

Queenstown Business Case

Peer Review

November 2020

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Contents

Transmittal Letter	1
1 Business Case Peer Review	1
1.1 Purpose	1
1.2 Summary Comments	2
2 Review of Methodology.....	4
2.1 Overview of methodology	4
2.2 Pedestrian amenity benefits	5
2.3 Unmet Demand	5
2.4 Sensitivity Analysis	6
3 Detailed Review.....	8

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Transmittal Letter

Frankton to Queenstown / Queenstown Town Centre Business Case Peer Review

17 November 2020

Tony Sizemore
Waka Kotahi, New Zealand Transport Agency
PO Box 5245, DUNEDIN 9058

Dear Tony,

In accordance with the IPA Contract, dated 14 August 2020 ("Contract"), EY has been engaged to undertake a peer review of work by Queenstown Lakes District Council (QLDC), Waka Kotahi, New Zealand Transport Agency (NZTA) and supporting advisors. The focus was to assess the completeness and adequacy of Wider Economic Benefit (WEB) analysis. Our findings are outlined in this peer review report (the "Report"), setting out our assessment of data, methodology and analytical tools applied.

In summary, we are of the view that WEB analysis is robust and defensible, with underlying methodologies aligned to NZTA guidance. Where data specified in NZTA guidance is not available, prudent and evidence-based alternatives have been drawn upon to ensure that benefit estimates are not overstated. The technical documents provide a comprehensive explanation of WEB-related methodologies, including key assumptions and proxy measures.

Appended to this Report is the findings of Flow Transportation Specialists Ltd, focussed on the modelling of conventional transport benefits. The results of Flow's assessment is not repeated in this document; hence the two reports should be considered in parallel in order to obtain a complete picture of peer review results.

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If you would like to clarify any aspect of the report or discuss other related matters then please do not hesitate to contact me.

Yours faithfully

§ 9(2)(a)

Partner, Strategy and Transactions

1 Business Case Peer Review

1.1 Purpose

Queenstown Lakes District Council (QLDC), Otago Regional Council (ORC) and Waka Kotahi, New Zealand Transport Agency (NZTA) requested that EY complete a peer review of the Frankton to Queenstown and Queenstown Town Centre Business Case with a focus on Wider Economic Benefits (WEBs).

The purpose of the peer review was to assess the completeness and adequacy of existing WEBs analysis, identify areas of future investigation, and provide an indication of the relative importance of the WEBs to the analysis provided in the case.

Peer Review is intended to consider the range of factors that will have significant influence on land use and trip behaviour in the region, including:

- ▶ Efficiency upgrades to SH6A, with prioritisation of public transport
- ▶ Inclusion of a public transport Hub on Stanley Street
- ▶ Integration with a water-based transport system
- ▶ Removal of traffic from the town centre
- ▶ Enhanced amenity and liveability within the town centre.

This Report is prepared solely for the purpose of reviewing the October 2020 Queenstown Business Case and should not be relied upon for any other purpose. In addition to the draft business case document (7 October 2020) we have assessed the methodological papers prepared by Stantec et al and their underpinning calculations. We have not reviewed wider models and forecasts such as the Queenstown Modelling Suite and QLDC demographic data.

1.2 Summary Comments

WEB analysis underpinning the draft business case is robust and defensible. Waka Kotahi options guidance has been correctly applied, for example taking account of the latest recommended discount rate (4%). Reliable and appropriate data sources have been drawn upon, for example QLDC population and tourism forecasts.

The draft business case assessment is based on the 2018 Economic Evaluation Manual (EEM), rather than the more recent Monetised Benefits and Costs Manual (MBCM). This is a justifiable decision, given that Waka Kotahi guidance states that the EEM remains acceptable for business cases commenced prior to the publication of the MBCM in August 2020.

Overall, WEB analysis is consistent with Waka Kotahi guidance. In some cases, data recommended by this guidance is not directly available, for example direct estimates of the impacts of SH6 reaching traffic capacity in the medium term. Other calculations require a degree of judgement, for example the timetable for the return of international tourists to Queenstown. These complexities inescapably introduce a degree of subjectivity, such that alternative modelling assumptions would also be valid (e.g. taking a time-based, rather than tourism- and GDP-based, approach to estimating SH6 capacity constraint impacts).

Similarly, it is our view that the substance of methodological concerns raised by a government “Challenge Panel” earlier in 2020 have been addressed. The measurement of tourism benefits, for example, is aligned to NZTA guidance, as described in the paragraph above. Economic evaluation does not assume significant development of the Queenstown Town Centre, hence supply rigidities are unlikely to negatively impact transport benefits.

We are comfortable that sensible and evidence-based assumptions have been applied in all cases where methodology and / or input data choices were not straightforward. This includes expert judgement in the case of pedestrian traffic volumes outside of business hours and updating pedestrian welfare monetisation factors. Key uncertainties and sensitivities are explicitly considered within the technical notes, so could easily be referenced within the Economic Case should this be of interest to decision makers.

Analysis of network constraint impacts, in particular, includes a number of conservative assumptions to ensure that benefits are not overstated. One example is excluding local residents from traffic-related estimates, despite New Zealanders making up a significant proportion of road users. Monetised WEB estimates, as highlighted in the draft Economic Case, are therefore likely to represent the lower-bound of benefits that can be expected.

The Unmet Demand technical note¹ identifies a number of additional avenues of economic impact that could lead to increased benefits, were further analysis to be performed. Agglomeration benefits, for example, could be meaningful

¹ NZTA Contract 2018235 - F2Q SSBC & QTC DBC

if the programme is successful in enabling higher density, higher amenity development in Queenstown. A one percent decrease in generalised journey cost, for example, could lead to \$70m in agglomeration benefits over 60 years (Net Present Value terms), substantially improving Benefit Cost Ratios.²

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Technical Note # 26: Effect of Transport Constraint on Tourism, 7 September 2020

² Based on high-level sensitivity analysis, making use of publicly available data. Please see the methodology section for more detail

2 Review of Methodology

2.1 Overview of methodology

Options evaluation within the draft Economic Case has been carried out incrementally, in accordance with the full procedures of the Economic Evaluation Manual (EEM). Investment options are assessed against a Do Minimum using a 60-year analysis period and a 4% discount rate. A 40-year analysis period and 6% discount rate has also been tested as part of the sensitivity analysis.

The development of the business case pre-dates the release of Waka Kotahi's Monetised Benefits and Costs Manual (MBCM, published 13 August 2020), hence it is not necessary for the more recent guidance to be applied. While a full reconciliation between the EEM and MBCM is out of scope for this peer review, we did not identify any differences between the two manuals that would significantly impact option assessment results.

The Frankton to Queenstown / Queenstown Town Centre Programme involves a phased roll-out of 8 phases. The identified project benefits are split into two categories. Phase 1 represents the Do Minimum, and includes preliminary town centre improvements through the New Zealand Upgrade Programme. The interaction between these phases is described in more detail in the Flow Economic Evaluation report.

The Economic Case excludes benefits that are expected to be captured as part of other business cases. Namely parking charges, as part of the Parking Strategy, and walking and cycling benefits, captured as part of the Active Travel Business Case. This likely represents a conservative assumption, as public transport and demand management projects regularly create benefits greater than the sum of their parts.

Analysis seeks to explore and monetise the impact of a number of improvements to the Queenstown land transport network. These include:

- ▶ Providing more efficient and reliable access for people and goods
- ▶ Sustainably managing high growth, allowing the town to grow by unblocking the existing bottlenecks
- ▶ Enabling enhanced land use. This will facilitate the delivery of the Spatial Plan and Queenstown and Frankton Masterplans by enabling higher density, higher amenity development
- ▶ Reducing reliance on private vehicles which will encourage a move towards more sustainable forms of transport
- ▶ Increasing adaptability to change and disruption. The network will be more resilient to both short lived network events such as crashes. It will also be more flexible to accommodate future technological and unforeseen demand changes
- ▶ Enhancing the liveability and quality of the natural and build environment. The network will contribute to the delivery of a built environment that complements the globally renowned natural environment of Queenstown.

The draft Economic Case considers 'Standard' and 'Wider' impacts in turn. The former consists of travel time, congestion, reliability, operating costs, crash costs, greenhouse gas emissions and public transport frequency. The latter is split into two categories, unlocking "unmet demand" and Pedestrian amenity benefits. Agglomeration, imperfect competition and labour supply impacts are discussed but ultimately judged to be low, and hence not quantified.

The remainder of this section focusses on the two categories of WEBs quantified in the draft Economic Case, before describing the results of EY sensitivity analysis. Additional commentary on the standard benefits and traffic modelling can be found within section three, as well as the appended Flow report.

2.2 Pedestrian amenity benefits

This analysis seeks to recognise the benefits to pedestrians of an improved town centre environment (i.e. amenity and wellbeing values). This includes three components:

- ▶ More people in the town centre than otherwise there would be without the improvements
- ▶ Higher retail spending due to improved wellbeing
- ▶ Higher property values on or near the improved streets, due to higher anticipated spending.

Key inputs include the Pedestrian Environment Review System (PERS) for scoring changes to street quality and the “Valuing the Urban Realm Tool” (VURT) for converting these scores to a dollar value. Contemporary Waka Kotahi research is applied to ensure that monetised values are scaled appropriately. We understand that Transport Agency experts were consulted in the development of this methodology and confirmed that a 4x multiplier was consistent with best practice.

Analysis by Stantec et al takes account of the significant uncertainty in pedestrian growth rates in the medium term, an important consideration in light of ongoing COVID-19 travel restrictions. A conservative approach has been applied to estimate late-evening and early-morning pedestrian volumes, making use of recent head count data.

Overall the analysis of pedestrian amenity benefits is clear, robust and consistent with published guidance. While ambiguity exists in the most appropriate treatment of international visitor welfare, we accept the arguments put forward in the Stantec et al technical paper. Namely that improvements to tourist utility will ultimately benefit New Zealanders in the form of additional spending, either in the short-term via consumption decisions or the medium-term via recommendations and investment.

2.3 Unmet Demand

This analysis seeks to estimate the cost of constrained network capacity, specifically the impact of a key local highway (SH6) being unable to meet demand in the medium to long term. Benefit calculations involve six steps:

- ▶ Estimate unrealised travel demand
- ▶ Calculate foregone international tourism spending and associated GDP for Queenstown
- ▶ Deduct other incremental costs (e.g. hotel construction costs) to get an estimate of net Queenstown benefits that would be foregone
- ▶ Estimate the incremental NZ effect, taking into account any offsetting increased international spending that would otherwise occur elsewhere in the country should less tourists switch their travel away from Queenstown
- ▶ Consider the extent that the net benefits are legitimately additional to other measures of benefit or instead represent double counting
- ▶ Consider to what extent benefits are attributable to interventions on SH6A and the supporting transport network.

While presented as a WEB within the draft Economic Case, unmet demand could just as easily be framed as a ‘standard’ transport benefit. This is because, fundamentally, complex analysis of network constraints is necessary due to modelling constraints. Specifically, a stable (convergent) long-term result could not be produced without removing microsimulation, and relying on a high-level (strategic) model. The inability to recognise a ‘bottleneck’ within the do minimum means that derived benefits are likely to be understated, particularly for those elements of the programme that increase overall network capacity. In our view this **strengthens** the argument for including unmet demand within the analysis of programme benefits.

Fundamental to the argument that SH6 will act as bottleneck to Queenstown travel in the medium-term is accurate forecasts of capacity and growth. Spreadsheets provided by Anthony Byett confirmed that extensive and robust analysis has performed. Constraints are calculated on a daily basis (i.e. recognising that some periods of the calendar year are busier than others) and extensive sensitivity analysis is demonstrated.

Consistent with pedestrian amenity benefits, we note that a number of conservative assumptions are applied to calculate unmet demand benefits. For example, non-tourists are excluded from the group negatively affected by the do minimum, and it is assumed that significant numbers of people will shift to public transport as SH6 traffic grows over time. Were travel by locals and domestic tourists to be included, capacity impacts could be up to 2.5 times larger. Three of the six steps involve subtracting offsetting benefits, for example impacts that could be attributed to other projects and other parts of the transport network.

Our primary concern, upon initial review of the unmet demand methodology, was its dependency on international tourism as a source of economic benefit. This appeared to contradict NZTA guidance stating that “*Tourism benefits must not be included in any BCR calculation, even as a sensitivity test, or added to the quantum of traditional transport WEBS*”. A similar view was raised by a government “Challenge Panel” earlier in 2020, querying the approach to calculating tourist benefits as well as the adequacy of agglomeration and supply chain analysis.

Subsequent conversations clarified that tourism is not being directly monetised as a benefit, but instead is used as a proxy for travel demand volumes. As noted above, unmet demand could just as easily be framed as a ‘standard’ benefit and be calculated using value of time factors. We recommend that this point be highlighted if the programme team ever presents their results to Treasury or Investment Decision Making Assurance officials in future.

We also note that the unmet demand analysis makes use of baseline forecasts of population and tourist growth, taking account of potential COVID-19 impacts. Economic evaluation does not assume significant development of the Queenstown Town Centre, hence “existing supply rigidities” are unlikely to negatively impact transport benefits. Furthermore, we understand that sensitivity analysis was completed by the economist leading WEB analysis, confirming that non-road related infrastructure is unlikely to affect benefit estimates in the timeframe being examined.

Despite the complexity of workings, we believe the unmet demand analysis to be structurally and logically sound. It is consistent with published guidance and results likely err on the side of caution as a result of conservative assumptions. Our review of the underlying spreadsheet did not identify any material errors.

2.4 Sensitivity Analysis

The MBCM contains a dedicated section on the subject of agglomeration benefits, noting that “*It is widely recognised that economic density – the clustering of activity in towns and cities – has a positive impact on productivity, and that such clustering is dependent on effective transport systems. Some of the productivity effects, commonly known as agglomeration, come from interactions between different economic agents that are not fully internalised, creating market failure and wider economic benefits, as recognised in this manual*”. It goes on to explain that “*Agglomeration effects are characterised as the productive impact of employment in surrounding areas on a firm’s production technology. Agglomeration is acknowledged to have three underlying sources, sharing, matching, and knowledge spillovers.*”

Estimating the potential for agglomeration benefits, as a result of transport investment, requires in-depth spatial analysis. Inputs consist of economic output (GDP), employment by industry and generalised journey costs. Traffic modelling must estimate origin-destination matrices by mode and journey purpose as well as providing an indication of change over time.

To provide a high-level assessment of potential Agglomeration benefits for Queenstown, we have performed sensitivity analysis using publicly available data. While consistent with Waka Kotahi guidance, it is based on a hypothetical improvement to employment-related travel costs, so should be interpreted as indicative only.

A one percent reduction in average generalised journey cost, across 31 suburbs within the Queenstown-Lakes District, would lead to **\$70 million** in agglomeration benefits over 60 years (New Present Value terms). A similarly sized benefit could also be achieved by reducing average journey costs by two percent in Queenstown Central, Queenstown East and Frankton.

If agglomeration benefits were created by phases 5-7 of the programme, for example if the arterial and bus hub projects created large improvements to accessibility, this would have a significant impact on Benefit Cost Ratios

(BCRs). The table below illustrates how these BCRs would change if an additional \$70m in benefits were to be allocated across the three phases based on share of cost.

Programme Phase	Original Benefits, BCR	Original + Agglomeration Benefits, BCR
Phase 5 - Queenstown Arterial - Stage 2	\$38m, 0.9	\$56m, 1.3
Phase 6 - Queenstown and Frankton Bus Hubs	-\$8m, 0.2	\$60m, 1.1
Phase 7 - Queenstown Arterial - Stage 3	\$12m, 0.2	\$69m, 0.9

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3 Detailed Review

This section provides some detailed comments on the methodology and suggestions for future sensitivity analysis. Technical comments are based on the two methodological papers drafted by Stantec et al, as well as underlying spreadsheets provided by Anthony Byett.

Review of Analysis & Methodology	
Key Point	EY Comments
Description of unmet demand / tourism benefits	▶ The approach to Pedestrian Amenity Benefits is explicitly in line with Waka Kotahi guidance, whereas Unlocking Unmet Demand is less clear. In particular the MBCM notes that '<i>Tourism benefits must not be included in any BCR calculation, even as a sensitivity test, or added to the quantum of traditional transport WEBs.</i>' ▶ This is a potential communications risk rather than a methodological problem. This is because tourism is not being directly monetised within the WEB analysis, but instead is used as a proxy for travel demand volumes. ▶ The programme team may wish to clarify this section of the technical note, to avoid any risk of misinterpretation, before presenting detailed analysis to external parties.
Description of productivity benefits within unmet demand	▶ The technical note states that "<i>more spending in Queenstown [could] translate into a productivity increase for NZ</i>". This could be interpreted as arguing for a change to annual productivity growth, whereas it's actually referring to a static value-added conversion. ▶ The programme team may wish to clarify this section of the explanation before presenting detailed analysis to external parties.
Updates to Waka Kotahi Guidance (EEM - > MBCM)	▶ While a full reconciliation between the EEM and MBCM is out of scope for this peer review, we did not identify any differences between the two manuals that would have significant impact on option assessment results. ▶ One of the key changes implemented by the Investment Decision Making Review in 2020 was greater recognition of non-monetised benefits. Publications clarified that social, economic and environmental outcomes should influence the choice of preferred option, whether or not a 'dollar figure' could be produced. ▶ The programme team may wish to consider whether any Queenstown-related benefits fall into this category, and therefore could receive for attention in follow-up assessment.
Agglomeration benefits	▶ Stantec et al. have judged the potential for agglomeration benefits to be low, relative to the impact of pedestrian welfare and unmet demand. ▶ While accepting this assessment, we note that agglomeration benefits could nevertheless be significant in absolute terms if the programme enables higher density development. ▶ Sensitivity analysis indicates that a 1-2% decrease in journey costs would lead to approximately \$70m in benefits over 60 years.
Conservative assumptions within WEB analysis	▶ Underlying WEB analysis errs on the side of caution in many of its data input and modelling methodology choices.

Review of Analysis & Methodology	
Key Point	EY Comments
	▶ Local residents are, for example, excluded from the group negatively affected by a SH6 bottleneck, and it is assumed that significant numbers of people will shift to public transport as SH6 traffic grows over time. Pedestrian welfare calculations similarly take a cautious approach to estimating volumes and growth over time.
Conventional economic benefits	▶ The draft economic case implies that carbon dioxide impacts have been considered, but the health impacts of other pollutants have not. A shift from private to public transport will likely have positive implications for nitrous oxide and particulate matter emissions, over and above greenhouse gas savings. Subsequent analysis may wish to take account of these EEM / MBCM benefit categories.
Interaction with other business cases	▶ Parking charges (income) and Walking and cycling benefits are excluded from the scope of Frankton to Queenstown / Queenstown Town Centre Programme Business Case impacts. ▶ This represents a conservative assumption if synergies exist between the projects and programme. Parking charges, for example, may complement other initiatives to encourage mode shift away from private vehicle travel. ▶ Future analysis may wish to explore the potential for these interventions to support one another, and determine whether they could lead to outputs that are greater than the sum of their parts.
Uncertainty within population forecasts	▶ As population and tourism are key drivers of WEBS, it should be highlighted that significant uncertainty exists in light of COVID-19. ▶ Technical documentation demonstrates that adequate sensitivity analysis has been undertaken, such that a range of possible outcomes can be quantified. ▶ The programme team should nevertheless be aware that benefit values could change considerably as new population and tourism forecasts are released.