

Memorandum				Auckland PO Box 91250, 1142 +64 9 358 2526 Hamilton PO Box 1094, 3240 +64 7 960 0006			Tauranga PO Box 13373, 3141 +64 7 571 5511			
	Wellington Level 4 Huddart Parker Building 1 Post Office Square PO Box 11340, 6142 +64 4 385 9315			Christchurch PO Box 110, 8140 +64 3 366 8891		PO Box 1028, 9348		Dunedin PO Box 657, 9054 +64 3 470 0460		
Attention:		Dave Moule, Planner								
Company: Boffa Misko		all Ltd								
Date: 16 Septemb		per 2022								
From: Bec Ramsay		y, Associate Principal Landscape Architect								
Message Ref:		Rangiriri West Solar development, Initial Landscape and Visual Comments								
Project No:		BM211050								

Boffa Miskell Limited (BML) has been engaged by Rangiriri Solar Farms to undertake an Assessment of Landscape Effects¹ (ALE) for a proposed solar energy development at 241 Glen Murray Road, Rangiriri West (otherwise referred to as The Site in this report). This memo provides an outline of the initial findings of the ALE and has been prepared for inclusion in an application for Ministerial referral of the project for fast-track consenting².

The Site

The Site is zoned General Rural within both the Operative and Proposed (Decisions Version) Waikato District Plan.

A site visit was carried out 14th April 2022 to view the site and its surroundings. Photographs from a previous site visit by others, aerial photography, google maps and further photography to prepare visual simulations, were also used to prepare this report.

Summary of findings

The initial analysis outlined below indicates that the Project will not have any significant adverse landscape, visual or natural character effects.

Methodology

This initial assessment considers the natural character, landscape and visual effects of the Proposed Development and has been undertaken with reference to the Quality Planning Landscape Guidance Note (Ministry for the Environment)³ and its signposts to examples of best practice, including: the UK guidelines for landscape and visual impact assessment⁴, the New Zealand Landscape Institute Guidelines for Landscape Assessment⁵ and the Draft Aotearoa Landscape Assessment Guidelines Te Tangi a te Manu⁶.

A full methodology will be outlined in the ALE, but in summary identified effects are rated using a seven-point scale which ranges from 'very low' to 'very high'. That scale, together with the corresponding meaning in terms of Resource Management effects scales (i.e. less than minor, more than minor and significant) is, illustrated in the following table:

¹ The assessment will consider the natural character, landscape and visual effects of the Proposed Development and will be undertaken with reference to the Draft Aotearoa Landscape Assessment Guidelines Te Tangi a te Manu. Te Tangi a te Manu recognises the term 'landscape effects' as all-encompassing, and that visual effects and natural character effects are a subset of landscape effects. The assessment will provide separate chapters to discuss landscape, visual and natural character effects, but is referred to throughout as an Assessment of Landscape Effects in accordance with the Guidelines.

² Under the COVID-19 Recovery (Fast-track Consenting) Act 2020.

³ https://www.qualityplanning.org.nz/index.php/node/805

⁴ Guidelines for Landscape and Visual Impact Assessment, 3rd Edition, 2013

⁵ Best Practice Note Landscape Assessment and Sustainable Management 10.1, NZILA

⁶ Te Tangi a te Manu Aotearoa New Zealand Landscape Assessment Guidelines [Final Draft], NZILA

Tangi a te	Very	Low	Low-	Moderate	Moderate-	High	Very High	
Manu seven-	Low		Moderate		High			
point scale								
Resource	<u>Less</u>	٨	<u>Ninor</u>	More than Minor				
Management	<u>than</u>	_						
Effects Scale	Minor							
			Significant ⁷					

Landscape Context

The Site is predominantly flat farmland that is used for grazing and cropping. There are three houses on the property, all accessed off Glen Murray Road. Other than the farm sheds and stock yards around the houses, there are no other buildings within the site. There are 220kV lines (HLY-OTA-A) and towers crossing through the centre of the site that the proposed solar farm will connect to. There are also 110kV lines (HAM-MER-B) and poles crossing the eastern edge of the site and local supply powerlines along Glen Murray Road.

There are several artificial open drains across the site, fencing, irrigation infrastructure, farm tracks and areas for silage storage. Existing vegetation on site is typical of the surrounding area, including shelter and amenity planting around the houses and farm buildings with shelter planting along some of the fence lines and the drainage channels.

There are a number of small wetland areas throughout the site, within which three different types of wetland habitats were identified. In general, diversity of species within the identified wetlands are low, and the vegetation composition overall is dominated by low growing exotic species. Grazing and stock disturbance is evident in the wetlands. The proposed development avoids disturbance in these areas, and they will be retained as part of the development.

The site is relatively well contained within the wider landscape, being situated within an area of farmland between the Waikato River to the north and east and the lakes and low hills to the south and west (**see Figure 1**). The settlement of Rangiriri is located to approximately 1.6km to the northwest, beyond the Waikato Expressway.

The site and surrounding land is zoned General Rural and used primarily for rural activities. Other land use in the surrounding area includes the Te Kauwhata Transport Depot located to the northeast at the intersection of Glen Murray Road and Te Ohaki Road and the Maurea Marae located 1.4km to the east of the Site on Te Ohaki Road. Huntly and Huntly Power Station are located approximately 10km to the south of the Site. There are dwellings along Te Ohaki, Glen Murray and Rotongaro Roads, frequently surrounded by shelterbelts, hedgerows, and amenity planting to provide wind protection and enclosure, refer **Figure 2**.

In the Waikato District Landscape Study (2018)⁸ the Site is identified as being within the Wetlands Character Area. This Character Area is defined by the extensive wetlands and peat lakes and generally flat low-lying landscape. There are no outstanding natural features or landscapes within the Site or its immediate vicinity. The closest Outstanding Natural Feature (ONF) to the Site is Lake Whangape, located approximately 2.5km to the west. The Waikato River is identified as a Special Amenity Landscape (SAL) and is located approximately 1.3km to the east and north of the Site. Significant Natural Area (SNA) have been identified around some of the lake edges in the surrounding landscape, however there are no SNA's within the Site (see **Figure 3**).

Visual context

Views of the Site from the surrounding landscape are limited due to the flat low-lying nature of the Site and the presence of shelterbelts and amenity planting around houses and farm buildings, along roads, drainage channels and paddock boundaries. A range of representative views to the Site will be provided and discussed in the ALE.

⁷ Significant adverse effects' means those of major magnitude and importance. 'Significant adverse effects' applies to particular RMA situations, namely as a threshold for the requirement to consider alternative sites, routes, and methods for Notices of Requirement under RMA s171(1)(b), the requirements to consider alternatives in AEEs under s6(1)(a) of the 4th Schedule. It may also be relevant to tests under other statutory documents such as for considering effects on natural character of the coastal environment under the NZ Coastal Policy Statement (NZCPS) Policy 13 (1)(b) and 15(b).

⁸ Boffa Miskell, *Landscape Study of the Waikato District*; Prepared for Waikato District Council (June 2018)

The northern shore of Lake Rotongaro is approximately 520m south of the Site boundary. Public access to the Lake is limited with no formed public access track to or around the Lake. The site is only partially visible as a small component in a wider landscape view from Rangiriri and Te Whero's Historic Reserve in Rangiriri.

The Site has a road frontage of approximately 775m along Glen Murray Road, with all other site boundaries set well back from the nearby roads (along which the houses are generally situated). From Rotongaro Road the site boundary is set back approximately 1.1km with no houses in the intervening paddocks. From Ohaki Road, the site boundary is set back between 650m and 1.8km from the road with only four houses accessed off long driveways in the intervening paddocks (accessed off Ohaki Road or Glen Murray Road). These setbacks limit visibility of the site from the surrounding roads.

Views from dwellings are limited by the site being well set back from the surrounding road boundaries to the east and west and the presence of Lake Rotongaro to the south. Views from houses on Glen Murray Road are limited by vegetation within the site, along the roads and around the private properties. There are very few houses nearby (refer to **Figure 2**). Views from the nearest properties to the site which may experience adverse visual effects will be assessed in the ALE.

Statutory provisions

Key provisions of the Operative Waikato District Plan include:

Objective 3.4.1 Landscapes and visual amenity values, as viewed from public places, are retained and enhanced.

Policy 3.4.2 Natural features and landscapes, including locally distinctive landforms and prominent ridgelines, and general visual amenity values should be protected from inappropriate subdivision, use and development, in particular by:

- avoiding or mitigating adverse effects on natural features such as indigenous vegetation, lakes, rivers and mountains
- ensuring that the visual effects of buildings can be absorbed without significant adverse effects on the landscape
- locating buildings and development so as to integrate them with the surrounding landscape and backdrops, to avoid dominating the landscape
- avoiding, remedying or mitigating as soon as practicable, the adverse visual effects of earthworks and vegetation clearance by:
 - retaining vegetation, and
 - restoring natural contours and replanting with appropriate species, and
 - limiting the area of soil exposed by earthworks and the length of time it is exposed, and
 - locating and constructing roads, tracks and vehicle accesses to minimise their visual impacts.
 - avoiding or mitigating the adverse effects on visual amenity from noxious, dangerous, offensive or objectionable materials.
- locating national grid transmission lines in ways that avoid or minimise adverse effects on visual amenity.

Policy 3.4.4 Rural landscapes and amenity values should be maintained by avoiding cumulative adverse effects of subdivision, use and development.

Policy GRUZ-03 of the PDP aims to ensure rural character and amenity is maintained and that "The attributes of areas and features valued for their contribution to landscape values and visual amenity are maintained or enhanced."

Policy from the PDP Infrastructure chapter (AINF-P21) includes:

"Enable the investigation, development, operation, maintenance and upgrading of renewable electricity generation activities, including domestic and community scale distributed renewable electricity generation, provided that adverse effects are avoided, remedied or mitigated."

The Waikato Regional Policy Statement (RPS) provides the current framework for the sustainable management of the Region's natural resources. Within the RPS, Policy 12.1 is relevant to the Region's outstanding natural features and landscapes. Under this policy, Policies 12.1.1 and 12.1.2 and 12.1.3 require

the identification, protection and identification of values of outstanding natural features and landscapes to tāngata whenua. Policy 12.3 requires that areas of amenity value are identified, and those values maintained and enhanced. No outstanding natural features and landscapes or special amenity landscapes identified in the RPS are located within the Site.

Proposed Development

The proposed development involves the construction, operation and maintenance of an approximately 130 MW photovoltaic solar farm. It will consist of approximately 200,000 solar panels set across a 274.16-hectare site. Refer **Figure 2**.

The solar farm is anticipated to be constructed of bifacial monocrystalline panels mounted on a metal tracking system aligned in North-South rows and panels will rotate East-West (+/- 60°). While detailed design is ongoing, it is currently anticipated that:

- Cabinets housing the inverters, transformer and associated equipment to convert DC energy
 produced by the solar panels into AC energy required by the national grid will be placed around the
 site and connected by buried cabling.
- The development will also include ancillary buildings, structures, access roads, cabling and infrastructure.

The site perimeter is anticipated to be made secure by the construction of 2.0metre high deer fencing and CCTV camera mounted on 2.5m high poles will be placed at certain points around the site.

A new 220kV substation will be constructed adjacent to the National Grid transmission line (tower HLY-OTA-A0029) which runs across the Site. The solar farm will be connected to this National Grid substation by a new section of transmission line, including supporting poles within the Site. The substation, which is to be approximately 6,000m² in area, will be accessed via the internal access tracks off Glen Murray Road. The componentry within the new substation will generally be between 5-10m in height, with limited vertical infrastructure (gantries and telecommunications poles) being up to c.25m in height.

The Project will also contain an energy storage facility on an area adjacent to the substation, comprised of battery storage systems within storage cabinets. The configuration of the battery storage system is subject to detailed design and may for example provide for DC-couple batteries spread around the site or a single AC-coupled battery which would most likely be located adjacent to the substation.

The Project will also include environmental enhancement areas for planting of native species and screen planting, along with retaining existing mature vegetation and enhancement of existing wetland habitats and waterways. As the specific details of screening/mitigation planting (including indigenous species type which is being discussed with mana whenua) are still being determined as part of the preparation of the ALE and consent application, the visual simulations appended to this report include indicative screen planting. Mitigation through strategically located tree planting will reduce visual effects from selected viewpoints.

Initial Assessment of Landscape Effects

Landscape and visual impacts result from natural or induced change in the components, character or quality of the landscape. Usually these are the result of landform or vegetation modification or the introduction of new structures, facilities or activities. All these impacts will be assessed to determine their effects on landscape character and quality, amenity as well as on public and private views.

The form and layout of the development has been considered and mitigation measures have been included to limit the degree of landscape character and visual effects, see **Figure 4**. These mitigation measures include:

- To assist with screening views and limit the perception of landscape change, planting is included in the following areas:
 - o a 3.5m wide planted buffer along the Glen Murray Road boundary.
 - Shelterbelt planting along the eastern fence line boundary of Block 1 for approximately 90m from Glen Murray Road.
 - Shelterbelt planting along the western fence line boundary of Blocks 2 and 4 from Glen Murray Road for approximately 350m back to where the existing shelterbelt starts.

- An approximately 15-17m setback of panels from the carriageway of Glen Murray Road (12m from the road reserve edge).
- All identified wetland areas within the Site will have a minimum 10m setback for any development activity. Fencing will exclude livestock from these areas (where practical) and support biodiversity and habitat protection and natural enhancement over time.

The preliminary assessment below takes account of proposed mitigation.

The proposed solar farm will result in a change from horticulture and agriculture use to an area containing energy infrastructure. The landscape currently includes built development, including electricity lines/towers, drainage channels, farm buildings/infrastructure and houses, however there is a predominance of open space associated with large, relatively flat paddocks.

The development of the Site will include installation of panels on pile foundations across most of the property and establishment of a substation occupying and area of approximately 5,500m². Overall, the general form and pattern of the fields and mature tree lines within the site and across the wider landscape will be retained, maintaining a key component of the existing rural landscape character.

Existing and proposed fencing and planting at the site boundaries and the shelterbelts present across the site will limit the potential to appreciate development of the whole site from any public vantage point. The low profile of the solar panels set in the flat landscape means that visibility of the Solar Farm will be low, limiting the perception of the extent of any landscape change. Any effects on the landscape character will be very localised and in the range of **very low** to **low-moderate adverse**.

The flat site topography means planting proposed along the Glen Murray Road boundary and to fill gaps or extend existing fence line shelter belt type planting at key locations on site boundaries, will assist in integrating the proposal into the landscape. With the proposed planting being predominantly indigenous, there would also be opportunities to enhance biodiversity values in this area.

Visual effects are very localised, being mainly limited to the three rural roads adjacent to and around the Site – Glen Murray Road (north), Rotongaro Road (west) and Te Ohaki Road (east). Views from the road corridor are transient views only and with the proposed mitigation in place, will generate **neutral** to **low adverse** effects, largely dependent on the distance between the road and site boundary. Viewpoints VS1A/VS1B and VS2A/VS2B are representative of views to the site from Glen Murray Road, with and without mitigation planting (after 5years growth), see **Figure 5a** for viewpoint locations. The full ALE will include multiple visual simulations and panorama photography to provide a full understanding of representative views of the Site and proposed development. The two simulations attached have been provided to give an initial understanding of the proposed development in its landscape context.

Where the development site boundary borders Glen Murray Road, there are two dwellings on the opposite side of the road. One of these (#272) is situated approximately 100m from the nearest proposed solar panels. They will have filtered views from any south-west facing windows through the established roadside trees. Once mitigation planting proposed along the site boundary has matured, visual effects will be further reduced. The second dwelling opposite the site is at 250 Glen Murray Road. There is a variety of vegetation surrounding the dwelling and no solar panels are proposed directly opposite. The nearest panels will be approximately 130m to the south-west and it appears that there are no windows oriented in that direction from the house.

For the majority of dwellings in the area, views are mitigated by distance, and/or screened by landform or shelterbelts, hedgerows, and amenity trees; and thus, views towards the Site are limited and overall effects will be **very low – low-moderate adverse**.

The Site has been highly modified to support agricultural and horticultural land use. Due to the high level of landscape modification, experiential values associated with **natural character values are low**. Existing ecological values are generally low across the Site, except in the areas of identified wetland which will not be modified as part of the proposal.

When considering the Site's existing nature, the biotic attributes (particularly existing wetland and waterway areas) are expected to improve and regenerate over time. The existing wetland areas will be fenced off from grazing animals and left to regenerate and thus provide habitat for indigenous flora species. In time, the wetland habitats across the Site will increase in naturalness. Experiential attributes associated with a rural

environment will reduce due to the presence of numerous structures that cover the landscape and partially obscure the landform. Overall, given the site's existing low level of natural character, the proposal is considered to have a **neutral** to **very low beneficial** effect on natural character values.

The potential for cumulative effects has also been considered. Another solar farm development is proposed (understood at the time of writing to be subject to resource consent, but not yet approved) on a site at the corner of Te Ohaki Road and Glen Murray Road. At a landscape character area scale, there will be no adverse cumulative effects on the Wetlands Character Area of which the two sites are a part. The solar farm developments do not require large scale earthworks, permanent land modification or vegetation removal that could impact the physical landscape and appreciation of its key characteristics at a landscape scale.

At a local scale, there will be cumulative landscape and visual effects associated with a change in land use along Glen Murray Road from pasture/agriculture farming to solar farming. The two solar developments are within properties are that are approximately 660m apart. Both solar farms propose road boundary planting that will, in time, screen views to the proposed solar panels within the paddocks on the southern side of the road.

The boundary planting will alter the experience of driving along Glen Murray Road, where there are currently intermittent views out over the paddocks past fences, hedgerows, houses and farm buildings. While the experience will change and will be cumulative when (if) both solar farms are constructed, the low sensitivity of the landscape to change and magnitude of change is considered **neutral** to **low-moderate adverse**.

The primary cumulative effect will be views to a vegetated road boundary rather than views out across paddocks. Change does not, of itself, necessarily constitute an adverse landscape or visual effect. In this case and in this landscape context, the landscape will retain a predominantly rural character.

Conclusions

On the basis of the above initial assessment, landscape character effects will be **very low to low-moderate adverse** and visual effects are expected to range from **very low to low-moderate adverse**, dependent on the nature and duration of the view experienced and distance. There will be **neutral to low beneficial** effects on natural character.

The initial analysis therefore indicates there will not be significant adverse landscape, visual or natural character effects associated with the proposed solar farm.



RANGIRIRI WEST SOLAR PROJECT

LANDSCAPE AND VISUAL ASSESSMENT - REFERRAL LAYOUT GRAPHIC SUPPLEMENT

AUGUST 2022



RANGIRIRI WEST SOLAR PROJECT



FIGURES

Site Context FIGURE 1:

Site Layout FIGURE 2:

Landscape Character FIGURE 3: FIGURE 4: Landscape Mitigation

FIGURE 5A: Viewpoint Locations - Photographs

FIGURE 5B: Viewpoint Locations - Visual Simulations

VISUAL SIMULATIONS

Glen Murray Rd looking Southwest (Existing View vs Proposed View following construction) VS1A:

Glen Murray Rd looking Southwest (Proposed View vs Proposed View after 5 years) VS1B: Glen Murray Rd looking Southeast (Existing View vs Proposed View following construction) Glen Murray Rd looking Southeast (Proposed View vs Proposed View after 5 years) VS2B:

SITE CONTEXT PHOTOGRAPHS

View from Te Wheoro Historic Reserve

View from corner of Te Ohaki Rd and Glen Murray Rd View from Glen Murray Rd (western site boundary) VP5:

View from Rotongaro Rd (Oakridge Rise entrance) VP6:

View from Rotongaro Rd (Poultry Farm entrance) VP7:

View from Rotongaro Rd looking Northeast VP8:

View from Te Ohaki Rd looking West VP9:

Date: 29 July 2022 | Revision: 0
Plan prepared for IGP by Boffa Miskell Limited
| Drawn: PMo | Checked: -Project Manager: s 9(2)(a)

Site Layout

~

Date: 19 August 2022 | Revision: 0
Plan prepared for IGP by Boffa Miskell Limited
| Drawn: PMo | Checked: -

Project Manager: s 9(2)(a)

380 m 1.15,000 @ A3 DA4 Sources. Eagle Technology, Land Information New Zealand, OEBCC, Community maps contributors

Projection: NZGD 2000 New Zealand Transverse Mercator

RANGIRIRI WEST SOLAR FARM

Landscape Character

က

Date: 19 August 2022 | Revision: 0
Plan prepared for IGP by Boffa Miskell Limited
| Dirawn: PMo | Checked: -

Project Manager: s 9(2)(a)

Landscape Mitigation

Date: 19 August 2022 | Revision: 0
Plan prepared for IGP by Boffa Miskell Limited
| Dirawn: PMo | Checked: -Project Manager: s 9(2)(a)

Date: 17 August 2022 | Revision: 0
Plan prepared for IGP by Boffa Miskell Limited
| Drawn: PMo | Checked: -Viewpoints

Project Manager: s 9(2)(a)

RANGIRIRI WEST SOLAR FARM

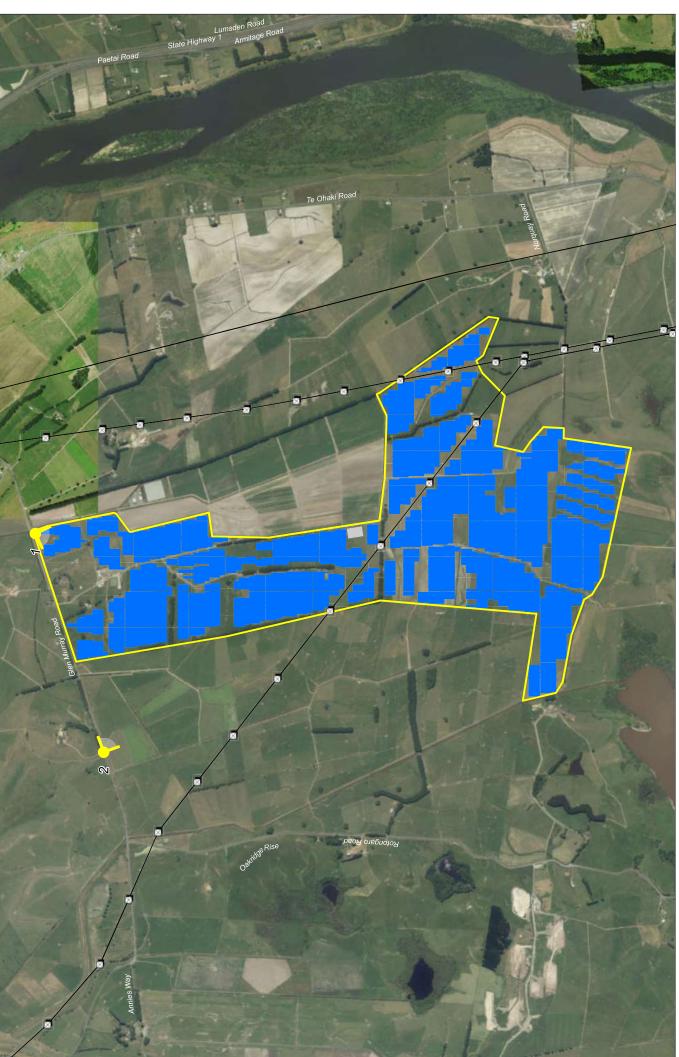
VPs (Sims)

ГЕСЕИD





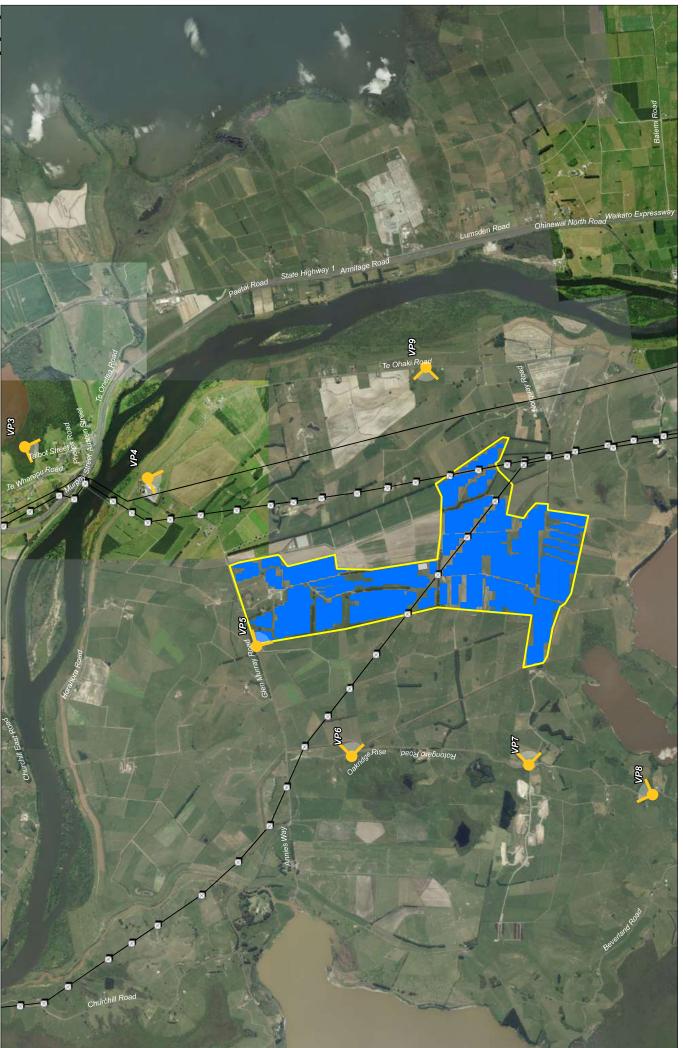
www.boffamiskell.co.nz Boffa Miskell



RANGIRIRI WEST SOLAR FARM

www.boffamiskell.co.nz

Boffa Miskell



Project Manager: s 9(2)(a)

VIEWPOINT

Boffa Miskell

www.boffamiskell.co.nz

Proposed View following construction Date: August 2022 Revision: 0
Prepared for IGP by Boffa Miskell Limited
| Drawn: PMo | Checked: -RANGIRIRI WEST SOLAR PROJECT Glen Murray Rd looking Southwest DRAFT Horizontal Field of View
Vertical Field of View
Projection
Image Reading Distance MZTM Northing : 1787 716 mE is in NZTM Northing : 5 853 778 mN is in Cround Elevation : 6 m is in Date of Photography: 11 August 2022

Existing View





VIEWPOINT

RANGIRIRI WEST SOLAR PROJECT Date: August 2022 Revision: 0
Prepared for IGP by Boffa Miskell Limited
| Drawn: PMo | Checked: -Glen Murray Rd looking Southwest

Proposed View after 5 years

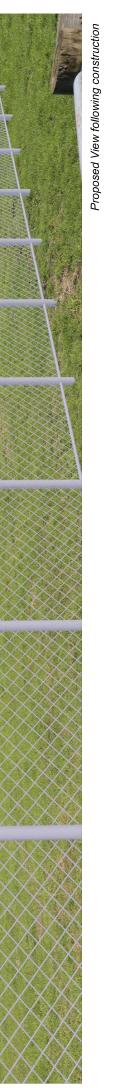
Horizontal Field of View
Vertical Field of View
Projection
Image Reading Distance

MZTM Easting :1787 716 mE
MZTM Northing :5853 778 mN
Ground Elevation :6 m
Date of Photography: 11 August 2022

www.boffamiskell.co.nz Boffa Miskell

Project Manager: S 9(2)(a) DRAFT





VIEWPOINT

Proposed View following construction

RANGIRIRI WEST SOLAR PROJECT Date: August 2022 Revision: 0
Prepared for IGP by Boffa Miskell Limited
| Drawn: PMo | Checked: -Glen Murray Rd looking Southeast

Project Manager: S 9(2)(a)

Horizontal Field of View
Vertical Field of View
Projection
Image Reading Distance

MZTM Reasting : 1786 490 mE et al. NZTM Northing : 5 853 395 mN Ground Elevation : 6 m Et al. Date of Photography: 11 August 2022

Boffa Miskell



Existing View

www.boffamiskell.co.nz

File Ref: BM211050_ReferralLayout_A3L.indd

Proposed View after 5 years

Project Manager: S 9(2)(a)

Horizontal Field of View
Vertical Field of View
Projection
Image Reading Distance

Boffa Miskell

www.boffamiskell.co.nz

MZTM Reasting : 1786 490 mE et al. NZTM Northing : 5 853 395 mN Ground Elevation : 6 m Et al. Date of Photography: 11 August 2022

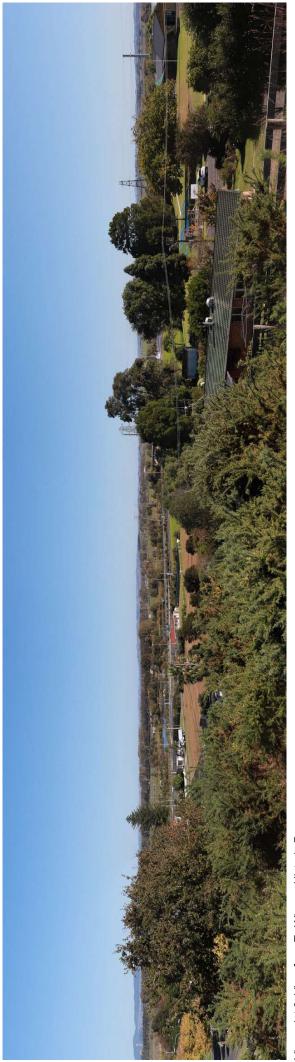


Proposed View following construction



RANGIRIRI WEST SOLAR PROJECT

DRAFT



Viewpoint 3: View from Te Wheoro Historic Reserve



Viewpoint 4: View from corner of Te Ohaki Rd and Glen Murray Rd



DRAFT

Site Context Photos Date: August 2022 Revision: 0
Prepared for IGP by Boffa Miskell Limited
| Drawn: PMo | Checked: -

Project Manager: s 9(2)(a)



Viewpoint 5: View from Glen Murray Rd (adjacent to western site boundary)



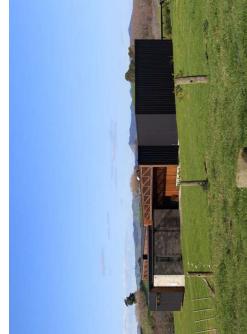
Viewpoint 6: View from Rotongaro Rd (Oakrdige Rise entrance)

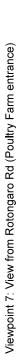
Project Manager: s 9(2)(a)

VIEWPOINTS

RANGIRIRI WEST SOLAR PROJECT Site Context Photos

DRAFT







Viewpoint 8: View from Rotongaro Rd looking Northeast

www.boffamiskell.co.nz Boffa Miskell

Site Context Photos

Date: August 2022 Revision: 0
Prepared for IGP by Boffa Miskell Limited
| Drawn: PMo | Checked: -Project Manager: s 9(2)(a)

DRAFT

Boffa Miskell www.boffamiskell.co.nz