Response ID ANON-URZ4-5FYR-U

Submitted to Fast-track approval applications
Submitted on 2024-05-03 02:23:31

Submitter details

Is this application for section 2a or 2b?

2B

1 Submitter name

Individual or organisation name:
North Rakaia Limited

2 Contact person

Contact person name:
James Gu

3 What is your job title

Job title:
Chief Executive Officer

4 What is your contact email address?

Email:
s 9(2)(a)

5 What is your phone number?

Phone number:
s 9(2)(a)

6 What is your postal address?

Postal address:

s 9(2)(a)

7 Is your address for service different from your postal address?

No

Organisation:

Contact person:

Phone number:

Email address:

Job title:

Please enter your service address:

Section 1: Project location

Site address or location

Add the address or describe the location:

2830 North Rakaia Road and 317A South Two Chain Road
Bankside
Selwyn District
Canterbury

2830 North Rakaia Road is legally described as Lot 1-2 DP 81616, Lot 1 DP 73371, Lot 2 DP 78940, Lot 2 DP 347786, RS 40748 and SEC 1 & 3 BLK XIII SELWYN SD and has an area of 204.8585 hectares.

317A South Two Chain Road is legally described as SEC 1 SO 1509, Lot 2 DP 345273, RES 2327 & 5078, BLK IX X SELWYN SD – TNA and has an area of 160.818 hectares.

The total area of the two properties combined, being the application site, is 365.6765 hectares.

File upload:
2830 North Rakaia Rd & 317A South Two Chain Rd.pdf was uploaded

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North Rakaia ODP-240502-2.pdf was uploaded

Do you have a current copy of the relevant Record(s) of Title?

Yes

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Who are the registered legal land owner(s)?

Please write your answer here:

BH Growth Limited is the registered legal land owner.

Registered address and address for service:
118 Hayton Rd
Wigram
Christchurch 8042

Detail the nature of the applicant's legal interest (if any) in the land on which the project will occur

Please write your answer here:

North Rakaia Limited (the applicant) is a project management company. It is intended that North Rakaia Limited will lease the land from BH Growth Limited for as long as needed. Importantly, both companies are under the control of the same people. Lease or other legal agreements can be provided if required to demonstrate that the applicant has the necessary land owner approval to operate.

Section 2: Project details

What is the project name?

Please write your answer here:
North Rakaia Solar, Horticulture and Data Centres

What is the project summary?

Please write your answer here:

A staged solar farm providing 150MW of electricity initially, a 450MW substation, battery energy storage (up to 900MWh), data centres (up to 250MW), horticultural greenhouses (size to be determined) and cold storage, replacing an existing dairy farm.

What are the project details?

Please write your answer here:

The purpose of the project is to establish a solar farm facility, including connection to the national grid while also collocating energy intensive industries (data centres, greenhouses and cold storage) within the site to improve energy efficiency.

The proposed solar farm would occupy approximately 220 hectares (about 60% of the site). Associated with the panels would be mounting structures and inverters, a substation, battery storage, electrical equipment structures, a cable network and high voltage transmission cables connecting the solar farm to Transpower's network. As part of the solar farm, agrivoltaics development would be incorporated such as in animal husbandry, crop production and by also locating solar panels on buildings. The diversification of the solar farm will enable the retention of productive land for productive uses and the trialling of different innovations relating to the solar industry.

As solar generation has the disadvantage of being an intermittent resource, i.e. it is less controllable as it is subject to meteorological conditions, it is proposed to reduce this impact through the establishment of a battery energy storage facility and the collocating of energy intensive industries on the site. This would include the establishment of data centres (single storey buildings), horticultural greenhouses and cold storage. The locating of these

activities on site improves energy efficiency by reducing transmission/conversion losses, as well as providing financial benefits through both the use of lower-cost locally generated energy and by avoiding energy transmission costs. Additionally, by encouraging users on the development site to use new, high efficiency technology that allows for flexible energy usage, the need to draw from the grid during periods of bad weather or during the hours of darkness are reduced. An example of this could be the incorporation of a thermal mass that is charged when the solar array is producing excess energy and slowly released to heat the proposed greenhouses.

Describe the staging of the project, including the nature and timing of the staging

Please write your answer here:

It is proposed that the project would be carried out in three stages:
Phase 1A – 2024 - 2026
• Begin to add more boundary planting (fill gaps of existing extensive shelter belts on boundaries)
• Phase out dairy farming
• Begin to improve stream health
• Establish Transpower connection
• Establish an initial solar farm area (up to 220Ha)
• Establish associated infrastructure buildings including storage
Phase 1B – 2025 - 2026
• Establish the first part of data centre campus (up to 5Ha including battery storage)
• Establish the first part of the battery storage system
• Establish the first part of the greenhouses and cold storage
• Start sheep farming
Phase 2 – 2027 - 2028
• Expand the solar farm area to neighbouring land (up to 220Ha). This part is not included in this application.
• Establish the 2nd part of data centre campus (up to 5Ha including battery storage)
• Establish the 2nd part of the battery storage system
• Establish the 2nd part of the greenhouses and cold storage
Phase 3 – 2028 - 2029
• Expand the solar farm area further to neighbouring land (up to 220Ha). This part is not included in this application.
• Establish the 3rd part of data centre campus (up to 5Ha including battery storage)
• Establish the 3rd part of the battery storage system
• Establish the 3rd part of the greenhouses and cold storage

What are the details of the regime under which approval is being sought?

Please write your answer here:

The Resource Management Act and its subsidiary documents (the National Policy Statement on Renewable Energy, the National Policy Statement for Highly Productive Land, the Selwyn District Plan and the Land and Water Regional Plan).

Selwyn District Plan

The primary planning document for the Selwyn District Council is the Selwyn Partially Operative District Plan. Under this Plan the site has been identified as being within the General Rural Zone (GRUZ). The site has also been identified as being within the Plains Flood Management Overlay and the West Plans and Foothills for density.

The primary reasons for resource consent being required under the Rules of the Partially Operative District Plan would be as follows:

• Rule EI-R31 (Other Renewable Electricity Generation and Renewable Electricity Generation Activities). Under this rule the establishment of a new renewable electricity generation activity requires a Discretionary Activity resource consent.
• Rural Production, being the horticultural activity use of the site is provided for as a permitted activity (Rule GRUZ-R16)
• The data centre would be a Discretionary Activity on the basis of being an unlisted “Other Activity” (Rule GRUZ – R39). It is noted that it could be interpreted that the data centres would constitute a commercial activity and, if so, a non-complying activity consent would be required in accordance with Rule GRUZ-R9. However, the data centres are effectively giant electrical heaters that heat the greenhouses instead of fossil gas or coal for much high productivity than dairy farming.

There may be other reasons for resource consent being required, such as non-compliances with Rule Requirements for earthworks, but this will depend on the specific details of the proposal and the above represents the primary reasons for resource consent being required under Selwyn District Provisions.

It is also noted that part of the application site (the southwest boundary) adjoins the Rakaia River. As the property boundary does not perfectly follow the top embankment of the river area small slivers of the application site are within the Indigenous Biodiversity Management and Outstanding Natural Landscape overlays associated with the river. This is not considered to trigger any issues of significance as this portion of the site has been identified for restoring to sheep farm as it was, instead of intensive dairy farming. Under our proposal, pollutions to the soil and river will be reduced significantly.

The Rakaia River is also identified as a Site and Area of Significance (SASM 33 - Nga Wai) but the boundaries of the identified area do not extend onto the application site.

Canterbury Land and Water Regional Plan

The Canterbury Land and Water Regional Plan implements the Canterbury Regional Policy Statement and applies to activities above the Mean High Water Springs across the Canterbury Region. The Site is not located within the coastal environment and is not subject to the Canterbury Coastal Plan. Preliminary Investigations identify that resource consent would be required for the following reasons:
• Rule 5.8 specifies that the discharge of wastewater onto land is required to meet specification limitations which the proposal will not comply with. On this basis a Restricted Discretionary Activity consent is required.
• Rule 5.97 specifies that the discharge of stormwater onto or into land is a Discretionary activity where the conditions of Rule 5.95 or Rule 5.96 are not met. In this instance the proposal will not comply with the conditions and accordingly a Discretionary activity consent is required.

In addition to the above, it is noted that an analysis of existing water bores for the site may trigger the need for new or replacement water bores which may also trigger the need for resource consent.

All used water by the data centres are considered clean, similar to rain water.

National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health

A preliminary review of the Environment Canterbury Listed Land Use Register does not identify the site as being subject to potential contamination. It is intended that a Preliminary Site Investigation will be undertaken to confirm whether any requirements under the NES are triggered but at this stage resource consent is not required under these provisions.

If you seeking approval under the Resource Management Act, who are the relevant local authorities?

Please write your answer here:

The Selwyn District Council and The Canterbury Regional Council.

What applications have you already made for approvals on the same or a similar project?

Please write your answer here:

There have been no resource consent applications made for this project.

A referral application was made for a different proposal on the same site through the Covid-19 Fast Track Consenting process (Application No. 2023-155). It wasn't approved as it did not meet the requirements for that more limited fast track scope. The minister considered it is more appropriate to apply through local council. That proposal did not include an associated data centre, but did include a significant component of greenfield residential development which has now been removed.

Is approval required for the project by someone other than the applicant?

Yes

Please explain your answer here:

Transpower has accepted the applicant’s application for a new substation to be built on the site and a new transmission line that connects to the National Grid and is carrying out detailed investigation and designs at the moment. However Transpower’s work agreement is pending on the approval of the resource consent of this project.

An approval of variation on existing easements with Transpower for a new T-connection to an existing National Grid line by owner of either 301 Rakaia Terrace Rd, 375 Rakaia Terrace Rd or 34 Ardlui Rd, Bankside, Canterbury, will be needed. There are 3 possible connection points. We just need one of them.

In addition, easements for overhead line that connects the National Grid and our site are required from owners of 93 Darrochs Rd, 3003 North Rakaia Rd, 729 Terrace Rd and Selwyn District Council (for going through public roads and one of their properties along the line) based on our preferred route. There are other options.

Discussions with a representative of the owner at 93 Darrochs Rd indicated their willingness to provide easement for the transmission line. Other two properties are less important as the line can be diverted if have to.

Investigations have identified that no other legal authorisations (other than contractual) will be required in order to begin the project.

If the approval(s) are granted, when do you anticipate construction activities will begin, and be completed?

Please write your answer here:

As set out in the staging answer, we aim to start construction work in 2025 and finish initial parts of work for the substation, solar farm, battery storage, data centres and greenhouses in 2 years if we could get an approval of the resource consent in 2024. Phase 2 and 3 are anticipated to be completed in about 2-3 years after completion of Phase 1.

Section 3: Consultation

Who are the persons affected by the project?

Please write your answer here:

The Selwyn District Council and Canterbury Regional Council;

Ngāi Tahu and Tuahuriri / Te Taumutu Rūnanga Runanga;

Neighbours of the site and owners/occupants along the proposed transmission line.

Detail all consultation undertaken with the persons referred to above. Include a statement explaining how engagement has informed the project.

Please write your answer here:

In preparation of the proposed development the following consultation has been undertaken:

Transpower and Orion – Consultation has occurred with Transpower and Orion throughout the development of the proposal, primarily to confirm whether Transpower would accept a connection to the National Grid. Transpower has already done the concept assessment and accepted our application for a 450MW/220KV substation and a new transmission line. Currently Transpower is investigating the costs, timelines, consenting and technical details, and will then design the system. We will contract Transpower to build the physical Grid injection point (GXP) and Grid Exit Point (GIP), get the connection established and the system commissioned.

Selwyn District Council – The Council was contacted to discuss the proposal with them. In general, they are supportive. Council's consent manager emailed us and gave a detailed list of issues to be addressed.

Ngāi Tahu is the governing iwi, while legally Ngai Tūāhuriri hold mana whenua status over the site and wider Rakaia area. It is also noted that the consultation report undertaken by the applicant suggests Te Taumutu Rūnanga hold mana whenua status for this area and recommends engagement with them. A First Phase Report prepared by the applicant details the consultation undertaken with Ngai Tūāhuriri. The feedback from representatives consulted was very positive, particularly as to the extent of ecological restoration proposed.

Other Parties – Consultation with local parties, including adjoining landowners, has occurred. No objections have been received so far. It should be noted that the consultation sent to neighbours and the council included the solar farm proposal, greenhouses, associated cold storage and residential, but not the proposed data centres.

The height of data centres will be about 2/3 of height of typical cold stores or lower. The noise level is expected to be similar to what will generate from cold stores. Proposed solar panel locations will be further stepped back away from North Rakaia Rd. The proposed substation and data centres will be well-separated by greenhouses and shelter belts. Apart from data centres, no other commercial activities are proposed. A spray dryer (could be over 20m high) for sheep milk proposed previously is not in the new proposal. So, visual impact, noise and traffic will be considerably less than previous proposal to which no objection has been received.

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Describe any processes already undertaken under the Public Works Act 1981 in relation to the land or any part of the land on which the project will occur:

Please write your answer here:

No processes under the Public Works Act have occurred to date.

Section 4: Iwi authorities and Treaty settlements

What treaty settlements apply to the geographical location of the project?

Please write your answer here:

The Ngāi Tahu Claims Settlement Act 1998 applies generally. The site has not been identified as containing land or features subject to Treaty Settlements. The principles and provisions of the Ngai Tahu Treaty Settlement include recognition of cultural associations with ancestral lands, water, sites, wahi tapu and other taonga. This includes the Rakaia River which has been identified as a site of significance. The application site is not within the identified area but elements of the proposal are designed to reflect the status of the area including native plantings and ongoing consultation at all stages of the proposal are proposed.

Are there any Ngā Rohe Moana o Ngā Hapū o Ngāti Porou Act 2019 principles or provisions that are relevant to the project?

No

If yes, what are they?:

Are there any identified parcels of Māori land within the project area, marae, and identified wāhi tapu?

No

If yes, what are they?:

Is the project proposed on any land returned under a Treaty settlement or any identified Māori land described in the ineligibility criteria?

No

Has the applicant has secured the relevant landowners' consent?

Yes

Is the project proposed in any customary marine title area, protected customary rights area, or aquaculture settlement area declared under s 12 of the Māori Commercial Aquaculture Claims Settlement Act 2004 or identified within an individual iwi settlement?

No

If yes, what are they?:

Has there been an assessment of any effects of the activity on the exercise of a protected customary right?

No

If yes, please explain:

Upload your assessment if necessary:
No file uploaded

Section 5: Adverse effects

What are the anticipated and known adverse effects of the project on the environment?

Please describe:

Landscape

A preliminary landscape assessment has been undertaken by Outerspace Landscape Architects. While there are no Outstanding Natural Landscapes (ONL) within the site, the site does contribute to the area of the Canterbury Plains as an Outstanding Natural Feature (ONF) in the operative Selwyn District Council Plan B 1.4, being those slivers of land previously identified.

The site that borders the Rakaia River (RS 4074S, CBA18A/166) includes a portion that is listed as an area of High Naturalness in the Canterbury Land and Water Regional Plan. This area is proposed to be converted to a sheep farming area rather than intensive dairy farming should this project has been approved.

When considering the visual and landscape effects associated with the proposal, the following matters are relevant:
• Maintaining visual amenity landscapes and in particular views to the foothills and the Southern Alps from public roads where the views are currently attainable and retaining views from current residential dwellings;
• Careful consideration will need to be applied to the lot of land that borders the Rakaia River area of High Naturalness to ensure that biodiversity is maintained and/or enhanced;
• Under our new proposal, rural characteristics and visual to the Southern Alps are maintained between North Rakaia Rd and Rakaia River;
• The perimeter fencing will have a distinctly rural character;
• Native planting to establish biodiversity corridors through the project site and boundary screening will soften views into the development and provide a buffer to neighbouring properties and passers-by;
• Stormwater and existing waterways will be integrated into the proposed ecological corridors to enhance biodiversity;
• The data centre and battery storage area will be set beside the substation, away from public roads and behind the proposed greenhouses.

Overall the landscape assessment concludes that any adverse effects associated with visual and landscape effects can be adequately avoided or mitigated and there are no significant landscape values affecting the site.

Ecological

An ecology report has been prepared by 4Sight Consulting with regards to the proposal. There are no naturally occurring areas of indigenous vegetation on the property, and therefore no significant natural areas (SNA) are present. The report finds there to be few ecological constraints across the property noting the following:
• The margins of the drains provide habitat for rushes (Juncus edgariae) and sedges (Carex virgata), while the drain channel provides habitat for indigenous aquatic species such as pond weed and sharp sike sedge;
• Aquatic macroinvertebrate communities are dominated by snails and worms, contain high diversity of fly larvae, and contain water beetles and zooplankton (including water fleas (Cladocera) and seed shrimps (Ostracoda)). These taxa are typically found in drain environments with poor water quality or in habitat dominated by sediments and/or aquatic plants;
• The absence of sensitive mayflies and stoneflies, which prefer habitats comprising gravel and cobble beds with stable flow conditions, contributes to the

overall ‘poor’ quality community health;
• It is possible that drains on the property may, at times, support freshwater fish, with records of common and upland bullies in nearby drains. Both common and upland bullies have been classified by Department of Conservation as ‘Not Threatened’ (Dunn et al. 2018);
• The potential for fish passage between the Rakaia River and drains on the property is unknown, however given the potential separation of the drains from the Rakaia River (i.e., there is no obvious surface water connection visible in aerial imagery and topographical maps), the drains are not expected to support diverse fish communities;
Ecological values present on site have been assessed as ‘Low’ based on the highly modified nature of the site comprising predominantly grazed pasture presenting predominantly exotic species. The naturalising of streams, ecological corridors and indigenous boundary planting will significantly enhance biodiversity across the site.

Glare

A solar photovoltaic glint and glare study will be prepared to outline the geometric reflection calculations and effects. The height of the solar panels reaches no more than 4m in height. No glare from these panels will be seen from the 3 residential houses nearby and from North Rakaia Rd. There is a small section of South Two Chain Rd where the solar panels could be seen before new shelter belt is established. However, South Two Chain Rd is a rural unsealed road with less 100 vehicles count per day. Generous setbacks (approximately 10m from boundaries) and existing and proposed boundary plantings will minimise visual effects on the receptors e.g. users of roads and occupants of nearby dwellings.

In summary it is considered that adverse effects associated with glint and glare can be managed so as to avoid any significant effects on road users or dwellings within the vicinity of the site.

Noise

Solar panels are considered noise-free with only the electrical inverters producing a slight hum (Harmony Energy 2021). The effect of potential noise associated with the solar farm on local fauna is considered to be ‘Negligible’.

Some of the other proposed uses on the site will be noise generating activities. For example, there will be some noise from the data centres and battery storage system. However, they are well stepped back from neighbouring houses and have greenhouses blocking the direct path between neighbouring houses and the data centre and battery storage area. The effect of noise generated would be similar to a large cool store. It is noted that setting up a cool store for produce is a permitted activity in the Selwyn District Plan. To further minimise noise, cooling equipment will be located further away from the edge of the data centre zone and use solid walls of 6-8m high to act as effective noise barriers.

The remoteness of the site and lack of sensitive receivers in the locale will help ensure that these activities can operate without causing significant adverse effects on the surrounds. Overall, noise from the project is not anticipated to be any greater than from a standard working rural productive activity in a rural environment.

Potential Loss of Highly Productive Land

The National Policy Statement High Productive Land 2022 (NPS-HPL) came in effect in October 2022, and its mandate is to protect highly productive land for primary production. Until such time as highly productive land is identified and mapped in the Canterbury Regional Policy Statement, highly productive land is land identified as land use capability (LUC) 1-3 on the New Zealand Land Resource Inventory (NZLRI) database on the Manaaki Whenua Landcare Research website or through more detailed mapping.

As identified in the ODP for the proposal, the Site is identified on the Manaaki Whenua Landcare Research website as LUC 3 land LUC4 and. Further detailed mapping has not been undertaken to date. The solar farm component is located predominantly on LUC 4 land, allowing for dual use of that land. All solar panels will have a ground clearance of 0.8 to 1m which will allow sheep to graze under them, or crops to grow between the solar panels without compromising the generation of electricity.

For a better environmental outcome and practical concern, the site will no longer be utilised for the farming of dairy cattle. Rather, the current milking shed and associated infrastructure will be converted for the purposes of sheep farming. The landowner will continue to farm the land for this purpose.

The solar panels will be pole driven into the ground, leaving the pasture underneath in place. Pasture is naturally retained as water runs off the panels and drains into the soil, and sunlight reaching ground level remains available due to the separation of the panels. This ensures that even while the solar panels are in-situ, the site can continue to be utilised for farming.

At the end of life of the solar panels (approximately 25-35 years), the panels can either be unscrewed and replaced, with the poles remaining in-situ, or the poles can be removed.

The overall loss of highly productive land is minimised as the majority of the farm will be retained in solar and farming. Loss of LUC 3 land for non-agricultural use is expected no more than 30 hectares on this 365.68ha site. In addition, majority of solar panels/sheep farm land is located on land that is not identified as highly productive land. Consequently, any adverse effects on the productive potential of land identified as LUC 3 are considered to be low.

Effects associated with the provision of infrastructure

The site is not currently serviced by local council and a range of infrastructure services including water supply (potable and firefighting), sanitary drainage, storm water, either have been established or will occur on site, without needing to connect to the reticulated infrastructure. The effects of this infrastructure can be managed as part of normal land development practices.

An infrastructure report has been prepared by Elliot Sinclair, which recommends some options to be most feasible for the development. It is noted this report was based on the previous proposal involving a significant residential component, which has now been discontinued.
• Reticulated water - Water supply will be provided to the proposed development via on-site water supply bore/s with treatment plant/s, noting the existing onsite wells are likely to have sufficient capacity to service the development, or one or more new wells may need to be drilled.
• Wastewater – This will be designed and constructed in due course. Existing septic tanks on site for the 7 houses will be retained and may be expanded. Used cooling water from data centres are clean and can be discharged for irrigation.
• Stormwater – This will be designed and constructed in due course.
• Telecommunications –Chorus, Enable and Orion have provided high-level comment that the development can be supplied by the network. A new high capacity undersea fibre link that links Christchurch, Dunedin, Invercargill, Australia, Singapore and the USA is scheduled to be completed by 2025. It will provide plenty of bandwidth for the proposed data centres. This is in addition to existing multiple high speed links to the world via Auckland.

Traffic

The proposal will result in traffic effects, which are expected to increase as the sites are developed. An Access Strategy has been prepared by Abley which confirms there will not be any fundamental impediments associated with vehicle access (this strategy was based on the previous scheme which included higher traffic numbers from the large residential component of the project, which is no longer being pursued).

The connection onto the public road network will occur via North Rakaia Road mainly. North Rakaia Road is a secondary collector sealed road and quite wide. Entrance/exit to/from the project site will be well away from any bend or blind point.

Reverse Sensitivity

The immediately surrounding properties are rural holdings except for several smaller lifestyle properties. To the north of the application site on North Rakaia Road at numbers 2902, 2906, 2924 is a cluster of three properties ranging in size from 4.0 ha to 8.0 ha, two of them have a residential dwelling. Further south at 2726 North Rakaia Rd is a 10 ha lifestyle property with a small plantation and a dwelling. Well separated from the proposed site is a cluster of dwellings at 137, 163 and 185 Breadings Rd, two of which have farm boundaries adjoining the application site.

As shown on the Outline Development Plan attachment, the data centres and greenhouses have been carefully located. Potential reverse sensitivities (e.g. noise) from existing dairy farming operation will be significantly improve once dairy farming has been stopped. The three adjoining northern properties (at No. 2902, 2906 and 2924 North Rakaia Rd) will benefit from an ecological corridor and boundary planting (at least 10m in width) to mitigate reverse sensitivities that may arise. Native plantings are proposed around the periphery of the site, to mitigate any reverse sensitivities occurring to the south and west.

Overall, any potential adverse effects of reverse sensitivity can appropriately be mitigated by location, design and screening.

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Section 6: National policy statements and national environmental standards

What is the general assessment of the project in relation to any relevant national policy statement (including the New Zealand Coastal Policy Statement) and national environmental standard?

Please write your answer here:

The NZ Coastal Policy Statement is not relevant to the site given the large distance between the site and the coastal environment.

The NPS-HPL seeks to direct urban development away from highly productive land, where possible. Preventing inappropriate subdivision, use and development will ensure the availability of highly productive land for food and fibre production.

The key objectives and policies relevant to the proposal have been assessed as follows:
Objective: Highly productive land is protected for use in land-based primary production, both now and for future generations.
...
Policy 4: The use of highly productive land for land-based primary production is prioritised and supported.

The highly productive land which forms the southern portion of the site being land which has been identified as LUC3 is located within the following properties:
• RS 40748 (CB184A/166)
• Section 1 Block XIII (CB32K/357)
• Lot 1 DP 733371 (CB4B/902)
These parcels are to be utilised for primary production, being allocated to sheep farming amongst the solar panels and land based primary production activities.

The loss of 20-30 hectares of LUC 3 land for the substation and data centres will enable more productive use of remaining LUC 3 land use in particular to the greenhouses otherwise may not be economically viable. 1 ha of typical greenhouse in New Zealand generates about the same or higher value as a 120 ha dairy farm does. Therefore, the combination of greenhouse and data centre is a far more effective way to utilise high productive land while contributing positively to the environment.

Policy 5: The urban rezoning of highly productive land is avoided, except as provided in this National Policy Statement.

The development of the site is largely on LUC 4 land for the solar and sheep farm. Only a small portion on LUC 3 land is used for the substation, cold storage and data centres, though, they provide an effective mean to produce affordable heat for uses by greenhouses. Thus, they support the higher output of produces from these greenhouses compared with existing dairy farm. It is worth noting that large amount surplus heat is expected from the data centres and could potentially be piped to neighbouring farms for higher productive production (e.g. greenhouses), reduced pollution to the environment and reduced water usage.

Policy 6: The rezoning and development of highly productive land as rural lifestyle is avoided, except as provided in this National Policy Statement.

Policy 7: The subdivision of highly productive land is avoided, except as provided in this National Policy Statement.

Policy 8: Highly productive land is protected from inappropriate use and development.

Policy 9: Reverse sensitivity effects are managed so as not to constrain land-based primary production activities on highly productive land.

The land identified as LUC 3 land will be largely utilised directly and indirectly for land based primary production (i.e. sheep grazing between panels operating in a complementary manner, cold storage for storing produces and data centres providing heat to greenhouses) in accordance with Policy 4 and 6.

Overall, the proposal is consistent with the outcomes sought under the NPS for Highly Productive Land.

NPS for Renewable Electricity Generation

A discussion of the key objectives and policies of the National Policy Statement for Renewable Electricity Generation 2011 is included below.

Objective to recognise the national significance of renewable electricity generation activities by providing for the development, operation, maintenance and upgrading of new and existing renewable electricity generation activities, such that the proportion of New Zealand's electricity generated from renewable energy sources increases to a level that meets or exceeds the New Zealand Government's national target for renewable electricity generation.

A. Recognizing the benefits of renewable electricity generation activities

Policy A sets out to ensure decision makers recognise the benefits of renewable electricity generation activities. These benefits include:
1. maintaining or increasing electricity generation capacity while avoiding, reducing or displacing greenhouse gas emissions;
2. maintaining or increasing security of electricity supply at local, regional and national levels by diversifying the type and/or location of electricity generation;
3. using renewable natural resources rather than finite resources;
4. the reversibility of the adverse effects on the environment of some renewable electricity generation technologies;
5. avoiding reliance on imported fuels for the purposes of generating electricity.

The proposal will serve as a model for a solar and sustainable community that contributes to the diversification of electricity generation in New Zealand and a reduction in greenhouse gas emissions. Providing up to 450MW (150MW 1st Stage) of solar energy, the proposal will contribute to the diversification of electricity generation in New Zealand and ultimately a reduction in greenhouse gas emissions for this site and Canterbury. In turn this will increase the security and capacity of renewable energy supply, particularly in Canterbury region.

Further, at the completion of the life of the solar panels (approximately 30-35 years), all components can be removed and recycled and replaced. The substation could be utilised by better form of electricity generation then. Overall, the proposal is consistent with the direction provided by the above NPS objective and policy.

B. Acknowledging the practical implications of achieving New Zealand's target for electricity generation from renewable resources

Policy B specifically notes that "meeting or exceeding the New Zealand Government's national target for the generation of electricity from renewable resources will require the significant development of renewable electricity generation activities".

The proposal provides for a significant electricity generation activity that will generate enough power to meet the electricity requirements of the horticultural activities and data centre and existing houses, while supplying the surplus energy created into the national grid. This will significantly contribute to the national target for renewable energy (being 100% for electricity generation by 2030). As such, the proposal is consistent with the direction of this policy.

C. Acknowledging the practical constraints associated with the development, operation, maintenance and upgrading of new and existing renewable electricity generation activities

Policy C1 states decision makers shall have particular regard to the following matters:
a) the need to locate the renewable electricity generation activity where the renewable energy resource is available;
b) logistical or technical practicalities associated with developing, upgrading, operating or maintaining the renewable electricity generation activity;
c) the location of existing structures and infrastructure including, but not limited to, roads, navigation and telecommunication structures and facilities, the distribution network and the national grid in relation to the renewable electricity generation activity, and the need to connect renewable electricity generation activity to the national grid;
d) designing measures which allow operational requirements to complement and provide for mitigation opportunities; and
e) adaptive management measures.

Policy C2 highlights that when considering any residual environmental effects of renewable electricity generation activities that cannot be avoided, remedied or mitigated, decision makers shall have regard to offsetting measures or environmental compensation – including measures or compensation which benefit the local environment and community affected.
The identified site presents an ideal site for solar electricity generation due to its proximity to a nearby transmission grid connection and extremely low density of surrounding residential houses. It is generally flat topography and the annual irradiance (the amount of light energy received) in this location means the proposal will result in very low levels of adverse effects, all of which can be adequately managed. The 10-12m high terrace on Northern boundary of the site is a natural barrier for visual impact.

Furthermore, the Applicant is proposing significant ecological restoration of the site. Due to proximity to the State Highway 1, potentially the electricity generated could support a large electric truck and car charging hub on State Highway 1. Each electric truck may need 1MW electricity connection which is almost impossible to find at the moment. This section of SH1 has a vehicle count around 12,000 per day and about 20% are trucks. Our proposed solar farm and battery storage could enable one or more large, super fast charging hubs on SH1 from Rakaia to Dunsandle. As such, the proposal is consistent with the direction of this objective.

Overall Assessment:

The proposal is considered to be consistent with the objectives of the National Policy Statement for Renewable Electricity Generation 2011. The proposal will result in a number of benefits, including contributing to the New Zealand Government's national target for renewable energy. Overall, the Project:
(i) Is consistent with the National Policy Statement - Renewable Energy Generation, specifically Policy A as discussed above.
(ii) Will increase energy generation while displacing greenhouse gas emissions.
(iii) Will increase the resilience of the overall national energy system through diversification.
(iv) Will contribute to the mitigation of climate change and the transition to low emissions economy.

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Section 7: Eligibility

Will access to the fast-track process enable the project to be processed in a more timely and cost-efficient way than under normal processes?

Yes

Please explain your answer here:

The normal consenting process may involve notification and appeals from adjacent landowners and many other interested groups. Recent solar farm examples in the Selwyn District have been at least limited notified and received objections from neighbours, requiring a hearing. If the local council treats the project for a public notification consent, it could be further delayed through an Environment Court appeal process which could add a year or longer to the entire process.

The fast-track process will provide more certainty, which intern supports earlier progression through the development design phases.

An approval from the central government would certainly give investors and financiers more confidence and allow lower costs on construction and equipment funding. Lower costs will enable the project to offer cheaper electricity to the general public and business customers. Cheaper electricity will encourage large industrial users such as Fonterra and Synlait Milk to switch from coal to electrical boilers earlier and contribute to the reduction of carbon emissions significantly. It is believed that process heating such as spraying drying milk counts for 17% of NZ carbon emissions.

What is the impact referring this project will have on the efficient operation of the fast-track process?

Please write your answer here:

There are no anticipated impacts on the efficient operation of the fast-track process from referring this project.

Has the project been identified as a priority project in a:

Central government plan or strategy

Please explain your answer here:

The Coalition Government's Action Plan for New Zealand for 1 April to 30 June 2024 has 3 to-do items that are related to this project.

These items may be considered as on a priority list.
#9. Take decisions on measures to increase investment in renewable electricity generation.
#13. Commence an independent review of the methane science and targets for consistency with no additional warming from agricultural methane emissions.
#21. Establish a Regional Infrastructure Fund.

This project is to increase investment in renewable electricity generation, reduce agricultural methane emissions, and contribute to a more sustainable and reliable regional infrastructure.

Getting sovereign data on New Zealand based data centres has been a known priority for the government for long time as majority of NZ sovereign data is still stored and processed overseas where critical data could be intercepted, deleted or manipulated. Green energy powered data centres based in New Zealand should be a priority for the central government and every local government. Due to surging demand in AI (artificial intelligence) technology and applications, resources around data centres are in short supply. Super fast computing power is the new infrastructure of AI age. Urgent action on this front will contribute to the economy greatly.

Will the project deliver regionally or nationally significant infrastructure?

National significant infrastructure

Please explain your answer here:

The solar farm, battery storage and connection to the National Grid are infrastructure. It is arguable that the data centre is also infrastructure, being a critical component of information technology.
This project has national and regional significance and aims to solve the following issues.

1. Solar Power Generation and Battery Storage

Canterbury region generates about 5% of electricity used for existing uses. With the growing popularity of electrical vehicles, wider adaption of AI (artificial intelligence) technology, the electrification of many coal boilers and constraints on the existing grid and distribution network, shortages and reliability of electricity supply will be worsened over time.

The proposed 1st stage of the project will produce up to 150MW electricity with solar arrays. The battery storage will deliver power in the morning and evening peak times even when the sun is not shining. This will be a significant contribution to around 900MW power needed for the Canterbury Region at the moment. Stage 1 and 2 of the project (not included in this application) will deliver further 300MW power to the region.

The additional electricity generated could be sent to the North Island via the National Grid if needed.

2. Data Centres – Essential Infrastructure for the 21 Century and Beyond

New Zealand currently is short of data storage and processing infrastructure. Sovereign data, sensitive private and commercial data is largely stored overseas. Once this facility is in place, companies such as Amazon, Microsoft, Google, etc will have the opportunity to construct and utilise infrastructure offered by this project for their data centres in NZ that contributing income tax to NZ for these activities hosted on NZ based servers.

Modern AI capable data centres consume large amounts of electricity and water for efficient cooling of powerful computer chips and rooms hosting high powered servers. Some attempts at establishing large data centres in urban areas in New Zealand (e.g. Auckland) have failed or are being put on hold (Amazon suspended their $4.5 data centre project in NZ) due to the significant volumes of fresh water required and discharged water through already severely constrained, aging local storm water systems. Stormwater and wastewater on this large rural site is much easier to manage, especially as it can be re-used for the horticultural and general farming activities.

Upon completion this project will provide sufficient electricity and fresh water to multiple large data centres on the site. Used warm water can then be re-used for irrigating and heating the proposed greenhouse operation and irrigating sheep farming area.

Significantly boosted AI data processing power in New Zealand will not only ensure New Zealand has sufficient processing power and data storage for local applications, but also can export cloud data service worldwide. This enables additional onshore tax revenues. For AI related applications, latency of data transmission is no longer a major concern as computing time is a much longer than transmission time. New Zealand's advantage of generating green power could well be the driving force to create a new export oriented industry that rivals traditional industries such as meat and forest.

This project is to accommodate large, experienced data centre operators with all infrastructure needed for AI capable data centres powered by green energy and reusable water. We will not build or operate the data centres ourselves.

Will the project:

contribute to a well-functioning urban environment

Please explain your answer here:

Yes. Cheaper electricity supply will encourage more people switching to electric cars. Duo to much lower running costs of electric cars, people could have wider selection on location of their home and pay less on housing costs.

Long term power supply agreements with potential charging network operators could reduce anxiety of car range associated with electric cars and enable more people to use electric cars and trucks comfortably.

Will the project deliver significant economic benefits?

Yes

Please explain your answer here:

The design and construction phase for the solar farm, data centres and greenhouses alone will create 100s of direct and indirect jobs over a 5-year period.

On going jobs for the solar farm and data centres on site may be at 50 to 60 or more. Remote and contractor workers could be well over 100.

On going jobs for the greenhouse operation may be at 16 people per ha. Discharged heat from 250MW data centres may well be able to support over 100 ha of greenhouses.

Many of the workers for the construction phase will be undergoing extensive training and upskilling. These skills will be invaluable for other projects in New Zealand.

Data centres will give many young New Zealanders, especially these new university graduates, and existing IT workers great opportunities to learn cutting edge technologies and further advance in the generative artificial intelligence technologies.

The world has been changed greatly. Creating wealth or GDP by export commodities cheaply is no longer as sustainable. The current prices of many commodities could not support employers to pay their staff wages or salaries sufficiently to match the ever-increasing costs on mortgage and groceries. New Zealand needs to gear up the value chain and use our precious resources wisely. Exporting virtual data services and high valued products are better ways for New Zealand to prosper. We need maximise potential values that could be generated from our green energy, fresh water and land with superb AI aged, world-class infrastructure and advanced technologies while saving the environment by cutting down pollutions and carbon emissions.

This is what this project will deliver for current and future generations.

As a synergistic outcome, this project will provide low-cost infrastructure for export-oriented greenhouse operations. Data centres generate huge amount of heat which will be channelled to inside of the proposed greenhouses for faster growing of vegetables, fruits and other plants which otherwise could not be produced economically and environment-efficiently. Water discharged by data centres can be reused for irrigating plants inside the greenhouses and open space farming.

Will the project support primary industries, including aquaculture?

Yes

Please explain your answer here:

Data centres generate huge amount of heat which will be channelled to inside of the proposed greenhouses for faster growing of vegetables, fruits and other plants which otherwise could not be produced economically and environment-efficiently. Water discharged by data centres can be used for irrigating plants inside the greenhouses and open space farming.

Electricity generated on site could directly be sent to farms and factories (e.g. Synlait Milk, 6kms away) in the areas for their electric vehicles, farm machinery (including tractors in coming years), heaters and driers. Local electricity network is severely constrained. Sufficient local supply of electricity will enable farms and primary industries to start electrification their production sooner.

Will the project support development of natural resources, including minerals and petroleum?

Yes

Please explain your answer here:

This project involves harvesting natural sunlight to generate electricity and use fresh water to cool the data centres and re-use the used water to heat the greenhouses and irrigate greenhouses and sheep farming areas.

Will the project support climate change mitigation, including the reduction or removal of greenhouse gas emissions?

Yes

Please explain your answer here:

Solar generated electricity will decrease the demand on power generated by coal and fossil gas, thereby reducing the carbon emissions from these sources.

Dairy farms generate significant carbon and methane emissions while sheep farms generate considerably fewer emissions.

Potential supply of cheaper electricity to farms in the area may bring the electrification of tractors, cars, motobikes and other farm machinery forward to eliminate the carbon emissions from burning fossil fuels.

Overall, this project will contribute positively to NZ's carbon zero goal.

Will the project support adaptation, resilience, and recovery from natural hazards?

Yes

Please explain your answer here:

Any adverse effect associated with natural hazards (namely flooding) can be adequately avoided or mitigated. As such, the project will be resilient to natural hazards.

Despite this project sits closed to Rakaia River, no part of the project site is classified as flooding prone zone by Environment Canterbury. This is because Rakaia River is very wide and can accommodate a lot more water volume than most other rivers in NZ.

Will the project address significant environmental issues?

Yes

Please explain your answer here:

Environmental damage caused by nitrogen leaching from dairy farms is a major concern in the Canterbury Region where 69% irrigated dairy farms nationwide are located.

The replacement of a dairy farm with a sheep farm will reduce groundwater pollution significantly. Usage of polluting fertilisers will also be eventually eliminated under solar panels, substation and data centres.

Our farm could well be the role model for other dairy farms on reducing negative environmental impact. Agriculture sector contributes to 50% of carbon emissions in NZ. Wider adaptation of new way of farming will have a national significant impact

Digital data exports, as opposed to physical food exports, will also reduce reliance on shipping and their associated fossil fuel pollutions.

Fresh water is a precious resource. The dairying industry is a significant user of water, requiring approximately 1,000 litres of water to produce 1 litre of fresh milk or 100g milk powder which is generally exported for only about NZ$0.50-0.60. The project site could supply water and power for up to 250MW data centres. The used water can then be reused for horticulture and sheep farming. Most of used water which contains no nitrogen or other fertilisers will return to the catchment after reused for heating and irrigation.

Greenhouses typically use only 5 to 25% of whatever water is needed for outdoor growing, which in turn is less than that required for dairying. The Selwyn District has areas of overallocated water resource. So reducing water usage, whilst still using the land productively, can contribute to environmental benefits.

Together with saving on heating by recycling the heat from the data centres, greater efficiency can be realised. This could give New Zealand an edge on competing with other countries in the world market on green data centres which are measured on efficiency of electricity and water usage. Reusing water for irrigation is far better than discharging through municipal system in terms of water use efficiency. This will give ESG conscious corporates incentive to shift their data centres to NZ and save water somewhere else.

Is the project consistent with local or regional planning documents, including spatial strategies?

Yes

Please explain your answer here:

This project involves productive rural activities (horticulture) in a rural zoned area. Solar farms are unlikely to occur on urban land due to their space extensive requirements and are arguably therefore most likely to occur on rural zoned land. It is noted that a solar farm consent application on rural zoned land in the Selwyn District has recently been approved. The associated single story data centres and cold store are consistent with larger farm buildings anticipated in rural environments.

Anything else?

Please write your answer here:

This project is innovative on effectively solving many of critical issues New Zealand are facing now or about to encounter in coming years.

We have been working on many of the initiatives for over 2 years and deserve to get support for them to become reality urgently.

On practical side, we have in-house expertise in many disciplines including electrical and electronics engineering, computer software, design, building and operating top grade food factory and real estate development.

With knowledge, experience and connection we have in the IT industry, we will contribute positively for New Zealand's transformation from a commodity based economy to AI aged digital economy.

Does the project includes an activity which would make it ineligible?

No

If yes, please explain:

Section 8: Climate change and natural hazards

Will the project be affected by climate change and natural hazards?

Yes

If yes, please explain:

However, any adverse effect associated with natural hazards (namely flooding) can be adequately avoided or mitigated. An infrastructure report has been prepared for the site which identifies certain areas within the site which are potentially susceptible to moderate, significant, and extreme flooding hazard in extreme rainfall events (200-year ARI and 500-year ARI).

A flood risk assessment (in accordance with Section 8.2.2 and 8.4.4 of the SDC Engineering Code of Practice ('ECoP')) will be prepared to determine the effects and impacts of the proposed development will have on overland flow paths and the surrounding area. This assessment will also determine the flood levels which is used to determine the required floor levels to protect dwellings from flooding. Minimum finished floor levels (FFL) for all residential units and any other principal buildings within the development must be 300mm above the 200-year (ARI) storm event in accordance with Section 8.2.2 of SDC ECoP.

In summary, the proposal is not precluded by any natural hazards, noting that further investigations will be required to determine that specific design for buildings and infrastructure are appropriate.

Section 9: Track record

Please add a summary of all compliance and/or enforcement actions taken against the applicant by any entity with enforcement powers under the Acts referred to in the Bill, and the outcome of those actions.

Please write your answer here:

There have been no compliance issues or enforcement action taken against the applicant.

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Declaration

Do you acknowledge your submission will be published on environment.govt.nz if required

Yes

By typing your name in the field below you are electronically signing this application form and certifying the information given in this application is true and correct.

Please write your name here:
James Gu

Important notes