Benje Patterson
People & Places

15 May 2026

Peer review of the Parkburn Project economic assessment

Report commissioned by Central Otago District Council

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Code of Conduct

This peer review has been prepared by Benje Patterson. I am a self-employed economist, who specialises in regional economics. I have worked professionally as an economist for 15 years. For the last 7 years I have been self-employed. Immediately prior to that I was Senior Economist, Head Regions for a Wellington-based economic consultancy (Infometrics).

I hold a Master of Arts (Economics and Politics) from the University of Freiburg, Germany, as well as a Postgraduate Diploma in Economics and a Bachelor of Commerce (majoring in Economics and Finance) from the University of Otago.

I am a current member, and former board member, of Economic Development New Zealand, which is the industry body for economic development professionals in New Zealand. I was formerly a member of the Otago Regional Economic Development (ORED) working group and I am a current board member (and former Chair) of the Arrowtown Promotion and Business Association (APBA). I hold memberships with the Queenstown Business Chamber of Commerce and Destination Queenstown.

I have a high degree of familiarity with Central Otago and the neighbouring Queenstown Lakes economy. Not only am I a resident of Arrowtown, but I have worked on dozens of projects in the local area over recent years across a broad range of industries (including residential and commercial property developments). I also have direct experience providing economic evidence on several other projects under the Fast-Track Approvals Act 2024 and so I am highly familiar with both the legislation and processes followed in assessing substantive applications.

I confirm that I have read the Code of Conduct for expert witnesses contained in the Environment Court Practice Note 2023. This peer review has been prepared in compliance with that Code, as if it was expert evidence presented in proceedings before the Environment Court. Unless I state otherwise, this peer review is within my area of expertise and I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in this peer review.

2. Executive summary

This document provides a peer review of the draft economic assessment (07/05/26) of the proposed Parkburn Project that was prepared by Insight Economics ('the Assessment') for the Applicant (Fulton Hogan Land Development Limited). Fulton Hogan intends to submit the economic assessment as part of its substantive application under the Fast-Track Approvals Act 2024. This peer review of that economic assessment has been commissioned by Central Otago District Council.

The Parkburn Project subject site comprises approximately 118 hectares and is currently used for aggregate quarrying. The proposal to develop the site provides for a comprehensively master-planned, mixed-use development comprising approximately 1,000 dwellings, a neighbourhood centre, supporting infrastructure, and the rehabilitation of the existing quarry. The Insight Economics assessment of the Project evaluates the economic effects of the proposal relative to a counterfactual in which quarrying activity continues on the site.

The remainder of this executive summary outlines a short summary of the overarching position of the peer review, and identifies key considerations related to the economic assessment as it currently stands. These key considerations centre on issues related to the reasonableness of assumptions, suggestions for areas where modelling refinements could be made, and identification of relevant benefits/costs not included in the analysis.

2.1. Summary of peer review position

The peer review generally supports the economic assessment's broad framework, including the use of quarrying as the counterfactual and the use of an economic impact assessment rather than a full cost-benefit analysis. It accepts that the Parkburn Project is likely to generate economic benefits through construction activity and ongoing commercial activity, and that the overall order of magnitude of quantified construction-related impacts appears broadly reasonable, even though some assumptions require better explanation and sensitivity testing.

However, the peer review considers that the current assessment understates the potential economic benefits of the project by not quantifying the broader labour-market contribution to the economy enabled by additional housing supply. In a constrained housing and labour market, the provision of nearly 1,000 dwellings could give employers outside of the project site access to a larger local workforce which could help to indirectly generate further regional economic activity. The peer review therefore concludes that the project's regional significance is more convincingly demonstrated when these broader labour-supply benefits are considered, while also noting that additionality, displacement, timing, and modelling transparency need further work to reinforce the credibility of the existing baseline analysis.

2.2. Key considerations from peer review of the economic assessment

The following is a bullet-point list of key considerations from the peer review of the economic assessment. The key considerations have been grouped according to the structure of the economic assessment to assist in reconciling between the peer review and the economic assessment.

- **Labour-supply benefits should be assessed:** The economic assessment should quantify the potential contribution of new Parkburn residents to the local labour market, particularly where additional housing enables workers to live and work in Central Otago.

- **Regional significance depends on broader benefits:** The currently quantified net GDP benefits may not, on their own, clearly demonstrate regional significance against the existing size of Central Otago's economy. The currently quantified net GDP benefits represent less than 2% of Central Otago's existing GDP that would be generated from an NPV perspective over 10 years. Including labour-market benefits from additional housing access could materially strengthen the case, lifting the indicative scale of potential effects to around 6% of Central Otago's discounted cumulative GDP over a comparable 10-year period.
- **Quarrying is an appropriate counterfactual:** Continued quarrying is a suitable basis for assessing opportunity cost, although further evidence is needed on remaining reserves, quarry life, replacement supply, and aggregate market impacts.
- **Economic impact assessment is appropriate:** The peer review supports using an economic impact assessment framework rather than a full cost-benefit analysis, provided its limitations are clearly explained.
- **Multiplier assumptions need greater transparency:** The assessment should provide more detail on multiplier calculations, direct vs indirect effects, and how national impacts are apportioned to Otago. Despite the need for more transparency, the peer review agrees that order-of-magnitude of total multiplier effects across the key economic benefits driver (construction) are reasonable.
- **Regional attribution should be justified:** The assumption that 75% of national impacts accrue to Otago should be supported by evidence on labour, contractor, materials, and supply-chain sourcing.
- **Construction delivery assumptions should be tested:** The 10-year build-out programme and the assumption that 80% of benefits are realised should be tested against labour availability, construction capacity, accommodation constraints, and competing projects.
- **Housing additionality is critical:** The assessment should explain how many dwellings are genuinely additional to already-enabled capacity, whether sufficient demand exists, and whether Parkburn could displace or delay other housing development.
- **Commercial activity may involve displacement:** The assessment should distinguish between genuinely additional retail, hospitality, and accommodation activity and activity redistributed from Cromwell, Wānaka, Queenstown Lakes, or elsewhere.
- **Infrastructure and fiscal impacts need more detail:** The assessment should identify which infrastructure is privately funded, which assets may be vested in Council, whether development contributions will fully recover costs, and any implications for capex, opex, and rates.
- **Development cost assumptions should be better evidenced:** Construction and enabling works assumptions should be more clearly sourced and tested, particularly given potentially higher construction costs in Central Otago and Queenstown Lakes compared with wider Otago.
- **Commercial employment assumptions are reasonable but should be demand-tested:** Employment density assumptions are considered broadly reasonable, but the scale of commercial floorspace should be validated against resident demand and wider visitor-accommodation demand.
- **Aggregate supply impacts need stronger evidence:** The assessment should better substantiate claims that quarry closure impacts would be modest and transitional with more specific details on other quarrying supply that is anticipated to replace Parkburn.
- **Minor inconsistencies should be corrected:** The assessment should reconcile apparent differences between employment tables, clarify whether figures are national or regional, avoid confusing use of "FTE-years," and correct minor labelling and terminology errors.

3. Approach to assessment

This section outlines peer review comments related to Insight Economics' approach to its economic assessment of the Parkburn Project. These comments relate to Section 6 of the Assessment.

3.1. Summary of overall approach

The Assessment identified a range of economic effects (costs and benefits). Some of these were quantified, while others were expressed in qualitative terms. These are summarised in Table 3 of the Assessment.

The focus of the economic benefits which were quantified related to the economic activity generated by construction activity (one-off impacts) and the ongoing onsite commercial activity, while the only economic cost considered was the counterfactual scenario in which the Project does not proceed. As a core set of economic effects to be quantified, I agree that these are appropriate, however, in my opinion the benefits have been described more narrowly than they could have been. On the basis of the benefits currently quantified by Insight Economics alone, I am not persuaded that regional significance has been clearly demonstrated. However, if broader labour-supply benefits enabled by genuinely additional housing are also substantiated and quantified (see Section 3.1.1), the project is more likely to demonstrate regional significance.

3.1.1. Additional labour supply could be quantified within economic benefits

The Assessment has taken a conservative approach by treating the project's economic benefits as limited to those arising from the one-off construction of the subdivision and its dwellings, and the operation of the commercial precinct as a going concern. It does not quantify the long-term economic value associated with the housing that would be supplied to future residents.

Leaving aside the potential qualitative social benefits of additional housing, there is also an economic link in a housing-constrained area with very low unemployment, whereby the additional housing provides accommodation to workers who may not have otherwise resided in the local area. The Assessment already recognises that housing affects access to employment and economic participation, and it records significant housing affordability pressures in Cromwell and Central Otago. It records, for example, strong Cromwell population growth, substantial increases in dwelling prices and rents, and a Central Otago house-price-to-income ratio well above conventional affordability benchmarks. In addition, Infometrics data shows that Central Otago has just a 1.3% unemployment rate which was around one quarter of the New Zealand rate in 2025 (5.0%)[1].

The economic activity supported by the wider labour-market contribution of Parkburn residents would be in addition to the Assessment's long-term quantified benefits within the commercial precinct. The assessment does not estimate the economic contribution of residents who may live at Parkburn but work elsewhere in Cromwell, the wider Central Otago District or nearby in Queenstown Lakes. Those residents could contribute to a wide range of employment beyond construction and commercial activity occurring directly on the Project site.

This is not simply an "induced spending" effect and should not be dismissed on the same basis as household-consumption multiplier effects. The issue is not that residents will spend money locally,

[1] Source: Infometrics Central Otago Economic Profile 2025, available here: https://regions.infometrics.co.nz/central-otago-district

although some will. The more important economic effect is that housing may allow additional workers to participate in the local labour market, thereby enabling firms and public services to operate, expand, or reduce productivity losses associated with labour shortages. In that sense, housing supply can be enabling infrastructure for the labour market.

It is reasonable to assume that additional housing would improve employers' access to a local workforce, provided that the dwellings represent a net addition to the housing stock over and above what was already anticipated. On that basis, there may be further economic benefits from the labour market contribution of new residents who would otherwise have been unable to reside in the area and participate in the local economy.

While these economic benefits are not directly driven by the Project, they are indirect benefits that would not occur in the absence of the Project. In the same way that the Assessment accounts for indirect benefits from construction and commercial activity, these indirect benefits of additional labour market supply could also be considered within a broader benefits assessment.

The economic benefit from this labour supply effect should not be assumed automatically. It depends on several conditions:

- the dwellings must be genuinely net additional to the district or functional labour market, rather than simply substituting for dwellings that would have been built elsewhere;
- a material share of residents must be working-age and labour-force participants;
- residents must work within the Central Otago / Otago economy, or at least within the relevant functional labour market;
- the skills and occupations of residents must match local labour demand;
- the development must provide housing at price points that are accessible to workers, not only higher-income households, retirees, second-home owners, or short-term accommodation users;
- the effect should not double-count jobs already captured in the onsite commercial activity or construction modelling.

A simple high-level framework would be:

new dwellings × occupancy × household size × working age population share x employment rate × average GDP per job – residents working in local commercial or construction jobs already measured

In simple terms, against Census 2023, 90.6% of dwellings were permanently occupied in Central Otago, the average household size was 2.50 people, while the working age population share (aged 15+) was 84% and the employment rate was 68.1%. If these Census metrics held for Parkburn's 989 homes assumed in the Assessment then you would expect to have approximately 1,281 workers. At an average productivity of $132,005 of GDP per job[2] that would mean a gross GDP effect of $169.2 million per annum from labour market contributions once the development was fully built out after 10 years. This gross figure would need to be adjusted to a net basis (e.g. against any residents already employed in the commercial precinct or construction within Parkburn), but it gives you an idea of the scale of what this effect could be. Over even just the first 10-year period of the project, assuming an even construction spread, this would give an NPV of $553 million, which is significantly larger than the $256 million of net GDP effects of the Project modelled by the Insight Economics. Please note that this is an indicative initial calculation to

[2] Source: Infometrics Central Otago Economic Profile (2025), available here: https://regions.infometrics.co.nz/central-otago-district

demonstrate order-of-magnitude of this economic benefit, and it is recommended that these calculations are refined further by Insight Economics.

The recognition of these potential benefits stemming from the additional labour supply accommodated by the additional housing supply provided by the Project are extremely important for overall conclusions of regional significance. I disagree with Insight Economics that its existing assessment of economic benefits, relative to the loss of quarrying activity, is clearly regionally significant. The net benefits assessed by Insight Economics do not appear to be regionally significant in the same way as some other fast-track projects. For example, the estimated net economic benefits ($256m in NPV terms) are less than 10% of those estimated for the proposed Bendigo-Ophir Gold Project ($3.3 billion in NPV terms[3]). Similarly, if the NPV of the Project's economic benefits are compared with the NPV of GDP generated across the Central Otago District over even just a 10-year period to coincide with the construction phase, the benefits would represent less than 2% of cumulative district GDP in NPV terms over 10 years[4]. On that basis, the benefits as they have currently been quantified by Insight Economics would not appear to represent a significant addition to regional economic activity.

If instead, the assessment quantified the value of the labour market contribution from new residents who would otherwise have been unable to live in the area, then the benefits from this source could be as high as $553 million over the project's first 10 years (before any potential considerations related to net housing effects and other employment were considered). While these benefits may not arise directly from activities occurring on the site itself, they are an important indirect economic benefit of the project. Quantifying them would assist in demonstrating whether the activity associated with the project can properly be regarded as regionally significant. If treated as a gross upper-bound illustration, adding the labour-supply estimate to the currently quantified net GDP benefits would lift the indicative scale of effects to around 6% of Central Otago's discounted cumulative GDP over a comparable 10-year period. However, this figure would need to be adjusted for additionality, build-out timing, working-age share, employment status, place of work, and double-counting. In my opinion, this order-of-magnitude would be capable of supporting a finding of regional significance.

3.1.2. Quarrying is appropriate as the counterfactual

Insight Economics identified quarrying as the counterfactual scenario of economic activity that is foregone from transitioning the land from a quarry into a housing development. This approach to considering the economic opportunity cost is appropriate as a counterfactual scenario.

3.1.3. The Assessment approach is best described as an economic impact assessment rather than a cost-benefit analysis

The approach followed by Insight Economics is best described as an economic impact assessment rather than a cost-benefit analysis. The only cost that Insight Economics has directly quantified is the foregone activity associated with quarrying, while the economic benefits associated with construction effects and activity within the commercial precinct have used multiplier analysis derived from an Input-Output framework.

[3] See: https://www.fasttrack.govt.nz/__data/assets/pdf_file/0013/24214/d0394d84a86555c72be1bd18cdb74b7667b4ce36.pdf

[4] Infometrics Economic Profile showed Central Otago generated $1,998.3m of GDP in 2025, which equates to $13.4 billion in NPV terms if it persisted over 10 years using an 8% real discount rate.

A full-blown economic cost-benefit analysis would have sought to quantify a much broader range of costs and benefits, including potentially some of the qualitative economic effects that have been identified in Table 3 by Insight Economics.

The use of an economic impact assessment framework to assess the economic benefits, coupled with the correct identification of the counterfactual to net out foregone activity, is an appropriate tool to identify economic benefits. The FTAA does not specify a specific tool to identify economic benefits, and there are concerns that if a cost-benefit analysis is undertaken then this can inadvertently create complexity for panel decision making. This complexity can arise because the direct comparison of costs and benefits within a summary statistic can make it more difficult for the Panel to exercise its judgement as to whether the project's benefits are out of proportion to the potential costs. There is also added complexity due to the fact that not all costs which are identified can be monetised in a consistent manner and so there will be intangible economic costs which must be considered qualitatively (as has been done by Insight Economics).

Confirmation of the appropriateness of an economic impact assessment, as opposed to a cost-benefit analysis framework is discussed at length in a paper by Dr Doug Fairgray.[5] The paper also highlights evidence from the Waihi North Project Decision which rejected a cost-benefit approach. The Waihi North Decision stated:

> *[786] Two points come out of this [s85(3)]:*
>
> *(a) There is no explicit requirement for either the "benefits" or "adverse impacts" to be quantified in monetary terms. This is so even where the claimed benefits are economic in character (as new jobs are). And:*
>
> *(b) If adverse impacts have already been monetised and factored into the benefits assessment, there would not be much point in a weighting exercise of the kind required by s 85(3).*

A more detailed review of the multiplier analysis framework used within Insight Economics' Assessment is provided in Section 3.2 below.

3.1.4. Infrastructure costs should be more thoroughly identified

The Assessment considered foregone quarrying activity as the only relevant cost of the project that could be quantified. The economic assessment gives limited attention to development contributions, infrastructure capex timing, operating and maintenance costs, vested assets, road impacts, open space maintenance, community facilities, and rating implications. While many of these costs are internalised within the Project construction calculations, there may be other costs that fall on Council which have not been clearly identified within the Assessment.

For CODC, one of the most important economic questions is not just whether the proposal generates GDP. It is whether the project creates infrastructure, servicing, and public asset obligations that are appropriately funded and timed.

The proposal includes three waters infrastructure, internal transport networks, external access works connecting to State Highway 6, open space, reserves, and other public or semi-public infrastructure. The

[5] See "Economic Assessment for Fast Track Approvals Act 2024", available here: https://static1.squarespace.com/static/650b8bab23e9e609fd42e851/t/69efd8ccf464a918d99d45d5/1777326286650/FT+Amendment+Act.pdf

report describes master-planned development as economically efficient and states that coordinated infrastructure delivery can reduce duplication and support growth.

That may be true, but the report does not quantify the fiscal implications for CODC. The Assessment, or other evidence by the Applicant, should therefore also provide reassurance regarding:

- which infrastructure is privately funded;
- which assets will be vested in CODC;
- whether development contributions fully recover growth-related costs;
- whether additional capital expenditure is required from CODC;
- whether any upgrades are required earlier than planned;
- operating and maintenance costs for roads, reserves, stormwater, wastewater, water supply, and community infrastructure;
- rating revenue and potential debt implications.

This is not simply a planning or engineering issue. It is an economic issue because if the Project causes any unfunded or underfunded infrastructure costs, then these could offset local benefits.

3.2. Approach to quantitative analysis

Insight Economics has used multiplier analysis to quantify the impacts of the Project. In outlining the multiplier analysis framework, Insight Economics has correctly described the theoretical underpinnings of multiplier analysis and its limitations. The limitations of multiplier analysis are not a reason not to use it, rather they give caution as to how results should be interpreted. Insight Economics has adopted a conservative approach to its use of multiplier analysis. Although I agree with taking a conservative approach, some of the assumptions made by Insight Economics are relatively arbitrary and are not easy to reconcile, especially between direct and indirect effects within the Otago context. That being said, the total order-of-magnitude of effects across the combined direct and indirect channels are similar to what are estimated in this peer review using an alternate source of economic multipliers from Infometrics.

In this section I provide high level comments regarding the overarching appropriateness of Insight Economics multiplier analysis framework, while in Section 4, I provide more detailed comments regarding key inputs and modelling assumptions fed into the framework.

The Insight Economics assessment provides headline results but does not include enough modelling detail to allow CODC or another reviewer to replicate the calculations. It states that national multipliers are applied and then 75% of the impacts are arbitrarily apportioned to Otago. It also states that the multipliers are updated to data for the year ended September 2025, rather than relying on the official Stats NZ 2020 input-output tables – although opaque, this approach allows for figures to be expressed in present value terms.

The lack of transparency is material because the report's headline benefits depend heavily on multiplier outputs. For example, in Table 8, development impacts are reported as 680 direct FTE-years and 1,530 indirect FTE-years, with GDP of $90 million direct and $182 million indirect in NPV terms. That means that Insight Economics estimates that the indirect development benefit is about twice the size of the direct benefit – in other words, the Project benefits depend on the local supply chain's ability to expand and absorb the additional construction activity without deferring or turning away work that would have otherwise occurred.

Insight Economics' economic multiplier is different from what is estimated by Infometrics, who have prepared economic multipliers specifically within Otago. Across the construction sector in Otago, Infometrics' multipliers suggest that the indirect GDP effects are about 90% of the initial direct GDP effects, which is substantially less than the 202% indirect-to-direct GDP ratio assumed by Insight Economics[6].

It is also worth noting that the direct GDP effects within the Insight Economics analysis in Table 8 can't be replicated as the share of construction investment that flows through into direct GDP has not been provided. As a point of reference, the Infometrics multiplier framework suggests that 29.6% of every $1 of construction investment flows into direct GDP. Against Insight Economics' estimate of $827 million of project investment, this would suggest about $245 million of direct GDP, which spreading across a 10-year build programme and discounting using an 8% discount rate would give direct GDP of $164 million in NPV terms. Applying the Infometrics ratio of 90% indirect effects to this direct estimate would suggest about $148 million of indirect GDP.

Adding these direct and indirect effects using Infometrics multipliers gives a total NPV of GDP from construction of $312 million under the Infometrics multiplier framework, which is of a similar order-of-magnitude to the Insight Economics' approach that leaves $272 million of GDP in NPV terms across direct and indirect effects. This calculation suggests that it is not the overall quantum of potential construction GDP effects that are in question, more the split between direct and indirect effects along the supply chain. As such, further work on the supply chain capacity in Central Otago should be provided by Insight Economics, including potential mitigations to ensure this capacity can exist for the Project if it does not already.

Insight Economics has conservatively narrowed its multiplier analysis framework to exclude induced consumption effects from the spending of wages and salaries generated by direct and indirect project employment. This approach is conservative. For example, in the Waihi North Decision, despite significant concerns by the Panel as to how induced effects should be calculated so as to not overstate them, it was ultimately determined that induced effects are relevant and occur above and beyond the direct and indirect effects[7]. In the Otago context for construction supply chains, the Infometrics economic multipliers suggest that the induced multiplier effect on GDP would be equivalent to about 36.5% of the combined direct and indirect GDP effect. Although I share some scepticism regarding whether the induced effects would indeed amount to this much, as that would depend on a large share of local wages and business owners' incomes not only being spent locally, but also not leaking out of the region in the form of imports. Nevertheless, this Infometrics' estimate does at least highlight that a leading independent economic consultancy has calculated that material induced GDP effects exist in the Otago construction context above and beyond the direct and indirect effects.

3.3. Analysis horizon and time value of money

Insight Economics' Assessment states that it used a 30-year horizon when considering economic effects. It is important to note that although 30 years was used for the commercial activity and the quarrying counterfactual, the construction benefits only persist over the 10-year construction horizon. The construction benefits are the primary driver of Insight Economics calculations – table 14 shows that construction activity accounts for $272 million of GDP, while future onsite commercial activity accounts for $31 million of GDP, and there is $47 million of foregone quarrying GDP.

[6] Note that it is not clear what proportion of the direct construction investment has been apportioned into direct GDP by Insight Economics.
[7] See paragraphs 813-817 of the Waihi North Decision.

The analysis horizon approach taken by Insight Economics is sensible, though due to how discounting works it is worth noting that any of the benefits accruing between years 10 to 30 only get a relatively small weighting in net present value (NPV) calculations. For example, if an even amount of GDP were generated each year over 30 years and discounted into NPV terms with an 8% discount rate then about 60% of the benefits would be over the 10 years from year 1 to 10, and 40% would be over the 20 years from year 11 to 30. Given that these benefits for years 11 to 30 only include the small amount of commercial activity and foregone quarrying, the analysis horizon is not a key factor influencing the overall net benefits calculated by Insight Economics.

In terms of discount rates used, Insight Economics used an 8% discount rate. This rate aligns with guidance from the Treasury and is an appropriate discount rate to use for considering a commercial proposal.

4. Key inputs and modelling assumptions

This section outlines peer review comments related to the key inputs and modelling assumptions used within Insight Economics' economic assessment of the Parkburn Project. These comments relate to Section 7 of the Assessment.

It is worth noting upfront that although Sections 4.1 and 4.2 both question Insight Economics' methods of apportioning multipliers to Otago and scaling of the multiplier, it was demonstrated in Section 3.2 that alternate approaches to multiplier analysis using Infometrics' multipliers would have still led to a similar order-of-magnitude estimate to project benefit types quantified by Insight Economics. That being said, there are still questions regarding the split between direct and indirect benefits, and how these benefits are realised both within the region and over what time horizon. It was also outlined in Section 3.1.1 that there are also potential indirect benefits from additional labour supply into the Central Otago economy enabled by the provision of housing within Parkburn that were not included in Insight Economics' benefits assessment.

4.1. Regional attribution

Insight Economics assumed that 75% of total estimated national impacts accrue to the Otago region for the direct and indirect economic benefits. For the quarrying counterfactual, Insight Economics has assumed all the impacts accrue to Otago region.

This is a material assumption that affects the economic multiplier used. If the proposal draws labour, materials, contractors, manufactured inputs, professional services, and capital from outside Otago, the regional share could be lower. Conversely, some quarry supply chain effects may also leak outside Otago. The report's asymmetry may be conservative in some respects, because it attributes all quarry losses locally, but it is not demonstrated.

The issue is particularly important for Central Otago. A 989-dwelling development near Cromwell is likely to draw on construction labour and materials across Central Otago, Queenstown Lakes, and other parts of Otago, as well as Canterbury, Southland, and possibly national supply chains. It is not obvious that 75% of direct and indirect effects will accrue within Otago.

As a point of comparison, Infometrics' multipliers for Otago suggest that about 71% of the combined direct and indirect construction GDP effects that occur nationally would accrue to Otago region.

As a recommended amendment, the Insight Economics report should provide a sourcing and labour-market rationale for the 75% attribution to Otago, or give sensitivity analysis if a lower attribution rate applies. It may also be sensible to provide a subregion view for Otago Central Lakes (encompassing Central Otago and Queenstown Lakes), because the subregion's supply chain is not necessarily identical to the wider Otago regional economy.

4.2. Realisation of economic impacts and development timing

The Assessment assumes that 80% of the proposal's economic benefits are realised, to reflect capacity and resourcing constraints. This is a useful attempt to moderate multiplier results, but it is too high-level to resolve the issue as it appears to be a relatively arbitrary assumption that is not well-explained or justified.

The key question is not simply whether 80% is conservative. The question is what resource constraints actually exist and whether the project would bring forward genuinely additional activity or displace other activity. Relevant constraints include:

- construction labour availability;
- accommodation for construction workers;
- availability of builders to deliver dwellings at the assumed rate;
- other large projects competing for the same labour and materials.

The Assessment states that the proposal would be delivered over about ten years, with overlapping stages and a neighbourhood centre assumed to be built in Stage D. It does not test whether that delivery programme is realistic under Central Otago market conditions.

This matters because if local construction capacity is constrained, some of the reported employment and GDP may be displaced from other projects rather than being additional regional activity. It may also increase local construction costs, which the multiplier model does not capture. It is recommended that the assessment should include a delivery feasibility section, with sensitivity testing for slower absorption and build-out.

4.3. Anticipated development yields

The Assessment identifies a large housing supply benefit, with an anticipated development yield of 989 residential dwellings. Insight Economics further notes that it has adopted a conservative approach which excludes additional superlots that may add further to this development yield.

Although this conservative approach to estimating the 989 residential dwellings is noted, the Assessment should provide further guidance as to:

- How much of the 989 dwelling yield estimate unlocked by the Fast-Track consent is net additional to already-enabled capacity?
- Is there sufficient unmet demand to necessitate such a lift in the housing supply?
- Would delivery at Parkburn displace or delay delivery in Cromwell township or nearby areas in Central Otago and Queenstown Lakes?
- Is the 10-year build timeframe realistic?

Further guidance on these questions above would help provide reassurance that the 989 dwellings were a net addition to the housing stock in Central Otago that was not otherwise anticipated to occur, as the net addition is what is important for fully realising these economic benefits related to additional housing.

From a non-residential perspective, Insight Economics has assumed that of the 5,000 m2 of non-residential floorspace, 2,200 m2 would be between retail and food and beverage, while 2,800 m2 would be for visitor accommodation. Insight Economics has not outlined how much of this activity may be redistributed rather than additional. These non-residential activities at Parkburn may draw spending, staff, and business activity from Cromwell, Wānaka, or elsewhere. That does not mean the neighbourhood centre is economically undesirable. Local services can reduce travel and support a more complete community. But the net regional economic gain may be smaller than the gross onsite activity.

The assessment should provide further guidance as to:

- activity that is genuinely additional to the district or region;
- activity relocated/displaced from Cromwell or other centres;

- retail space required to service the new resident population or to meet unmet demand for visitor accommodation that is not currently sufficiently provided for in Central Otago or neighbouring areas.

The report does not include the construction and operation of a potential primary school in the quantified modelling, on the basis that the Ministry of Education would otherwise provide capacity elsewhere in response to underlying growth. That assumption would be conservative if it is demonstrated that the additional houses in Parkburn are a net addition to Central Otago that would not have otherwise occurred in the absence of the development. If this is the case, then the additional students would be above and beyond that planned for by the Ministry of Education and so the provision of schooling would be above and beyond what would have otherwise happened.

4.4. Construction costs

Construction costs have been provided by Insight Economics in table 5 of the Assessment. Insight Economics has said these figures are from building consents, but has not provided the precise source. It is assumed that these are Statistics New Zealand figures. Insight Economics correctly notes that building consents provide a conservative estimate of spending on construction, as project spend typically creeps out beyond what is initially envisaged at the time a consent is lodged.

The construction cost data provided is for Otago region, rather than for Central Otago or neighbouring Queenstown Lakes. This assumption has not been discussed by Insight Economics, but it brings another layer of conservativeness to the construction cost estimates as construction costs in Central Otago and Queenstown Lakes are generally much higher than other parts of Otago.

4.5. Other development costs

Insight Economics includes an estimate of other development costs related to site-wide enabling works, which include civil works, infrastructure, and other land development costs. The assumptions underpinning these additional costs have not been described, and appear to be informed primarily by industry benchmarks.

As was outlined in Section 3.1.4, the Assessment should provide more detail on the nature, funding, ownership, vesting, and the potential whole-of-life fiscal implications to CODC of the infrastructure included in these other development costs.

4.6. Ongoing commercial activity assumptions

Insight Economics has assumed that there is one worker per 40 m2 of retail activity and one worker per 100 m2 of accommodation activity. These assumptions are entirely reasonable and accord with data from BERL (2015) Upper North Island Industrial Land Demand, as well as calculations with insights from the Hotel Council Aotearoa[8]. It should be noted that food and beverage establishments typically have a slightly higher employment density than retail with one employee per 20 m2 according to BERL. The use of the 40 m2 assumption leads to a relatively conservative assumption of potential employment by

[8] See: https://tinyurl.com/mrk8fhm9, which suggests that 0.4 employees are required per hotel room, while further evidence from Marriott International (see https://tinyurl.com/4uzub3y9) suggests that a typical 25-30 square metre hotel room would require the equivalent of 40 square metres of gross floor area in the hotel build to factor in back-of-house and communal areas. Taken together these lead to about one employee per 100m2.

Insight Economics given that 1,400 m2 of cafes and restaurants is anticipated within the 2,200 m2 of retail and hospitality area assumed in the Assessment.

No further testing of the multiplier assumptions by Insight Economics has been undertaken given the overarching conservativeness of the commercial activity assumptions related to employment, however, it is noted that more guidance and testing of the multiplier assumptions should be provided as per the construction multiplier comments raised in Section 3.2 of this peer review.

Insight Economics should also provide further validation of market demand from potential residents of Parkburn, as well as broader visitor accommodation demand in order to validate the assumptions related to the overall size of commercial space assumed in the model. This suggestion was made in Section 4.3 and is necessary for testing that the commercial activity benefits provided reflect the net regional economic gain rather than a scenario where much of the activity occurs because of displacing commercial activities from elsewhere.

4.7. Foregone quarry activity assumptions

The Assessment uses continued quarrying as the counterfactual and assumes the quarry would operate for 30 years. That approach increases the measured opportunity cost for headline GDP of approving the proposal, which is conservative in one sense. However, the same section also states that the remaining operational life of the quarry is likely to be materially shorter than 30 years and that Fulton Hogan is progressing a replacement quarry elsewhere in the district which will be necessary to ensure a continued supply of local aggregates for downstream industries.

The aggregate-supply issue is different: even if the GDP opportunity cost is overstated, local aggregate supply risks could still be understated if replacement supply is uncertain, farther away, or more expensive.

The downstream effects section of the Assessment (Section 12.1) acknowledges that aggregates are critical for construction and that closure may increase transport costs, road wear, fuel use, emissions, input prices, and competition concerns, but concludes these impacts are expected to be modest and transitional. That conclusion needs more evidence, such as:

- remaining consented and economically recoverable aggregate reserves at Parkburn;
- current and forecast annual extraction volumes;
- the likely closure date under the no-development counterfactual;
- the timing, consenting status, capacity, and haulage profile of any replacement quarry;
- how much of the local aggregate market is serviced by Parkburn across Cromwell, Wānaka, Queenstown Lakes, and other relevant markets.

Within Insight Economics assumptions regarding foregone quarrying it is assumed that there are jobs equivalent to 12 FTEs directly at the quarry, which is drawn directly from Fulton Hogan's operational data. These jobs are then translated into measures of direct and indirect economic activity using multiplier analysis. No further testing of the multiplier assumptions by Insight Economics has been undertaken given the overarching conservativeness of the counterfactual scenario (assuming other aggregate supplies are made available), however, it is noted that more guidance and testing of the multiplier assumptions should be provided as per the construction multiplier comments raised in Section 3.2 of this peer review.

5. Other considerations and minor errors

While reviewing the Assessment, some minor errors were identified. These errors have not affected the overall peer review, but are noted here to assist Insight Economics as part of any future updates to its Assessment.

The most important is the apparent inconsistency between Table 8 and Table 9. Table 8 reports total one-time development employment of 2,210 FTE-years. Table 9 then reports industry employment totalling 3,679 FTE-years, with the top 10 industries accounting for 3,016 FTE-years.

This may be because Table 9 shows unscaled national impacts before the 75% regional attribution and 80% realisation adjustments. If so, the table should say that clearly. If not, the figures need correction. Even if there was no mistake, it would be helpful to also provide the figures from an Otago region perspective.

I also note that the concept of FTE-years is a confusing way to describe the employment effects of a project. Although a few RMA economists in New Zealand rely on such a concept in core project descriptions, the terminology is inconsistent with how other economists, policymakers, and the public commonly view employment. FTE-years can be useful for cumulative employment effects, but they are less intuitive than average annual FTEs, or employment in any given year. The Assessment should therefore present average annual FTEs over the construction period, and a timeline of year-by-year employment, alongside any FTE-year figures. GDP effects in comparison can easily be summed together in an NPV type calculation as dollar values are more readily understandable by the audience and discounting for the time value of money can easily translate future outcomes into present value terms.

Other minor errors in the Assessment include:

- Table 15 is titled “Summary of Employment Impacts (NPV, $m)”, but FTE-years are not NPV dollar values.
- Table 5 gives total building costs of about $658 million, while Table 6 gives construction costs of $654 million. This may be rounding or classification, but it should be reconciled.
- The report refers to “foregone rural production” in the multiplier appendix, whereas the counterfactual is quarry production.
- The Queenstown Lakes District reference in Section 12.3 should be corrected to Central Otago District or the relevant market area, such as Otago Central Lakes if the author wants to use the subregion that combines Central Otago District and Queenstown Lakes District.

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People & Places