

# **MANAWHENUA REPORT**



**For Nova Energy Limited**

**Prepared By:  
Aoraki Environmental Consultancy Limited and Aukaha  
(1997) Limited on behalf of Te Rūnanga o Arowhenua,  
Te Rūnanga o Moeraki and Te Rūnanga o Waihao**

**February 2025**

## **Nova Energy Limited Solar Farm Resource Consent Application to Mackenzie District Council and Canterbury Regional Council (Environment Canterbury)**

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*This report provides input and feedback on the cultural impacts of the solar farm located at Lot 2 DP 487658.*

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## EXECUTIVE SUMMARY

Nova Energy Limited (“Nova”) have commissioned Aoraki Environmental Consultancy Limited (“AECL”) and Aukaha (1997) Limited (“Aukaha”) to prepare a Manawhenua Report on behalf of Te Rūnanga o Arowhenua (Arowhenua), Te Rūnanga o Moeraki (Moeraki) and Te Rūnanga o Waihao (Waihao) to assist in the preparation of a resource consent application to be submitted to Mackenzie District Council (MDC) and Canterbury Regional Council, known as Environment Canterbury (ECan) for the installation of a solar array farm at Lot 2 DP 487658.

This Manawhenua Report will provide assistance to Nova in a way that enables them to meet their statutory obligations under various legislation including the Resource Management Act 1991 (“RMA”).

The purpose of this report is to identify significant areas and sites that may be affected by the proposed solar farm and assess the values and potential impacts of the activity on these values.

This manawhenua report includes:

- A description of Nova Energy site and proposal;
- Identifications of the relevant Iwi Management Plans;
- An explanation of who Kāi<sup>1</sup> Tahu and papatipu rūnaka are, their links to Te Manahuna and their relationship to the site;
- An assessment of the effects the proposal will have on the relationship papatipu rūnaka have with their ancestral lands and waters; and
- Future opportunities in which Nova and papatipu rūnaka can work together to undertake restoration projects and matauranga māori monitoring.

This Manawhenua Report is based on a consultative process with Arowhenua, Waihao, and Moeraki rūnaka providing input the assessment of the consent application and to collate feedback on the cultural impacts of the proposal.

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<sup>1</sup> The southern dialect replaces the ‘ng’ with a ‘k’.

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## 1. PURPOSE OF THIS REPORT

The purpose of this Manawhenua Report is to provide assistance to Nova Energy Limited (Nova) in a way that enables them to meet their statutory obligations under the Resource Management Act 1991 ("RMA"). The provides:

- A brief overview of the proposed project;
- An explanation of who are manawhenua and papatipu rūnaka;
- A brief description of the relevant Iwi Management Plans;
- An explanation of the relationship of papatipu rūnaka to Te Manahuna;
- An explanation of the relationship of papatipu rūnaka to the application site;
- An assessment of the effects of the activity on the relationship papatipu rūnaka have with their ancestral lands and waters

This report is based on a consultative process aimed at Arowhenua, Moeraki and Waihao rūnaka (papatipu rūnaka) providing input into the assessment of the consent application and to collate feedback on the cultural impacts of the proposal. The report provides a set of future opportunities for Nova and Arowhenua, Moeraki and Waihao rūnaka to work together if the consenting process is successful.

It is anticipated that a summary of this report, including key values, impacts and recommendations will be included in the final resource consent application.

### 1.2 Nova Energy Solar Farm Proposal

Nova, a wholly owned subsidiary of Todd Corporation, is proposing the development of a renewable solar generation plant on an 868 ha site at Twizel within Te Manahuna / Mackenzie Basin.

The scale of this development, constructed in one stage, is expected to be approximately 300 megawatts (MW) of renewable electricity generation, connected to the 220 kilovolt (kV) national grid transmission system at the Transpower Twizel substation

#### 1.2.1 Project Overview

The site is situated between the Twizel and Ōhau Rivers, on the eastern side of State Highway 8 (SH8) and Twizel township. The site is accessed via an established entry road on SH8. The 868 ha site area is contained within one land title (shown in red in Figure 1) and lies within the Mackenzie District Council and Environment Canterbury Regional Council boundaries.

The Transpower owned Twizel substation is located on the eastern side of SH8 and the property shares boundaries with Department of Conservation to the south and Meridian Energy to the east. Consequently, Nova do not have direct access to the substation from the site and a transmission line easement agreement will be required to cross third party land and connect to the national grid at the Transpower substation.

According to Nova's Project Description Twizel Solar Plant Report (dated 24 September 2024), 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 piles will be made of hot-dip galvanized steel to withstand corrosion. The tracking system includes polyamide parts to prevent direct contact between steel and aluminium components, providing protection from galvanic corrosion. The chosen mounting system will be designed and certified for operation in local weather conditions and to meet local regulatory requirements. The panel framing structure is installed directly on the 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 the optimal strength (typical depth range 2 – 4 m). The project proposes a tracking system in a 1P configuration (single panels vertically mounted). The centre height of the tracking system has been shown as 1.85 m, rather than a typical height of 1.6 m, to provide design flexibility for additional panel clearance from obstructions (if required), when panels are in the vertical stow position.

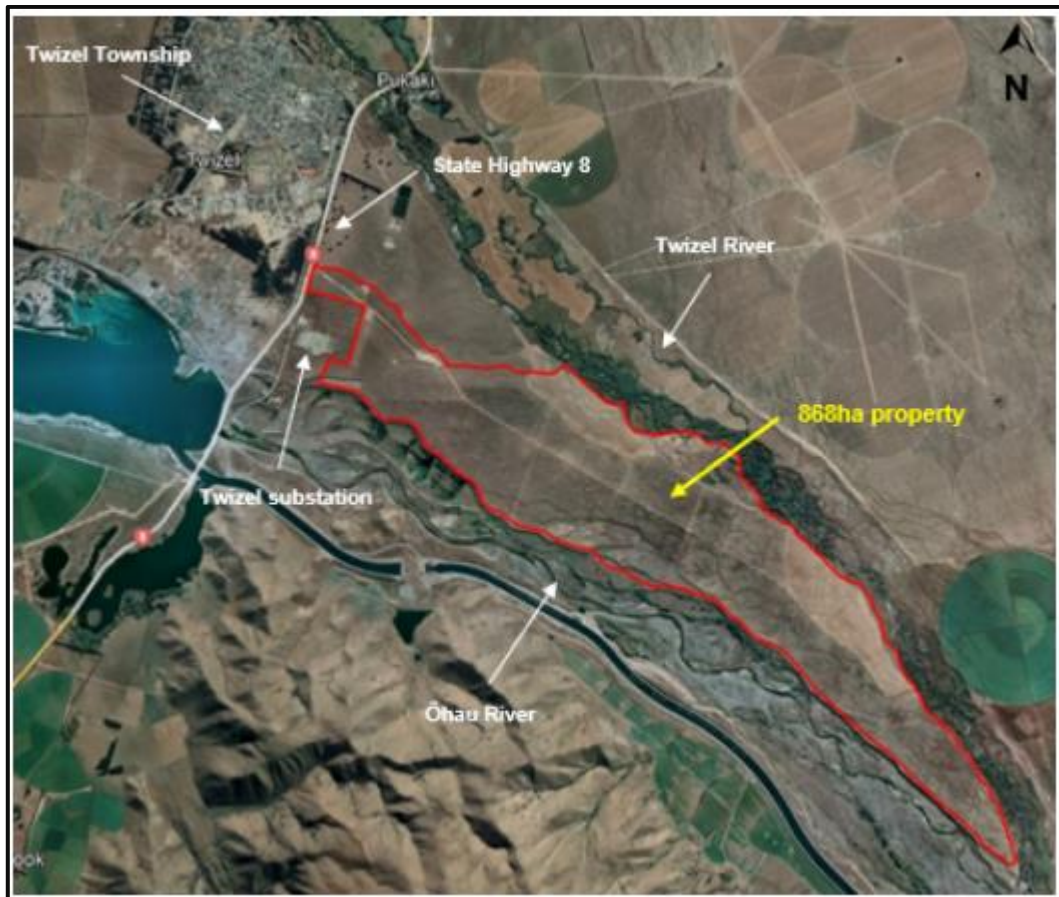


Figure 1: Location of the Twizel site. Source: Nova Energy Project Description Report, September 2024.

Inverters are an integral component in solar power plant systems. The function of the inverter is to convert the DC output of the solar panels into AC, at an appropriate voltage to match the electricity network. Centralised inverters are typically used in utility-scale PV power plant. For this project, an SMA centralised inverter with a capacity of 4.2MW is proposed. The reason for selecting the SMA MVPS 4200-S26 is to provide a high capacity and efficient MW output, with a reduced number of inverters. The fuse and combiner free design eliminates the need for external components and this reduction in the number of components limits possible faults and maximises system availability.

Assuming the inverter is mounted on driven piles, at a height of 1m, the total height of the inverter installation will be approximately 3.9m. Suitable access ladders, platforms and handrails will be included in the design and construction of pile mounted inverters to ensure the health and safety of personnel. Due to the combined transformer within the central inverter package, consideration of environmental protection for oil spill during transport, installation and operation is required. This may include options such as double skinned transformer tanks, drip capture trays at fill and drain points, or bunding systems incorporating hydrocarbon traps within the inverter mounting design.

To ensure safety and integrity of components in the event of a fault or over current situations, HV Switchgear will be installed with appropriate equipment ratings, for connecting the PV System to the

33kV network, through to the 33kV transmission lines, via a suitable connection configuration for rapid fault isolation, operational switching and earthing functions.

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

## **2. MANAWHENUA**

Manawhenua refers to the mana or ‘authority’ held by an iwi, hapū or whanau over the land or territory (and associated resources) of a particular area. This authority is passed down through whakapapa (genealogy) and is based on occupation and continued use and control of natural resources within an area. Manawhenua is also used to describe the people who hold this authority, and who are also considered the kaitiaki of their particular area or takiwā.

### **2.1 Ngāi Tahu Whānui**

Kāi Tahu Whānui are the iwi (Māori tribe) who hold manawhenua over a large proportion of Te Waipounamu – the South Island. The modern iwi originates from three main tribal strands; Waitaha, Ngāti Mamoe and Kāi Tahu. Through intermarriage, warfare and alliances, these tribal groups migrated, settled, occupied and amalgamated and established manawhenua over their tribal area prior to European arrival. Specific hapū or sub-tribes established control over distinct areas of the island and have maintained their mana over these territories to this day.

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 Ngai Tahu Act 1996 to protect the beneficial interests of all members of Kāi Tahu Whānui, including the beneficial interests of the Papatipu Rūnaka of those members. Kāi Tahu is governed by elected representatives from each of the 18 papatipu rūnaka and has an administrative office as well as a number of commercial companies.

### **2.2 Papatipu Rūnaka**

Papatipu rūnaka are the administrative councils of traditional Kāi Tahu hapū (sub-tribes) based around their respective kāinga/marae-based communities and associated Māori reserves, pā, urupā and mahika kai areas. The takiwā (jurisdiction) of each Papatipu Rūnaka is set out in Schedule 1 of the Te Rūnanga o Ngai Tahu Act 1996.

Accordingly, the key Kāi Tahu hapū/papatipu rūnaka who have traditional associations with the area affected by this application include:

- Te Rūnanga o Arowhenua

The takiwā of Te Rūnanga o Arowhenua centres on Temuka and extends from the Rakaia River in the north to the Waitaki River in the south, sharing an interest with Te Taumutu rūnaka and Ngāi Tūāhuriri between the Hakatere/Ashburton River and the Rakaia River, and Waihao to the south between the Pureora River and the Waitaki River, and thence inland to the Main Divide. Arowhenua and their environmental entity AECL are taking the lead in this resource consent application.

- Te Rūnanga o Moeraki

The takiwā of Te Runanga o Moeraki centres on Moeraki and extends from Waitaki to Waihemo and inland to the Main Divide

- Te Rūnanga o Waihao

The takiwā of Te Runanga o Waihao centres on Wainono, sharing interests with Arowhenua to Waitaki, and extends inland to Omarama and the Main Divide.

### **3. Iwi Environmental Management Plans**

There are two Iwi Environmental Management Plans that are relevant to this resource consent application. They are the Iwi Management Plan of Kati Huirapa (1992) prepared for Arowhenua and the Waitaki Iwi Management Plan (2019) prepared by Arowhenua, Moeraki and Waihao.

#### **3.1 Iwi Management Plan of Kati Huirapa (1992)**

The Iwi Management Plan of Kati Huirapa contains objectives and policies that promote the sustainable management of the takiwā, with the key focus areas being:

- Water quality and quantity
- Mahika Kai quality and quantity
- Habitat Integrity; and
- Provision for customary practices, including access.

The key themes that were introduced into the Iwi Management Plan by Kati Huirapa

- 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; and
- 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.

#### **3.2 Waitaki Iwi Management Plan (2019)**

Arowhenua, Moeraki and Waihao developed the Waitaki Iwi Management Plan as an expression of rangatiratanga and in fulfilment of their kaitiaki responsibilities within the Waitaki Catchment.

Natural and cultural resources are taonga handed down by tūpuna (ancestors). It is the responsibilities of the present generation to ensure that the resources are managed sustainably for the generations that follow. The plan provides a whanau-friendly policy framework for the protection and enhancement of natural and cultural resources in the Waitaki Catchment.

The Plan was developed in 2019 to:

- Describe the values held by rūnaka relating to Aoraki, wai, mahika kai and wāhi tupuna in the Waitaki Catchment.
- Identify the primary issues rūnaka have regarding these matters in the Waitaki Catchment.
- Articulate rūnaka policies and management guidelines for these matters
- Provide for the relationship that rūnaka have with these resources.



## **4. RELATIONSHIP OF PAPATIPU RŪNAKA TO TE MANAHUNA AND APPLICATION SITE**

### **4.1 Identity of Kāi Tahu in Te Manahuna**

The story of Papatipu Rūnaka begins with Aoraki and the creation of Te Waipounamu (South Island). 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 manawhenua descend.

The story of Aoraki and his brothers has been passed down through many generations of our people and has endured across both time and tribe to continue as a creation mythology of high importance to Kāi Tahu. This creation story of the landscape surrounding Arowhenua is a central tradition for the Waitaha, Rapuwai, Kāti Hāwea, Kāti Māmoe, and Kāi Tahu tribes from which the local hapū (Arowhenua, Waihao and Moeraki) descend. It is largely on this basis, and as the principal marae in the region, that the Arowhenua, Waihao and Moeraki assume responsibility as kaitiaki - guardians to Aoraki/Mt Cook and the surrounding areas.

The takiwā of Arowhenua, Moeraki and Waihao extends over the area from the Rakaia Catchment in the north to Waihemo in the south, and inland to Aoraki and the Main Divide and seaward across the exclusive economic zone. The history of the land goes back to about 850 AD when, according to tradition, Rākaihautu came to Te Waipounamu (South Island) from Hawaiki in the canoe Uruao. The canoe landed at the boulder bank at Nelson. While his son Te Rākīhouia took some of the party down the east coast, Rākaihautu led the remainder through the interior to Foveaux Strait. With his digging stick, Rākaihautu dug Te Kari Kari O Rākaihautu (the southern lakes). Te Rākīhouia proceeded south in Uruao down the Canterbury Coast where he placed eel weirs at the mouths of rivers. The posts he left behind became known as Nga Pou Pou O Rākīhouia. The two parties met up at Waihao, then proceeded up the coast, making their headquarters at Akaroa. Rākaihautu was buried at Wai Kakahi (near Wairewa/ Lake Forsyth). Te Uruao lies as part of the Waitaki Riverbed near Wai Kakahi (near Glenavy).

Kāi Tahu traditions link manawhenua to their tūpuna and the cosmological world of the gods. These histories reinforce tribal identity and connection between generations, documenting the events which shaped the environment of Te Wai Pounamu and Kāi Tahu as an iwi. At the centre of these traditions is Aoraki the mauka atua.

Papatipu rūnaka have lived on the fertile coastal plains of mid and south Canterbury and the inland basin of Te Manahuna/Mackenzie Basin for hundreds of years, venturing up the river valleys into the mountains of the takiwā, crossing the passes (ara tawhito) inland to Te Manahuna, or over to Te Tai Poutini (West Coast) to access and process mahika kai. The waters that flow from Aoraki and Kai Tiritiri-o-te-moana (the Southern Alps) supported the substantial mahika kai of the Te Manahuna, which drew Kai Tahu tūpuna to the area on a seasonal basis. Their travel dictated by the knowledge of where food, water and other resources could be found at particular times of the year. Their ancestors carried little. Papatipu rūnaka were entrusted to care for their takiwā and as owners by customary right, they were responsible for looking after their lands, waters and the resources they sustained. It was the natural resources that attracted Māori people to Te Wai Pounamu, and the enjoyment of these is what kept them there. The distinctive flavours of birds, eel, fish and other wildlife bound the people to the land and to the waters and strengthened their will to hold on to them as well as learn and converse with tūpuna and atua in whare wānaka.

## **4.2 Manawhenua Values and Interests**

Kāi Tahu and papatipu rūnaka do not see their existence as separate from te ao tūroa (the natural world), but as an integral part of it. Through whakapapa, all people and life forms descend from a common source. Whakapapa binds mana whenua to the mountains, forests and waters and the life supported by them, and this is reflected in traditional attitudes towards the natural world and resource management.

Whanaukataka embraces whakapapa, through the relationship between people, and between people and the environment. The nature of these relationships determines people's rights and responsibilities in relation to the use and management of taoka of the natural world. Those Kāi Tahu rūnaka that whakapapa to Te Manahuna/Mackenzie District are Arowhenua, Moeraki and Waihao.

For papatipu rūnaka, a way of life developed, which was closely related to the natural environment. Natural resources were used to feed, clothe, and equip people. Physical landmarks were often associated with atua (gods) and with the births, lives, and deaths of tīpuna (forebears). Within Te Manahuna natural resources were managed by strict kawa (resource management protocols and practices) and observance to atua.

Over time, papatipu rūnaka developed an extensive knowledge of the place names, stories, food resources and resting places of Te Manahuna. Many of the hills and mountains bear the names of the waka (canoes) and the crew members important to the hapū of Arowhenua, Waihao and Moeraki. Many of the rivers, lakes and plains are named to represent the movements and marks upon the land of these ancestral vessels and people. Smaller hills and rivers often bear names of later people and events. These might be events from the history of hapū or of whānau. And then, just as names of people and events were given to places, so were names for people and events taken from places.

The places and their names were part of a memory system in which religious beliefs, history and geography were combined. Any papatipu rūnaka member who knew the tribe's traditions and histories about the land would have been able to find their way around the vast and varied Te Manahuna landscape with ease. Therefore, for papatipu rūnaka, the recognition of significant cultural landscapes is imperative. Today, knowledge of these traditional cultural narratives and landscapes is maintained by kaumatua (elders) and whanau.

## **5. RELATIONSHIP OF PAPATIPU RŪNAKA TO SITE AND SURROUNDING AREA**

The site in which this application relates is legally known as Lot 3 DP 422901 and contains an area of 868.119 ha as shown in Figure 1 above. Situated immediately north of the Ōhau River, south of the Twizel River and west of the Pūkaki River, the site is located within an environment that has been heavily modified as a result of the creation of the hydro scheme.

Whilst Lakes Benmore and Ruataniwha are man-made lakes, the area is one of the most culturally significant areas for Kāi Tahu and specifically Arowhenua, Moeraki and Waihao. Lakes Ōhau and Benmore are statutory acknowledgement areas with great significance. Lake Ōhau is a glacial lake in Te Manahuna (the Mackenzie Basin), fed by Te Awa Aruhe (Hopkins River) and Ōtao (Dobson River). Ōhau is renowned for the north-west wind that blows over the lake. Ōhau along with nearby lakes Pūkaki and Takapō (Tekapo) formed part of the Kāi Tahu and papatipu rūnaka seasonal food gathering patterns and was renowned for tuna (eels) and weka that were gathered and preserved for the upcoming winter months. Lakes Ōhau and Benmore also have several kāika nohoaka (traditional villages used seasonally) sites, māori rock art and culturally sensitive areas.

Prior to the creation of the hydro schemes and canals, Lake Ōhau was the beginning of the Waitaki River, flowing from the lake to the Pacific Coast. The Waitaki is a significant element of Kāi Tahu identity, particularly for Arowhenua, Moeraki and Waihao, linking whānau today with the atua and tīpuna who shaped the land and water. This includes the ancestor Tū Te Rakiwhānoa and his assistants, one of whom Marokura stocked the waterways. The river between Lake Ōhau and Lake Ruataniwhā is now called the Ōhau River and the stretch of Waitaki River between Lake Ruataniwhā and the coast has been heavily modified for hydro purposes.

The name Waitaki (a South Island variant of the name Waitangi which is found throughout the North Island) is a common place name throughout Polynesia. Although the specific tradition behind the name has been lost in this case, it literally means “the waterway of tears”, and the Waitaki is often referred to in whaikōrero (oratory) as representing the tears of Aoraki which spill into Lake Pūkaki and eventually make their way south along the river to the coast. This image is captured in the whakatauhākī: “Ko Waitaki te awa, kā roimata nā Aoraki i riringi” (“Waitaki is the river, the tears spilled by Aoraki”).

The Kāi Tahu and papatipu rūnaka association with the Waitaki extends back to the first human habitation of Te Wai Pounamu. A moa butchery site at the mouth of the river is one of the oldest recorded settlement sites in the island and other sites further up the river are also extremely ancient. As such, the river is an essential element of the identity of Kāi Tahu as an iwi. The Waitaki River (from Lake Ōhau to river mouth) is of such cultural significance that up to 10 rūnaka can whakapapa to it; however, at present, only Arowhenua, Waihao and Moeraki are actively involved in its management.

The river was not only a pathway for snowmelt and rainwater from Aoraki to travel to the sea; it also provided a trail for tīpuna to follow inland, allowing access to food and resources that were the basis of economic and social development. These ara tīpuna (ancestral trails) formed part of a major route from coast to coast, enabling access to Hāwea and Wānaka via the Lindis Pass, and to the West Coast via Ōkuru or Arthurs Pass. A further trail linked through to Central Otago, providing access to mahika kai and pounamu resources. Seasonal gathering sites in the Ōhau, Pūkaki, Takapō, Alexandrina, and Whakarukumoana (McGregor) catchments were accessed via these travel-ways. Knowledge of these trails continues to be held by whānau and hapū, and is regarded as a taonga, reflecting the mobile lifestyle of the people that relied on the availability of resources from the land and waterways.

The entire stretch of water from Lake Ōhau to the coast has a large number of cultural sites, most of which are now under water due to the formation of the hydro lakes. These sites were linked to important tīpuna, including a nohoaka called Te Ao Mārama that Te Maiharoa was evicted from by constabulary in the late 1800s. It is from this site that Lake Benmore takes its name. In 1877, the religious leader Te Maiharoa, a descendant of Te Rākaihautū, led his people up the Waitaki to establish a settlement at Te Ao Mārama/Lake Benmore (near modern-day Ōmārama), to demonstrate his assertion that the interior had not been sold by Kāi Tahu, and therefore still belonged to the iwi. Although the settlement was eventually broken up by the constabulary, and the people forced to retreat back down the river, the episode is a significant one in the long history of Te Kerēme (the Ngāi Tahu Claim).

There are two sites 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, and they are “*Para Arero*” and “*Kahuika*”. Para Arero was a kāika nohoaka (traditional areas of communal living on tribal lands) and kāika mahika kai site. Located approximately halfway down the southern boundary of the application site and situated between the property boundary and the Ōhau River braid tuna (eels) and turnips were gathered and harvested for the winter months.

At the southern point of the application site is Kahuika a kāika (a small settlement) located at the junction of the Ōhau, Pūkaki and Takapō Rivers where mahika kai such as tuna (eels) and turnips were gathered. Said to mean ‘meeting of the waters’ the top of Lake Benmore (Waitaki River) was deceiving

and treacherous with long smooth swirls on the surface and strong twisting currents under the surface.

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

The extensive wetland areas formerly associated with the river once provided important spawning, rearing and feeding grounds for all of these species and were among the richest mahika kai areas on the river. Although many of these species have now been depleted, the Waitaki remains a nationally important fishery.

The Waitaki Valley holds one the country's major collections of māori rock art, and the river itself seems to have acted as a form of cultural "barrier" in rock art design. The surviving Māori rock art remnants are a particular taonga of the area, providing a unique record of the lives and beliefs of the people who travelled the river.

Mauri (life force) is a key principle of the environmental practices of mana whenua. When the mauri of the environment is intact, the landscape reflects the experience of tīpuna. Today, however, the mauri of the landscape of Te Manahuna has already been significantly degraded due to landscape modification and intensive land-use practices. Papatipu rūnaka are concerned that this proposal will add to those pressures by introducing visual and environmental impacts that pose risks to environmental and cultural values and make the traditional landscape less visible. These impacts extend to potential impacts on archaeological values and those related to stormwater management.

## **6. EFFECTS OF THE PROPOSAL ON THE RELATIONSHIP PAPTIPU RŪNAKA HAVE WITH THEIR ANCESTRAL LANDS AND WATERS**

### **6.1 Biodiversity**

According to the Wildlands Report (Contract Report No. 6620) provided to AECL by Nova, the proposed solar farm site is located within the Pūkaki Ecological District, which is characterised by dry outwash plains between Lakes Takapō and Benmore, mostly below 600 m above sea level. The Lake Ruataniwha Conservation Area surrounds much of the proposed solar farm site, made up of several discrete areas of land. One area lies along most of the Twizel River side of the proposed solar farm property, with another area on the Ōhau River side nearest to Lake Ruataniwha. The Ben Ōhau Conservation Area is approximately five kilometres to the north and the Glenbrook Conservation Area is approximately 10 kilometres to the south.

According to the monitoring samples undertaken by Wildlands during their site visits to the application site, they discovered a number of threatened weta, grasshopper, skink and butterfly species (refer to Table 1) and at-risk vascular plants located within the application site, primarily within indigenous vegetation habitats or along the boundary of the site.

Table 1: Indigenous species found on site. Source: Wildlands Letter dated 9 May 2024

Common Name	Scientific Name	Threat Level
Tekapo Ground Weta	<i>Hemiandrus furoviarius</i>	Threatened – Nationally Endangered
Minute Grasshopper	<i>Sigauss minutus</i>	Threatened – Nationally Vulnerable
Otago Short-Horned Grasshopper	<i>Phaulacridium marginale</i>	Not Threatened
McCann's Skinks	<i>Oligosoma maccanni</i>	Not Threatened
Southern Alps Gecko	<i>Woodworthia "Southern Alps"</i>	At Risk - Declining
New Zealand Blue Butterfly	<i>Zizina oxleyi</i>	Under Threat

Whilst the development has been redesigned to exclude high density areas of indigenous vegetation, large expansive areas of shading generated by the solar panels will ultimately have some impact on the biodiversity of the expansive site. Altering the biodiversity of this large site in conjunction with the loss of biodiversity of the adjoining Far North Solar site and the surrounding land that has been converted to irrigated farmland risks a significant loss of biodiversity within Te Manahuna. For manawhenua, once the biodiversity is lost, it is lost forever, and it cannot be restored.

## 6.2 Landscape

The application site adjoins the Ōhau River and Lake Benmore, which are both identified as a Site and Area of Significance to Māori (SASM) in the Mackenzie District Plan, in addition to being a site of National Significance, Area of Visual Vulnerability, an Area of Outstanding National Landscape and an Outstanding Natural Feature (see Figure 2 below) primarily for its cultural and visual amenity values, avifauna habitat values, as well as areas of wetland. It extends along the Ōhau river from Lake Benmore into, and including, parts of Lake Ruataniwha and its margins. There are two locations where this area overlaps with the boundary of the proposed solar farm property.

The landscape of Te Manahuna and particularly north of Lake Benmore has been altered significantly over the past three decades with the introduction of intensive dairy, beef and deer farming and irrigation pivots. Irrigation has changed the visual appearance of the land, it has changed the makeup of the soils, it has resulted in the loss of indigenous biodiversity, and it has introduced new plant species in an environment that was once a unique alpine outwash plain consisting of rare ecosystems and critically endangered vegetation.

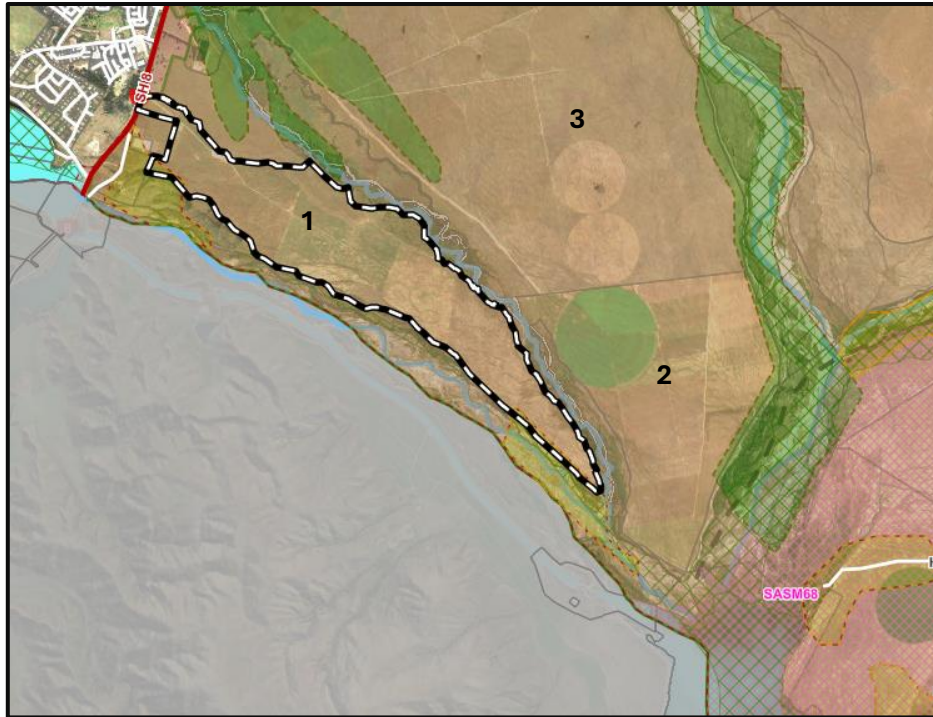


Figure 2: Relevant Policy Overlays from the Mackenzie Proposed District EPlan with the application site identified with a black and white outline.

The proposed Nova solar farm (#1 on Figure 2 above) in addition to the Far North Solar Farm (Fast Track Bill process) located on Section 3 SO 384036 (#2 on Figure 2 above) across Twizel River from the application site, in conjunction with the proposed (RM180052) agricultural intensification of Lot 2 DP 470213 (#3 on Figure 2 above) will significantly alter the Te Manahuna landscape.

The proposed development would be highly visible from several key vantage points in the area, including State Highway 8 along the Twizel straight, the Ruataniwhā Dam, the length of road along the Lake Ōhau canal, and from Lake Ōhau. Given the significant landscape modification already present in the catchment, the addition of this activity would add another layer to the history of loss in Te Manahuna. For example, the ancient trails manawhenua took to gather mahika kai and seasonal food could disappear entirely and the landscape will appear more mechanical in nature, further adding to the significant landscape impacts of the hydro dams.

Papatipu rūnaka are concerned that the current proposal will further erode the ability of whānau to recognise the landscape of their tīpuna.

### 6.3 Wai/Water

The way in which manawhenua view wai (water) is culturally unique. Despite this loss of customary right, wai remains an integral part of manawhenua iwi life. Maintaining and enhancing the health and well-being of wai is an ongoing concern for manawhenua. Wai is a living taonga, classified under Article II of the Tiriti o Waitangi. A sacred treasure, wai symbolises the wairua (spiritual) link between the past and the present.

Water catchments in Te Manahuna/Mackenzie District were central to the wellbeing and survival of tūpuna (ancestors) living in the rohe. Awa (rivers such as the Ōhau, Twizel, Pūkaki and Takapō) provided natural pathways for accessing inland areas from the coast, where many resources could be gathered. The whole catchment was important for harvesting resources. The decline in water quantity from changes in land use, an increase in demand for irrigation, changes in the local and national climate resulting in less snow fall/melt is placing additional pressure on lake and river levels.

A reduction in lake and river levels and warmer temperatures is contributing to an increase in algal blooms, which when influenced by higher nitrate levels within groundwater results in lower water quality.

Customs and cultural values associated with wai and mahika kai were an integral part of traditional life; maintaining the life supporting capacity of wai remains central to the lives of present day for manawhenua. However, due to the ongoing degradation of the environment as a result of a land use change manawhenua are no longer able to participate in their customs and traditional practices, creating fragmentation of the cultural landscape. This poses risks to the practice of kaitiakitanga, as a result of kaitiaki being unable to teach their mokopuna as they were taught by their kaitiaki.

## **7. FUTURE OPPORTUNITIES**

Whilst undertaking a visit to the application site on 6 November 2024, representatives of Nova and papatipu rūnaka discussed potential restoration and matauranga māori projects that could take place on site if Nova were successful in obtaining the necessary resource consents for the solar array.

Papatipu rūnaka stress that further consultation is necessary to finalise future opportunities, and it is thought Nova would invite papatipu rūnaka to participate in the formulation of draft conditions to ensure matauranga māori is provided for throughout the lifespan of the solar array project. Despite this, the following opportunities have been identified by papatipu rūnaka as a starting point for discussion:

### Restoration Projects:

- Planting of low flammable indigenous plants along the northern and southern side boundaries of the property in conjunction with Department of Conservation input.

### Matauranga Māori:

Matauranga Māori focusses on maintaining and enhancing the mauri of a resource or ecosystem through māori environmental management. This is done by:

- Undertaking soil health and loss sampling prior to the solar panels are installed and then again at years 1, 5, 10, and 15 to measure the direction of progress and whether contaminants and/or metals are accumulating in the soils under the solar panels.
- Undertaking ecological health sampling prior to the solar panels are installed and then again at years 1, 5, 10, and 15 to ascertain whether the solar array has disrupted the life force and caused negative effects to the ecosystem and the resources it contains.
- Undertaking lizard and skink population surveys prior to the solar panels are installed and then again at year 1, 5, 10, and 15 to ascertain whether the solar panels are impacting lizard and skink populations. Where mauri is strong, the resources and taoka will flourish.
- Undertaking water quality sampling prior to the solar panels are installed and then again at years 1, 5, 10, and 15 to measure levels of contaminants coming from the site (if there are coming from the site).

If the mauri is weakened or undermined, it will result in the decay of the resource, or low productivity.