and experienced ecologist (herpetofauna specialist)	LMP
Lizards – habitat enhancement	Monitoring of survival and condition of enhancement plantings and rock piles	Concurrent with lizard monitoring	Suitably qualified and experienced ecologist	LMP

Lizards – adaptive management	Comparison of lizard abundance between monitoring rounds to detect decline	After each monitoring round	Suitably qualified and experienced ecologist; DOC consultation where required	LMP
Terrestrial invertebrates – abundance / activity	Standardised transect counts, pitfall trapping, and activity indices for Tekapo ground wētā, Otago short-horned grasshopper, and minute grasshopper (if present)	Annually for first 3 years post-construction, then every 3 years for 12 years	Suitably qualified and experienced ecologist (invertebrate specialist)	TIMP
Terrestrial invertebrates – enhancement areas	Monitoring of enhancement plantings, habitat condition, and connectivity	Concurrent with invertebrate monitoring	Suitably qualified and experienced ecologist	TIMP
Terrestrial invertebrates – adaptive management	Trend analysis to detect population decline or failure to increase	After each monitoring round	Suitably qualified and experienced ecologist; adaptive response implemented by applicant	TIMP
Pest mammals	Monitoring pest mammal abundance using tracking indices and device checks	As specified in PMMP (seasonal / annual)	Pest control contractor under the oversight of a suitably qualified and experienced ecologist	PMMP
Freshwater (sedimentation risk)	Visual inspection of erosion and sediment controls and discharge risk to rivers and wetlands (no freshwater fauna population monitoring proposed)	During earthworks and after rainfall events	Contractor; audited by ESC specialist / ECan	ESCP

5.18 Conditions of Consent

Nova's proposed conditions of consent for each resource consent and the Wildlife Act approvals are provided in attachments 3.2 and 3.3. Additionally, a separate set of proposed mana whenua conditions is included as attachment 3.2A (as discussed in Section 5.13.4 above).

Attachment 3.17 provides schedules of Management Plan Conditions and Adaptive Management Conditions.

The table below provides a link between the actual and potential environmental effects of the Project and the conditions of consent.

Table 5.5: Link between Conditions and Effects being Managed

Effect	Effect Being Managed	Relevant Conditions
Threatened and At-Risk Flora	Loss or damage to Threatened and At-Risk plant species and ecologically significant indigenous vegetation	<ul style="list-style-type: none"> Condition 5 (MDC): Minimum setbacks from significant indigenous vegetation, Sites of Natural Significance, rivers and wetlands. Condition 12 (MDC): Final pre-construction Threatened and At-Risk flora survey by a SQEP botanist Condition 12 (MDC): Requirement to adjust layout to avoid Threatened and At-Risk Flora where identified Condition 13 (MDC): Submission of SQEP botanist report to MDC confirming avoidance or layout adjustment Condition 14 (MDC): Mapping and installation of exclusion fencing around “no-go” areas Condition 32-33: Biosecurity and Vegetation Management Plan to prevent introduction and spread of pest plants Condition 79 (MDC): Annual Ecological Compliance Report Condition 80: Independent ecological audit
Indigenous Lizard Habitat and Populations	Habitat loss, fragmentation, injury or mortality of indigenous lizards	<ul style="list-style-type: none"> Condition 15 (MDC): Peg-out and protection of high and moderate lizard habitat to be avoided. Implementation of lizard corridors and biodiversity nodes Condition 35-36 (MDC): Pest Mammal Management Plan to reduce predation pressure Condition 41-42 (MDC): Lizard Management Plan, including avoidance, mitigation and discovery protocols Condition 69 (MDC): Restrictions on agrichemical use within lizard habitat and enhancement areas Condition 79 (MDC): Annual Ecological Compliance Report Condition 80 (MDC): Independent ecological audit
Terrestrial Invertebrates	Mortality during earthworks and loss or degradation of invertebrate habitat	<ul style="list-style-type: none"> Condition 14 (MDC): Exclusion fencing and avoidance of key invertebrate habitat. Condition 16 (MDC): Salvage and translocation of identified terrestrial invertebrates Condition 35-36 (MDC): Pest Mammal Management Plan Condition 38-39 (MDC): Terrestrial Invertebrate Management Plan Condition 69 (MDC): Restrictions on broadcast agrichemical spraying Condition 79 (MDC): Annual Ecological Compliance Report Condition 80 (MDC): Independent ecological audit
Avifauna (Disturbance and Collision Risk)	Disturbance during breeding season and mortality from collision with panels or infrastructure	<ul style="list-style-type: none"> Condition 5 (MDC): Minimum setbacks from significant indigenous vegetation, Sites of Natural Significance, rivers and wetlands. Condition 6 (MDC): Construction setback distances during the avifauna breeding season. Condition 7 (MDC): Solar panel design requirements including tracking arrays, spacing between panels and anti-reflective coating. Condition 44-45 (MDC): Avifauna Management Plan. Condition 46 (MDC): Indigenous bird mortality thresholds. Condition 51-53 (MDC): Pre-works avifauna survey where construction occurs in the breeding season. Condition 70 (MDC): Bird Monitoring Plan. Condition 71 (MDC): Requirement to prepare a Bird Collision Management Plan if thresholds are exceeded.

		<ul style="list-style-type: none"> • Condition 72 (MDC): Implementation of collision mitigation measures where required • Condition 74-78 (MDC): Ongoing monitoring and review under the BCMP • Condition 79 (MDC): Annual Ecological Compliance Report. • Condition 80 (MDC): Independent ecological audit.
Pest Plants and Pest Mammals	Spread of pest plants and increased predation pressure on indigenous fauna	<ul style="list-style-type: none"> • Condition 32-34 (MDC): Biosecurity and Vegetation Management Plan including machinery hygiene and weed control. • Condition 35-36 (MDC): Pest Mammal Management Plan. • Condition 79 (MDC): Reporting on pest plant and pest mammal management outcomes. • Condition 80 (MDC): Independent ecological audit.
Archaeological Values	Damage to unrecorded archaeological material and inappropriate response to discoveries	<ul style="list-style-type: none"> • Condition 26 and 50 (MDC): Archaeological induction requirements via the CEMP. • Condition 47-48 (MDC): Archaeological Management Plan. • Condition 49 (MDC): Archaeological Discovery Protocol. • Condition 63 (MDC): Archaeological monitoring of specified earthworks. • Condition 64 (MDC): Requirement to comply with the certified AMP during construction.
Cultural Values and Mana Whenua	Effects on tikanga, wāhi tapu, kōiwi tangata and taonga values	<ul style="list-style-type: none"> • Refer to attachment 3.2A; and • Condition 19 (MDC): Mana whenua consultation prior to submission of management plans. • Condition 20 (MDC): Provision of mana whenua feedback to MDC. • Condition 21 (MDC): Process where feedback is not received • Condition 22 (MDC): Certification and amendment process for plans. • Condition 50 (MDC): Cultural components within contractor inductions.
Soil Disturbance and Potential Contamination	Contaminant mobilisation and elevated soil metal concentrations	<ul style="list-style-type: none"> • Condition 9 (ECan LUC): Accidental discovery of contaminated material protocol. • Condition 18 (ECAN): Soil Sampling Programme including baseline and ongoing monitoring. • Condition 21 (ECAN): Submission of soil sampling reports to MDC.
Erosion, Sediment and Land Stability	Sediment runoff, erosion and instability during construction	<ul style="list-style-type: none"> • Condition 24 (MDC): Construction Environmental Management Plan. • Condition 6 (ECan): Installation of erosion and sediment controls prior to earthworks. • Condition 9 (ECan LUC): Accidental discovery of contaminated material protocol. • Condition 10 (ECan): ESCP content requirements. • Condition 11 (ECan): ESCP certification and implementation. • Condition 13 (ECan): Inspection and maintenance of erosion and sediment controls. • Condition 23 (ECan): Stabilisation and revegetation following works.
Stormwater and Water Quality	Sediment-laden stormwater and operational runoff effects	<ul style="list-style-type: none"> • Condition 5 (MDC): Minimum setbacks from significant indigenous vegetation, Sites of Natural Significance, rivers and wetlands. • Condition 15 (MDC): Mapping and installation of exclusion fencing around "no-go" areas. • Condition 57-58 (MDC): Stormwater and Natural Hazard Mitigation Works Plan.

		<ul style="list-style-type: none"> • Condition 1–15 (ECan Discharge): Construction-phase stormwater discharge controls. • Condition 2–7 (ECan Discharge): Operational stormwater limits, inspections and maintenance. • Condition 14-15 (ECan): Stormwater Management Plan. • Condition 19 (ECan): Spill reporting requirements.
Earthworks over Aquifers	Groundwater contamination and uncontrolled artesian flows	<ul style="list-style-type: none"> • Condition 2 (ECan): Maximum excavation depth limits. • Condition 3 (ECan): Prohibiting excavation into exposed groundwater. • Condition 13 (ECan): Accidental artesian aquifer interception response.
Traffic and Access	Construction traffic safety risks and effects on the road network	<ul style="list-style-type: none"> • Condition 27-31 (MDC): Construction Traffic Management Plan. • Condition 54 (MDC): NZTA acceptance of vehicle access design. • Condition 55 (MDC): Construction of vehicle access in accordance with approved plans. • Condition 62 (MDC): Notification of access commissioning.
Construction Amenity (Noise and Dust)	Nuisance noise and dust during construction	<ul style="list-style-type: none"> • Condition 26 (MDC): Noise and dust management measures within the CEMP. • Condition 62 (MDC): Notification of access commissioning. • Condition 65-66 (MDC): Complaints register and response procedures.
Glare and Visual Effects	Glint and glare affecting road users and visual dominance of structures	<ul style="list-style-type: none"> • Condition 7 (MDC): Anti-reflective solar panel coating and tracking arrays. • Condition 81 (MDC): Minimum solar panel rest angle of 5 degrees. • Condition 82 (MDC): Recessive colour and reflectance standards for buildings and structures
Fire Risk and Emergency Preparedness	Inadequate firefighting capability and emergency response	<ul style="list-style-type: none"> • Condition 56 (MDC): Firefighting water supply compliant with SNZ PAS 4509. • Condition 67 (MDC): Engagement with Fire and Emergency New Zealand.
Hydro Inundation Risk	Risk to life and property from hydro scheme failure	<ul style="list-style-type: none"> • Condition 61 (MDC): Emergency Hydro Inundation Response and Evacuation Plan.
Natural Hazards Risk	Risk to people, property, and the environment from flooding, surface water runoff, and natural hazard processes	<ul style="list-style-type: none"> • Condition 57-58 (MDC): Stormwater and Natural Hazard Mitigation Works Plan
Decommissioning and End-of-Life Effects	Abandoned infrastructure and poor site rehabilitation	<ul style="list-style-type: none"> • Condition 85-87 (MDC): Preparation and certification of a Decommissioning Plan. • Condition 88 (MDC): Notification prior to decommissioning. • Condition 89-90 (MDC): Decommissioning Report demonstrating site rehabilitation.

Advice Note: The conditions identified in Table 5.5 are proposed for the purpose of avoiding, remedying, mitigating and monitoring adverse effects of the Project. Compensation is incorporated as a component of some of the ecological management plans.

Advice Note: No conditions within the substantive set of conditions proposed are identified or relied upon as Augier conditions; all are proposed as effects-based and are intra vires.

5.19 Effects Summary

The proposal will have significant and direct positive effects in providing for the development of renewable energy resources, increasing low emissions electricity supply to support energy resilience and creating economic and employment activity. Overall, any actual and potential adverse effects are considered to be appropriately avoided, remedied or mitigated for the following reasons:

- The scale of the Project will alter the character of the site from a rural landscape to a landscape containing energy infrastructure. Renewable electricity generation is however, anticipated in the Mackenzie District Plan and landscape effects will be avoided, remedied or mitigated as far as practicable, primarily by the siting of the Project in a part of the Mackenzie Basin where renewable electricity infrastructure forms part of the existing character, including the Upper Waitaki / Waitaki Power Scheme assets and related transmission infrastructure. The solar plant will maintain dry stock farming on the site retaining an element of primary production;
- The Project will not result in any significant adverse landscape and visual effects;
- Potential nuisance-related amenity effects are able to be suitably managed during both construction and operation phases;
- Areas of indigenous ecological values have been identified, largely around the margins of the site, and the solar project has been designed to avoid these areas with buffers maintained around them. Residual adverse effects will be managed by conditions of consent including adherence to a suite of ecological management plans which include monitoring and adaptive management responses if required;
- A solar panel rest angle of no less than 5 degrees is proposed, which will avoid any adverse effects of glint and glare from the panels;
- Project design controls and management plans will suitably manage effects related to potential hydro inundation, erosion and sediment runoff, geohazard and flooding risks and stormwater effects within the application site and surrounding area;
- Potential risk to human health associated with electric and magnetic fields (EMFs) is low with all electrical equipment to be designed to New Zealand standards;
- An archaeological assessment has found that there is a low risk of encountering archaeological features during construction. The potential for archaeological discovery during site development works will be suitably managed through adherence to an Archaeological Management Plan and Discovery Protocol;
- Nova has proactively engaged with mana whenua in acknowledgement of their role as kaitiaki. A cultural assessment has been prepared which includes areas of concern, management responses and draft mana whenua consent conditions which Nova are working with mana whenua to address. Nova has proposed conditions to address cultural concerns and provide for exercise of kaitiakitanga and will continue refining conditions post lodgement of the application;
- Safe and efficient access will be provided with the proposed vehicle access point to State Highway 8 (SH 8) to meet NZ Transport Agency (Waka Kotahi) design standards. Operational movements will be infrequent and construction traffic will be managed through a traffic management plan; and

- The Project will not result in any significant cumulative effects on the surrounding environment.

6 PERSONS AND GROUPS LIKELY TO BE AFFECTED BY THE PROJECT AND/OR PERSONS WHO MUST BE INVITED TO COMMENT

6.1 Identified Persons and Organisations Potentially Affected

The following parties have been identified as having an interest in or potential to be affected by the proposal. This list has been compiled in accordance with section 53 of the FTAA, with reference to section 13(4)(j):

Relevant local authorities

- Environment Canterbury
- Mackenzie District Council

Relevant iwi authorities and Treaty settlement entities:

- Te Rūnanga o Ngāi Tahu

The owners and occupiers of the land to which the application relates

- SOL Screening and Crushing Ltd (Occupier)

The owners and occupiers of the adjacent land to which the application relates

- Road Metal Holdings Limited
- Mackenzie Properties Limited
- Waitaki Trustees (Golden Acres) Limited
- Bendrose Farms 2014 Limited
- BH Growth Limited
- Meridian Energy Limited

The Minister for the Environment and other relevant portfolio ministers

Relevant administering agencies:

- Environmental Protection Authority
- Department of Conservation
- New Zealand Transport Agency (Waka Kotahi)

Other groups - Infrastructure operators and utility providers:

- Meridian Energy Limited
- Transpower New Zealand Limited

The relevant persons and groups listed in clause 4 of Schedule 7 (in relation to the Wildlife Act approval applications):

- the New Zealand Conservation Authority;
- relevant Conservation Boards;
- the New Zealand Fish and Game Council;
- the Game Animal Council.

Figure 6.1 below, and the plans included as attachment 1.2, identify the location of adjacent landowners.

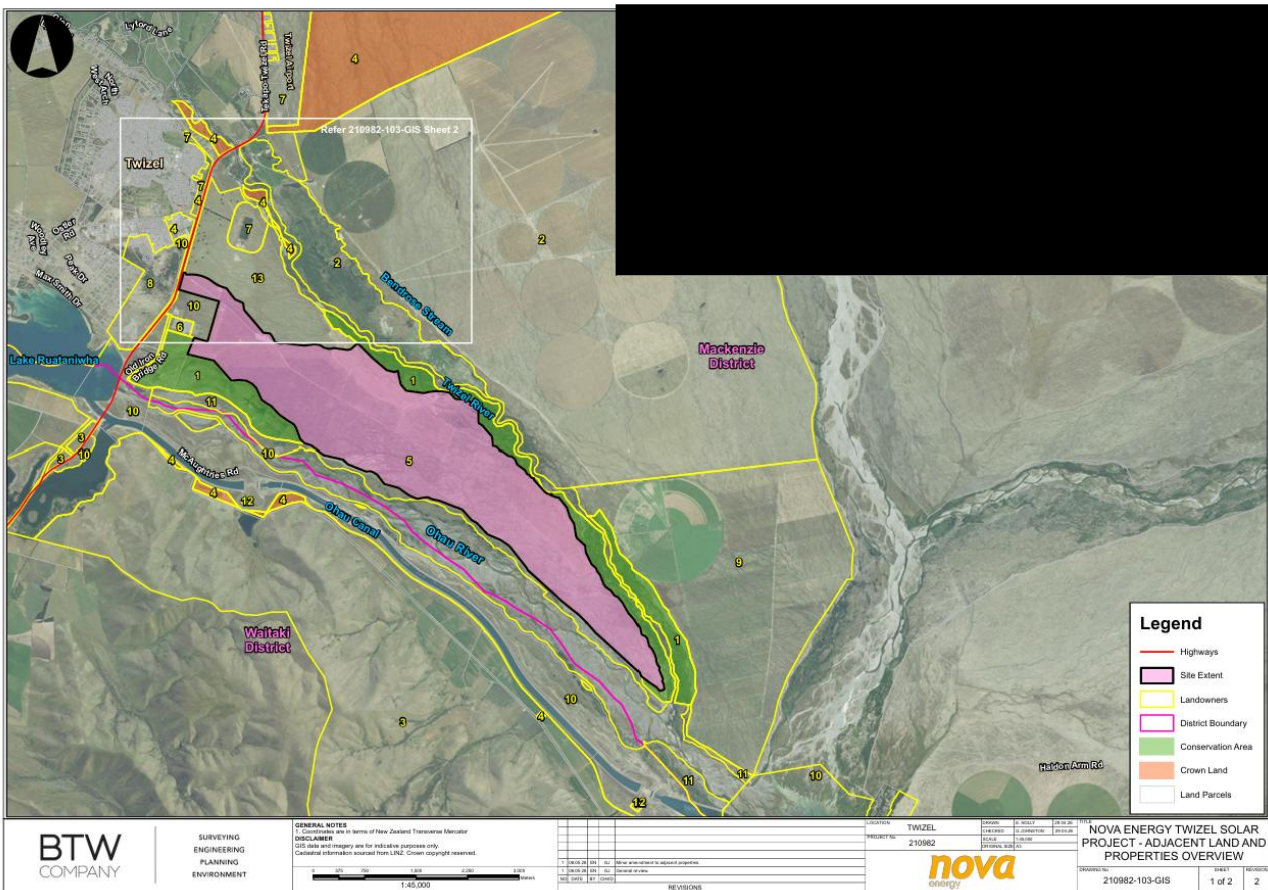


Figure 6.1: Adjacent Land and Properties

6.2 CONSULTATION

In relation to a referral application for a listed project, section 11 of the FTAA requires the authorised person for a referred project to undertake consultation with the parties and groups referred to in section 11. What is required in respect of consultation is not set out in the FTAA.

Section 11 refers to the following persons and groups: a. relevant local authorities; b. any relevant iwi authorities, hapu and Treaty settlement entities; c. relevant applicant groups with MACA applications; and d. relevant administering agencies.

Nova undertook consultation with those persons as part of its referral application.

The referral order for the Twizel Solar Project requires that the following information must be submitted with the substantive application lodged for the project (s27(3)(b)(ii)):

(i) A summary of consultation with Te Rūnanga o Ngāi Tahu, relevant papatipu rūnanga and their representatives since referral, outlining concerns raised regarding Ngāi Tahu settlement principles, statutory acknowledgements, nohanga, and taonga species, and explaining how this has informed the substantive application.

There is no further requirement in the FTAA for an applicant for a referred project to undertake consultation on a resource consent application for a referred project. Nevertheless, Nova recognises that engagement is an ongoing and integral component of the resource consent application process, both prior to and after formal lodgement of applications.

Alongside consultation with Te Rūnanga o Ngāi Tahu, Nova has therefore undertaken targeted pre-application consultation with other parties identified as potentially affected by the Twizel Solar Project. Consultation has, and continues to be undertaken, to identify potential environmental, cultural, operational and land-use effects, understand stakeholder interests, and inform the development of mitigation, management measures, and application documentation.

A Consultation Register and a Consultation Summary are included with the application as attachments 3.14 and 3.14A respectively. To assist the Panel, this includes a summary of how consultation has informed the Project.

6.3 Summary of Consultation Undertaken

Since 2022, Nova, along with Project consultants, have undertaken consultation via a number of methods including phone and email correspondence, face to face meetings with recorded minutes, site visits and sharing project documentation with stakeholders.

Key matters raised during Nova's consultation with stakeholders include:

- The need for robust technical assessments and planning documentation;
- Consideration of ecological effects, including avifauna, indigenous vegetation, and long-term biodiversity outcomes;
- Assessment and management of cumulative effects, particularly in the context of multiple renewable energy developments within Te Manahuna;
- Recognition of cultural values, Te Rūnanga o Ngāi Tahu settlement interests, and mātauranga Māori, including interest in ongoing engagement and shared environmental outcomes;
- Management of construction and operational effects on infrastructure, adjoining land uses, access, and future development opportunities; and

- Specific interest from Meridian Energy Limited in the hydro inundation hazard area, including design responses and operational risk management.

6.4 Summary of how Consultation has Informed the Project

Feedback received through consultation has informed the consent applications in the following ways.

6.4.1 Application Content and Process

Engagement with MDC, ECan, the EPA, DOC and NZTA has confirmed expectations around consents required, assessment scope, documentation and process under the Act, directly informing the structure and content of the substantive application, supporting assessments and proposed conditions.

6.4.2 Ecological and Environmental Management

Ecological assessments and management plans have been developed to address sensitivities identified by stakeholders, particularly Te Rūnanga o Ngāi Tahu, mana whenua rūnaka and DOC, including avifauna, indigenous vegetation and restoration opportunities. The design and layout of the Project avoids areas of higher indigenous value, with management plans setting clear objectives, performance outcomes and adaptive management frameworks. Where required, approvals under other legislation (including the Wildlife Act) have been identified and applied for.

6.4.3 Cumulative Effects

The application includes consideration of cumulative effects associated with other solar developments. This issue has been raised by councils, Te Rūnanga o Ngāi Tahu, mana whenua rūnaka and DOC, particularly in respect to landscape values and ecology. Nova's position on cumulative effects is set out in section 5.16.

6.4.4 Mana Whenua Engagement and Cultural Response

Consultation with Te Rūnanga o Ngāi Tahu and the relevant Papatipu Rūnanga has informed:

- Consideration of Ngāi Tahu settlement principles, acknowledgements and nohoaka;
- Incorporation of mana whenua involvement and oversight through proposed consent conditions;
- Integration of cultural values and mātauranga Māori where practicable; and
- Recognition that supplementary or side agreements may provide for restoration, enhancement and mitigation outcomes beyond the scope of consent conditions, particularly in response to potential cumulative effects.

6.4.5 Infrastructure, Land Use and Neighbour Effects

Engagement with Transpower, Meridian Energy and affected landowners has informed project layout, staging, consent conditions, construction management planning and operational interfaces, including confirmation that panels are not proposed on the upper terrace, addressing visual effect concerns raised during consultation.

6.5 Ongoing Engagement

Nova is committed to maintaining relationships and information sharing with affected parties, including mana whenua, regulators, infrastructure providers and neighbouring landowners, both during and following the Fast-track process. Ongoing engagement has been built into the proposed conditions and management plans.

7 SECTIONS 5, 6 AND 7 OF THE RESOURCE MANAGEMENT ACT

Clause 5(1)(g) of Schedule 5 of the Act requires an assessment of the activity against sections 5, 6 and 7 of the Resource Management Act 1991 (RMA). Section 5(1) provides that the purpose of the RMA is to promote the sustainable management of natural and physical resources. Sustainable management is defined in section 5(2).

The proposal has been assessed against section 5 and the proposed Twizel Solar Project is considered to be consistent with the overall purpose of the RMA.

The proposal achieves the purpose of the RMA by promoting the sustainable management of natural and physical resources. It does so by enabling the development and use of a renewable electricity generation activity, generating up to 300 MW of low-emissions electricity, delivering substantial regional and national benefits, including increased energy security, reduced greenhouse gas emissions, and economic and employment benefits.

The Project makes efficient use of rural land that is not highly productive and allows for ongoing dry-stock farming alongside solar generation, supporting economic wellbeing while avoiding irreversible land use change. Actual and potential adverse effects on the environment—including effects on landscape, ecology, freshwater, cultural values, natural hazards, traffic, noise, and amenity—have been systematically avoided where practicable and otherwise appropriately remedied or mitigated through project design, setbacks, and comprehensive management plans including monitoring and adaptive management, secured by proposed conditions of consent.

Taken as a whole, and having regard to the scale and significance of both positive and adverse effects, the proposal represents an appropriate balance between enabling social and economic wellbeing and safeguarding environmental and cultural values. Accordingly, the proposal is considered to promote the sustainable management of natural and physical resources and therefore achieves the purpose of the RMA under section 5.

7.1 Matters of National Importance (Section 6)

The following matters of national importance, to be recognised and provided for, are considered to be relevant to the Project:

- a. *the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development:*
- b. *the protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development:*
- c. *the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna:*
- e. *the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga:*
- h. *the management of significant risks from natural hazards.*

Assessment: In terms of section 6(a), the Project recognises and provides for the preservation of the natural character of wetlands and rivers and their margins through:

- applying development setbacks which avoid development within proximity of these features;
- Comprehensive erosion and sediment control measures and stormwater management to avoid sediment laden runoff entering waterbodies during construction.

In terms of section 6(b), the Project will recognise and provide for the values of the Mackenzie Basin through the nature of the design of the solar farm which predominantly comprises low structures located in an area of the Mackenzie Basin where the landscape is already strongly characterised by existing large-scale energy infrastructure energy. The Landscape Assessment finds that the project will not result in any significant adverse effects on the landscape values of the Mackenzie Basin.

In terms of section 6(c), the Project recognises and provides for the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna through avoiding development within proximity of these features, managing any residual effects through conditions and a suite of management plans which include monitoring and adaptive management and providing for restoration and enhancement of habitat.

In terms of section 6(e), Nova has engaged with mana whenua in recognition of the relationship of Māori with their ancestral lands, water, sites, waahi tapu, and other taonga and to better understand how the Project can recognise and provide for this relationship. Nova has commissioned a Manawhenua report, conducted ongoing consultation with mana whenua and proposed consent conditions which actively involve mana whenua in matters such as project governance via the Kaitiaki Governance Group, development of a Strategic Cultural Programme and management plans and monitoring of effects, in order to recognise and provide for their relationship with their ancestral lands, water, sites, waahi tapu, and other taonga.

In terms of section 6(h), the Project is not deemed to be at significant risk from natural hazards. It does not create the potential to exacerbate natural hazard risk and has been designed to take account of potential flooding and geohazards on the application site.

Overall, it is considered the Project recognises and provides for the relevant matters of national importance.

7.2 Other Matters (Section 7)

Particular regard must be had to the following relevant 'other matters'.

(a). *kaitiakitanga:*

Assessment: Nova has engaged with mana whenua in recognition of their role as kaitiaki. Nova will continue to engage with mana whenua and provide opportunity to exercise kaitiakitanga through the Fast-track process and as part of implementation of the consent. As discussed above, Nova has proposed consent conditions which actively involve mana whenua and provide for opportunities to exercise kaitiakitanga and will continue to refine these conditions in consultation with mana whenua.

(aa). the ethic of stewardship:

Assessment: The Project has particular regard to the ethic of stewardship, taking care in the management of the environment and engaging with mana whenua in recognition of their role as kaitiaki.

(b). the efficient use and development of natural and physical resources:

Assessment: The Project directly provides for efficient use and development of solar energy resources to produce renewable electricity. The Project also provides for complimentary rural land-use as an efficient use of the land resource. The Project will provide electricity directly to the National Grid to provide the energy equivalent to power approximately 75,000 homes annually. The development of solar resources supports New Zealand's transition to a low-emissions economy and will increase resilience in managing risks to the security of the national power supply. Solar electricity generation diversifies New Zealand's renewable energy generation, providing for electricity generation when power from other renewable energy sources is not sufficient to meet New Zealand's demand, such as during periods of low rainfall (and snowfall) in the headwaters of the country's hydroelectric schemes or periods of low wind speeds across major windfarms.

(ba). the efficiency of the end use of energy:

Assessment: The Project supports efficient end use of energy, diversifying New Zealand's energy generation to meet growing electrical demand. The net energy produced by the Project will far exceed the energy required to develop, operate and decommission it.

(c). the maintenance and enhancement of amenity values:

Assessment: The Project will introduce a new form of renewable energy as a land-use element in the Twizel area. As nationally and regionally significant infrastructure and a renewable electricity generation activity, the regulatory planning framework recognises the important contribution electricity generation has in maintaining effective and efficient societal function at district, regional and national levels and the significant contribution to the health, safety and well-being of the community. The Project is designed to maintain amenity values whilst acknowledging the change in land-use will alter landscape character and associated amenity values from rural based farming activity to solar plant activity.

In the context of the regulatory framework, it is considered the Project will maintain an appropriate level of amenity. Construction activity will be suitably managed to avoid or mitigate potential nuisance effects. Operational activity levels will be minimal and will not generate nuisance effects. The solar panels will sit within the landscape with a low profile and will maintain views of the mountain backdrops which will remain the dominant skyline features.

(d). intrinsic values of ecosystems:

Assessment: The Project has regard to intrinsic values of ecosystems through avoiding development within the proximity of the sensitive ecosystems identified on the site and managing residual effects through the proposed conditions and ecological management plans including monitoring of effects and adaptive management if required.

(f). maintenance and enhancement of the quality of the environment:

Assessment: Overall, in the context of the regulatory framework, it is considered the Project will maintain the quality of the environment and will make positive contributions through lowering emissions. The existing site has been modified through farming activity and the solar plant does not require significant modification to the existing landform (with opportunity to rehabilitate the application site following decommissioning).

(g). any finite characteristics of natural and physical resources:

Assessment: The Project will generate electricity using solar resource as a non-finite resource. Following decommissioning of the solar plant the majority of solar plant infrastructure (including panel materials) is able to be recycled and the application site is able to be rehabilitated to provide opportunity for future land use.

(i) the effects of climate change:

Assessment: The Project is not considered to be at heightened risk from the effects of climate change. Climate change is not expected to markedly decrease the level of solar irradiance in the vicinity of the application site. The Project is not considered to be at undue risk from increased storm and high-intensity rainfall events, noting finished floor heights for key Project infrastructure will be designed to account for modelled flood events based on predicted climate change variation.

(j). the benefits to be derived from the use and development of renewable energy.

Assessment: The Project will have significant benefits in enabling the use and development of renewable solar energy to support New Zealand's transition to a low-emissions economy. As noted, the Project will increase energy supply to support resilience within the National Grid, generating enough electricity to power approximately 75,000 homes annually. The Project further positions the District and wider Region to be a leader in renewable energy knowledge, investment and technology.

8 RELEVANT STATUTORY AND POLICY PROVISIONS

8.1 Introduction

Subclause 5(1)(h) of Schedule 5 of the Act requires an assessment of the activity against any relevant provisions in any of the documents listed in subclause (2). For completeness, some documents and provisions have been assessed to illustrate why they are not relevant to the Project.

The relevant documents referred to in subclause (2) for the Project are:

- Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011;
- Resource Management (National Environmental Standards for Freshwater) Regulations 2020 (NES-Freshwater)
- National Policy Statement for Freshwater Management 2020 (NPSFM);
- National Policy Statement for Renewable Energy Generation 2011 (NPSREG);
- National Policy Statement for Natural Hazards 2025 (NPSNH);
- National Policy Statement for Electricity Networks 2008 (NPSEN);
- Canterbury Regional Policy Statement 2013 (CRPS);
- Canterbury Land and Water Regional Plan 2015 (CLWRP);
- Waitaki Catchment Water Allocation Regional Plan 2016 (WCP);
- Mackenzie District Plan (MDP);
- Iwi Management Plan of Kati Huirapa 1992;
- Waitaki Iwi Management Plan 2019; and
- Canterbury (Waitaha) Conservation Management Strategy 2016

An assessment of the matters below, as required by subclauses 3(a), (b) and (c) of Schedule 5, is provided in the following subsections and/or in the Statutory Planning Policy Assessment provided with the application (see attachment 3.7):

- any relevant objectives, policies, or rules in the above documents;
- any requirement, condition, or permission in any rules in any of those documents; and
- any other requirements in any of those documents.

8.2 Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011

The NESCS provides a framework for managing the risks to human health arising from development and consented activities including soil disturbance, soil sampling, subdividing land, change of land use and/or replacing fuel storage systems.

The NESCS is relevant as a Preliminary Site Investigation (PSI) has been undertaken for the application site with the following Hazardous Activities and Industries List (HAIL) identified:

- HAIL B4 – Power stations, substations or switchyards: The power sub-station area located to the west of the site (Twizel Substation) is listed on the ECan’s land use registers. The activity conducted in the power sub-station is categorised under HAIL B4. It was concluded highly unlikely the power sub-station to the west of the site would have impacted the site from soil contamination.
- Potential HAIL I – Superphosphate application to land: There were no intensive agricultural activities identified on the site prior to 2015. Some areas of the site were used for dairy farming from 2016, which is after the limit on the use of cadmium was applied by the fertilizer association indicating that any presence of cadmium in the site soils is highly unlikely, and even more unlikely to be a risk considering the possible change of the site to a less sensitive land use.

This investigation concluded there are no HAIL activities being undertaken, have been undertaken or more likely than not been undertaken on the site, therefore a resource consent under the NESCS is not required for the Project. The NESCS is therefore not relevant to the Project.

8.3 Resource Management (National Environmental Standards for Freshwater) Regulations 2020

The Project does not involve any activities regulated by the NES-Freshwater. The Project activities maintain a 100 m buffer from natural inland wetlands, do not involve any activities within the bed of a river or stream or any of the other activities regulated by the NES-Freshwater. The NES-Freshwater is therefore not relevant to the Project.

8.4 National Policy Statement for Freshwater Management 2020

The NPSFM provides local authorities with direction on how they should manage freshwater under the RMA. The NPSFM came into force on 3 September 2020. The proposal does not seek to consent any water takes, works within the bed of any river or stream or works within the vicinity of natural inland wetlands, however the NPSFM is relevant because the site is bounded by the Twizel and Ōhau Rivers and discharges to land are proposed which, if not managed appropriately, have the potential to result in adverse effects on freshwater environments.

Te Mana o Te Wai is the fundamental concept underpinning the NPSFM (section 1.3):

Te Mana o te Wai is a concept that refers to the fundamental importance of water and recognises that protecting the health of freshwater protects the health and well-being of the wider environment. It protects the mauri of the wai. Te Mana o te Wai is about restoring and preserving the balance between the water, the wider environment, and the community.

The Project has been developed consistent with the concept of Te Mana o te Wai, prioritising the health and well-being of water bodies and freshwater ecosystems by designing the project to incorporate setbacks from waterbodies and freshwater ecosystems to avoid effects on riparian and wetland margins. The management measures proposed for the discharges associated with the Project including the CEMP and ESCP have a focus on prioritising the health and wellbeing of freshwater environments.

The proposal is considered to be consistent with the overall objective and supporting policies in the NPSFM.

8.5 National Policy Statement for Renewable Energy Generation 2011(amended December 2025)

The NPSREG has one objective and a series of policies that, as a whole, seek to enable renewable electricity generation activities. A full assessment of the objective and policies is provided in attachment 3.7. The proposal is consistent with the relevant objective and policies.

8.6 National Policy Statement for Natural Hazards 2025

The NPSNH has one objective focussed on managing natural hazard risk to people and property as follows:

Natural hazard risk to people and property associated with subdivision use and development is managed using a risk-based proportionate approach.

An assessment of the relevant objective and policies of the NPSNH is provided in attachment 3.7. The proposal is consistent with the relevant objective and policies.

8.7 National Policy Statement for Electricity Networks 2008

The Project gives effect to the National Policy Statement for Electricity Networks by recognising the presence and operational requirements of the elements of the National Grid that traverse the application site. The Project avoids incompatible activities within the transmission corridor, maintains Transpower access at all times, and implements a comprehensive CEMP and recommended Transpower conditions of consent which provide for management of Project activities within proximity of the transmission corridor. Activities in proximity to transmission assets, including the upgrade of the existing access track near tower CHH-TWZ-A0003, are subject to detailed construction management and Transpower oversight. These measures ensure the Project will not compromise, and will co-exist safely with, the ongoing operation, maintenance and upgrade of transmission infrastructure within the application site.

8.8 Canterbury Regional Policy Statement 2013

The CRPS 2013 sets the framework for resource management policies including policies to achieve integrated management of natural and physical resources of the Canterbury Region. A

replacement Regional Policy Statement and accompanying Section 32 reports are being drafted but are currently paused due to government changes in freshwater management.

Relevant objectives and policies of the CRPS are assessed in attachment 3.7. The Project is consistent with the relevant objectives and policies of the CRPS.

8.9 Canterbury Land and Water Regional Plan 2015

Objectives and policies of the CLWRP relevant to the proposed construction and operation phase discharges and earthworks over aquifers are assessed in attachment 3.7. The proposal is consistent with the relevant objectives and policies of the CLWRP.

8.10 Waitaki Catchment Water Allocation Regional Plan 2016

The Waitaki Catchment Water Allocation Regional Plan was prepared by the Waitaki Catchment Water Allocation Board in accordance with the requirements of the Resource Management (Waitaki Catchment) Amendment Act 2004. The Plan provides for the allocation of water in the Waitaki catchment on a basis that is consistent with the purpose and principles of the RMA.

The application site is located within the Waitaki Catchment however no water takes, diversion or damming activities are proposed to be consented as part of the Project and therefore no consents are required under the Waitaki Catchment Water Allocation Regional Plan. Water will be taken and used from the existing site bore in accordance with the permitted standards of Rule 1 i.e. no more than 10 cubic metres per day per at a rate not exceeding 5 litres per second.

8.11 Mackenzie District Plan

The MDP has recently been reviewed with the most recent stages being Stage 3 (Plan Changes 23-27) and Stage 4 (Plan Changes 28-30 + associated variations). Plan changes 23-27 are fully operative and issues addressed included Rural and Natural Environment Values, Sites and Areas of Significance to Māori, Rural Lifestyle Zone, Energy and Infrastructure and Subdivision and Earthworks and Access/Transport. As a result, provisions of the MDP relevant to the Project have been tested recently via the Schedule 1 RMA process and the plan has been updated to respond to demands for growth in the region and to align it with national and regional planning instruments. The provisions within plan changes 28-30 that are not yet fully operative are not relevant to the Project.

The significant natural resources of the District are now recognised in the introduction to the Natural Environment chapter as follows:

'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.'

All of the above matters are of relevance to this application.

Chapter REG – Renewable Electricity Generation contains District Wide provisions relating to renewable electricity generation activities.

The Introduction to the Renewable Electricity Generation (REG) chapter highlights the importance of energy efficiency and the use and development of renewable energy as a matter that the District Plan must have regard to under section 7 of the RMA and the need to recognise and provide for the national significance of renewable electricity generation and the national, regional, and local benefits of renewable electricity generation activities, such as increasing electricity capacity and security of supply while displacing greenhouse gas emissions in accordance with the NPSREG.

The REG chapter largely stands alone in terms of the regulation of renewable electricity activities in the District Plan. The Introduction states:

'In addition to the provisions in this chapter, the provisions in Table 1 also apply to renewable electricity generation activities. Beyond the provisions listed in Table 1, no other provisions in this plan apply to renewable electricity generation activities, except where specified within the provisions of this chapter.'

The provisions in Table 1 are outlined below. These provisions, along with the relevant provisions within the REG chapter, have been assessed in attachment 3.7. No other provisions within the MDP are relevant.

Table 8.1: MDP Table 1: Renewable Electricity Generation Chapter

Topic	Plan Provisions that Apply to Activities Managed in this Chapter
Strategic Directions	All provisions in the ATC , MW , NE and UFD chapters
Contaminated Land	All provisions in the Contaminated Land Chapter
Natural hazards	All provisions in the Natural Hazards Chapter
Hazardous Substances	HAZS-O1 , HAZS-O2 , HAZS-P1 , HAZS-P2 , HAZS-R1 , HAZS-R2
Historic Heritage	All provisions in the Historic Heritage Chapter
Notable Trees	All provisions in the Notable Trees Chapter
Ecosystems and Indigenous Biodiversity	Section 19 – Ecosystems and Indigenous Biodiversity - Rules 2.1.1 and 2.2.1 (relating to the Waitaki Power Scheme and Opuha Scheme) and the Objective and Policies 1, 5, 7 and 8 but only insofar as they apply to the activities managed by Rules 2.1.1 and 2.2.1
Activities on the Surface of Water	All provisions in the Activities on the Surface of Water Chapter
Lighting	All provisions in the Light Chapter
Noise	All provisions in the Noise Chapter
Signs	All provisions in the Signs Chapter

The Project is consistent with the relevant objectives and policies of the MDP, attachment 3.7 provides a full assessment.

8.12 Ngāi Tahu 2025 – Iwi Management Plan

Ngāi Tahu's document, the Ngāi Tahu Iwi Management Plan 2025 states the aspiration is that "Te Runanga o Ngāi Tahu participates fully in the decision-making processes of resource management agencies."

Ngāi Tahu Resource Management Strategy for the Canterbury Region

This document outlines the key issues and aspirations for Ngāi Tahu in the Canterbury Region with regards to natural resource management. The following policies are considered relevant to the proposal:

- That Ngāi Tahu retain the right to be involved in and contribute to the resource allocation and management decisions which impact on tribal resources; and
- That the Canterbury Regional Council should encourage landowners or occupiers to plant vegetation on riparian strips to prevent contaminated run-off into any wetland, waterway or lake.

The Ngāi Tahu 2025 is the overarching tribal development strategy, setting out the aspirations of Ngāi Tahu for cultural, social, environmental, and economic wellbeing. A core objective is that Te Rūnanga o Ngāi Tahu participates fully in the decision-making processes of resource management agencies. This reflects the exercise of rangatiratanga and kaitiakitanga over natural resources within the Ngāi Tahu takiwā. For resource consent applications, this requires active recognition of Ngāi Tahu values and meaningful engagement in decision-making.

The Ngāi Tahu Resource Management Strategy for the Canterbury Region complements Ngāi Tahu 2025 by identifying specific natural resource management issues and desired outcomes. Relevant policies include:

- That Ngāi Tahu retain the right to be involved in and contribute to the allocation and management decisions that impact tribal resources; and
- That regional authorities encourage landowners and occupiers to plant riparian vegetation to prevent contaminated runoff from entering wetlands, waterways, or lakes.

The Project is consistent with the first policy, as mana whenua have been identified as key partners in the fast-track process and have been actively engaged by Nova since 2021 through hui, site visits and the commissioning of a Manawhenua report prior to engaging in the preparation of a substantive consent application. Nova acknowledges Ngāi Tahu's role as Treaty partner and supports their participation in decision-making through engagement and recognition of cultural values in project design, management plans and consent conditions.

In relation to land and water management, the Project does not seek consent for direct abstraction from or discharge into surface waterbodies. Stormwater effects will be managed through setbacks from waterbodies, soakage to ground, design interventions, management plans and conditions, avoiding contaminated runoff to nearby rivers, wetlands, or lakes. The Project setbacks from waterbodies and other sensitive features are consistent with the Strategy's policy direction on water quality protection.

Overall, the Project avoids direct effects on water bodies or tribal resources and provides a platform for Ngāi Tahu to be actively involved in decision-making about land and resource use within their takiwā. Through careful Project design and conditions which provide for mana whenua to exercise kaitiakitanga, the Project is considered to be broadly consistent with the objectives of Ngāi Tahu 2025 and the relevant policies of the Ngāi Tahu Resource Management Strategy for the Canterbury Region.

8.13 Waitaki Iwi Management Plan 2019

This Plan describes the values of the Te Papatipu Rūnaka (Te Rūnanga o Arowhenua, Te Rūnanga o Waihao and Te Rūnanga o Moeraki) in relation to the Waitaki River and the wider catchment that provides a life source to the river (Aoraki/Mount Cook to the sea). The Plan outlines the issues relating to the area, and direction for how these are addressed and how their relationship with the identified resource can be provided for.

Of relevance to the Project are the following key objectives:

- Mana Whenua have a co-governance and co-management role over the Aoraki; and
- Wahi tupuna are protected and the relationship mana whenua have with these landscapes is enhanced

The Project lies within the Waitaki catchment, a landscape of cultural, spiritual, and environmental importance to mana whenua. The Project does not involve abstractions from the Waitaki River or any other rivers within the wider catchment, or activities directly affecting water quality. However, the Plan recognises that the health of the catchment is connected across land, water, and people. The siting of large-scale infrastructure such as solar generation must therefore be carefully managed to avoid eroding the mauri of the environment or diminishing the relationship of mana whenua with wāhi tupuna.

The Project achieves outcomes sought in the Plan as follows:

- Protection of wāhi tupuna and cultural landscapes is given effect to through careful design and siting of infrastructure, including setbacks from waterbodies and avoidance of significant habitats of indigenous flora and fauna, consideration of viewshafts, landscape integration, and avoidance of sites of known cultural significance.
- Ongoing engagement and partnership with mana whenua is embedded in the Project, including opportunities for input into environmental management plans and monitoring of activities.
- Recognition of interconnected values is demonstrated through sustainable land and water management practices on site, such as low-impact stormwater design, natural hazard mitigation, habitat enhancement, and avoidance of contaminants entering surface water and groundwater systems.
- Enhancement of mana whenua relationships with the land is supported through opportunities to collaborate on restoration, biodiversity initiatives, and other measures that give practical expression to the kaitiakitanga responsibilities outlined in the Plan.

Overall, while the development of a large-scale solar farm represents a change to an already modified rural landscape, the Project is consistent with the outcomes sought in the Waitaki Iwi Management Plan 2019. By adopting a proactive approach to engagement and designing the site to provide for cultural values through construction and operations, the Project will contribute to renewable energy generation in a way that is compatible with the protection of wāhi tupuna and the enhancement of mana whenua relationships with their ancestral landscapes.

8.14 Iwi Management Plan of Kati Huirapa 1992

The Manawhenua report identifies the Iwi Management Plan of Kati Huirapa 1992 to be relevant to the Project and identifies the following as key focus areas, objectives and policies.

- Water quality and quantity;
- Mahika Kai quality and quantity;
- Habitat Integrity; and
- Provision for customary practices, including access.

The key themes are identified as:

- Provide for cultural and spiritual values and customs and traditions;
- Allow all things that affect Arowhenua to be dealt with by Arowhenua first and foremost;
- Increase opportunities for Arowhenua to practice customs and traditions associated with the uri (descendants) of Arowhenua;
- Ensure all breeding areas for fish and birds are undisturbed;
- Ensure access to mahika kai adjacent to Māori reserves is maintained; and
- Ensure access to mahika kai allows access to water of sufficient quantity and quality to exercise traditional rights and customary uses.

The Kāti Huirapa Iwi Management Plan was developed to articulate the values, concerns, and aspirations of Kāti Huirapa rūnanga, particularly with respect to the protection of freshwater, mahika kai, and the cultural integrity of places and practices associated with their takiwā. The Plan is an important expression of mana whenua perspectives and provides objectives and policies that inform statutory decision-making processes under the RMA and, by extension, the fast-track consenting process. It identifies water, mahika kai, habitat integrity, and the provision for customary practices (including access) as central to the well-being of mana whenua and their relationship with ancestral lands and waters.

The Project is located in proximity to catchments and landscapes of significance to Kāti Huirapa and the wider iwi. The Project does not seek consent for direct abstraction from, or discharges into, surface water bodies and will maintain buffers from surface waterbodies. Stormwater from the site will be managed via soakage to ground, minimising potential adverse effects on water quality or quantity. On this basis, the proposal is considered consistent with the Plan's objectives relating to the protection of freshwater resources.

Mahika kai values are a central theme in the Plan, particularly the quality and availability of species and habitats relied upon for customary harvest. The application site is within a landscape where braided rivers, wetlands, and indigenous habitats are critical for bird and fish species important to mana whenua. The Project avoids direct disturbance to these areas and includes

habitat restoration which supports the Plan's objective to maintain or improve the quality and integrity of mahika kai resources.

The Plan also emphasises habitat integrity and the need to avoid impacts on breeding areas for fish and birds. The Project footprint is confined to modified rural land, with no known breeding areas of significance within the site. Construction management practices, designed setbacks and ecological safeguards will ensure that adjoining habitats are not adversely affected, aligning with the Plan's policies to maintain habitat integrity.

Furthermore, the Plan highlights the importance of ensuring ongoing opportunities for customary practices, including access to resources and water of sufficient quality and quantity. The Project will not restrict access to mahika kai areas, Māori reserves, or public conservation land. By avoiding direct impacts on waterbodies and by providing opportunities for ecological enhancement, the Project can be seen as supporting the intent of the Plan to enable the continuation of mana whenua cultural practices and traditions.

In summary, while the Project is located within an area of cultural significance, its design and management approach avoids direct impacts on freshwater, mahika kai, or habitat values. With the inclusion of mitigation and enhancement measures and opportunities for mana whenua to exercise kaitiakitanga, the Project is considered broadly consistent with the key objectives and policies of the Kāti Huirapa Iwi Management Plan.

8.15 Canterbury (Waitaha) Conservation Management Strategy 2016

The Canterbury (Waitaha) Conservation Management Strategy (CMS) is a statutory document prepared by the DOC under the Conservation Act 1987. Its purpose is to provide an integrated framework for the management of public conservation lands, waters, species, and natural and historic resources within the Canterbury region. The CMS identifies places and values of particular significance, sets long-term objectives for their protection and enhancement, and provides policy direction to guide DOC's own decision-making as well as the way other agencies, communities, and applicants for resource consents consider conservation outcomes. While the CMS does not regulate land use on private property, it is a relevant statutory context that informs council plans, DOC submissions, and decisions under the RMA and Fast-Track consenting processes.

The application site lies in close proximity to DOC-managed land, including conservation areas, braided river margins, and habitats that support significant indigenous biodiversity. The CMS sets out objectives for protecting these values, with a particular emphasis on maintaining the open landscapes, ecological integrity, and recreational opportunities that define the Basin.

The CMS identifies the Mackenzie Basin as a priority for the protection of tussock grasslands, braided rivers, and threatened species such as kakī/black stilt and wrybill. The Project has been sited on modified rural land and avoids the clearance of intact indigenous vegetation or direct intrusion into DOC-managed areas. While the Project is close to important ecological and landscape features under DOC stewardship, its physical footprint does not extend into these areas, avoids areas of ecologically significant flora and fauna and provides buffers from river margins and wetlands. Accordingly, potential adverse effects on conservation lands and values are indirect and can be effectively managed through the wide range of mitigation measures proposed.

Landscape and natural character are central themes of the CMS, with the Mackenzie Basin identified as a nationally significant landscape. The proposal will alter local character through the introduction of solar arrays over a large area. However, its proximity to Twizel township and existing hydro scheme and electricity infrastructure, means that the Project sits at the edge rather than the core of the Basin's open landscape. Landscape and visual effects will be further reduced through the use of non-reflective panels, setbacks from key viewing corridors ensuring that the values of adjoining DOC-managed land are not undermined.

Recreational values are also addressed within the CMS, particularly in relation to public access and enjoyment of lakes, rivers, and conservation areas. The Project will not restrict or interfere with public access to nearby DOC lands or waterways, nor will it displace existing recreational activities such as walking, cycling, or fishing.

Overall, while the Project is located near sensitive conservation lands, its design avoids direct encroachment into DOC-managed areas and incorporates measures to protect adjacent ecological, landscape, and recreational values. The Project is considered to achieve broad alignment with the objectives of the Canterbury (Waitaha) CMS.

8.16 Conclusion on Relevant Statutory and Policy Provisions

Overall, the Project is consistent with, and gives effect to, the relevant national, regional and district statutory and policy framework. It strongly supports the development of renewable electricity generation, aligns with the objectives of the relevant National Policy Statements, and is recognised as regionally significant infrastructure under the Canterbury planning framework.

Any potential conflicts with environmental or cultural values have been appropriately addressed through site selection, design, avoidance, and mitigation measures secured by proposed conditions of consent.

Accordingly, the Project is considered to achieve the outcomes sought by the relevant planning instruments and is supported by the applicable statutory framework.

9 WILDLIFE ACT 1953

The FTAA enables the authorised person for a referred project to seek a Wildlife Act approval as part of a substantive application. Schedule 7 of the FTAA prescribes the information that must be provided in an application for a Wildlife Act approval. This section responds directly to those statutory requirements and draws on the supporting ecological assessments and management plans lodged with the substantive application.

9.1 Purpose

Wildlife Act approvals are sought to authorise specified activities on the application site that may otherwise constitute offences under the Wildlife Act, where such activities may arise incidentally during construction or operation of the Project, or where required to implement approved ecological management, monitoring and adaptive management measures.

9.2 Proposed Actions in Relation to Protected Wildlife

Wildlife Act approvals are sought in relation to the following potential actions on the application site involving protected wildlife.

A Wildlife Act approval in relation to lizards is sought to:

- Disturb, catch, relocate and liberate Southern grass skink and Southern Alps gecko during vegetation clearance and earthworks in areas that have either confirmed or expected presence of these species.
- Incidentally injure or kill Southern grass skink and Southern Alps gecko, if injury or death is not directly intended but is unavoidable and foreseeable and all reasonable effort has been made to meet the conditions in the approval.

A Wildlife Act approval in relation to avifauna is sought to:

- To hold, possess, store, and temporarily retain the dead bodies or parts of protected Threatened and At-Risk avifauna that are incidentally killed as a result of lawful construction or development activities; and
- transport such specimens for the purposes of:
 - identification;
 - veterinary or scientific assessment;
 - necropsy;
 - reporting to the Department of Conservation, and
 - final disposal or transfer as directed by the Grantor.

9.3 Assessment against Purpose of the Wildlife Act

The Wildlife Act does not contain an express purpose provision equivalent to section 5 of the RMA. Rather, its purpose is derived from its long title and operative provisions, which collectively establish a framework for the protection and control of wildlife. The purpose of the Wildlife Act is to provide a statutory framework for the protection and control of wildlife, including regulating human interaction with indigenous fauna and managing their use and habitats.

The Wildlife Act approval sought for lizards is consistent with the purpose of the Wildlife Act because it:

- enables the lawful control of unavoidable interactions with protected wildlife which may occur during construction and operation of the Project;
- supports the protection of indigenous species through avoidance-led design and management;
- facilitates monitoring, adaptive management, and conservation outcomes; and
- is limited to incidental disturbance and handling, rather than intentional adverse effects on protected wildlife.

The Wildlife Act approval sought for avifauna is consistent with the purpose of the Wildlife Act because it:

- enables detailed investigation and reporting of the causes of bird mortality in order to inform avifauna management measures in relation to the Project;
- supports the protection of indigenous species by:
 - ensuring that management responses on the Site can be appropriately targeted and
 - contributing to wider knowledge regarding the manner in which avifauna may interact with the solar plant.

Overall, the approvals are necessary and appropriate to implement the Project in a manner that maintains alignment with the Wildlife Act's fundamental objective of protecting and managing New Zealand's wildlife.

9.4 Protected Wildlife Species known or Predicted to be in the Area

Protected wildlife species known or predicted to be present within the Project area include indigenous lizards and indigenous avifauna. Species presence, and where available, abundance information is documented within the Assessment of Potential Ecological Effects included as attachment 2.14.

9.4.1 Lizards

Lizard species recorded within the Project area include McCann's skink (Not Threatened), southern grass skink (At Risk – Declining), and Southern Alps gecko (At Risk – Declining). Habitat distribution, survey results and impact assessments are provided in the Lizard Management Plan and the Assessment of Potential Ecological Effects.

9.4.2 Avifauna

Indigenous avifauna recorded or predicted to utilise habitats within or adjacent to the Project area is fully documented in the Assessment of Potential Ecological Effects and includes eight Threatened and nine At Risk species associated with braided river margins, wetlands and open-country habitats. Protected species, ecological values, potential risks and management measures are identified in the Avifauna Management Plan and the Assessment of Potential Ecological Effects.

9.5 Impacts on Threatened, Data Deficient and At-risk Wildlife Species

9.5.1 Avifauna (*Threatened / At Risk*)

The Assessment of Potential Ecological Effects and Avifauna Management Plan identify that the site and adjacent habitats support, or may be used by, Threatened and At Risk indigenous birds, particularly associated with the Ōhau River, Twizel River, wetlands and open-country habitats. Confirmed on-site observations during the December 2022 survey include tarapirohe/black-fronted tern (Threatened–Nationally Endangered), pānera/grey duck (Threatened–Nationally Vulnerable) and several At Risk species (e.g., pohowera/banded dotterel, tarāpuka/black-billed gull, tōrea/South Island pied oystercatcher, kawaupaka/little shag, māpunga/black shag).

Potential adverse effects on these Threatened/At Risk birds are described as: habitat loss/modification, disturbance to breeding birds during construction, injury/death during clearance and machinery operation, ongoing operational disturbance (vehicles/maintenance), and collision risk (bird strike).

9.5.2 Lizards (*At Risk; potential Threatened but unlikely*)

Lizard surveys confirmed three indigenous species on site: McCann's skink (Not Threatened), southern grass skink (At Risk–Declining), and Southern Alps gecko (At Risk–Declining).

The LMP acknowledges that Threatened lizard species occur in the wider area (e.g., Lakes skink and Scree skink, both Threatened–Nationally Vulnerable) but concludes these are unlikely/highly unlikely at the site after multiple surveys; if unexpectedly encountered, the Incidental Discovery Protocol applies (including cessation of works for nationally “Threatened” lizards until DOC advice/approval is obtained).

9.5.3 Data Deficient Species

No wildlife species have been explicitly identified as “Data Deficient” on the application site. The LMP does, however, set expectations for reporting and escalation for any unexpected higher-status lizards encountered during works.

9.6 Best Practice Methods/Standards

9.6.1 Avifauna

For collision risk, the Avifauna Management Plan specifies design measures (panel spacing, roading corridors, tracking arrays, anti-reflective glass, night rest position) and links these to a structured monitoring and adaptive management programme.

Best practice is further evidenced by the requirement to develop an Avifauna Carcass Monitoring Programme (ACMP) that is submitted to DOC for certification, developed by an SQAE in collaboration with a suitably qualified biostatistician, using risk-stratified monitoring design and correction factors for detection probability.

9.6.2 Lizards

The LMP explicitly states it has been developed to follow DOC's "Key principles for lizard salvage and transfer in New Zealand" (DOC 2019) and provides a table showing how each key principle is addressed.

The LMP adopts an avoidance and remediation approach rather than large-scale salvage, on the basis that high and moderate habitat can be avoided and that salvage over a large low-density footprint would be inefficient and not necessarily beneficial at population scale.

Best-practice implementation is supported through use of authorised personnel who are suitably qualified and trained/approved (including by the DOC lizard Technical Advisory Group), and through clear role responsibilities (Project Herpetologist, site roles, reporting requirements).

9.7 Actual and Potential Wildlife Effects

Actual and potential wildlife effects have been comprehensively assessed in the Assessment of Potential Ecological Effects, the Avifauna Management Plan and LMP and in section 5.5 of this report.

9.7.1 Avifauna – adverse effects

There are no potential adverse effects relevant to the activity for which a Wildlife Act approval is sought as approval is only sought to handle dead birds.

9.7.2 Avifauna – positive effects

The positive effects relevant to the activity for which a Wildlife Act approval is sought is the ability for Nova to investigate bird mortalities to inform adaptive management responses to mitigate against the potential for further mortalities.

9.7.3 Lizards – adverse effects

The adverse effects relevant to the activity for which a Wildlife Act approval is sought is the potential for incidentally injuring or killing Southern grass skink and Southern Alps gecko.

9.7.4 *Lizards – positive effects*

The positive effects relevant to the activity for which a Wildlife Act approval is sought is the ability for Nova to relocate/translocate lizards to habitat enhancement areas outside the Project development footprint.

9.7.5 *Methods proposed to Avoid and Minimise Adverse Effects*

Avifauna

Key avoidance/minimisation steps related to the potential for bird strike include:

- Collision risk controls: panel spacing, tracking systems, anti-reflective glass, night rest positioning, roading corridors that break up reflection; plus monitoring-informed adaptive management.

Monitoring, adaptive management and compensation is also proposed via the following methods:

- Carcass monitoring: ACMP prepared (with biostatistician), submitted to DOC for certification, with risk-stratified sampling and correction factors; baseline carcass searches pre-construction and at least monthly post-construction for ≥ 3 years.
- Trigger levels: defined trigger thresholds for injury/mortality by threat class that require independent review and adaptive management.
- Adaptive management options: UV paint/film, flags/streamers, bird-flight diverters on lines, undergrounding wires in persistent collision areas, new panel technologies, targeted panel removal.
- Compensation: if adaptive management is not effective (or if high-value Threatened species strike occurs), Avifauna Management Plan contemplates evidence-based compensation payments to off-site initiatives linked to Collision Risk Modelling (Band model or equivalent) and PVAs (Vortex).

Lizards

Key avoidance/minimisation steps include:

- Avoid high/moderate habitat: all high and moderate quality lizard habitats are to be avoided.
- Buffer zones: a 10-35 m setback applied to high/moderate habitat, biodiversity nodes and corridors to prevent shading impacts from panels.
- Corridors and nodes: retain lizard habitat corridors through central site; establish biodiversity nodes (minimum 30) and include a larger node ($\sim 1,250$ m² rock pile area), with corridors minimum 5 m wide.

- Habitat enhancement: eco-sourced plantings in high/moderate habitats and nodes; rock piles created from excavated rock to enhance refugia; plant protection (guards) and maintenance.
- Pest plant control: follow Biosecurity and Vegetation Management Plan approaches, avoid chemical sprays in high/moderate lizard habitat; undertake control every three years (commencing one year after establishment begins).
- Pest mammal control: implement Pest Mammal Management Plan measures (trap types and control zones specified), commencing before rock piles are created.

Monitoring, adaptive management and compensation is also proposed via the following methods:

- No proactive salvage is proposed; lizard salvage/transfer is described as appropriate only where avoidance/remediation cannot achieve no-net-loss and is considered inefficient for low-density lizards over a large area.
- Incidental Discovery Protocol: stop/restrict works, capture/hold lizard appropriately, notify Environmental Manager and Project Herpetologist, record details including GPS, and release on site under specified release distances; if a nationally “Threatened” lizard is encountered, all works will cease immediately until DOC advice and approval is obtained (and further plan/approval if required).
- Monitoring: monitoring of lizard uptake in enhanced habitats is proposed, with monitoring by a qualified herpetologist in Years 1, 3 and 5 post enhancement, and methodology using ACOs and funnel traps in suitable conditions.
- Adaptive management: if capture rates fail to increase by 10% by end of Year 5, monitoring extends to Years 7 and 9; if decline occurs between rounds, interventions may include additional monitoring, increased pest control effort, further habitat enhancement, and funding for lizard research/conservation (with consultation).
- Contingency compensation: where areas to be avoided are disturbed/cleared, the LMP provides for additional habitat enhancement and immediate DOC notification and notes likely compensation may be required; it also references provision of \$5,000 funding for lizard research and conservation under specified contingency circumstances.

9.8 Offences and Charges under the Wildlife Act

Nova, its directors, trustees, partners, and any other persons involved in the application for Wildlife Act approvals confirm that none have been convicted of an offence under the Wildlife Act, and none are currently subject to any charges under that Act pending before a court.

9.9 Consultation and Additional Expert Advice or Opinions

Consultation on the outcomes of the Assessment of the Potential Ecological Effects, the Avifauna Management Plan and LMP is detailed in the Consultation Register included as attachment 3.14. Documents have been shared with those with key interests in potential effects on wildlife such as

mana whenua, DOC, MDC and ECan with feedback received incorporated into the proposed consent conditions for the WA approvals which are included as attachment 3.3.

10 CONCLUSION

This report has assessed the application by Nova Energy Limited for resource consents and Wildlife Act approvals to enable the construction and operation of the Twizel Solar Plant. The Project comprises a nationally and regionally significant renewable electricity generation facility capable of generating up to 300 MW of electricity, sufficient to power approximately 75,000 homes annually.

The purpose of the FTAA is to facilitate the timely delivery of infrastructure and development projects that are nationally or regionally significant, while ensuring appropriate consideration of environmental effects and values. In accepting Nova's referral application, the Minister for Infrastructure has already determined that the Project is eligible under the Act and is capable of delivering significant regional or national benefits.

The Project squarely meets the purpose of the Act by:

- Delivering large-scale renewable electricity generation infrastructure of national significance;
- Supporting New Zealand's transition to a low-emissions economy and directly contributing to climate change mitigation objectives under the Climate Change Response (Zero Carbon) Amendment Act 2019 and the Government's emissions reduction plans;
- Increasing electricity supply diversity and resilience within the National Grid, particularly complementing existing hydro generation in the Upper Waitaki catchment;
- Generating substantial economic and employment benefits at both regional and national levels during construction and operation; and
- Making efficient use of land that is not highly productive, while enabling ongoing dry-stock farming alongside solar generation.

The Project does not involve any ineligible or competing activities and has been developed specifically to align with the accelerated consenting framework established by the Act.

A comprehensive assessment of actual and potential effects has been undertaken in accordance with Schedule 5 of the Act. The assessment demonstrates that, while the Project introduces a new form of infrastructure into a rural environment, potential adverse effects are either avoided through careful site selection and design, or appropriately remedied or mitigated through robust conditions of consent, management plans, monitoring and adaptive management.

Key findings include:

- Landscape and visual effects are localised, more than minor in some locations but not significant, and acceptable in the context of the Mackenzie Basin's established renewable energy and transmission landscape and relevant policy framework;

- Ecological values have been strongly protected through avoidance of high-value habitats, setbacks, and a comprehensive suite of ecological management plans with restoration, monitoring and contingency measures;
- Freshwater and groundwater effects will be minimal, with stormwater managed through infiltration, setbacks, erosion and sediment controls, and design measures that give effect to Te Mana o te Wai;
- Cultural values have been carefully considered through early and ongoing engagement with mana whenua, the preparation of a Manawhenua report to inform Nova's understanding of relevant cultural values, and proposed consent conditions that provide for a Kaitiaki Governance Group, a Strategic Cultural programme and the exercise of kaitiakitanga;
- Natural hazard risks, including flooding and geohazard risks, have been assessed using a risk-based approach under the NPSNH and will not result in any very high hazards that must be avoided. Residual natural hazard risk and risk from potential hydro-inundation can be appropriately managed through design controls, operational measures, and emergency response planning;
- Amenity, traffic, noise, glint and glare, and human health effects have been assessed by qualified experts and are demonstrated to be no more than minor or are capable of being fully avoided through conditions of consent; and
- The Project will not result in significant cumulative effects on the surrounding environment.

Nova has proactively engaged with a number of stakeholders including mana whenua, MDC and ECan, the Department of Conservation, Transpower, Meridian, the New Zealand Transport Agency / Waka Kotahi, Fire and Emergency New Zealand and surrounding landowners. Outcomes of this consultation have informed development of the Project and Nova is committed to ongoing engagement and building mutually positive long-term relationships beyond the consent process.

The Project has been assessed against all relevant national, regional and district planning instruments, including the National Policy Statements for Renewable Energy Generation, Freshwater Management, Natural Hazards and Electricity Networks, the Canterbury Regional Policy Statement, the Canterbury Land and Water Regional Plan, the Waitaki Catchment Water Allocation Regional Plan, the Mackenzie District Plan and the Canterbury (Waitaha) Conservation Management Strategy. The Project has also been assessed against the relevant iwi management plans. The Project is consistent with the objectives and policies of these instruments and plans, which collectively direct the enabling of renewable electricity generation while managing environmental effects.

When assessed overall, the significant regional and national benefits of the Project—particularly its contribution to renewable energy generation, emissions reduction, energy security, and economic wellbeing—are substantial and enduring. These benefits clearly outweigh the identified adverse effects, which are localised, and capable of being effectively managed over the life of the Project.

The Project represents an efficient, appropriate and policy-consistent use of land and infrastructure resources, achieves the purpose of the FTAA, and promotes the sustainable management of natural and physical resources.

For these reasons, it is concluded that the resource consents and Wildlife Act approvals sought for the Twizel Solar Plant should be granted, subject to the proposed conditions of consent.