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Mamaku Renewables Limited

1/05/2026

Economic and
Property Research

Mangapapa Wind Farm

Economic Impact Assessment
Fast-track Consent Application



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We provide property and retail market research to assist with planning and marketing of new projects. This includes identification of new sites and market areas, assessments of market potential and positioning, and the evaluation of market-feasibility of specific projects.

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1. Executive Summary

This report provides an economic assessment of the proposed Mangapapa Wind Farm (the Project) to support referral under the Fast-track Approvals Act 2024 (FTAA).

The Project comprises a large-scale renewable electricity generation project with an installed capacity of approximately 453.6 MW, generating approximately 1.39 TWh (Terrawatt hours) per annum based on s 9(2)(b)(ii), capacity factor. At this scale, the Project would supply approximately 3.5% of New Zealand's annual electricity demand, representing a material addition to national generation capacity.

The Project delivers significant national benefits across electricity supply, emissions reduction, and energy security. Based on projected generation and an emissions factor of 0.516 tCO₂e/MWh, the Project is estimated to avoid approximately 0.72 Mt CO₂e per annum through the displacement of fossil fuel generation.

The Project is also estimated to offset approximately 9–10 PJ (Petajoules) of natural gas annually, equivalent to around 7.7% to 8.5% of New Zealand's total gas supply, based on national production of approximately 118 PJ per annum. At this scale, the Project represents a material reduction in gas demand at the system level, contributing to reduced reliance on declining domestic gas supply and improving overall energy security.

The Project represents a capital investment of approximately s 9(2)(b)(ii) billion total, or approximately s 9(2)(b)(ii) n occurring within NZ. It is estimated to generate approximately \$231.6 million in GDP during the construction phase, supporting approximately 1,278 full-time equivalent (FTE) jobs across direct and indirect effects.

During operation, the Project is estimated to generate s 9(2)(b)(ii) in annual revenue, directly and indirectly contributing approximately \$81.2 million in GDP per annum and supporting approximately 250 FTE jobs on an ongoing basis.

At a regional level, the Project is estimated to contribute approximately \$77.2 million to GDP per annum over a three-year construction period, equivalent to around 0.3% of the Bay of Plenty regional GDP. This represents a significant increase in regional economic activity, supporting local employment, supply chains, and associated business demand.

Overall, the Project constitutes nationally significant infrastructure, delivering long term economic benefits through increased electricity supply, reduced emissions, improved energy security, and sustained economic activity during both construction and operation.

Significance of Economic and Electricity System-Level Benefits

While the Project generates substantial measurable economic benefits in terms of GDP and employment, it is important to recognise that these indicators, while material, are inherently broad measures of economic activity and can understate the true significance of the Project.

From an economic perspective, equal, if not greater, weight should be placed on the Project's contribution to the efficient and competitive operation of the electricity market. By introducing large-scale, low marginal cost generation, the Project exerts downward pressure on wholesale electricity prices, reduces price volatility, and improves market competition. These effects enhance allocative efficiency across the economy by lowering input costs for businesses and households, supporting productivity and investment.

In addition, the Project delivers non-market and system-level benefits that are not fully captured in GDP metrics, including climate change mitigation, improved energy security, and reduced

reliance on increasingly scarce domestic gas supply. These outcomes address structural issues within the energy sector and generate long-term economic value beyond what is reflected in standard GDP and employment measures.

Accordingly, the significance of the Project should be understood not only in terms of its direct economic contribution, but also through its role in improving market functioning, system resilience, and environmental outcomes, which are central to achieving efficient and sustainable long-term economic performance.

Assessment against the Fast-track Approvals Act 2024

The FTAA referral test requires consideration of whether the Project is an infrastructure or development project that would have significant regional or national benefits under s22(1)(a). The economic assessment has considered this test using a benefits framework focused on electricity system contribution, capital investment, GDP and employment effects, emissions reduction, energy security, regional economic activity, and wider economic efficiency effects.

The Project aligns with the FTAA criteria as follows:

- **New regionally and nationally significant infrastructure - s22(2)(a)(ii)**
The Project would deliver approximately 453.6 MW of installed renewable generation capacity and around 1.39 TWh per annum, equivalent to approximately 3.5% of New Zealand's annual electricity demand. This represents a material addition to national electricity generation capacity.
- **Significant economic benefits - s22(2)(a)(iv)**
The Project represents approximately **s 9(2)(b)(ii)** in total capital investment, with around **s 9(2)(b)(ii)** expected to occur within New Zealand. It is estimated to contribute \$231.6 million to GDP during construction and support 1,278 FTE jobs, with direct and indirect ongoing operational benefits of approximately \$81.2 million in GDP per annum and 250 FTE jobs.
- **Development of natural resources - s22(2)(a)(vi)**
The Project would enable productive use of the region's wind resource for large-scale renewable electricity generation, supporting the development of a domestic natural resource for national energy supply.
- **Climate change mitigation - s22(2)(a)(vii)**
By displacing fossil fuel generation, the Project is estimated to avoid approximately 0.72 Mt CO₂e per annum, representing a significant contribution to greenhouse gas emissions reduction.
- **Energy resilience and adaptation - s22(2)(a)(viii)**
The Project would improve the resilience of the electricity system by increasing generation capacity and reducing reliance on gas-fired generation, which is subject to declining domestic supply. By offsetting approximately 9-10 PJ of natural gas annually (around 7.7% to 8.5% of national supply), the Project reduces exposure to fuel supply risks and enhances the system's ability to respond to periods of peak demand or supply constraint.
- **Addressing significant environmental issues - s22(2)(a)(ix)**
The Project responds to the need to meet increasing electricity demand through renewable generation rather than additional fossil fuel generation, thereby supporting decarbonisation of the electricity system.

On this basis, the economic assessment concludes that the Project would deliver **significant national and regional benefits** for the purposes of **s22(1)(a) of the FTAA**, through nationally significant infrastructure, substantial economic activity, renewable energy generation, emissions reduction, and improved energy security.

2. Introduction

This report assesses the economic effects of the Project, including its contribution to the electricity system, GDP and employment, and wider economic outcomes such as emissions reduction and energy security.

The assessment adopts a standard economic framework, considering primary benefits (electricity generation), secondary effects (GDP and employment), and wider economic impacts (emissions and energy security).

3. National Electricity Context

New Zealand's electricity system is undergoing structural change driven by increasing electrification of transport and industry, population growth, and the transition to a low-emissions economy.

The New Zealand electricity system is currently facing a number of supply-side constraints. Transpower's most recent security of supply assessment highlights that "This risk is exacerbated by the risk of an accelerated reduction in gas supply available for electricity generation (whether due to a fall in total gas availability or gas being used by industrials) and means the industry should consider alternatives that can ensure security margins are maintained", reflecting reduced availability of thermal generation¹.

The system also remains highly dependent on hydro generation. The Electricity Authority notes that "most electricity is provided by hydro generation... [and] risks occur when hydro lake levels fall," with seasonal inflows often not aligning with winter demand².

These factors contribute to increasing pressure on system margins, with Transpower highlighting the concern of whether there is sufficient generation to meet demand across the winter months and during peak periods such as "the coldest mornings and evenings."³

Taken together, these constraints indicate a tightening supply-demand balance, increasing the economic value of new generation capacity.

In this context, additional renewable generation capacity has significant economic value, as it reduces scarcity driven pricing, improves system reliability, and enhances market competition.

4. Strategic Context

The Project directly addresses several structural challenges within New Zealand's electricity system.

First, it provides a large-scale increase in renewable generation capacity at a time when the system is experiencing tightening supply-demand conditions.

Second, it reduces reliance on thermal generation, particularly natural gas, which is subject to declining domestic supply and increasing cost uncertainty.

¹ Transpower Security of Supply Assessment 2025 / <https://www.transpower.co.nz/system-operator/security-supply>

² Security of supply | Electricity Authority / <https://www.ea.govt.nz/industry/wholesale/security-of-supply/>

³ <https://www.transpower.co.nz/system-operator/security-supply>

Third, the Project contributes to mitigating winter energy risk by increasing total system generation capacity, thereby reducing the likelihood of supply shortfalls during periods when electricity demand peaks and existing generation is constrained.

Importantly, the Project's location in the Upper North Island provides additional system value. This region contains New Zealand's largest demand centres and is increasingly reliant on imported electricity from other regions. Locating generation close to demand:

- reduces transmission losses;
- improves reliability of supply;
- reduces dependence on constrained transmission corridors.

While existing transmission capacity constraints are present within the region, these are being progressively addressed through planned network upgrades (e.g. The Western Bay of Plenty Development Plan⁴). The alignment of the Project with these upgrades ensures that its benefits can be integrated efficiently into the national grid over time.

5. Project Scale and Characteristics

The Project has the following key characteristics.

Figure 1:
Project Generation Metrics

Metric	Value
Installed Capacity	453.6 MW
Capacity Factor	59(2)(0)%
Annual Generation	1.39 TWh
National Annual Demand	40.0 TWh
Share of NZ Demand	3.5%

Source: Mamaku Renewables Limited

With generation of approximately 1.39 TWh per annum, the Project represents a material addition, in the order of 3.5%, to existing annual national electricity supply, with system-level implications for pricing, generation mix, and reliability.

Additionally, the Project represents a meaningful contribution toward meeting future national demand growth. MBIE's Electricity Demand and Generation Scenarios (2024) report⁵ estimates that electricity demand will increase from approximately 40.0 TWh to 62.1 TWh by 2050 under the 'Reference' (i.e. baseline) scenario. On this basis, the Project would account for approximately 6.3% of projected future demand, equivalent to around 1.7 years of annual demand.

⁴ <https://www.transpower.co.nz/projects/wbop>

⁵ <https://www.mbie.govt.nz/assets/electricity-demand-and-generation-scenarios-report-2024.pdf>

6. Economic Contribution to the Electricity System

The primary economic benefit of the Project arises from its impact on the electricity system.

Electricity prices in New Zealand are determined by the marginal cost of the last generator required to meet demand. Wind generation enters the system at near-zero marginal cost and displaces higher-cost thermal generation.

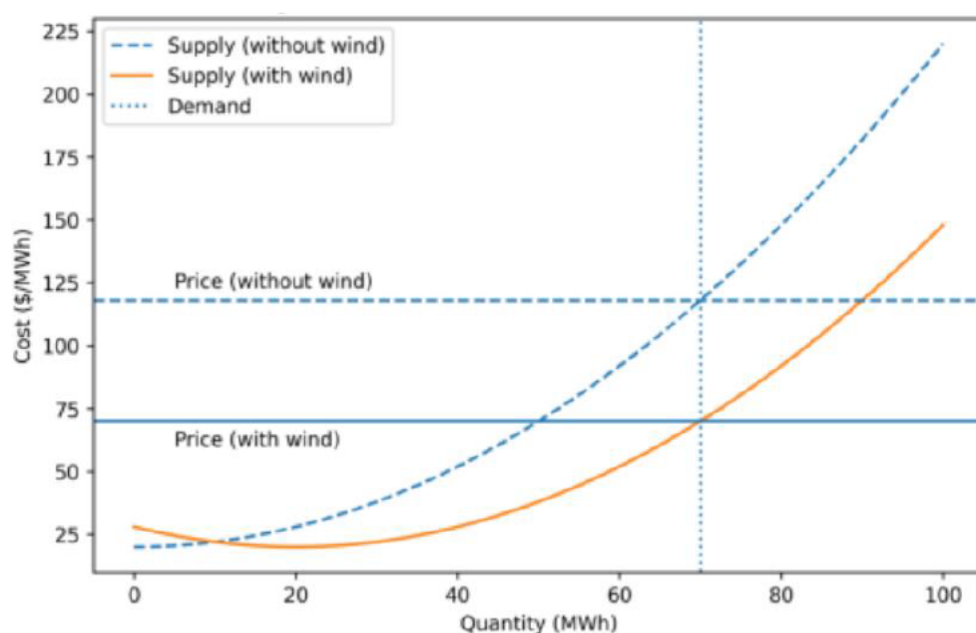
At the scale of the Project, this results in:

- downward pressure on wholesale electricity prices;
- reduced price volatility;
- improved market competition.

These effects generate economy-wide benefits by reducing input costs for businesses and households and improving the efficiency of electricity markets.

Given the tightening supply-demand balance in New Zealand, the addition of large-scale generation has a disproportionate impact on system outcomes relative to smaller projects.

Figure 2:
Merit Order Effect of Wind Generation (Indicative Only)



Source: UE

7. Emissions Reduction Benefits

The Project reduces emissions through the displacement of fossil fuel generation. Based on projected generation and an emissions factor of 0.516 tCO₂e/MWh, the Project is estimated to avoid approximately 0.72 Mt CO₂e per annum through the displacement of fossil fuel generation.

At current carbon prices, this reduction represents a significant economic benefit through avoided emissions costs, as well as contributing to objectives to reduce emissions.

Figure 3:
Emissions Reduction Estimates

Metric	Value
Annual Generation	1,390,738 MWh
Emissions Factor	0.516 tCO ₂ e/MWh
Avoided Emissions	0.72 Mt CO ₂ e

Source: Mamaku Renewables Limited , Electricitiy Authority

8. Energy Security Benefits

The Project contributes to energy security by increasing supply and reducing reliance on gas-fired electricity generation.

Based on expected generation output, the Project is estimated to offset approximately 9 - 10 PJ of gas annually. In the context of New Zealand's total natural gas production (approximately 118 PJ in 2024), this equates to around 7.7% to 8.5% of national gas supply.

At this scale, the Project represents a material reduction in gas demand, rather than a marginal contribution. This is particularly relevant given declining domestic gas availability.

Reducing gas demand extends domestic supply, lowers exposure to international fuel markets, and reduces reliance on imported energy. This improves the resilience of the electricity system and the wider economy, particularly during periods of tight supply or peak demand.

Figure 4:
Gas Displacement Estimates

Metric	Value
Gas Offset	9–10 PJ/year
% of NZ Production	7.7%–8.5%

Source: UE, Mamaku Renewables
Limited, MBIE Energy in NZ 2025

9. Economic Contribution from Construction (GDP and Employment)

The contribution of construction to GDP and employment is estimated using a value-added approach⁶. This measures the economic activity generated through labour, operating surplus, and production-related taxes associated with the Project. The assessment distinguishes between direct and indirect (flow-on) effects, with indirect impacts estimated using input-output multipliers derived from Statistics New Zealand tables. These multipliers reflect the linkages between sectors and the extent to which construction expenditure generates additional activity across the wider economy.

⁶ Value added, or GDP-by-industry, represents the contribution of an industry to total GDP. It comprises compensation of employees, taxes on production and imports less subsidies, and gross operating surplus. It is calculated as the difference between an industry's total output and the cost of intermediate inputs.

The Project represents a significant investment in nationally and regionally important infrastructure, with total construction expenditure of approximately s 9(2)(b)(ii). It is estimated that around 70% of this expenditure relates to imported components, with the remaining 30% (approximately s 9(2)(b)(ii)) occurring within New Zealand. This domestic expenditure is estimated to generate approximately \$118.4 million in direct GDP during the construction phase, reflecting value added through labour, operating surplus, and production activity within the construction sector. It is estimated that this construction activity would directly support approximately 715 full-time equivalent (FTE) jobs.

In addition to these direct effects, the Project is estimated to generate a further \$113.2 million in indirect GDP and support 563 FTE jobs through supply chain linkages. These indirect effects arise from increased demand for goods and services across upstream industries, resulting in a total construction-related GDP contribution of approximately \$231.6 million and total employment of 1,278 FTEs. Overall, these impacts represent a substantial increase in economic activity during the construction period.

As outlined in Figure 7, the construction impacts are expected to occur over an approximately three-year build period. On this basis, the Project is estimated to generate around \$77.2 million in GDP per annum and support approximately 426 full-time equivalent (FTE) jobs per year, reflecting the combined direct and indirect effects of construction activity over the build phase.

Figure 5:
Capital Investment and Direct GDP Contribution

Metric	Estimate
Total CAPEX (\$m)*	s 9(2)(b)(ii)
Offshore CAPEX Component	70%
NZ Net CAPEX (\$m)**	s 9(2)(b)(ii)
GDP Contribution (\$m)	\$118.4

Source: UE, Mamaku Renewables Limited

*Includes cost of importing components from offshore.

**Spend directly related to the construction of proposal within NZ.

Figure 6:
Direct + Indirect GDP & Employment Effects

Impact	Sector	Output Multiplier	Project Value/ Output (\$M)	Value Added Multiplier	Value Added to GDP (\$M)	FTE Estimate
Direct	Construction	1.00	s 9(2)(b)(ii)	0.30	\$118.4	715
Indirect	-	0.71	\$276.9	0.29	\$113.2	563
Total Impact	-	1.71	\$666.9	0.59	\$231.6	1,278

Source: Statistics NZ, UE

Figure 7:
Construction Phase Economic Effects (Direct + Indirect)

Year	GDP Contribution (\$m)	Employment (FTEs)
1	\$77.2	426
2	\$77.2	426
3	\$77.2	426
Total	\$231.6	1,278

Source: UE, Mamaku Renewables Limited

10. Economic Contribution from Ongoing Operation (GDP and Employment)

During operation, the Project will generate ongoing economic benefits through operational expenditure, employment, and diversification of farming income for landowners. The Project is estimated to generate approximately **s 9(2)(b)(ii)** annual revenue⁷, directly and indirectly contributing around \$81.2 million in GDP per annum, reflecting value added through labour, operating surplus, and associated economic activity. Ongoing operations are estimated to support approximately 250 direct and indirect FTE jobs, across maintenance, services, and the wider economy (e.g. transport services, equipment servicing, accommodation and hospitality, and professional services.). While smaller in scale than construction effects, these impacts are sustained over the life of the Project (3 year construction and ongoing operation over the long term), providing a stable and long term contribution to economic activity.

Figure 8:
Operational Expenditure and Direct GDP Contribution

Metric	Estimate
Total Operating Revenue (\$m)	s 9(2)(b)(ii)
GDP Contribution (\$m)	\$53

Source: UE, Mamaku Renewables Limited

Figure 9:
Direct + Indirect GDP and Employment Effects

Impact	Output Multiplier	Operating Revenue/ Output (\$M)	Value Added Multiplier	Value Added to GDP (\$M)	FTE Estimate
Direct	1.00	s 9(2)(b)(ii)	0.39	\$53.3	102
Indirect	0.48	\$66.8	0.20	\$27.9	148
Total Impact	1.48	\$205.3	0.59	\$81.2	250

Source: Statistics NZ, UE

11. Total Economic Contribution

The Project represents a total construction investment of approximately **s 9(2)(b)(ii)** which approximately **s 9(2)(b)(ii)** is estimated to be spent within New Zealand, with the balance relating to imported components. Based on this level of domestic expenditure, construction activity is estimated to contribute approximately \$231.6 million to GDP over the construction period and support approximately 1,278 full-time equivalent (FTE) jobs across direct and indirect effects. Once operational, the Project is estimated to generate ongoing annual revenue of around **s 9(2)(b)(ii)**, directly and indirectly contributing approximately \$81.2 million to GDP per annum, and sustaining a further 250 FTE jobs per annum.

⁷ Based on an average wholesale electricity price of \$100.

12. Wider Economic Effects

The Project generates wider economic benefits through lower and more stable electricity prices, enhancing market efficiency and business competitiveness. Reduced electricity costs lower input expenses for firms, support investment, and enable the wider use of electricity across the economy.

13. Regional Economic Contribution

In addition to national-level impacts, the Project represents a material economic contribution at the regional level. Based on an estimated construction expenditure profile distributed over a three-year build period, average annual construction GDP contribution is in the order of \$77.2 million per annum. When compared to the Bay of Plenty regional economy (approximately \$24 billion in annual GDP), this equates to around 0.3% of regional GDP per annum.

During operation, the Project is also estimated to contribute approximately \$81.2 million in GDP per annum, equivalent to around 0.4% of regional GDP, providing an ongoing and stable source of economic activity in the region over the life of the asset.

At this scale, the Project represents a significant injection of economic activity into the regional economy, supporting employment, local supply chains, and business activity during construction, with sustained benefits continuing through the operational phase. These effects are expected to be concentrated in sectors such as construction, engineering, transport, and accommodation services during construction, and maintenance, services, and land-based income during operation, with flow-on benefits to the broader regional economy through multiplier effects.

In the context of the FTAA, the scale and duration of these regional economic effects are considered to constitute significant regional benefits. The Project represents a measurable and sustained increase in regional GDP, employment, and business activity, with impacts that are material relative to the size of the Bay of Plenty economy. These outcomes are consistent with the intent of the FTAA to recognise projects that deliver meaningful regional economic uplift.

14. Potential Adverse Effects

Potential adverse economic effects are limited and primarily occur during construction, including temporary labour market pressure and short-term accommodation demand.

These effects are localised, temporary, and manageable, and do not materially affect the overall economic outcome.

In considering the FTAA criteria, these adverse effects are not of a scale or duration that would offset the Project's overall benefits. The effects are temporary, localised, and manageable, and therefore do not detract from the conclusion that the Project delivers significant regional and national benefits as required under the Act.

15. Overall Economic Assessment

The Project delivers strong positive economic outcomes across key areas of national significance. As summarised in Figure 10, the Project makes a substantial contribution to electricity supply, emissions reduction, energy security, and GDP, each assessed as having significant positive effects. Employment impacts are also positive, with benefits assessed as moderate to strong, reflecting both construction and ongoing operational roles. Potential adverse effects are limited in scale and duration, and are assessed as minor. Taken together, the Project generates a clear net positive economic outcome.

Figure 10:
Summary of Economic Effects

Category	Impact
Electricity Supply	Strong positive
Emissions	Strong positive
Energy Security	Strong positive
GDP	Strong positive
Employment	Moderate–strong
Adverse Effects	Minor

Source: UE

When assessed against the statutory test under the FTAA, the Project is considered to meet the threshold of delivering significant regional and national benefits. This conclusion is supported by the Project's material contribution to electricity supply, emissions reduction, energy security, and sustained economic activity, alongside its role in improving the efficiency and resilience of the national energy system.

16. Conclusion

Overall, the Project constitutes infrastructure of national significance and, when assessed against the FTAA, is considered to deliver significant regional and national benefits. These benefits arise from its contribution to renewable electricity supply, emissions reduction, improved energy security, and sustained economic activity at both regional and national levels. As such, the Project is considered to be consistent with the purpose and referral criteria of the FTAA.