INSIGHT ECONOMICS

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Economic Assessment of Proposed Solar Farm in Marton, Rangitīkei for Fast-track Referral

Prepared for:
FRV Limited

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1. Executive Summary

Context

FRV Limited (**FRV**) seeks referral under the Fast-track Approvals Act 2024 (**FTAA**) for the Rangitīkei Solar Farm (the **proposal**), a utility-scale solar and battery energy storage facility on the eastern edge of Marton in the Rangitīkei District. The subject site spans approximately 507 hectares across four landholdings and currently supports a mixture of sheep and cattle grazing and arable cropping.

The proposal involves the construction and operation of an approximately 220 MW AC solar farm, complemented by a 190 MW / 380 MWh battery energy storage system (**BESS**), a new substation, and connection to Transpower's 220 kV national grid transmission lines that cross the site.

To assist with the referral application, this report assesses the proposal against the relevant referral criteria in section 22(2)(a) of the FTAA, with particular focus on whether it delivers significant regional and national economic benefits, supports climate change mitigation, and supports nationally and regionally significant infrastructure.

Key Findings

The proposal would generate substantial one-off economic benefits in the region during construction. Over the estimated 18 to 24-month build period, it is projected to support approximately:

- $69 million in GDP;
- $35 million in wages and salaries; and
- 435 FTE-years of employment in total.

This is equivalent to an average of approximately 218 to 290 full-time positions sustained at any given time across the construction programme, including all upstream supply-chain employment. Reflecting the typical construction profile for utility-scale solar projects, the on-site workforce is expected to peak at approximately 250 FTE during the 4 to 6-month installation phase.

Once operational, the solar farm would sustain approximately 4 to 6 permanent on-site FTEs, supplemented by contracted services for vegetation management, panel cleaning, electrical testing, and civil maintenance. Including indirect supply-chain effects, ongoing onsite activity is estimated to support approximately:

- 10 FTEs annually;
- $1.1 million in annual wages and salaries; and
- $3.0 million in annual GDP.

Electricity Market and Emissions Benefits

The proposal's most significant contributions are national in scope. The solar farm's indicative s 9(2)(b)(generation of approximately s 9(2)(b)(ii) per annum would:

- Lift national solar generation by approximately s 9(2)(b)(ii) per annum, from a 2024 base of approximately 595 GWh to almost 1,000 GWh per annum – an increase of approximately **67 percent**. This reflects New Zealand's relatively early stage of utility-scale solar deployment; on an absolute basis, the proposal's contribution is consistent with the step-change in renewable generation identified as necessary under all of MBIE's demand scenarios to meet projected electricity demand growth of 57 percent by 2050;

- On an indicative basis, avoid approximately **195,000 tonnes of CO_2-equivalent emissions per year**, calculated by reference to the emissions intensity of gas-fired generation – the marginal thermal fuel in the New Zealand electricity system. This is equivalent to approximately 8.9 percent of New Zealand's total annual electricity generation emissions from gas;[1]

- Generate sufficient electricity to meet the annual needs of approximately **57,280 New Zealand households**, or to power approximately **257,000 electric vehicles** per year;

- Improve competition in the wholesale electricity market through the addition of significant low-marginal-cost generation, placing downward pressure on wholesale prices and moderating the rate of retail electricity price growth over time; and

- Enhance system flexibility and resilience by complementing existing hydro and wind generation, effectively saving water in southern hydro lakes for deployment during evening peaks and winter periods, and reducing system exposure to gas supply and hydrology risks.

Wider Economic Impacts

Beyond the quantified construction and operational impacts, the proposal would deliver several wider economic benefits. First, the proposal aligns strongly with the *National Policy Statement for Renewable Electricity Generation 2011* (Amended December 2025), the *Emissions Reduction Plan 2026-2030*, and the Government's *Going for Growth* agenda, particularly its pillars on competitive business settings, trade and investment, and infrastructure for growth.

Second, the proposal represents a private-sector capital commitment of more than $300 million in nationally significant renewable energy infrastructure, delivering positive investment signal effects that may help reduce perceived market risk and bring forward complementary renewable investment in the region.

[1] The actual displacement mix will depend on system conditions at the time of generation; gas is adopted here as a transparent benchmark to contextualise the scale of the proposal's emissions benefit, rather than to imply that gas-fired generation is displaced one-for-one.

Third, the proposal is being delivered by FRV, an experienced international developer of utility-scale solar and storage projects, which strengthens confidence that the enabled generation capacity will be realised in practice.

Finally, the main economic cost of the proposal – foregone rural production from the site's mixed pastoral and arable use – is small in comparison to the scale of the energy and economic benefits enabled. If used in its current configuration, the site could sustain annual GDP of approximately $1.4 million, employment for approximately six FTEs, and wages and salaries of approximately $0.5 million. Continued agrivoltaic grazing within the panel arrays may further offset this opportunity cost.

Conclusion

In our view, the proposal makes strong, positive contributions to several limbs of the relevant FTAA referral criteria. It would support nationally and regionally significant electricity infrastructure, deliver significant regional and national economic benefits, and support climate change mitigation through substantial emissions displacement. The Fast-track process helps ensure that those benefits are realised sooner than traditional consenting pathways would otherwise allow.

On that basis, we consider the proposal meets criteria 22(2)(a)(ii), 22(2)(a)(iv), and 22(2)(a)(vii) of the FTAA, and we support it on economic grounds.

2. Introduction

2.1. Context

FRV Limited (**FRV**) seeks referral under the Fast-track Approvals Act 2024 (**FTAA**) for the construction, operation, and (if necessary) decommissioning of the Rangitīkei Solar Farm – a utility-scale solar and battery energy storage facility located on the eastern edge of Marton in the Rangitīkei District (the **proposal**). The proposal spans approximately 507 hectares of rural land contained by Tutaenui Road, Calico Line, State Highway 1, and Colemans Road, and will deliver approximately 220 MW AC of solar generating capacity, supported by a 190 MW / 380 MWh battery energy storage system (**BESS**), a new substation, and connection to Transpower's existing 220 kV national grid transmission lines that traverse the site.

2.2. FTAA Referral Criteria & Report Scope

The purpose of the FTAA is to facilitate the consenting of large-scale projects expected to generate significant regional and/or national benefits. Under section 22 of the Act, proposals may be referred to an expert panel for fast-track consenting where the Minister is satisfied that they meet the purpose of the Act.

When deciding whether to refer a project, the Minister may consider a range of factors set out in section 22(2)(a) of the Act. To that end, this report provides an economic assessment of the proposal against three of the referral criteria in section 22(2)(a), namely whether the project will:

ii. Deliver new or support existing regionally or nationally significant infrastructure;

iv. Deliver significant economic benefits; and

vii. Support climate change mitigation, including the reduction of greenhouse gas emissions.

2.3. Region Adopted

This report adopts the Manawatū-Whanganui region (administered by Horizons Regional Council), as the relevant 'region' over which the significance of the proposal's economic benefits is assessed. National-level effects, including those associated with electricity market participation, emissions displacement, and renewable generation capacity, are addressed at a national scale.

2.4. Structure of this Report

The remainder of this document is structured as follows:

- **Section 3** identifies the subject site and summarises the proposal.
- **Section 4** describes the methodology used to estimate the proposal's economic benefits.
- **Section 5** details the inputs and assumptions used to estimate the economic benefits.
- **Section 6** estimates the one-time impacts of the proposal's development.

- **Section 7** estimates the ongoing impacts of operational activities sustained on-site.
- **Section 8** assesses the proposal's electricity market impacts.
- **Section 9** considers a range of wider economic impacts of the proposal.
- **Section 10** provides a conclusion and a checklist against the FTAA referral criteria.

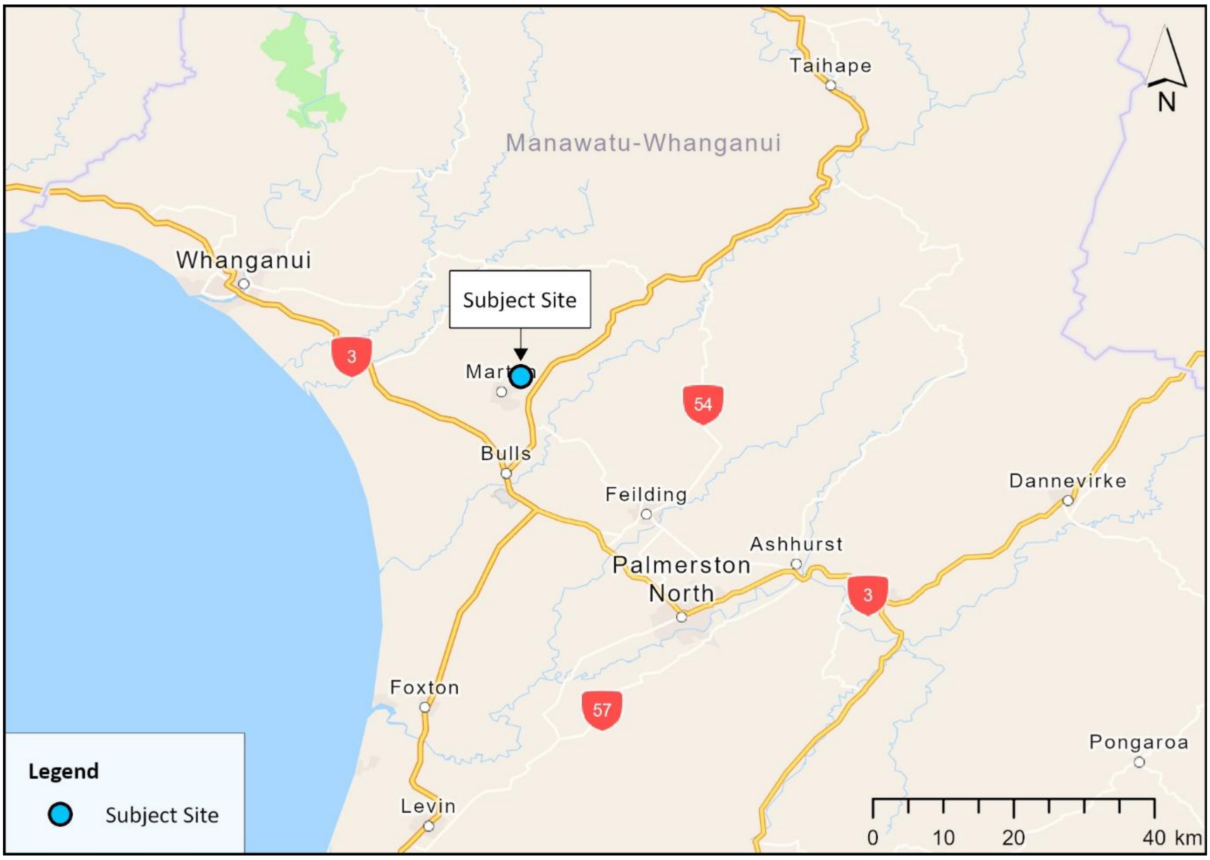
3. About the Proposal

This section identifies the subject site and provides indicative project parameters.

3.1. Site Location & Description

The subject site is located on the eastern edge of Marton in the Rangitīkei District, within the Manawatū-Whanganui region. It is bound by Tutaenui Road to the west, Calico Line to the south, the urban edge of Marton to the south-west, and Colemans Road and farmland to the north-east. The site is held across four landholdings totalling approximately 507 hectares. The location of the site is denoted by the blue dot in the map below.

Figure 1: Location of Subject Site



The site is currently used for sheep and cattle grazing, together with arable cash cropping including wheat, barley, maize, and oats. The land is predominantly Land Use Capability Class 3. Existing farm infrastructure includes dwellings, farm buildings, stockyards, and associated agricultural improvements.

3.2. Receiving Environment

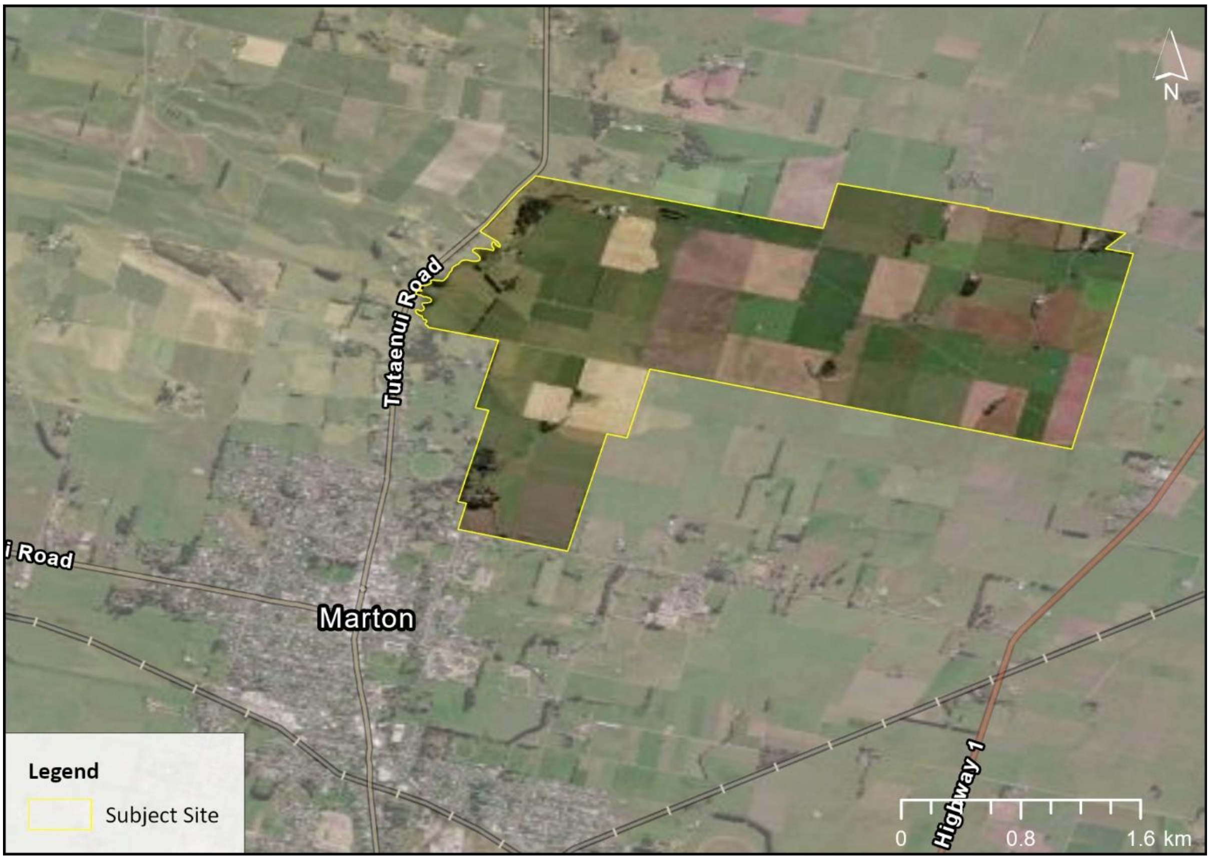
The receiving environment surrounding the site is predominantly rural in character and is largely used for pastoral and arable farming activities typical of the Rangitīkei plains. To the south and west, the site adjoins the urban edge of Marton, providing a transitional interface between the township and the surrounding rural area. To the north and east, the wider landscape comprises larger rural landholdings with associated farm infrastructure, rural dwellings, and agricultural support activities.

Of particular relevance, Transpower's existing 220 kV national grid transmission lines traverse the site diagonally from the south-east to the north-west. This existing transmission infrastructure provides a strategically valuable point of connection for the proposed generation facility, materially reducing the distance and cost associated with new connection works and limiting the need for additional transmission corridors.

State Highway 1 runs along the eastern edge of the wider site catchment, providing direct access to the strategic road network for construction logistics and ongoing operations.

Figure 2 shows a satellite view of the site in its immediate receiving environment.

Figure 2: Receiving Environment

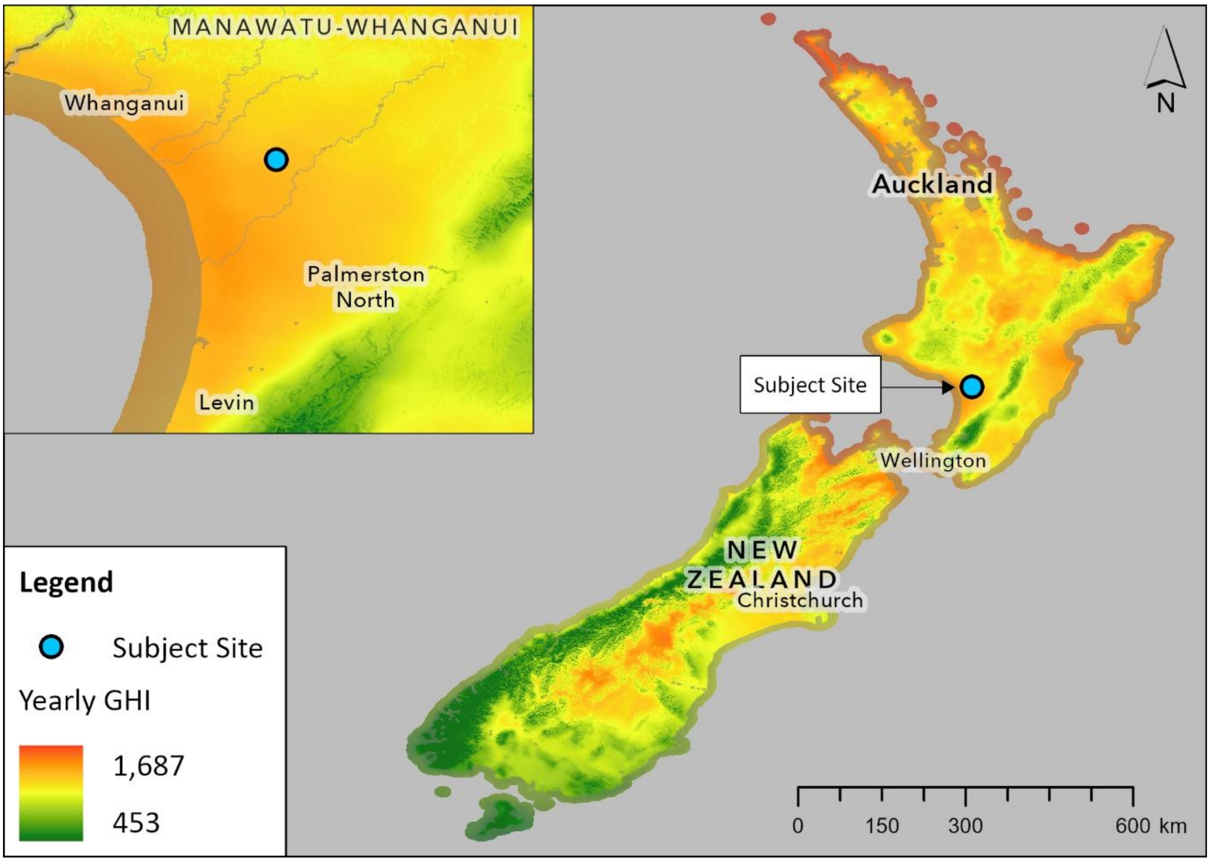


3.3. Solar Irradiation at the Site

The site receives high levels of solar irradiation – a key determinant of solar farm efficiency. Solar irradiation refers to the amount of solar energy received at a given location over a specified period, commonly expressed as global horizontal irradiation (**GHI**) in kilowatt-hours per square metre per year (**kWh/m²/year**). It is one of the key physical determinants of electricity generation, alongside panel efficiency, system performance, and the area of panels installed. Sites with higher irradiation generally achieve higher capacity factors, meaning a greater share of their installed capacity is converted into electricity per year. Higher capacity factors increase annual generation and reduce the cost per MWh for a given capital investment.[2] Even modest differences in solar resource can therefore have a material effect on the commercial viability and long-term productivity of a solar farm.

A desktop review of publicly available data from Solargis indicates that the Rangitīkei site receives average annual GHI of approximately 1,435 kWh/m²/year.[3] As shown in Figure 3, the site is located within one of the higher GHI zones in the North Island, where GHI levels range from approximately 1,240 to 1,500 kWh/m²/year. The Rangitīkei plains benefit from relatively flat topography, low cloud cover relative to many parts of the North Island, and generally settled summer weather, all of which support sustained solar generation across the year.

Figure 3: Global Horizontal Irradiation (GHI) across New Zealand



3.4. Indicative Site Layout

The indicative layout provides for photovoltaic array blocks across the developable parts of the site, while excluding existing dwellings, farm buildings, identified watercourses and natural inland wetlands and the riparian margins (10m – 20m), the existing Dam E4 designation, and identified flood high risk areas. The development area will cover approximately 403 hectares of the 507-hectare site. The balance includes approximately 67.5 hectares retained for ongoing landowner use, together with streams, riparian setbacks, wetlands, mitigation buffers, and existing on-site vegetation

[2] National Renewable Energy Laboratory (NREL). *PVWatts Calculator Documentation and Solar Resource Fundamentals*. Available here: https://docs.nrel.gov/docs/fy14osti/62641.pdf

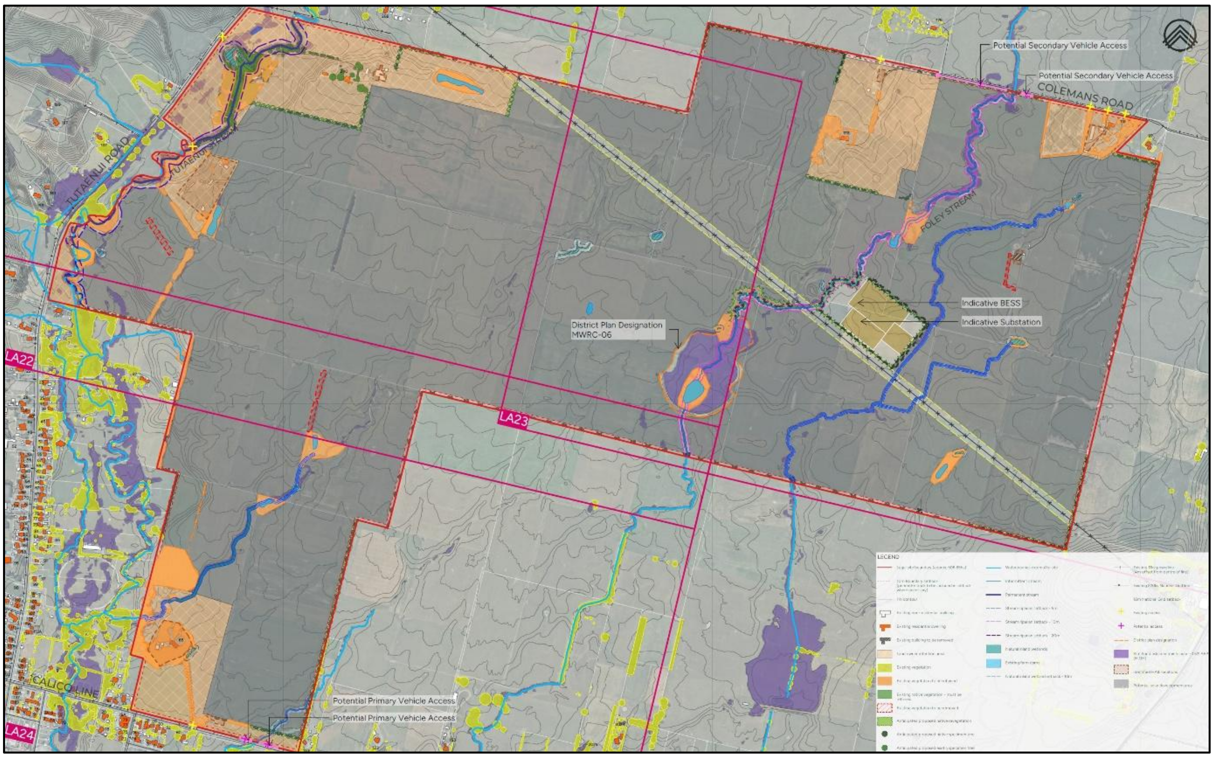
[3] Available here: www.solargis.com/resources/free-maps-and-gis-data?locality=new-zealand

Ancillary infrastructure includes:

- A new substation occupying approximately 1-3 hectares;
- A BESS occupying approximately 1-3 hectares;
- Inverters, transformers, and underground cabling integrated within the array blocks;
- A new primary site access from Calico Line and a new secondary site access from Colemans Road;
- Internal access and maintenance roads;
- Storage and maintenance buildings, a site office, and water tanks for fire management;
- Lighting, security fencing, and security cameras; and
- Boundary mitigation planting, riparian planting, and mid-block screen planting.

An overall site context plan of the proposal is provided in Figure 4 below.

Figure 4: Indicative Layout Plan



3.5. Anticipated Generation

Based on the current concept design, the Rangitīkei Solar Farm is expected to have a maximum export of approximately 220 MW AC to the national grid via a 190 MVA point of connection to Transpower's existing 220 kV transmission lines. The proposal will incorporate a 190 MW / 380 MWh BESS, which may be installed as a second stage. The BESS will enable electricity generated during periods of high solar production to be stored and dispatched at times when electricity demand is higher, thereby improving the flexibility and reliability of the electricity supply to the national grid.

The indicative s 9(2)(b)(annual energy yield for the project is in excess of s 9(2)(b)(ii) per year. This implies a capacity factor of approximately 21 percent on an AC basis,[4] which is consistent with expectations for a well-sited single-axis solar installation in the lower North Island.

To put this output into perspective, the solar farm's annual generation would be sufficient to meet the electricity needs of approximately 57,280 New Zealand households, based on average household consumption of approximately 6,983 kWh per year.[5]

3.6. Agricultural Land Use (Agrivoltaics)

During the operation of the solar farm, agricultural use of the site can continue through targeted agrivoltaic grazing beneath and between the solar panel arrays. Agrivoltaics describes the dual use of land for both solar energy generation and agricultural production. The arrays anticipated for the site, with a likely tracker pitch of some 6.1 metres between rows, provide ample space for livestock to graze freely beneath the structures and for vehicles and machinery to operate between rows.

FRV has confirmed that targeted agrivoltaic grazing may be possible on the site, and the underlying landowners have expressed interest in pursuing this option. Sheep grazing is the most commercially proven agrivoltaic land use internationally and in the limited New Zealand context to date, and is considered the most likely activity to be undertaken on the Rangitīkei site if agrivoltaic use is pursued. Continued grazing within the panel arrays would:

- Enable continued productive use of the rural land alongside electricity generation;
- Reduce the need for mechanical mowing and weed management within the array blocks;
- Provide a lower-intensity agricultural land use than the current mixed grazing and cropping operation, with associated reductions in on-farm greenhouse gas emissions; and
- Create micro-climate benefits for livestock, including shade and shelter from wind, sun, and frost, which can improve animal welfare and productivity outcomes.

While sheep grazing is the most appropriate and commercially proven agrivoltaic use for the site at this time, alternative agricultural activities may emerge over the course of the solar farm's operation as the agrivoltaic sector develops. Internationally, a range of crops are being trialled within operating solar farms, and FRV and the landowners may explore complementary primary production opportunities as they become viable.

To adopt a conservative position, the economic modelling presented in this report excludes the economic contribution of agrivoltaic grazing. This ensures that the assessment does not rely on agricultural activity that may or may not be undertaken in practice. Where agrivoltaic grazing is pursued, the opportunity cost of the proposal in terms of foregone rural production would be partially offset.

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[4] Calculated as s 9(2)(b)(ii) ÷ (220 MW × 8,760 hours) ≈ 21%

[5] Source: Electricity Authority, average New Zealand household electricity consumption (YE December 2025). Available at: https://www.emi.ea.govt.nz/r/vvb0r

4. Methodology

This section describes the methodology used to estimate the proposal's economic impacts.

4.1. Introduction to Multiplier Analysis

Our assessment uses a widely known technique called "multiplier analysis" to estimate the GDP, jobs, and wages/salaries associated with one-time and ongoing economic activity enabled by the proposal, plus the GDP, jobs, and wages/salaries lost via foregone rural production. Multiplier analysis is based on detailed matrices called "input-output" (**IO**) tables, which capture the interrelated supply chains that comprise each economy. Leveraging those relationships, multiplier analysis captures the overall impacts of a change in one sector on the economy, including both direct and supply-chain effects.

Consider the following example. Suppose a local construction company wins a new building contract. In addition to boosting its own workforce to complete the job, the company will also need to engage various subcontractors and to source building products from its own suppliers. However, some of those suppliers, in turn, may then need to source various inputs from their suppliers, and so on. Multiplier analyses trace all these supply-chain interdependencies so that the wider economic effects of the new building work can be estimated, including flow-on effects.

As this example alludes to, multiplier analysis is particularly useful for assessing construction projects, because such a large share of the work is typically done by third parties (i.e., subcontractors), not the main contractor. In fact, according to the latest official data, for every $1.00 of GDP generated directly in building construction, another $2.76 is generated in the industries that support it.[6] Similarly, for every FTE directly employed in building construction, another 2.82 FTEs are employed by supply chain industries. Accordingly, multiplier analysis is particularly useful for assessing the economic impacts of large-scale construction projects like the proposal.

4.2. Scope of Effects Estimated

The impacts derived via multiplier analysis typically comprise three parts, namely:

- **Direct effects** – which capture the economic impacts of entities directly engaged to complete the project (e.g., the main contractor); plus
- **Indirect effects** – which arise when the main contractor sources goods and services from their suppliers (i.e., subcontractors), who in turn may need to source goods and services from their own suppliers, and so on; and
- **Induced effects** – which occur when a share of the additional wages and salaries generated by the project (either directly or indirectly) are spent in the local/regional economy and therefore give rise to additional rounds of economic impacts.

[6] As measured by the indirect effect, i.e., excluding induced effects.

These effects are typically measured in terms of:

- **Contributions to value-added (or GDP):** GDP measures the difference between a firm's outputs and the value of its inputs. It captures the value that a business adds to its own inputs to produce its outputs. From an accounting perspective, GDP equals a firm's earnings before interest, tax, depreciation, and amortisation (**EBITDA**), plus total wages and salaries paid.

- **The number of FTEs employed**: this is measured in terms of full-time equivalents, which convert part-time roles into their full-time equivalent.

- **Total wages and salaries paid to workers**: sometimes called 'household incomes.'

4.3. Limitations & Mitigation Strategy

Despite the intuitive appeal and widespread use of multiplier analysis, it does face some limitations. They include that it:

- **Assumes that businesses use inputs in fixed proportions:** i.e., without substituting towards more cost-effective options if/when they become available.

- **Ignores capacity constraints:** it assumes that labour, materials, and other inputs are always available when needed, which may be unrealistic in a tight economy.

- **Does not capture price effects**: multiplier models are fixed-price frameworks, which ignore cost inflation, wage pressures, and so on.

Consequently, multiplier analysis is useful for showing how spending ripples through an economy's supply chains, but it is not – on its face – a precise forecast of real-world net benefits. To help address these limitations and ensure that our analysis is as robust as possible, we adopted the following mitigation strategies and measures.

- **Strategy 1: Ignoring induced effects:** We ignore these because, in our view, much of the assumed spending would have likely occurred regardless of the proposal.

- **Strategy 2: Using the most up-to-date multipliers:** The multipliers used in this assessment were derived from National Accounts data for the year ended September 2025.

- **Strategy 3: Excluding imported components from the domestic expenditure base:** Utility-scale solar projects involve a high share of imported equipment (panels, inverters, trackers, transformers, and BESS modules) which does not generate domestic economic activity. We exclude these imported components from the modelled expenditure base, yielding conservative estimates of one-time economic activity.

- **Strategy 4: Using applicant-provided cost estimates:** Our cost inputs are based on FRV's own capital cost estimates for the project, which have been prepared by an experienced utility-scale solar developer familiar with delivering comparable projects.

5. Development Inputs & Assumptions

5.1. Introduction

This section sets out the key inputs and assumptions used in our economic assessment, including the anticipated staging and timing of development, the principal components of the development, and the cost assumptions used in the multiplier analysis. Where possible, inputs have been drawn from project-specific data provided by FRV, complemented with the latest available industry data to fill any gaps. All cost figures are expressed in current (2026) dollars unless otherwise stated.

We assume that **65 percent** of estimated project benefits accrue to the Manawatū-Whanganui region, with the balance accruing nationally. This share reflects the regional composition of the activities most directly engaged by the proposal. General construction work, civil and earthworks, locally supplied materials, and ongoing operational services are well-represented within the region's labour market and supply chain. However, more specialised inputs – including high-voltage electrical works, substation commissioning, specialist engineering services, and certain manufactured components – are typically sourced from larger centres elsewhere in New Zealand. The 65 percent assumption recognises both elements and is set deliberately on the conservative side to avoid overstating the regional share of benefits.

5.2. Staging & Timing

The Rangitīkei Solar Farm is to be delivered as a single construction programme over an anticipated period of approximately 18 to 24 months, including a peak construction phase of approximately four to six months associated with the installation of the panels. Unlike staged residential or commercial developments, which are typically delivered in sequential phases over multiple years in response to market absorption, utility-scale solar farms are constructed as integrated projects with overlapping work streams, including civil works, mechanical installation, electrical works, grid connection, and commissioning, progressing concurrently across the site.

The BESS may be installed as a second stage following completion of the solar farm; however, for the purposes of this assessment, the BESS is included within the overall construction programme to provide a holistic view of total project investment.

5.3. Construction Costs

Our analysis incorporates various assumptions about the likely scale and composition of development expenditure. The project team has advised that the total capital cost of the proposal is expected to be approximately s 9(2)(b)(ii).[7] Of this, we have assumed that approximately 50 percent (or s 9(2)(b)(ii) s 9(2)(b)(ii)) is to be spent domestically on scheme finalisation, site-wide enabling works, civil and electrical construction, on-site installation labour, and locally supplied materials and services. The balance reflects imported components such as solar panels, inverters, trackers, transformers, and BESS modules, which are excluded from modelling as they do not generate domestic economic activity.

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[7] The capital cost estimates provided by FRV are high-level and have been informed by the applicant's involvement in other large-scale projects of a similar nature, which provides a basis for estimating both the overall and domestic components of expenditure.

5.4. Other Development Costs

The development will require significant upfront investment in site-wide enabling works before installation can commence, including bulk earthworks, internal access roads, trunk cable trenching, fire and stormwater management infrastructure, and the formation of platforms for the substation and BESS. In addition, any necessary upgrades to local roads or intersections will form part of the upfront expenditure. This suite of broader costs was estimated using project-specific information provided by FRV wherever possible, with any gaps filled via broad industry averages gleaned from our experience with similar developments across New Zealand.

5.5. Total Estimated Proposal Cost

Table 1 brings together the estimated total development cost of the proposal. This expenditure forms the basis for the one-time economic impact assessment presented in the following section.

Table 1: Summary of Estimated Project Investment

Cost Category	Estimated Cost ($m)	Share of Cost
Scheme finalisation	s 9(2)(b)(ii) [redacted]	2%
Site-wide enabling works	[redacted]	8%
Solar, BESS, and substation works	[redacted]	90%
Total estimated project cost	[redacted]	**100%**

6. One-Time Impacts of Development

This section estimates the one-time impacts of the proposal's construction phase.

6.1. Introduction

As outlined above, the proposal involves approximately s 9(2)(b)(ii) of domestic expenditure on scheme finalisation, site-wide enabling works, solar farm installation, and BESS and substation construction. This section estimates the one-time economic impacts of this expenditure on GDP, employment, and wages and salaries.

6.2. Impacts on GDP, Jobs & Wages

Table 2 presents the estimated one-time economic impacts of the proposal's construction on the Manawatū-Whanganui region, broken down by development component, for each of the three key impact metrics: employment, wages and salaries, and GDP.

Table 2: One-Time Economic Impacts of the Proposal

Employment (FTE-Years)	Direct	Indirect	Total
Upfront/Site-wide Works	18	21	39
Solar, BESS, and Substation Works	103	293	396
Project Totals	**121**	**314**	**435**
Wages & Salaries ($m)	**Direct**	**Indirect**	**Total**
Upfront/Site-wide Works	$2.0	$2.0	$4.0
Solar, BESS, and Substation Works	$8.0	$23.0	$31.0
Project Totals	**$10.0**	**$25.0**	**$35.0**
GDP ($m)	**Direct**	**Indirect**	**Total**
Upfront/Site-wide Works	$3.5	$4.0	$7.5
Solar, BESS, and Substation Works	$16.5	$45.0	$61.5
Project Totals	**$20.0**	**$49.0**	**$69.0**

To summarise:

- Overall, the proposal's construction is estimated to boost regional employment by approximately 435 FTE-years, generating approximately $35 million in wages and salaries and lifting GDP by approximately $69 million.

- This is equivalent to an average of approximately 218 to 290 full-time positions sustained at any given time across the 18 to 24-month programme, including all upstream supply-chain employment.

- Reflecting the typical construction profile for utility-scale solar projects, the on-site workforce is expected to peak at approximately 250 FTE during the 4 to 6-month installation phase.

- Indirect effects dominate the proposal's one-time impacts, accounting for more than 70 percent of the total across all three metrics. This reflects the significant upstream demand that utility-scale solar construction generates for manufactured components, transport and logistics, professional and engineering services, and specialised electrical and civil trades.

6.3. Top 10 Industries by FTEs Employed

To better understand the likely impacts of the proposal's construction, Table 3 reveals the 10 industries likely to experience the greatest employment boosts. Those top 10 industries are expected to account for the vast majority of all full-time employment generated by the proposal, with the balance spread across numerous other sectors.

Table 3: Top 10 Industries by FTE-years Generated during Development

Industries	FTE-years	Shares
Building Construction	123	28%
Construction Services	98	22%
Professional, Scientific and Technical Services	37	8%
Wholesale Trade	20	5%
Fabricated Metal Product Manufacturing	20	5%
Heavy and Civil Engineering Construction	19	4%
Wood Product Manufacturing	18	4%
Administrative and Support Services	14	3%
Non-Metallic Mineral Product Manufacturing	9	2%
Petroleum and Coal Product Manufacturing	7	2%
Top 10 Subtotal	**365**	**84%**
All Other Industries	70	16%
Total All Industries	**435**	**100%**

7. Ongoing Impacts of Future Uses

This section estimates the ongoing economic activity that would be generated by the proposal.

7.1. Introduction

The operational phase of the proposal will sustain two distinct streams of ongoing onsite economic activity: the operation and maintenance of the solar farm, and (potentially) continued agricultural production through targeted agrivoltaic grazing beneath and between the panel arrays.

To adopt a conservative position, we have excluded the economic contribution of agrivoltaic grazing from our quantified modelling. The final decision on whether and how to graze the site will rest with the landowners, and we consider it appropriate to exclude these impacts so that the assessment does not rely on agricultural activity that may or may not occur in practice. Where agrivoltaic grazing is pursued, the proposal's net effect on ongoing onsite economic activity would be greater than reported below, and the opportunity cost in terms of foregone rural production would be partially offset.

7.2. Estimated Future Onsite Workers

The operational phase of the solar farm will sustain a permanent onsite workforce. Based on the project information provided by FRV, the solar farm is expected to support approximately **4 to 6 full-time equivalent roles** on an ongoing basis, comprising site management, operations and maintenance technicians, and security personnel. Operations are anticipated to run on a 24-hour, seven-day basis.

In addition to the permanent workforce, the operation will generate ongoing demand for contracted and seasonal services, including vegetation management, panel cleaning, electrical testing, equipment servicing, and civil maintenance. Adopting a conservative approach, we have excluded the ad hoc and seasonal workforce from our modelling and quantified only the permanent on-site employment. The qualitative benefits associated with contracted services and broader ongoing operational expenditure are discussed in Section 9.

7.3. Annual GDP, Jobs, and Wages

Table 4 presents the estimated annual onsite economic activity sustained by the proposal, including direct and indirect supply-chain effects.

Table 4: Estimated Annual Onsite Economic Activity

Impact	FTEs	Wages ($m)	GDP ($m)
Direct	5	$0.5	$1.4
Indirect	5	$0.6	$1.6
Direct + Indirect	**10**	**$1.1**	**$3.0**

In summary, the proposal could directly support work for approximately 10 full-time equivalents annually, paying around $1.1 million in salaries and wages and generating approximately $3.0 million in GDP each year. When contracted and seasonal services are included, future activity enabled by the proposal could support even greater ongoing activity to benefit the region's long-term social and economic needs.

8. Electricity Market Impacts

This section assesses the electricity market and emissions benefits of the proposal. These are the benefits that are national in scope and that distinguish utility-scale solar generation from other forms of large-scale development.

8.1. Impacts on Renewable Energy Infrastructure

New Zealand's electricity system faces a substantial capacity challenge. The Ministry of Business, Innovation and Employment's (**MBIE**) latest projections (July 2024)[8] forecast that total electricity demand will increase by 57 percent by 2050, driven by population growth, electrification of transport and industrial processes, and new demand from datacentres. Generation capacity will need to almost double to meet this growth and offset the retirement of ageing plants. Across all five of MBIE's demand scenarios, solar and wind account for the majority of the required new capacity, with solar capacity projected to increase more than 11-fold under the reference scenario, from 0.4 GW to 4.7 GW by 2050. Even under the most conservative scenario, solar capacity reaches 2.7 GW.

Accommodating this expansion will require significant additional land. International benchmarks indicate that utility-scale solar farms typically require approximately 2-3 hectares per megawatt of installed capacity,[9] which when applied to MBIE's reference scenario implies an additional 8,000 to 13,000 hectares nationally.[10] Regions with strong solar resources and proximity to existing grid infrastructure, including the Manawatū-Whanganui region, are well positioned to support this rollout.

Expanding renewable generation also addresses structural vulnerabilities in the electricity system. New Zealand remains exposed to hydro-lake variability, declining domestic gas reserves, and global fuel price volatility,[11] risks that were underscored during the 2024 winter period when constrained gas supply and low hydro storage drove sharp spikes in wholesale electricity prices.[12]

The Rangitīkei Solar Farm, with an indicative s 9(2)(b)(i yield in excess of s 9(2)(b)(ii) per year, would represent a particularly material addition to national solar capacity. Total solar generation in New Zealand was approximately 595 GWh in 2024 (the latest year for which MBIE annual electricity generation data is available), so the proposal alone would lift national solar output to approximately 1,000 GWh per annum – an increase of approximately 67 percent relative to the 2024 baseline.

The relative size of this percentage reflects the small absolute base from which utility-scale solar in New Zealand is currently deployed. New Zealand has historically been a low-solar-deployment jurisdiction by international standards, with most of its renewable generation coming from hydro, geothermal, and wind. The proposal should therefore be understood as one of the larger early

[8] Available here: www.mbie.govt.nz/assets/electricity-demand-and-generation-scenarios-report-2024.pdf

[9] Ong, S., Campbell, C., Denholm, P., Margolis, R., & Heath, G. *Land-Use Requirements for Solar Power Plants in the United States*. National Renewable Energy Laboratory. 2013.

[10] Calculated by applying an indicative land requirement of 2-3 hectares per MW of installed utility-scale solar capacity to MBIE's projected increase in solar capacity of 0.4 GW to 4.7 GW by 2050. This implies an additional 4.3 GW (4,300 MW) of solar capacity, requiring approximately 8,600 to 12,900 hectares nationally.

[11] Source: Ministry of Business, Innovation and Employment. *Electricity Demand and Generation Scenarios*. 2024.

[12] More information available here: https://www.ea.govt.nz/news/eye-on-electricity/what-was-behind-high-wholesale-electricity-prices/

contributors to the step-change in solar deployment that MBIE's projections require, rather than as a uniquely large project relative to a mature solar market.

8.2. Improved Competition in the Wholesale Electricity Market

While no single generation project will materially shift wholesale price formation in isolation, the proposal forms part of a wider pipeline of new renewable generation entering the New Zealand electricity market, and the cumulative effect of these additions is to enhance competition among wholesale generators and place downward pressure on wholesale prices over time. By adding significant low-marginal-cost generation to the grid, the proposal contributes to this transition by reducing collective reliance on higher-cost thermal peaking plants and broadening the diversity of the generation stack. This contribution holds whether the project's output is dispatched into the wholesale market or contracted under power purchase arrangements (**PPA**): PPA-backed generation reduces the contracting party's residual demand on the wholesale market, and merchant generation bids directly into the spot market – in either case displacing higher-cost generation at the margin.

The Electricity Authority has emphasised that increasing generation capacity is critical for fostering competition and improving price outcomes, noting in a 2023 paper[13] that a more dynamic generation market is essential to counteract high and volatile electricity prices and that the shift toward renewables can reduce barriers for new entrants. The proposal aligns with the work of the newly established Energy Competition Taskforce,[14] which is focused on enabling greater participation from independent generators and retailers.

8.3. Reduction in Rate of Retail Electricity Price Growth

Wholesale electricity costs are a significant component of retail electricity prices, so by moderating wholesale price volatility the proposal helps to mitigate flow-through effects on retail pricing over time. This is particularly relevant as electricity demand grows with the electrification of transport, industrial heat, and household energy use, as additional low-cost renewable capacity helps to absorb that growth without a proportionate increase in retail prices.

8.4. Support for Well-functioning Urban Environments

The NPS-UD defines well-functioning urban environments as those that, among other things, support reductions in greenhouse gas emissions and are resilient to the likely current and future effects of climate change. While the proposal is located in a rural area and does not involve the construction of housing or other urban activities, reliable and affordable electricity supply is a fundamental enabling input for households, businesses, and urban infrastructure. By increasing the availability of domestically generated renewable electricity at a time of declining gas supply and elevated wholesale prices, the proposal supports the ongoing functioning of urban environments while contributing to reductions in greenhouse gas emissions, consistent with Objective 8(a) and Policy 1(e) of the NPS-UD.

[13] Available here: www.ea.govt.nz/documents/3017/Decision_paper_promoting_competition_through_the_transition.pdf

[14] A jointly established task force between the Electricity Authority and the Commerce Commission to investigate ways to improve the performance of the electricity market.

9. Wider Economic Impacts

This section considers a range of wider economic impacts of the proposal.

9.1. Displacement of Carbon Dioxide Emissions

One of the most significant long-term benefits of the proposal is the displacement of greenhouse gas emissions from fossil fuel electricity generation. To quantify this effect, we have developed an emissions displacement model that estimates the net emissions avoided by the solar farm on an annual basis.

Approach

The model is intended to provide an indicative measure of the proposal's emissions benefit, calculated by reference to the emissions intensity of New Zealand's gas-fired electricity generation. It does not assume that the proposal's output displaces gas-fired generation on a one-for-one basis. Rather, gas is adopted as a transparent benchmark for two reasons:

1. Gas is the marginal thermal fuel in the New Zealand electricity system, accounting for the majority (~80%) of electricity generation emissions; and

2. Gas peaker plants are the primary generation source that ramps up and down to cover shortfalls in renewable generation, such as during dry hydro years, and are therefore the generation type most directly affected at the margin by new renewable capacity entering the grid.

The actual displacement mix in any given period will depend on system conditions, the merit order at the time of generation, hydrology, and the broader pipeline of renewable additions; the figures presented in this section should accordingly be read as a contextualised estimate of the order of magnitude of the proposal's emissions benefit, not as a precise forecast.

The model also accounts for the lifecycle emissions of the solar farm itself (encompassing manufacturing, construction, and eventual decommissioning of panels and infrastructure) to arrive at a net displacement figure. The key inputs and results are summarised in Table 5 below.

Table 5: Emissions Displacement – Key Inputs and Results

Parameter	Unit	Value
Annual generation s 9(2)(b)(ii)	GWh p.a.	s 9(2)(b)(ii)
Emissions intensity - NZ gas generation	g CO_2-eq / kWh	537
Gross emissions displaced (gas equivalent)	tonnes CO_2-eq p.a.	214,677
Lifecycle emissions - solar PV (IPCC median)	g CO_2-eq / kWh	48
Annualised project lifecycle emissions	tonnes CO_2-eq p.a.	19,200
Net emissions displaced	**tonnes CO_2-eq p.a.**	**195,477**

The gas generation emissions intensity of approximately 537 g CO_2-eq/kWh is derived from New Zealand's actual gas-fired electricity generation and associated emissions data, as published by MBIE.[15] The solar lifecycle emissions figure of 48 g CO_2-eq/kWh is the median estimate from the IPCC's comprehensive review of lifecycle assessments for utility-scale crystalline silicon photovoltaic systems.[16]

Results

On a net basis, the Rangitīkei Solar Farm is estimated to displace approximately **195,477 tonnes of CO_2-equivalent emissions per year**. To contextualise the scale of this displacement:

- New Zealand's total electricity generation emissions from gas were approximately 2.20 million tonnes of CO_2-equivalent in 2023. The proposal's net annual displacement therefore represents approximately **8.9 percent** of that total.[17]

- The proposal's annual generation of approximately [redacted] GWh would be sufficient to power approximately **257,000 electric vehicles** per year, based on average New Zealand fleet energy consumption of approximately 154 Wh/km and average annual distance travelled of approximately 10,110 km per vehicle.[18] [19]

- Equivalently, the generation would meet the annual electricity needs of approximately **57,280 New Zealand households**, based on average household consumption of approximately 6,983 kWh per year.[20]

The net displacement figure reflects electricity-sector emissions only and does not account for changes in on-site agricultural emissions. As the site's current use generates ongoing emissions through livestock methane, fertiliser application, and farm machinery use, transitioning the site to solar generation – whether panels alone or in combination with lower-intensity agrivoltaic sheep grazing – would reduce or eliminate these emissions relative to the status quo. The figures above should therefore be regarded as lower-bound estimates of the proposal's total emissions benefit, with further reductions arising from the change in land use that have not been quantified for the referral.

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[15] Gas emissions intensity calculated from MBIE Electricity Statistics and Energy Sector Greenhouse Gas Emissions data. Available here: www.mbie.govt.nz/building-and-energy/energy-and-natural-resources/energy-statistics-and-modelling/energy-statistics

[16] Source: *Solar lifecycle emissions from IPCC AR5 Working Group III, Annex III, Table A.III.2, median estimate for utility-scale crystalline silicon PV.*

[17] Source: MBIE, *Energy Sector Greenhouse Gas Emissions* (YE 2023) and *Electricity Statistics* (YE 2023). Available at: www.mbie.govt.nz/building-and-energy/energy-and-natural-resources/energy-statistics-and-modelling/energy-statistics/new-zealand-energy-sector-greenhouse-gas-emissions

[18] Source: EVDB.nz, average WLTP energy consumption across the 50 most popular EV models in New Zealand (~154 Wh/km fleet average, 2026). Available at: https://evdb.nz/l/efficient

[19] Source: Flip the Fleet, average monthly distance data (year ended February 2026), annualised to approximately 10,110 km per vehicle. Available at: https://flipthefleet.org/

[20] Source: Electricity Authority / EMI, average New Zealand household electricity consumption of approximately 6,983 kWh per annum (YE December 2025). Available at: https://www.emi.ea.govt.nz/r/vvb0r

9.2. Alignment with National and Regional Strategies

The proposal is strongly aligned with the Government's strategic direction for decarbonisation, energy security, and renewable generation. The *Emissions Reduction Plan 2026-2030*[21] identifies electricity generation as one of four priority areas for emissions reduction, recognising that decarbonising the electricity system is critical to achieving New Zealand's net zero by 2050 target, and commits to increasing the share of renewable generation while phasing down fossil fuels.

The proposal also gives effect to the *National Policy Statement for Renewable Electricity Generation 2011* (Amended December 2025) (**NPS-REG**),[22] which recognises the national significance of renewable electricity generation, including solar, and requires decision-makers to provide for its development, operation, maintenance, and upgrading. While the *New Zealand Energy Strategy* is still under development, MBIE has made clear that the transition to a modern, secure, and affordable energy system will depend on large-scale investment in renewable generation, particularly wind and solar.[23]

The proposal also aligns with the Government's *Going for Growth* agenda (launched in early 2025), particularly its pillars on competitive business settings (through additional low-marginal-cost generation), promoting trade and investment (through a private-sector capital commitment of approximately $300 million), and investing in infrastructure for growth.

At the regional level, the proposal aligns with Horizons Regional Council's strategic priorities for renewable energy development and climate change mitigation. At the district level, the Rangitīkei District is well positioned to accommodate utility-scale solar development given its relatively flat topography on the Rangitīkei plains, high solar irradiation, proximity to the Marton township for workforce access, and direct access to Transpower's national grid transmission lines.

9.3. Ongoing Employment Impacts

The jobs enabled by the proposal will sustain a diverse and stable local workforce, generating broader economic benefits through skills development, supply chain linkages, and workforce participation. Operational roles such as technicians, operators, and maintenance personnel will involve on-the-job training in photovoltaic systems, electrical infrastructure, and remote monitoring, contributing over time to specialised technical capability within the regional workforce and providing practical pathways for workers to enter the renewable energy sector.

Unlike construction activity, which is temporary, operational roles will persist throughout the project's operating life of at least 40 years (with the potential for repowering beyond that), providing stable employment in a predominantly rural labour market where employment can otherwise be strongly influenced by seasonal agricultural cycles. The solar farm will also support local service providers through ongoing demand for vegetation management, panel cleaning, electrical testing, and civil

[21] Available here: https://environment.govt.nz/publications/new-zealands-second-emissions-reduction-plan/

[22] Available here: https://environment.govt.nz/publications/national-policy-statement-for-renewable-electricity-generation/

[23] Available here: https://www.mbie.govt.nz/building-and-energy/energy-and-natural-resources/energy-strategies-for-new-zealand/new-zealand-energy-strategy

maintenance – typically delivered by locally based contractors and trades – together with broader supply-chain demand for monitoring systems, spare parts, consumables, and professional services.

9.4. Community Benefit Contributions

Developers of utility-scale renewable energy projects increasingly establish community benefit funds or similar arrangements as part of project delivery. These mechanisms typically provide a fixed annual contribution – administered locally and directed toward community projects, education and training initiatives, environmental enhancement, or community facility upgrades – over the operating life of the project. International benchmarks for utility-scale solar developments commonly sit in the range of approximately NZD $1,000 to $1,500 per MW of installed capacity per annum.[24] Applied to a project of this scale (approximately 220 MW AC), this would imply an indicative annual contribution in the order of $220,000 to $330,000.

Whether and on what terms a community benefit arrangement is adopted for the Rangitīkei Solar Farm is a matter for FRV and the relevant local stakeholders, and no specific commitment has been assumed in the quantified modelling presented in this report. We note, however, that any such contribution would represent an additional ongoing benefit to the host community over and above the operational employment, supply-chain expenditure, and wider effects discussed elsewhere in this section, and would form part of the operational expenditure profile of the project.

9.5. Project Acceleration

Not only will the proposal provide meaningful employment for a wide range of local and regional workers, as illustrated above, but it will likely progress considerably faster via the FTAA process than would otherwise be the case. Absent Fast-track approval, it would likely be subjected to a protracted consent process involving multiple consents at both district and regional levels, public notification, hearings, and the potential for Environment Court appeals. The FTAA (as strengthened by the Fast-track Approvals Amendment Act 2025) is specifically designed to accelerate nationally and regionally significant projects, bringing forward the construction-related stimulus, ongoing onsite economic activity, emissions displacement, and electricity market benefits described in this report.

9.6. Feasibility and Delivery of Enabled Capacity

In addition, the proposal is being advanced by FRV, an experienced international developer of utility-scale solar and energy storage projects. Developer capability is relevant to energy infrastructure outcomes because consented generation capacity only translates into actual electricity supply if it is delivered, commissioned, and connected to the network in a timely and coordinated manner. An experienced developer is better positioned to manage the technical, regulatory, and commercial complexities associated with utility-scale energy projects, including design optimisation, procurement, grid connection, and construction sequencing. This reduces the risk of delays or under-delivery and

[24] Clean Energy Council (Australia), *A Guide to Benefit Sharing Options for Renewable Energy Projects* (October 2019), reports observed annual community benefit contributions in the range of AUD $130 to $800 per MW (AC) per year over 10 to 25 years, with documented case-study contributions of approximately AUD $1,315 per MW per annum. In New South Wales, the Uralla Shire community benefit policy (adopted 2023) sets minimum thresholds of AUD $850 and $1,050 per MW per annum for solar and wind respectively. United Kingdom precedent typically references a benchmark of approximately GBP £1,000 per MW of installed capacity per annum, indexed and applied over the operating life of the project (see, for example, Dorset County Council renewable energy guidance).

increases confidence that the generation capacity and associated benefits enabled by the proposal will be realised in practice.

9.7. Foregone Rural Production

The main economic cost of the proposal is foregoing the opportunity to continue the existing mixed sheep and cattle grazing and arable cropping enterprise on the site. We have estimated the per-hectare economic contribution of the existing land use using the latest available industry data for sheep and beef and arable cropping enterprises in the Manawatū-Whanganui region.[25] Applying these per-hectare metrics to the site's total area of 507 hectares[26] yields the estimated annual foregone rural production set out in the table below.

Table 6: Estimated Annual Production of Counterfactual Activity

Impact	FTEs	Wages ($m)	GDP ($m)
Direct	2.7	$0.2	$0.6
Indirect	3.8	$0.3	$0.8
Direct + Indirect	**6.5**	**$0.5**	**$1.4**

If used in its current mixed pastoral and arable configuration, the site could sustain approximately $1.4 million in annual GDP, employment for approximately six FTEs, and approximately $0.5 million in annual wages and salaries. These values are modest in the context of the construction activity, ongoing operational activity, electricity market benefits, and emissions displacement enabled by the proposal. Furthermore, where targeted agrivoltaic grazing is pursued during the operational period, a portion of the foregone rural production would be retained alongside electricity generation, reducing the net opportunity cost further.

9.8. Investment Signal Effects

Finally, the development will provide a clear signal of confidence in the region's medium- to long-term economic outlook and in New Zealand's renewable energy investment environment. Large, capital-intensive infrastructure projects require extensive due diligence, long investment horizons, and confidence in future demand, regulatory settings, and grid access. Their delivery can therefore signal to other investors that underlying conditions are sufficiently robust to support further activity, which may help spur or bring forward other developments.

[25] Available here: https://beeflambnz.com/industry-data/farm-data-and-industry-production/sheep-beef-farm-survey

[26] We conservatively model production across the site's full area. This approach overstates the productive area and thereby maximises the estimated opportunity cost of the proposal.

10. Conclusion and Checklist

10.1. Conclusion

The Rangitīkei Solar Farm is a utility-scale solar generation and energy storage proposal of national significance. With an installed capacity of approximately 220 MW AC and an indicative s 9(2)(b)(ii) generation in excess of s 9(2)(b)(GWh per year, the proposal represents a material addition to New Zealand's renewable generation capacity at a time when the electricity system requires a step-change increase in solar and wind generation to meet projected demand growth.

The economic evidence presented in this report confirms that the proposal delivers significant regional and national benefits. In summary:

- During the 18 to 24-month construction period, the proposal is estimated to support approximately 435 FTE-years of employment, generate approximately $35 million in wages and salaries, and contribute approximately $69 million in GDP, primarily within the Manawatū-Whanganui region. This is equivalent to an average of approximately 218 to 290 full-time positions sustained at any given time across the construction programme;

- Once operational, the solar farm will sustain approximately 4 to 6 permanent on-site FTEs and approximately 10 FTEs in total once indirect supply-chain effects are included, supporting approximately $1.1 million in annual wages and salaries and approximately $3.0 million in annual GDP. This will be supplemented by ongoing demand for contracted services for vegetation management, panel cleaning, electrical testing, and civil maintenance, providing stable long-term employment in a predominantly rural labour market;

- The proposal will displace approximately 195,000 tonnes of CO_2-equivalent emissions per year – equivalent to approximately 8.9 percent of New Zealand's total annual electricity generation emissions from gas – supporting New Zealand's statutory climate objectives and the *Emissions Reduction Plan 2026-2030*;

- The proposal would represent a 67 percent increase in total national solar output relative to 2024 levels, generate sufficient electricity to meet the annual needs of more than 57,000 New Zealand households or to power approximately 257,000 electric vehicles, enhance competition in the wholesale electricity market, improve the flexibility and resilience of the national electricity system through complementarity with hydro and wind generation, and contribute to moderating the rate of retail electricity price growth over time;

- The proposal is strongly aligned with the NPS-REG, the *Emissions Reduction Plan 2026-2030*, and the Government's *Going for Growth* agenda; and

- The proposal makes efficient use of existing transmission infrastructure traversing the site and is being delivered by an experienced international developer with a proven pipeline of utility-scale solar and storage projects.

The main economic cost – foregone rural production from the site's current mixed pastoral and arable use – is modest in comparison to the scale of the energy and economic benefits enabled. Foregone rural production is estimated to support annual GDP of approximately $1.4 million, employment for approximately six FTEs, and annual wages and salaries of approximately $0.5 million. This opportunity cost may be partially offset by targeted agrivoltaic grazing during the operational period.

The Fast-track process helps ensure that these benefits are realised sooner than traditional consenting pathways would otherwise allow. On that basis, we consider the proposal meets criteria 22(2)(a)(ii), 22(2)(a)(iv), and 22(2)(a)(vii) of the FTAA, and we support it on economic grounds.

10.2. FTAA Criteria Checklist

The following table provides a signpost to where each of the relevant criteria listed in Section 22(2)(a) of the FTAA are addressed in this report.

Table 7: Assessment Against Section 22(2)(a) Criteria of FTAA

Ref	Criterion	Signpost
(i)	Identified as a priority project in government plans or strategies	n/a
(ii)	Delivers new or supports existing regionally/nationally significant infrastructure	Sections 3, 8 & 9
(iii)	Increases housing supply, addresses housing needs, or contributes to a well-functioning urban environment	Section 8.4
(iv)	Delivers significant economic benefits	Sections 6 – 9
(v)	Supports primary industries, including aquaculture	n/a
(vi)	Supports development of natural resources, including minerals and petroleum	n/a
(vii)	Supports climate change mitigation (e.g. reducing greenhouse gas emissions)	Section 9
(viii)	Supports climate change adaptation, reduces risk from natural hazards	n/a
(ix)	Addresses significant environmental issues	n/a
(x)	Consistent with local/regional planning documents and spatial strategies	Section 9.2