Application for a project to be referred to an expert consenting panel

(Pursuant to Section 20 of the COVID-19 Recovery (Fast-track Consenting) Act 2020)

For office use only:

Project name: Kapuni Green Hydrogen Project
Application number: PJ-0000722
Date received: 06/11/2020

This form must be used by applicants making a request to the responsible Minister(s) for a project to be referred to an expert consenting panel under the COVID-19 Recovery (Fast-track Consenting) Act 2020.

All legislative references relate to the COVID-19 Recovery (Fast-track Consenting) Act 2020 (the Act), unless stated otherwise.

The information requirements for making an application are described in Section 20(3) of the Act. Your application must be made in this approved form and contain all of the required information. If these requirements are not met, the Minister(s) may decline your application due to insufficient information.

Section 20(2)(b) of the Act specifies that the application needs only to provide a general level of detail, sufficient to inform the Minister's decision on the application, as opposed to the level of detail provided to an expert consenting panel deciding applications for resource consents or notices of requirement for designations.

We recommend you discuss your application and the information requirements with the Ministry for the Environment (the Ministry) before the request is lodged. Please contact the Ministry via email: fasttrackconsenting@mfe.govt.nz

The Ministry has also prepared Fast-track guidance to help applicants prepare applications for projects to be referred.

Part I: Applicant

Applicant details

Person or entity making the request: Hiringa Energy Limited ("Hiringa") and Ballance Agri-Nutrients Limited ("Ballance")

Contact person: Matt Luscombe – Hiringa Energy Limited

Job title: Head of Projects & Operations

Phone: s 9(2)(a)

Email: s 9(2)(a)

Postal address:

15 Lismore St, New Plymouth, NZ 4310

Address for service (if different from above)

Organisation: BTW Company Limited

Contact person: Cam Twigley

Job title: Director, Planning and Environment

Phone: s 9(2)(a)

Email: s 9(2)(a)

Email address for service: s 9(2)(a)

Postal address:

PO Box 551, New Plymouth 4340

Part II: Project location

The application: does not relate to the coastal marine area

If the application relates to the coastal marine area wholly or in part, references to the Minister in this form should be read as the Minister for the Environment and Minister of Conservation.

Site address / location:

A cadastral map and/or aerial imagery to clearly show the project location will help.

271 – 359 Kokiri Road and 414 Kokiri Road, Kapuni (the "PKW Farm"), and the Ballance Agri-Nutrients Plant at 309 Palmer Road, Kapuni (the "Ballance Kapuni Plant").

Legal description(s):

A current copy of the relevant Record(s) of Title will help.

Section 66, 67 and 68 Block III Waimate SD (the PKW Farm), and Part Lot 1 DP 13121 (the Ballance Kapuni Plant).

Registered legal land owner(s):

The Proprietors of Parininihi Ki Waitotara Block and Parininihi ki Waitotara Farms Limited (the PKW Farm), Ballance Agri-Nutrients (Kapuni) Limited (the Ballance Kapuni Plant)

Detail the nature of the applicant's legal interest (if any) in the land on which the project will occur, including a statement of how that affects the applicant's ability to undertake the work that is required for the project:

The applicant will have an easement agreement with regard to occupation and use of part the PKW Farm to establish the wind turbines. An agreement is in place with PKW to conduct assessment and negotiate terms of detailed

easement and royalty agreement. A formal agreement is expected to be executed at the PKW November 2020 board meeting. Ballance own the Kapuni plant where the electrolysis and refueling infrastructure will be established.

Part III: Project details

Description

Project name: Kapuni Green Hydrogen Project

Project summary:

Please provide a brief summary (no more than 2-3 lines) of the proposed project.

Hiringa and Ballance are proposing to jointly develop a renewable hydrogen hub at Kapuni in Taranaki (the "Project"). This will be the first project in New Zealand to couple wind generation integration with hydrogen production. It will create new technical capabilities and new employment opportunities in New Zealand for green hydrogen production, while also leveraging existing energy sector infrastructure and expertise in Taranaki. It will also provide the seed infrastructure, markets and industry capability for Taranaki to lead New Zealand's transition to a low emissions sustainable industry and create a regional hub for the decarbonisation of industry and heavy transport.

Project details:

Please provide details of the proposed project, its purpose, objectives and the activities it involves, noting that Section 20(2)(b) of the Act specifies that the application needs only to provide a general level of detail.

Project overview

The purpose of the Project is to establish commercially sustainable green hydrogen and ammonia production at scale, demonstrating New Zealand's capability and leadership in the de-carbonisation of the heavy industry and heavy transport sectors.

A key objective is to provide a catalyst for a faster transition to a low emissions economy and to provide infrastructure that will improve economic, employment and environmental outcomes. The Project has national significance and is also a key regional project outlined in the H2 Taranaki roadmap.

As a high-level overview, the project is:

- Shovel ready and will provide employment opportunities in 2021/2022 for more than 100 people in the engineering, construction and support industries, as well as leveraging existing energy sector infrastructure and expertise in Taranaki.
- Supported by central and local government investments, and by investments from several private entities. The project will result in a number of economic benefits in the Taranaki region and it has the potential to provide a catalyst for ongoing investment in hydrogen infrastructure and vehicles across New Zealand.
- A key strategic development in the transition of Taranaki's energy sector and the de-carbonisation of New Zealand's agri-chemical and heavy transport sectors.

Project activities and location

The project will generate renewable electricity from wind turbines on PKW land, near Ballance's Kapuni Plant, which will then provide baseload power to the Kapuni Plant and produce green hydrogen from water via electrolysis. The resulting green hydrogen will be used by the plant and combined with atmospheric nitrogen to produce green urea. The green hydrogen produced will also provide fuel for the transport sector and support the development of a green hydrogen energy and transport hub for South Taranaki. Excess power during peak electricity production will be fed into the grid.

The Project works will involve the following activities:

- Installation of four wind turbines with up to 24 MW of generation capacity.
- Construction and installation of electrolysis plant and hydrogen production infrastructure within Ballance's Kapuni Plant site.

- Construction and installation of hydrogen storage and loadout facilities within Ballance's Kapuni Plant site.

There are a number of unique factors which exist at Kapuni, which make the proposed location especially suitable for the Project, including:

- a world class wind resource;
- a relatively sparse population/density of houses;
- a large-scale industrial user of hydrogen with a proven safety record, which is currently using non-renewable natural gas as a feedstock;
- a large local heavy vehicle fleet (primarily serving the dairy industry) that can be converted to hydrogen vehicles;
- other large scale industrial plants located nearby that are powered by natural gas that can also be provided with renewable energy;
- an abundant water supply; and
- an available grid connection for excess power.

Employment and ongoing investment

This Project is the first step to a significant reduction in greenhouse gas emissions at the Ballance Kapuni Plant, while creating employment opportunities and certainty for the existing workforce and contractors at the plant.

The Ballance Kapuni Plant is one of the largest employers in South Taranaki and in a typical year spends ~s 9(2)(b)(ii) in the local economy. Outside of raw materials Ballance annually spend s 9(2)(b)(ii) on wages, maintenance and growth/development/innovation.

The plant relies on natural gas for its feedstock so the Project represents a way to not only future-proof a large employer and improve the Plant's long term economic and environmental outcomes, but also a way to provide a tangible example of a just transition for the region. It will create and support new opportunities, new jobs, new skills and new investments that will emerge from the transition.

The Project will also heavily leverage existing skills, capability, facilities and infrastructure available in the Taranaki region. The region has a very strong, internationally recognised engineering and fabrication capability, together with maintenance and gas infrastructure management skills due to the existing oil and gas industry in the region. The Project provides an avenue for these skills to be used, adapted and retained within Taranaki. Leveraging the existing infrastructure at the Ballance Kapuni Plant also ensures efficient and optimal resource use.

The development of a new stand-alone wind to green urea plant would require significantly more capital and is not currently a commercially viable project. The perceived levels of risk associated with building new hydrogen infrastructure without certainty of demand are high.

The Project presents a unique situation to materially de-risk the situation where the supply of green hydrogen can be immediately fully utilised at the Ballance Kapuni Plant to manufacture 'green' nitrogen fertilisers that will have a low emissions profile. Currently, the Balance Kapuni Plant's hydrogen production is constrained. The additional green hydrogen feed the will be generated by the Project will enable the Plant to produce more green urea than it does presently. In doing so, this will displace the need to import urea and create a sustainable hydrogen ecosystem.

As the hydrogen transport market develops, an increased hydrogen supply for transportation with a hydrogen offtake will occur. Additional hydrogen generation will be added as markets / demand requires utilising wind turbine capacity that is exported to the grid in the initial phase. The hydrogen production can be approximately doubled with additional electrolysis using the existing wind farm. As scale and electrolyser technology develops the cost of producing green hydrogen is expected to reduce and become commercially competitive with Steam Methane Reforming.

The Project will ensure New Zealand's domestic ammonia manufacturing and heavy transport industries are well placed to be leaders and early adopters of these technologies as they develop and become competitive with conventional hydrogen manufacturing processes.

Environmental outcomes

The Project is a key step for the energy sector transition in Taranaki and in New Zealand. It is expected to generate sufficient green hydrogen to supply up to 6,000 cars, or 50 buses and trucks per year. The "Kapuni Green Hydrogen Hub" will be linked to a hydrogen supply and refuelling network that is being established across New Zealand to enable use of hydrogen fuel cell technology for zero-emission heavy transport – displacing imported fossil fuels with home-grown clean energy.

While the hydrogen fuel-cell market develops, the hydrogen supply can be fully utilised in the Ballance Kapuni Plant to manufacture 'green' nitrogen fertilisers that will have an extremely low emissions profile. Synthetic fertilizers are currently a vital component of agriculture and a necessity for global food production and urea is the most widely used synthetic nitrogen fertilizer worldwide. Nitrogen fertilizers are especially important since available nitrogen is typically the limiting nutrient that inhibits soils from sustaining crop growth.

Production from the Ballance Kapuni Plant meets approximately one third of New Zealand's demand for urea. Remaining demand is imported primarily from the Middle East, Far East and China. Ballance's urea (produced from hydrogen via natural gas reforming and in the future via green hydrogen) is therefore in direct competition against manufacturing plants and countries with less stringent international climate change ambitions and which solely utilise coal or natural gas. The continued use of synthetic fertilizers within agriculture is expected for the foreseeable future and the Project will offer a new more sustainable choice of nitrogen fertiliser for New Zealand farmers.

The manufacture of green ammonia-urea will offset up to 12,000 tonnes of carbon emissions and avoid the import of 7,000 tonnes of urea from the Middle East and Asia. Production of green urea would eliminate the equivalent amount of CO2 as taking 2,600 cars off the road. The renewable energy that will be generated means the Ballance Kapuni Plant will also be able to use almost entirely renewable electricity for its electricity needs.

The Project represents an important first step for Ballance in their efforts to reduce their environmental and carbon emissions footprint. It will enable Ballance to start the transition away from using non-renewable hydrogen sources (such as natural gases) – instead harnessing wind and water energy to produce carbon-neutral hydrogen.

The Taranaki region has a world class wind resource that is yet to be developed. This project represents a new wind generation model that unlocks new wind developments by using wind's variable generation to produce base load power for industrial users and utilises the variable wind resource to produce hydrogen via electrolysis.

In short, the Project will increase New Zealand's total share of renewable energy, while resulting in emissions reductions from the industrial and heavy transport sectors.

Where applicable, describe the staging of the project, including the nature and timing of the staging:

The Project will be completed in one stage between 2020 and 2022. Further details on the construction programme are set out under the heading Construction Readiness section.

Consents / approvals required

Relevant local authorities: South Taranaki District Council, Taranaki Regional Council

Resource consent(s) / designation required:

Land-use consent, Water permit

Relevant zoning, overlays and other features:

Please provide details of the zoning, overlays and other features identified in the relevant plan(s) that relate to the project location.

Legal description(s)	Relevant plan	Zone	Overlays	Other features
Section 66, 67 and 68 Block III Waimate SD (the PKW Farm)	South Taranaki District Plan 2015 (STDP)	Rural	Streams Other Road – Kokiri Road Secondary Collector Road – Palmer Road	Tributaries of Kapuni and Waiokura Streams cross the site and all are subject to Statutory

Legal description(s)	Relevant plan	Zone	Overlays	Other features
				Acknowledgement under the Ng?ruahine Claims Settlement Act 2016.
Part Lot 1 DP 13121 (The Ballance Site)	South Taranaki District Plan 2015	Rural Industrial	High Pressure Gas and Liquid Petroleum Pipeline Stream Designation D36 – Kapuni Electricity Substation Secondary Collector Road – Palmer Road Railway	Tributaries of the Kapuni Stream cross the site and are subject to Statutory Acknowledgement under the Ng?ruahine Claims Settlement Act 2016.

Rule(s) consent is required under and activity status:

Please provide details of all rules consent is required under. Please note that Section 18(3)(a) of the Act details that the project **must not include** an activity that is described as a prohibited activity in the Resource Management Act 1991, regulations made under that Act (including a national environmental standard), or a plan or proposed plan.

Relevant plan / standard	Relevant rule / regulation	Reason for consent	Activity status	Location of proposed activity
STDP	Energy Rule 13.1.4 Discretionary activities - Large-scale renewable electricity generation activities that are not located in the Coastal Protection Area or in an area of Outstanding Natural Features and Landscapes	The proposal does not meet the STDP definition of 'small scale renewable electricity generation' because its capacity exceeds the 20kW limit, and is therefore to be considered large-scale. Large scale renewable electricity generation activities are listed as being discretionary under this rule. The proposal meets the Discretionary criteria as the site is not in the Coastal Protection Area or an area of Outstanding Natural Features and Landscapes	Discretionary	331 Kokiri Road, Kapuni
STDP	Rural Zone Rule 3.1.4 Discretionary activities - Any activity that is not listed as a permitted, controlled, restricted discretionary, non-complying or prohibited activity	The proposal will exceed the 15 m height limit, and generate unusual heavy traffic from temporary construction-related traffic only. Once constructed and in operation, traffic from	Discretionary	331 Kokiri Road and Ballance Site

		the turbine site will be similar to that pre-construction, and additional traffic at the Ballance site will be limited to that associated with the refuelling station and offtake facilities.		
STDP	Rural Industrial Zone Rule 8.1.4 Discretionary activities - Any buildings, works, structures or activities that are not in accordance with a relevant Concept Plan	The proposed vehicle refuelling infrastructure is not currently listed as a permitted activity as the proposed hydrogen technology was not available and anticipated at the time. The technology will ultimately replace the Diesel refuelling infrastructure that is currently in place. The proposal does not comply with the Concept Plan for the site, including the location and size of buildings. The proposed activities are similar in nature to those permitted and existing on the site i.e. heavy vehicles already visit the site to collect goods (urea) produced on the site from materials derived from the immediate environment (natural gas).	Discretionary	Ballance Site
STDP	Parking and Transportation Rule 10.1.4 Discretionary activities – Any restricted discretionary activity that does not comply with one or more of the performance standards	Parking spaces for use post-construction are not proposed to be provided as the turbines and Ballance activities will not generate light vehicle traffic in excess of the permitted levels. All construction-related vehicles will be parked on-site to maintain the safety and efficiency of the roading network. Vehicle crossings may not meet the construction performance	Discretionary	331 Kokiri Road and Ballance Site

		standards, for example because they may need to be wider than the permitted 9 m to provide safe and efficient access for semi-trailer trucks to the refuelling station.		
STDP	District Wide Rule 18.1.3 Restricted Discretionary Activities - Any permitted activity which does not meet one or more of the performance standards.	The length of time and size of temporary buildings associated with construction may marginally exceed the performance standards (potentially exceeding 12 months, and the size of temporary buildings may be greater than 50 m2 in area respectively, due to the scale and practicalities of this project). Temporary buildings will be removed as soon as practicable once their use for construction activities has ceased.	Restricted Discretionary	331 Kokiri Road and Ballance Site
Regional Freshwater Plan for Taranaki	Rule 54 - Maintenance, repair reconstruction or minor upgrading of a structure, in, on, under, or over the bed of a river or lake	Alterations or reconstruction of culverts may be required to facilitate safe and efficient access tracks for transportation of turbines to the proposed locations and other construction traffic.	Controlled	331 Kokiri Road
Regional Freshwater Plan for Taranaki	Rule 64 - Construction, placement and use of any structure that is not permitted or controlled	Potential installation of new culverts to facilitate safe and efficient access tracks for transportation of turbines to the proposed locations and other construction traffic.	Discretionary	331 Kokiri Road

Resource consent applications already made, or notices of requirement already lodged, on the same or a similar project:

Please provide details of the applications and notices, and any decisions made on them. Schedule 6 clause 28(3) of the COVID-19 Recovery (Fast-track Consenting) Act 2020 details that a person who has lodged an application for a resource consent or a notice of requirement under the Resource Management Act 1991, in relation to a listed project or a referred project, must withdraw that application or notice of requirement before lodging a consent application or notice of requirement with an expert consenting panel under this Act for the same, or substantially the same, activity.

N/A

Resource consent(s) / Designation required for the project by someone other than the applicant, including details on whether these have been obtained:

N/A

Other legal authorisations (other than contractual) required to begin the project (eg, authorities under the Heritage New Zealand Pouhere Taonga Act 2014 or concessions under the Conservation Act 1987), including details on whether these have been obtained:

N/A

Construction readiness

If the resource consent(s) are granted, and/or notice of requirement is confirmed, detail when you anticipate construction activities will begin, and be completed:

Please provide a high-level timeline outlining key milestones, e.g. detailed design, procurement, funding, site works commencement and completion.

Refer to Figures 1 and 2 in the Graphic Supplement uploaded to support this application.
A five-stage project framework have been developed for the Project by Hiringa. Each stage is mapped with the associated deliverables and key decisions. The framework has been designed to ensure consistent decision making and assurance, that duplication and rework is reduced and that effective resource allocation is facilitated for successful project delivery. Between each stage there is a stage gate checkpoint to confirm that the stage's objectives have been met and therefore the Project is ready to progress to the next stage. A key element of the Project's stage gate framework is the requirement for assurance reviews which provide an independent and objective oversight of the likely future performance of the Project to the governance committee, board and investors who are responsible for sanctioning, financing, or insuring the Project.
The assurance framework comprises audits and reviews independent from Project team and key project assurance processes contributing to project delivery. A detailed project assurance plan is in place for the Project that details these stage gate reviews and assurance activities. The Assess and Select stages have now been completed, and the Project has passed through the Select Stage gate. As part of this, an independent comprehensive assurance review was performed.
The key outcomes of the Select stage include the decisions relating to:

1. Wind turbine selection:
    - Manufacturer, size, location, number, redundancy
    - Contracting strategy (EPC vs project managed)
2. Electrolyser facilities
    - Model, size, location, number, type (PEM vs Alkaline),
    - Contracting strategy
3. Power supply & Export
    - Direct connected wind turbines to plant or through grid supply
    - Nova or Powerco for grid connect
    - Sub-transmission voltage and connection point
4. Ammonia plant feedstock
    - Tie-in point, supply variability limits, storage requirements
5. Hydrogen Offtake facilities for transport market
    - Compressor sizing, site storage, facilities location, consideration for future refuelling

Project deliverables completed during the Select stage include:

- Concept select report with decision above
- Project Assurance plan
- Project Execution plan
- Basis of Estimate for project cost

- Procurement and contracting strategy
- Insurance Strategy
- Project Risk including HAZID, TECOP

Current Project Status (at time of application)

The Project is currently in the Define Stage with a focus on completing engineering deliverables, commercial contracts, stakeholder engagement and consenting for the Project. A number of Define stage project activities will continue in parallel to the consenting process through 2020 prior to consent by end of Q1 2021, including:

- Finalisation of detailed design / execution plans (engineering / contracts support for Final Investment Decision (FID), and finalise project funding);
- Tender, select and finalise commercial terms with third party execution contractors;
- Completion of commercial and technical information to support the Final Investment Decision (FID);
- Execute funding agreements for remaining funds; and
- Geotechnical surveys at turbine sites to establish ground improvement requirements.

Wind turbines timeframe

The preliminary construction timeframes for the wind turbine element of the project are outlined below. This is based on a financial investment decision being made in late March 2021 and assuming a resource consent is approved by this time.

- March / April 2021: It is planned that construction on site will start immediately to avoid inclement weather in winter and to minimise disruption to farming activities.
    - Underground power lines will be installed from the circuit breaker position to the Powerco lines on Palmer Road or to the Ballance Kapuni Plant north of the PKW farm with works continuing through winter.
    - A geotechnical investigation will be completed over two weeks at the proposed turbine locations.
    - A new entry to the farm will be constructed on Kokiri Road to allow construction vehicles and turbine components to access the farm site.
    - The existing farm races will be upgraded using compacted gravel and used to allow the construction vehicles to access the turbine locations.
- May / June 2021: After ground improvement work is completed, the turbine foundations will be laid.
- October 2021: Crane pad construction and crane mobilisation.
- November 2021: The turbine components (tower, blades, nacelle and hub) will be shipped to Port Taranaki and delivered to site as individual pieces and assembled. Power cables are installed between each turbine and then connected to an export circuit breaker located on the farm.
- December 2021 / January 2022: Commissioning and readiness to operate decision, commence operations and maintenance of facilities to deliver value.

Electrolyser and hydrogen loadout facilities timeframe

The preliminary construction timeframes for the electrolyser element of the project are outlined below. This is based on a financial investment decision being made in late March 2021 and assuming a resource consent is approved by this time.

- June 2021 – September 2021: Civil foundations and electrolyser shed installation
- August 2021: Process and electrical connections into the Ballance Kapuni Plant
- September – October 2021: Site installation of electrical equipment and process pipes
- November 2021 – February 2022:
    - Installation and commissioning of the electrolyser
    - Installation of underground hydrogen pipeline
    - Installation of tube trailer filling facility

Part IV: Consultation

Government ministries and departments

Detail all consultation undertaken with relevant government ministries and departments:

Key Minister Engagements - Discussion Outline

- Prime Minister - Jacinda Ardern - Meeting May 2017, outlining project and associated refueling project. Prime Minister indicated she was supportive of the Project.
- Prime Minister - Jacinda Ardern - launch of H2 Taranaki Roadmap incorporating this project as a key element, May 2019
- Energy Minister – Megan Woods Meeting December 2018 outlining project and partnership. Minister indicated she was supportive of the Project. Meeting August 2020 updating Minister on the project status.
- Minister for the Environment – Minister Parker - Meeting December 2018 outlining project. Letter to Minister October 2020 outlining the project status and the intent to submit this application.
- Climate Change Minister - Minister Shaw - Meeting with Minister April 2020, outlining this project status and associated refueling project. Minister indicated he was supportive of the Project.
- Transport & Economic Development Minister – Phil Twyford - Meeting with Minister Twyford May 2020 outlining this project status and associated refuelling project.
- Minister Andrew Little - Site visit to Kapuni, October 2020, outlining project status. Minister indicated he was supportive of the Project.
- Deputy Prime Minister Winston Peters Meeting 2018, outlining project. Announcement of PGF support for project March 2020.
- Infrastructure and Regional Economic Development Minister – Shane Jones, and Associate Minister for Regional Economic Development - Fletcher Tabuteau - Several engagements with Ministers Jones and Associate Minister Tabuteau 2017, 2018, 2019, 2020 regarding project and PGF support.

Local authorities

Detail all consultation undertaken with relevant local authorities:

Please see attached engagement register

Other persons/parties

Detail all other persons or parties you consider are likely to be affected by the project:

Please see attached engagement register

Detail all consultation undertaken with the above persons or parties:

Please see attached engagement register

Part V: Iwi authorities and Treaty settlements

For help with identifying relevant iwi authorities, you may wish to refer to Te Kāhui Māngai – Directory of Iwi and Māori Organisations.

Iwi authorities and Treaty settlement entities

Detail all consultation undertaken with Iwi authorities whose area of interest includes the area in which the project will occur:

Iwi authority	Consultation undertaken
Ngati Tu	Please see attached engagement register
Ngati Manuhiakai	Please see attached engagement register

Detail all consultation undertaken with Treaty settlement entities whose area of interest includes the area in which the project will occur:

Treaty settlement entity	Consultation undertaken
Te Korowai o Ngaruahine Trust	Please see attached engagement register

Treaty settlements

Treaty settlements that apply to the geographical location of the project, and a summary of the relevant principles and provisions in those settlements, including any statutory acknowledgement areas:

Section 18(3)(b) of the Act details that the project **must not include** an activity that will occur on land returned under a Treaty settlement where that activity has not been agreed to in writing by the relevant land owner.

The project does not include an activity that will occur on land returned under a Treaty settlement where that activity has not been agreed to in writing by the relevant landowner.

Part VI: Marine and Coastal Area (Takutai Moana) Act 2011

Customary marine title areas

Customary marine title areas under the Marine and Coastal Area (Takutai Moana) Act 2011 that apply to the location of the project:

Section 18(3)(c) of the Act details that the project **must not include** an activity that will occur in a customary marine title area where that activity has not been agreed to in writing by the holder of the relevant customary marine title order.

N/A

Protected customary rights areas

Protected customary rights areas under the Marine and Coastal Area (Takutai Moana) Act 2011 that apply to the location of the project:

Section 18(3)(d) of the Act details that the project **must not include** an activity that will occur in a protected customary rights area and have a more than minor adverse effect on the exercise of the protected customary right, where that activity has not been agreed to in writing by the holder of the relevant protected customary rights recognition order.

N/A

Part VII: Adverse effects

Description of the anticipated and known adverse effects of the project on the environment, including greenhouse gas emissions:

In considering whether a project will help to achieve the purpose of the Act, the Minister may have regard to, under Section 19(e) of the Act, whether there is potential for the project to have significant adverse environmental effects. Please provide details on both the nature and scale of the anticipated and known adverse effects, noting that Section 20(2)(b) of the Act specifies that the application need only provide a general level of detail.

A general description of the nature and scale of the anticipated and known adverse effects that may arise from the Project are set out below.

Construction Traffic Effects

The construction of the wind turbines will involve some minor upgrading works to roads providing access to the site; as well as increased temporary traffic generation on those roads from trucks accessing the PKW Farm to deliver concrete and other materials and to transport the cranes necessary to erect the turbines.

Actual or Potential Adverse Effects:

- Safety and efficiency of traffic movements on Kokiri and Palmer Roads and surrounding road network.
- Impacts on amenity values from noise and disturbance.
- Potential for dust from traffic using farm tracks.

Mitigation Factors / Measures:

- Traffic management techniques such as speed-controlled zones will be used on Kokiri and Palmer Roads and at site entrances for all project traffic.
- The site access off Kokiri Road will be upgraded to provide for safe access and egress.
- Construction traffic will be limited to day-time hours only.
- Road upgrades will be undertaken, e.g. widening of corners and carriageways to provide for construction traffic.
- All construction traffic will park on site and no vehicles will be parked on the road.
- All construction traffic will operate in accordance with an approved Construction Traffic Management Plan.
- Construction activities will be communicated to surrounding landowners and other stakeholders e.g. timing and routes for oversized loads.

Assessment: It is not considered that there will be any significant adverse traffic effects arising from the Project.

Noise Effects

A noise assessment has been undertaken by Hegley Acoustics. The activities that have the potential to generate adverse noise effects are the construction activities referred to above, and the operation of the wind turbines, both from mechanical noise sources and aerodynamic noise sources. Actual or

Potential Adverse Effects:

- The potential for noise from construction activities and from operation of the turbines to affect amenity.
- The perceived potential for noise from operation of the turbines to affect stock/animals.

Mitigation Factors / Measures:

- Construction noise will be managed under New Zealand Standard NZS6803:1999 (Acoustics – Construction Noise) and limited to daytime hours only i.e. 7am-10pm.
- Hiringa have undertaken background noise monitoring and engaged an acoustic expert to model noise. The results show that due to the distance between the turbines and neighbouring dwellings noise from the turbines will comfortably comply with the New Zealand Standard 6808:2010 Acoustics - Wind Farm Noise. This means noise will not result in sleep disturbance for residents of surrounding dwellings.
- If consent is granted for the project regularly noise monitoring will be undertaken to ensure compliance with the NZ standard. The impact of an operating wind farm on livestock is minimal. Sheep, cows and horses are not disturbed by wind turbines and typically graze right up to the base of the towers, which they often use as rubbing posts or for shade.

Assessment: It is not considered that there will be any significant adverse noise effects arising from the Project. The expert noise assessment obtained by Hiringa concludes that the noise effects of the proposed wind turbines will be no more than minor.

Landscape and Visual Effects

A Landscape and Visual Impact Assessment has been undertaken by Boffa Miskell. The wind turbines are by necessity large structures that require open landscapes in order to effectively harness the wind. Given the height and scale of the turbines and their location on the open South Taranaki ring plain, the turbines have the potential to result in adverse visual and landscape effects.

Actual or Potential Adverse Effects:

- Potential adverse effects on people's appreciation of the surrounding landscape, such as viewshafts to Mount Taranaki and the Central Plateau.
- Shadow flicker on some dwellings from movement of the turbine blades.

Mitigation Factors / Measures:

- Buffer distances between turbines and surrounding dwellings e.g. closest dwelling is located 800m away with most surrounding dwellings much further from the turbines.
- For several of the viewpoints from private properties, dwellings are surrounded by tall shelterbelts, hedges and/or amenity planting which screen views to the surrounding countryside.
- Additional planting around dwellings to provide visual screening of the turbines will be undertaken on a case by case basis as agreed with landowners.

Assessment: The Boffa Miskell assessment concludes that while the turbines will be prominent when viewed from various places on the South Taranaki ring plain, they will not dominate it and the nature and scale of the landscape is such that the four turbines will be able to be successfully accommodated without significant landscape and visual effects. Compliance with shadow flicker guidelines will be achieved through a combination of local planting to prevent

show flicker at sensitive windows and if necessary, curtailment of certain turbines during sunny days (~ 30 hrs total / year).

Ecological Effects

An Ecological Assessment has been undertaken by Boffa Miskell and has been peer reviewed by Dr John Craig. The Project site is highly modified and comprises plant communities and habitats with low ecological value. The site is not unique and does not contain habitat not found within the many thousands of farms surrounding it.

The Project will not impact on coastal or freshwater habitats. Construction and operation activities that have the potential to generate adverse ecological effects on birds have been considered and assessed. During construction, the earthworks on the site will be minimal, and will not impact on the local birdlife which are accustomed to normal farm activities, stock, machinery and vehicle movement. These species are also highly mobile and can move away from any activity that disturbs them. When the wind turbines are operating, there may be some collision mortality with non-threatened species, such as Australasian harrier, black backed gull, magpies and finches as has been observed at other windfarm sites, however no adverse effects on migratory birds or threatened species is likely.

Actual or Potential Adverse Effects:

- Potential removal and/or impacts on habitats of significant indigenous flora or fauna.
- Bird strike from birds colliding with turbines.
- Sediment from earthworks impacting streams.

Mitigation Factors / Measures:

- The construction areas are predominantly dairy pasture or the existing industrial Ballance plant and are highly modified environments.
- No significant areas of indigenous flora or fauna are present in the project areas.
- Fenced and planted waterways will not be directly affected.
- The application site is not located on a key route for migratory birds.
- The turbines are arranged in a north-south alignment further reducing the exposure to any migration.
- Earthworks will be undertaken in accordance with an Erosion and Sediment Control Plan which will avoid sediment laden stormwater entering streams.

Assessment: The expert ecological assessment and peer review obtained by Hiringa concludes the adverse ecological effects of the proposed windfarm will be no more than minor and that as a consequence there is no need for particular avoidance or mitigation measures.

Heritage and Archaeological Effects

An Archaeological Assessment has been undertaken by Archaeological Resource Management. The activities which have the potential to generate adverse heritage and archaeological effects are the earthworks for the installation of the proposed wind turbines; access track upgrades; and cable trenching.

Actual or Potential Adverse Effects:

- Damage or destruction of archaeological sites, material, areas and landforms that have heritage, cultural and/or archaeological value.

Mitigation Factors / Measures:

- There is no historic record of traditional Maori occupation at this specific location and the property contains no recorded archaeological sites. No previously unrecorded archaeological sites were noted during a field survey of the project area.
- An Archaeological Discovery Protocol has been prepared for the project and all contractors will be briefed on the protocol so appropriate steps are undertaken in the event of an archaeological discovery.

Assessment: The archaeological assessment concluded that no known archaeological sites will be affected by the project and that the likelihood of recovering in-situ archaeological evidence on the PKW Farm has been assessed as low.

Cultural Effects

Hiringa conducts ongoing engagement with mana whenua, and has also undertaken specific consultation in relation to the Project with Te Korowai o Ngaruahine Trust (the iwi authority for Nga Ruahine Iwi), Ngati Manuhiakai Hapu and Ngati Tu Hapu. Hiringa is continuing to work with mana whenua to ensure any potential adverse cultural effects arising from the Project are properly identified, understood and addressed.

Actual or Potential Adverse Effects:

- Impacts on the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga.
- Damage or destruction of archaeological sites, material, areas and landforms that have cultural value.

Assessment and Mitigation Factors / Measures:

- Finalising Agreements with Nga Ruahine Iwi, Ngati Manuhiakai Hapu and Ngati Tu Hapu to address any potential cultural effects and opportunities to continue to work with Iwi and Hapu over the short and longer term.
- An Archaeological Discovery Protocol has been prepared for the project and all contractors will be briefed on the protocol so appropriate steps are undertaken in the event of an archaeological discovery, including use of tikanga Maori.

Safety and Risk Effects

Hydrogen gas is a class 2.1.1a hazardous substance, meaning it is a high-hazard flammable gas. It poses no environmental or toxic hazards but does pose a fire/explosion risk.

Actual or Potential Adverse Effects:

- Serious injury/fatality and/or damage to nearby surrounding structures from fire or explosion at hydrogen facilities.

Assessment and Mitigation Factors / Measures:

- The project has selected established vendors for design and supply of equipment items. The vendors have years of experience of designing, manufacturing and supplying the chosen equipment. As far as practical, standard off-the-shelf equipment components with proven operational capability have been selected.
- A preliminary Hazard Identification (HAZID) study has been undertaken for the Project which identified no hazards as having a 'high' residual risk after safeguards are considered. The preliminary study findings have been used to inform key design decisions as the Project advances to further reduce the risk through engineered safeguards. A full HAZID study and detailed Hazard & Operability (HAZOP) study will be conducted for the equipment once final design decisions have been made.
- An inspection, testing and maintenance regime will be developed for the operations phase to ensure that engineered safeguards remain effective, with any residual risk associated with these activities to be managed by procedural controls.

Part VIII: National policy statements and national environmental standards

General assessment of the project in relation to any relevant national policy statement (including the New Zealand Coastal Policy Statement) and national environmental standard:

New Zealand Coastal Policy Statement

Due to the application site being located some 9 km from the coast, the New Zealand Coastal Policy Statement (2010) is generally not applicable to this project other than Policies 22 and 23 which require the reduction in sediment loadings in runoff in stormwater systems through contaminant treatment and controls on land use activities. The proposal is consistent with these policies through use of an Erosion and Sediment Control Plan for proposed earthworks to minimise any sediment discharge to waterbodies which flow to the sea.

National Policy Statement for Renewable Electricity Generation

Under the National Policy Statement for Renewable Electricity Generation (2011) ("NES REG") the following are matters of national significance:

a) the need to develop, operate, maintain and upgrade renewable electricity generation activities throughout New Zealand; and

b) the benefits of renewable electricity generation.

The Project is consistent with the NES REG and will use renewable natural resources to increase New Zealand's electricity generation capacity while reducing and displacing greenhouse gas emissions. It will also increase the security of electricity supply at local and regional levels by diversifying the type and location of electricity generation. It also avoids reverse sensitivity effects on other renewable generation activities, aligns with the South Taranaki

District Plan (STDP) and Taranaki Regional Policy Statement provisions, and has used the opportunity provided by the STDP to investigate the wind resource as part of due diligence.

It is noted that when considering this application, decision makers are required to have particular regard to the need to locate renewable electricity generation activities where the renewable energy resource is available and the location of existing structures and infrastructure. South Taranaki has a world class wind resource, and existing infrastructure that can utilize and benefit from renewable energy generation.

National Policy Statement for Freshwater Management

With regard to freshwater, the proposal involves:

- A nominal change to existing Ballance water permits to permit use of water for electrolysis (the volume of take remains within the consented allowance with the purpose for use to be amended;
- Upgrade / installation of new culverts within streams to facilitate access to the PKW farm; and
- Earthworks for construction. All earthworks will be temporary and managed with an Erosion and Sediment Control Plan and associated methods such as silt fences and settling ponds and all culverts will be installed with regard to good practice such as allowing for fish passage.

Therefore, considering the National Policy Statement for Freshwater Management 2020, the proposal is broadly consistent with the objective and policies, maintaining the health and wellbeing of nearby streams, their uses for people, and the well-being of people and communities.

National Environmental Standards for Freshwater

The proposal has taken into account the Resource Management (National Environmental Standards for Freshwater) Regulations 2020. Subpart 3 deals with the effects on the passage of fish from structures, including culverts, in the bed of any river. It seeks to ensure that the design and performance of structures is appropriate for maintaining fish passage. The NES specifies permitted activity standards for culverts, including design criteria such as gradient, water velocity, culvert versus stream width, height in relation to bed height, and provision for sediment movement and geomorphic processes. Any new or replacement culvert will be designed with regard for the permitted activity criteria though compliance is unable to be confirmed at this stage.

Overall, any new culvert will be designed and installed such that fish passage will be appropriately maintained.

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

The proposal has taken into account the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations (2011). The location of the proposed turbines is not identified as a HAIL site. The Ballance Site is identified on the Taranaki Regional Council Register of Selected Land Uses for historic “Chemical Processing/Manufacturing, Fertiliser Storage or Distribution” uses, and current “Chemical Processing/Manufacturing uses”. Its status is “1(b)-Haz Subs Present-Risk acceptable for land use”. At least part of the Ballance site is therefore a HAIL site. Details for proposed disturbance of soil at Ballance are yet to be confirmed, and if the proposed volume exceeds the permitted limits on a ‘piece of land’ as identified in the Standard, a Detailed Site Investigation will be undertaken to advise the appropriate methods for the activities and the appropriate consent will be applied for as necessary. Altogether, any contaminated soils will be assessed and managed such that human health is protected.

Part IX: Purpose of the Act

Your application must be supported by an explanation how the project will help achieve the purpose of the Act, that is to “urgently promote employment to support New Zealand’s recovery from the economic and social impacts of COVID-19 and to support the certainty of ongoing investment across New Zealand, while continuing to promote the sustainable management of natural and physical resources”.

In considering whether the project will help to achieve the purpose of the Act, the Minister may have regard to the specific matters referred to below, and any other matter that the Minister considers relevant.

Project’s economic benefits and costs for people or industries affected by COVID-19:

A report by economists Infometrics titled Economic Impacts of COVID-19 on the Taranaki Economy – Early Estimates for Venture Taranaki & New Plymouth District Council was prepared in April 2020 and found that the energy sector contributes about a quarter of Taranaki’s economic output

(http://venture.taranaki.info/VT.Venture/media/Publications/Economic-Impacts-of-COVID-19-on-the-Taranaki-Economy.pdf).

The Infometrics report also examined the impact of COVID-19 on the Taranaki Region and predicted that mining, electricity, gas, water and waste services will contribute more than a third of the overall decline in GDP in Taranaki over the year to March 2021. GDP in these industries is expected to decline by s 9(2)(b)(ii)

The project is a significant infrastructure construction project generating employment for over 100 people during construction. Infrastructure is a powerful vector for social and economic development and significant shovel-ready projects can immediately boost local and regional economies by injecting extra liquidity and helping to stabilize supply chains. Head contractors will be engaged for civil and electrical construction work and other local contractors will be needed for works at the PKW Farm and Ballance Kapuni Plant, undertaking earthworks, trenching, surveying and fencing, laying turbine foundations, installation of the electrolyser equipment, fabrication and installation of associated balance of plant equipment and providing security.

The ongoing operation of the Green Hydrogen Hub once established will support work for over 150 existing staff and contractors at the Ballance Kapuni site, support employment in clean technology in the region and inject approximately s 9(2)(b)(ii) per year into the Taranaki economy through staff salaries and maintenance activities. The Project will also generate opportunities for new and continued employment in terms of design, construction, operations and maintenance jobs.

The project is expected to provide work for over 200 people from design through to operation. Whilst job creation is also covered elsewhere in this application it is also highlighted in this section, as one of the largest economic impacts for people affected by the COVID-19 pandemic was the reduction in work hours or complete loss of jobs.

The Infometrics report also anticipates a 8.5% contraction in regional GDP for the year to March 2021 – slightly worse than an 8.0% drop forecast nationwide, while jobs are expected to decline 9.5% in the region, against a 9.8 % drop nationally. The report estimates that 5,500 jobs will be lost in the region. The accommodation and food services, retail and wholesale trade and transport, postal and warehousing sectors are anticipated to be hardest hit. Construction is also expected to lose over 500 jobs. The two main pillars of our regional economy – energy and food production – are expected to see mixed fortunes going forward," says Venture Taranaki Chief Executive Justine Gilliland.

"Internationally, we have seen a significant plunge in the commodity price for oil, and, compounded with COVID-19, the energy sector is expected to take the biggest hit of all our sectors in GDP terms, while food production and exports have remained strong and are forecast to stay that way."

Ballance's Kapuni Plant is currently one of the largest employers in South Taranaki, contributing hundreds of millions of dollars to the regional economy in wages and contract work. Diversifying the fuel supply for the operations at the Ballance Kapuni Plant inherently increases its resilience and reliability and therefore its ability to provide a workplace for employees, and increases operational certainty with regard to the pricing of electricity for Ballance operations.

Direct economic benefits for New Zealand include the reduction in imported crude and fossil fuels, and urea. The additional 7000 tonnes per annum of urea produced in NZ with a value of approximately s 9(2)(b)(ii) will displace imports.

Project's effects on the social and cultural wellbeing of current and future generations:

Hawera is South Taranaki's main service centre and the district is otherwise predominantly characterised by dairy farming and oil and gas or industrial related activities. South Taranaki district had a population of 27,534 in the 2018 census, as compared to New Plymouth district with 80,679 people. The Manaia-Kapuni area itself had a population of only 1551 people.

Most economic activity in the Taranaki Region is centred in New Plymouth city approximately an hour's drive to the north from Kapuni. Considering the context of the area in which the proposal is located, the proposal is anticipated to have the following effects on the district's social and cultural wellbeing (as guided by https://www.mpi.govt.nz/dmsdocument/5266-the-social-value-of-a-job):

- Physical and mental health: Generation of more and diversified employment opportunities. People with disposable incomes are able to improve their living standards and pay for health and wellbeing services. Psychologically, people who are self-sufficient for income (rather than reliant on government support) have improved self- and societal respect and esteem. This can benefit family-wide through improved social status of family members and with children with employed caregivers being less likely themselves to be out of work

in the future. Being employed, even on a fixed term as for the construction period of this project, is also better for peoples' long-term employability.

- Community and society: With a larger and economically active community, people increase their participation in events. There are generally more resources, services and fundraising abilities in communities with higher employment. There is increased respect for active towns and areas, and better engagement of people in leadership positions such as at local government.
- Residential effects: Possible pressure from high demand on short term housing during construction phase, similar to that experienced during major industry turnaround / maintenance activities. Possible changes for Kapuni / South Taranaki as a place from introduction of turbines as a new land use and changed landscape.
- Economic activity: Increased opportunities and spending during the construction phase, increased resilience for the Ballance plant thereafter and ongoing work associated with the maintenance of the turbines. Boost to local economy with contracts for construction. Diversification of the activities in the area and decreased reliance on traditional fossil-fuel related activities. The Project also presents an opportunity for farmers to use a fertiliser product with reduced energetic, financial and environmental costs.
- Education: Potential for training opportunities targeted at young people during the design and construction phases. Potential to showcase different career opportunities for students. Opportunities for local business training and development.

Whether the project would be likely to progress faster by using the processes provided by the Act than would otherwise be the case:

If the Project was to seek consent via the conventional Resource Management Act 1991 (RMA) consenting pathways, the proposal would be publicly notified due to the adverse effects of the project being more than minor.

The statutory processing timeframes for a publicly notified application total 130 working days (at least) for a decision on the application to be issued, dependent on whether a hearing is required. However, these timeframes are often extended or suspended, particularly if further information requests are made.

Under the COVID-19 Recovery (Fast Track Consenting) Act 2020 ("the Fast Track Act'), a decision from the Panel is required to be issued within 50 working days of an application being lodged with the Environmental Protection Agency. Under the RMA, any submitter has a right of appeal to the Environment Court in respect of a matter raised in their submission.

Under the Fast Track Act, an appeal may be made only on a question of law and is made to the High Court. A further appeal on the High Court's decision is able to be made to the Court of Appeal under the Act but that is the final appeal. Therefore, as compared to the RMA, the Act essentially reduces the potential delays and uncertainties associated with appeals in the appellant Courts.

Altogether, the Act provides a condensed timeframe for a decision on the resource consent applications and one forum/process for consideration for the proposal. The usual consent process with associated costs and potential timeframes which could extend into 2022 are considered to impose a significant barrier to new renewable electricity developments.

The Project has secured a manufacturing slot with the wind turbine manufacturers which match up with the Project's ideal construction timeline and in order to hold this slot, the FID on the Project will need to be made by April 2021. It is unlikely that his can be achieved with the normal consenting process due to consent processing times and potential appeals.

The demand for electrolysis equipment is also increasing with a global increase in hydrogen projects. Delays in consenting and therefore the ability to order equipment will increase delivery times. Fast-tracking the resource consent process provides the necessary timeframe and process certainty required by investors associated with developments of the nature proposed.

Covid-19 has also directly delayed the project by ~ 6 months and compressed time frames. Lockdown delayed environmental assessments surveys and the ability to undertake critical stakeholder consultation. Most wind farms in NZ have taken between 12- 24 months for consenting, the fast track consenting process will reduce the consent timeframe and provide certainly to secure project investment.

This project is approximately 1/8th the scale of recent consented wind farm utility scale developments and represents an important style of commercial/industrial scale renewable development that will be essential for achieving New

Zealand's decarbonisation commitments. The fast track process would provide a consenting timeframe that is more fit for purpose and in keeping with the Project's scale.

Whether the project may result in a 'public benefit':

Examples of a public benefit as included in Section 19(d) of the Act are included below as prompts only.

Employment/job creation:

The Project has already provided work opportunities for approximately 70 people during the Assess and Select stages. If consent is granted, the Project will have a direct economic impact in the form of job creation and through procurement and construction from local contractors. The Project will provide indirect employment for engineering, construction and support industries, and is forecast to employ over 100 people during the Execute stage.
Post COVID-19, many construction-related businesses have had reduced workflows and employees' hours or made people redundant. Construction output in New Zealand decreased 24.2% in June 2020 when compared to the same month in 2019 and forecast to be 13% lower for this quarter (https://tradingeconomics.com/new-zealand/construction-output). Refer to Figure 3 of the Graphic Supplement uploaded to support this application.
The Project will require civil / construction / engineering inputs and is of a scale that can provide some certainty for employers and employees alike for the next year, considered to be a crucial time in the recovery from the economic impacts of COVID-19. Employment generated from the Project will cover a wide spectrum of the workforce from unskilled labour to professional services.
The Ballance Kapuni Plant is one of the largest employers in South Taranaki and is committed to an ongoing re-investment programme to maintain the integrity and efficiency of the Ballance Kapuni Plant, which provides 130 full-time jobs and 20 direct contracts. Hiringa has held initial meetings with E tu union officials to develop a plan for Ballance worker retention and just transition. It is intended that Hiringa, Ballance, and E tu collaboratively identify and develop a plan for skills and training opportunities. Specific skills and training required will include wind turbine and electrolyser installation, operation and maintenance, supply infrastructure projects, refuelling infrastructure and vehicle development and maintenance.

Housing supply:

N/A

Contributing to well-functioning urban environments:

N/A

Providing infrastructure to improve economic, employment, and environmental outcomes, and increase productivity:

The H2 Taranaki Roadmap, launched by the Prime Minister Jacinda Ardern in March 2019 provides an excellent outline of the opportunity for hydrogen in Taranaki. This Kapuni Green Hydrogen Project is one of the roadmap's core initiatives outlined in the document. Currently, the establishment of hydrogen demand for domestic purposes such as transport and industrial use is restricted by the lack of supply, while supply is limited by the lack of a domestic demand. Breaking this interdependence is a critical challenge for hydrogen and the potential for hydrogen to play an important role in decarbonising the New Zealand economy.
The Project will deliver a sustainable and reliable source of electricity to the Ballance plant and hydrogen for vehicle refueling and export from the site, increasing the resilience and productivity of Ballance as a large employer. Diversifying the energy and fuel supply for operations at the Ballance Kapuni Plant inherently increases its resilience and reliability and therefore its ability to provide a workplace for employees. It also increases operational certainty with regard to the pricing of electricity for Ballance operations and will maximise asset utilization in the long term. Hydrogen refueling infrastructure is key to decarbonising the heavy transport industry in New Zealand and the site will be one within a network of refueling stations over time. Hydrogen also has a complementary role in a renewable electricity system and the Project will assist to diversify energy streams in the district. By producing additional hydrogen, the productivity of the Ballance Kapuni Plant will improve increasing the plant output by s 9(2)(b)(ii).

The grid connection also provides opportunity to capture excess curtailed renewable energy produced anywhere in NZ during low demand periods by ~ 10GWh/yr. The scale of wind generation aligns with the industrial demand at Kapuni, fits into the local network capacity and when coupled with electrolysis provides flexibility to match renewable production. Kapuni has a wind resource that is ideally suited to the latest wind turbines technology to produce low cost energy at a scale that can be accommodated within the local farm environment.

Electrolyser technology allows hydrogen to be produced and stored during periods of excess electricity generation. In periods of high electricity demand, hydrogen assets would be able to load shed supporting a resilient renewable electricity network. The use of hydrogen produced from excess electricity can be utilised in multiple applications which are difficult to achieve directly with battery electrification. New Zealand currently exports a significant amount of renewable electricity through base load industrial processes.

A key advantage of a hydrogen export industry over base load export industrials is the ability for hydrogen technologies to release power to the grid during periods of supply scarcity. The project will establish renewable energy capability in the region for wind / hydrogen development, maintenance and operations. By providing a large hydrogen offtake, the project acts as a platform larger scale combined wind / hydrogen development and a catalyst for a hydrogen export industry of national significance. The latest wind turbine technology coupled with an outstanding wind resource provides industry leading turbine capacity factors and low cost energy essential to produce commercially viable hydrogen.

Accordingly, the project has attracted international attention from leading equipment suppliers and energy sector investors. As an example of the investment momentum created by this project and Hiringa's associated activities, Hiringa and Mitsui & Co, have signed a strategic alliance agreement to jointly pursue hydrogen related commercial projects in New Zealand. Through this agreement the two companies will:

- Work towards a common goal of creating a viable domestic hydrogen economy and export opportunities in NZ
- Provide Mitsui & Co with access to participate in multiple Hiringa hydrogen projects including
    - The Kapuni Green Hydrogen Project (this project)
    - Hiringa's nationwide refuelling network

In addition, the Project will showcase NZ skills, capability and world leading wind resource and it is hoped this will attract international attention. It will also build capability in renewable energy – wind development, maintenance and operations in region; and it will provide a platform for larger scale wind and hydrogen for export industry with national significance.

Improving environmental outcomes for coastal or freshwater quality, air quality, or indigenous biodiversity:

The Project will improve environmental outcomes for air quality by actively lowering the level of emissions generated from combustion of natural gas and petrol or diesel through the provision of a renewable energy source and clean-burning hydrogen as a feedstock for the Ballance Kapuni Plant.

The manufacture of green ammonia-urea will offset up to 12,000 tonnes of greenhouse gas emissions and avoid the import (and associated emissions) of 7,000 tonnes of urea from the Middle East and Asia. Production of green urea would eliminate the equivalent amount of CO_2 as taking 2,600 cars off the road. The energy used to power to plant may provide up to an additional 20,000 tonnes per annum of CO_2 reduction. The Project may also serve as a catalyst for further decarbonisation of the agri-nutrients sector.

In 2018 New Zealand's gross greenhouse gas emissions were mainly made up of carbon dioxide (44.5 percent), methane (43.5 percent), and nitrous oxide (9.6 percent). Carbon dioxide emissions were mainly produced by transport (47.0 percent), manufacturing industries and construction (17.9 percent), and public electricity and heat production (9.4 percent) (https://www.stats.govt.nz/indicators/new-zealands-greenhouse-gas-emissions). Transport emissions were mainly made up by road vehicle emissions (90.7 percent).

The Project will provide a zero emissions fuel source for heavy transport and serve as a catalyst for decarbonisation of that sector. Pollutants from fossil-fuel vehicles (particularly those that run on diesel) are associated with respiratory illnesses such as asthma, impaired lung development and function, heart and brain problems, and other general health issues. A shift to a low-emissions heavy vehicle fleet would assist to remove these pollutants, provide cleaner air, and reduced rates of illness and mortality caused by air pollution. Increasing the capacity of renewable electricity

generation in New Zealand will also lead to a decentralised power network. This, too, could have potential positive benefits for air quality by displacing carbon-intense fuels with clean, emissions-free local generation.

Minimising waste:

Whilst the Project will not result in waste minimisation, as that term is understood under the Waste Minimisation Act 2008, the Project will leverage existing infrastructure and in doing so, extend the life of the Ballance Kapuni Plant. Efficient use of resources is a key component of waste minimization.

Contributing to New Zealand's efforts to mitigate climate change and transition more quickly to a low-emissions economy (in terms of reducing New Zealand's net emissions of greenhouse gases):

At a national level, green hydrogen is a key to the decarbonisation of commercial and heavy transport, agricultural and industrial chemical production, process heat, and energy storage. These sectors have significant potential to accelerate NZ's transition to a low emission economy while increasing energy resilience and replacing imports with sustainable regionally produced products.

This project is a tangible example that touches on all those sectors by leveraging the existing infrastructure to deploy green hydrogen production at commercial scale. The additional urea production offsets imported urea with locally produced green urea, which typically has higher emissions due to production from coal and ocean transport. As production is diverted to the transport market it offsets fossil fuel imports with locally produced green hydrogen for transport.

A key challenge with establishing a hydrogen network in New Zealand is the need for the transportation demand to match generation or supply capacity. This project will enhance the Crown Infrastructure Partners (CIP) funded supply infrastructure project, by providing flexible renewable hydrogen production at scale, that can be diverted to a growing transport market.

Outside the scope of this Project is Hiringa's supply infrastructure project which is targeting the establishment of nation-wide refuelling infrastructure with green fuels generated within NZ. Hydrogen from this project will be used to decarbonise the heavy transport sector. Heavy vehicles produce grossly disproportionate emissions with large line haul trucks generating over 100 times the emission of an average light vehicle. This project will enable commercially viable hydrogen production to replacing the highest emitting vehicles with zero emission solutions to accelerate transitions to a low emission economy.

The Project is transformative for the Kapuni and South Taranaki region. It will provide the seed infrastructure, markets and industry capability for Taranaki to lead the transition from high to low emission sustainable industry. It will help create a vision for the region that it has an ongoing role for energy in the future. This project is a way to leverage existing infrastructure and markets to develop a green hydrogen supply in NZ, as the Ballance Kapuni Plant provides both a renewable electricity offtake and green hydrogen offtake for the project that reduces overall project risk. It is a mechanism for direct action from central government for transition towards a net zero economy by creating a regional hub for the decarbonisation of industry and heavy transport. Hydrogen complements and can help underpin the development of renewal energy through the ability to load follow and shed renewable energy production to balance demand. It improves utilization of the existing electricity distribution and generation network, can provide grid stabilization and storage.

The direct benefits from this project are enhanced when compared to other wind developments. South Taranaki has a world class wind resource capable to generate the low cost renewable energy required to produce commercially viable hydrogen. This low cost energy when coupled with the industrial hydrogen offtake enable the wind turbines development to play a critical role to catalyst hydrogen for heavy transport and industrial decarbonisation. Direct coupling of the wind resource is critical to a low delivered energy cost and competitive hydrogen production.

Promoting the protection of historic heritage:

While the project does not actively protect historic heritage, an archaeological assessment has been undertaken to ensure the Project will not adversely impact on historic heritage. An archaeological assessment has found no historic record of traditional Maori occupation at this specific location and the property contains no recorded archaeological sites. An Archaeological Discovery Protocol has been prepared for the project.

Strengthening environmental, economic, and social resilience, in terms of managing the risks from natural hazards and the effects of climate change:

The project will increase renewable energy generation for industry and provide a commercial demonstration of coupling wind generation to green hydrogen via electrolysis in New Zealand. By diversifying electricity production through adding another renewable contributor to the region and country, energy resilience is improved; wind generation can fill gaps in generation when hydro lakes are low or the sun does not shine.
Potential associated effects of climate change and the reducing supply of fossil fuels may see more stringent policies and pricing for petrol and diesel, with potential shortages or with supplies being uneconomic. Providing a catalyst for uptake of hydrogen powered heavy vehicles will enable transportation fuel to be generated from New Zealand renewable energy and reduce New dependence on imported fossil fuels.
The project will reduce reliance on imported urea through the direct additional production and the catalyst for establishment of a larger green hydrogen and urea project. The proposal creates the basis for a hydrogen transport hub for green hydrogen at Kapuni, aiding in the transition from fossil fuels for the transportation sector and providing a diversified supply of fuel.

Other public benefit:

In addition to the economic and employment benefits, the Project has the potential to create a number of co-benefits, including:

- Cleaner air, and reduced rates of illness and mortality caused by air pollution. Pollutants from fossil-fuel vehicles (particularly those that run on diesel) are associated with respiratory illnesses such as asthma, impaired lung development and function, heart and brain problems, and other general health issues. A shift to a low-emissions heavy vehicle fleet would assist to remove these pollutants.
- The emergence of new technologies and firms. The Project will bring together world-leading hydrogen technology and specialist technical capabilities into the region. It is the first in a series of proposed hydrogen energy projects that can attract and retain highly valuable specialist skills for the benefit of New Zealand. A reinvigorated and refocused innovation system may result in greater effort being directed towards developing and applying new ideas that offset, reduce or remove GHGs. New Zealand has already proved a fertile ground for developing such technologies, and scope exists to considerably expand New Zealand's contribution to global knowledge
- The proposal is a powerful green branding opportunity for Taranaki, and by extension energy, agriculture, transportation and tourism as key industries within the New Zealand economy. The project is considered to contribute positively to the local and international public perception and marketability of these industries, with a flow on effect of greater spending and investment within them.
- Use of this green urea reduces New Zealand's dependence on fertiliser imports, which may be impacted in this current time where some trade between countries is restricted or reduced, reducing supply and raising prices of products.
- Hydrogen is key to the decarbonisation of sectors such as industrial chemicals and heavy transport. Hiringa is focusing on industrial scale chemicals, public transport, freight and logistics and in New Zealand to enable commercial economies of scale and maximise the potential benefit to New Zealand by applying hydrogen to the most suitable applications.

Whether there is potential for the project to have significant adverse environmental effects:

The applicants have engaged experts to advise on the significance of any environmental effects and mitigation measures that can be implemented to reduce the significance of effects. None of the environmental assessments undertaken for the project conclude that the proposed activities will result in significant adverse environmental effects. Key measures to mitigate effects include implementing an Erosion and Sediment Control Plan for earthworks, a Construction Traffic Management Plan, a Construction Management Plan, an archaeological Discovery Protocol, and siting the turbines in the most feasible location after extensive due diligence research including on noise effects.

Part X: Climate change and natural hazards

Description of whether and how the project would be affected by climate change and natural hazards:

The main features of New Zealand climate change projections (https://www.mfe.govt.nz/publications/climate-change/climate-change-effects-and-impacts-assessment-guidance-manual-local-51#:~:text=Key%20points%3A,5.1%C2%B0C%20by%202090) with relevance to the Project are understood to be mean temperature increase, fewer low temperature extremes and more high temperature extremes, heavier and/or more frequent extreme rainfall, increase in annual mean westerly wind flow, and increase in severe wind risk. The majority of the above climate change features are anticipated to have no effects on the project, with the exception of an increase in westerly wind flow which will have positive effects on the electricity production potential of the wind turbines.

Other features of the projections include effects on snow, glaciers, sea level rise, waves, storm surge, ocean currents and ocean temperatures. These are not considered to be relevant to the project. The main natural hazards for the application site are volcanic eruption, earthquake, flooding, storms, tornadoes and drought. At 8 km from the shoreline the site is not considered to be subject to tsunami risk.

The site is outside the immediate lava flow, lava dome, pyroclastic flow and lateral blast hazard zones (https://www.gns.cri.nz/Home/Learning/Science-Topics/Volcanoes/New-Zealand-Volcanoes/Volcano-Geology-and-Hazards/Taranaki-Egmont-Volcano-Geology#:~:text=FUTURE%20HAZARDS%20AT%20TARANAKI%2FEGMONT%20VOLCANO&text=Hazards%20from%20%22ground%2Dhugging%22,debris%20flows)%20and%20associated%20floods).

The site is within landslide, lahar and flood hazard zones however approximately 80% of Taranaki is also in this area and therefore it is not considered practical to employ any specific methods to mitigate risk from what would be an exceptional and widespread natural hazard.

With regard to land instability, the turbines will be established on plains that are essentially flat. They will also have ground testing and resulting engineered foundations to ensure their stability. There will be no slope that has an increased risk of instability as a result of the proposed activities. The proposed turbine and foundation designs will be constructed so as to comply with New Zealand seismic requirements.

With regard to potential flooding, only small tributaries are in close proximity to the site. The majority of the site will remain in permeable pasture, and overland flow-paths will be maintained to as reasonably close to what they are currently. There will therefore be no stormwater generation or diversion that will result in any different effects from the current site.

The structural design of the turbines will be to withstand strong wind events and rain does not affect them, therefore risk from storms is mitigated. Tornadoes are rare in New Zealand and as for volcanic hazards there is no practicable method to undertake to ensure total risk mitigation, though the risk is deemed to be acceptable. Droughts will have no impact on the ability to generate electricity from the turbines.

Part XI: Track record

A summary of all compliance and/or enforcement actions taken against the applicant by a local authority under the Resource Management Act 1991, and the outcome of those actions:

Local authority	Compliance/Enforcement Action and Outcome
South Taranaki District Council	No compliance or enforcement actions have been taken against the applicant by a local authority under the Resource Management Act 1991.
Taranaki Regional Council	No compliance or enforcement actions have been taken against the applicant by a local authority under the Resource Management Act 1991.

Part XII: Declaration

I acknowledge that a summary of this application will be made publicly available on the Ministry for the Environment website and that the full application will be released if requested.

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.

Cam Twigley	06/11/2020
Signature of person or entity making the request	**Date**

Important notes:

- Please note that this application form, including your name and contact details and all supporting documents, submitted to the Minister for the Environment and/or Minister of Conservation and the Ministry for the Environment, will be publicly released. Please clearly highlight any content on this application form and in supporting documents that is commercially or otherwise sensitive in nature, and to which you specifically object to the release.
- Please ensure all sections, where relevant, of the application form are completed as failure to provide the required details may result in your application being declined.
- Further information may be requested at any time before a decision is made on the application.
- Please note that if the Minister for the Environment and/or Minister of Conservation accepts your application for referral to an expert consenting panel, you will then need to lodge a consent application and/or notice of requirement for a designation (or to alter a designation) in the approved form with the Environmental Protection Authority. The application will need to contain the information set out in Schedule 6, clauses 9-13 of the Act.
- Information presented to the Minister for the Environment and/or Minister of Conservation and shared with other Ministers, local authorities and the Environmental Protection Authority under the Act (including officials at government departments and agencies) is subject to disclosure under the Official Information Act 1982 (OIA) or the Local Government Official Information and Meetings Act 1987 (LGOIMA). Certain information may be withheld in accordance with the grounds for withholding information under the OIA and LGOIMA although the grounds for withholding must always be balanced against considerations of public interest that may justify release. Although the Ministry for the Environment does not give any guarantees as to whether information can be withheld under the OIA, it may be helpful to discuss OIA issues with the Ministry for the Environment in advance if information provided with an application is commercially sensitive or release would, for instance, disclose a trade secret or other confidential information. Further information on the OIA and LGOIMA is available at www.ombudsman.parliament.nz.

Checklist

Where relevant to your application, please provide a copy of the following information.

Yes	Correspondence from the registered legal land owner(s)
Yes	Correspondence from persons or parties you consider are likely to be affected by the project
No	Written agreement from the relevant landowner where the project includes an activity that will occur on land returned under a Treaty settlement.

No	Written agreement from the holder of the relevant customary marine title order where the project includes an activity that will occur in a customary marine title area.
No	Written agreement from the holder of the relevant protected customary marine rights recognition order where the project includes an activity that will occur in a protected customary rights area.