

FAR NORTH SOLAR FARM LTD.

Proposed Solar Farm Moroa Road, Greytown

Assessment of landscape effects

8 December 2022

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Prepared by	Simon Cocker Landscape Architect Principal SCLA	
Reviewed by	Simon Cocker Landscape Architect Principal SCLA	
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1.0 INTRODUCTION

Simon Cocker Landscape Architecture (SCLA) has been engaged by Far North Solar Farms Ltd. (FNSF Ltd), to undertake a landscape, and visual amenity assessment for a photovoltaic solar farm on Moroa Road, Greytown (refer to Figure 1).

The proposed development involves minor earthworks to establish the appropriate contours and foundations for a solar farm, followed by construction of the solar panels and associated infrastructure either under or over ground transmission to the substation at the eastern end of Moroa Road.

This document will focus upon a description of the site, the characteristics of the proposal and an analysis of the landscape, identification of any affected parties or individuals, an assessment of the landscape, and visual amenity effects of the activity.

Specific to the type of activity under consideration, reference has also been made to the BRE planning guidance publication¹ which includes guidance for the assessment of landscape and visual effects associated with ground mounted solar PV systems.

The site is located within the Primary Production Zone. It is understood that the activity status of the application is a restricted discretionary activity.

2.0 ASSESSMENT METHODOLOGY

The assessment has been prepared by a Registered Landscape Architect with reference to the Te Tangi a Te Manu (Aotearoa New Zealand Landscape Guidelines). The assessment methodology is detailed in Appendix 2. In addition, this report has been prepared in accordance with the NZILA (New Zealand Institute of Landscape Architects) Code of Conduct².

Effects Ratings and Definitions

The significance of effects identified in this assessment are based on a seven-point scale which includes very low; low; moderate-low; moderate, moderate-high, high, and very high. For the purpose of this assessment, a rating of low – moderate equates to minor in terms of RMA terminology.

Desktop study and site visits

In conducting this assessment, a desktop study was completed which included a review of the relevant information relating to the landscape and visual aspects of the project. This information included:

- The Wairarapa Combined District Plan (2012);
- Plan titled 'Module General Arrangement Layout – [175 MWp], Rev E';
- AEE prepared by WWLA Ltd., July 2022;
- Visual simulations prepared by Virtual View, dated November 2022 (contained in Appendix 4);
- Boffa Miskell Ltd. Wairarapa Landscape Study. 2010;
- Wildland Consultants Ltd. Wairarapa Plains Ecological District Survey report for the Protected Natural Areas Programme. 2000. Dept of Conservation, and;
- Aerial photography, Wairarapa District Council GIS mapping, Bing Maps (aerial photography), and Google Earth.

¹ BRE Trust. *Planning guidance for the development of large scale ground mounted solar PV systems*. October 2013

² Contained in Appendix 1 of: http://www.nzila.co.nz/media/50906/registered_membership_guide_final.pdf

A visit was undertaken on the morning of 24 April 2022. The weather conditions during the visit were sunny with light winds.

Subsequent to the first iteration of this assessment being prepared, the proposed area of the solar farm – being ‘the Site’ – has been expanded. Assessment of these expanded areas has been based on site photography (captured during the site visit by SCLA), aerial photography, photos captured by FNSF Ltd., and visual simulations prepared by Virtual View.

Visual simulations

The visual simulations are contained in Appendix 4. The simulations have been prepared in accordance with the NZILA Best Practice Guide (BPG 10.2³)

The camera alignment was achieved by using handheld GPS positions and heights from LINZ topographic data. The photos were aligned using a wider terrain model of the contextual landscape.

The larger grade mitigation planting have been simulated at 3m high and the smaller at 2.5m. This represents height at the time of commissioning. The spacing of the trees has been modelled at 1.5m in a double staggered row.

The panels have been simulated the panels in their flat position at 2.2m high.

3.0 THE PROPOSAL

Far North Solar Farm Ltd seeks consent to construct a 175 MWp photovoltaic solar farm within the subject site. The proposal is illustrated in Figure 2a. The site covers an area of 237 Hectares, with the most of the area covered with tracking solar panels, covering an actual area under the panels of 66Ha. The panels have 6m spacing between the rows, and grazing will occur on the entire site.

As is evidenced in Figure 2a, the proposed Site straddles Moroa Road. To the north of the road – and bounded on its southern edge by the road, the solar farm occupies an area of 170 ha, and extends for a distance of 2km along Moroa Road.

To the south of the road, two discrete areas are proposed, both of which are bounded by Moroa Road on the northern boundary. The western-most part of the farm will occupy 44ha, and the easternmost will occupy 24ha.

In total for the site, 4,720 arrays will be placed along with 32 Inverter Stations (each approximately the size of a container) and 300,000 solar panels (595WP Canadian Monocrystalline PV Module currently planned, each 2.1 x 1.1m). The panels will fixed to solar tracking mounting structure through the mounting legs which will be secured by screw piles or driven piles in the top soil.

The panels will be mounted on 9,200 tracking tables, with the panels mounted in portrait format (2P) and 32 panel long tables. These single-axis solar trackers track the sun east to west, rotating on a single axis 2.2m above the ground. Each table will have a small electric motor to drive the table, moving once about every 15 minutes. The panels will have a centre height of 2.2m (refer to plate 1 below) and a maximum height at full-tilt (55°) of 4m. .

The spacing between the rows of tables will be 6m, with a pitch (centre to centre) of 10m. Therefore, since the panels are 2.1m in length, and each pitch being 10m, there will be a 6m gap at noon when the panels are horizontal.

³ https://nzila.co.nz/media/uploads/2017_01/vissim_bpg102_lowfinal_gQFss9X.pdf

The fence will most likely be constructed with wooden poles and 2.1m in height. This will be set 3m inside the existing 5 wire fence, with the gap between being for tree planting.



Plate 1. Example images of proposed infrastructure

The entire area will be grazed by the existing owner.

There has been no earthworks or physical modification of the site undertaken by the applicant prior to consents being lodged. Vegetation clearance (removal of shelterbelts within the footprint of the farm), and earthworks to provide a contour suitable for installation of the solar arrays will be required.

Figure 2a illustrates how the applicant intends to undertake planting to create a visual buffer along all boundaries of the three separate areas of the Farm. Where existing shelterbelts currently define the external boundary, these shall be retained and reduced in height to 3.0m, and supplemented by a new vegetative screen as proposed for the balance of the external boundaries.

It is proposed that the screen plantings comprise *Cryptomeria japonica* (Japanese cedar) hedges planted as a double staggered row (at 1.5m spacings). The hedges will be maintained to a minimum height of 4.0m, so that screening is afforded to the proposed structures from external locations, but also avoiding shading on the solar arrays.

The size / grade of these plants will vary depending on the level of mitigation sought. Where potentially affected receptors have been identified and where the level of potential adverse effect exceeds 'low' as defined in Appendix 2, the proposed plants will be approximately 2.5m – 3.0m in height at the date of commissioning. These will be contract grown so ensure a supply of plants of this size. Elsewhere, the *Cryptomeria* will be planted as 1.5m tall trees and so will be 2.0 – 2.5m tall at the date of commissioning.

The use of shelterbelt plantings has been adopted in deference to the existing landscape character of the area – which is structured by shelterbelts.

The timing of the development is orientated around disturbance and stabilisation of the site (with grass cover and planting) through the Spring period with infrastructure installation through the Summer period 2024/25 and commissioning in December 2025. Planting is expected to occur in June – August 2024.

The site will be enclosed by a 2.1m security fence. The fence will be constructed from wire mesh, with galvanized steel posts and will be visually permeable. The posts and mesh will be left to weather to a dull grey galvanized finish. The fence will be located on the inside of the shelterbelt, so that the fence will be visually screened once the shelter belt has become established

Operational activities

The Site will be accessed via a crossing off Moroa Road. The crossing will be constructed from concrete, and accessways within the Site will be constructed from metal.

The site will not be lit.

It is anticipated that the site will generate very little traffic. The Site will be grazed by the existing landowners.

4.0 EXISTING ENVIRONMENT

4.1 The site context and character

Figure 1 illustrates the location of the Site. It is situated some 4km to the south west of Greytown, within the Wairarapa Valley. In broad terms, the Wairarapa Valley forms a part of the Palins and Lowlands landscape type. Formed by down warping along the West Wairarapa Fault. The valley is open at its southern end, forming Palliser Bay, between the Rimutaka Range on the west and the Aorangi Range on the east. These two range features dominate views from within the Valley (refer to photos 1, 2 and 3).

The Ruamahanga River and its tributaries are also a dominant feature of the plains, and have essentially created them through deposition of river gravels.

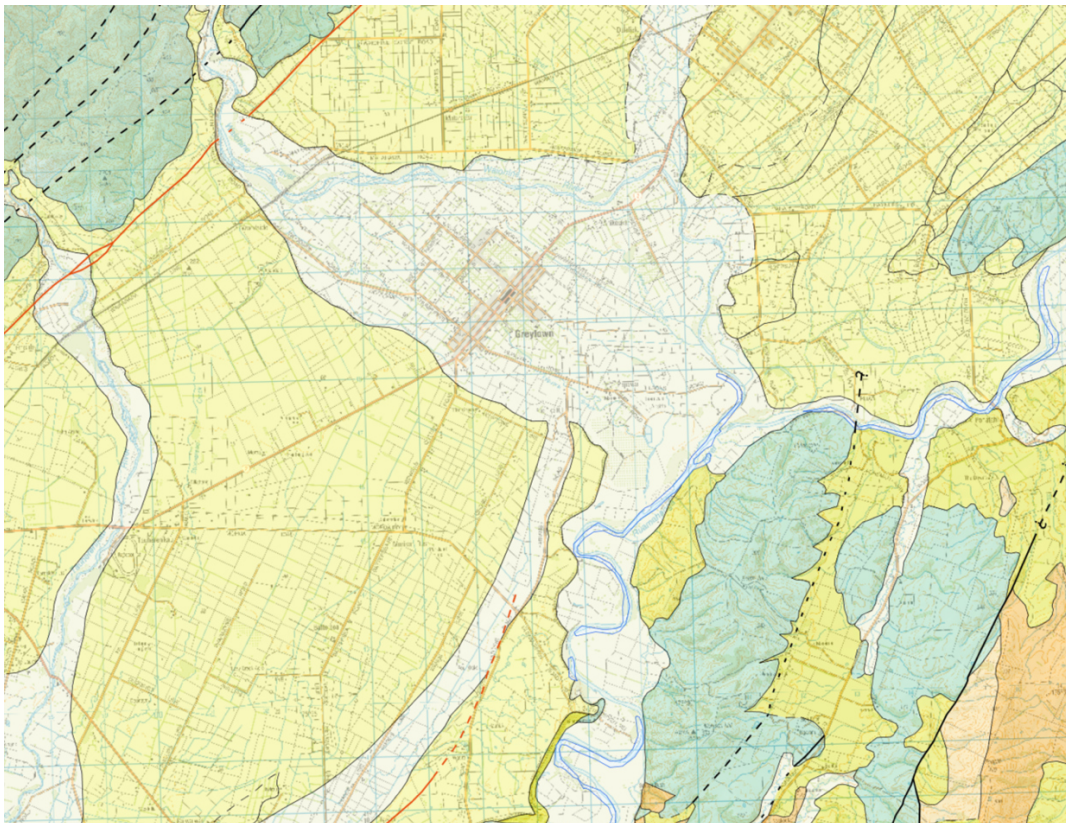


Plate 2: Geology

River gravels and alluvium form the underlying geology (refer to Plate 2). The fertility and ease of development for agriculture meant that the plains and lowlands were readily developed for agriculture and they have been extensively modified.

The plains are intensively grazed, with areas in horticultural crops declining during the past decade, apart from the areas in grapes around Martinborough and Gladstone, and also more recently north of Masterton. The majority of the towns and settlements in the Wairarapa are located on the plains.

The plains, can be broadly separated into two, the northern plain comprising flat, gently undulating to rolling land most of which is intensively grazed with shelterbelts, amenity plantings and small areas of native forest remnants. The northern plain is also where most of the Wairarapa towns are located (Featherston, Greytown, Carterton, Masterton) and consequently a smaller subdivision and settlement has occurred around each of these towns. The southern plain is occupied by Lake Wairarapa.

The subject Site is positioned within the Central Plains character area, as defined in the Wairarapa Character Study⁴. This document describes the landscape as being defined by flat to gently undulating, free-draining, old and recent gravel fans, terraces and floodplains⁵, but with lower rainfall it is drier than the western and southern plains. The Wairarapa Plains Ecological District PNAP survey identifies the subject Site as occupying an area described as forming an 'Older aggregation plain, and explains that it is:

Formed of marine gravel terraces, through Pleistocene infilling of a former seaway, and wide spreading shallow fans of greywacke detritus carried from the eroding Tararua Range by the Tauherenikau, Waiohine, and Waingawa Rivers during the last glacial stage of the Pleistocene era. These fans have stony surfaces, but a loess veneer lends a smoothness to the terraces (a maximum altitude 300 m a.s.l.).

Compared to the Western Plains – which is close to the Tararua Ranges – the Central Plains landscape has a feeling of openness and expansivity (refer to photos 1 - 5). To the east, the distinctive profile of the Nga Waka - a - Kupe and Maungaraki Ranges are prominent landmarks and backdrops.

The Ruamahanga River is a dominant feature in this character area. It meanders tightly, hugging the eastern side of the plains due to the large quantities of gravel which have been swept down from the Tararua Ranges.

The alignment of roads lines is based on a modified grid pattern which reflects the flat topography of the plains and historic settlement patterns.

Land use is quite diversified and includes dairy, sheep and beef farming, scattered areas of market gardening, and orchards. Some arable farming occurs in this area with irrigation systems on some of these properties. Land cover is dominated by grazed pasture and shelterbelts; whilst amenity plantings are less extensive than on the western plains. Indigenous vegetation is very limited and insignificant, limited to some distinctive stands of kanuka, and small isolated lowland forest remnants such as the 13 hectare Trenair (Lowes Bush) broadleaf remnant, and occasional groups or single trees.

Land parcels on the plains tend to follow a regular, linear pattern, with drainage ditches and shelter belts creating a distinctive patchwork. The area is characterised by well-established rural and rural-residential enclaves with some evidence of recent rural residential development. Smaller landholdings around the fringe of the urban areas between 1 and 4 hectares characterise the area with a larger scale and less dense settlement pattern further from the towns. Transmission line pylons are also present and in some places are prominent elements in this flat landscape.

⁴ Boffa Miskell Ltd. *Wairarapa Landscape Study*. 2010

⁵ As illustrated in Plate 1, the Site is underlain by Late Pleistocene River Deposits whilst the river corridors, and historic river alignments (including Greytown) are underlain by Holocene river deposits.

In pre-European times the central plains area was dominated by waterways and wetlands and so with the exception of elevated places was used mainly for temporary camps by people walking through the main valley. The area was valued because of the bountiful supply of animal and plant food sources found within the patchwork of swamps, streams and forests. The Ruamahanga River was used for transporting people and goods the length of the valley when bulk items were required to be moved between pa that were built on rises near the banks of the river. As modification of the land occurred following European settlement Maori started to build marae such as Papawai at Greytown and Puanani at Carterton, often becoming involved in agriculture and other introduced industry in those locations.

4.2 Statutory Matters

Wairarapa Combined District Plan (2021)

The Site is situated within the Primary Production Zone. This document describes the rural character of the zone as follows:

While rural properties vary in size, the rural environment is typically characterised by the following elements:

- *Open space, natural landscapes, and vegetation predominate over the built environment;*
- *Working productive landscape, with a wide range of agricultural, horticultural and forestry purposes, with potential for associated effects, including noises and odours;*
- *Large areas of exotic and indigenous vegetation, including pasture, crops, forest and scrublands;*
- *Range of built forms, from reasonably large utilitarian buildings associated with primary production, through to small utility buildings;*
- *Place where people live and work, with low population density;*
- *A road network ranging from unsealed local roads with low traffic volumes to busy State Highways; and*
- *Allotments self-serviced in terms of water supply and wastewater disposal*

4.3.1 Objective Rur1 – Protection of Rural Character & Amenity

To maintain and enhance the amenity values of the Rural Zone, including natural character, as appropriate to the predominant land use and consequential environmental quality of different rural character areas within the Wairarapa.

4.3.2 Rur1 Policies

- d) *Maintain and enhance the amenity values, including natural character, of the differing Rural character areas through appropriate controls over subdivision and the bulk, location and nature of activities and buildings, to ensure activities and buildings are consistent with the rural character, including an appropriate scale, density and level of environmental effects.*
- e) *Manage subdivision, use and development in a manner which recognises the attributes that contribute to rural character, including:*
 - (i) *Openness and predominance of vegetation*
 - (ii) *Productive working landscape*
 - (iii) *Varying forms, scale and separation of structures associated with primary production activities*
 - (iv) *Ancillary living environment, with an overall low population density*
 - (v) *Self-serviced allotments.*

16.3 Objectives, Policies and Methods: 16.3.1 Objective NUE1 – Management of Network Utilities

To enable the efficient development, maintenance and operation of network utilities, while avoiding, remedying or mitigating adverse effects on the environment.

- (d) *Avoid, remedy or mitigate any adverse effects of network utilities on the amenity and character of the Wairarapa environment, particularly outstanding landscapes and natural features.*

16.3.2 NUE1 Policies

- (a) *Controls on subdivision and land development as needed to avoid, remedy or mitigate the adverse effects of new development on the efficient operation of network utilities.*

Permitted Baseline

In terms of a permitted baseline, it is noted that the following activities within the Rule Zone are permitted under the WCDP:

- Structures (other than dwellings) up to 15 m in height;
- Intensive farming (not within 500 m of an existing dwelling); and
- Wastewater discharge from a municipal wastewater treatment system.

Standards that relate to these activities restrict the height of the structures, height in relation to boundary conditions and distance from other existing dwellings. Despite this, there is a fairly permissive baseline that provides for a wide range of rural activities, acknowledging that these activities have visual and landscape effects. Therefore, any potential landscape and visual effects associated with the proposed solar farm needs to be considered in the context of this permitted baseline and the activities that may be undertaken as of right (as per s95D(b), s95E(2)(a) and s104(2) of the RMA).



Plate 3: Aerial photo of agricultural shelter structures (Google Maps)



Plate 4: View from Fabian Road toward shelter structure illustrated in Plate 3. [Google Streetview]

On this basis it is reasonable to conclude that the permitted baseline for the site includes greenhouses or shelter structures which may extend across the entire, or a significant portion of the site, such as the example illustrated below in Plates 3 and 4. The illustrated structures are located some 4km to the east of the Site, and to the south east of Greytown.

4.3 Visual Catchment

Given the flatness of the plains landscape, the visibility and visual catchment of the subject Site is dictated – principally – by vegetation and separation distance. The main body of the Site is accommodated within a triangle formed by State Highway 2 to the north and north west, Moroa Road to the south, and Bidwells Cutting Road to the east. The eastern portion of the Site to the south of Moroa Road is defined by that road on its northern side, and flanked by Settlement Road to the south, and Battersea Road to the east.

The western portion to the south of Moroa Road is defined by Moroa Road on its northern side, but isolated from No. 1 Line (to the west), and Settlement Road (to the east) by a distance of some 1km.

Table 1 below lists the potentially affected properties.

As is apparent from Figure 1, Pharazyns Road extends from State Highway 53 (some 3.5km to the south). The road is little more than a farm track where it approaches and adjoins this portion of the Site, but to the south it provides access to a small number of residential properties. The closest of these is located near the junction with Phillips Road and is separated by approximately 1.5km.

Moroa Road offers direct views into the northern and southern portions of the Site for a distance of some 1,400m to the west, from the road where it adjoins those portions, and from the road as far as its junction with Battersea Road, some 350m to the east (refer to photos 1, 4, and 5 – 10). This gravel road experiences a low volume of traffic, and provides access to a limited number of properties.

At its western end – some 2.0km from the Site – a cluster of rural residential properties occupy the triangle formed by the diverging State Highway and Moroa Road, but these properties are set within a robust and containing structure of shelterbelts and other vegetation and this limits opportunities to gain views to the east.

Landholdings along the balance of Moroa Road tend to be large and there are few residential properties. Two properties are situated to the south of the road to the east of the western portion of the Site, and opposite the south western corner of the main portion of the Site. These are identified as Lots 1 and 2 DP 28980. The latter lot (identified on Google Maps as the Wairarapa Eco CSA Farm) is visually screened from the Site by vegetation.

In addition, two vacant residential lots are located on the south western corner of Moroa Road and Battersea Road. These lots offer views north across the road to the main portion of the Site.

A number of smaller rural residential properties are accessed from Settlement Road and Battersea Road (refer to photos 11 and 12). These properties are illustrated on Figure 3 and a number adjoin the southern portion of the Site. This portion of the Site is partially separated from these properties by a fragmented shelterbelt which is situated on the Site's southern boundary. Lots 1, 2, 3 and 4 DP 521225, and Lot 2 DP 308376 have the potential to gain more direct views into the southern portion of the Site. These properties are separated from the northern portion by Moroa Road and a distance of some 500m.

A number of properties on Battersea Road offer the potential to gain westerly views into the southern portion of the Site. These are identified as Lots 1, 2 and 3 DP 306239 and are separated from the Site by a distance of some 240m.

The majority of residential properties along Bidwells Cutting Road are located to the east of this road, are approximately 650m from the Site and are buffered from the road by vegetation within gardens.

Dwellings situated within smaller lots two larger holdings; being Lot 2 DP 490058 (refer to photo 3, 14 and 16), and Pt Lot 10 DP 3106 (refer to photos 2 and 13) offer the potential for westerly views to the Site over a distance of some 600 – 700m.

Views from the State Highway are in part restricted by shelterbelts which delineate paddock boundaries between the State Highway and Site. Distant and glimpse views are possible from isolated positions such as that represented by photos 17 – 20. The Site is a minimum of 900m from the State Highway. The majority of residential properties accessed from the State Highway tend to be screened from the Site. The exception to this is a recently constructed dwelling within Lot 3 DP 510604, located a minimum of 315m from the north western boundary of the subject Site.

Address	Legal desc.	Comment	Distance
Occupants of dwellings accessed from Bidwills Cutting Road (to the east and north east). Photo ref: 2, 3, 16, 13, 14			
244 Bidwills Cutting Rd (Owners brother, has signed a non-objection)	LOT 1 DP 490058 LOT 2 DP 468232 SECS 53	Two storey dwelling oriented to north west. View to west and south west partially screened by garden vegetation. Unimpeded views across landscape to Site (north west)	740m
263 Bidwills Cutting Rd	PT SEC 45 GREYTOWN SMALL FARM SETT BLK I (#263)	Single storey dwelling set back from road. Views to south west and west screened by garden vegetation. Views to north west more open and unimpeded	450m
268 Bidwills Cutting Rd	LOT 2 DP 490058 (#268)	Recently constructed two storey dwelling located within paddock to west of road. Panoramic views across the landscape to the northern, western and eastern quadrants, with little garden vegetation of any scale.	250m
269 Bidwills Cutting Rd	PT SECS 45 GREYTOWN SMALL FARM SETT BLK I (#269)	Two storey, set back from road on east side. Views to the west are partially screened by garden vegetation. Views to the south west are more open and unimpeded	530m
247 Bidwills Cutting Rd	LOT 1 DP 34841	Single storey dwelling. Views to west, south west and north west screened by garden vegetation..	430m
255 Bidwills Cutting Rd	PT SEC 46 SMALL FARM SETT BLK I HUANGARU	Single storey dwelling with views over low boundary planting to west. Views to north west screened by garden vegetation.	430m
273a Bidwills Cutting Rd	LOT 1 DP 468232 (#273A)	Recent subdivision (273a – 273d. All vacant. Open view to west across road to Site	440m
299 Bidwills Cutting Rd	LOT 1 DP 468232 (#299)	Single storey dwelling set back from eastern side of road with fragmented views to east and south east through garden vegetation and trees of some scale.	500m to west 190m to SW
312 Bidwills Cutting Rd (Property owner.).	PT LOT 10 DP 3106 LOTS 1 3 DP 76478 (#312)	Single storey dwelling set back from western side of road with unimpeded views to north and north west, fragmented views to the west, south west and south through garden vegetation.	175m to west 40m to south
-	SEC 1 SO 20659 MOROA DIST BLK I HUANGARU (Substation)	N/A	N/A
489 Bidwills Cutting Rd	LOT 1 DP 68272 BLK I HUANGARUA SD (#489)	Single storey dwelling. Views to north and north west screened by garden vegetation. Unimpeded views to north west and west.	50m to west 70m to north
Users of Bidwills Cutting Road. Photo ref: 2, 3, 16, 13, 14			
		Largely unimpeded views to the west across the landscape from the road corridor to the Site between #312 north to the dwelling within #224.	440m at southern end, 800m at northern end.
Occupants of dwellings accessed from Battersea Road (to the east and south east).			
#28 Battersea Road	-LOT 1 DP 65364 BLK I HUANGARUA SD	Dwelling contained by vegetation within garden on northern, western and southern quadrants.	190m to west 230m to north
#50 Battersea Road	LOT 1 DP 306239 BLK I HUANGARUA SD (#50 Battersea Road)	Views to north west and west partially blocked by structures and vegetation	225m
#72 Battersea Road	LOT 2 DP 306239 BLK I HUANGARUA SD	Single storey dwelling. Open views to west and north west across paddocks	280m
#80 Battersea Road	LOT 3 DP 306239 BLK I HUANGARUA SD	Single storey dwelling. Open views to west and north west across paddocks	225m
#84 Battersea Road	LOT 3 DP 306239 BLK I HUANGARUA SD	Single storey dwelling. Open views to west across paddocks. Views to north west and north toward Site screened by shelterbelt on boundary with #80.	240m to corner of Site
#100 Battersea Road	LOT 2 DP 327775	Single storey dwelling. Filtered views to west through garden vegetation. Potential for narrow oblique view through gaps in vegetation to north west across paddocks	200m to corner of Site

#100a Battersea Road	LOT 2 DP 327775	Dwelling screened by garden vegetation from westerly and northerly views	250m to corner of Site
Users of Battersea Road.			
		Road corridor largely contained by shelterbelt and hedgerow vegetation. Glimpse views to west across landscape to Site along the frontage of #80.	300m
Occupants of dwellings accessed from Settlement Road (to the south). Photo ref: 12			
#26 Settlement Road	LOT 4 DP 327775 (#26)	Single storey dwelling screened from views to north and west by garden vegetation, and additionally by boundary plantings with neighbour to west and north west (Shelterbelt retained on southern boundary of Site and trimmed to 3.0m)	240m
#38 Settlement Road	LOT 1 DP 302672 (#38)	Single storey dwelling close to road screened from views to north and west by boundary plantings with neighbour. Possible glimpse views to north east. (Shelterbelt retained on southern boundary of Site and trimmed to 3.0m)	300m
#54 Settlement Road	LOT 1 DP 308376 (#54)	Single storey dwelling with views to north and north west filtered by curtilage plantings. Shelterbelt along southern site boundary screen views to north east and north. Potential filtered views to north west to Site. (Shelterbelt retained on southern boundary of Site and trimmed to 3.0m)	180m
#56 Settlement Road	LOT 2 DP 308376 (#56)	Single storey dwelling with open outlook to north across Site.	75m
#76 Settlement Road	LOT 1 DP 521225 (#76)	Single storey dwelling. Views to north and north east filtered by curtilage planting to north of dwelling, and boundary plantings with neighbour top north east	260m to south west corner of Site
#90 Settlement Road	LOT 2 DP 521225 (#90)	Single storey dwelling. Views to north and north east screened by shelterbelt within #96.	310m to south west corner of Site
#97 Settlement Road	LOT 4 DP 521225 (#97)	Single storey dwelling with open views across landscape to north and north east (toward Site).	280m to eastern area 450m to main (northern) area
#96 Settlement Road	LOT 3 DP 521225 (#96)	Single storey dwelling with open views across landscape to north and north north east. Views to north east and east screened by shelterbelt on boundary with #56.	120m to eastern area 450m to main (northern) area
Users of Settlement Road. Visual simulation ref: 12			
		Road corridor largely contained by shelterbelt and other vegetation from junction with Battersea Road, west until the termination of the public road at #56. Glimpse views north to the Site at this point.	345m
Occupants of dwellings accessed from Moroa Road. Rep photos ref: 8			
#286 Moroa Road	LOT 1 DP 28920 BLK I HUANGARUA SD	Single storey dwelling with open views to north. Views softened by fragmented vegetation on northern / road boundary of property. (Shelterbelt on southern boundary of Site retained but trimmed to 3.0m)	160m
	LOT 2 DP 28980 BLK IV WAIRARAPA SD BLK I	CSA Wairarapa Eco Farm. Views internalised by structure of shelterbelts and vegetation.	Nil
	LOT 2 DP 570788	Vacant lot fronting onto Moroa Road, across road from Site. Views north to Site filtered by vegetation on northern boundary.	20m boundary to boundary
	LOT 3 DP 570788	Vacant lot fronting onto Moroa Road, across road from Site. Views north to Site filtered by vegetation on northern boundary.	20m boundary to boundary
Wairarapa Clay Target Club	LOT 1 DP 475450	Open views along Moroa Road and to north east to Site	1,000m
Users of Moroa Road. Rep photos ref: 1, 4, 5, 6, 7, 8, 9, 10			
		Travelling from the west, views to the main (northern) portion of the Farm, and western portion over a distance of some 1.4km and 900m respectively. The road corridor is, for the most part open and affords long views across the landscape to the north and south. Travelling from the east, views of the main portion of the Site are constrained until the junction with Battersea Road. Views to the eastern portion are not available until the receptor has passed the western (shelterbelt) boundary of #28 Battersea Road (LOT 1 DP 65364 BLK I HUANGARUA SD).	20m – 1.4km
Occupants of dwellings located on Pharazyns Road			
#18 Pharazyns Road	LOTS 8 9 10 D P 991 LOT 9 DP 28980	Distant views across landscape to north. Southern boundary of the Site is defined by a shelterbelt and this screens views into the Site from the south and south west.	1.5km
#1 Pharazyns Road	LOT 3 DP 78705 BLK IV WAIRARAPA SD	Distant views across landscape to north. Southern boundary of the Site is defined by a shelterbelt and this screens views into the Site from the south and south west.	1.7km

255A No 1 Line	Lot 3 DP 536011	Distant views across landscape to north. Southern boundary of the Site is defined by a shelterbelt and this screens views into the Site from the south and south west.	1.7km
Occupants of dwellings accessed from State Highway 2. (to the north) Rep photos ref: 17, 18, 19, 20.			
#1832 SH2	LOT 1 DP 510604	Two storey dwelling located close to, but screened from State Highway by garden vegetation. Building enclosed on eastern, western and southern sides by garden / curtilage vegetation. Possible glimpse views to south 'past' shed. These views screened by shelterbelts further to south	600m
#1822 SH2	LOT 1 DP 28920 BLK I HUANGARUA SD	Single storey dwelling located close to but screened from State Highway by garden vegetation. Building benefits from views to west and east, but views to south east and south (toward Site) are screened by proximate vegetation on adjoining property to south	690m
#1808B SH2	PT LOT 3 DP 5226 INT IN R/W BLK I HUANGA	Two storey dwelling set back from State Highway. Enclosed by vegetation with no views to Site although potential views to south east and Site from access.	425m
#1808 SH2	LOT 1 DP 84332	Two storey dwelling buffered from State Highway and set within a framework of vegetation. Long views across landscape to south east but Site largely screened by intervening shelterbelts.	700m
#1832A SH2	LOT 2 DP 510604	No dwelling within lot. Boundaries of lot vegetated with shelterbelts on eastern, southern and western sides. Potential view through gap in south western corner to south.	335m
#1832B SH2	LOT 3 DP 510604	Single storey dwelling located in north eastern corner of lot. Lot contained by shelterbelts on eastern, western and northern boundaries. Dwelling is oriented to west, and outlook primarily focused in this direction, but direct and unimpeded views to Site (south and south east) from the southern façade of the building and outdoor living areas. (Shelterbelt on northern portion of western boundary of Site retained but trimmed to 3.0m)	260m
Users of State Highway 2: Rep photos: Rep photos ref: 17, 18, 19, 20.			
		To the north of the main portion of the Site (between the Site and the State Highway), the 'grain' of the landscape has a north west – south east patterning, with the shelterbelts assuming this alignment. This precludes views to the Site until the receptor is at a point to the north west (as represented by VP19). From this point east to #1822 State Highway 2, glimpse views are possible across the flat landscape over a minimum distance of between 500 – 700m. These views tend to be fragmented by shelterbelt vegetation and are not easily gained when travelling along the road at speed.	500 – 700m

Table 1: Potentially affected properties / individuals

5.0 IDENTIFIED LANDSCAPE VALUES

The Wairarapa Character Study summarises the key landscape characteristics of the Central Plains Character Area (within which the subject Site is identified as being located) as follows:

- Flat to gently undulating topography
- Climatic conditions – drier than the western plains
- Sheep and beef farming, dairying, large scale orchard operation, pockets of rural-residential development on fringe of towns
- Very little native vegetation present
- Distinctive backdrops of the Waka and Maungaraki Ranges.

The study identifies the grid pattern which reflects the flat topography of the plains and historic settlement and how these are manifest in the land parcels on the plains which tend to follow a regular, linear pattern, with drainage ditches and shelter belts creating a distinctive patchwork.

The Wairarapa Ecological District PNAP survey identifies a number of sites within the vicinity of the subject Site – to the south west and east – but no features of values within the Site.

Within this context, when the landscape is assessed against the attributes set out as Table 1 in Appendix 3, it is determined that the landscape quality is at most, 'Ordinary'. It displays a distinguishable landscape structure,

characteristic patterns of landform and land cover often masked by land use, together with some features worthy of conservation, and some detracting features.

6.0 ASSESSMENT OF LANDSCAPE EFFECTS

The effects covered in this assessment, include those that can occur in relation to physical features, viewing audiences and visual amenity and/or on the site's contribution to the existing landscape character and amenity values, as follows:

- Landscape effects derive from changes in the physical landscape, which may give rise to changes in its character and how this is experienced. This may in turn affect the perceived value ascribed to the landscape and includes visual amenity effects under the ambit of 'experiential attributes'.

Impacts on landscape effects can result from 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 are assessed to determine their effects on landscape character and quality, rural amenity and on public and private views. In this report, the assessment of potential effects is based on a combination of the landscape's sensitivity and visibility and the nature and scale of the development proposal.

The nature of landscape effects (of which visual amenity effects is a component) generated by any particular proposal can, therefore, be:

- Positive (beneficial), contributing to the visual character and quality of the environment.
- Negative (adverse), detracting from existing character and quality of environment; or
- Neutral (benign), with essentially no effect on existing character or quality of environment.

Landscape and visual amenity effects can be rated on a seven-point scale from Very High, through to Very Low (refer to Appendix 2).

Change in a landscape does not, of itself, necessarily constitute an adverse landscape or natural character effect. Landscape is dynamic and is constantly changing over time in both subtle and more dramatic transformational ways, these changes are both natural and human induced. What is important in managing landscape change is that adverse effects are avoided or sufficiently mitigated to ameliorate the effects of the change in land use.

The aim is to provide a high amenity environment through appropriate design outcomes, including planting that can provide an adequate substitution for the currently experienced amenity.

6.1 Physical - abiotic attributes

The key abiotic attributes of the site include the landform, its geology, and its hydrology. Overall, the abiotic attributes of the site and its context have subject to only limited modification and retain the characteristic flatness and spaciousness, albeit contained, punctuated and structured by shelterbelt plantings.

The proposal will, at most only require a very limited modification to the topography of the Site. Construction of the farm will necessitate only limited earthworks, the panels being supported on galvanised steel 'piles' that will be driven into the ground. Once the activity has been terminated, these piles can be removed.

The proposal will require no changes in the hydrological systems of the area.

6.2 Physical - biophysical biotic attributes

The biotic attributes of the Site are the living organisms which shape an ecosystem. The proposal will only necessitate the clearance of predominantly exotic shelterbelt vegetation within the Site, and the anticipated change to the biotic attributes resulting from the proposal will be very small.

6.3 Physical – land use and built attributes

As identified above, the Site occupies a location within a landscape which is rural and productive, but with pockets of rural residential settlement at the western end of Moroa Road, at its eastern end (accessed from Battersea Road and Settlement Road, along Bidwells Cutting Road to the east of the Site, and to the north west, accessed from the State Highway). The Site itself inhabits an expansive and pastoral landscape which is structured by shelterbelts.

The proposal will result in the Site being occupied by solar panels, although the land will retain its productive potential, with grazing or cropping operations possible between the rows of tables and beneath the panels.

The proposal seeks to visually screen the structures from potential external locations through the planting of vegetative screens. These features will replicate existing features which are present in the landscape, and so will maintain the existing patterning and character of the landscape.

It is considered that the change resulting from the proposal on the land use and built attributes of the Site will be very small.

6.4 Physical – archaeology and cultural attributes

The AEE reports that there are no overlays or significant heritage features associated with the Site.

6.5 Perceptual attributes

Experiential attributes comprise the interpretation of human experience of the landscape. This includes visible changes in the character of the landscape – its naturalness as well as its sense of wildness and remoteness including effects on natural darkness of the night sky.

The Site is situated within a flat landscape in which vegetation of a relatively small scale has the potential to terminate views. The majority of the potential public view locations associated with the Site are spatially separated from the Site, and as such, even where views to the Site are possible, the receptor will only be afforded views of the 'edge' of the farm.

Where not screened by existing, or proposed mitigation planting, this will appear as a low dark line, and the extent and scale of the farm will not be apparent. The proposed advanced grade mitigation planting will, as is evidenced by visual simulations 1 – 5, contained in Appendix 4, predominantly screen such views immediately with the exception of those periods when the panels are at 'full tilt'.

It is anticipated that the smaller grade mitigation screen planting will be partially effective immediately, and fully effective within a period of 1 – 2 years (refer to visual simulation 6). Only along Moroa Road will receptors traveling along the road gain immediate views of the proposed structures; these set some 4 – 5m back from the edge of the road reserve. Such views will be screened by the proposed mitigation planting within 3 – 5 years.

The proposed mitigation planting strategy has been developed such that it mimics the existing and characterising vegetative features within the landscape. Once established, the vegetative screen plantings will fully enclose the three areas of the Farm, and will appear consistent with the existing vegetative character of the landscape.

The visual catchment of the site is described in section 4.3 and the primary viewers can be gathered into three main groups, based on a commonality of views-types and geographical locations. Those associated with public viewpoints are as follows:

1. Users of Bidwills Cutting Road;
2. Users of Battersea Road;
3. Users of Settlement Road;
4. Users of Moroa Road;
5. Users of State Highway 2, and
6. Visitors to the Wairarapa Clay Target Club on Moroa Road.

Those associated with private viewpoints are as follows:

1. Occupants of dwellings on Settlement, Battersea and Bidwells Cutting Road.
2. Occupants of dwellings on Moroa Road;
3. Occupants of dwellings to the north (accessed from SH2), and;
4. Occupants of dwellings accessed from, or near Pharazyns Road.

Within these geographical groups, there exist subgroups, including occupants of residential properties, occupants of vehicles and pedestrians, and visitors to, or occupants of commercial premises and offices. The sensitivity to change within the visual environment of these subgroups varies, with occupants of dwellings being most sensitive, whilst users of the road / occupants of vehicles being least sensitive.

The sensitivities assumed, and applied are as follows:

1. Road users on Bidwills Cutting, Battersea and Moroa Road: Low to moderate number of individuals with a low to moderate sensitivity to change.
2. Road users on Settlement Road. Very low to number of individuals with a low to moderate sensitivity to change.
3. Users of State Highway 2. High number of individuals with a low sensitivity to change.
4. Visitors to the Wairarapa Clay Target Club on Moroa Road. Low to moderate number of individuals with a low sensitivity to change.
5. Occupants of residential properties on Bidwills Cutting, Battersea, Settlement and Moroa Road. Low to moderate number of individual with a high sensitivity to change.
6. Occupants of residential properties on Pharazyn Road. Very low number of individual with a high sensitivity to change.
7. Occupants of residential properties State Highway 2. Low number of individual with a high sensitivity to change.

The assessed level of effect are as detailed in Table 2 below..

Address	Legal descript.	Mitigation	Distance	Construc. effect	Short term	Med to long term
Occupants of dwellings accessed from Bidwills Cutting Road (to the east and north east). Visual simulation ref: 4, 5						
244 Bidwills Cutting Rd (Owner has signed a non-objection agreement)	LOT 1 DP 490058 LOT 2 DP 468232 SECS 53	Two storey dwelling oriented to north west. View to west and south west partially screened by garden vegetation. Views to the north west and the Site will be screened by the proposed advanced grade boundary screen planting.	740m	Low	Low	Nil
263 Bidwills Cutting Rd	PT SEC 45 GREYTOWN SMALL FARM SETT BLK I (#263)	Single storey dwelling set back from road. Views to south west and west screened by garden vegetation. Views to the north west and the Site will be screened by the proposed boundary screen planting.	450m	Nil	Very low	Nil
268 Bidwills Cutting Rd	LOT 2 DP 490058 (#268)	Recently constructed two storey dwelling located within paddock to west of road. Panoramic views across the landscape to	250m	Low to moderate	Low to moderate	Low to moderate

		the northern, western and eastern quadrants, with little garden vegetation of any scale. Views of the Farm from the ground floor of this dwelling, and outdoor living areas will be screened by the proposed advanced grade boundary screen plantings. Views from the first floor will be partially screened.				
269 Bidwills Cutting Rd	PT SECS 45 GREYTOWN SMALL FARM SETT BLK I (#269)	Two storey, set back from road on east side. Views to the west are partially screened by garden vegetation. Views to the south west are more open and unimpeded. Views to the Site will be screened by the proposed boundary screen planting.	530m	Very low	Very low	Nil
247 Bidwills Cutting Rd	LOT 1 DP 34841	Single storey dwelling. Views to west, south west and north west screened by garden vegetation.	430m	Nil	Very low	Nil
255 Bidwills Cutting Rd	PT SEC 46 SMALL FARM SETT BLK I HUANGARU	Single storey dwelling with views over low boundary planting to west. Views to north west screened by garden vegetation.	430m	Nil	Very low	Nil
273a Bidwills Cutting Rd	LOT 1 DP 468232 (#273A)	Recent subdivision (273a – 273d. All vacant. Open view to west across road to Site. Views to the Site will be screened by the proposed boundary screen planting.	440m	Very low	Low	Nil
299 Bidwills Cutting Rd	LOT 1 DP 468232 (#299)	Single storey dwelling set back from eastern side of road with fragmented views to east and south east through garden vegetation and trees of some scale. Views to the Site will be screened by the proposed boundary screen planting.	500m to west 190m to SW	Very low	Low	Nil
312 Bidwills Cutting Rd (Property owner.).	PT LOT 10 DP 3106 LOTS 1 3 DP 76478 (#312)	Single storey dwelling set back from western side of road with unimpeded views to north and north west, fragmented views to the west, south west and south through garden vegetation. Views to the Site will be screened by the proposed advanced grade boundary screen planting.	175m to west 40m to south	Low	Low	Low
-	SEC 1 SO 20659 MOROA DIST BLK I HUANGARU (Substation)	N/A		Nil	Nil	Nil
489 Bidwills Cutting Rd	LOT 1 DP 68272 BLK I HUANGARUA SD (#489)	Single storey dwelling. Views to north and north west screened by garden vegetation. Unimpeded views to north west and west. Views to the Site will be screened by the proposed advanced grade boundary screen planting.	50m to west 70m to north	Low	Low	Nil

Users of Bidwills Cutting Road.

		Largely unimpeded views to the west across the landscape from the road corridor to the Site between #312 north to the dwelling within #224. Views to the Site will over a 3 – 5 year period be screened by the proposed boundary screen planting.	440m at southern end, 800m at northern end.	Low	Low	Nil
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Occupants of dwellings accessed from Battersea Road (to the east and south east). Visual simulation ref: 3

#28 Battersea Road	-LOT 1 DP 65364 BLK I HUANGARUA SD	Dwelling contained by vegetation within garden on northern, western and southern quadrants.	190m to west 230m to north	Nil	Nil	Nil
#50 Battersea Road	LOT 1 DP 306239 BLK I HUANGARUA SD (#50 Battersea Road)	Views to north west and west partially blocked by structures and vegetation. Views to the Site will be screened by the proposed advanced grade boundary screen planting.	225m	Low	Low	Nil
#72 Battersea Road	LOT 2 DP 306239 BLK I HUANGARUA SD	Single storey dwelling. Open views to west and north west across paddocks. Views to the Site will be screened by the proposed	280m	Low	Low	Nil

		b advanced grade boundary screen planting.				
#80 Battersea Road	LOT 3 DP 306239 BLK I HUANGARUA SD	Single storey dwelling. Open views to west and north west across paddocks. Views to the Site will be screened by the proposed advanced grade boundary screen planting.	225m	Low	Low	Nil
#84 Battersea Road	LOT 3 DP 306239 BLK I HUANGARUA SD	Single storey dwelling. Open views to west across paddocks. Views to north west and north toward Site screened by shelterbelt on boundary with #80.	240m to corner of Site	Low	Low	Very low
#100 Battersea Road	LOT 2 DP 327775	Single storey dwelling. Filtered views to west through garden vegetation. Potential for narrow oblique view through gaps in vegetation to north west across paddocks. Views to the Site will be screened by the proposed boundary screen planting.	200m to corner of Site	Low	Low	Very low
#100a Battersea Road	LOT 2 DP 327775	Dwelling screened by garden vegetation from westerly and northerly views.	250m to corner of Site	Nil	Nil	Nil
Users of Battersea Road.						
		Road corridor largely contained by shelterbelt and hedgerow vegetation. Glimpse views to west across landscape to Site along the frontage of #80. Views to the Site will be screened by the proposed boundary screen planting.	300m	Very low	Very low	Nil
Occupants of dwellings accessed from Settlement Road (to the south). Visual simulation ref: 2						
#26 Settlement Road	LOT 4 DP 327775 (#26)	Single storey dwelling screened from views to north and west by garden vegetation, and additionally by boundary plantings with neighbour to west and north west (Shelterbelt retained on southern boundary of Site and trimmed to 3.0m)	240m	Low	Low	Very low
#38 Settlement Road	LOT 1 DP 302672 (#38)	Single storey dwelling close to road screened from views to north and west by boundary plantings with neighbour. Possible glimpse views to north east. (Shelterbelt retained on southern boundary of Site and trimmed to 3.0m). Views to the Site will be screened by the proposed boundary screen planting.	300m	Low	Low	Very low
#54 Settlement Road	LOT 1 DP 308376 (#54)	Single storey dwelling with views to north and north west filtered by curtilage plantings. Shelterbelt along southern site boundary screen views to north east and north. Potential filtered views to north west to Site. (Shelterbelt retained on southern boundary of Site and trimmed to 3.0m).	180m	Nil	Nil	Nil
#56 Settlement Road	LOT 2 DP 308376 (#56)	Single storey dwelling with open outlook to north across Site. Views to the Site will be screened by the proposed advanced grade boundary screen planting.	75m	Low	Low	Nil
#76 Settlement Road	LOT 1 DP 521225 (#76)	Single storey dwelling. Views to north and north east filtered by curtilage planting to north of dwelling, and boundary plantings with neighbour top north east. Views to the Site will be screened by the proposed boundary screen planting.	260m to south west corner of Site	Very low	Very low	Nil
#90 Settlement Road	LOT 2 DP 521225 (#90)	Single storey dwelling. Views to north and north east screened by shelterbelt within #96.	310m to south west corner of Site	Very low	Very low	Nil
#97 Settlement Road	LOT 4 DP 521225 (#97)	Single storey dwelling with open views across landscape to north and north east (toward main area of Site to north, and eastern area to north east).	280m to eastern area 450m to main (northern) area	Low	Low	Nil

		Views north to the main area of Site will be screened by the proposed advanced grade boundary screen planting. Longer filtered views to the main area of the Site will be screened over a period of some 3 – 5 years. Views north east to the eastern area of the Site will be screened by the proposed advanced grade boundary screen planting.				
#96 Settlement Road	LOT 3 DP 521225 (#96)	Single storey dwelling with open views across landscape to north and north north east. Views to north east and east screened by shelterbelt on boundary with #56. Views north to the main area of Site will be screened by the proposed advanced grade boundary screen planting. Longer filtered views to the main area of the Site will be screened over a period of some 3 – 5 years. Views north east to the eastern area of the Site will be screened by the proposed advanced grade boundary screen planting.	120m to eastern area 450m to main (northern) area	Low	Low	Very low
Users of Settlement Road.						
		Road corridor largely contained by shelterbelt and other vegetation from junction with Battersea Road, west until the termination of the public road at #56. Glimpse views north to the Site at this point. Views to the Site will be screened by the proposed advanced grade boundary screen planting.	345m	Very low	Very low	Nil
Occupants of dwellings accessed from Moroa Road. Visual simulation ref: 1						
#286 Moroa Road	LOT 1 DP 28920 BLK I HUANGARUA SD	Single storey dwelling with open views to north. Views softened by fragmented vegetation on northern / road boundary of property. ((Shelterbelt retained on southern boundary of Site and trimmed to 3.0m). Views to the Site will be screened by the proposed advanced grade boundary screen planting.	160m	Low	Low	Very low
	LOT 2 DP 28980 BLK IV WAIRARAPA SD BLK I	CSA Wairarapa Eco Farm. Views internalised by structure of shelterbelts and vegetation.	Nil	Nil	Nil	Nil
	LOT 2 DP 570788	Vacant lot fronting onto Moroa Road, across road from Site. Views north to Site filtered by vegetation on northern boundary. Views to the Site will be screened by the proposed advanced grade boundary screen planting.	20m boundary to boundary	Low	Low	Nil
	LOT 3 DP 570788	Vacant lot fronting onto Moroa Road, across road from Site. Views north to Site filtered by vegetation on northern boundary. Views to the Site will be screened by the proposed advanced grade boundary screen planting.	20m boundary to boundary	Low	Low	Nil
Wairarapa Clay target Club	LOT 1 DP 475450	Open views along Moroa Road and to north east to Site	1,000m	Low	Low	Nil
Users of Moroa Road.						
		Travelling from the west, views to the main (northern) portion of the Farm, and western portion over a distance of some 1.4km and 900m respectively. The road corridor is, for the most part open and affords long views across the landscape to the north and south. Travelling from the east, views of the main portion of the Site are constrained until the junction with Battersea Road. Views to the eastern	20m – 1.4km	Low to moderate	Low to moderate	Low

		portion are not available until the receptor has passed the western (shelterbelt) boundary of #28 Battersea Road (LOT 1 DP 65364 BLK I HUANGARUA SD).				
		Views to the Site will over a 3 – 5 year period be screened by the proposed boundary screen planting.				

Occupants of dwellings accessed from State Highway 2. (to the north) Rep visual simulation ref: 6

#1832 SH2	LOT 1 DP 510604	Two storey dwelling located close to, but screened from State Highway by garden vegetation. Building enclosed on eastern, western and southern sides by garden / curtilage vegetation. Possible glimpse views to south 'past' shed. These views screened by shelterbelts further to south. Views to the Site will be screened by the proposed boundary screen planting.	600m	Low	Low	Nil
#1822 SH2	LOT 1 DP 28920 BLK I HUANGARUA SD	Single storey dwelling located close to but screened from State Highway by garden vegetation. Building benefits from views to west and east, but views to south east and south (toward Site) are screened by proximate vegetation on adjoining property to south.	690m	Very low	Very low	Nil
#1808B SH2	PT LOT 3 DP 5226 INT IN R/W BLK I HUANGA	Two storey dwelling set back from State Highway. Enclosed by vegetation with no views to Site although potential views to south east and Site from access. Views to the Site will be screened by the proposed boundary screen planting.	425m	Low	Low	Nil
#1808 SH2	LOT 1 DP 84332	Two storey dwelling buffered from State Highway and set within a framework of vegetation. Long views across landscape to south east but Site largely screened by intervening shelterbelts. Views to the Site will be screened by the proposed boundary screen planting.	700m	Very low	Very low	Nil
#1832A SH2	LOT 2 DP 510604	No dwelling within lot. Boundaries of lot vegetated with shelterbelts on eastern, southern and western sides. Potential view through gap in south western corner to south. Views to the Site will be screened by the proposed boundary screen planting.	335m	Very low	Very low	Nil
#1832B SH2	LOT 3 DP 510604	Single storey dwelling located in north eastern corner of lot. Lot contained by shelterbelts on eastern, western and northern boundaries. Dwelling is oriented to west, and outlook primarily focused in this direction, but direct and unimpeded views to Site (south and south east) from the southern façade of the building and outdoor living areas. (Shelterbelt on northern portion of western boundary of Site retained and trimmed to 3.0m). Views to the Site will be screened by the proposed advanced grade boundary screen planting.	260m	Low	Low	Very low

Users of State Highway 2: Visual simulation ref: 6

		To the north of the main portion of the Site (between the Site and the State Highway), the 'grain' of the landscape has a north west – south east patterning, with the shelterbelts assuming this alignment. This precludes views to the Site until the receptor is at a point to the north west (as represented by VP19). From this point east to #1822 State Highway 2,	500 – 700m	Very low	Very low	Nil
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		glimpse views are possible across the flat landscape over a minimum distance of between 500 – 700m. These views tend to be fragmented by shelterbelt vegetation and are not easily gained when travelling along the road at speed. Views to the Site will over a 3 – 5 year period be screened by the proposed boundary screen planting.				
Occupants of dwellings located on or near Pharazyns Road						
#18 Pharazyns Road	LOTS 8 9 10 D P 991 LOT 9 DP 28980	Distant views across landscape to north. Southern boundary of the Site is defined by a shelterbelt and this screens views into the Site from the south and south west.	1.5km	Very low	Very low	Nil
#1 Pharazyns Road	LOT 3 DP 78705 BLK IV WAIRARAPA SD	Distant views across landscape to north. Southern boundary of the Site is defined by a shelterbelt and this screens views into the Site from the south and south west.	1.7km	Very low	Very low	Nil
255A No 1 Line	Lot 3 DP 536011	Distant views across landscape to north. Southern boundary of the Site is defined by a shelterbelt and this screens views into the Site from the south and south west.	1.7km	Very low	Very low	Nil

Table 2: Visual amenity effects summary

6.6 Social, cultural and associative attributes

Social, cultural and associative values are linked with individual's relationship with the landscape, their memories, the way they interact with and use the landscape and the historical evidence of that relationship.

The Site is separated from public viewpoints, and – it is understood – is not subject to any cultural or historical associations.

Research indicates that public attitudes to solar power are generally supportive, with a ShapenZ Poll reporting a 69% support for solar power as a preferred energy source⁶. This suggests that public attitudes to a facility generating solar power are unlikely to be negative particularly when the scale and 'intrusiveness' of the facility is minimal.

Overall therefore, it is the opinion of the author that the potential impact on social and associative attributes will be very small.

6.7 Summary of landscape effects

In summary, any landscape effects would be limited to an existing area that has been previously modified (cleared of vegetation). The proposal will result a very limited localised change in the abiotic and biotic attributes of the Site, but the landform and vegetation character of the Site will be maintained and will reflect the character of the surrounding area.

Whilst the proposal will result in a marked shift in the character of the Site, the degree of change is commensurate to the change resulting from the construction of horticultural shelter structures as depicted in Plates 3 and 4. Such structures, sometimes seen on the roadsides in the wider area can form a visual barrier of some 3.0 – 4.0m in height. Frequently constructed of white shelter cloth, these structures are visually dominant within the landscape.

⁶ http://www.windenergy.org.nz/store/doc/Wind_Energy_and_Public_Opinion.pdf

Notwithstanding this, the experiential attributes of the proposal would be affected at an immediate site level, with a very small number of proximate receptors affected to some degree, but the level of effect will be low or very low for the majority of individuals.

The social and associative attributes of the site will not be affected and overall it is the opinion of the author that the potential adverse landscape effects will be low.

6.8 Potential effects arising from solar panels

The potential for glare associated with non-concentrating photovoltaic systems which do not involve mirrors or lenses is relatively limited. PV solar panels are designed to reflect as little sunlight as possible (generally around 2% of the light received⁷), resulting in negligible glare. The reason for this is that PV panels are designed to absorb as much solar energy as possible in order to generate the maximum amount of electricity or heat. The panels will not generally create noticeable glare compared with an existing roof or building surfaces (NSW Department of Planning 2010).

Seen from above (such as from aircraft) they appear dark grey and do not cause a glare or reflectivity hazard. Solar photovoltaic farms have been installed on a number of airports around the world.

Other onsite infrastructure that may cause glare or reflections depending on the sun angle, include:

- Steel array mounting - array mounting would be steel or aluminium.
- Temporary construction site offices
- Inverter stations
- Transmissions line power poles.

The proposed facility will be contained by mitigation planting and – located within a flat landscape – will not be visible to the majority of viewers since few individuals are offered elevated views from dwelling toward the Site. Where these views are possible, they tend to be from the ‘rear’ of dwelling, so any glare will not affect primary views from these properties.

7.0 AFFECT ON THE STATUTORY FRAMEWORK

Objectives and policies of relevance for the Primary Production Zone focus on the mitigation of adverse effects, particularly on rural character and amenity. In addition, provisions seek the protection of outstanding natural landscapes and features. The Site does not contain / is not overlain by outstanding natural landscapes and features.

The site and its context retain a rural and productive character with a flat and low-lying landscape. Although the landscape has a spacious, open and exposed feeling, views are frequently curtailed or constrained by shelterbelts.

The proposal will maintain this character, with potential views of the structures being screened by shelterbelt / hedges which will be maintained to a height of around 4.0m. The structures within the Site will be of a limited height and will be fully screened by the proposed mitigation planting.

Thus, although the proposed facility will be of a extent and character that has the potential to contrast with the existing landscape character, the flatness of the terrain, the limited height of the proposed structures and the ability to create screening using relatively low mitigation plantings will ensure that the facility is visually contained and will not be evident from its landscape context. As such, it will maintain the existing rural character and will (with the exception of two neighbouring properties) generate a low level of potential adverse visual amenity effect.

⁷ Spaven Consulting, 2011, Solar Photovoltaic Energy Facilities: Assessment of potential for impact on aviation , report prepared January 2011, for RPS Planning and Development.

In addition, there is the potential to retain the productive capacity of the Site, with the ability to undertake grazing of small stock, or cropping under and between the structures.

It is the opinion of the author that the proposal will be consistent with the objectives and policies of the Plan where they relate to this assessment.

8.0 CONCLUSION

Far North Solar Farm Ltd seeks consent to construct a photovoltaic solar farm within the subject Site.

The site is located within the Primary Production Zone. It is not affected by any landscape overlays in the statutory documents.

The low-lying and flat landscape has a rural, spacious, open and exposed feeling although views are constrained by shelterbelts. Direct views into the Site are afforded from Moroa Road, but from other roads, views tend to be in part obscured by vegetation. Direct, and in some cases proximate views into the Site are possible from properties close to, or adjoining the various parts of the Site on Moroa Road, Settlement Road, Bidwills Cutting Road and to a lesser extent, State Highway 2.

The proposed facility will be of an extent and character that has the potential to contrast with the existing landscape character, but the flatness of the terrain, the limited height of the proposed structures and the ability to create screening using mitigation plantings will ensure that the facility is visually contained and will not be evident from its landscape context.

In addition, it is the opinion of the author that the proposed activity will have the potential to result in a similar outcome, or appearance as an activity that could occur under permitted agricultural practises such as the construction of shelter structures. Such structures are often white in colour and could potentially result in a greater level of visual intrusion.

It is the opinion of the author that the resulting landscape effect of the proposal will be low. The potential adverse visual amenity effect will be low for all receptors once the mitigation planting has become established (within a period of 5 years).

For a very small number of receptors – being users of Moroa Road – the level of effect will be low to moderate initially, diminishing to low within 3 – 5 years. Again, it is noted that, as a permitted activity the construction of agricultural shelter structures – for example – would result in a similar landscape change and level of effect for these individuals.

Similarly, the occupants of 268 Bidwills Cutting Road, the potential adverse effect on whom has been assessed as being low – moderate, could anticipate a similar level of effect from agricultural shelter structures.

The proposal will be consistent with the provisions of the statutory instruments where they apply to the scope of this report, and the proposal is considered to be appropriate from a landscape and visual perspective.

Simon Cocker

8 December 2022

