Response ID ANON-URZ4-5FNH-6

Submitted to Fast-track approval applications
Submitted on 2024-05-03 23:59:31

Submitter details

Is this application for section 2a or 2b?

2B

1 Submitter name

Individual or organisation name:
BM Energy 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:

s 9(2)(b)(ii)

Canterbury

Legal description:
s 9(2)(b)(ii)

s 9(2)(b)(ii)

File upload:
No file uploaded

Upload file here:
No file uploaded

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

Yes

upload file:
s 9(2)(b)(ii) was uploaded

Who are the registered legal land owner(s)?

Please write your answer here:

Crown is the legal land owner for the property.

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:

s 9(2)(b)(ii)

s 9(2)(b)(ii) .

s 9(2)(b)(ii)

s 9(2)(b)(ii)

Section 2: Project details

What is the project name?

Please write your answer here:
Benmore Energy, Horticulture and Data Centres

What is the project summary?

Please write your answer here:

A staged wind and solar farm providing up to 700MW of electricity generation capacity, battery energy storage (up to 2800MWh), data centres (up to 500MW), horticultural greenhouses (size to be determined) and cold storage. A super charging hub and a hydrogen generation plant are also included in the project. Existing sheep farm will be retained.

What are the project details?

Please write your answer here:

The purpose of the project is to establish a wind and 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. A hydrogen generation plant is also proposed to fully utilise electricity generated in off-peak times. It will be an effective way that deals with electricity shortage in dry years or periods and encourage switching over to hydrogen powered vehicles from fossil fuel powered vehicles, especially these heavy trucks.

The proposed solar farm would occupy s 9(2)(b)(ii) . The footprint of wind turbines once installed will take less than 1% of the site to allow sheep farming continues as usual. Associated with the panels and wind turbines would be mounting structures and inverters, battery storage, electrical equipment structures, a cable network and high voltage transmission cables connecting the wind and solar farm to Transpower's two substations next to this project's site. As a 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 agricultural 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 wind farm and large 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 peak hours are reduced.

A super charging hub and service centre on s 9(2)(b)(ii) as a part of the project site will solve the shortage of fast charging facilities for electric cars and trucks traveling between Queenstown and Christchurch and beyond. Associated food and accommodation establishments will compliment the charging hub by providing visitors and drivers a place to have foods and rest.

At later stage, hydrogen refilling service will also be provided using hydrogen generated and stored on site. Potentially fully charged trucks or cars can travel to any destination in the South Island without refilling.

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:
Preliminary work – 2025 - 2026
• Carry out 12-month researches on wind speed/direction data and bird activities
• Work with Transpower on investigation and design of the new 700MW/220KV connections
Phase 1 – 2026 - 2027
• Begin to add more boundary planting (fill gaps of existing shelter belts on boundaries)
• Establish Transpower connection
• Establish an initial solar farm area
• Establish associated infrastructure buildings including storage
• Establish the first part of the battery storage system
• Establish the first part of the greenhouses and cold storage
• Establish the first part of data centre campus
• Carry out detailed investigations and designs on the wind farm, submit building consents for the wind farm and order necessary equipment.
• Establish a large electric vehicle charging hub and service centre by s 9(2)(b)(ii) on a part of the project site.
Phase 2 – 2028 - 2029
• Construct the first half of the wind farm on the hills
• Establish the 2nd part solar farm area
• Establish the 2nd part of the battery storage system
• Establish the 2nd part of the greenhouses and cold storage
• Establish the 2nd part of data centre campus
• Prepare for establishing a hydrogen generation plant
Phase 3 – 2029 - 2030
• Construct the 2nd half of the wind farm on the hills
• Establish the 3rd part of solar farm area
• Establish the 3rd part of the battery storage system
• Establish the 3rd part of the greenhouses and cold storage
• Establish the 3rd part of data centre campus
• Establish a hydrogen generation plant.

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

Please write your answer here:

s 9(2)(b)(ii)

s 9(2)(b)(ii)

It is the proximity to the s 9(2)(b)(ii) that make this area attractive to other energy scheme such as this proposal wind farm and hydrogen production.
This is a facility of national significance and with its zoning there is a high level of consent complexities. The following Planning Regimes would be involved in this project:
The Resource Management Act and its subsidiary documents (the National Policy Statement on Renewable Energy, the National Policy Statement for Highly Productive Land, the Waitaki District Plan and the Canterbury Land and Water Regional Plan.

Waitaki District Plan

The primary planning document for the WDC is the Waitaki District Plan. Under this plan the hill part of the site has been identified as being within area of Outstanding Landscape and the zone is Rural Scenic. There is a new draft plan which is in process of being adopted. The draft plan has specific chapter in relation to energy.

The primary reasons for resource consent being required under the Rules of the Partially Operative District Plan and Draft Plan would require a

Discretionary Consents for this activity would be as follows:
• The Rural S (Scenic) Zone generally covers the high country, rangelands and inland basin areas and is predominantly used for extensive pastoral farming with pockets of forestry and arable farming. The Rural Scenic Zone has a particular visual amenity associated with the dominance of open-space vistas and landforms and the lack of intensive subdivision and land use and the overall absence of buildings and structures. Parts of the upper Waitaki contain landscapes that are outstanding due to their high degree of unity, coherence and naturalness.
• In part A of the draft plan (General Energy) the Council must pay recognition to: "Energy efficiency and the use and development of renewable energy are matters the District Plan must have particular regard to under section 7 of the Act. The District Plan must also give effect to the National Policy Statement on Renewable Electricity Generation 2011 which requires recognition of the benefits of renewable electricity generation. The types of renewable energy sources relevant to this District are solar, biomass, hydro and wind. At a domestic scale, there are various ways to use natural sources of energy, including solar water heating or solar panels and small wind turbines. In addition, emerging technologies for other sources of energy, such as hydrogen, offer potential for a transition to a low-emission economy"
• Objectives that apply to this project are- ENG-01/02/03. Policies that apply are ENGP1/2/3 P# is of particular relevance – "Only allow new sensitive activities to establish in proximity to existing or consented renewable electricity generation activities where they are designed and located to avoid or mitigate reverse sensitivity effects".
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 specific 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 a resource consent.

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 Waitaki District Plan and Canterbury Land and Water Regional Plan.

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

s 9(2)(b)(ii)

s 9(2)(b)(ii)

s 9(2)(b)(ii)

s 9(2)(b)(ii)

s 9(2)(b)(ii)

s 9(2)(b)(ii)

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

Please write your answer here:

The Waitaki 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:

None

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

Yes

Please explain your answer here:

s 9(2)(b)(ii)

s 9(2)(b)(ii)

s 9(2)(b)(ii)

s 9(2)(b)(ii)

s 9(2)(b)(ii)

s 9(2)(b)(ii)

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 preliminary work in 2025 for a start on construction work in 2026 (could bring forward if Transpower can finish connection work sooner) and finish initial parts of work for 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 is anticipated to be completed in about 2 years after completion of Phase 1. Phase 3 is anticipated to be completed in about 2 years after completion of Phase 2. The final completion date will almost be aligned with the government target of 100% renewable electricity generation by 2030.

The completion of hydrogen generation will be particularly important as hydrogen can be used as a green fuel to replace coal and fossil gas even in dry years and therefore to achieve true 100% renewable electricity generation.

Section 3: Consultation

Who are the persons affected by the project?

Please write your answer here:

s 9(2)(b)(ii)

s 9(2)(b)(ii)

Please write your answer here:

s 9(2)(b)(ii)

s 9(2)(b)(ii)

s 9(2)(b)(ii)

s 9(2)(b)(ii)

s 9(2)(b)(ii)

s 9(2)(b)(ii)

s 9(2)(b)(ii) [redacted]

Upload file here:
No file uploaded

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:

N/A

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?

No

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

s 9(2)(b)(ii)

s 9(2)(b)(ii)

s 9(2)(b)(ii)

They claimed that their site is one of best site for solar farm in New Zealand. Proximity to intensive power facilities in this particular area is important when selecting suitable sites for solar and wind farms.

Wind and solar farms, in our opinion, can be well blended into the surrounding power generation zone due to special characters of this area. Data centres, if located far away from public roads, should look similar to agricultural buildings and cold stores.

New Zealand has extensive mountain areas, though, not many are feasible for wind farms due to distance to the nearest electricity infrastructure, difficult to build roads to reach their ridges, intercepted wind by other hills or too windy.

This is unique site with rare advantages compared with many other sites.

Certainly, extensive boundary shelter belts and native planting will make the area much more attractive.

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 Southern Alps from public roads where the views are currently attainable;
• Careful consideration the location of data centre and greenhouses so that greenhouses which are permitted in Rural Scenic Zone will act visual barrier to data centre buildings. In reality, modern cold stores which is also permitted in the zone is more than 50% higher than typical data centre buildings;
• Under our new proposal, rural characteristics and visual to the Southern Alps are maintained or enhanced as much as possible;
• 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.

Overall any adverse effects associated with visual and landscape effects can be adequately avoided or mitigated to ensure existing scenic values are maintained or enhanced.

Ecological

s 9(2)(b)(ii)

Glare

A solar photovoltaic glint and glare study will be prepared to outline the geometric reflection calculations and effects to drivers of passing by cars. The height of the solar panels reaches no more than 4m in height. No glare from these panels will be seen from any of the residential houses on other side of the hill, near s 9(2)(b)(ii)
Existing and proposed boundary plantings will minimise visual effects on the receptors e.g. users of roads.

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 within the vicinity of the site. No residents in the area will be affected by glint or glare caused by the solar panels.

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 road. 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 Waitaki 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.

s 9(2)(b)(ii)

s 9(2)(b)(ii)

s 9(2)(b)(ii) [redacted]

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 activity in a rural environment.

Birds

Birds are common concerns for responsible wind farm operators. Detailed study will be carried out by experts in this field.
As this property is largely form by bare rocky mountains, birds number should be significantly less than these with extensive forest.

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 will be prepared by experts.
• 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 water from creeks 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 main house and workers' accommodation will be retained and may be expanded. Used cooling water from data centres are clean and can be discharged for irrigation and heating and can be discharged as storm water.
• Stormwater – This will be designed and constructed in due course.
• s 9(2)(b)(ii) [redacted]

Traffic

The proposal will result in traffic effects, which are expected to increase as the sites are developed. However, it will occur mainly during construction phase. Traffic will be minimum after the project has been completed. s 9(2)(b)(ii) [redacted]

Reverse Sensitivity

Due to lack of residential houses in the surrounding area of the subject site, no reverse sensitivity will be more than minor.

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

Upload file:
No file uploaded

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.

There is no LUC 3 land on the subject property. s 9(2)(b)(ii) [redacted]

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 700MW of wind and 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).

The proposed hydrogen generation will prepare NZ to reach 100% renewable electricity generation even in dry years.

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 wind and 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 for the flat part of the subject property where solar panels will be installed 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.

Furthermore, the Applicant is proposing significant ecological restoration of the site. Due to proximity to the s 9(2)(b)(ii) the electricity generated will support a large electric and hydrogen truck and car charging hub on s 9(2)(b)(ii) Each electric truck may need 1MW electricity connection which is almost impossible to find at the moment. This site is strategically located between Queenstown and Christchurch. 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.

File upload:
No file uploaded

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 will involve public notification, hearings and appeals from adjacent landowners and many other interested groups. The project could be long delayed through an Environment Court appeal process and add years 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 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 2 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.
#21. Establish a Regional Infrastructure Fund.

This project is to increase investment in renewable electricity generation and contribute to a more sustainable and reliable regional and national 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 wind and solar farm, battery storage and connection to the National Grid are important 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. Wind and Solar Power Generation and Battery Storage
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 wind and solar will produce up to 700MW electricity with wind turbines and 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 7000 to 9000MW capacity of electricity needed for New Zealand at the moment.
Combined with hydrogen generation and wind farm, the power generated on site could well help NZ to go through dry periods and years. This is a much more environment-friendly, modern solution for dry year solutions. It will not cost tax payer anything. In fact, it will generate substantial tax revenue for the country.
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 $4.5b 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 wind and solar farm, data centres, hydrogen plant and greenhouses alone will create 100s of direct and indirect jobs over a 5-year period.

On going jobs for the wind and solar farm, data centres and hydrogen plant on site may be over 100. Additional remote and contractor workers could also be well over 100.

On going jobs for the greenhouse operation may be at 16 people per ha. Discharged heat from 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.

s 9(2)(b)(ii)

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 other farms in the areas for their electric vehicles, farm machinery (including tractors in coming years). 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.

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.

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.

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 500MW 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:

Yes, the project involves productive rural activities (horticulture) in a rural zoned area. Wind and 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.

Renewable energy generation is well considered in the Waitaki District Plan. 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.

s 9(2)(b)(ii)

s 9(2)(b)(ii)

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.

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.

Load your file here:
No file uploaded

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