URBAN
ECONOMICS

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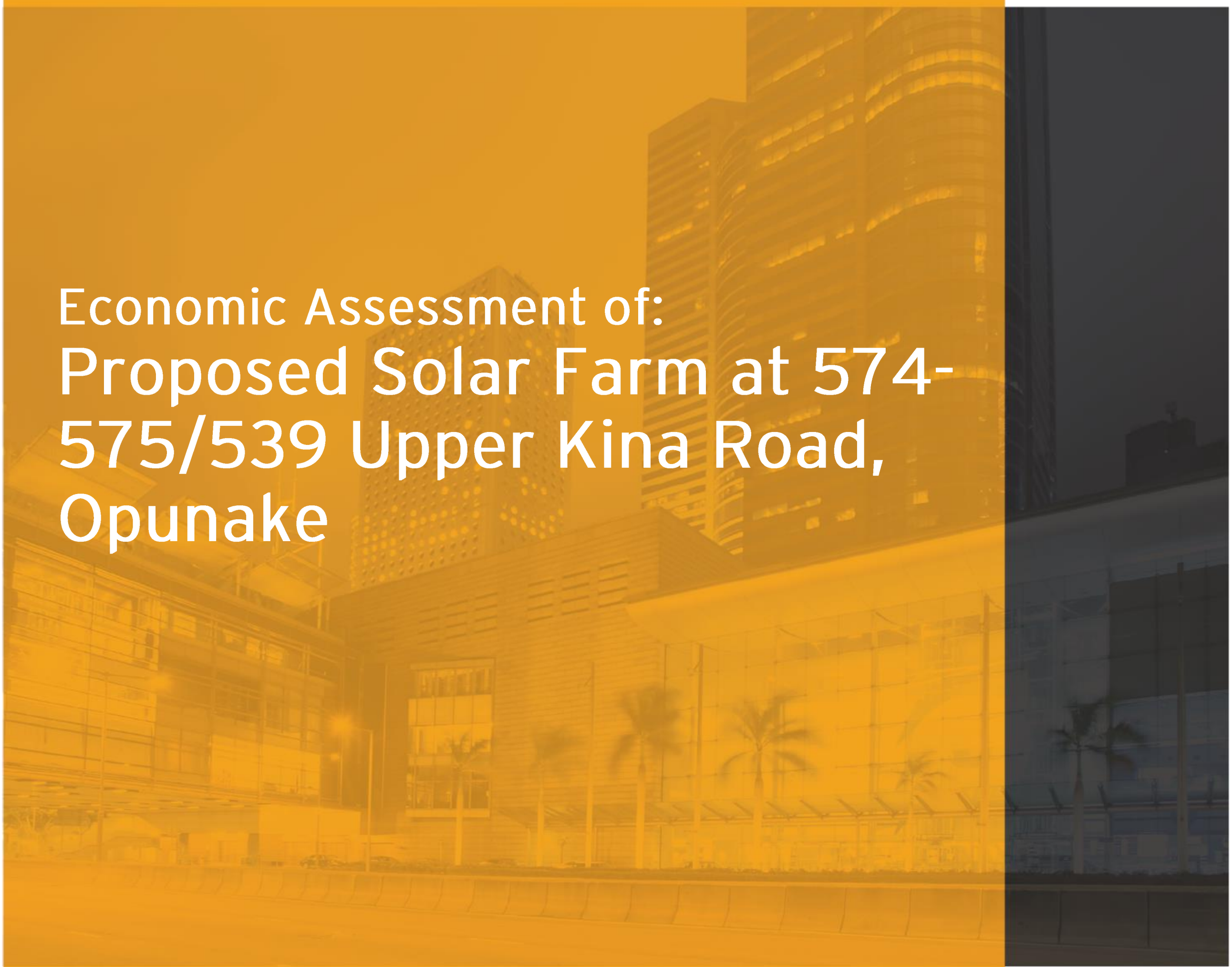

Economic Assessment of:

# Proposed Solar Farm at 574-575/539 Upper Kina Road, Opunake

PREPARED FOR
Energy Farms Limited

# ABOUT US

## OUR AREAS OF EXPERTISE

### Economic Analysis

Our work aims to bridge the gap between land-use planning and urban economics.  Our focus is on the interaction between land markets, land-use regulations, and urban development.  We have developed a range of methodologies using a quantitative approach to analyse urban spatial structure and audit land-use regulations.

### Property Research

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.

### Development Advisory

We provide development planning and costing advisory services to support small and large-scale developments.

## DISCLAIMER



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# 1. Executive Summary

The proposal is to build a solar farm with the agricultural activity (sheep farming) continuing to operate underneath the solar panels. The site has an area of 188.6 hectares. It is expected to generate approximately 293,000 MWh of electricity annually, sufficient to support approximately 40,350 homes[1].

The construction of the proposed development is expected to contribute approximately $37.0 million to the construction sector GDP and generate 306 FTE jobs.

The ongoing economic impact from the proposed development, including ongoing sheep farming, is expected to contribute approximately $21.2 million to GDP and generate 64 FTE jobs per annum. The proposal is expected to have a net present value of approximately $342.0 million over a 30-year period with a discount rate applied at 5% per annum.

The proposal contributes towards achieving Policy 1 of the NPS-UD by increasing the accessibility to renewable energy, which is fundamental to a well-functioning urban environment (i.e. urban environments require a reliable energy supply). In addition, a key requirement of Policy 1 of the NPS-UD is the enabling of suitable sites for a range of businesses in terms of location and size. Solar farms are land-extensive businesses which require large sites to operate. Additionally, the site is efficiently located to supply electricity across the Taranaki Region. Therefore, the proposal is consistent with Policy 1 of the NPS-UD.

The proposal would meet the economic requirements of the fast track consenting process and is recommended for approval.

[1] Based on New Zealand average energy consumption per household

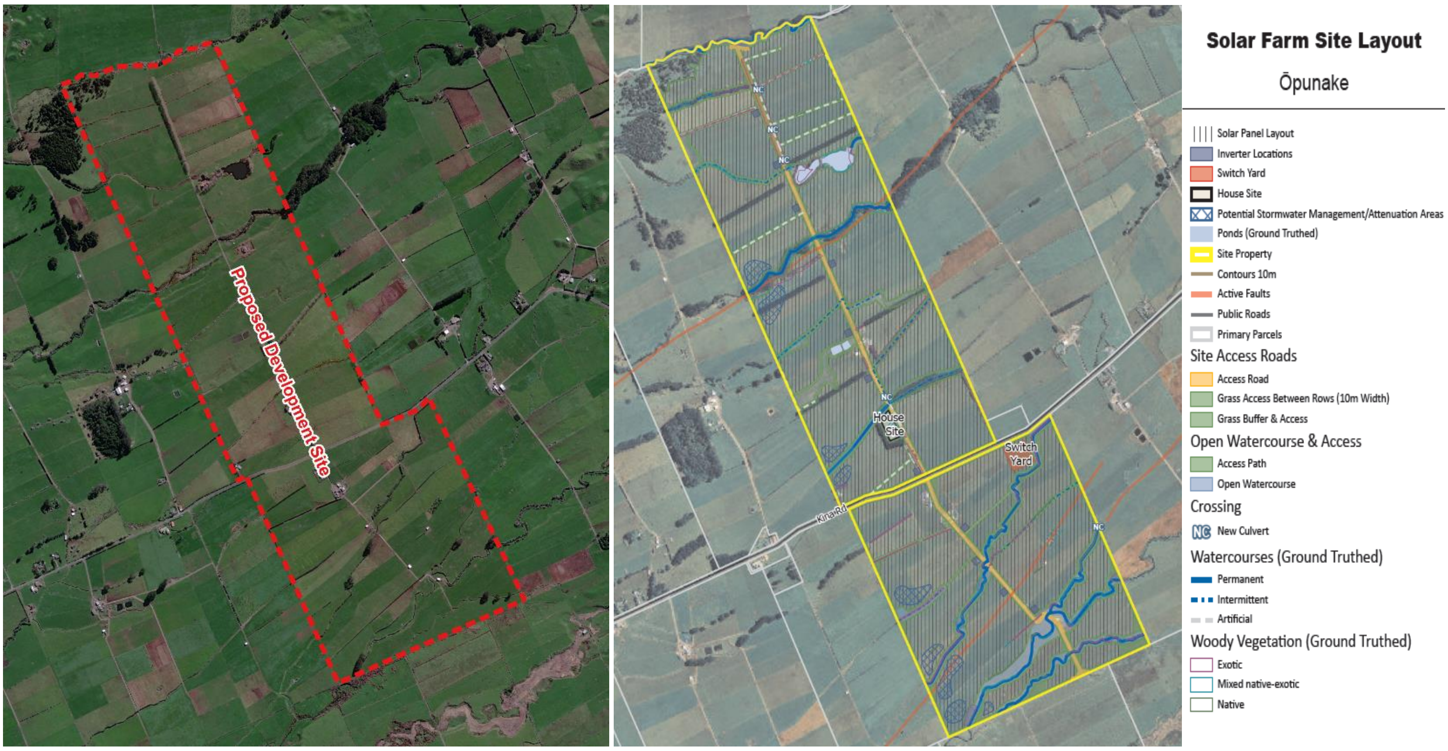
# 2. Introduction

This report provides an economic assessment of a proposed solar farm located at 574-575/539 Upper Kina Road, Opunake. This is to support an application for a consent under the COVID-19 Recovery (Fast-track Consenting) Act 2020.

## 2.1. The Proposal

Figure 1 outlines the location of the proposed development site. It has a total site area of 188.5 hectares and is currently zoned Rural. The proposal is to build a solar farm with the agricultural activity (sheep farming) continuing to operate underneath the solar panels. The solar farm would generate approximately 293,000 MWh of energy per annum, sufficient to support approximately 40,350 houses.

Figure 1: Proposal Site




Source: CoreLogic, Reyburn & Bryant

# 3. Economic Contribution

The proposal would create a significant number of jobs within the construction and energy sectors (electricity, gas, water & waste services). This is comprised of the initial construction and ongoing operation of the solar farm including sheep farming.

## 3.1. Construction Phase

The national 'value-added per employee' for each sector has been used to estimate the GDP contribution and the related full-time equivalent (FTE) employment for this project. This methodology accounts for both the direct and indirect contributions generated from the proposed development.

Figure 2 outlines the value-added GDP and FTEs that the proposed solar farm would generate. It is estimated that the construction of the proposed solar farm would contribute approximately $37.0 million to the construction sector's GDP and generate 306 FTE jobs.

Figure 2: GDP and FTE Employee Estimates

| | | | FTE Employees | | | |
|---|---|---|---|---|---|---|
| **Proposed Development** | **Project Value ($M)** | **Value Added ($M)** | **Land & Building Construction** | **Construction Services** | **Architectural, Scientific & Engineering Services** | **Total** |
| Construction Phase | $120.3 | $37.0 | 78 | 170 | 58 | 306 |

Source: Urban Economics

The proposed development is expected to be developed over a 2-year period. Figure 3 outlines the 'value added' GDP and the number of FTE jobs created in each year of the proposed development. Some of the key points to note are:

- The proposed development would contribute approximately $37.0 million to GDP and generate a total of 306 FTE jobs over a two-year development period. This equates to a contribution of approximately $22.0 million to GDP and 182 FTE jobs in Stage 1 and a contribution of approximately $15.0 million to GDP and 124 FTE jobs in Stage 2.
- The proposed development would generate approximately 78 FTE jobs in the building construction sector. This equates to 39 FTE jobs per annum in Stage 1 and Stage 2.
- The proposed development would generate approximately 170 FTE jobs in the construction service sector, of which 102 FTE jobs would be generated in Stage 1 and 68 FTE jobs would be generated in Stage 2.
- The proposed development would generate approximately 58 FTE jobs in the architectural scientific and engineering services sector, of which 41 FTE jobs would be generated in Stage 1 and 17 FTE jobs would be generated in Stage 2.

Figure 3: FTE Jobs at Different Development Time Periods

| | | | | FTEs | | | |
|---|---|---|---|---|---|---|---|
| **Development** | **Timeframe** | **Project Value ($M)** | **Value Added ($M)** | **Land & Building Construction** | **Construction Services** | **Architectural, Scientific & Engineering Services** | **Total** |
| Stage I | 2024-2025 | s 9(2)(b)(ii) [redacted] | $22.0 | 39 | 102 | 41 | 182 |
| Stage II | 2025-2026 | [redacted] | $15.0 | 39 | 68 | 17 | 124 |
| **Total** | | [redacted] | **$37.0** | **78** | **170** | **58** | **306** |

Source: Urban Economics

Figure 4 shows that the construction sector has a $23.2 billion contribution to the national GDP and a workforce of 191,500 FTEs. The agriculture sector has a $14.1 billion contribution to the national GDP and a workforce of 84,900 FTEs. The energy sector has an $8.5 billion contribution to the national GDP and a workforce of 20,300 FTEs. This results in a respective value added of $121,000, $166,000 and $419,000 per FTE employee.

Figure 4: Value Added GDP per Employee

| **Sector** | **Value Added GDP ($M)** | **FTE Workers** | **Value Added GDP Per Employee** |
|---|---|---|---|
| Construction | $23,200 | 191,500 | $121,000 |
| Agriculture | $14,100 | 84,900 | $166,000 |
| Electricity, Gas, Water & Waste Services | $8,500 | 20,300 | $419,000 |

Source: Statistics NZ

## 3.2. Ongoing Operations

Figure 5 outlines the economic contribution of the ongoing operation of the proposed solar farm including sheep farming. Some of the key points to note are:

- The ongoing economic impact from the proposed solar farm is expected to contribute approximately $17.6 million to GDP and generate 42 FTE jobs per annum. The proposed activity is expected to have a net present value of $284.0 million over a 30-year period with a discount rate applied at 5% per annum.

- The ongoing economic impact from the proposed agricultural activity is expected to contribute approximately $3.6 million to GDP and generate 22 FTE jobs per annum. The proposed activity is expected to have a net present value of $58.0 million over a 30-year period with a discount rate applied at 5% per annum.

- Overall, the ongoing economic impact from the proposed development is expected to contribute approximately $21.2 million to GDP and generate 64 FTE jobs per annum. The proposed development is expected to have a net present value of $ 342.0 million over a 30-

year period with a discount rate applied at 5% per annum.

Figure 5: Economic Contribution and Employment

| Ongoing Operation | Value Added p.a. ($M) | Net Present Value ($M) | FTE |
|---|---|---|---|
| Solar Farm | $17.6 | $284.0 | 42 |
| Agriculture | $3.6 | $58.0 | 22 |
| **Total** | **$21.2** | **$342.0** | **64** |

Source: Urban Economics

# 4. Fast Track Assessment Considerations

The COVID-19 Recovery (Fast-track Consenting) Act 2020 requires several economic considerations, which are addressed as follows.

*The project's economic benefits and costs for people or industries affected by COVID-19 (see section 19(a)).*

The project will create a range of employment opportunities in the construction, energy and agricultural sectors. Notably, during the construction phase of the development, local spending in the Covid-19 impacted retail and hospitality sector is likely to experience a boost from the increased local employment and thus benefit from the construction of this project.

*The project's effect on the social and cultural well-being of current and future generations (see section 19(b)).*

The proposed development would provide employment and create a reliable source of renewable energy for current and future generations. The project is estimated to supply enough electricity per annum to power approximately 40,350 homes. This is a considerable social benefit for current and future generations in the local environment.

*If applicable, whether the project may result in a public benefit by generating employment (see section 19(d)(i)).*

As outlined above, the construction of the project would contribute approximately $37.0 million to GDP and generate an estimated 306 FTE jobs. These jobs would be in roading, construction, landscaping, planting, land surveying, administration and support services and other related activities.

The ongoing operation of the solar farm would contribute approximately $17.6 million to GDP and generate 42 FTE jobs. Additionally, the land will also be used for sheep farming, which will contribute approximately $3.6 million to GDP and generate 22 FTE jobs in the agricultural sector. These are notable economic benefits.

*If applicable, whether the project may result in a public benefit by contributing to well-functioning urban environments (see section 19(d)(iii)).*

The project will provide a sustainable and reliable supply of electricity, which is a key contributor to well-functioning urban environments. The project is estimated to produce approximately 293,000 MWh of energy per year, supplying electricity to approximately 40,350 homes. This is a considerable economic benefit.

# 5. NPS-UD Assessment

Policy 1 of the NPS-UD 2020 requires planning decisions to contribute to well-functioning urban environments. The policy states,

> "*Planning decisions contribute to well-functioning urban environments, which are urban environments that, as a minimum*
>
> > *(b) have or enable a variety of sites that are suitable for different business sectors in terms of location and site size; and*
> >
> > *(e) support reductions in greenhouse gas emissions; and*
> >
> > *(f) are resilient to the likely current and future effects of climate change*".

The proposal contributes towards achieving this policy by increasing the accessibility to renewable energy, which is fundamental to a well-functioning urban environment (i.e. urban environments require a reliable energy supply). In addition, a key requirement of this policy is the enabling of suitable sites for a range of businesses in terms of location and size. Solar farms are land-extensive businesses which require large sites to operate. Additionally, the site is efficiently located to supply electricity across the Taranaki Region. Therefore, the proposal is consistent with Policy 1 of the NPS-UD.

# 6. Conclusion

The proposal would result in an increase in construction sector output, contributing approximately $37.0 million in GDP and generating 306 FTEs.

The proposal would also create ongoing employment in the energy and agricultural sectors, with an additional 64 FTEs and a value added contribution of $ 21.2 million to GDP. This equates to an NPV of $342.0 million over a 30-year period.

The proposal would meet the economic requirements of the fast track consenting process and is recommended for approval.