

Technical Memo

To:	BTW c/- Cam Twigley	From:	Fraser Colegrave & Nicholas Keith
Date:	Thursday, 27 August 2026	Page:	8 (including this page)
Subject:	Twizel Solar Project – Cumulative Effects Assessment: Economic		

Introduction

Nova Energy is seeking approval under the Fast-track Approvals Act 2024 (FTAA) to develop the Twizel Solar Project, a utility-scale solar farm on an 868-hectare site near Twizel, with a development footprint of approximately 565 hectares and a grid export capacity of approximately 300 MW (the proposal). Our substantive economic assessment concluded that the proposal would deliver significant regional and national economic benefits that substantially outweigh its modest economic costs.

On 10 August 2026, an expert panel granted consent for the Haldon Solar Farm, located at Haldon Station approximately 15 kilometres southeast of Twizel (the Haldon decision). It is our understanding that the Haldon Solar Farm is the first, and currently the only, consented solar farm in the Mackenzie Basin. Its approval thus changes the receiving environment against which the proposal falls to be assessed.

The purpose of this memorandum is to provide a cumulative effects assessment for the proposal which considers the combined economic effects of the proposal and the consented Haldon Solar Farm, and assesses whether the conclusions of our substantive economic assessment¹ change as a result.

Framework

The Haldon decision establishes the framework for this assessment.² The Panel considered cumulative effects at length (at [138] to [155]) and, applying the first-in-time principle and existing-environment case law, held (at [151]) that cumulative effects “*in the sense of the cumulative position of the existing environment at the time of the application*” can be considered, but potential effects of future, unconsented applications cannot.

Two passages are relevant to the proposal. At [153], the Panel stated that “*if there was another approved application which had not yet been built, that approved application, if it had a reasonable prospect of proceeding, would be taken into account.*” And at [154]: “*If cumulative effects become relevant in the second application because the first has been granted, then those effects will have to be considered on their merits at the time that the second application is being considered by a panel.*”

The consented Haldon Solar Farm, which we assume has a reasonable prospect of proceeding, forms part of the receiving environment for the proposal. This assessment therefore considers the combined

¹ Insight Economics (April 2026). *Economic Assessment of Proposed Solar Project in Twizel for Fast-track Substantive Application*. Prepared for Nova Energy Limited.

² Available at <https://www.fasttrack.govt.nz/projects/haldon-solar/the-decision>

economic effects of the two projects.³ In doing so, we work through each element of our April 2026 assessment below and identify whether the presence of the consented Haldon project causes each assessed impact to be lessened, enhanced, or materially unchanged.

The Haldon Solar Farm as Consented

The decision records that elements of the Haldon proposal were adjusted significantly during the panel process. The key economic parameters of the final approved project, taken from the decision, are summarised in Table 1 below.

Table 1: Key Economic Parameters of the Consented Haldon Solar Farm

Parameter	Approved parameter description
Scale	Approximately 360,000 sun-tracking solar panels, 48 power transformers with a battery storage component, and a new substation connecting to the existing Transpower transmission line via one new tower.
Site	Approximately 320 ha within Haldon Station, about 15 km southeast of Twizel, plus a 180-ha predator-fenced Compensation Area and five conservation/release areas.
Generation	Approximately 370 GWh per year, equivalent to around 45,000 households.
Construction	A 14–18-month build; direct construction employment of approximately 235-242 jobs (M.E modelling; the Panel’s conclusion cites 220-250 jobs).
Operations	5-6 direct FTEs per year, potentially more including compensation-area management and monitoring.
Value added	Real present value of \$134.0m-\$135.4m (direct plus indirect), rising to \$189.0m-\$189.5m including induced effects.
Consent	35-year duration with a 10-year lapse period; construction start date unknown.

The decision also imposes conditions with economic relevance, including a construction traffic cap of approximately 100 vehicle movements per day, supported by shared-transport measures. This implies some degree of coordinated worker transport, rather than reliance solely on individual commuting. Notably, no workforce accommodation condition and no local procurement condition were imposed. The consent has a 35-year duration and a 10-year lapse period, and the construction start date is unknown. Where construction timing matters to the assessment below, we therefore consider two scenarios: concurrent construction of the two projects, and sequential construction.

Combined Construction-Phase Effects

Our April 2026 assessment estimated that development of the proposal would deliver a one-time boost to regional GDP of around \$85 million (including flow-on effects), support around 570 FTE-years of employment (equivalent to approximately 285 people employed full-time for two years, of which around 132 FTEs per year are direct), and generate around \$51 million in wages. For the Haldon project, the decision records estimated direct construction employment of approximately 235-242

³ For completeness, we note that several other solar farms have been proposed in and around the Mackenzie Basin. Our understanding is that no decisions have been issued on these proposals, and consistent with the framework above, they are noted here for context only and are not assessed further.

jobs over a 14-to-18-month build, together with total value added of \$134.0-\$135.4 million in real present value terms (direct plus indirect) over the project's life.

These estimates were produced by different authors using different models and metrics, so they are not strictly additive. They are, however, additive in nature: each project's expenditure, employment, and value added arises from separate investment, with neither assessment including activity attributable to the other. If the projects are built sequentially, the combined benefits accrue over a longer period. If they are built concurrently, a combined direct workforce of roughly 370 FTEs would be employed across the two sites at peak,⁴ before flow-on employment is counted. The principal risk under a concurrent scenario is that too much activity within too short a timeframe could exceed the local capacity available to support it, slowing delivery or raising costs. We address this below, and note that our modelling already makes allowance for such constraints on the realisation of benefits.

In our view, the main cumulative consideration is not the size of the combined benefits but the capacity of the local labour market and accommodation stock to support their realisation. The Mackenzie District's resident construction workforce is relatively small, so both projects will necessarily draw much of their workforce from the wider Canterbury and Otago regions and beyond. Under a concurrent construction scenario, the two projects would compete for similar trades, which could bid up wages (itself a benefit to workers, though a cost to the projects), slow delivery, or increase reliance on distant workers. Under a sequential scenario, the opposite dynamic applies: a pipeline of successive projects helps attract and retain a specialised construction workforce in the region, reducing mobilisation costs and supporting the realisation of each project's benefits. A review of cumulative assessments prepared for Australian renewable energy zones recognise both of these dynamics, finding that combined project demand can attract and retain skilled workers in a region and reduce outmigration, while recommending staggered construction to smooth peak workforce and accommodation pressures.⁵

A related consideration is worker accommodation. Twizel has a small resident population but, as a tourism hub, a substantial stock of visitor accommodation, holiday homes, and campground capacity, with further capacity in Tekapo, Fairlie, and Omarama. In its comments on the Haldon application, Mackenzie District Council identified potential *"social issues arising from limited accommodation in surrounding townships for the number of construction staff"*, with implications for housing supply and potentially wage growth, while concluding that the positive economic effects would likely outweigh the temporary adverse effects (decision at [427]). The Panel found Haldon's construction effects acceptable on that basis.

⁴ Of note, a portion of direct employment includes planning and design FTEs, which aren't expected to be onsite and therefore won't compete for local labour or beds.

⁵ See, for example, EnergyCo (2024), *Central-West Orana Renewable Energy Zone Transmission Project EIS*, Appendix L: Updated Cumulative Impact Assessment, p. L-109, which finds that *"regional jobs growth from the cumulative project demand can partly offset this trend by providing opportunities for the existing and future regional workforces, attracting middle- and high-skilled workers and families to regional areas, reducing outmigration of the regional workforce to look for employment in cities, and increas[ing] regional labour force participation"* (with an equivalent finding for the combined operational workforce at p. L-110); and Urbis for EnergyCo (July 2025), *New England Renewable Energy Zone Workforce Accommodation Study*, p. 8, which recommends that *"projects should be staged to smooth the peak periods"* and observes that *"labour availability will most likely force staging to an outcome that could be managed."*

In our view, the combined position is the relevant question for this assessment: if the two construction periods overlap, peak demand for worker accommodation would be materially higher than for either project alone, and would likely have some interaction with seasonal tourism peaks. We note, however, that construction worker spend also represents a countervailing benefit to local hospitality and accommodation businesses, particularly outside tourism peaks, when spare capacity in the visitor economy is greatest. A multi-year construction workforce would provide these businesses with a steadier, less seasonal revenue base than visitor demand alone, supporting year-round employment and helping to sustain capacity that also serves the tourism market. In addition, Haldon's shared-transport condition may temper accommodation demand to the extent that some workers commute rather than residing locally, although we place only modest weight on this, as it is a traffic-management measure rather than an accommodation measure, and shared transport is equally consistent with workers being transported from accommodation within Twizel and the surrounding townships.

Overall, we conclude that the combined construction-phase effects remain strongly positive, with a timing-dependent risk to the pace and cost of benefit realisation rather than to the benefits themselves. In reaching this view, we note that our impact estimates already embed conservative allowances for these dynamics. Our modelling assumed that only around one-quarter of the proposal's total capital cost would be spent domestically, attributed 90 percent of the resulting national impacts to the Canterbury region on the basis that some inputs would inevitably be sourced from further afield, and expressly recognised that capacity constraints, such as limited skilled labour, may dampen the scale of impacts. Concurrent construction would increase the likelihood that these allowances are drawn upon; it would not imply effects beyond those estimated.

Combined Ongoing Effects

Once operational, the proposal is expected to sustain around 20 FTEs (8 permanent roles plus approximately 12 FTEs of contracted support services) and contribute more than \$4 million in annual GDP. The Haldon decision records an operational workforce of 5-6 direct FTEs per year, potentially more once compensation-area management and monitoring are included. The combined operational workforce is small relative to the local labour market and raises no immediate capacity concerns. Unlike the temporary construction workforce, these are likely to be permanent, ongoing roles, which could plausibly be filled from within the district's existing labour market, by workers relocating to the area, or a combination of the two. Either way, the numbers involved are modest, and to the extent that roles are filled by new residents, they would add to the local population, spending, and rating base rather than compete for scarce local labour.

In our view, the two projects will be complementary in their operation. They will support the viability of a local base of operations and maintenance contractors, strengthen the business case for training and apprenticeships in solar servicing, and can share a common local supplier base. The combined ongoing local expenditure, lease income, and rates contributions are additive. We therefore assess the ongoing effects of the proposal as materially unchanged, with a modest upside to the local realisation of benefits.

Combined Wider Economic Effects

The proposal is expected to generate around 526 GWh of electricity per year, enough to meet the annual needs of approximately 75,000 households. The consented Haldon project adds approximately 370 GWh per year, equivalent to around 45,000 households. The combined contribution of nearly 900 GWh per year, or roughly 120,000 households, is itself a cumulative benefit. The National Policy Statement for Renewable Electricity Generation (**NPS-REG**) requires decision-makers to recognise and provide for the development of renewable generation capacity “*including enabling cumulative increases*” at any scale, a point recorded in the Haldon decision (at [504] to [505]). Cumulative effects, in other words, cut both ways; the presence of the consented Haldon project will amplify, rather than diminish, the renewable generation benefit that the Panel must weigh.

In our view, the question for this assessment is whether the Haldon decision materially diminishes the marginal wider benefits we attributed to the proposal alone. These included improved competition in the wholesale electricity market, a reduction in reliance on higher-carbon alternatives, moderation of retail electricity price growth, and positive investment signal effects. In our assessment it does not. Projected demand growth driven by the electrification of transport, industry, and process heat is expected to require substantial additional generation capacity, far beyond the contribution of these two projects. Official projections anticipate installed solar capacity growing from around 0.4 GW to 4.7 GW by 2050, more than ten times the combined installed capacity of the two projects.⁶

New Zealand’s decarbonisation pathway requires a sustained pipeline of new renewable generation, of which both projects form part. Each project’s marginal contribution to competition and price moderation is arithmetically slightly smaller in a market that also contains the other, but this reduction is largely immaterial against projected demand growth, and the combined effect of the two projects on competition, security of supply, and emissions is unambiguously larger than that of either alone.

Cross-checking our view against specialist electricity-sector evidence prepared for other recent applications supports this conclusion. Concept Consulting’s analysis for the Tekapo Power Scheme re consenting, prepared under the same FTAA process and for the same region, projects that national electricity demand (excluding the Tiwai Point smelter) will grow by around 32 percent by 2035, and by a further 35 percent by 2050, as transport and industrial process heat electrify. On these projections, meeting New Zealand’s decarbonisation goals will require around 1,100 GWh of new generation capability to be added every year until 2050, roughly two and a half times the pace of development achieved over the last 25 years.⁷ Against that requirement, the combined output of the proposal and Haldon, at around 900 GWh per year, amounts to less than a single year of the required national build-out. The suggestion that two consented projects could saturate the market’s capacity to absorb new renewable generation is therefore not supported by the available projections, which are consistent with the demand outlook presented in our own substantive assessment.

The same analysis is also instructive on how the two projects would interact with the wider generation mix. As the share of intermittent generation grows, from around 7 percent in 2020 to a projected 46

⁶ MBIE (July 2024). *Electricity Demand and Generation Scenarios: Results Summary*. Figures reflect MBIE’s reference scenario; alternative scenarios project between 2.7 GW and 9.1 GW of installed solar capacity by 2050.

⁷ Concept Consulting (February 2025). *Tekapo Power Scheme – Electricity Sector Benefits*. Prepared for Genesis Energy; Appendix G to the Tekapo Power Scheme re consenting Fast-track application. See in particular sections 3.3, 3.8 and 4.5.

percent by 2050, the value of flexible hydro generation with storage will increase. Both projects would operate alongside the Waitaki hydro system, and their daytime output will allow hydro storage to be conserved for evening peaks and dry periods. Solar developments in the Mackenzie Basin are therefore complements to, rather than substitutes for, the existing generation base, and two projects deepen that complementarity. Finally, to the extent that additional midday supply from the two projects moderates wholesale prices at those times, the effect will be a benefit to electricity consumers; any consequential reduction in per-unit revenues being a commercial matter for generators, not a diminution of the economic benefits of either project.

One matter warrants specific attention, however. In the Haldon process, Transpower advised that although regional transmission capacity is relatively unconstrained, *“electricity market constraints will place a practical and economic limit on how many projects are built”* (decision at [547]), and the decision also records a claim by The Point Solar Farm’s applicant that Haldon and The Point could not both proceed due to transmission constraints (at [395]). Importantly, the proposal connects to the national grid via its own new connection at Transpower’s Twizel substation, whereas Haldon connects via a new tower on the existing transmission line near its site. We understand, and have assumed, that Haldon’s connection does not affect the proposal’s planned connection at the Twizel substation.

Finally, successive consents strengthen, rather than weaken, the investment signal effects identified as a benefit in our assessment. The consenting of two utility-scale solar farms in the district reinforces the emerging position of the Mackenzie/Waitaki area as a renewable energy hub, and may attract related investment in servicing, storage, and grid infrastructure. The remaining wider benefit themes in our assessment, including alignment with the Government’s growth agenda and higher and better use of the subject land, are site-specific or national in character and are unaffected by the consenting of Haldon.

Combined Land-Use Effects

The two project sites together cover approximately 1,188 hectares, within which the combined built footprint is in the order of 695 hectares.⁸ Our assessment estimated the forgone rural production on the subject site at approximately \$1.5 million of GDP and 8 FTEs per year, and showed within a Total Economic Value framework that the proposal represents a substantially higher-value use of the land.

The two sites differ materially in their productive history. The Haldon site has rarely been grazed: the Panel found that there was *“no evidence of modification or enhancement for livestock grazing within the previous 15 years”*, and regarded the existing environment as being *“the present desiccated site of largely sparse indigenous vegetation”* (decision at [104] and [110]). The proposal site, by contrast, has been used more consistently for agricultural purposes, as extensive pastoral grazing land. The consented Haldon project therefore displaces little, if any, pastoral production, and the combined forgone rural output of the two sites is driven almost entirely by the proposal site. It remains small, both in absolute terms and as a share of the district’s pastoral production, and the land use is

⁸ The proposal site is approximately 868 hectares, of which the development footprint is approximately 565 hectares. The Haldon site is approximately 320 hectares within the roughly 5,000-hectare Haldon Station; the Haldon decision records evidence that roads, buildings and panel arrays would cover only about 40 percent of that site (at [291]), implying a built footprint in the order of 130 hectares. The combined built footprint figure above adopts that 40 percent assumption for Haldon.

substantially reversible, as both consents are time-limited and solar infrastructure can be decommissioned, allowing the proposal site to be returned to grazing.

In addition, as noted in our substantive assessment, solar development does not necessarily entail the complete loss of rural production. The proposal site is potentially compatible with continued grazing beneath and between the arrays (an *agrivoltaic* configuration), which, if implemented, would further reduce the forgone pastoral output. We have conservatively excluded any such offset from our estimates because continued grazing is an option available to the landowner rather than a commitment; it therefore represents potential upside to our figures rather than additional downside risk.

Accordingly, the combined land-use effects do not alter the conclusions of our assessment, and the cumulative loss of pastoral production is largely immaterial from an economic perspective.

Summary and Conclusion

Table 2 summarises the expected effect of the consented Haldon Solar Farm on each element of our substantive assessment.

Table 2: Expected Effect of the Consented Haldon Solar Farm

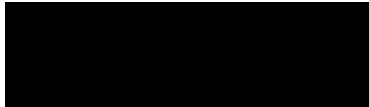
Element of April 2026 assessment	Direction of change	Basis
Economic rationale for the proposal (s5)	Unchanged	National supply-demand fundamentals unaffected; combined output remains small relative to projected requirements.
One-time impacts of development (s6)	Unchanged in aggregate; timing-dependent realisation risk	Benefits additive; concurrent builds could pressure labour and accommodation, while sequential builds create a beneficial workforce pipeline.
Ongoing impacts of future uses (s7)	Unchanged; modest upside potential	Small combined operational workforce; O&M, training, and supplier complementarities.
Renewable energy infrastructure (s8.1)	Enhanced	Combined ~900 GWh p.a. is a cumulative benefit under the NPS-REG.
Competition, carbon displacement, and retail prices (s8.2-8.4)	Marginally lessened; immaterial	Demand growth comfortably absorbs both projects; combined effect larger than either alone.
National growth agenda and highest and best use of site (s8.5, s8.7)	Unchanged	Site-specific and national considerations unaffected.
Investment signal effects (s8.6)	Enhanced	Successive consents reinforce the region's renewable energy hub positioning.
Potential economic costs (s9)	Slightly increased in combination	Combined site area ~1,188 ha (built footprint ~695 ha); forgone pastoral output arises almost entirely on the proposal site, and is negligible and reversible.
Project acceleration (s10)	Unchanged	Fast-track timing benefit is project-specific.

In summary, the consenting of the Haldon Solar Farm does not change the conclusions of our substantive assessment. The combined benefits of the two projects are largely additive, and their combined contribution to renewable generation is itself a cumulative benefit that decision-makers are

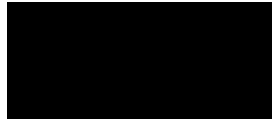
directed to recognise. The principal adverse interaction is a timing-dependent risk that overlapping construction programmes could place short-term pressure on the district's construction labour force and worker accommodation. In our view, this will affect the pace and cost of benefit realisation rather than the benefits themselves, and is manageable through staging and workforce management.

I trust this memorandum provides all the information that you need for now, but please let us know if you need anything further.

Sincerely,



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Nicholas Keith
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