WAKA KOTAHI
NZ TRANSPORT AGENCY

QUEENSTOWN BUSINESS CASE

Summary Report

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12 NOVEMBER 2020

FINAL

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ABBREVIATIONS

Abbreviation	Full Name
ADT	Average Daily Traffic
BCR	Benefit Cost Ratio
bn	billion
BRT	Bus Rapid Transit
CAPEX	Capital Expenditure
CBD	Central Business District
CCT	Closed circuit television
CIP	Crown Infrastructure Partners
COVID-19	2019 novel coronavirus
DBC	Detailed Business Case
DSI	Death and Serious injury
EECA	Energy Efficiency and Conservation Authority
EV	Electric Vehicle
F2Q	Frankton to Queenstown
GPS	Government Policy Statement
GR2KF	Grant Road to Kawarau Falls
HOV/SOV	High Occupancy Vehicle/Single Occupancy Vehicle
IBC	Indicative Business Case
ITS	Intelligent Transport Systems
KPI	Key Performance Indicator
LCLR	Low Cost Low Risk
LOS	Level of Service
M	Millions (where adjoining monetary value)
MCA	Multi criteria analysis
MOT	Ministry of Transport
MRT	Mass Rapid Transit
NLTF	National Land Transport Fund
NLTP	National Land Transport Programme

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Abbreviation	Full Name
NZUP	New Zealand Upgrade Programme
OPEX	Operational Expenditure
ORC	Otago Regional Council
PBC	Programme Business Case
PPP	public/private partnerships
PT	Public Transport
QIT	Queenstown Integrated Transport
QLDC	Queenstown Lakes District Council
QRA	Quantitative Risk Assessment
QTC	Queenstown Town Centre
RLTP	Regional Land Transport Plan
RMA	Resource Management Act
RTC	Regional Transport Committee
SC	Strategic Case
SH	State Highway
SHA	Special Housing Area
SPSV	Small passenger service vehicles
SPV	Special Purpose Vehicle
SSBC	Single Stage Business Case
tbc	To be confirmed
TDM	Travel Demand Management
TMA	Travel Management Association
VKT	Vehicle kilometres travelled
vpd	Vehicles per day
Waka Kotahi	Waka Kotahi NZ Transport Agency
WATN	Wakatipu Active Travel Network
WTOC	Wellington Transport Operations Centre
W2G	Way to Go

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1 EXECUTIVE SUMMARY

1.1 Context

1. The purpose of this business case, referred to as the Queenstown Business Case, is to provide a detailed assessment of options to improve the transport network, developing on previous work undertaken. It provides evidence that the preferred programme provides the best feasible option to deliver the desired outcomes, and that it is affordable.

2. The project partners are seeking endorsement of the Queenstown Business Case programme. Specifically, in the next NLTP period (2021-24), there are two business case activities to be developed - one for Travel Demand Management (TDM), the second for Public Transport (PT) Services and Infrastructure. It is anticipated that the TDM business case will be led by Waka Kotahi NZ Transport Agency (Waka Kotahi) and the PT business case will be led by the Otago Regional Council (ORC).

1.2 Geographic Extent

3. The Queenstown Business Case covers the Wakatipu Basin. It incorporates the Queenstown Town Centre, the Frankton to Queenstown corridor, Frankton and the Frankton to Ladies Mile Corridor. Investment cases have been developed for each geographic area. The geographic extents of the project are presented in Figure 1.

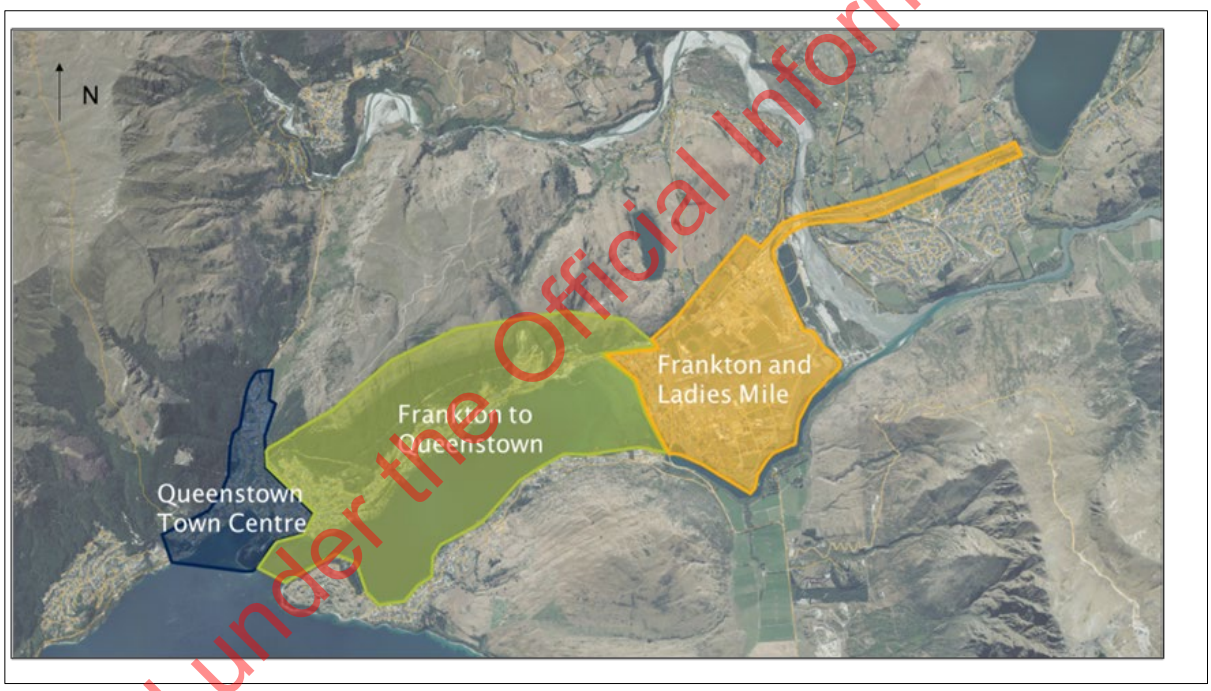

Figure 1: Project Extent

1.3 Assurance Process

4. The assurance process undertaken for the Queenstown Business Case is as follows:

- A Challenge Team review of the emerging programme by a team of independent technical specialists, February 2020
- Modelling Peer Review (Flow Transportation Specialists), September 2020
- Economics Peer Review (Ernst and Young), September 2020
- Review of the draft Queenstown Business Case – (Waka Kotahi, Queenstown Lakes District Council (QLDC), ORC, and AECOM), September 2020

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- Business case drawings (Arup), September 2020
- Review of the final draft Queenstown Business Case, in compliance with Waka Kotahi business case review process requirements (Commute), October 2020.
- Investment Quality Assurance Review (Waka Kotahi), October 2020.

1.4 Business Case Composition

5. The Queenstown Business Case builds on previous studies and investigations including the Queenstown Integrated Transport (QIT) Programme Business Case (PBC, Waka Kotahi, June 2017), Queenstown Town Centre (QTC) Masterplan PBC (QLDC November 2017) and associated Indicative Business Cases (IBCs) for the arterial roads, public and passenger transport and parking infrastructure. This business case is the next step in the project development process. The background and composition of the Queenstown Business Case is summarised in Figure 2.

Figure 2: Queenstown Business Case composition

6. As the Queenstown Business Case developed, several changes occurred which had implications for the programme and scope of works.

   a. It was recognised that the Frankton area had a key role to play in growth and network connectivity (in particular the SH6 / SH6A intersection) and that a connected network-wide response would be required to avoid misalignment between packages and to maximise the benefits. The original geographic extent (QTC and Frankton to Queenstown) was expanded to include Frankton and Ladies Mile. This included the geographical scope covered by the Grant Road to Kawarau Falls Bridge (GR2KFB) project.

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b. In parallel with this business case, a spatial plan was developed for the Wakatipu Basin. This acknowledged the importance of a higher level of land use and transport integration.

c. Funding was secured for infrastructure identified through previous investigations and the early stages of this business case through:

- The New Zealand Upgrade Programme (NZUP), a $6.8 billion investment to get New Zealand NZ cities moving, to save lives and boost productivity in growth areas. Queenstown was allocated $ 90m funding for SH6A corridor improvements, Ladies Mile corridor improvements and SH6 Grant Road to Kawarau Falls Bridge improvements. The focus of the NZUP improvements is on infrastructure that provides for public transport priority, as identified through this business case. The interventions provided by NZUP are discussed in section 1.8.

- Crown Infrastructure Partners (CIP) "shovel ready" key infrastructure projects for projects that would add significant value to the nation's economic recovery from COVID-19. Queenstown was allocated $50m towards Stage 1 of the town centre arterials and $ 35m towards the streetscape component of the Queenstown Town Centre transformation. The interventions provided by CIP are discussed in section 1.8.

7. These factors have been included in the Queenstown Business Case, which has been compiled as a single document to report on the integrated programme of works.

8. The level of detail of the Queenstown Business Case is as follows:

- The Queenstown Town Centre Detailed Business Case (QTC DBC) builds on the work undertaken through the QIT PBC, the Queenstown Town Centre Masterplan PBC and associated IBCs for the arterial corridor, public and passenger transport facilities and parking infrastructure.

- The Frankton to Queenstown Single Stage Business Case (F2Q SSBC) confirms and develops an activity for the corridor and how it will be implemented.

- High Capacity Passenger Transport improvements have been prepared to an IBC level, where solutions are long-listed then short-listed. As the high capacity passenger transport options have an impact on the design of the town centre and Frankton to Queenstown elements, a preferred network of improvements has been identified.

1.5 Case for Change

9. The Queenstown area is one of New Zealand's fastest growing regions, driven by population growth, the tourism industry and supporting activities. This growth is placing increasing pressure on the infrastructure of the area and in particular the transport system.

10. There is a compelling Case for Change for investment in improving the multi modal transport network in Queenstown. Evidence suggests there is a problem, and the scale of the problem is significant. Key stakeholders are aligned and behind the need to address the agreed problems.

11. The Case for Change and scale of the problem is presented below:

- A Spatial Plan is being developed to look at likely changes to where people will live and work within the Wakatipu Basin over the next 40 years. It identifies a need to plan development sustainably to minimise traffic growth. Therefore future investment in the transport network will need to align with this plan. The Spatial Plan, coupled with the new National Policy Statement on Urban Development (NPS-UD 2020), seeks to encourage intensification and enhance planning policy particularly around public transport nodes. These two documents will lead to a major shift in planning policy in Queenstown and result in improved development control.

- Residential and visitor growth remains strong which will increase travel demand on the current network. Peak day population is forecast to grow from approximately 120,000 in 2018 to 200,000 in 2048 (refer to Figure 3). While COVID-19 has undoubtedly had a significant impact on visitor numbers, this is a temporary phenomenon with QLDC projecting that Queenstown will be back to pre-COVID visitor numbers by 2024. This is a slightly shorter recovery period than that projected through Waka Kotahi's Arataki forecasts which indicates a medium term (10 year) impact on growth

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and the economy. Due to the level of uncertainty, ongoing monitoring of transport, land use and economic changes will be required.

- Parts of the network are already at capacity. SH6A practical capacity was exceeded on 140 days in 2019. Without remedy, the level of service will further decline – peak spreading will occur, travel time reliability will deteriorate, and increasingly significant congestion will result. By 2028, modelling indicates that average conditions will be similar to current peak travel times and peak periods will experience regular gridlock with car and PT travel times between Lake Hayes Estate and Queenstown regularly exceeding 60 minutes (compared to 15-20 minutes today).
- Peak hour people trips are forecast to double on the geographically constrained SH6A, from approximately 1,500 (in 2028) to more than 3,000 (2048) (refer to Figure 4). SH6A is already at capacity at certain times of the day. The physical constraints of the environment mean that the network is not resilient to disruption – SH6A is the main access corridor for Queenstown and crashes or weather events have network wide implications.
- Travel in Queenstown is predominately by private car (for example, private car trips make up 84% of trips on SH6A). This is not sustainable from the perspectives of resident and visitor growth, efficiency, amenity, or for achieving positive environmental (including climate change), safety and resilience outcomes. Left unchecked, the road network would be over capacity for much of the day, and it is estimated that Queenstown Town Centre would require an additional 3,000 car parking spaces should the current mode share continue into the future. There has been some success in reducing Queenstown's car dominance with the introduction of the $2 Orbus service in 2017. However, the service is already reaching capacity and a further step change will be required to maintain long term functionality on the network. Modelling demonstrates that a shift from 16% to 40% of people using alternative modes to the private car will be required during peak periods on SH6A by 2028. This number increases to 60% by 2048 if historic levels of growth continue.
- Total emissions are forecast to increase from 178,535t total annual emissions (Co2-e) in 2018 to 227,939t in 2028 in a Do-minimum situation. The provision of more sustainable travel options to the private car, coupled with behavioural change will be critical to reduce emissions and mitigate adverse effects on Queenstown's urban and natural environment.
- Evidence shows that Queenstown Town Centre is becoming degraded in a way that threatens the cherished liveability, local resident appeal and rich visitor experience that people expect from Queenstown. Queenstown's rapid and organic growth has created a situation where the needs of the private motor vehicle are taking priority over people and the much-needed balance of transport across public, passenger and active modes cannot occur at anywhere near the required level. At the heart of this situation is the need to ensure that the experience the Town Centre provides is attractive enough to bring locals back to town and keep the visitors coming to the district.
- It is estimated that there will be between a $ 670m to $1.2 billion loss to the Queenstown economy, over a 40 year period, through visitors travelling elsewhere without investment in the Queenstown transport network.

Figure 3: Queenstown Resident and Visitor Growth numbers

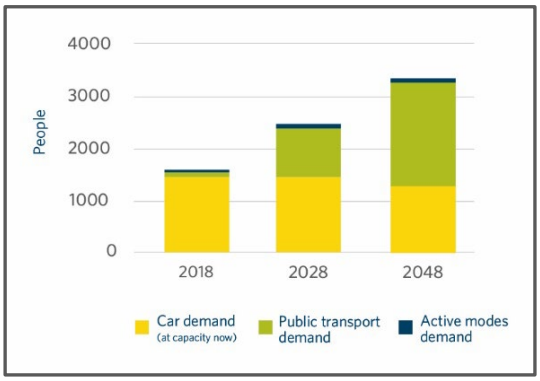

Figure 4: Projected People per hour along SH6A

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12. Investment in Queenstown's transport network supports safer transport, encourages mode shift by providing alternative choices to the private vehicle, supports future growth, and improves customer levels of service. This business case is strongly aligned with national, regional, and local policies and is consistent with both the current Government Policy Statement on Land Transport (GPS 2018) and the new GPS 2021-24. Further detail on this is provided in the Preferred Option Assessment report.

1.6 Problems, Benefits, Opportunities and Investment Objectives

13. The preceding QIT PBC identified rapid growth and car dominance as the two fundamental transport problems. The problem statements and benefits for this business case were developed from the investment objectives agreed as part of the QIT PBC and were confirmed through stakeholder workshops. These investment objectives are consistent for all aspects of the Queenstown transport business cases.

14. The QIT PBC problem statements were retested during an October 2018 workshop with Waka Kotahi, QLDC, ORC and other key stakeholders. It was agreed that, although they remained applicable, they should be modified for the purposes of the F2Q and QTC business cases. Stakeholders also agreed that Queenstown Town Centre has sufficiently unique problems to warrant separate statements, while Frankton to Queenstown, Frankton and Ladies Mile share consistent themes. The following Problem Statements were agreed for the respective study areas:

Frankton to Queenstown, Frankton and Ladies Mile

15. **Efficiency:** Rapid growth, the high relative attractiveness of car travel over other modes and a lack of alternative routes are leading to increasing traffic volumes along SH6A. This is causing more congestion, longer/more unreliable travel times and rat-running, which limits opportunities for future tourism growth and reduces the liveability of Queenstown.

16. **Amenity:** High traffic volumes, limited connections to active travel routes and unattractive adjacent land use means that SH6A is not presenting as a high-quality gateway into Queenstown. This does not align with the community's aspiration for high levels of amenity and an enhanced place value for Queenstown.

17. **Safety:** High traffic volumes limit opportunities to safely cross or turn onto SH6A, increasing frustration for all road users and limiting access to PT/active travel modes. This raises the likelihood of injury or death, causes community severance and reduces the LOS for all road users.

18. **Resilience:** SH6A provides the only direct transport link between Queenstown and Frankton but is subject to landslides and is constrained in width. This means that the road is susceptible to delays caused by minor planned or unplanned disruptions, which creates severance between the two centres and makes access to essential services (i.e. emergency services and the airport) vulnerable.

Queenstown Town Centre (QTC)

19. **Efficiency:** Limited PT/active travel options, coupled with growth in resident and visitor numbers, is leading to increasing congestion and parking demand. This further discourages people from visiting the Town Centre, has negative environmental effects and reduces Queenstown's liveability and visitor experience.

20. **Amenity:** Severance created by high traffic volumes on SH6A together with the effect of drivers searching for parking is devaluing the pedestrian/cyclist experience, constraining the expansion of the town centre and limiting economic and placemaking opportunities.

21. **Safety:** Roads performing both place and access functions introduce conflicts between vehicles and other modes, which increases the likeliness for injury and reduces the quality of the public realm.

22. Although these problem statements were developed separately for each of the two areas, there was enough commonality to create a common set of investment objectives, as shown in Figure 5 below.

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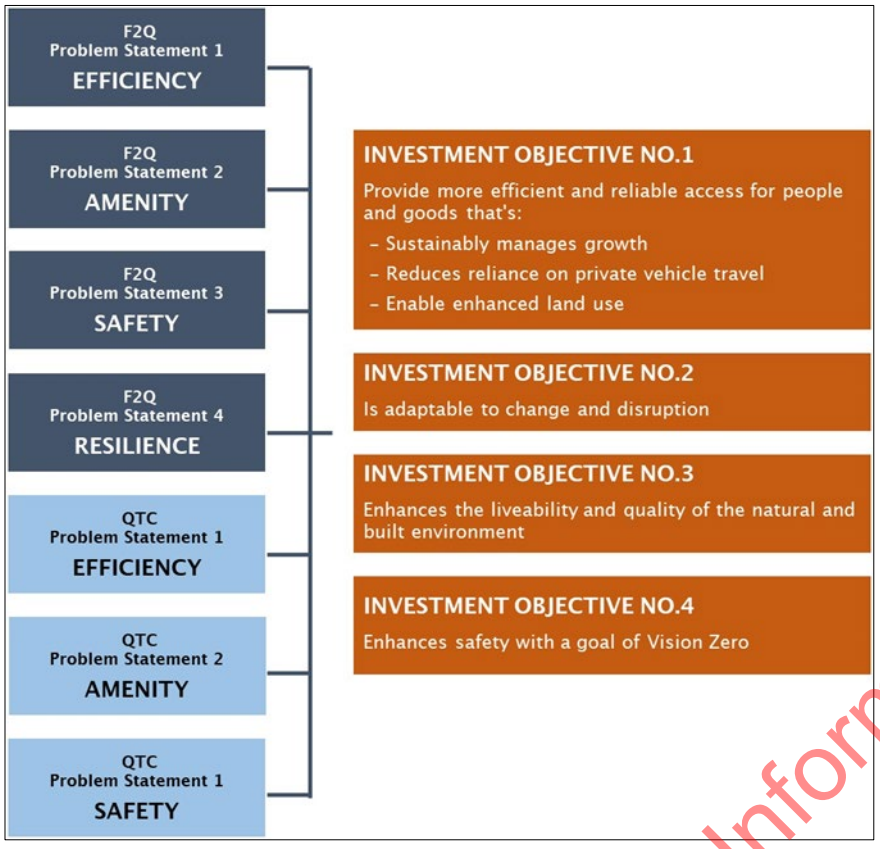

Figure 5: Problem Statements and Investment Objectives

1.7 Option Development and Assessment

23. The development of the recommended programme involved an iterative optioneering process alongside stakeholders representing local Iwi, businesses, and community groups, as follows:

    - Building on previous work plus some new ideas, more than 300 options were put forward (240 ideas for Queenstown Town Centre and 140 ideas for Frankton to Queenstown).
    - These ideas were tested and distilled into nine packages.
    - The scope was extended to bring in Frankton. Thirteen options that were initially identified for the SH6/SH6A intersection as part of the Grant Road to Kawarau Falls Bridge IBC, July 2017 were retested along with the investment objectives in July 2020 – one further option was added.
    - The preferred programme was developed and tested through Councillor meetings and also stakeholder and public engagement (August 2020).

24. As demonstrated in the case for change above, the current rate of traffic growth is not sustainable. In order to support the ongoing development of the area, a significant shift to non-car modes of transport is required. This requirement has been the key determinant in the development of the emerging programmes.

25. The programme emerging from the optioneering processes was publicly consulted on during August 2020. This, coupled with further technical assessment, allowed the preferred programme to be identified.

26. This engagement showed general support for the proposed interventions, noting that some questions were raised about specific interventions that will need to be considered further as the interventions progress to the next stage. Comments raised during engagement indicated that a more detailed consideration of Town Centre parking requirements as well as park-and-ride needed to be considered. These are currently being developed to a greater detail by QLDC.

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1.8 Preferred Programme

27. The optioneering and engagement processes have demonstrated that the mechanism to deliver on the investment objectives will need to include a wide range of initiatives focussed on shifting the current reliance on the private vehicle, by providing users with a range of travel choices. It is therefore important that investment is distributed to infrastructure and non-infrastructure as identified through the 'three pillars of investment' (Figure 6) described below:

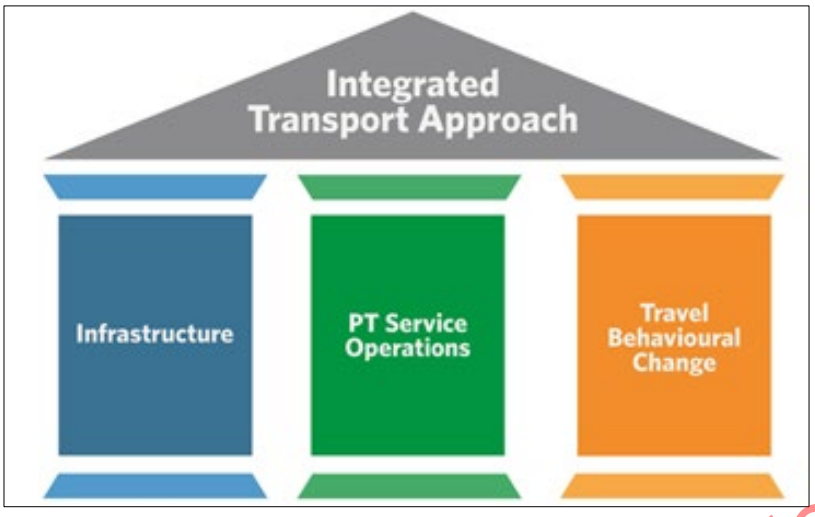

Figure 6: Three pillars of investment

- Targeted infrastructure investment – Urban realm improvements to the town centre facilitated by the CIP investment and the interventions identified in the active travel SSBC, improvements to SH6 and SH6A facilitated by NZ Upgrade Programme investment.
- Public Transport services – A high quality system built on Bus Rapid Transit (BRT) principles providing increased public transport services and improved public transport facilities (fleet and infrastructure), leveraging off the public transport priority provided through the NZUP investment.
- Travel Behaviour Change mechanisms – A suite of interventions that encourage the uptake of more sustainable transport modes through more proactive parking management and other Travel Demand Management tools. This will be achieved through both pull and push factors. For example, PT fare incentives can be used to encourage uptake (the success of the Orbus $2 flat fare is evidence of this).

28. The analysis demonstrates that the interventions need to be built around a step change in public transport, provided through a high capacity, high priority public transport spine that links the key development areas identified through the spatial planning process as well as important tourist destinations. Feeder networks of public transport and active modes are also provided. This needs to be supported by the infrastructure and behaviour change aspects for it to be successful. This includes the CIP funded targeted improvements in the town centre that reduce traffic volumes and improve walkability as well as the NZUP funded PT priority elements.

29. The preferred programme also includes a future suite of interventions that could be implemented at a later date when required, or as funding becomes available. A summary of the interventions that make up the preferred programme are presented by funding period in Figure 7 and set out in a map in Figure 8. Further detail on funding requirements is provided in section 1.11.

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Figure 7: Programme of Interventions by Funding Period

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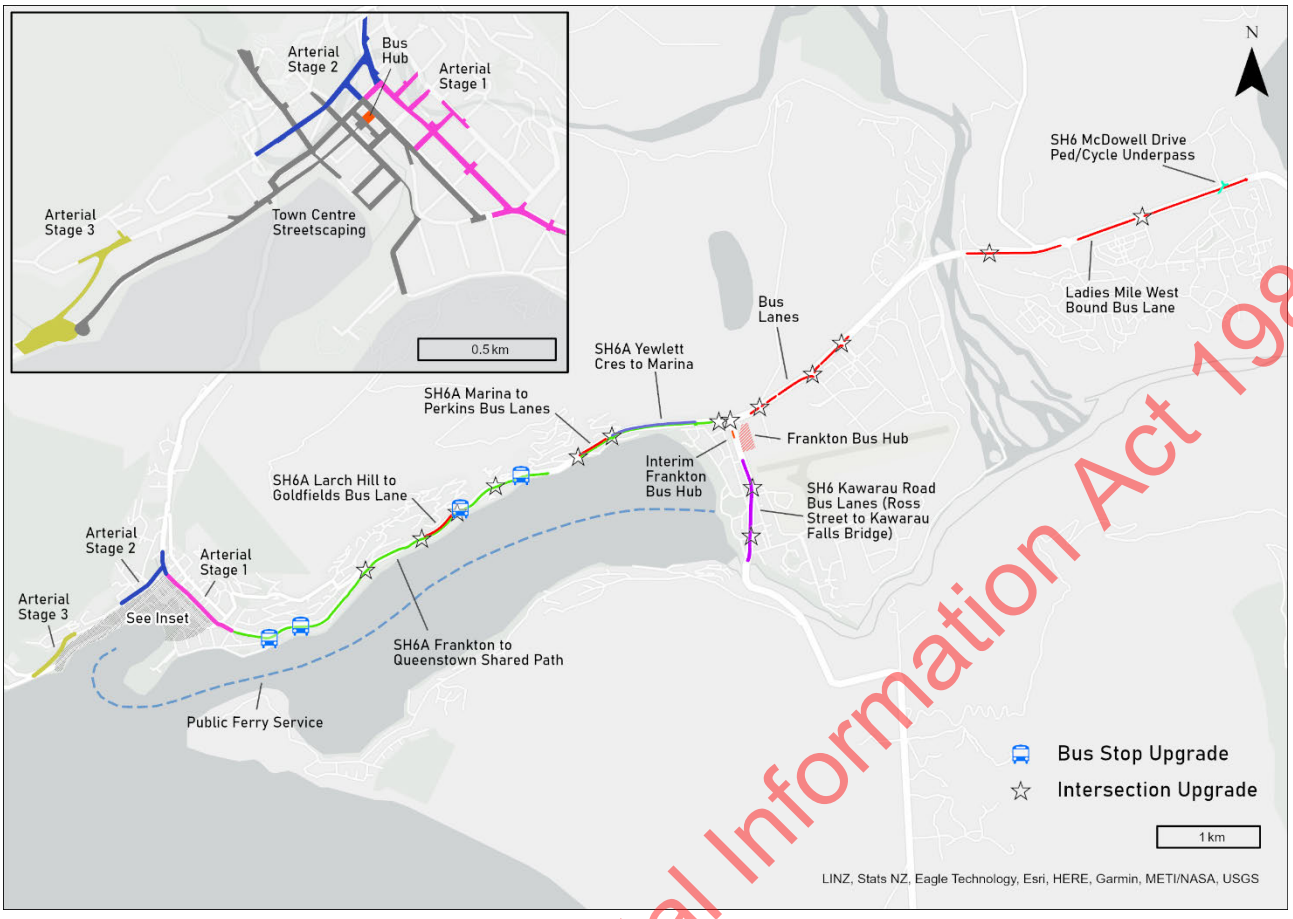

Figure 8: Mapped Programme of Interventions

Infrastructure Committed – Town Centre (CIP funded)

30. The first stage of the arterial corridor will remove general traffic from Stanley Street (between Shotover Street and Ballarat Street). This will improve pedestrian experience and safety and provide better connections between Project Manawa (the civic heart of Queenstown – providing a range of cultural and community facilities), the historic core of the town centre and the lake.

31. Town Centre streetscape upgrades to improve pedestrian and cyclist facilities and encourage a slower street environment creating a calmer and more enjoyable experience for everyone.

Infrastructure Committed – SH6A Corridor Improvements (NZUP Programme funded)

32. Targeted priority for PT implemented between the SH6/SH6A intersection and SH6A/Marina Drive intersection.

33. Key intersections signalised with PT priority.

Infrastructure Committed - SH6 Ladies Mile Corridor Improvements (NZUP Programme funded)

34. Westbound PT lane along SH6 - Ladies Mile. Bus priority onto the Shotover bridge is being considered.

35. Howards Drive roundabout access and safety improvements

Infrastructure Committed - SH6 Improvements (NZUP Programme funded)

36. Improvements to the SH6A/SH6 intersection

37. The SH6 link to the east will include bus lanes in both directions and signalising the existing intersections.

38. The SH6 link to the south will include a northbound bus lane and signalising the existing intersections.

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39. Upgrade to the existing Frankton hub to resolve current congestion issues and provide a higher quality waiting environment for customers.

Infrastructure recommended (unfunded)

40. A series of town centre upgrades to improve pedestrian and cyclist facilities, supporting the significant increase in expected active mode usage while encouraging a slower street environment creating a calmer and more enjoyable experience for everyone.

41. Urban realm improvements along Stanley Street and Shotover Street. This will pave the way for revocation of these sections of SH6A.

42. An upgraded transport hub at Stanley Street, acting as the principal gateway into the town centre. The delivery of the hub will be split over two stages. The first stage of this will be provided through on street improvements that will facilitate the service improvements described below.

43. An extension to the arterial route (Stage 2 and 3) that reduces general traffic in the town centre – particularly on Stanley Street and Shotover Street. This will further improve pedestrian experience and safety, and provide better connections between Project Manawa, the historic core of the town centre and the lake. The second stage of the arterial route extends from Gorge Road to Hay Street and is covered by this business case. The third stage connects through to One Mile Roundabout in the longer term.

44. A widened shared path along the lakeside of Frankton Road provides improved connectivity for pedestrians and cyclists, and improved travel choice.

45. Improved first and last mile connectivity to the bus stops and hubs across the network improves access to the PT services.

Public Transport Services (unfunded)

46. Enhanced public transport fleet, stop and depot facilities to deliver higher capacity and higher frequency BRT style services. The fleet will be upgraded incrementally with a view to delivering highly efficient and environmentally friendly bi-articulated “trackless tram” style vehicles as demand increases. A network of enhanced BRT station stops will be provided with enhanced first mile/last mile connectivity.

47. Ferry services that complement the bus services. These have been detailed in a separate ferry business case (ORC).

48. Stage two of the development of the bus hub in Queenstown Town Centre to sit alongside project Manawa and other potential Transit Oriented Developments. This will provide also improved connectivity with regional and tourist coach services.

49. Further upgrades to bus services to provide connector services to key residential and development areas, as required through the delivery of the spatial plan.

50. Future offline public transport services that provide a further step change in capacity along with additional resilience and experiential benefits. This will require the development of offline public transport hubs in both Frankton and Queenstown.

Travel Behavioural Change (unfunded)

51. Travel Demand Management to encourage people to use more sustainable and higher capacity forms of transport.

52. Improved parking management in both Queenstown Town Centre and Frankton to reduce circulating traffic volumes.

53. Improved use of technology for transport network operations management and customer information (wayfinding and variable message signage).

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1.9 Performance of preferred programme against objectives

54. The preferred programme performs well against all four investment objectives and provides numerous multi-modal benefits across all transport user modes.

55. The programme BCR for the elements that are recommended for the next ten years is 2.3. The programme BCR for the full programme is 1.5 (reflecting the inclusion of elements with higher costs relative to benefits). A summary of the headline performance figures is provided in Table 1 below:

Table 1: Performance against investment objectives

Investment Objective	Summary of performance (sample KPIs)
Provides more efficient and reliable access for people and goods	• Greater than 100% increase in corridor people movement capacity for SH6A by 2028 • Greater than 20% improvement in travel time for public transport users, network wide by 2028 • Unlocks $670m to $1.2 billion of economic growth in Queenstown over 60 years
Adaptable to change and disruption	• Infrastructure provides flexibility to operate a scalable PT service • Investment in alternative modes improves travel choice • Future offline corridor improves resilience of Frankton to Queenstown journey
Enhanced liveability and quality of the natural and built environment	• Improvements in amenity across the town centre contributes to $143m of wider economic benefit over 60 years • 15% reduction in traffic emissions by 2048
Enhances safety with a goal of vision zero	• Targeted intersection safety improvements • Economic analysis indicates safety benefits of up to $31m over 60 years

Investment Objective 1 – Provides more efficient and reliable access for people and goods

56. Fundamentally, the preferred programme delivers a step change in capacity across the network. A focus on more efficient modes of transport (PT and active modes) means that more people can move around with less delay. The focus on PT services improves the capacity of the core route between Frankton and Queenstown by over 100%.

57. By 2028, the preferred programme network is able to incorporate around 15% more growth than the existing network and still deliver travel time savings of around 21% for Public Transport for the journey between Lake Hayes Estate and Queenstown. The proposed BRT services will deliver significant travel time reliability benefits for public transport users. The priority measures will allow the public transport services to run reliably to schedule and the service frequency increases will deliver a "turn up and go" service for the Wakatipu Basin. Due to the nature of the improvements, there will also be some reliability improvements for motorists – particularly those travelling between Frankton and Queenstown and accessing Frankton Road from the residential areas to the north. Vehicles servicing the businesses in the town centre will have more reliable travel times improving the efficiency of the supply chain.

58. Although increasing levels of traffic congestion (as demonstrated in the do minimum modelling) would force mode shift, this represents a negative and "blunt stick" approach. Through the implementation of the preferred programme, people will be enticed onto the alternative modes through a step change in provision, capacity and amenity. This will be accompanied by an effective travel demand management package (incorporating QLDC's new town centre parking management approach). This will allow capacity on the traffic network to be freed up for the people who really need to use it (local businesses, servicing vehicles, those with mobility needs etc).

59. The additional capacity provided across the network has the potential to unlocks $670m to $1.2 billion of economic growth in Queenstown over 60 years.

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Investment Objective 2 – Adaptable to change and disruption

60. The onset of the COVID-19 pandemic has demonstrated the importance of adaptability. Although the working assumption is that growth will return to previous levels relatively quickly, there is now a great deal more uncertainty. As such, the preferred programme has been developed to be scalable. The core infrastructure elements delivered through the CIP and NZUP investment enable public transport services to be improved incrementally and in a way that meets demand and growth requirements.

61. The emerging spatial plan for the Queenstown Lakes District is well aligned with the preferred programme. As land use becomes more structured and focussed on key transport nodes, the services can be modified to maximise the potential of these nodes to become transit oriented developments.

62. The preferred programme also provides improved resilience to unplanned events. Dedicated provision for public transport across Frankton, coupled with investment in the active travel network and improved information provision will provide people with more travel choice.

63. Longer term, the provision of an offline public transport link between Frankton and Queenstown will deliver an alternative corridor that provides full separation from the road network.

Investment Objective 3 – Enhanced liveability and quality of the natural and built environment

64. The streetscape and urban realm improvements in the town centre will deliver significant amenity improvements that will have a positive effect on town centre businesses. Analysis has been undertaken using two (similar) amenity assessment tools and both demonstrate that the quality of the urban realm in the town centre will improve (see below – green coloured streets indicate areas of higher amenity). The graphics in Figure 9 indicate that the current urban fabric is highly variable and this will be improved. Amenity improvements will result in economic benefit as the town centre urban realm improvements will present opportunities to stimulate development. Analysis of wider economic benefits indicates that the urban realm improvements could contribute to $143m of wider economic benefits that would manifest themselves as land use development or intensification.

Figure 9: Amenity Assessment (current and potential future)

65. It is important to note that the enhanced liveability and quality of the natural and built environment will not be limited to the Queenstown Town centre. Corridor improvements along SH6 and SH6A will assist with the delivery of the urban realm improvements envisioned in the Frankton Masterplan. High quality public transport facilities and vehicles will also improve the look and feel of the corridor. Furthermore, the shift towards more sustainable modes will allow the economy grow without increasing transport related emissions. Traffic related emissions are forecast to reduce by 15% by 2048 despite an increase in the residential population of approaching 100%.

Investment Objective 4 – Safety improvements

66. Intersection improvements coupled with improvements to infrastructure for pedestrians and cyclists will deliver improved safety outcomes. A focus on public transport will also encourage more people to use an inherently safer form of transport. Economic analysis has been undertaken using output from the transport modelling suite. This indicates potential crash savings which contribute between $25m and $31m in economic benefit over the next 60 years.

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1.10 Sequencing

67. The following table (Table 2) demonstrates the proposed sequencing for the interventions. This sequencing has been developed in a way that maximises the benefits provided by the committed projects through short term improvements in PT services that pave the way for the implementation of BRT style services from 2027. Behaviour change components will be required to match the PT service improvements to maximise mode shift and maximise overall network efficiency. The table demonstrates the degree to which the interventions deliver economic benefit (through the Benefit Cost Ratio calculations).

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Table 2: Sequencing of Interventions

Element	Lead Organisation	Dependencies (Description and Completion Date)	Trigger Points	Activity Class	IAF Assessment Profile	Expected Cost implications	IAF Funding Priority	DBC Preferred Programme Status	NLTP Period for Implementation
SH6A Improvements, GR2KFB Improvements and Ladies Mile Improvements	Waka Kotahi	Requires mode shift otherwise whole network breaks down	None – committed activity	NZUP - committed activity	None – committed activity	$106m	None – committed activity	Committed Activity – No approvals required	21-24
Arterials – Stage 1, Town Centre Upgrade – Stage 1	QLDC	Arterials requires design inputs from Project Manawa, e.g. retaining levels, access, pedestrian overbridge	None – committed activity	CIP – committed activity	None – committed activity	$120m	None – committed activity	Committed Activity – No approvals required	21-24
Travel Demand Management package	QLDC / ORC / Waka Kotahi	PT Services and Infrastructure, NZUP and Active Travel to help with mode shift	Monitoring of transport activity required	Promotion of road safety and demand management	Results Alignment: H CBA: M BCR = 3.5	$1.8m	4	Recommended Option – Funding approval required	Ongoing activity over multiple periods
PT Services Improvements	ORC	NZUP funded infrastructure, TDM	None – requires small variations within existing contract	Public Transport Continuous Programme	Results Alignment: H CBA: M BCR = 3.5	Increase in annual gross opex from $8m to $11m.	4	Recommended Option – Funding approval required	21-24 for further investigation, staged implementation from 24-27
On Road PT Service Improvements	ORC	NZUP funded infrastructure, TDM, Stanley Street Hub, Frankton Hub	Various demand triggers will require a step-change in service improvements	Public Transport improvements	Results Alignment: H CBA: M BCR = 3.5	$80m plus gross opex costs ramping up from $11m to $24m per annum by 2027	4	Recommended Option – Funding approval required	Staged implementation over multiple periods starting 27-30
Stanley Street and Shotover Street Improvements (including Stanley Street Bus Hub Stage 1)	Waka Kotahi	NZUP and CIP funded infrastructure, Project Manawa site clearance work along Stanley Street	Immediate benefits – dependencies provide trigger points	Local road, regional and state highway improvements	Results Alignment: H CBA: L BCR=1.6	$24m	5	Recommended Option – Funding approval required for Pre-imp and property	24-27
Town Centre Upgrade – Stage 2	QLDC	Town Centre Upgrade – Stage 1	Immediate benefits	Walking and Cycling improvements	Results Alignment: H CBA: L BCR = 1.5	$17m	5	Recommended Option – Funding approval required for Pre-imp	24-27
Arterial Stage 2	QLDC	Replacement of memorial hall, which becomes Performing Arts Centre at Project Manawa	Immediate benefits – dependencies provide trigger points	Local road, regional and state highway improvements	Results Alignment: M CBA: L BCR = 0.9 (1.1 with QLDC property costs discounted)	$43m (excluding the rebuild of the Memorial Hall)	6	Recommended Option – Funding approval required for Pre-imp and Property phases	Further investigation 24-27, pre-implementation and Implementation 27-30
Stanley Street Redevelopment (including Bus Hub stage 2)	QLDC / ORC / Developer	Stanley Street and Shotover Street Improvements, revocation of State Highway	Likely funding trigger required – to be confirmed through further investigation	Public transport improvements/ third party funding	n/a[1]	$46m (incl $33m property costs)	Not required	Other supporting activities – for endorsement	Further investigation 24-27
Arterial Stage 3	QLDC	None	Low BCR – no trigger points have been identified	Local road, regional and state highway improvements	BCR = 0.2	$118m	Not required	Other activities – for later re-evaluation	Further investigation beyond 2030
Offline PT Service Improvements, including offline PT hubs	Waka Kotahi/ORC	Future proofed/protected corridor and terminal locations	Demand trigger – once on road capacity is reached. Anticipated beyond 2030	Public transport improvements	BCR = 1.7	$262m	Not required	Other activities – for later re-evaluation	Further investigation beyond 2030

[1] BCR dependent on nature of development – opportunity to deliver Transit Oriented Development adjacent to Stanley Street bus hub and adjacent regional/tourist coach facility on Athol Street

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1.11 Funding

68. In addition to the committed funding already provided by the NZUP and CIP investments, costs for the preferred programme have been split based on the following assumptions:

- Infrastructure - the remaining town centre improvements, including the remaining stages of the arterial corridor will be funded through a combination of the National Land Transport Fund (NLTF) and local share (QLDC).
- Infrastructure – the improvements to Shotover and Stanley Street (SH6A), will be fully funded by Waka Kotahi through the NLTF.
- Infrastructure - The final stages of the town centre public transport hub development will be funded through a combination of the NLTF and QLDC funding.
- PT Services – The BRT services will be provided as part of the ORC continuous programme. A PT Services DBC (by ORC) will be required to confirm future PT Services funding.
- PT Services – the funding source for BRT fleet, stops, hubs and the depot will be confirmed through the PT services DBC, but are currently assumed to be fully funded through the NLTF.
- Travel behaviour change – A suite of behaviour change interventions will be provided. A Single Stage Business Case (by Waka Kotahi) will be required to further develop a Travel Demand Management Plan implementation programme.

69. Based on current estimates, the total anticipated cash flows for the investment proposal over the next three NLTP periods are summarised in Figure 10 and Figure 11 below (longer term interventions such as the third stage of the arterial corridor and off line PT are not included in these graphs). The costs will be spread over an extended period and are based on the implementation staging identified below. A breakdown of costs by funding sources is in Figure 12. Table 3 provides a summary of the activities for the next NLTP period. Further detail on funding is provided in the Financial Case and associated funding summary tables.

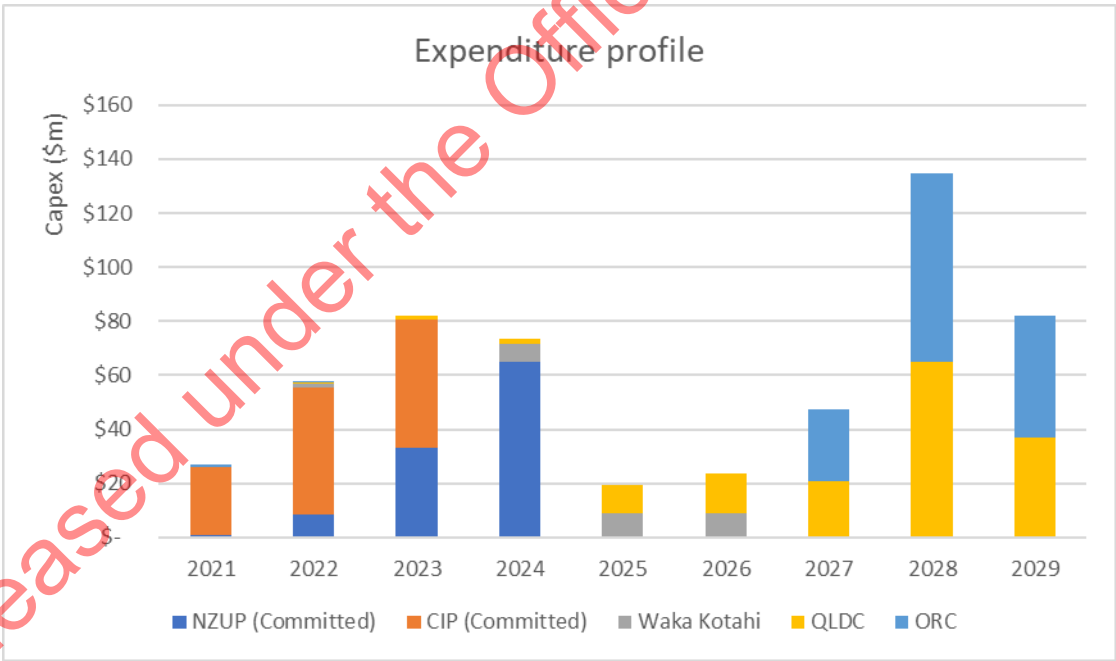

Figure 10: Expenditure Profile (capex)

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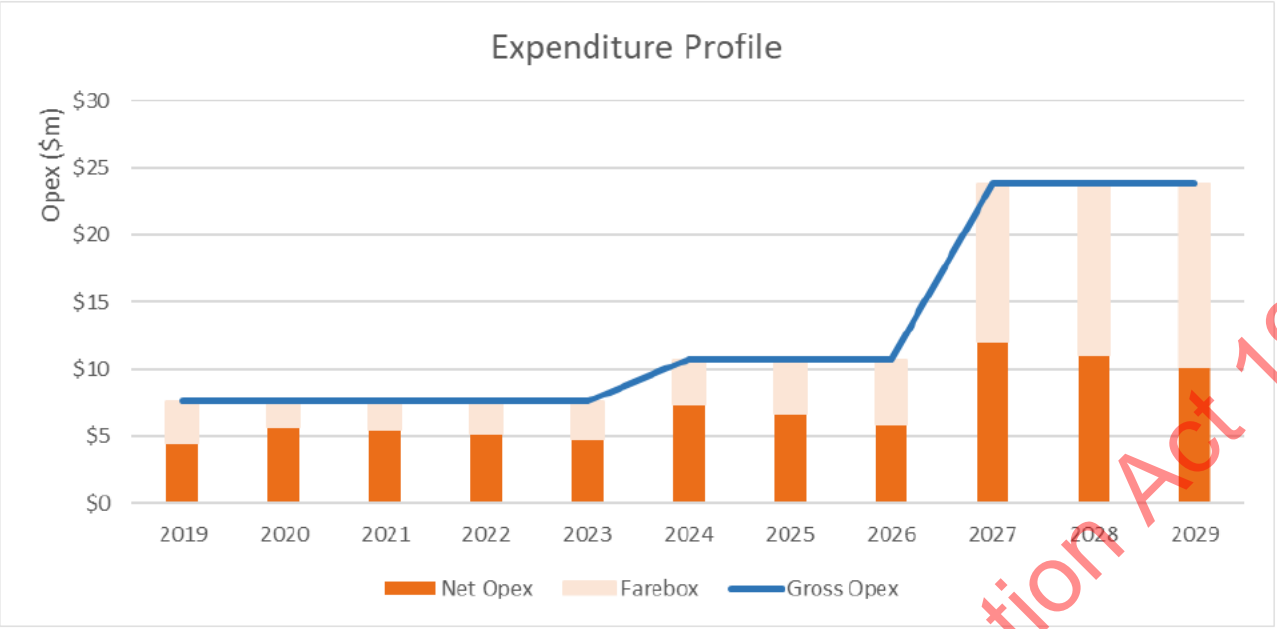

Figure 11: Expenditure Profile (opex)

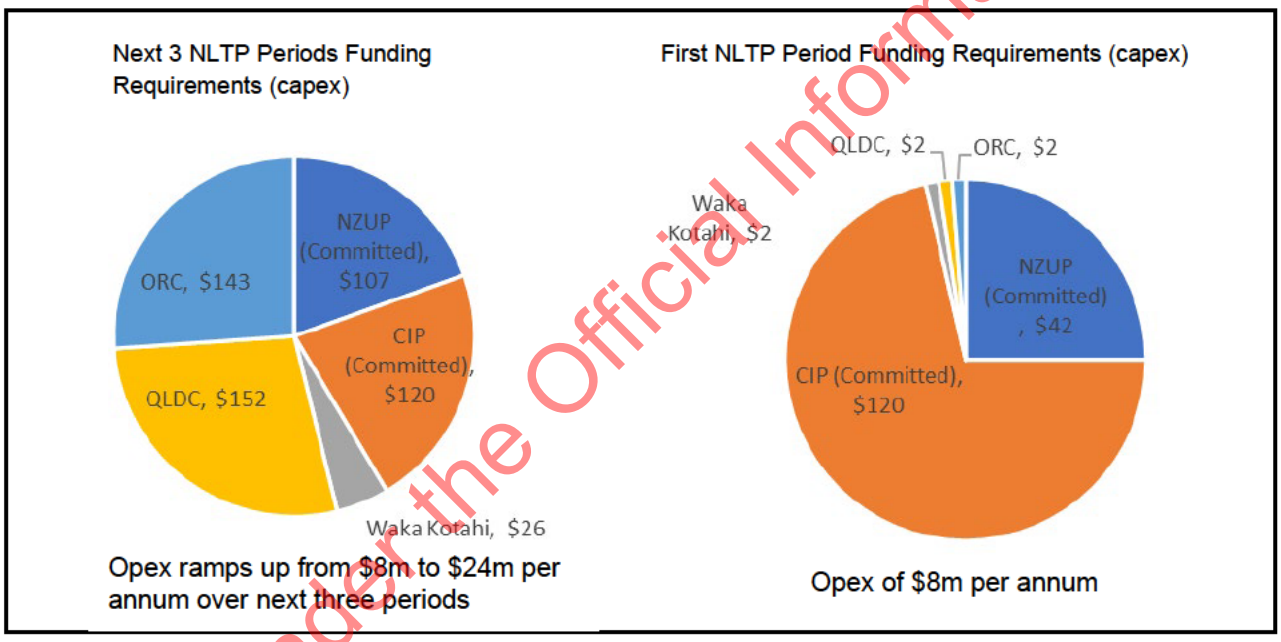

Figure 12: Funding by Source $m (Next 3 NLTP periods//21-24 period)

Table 3: Activities for the next NLTP period

Organisation	Element	Cost
Waka Kotahi	Travel Behaviour Change SSBC along with preliminary work on the Stanley Street and Shotover Street Improvements	$1,722,821
ORC (excluding opex)	PT Services and Infrastructure DBC	$1,500,000
QLDC	CIP obligations plus small scale changes in Old Frankton and preliminary wayfinding and Travel Behaviour Change interventions	$1,695,243 (plus CIP obligations)

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1.12 Commercial Case

70. The implementation of the programme has two parts – those already committed and funded, and those that are not. Implementation decisions on parts that are funded (outside the direct control of this business case) may impact on how the remainder of the programme is delivered.

71. An Alliance approach has been agreed between Waka Kotahi and QLDC for construction. A tender will be let and a preferred supplier secured Quarter 4 2020.

72. Property purchase will be on the critical path for the delivery of the programme.

73. One of 37 consent locations in the NZUP package has been identified as complex, the remaining consents are split between having some challenges and being straight forward. No complex issues were identified in the strategies for the remaining programmes.

74. The focus, therefore, for the next NLTP period is the procurement of the next phases of critical investment investigation – specifically PT services and supporting infrastructure (hubs, depots and stops) and Travel Behaviour Change.

1.13 Management case

75. The NZUP and the CIP Stimulus Package elements are approved packages of work with allocated funding. An alliance is being established as the delivery vehicle for these elements.

76. The next stages of work from the business case are well understood. Appropriate governance, plans and processes are already in place to help ensure the successful delivery of the programme. The existing governance structure can progress through to the next stages of the business case.

77. The remainder of the preferred programme will be delivered as individual projects but remain subject to funding approval. The roles and responsibilities for the programme and the packages are clearly defined.

78. Interdependencies and remaining outstanding issues are clearly described, to ensure that they are carefully managed into the next stages. Understanding interdependencies within the programme and also with other projects that are delivered by the partners is a key issue for delivery.

79. The management case identifies the next stage for each of the projects, which organisation is responsible, the timing for delivery and approval/funding status. The case demonstrates that the programme can be reasonably delivered.

80. Quality assurance processes for the key items are clearly defined to ensure that quality continues, supported by change control approaches, and clear identification and treatment strategies for risks

81. The key risks have been identified as follows

    - That the funding available to implement business case recommendations, and the recommendations, do not align.
    - That property(ies) required are not available.
    - That decision making is poor or slow.
    - That decisions made for interface projects are inconsistent with business case recommendations (misalignment).
    - There is the threat that the projects lose community support due to timing delays or other priorities.
    - There are detail design changes required in later stages.

82. A benefits realisation plan sets a programme to monitor the key performance indicators to demonstrate that the investment objectives have been achieved.

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1.14 Summary

83. Queenstown is growing rapidly. Without investment, the transport network will cease to operate effectively resulting in negative economic outcomes. The proposed interventions identified in these business cases maximise the benefits of the committed investment in the NZ Upgrade Programme projects, as well as the Crown Infrastructure Partners investment in town centre improvements and will deliver transformational change for Queenstown. The significance and effectiveness of these changes, as demonstrated through these business cases has been carefully tested through a robust review process. The analysis, process and design has been reviewed internally within the project team, externally by the Way 2 Go management team and designated external peer reviewers, and by an independent specialist challenge team.

84. These business cases present a compelling case for investment in a suite of multi modal transport interventions built around the three pillars of targeted infrastructure improvements, BRT services and behaviour change. Together, they will allow the Queenstown Lakes District to continue to grow sustainably and continue to be a highly desirable place to live, work and play.

85. The elements of the recommended programme implemented in the first ten years will deliver a BCR of 2.3, with the focus on PT services and supporting infrastructure. The full programme, to be implemented over a longer time period, delivers more benefits but at a much higher cost. The BCR of the full programme is 1.5.

86. In summary, the proposed interventions will deliver the following key benefits:

    - Corridor capacity increases in excess of 100% on the most constrained parts of the network will allow the Queenstown area to continue the grow and flourish as a tourist destination of international standing and a high quality place to live. This is estimated to unlock between $670m and $1.2 billion of economic growth.
    - The delivery of a BRT based transport system, coupled with travel demand management measures, will improve travel times across the network by over 20% relative to current bus travel times, along with significant reliability improvements.
    - The suite of improvements in the town centre will increase the quality of the built environment stimulating development.
    - Safety and access improvements across the network.

87. With the COVID-19 pandemic temporarily suppressing demand across the network, now is the time to act. There is an unprecedented opportunity to reset the approach to transport planning and operations in Queenstown in a way that will facilitate more sustainable levels of growth into the future.

1.15 Business Case Documentation

Table 4 below provides an outline of how the documentation that comprises this business case has been compiled and fits together.

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Table 4: Business Case Documentation Configuration

Synopsis
- Business Case poster providing short summary of case for investment; how the programme developed, preferred programme (and sequence), outcomes and benefits of the programme.

Executive Summary Document
- High level summary
- Scale of problems and proposed interventions
- Summary table interventions, costs, responsible agency

Strategic Context
- Compelling case for change
- Highlights investment objectives
- Key issues to consider (inc COVID and other drivers)
- Effects if investment not forthcoming

Strategic Context Appendices
- Major influences
- Key Performance Indicators
- Engagement and Workshops

Options Assessment
- Assessment development process
- Long list options
- Technical investigations
- Short list options and evolution to emerging preference

Options Assessment Appendices
- Detail technical information inc modelling
- Engagement feedback and MCA notes

Preferred Option Assessment
- Detail on preferred configurations and recent influences (CIP, NZUP)
- Wider implications and issues
- Alignment within the programme and between strategies

Preferred Option Assessment Appendices
- Designs, cost estimates, design philosophy, design reports

Programme Sequencing
- Summary outline of interventions, costs, responsible agency, timing of interventions and dependencies

Economic Case
- Benefits and costs of programme
- Demonstrates contribution of individual elements

Economic Case Appendices
- Peer Review Feedback
- Details of approach to Wider Economic benefits

Financial Case
- Delivery costs of project components
- Funding sources for interventions
- Funding/cashflow/agency spreadsheet

Commercial Case
- How preferred programme to be implemented
- Risk allocations

Commercial Case Appendices
- Risk register
- Property Strategy (tbc)

Management Case
- Roles and responsibilities for delivering outcomes
- Governance and management through implementation

Assurance Reviews
- Assurance reviews covering economics, modelling, business case review in line with Waka Kotahi Peer Review Business Case guidelines and independent Quality Assurance Review

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QUEENSTOWN BUSINESS CASE
PROGRAMME DEVELOPMENT

The Queenstown area is one of New Zealand's fastest growing regions, driven by growth in population, the tourism industry and supporting activities. This growth is placing increasing pressure on infrastructure and, in particular, the transport system.

This Queenstown Business Case provides a detailed assessment of the previous work undertaken and direction set by the Queenstown integrated Transport PBC and the QTC Masterplan PBC. Both of these PBC recommended programmes, that were economically robust, sought to address the following key identified issues:

- Efficiency.
- Amenity,
- Safety,
- Resilience

While Covid-19 has affected current growth rates, these are expected to recover by the medium term and do not compromise the findings of this business case.

The agreed investment objectives of the business case are to:

1. Provide more efficient and reliable access for people and goods that:
- Sustainably manages growth
- Reduces reliance on private vehicle travel
- Enables enhanced land use

2. Is adaptable to change and disruption

3. Enhances the livability and quality of the natural and built environment

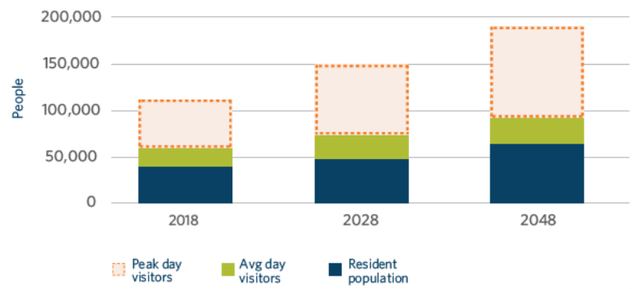
4. Enhances safety with a goal of vision zero.

A wide range of interventions and programmes have been considered in the development of this business case. The overarching philosophy when developing the preferred programme was to shift the current reliance on the private vehicle, providing users with choice, and to have a programme that is adaptive and scalable such that a response is agile to respond to uncertainties in the future.

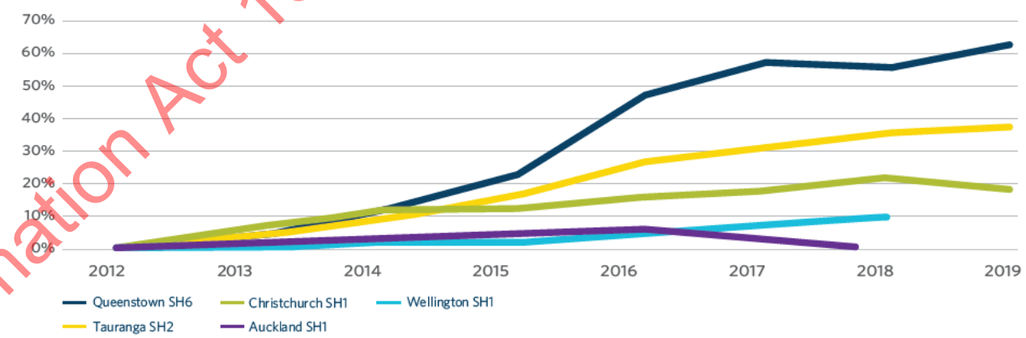
A key outcome of the assessment process was that additional road capacity for State Highway 6A (SH6A) between Frankton and Queenstown would be unfeasible due to cost and geotechnical challenges. Furthermore, a step change is required to achieve the 40% alternative mode share needed during the PM peak on SH6A by 2028 to meet the investment objectives.

The recommended programme has therefore identified a mixture of infrastructure, public transport and travel behaviour change improvements for implementation.

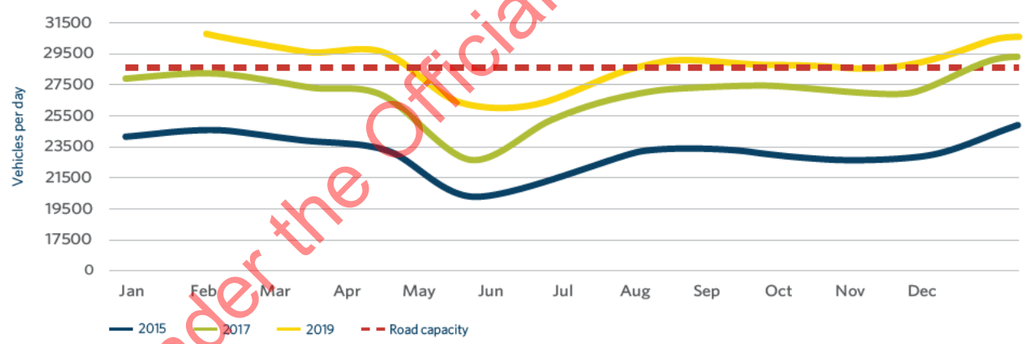
GROWTH FORECAST



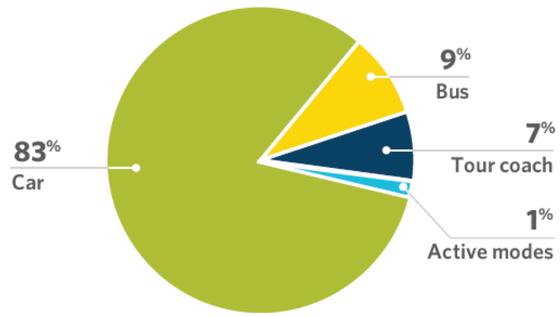
TRAFFIC GROWTH COMPARISON



SH6A FLOW PROFILES



CAR DEPENDENCY



> **"If these problems are not resolved, it is estimated that there will be between a $670M to $1.2 billion loss to the Queenstown economy, over a 40 year period, through visitors travelling elsewhere"**

Why invest?

- Peak day residential population is forecast to grow from approximately 120,000 in 2018 to 200,000 in 2048.
- Decoupling of CO^2 emissions from population growth. There is an estimated 15% reduction in overall emissions by 2048.
- SH6A practical capacity was exceeded on 140 days in 2019 resulting in high levels of delay and congestion.
- Private car trips make up 83% of trips on SH6A which is not sustainable impacts resident and visitor growth opportunities, efficiency, amenity, safety and network resilience.
- An estimated $670 million to $1.2 billion loss to the Queenstown economy will occur, over a 40 year period through reduced visitor arrivals and/or activity.

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QUEENSTOWN BUSINESS CASE
PROGRAMME DEVELOPMENT

The development of the recommended programme involved an iterative optioneering process alongside stakeholders representing local Iwi, businesses, and community groups, as follows:

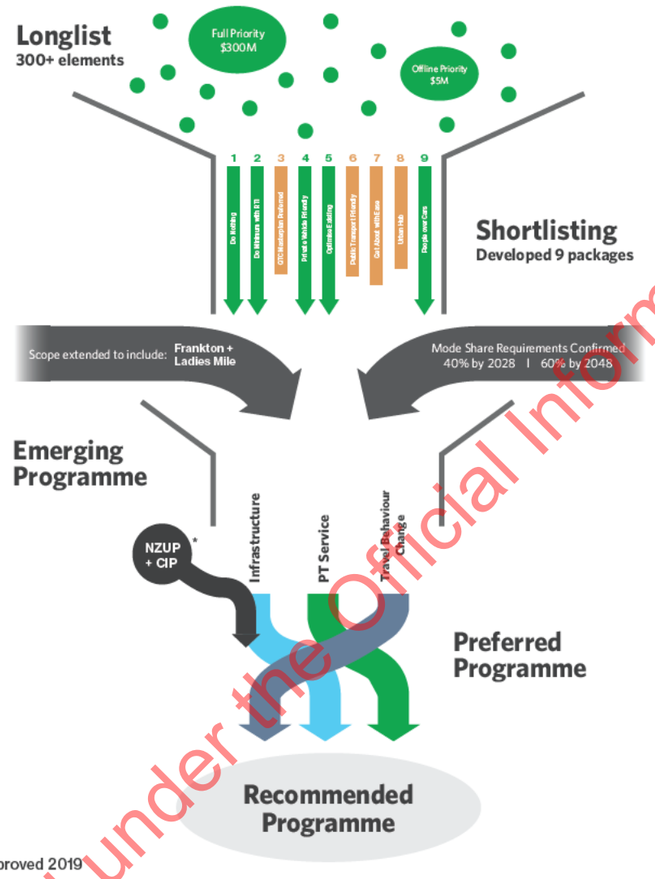
- More than 300 options were put forward (240 ideas for Queenstown Town Centre and 140 ideas for Frankton to Queenstown).
- Options that did not meet at least one of the project's Investment Objectives were omitted. The remaining interventions were then categorised into 9 multi-modal shortlist packages with different levels of public transport mode share.
- The scope of the business case includes the Town Centre, SH6A, Frankton and Ladies Mile to provide a comprehensive assessment of the Wakatipu Basin transport system.
- Integration with the Queenstown Spatial Plan, through regular communication with the spatial plan team.
- The best performing components of each package were reassembled into an optimised preferred programme.

> **"The Benefit-Cost Ratio for the committed programme phases of the overall project is 2.3"**

NZ Upgrade Programme and CIP funding was also secured in 2020 which has reduced the overall funding requirements of this business case.

Implementation of the recommende programme will enable the full value of these investments to be realized. The integrated programmed has therefore been shown in three parts:

1. Committed Activities,
2. Supporting Activities: Where funding is sought (2021-2027 NLTP Periods), and
3. Other Activities: Where programme endorsement is sought (2027+)
4. Other Activities: For noting only as potential future activities which will be subject to further evaluation.



SHORTLIST MULTI-CRITERIA ANALYSIS

More car based ↑ / More PT based ↓

	Relative Score	Ranking	IO1	IO2	IO3	IO4
Do nothing	117	9	✗	✗	✗	✗
Do Minimum + RTI	127	8	✗	✗	✗	✗
QTC masterplan preferred	248	5	–	–	✓	✗
Private vehicle friendly	161	7	✗	✗	–	✗
Optimise existing	211	6	–	–	–	✓
Public transport friendly	276	3	✓	✓	✓	–
Get about with ease	300	2	✓	–	✓	✓
Urban hub	266	4	✓	–	✓	–
Cars not needed	304	1	✓	✓	✓	✓

Note: not in ranked order

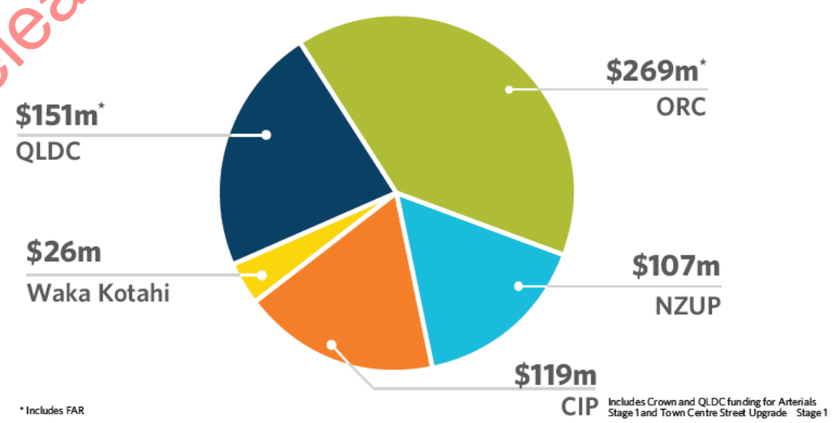
RECOMMENDED OPTION - 10 YEAR PROGRAMME

Programme	60-year NPV Cost	60-year NPV Benefit	BCR
PT Services and Infrastructure NZUP Enabled PT Services Stanley + Shotover Streets Queenstown Bus Hub	$162M	$374M	**2.3**

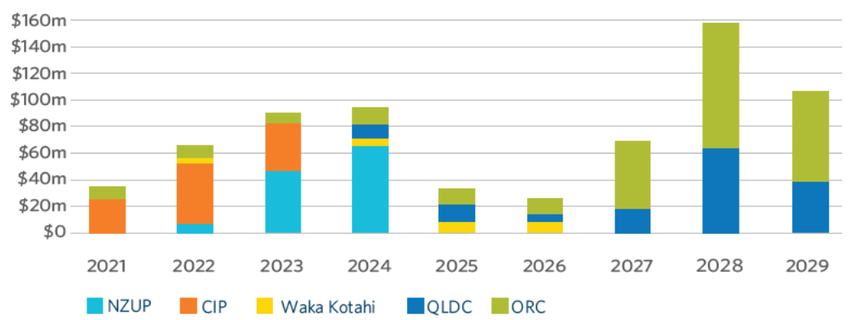
LIFETIME PROGRAMME - 50 YEAR

Full Programme NZUP Enabled PT Services Stanley + Shotover Streets Queenstown Bus Hub Town Centre Upgrades - Stage 2 Queenstown Arterial - Stage 2 Queenstown Arterial - Stage 3	$295M	$445M	**1.5**
Offline public transport (inc. Frankton Bus Hub)	$114M	$187M	**1.6**

SUMMARY OF FUNDING SOURCES - CAPEX AND OPEX (10 YEAR PROGRAMME)



EXPENDITURE PROFILE (10 YEAR PROGRAMME)



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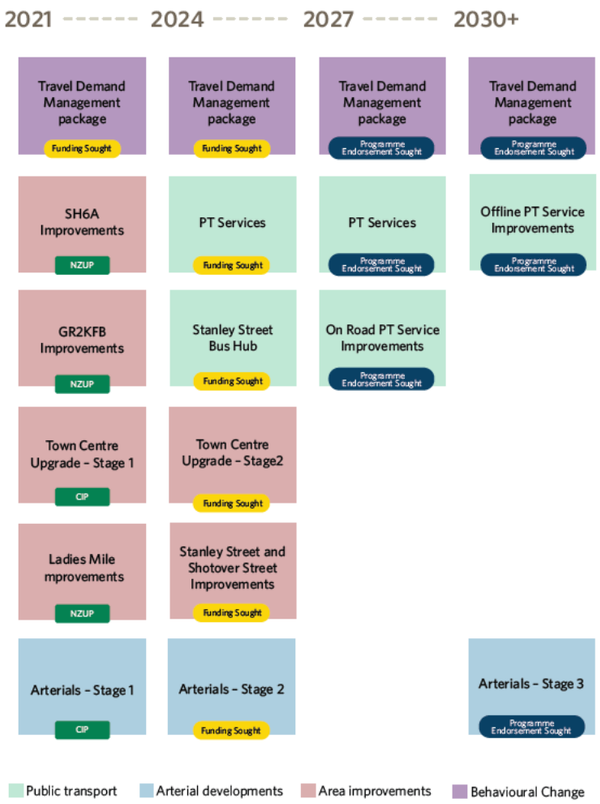
QUEENSTOWN BUSINESS CASE
PROGRAMME DEVELOPMENT

Preferred Programme

- Town Centre – Arterial Stage 1 and streetscape upgrades.
- SH6A Corrido Improvements – Targeted PT priority and intersection improvements.
- SH6 Ladies Mile Corridor Improvements - Targeted PT priority and intersection improvements.
- SH6 Improvements - Targeted PT priority, intersection improvements, town centre upgrades and an upgrade to the existing Frankton bus hub.
- Other infrastructure – Stanley Street PT Hub, Arterials Stage 2 and Stage 3, increased active mode amenity.
- Public Transport Services – Enhanced PT fleet, Ferry services and PT hubs.
- Travel Behavioural Change – Travel demand management and parking management.



Outcomes

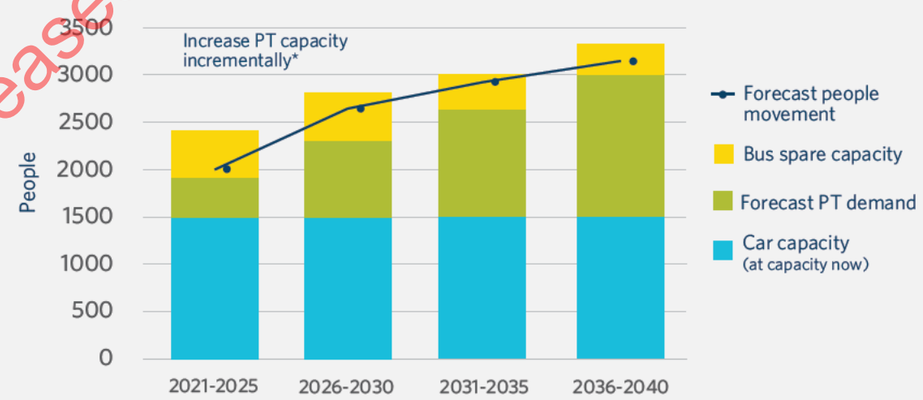
• Infrastructure to support PT services • Town centre traffic reduction • Town centre urban realm improvements	• Improved PT capacity • Town centre hub • Further town centre improvements	• BRT services • Step change in PT capacity • Reduced CO^2 emissions	• Further town centre traffic reduction • Offline PT providing additional capacity

Outcomes

I summary, the proposed interventions will deliver the following key benefits and fufill the projects investment objectives:

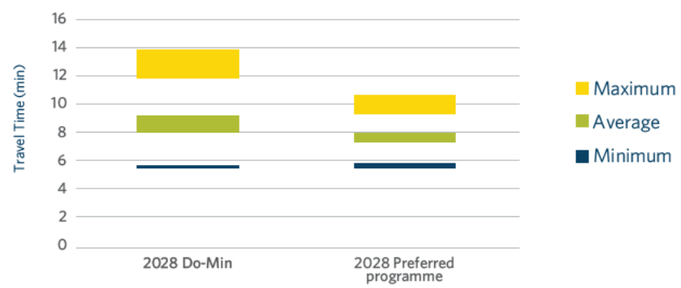
- Emissions are forecast to reduce by 15% between 2018 and 2048 despite a near doubling of the population due to a mode shift away from private vehicle usage and more sustainable vehicle types.
- Corridor capacity increases in excess of 100% on the most constrained parts of the network will allow the Queenstown area to continue the grow and flourish as a tourist destination of international standing and a high quality place to live. This is estimated to unlock between $670M and $1.2 billion of economic growth.
- The delivery of a BRT based transport system, coupled with travel demand management measures, will improve travel times across the network by over 20%, along with significant reliability improvements.
- The suite of improvements in the town centre will increase the quality of the built environment stimulating development.
- Safety and access improvements across the network.

SH6A MOVEMENT CAPACITY



*Interventions scheduled to achieve value for money and address capacity constraints

MODEL SH6A TRAVEL TIMES 11AM-12PM



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QUEENSTOWN BUSINESS CASE
PROGRAMME DEVELOPMENT

Delivery approach:

As part of the NZUP and CIP funding, an alliance approach has been agreed between the investment partners for delivery of these critical infrastructure projects.

Key risks:

Risk allocation is dependent on the procurement approach and delivery model. For the projects that are delivered through the traditional approach it is expected that most risks would remain with QLDC or Waka Kotahi, but for the alliance it is expected that many of the risks would be transferred to the alliance.

A key philosophy is that the risks will be allocated to the organisation that is best placed to manage them. This requires that the individual projects develop their own risk registers for their next stage (under the traditional approach). These would be managed together under an alliance.

The key risks outlined in the commercial case for the recommended programme are:

1. That even with the infrastructure and service improvements in place the minimum mode shift target is not achieved to maintain a functioning transport as behavioural change to travel by non-car -modes has not occurred. Mitigation includes recommending a wider transport package with travel demand management and behavioural change initiatives developed and implemented.

2. That we are not be able to rely on the compulsory acquisition provisions of the Public Works Act to acquire all the land needed in time for planned construction start date, noting that here is a significant number of portions of privately owned land that is required for the package. This could cause delay to the programme. Mitigation includes the early development of the project property strategy and the early identification of the required properties for discussions to begin with property owners. Consideration of staging of construction also may help to minimise the delay from property acquisition

3. There is a risk that the costs increase as more detailed assessment and investigation is complete. Mitigation of this risk includes the business case work going into a high level of detail to reduce this risk. Also, the parallel estimate currently being undertaken will provide a greater level of certainty with the project cost.

Next steps:

1. The Queenstown Business Case programme is endorsed by the by Way to Go partners

2. A data improvement plan and final benefit realisation plan is delivered and signed off by the Way to Go Board

3. A parking implementation plan is delivered by Queenstown Lakes District Council, that is consistent with the Parking Strategy and able to support the ambitious mode share targets.

4. That a Travel Demand Management SSBC is progressed with urgency

5. That the Public Transport Services DBC is progressed with urgency.

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WAKA KOTAHI
NZ TRANSPORT AGENCY

QUEENSTOWN BUSINESS CASE

Strategic Context

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16 NOVEMBER 2020

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PART A: THE CASE FOR THE PROJECT

1 INTRODUCTION

This is the first of seven in a suite of reports that make up the Queenstown Business Case project (the "project"), being delivered by Way to Go. It sets out the strategic context for the project.

The project originally comprised the Frankton to Queenstown (F2Q) Single Stage Business Case (SSBC) and the Queenstown Town Centre (QTC) Detailed Business Case (DBC), with Mass Rapid Transit (subsequently referred to as High Capacity Public Transport, HCPT) to be investigated to an Indicative Business Case (IBC) level. Partway through the project, Frankton and Ladies Mile were added to the scope at a SSBC/DBC level (refer Section 1.2.4) The project is effectively a 'Detailed Programme Business Case' due to the breadth of its scope, picking up on the recommended programme from the preceding Queenstown Integrated Transport (QIT) Programme Business Case (PBC). These relationships and the Business Case composition are shown in Figure 1.

WAY TO GO

Way to Go is a collaborative working group made up of partner organisations Waka Kotahi NZ Transport Agency, Queenstown Lakes District Council and Otago Regional Council. The partnership is responsible for delivering transport improvements for the Wakatipu Basin, including this business case.

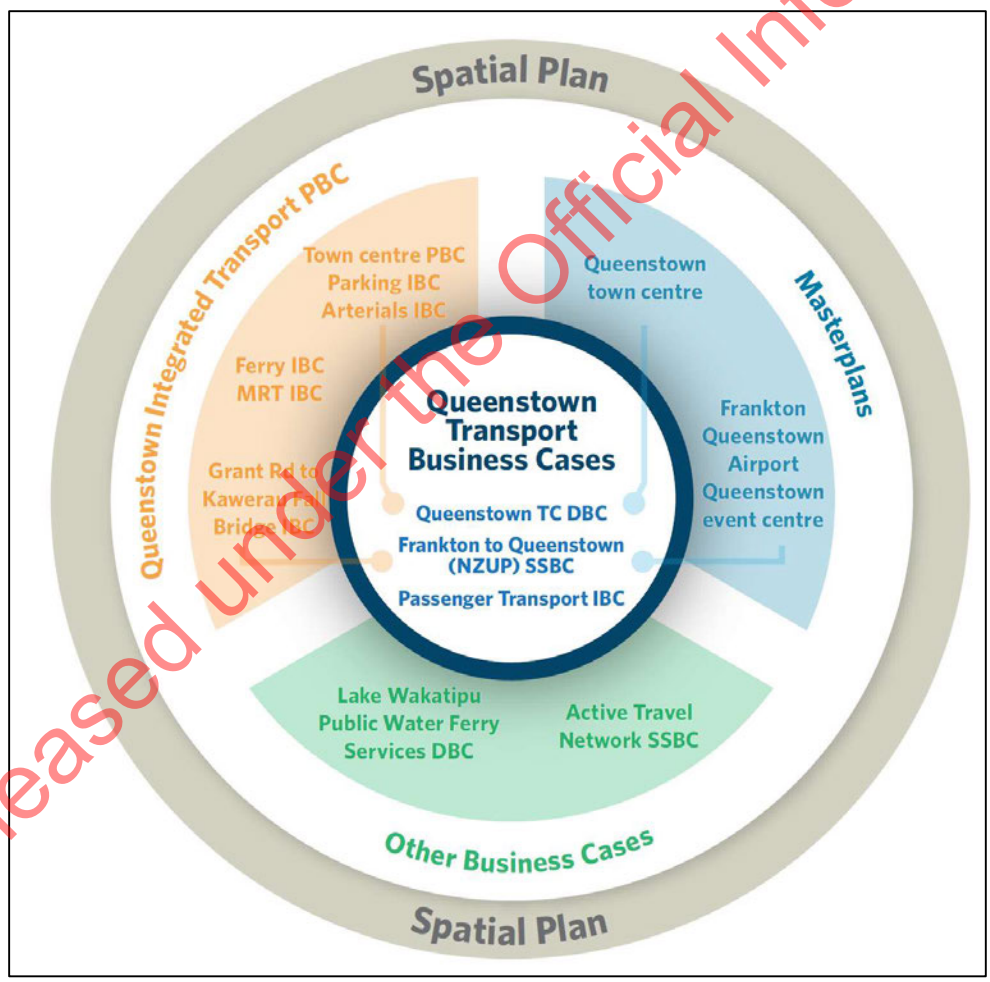

Figure 1: Queenstown Business Case composition

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1.1 Report Purpose

The purpose of this report is to:

- Document and evidence the existing and anticipated problems pertaining to Queenstown's transport network and its users.
- Re-confirm the strategic case for investment in the Queenstown transport network as established in the QIT PBC.

It forms Part A of the Queenstown Business Case (QTBC) and is intended to be read in conjunction with Part B (Developing the Programme) and Part C (Monitoring and Delivery).

1.2 How did we get here?

The well-publicised tourism boom in Queenstown has led to substantial and sustained growth in both the number of visitors and the resident population. While tourism has proved an economic boon to some areas of the community, it has also created a myriad of social and environmental issues.

Although growth has recently slowed, as a result of COVID-19 pandemic travel restrictions and the associated economic downturn, it is highly likely Queenstown will quickly recover, with QLDC predicting that growth – and its commensurate congestion and emissions - will return to previous levels by 2024. This hiatus offers the ideal opportunity to progress transport improvements so that Queenstown is well positioned for the future. Potential impacts of the COVID-19 pandemic are further discussed in Section 1.4.

A history of car-oriented development and dispersed land use has led to a lack of travel options for residents and visitors, while the ability to provide additional capacity, cost-effectively, is restricted by the area's challenging terrain. As a result, the existing transport network is beginning to show signs of strain, unable to maintain an adequate level of service for the unprecedented number of users, which is negatively impacting the liveability of the town for residents and degrading the visitor experience.

Looking into Queenstown's history gives insight into the origins of Queenstown's transport and land use challenges. As recently as 1980, Queenstown's population was 3,500 residents, most of whom lived within walking distance of the Queenstown Town Centre, with a small settlement at Frankton around the intersection of SH6 and SH6A (colloquially known as the BP Roundabout). At the time, Queenstown's visitor economy was focused around skiing in winter and being a typical kiwi holiday destination in summer.

Since then, several key developments have set off Queenstown's ongoing cycle of significant growth:

- A J Hackett launched a bungy operation from the old Kawarau Bridge in 1989, setting off Queenstown's pathway to being an adventure tourism mecca, with adventure tourism activities proliferating ever since.
- Domestic jet services began in 1989 by the then Ansett New Zealand and in 1992 by Air New Zealand. This provided non-stop flights to Queenstown from Auckland for the first time.
- International flights to Queenstown began in 1995 with Qantas flights from Sydney. Originally largely ski season services, these have evolved into increasingly frequent year-round services from Australian east coast capitals.
- Night flights to Queenstown began in 2016 which allowed the airport to better optimise its capacity within its limited footprint.

The combined effect of these were to create a much broader tourism offer in Queenstown, more attractive and more easily accessible to many more people with non-stop jet flights from the North Island and the Australian east coast capital cities.

This increase in visitor demand led to a commensurate increase in the population to service these visitors with hospitality, food and beverage and construction sectors all requiring significant workforces.

This came up against the constraint of limited flat easily developable land close to Queenstown Town Centre and the conversion of an increasing proportion of centrally located housing stock to visitor accommodation, including AirB&B.

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The flat land that was available was either in Frankton, or east of the Shotover River or south of the Kawarau River. The housing developments from the 1990s onwards were largely residential suburbs with few local amenities, meaning that the vast majority of trips required leaving the community by car. While this housing was relatively affordable by Queenstown standards, it imposed increased transport costs on its residents in the absence of good non-car travel choices.

The consequence of this was an increased number of trips by an increased number of people on trips of increasing length. This put increasing pressure on State Highway 6 and its bridges across the Shotover River (built in 1975 when the context was completely rural) and the then single-lane bridge across the Kawarau River.

The two branches of State Highway 6 meet at the BP Roundabout with State Highway 6A leading to Queenstown Town Centre where the ability of the roading network to accommodate growth is limited by the capacity of the roundabout at the Frankton end and the capacity of the town centre to absorb arriving traffic at the other end. The consequence of these two pinch points is severe congestion over significant parts of the day throughout the year on all of State Highway 6A, State Highway 6 East and State Highway 6 South with no ability to accommodate further growth in the current system (evidence in Evidence Base section).

Queenstown's stunning physical setting; extremely broad tourism offer and easy accessibility from large markets (for example, Sydney and Melbourne each have 5 million residents within around 3 hours flying time from Queenstown) means that Queenstown has continued to grow, even during the COVID-19 pandemic. In July 2020, the median house price once again breached the $1 million mark, driven by returning kiwis (the so-called 'brain gain'). [1]

While the Queenstown roading network has limited ability to accommodate future growth, land use and tourism changes mean that peak hour demand to travel between Frankton and Queenstown is predicted to more than double by 2048. In fact, the increase in demand is expected to be so large that conventional transport models often freeze up and present infinite travel times when trying to model this demand. In this situation, the only way to address issues sustainably is through mode shift, travel demand management, trip retiming, trip suppression or trip chaining (in the order of 40% of trips by non-car modes by 2028, rising to 60% by 2048).

Unlike typical urban contexts, visitors have a choice about where and when they travel. Tourism market research already shows that satisfaction with travel and parking is lower than for other metrics, while other tourism-oriented communities such as Wānaka and Te Anau have low or no levels of congestion. Those destinations are actively positioning themselves to be more attractive destinations in their own right. When insatiable desirability comes face to face with insatiable traffic congestion, the risk is that visitors will choose to spend time in place where they don't spend significant time stuck in traffic jams. The opportunity cost to the Queenstown economy from failing to meet latent demand has been estimated at $750 million (with a further $150 million cost to the national economy) (refer to economic analysis in Technical Note 26: Effect of Transport Constraints on Tourism -see Appendix D02).

Announced investments by central government such as the NZ Upgrade programme bus priority investments provide a platform for addressing transport challenges by facilitating more sustainable travel choices. But these investments do not provide the public transport services to make use of the investment.

1.2.1 Key Challenges

Driving the transport-specific problems laid out later in this document, there is a complicated broader context that has ultimately led to the need for this project, as summarised in Figure 2. Transport Problems, opportunities and constraints are explored in more detail later in this strategic context.

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[1] https://www.odt.co.nz/business/property/otago-median-house-prices-record-high accessed on 7th October 2020

Uncertain growth	Challenging construction terrain, Outstanding Natural Landscape	Increasing demand and conflict between modes	Land use, transport system interaction	Large visitor numbers, low ratepayer base	Constrained funding environment, NLTF uncertainty

Figure 2: Key challenges

1.2.2 The Three Pillars

Continuing the theme from the QIT PBC, the Queenstown Business Case is founded on an integrated transport approach comprising three pillars of investment (Figure 3). As documented in Changes Since the PBC, **Infrastructure** alone will not address Queenstown's transport problems.

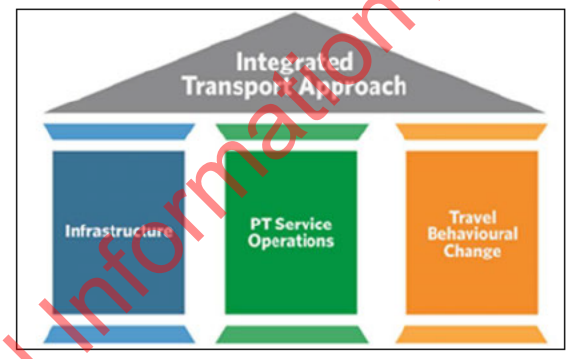

Figure 3: Three Pillars of Investment

The Future PT Demand Model (refer Section 4.3.4) identified that significant **PT service** upgrades would be required for the infrastructure upgrades to provide any benefit (that is, a bus lane cannot transport any people without buses).

Forecasts from the Future PT Demand Model also highlighted that, even with substantial public transport improvements and associated mode shift, the road network would not be able to accommodate anticipated demands as car travel would remain attractive thanks to low-cost and unrestricted parking. Additional **travel behavioural change** measures would be required to maintain a functioning network.

1.2.3 Project Extents

The project originally comprised the F2Q SSBC and the QTC DBC, with the objective of developing investment cases for each geographic area. Through the course of the project, it was recognised that a connected network-wide response would be required to avoid misalignment between packages and to maximise benefits. The geographic extents of the project were therefore expanded to include Frankton and Ladies Mile, as shown in Figure 4, building on a previous business case for the section of Frankton around the SH6/SH6A intersection, the Grant Road to Kawarau Falls Bridge SSBC. No previous business case exists for Ladies Mile, though Waka Kotahi are familiar with the area through the Ladies Mile Housing Infrastructure Fund (HIF) Integrated Transport Assessment and business case.

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Figure 4: Project Extents

1.2.4 Frankton Scope Expansion

The need to incorporate Frankton and Ladies Mile into the project study area was identified during optioneering and transport modelling for SH6A. It was determined that the level of service along the corridor, for public transport in particular, is highly dependent on the amount of traffic able to move in to and out of Frankton. The original scope, restricted to the SH6/ SH6A intersection, was at risk of resulting in an incomplete programme of interventions that did not address knock-on impacts elsewhere in the network.

The scope expansion enabled the project team to integrate the proposed solutions for Frankton to Queenstown and Queenstown Town Centre, with work done previously for the Grant Road to Kawarau Falls (GR2KF) SSBC (see section 1.3.3 below). Weaving the projects together was dependent on the compatibility of strategic cases, both of which identify rapid growth and car dependency as the crux of transport problems in the area. As a result, options developed for the GR2KF SSBC were easily absorbed by the project, with some changes to accommodate the updated approach.

1.3 Past Business Case Stages

The QIT PBC, endorsed by the Waka Kotahi board, is the overarching strategic transport document that recommends a programme of investments for the overall Queenstown network.

The F2Q component of this project is a continuation of the process from 'Programme' to 'Indicative' and 'Detailed' (now Single Stage), providing detail for the preferred option for that section of the network. The QTC component has been through intermediate steps as part of the Queenstown Town Centre Masterplan, which included a transport PBC and several transport IBCs.

1.3.1 Queenstown Integrated Transport Programme Business Case (2017)

The QIT PBC identified two key problems:

- Significant growth in visitors, residents and vehicles, leads to increasing trip unreliability and worsening customer experience across the network
- Car dominance and associated congestion is affecting the liveability and attractiveness of the area.

Mode neutrality was a key theme of the business case as it was identified that road capacity alone would only partially address the identified problems. This did not necessarily mean equal investment for all modes as, for

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example, improving active travel could help reduce congestion without the need for specific investment in road infrastructure.

The QIT PBC recommended programme of activities is shown in Figure 5.

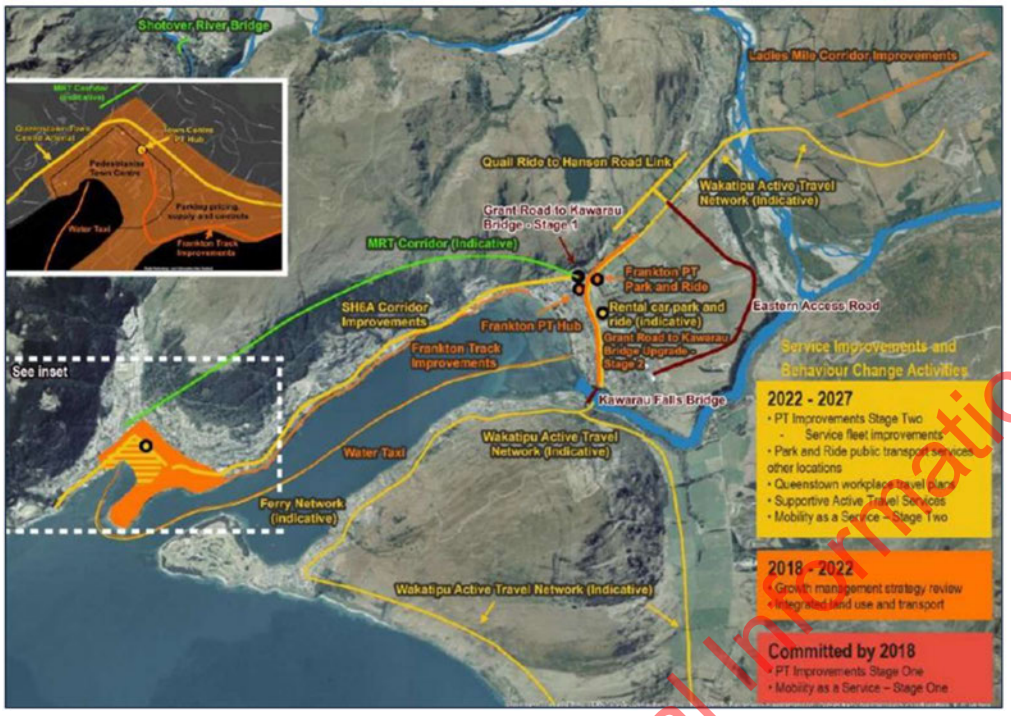

Figure 5: QIT PBC Recommended Programme (2040)

The recommended programme was intended to promote a modal shift to more sustainable transport modes and includes a combination of the three pillars - infrastructure, service and Travel Demand Management (TDM) measures.

The priority projects were:

- Public transport improvements – increased service frequencies, bus priority, Park and Ride, and a Mass Rapid Transit (MRT) corridor between Queenstown and Frankton (Figure 5 indicates a gondola over Queenstown Hill as a MRT option, though bus rapid transit and light rail are also suggested).
- Parking – changes to cost, provision, and management of parking.
- Town Centre Arterials – upgrades and connections to existing road corridors to provide a new route around the edge of the town centre, enabling the removal of traffic from Stanley Street, Shotover Street, and the historic core.

The estimated programme cost was $447 to $647 million, with a benefit-cost-ratio (BCR) in the range of 0.7-1.0.

By 2045, the programme is intended to achieve:

- 30% non-car mode share (up from 15%).
- 7% fewer vehicles per hour (F2Q).
- 16-minute faster travel time during peaks for journeys between Frankton and Queenstown.
- 3-minute travel time variability during peaks for journeys between Frankton and Queenstown.

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1.3.2 Queenstown Town Centre Masterplan Programme Business Case (2017)

As part of the Queenstown Town Centre Masterplan, a transport PBC was undertaken to develop the investment case for the transport elements of the programme. Detail on the broader masterplan is provided in Related Projects (see section 1.9 below). The programme is summarised in Figure 6.

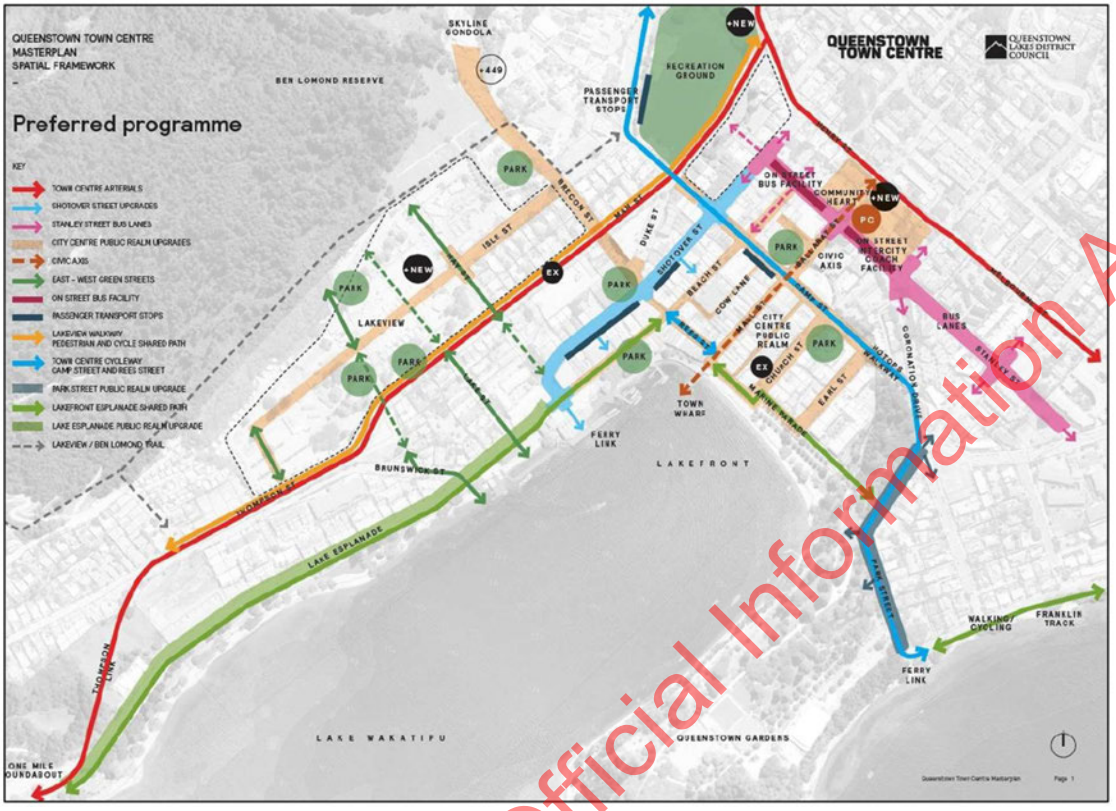

Figure 6: Queenstown Town Centre Masterplan - Preferred Programme

The preferred programme (#6) identified in the QTC Masterplan included an amalgamation of the preferred options from individual projects and included:

- New town centre arterials from Melbourne Street to One Mile Roundabout
- Improved parking supply and management
- A new 6-8 bay public transport hub on Stanley Street
- Development of wharf facilities to support waterborne transport
- A programme of public realm improvements, such as the 'Gardens to Gondola' route, that aim to enhance the visitor and local experience in the town centre through enhancing streets and lanes, improving connections between attractions and celebrating Queenstown's unique heritage and culture
- Introduction of technology to better manage and connect people with public transport and parking options
- Improved walking and cycling routes and facilities in the town centre, supporting the uptake of active transport and integrating with wider networks
- Marketing communications campaigns to better educate people on transport options.

The programme cost was estimated to be $385 million and achieved an indicative BCR of 1.7. When assessed against the 2018-2021 Waka Kotahi Investment Assessment Framework, the programme performed strongly against both the criteria for the "High" and "Very High" results alignment requirements.

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1.3.3 Grant Road to Kawarau Falls SSBC (paused in 2018)

Undertaking the GR2KF SSBC was a recommended activity from the Queenstown Integrated PBC. It investigated the need for investment in the key section of the network around the 'BP roundabout' (SH6/SH6A intersection). The project was absorbed into the Queenstown Business Case when the scope was expanded to Frankton and Ladies Mile.

Problem statements adopted for the project were:

Problem 1. The transport system is not providing for growth in a timely manner resulting in the increasingly inefficient movements of goods and people (70%)

Problem 2. The existing transport system favours cars at the expense of investment in and use of alternative modes which makes it difficult to encourage change (30%)

In addressing these problems, the intent of the GR2KF SSBC was to increase the throughput of vehicles at the SH6/SH6A intersection during peak periods and improve access to key destinations in and around Frankton.

That business case was carried out in two stages, with Stage 1 identifying the need for immediate capacity improvements at the BP roundabout. The project was paused during Stage 2 when it was recognised that the project would be ineffective in isolation and a broader understanding of adjoining areas and future public transport demand would be needed to develop an integrated solution.

Much of the GR2KF SSBC, including problem statements and investment objectives, was directly relevant to the Queenstown Business Case (more detail on integration of problem statements is provided in Defining the Problems). Options developed for the GR2KF SSBC including intersection improvements, HOV lanes, active mode connections and the critical SH6/SH6A intersection, were consulted on with stakeholders and the community, and have been reviewed and updated to integrate with the expanded scope of this project.

1.4 COVID-19 Impacts

The local economy has been severely impacted by the COVID-19 pandemic. QLDC estimates that over 60% of the district's population is directly or indirectly employed by the tourism industry[2], which has been devastated by the drop in visitor numbers caused by travel restrictions. This has seen unemployment rise to 11% with almost 20,000 welfare requests received by 12 June 2020.

Using airport passenger movements (Figure 7) as a proxy for the health of the tourism industry in Queenstown, the impacts of COVID-19 are evident. Despite a busy school holiday period[3], movements in June 2020 were down 75% from the previous year, including a complete cessation of international travel. It is unlikely that international visitors will return in the short term, and the domestic market is largely restricted to school holidays.

In terms of impacts on the transport network, general demand for travel around the district has reduced. In addition to lower visitor travel, the pandemic has caused unemployment to rise, meaning fewer work trips are made on the road. Traffic volumes have reduced to approximately 2016/2017 levels (except for school holidays), and anecdotally, bus patronage has reduced substantially.

The Queenstown Business Case uses population and visitor growth projections endorsed by QLDC[4] that forecast growth returning to pre-COVID levels in 3-5 years. However, substantial uncertainty remains around future demand for travel in the district. Growth rates are sensitivity tested throughout the business case.

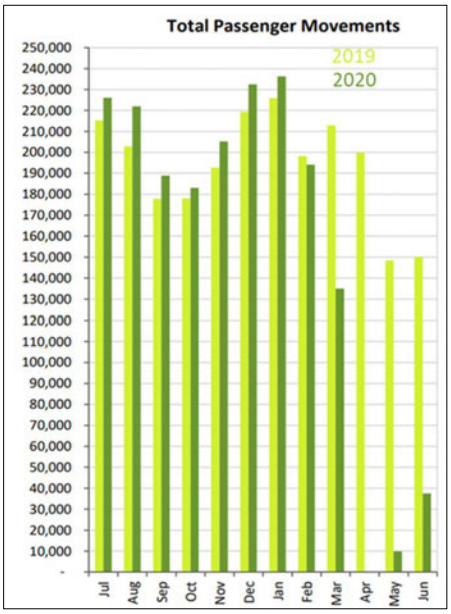

Figure 7: Queenstown Airport Passenger Movements Year to July 2020

[2] Queenstown Lakes District Council COVID-19 Intelligence Report (June 2020)
[3] Skiers in record numbers at Queenstown resorts, but overall visitors down, NZ Herald (July 2020)
[4] Queenstown Lakes District Population Projections Post-COVID (September 2020)

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Waka Kotahi's strategic Arataki document highlights the following potential COVID-19 impacts on Queenstown's land transport system:

- Pressure on transport revenues, including road user charges, fuel excises and public transport fares, from reduced travel demand
- Increased importance of providing access to employment and essential services by a range of modes
- Transport will need to support the recovery of the tourism industry. The downturn provides an opportunity to re-evaluate what infrastructure is required and where, and the scale and sequencing of growth and investment.

It is clear that despite the removal of immediate growth pressures which were the original driver for change, the case for investment in the Queenstown transport network remains strong. Furthermore, the current temporary reduction in demand represents an opportunity to make changes to the network with slightly reduced construction effects.

1.5 Changes since the PBC

Several one-off infrastructure investment packages have been announced for Queenstown by central government in response to different pressing issues, such as rapid growth and the economic downturn caused by the COVID-19 pandemic.

In isolation, the projects committed will not solve Queenstown's transport problems, and without further supporting investment in public transport services and demand management measures, could be left 'high and dry' without achieving any material benefits.

The Queenstown Business Case explores the additional investment required to ensure a fully integrated infrastructure package that unlocks the benefits intended by the already-committed funding. Non-infrastructure improvements, in areas such as Travel Demand Management and public transport services, are crucial to break Queenstown's traditional dependency on private car travel and ensure that investment in infrastructure is not undermined by continued growth in traffic volumes.

1.5.1 New Zealand Upgrade Programme

The NZ Upgrade Programme (Figure 8), announced while this business case was underway, was born out of a surplus in the central government budget of $12bn. Queenstown received $90m in funding to build on the recent success of the new bus service, with new public transport projects across the network. The package of investments was heavily influenced by the emerging findings of this business case.

Figure 8: New Zealand Upgrade Programme Queenstown

As the package is funded through Crown investment, it is limited to assets on Crown land, and includes:

- Bus lanes on SH6 through Frankton
- Intersection upgrades (including SH6/SH6A) with bus priority on SH6A
- Upgraded bus hub on SH6
- Grant Road to Kawarau Falls improvements (from the GR2KF SSBC)
- New roundabout at Howards Drive (Lake Hayes Estate access)
- New underpass at Ladies Mile

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The package is intended to promote mode shift away from private cars by prioritising public transport and making active mode access safer and more convenient. This business case provides further definition of the projects that will make up the Queenstown NZ Upgrade Programme. Construction is expected to begin in late 2021.

1.5.2 Economic Stimulus Package

As part of the government's COVID Response and Recovery Fund, $3bn has been allocated to infrastructure projects nationally, including $708m for transport. Of this fund, $85m is committed for Queenstown, namely for town centre streetscape improvements ($35m) and Stage One of the Queenstown Arterial Route ($50m).

The town centre streetscape improvements aim to enhance the amenity and quality of the public realm on Brecon Street, Beach Street, Rees Street and Park Street, completing the 'Gardens to Gondola' active mode route. The project has a target start before the end of 2020.

The Stage One Arterial project will provide a new route for traffic between Frankton Road and Shotover Street, effectively connecting and upgrading existing roads Melbourne Street and Henry Street. The project is intended to remove general traffic from the Stanley Street bus hub and enable land use development in the town centre. Fast Track Designation is underway for the full Arterial Route (Figure 4 – Interdependent Projects Section) and construction is expected to commence in July 2021.

1.5.3 Housing Infrastructure Fund

The Housing Infrastructure Fund was established by the Ministry of Housing and Urban Development to enable the delivery of core infrastructure supporting housing development in response to the national housing affordability crisis. The contestable fund is made up of $1bn worth of 10-year interest-free loans for high growth areas.

Three projects have been approved for Queenstown:

- Kingston
- Quail Rise South
- Ladies Mile

Funding approved for Quail Rise South includes bus stop shelters, pedestrian/cycleway underpass and an arterial road connecting to SH6. Long term transport issues at Ladies Mile need to be addressed before that development is approved; at the time of writing, a second master planning exercise is underway.

1.5.4 Other Transport Investments and Actions

In March 2016, the $8.2 million State Highway 6 east Glenda Drive Intersection Improvements Project was completed, providing for a four-lane alignment between Hardware Lane and Grant Road, including new roundabouts at Grant Road and Hawthorne Drive.

In early 2017, a $1.36 million upgrade of the BP Roundabout was completed to provide two circulating lanes on the roundabout towards Queenstown and additional stacking and turning space on most approaches. This was designed to maximise the capacity of the roundabout in advance of more significant future changes.

In November 2017, a new bus network was implemented in Queenstown, replacing the previous commercially provided Connectabus network. The network was built around a frequent trunk spine service between Fernhill and Remarkables Park via Queenstown Town Centre, supported by a range of feeder services in a largely hub and spoke model centred on Frankton. More detail is provided in section 1.6.1.

In December 2017, the $22 million Hawthorne Drive project was completed providing an eastern bypass of Frankton from State Highway 6 south to State Highway 6 east avoiding the often congested BP Roundabout.

In May 2018, the $22 million two-lane Kawarau River Bridge was opened on State Highway 6 south, replacing the 1926 traffic-signal controlled single-lane wooden bridge.

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A $6.4 million upgrade of the intersection of State Highway 6 with Tucker Beach Road was completed in May 2019, addressing a significant safety issue for vehicles turning right out of Tucker Beach Road by providing an underpass and acceleration lane to join State Highway 6 westbound.

1.6 Economic Context

The environment around Queenstown echoes Tolkien's Middle Earth – deep hidden valleys, barren tussock lands, and remote mystical mountains. The magnitude of the dramatic natural scenery is matched only by the adrenaline-fuelled activities that have led to Queenstown's position as a global adventure tourism mecca. Such is the attraction of the area, up until now there has been little need for the local economy to diversify, and Queenstown is now notoriously reliant on the tourism industry.

1.6.1 Setting the Scene

Prior to the COVID-19 pandemic, tourism accounted for 64% of all jobs in the district[5]. Accommodation and food services contributed 17.3% of the district's GDP (compared to 2.2% nationally), while construction contributed 10.7% (compared to 6.4% nationally)[6]. These figures speak to the importance of tourism to the local economy, construction's share reflecting the rapid growth seen in the district.

Figure 9: Annual Tourist Spend by District YTD August 2020 (Source: MBIE)

Although vulnerable to economic shocks, such as the COVID-19 pandemic, Queenstown's contribution to the regional and national economy is unquestionable. Even in the year to August 2020, affected by the pandemic, Queenstown Lakes District ranked second in tourism spend (Figure 9). Queenstown is also New Zealand's most popular destination outside of Auckland (where numbers include transit through the international airport).

Prior to the pandemic, international visitors who come to New Zealand to visit Queenstown spent $157–$254 million per annum in the rest of the South Island (excluding Queenstown). This spending generates $988 million–$1.10 billion to the South Island's GDP, and 9,600–11,600 jobs in the South Island. New Zealand as a whole also benefits from the Queenstown visitor experience. Visitors who come to New Zealand to visit Queenstown spend a total of $1.44–$1.74 billion per annum nationally. This spending contributes $1.3–$1.6 billion to New Zealand's overall GDP and 13,700–17,000 jobs nationally[7].

Economic performance in the district, as measured by GDP, has grown above national rates consistently since 2001 (Figure 10). Between 2013 and 2019, GDP growth in Queenstown was at least 2.1% higher than the national rate, reaching a peak gap of 7.4% in 2016.

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[5] Economic impact of COVID-19 on Queenstown-Lakes, Infometrics (2020)
[6] Queenstown Lakes District Overview Annual Economic Profile, Infometrics (2019)
[7] Sustaining Tourism Growth in Queenstown, Martin Jenkins (2018)

Figure 10: Annual Average GDP Growth

1.6.2 Signs of Strain

Unabated growth in Queenstown has led to a commensurate rise in house prices, meaning home ownership is unrealistic for many locals, particularly those working in the service and tourism sectors (which make up 64% of the workforce). Even during the economic downturn caused by COVID-19, where unemployment has risen drastically, median house prices exceeded $1 million[8]. The average house value to average annual earnings in 2018 was 20.6:1. Comparing this to ratios of 10:1 in Nelson and 16.6:1 in Auckland indicates the extent of the increasing crisis.

Pre-COVID, Queenstown ratepayers were facing an increasing burden to pay for infrastructure used by non-paying visitors. Among New Zealand's main tourist centres, Queenstown has an unparalleled ratio of 34 international tourists-to-residents. The overall number of international visitors to Queenstown in 2016 was higher than the number of international tourists who visited Christchurch, which has a resident population 10 times that of Queenstown. Historically, investment in infrastructure by government has been guided by the number of residents in a town or region, which in Queenstown's case has resulted in chronic under-investment. In line with the paragraph above, realistic alternatives to pay for much-needed infrastructure upgrades are limited. A visitor levy for Queenstown was backed by the Government in 2019 to help pay for investment in infrastructure, though this was parked in the wake of the COVID-19 pandemic[9].

Capped Growth

Failure of central Government to intervene in Queenstown's transport problems will allow congestion to worsen (travel demand is forecast to double on SH6A by 2048), with associated degradation of liveability and the visitor experience. Ultimately, this will artificially cap growth, causing Queenstown to stagnate.

Visitor feedback already indicates that the single biggest negative, in an otherwise highly regarded visitor experience, is traffic issues. The risk of Queenstown being bypassed by visitors is materialising as the ability to travel around the district worsens.

The loss to the local economy caused by forecast 'unmet demand' has been calculated at $750 million (refer to Technical Note 26: Effect of Transport Constraints on Tourism). Although some demand will disperse to other parts of the country, Queenstown's importance to the national tourist offering translates to a cost to the national economy of $150 million.

1.6.3 Implications of COVID-19

An assessment of economic impacts caused by the COVID-19 pandemic by Infometrics[10] forecast economic activity (in GDP) to contract by 23.3% in the year to March 2021 (compared to an 8.0% contraction nationally). Employment is projected to fall by 25.3% in the same period, translating to a loss of 7,900 jobs. In terms of total job losses, this figure is only beaten in the main centres. Unemployment is expected to reach 18.5%, up from

[8] Queenstown Real Estate Sales - Monthly Housing Statistics (accessed September 2020)
[9] Visitor levy on hold, Otago Daily Time (April 2020)
[10] Economic Impacts of COVID-19 on the Queenstown-Lakes Economy – Early Estimates, Infometrics (May 2020)

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1.1% pre-COVID and significantly above the national figure of 9.0%. The resulting economic cost is expected to be $270m.

However, forecasts published by QLDC indicate a less dramatic downturn, with visitor and resident growth expected to return to pre-COVID levels in 3-5 years[11].

No significant changes are expected in the nature, scale and location of transport demand over the medium to long term with the 10-year outlook remains largely unchanged. Therefore, investment in public and active transport services to support the COVID-19 recovery is critical to enable a more effective and diverse travel choice. In particular, investment in public transport would play an important role in further strengthening mode shift that will influence the future of travel in Queenstown.

1.7 Transport Context

Queenstown's transport network operates around a spine of State Highway 6, connecting Frankton with the eastern corridor (towards Cromwell) the southern corridor (towards Kingston), and a spur to the town centre along SH6A (Frankton Road). Historic settlements Arthurs Point and Arrowtown are connected by Primary Collectors, Gorge Road and Malaghans Road, while most residential subdivisions are accessed from the highway by local roads (Figure 11).

Figure 11: Queenstown Road Network

Historically, Queenstown has been a rural town with a relatively low population and little traffic congestion. The public transport system was modest until 2017, when a new bus system was introduced. Ferries play a supplementary role, mainly carrying low numbers of tourists. A comprehensive trail network supports recreational cycling and walking and is being transitioned into a commuter network. This resulted in overwhelmingly car-oriented design throughout the district and has led to ingrained travel behaviour. Only

[11] Queenstown Lakes District Population Projections Post-COVID (September 2020)

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following the recent tourism boom (post 2005), and associated increase in traffic volumes, has there been a need to provide alternative transport options.

1.7.1 Public Transport

A new bus network (Figure 12) was introduced in November 2017, comprising 4 routes operating at regular frequencies from 06:00 to 00:45, 7 days a week. Route 1 (Town Centre to Remarkables Park via Airport) runs on a 15-minute frequency all day while all other routes run on 60-minute frequencies, increasing to 30 minutes during peak hours, except Route 3 (Kelvin Heights to Frankton Flats).

In January 2020, following lobbying from the community, Route 4 was replaced by a peak-hour direct Lake Hayes to Town Centre service and Jacks Point to Frankton service, which now operate over all hours of service. The Fernhill route has also been extended to Sunshine Bay throughout the day. Due to limitations of existing ticketing data, the effect of the 2020 changes on patronage is not yet known.

In September 2020, the 'Bee Card', an integrated ticketing system, was introduced. The change to a tag on-tag off system will provide granular data on public transport users' origin destination movements, something that was lacking for this project. Cash fares were reduced from $5 to $4 and airport fares were reduced from $10 to $4. Additional changes to routes include use of Shearer's Road between Grant Road and Hawthorne Drive, removing the need for the precarious three-point turn in Five Mile Shopping Centre.

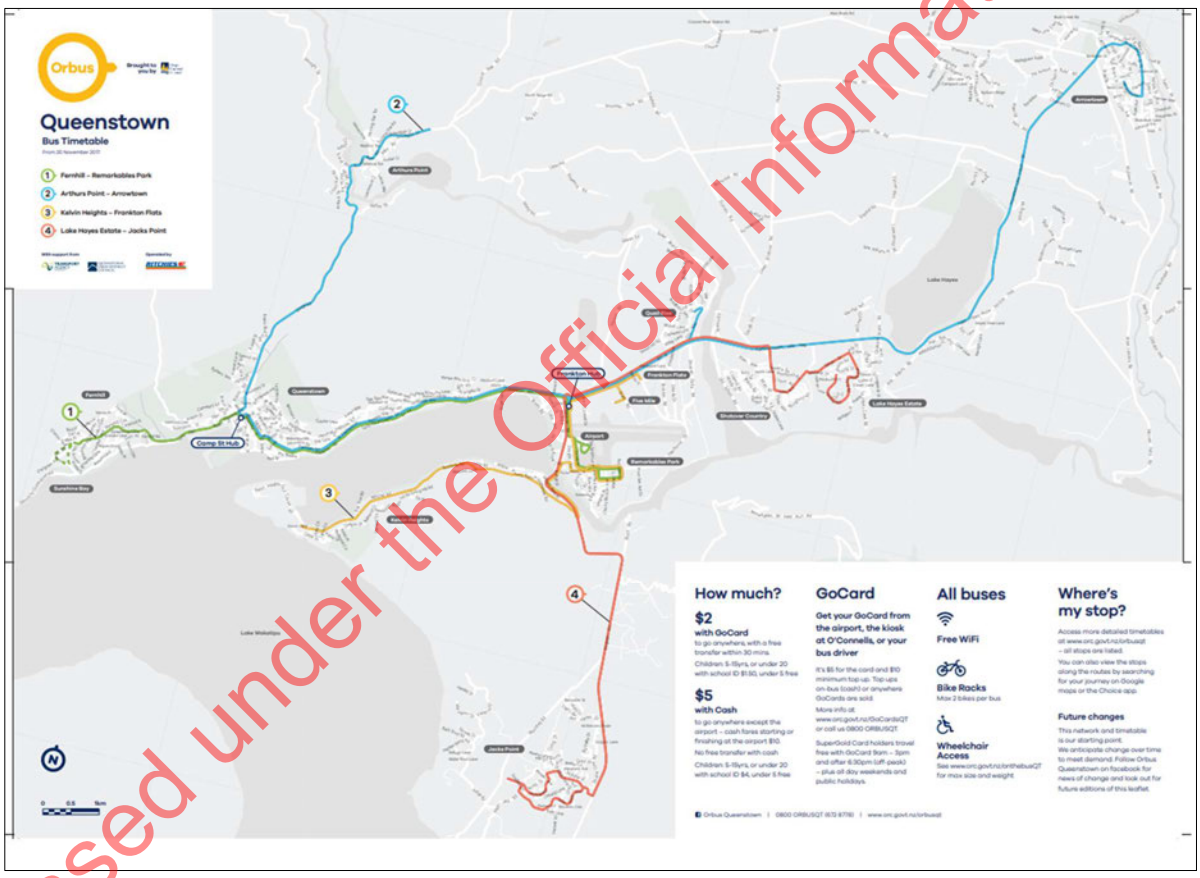

Figure 12: Queenstown Bus Routes

The introduction of a flat $2 bus fare and increased parking charges in November 2017 caused a 192% increase in patronage between June 2017 and June 2018, highlighting the potential for step-change growth in public transport in Queenstown (refer to Figure 13).

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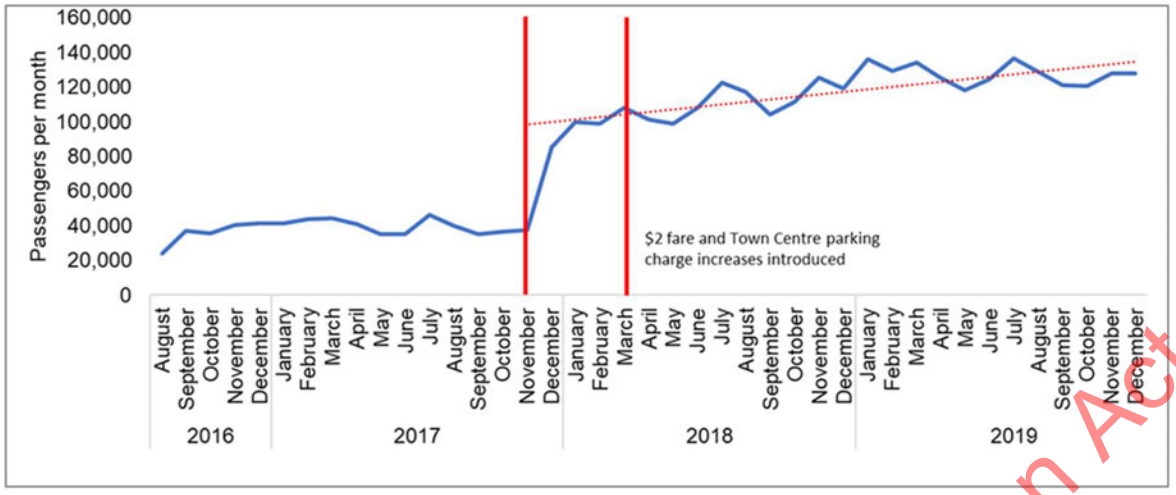

Figure 13: Wakatipu Bus Patronage (Source: ORC Bus Patronage Data via Email)

Following the initial step change, steady patronage growth continued between 2018 and 2020. Bus hub observations undertaken in November 2019 indicate that the system was reaching capacity[12] (pre-COVID – refer Section 1.4), with standing room only on peak hour buses. Further upgrades to hubs, route frequencies, transfer reliability and travel time reliability will be required to attract remaining latent demand and avoid deterring existing patronage as levels of service drop.

From November 2018, Go Orange has operated a scheduled ferry service on the Frankton Arm of Lake Wakatipu. The service currently operates on an hourly timetable with two vessels travelling in opposite directions around the lake, running from 07:30 to 18:30 (22:30 on Fridays and Saturdays). Tickets are $9 for a single, $15 for a return or $49 for a 10-trip concession. According to Go Orange, the ferry service has been popular and reached a milestone of 100k trips by October 2019, 10 months after it began operating. ORC announced in January 2020 that the existing service would be subsidised in the short term while it planned a full funding arrangement with Way to Go partners.

Queenstown Ferries

The Lake Wakatipu Public Water Ferry Service DBC (Arup 2019) found that a subsidised Frankton Arm ferry service would deliver a BCR of 1.1, with expanded services to Jacks Point, Lake Hayes or Fernhill producing BCRs below 1. Patronage forecasts are low due to the lakeside being relatively inaccessible except in low density residential areas such as Kelvin Heights

1.7.2 Queenstown Town Centre

The Town Centre is effectively located at the 'end of the line', separated from other centres by mountains and the lake, making it difficult to serve with transport routes. It also happens to be the biggest source of employment in the district, and the primary destination for visitors due to its historic core, spectacular alpine scenery and concentration of tourist attractions. This combination of effects means that large numbers of people travel to the town centre, primarily by car, to spend time on foot enjoying the ambience, generating an increasingly large conflict between movement and place.

Figure 14: Shotover Street Looking East

This conflict is exemplified by Shotover Street, the town's main thoroughfare (and

[12] Stanley Street Bus Hub Observations Memo, WSP (November 2019)

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state highway), serving up to 18,000 vehicles and 7,000 pedestrians per day. The road has zebra crossings, on-street parking, loading bays and even on-street dining, shown in Figure 14.

1.7.3 Frankton to Queenstown

The primary function of the Frankton to Queenstown corridor is providing movement between Queenstown's two main centres. It is the only highway providing access to Queenstown, and further afield to Glenorchy/ Mt Aspiring National Park. However, as a result of Queenstown's growth and minimal land availability, land use has developed along the route, with multiple accommodation providers and a residential population of up to 3,000 people. This has led to increasing demand to and from side roads and accesses along the state highway, resulting in increasing conflict.

The route is also inextricably linked to the performance of the town centre network. As the receiving environment, the town centre effectively caps the amount of traffic able to travel through the Frankton to Queenstown corridor. Similarly, uncontrolled amounts of traffic leaving the town centre can overload SH6A, particularly in the PM peak. The Frankton track along the edge of Lake Wakatipu provides walking and cycling access between Frankton and Queenstown and is proposed to be upgraded as part of the Wakatipu Active Travel Network. Access to the track is currently limited to a few points along the route requiring switchbacks or use of stairs.

1.7.4 Frankton and Ladies Mile

The recent increase in development in Frankton is closely linked to the value uplift in the town centre. Big box retail has thrived in Frankton in recent years, with over 80 businesses opening at the Queenstown Central and Five Mile retail centres.

Free and largely unrestricted parking drives increased car dependency across Frankton. This is exacerbated by dispersed land uses with poor connections due to severance caused by the airport. This severance makes it not only difficult to walk or cycle, but also difficult to serve the area effectively (and attractively) with public transport. A public transport hub is located at the main intersection of the eastern and southern corridors of SH6 – (the 'BP roundabout'). This hub still requires transfers for some trips but is well located to minimise additional travel time and delay. Despite Frankton being relatively flat with fewer competing demands for land, there are minimal active mode connections around the area, particularly between the Events centre and Five Mile retail centre.

The 'Ladies Mile' corridor also has well publicised traffic issues during the morning peak, with queues extending up to 2km from the Stalker Road roundabout. The large residential subdivisions of Lake Hayes Estate and Shotover Country are poorly served by public transport due to their circuitous layouts, restricting the potential catchment for public transport. This, in combination with free unrestricted parking in Frankton, leads to high mode share for car, in spite of long queues over the Shotover Bridge.

1.7.5 Queenstown Airport

Queenstown airport is somewhat a totem of tourism in the district: some see it as enabling economic prosperity, while others see it as unsustainable and environmentally damaging. In terms of generating road traffic, the airport's impact is often overstated, only accounting for approximately a third of all arrivals to the district (the remainder arriving by car)[13], and most travel occurring outside of typical peak hours.

However, growth projections indicate a trebling of demand by 2035, leading to plans for expansion, or even relocation, both of which have been met with community resistance. As shown in Figure 15, annual passenger demand at Queenstown Airport is forecast to increase from 1.8 million in 2016 to 3.2 million in 2025, 6 million in 2035, and 7.1 million in 2045[14]. These forecasts were developed prior to the onset of the COVID-19 pandemic; however, the expectation is that growth will resume and are therefore still considered as relevant for longer term infrastructure planning.

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[13] Understanding current and forecast visitor flows to the South Island (2018)
[14] Queenstown Airport Masterplan (2017)

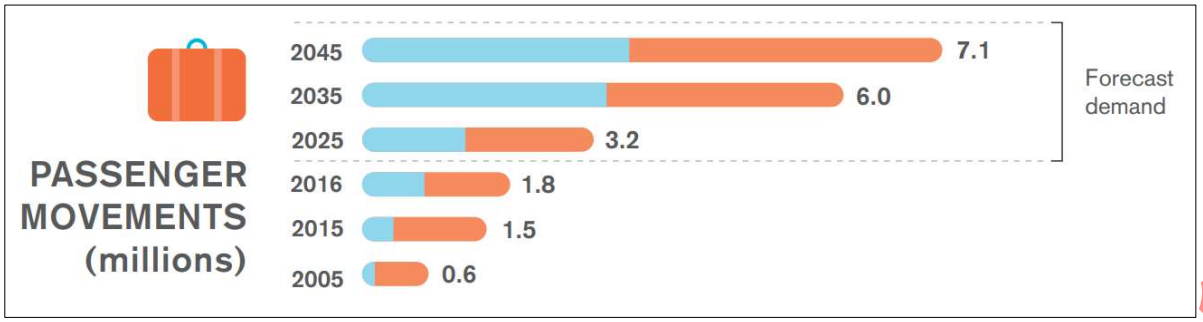

Figure 15: Queenstown Airport Forecast Passenger Movements (Source: Queenstown Airport Masterplan (2017)

Current noise boundaries under the District Plan are understood to allow for 2.6 - 2.7 million passengers per annum; expanding beyond this demand has been met with fierce resistance from the community. In addition to expanding noise boundaries, the airport is likely to require additional physical capacity to accommodate demand beyond 2025. This has been proposed to be provided by a new terminal along the southern edge of the runway.

The Queenstown Airport Masterplan was developed in 2017 to understand the speed of growth and consequent infrastructure requirements over the next 30 years. Additional social and economic impact assessments have been carried out[15], testing alternative means of facilitating airline passenger growth. These include maintaining the status quo, expanding Queenstown airport, operating a dual Queenstown/Wanaka Airport, or creating a new 'Central Otago' Airport.

These assessments found that, accounting for both positive and negative feedback, stakeholders generally support maintaining the status quo and not increasing airport capacity. This option, if chosen, is likely to lead to increased visitor arrivals into Queenstown by road, as additional growth will be accommodated by airports further afield. Conversely, this may also lead to a decrease in the growth of tourism in Queenstown, with other destinations such as Dunedin or Christchurch absorbing demand.

In July 2020, Christchurch Airport announced they had spent up to $45m on plans to establish a new international airport in Tarras. They have indicated that implementation would only occur when Queenstown airport reaches capacity, but this would accommodate forecast growth within the district.

While Wanaka is likely to absorb a higher proportion of visitors, due to being close to Tarras, visitor arrivals in Queenstown are increasingly likely to be by car.

1.8 Land Use and Spatial Planning Context

Prior to the COVID-19 pandemic, the rate of population growth in Queenstown outstripped the speed at which new housing was being built in the district, leading to a housing affordability crisis[16]. New housing subdivisions have sprung up around the district to meet demand, with multiple proposals at various stages of planning in the pipeline. Given Queenstown's 'insatiable desirability', demand is forecast to return to pre-pandemic levels[17]. At the time of writing, a spatial plan was under development for the Queenstown Lakes District. Development of this spatial plan has occurred in parallel with this business case and the two processes have informed each other.

Substantial growth is expected to continue in the long term throughout the Queenstown Lakes District, despite the recent downturn after a short-term slowdown caused by the COVID-19 pandemic. This section identifies

[15] Socio-Economic Impacts of Airport Infrastructure in the Queenstown Lakes District (June 2020)
[16] Workers 'hot bed' as Queenstown housing crisis worsens, Stuff (September 2019)
[17] Queenstown Lakes District Population Projections Post-COVID (September 2020)

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planned and known proposed developments. Based on current growth projections, 3,715 dwellings are expected to be built in the Queenstown Lakes District by 2028, rising by another 12,312 dwellings by 2048.

1.8.1 Grow Well/Whaiora – Spatial Plan (ongoing)

The Spatial Plan for the Queenstown Lakes area was commissioned in response to rapid growth occurring in the district. It endeavoured to avoid past mistakes that have led to Queenstown's current land use/transport disconnect. A partnership between QLDC, Central Government and Kai Tahu, the spatial plan incorporates inputs from national, regional and district strategies. It recognises that growth in such a desirable location is inevitable and provides a mechanism for ensuring growth happens in a managed, integrated and sustainable fashion, rather than through ad hoc private developments.

The plan effectively provides strategic oversight for the district plan, which covers land use rules and environmental protection, and the 10-year plan, which sets out budgets for planned activities. It is a high-level vision intended to achieve the outcomes shown in Figure 16.

Ultimately, the spatial plan will define the roles of settlements throughout the district, and determine the infrastructure and connections needed to fulfil those roles. As the fundamental cause for travel (between residence, workplace, education, shopping and recreation), the spatial layout of the district's land use is inherently linked to the future transport network.

This project therefore needs to provide solutions that are aligned with the outcomes of the spatial plan. The spatial plan also recognises that transport infrastructure can equally drive land use change, such as around a Mass Rapid Transit route.

Figure 16: Grow Well/Whaiora – Spatial Plan Objectives

The impacts of COVID-19 on the spatial plan are not yet fully understood, but there is expected to be a reduction in growth, at least for the short term. Long term growth is not expected to be substantially different.

1.8.2 Ladies Mile

In recent times, Lake Hayes Estate and Shotover Country have been the primary source of affordable housing in Queenstown. However, as of 2018, the area is largely at capacity (at currently permitted densities), with 1,470 households completed of a projected total of 1,640.

Land along the Ladies Mile corridor has long been touted as a suitable area for development due to its flat, sunny, non-hazardous land and proximity to commercial areas in Frankton (Figure 17). However, in April 2019 councillors declined three applications to develop housing there, citing community concerns around congestion and visual impacts on the gateway into Queenstown.

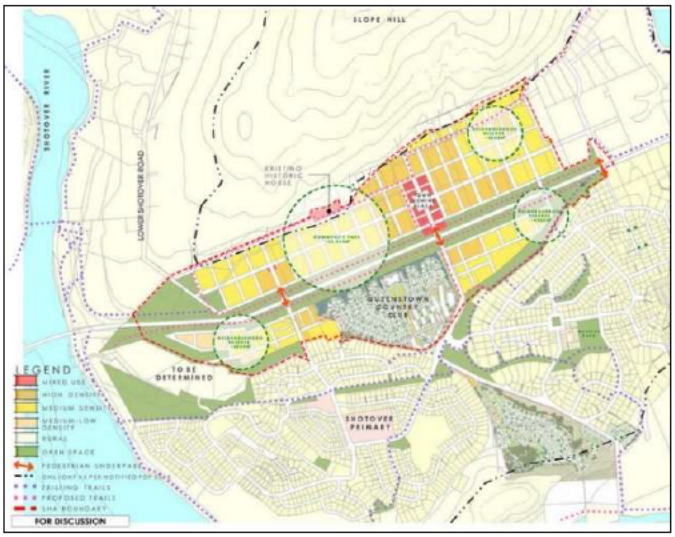

Figure 17: Previous Ladies Mile Masterplan

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Councillors since agreed a resolution stating that development was likely to occur regardless of council's position, and a Council-led process would ensure better and more integrated outcomes than an ad hoc series of private developments.

A master planning exercise (with associated business case) is now underway to enable a plan change and establish an implementation plan for infrastructure for the Ladies Mile corridor with the following objectives:

1. A land use solution is delivered in a timely, integrated, and organised manner, avoiding individual applications
2. Increased liveability, wellbeing, and community cohesion for existing and future residents of the Ladies Mile area.
3. Improved access to and from Ladies Mile with a transport network that can deliver its functions efficiently and effectively.
4. Supporting enhanced public transport and active travel provision and utilisation through land-use solutions.

Critical to achieving objectives for Ladies Mile will be a very high mode share to public and active transport.

1.8.3 Southern Corridor

In similar fashion to the Ladies Mile corridor, the southern corridor is being developed for housing due to its flat land and convenient access to SH6. Access to the south was vastly improved with the completion of the two-lane Kawarau Falls Bridge in 2018.

As of 2018, Jacks Point was the only residential area to the south with 280 households. By 2048, there are anticipated to be further developments at Hanley's Farm and Homestead Bay[18], plus an approved Special Housing Area at Coneburn[19], constituting 2,370 dwellings in total[20] (Figure 18).

Note that these are baseline projections while Grow Well/Whaiora has aspirations for up to 10,000 dwellings in the Southern Growth Area.

In addition to residential development, commercial and industrial growth is planned. Jacks Point Village and Homestead Bay have plans to develop new hotels, restaurants, shopping and a marina. A proposal for a new industrial area on the eastern side of SH6 is also being investigated.

Evidently, the southern corridor is expected to undergo significant change, with the Kawarau Falls Bridge likely to suffer similar transport issues to those experienced at the Shotover Bridge if not managed proactively. A Network Operating Framework has been developed to ensure land use and transport infrastructure is developed in an integrated way that supports best use of assets and space.

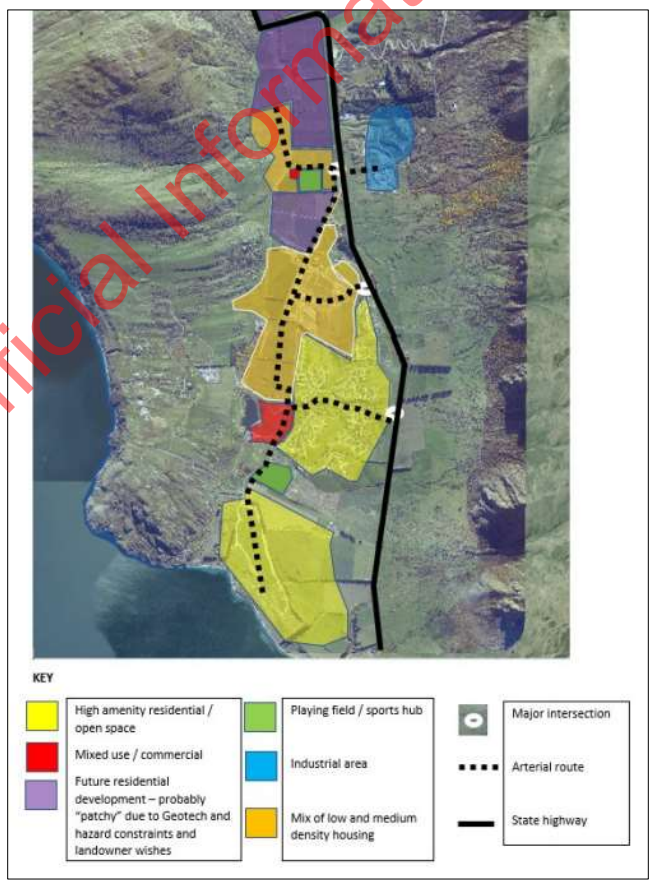

Figure 18 Coneburn Valley Development (Source: Expression of Interest for a Special Housing Area, February 2019)

[18] Homestead Bay Masterplan (2018)
[19] Coneburn Special Housing Area Resource Consent Approval (2020)
[20] Queenstown Lakes District Population Projections (December 2018) *Updated in September 2020 to include COVID-19 impacts and Spatial Plan outcomes

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1.8.4 Town Centre

Several land development projects are planned (and are understood to be continuing post-COVID) within the Queenstown town centre, including (but not limited to) the following:

- **Lakeview**: Six hectares of land owned by the QLDC is set to be developed as a range of small commercial, residential and visitor accommodation activities[21]. A preferred bidder to complete this project was appointed in April 2019 by QLDC. This project is likely to be completed over a 10-year period and is expected to provide homes for over 1,500 residents.
- **Wakatipu High School Site:** Plans to redevelop the site to provide over 300 high density residential homes and supporting community spaces[22]. Of the 300 houses, 100 are expected to be KiwiBuild homes and the first group of homes are expected to be completed by 2022.
- **Man Street Hotel:** A five-star, five-storey hotel, featuring 47 studios, nine suites and one penthouse. This hotel will be constructed on top of the existing Man Street carpark.
- **Brecon Street Hotel:** 393 guest rooms, including a 73-space car park.

In the context of a thriving, rapidly expanding town, the amount of development planned at the heart of the district is relatively minor in comparison with more sprawling developments proposed for the periphery of the urban area. The amount of brownfield development (infill) proposed in the Town Centre is substantially smaller than the greenfield developments described above.

Figure 19 provides the current understanding of proposed land use development within the Town Centre.

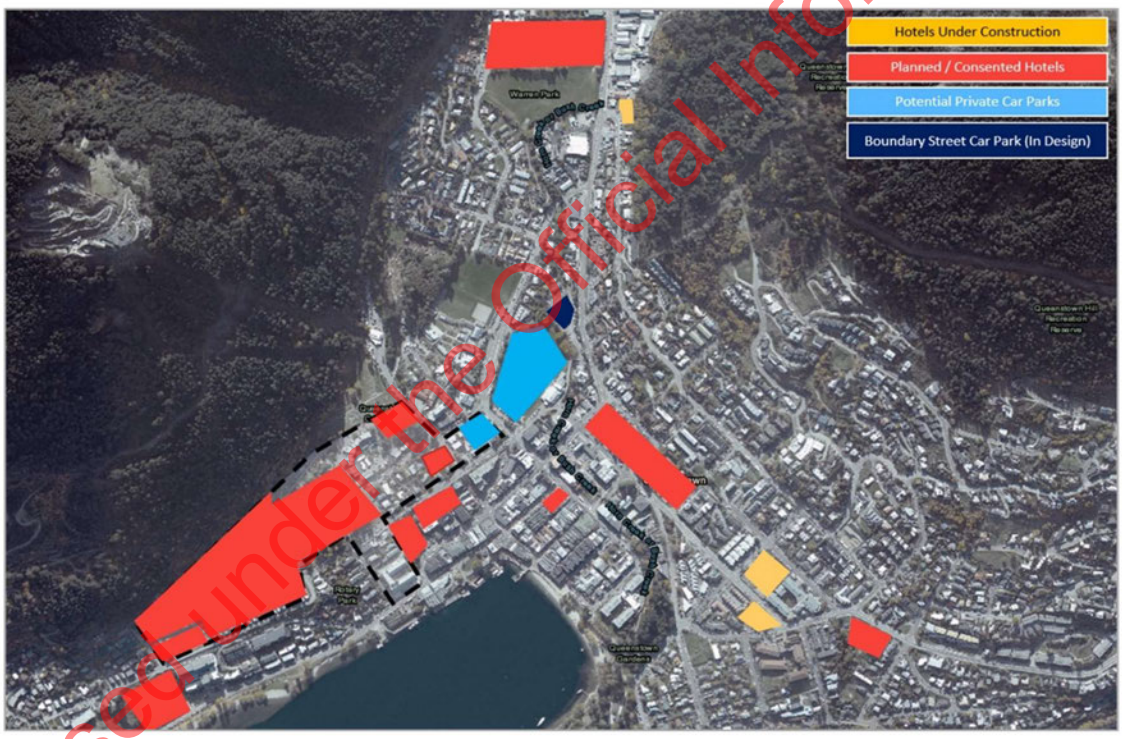

Figure 19: QTC Planned Developments (as of 2019)

1.8.5 Special Housing Areas

The designation of Special Housing Areas (SHA) is one of the tools available to fast-track the development of housing in the Queenstown Lakes district. SHAs act as a means of increasing housing supply and affordability

[21] Lakeview Tenure Discussion
[22] Kiwibuild homes announced for Queenstown (March 2019)

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in regions, such as Queenstown, which are experiencing high levels of population growth. Eight SHAs have already been approved in Queenstown, resulting in approximately 1,120 residential sections/units. These are:

- Bridesdale – 136 sections (including two existing dwellings)
- Shotover Country – 101 sections
- Arrowtown Retirement Village – 195 apartments + aged bed care facility
- Queenstown Country Club – 332 apartments/villas plus 14 residential sections + aged bed care facility
- Onslow Road – 21 sections
- Arthurs Point Stage 1 (Bullendale) – 88 residential units (Consent obtained -SH160143)
- Business Mixed Use Zone (Gorge Road) – 143 units (Consent obtained -SH160147)
- Arthurs Point Stage 2 (Bullendale) - 92 residential units (No Consent yet)
- Coneburn – 600 homes (Consent obtained)

However, QLDC councillors declined all three Special Housing Areas in Ladies Mile (Laurel Hills, Flint's Park and Glenpanel), comprising 579 housing units, over concerns about traffic and transport infrastructure. The Coneburn SHA south of the Kawarau River, planned to have 600 housing units was, however, approved[23].

1.9 Masterplans

The Masterplans described here were developed with the intent of improving liveability outcomes; the Queenstown Business Case sought to identify transport solutions to enable those outcomes.

1.9.1 Queenstown Town Centre Masterplan (2017)

The Queenstown Town Centre Masterplan (parent project of the transport-focussed Town Centre Masterplan PBC) was undertaken to address a number of arising growth-related challenges with an integrated series of transport, amenity, liveability and land use projects, and give a clear direction to investment in infrastructure for the future.

It was identified that the fabric of the town centre was changing as a result of rapid growth in the tourism industry, reducing liveability for both residents and visitors. As tourist numbers grew, bringing with them economic opportunity, the town's offering started to be dominated by visitor-oriented shopping, dining and recreation. Residents, who have a lower price point and are less drawn in by tourist attractions, shifted to Frankton for day-to-day activities, leaving the heart of the town devoid of local authenticity, something that visitors regularly rate importantly in surveys of their overall experience.

To address these issues and reclaim the desired purpose of the town centre, the Masterplan identified a programme designed to improve access into and around the town centre, while creating an enhanced environment that meets the needs of both residents and visitors.

The masterplan identified the following 'next steps' (i.e. for the Queenstown Business Case):

- better understanding of costs and benefits for stage 3 of the arterial
- further testing of optimisation options for Stanley and Shotover Street traffic flows
- investigation of a public transport only programme in the masterplan programme
- an outline of how parking developments will be managed to ensure they play an integrated role in delivering the required transport outcomes
- an outline of how smart technology will be used to enhance transport experiences.

The intent of the Queenstown Business case has strong alignment with the QTC masterplan, aiming to give action to the vision and strategies within. A focus on public realm, public transport and walking and cycling

[23] https://www.scene.co.nz/features/breaking-ladies-mile-shas-declined

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improvements throughout the town forms the core of both projects. Alignment between the projects, particularly in relation to option development, is presented in more detail in Part Bi of the Queenstown Business Case.

1.9.2 Project Manawa

A key component of the Masterplan was to develop a 'community heart', which has since become Project Manawa. Located on Stanley Street in central Queenstown between Ballarat Street and Gorge Road, the project is being developed in a collaboration between Kai Tahu and QLDC, and intends to provide a cultural and civic heart for the wider district, delivering a range of cultural and community facilities such as arts spaces, library, performance and visual arts centre, town square and commercial buildings. Proposals are also in place to rationalise council office space (currently dispersed in multiple buildings around Queenstown) into a central hub at the site. The project is at a conceptual stage so operational and site layout details are unavailable.

However, the precinct is a key interdependency with this project, as it shares a border with the potential Stanley Street public transport hub and will create a major new destination, changing travel patterns in the town centre. Pre-implementation following the Queenstown Business Case will need to ensure integration with more detailed plans when they are available.

1.9.3 Frankton Masterplan (2019)

The motives for developing the Frankton Masterplan were similar to those in the town centre. Since the Queenstown Masterplan was developed, Frankton emerged as a key economic centre for the district, and similar pressures on existing infrastructure, brought about by the unprecedented pace of development, became evident. The masterplan was commissioned to present an integrated programme of land use, environmental, amenity, cultural and transport projects designed to ensure that Frankton can continue to provide its function as a transport network, while enhancing the visitor experience and residents' quality of life.

Key facets of the master plan (Figure 20) include:

- Transport – an integrated system with universal access for all, particularly by improving active modes and public transport connections, with a view to enabling high frequency, high capacity public transport in the future
- Amenity – enhancing the arrival experience for visitors and enhancing green spaces, acknowledging 'ancestral landscapes' and expressing cultural values
- Land use integration – aligning with the Spatial Plan, identifying appropriate agglomerations of land use, such as the future public transport hub, events centre expansion and intensified residential while relocating rural infrastructure closer to the Rural Urban Boundary.

Of note, the masterplan also promotes converting the Frankton-Ladies Mile Highway to a 'high amenity urban arterial'. Given the current function of the road as a regionally important State Highway carrying up to 30,000 vehicles per day, this is likely to create conflicts between movement and place that will need to be carefully managed through design.

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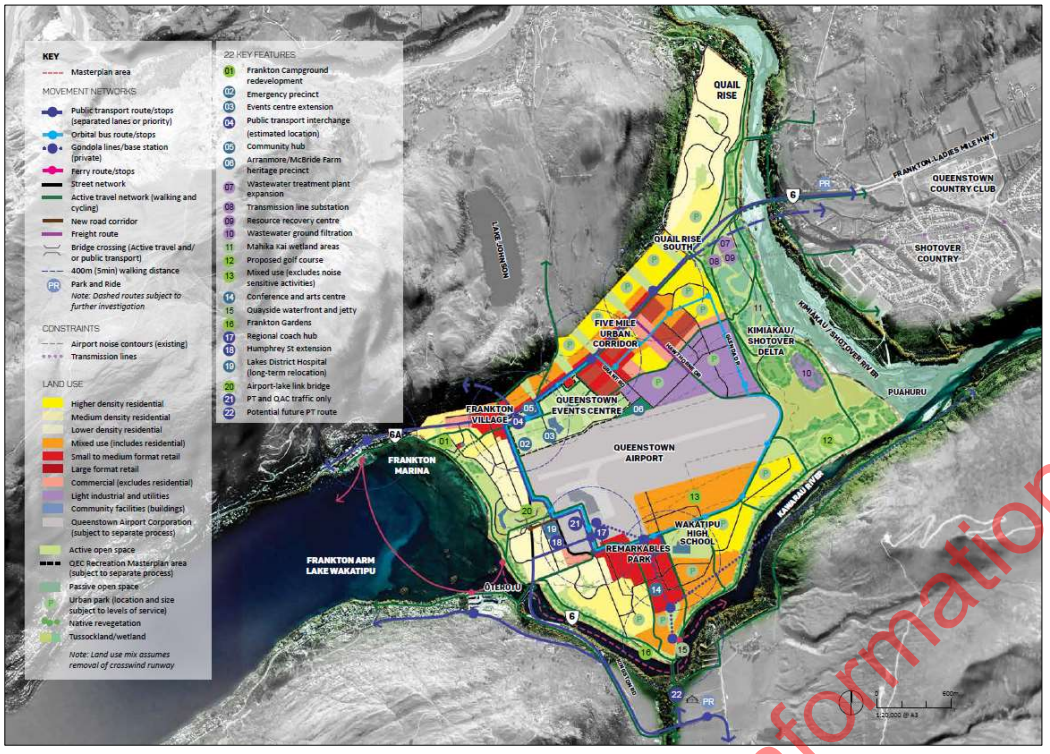

Figure 20: Frankton Masterplan Overview

The masterplan gives a vision for the development of land use in Frankton, and high level proposals as to transport provision for the area, some of which were developed in collaboration with the Queenstown business case team. Transport proposals from the Masterplan that have been considered in this project include:

- Regional coach hub at the airport
- New Humphrey Street link
- Active mode route between the airport and lakefront
- Public transport only bridge over the Kawarau River
- Orbital bus route

Waka Kotahi have indicated that they support the intent of the Masterplan but require detail from the Queenstown business cases before endorsing it. Integration of transport with proposed land use development, such as the proposed emergency services precinct at Frankton Golf Course, needs to be covered in more detail through this business case.

More contextual information on Frankton is available in Appendix A01.

1.10 Related Projects

This section presents previous and parallel projects that did not steer the strategic direction of this business case, but informed localised elements of optioneering.

1.10.1 Rapid Targeted Interventions

A suite of quick-win interventions was identified by the project team to resolve immediately pressing transport issues in the interim of major infrastructure projects being implemented. The programme of works comprised what would traditionally be classed as low cost, low risk projects, which were grouped to enable an integrated response to improve bus reliability and active mode accessibility while optimising the existing road network.

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Interventions investigated included bus lanes, high occupancy vehicle lanes, Shotover Street signals, parking reduction, Stanley Street optimisation and shared paths. However, funding was unavailable at the time and the project was dropped. Many of the components are expected to form aspects of the Do Minimum scenario for the Queenstown Business Case.

1.10.2 Wakatipu Active Travel Network (WATN) SSBC

The WATN SSBC was one of the main activities of the QIT PBC recommended programme not to be directly addressed by the Queenstown Business Case. It identified a series of upgrades and connections to the existing network of trails and tracks to create a safe, integrated walking and cycling network for recreational and commuter use in the Wakatipu Basin.

The project focussed on network connections, linking previously disconnected areas, rather than localised gaps in existing provision. The Queenstown Business Case presents an opportunity to capitalise on committed network upgrades by further improving localised access to public transport and supporting broader mode shift targets identified in this business case. As described in The Three Pillars, supplementary non-car interventions will be critical in achieving the 40/60% mode share targets. The proposed active travel network for Queenstown is shown in Figure 21.

In October 2019, Waka Kotahi announced a $14 investment in implementing the first stage of the network, which will include upgrades to a number of existing trails as well as several new trails, connecting key destinations such as Arrowtown, Arthurs Point, Kelvin Heights, Jacks Point, Lake Hayes Estate and Shotover Country, Fernhill, Frankton and Queenstown.

A key element of the programme is the proposal to seal and light the Frankton Trail on the lakeshore between Frankton and Queenstown, which will significantly increase the utility of this key recreational and commuting route, especially in winter when the hours of daylight are very short.

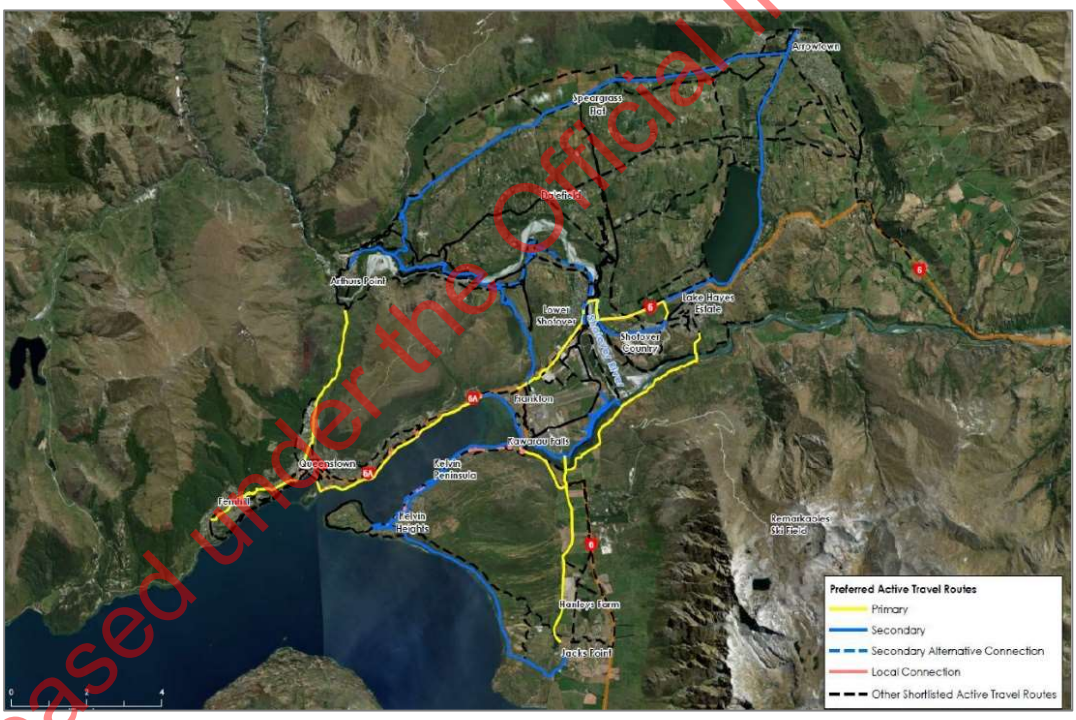

Figure 21: Active Travel Routes

1.10.3 Parallel Projects

Table 1 summarises other projects that stemmed from the QIT PBC or would influence optioneering for the Queenstown Business Case.

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Table 1: Parallel Projects Summary

Project	Description	Relevance
Lake Wakatipu Public Water Ferry Service DBC (2019)	Investigated whether a ferry operation on Lake Wakatipu would be commercially viable long-term	Provided the case for investment in ferries as a component of the public transport network. Found that a subsidised Frankton Arm ferry service would achieve a BCR of 0.97, suggesting ferries are unlikely to form the Mass Rapid Transit option for this business case.
Wakatipu Basin Future Public Transport Demand/Capacity Analysis (2018)	Future demand for public transport was identified as a key gap in the modelling suite required to inform the Queenstown business case. A public transport model was established to forecast demand around the district for different high-capacity networks.	Tested the impact of a variety of parameters such as bus priority, parking management and fares on public transport mode shares. Provided demand forecasts for different modes of public transport to assist in selecting the high capacity public transport element of the business case preferred package.
Queenstown Parking Strategy (2019)	Sets out how parking will be managed and integrated with the wider transport system. Intended to promote mode shift and support amenity, a safe and efficient transport system and economic development of the town.	PT modelling indicated that parking is the single most sensitive parameter driving mode shift in Queenstown. The details of the parking strategy need to be developed in parallel with this business case to ensure equilibrium between carrot and stick measures.
Ladies Mile Housing Infrastructure Fund Integrated Transport Assessment (2018)	Assessed transport effects of a proposal to develop housing along Ladies Mile, testing various yield, build rate and growth rate scenarios to determine an appropriate transport infrastructure and services response.	Identified that, under growth rates observed at the time, any additional housing on Ladies Mile would result in traffic volumes over the capacity of the Shotover Bridge. Set out triggers for development, public transport interventions and levels of mode shift required to maintain network functionality.

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2 STRATEGIC ALIGNMENT

The QIT PBC and QTC PBC established a clear strategic case for investment in Queenstown's transport network. This business case reviews and builds on previous work, updated as necessary to reflect new evidence and the implications of new transportation strategy; notably the Government Policy Statement (GPS) on Land Transport.

Investment in Queenstown's transport network aligns strongly with national, regional, and local policies as it supports safer transport, encourages mode shift, supports future growth, and improves customer levels of service. The strategic case presented in the QITPBC and QTCMPBC is still relevant, with the evidence base showing that identified problems have worsened, and that despite a brief respite brought about by COVID-19, they are expected to worsen again in the future.

This section outlines how this conclusion has been drawn, through a review of the following strategic documents:

- Queenstown Integrated Transport Programme Business Case
- National Strategies:
  - Government Policy Statement on Land Transport 2018/19-2027/28 and GPS 2021
  - Road to Zero: NZ's Road Safety Strategy 2020-2030
  - Arataki – Waka Kotahi's ten-year view on what is needed to deliver on the government's current priorities and long-term objectives for the land transport system
  - Keeping Cities Moving (2019) – Waka Kotahi plan to reduce car dependency and improve travel choice
  - National Policy Statement – Urban Development (2020) – Sets out national direction for urban development under the Resource Management Act.
- Regional Strategies:
  - Draft Otago/Southland Regional Land Transport Plan (2018-24)
  - Otago Regional Public Transport Plan (2014)
- Local Strategies:
  - Grow Well Whaiora Spatial Plan
  - QLDC District Plan
  - Better Ways to Go (Waka Kotahi, 2020) – the Queenstown mode shift plan

2.1 Queenstown Integrated Transport PBC (2017)

As described above, the strategic direction for this project primarily comes from the Queenstown Integrated Transport PBC. The problems identified for that project were:

- Significant growth in visitors, residents and vehicles, leads to increasing trip unreliability and worsening customer experience across the network.
- Car dominance and associated congestion is affecting the liveability and attractiveness of the area.

Evidence (presented in Section 3 Defining the Problems below) shows that visitor numbers, resident population and traffic volumes have all continued to grow at rapid rates since publication of the QIT PBC. Although the pandemic has slowed growth in the short term, visitor and resident numbers are expected to return to pre-COVID levels in 3-5 years. The respite brought by COVID-19 also presents an opportunity to 'catch up' with infrastructure and service provision in time to cater to the expected boom in latent demand from international tourists once borders reopen.

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Similarly, residents have continued to voice frustrations about levels of congestion, and visitors overwhelmingly score transport as the worst aspect of their trip in satisfaction surveys. There has been some success in achieving mode shift away from cars, but this is occurring at a lower rate than overall traffic growth.

It can be concluded that evidence in the QIT PBC is still relevant and a strategic case exists for investment in transport for Queenstown.

2.2 Queenstown Town Centre Masterplan PBC (2017)

The transport PBC developed as part of the Queenstown Town Centre Masterplan sits beneath the QIT PBC in precedence but provides granularity on the strategy for the key town centre part of the network.

In progressing the project from a programme level to a detailed level through the QTC element of this business case, several aspects of the masterplan preferred package are expected to be omitted or changed, but the overall strategic direction is aligned.

Aspects of the programme in alignment are parking supply and management, public transport hub, public realm upgrades and walking and cycling improvements. There is some divergence in staging of the Queenstown Arterials project, public realm improvements and communications and technology. However, the bulk of the less-aligned elements have been funded through the Crown Infrastructure Partners economic stimulus package and will therefore not form part of this business case programme.

2.3 New Zealand Upgrade Programme and Crown Infrastructure Partner Stimulus (2019/2020)

The New Zealand Upgrade Programme is intended to give action to the GPS on Transport, reflecting the Government's policy for balanced transport with investment in road, rail, public transport and walking and cycling. In addition to providing safer and more sustainable travel choices, the programme aims to unlock housing development. The NZUP package for Queenstown comprises projects identified in the QIT PBC and through the optioneering phase of the Queenstown Business Case and is therefore directly aligned in strategy.

Funding unlocked through the Crown Infrastructure Partner stimulus package has fundamentally different strategic objectives, namely to stimulate the local economy in response to the economic downturn caused by COVID-19. The Queenstown Business Case package not only needs to accommodate the fast-tracked project while delivering on its original strategic objectives but ensure that the new project is supported by additional service and demand management interventions to prevent unintended consequences on the Town Centre network.

2.4 National Strategies

The national strategy for transport is largely dictated by the Government Policy Statement on Transport, which sets out funding priorities. Arataki then provides context with detail on regional issues and drivers for change, and identifies activities needed to deliver the Government's objectives for the Land Transport system.

2.4.1 Government Policy Statement on Land Transport (2018-2028)

The Government is seeking an effective, efficient, safe, secure, accessible, and resilient transport system that supports the growth of the economy to deliver greater prosperity, security, and opportunities for all New Zealanders. The two key areas of focus for transport are safety and access, with value for money and environment as supporting strategies. The policy promotes maximising value from limited resources. These elements are reflected in the Government Policy Statement, which sets out the Government's priorities for expenditure from the National Land Transport Fund over the next 10 years.

Table 2 sets out how investment in the Queenstown transport system would contribute to all priorities and objectives of the GPS.

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Table 2: GPS Priorities and Objectives

Priorities	Objectives	Frankton to Queenstown, Frankton and Ladies Mile	Queenstown Town Centre
Access	Provides increased access to economic and social opportunities.	Greater efficiency of movement, and prioritising low-cost public transport, will provide equitable connections and access to employment, recreation and healthcare for Queenstown's broad range of network users. Improved centralised high capacity links will also help drive better land use integration.	Improved public transport and active travel options will improve Queenstown's liveability and visitor experience while providing affordable, convenient transport options to the employment centre.
	Is resilient.	Additional routes, as well as increased travel choice, will increase overall network resilience to network shocks and technological advances.	A transport system that provides mixed modes of transport will be better prepared for future needs. Failure to do so in the Town Centre will artificially cap growth.
	Enables transport choice and access.	Investment would allow residents and visitors to utilise public transport, walk or cycle to access employment, services (e.g. schools, shops, recreation) and accommodation in Frankton and the QTC.	Good access to multi-modal transport options will improve the experience for all road users through reduction in traffic volumes and parking demands.
Road Safety	A safe system that is free of death and serious injury.	Investment would improve the Infrastructure Risk Rating. Safety would improve for all road users including vulnerable road users (pedestrians, cyclists, impaired).	Reducing traffic volumes (through mode shift) leads to less congestion and parking demand. Roads will perform better and conflict between vehicles and other transport modes will reduce crashes resulting in safer roads.
Environment	Reduces greenhouse gas emissions, as well as adverse effects on the local environment and public health	Reduction in congestion due to lower traffic volumes (from reduced car travel and increased use of more sustainable, environmentally friendly modes) will reduce greenhouse gas emissions and improve public health through better air quality, stormwater and visual experiences.	
Value for Money	Delivers the right infrastructure and services to the right level at the best cost.	The business case approach will determine the right option at the best cost.	

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Long Term Results

The relationship between the priorities, objectives, and long-term results are mapped out in the GPS. There are 11 long term results and 33 short-to-medium term results in the GPS. Table 3 summarises how investment in the Queenstown transport system will achieve the GPS' long term results.

Table 3: GPS Long-Term Results

Long Term (10+years)	Short to Medium-Term (3-6+years)	Relevance to Queenstown Business Case
Significant reduction in deaths and serious injuries	• State highways and local roads are safer for everyone. • Cycling and walking is safer.	• Reducing traffic volumes leads to less congestion and parking demand. Roads will perform better and conflict between vehicles and other transport modes will reduce crashes.
Metropolitan and high growth urban areas are better connected and accessible	• A more accessible and better integrated transport network including public transport, walking and cycling • Improved land use and transport planning to create more liveable cities. • Improved throughput of people and goods in major metropolitan areas • Improved transport access to new and existing housing including provision of public transport services.	• Good access to multi-modal transport options will improve the experience for all road users. • Reduction in traffic volumes and parking demands.
Better access to markets, business areas, and supporting tourism	• Nationally important transport connections are maintained or improved to support areas of growth, changes in population, freight and tourism, and to improve safety. • Enhanced testing and deployment of intelligent transport systems and other technologies to make the best use of existing networks.	• Lower traffic volumes will improve connections and access to adjacent land use activity and support the development of any future adjacent land use. • Improved connections between Frankton and Queenstown. • Improved access to key tourism centres. • ITS to guide vehicles to available parking, reducing congestion.
Sustainable economic development of regional New Zealand is supported by safer and better transport connections	• Regional networks (including key regional freight routes) are safer, better connected and more resilient. • Improved transport connections (including local roads, public transport and active modes) on key regional tourist routes to make these routes safer for all.	• Provide a resilient network by providing alternative routes between Queenstown and Frankton. As well providing opportunities for mixed modes of transport for tourists and locals alike. • A transport system that provides mixed modes of transport can prepare the city for climate change and be more responsive to significant disruption.
Increased mode shift from private vehicle trips to walking, cycling and public transport	• A reduction in overall single occupant private vehicle travel in urban areas. • Improved good-quality, fit-for-purpose walking and cycling infrastructure. • Improved real and perceived safety for both pedestrians and cyclists. • Increased proportion of journeys made using public transport and active modes of travel (including children travelling to and from school).	• Providing multi-modal transport options will result in an overall reduction in single occupant private vehicles. • Reduction in congestion will result in pedestrian and cyclist safety.

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Long Term (10+years)	Short to Medium-Term (3-6+years)	Relevance to Queenstown Business Case
More transport choice (including for people with less or limited access to transport)	• Public transport is more accessible and affordable, especially for those reliant on it to reach social and economic opportunities (including people with disabilities, low-income people, and Super Gold cardholders)	• Improved public transport and active travel options will improve Queenstown's liveability and visitor experience.
Improved network resilience for the most critical connections	• Improved resilience on routes where disruptions pose the highest economic and social costs • When disruption to the network occurs, impacts of disruption are reduced at the parts of the network that have the most economic and social importance	• Provide a resilient network by providing alternative routes between Queenstown and Frankton. As well providing opportunities for mixed modes of transport. • A transport system that provides mixed modes of transport can prepare the city for climate change and be more responsive to significant disruption.
Reduce greenhouse gas emissions from transport	• Reduced greenhouse gas emissions from land transport using a whole-of system approach.	• Reduction in congestion due to lower traffic volumes will reduced greenhouse gas emissions. • Investment in public transport and active modes will encourage more sustainable and environmentally friendly travel choices.
Reduce transport's negative effects on the local environment and public health	• Reduced significant harmful effects of land transport-related noise. • Reduced significant harmful effects of land transport-related air pollution. • Reduced significant negative effects on water quality and biodiversity from construction and ongoing use of transport infrastructure. • Increased uptake of active travel modes such as walking and cycling to support environmental and public health objectives.	• Reduction in congestion due to lower traffic volumes will improve public health through better air quality, stormwater and visual experiences. • Improved public transport and active travel options will improve Queenstown's liveability and visitor experience.

Through the Government Policy Statement, the Government has committed to providing non-car transport choices that are accessible and affordable to all New Zealanders. This commitment will be actioned through Waka Kotahi's Arataki, which sets out a plan to reimagine New Zealand's transport system. This new direction, away from a purely roading infrastructure focus, is one of the reasons why the preferred programmes identified through this business case process may not necessarily align directly with that in the QTC Masterplan.

A summary of the GPS, Arataki and other relevant national and local strategies is provided in Appendix A02.

The Queenstown business case is a case study in the application of Arataki due to unique local constraints restricting the ability to provide 'traditional' transport interventions. Given the challenging terrain, low ratepayer base and highly seasonal demand, more efficient and effective solutions than simply building extra road capacity are needed. Arataki explicitly references a high need to transform urban mobility and improve urban form in Queenstown by:

- supporting delivery of the outcomes of the QITPBC
- supporting improvements to walking and cycling networks, with a focus on providing safe and efficient access to, and within, activity centres and schools, and connecting and expanding existing infrastructure to provide better connected networks
- supporting public transport services including on demand services where these provide a basic level of access to employment and essential services, more affordable transport choice, improve throughput on constrained corridors and help shape a more vibrant city

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- working with QLDC to manage car-parking in the city centre, city fringe area and other key centres to increase uptake of public transport, walking and cycling for trips to these locations.
- working with QLDC and central government to implement the Queenstown Spatial Plan
- supporting further development where it supports relevant transport capacity enhancement measures
- working with QLDC to help ensure urban development occurs around corridors that have potential for public transport.

Keeping Cities Moving is Waka Kotahi's plan to improve travel choice and reduce car dependency. Its purpose is to improve the quality, quantity and performance of public transport facilities and services, and walking and cycling facilities, enabling more people to use them. This can involve both optimising the existing system (for example, through reallocating road space), investment in new infrastructure and services, and providing better connections between modes.

At a more local level, Better Ways to Go is Waka Kotahi's mode shift plan for Queenstown. This document found that "as a result of trip distances and the volumes of people involved, public transport has the greatest role to play in achieving the mode shifts necessary in the next twenty to thirty years if gridlock is to be avoided".

2.4.2 National Policy Statement – Urban Development (NPS-UD)

The NPS-UD sets out objectives and policies for urban development under the Resource Management Act (1991) that council are obliged to give effect to. QLDC is considered a tier 2 local authority for the purposes of the NPS-UD. Tier 2 councils, including QLDC, are required to give effect to the NPS-UD soon as practicable and not later than two years after the NPS-UD commencement date. That is, by 20 August 2022.

The most significant implications of this for Queenstown are included in the following policies:

Policy 5: Regional policy statements and district plans for urban environments enable heights and density of urban form commensurate with the greater of: the level of accessibility by existing or planned active or public transport to a range of commercial activities and community services.

Policy 6: Existing amenity values appreciated by some people are not, of themselves, an adverse effect

Policy 7: The requirement to set housing bottom lines in regional policy statements and district plans

Policy 11: After a transition period, QLDC will not be able to set minimum car parking rate requirements (except for accessible parking spaces).

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3 DEFINING THE PROBLEMS

Queenstown's transport problems are well documented in the studies and business cases preceding this project. This section sets out the process behind agreeing the problem statements, benefits statements and investment objectives for the Queenstown Business Case.

3.1 Investment Logic Map (ILM)

A facilitated Investment Logic Map workshop was held with stakeholders from Waka Kotahi, QLDC, ORC and the project team on 9th October 2018. The session began with a discussion framing the problems, objectives, key principles and desired outcomes of the project from each organisation's perspective. Based on this discussion, the group then agreed on a series of Problem Statements, Benefit Statements, potential Key Performance Indicators (KPIs) and Investment Objectives. Benefits and KPIs are addressed in more detail in Section 3.4.

Stakeholders agreed that the Queenstown Town Centre and Frankton to Queenstown project areas had sufficiently different problems to warrant separate problem and benefit maps, which are shown in Figure 22 and Figure 23. The progression of problem and benefit statements into Investment Objectives is explained in Section 3.3. The Frankton to Queenstown ILM was reviewed in February 2020 when the project scope was expanded to include Frankton and Ladies Mile and was determined to be aligned with the new project areas.

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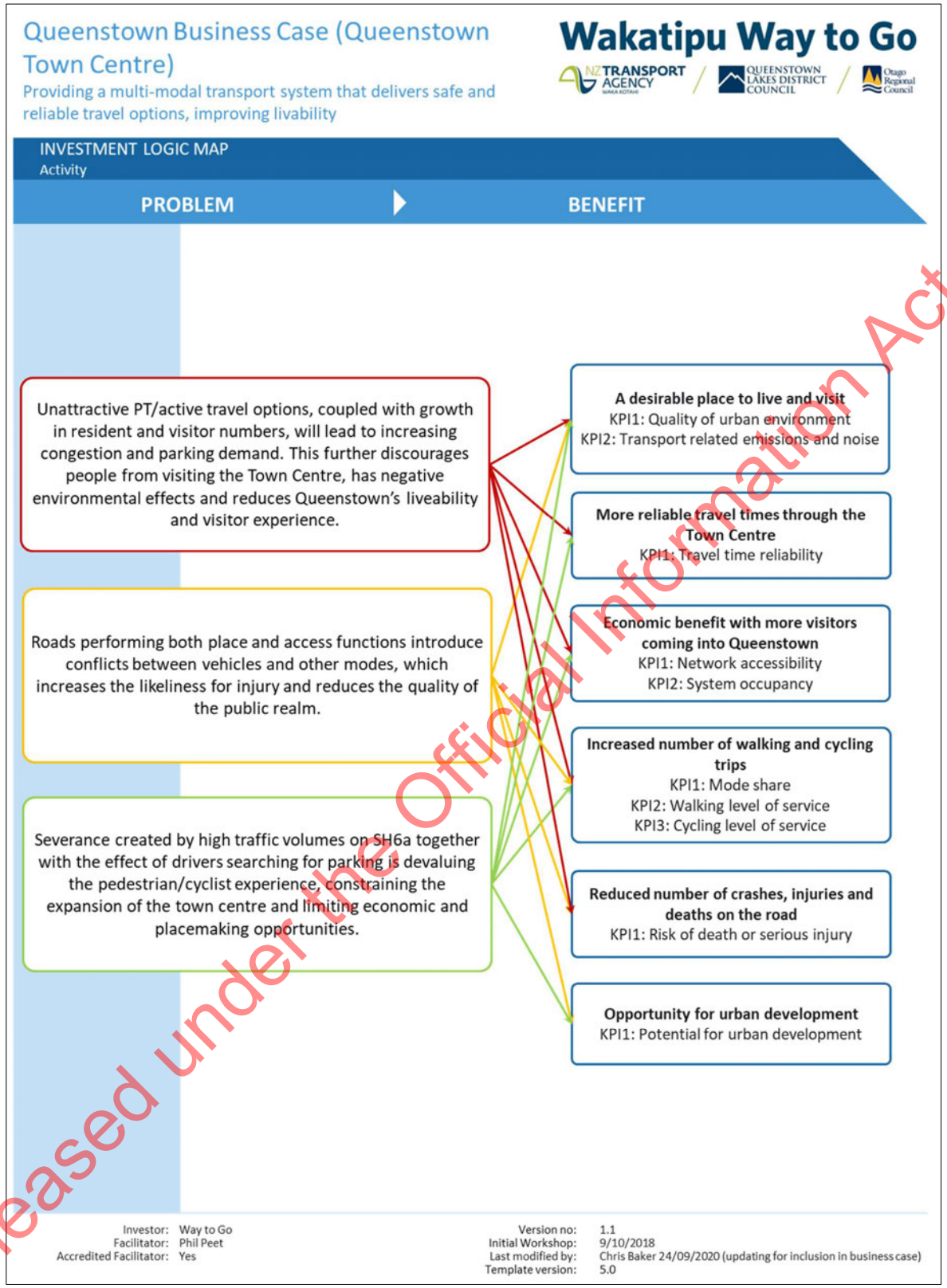

Figure 22: Investment Logic Map for Queenstown Town Centre

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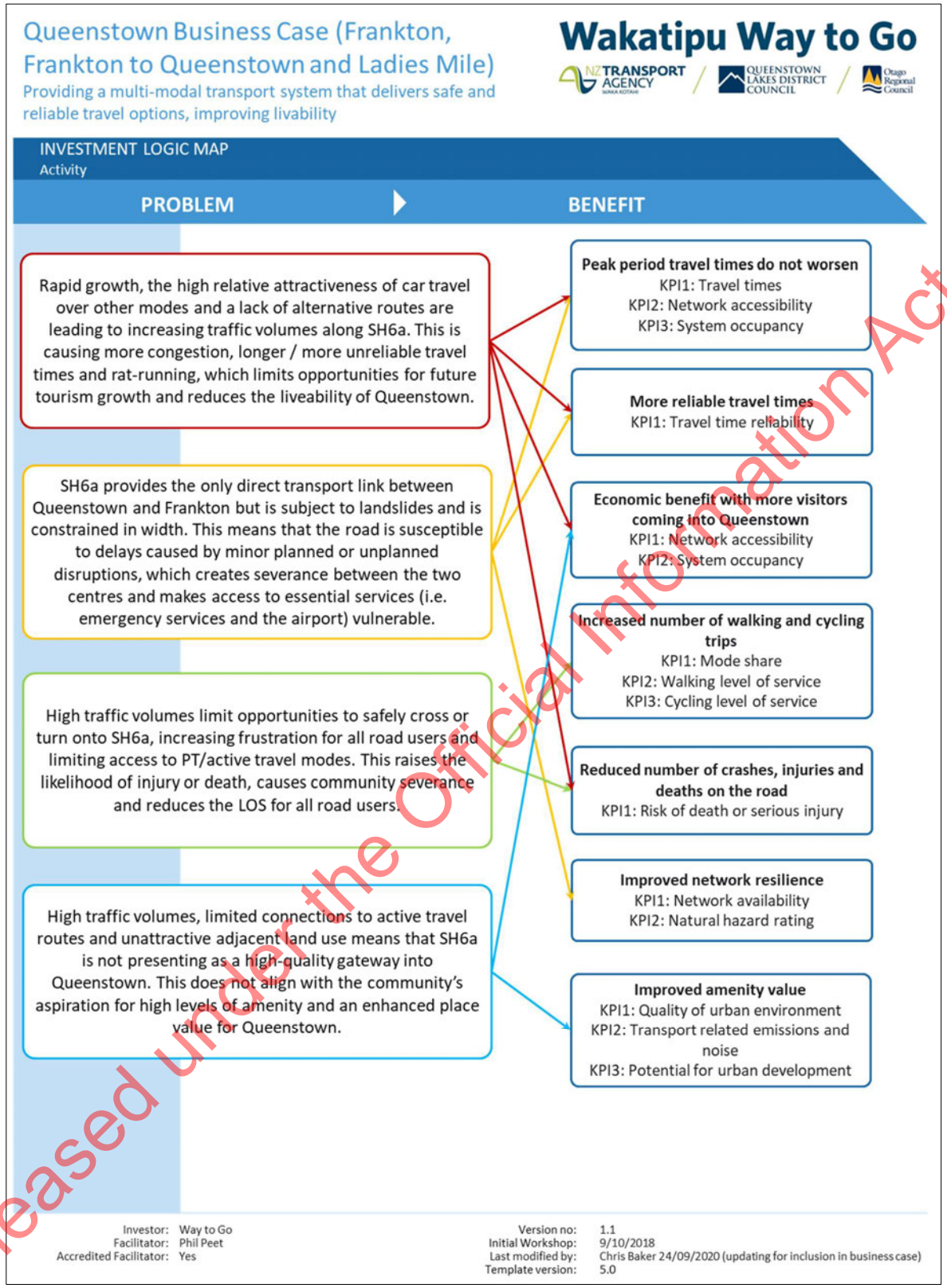

Figure 23: Investment Logic Map for Frankton to Queenstown

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3.2 Problem Statements

3.2.1 Expanding on Previous Work

The QITPBC amalgamated and built on three previous Investment Logic Maps (ILMs) developed for the Queenstown Town Centre PBC, the Frankton Flats SBC and the Wakatipu Basin Public Transport PBC. Rather than reproducing a full ILM, the project adopted two problem statements:

1. The significant growth in visitors, residents and vehicles, leads to increasing trip unreliability and worsening customer experience across the network.
2. Car dominance and associated congestion is affecting the liveability and attractiveness of the area.

These statements were reviewed and formed the basis of discussions on updated and more detailed problem statements for this business case.

The GR2KFB SSBC was an activity level business case stemming from the QITPBC that was paused and later integrated into the Queenstown Business Case (refer Section 1.3.3). This project adopted similar problem statements to the QITPBC:

1. The transport system is not providing for growth in a timely manner resulting in the increasingly inefficient movements of goods and people (70%).
2. The existing transport system favours cars at the expense of investment in and use of alternative modes which makes it difficult to encourage change (30%).

3.2.2 Frankton to Queenstown, Frankton and Ladies Mile

Four problem statements were developed for Frankton to Queenstown. Upon expansion of the scope to include Frankton and Ladies Mile, these statements were reviewed and found to be appropriate for the new areas:

1. **Efficiency.** Rapid growth, the high relative attractiveness of car travel over other modes and a lack of alternative arterial routes are leading to increasing traffic volumes along SH6A. This is causing more congestion, longer/more unreliable travel times and localised rat-running, which limits opportunities for future tourism growth and reduces the liveability of Queenstown.
2. **Resilience.** SH6A provides the only direct transport link between Queenstown and Frankton but is subject to landslides and is constrained in width. This means that the road is susceptible to delays caused by minor planned or unplanned disruptions, which creates severance between the two centres and makes access to essential services (i.e. emergency services and the airport) vulnerable.
3. **Safety**. High traffic volumes limit opportunities to safely cross or turn onto SH6A, increasing frustration for all road users and limiting access to PT/active travel modes. This raises the likelihood of injury or death, causes community severance and reduces the LOS for all road users.
4. **Amenity.** High traffic volumes, limited connections to active travel routes and unattractive adjacent land use means that SH6A is not presenting as a high-quality gateway into Queenstown. This does not align with the community's aspiration for high levels of amenity and an enhanced place value for Queenstown.

3.2.3 Queenstown Town Centre

Three problem statements were developed for Queenstown Town Centre:

1. **Efficiency**. Unattractive PT/active travel options, coupled with growth in resident and visitor numbers, will lead to increasing congestion and parking demand. This further discourages people from visiting the Town Centre, has negative environmental effects and reduces Queenstown's liveability and visitor experience.
2. **Safety**. Roads performing both place and access functions introduce conflicts between vehicles and other modes, which increases the likeliness for injury and reduces the quality of the public realm.
3. **Amenity.** High traffic volumes entering and circulating around the town centre is detracting from the place value of the area, reducing liveability and degrading the 'visitor experience'. The amount of road space

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currently allocated to vehicle traffic constrains the ability to cater to increasing footfall and deliver improved placemaking.

3.2.4 Evolution of Problem Statements

The problem statements agreed for the Queenstown Business Case are essentially a refinement of previous iterations, providing more granular context to the problems that the project seeks to address.

As shown in Table 4, the problem statements are strongly aligned with the QIT PBC and the GR2KF SSBC. The previous statements identify rapid **growth** as the primary cause of inefficient movement and unreliable travel times, which are negatively affecting Queenstown's **liveability**. **Car dependency** was also recognised by both business cases as a key problem.

Problem statements for the Queenstown Business Case continue these themes, but also add resilience and safety to align with objectives of the Government Policy Statement on Transport. An amenity-specific statement has also been added to acknowledge the need to support non-transport outcomes in the Queenstown Town Centre and Frankton masterplans.

Table 4: Evolution of Business Case Problem Statement Themes

	Problem Statement Themes			
QIT PBC	Significant **growth** leads to increasing trip unreliability and worsening **customer experience**		**Car dominance** and associated congestion is affecting **liveability**	
GR2KF SSBC	The system is not providing for **growth** resulting in inefficient movements of goods and people		The system **favours cars** which makes it difficult to encourage change	
Frankton to Queenstown	Rapid **growth** and attractiveness of car travel leading to increasing congestion and worsening **liveability**	*Only one arterial link between main centres susceptible to delays and severance*	**High traffic volumes** limit opportunities to safely cross or turn onto SH6A, **limiting access to PT/active modes**, raising likelihood of injury or death	**High traffic volumes**, **limited connections to active travel routes** and unattractive adjacent land use does not align with aspirations an enhanced place value
Queenstown Town Centre	Unattractive travel options, coupled with **growth** leading to increasing congestion and parking demand, reducing **liveability**		*Roads with multiple functions create conflict between modes, which increases the likeliness for injury*	**High traffic volumes** and **allocation of road space** in the town centre detracting from amenity

Italics indicates new problem statement themes

3.3 Investment Objectives

Given the interdependencies between the Frankton to Queenstown and Queenstown Town Centre project areas, a single suite of investment objectives was developed to guide optioneering and address the areas' different problems with a consistent approach. Draft objectives were initially discussed at a meeting with representatives from the project team and each of the Way to Go partner organisations on 31st October 2018 and confirmed at a workshop with the wider stakeholder group on 22nd February 2019.

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As noted in Section 3.1, the Investment Objectives were reviewed in February 2020 following the addition of Frankton and Ladies Mile to the project scope and found to be appropriate for the new project areas. The Investment Objectives are shown in Figure 24.

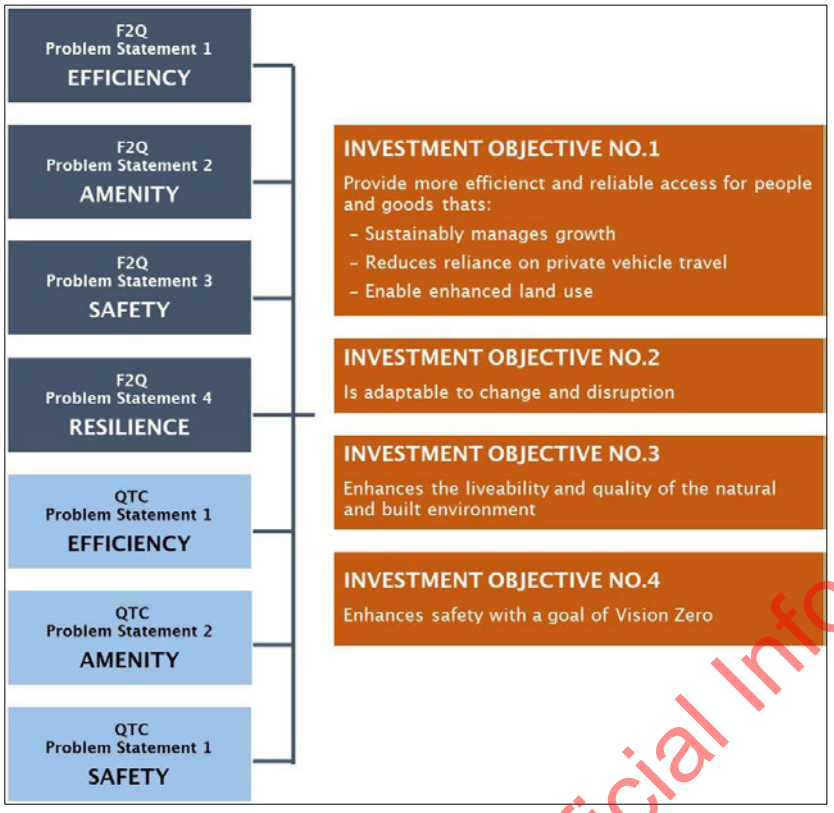

Figure 24: Investment Objectives

Investment Objective 1 initially focussed on increasing throughput of people and goods to address problems with congestion and travel time reliability covered by Problem Statement 1. The project team and Way to Go partners agreed that the objective should be more nuanced, emphasising the importance of providing more capacity in a sustainable manner (i.e. across multiple modes). The team also recognised the need to integrate transport and land use in the investment objectives (as the primary driver for travel demand); 'enhanced land use' was added to highlight the mutual benefit of improved transport links and higher density (and value) land use, such as that provided by Transit Oriented Developments.

Investment Objective 2 stemmed from Problem Statement 4 for Frankton to Queenstown, originally relating to short-term threats from natural hazards and network impact vulnerabilities on SH6A. This was tweaked to incorporate adaptability to long term changes both in terms of risks and opportunities, such as climate change and technological advances.

Investment Objective 3 addresses Problem Statement 2 and is intended to give action to non-transport objectives of the Queenstown Town Centre and Frankton masterplans, such as liveability, placemaking, urban design and amenity.

Investment Objective 4 relates to Problem Statement 3 and was included to specifically address objectives in national strategies such has the Government Policy Statement and Road to Zero.

3.4 Benefits of investment

3.4.1 Benefit Statements

At the ILM workshop on 9th October 2018, the project team and Way to Go representatives agreed that investing in addressing the identified problems (Section 3.2) would result in the following benefits:

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Frankton to Queenstown, Frankton and Ladies Mile

- Peak period travel times do not worsen
- More reliable travel times
- Economic benefit with more visitors coming into Queenstown
- Increased number of walking and cycling trips
- Reduced number of crashes, injuries and deaths on the road
- Improved network resilience
- Improved amenity value

Queenstown Town Centre

- A desirable place to live and visit
- More reliable travel times through the Town Centre
- Economic benefit with more visitors coming into Queenstown
- Increased number of walking and cycling trips
- Reduced number of crashes, injuries and deaths on the road
- Opportunity for urban development

Benefit mapping with more detail in relation to the preferred option is explored in more detail in the Management Case.

3.4.2 Outcomes and Key Performance Indicators

Table 5 summarises how the Investment Objectives are intended to realise benefits, and how the benefits will be measured. Further details for each KPI, in terms of the measurement method, baseline and expected results are provided within Appendix A03, and expanded on in relation to the preferred option in the Management Case.

Table 5: Outcomes and Key Performance Indicators Mapping

Investment objective	Key performance indicator	Outcomes	Measure
Provide more efficient and reliable access for people and goods that: a. sustainably manages high growth b. reduces reliance on private vehicle travel c. is adaptable to change and disruption d. enhances the liveability and quality of the natural and built environment	Travel time reliability for all modes	Decrease the financial cost of using transport, better management of population and visitor growth	Average travel time variability
	Mode Share	Decrease the financial cost of using transport, reduce reliance on car travel	Number of pedestrians, cyclists and public transport boarding
	Network accessibility (population, including visitors within 15mins and 30mins (QTC))	Improved accessibility to town centre by sustainable modes	Total number of people within 15 or 30min to QTC by walk, cycle, PT
	System Occupancy (Network Productivity)	Increase vehicle occupancy	Number of passengers for general traffic and public transport
	Walking Quality of Service (LOS)	Improve the level of service for pedestrians in the Queenstown town centre	Quality of service metric based on Transport for London guidance (Pedestrian Comfort Level)

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Investment objective	Key performance indicator	Outcomes	Measure
			– average LoS for two hour period
	Cycling Quality of Service (LOS)	Improve the level of service for cyclists	Percentage travel on cycle network classified as complying with defined level of service (facility type)
Is adaptable to change and disruption	Network availability	Improve resilience to natural hazards – availability of alternatives for high risk/risk impact routes	Percentage of high-risk, high-impact routes with a viable alternative
	Natural Hazard Rating/Risk/QRA	Improve resilience to natural hazards – level of service and risk	Average number of road closures from natural hazards
	Future ready	Improve network resilience and travel time reliability – network redundancy	Appropriate capacity in event of system disruption (including alternative routes, alternative modes, alternative destinations)
Enhances the liveability and quality of the natural and built environment	Quality of urban environment	Improve the amenity value of the built environment, people focused	Amenity rating
	Transport related emissions and noise	Reduce pollution and greenhouse emissions Reduce environmental noise, people focused	VKT proxy for tonnes of CO2 equivalents emitted Measure noise level in dB Laeq over 24h
	Potential for urban development	A transport system that encourages and enables development	People and goods throughput on SH6A
	Quality of life survey	Improved residents' satisfaction with the transport system and built environment	
Enhances safety with a goal of Vision Zero	Risk of death or serious injury	Support physical health, improved access for alternative transport modes	Mode share of active modes

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4 EVIDENCE BASE

This section summarises the status of the evidence base, identifying changes since the QITPBC was published using updated datasets from transport modelling, traffic data, site investigations, customer insights and stakeholder workshops.

4.1 Customers' Problems

Queenstown's transport network caters to a complex set of demands from a broad range of users. It needs to provide for residents, visitors and freight, who have distinctly different needs, and the many subgroups within those categories.

The ability to understand the needs of customers is complicated by lacking or incomplete datasets. Privacy concerns restrict the ability to collect detailed origin and destination data, while the commercial sensitivity of industries like car hire and aviation means businesses are unwilling to share granular data on customer numbers and movements.

However, customer insights obtained through QITPBC, GR2KF SSBC and the Queenstown Town Centre Masterplan engagement provide a qualitative view of the types of customers travelling in Queenstown and their needs. These insights are summarised in Table 6. Sample portraits of different network users are given in Queenstown Integrated Transport Preliminary Business Case Liveability & Visitor Experience Insights.

Table 6: Customer Summary

Customer	Summary	Problems
Local residents	• Construction is Queenstown's second biggest industry and a large proportion of the population is employed as 'tradies', who need to carry tools and therefore cannot regularly use public transport or active modes. • Population density has shifted out of traditional centres in Frankton and the Town Centre to subdivisions on the edge of the urban area. • Transient seasonal workers make up a proportion of the resident population. These workers tend to be in low-paid jobs and rely on cheaper modes of transport	• The community regularly complains of unreliable travel times making it difficult to plan journeys and causing missed appointments. • While the mode share of public transport has increased through the introduction of the $2 flat fare, buses currently offer no travel time benefit over cars • Subdivisions on the periphery of the urban area are almost entirely residential. Residents must travel for work, shopping, health care and recreation
Regional commuters	• Increasing numbers are living further afield from the main centres due to high cost of living.	• There is currently minimal regional public transport, so most commuters travel by car. • Bottlenecks at the entry to Frankton cause significant delays and there are no opportunities to transfer to public transport. • Leads to unsustainable transport outcomes, with vehicle kilometres travelled increasing substantially
International visitors	• Queenstown is marketed as a self-drive destination (and is likely to be so again once the borders re-open). A large number of international visitors pick up a rental car from the airport (rentals make up 20%-25% of airport vehicle mode share[24]). • Australia is the only country with direct flights to Queenstown. As such, other international visitors catch connecting flights from other centres or hire a car or campervan and arrive by road.	• The public transport network is not well advertised at the airport and can be hard to understand, discouraging visitors from using it. • Rental cars and taxis are prioritised over other transport options at the airport, with public transport access requiring a 'walk of shame' across the forecourt

[24] Queenstown Airport Road Transport Data Collection Report, WSP (2020)

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Customer	Summary	Problems
Domestic visitors	• Anecdotally, many domestic visitors arrive by car from local regional towns, particularly for long weekends. • Following the closure of the borders due to COVID-19, demand for domestic travel into Queenstown increased 25% (during the July 2020 school holidays compared with the previous year[25]). • New Zealand as a nation is generally reliant on car travel[26], which leads to most visitors hiring a car in Queenstown. • Visitor travel patterns vary between seasons. In winter, the primary attraction is the ski fields, which have dedicated buses providing transport up the hill for at least a portion of demand. In summer, campgrounds accommodate a much higher proportion of visitors.	• The prominence of car travel among regional visitors makes it difficult to promote alternative modes to this group without Park and Ride facilities. • Following COVID-19, the tourism sector is entirely dependent on the domestic market, which itself is largely driven by school holidays. Seasonal variability has become more prominent, with busier peaks and quieter off-peaks, making it difficult to provide an appropriate level of service year round. • Summer travel demands are harder to facilitate with non-car transport as popular activities and accommodation tend to be spread further afield closer to outdoor activities.
Commerce	• State Highway 6 has been described as the 'lifeblood of the Queenstown economy'. It provides the only route for freight to service Town Centre businesses. It also facilitates tour operator trips to activities around Queenstown and further afield. Gorge Road provides access to Coronet Peak, Skippers Canyon and Shotover Jet, all of which require travel over the 101-year-old, one-lane Edith Cavell Bridge.	• As congestion and delays increase, freight companies have reported being able to complete fewer deliveries per day, which has flow-on effects in terms of increasing prices for businesses and customers • Tour operators have complained that Milford Sound coach drivers are exceeding logbook hours as a result of congestion. • The local economy is highly vulnerable to transport impacts with singular network events having the potential to disrupt almost the entire Queenstown economy, particularly if SH6A is closed.

4.2 Land Use

The transport problems identified here need to be understood within the context of the spatial development of land use, which itself creates the need for people to travel.

4.2.1 Causes

In recent years, the rate of growth in Queenstown has outstripped the speed at which appropriate housing and infrastructure could be planned and built. The lack of developable land (due to terrain and district plan height restrictions) exacerbates the issue, with only 12% of total growth in the district forecast to happen in the town centre[27]. This has resulted in an ad hoc, largely private sector-led approach to housing, creating dispersed and disconnected developments that are difficult to serve effectively with transport. Figure 25 summarises the spatial distribution of land use and major trip generators in the Wakatipu basin.

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[25] Air NZ boosts capacity on Queenstown flights above pre-COVID levels, Otago Daily Times (September 2020)
[26] Commuting Time by Mode of Transport, EHINZ (2020)
[27] Queenstown Lakes District Population Projections Post-COVID (September 2020)

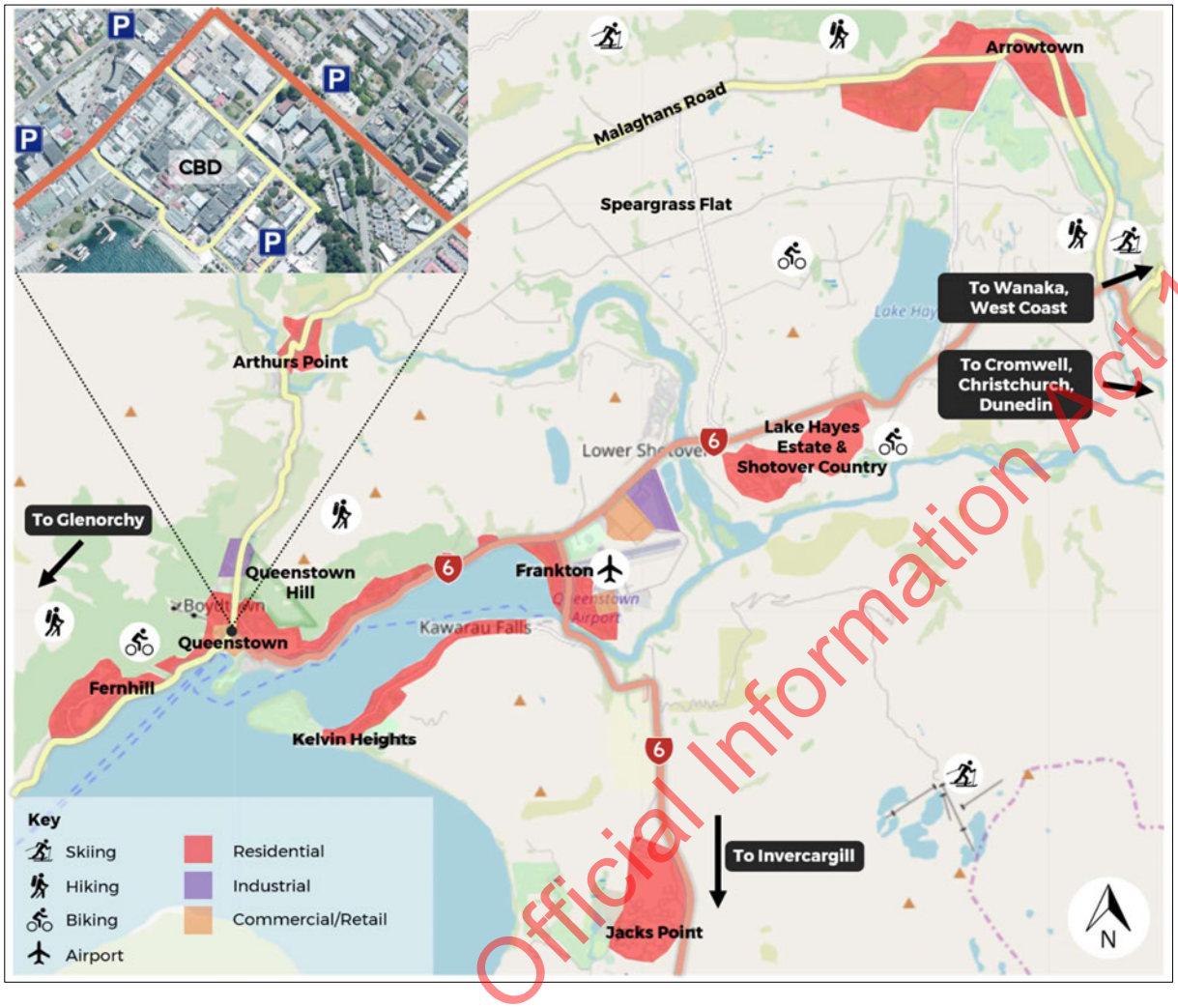

Figure 25: Land Use in the Wakatipu Basin

A lack of strategic oversight has seen land developed in suboptimal ways across the district. Continued value uplift and associated rent increases has caused a gradual relocation of 'everyday' shopping away from the town centre. Car-centric big box retail has sprung up across Frankton, where land is flat and comparatively cheap, while residents in the 1,500 houses in Lake Hayes Estate and Shotover Country must cross the Shotover Bridge to reach shops, community facilities or healthcare.

With sections of the road network now reaching capacity, the impact of disjointed land use and transport planning have come to bear. As communities increasingly complain of unreliable travel times causing missed appointments, and visitors ranking transport issues as the most negative aspect of their stay[28], it is evident that the quality of life of residents and the visitor experience is beginning to worsen.

4.2.2 Effects

The root cause of the transport effects described in this report is the need to travel, which is generated by the spatial distribution of land use. Existing land use in Queenstown is having the following effects on the transport system:

- The ease with which people can park outside destinations in Frankton, and the difficulty serving the same dispersed destinations with public transport and active modes, is encouraging continued use of private vehicles, and particularly single occupancy trips, among locals for most trip purposes

[28] Visitor Insights Programme, Angus & Associates (Q3 2016 – Q2 2018)

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- The reactive, as opposed to proactive, response to growth has led to longer trips, a larger proportion of which are by car, contributing significantly to congestion
- The reluctance to intensify land use in order to protect the existing natural environment and historic feel of the town may be having a counterproductive effect, in that low density development is sprawling throughout the district, occupying more land and creating an unsustainable long-distance transport system.

4.2.3 Consequences

The consequences of land use issues described above are having an impact on not only the transport system, but the lives and experiences of residents and visitors:

- Relentless economic growth in the town has caused house prices to soar (Queenstown had the highest median house price in the country prior to Covid-19), creating a housing affordability crisis. It has been reported that hospitality and tourism workers have been 'hot-bedding', whereby shared beds are rented, rather than rooms[29].
- Employers, including local bus service providers Ritchies, are increasingly reporting difficulty finding workers. The bus company has identified hiring sufficient drivers as a potential fatal flaw in any step-change expansion of the public transport network. Many workers live outside the district and commute to Queenstown by car, compounding the transport issues described elsewhere
- Residents, who have a lower price point and are less drawn in by the amenity of the town centre, are leaving the heart of the town devoid of local authenticity, something that visitors regularly rate importantly in terms of their overall experience.

4.3 Efficiency

Congestion on the network is beginning to limit the efficiency of the transport system. Journey times are becoming longer, and travel time reliability is decreasing. Being unable to predict journey times is having an impact on the liveability of Queenstown, with locals complaining of missed appointments, tour coach drivers exceeding legal hours and freight vehicles completing fewer deliveries per day. The capacity of the transport system is currently one of the biggest constraints on the growth of Queenstown in a broader sense.

However, it is acknowledged that increasing the general traffic capacity of a road can be counterproductive, particularly in areas with high latent demand, as travel time improvements can induce traffic, creating more congestion. Additionally, in a geographically constrained environment such as Queenstown, opportunities to upgrade road capacity are limited and expensive.

> The viability of some of Queenstown's preeminent tourist offerings is under threat as congestion is beginning to push driver hours above legal limits. Trips to Milford Sound, the 'eighth wonder of the world', are a huge drawcard for visitors to the area, but require an 8-hour round trip by road. Any delays can take drivers above their permitted logbook hours. Getting coaches down SH6A, or establishing coach operations from Frankton, is key to preserving a major contributor to the local economy.

4.3.1 Causes

Sustained rapid growth in traffic volumes and the inability to provide additional capacity is the root cause of increasing inefficiency on the network. Compounding the issue, a history of car-oriented development has led to ingrained travel behaviour and low occupancy rates. Subdivisions have been retrofitted to accommodate public transport, but gaps remain in the catchment and routes are not supported by priority measures. The burgeoning public transport system has seen significant growth in mode share but is now reaching capacity, limiting the ability to take more cars off the road.

[29] https://www.stuff.co.nz/business/115954442/workers-hot-bed-as-queenstown-housing-crisis-worsens accessed on 7th October 2020

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Resident and Visitor Growth

Queenstown's economy is heavily dependent on the tourism market, within which there has been significant recent growth. This growth has stimulated an increase in resident population, which is forecast to continue growing at a rate of 3.6% per annum to 2028, then 2.1% per annum to 2048. Figure 26 shows forecast growth in residents and visitors. Updated forecasts have been generated by QLDC to reflect changes caused by the COVID-19 pandemic. Long-term projections are similar to previous iterations, with a short-term reduction in growth offset by increased growth in 3-5 years.

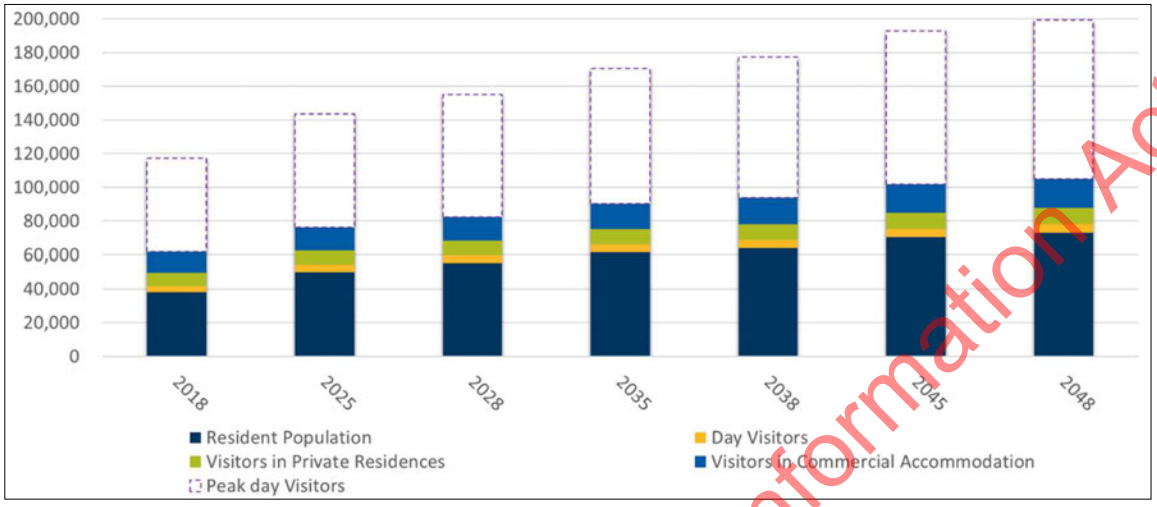

Figure 26: Queenstown Resident Population and Visitor Forecast (Source: QLDC Growth Projections[30])

In recent times, infrastructure has struggled to keep up with this surge in demand. The difference between peak demand and resident population highlights the scale of financial pressure on the ratepayer base to subsidise visitors' use of infrastructure.

As total resident population and visitor numbers increase, land use patterns are also changing. New and planned developments at Hanley's Farm, Coneburn and Homestead Bay will lead to increased traffic on the southern corridor, while proposed subdivisions on Ladies Mile have the potential to add 1,000 households to the eastern corridor. Frankton has become a commercial and retail hub due to development of the Queenstown Central and Five Mile precincts, changing trip patterns in the district and increasing the proportion of journeys with Frankton as a destination.

Traffic Growth

As a result of growth in population and visitor numbers, traffic volumes on the State Highway network in and around Queenstown have increased at a faster rate than anywhere else in the country (Figure 27) with the annual growth rate reaching 20% in 2016.

Compounding the effects of rapid growth on Queenstown's transport network is the seasonality of demand (Figure 28). Activity-driven peaks, such as those seen during the ski season, create chronic traffic issues at very specific times that are inefficient to design for, given their short duration.

Due to successful marketing strategies, demand is becoming more evenly spread throughout the year. However, less prominent shoulder seasons can also be attributed to

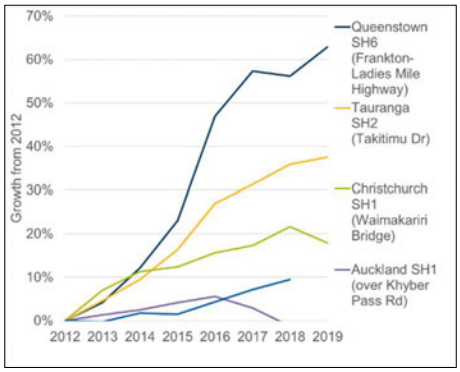

Figure 27: National AADT Growth Comparison (Source: Waka Kotahi Traffic Monitoring System

[30] Queenstown Lakes District Population Projections (December 2018) *Updated in September 2020 to include COVID-19 impacts and Spatial Plan outcomes

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capacity being reached during the winter and summer peaks, rather than a slowing of growth in demand.

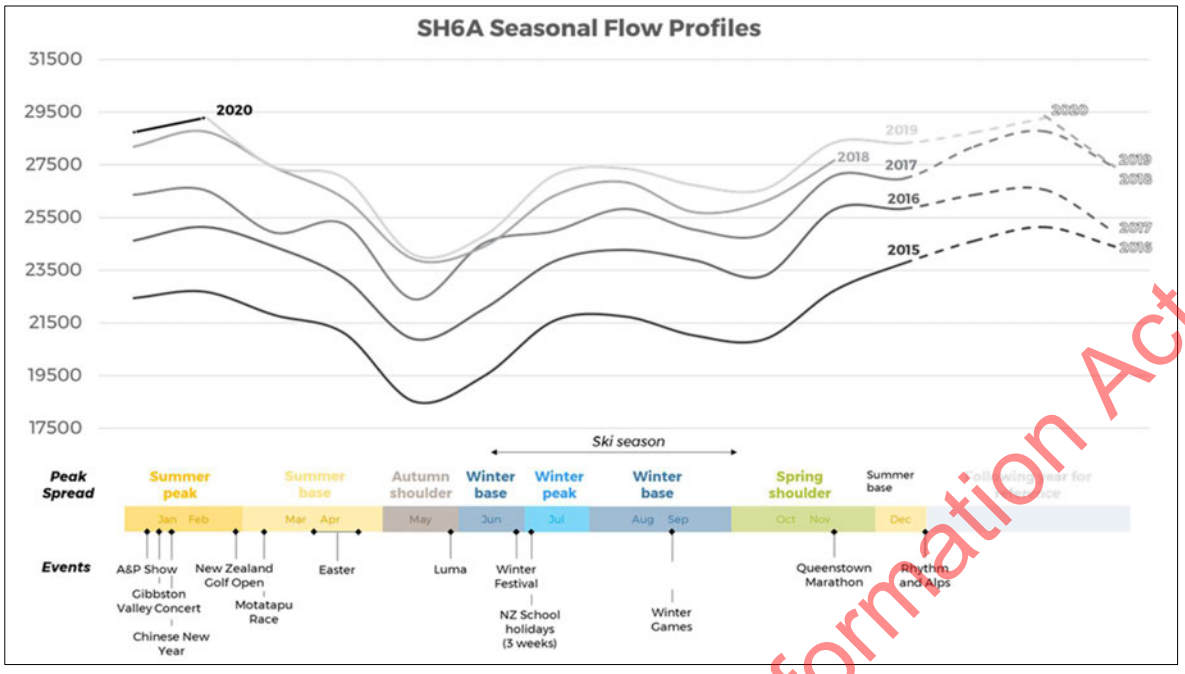

Figure 28: SH6A Seasonal Flow Profiles – Vehicles per Day (Source: Waka Kotahi Traffic Monitoring System)

Figure 28 shows the growth in daily traffic volumes on SH6A since 2015. Traffic demand is increasingly exceeding the current theoretical capacity of SH6A (28,500 vehicles per day[31]), which causes significant delays and unpredictable travel times during peaks.

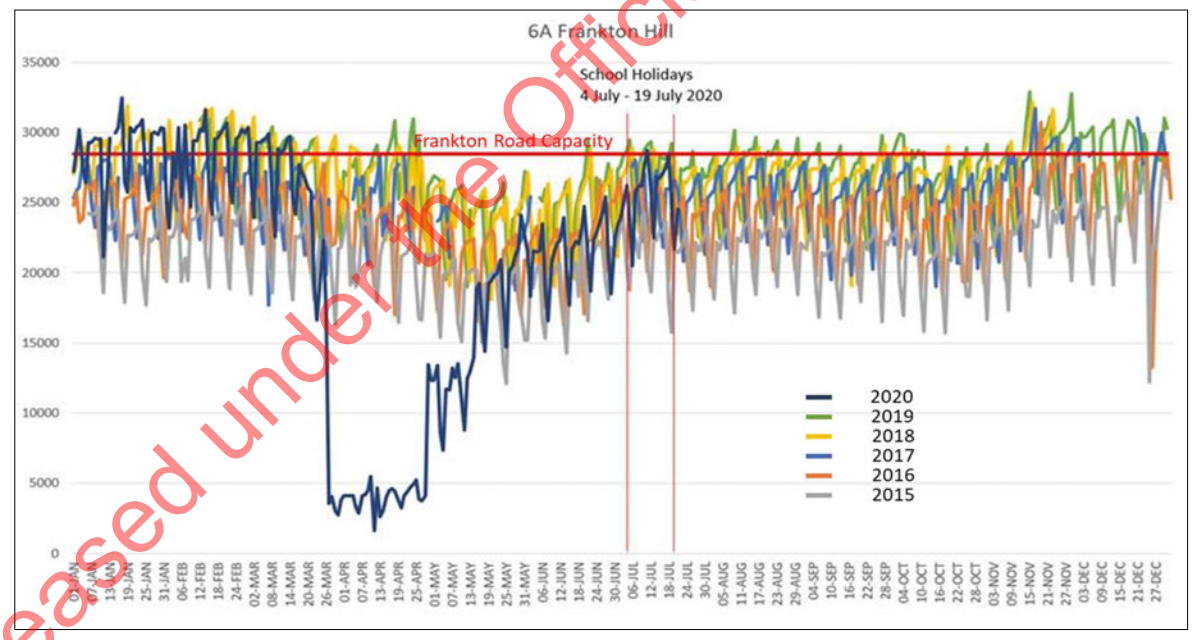

Figure 29: Daily Traffic Volumes Frankton Road

The capacity of SH6A has been measured at 1,450veh/hr westbound and 1,250veh/hr eastbound using the Waka Kotahi Traffic Monitoring System. Figure 29 shows that peak hour volumes on SH6A are reaching capacity for an increasing number of days each year. There were 140 recorded days in 2019 where practical capacity (90% of theoretical capacity, where queueing and delays begin to increase exponentially) was

[31] QITPBC, Abley (2017)

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exceeded, compared to just 29 days in 2015. Also evident is the temporal spread of peak demand, with high volumes being seen across longer periods of the day (Figure 30). Continued peak spreading will lead to more unreliable travel times outside of peak hours, impacting the less peak-driven tourist operations.

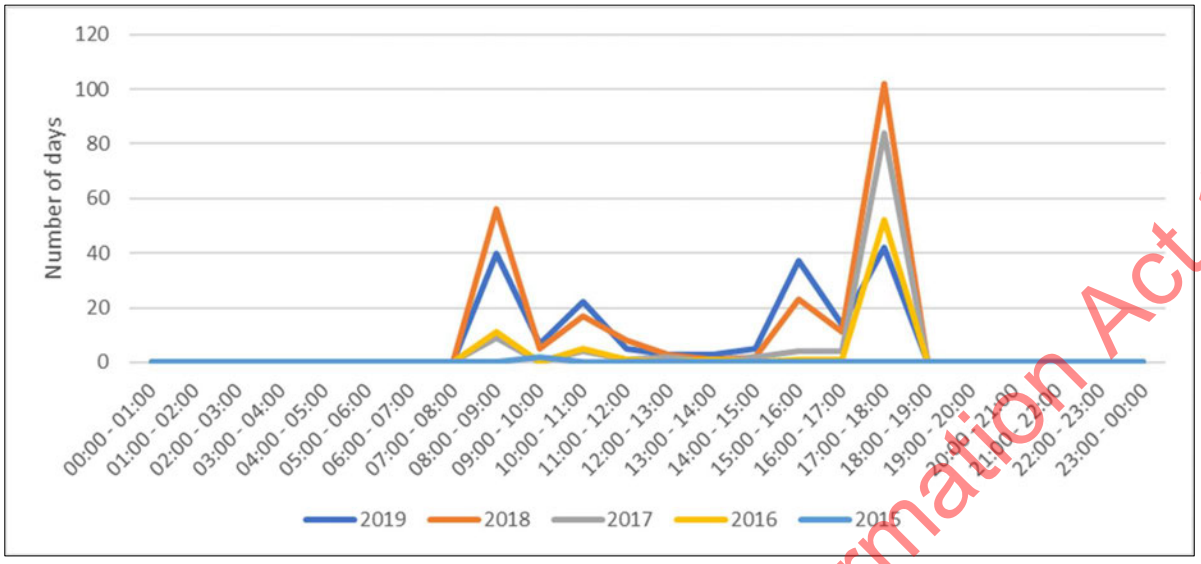

Figure 30: Occurrence of 90% capacity being exceeded on SH6A (Eastbound)

Limited Travel Choice

Queenstown has only recently experienced congestion problems. Historically, there has been no need for alternative travel options, as roads had spare capacity and it was possible to provide ample parking at most destinations without overloading the system. Only since the tourism boom and rapid growth, when infrastructure was unable to 'keep up', has there been a need to address car dominance in Queenstown.

Additionally, development in the district has occurred in an ad-hoc, dispersed fashion with long distances between residential, employment and recreation areas. The traditionally minimal public transport network did not meet the needs of residents or visitors and as a result, the town has developed a reliance on private vehicles. As shown in Figure 31, the private vehicle mode share on SH6A is approximately 80%.

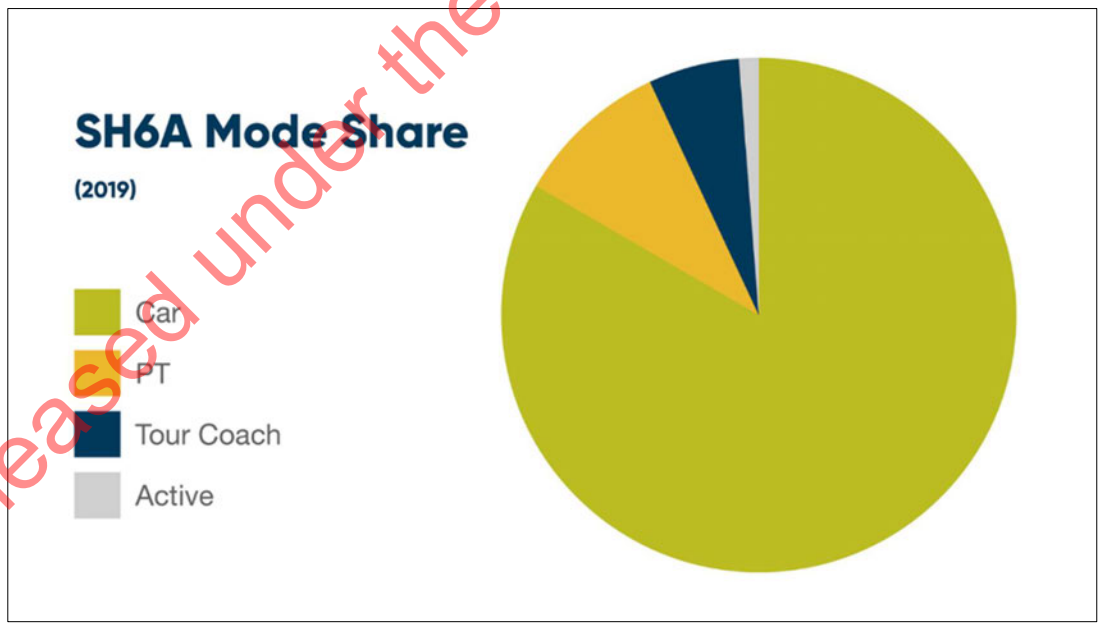

Figure 31: Mode Share on SH6A 2019 (Source: 2018 Census Journey to Work Data)

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In addition to ingrained travel behaviour and land use issues described above, this high private vehicle mode share is driven by other factors including:

- Anecdotally, a high proportion of 'tradies' travel in single occupancy vehicles that carry their tools to work. Construction is Queenstown's second largest industry[32], and these trips make up a significant portion of traffic volumes. Similarly, Real Estate agents have raised concerns over travel time reliability affecting their ability to travel around the district for work, even during off-peak hours[33].
- Self-drive holidays have become increasingly popular due to national and international advertising strategies and the dispersed nature of tourist destinations across the lower South Island. Promotional arrangements between tourism operators and rental car companies often incentivise people to rent vehicles to receive discounts on tourism activities, such as the Treble Cone and Jucy rentals deal, which makes it cheaper to rent a car to get a free ski pass than it is to buy a day pass up the mountain.
- Minimal incentive for arrivals at the airport to use public transport. The bus stop itself is located beyond the taxi rank and pick-up/drop-off, requiring a colloquial 'walk of shame' symbolising its lowly position in the transport hierarchy. Meanwhile, public transport information is difficult to find before travelling and physical wayfinding is minimal. The airport also applies a $5 surcharge to bus users ($10 total for a cash fare).

Active Modes

Relative to other areas, Queenstown has a highly active population with mountain biking, hiking and skiing a big drawcard for many choosing to live in the area. However, there are currently minimal provisions for commuters using active modes on the majority of roads in the district, and the existing active travel network is primarily geared towards recreational users. Indirect and unsafe routes, or a complete absence of footpaths and cycleways in places, means that walking or cycling is not a realistic commuting option for most residents (Figure 32).

Inconsistent rules in the District Plan result in different provisions for cycling in different parts of town. The lack of cycle facilities, and uncertainty as to whether destinations will have them is a major disincentive to commuter cycling.

Active Mode Shortcomings

A 15 minute, 4.5km cycle from Lake Hayes Estate to the Five Mile Centre by the most direct (but unsafe) route, becomes a 25 minute, 8km journey when using the nearest dedicated route, which also requires a substantial drop and climb.

The Frankton Track is an attractive end-to-end route between Frankton and Queenstown (and is proposed to be upgraded further through the WATN SSBC) but is separated from hillside suburbs by steep slopes, few access points and stairways that reduce its functionality as a local access route.

Arthurs Point is bisected by the Shotover River. The existing one-lane crossing effectively rules out use of the route for all but confident cyclists, though solutions are currently being investigated in the Arthurs Point Crossing SSBC.

The Frankton to Five Mile route has relatively gentle gradients, suitable for commuter cycling, but the existing level of service is an unsealed, narrow track running along the edge of the SH6, as shown in Figure 32.

Figure 32: Frankton to Five Mile Walking Route (Source: WSP)

[32] Queenstown-Lakes District Annual Economic Profile, Infometrics (2019)
[33] Liveability & Visitor Experience Insights, ThinkPlace (2017)

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Public Transport

As described in Section 1.7.1, public transport soared 192% year on year to June 2018 following the introduction of the $2 flat fare, increased frequencies and routes, and increased parking charges. The success of the new bus service should be understood within the context of the low base patronage, which was 37,383 monthly users in November 2017. Prior to the Covid-19 pandemic, monthly patronage was hovering around 128,000 (December 2019 latest dataset available[34]). Mode share data is not currently collected in Queenstown for people-trips (only vehicle-trips), but the Future Public Transport Demand model suggests this represents a public transport mode share of 6% on SH6A.

Site observations undertaken in November 2019 found that the bus service was nearing capacity, at least during peak periods[35]. Several short-term opportunities for improvement were identified:

- Existing bus stops are basic with minimal facilities or shelters and no real time information. Bus stops do not have numbers or location information, which makes legibility more difficult, particularly for unfamiliar users. A programme of works is underway through QLDC to provide shelters, lighting, bins and ski racks but there is currently a lack of consistency across the network.
- Buses currently used on the network have substandard luggage storage available, particularly for routes that serve the airport, making it difficult to carry shopping, skis and suitcases.
- Different operators (Go Orange and K Jet) have proposed using ferries as a solution to public transport and congestion issues in Queenstown. However, the vehicles are substantially more expensive to operate than buses, and low accessibility to the lakeside means the catchment is significantly smaller. A Kelvin Heights to Queenstown Bay service is an obvious opportunity but is unlikely to attract material patronage beyond those areas[36]. A Lake Hayes service operating with jet boats on the Kawarau River has been proposed by a local operator[37] but will need to address issues with a sufficiently large fleet of practical jet boat ferries, timetable pressures and pedestrian access of up to 2km from Lake Hayes Estate and Shotover Country.
- Bus priority is currently limited to one 50m strip of bus lane on Kawarau Road. Bus trips are therefore affected by the same congestion issues experienced by general traffic, meaning buses do not offer journey time benefits over cars.
- The Frankton Bus Hub is located centrally, but is isolated from many of the local destinations, meaning that many journeys require a transfer. Heading away from town, connecting services to Lake Hayes, Kelvin Heights and Jacks Point are infrequent with headways of up to 60 minutes, meaning delays to first leg trips can cause significant disruption for passengers. The hub is also a site with numerous conflicts between urban, regional, long distance, Milford Sound and tour buses, taxis, ubers, drop-offs and kiss-and-riders (Figure 33). Public transport stops at the hub and on SH6A are under pressure from private coach use, with up to 90 NZSki buses stopping per day in winter. Real Journeys coaches stopped at the Frankton hub for an average of 4 mins 49 seconds in 2019, potentially delaying public buses.

Public Transport in Frankton

Frankton is difficult to serve efficiently with public transport due to its dispersed destinations and severance caused by the airport. Meanwhile, public transport provision has not kept pace with rapid development of new commercial and retail centres. This has led to a situation where 'Hawthorne Drive has bus stops but no buses, and the Frankton-Ladies Mile Highway has buses but no bus stops'.

Figure 33: Congestion at Frankton Hub (Credit: Darren Davis)

[34] ORC Bus Patronage Data, by email (March 2020)
[35] Stanley Street Bus Hub Observations Memo, WSP (November 2019)
[36] Future Public Transport Demand Analysis, WSP (2018)
[37] Queenstown jet-boat ferry service approved, Otago Daily Times (May 2020)

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4.3.2 Contributing Factors

Other factors that contribute to the transport network efficiency issues above are outlined below:

- **Car-dependency**. 70% of people travel by car to work, with 50% of these trips in single occupancy vehicles[38]. This is reflective of the low incentive to take public transport and the convenience of car travel.
- **Lack of appropriate alternative routes.** There is one alternative full route between Queenstown and Frankton via Gorge Road, which includes a 100-year-old one-way bridge, and one partial route via Queenstown Hill, which comprises narrow residential streets with on-street parking. Similarly, Frankton is cut off by the Shotover River and Kawarau River, with access restricted to two bridges.
- **Topographic and climatic constraints.** Steep gradients on the network affect mode choice, particularly due to snow and ice in the winter, as it is a relatively more comfortable journey to use a car than cycle or take a bus. This is accentuated by the fact that only the road carriageway, and not footpaths, are gritted to improve traction.
- **Increasing pedestrian and traffic movements.** Competing demands across all modes within constrained environments, such as the town centre, has caused significant congestion and intermodal conflict, particularly on Shotover Street where pedestrian crossing demands are very high.
- **Limited footpath widths.** Increasing densities of pedestrians are causing pedestrian levels of service to diminish. This is particularly acute around Fergburger, where, despite two parking spaces being converted into a parklet to improve pedestrian experience, significant congestion remains.
- **Insufficient pedestrian priority.** Crossing demand at the three zebra crossings on Shotover Street is very high and regularly causes traffic delays. Inconsistent crossing types with large distances between controlled crossings causes confusion among visitors, who assume they have priority and cross unsafely.
- **Vehicle access to facilities conflicting with pedestrians and cyclists.** Car parks, retailers and hotels require vehicle accessibility, which increases the number of movements to and from main roads. Tour operators also tend to have ad-hoc pick up/drop off locations that increase the number of conflict points.

4.3.3 Effects

Public Transport Reliability

Figure 34 and Figure 35 show how travel times along Frankton Road vary in the westbound and eastbound directions respectively. Areas in grey refer to the 50th to 90th percentile range, whilst the orange area refers to the 10th-50th percentile range. The 50th percentile is where the grey and orange areas meet.

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[38] Way to Go Survey (April 2019)

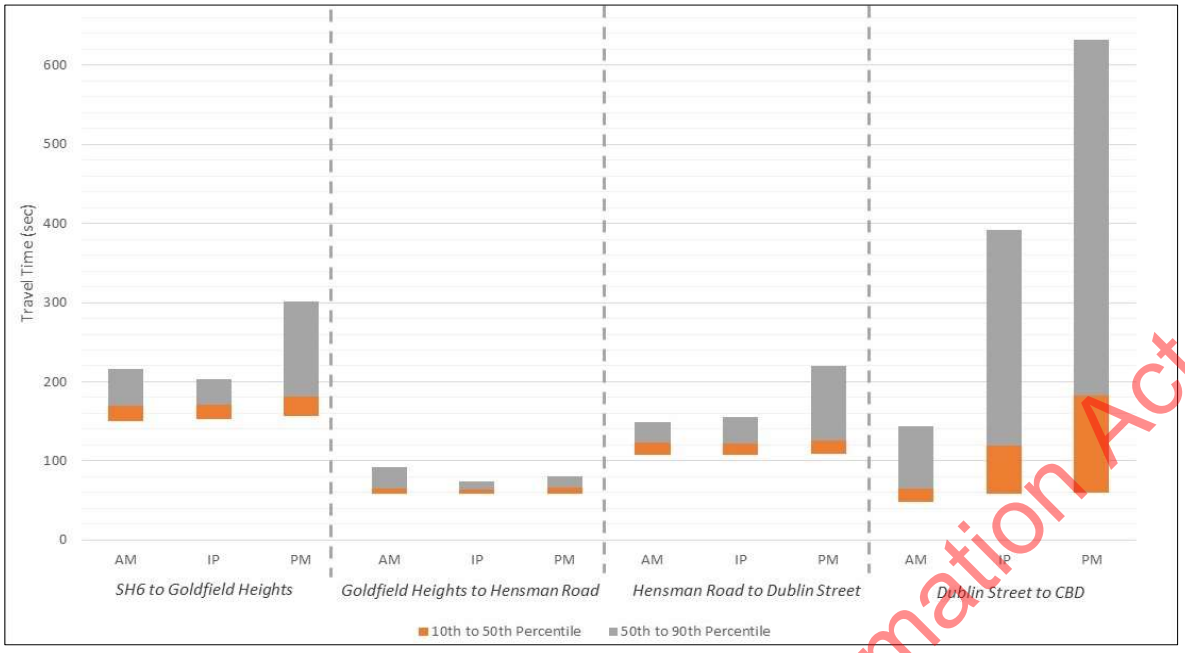

Figure 34: Daily Travel Time Variability – Westbound (Source: Bliptrack)

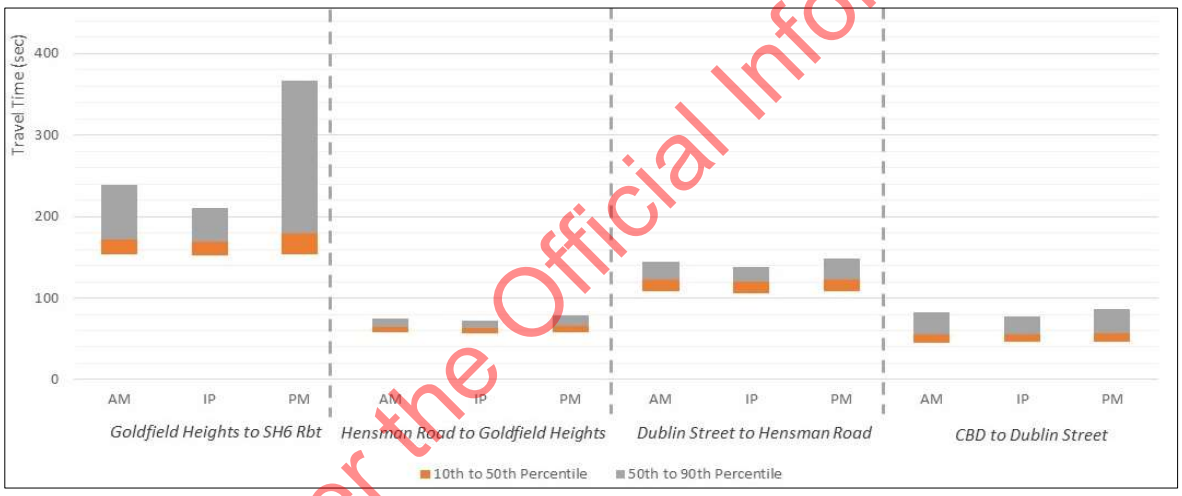

Figure 35: Daily Travel Time Variability – Eastbound (Source: Bliptrack)

The data highlights the variability in bus travel times through the day and in individual peak periods. Travel times are particularly unreliable at the SH6/SH6A intersection and on entry to the town centre, where they vary by 9.5 minutes on a 700m stretch. The evening peak tends to produce unreliable travel times due to the combined activity peaks of commuters and tourists, particularly skiers in winter, while the 'traditional' interpeak is also unreliable due to tourism activity.

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4.3.4 Consequences

The key consequences of poor network efficiency are:

- Increased reliance on the private car due to poor travel time reliability and customer experience on public transport, which perpetuates the cycle of congestion and negative knock-on environmental and liveability effects.
- People cannot reliably travel around the district, impacting their jobs and lifestyle. Similarly, Freight companies cannot make as many deliveries per day, which increases running costs that could be passed onto businesses and their customers
- Decreased vitality of the Town Centre caused by high traffic volumes and congestion in areas like Shotover Street, with high footfall of both visitors and residents.
- Diminishing visitor experiences. Research shows that visitors were least satisfied with traffic and car parking compared to all other aspects of their Queenstown visit in surveys carried out between Q3 2016 and Q2 2018. Experiencing chronic congestion and seas of rental cars on arrival to the airport belies the '100% Pure' messaging that undoubtedly brought many visitors to see Queenstown's environment.
- Congestion is beginning to spread throughout the day as peak spreading occurs, caused by congestion in the peak hours. A combination of people changing travel behaviour due to unreliable travel times in the peaks, and traffic simply not being able to pass through a bottleneck within the peak hour, leads to higher volumes in off-peak periods.
- Despite congestion creating travel time and reliability problems, it presents an opportunity to promote mode shift. Circumventing delays and queueing on capacity-constrained links by providing bus lanes is an effective way of encouraging people out of their cars.
- Increased risk that emergency services cannot get to their destination quickly enough.
- Increased severance between residential areas and the lakeshore as increased traffic clogs links and intersections. Congestion in the Town Centre is currently taking precedence over the pedestrian experience, with traffic signal phasing designed to optimise traffic movements.

Monetising the Consequence of Poor Efficiency

Impacts on the visitor experience has been monetised as described in Technical Note 26: Effect of Transport Constraints on Tourism (as referenced in the economic case). The longer-term constraint on economic growth due to visitors' inability to travel around the district efficiently has been calculated to be worth around $750 million to the local economy and around $170 million to the New Zealand economy. This value is effectively the opportunity cost of not being able to cater to demand, causing visitors to travel elsewhere instead.

One of the key consequences of the efficiency problem is that almost all future growth will need to be accommodated by non-car modes. Figure 36 shows that the car capacity of SH6A was all but reached by 2018. Without substantial travel behaviour change, the majority of growth above this point can only be catered by increasing road capacity over the entire network or by providing high capacity public transport. Based on the forecast levels of demand, **40% of trips on SH6A will need to be by non-car modes by 2028, rising to 60% by 2048**[39]. The Future PT Demand Model also found that public transport infrastructure and service improvements alone would not achieve these targets, and a degree of demand management measures (shown as 'Active Modes' below) would be required to ensure a functioning network with equilibrium between capacity and demand.

[39] Wakatipu Basin Future Public Transport Demand Analysis Technical Note 3 – Land Use, Demand and Capacity, WSP (2019)

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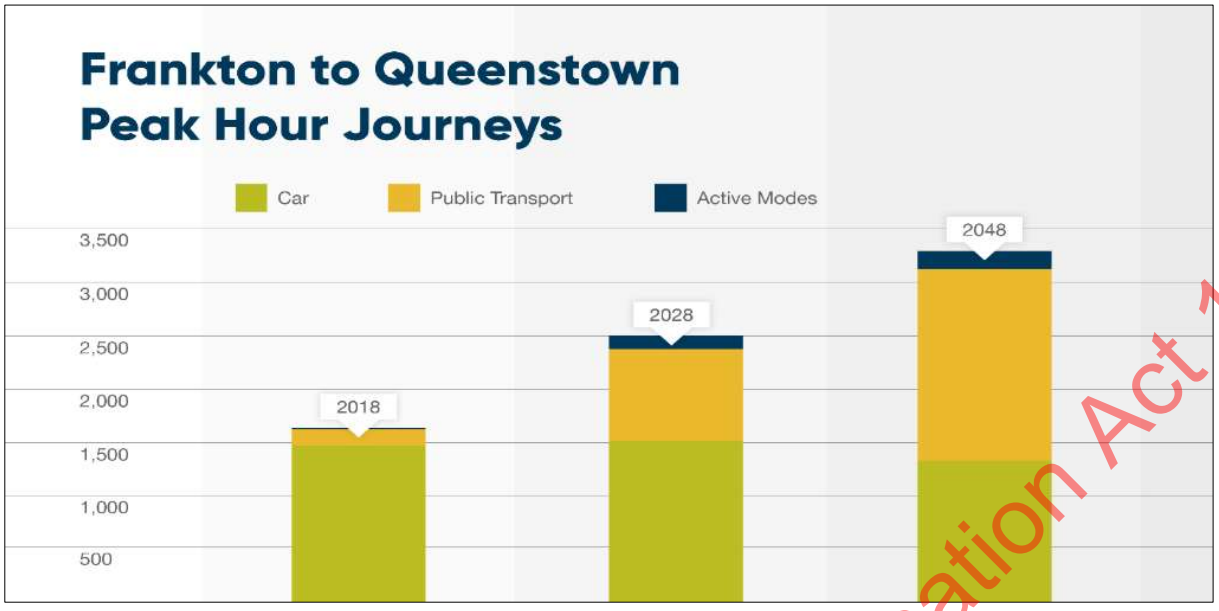

Figure 36: Peak Hour Mode Share Projections for SH6A (Source: Future PT Demand Model)

4.4 Resilience

Access between Frankton and the town centre is largely reliant on SH6A, which would be a critical lifeline in the event of a natural disaster. The only full alternative route, via Gorge Road, is restricted by the capacity of the one-way Edith Cavell bridge. The F2Q corridor is vulnerable to closures from crashes and natural hazards (primarily slips), while planned closures such as roadworks can cause significant delays, even when carried out at night. The evidence presented below represents the issues, however it is clear that resilience is to some extent a secondary problem and not the main driver for investment.

4.4.1 Causes

Queenstown's topography and winter weather make the road network susceptible to closures. The additional constraint of having few alternative routes mean that closures, planned or otherwise, can cause significant disruption.

Route Choice

Queenstown's topography has led to the road network being developed around singular routes from the east and south, with few opportunities for secondary routes. Figure 37 highlights the lack of alternative routes in the area, with access from the region primarily via State Highway 6, and the only alternative route being Malaghans Road between Arthurs Point and Arrowtown.

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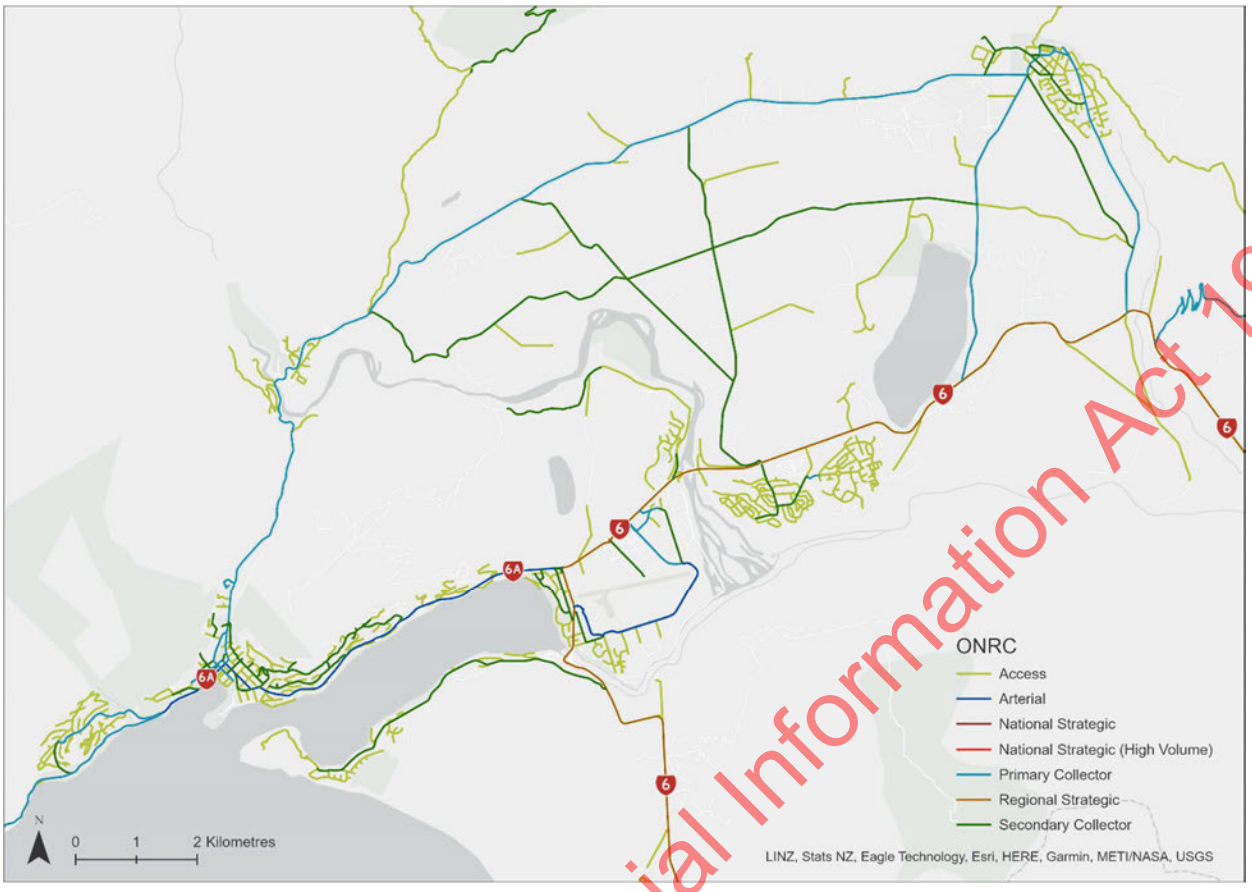

Figure 37: Queenstown Network Road Classification

Natural Hazards

The F2Q corridor is vulnerable to geological hazards including earthquakes, landslides and potentially liquefaction. Multiple landslides have occurred on Queenstown Hill, including the Frankton landslide that closed SH6A in 1999. The highway is critical from an emergency response perspective, providing the only major connection between the Town Centre and Frankton. Figure 38 provides an overview of the landslide risks that could impact the operation of the F2Q corridor.

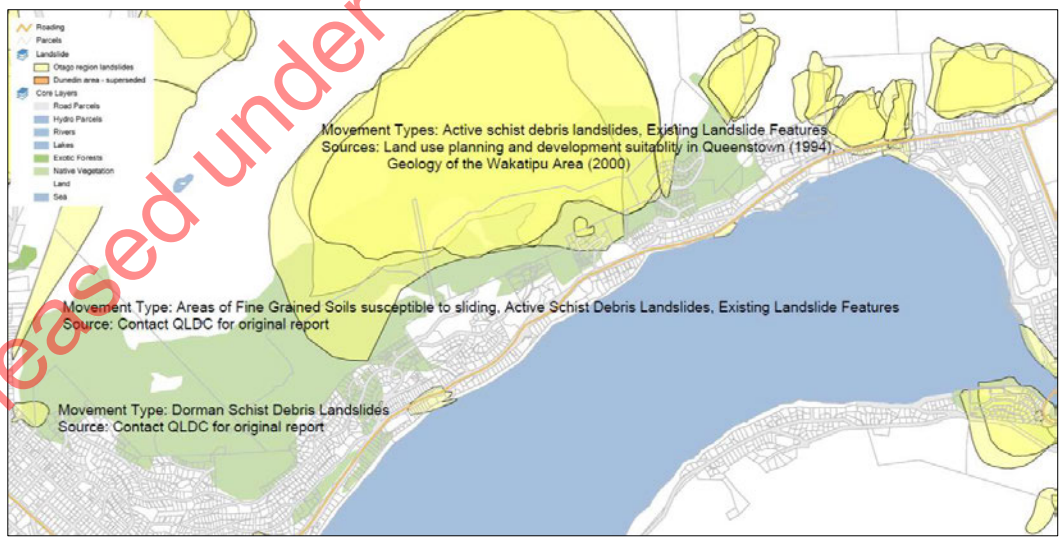

Figure 38: Geotechnical Risk Map Queenstown Hill

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The corridor is also vulnerable to road closures from weather and public events. Snow and ice during winter make travel difficult and uncomfortable particularly for active modes; occasionally roads are closed or cannot be gritted in time for the morning commute. This has economic ramifications for the area as the winter economy is dependent on the transport network being safe and accessible through weather events.

Since 2010, there have been 55 cautions for crashes issued on SH6A through the Traffic Road Event Information System (TREIS). There have been an additional 21 instances of 'Delays' or 'Road Closed' for public events and maintenance. Figure 39 shows the duration of incidents recorded in TREIS over the past 10 years. The recording of incidents appears to drop off after 2016, though this is understood to be due to a change in reporting rather than reduction in incidents. The duration of major incidents such as roadworks, appears to be increasing over time. Full closures are only recorded for the annual Queenstown Marathon, though it is known that multiple crashes closed the road in early 2020. It is therefore difficult to ascertain the frequency of full road closures.

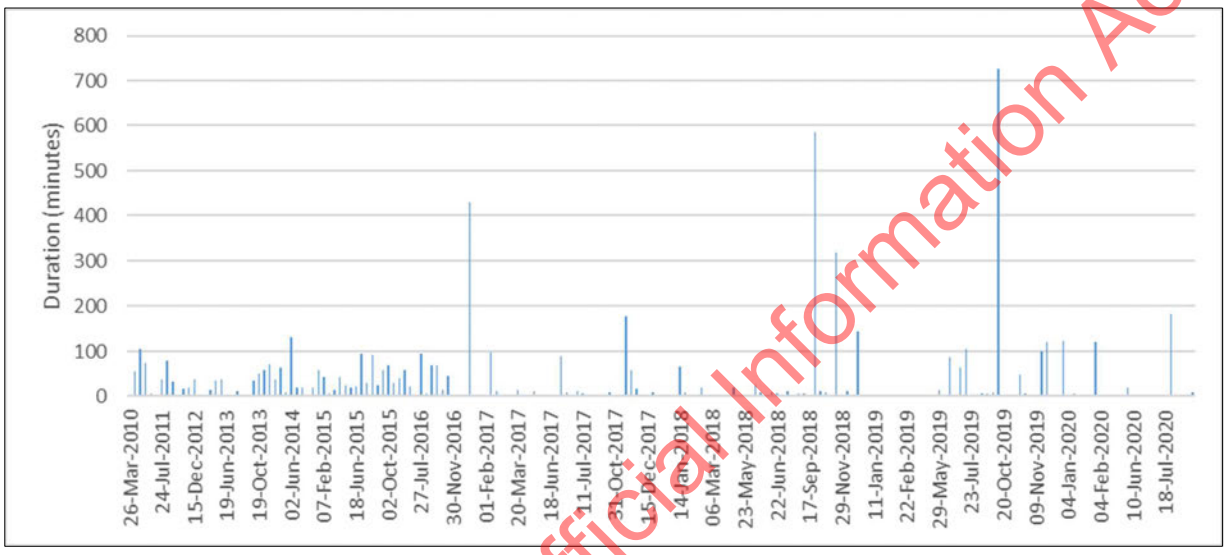
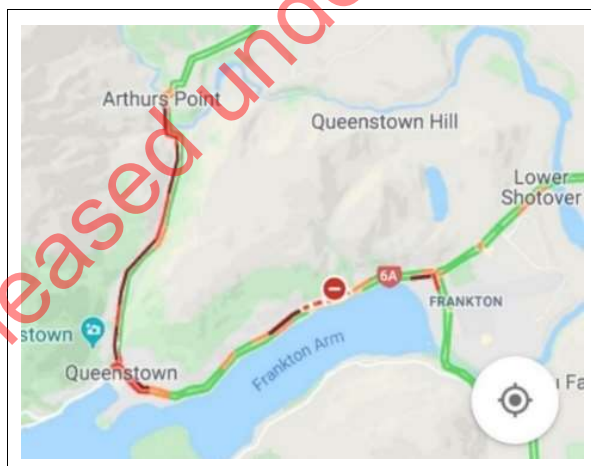


Figure 39: TREIS Incidents and Duration since 2010

Road closures

Due to the critical function of SH6A, roadworks must be carried out under certain conditions depending on the type of work being done. Works that require stop-go must be undertaken between 10pm and 5am, though they still cause queuing and delays. Lane shifts are permitted during the day but have been observed causing congestion due to high traffic volumes. While planned closures can be managed, unplanned closures generally cause gridlock on the network.



A crash on SH6A in January 2020 closed the road for 4.5 hours and caused significant disruption. Figure 40 shows the resulting queues on the only available detour route extending 5km into the town centre from the Edith Cavell Bridge in Arthurs Point. The bridge has a capacity of approximately 500veh/hr per direction. There is an additional partial alternative route to SH6A on Queenstown Hill via Hensman Road, but in this instance the closure occurred east of where the route re-joins the highway. The route is also inappropriate for large volumes due to narrow, steep residential roads with on-street parking.

Figure 40: Congestion Following SH6A Crash (11th January 2020)

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4.4.2 Effects

The key effects of poor network resilience are:

- In the event of a closure, traffic diverts onto the only alternative routes, which are not appropriate for large volumes of traffic.
- Large and unpredictable delays limit economic function in the area, frustrate locals and services providers, and restrict the ability of emergency services to respond to events, as identified in engagement for the QIT PBC.
- SH6A is the only viable route for transportation of goods into and out of the Town Centre, particularly for over dimension vehicles.

4.4.3 Consequences

The key consequences of poor network resilience are:

- The local economy is almost entirely dependent on the efficient functioning of a single corridor.
- Increased risk that emergency services cannot get to events quick enough.
- In the case of a large event, such as an earthquake, closure of SH6A will cut Queenstown off for an extended period. Evacuations, particularly of stranded tourists, will only increase in cost as visitor numbers grow and appropriate alternative routes are lacking.

4.5 Safety

Complaints received through Aspiring Highways (the Central Otago Network Operating Contract suppliers), and community engagement undertaken for the QIT PBC, GR2KF SSBC and Queenstown Business Case indicate that safety issues along SH6A are primarily related to perceived risk. A crash analysis undertaken for this project in August 2020 (summarised in Section 4.5.3) shows that crash history is typical for each of the project areas. As such, safety is something to be aware of and improvements should be made where possible, but improving safety is not the primary goal of this investment.

As for perceived risk, Queenstown is a traditionally car-oriented town and the majority of active mode facilities are unsuitable for current demands. Where they exist, footpaths and cycle lanes are generally narrow and do not have safe connections to the rest of the network. As a result, less-confident users are disinclined to walk or cycle.

While there is a crash history on the F2Q route, the majority of crashes are low severity. The road is median-separated, well lit, and has a low operating speed during peak hours (despite being posted as 70km/h) and as a result, the majority of crashes are rear-end or low-speed turning. However, 2 serious crashes occurred in January 2020, highlighting the inherent crash risk on the road.

The Queenstown Town Centre has also seen several crashes over the last five years, but whilst the percentage of crashes resulting in serious injuries is low (2.6%), all involved either pedestrians or cyclists. This raises the need for better facilities, particularly for pedestrians and cyclists within the town centre.

4.5.1 Causes

The primary causes for the safety issues facing Queenstown are limited access to cycle and walking facilities, increasing conflicted demands in developed areas such as Frankton and the Queenstown Town Centre, high traffic volumes increasing the level of driver risk taking and inadequate pedestrian facilities.

Entering and Exiting Side Roads

Increasing traffic volumes mean that there are less gaps for side road traffic to enter the main road, causing drivers to adopt unsafe behaviour. This is highlighted in the crash history, which indicates that approximately 11% of the crashes recorded within the study area during the past five-year period were crossing/turning type crashes, with over half of these crashes recorded during peak periods when traffic flows are high. Combined with high speeds, such as at the Howards Drive/SH6 intersection, this has the potential to cause high severity crashes.

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In terms of the location of crashes, over 50% of all crossing/turning crashes were recorded along SH6A, suggesting that access to Queenstown Hill suburbs is becoming increasingly difficult. All intersections on SH6A are currently priority controlled, which means there is minimal vehicle platooning. This leads to an uninterrupted flow of traffic and very few gaps to pull into the traffic stream.

Inadequate Active Mode Facilities

Figure 41 highlights common problems with crossing provision along SH6A. The intersection throat is very wide and uphill pedestrians must look over their shoulder to see oncoming slip lane traffic that can legally travel at 70km/h. Footpaths are substandard at 1.3m wide and are not supported by formal drop kerbs or tactiles. Cyclists are directed to cycle through the full width of the intersection throat via an unmarked cycle lane (the green marking was added post-photo to show its location).

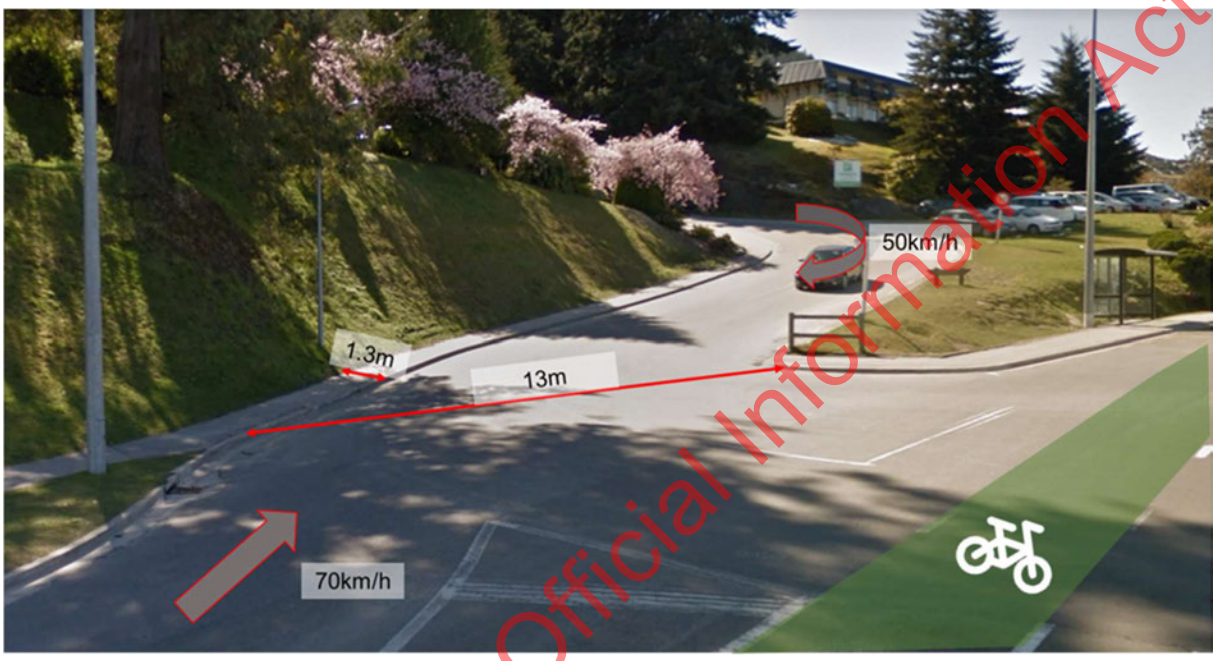

Figure 41: Inadequate Crossing Provision (Goldfield Heights/SH6A Intersection)

Community engagement undertaken in February 2019 (refer Appendix A04) raised concerns about insufficient access to cycling facilities on SH6A, inadequate separation between vehicular and cycling traffic and obstacles such as grates and manhole covers in cycle lanes. Several near miss reports were also submitted to Aspiring Highways, particularly regarding the wide crossing and high vehicle speeds at the SH6A/Goldfield Heights intersection. Figure 42 shows a summary of feedback provided.

The effect of inadequate pedestrian crossing and cycle facilities along SH6A is highlighted by the crash data (summarised in Section 4.5.3), which indicated that approximately 26% of the pedestrian crashes and 70% of the cyclist crashes recorded within the study area occurred on SH6A.

Site observations on Shotover Street (from Technical Note 25 – Pedestrian Wellbeing Benefits see Appendix B09), the primary commercial hub for tourist operators and shuttle services, highlighted several issues stemming from conflicting movement and place functions. High volumes of vehicles and pedestrians compete for space, with the street accommodating through traffic, on-street parking, loading and unloading, pedestrian crossings and even outside dining at Fergburger. Inconsistent crossing treatments leads to confusion around priority, particularly for international visitors unfamiliar with local road rules. Desire lines are also blocked by fencing.

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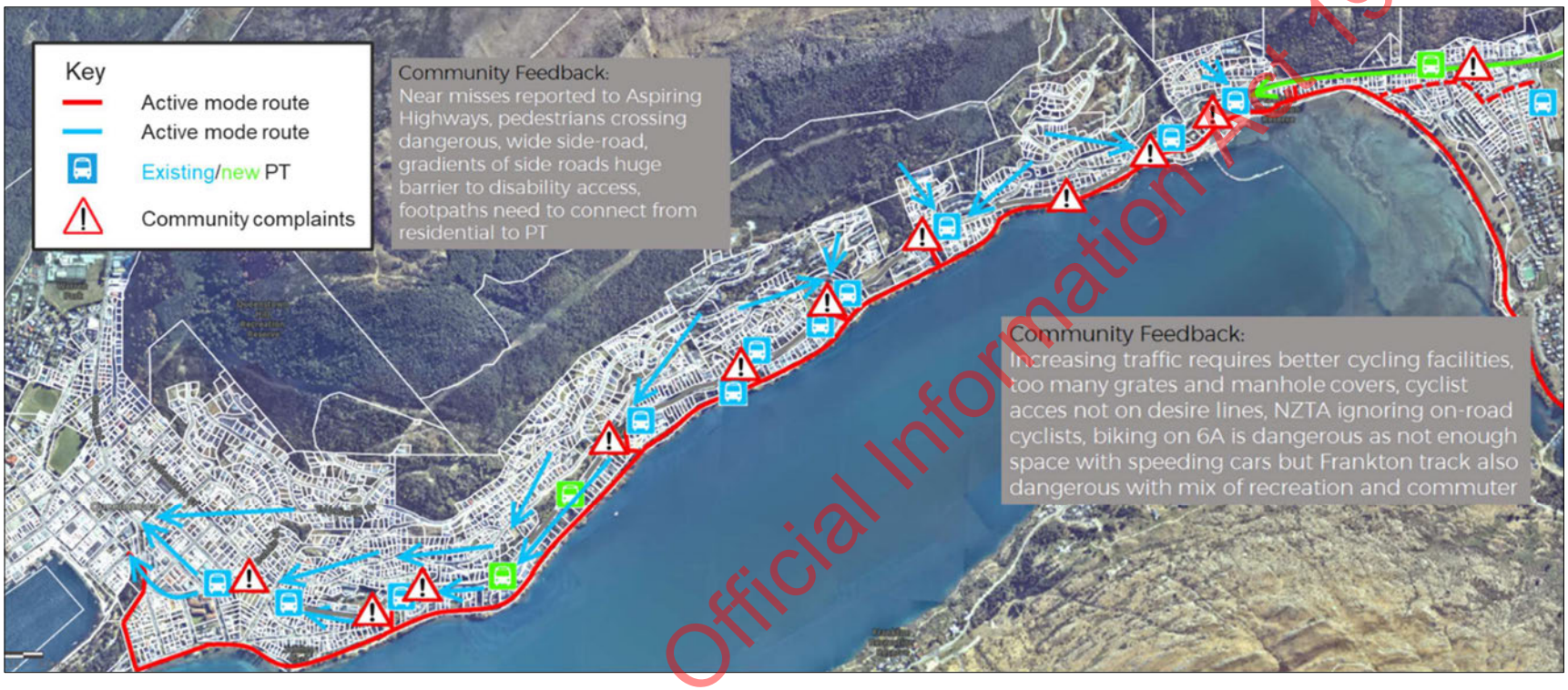

Figure 42: Community Feedback on Active Modes

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4.5.2 Contributing Factors

Other key factors which influence the safety of the transport network are outlined below:

- **Traffic volume and congestion.** The crash rate may accelerate as suitable gaps in the traffic become more infrequent and drivers take unsafe manoeuvres as they become frustrated/LOS decreases.
- **Poor visitor observation/understanding/compliance with road rules.** By the very nature of the QTC being a premier tourist destination, many visitors come from places where the driving experience and road rules differ from those in New Zealand. An example is that most developed countries, but not New Zealand, require drivers to give way to pedestrians crossing parallel to traffic at all intersections, whether they are signalised or provide a zebra crossing. Three (50%) of the serious injury crashes in the crash analysis showed road users failing to follow the road rules.
- **Limited formal crossing points, unclear priorities and particularly confusion for international visitors.** While the 'heart' of the town centre has been partly pedestrianised, there is generally a lack of clarity and direction provided to all modes resulting in congestion and increased safety risks. This affects all modes and decreases the town centre sense of comfort for residents and visitors using active modes. 14% of all crashes in the town centre in the past five years involved pedestrians crossing the road.
- **Poor wayfinding increasing circulating traffic.** Circulating vehicles looking for car parks add to congestion. The higher the number of vehicles in the town centre, the greater the chance for conflict with another vehicle or a vulnerable road user.

4.5.3 Effects

The consequences of the current safety issues are summarised by way of crash history in Table 7. The crash analysis was undertaken in August 2020 for the years 2015-2019 (the last full 5 years) within the bounds described (the analysis therefore misses the 1 fatal and 1 serious crashes on SH6A in January 2020).

Table 7: Crash Analysis Summary

	Queenstown Town Centre	Frankton to Queenstown	Frankton	Ladies Mile
Total Reported Crashes	230	105	110	36
Death and Serious Injury Crashes	6 (no fatals)	2 (no fatals)	1 (no fatals)	1 (1 fatal)
Overrepresented Crash Types	Rear end/obstruction, Pedestrian vs Vehicle	Rear end/obstruction, Crossing/turning	Rear end/obstruction, Pedestrian vs Vehicle	Crossing/turning, Overtaking, Lost control/head on

The crash analysis indicates:

- A high concentration of the rear-end type crashes on the approach to the SH6/SH6A (BP) roundabout.
- A high concentration of manoeuvring and pedestrian crossing crashes on SH6A, Shotover Street and Camp Street.
- Pedestrians are particularly at risk, constituting 20% of serious crashes.
- Low likelihood but high severity crashes on the high speed highway at Ladies Mile.

Figure 43 shows all reported crashes in each of the project areas in the last full five years (clockwise from top left – Queenstown Town Centre, Frankton and Ladies Mile and Frankton to Queenstown).

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Figure 43: Fatal, Serious, Minor and Non-injury Crashes

4.5.4 Consequences

The key consequences of failing to address safety are:

- Increased number of deaths and serious injuries, particularly pedestrians and cyclists.
- Increased number of road closures caused by a crash.
- Damage to Queenstown's reputation as a safe place to live and holiday in.
- Decreased visitor experience over being caught up in, or witnessing, an incident.
- Discourages walking and cycling, through perceived safety risks.
- Increased cost of repairing the road or property damage in the event of a crash.

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4.6 Amenity

4.6.1 Causes

Queenstown has a distinct character which is formed through interrelationships of the scale and form of many of the buildings, the layout of the streets and pedestrian linkages and proximity of the lakefront and mountains. The three principal road entry points also provide a strong sense of arrival into Queenstown, and the Town Centre is generally orientated towards Lake Wakatipu. The relocation of the town centre bus hub from Camp Street to Stanley Street has somewhat dampened the arrival experience but integrating with the planned community heart Project Manawa site will breathe life into the area.

The Town Centre should function as a place for locals and visitors alike. However, as tourist numbers have grown, the town's offering has started to be dominated by visitor-oriented shopping, dining and recreation, which can take away a feeling of authenticity and locals' sense of belonging.

This has significant impacts on the Town Centre economy with a preference by locals to shop in Frankton over the Queenstown Town Centre and a feeling by locals that the Town Centre belongs to visitors and not to them. This 'sense of place' is the main cause of the perceived amenity issue.

Amenity Assessment

Amenity refers to the quality of facilities and the overall feel of the public realm. It is possible to assess the quality of the urban environment by considering factors such as traffic volumes, speed, the amount of street furniture, tree canopy coverage, the percentage of green space, allocation of space to active modes and footpath material. The amenity values are based on a methodology, scoring scale and formula that was developed (and validated) for the Waka Kotahi *'Let's Get Welly Moving'* project.

Figure 44 provides results from an assessment using a modified version of the Valuing the Urban Realm Tool (VURT), previously used in London and Auckland. This scored 17 street attributes for moving and static pedestrians on affected streets. The map provides a guide as to where opportunities are for extending the realm of high amenity back from the lakeshore. This assessment will be revisited as part of the wider traffic modelling assessment and will look to reflect feedback from the community.

The assessment has identified that the levels of amenity are high along the pedestrianised streets (after 10:00) of Beach Street and Mall Street. There is a correlation between traffic and amenity, which affects the ratings for SH6A and Stanley Street.

Figure 44: Amenity Assessment (Current State)

The other key factors which influence amenity are outlined below:

- **Congestion.** Queued vehicles spoil the vistas offered by the Wakatipu Basin and vehicles stuck in congested traffic are not afforded an aesthetically pleasing corridor to wait.

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- **Utilitarian appearance of Frankton Road.** There are few roadside features on Frankton Road, and there is a lack of tree and amenity planting. Instead the corridor is lined with overbearing and untidy retaining walls.
- **Access vs place functions.** Several roads perform both place and access functions, where the domination of vehicles in areas of high pedestrian activity takes away from the amenity value of the local surroundings.
- **High vehicle volumes and congestion.**
- **Lack of legibility and wayfinding.**

4.6.2 Effects

The effects of suppressed amenity values are:

- Ratepayers and residents feel that the town centre belongs to visitors and not them.
- Locals have a preference to shop in Frankton rather than the Town Centre.
- Reduces the appeal of walking and cycling journeys.
- Reduces Queenstown's "wow" factor.
- Reduces the visitor experience.

4.6.3 Consequences

The key consequences of poor amenity are:

- The absence of an arrival experience for Queenstown or Frankton may have negative long-term effects in terms of visitor satisfaction and future tourism growth.
- Queued traffic generates air pollution and a negative safety perception for pedestrians and cyclists.
- Health and well-being consequences from people not engaging in active transport mode options.
- No defining character or thresholds that identify where the 'town centre' starts and ends.
- No clear purposes for streets and spaces.
- Negative environmental effects (pollution, noise, air quality).

4.7 Implications of failing to address the problems

As indicated above, the problems identified are real, supported by evidence and increasing. Failing to act now will result in these problems continuing to intensify. Modelling (as reported in the option assessment report) of the do minimum, even with the CIP and NZUP infrastructure elements in place indicates levels of traffic that cannot be accommodate on the network resulting in gridlock (to the extent that the model blocks rendering outputs largely meaningless). This demonstrates the need to invest in the remaining two pillars of travel behaviour change and PT services.

As reported above, the consequences of failing to act effectively will be a constraint to the economic vitality, attractiveness and liveability of Queenstown. This will not only cost the Queenstown economy, it will cost the national economy because of the significance of Queenstown as a draw for tourists. The COVID-19 pandemic represents an opportunity to make significant improvements that will mean that growth can continue and in a more sustainable way when tourism recovers.

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4.8 Opportunities

4.8.1 Public Transport Network

An opportunity exists to optimise the existing public transport service through low-cost rapid interventions. This could include physical improvements (bus priority), and better integration between walking and cycling links to bus stops. Simple improvements to legibility, wayfinding and quality of service would make the bus system vastly more accessible to unfamiliar users.

Changes to services, including increased frequency of peak hour services and an integrated ticketing system, are already being rolled out and are expected to further improve patronage. There has been a 192% increase in patronage since the introduction of $2 fares. Whilst this is a strong rise in percentage terms, the absolute rise was from a relatively low base; it does however highlight the potential for a step change in patronage in Queenstown. Therefore, there is good potential for further mode shift with improvements to public transport services and facilities.

In the future, public transport may include expanded ferry services and/or a form of high capacity public transport. There is an opportunity to ensure that options are sufficiently agile to accommodate a range of possible scenarios for these future travel modes. There is also opportunity to provide significantly higher capacity by encouraging a shift away from private vehicles thus reducing car dominance. This could be achieved through a variety of 'carrot and stick' initiatives.

During site observations, the project team identified several minor issues that, when combined, could discourage some users from making public transport trips in the future. Wayfinding on the network is currently lacking; minimal information on using public transport is provided at the airport – only recently was "airport" added to destination displays, while the Arrowtown to Queenstown bus still displays "Arthurs Point". The Route 1 bus currently does a double loop around Remarkables Park before returning to the airport, the stop it left just prior. Cumulatively, these shortcomings are likely to dissuade visitors from using public transport.

4.8.2 Future Technologies

There is an opportunity to anticipate, and even advocate for, potential technology advances in option development to future-proof the transport system. Technological advances may have dual benefits, both reducing demand and increasing capacity or efficiency.

Several future technologies are in various stages of development, including mobility-as-a-service, electric vehicles, self-driving vehicles and bus-tram hybrids. All of these have the potential to revolutionise how people travel. Solutions implemented in the short-term may become obsolete or even more critical, depending on successful technologies.

4.8.3 Cycling and Walking

Cycling as a transport mode is experiencing rapid growth nationwide. Queenstown has already experienced significant growth in cycling tourism associated with development of the Queenstown Cycle Trails. Given the prominence of cycling in the recreational lives of many locals, there is considerable potential for increased commuter cycling as well.

The SH6A route has relatively gentle gradients, suitable for commuter cycling with the appropriate level of infrastructure. There is an opportunity to provide complimentary cycling infrastructure on SH6A and Frankton Track. Improving the public transport network also delivers active transport benefits, as most trips begin and end with a walking trip.

4.8.4 Land Use Changes

Integrated land use planning can help optimise the use of the finite developable space available in the QTC and on the F2Q corridor and reduce the existing dependency on private car travel. An opportunity exists to promote spatial planning as travel demand management, reducing the need to build capacity later. High Capacity Public Transport options provide the opportunity to enable development and build density around the transport network.

Although the significant residential and visitor growth is having a substantial impact on the Town Centre, it also provides the financial and physical drivers to improve the economic, social and environmental aspects of the town including:

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- Diversification of commercial, retail and civic opportunities.
- Increased population, and densities, that can further enhance the viability and demand for higher quality facilities, social infrastructure and public transport services enhancing connectivity and environmental outcomes through reduced reliance on the private car.
- Community Heart (Project Manawa) – this development, focusing on the Stanley and Ballarat Street areas could unlock a new approach to integrated land use planning and operation through combining new community facilities such as library and performing arts venue with commercial activities including office developments as well as a public transport facility.
- Stimulate technologically innovative approaches to transport such as the introduction of electric vehicles/buses or low/zero emission zones.

Through a rebalancing of transport modes with a focus on people, rather than mode type, more active travel options will be encouraged and result in greater investment in the public realm, both scale and quality, e.g., through streetscape renewal or the prioritising of public transport services rather than parking facilities.

4.8.5 Quality of the Public Realm

There is an opportunity to provide a fitting gateway for visitors to both Queenstown and New Zealand, while improving liveability and sense of place for locals. Currently there is a disconnect between the welcoming experience for visitors at the airport, and the journey to their destination in Queenstown. Heavy traffic through Frankton and on SH6A does not currently appeal to the character of the destination.

4.8.6 Behaviour change

The relative success of the Orbus bus network implementation demonstrates a desire to change travel behaviour. Improvements in public transport services are only part of the solution, however. Other mechanisms to encourage a positive change in travel behaviour can be implemented to enhance the effectiveness of the PT services and to maximise the value of the CIP and NZUP investment in infrastructure. These mechanisms could either work be enticing people onto public transport or active modes ("carrot" measures) or by disincentivising private car use ("stick" measures).

4.9 Constraints

4.9.1 Committed Funding

With funding for Stage 1 of the Queenstown Arterial Route now committed, the project will form part of the Queenstown business cases' "Do Minimum". Although the project is in part intended to enable public transport and amenity outcomes, which meet objectives of the Queenstown Business Case, it will also provide more capacity for general traffic and thereby incentivise travel by car. This incentive will need to be offset by services and demand management interventions to deliver on established mode shift targets.

The NZ Upgrade Programme also has funding committed and the infrastructure provided will also form part of the business case "Do Minimum". It comprises several infrastructure interventions identified in the QIT PBC and developed through the early stages of the Queenstown Business Case. The committed infrastructure projects alone will be ineffectual at achieving mode shift targets or delivering the project's Investment Objectives; the Queenstown Business Case needs to develop a complementary package of services and demand management (and supplementary infrastructure) interventions in order to achieve the Investment Objectives and capitalise on funding committed through NZUP, which would otherwise be wasted.

The 'community heart', which has since become Project Manawa, is a key interdependency with this project, as it borders the proposed future public transport hub and will create a major new destination, changing travel patterns in the town centre. Designs through this business case will need to integrate with, what will be, a key feature of the town centre.

4.9.2 Political Constraints

The key stakeholders in the project, namely QLDC, ORC and Waka Kotahi, have distinct responsibilities and competing motivators in terms of project outcomes. For example, QLDC are under pressure to address housing

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affordability, while ORC is responsible for providing an economical and commercially viable public transport network. Conflicts may arise where solutions do not satisfy each organisation's objectives.

The 2017 election led to a significant change in the approach to the national transport strategy. Generally speaking, focus shifted from investment in road infrastructure to mode neutrality, recognising the roles of public transport and active modes, which has heavily influenced the direction of the Queenstown Business Case. A change in Government at the 2020 election (or future elections) may lead to these policies and objectives changing again under the next Government Policy Statement.

4.9.3 Land Use, Population and Visitor Growth

Tied to the uncertain rate of population, visitor and vehicle growth, there is uncertainty around future land use in the region. Due to the current high demand for housing, proposals for development can appear with little warning, while Special Housing Areas and Housing Infrastructure Fund developments can be fast-tracked, circumventing the rigour of usual planning requirements. While the Queenstown Business Case seeks to address problems surrounding this issue, there are certain elements of growth that it cannot influence, such as the insatiable desirability of Queenstown.

While the new district plan is designed to control development, there are examples of hotels being built in residential zoned areas. This leads to uncertainty in future land use (and therefore traffic demand projections) and limits the ability to provide timely and adequate infrastructure.

Restrictions on building heights limit the value of commercial space that could be used to offset costs associated with new transport infrastructure. Transport Oriented Developments could be located at transport nodes to utilise the economic potential provided by the high volume of foot traffic. Additionally, the existing height restrictions limit the ability to densify population around transport hubs or provide mixed use land zoning to reduce people's travel distances and choice of other modes such as active travel.

4.9.4 Lack of Data

An absence of some datasets can make defining problems challenging. Particularly constraining is the understanding of visitor travel behaviour and the ratio of visitor trips to resident trips. Existing information on bus operations is largely limited to revenue, though more detailed information is expected to be available following implementation of the integrated ticketing system.

4.9.5 Physical Constraints

The F2Q corridor is physically constrained by Queenstown Hill to the north and Lake Wakatipu to the south, an environment not conducive to multiple route options and easy construction. Development has intensified on both sides of SH6A, further reducing the feasibility of physical interventions. Queenstown Hill and SH6A are also susceptible to landslides and any construction of physical improvements is likely to be costly due to property and construction costs.

The topography of the areas means that it is unlikely that the F2Q corridor can provide 'all things to all people' and the competing demand with limited space will mean that some trade-offs will be required.

4.9.6 Funding

While one-off funding streams have been approved for big ticket infrastructure projects such as NZUP and Stage 1 Arterials, the remainder of any preferred package will need to be funded primarily through the National Land Transport Fund. In addition to being as being fully subscribed, the fund is under stress due to the loss of revenue from Road User Charges and Fuel Excise Duty during the COVID-19 lockdown.

As well as limited funding being available, there are uncertainties surrounding funding sources external to the NLTF. Visitor levies and bed taxes have been a common theme for discussion in the district and could provide a revenue stream for investment in infrastructure. However, nothing has been agreed and the impacts of COVID-19 are not fully understood.

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4.10 Case Studies

Though largely unique in a New Zealand context, the issues facing Queenstown are typical of resort towns worldwide: high seasonal demand, low ratepayer base and a largely car-based transport system. Table 8 summarises how some resort towns have succeeded in addressing similar issues, indicating that Queenstown could do the same.

Table 8: Resort Town Transport Planning Case Studies

Location	Description
Zermatt, Switzerland	Zermatt has been car free since 1961. Only electromobiles (fabricated at the resort), electric buses, horse-drawn carriages and trains are used for transport. Visitors can park their car at Tasch and travel the remaining 5 km by train. Two, three, and five day passes allows unlimited travel on 761 km of rail network and a 50% discount on a range of funiculars, cable cars and sports and recreational facilities. A bike ticket allows travel on a bike tour through the valley and a train on the way back.
Colorado, USA	Boulder, Colorado employs an integrated philosophy whereby parking revenues are invested in Travel Demand Management (TDM) measures. Aspen, a Colorado resort community, began charging for on-street parking in 1995 and has implemented a pricing system where fees are highest in the centre and decline with distance from the core. They have now also established a residential parking permit system. Revenue collected contributes to providing alternative transport including eight free transit routes, carpool permits and HOV lanes. Breckenridge, a Colorado resort community, has a comprehensive parking pricing scheme; any profit is dedicated to transport and public realm improvements, including free public transport passes for downtown employees.
Whistler, British Colombia, Canada	Whistler has adopted a programme of education and enforcement, which has increased compliance with parking restrictions. The vehicles of repeat offenders are towed, rather than issued with tickets. With the increased enforcement, officers are writing less tickets and street "pay and display" revenue has increased by a reported 45 percent. Plans are underway to enable ski lift passes to include the public transport system. Whistler has also created a parking communication strategy targeting tourists through the local tv station to provide information on where and how to park, with additional information provided to hotel guests.

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5 STAKEHOLDER ENGAGEMENT

5.1 Workshops

The following stakeholder workshops helped to shape this business case:

- **Workshop 1: Project Inception.** The purpose of this workshop (18th/19th September 2018) was to clarify the scope of the project, agree the programme for delivery and key deliverables, establish the workshop process and identify key risks going forward.
- **Workshop 2: Problems, Opportunities and Constraints.** The purpose of this workshop (9th October 2018) was to review the evidence base for both projects and confirm the problems, benefits and investment objectives. Initial conversations around the long list were also held.
- **Workshop 3: Long-List.** The purpose of this workshop (4th /5th December 2018) was to define the long-list of options and establish the multi-criteria assessment criteria, against which the long-list will be assessed.
- **Workshop 4: Long-List to Short-List.** The purpose of this workshop (22nd February 2019) was to develop various 'strawman' programmes and discuss potential phasing of individual initiatives.
- **Workshop 5: Short List to Preferred Option**. The purpose of this workshop was to confirm the preferred option (this workshop was held remotely on 18th March 2020 due to COVID-19 mobility restrictions)

Stakeholders were identified from a cross section of local businesses and special interest groups. The workshops notes are provided within Appendix A05.

5.2 Communications and Engagement Plan

The project **Communications and Engagement Plan** is provided within Appendix A06 along with a list of the key stakeholders and project team members.

5.3 Community Consultation

In order to gain a better understanding of the transport issues and opportunities, the following community consultation open day sessions were held:

Table 9: Consultation Events

Event	Date	Time
Remarkables Market	Saturday 26 January 2019	9am - 2pm
Queenstown Airport	Friday 16 and Sunday 18 November 2018	10am - 1pm
Creative Queenstown Arts and Crafts Markets	Saturday 2 February 2019	9am - 4.30pm
Camp Street Bus Hub	Wednesday 17 April 2019	1pm – 5pm
Frankton Hub	Thursday 18 April 2019	9am – 1pm

The sessions provided an opportunity for locals, visitors and transport network users who are familiar with this area to share their knowledge which could then be incorporated into the option development.

The key questions asked as part of the consultation included:

Tell us about your experiences using the car on the Frankton to Queenstown corridor and around the town centre? Where do you park?

Tell us about your experiences using public transport to travel along the Frankton to Queenstown corridor and around the town centre?

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Tell us about your experiences cycling along the Frankton to Queenstown corridor and around the town centre?

Tell us about your experiences walking along the Frankton to Queenstown corridor and around the town centre?

What could be improved?

Do you have any other comments?

The events were promoted through Waka Kotahi and QLDC websites and social media channels and media advisory on local papers. Further feedback was received via the **Waka Kotahi's Social Pinpoint**, which provided an online platform with a map to allow the community to add comments. In total, responses from 349 people were gathered via the online portal, and discussions were held with over 230 people who attended the events held at the Airport and the markets.

5.3.1 Customer Insights

Table 10 provides a summary of the consultation feedback received.

Table 10: Custom Insight Feedback

Mode	Area	Feedback
Walking	Queenstown Town Centre	• Narrow footpaths which are often congested. • Drivers parking vehicles over the kerb or large vehicles and vehicles with bikes reduces the footpath space available for pedestrians. • Walkways are dangerous during winter months due to shading by plants and muddy surfaces. • Pedestrianise Marine Parade and the Town Centre. • The current large intersection layouts and road design provide no consideration for pedestrians crossing. No signage provided to indicate pedestrian priority. • Pedestrian access up/down the hill provides a footpath only on one side of the road with unmarked stairs at some places. There are no provisions for mobility impaired pedestrians, and no signs to direct pedestrians. • Some crossing points in town with pedestrian priority are conflicting with the need to keep traffic moving. • More footpaths are required. • Need streetlights, designed for the footpath, for safe use after dark.
	Frankton to Queenstown	• Difficult to cross SH6A, particularly when accessing bus stops. • Potential for crashes as some pedestrians fail to look before crossing or look in the incorrect direction (i.e. visitors). High traffic speed creates difficulty when crossing and drivers suddenly stopping to let pedestrians cross could result in rear-end collisions. • A new footpath/track along SH6 past Queenstown Events Centre and Golf Centre to Five Mile. • More footpaths. • Streetlights, designed for the footpath, for safe use after dark.
Cyclists	Queenstown Town Centre	• More and better signage on cycle trails towards the town centre. • Cycle lanes from other suburbs into town (Kelvin Heights; Gorge Road). • More on-street bike parking. • Bike friendly Town centre. • E-bikes to be introduced.
	Frankton to Queenstown	• Cycling feels dangerous on SH6A – especially crossing. • Sealed tracks. • Cycle lanes separated from traffic. • More commuter routes needed as existing trails are for recreational purposes. • Trail congestion at peak times.

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Mode	Area	Feedback
		• Shared paths are too narrow to be shared. • Ferries that you can take a bike. • E-bikes.
Bus	All	• Using the bus services is easier, quicker and low price. • Buses on some routes are often too full. • Too many non-public bus services. • Bus services are sometimes unreliable. • Public transport needs to be enhanced and given priority in heavy traffic times. (e.g. Express bus lanes) • Extended service hours by providing buses earlier and later in the day. • Remove commercial bus parking from town centre. • Small buses or shuttle to feed the bus services to places such as Jacks Point. • More covered bus stops. • More bus services along SH6A. • Electric buses. • More bike racks on buses. • Extra buses for large events and school bus services. • More frequent bus services into town from outer areas including Jacks Point, Lake Hayes Estate, Kelvin Heights, Arthurs Point and Shotover Country.
	Queenstown Town Centre	• Bus parks should be relocated out of the town centre • Provide Queenstown Hill bus service. • More direct buses from suburbs to Queenstown Town Centre. • Run the bus from Arrowtown to Queenstown Town Centre through Arthurs Point. • Remove golf course and create bus hub and park and ride at this location.
	Frankton to Queenstown	• Provide a non-stop route straight from Kelvin Heights to Queenstown Town Centre. • Tourist coaches clogging up the road. • Express buses between Queenstown and Frankton. • Park and Ride in Frankton.
Other Public Transport	All	• Public funded / subsidised ferry service. • More ferries from Kelvin Heights. • Increase the water taxi ferry service during peak hours and later into the evening. • Ferry with parking infrastructure at terminals. • Tram or monorail to and in QTC • Create a loop encompassing Town, Arthurs Point, Lake Hayes, Shotover Country, Five Mile, Frankton and back to town. • The main transport interchange (or bus interchange) to be located close to the ferry terminal to ensure passengers can easily switch modes.
Car	Queenstown Town Centre	• A car free TC to provide a pedestrianised space. • A bypass around the town centre (e.g. Fernhill to Frankton). • 30km/h speed limit through the town centre. • Safety calming measures (speed humps) to encourage low travel speeds. • All on-street parking on Shotover Street to be removed to create more pedestrian friendly space. This will reduce the traffic congestion created by drivers parallel parking or searching for parking within this section. • Limited parking is currently an issue. • Increase the cost of parking in town to encourage the use of public transport.
	Frankton to Queenstown	• Accessing Frankton Road from side streets is difficult, with these intersections considered dangerous. • Traffic congestion caused due to lanes merging. Shotover Bridge is considered a major bottle neck. • Four-laning the Queenstown to Frankton corridor is likely to address efficiency issues.

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Mode	Area	Feedback
		• Whilst some feedback indicated that the existing 70km/h speed limit is considered appropriate along this corridor, others suggested a 50km/h speed limit to improve safety for drivers turning into/out of Frankton Road, pedestrians and cyclists travelling within this corridor.
Other	All	• No provisions for motorhomes. • Wayfinding and signage are poor in places. • Park and Ride facilities • A transit map for all walking/cycling access routes between QTC and Frankton would be helpful.

A more detailed summary of the feedback is presented within a separate report provided within Appendix A04.

5.3.2 Wordles

During the community open days sessions members of the public were asked to answer the following questions in as few words as possible:

1. Describe the greatest challenge for transport today
2. Describe your ideal future transport situation.

The main issues identified during the open days were generally consistent with those identified as part of the wider consultation exercise (via websites and media). The key issue themes were around safety crossing roads, public transport reliability, inadequate cycling provisions and congestion.

Figure 45 provides an overview of the feedback ('wordles') relating to the QTC and F2Q area, where the bigger the word the more important the issue is for the community.

Figure 45: Future Transport Desires – Wordles

The community desires for the transport future for Queenstown focus clearly around enabling safe pedestrian crossings and improving the active and public transport infrastructure.

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6 SUMMARY

This document has demonstrated how an insatiable growth in the number of visitors has been accompanied by a commensurate increase in residents to service this growth. With spatial and topographical constraints, this growth combined with housing and land supply constraints have caused Queenstown to have New Zealand's most unaffordable housing market. In addition, the growth has led to very significant growth in the demand to travel with very few roads to accommodate this growth, and little provision for alternatives such as public transport, walking and cycling. The high place quality of the historic core of Queenstown Town Centre is being eroded as large numbers of people visit mostly by car, due to lack of mode choice. The irony is that the "insatiable desirability" of the town centre and Queenstown as a whole risk being overwhelmed by car-dominated travel patterns which threaten that very place quality.

A different pathway is therefore clearly needed for Queenstown to retain its place as the jewel in New Zealand's tourism crown. This will be achieved through a targeted investment in the three pillars – PT service improvements supported by infrastructure that encourages mode shift and travel demand management initiatives. The next sections will set out the interventions identified to deliver on the investment objectives.

Now is the time to address these challenges. The current, and temporary, drop in travel associated with COVID-19 provides the opportunity to address well-known transport challenges at a time when they are less acute, meaning that construction would have less overall impact on the transport network, and put Queenstown in a good place for the projected full return of visitors by 2024. Investment will also create much needed jobs for residents.

In the longer term, the evidence presented around growth, network capacity and poor mode choice supports the case for investment to ensure Queenstown remains an attractive, well-managed resort that is a pleasure to visit and which can continue to compete on an international stage. There is also a risk of not acting – which may cause Queenstown to stagnate resulting in negative economic and reputational outcomes for the area and the rest of New Zealand. Visitor feedback already indicates that traffic congestion is the single biggest negative in an otherwise very highly regarded visitor destination with the consequent risk of Queenstown being bypassed by visitors.

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WAKA KOTAHI
NZ TRANSPORT AGENCY

QUEENSTOWN BUSINESS CASE

Options Assessment

s 9(2)(a)

16 NOVEMBER 2020

FINAL

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1 INTRODUCTION

1.1 Purpose of this Report

This report forms Part B(i) of the Queenstown Transport Business Case and documents option development for the project.

Because of the complexity of the project and depth of the scope, the optioneering process required a bespoke approach (refer to Option Development Approach), with packages of options developed to different levels of detail (business case stages) for different project areas.

The report also documents how option development and assessment, undertaken previously through the Grant Road to Kawarau Falls Bridge (GR2KFB) SSBC and the Ladies Mile Housing Infrastructure Fund Integrated Transport Assessment, has been adapted and incorporated into the expanded Frankton and Ladies Mile scope.

This report was originally produced as a standalone document to fulfil the role of the 'check in point' in the business case process shown in Figure 1. This step is intended to provide Waka Kotahi decision makers with confidence that a case for investment exists, the process behind optioneering was robust, and that options taken forward are appropriate to achieve the project's investment objectives.

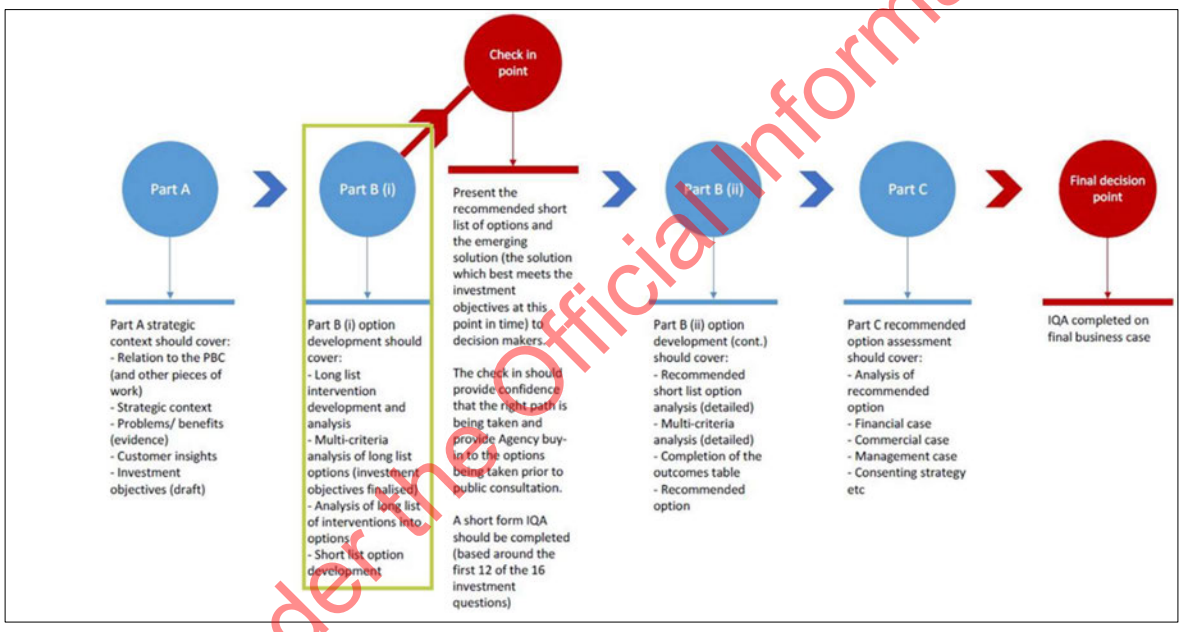

Figure 1: Single Stage Business Case Process

1.2 Summary of the Strategic Case

The Strategic Case reconfirmed the need for investment in the transport system for the Queenstown Town Centre, Frankton to Queenstown corridor (SH6a), Frankton and Ladies Mile, as originally identified in the QITPBC and the Queenstown Town Centre Masterplan PBC. The project extent is shown in Figure 2.

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Figure 2: Project extents

1.2.1 Problems, Investment Objectives and Outcomes

At the Investment Logic Map (ILM) workshop, project stakeholders agreed on a set of Problem Statements, Benefit Statements, Key Performance Indicators (KPIs) and Investment Objectives, summarised in Figure 3. Refer to the Strategic Context for more detail on the ILM process, and the Management Case for more detail on KPIs and outcomes. The Frankton to Queenstown ILM was reviewed when the project scope was expanded to include Frankton and Ladies Mile and was determined to be aligned with the new project areas.

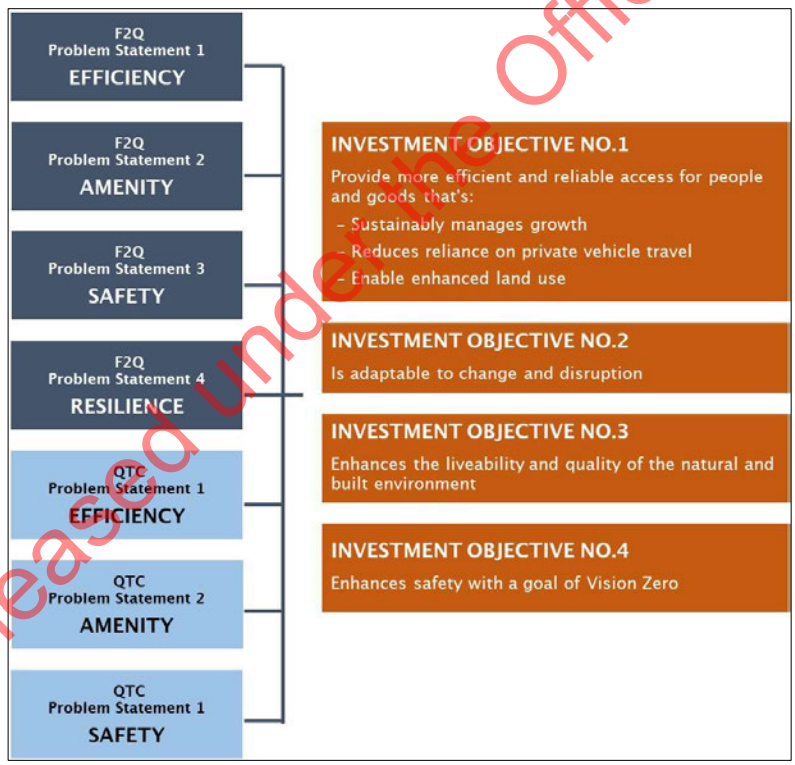

Figure 3: Problems and Investment Objectives

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2 OPTION DEVELOPMENT APPROACH

The Queenstown Transport Business Case originally comprised the Frankton to Queenstown (F2Q) Single Stage Business Case (SSBC) and the Queenstown Town Centre (QTC) Detailed Business Case (DBC). The scope also included High Capacity Public Transport to be investigated to an Indicative Business Case (IBC) level to ensure SH6A interventions are appropriately future-proofed for later upgrades in public transport capacity. Partway through the project, Frankton and Ladies Mile were added to the scope at a SSBC/DBC level.

Due to the breadth of its scope, the project is therefore effectively a 'Detailed Programme Business Case', developing detail for activities in the recommended programme from the preceding Queenstown Integrated Transport (QIT) Programme Business Case (PBC).

The F2Q scope was developed straight from the Programme Business Case, thereby requiring a greater level of optioneering and analysis to arrive at the recommended option. The QTC, Frankton and Ladies Mile scope built on options developed in previous stages, with Indicative Business Cases completed for discrete elements such as the arterials and parking. Given the complexity of the interrelationships between each project area and the need for an integrated overarching network response, a bespoke approach to optioneering was adopted (refer to TN7- Strategic Direction tech note) to ensure the project was 'right-sized' (not wasting resource or money) while still delivering the project's Investment Objectives.

2.1 Optioneering Context

As identified in the Strategic Case, at the centre of Queenstown's transport problems is continuing resident and visitor growth, and finite capacity to support their movement around the district. Growth projections and transport modelling show existing road capacity on SH6A being reached in the short term (if not already), with total travel demand on the corridor doubling by 2048[1].

A key outcome from the Future PT Demand Model is that, at current road capacity across the network, 40% of peak hour trips on SH6A will need to be by non-car modes by 2028, rising to 60% by 2048 (or an equivalent increase in vehicle occupancy/reduction in travel demand), as shown in Figure 4. Widening roads to provide additional general traffic capacity was found to be unaffordable, particularly on SH6A (refer to Network wide public transport Options); high capacity public transport is therefore the only realistic alternative able to cater to forecast levels of demand. This dictated the approach to option development for the major components of the overall programme.

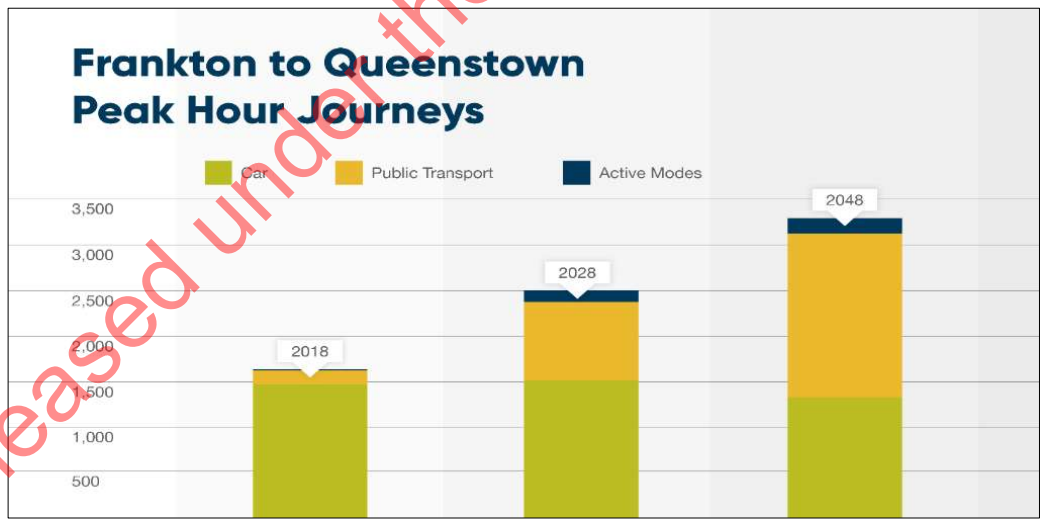

Figure 4: Peak Hour Mode Share Projections for SH6A (Source: Future PT Demand Model)

[1] Wakatipu Basin Future Public Transport Demand Analysis Technical Note 3 – Land Use, Demand and Capacity, WSP (2019)

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2.2 The Three Pillars of Investment

Transport modelling also found that **infrastructure alone would not achieve mode shift targets**. Additional public transport services and demand management measures (shown as 'Active Modes' in Figure 4 above) would be required to ensure a functioning network with equilibrium between capacity and demand.

Continuing the theme from the QIT PBC, the Queenstown Transport Business Case is therefore founded on an integrated transport approach comprising three pillars of investment.

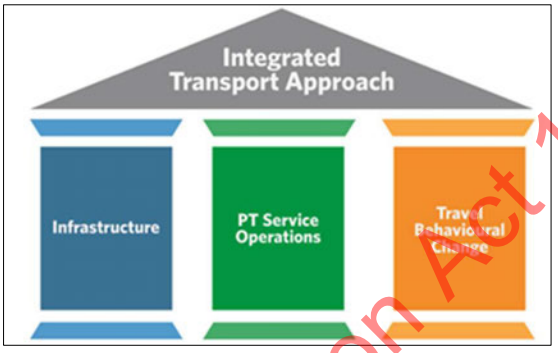

Figure 5: The 'Three Pillars of Investment'

The Future PT Demand Model identified that significant **PT service** upgrades would be required for the infrastructure upgrades to provide any benefit. That is, PT priority (infrastructure) may provide travel time benefit over cars but would require a high-frequency service over a large catchment to carry forecast levels of demand.

Forecasts from the Future PT Demand Model also highlighted that, even with substantial public transport improvements and the consequential mode shift, the road network would not be able to accommodate anticipated demands. Car travel is expected to remain attractive due to convenience and a level of unrestricted parking, particularly in Frankton. Some trips can only be made by car (deliveries, taxis, shopping etc); additional **travel behavioural change** measures will be required to control demand at peak times and ensure these trips can be made reliably.

This approach, in conjunction with other local strategies for better integrated planning, aligns with Waka Kotahi's Intervention Hierarchy, shown in Figure 6, acknowledging that the magnitude of growth in Queenstown necessitates at least some investment in physical infrastructure.

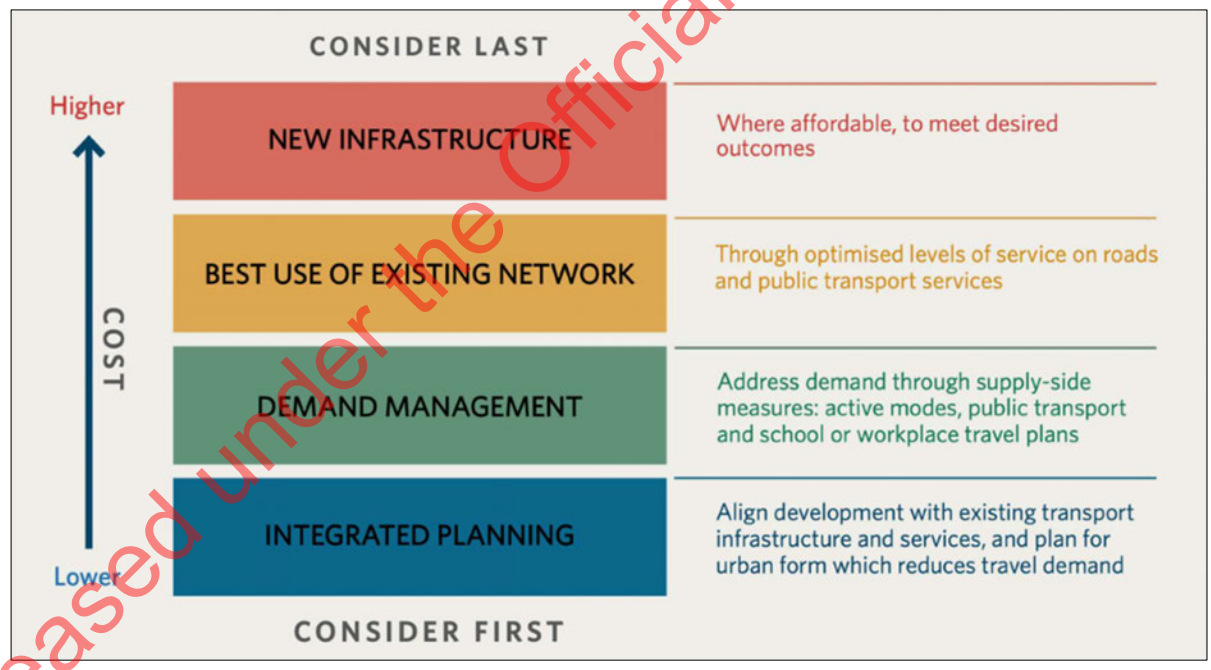

Figure 6: Waka Kotahi Intervention Hierarchy

2.3 Developing the Programme

As described above, the project is effectively a 'Detailed Programme Business Case' and as such does not follow a typical linear SSBC or DBC approach to option assessment (a series of long list options, refined to a shortlist before selecting a single preferred option). Given the large range of potential alternatives within each

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project area, and the interdependencies between them, a more bespoke approach to optioneering was required, as summarised below and in Figure 7:

1. A standard joint longlisting exercise for the F2Q and QTC project areas was undertaken with the wider stakeholder group (refer to Longlist Development), where over 300 discrete interventions were identified. Options that did not meet at least one of the project's Investment Objectives were omitted.

2. Remaining interventions were then categorised into 9 'strawman' shortlist packages (refer to Shortlist ranging from car-focussed to public-transport focussed. The recommended QTC Masterplan package was included as a benchmark for previous strategic direction. The wider stakeholder group was asked to score each package against project Investment Objectives.

3. The five highest-ranking packages were then broken into their component parts for more detailed assessment. The best performing components of each package would then be reassembled into an optimised preferred programme.

4. The vast range of options under consideration would have created an unmanageable assessment process, so option development was prioritised on a hierarchical basis (refer to Prioritising the Programme), dictated by the need to achieve the mode shift targets set out in Programme Pre-requisites/Optioneering Context? and contribution to project Investment Objectives.

5. During the development of the programme, the need to expand the project scope to Frankton and Ladies Mile was identified (refer to the Strategic Case for context), so options previously developed under the GR2KF SSBC and the Ladies Mile HIF ITA were incorporated into the project.

6. The Three Pillars of Investment, described above, formed the foundation of the Preferred Programme, with recognition that an integrated suite of infrastructure, PT services and travel behavioural change measures would be needed to achieve the Investment Objectives.

7. The infrastructure element of the Three Pillars was later largely committed through funding announced by central Government via the New Zealand Upgrade Programme and Crown Infrastructure Partners stimulus funding; the remaining elements of the Queenstown Transport Business Case were then intended to support and complement the committed infrastructure projects.

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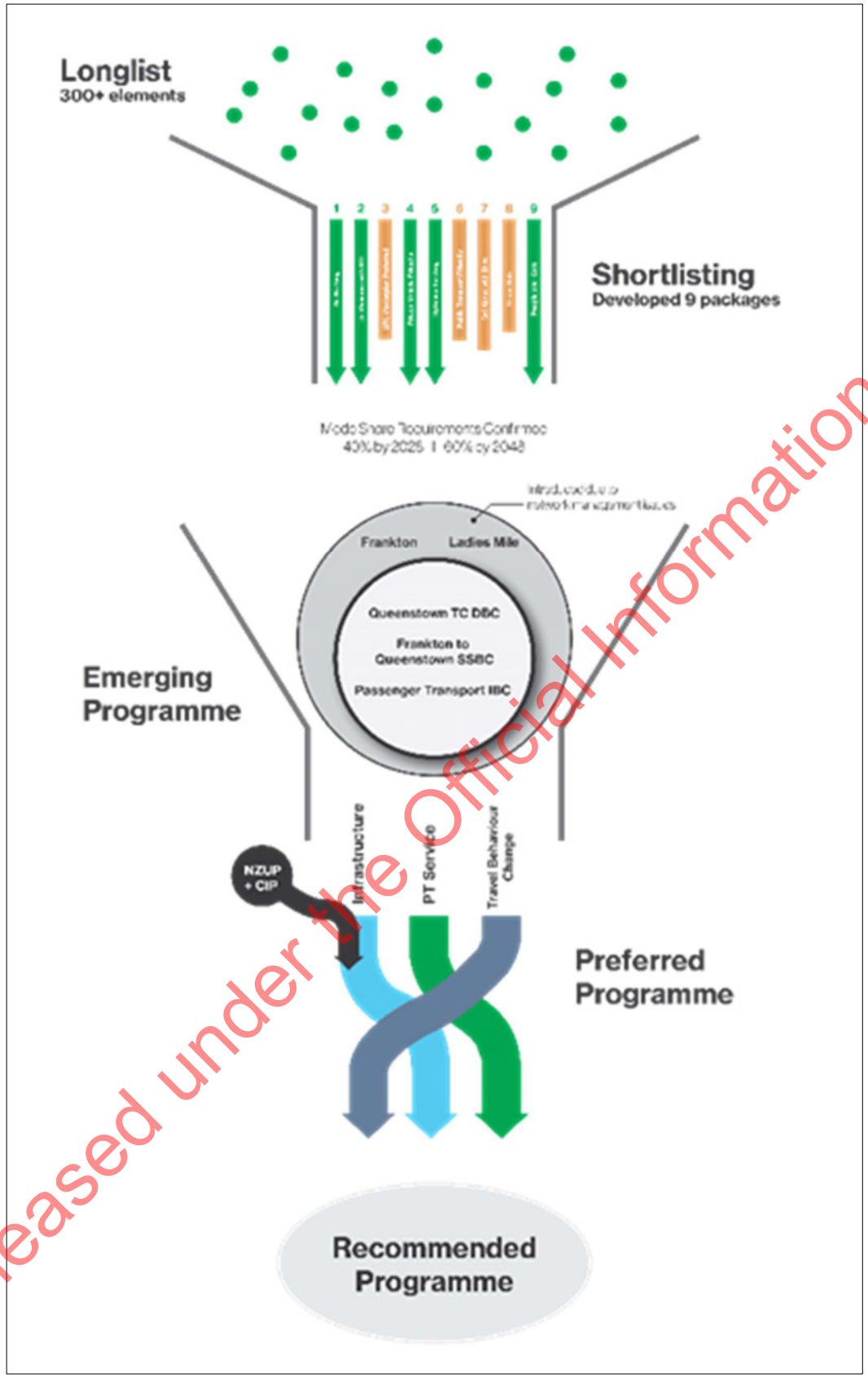

Figure 7: Queenstown Business Case Option Development 'Funnel'

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Further detail of the option development processes can be found in Appendix B01.

2.4 Longlist Development

2.4.1 Longlist Process

A joint long listing workshop was undertaken for the QTC and F2Q components of the business case with the wider stakeholder group on 4th and 5th December 2018.

Attendees were encouraged to consider a wide range of solutions not limited to transport infrastructure, such as land use integration, asset management, information, pricing and strategy. In keeping with the business case process, stakeholder groups were also asked to consider solutions from supply (increasing capacity), demand (reducing the need to travel at peak times) and productivity (optimising existing infrastructure) perspectives. Prior to the workshop, options put forward in the QTC Masterplan PBC underwent a review and gap analysis process to ensure relevance and were added to supplement those put forward by stakeholders.

At this early stage of the project, a philosophy of "no wrong answers" was adopted, but solutions had to meet at least one of the Investment Objectives. Workshop attendees were split into groups and then asked to circulate between various tables to consider potential interventions that aligned with the following overarching categories:

- Network focus
- Public transport
- Active travel
- Coaches
- Public Realm
- Freight
- Marketing and Communications
- Behaviour Change
- Parking.

Stakeholders requested that options be considered in light of potential broader positive effects for the local tourism industry, rather than simply providing transport solutions. Considerations raised include:

- A gondola would be iconic and a unique selling point in its own right, providing a boon for Queenstown's tourism industry.
- Opportunities to create awareness of climate change and sustainability. If Queenstown could make some big changes in the sustainable travel space, then transport between various locations could become part of the experience. This creates huge potential to market the town as truly environmentally sustainable place.
- Ferries could be a high quality and high value option from a tourism perspective. Views from the ferry on entry to Queenstown would again be a good selling point.
- Active travel can be associated with positive tourism marketing for Queenstown, with existing trails already popular.

Approximately 240 ideas were generated for F2Q (summarised in Figure 8) and 140 ideas were generated for QTC (summarised in Figure 9). A list of interventions identified for both areas is provided in Appendix B02.

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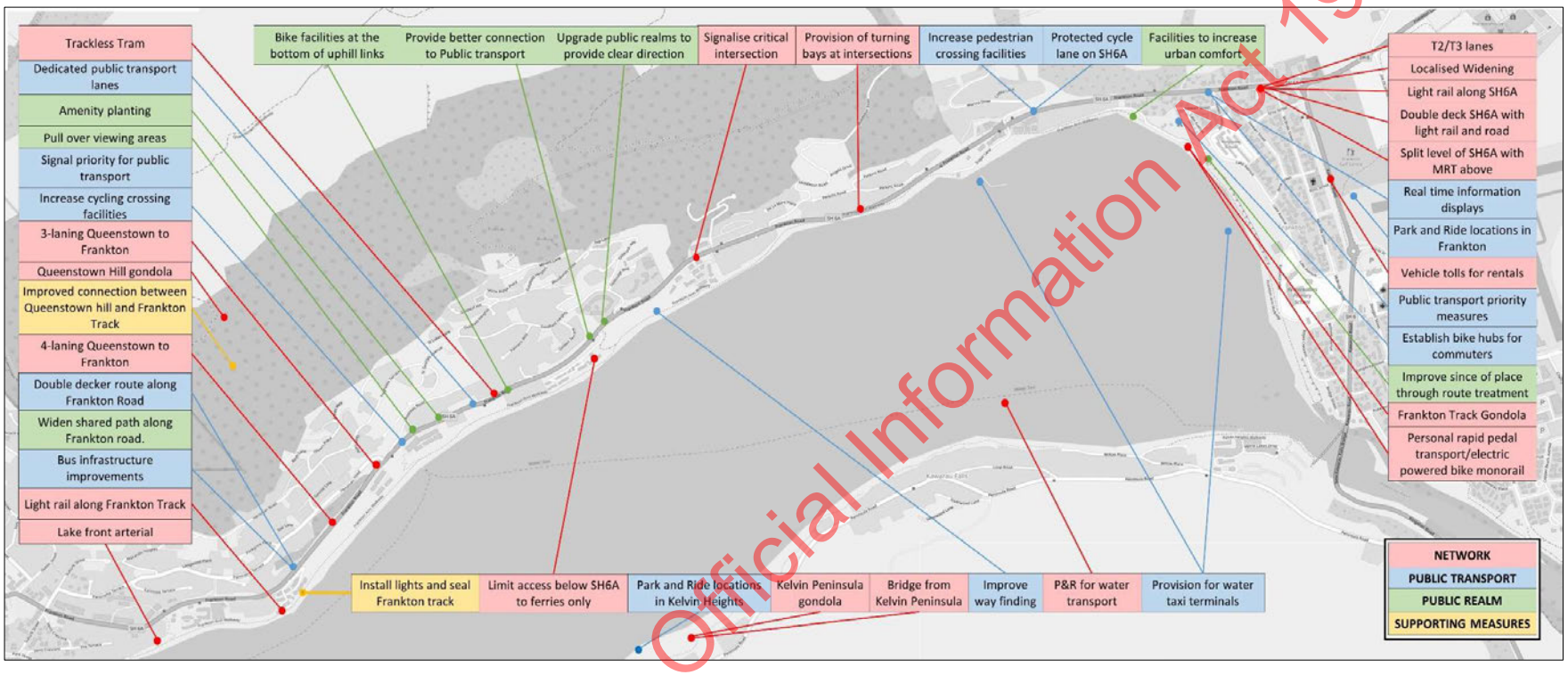

Figure 8: Frankton to Queenstown Longlist

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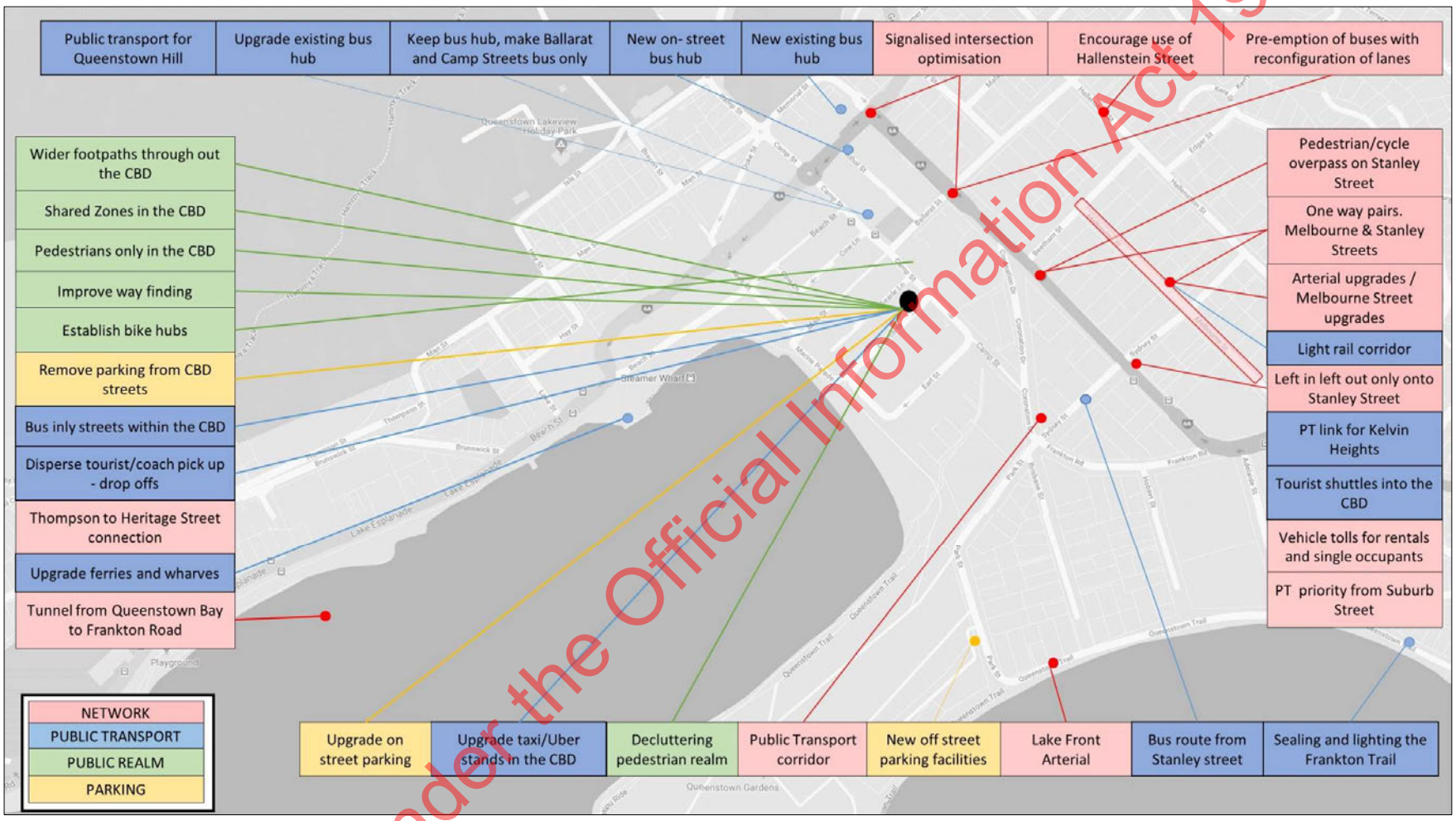

Figure 9: Queenstown Town Centre Longlist

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2.4.2 Longlist Assessment

The longlist was initially skimmed by the project team to remove options already under consideration in other projects or were out of scope for the Queenstown Business Case, as summarised in Table 1.

Table 1: Out of Scope Longlist Options

Parking DBC	Active Travel SSBC	Frankton Masterplan	Out of Scope
• Ballarat Street - Upgrade • Ballarat/Stanley Street - Building • Boundary Street - Upgrade • Boundary Street - Building • Skyline (350 Parks) • Recreation Ground or another Appropriate Site • One New Carpark - Rec Ground/Stanley Street Site • Gardens Parking - Change Arrangements • Athol Street - Car Park Development for Higher Valued Purpose • Warren Park (Construction Disruption Overflow)	• Lighting and seal Frankton Track	• Park and Ride locations in Frankton (alternative) • Ladies Mile Park and Ride SSBC	• Bailey bridge backup for Edith Cavell Bridge • Fuel storage facilities • Emergency response centre moved to Frankton (Event Centre) • Redevelopment in existing areas • Frankton (Retail) • Retail balance • Affordable housing • Expand availability of public toilets • CPTED • Wifi • School travel plans • Education and communication programme • Carpooling • Resident alerting • Toll the Shotover bridge • Provide bus tickets with accommodation sales, or with arrival documentation/at airport (or ticketless from airport) • Restrict car use on certain days • Shift in business operating hours • Bag services • Base (variable) pricing on traffic congestion • Out of town integrated rental hub with public transport • Cultural narratives in public realm

2.4.3 Previous Frankton Longlist

A long listing exercise was undertaken for Frankton in July 2017 as part of the GR2KFB SSBC. Through the workshop, a series of network options, intersection upgrades, bus lanes and active mode improvements were identified.

A key component of the assessment was the SH6/SH6A intersection, for which 13 options were initially identified. In addition, 3 options were identified for each of the Humphrey Street, Lucas Place, Hansen Road and Joe O'Connell Drive intersections. Further network improvements were identified in the form of a new Humphrey Street link, Hansen Road realignment and Queenstown Events Centre access.

Options taken forward for shortlist assessment are discussed in Section 2.5.3.

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2.5 Shortlist Programmes

2.5.1 Shortlist Process

In advance of the shortlist workshop on 21st February 2019, the project team developed 'Strawman' programmes made up of longlist interventions grouped by their role in facilitating varying degrees of public transport-oriented or car-oriented outcomes (programmes and their composite longlist options are shown overleaf in Table 2). The programmes and their relative position on a car to public transport spectrum is outlined in Figure 10. The QTC Masterplan recommended programme was used as a benchmark, from which the other programmes were built by adding interventions emerging from the Frankton to Queenstown work and assessment from the public transport model. The shortlist programmes were:

- Do Nothing
- Do Minimum + Rapid Targeted Interventions
- QTC Masterplan – Preferred Option
- Private Vehicle Friendly
- Optimise Existing Network
- Public Transport Friendly
- Getting About with Ease
- Urban Hub
- Cars Not Needed.

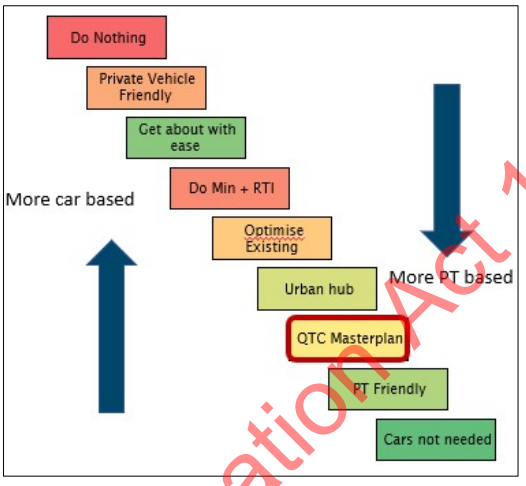

Figure 10: QTC Strawman Programmes

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Table 2: Strawman Packages

Area	Category	Description	Do nothing	Do Minimum + RTI	QTC Masterplan Preferred	Private Vehicle Friendly	Optimise Existing	Public Transport Friendly	Get about with ease	Urban hub	Cars not needed
Both F2Q and QTC	Public Transport	Standard ferry			■	■	■	■	■	■	
		Fast and/or high capacity ferry									■
		Frankton track trackless trams or light rail									■
		Bus either standard, high capacity (e.g. double decker)	■	■	■	■	■	■			■
		Trackless trams, light rail (in several variations), or bus rapid transit							■	■	■
		Gondola									■
		Some segregation in congested areas, with localised road widening and/or signal pre-emption	■								
		Segregation in all areas where there is enough space		■	■	■	■				
		Dedicated lane						■			
		Dedicated route							■	■	
		Existing frequency and standard capacity vehicles									■
		Less than 10 departures per hour each way	■	■	■	■					
		More than 10 departures per hour each way or high-capacity vehicles					■	■			
		Services continue beyond the town centre, where one or more super stops are located							■	■	■
		Services terminate at an interchange, where passengers can change to other services, coaches, taxis etc.	■	■	■	■	■	■	■		
		Some seating and shelter at stops								■	■
		Shelter, seating and information at key stops	■								
		Shelter, seating, information, air-conditioning, toilets, secure cycle parking and level boarding at key stops		■	■	■	■				
		Dependent on Ferry Service business case						■	■	■	■
	Active Travel	Town centre cycle network			■				■	■	■
		Frankton Track Upgrade, widen SH6a shared path	■	■	■	■					
		Full on-road and separated cycle facilities on SH6a, improved foot access to PT, footpath widening within QTC catchment									
		Bike stands					■	■	■	■	■
		Expanded provision/distribution of cycle facilities	■	■		■					
		Pedestrian/Cycle overpasses			■			■			
	Marketing and Communications	• Temporary VMS signs to inform drivers - parking availability, network status • Improve PT website, route maps/printed material and distribution • Workplace/School Travel Plans • Improve tourist information					■		■	■	■
		• Permanent VMS signs to inform drivers - parking availability, network status • Online parking, booking, payment systems • Active marketing campaign to support mode shift • RTI screens around town centre	■	■		■					
		Proper Mobility as a Service provision (MAAS)			■		■	■			
	Behaviour Change	Await technological changes	■	■	■	■					
		Incentives for ride sharing, use of alternative modes					■	■		■	
		Road pricing, parking supply/charges, limited access, e.g., no emission zones							■		■
	Parking	• Parking managed only in Historic Core and Lakefront area • Provision of EV charging points							■	■	■

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Area	Category	Description	Do nothing	Do Minimum + RTI	QTC Masterplan Preferred	Private Vehicle Friendly	Optimise Existing	Public Transport Friendly	Get about with ease	Urban hub	Cars not needed
		Parking managed in Historic Core, Lakefront, Lakeview and Town Centre precincts	■	■		■					
		Parking managed across town centre area to maintain optimal provision 85%			■	■	■	■			
		Reduce overall car park numbers e.g., no parking in Historic Core (except limited mobility parking etc)							■	■	■
		• Cap parking provision at current total numbers, although can be relocated e.g. on-street to off-street • Park and Ride							■	■	■
		Increase overall supply of parking	■	■	■	■	■	■			
	District Plan	• Existing District Plan zoning • Minimum/Maximum parking standards			■	■	■				
		QTC land use, e.g. intensification, mixed use development/						■			
		Intensification of land use – QTC to F2Q corridor and wider district, TOD in QTC							■	■	■
F2Q	Network	• Signal improvements, left in/left out restrictions • Network operating plan	■	■	■	■					
		• Optimise access onto/from 6A • T2/T3 Lane • P&R Ferry from Kelvin Peninsula • Coronation Drive bus priority					■	■			
		• Bollards to prevent rat running • Reduce access to/from 6A • Bus lanes							■	■	■
		• Upgrade Melbourne and/or Hallenstein Street			■	■					
		• Targeted road widening • Signalisation of side streets onto/from 6A					■	■			
		• Significant road widening • One-way streets - Melbourne/Stanley Streets							■	■	■
		Localised widening				■					
		(Intermittent) 3 laning of Frankton Road with tidal flow			■		■	■			
		4 laning Frankton Road without PT lanes							■	■	■
QTC	Network	• Signal improvements, left in/left out restrictions • Network operating plan	■	■							
		• Divert traffic on Hallenstein Street from Gorge Road • Increased restriction on vehicles in Town Centre • Coronation Drive bus priority				■		■			
		• Banning private vehicles from town centre • Bollards to prevent rat running • Reduce access to/from 6A • Bus lanes			■		■		■	■	■
		Upgrade Melbourne and/or Hallenstein Street				■					
		• Targeted road widening • Signalisation of side streets onto/from 6A					■		■	■	
		• Significant road widening • One-way streets - Melbourne/Stanley			■			■			■
		• No arterials • Localised widening						■			■
		• Partial arterials e.g., stage 1 and/or 2				■	■		■	■	

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Area	Category	Description	Do nothing	Do Minimum + RTI	QTC Masterplan Preferred	Private Vehicle Friendly	Optimise Existing	Public Transport Friendly	Get about with ease	Urban hub	Cars not needed
		• New connection from Beetham/Stanley - Ballarat/Henry (in place of Melbourne -Henry Streets)									
		• (Intermittent) 3 laning of Frankton Road with tidal flow									
		• Full Arterials, Thompson Street to Heritage									
		• 4 laning Frankton Road with/without PT lanes									
	Coaches	Reduce on-street coach parking facilities to encourage private provision (town centre)									
		• Maintain current supply of coach facilities through management approaches e.g. fees									
		• Increase stop capacity on 6A									
		Expand coach provision to meet projected demand (on-/off street)									
	Public Realm	Decluttering/signage reduction, footpath widening, rehabilitation of existing surfaces, improve provision of cycling facilities									
		Shared spaces and zones, Ballarat Street pedestrian corridor, wayfinding system, street greening/amenity planting									
		Pedestrianisation of historic core, expand permeability via laneways, gateway treatments									
	Freight	Dedicated parking									
		Expand delivery restriction areas/zones e.g., non-core hours									
		• Consolidation facility outside historic core									
		• Coordinated freight strategy									

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2.5.2 Shortlist Assessment

Workshop attendees (project team and Way to Go partners) were asked to score individual interventions on how well they would achieve each of the Investment Objectives using a 7-point scale ranging from -3 to +3. Intervention scores were then combined as per their parent programmes and translated into overall programme scores.

Do nothing, do minimum and private vehicle focused packages scored poorly against the investment objectives as they would not address existing problems in the short term, and would lead to significant worsening of problems over time.

	Relative Score	Ranking
Do Nothing	117	9
Do Minimum + RTI	127	8
QTC Masterplan Preferred	248	5
Private Vehicle Friendly	161	7
Optimise Existing	211	6
Public Transport Friendly	276	3
Get About With Ease	300	2
Urban Hub	266	4
Cars Not Needed	304	1

Note: Not in Ranked order

Figure 11: Strawman Programme Assessment

Stakeholder scoring of the shortlist programmes indicated a clear preference for non-car focussed programmes, as shown in Figure 11 (red indicates a lower score). The QTC Masterplan scored well but was ranked 5th overall, with stakeholders scoring prioritisation of public transport, active modes and demand management higher for other programmes.

For example, when comparing QTC Masterplan scores with Cars Not Needed, the former scored 42 points lower on public transport (due to no specific provision for high capacity public transport), 19 points lower on parking (due to increasing, rather than reducing, overall parking supply) and 17 points lower on intensification of land use (due to not promoting intensification of land use throughout the district and a Transit Oriented Development in the Town Centre). Key themes emerged from the workshop discussions:

The Town Centre Masterplan forms a strong basis for ongoing development of the town centre.

- The parking strategy, combined with active travel and urban improvements, is essential for delivering key outcomes in the Masterplan.
- A step change in public transport is necessary for Queenstown's growth.
- Public transport should be multi-modal and include a combination of bus service improvements, water-based public transport options and new public transport corridors facilitated by alternative modes (gondolas or light rail/bus rapid transit).
- Access improvements to public transport and public transport hubs within the town centre and Frankton (and surrounding residential areas).
- Increase district-wide land use intensification is a mechanism to improve public transport uptake and manage pressure on the traffic network.
- Optimisation of the network within the town centre and along Frankton Road to reduce traffic volumes near historic core and facilitate movement around the town centre; this may include construction and/or upgrades to arterial connections.

Stakeholder scoring of the shortlist programmes shows recognition of the need to address transport problems through an integrated approach of infrastructure, PT services and demand management interventions, which aligns strongly with conclusions and mode shift targets derived from the transport modelling outlined in Optioneering Context.

Outcomes of the workshop include:

- Agreement that high-capacity public transport (HCPT) would form the core of the business case programme to do the 'heavy lifting' in terms of moving people along the Frankton to Queenstown corridor and into the Town Centre.
- Acknowledgement that the HCPT core would need to be supplemented by public transport service improvements and travel demand management interventions including active mode upgrades.

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- Agreement that car-focussed solutions would not achieve project Investment Objectives and should be omitted (unless to enable other elements of the programme).
- Acknowledgement that optimisation of existing infrastructure would represent a better investment than building new car-focussed road infrastructure.

Constituent elements of the highest scoring programmes (e.g. public transport network, bus priority, public transport hubs) were then taken forward for more detailed assessment, prioritised by impact on outcomes (refer to Section 2.6), to later be reassembled into the Preferred Programme.

2.5.3 Previous Frankton Shortlist

Through the GR2KFB SSBC, a shortlist was developed at a stakeholder workshop in December 2017, as summarised in Table 3. Items in bold were taken forward as the preferred option. Westbound and southbound bus lanes were also proposed on SH6 from Grant Road to Lucas Place (as well as a northbound section between Lucas Place and the bus hub), staged from T2 to T3 to bus lane.

This shortlist was revisited at a workshop in July 2020 and the evaluation was undertaken based on the modified investment objectives developed for the Queenstown business cases. This resulted in an additional option for section B being brought forward for further consideration – a conventional signalised intersection at SH6/SH6A shifted south-east. Further detail is provided on this in the preferred option section.

Table 3: GR2KFB SSBC Shortlist Summary

Section	Shortlist
A. Grant Road to Queenstown Events Centre	1. 4-way signalised intersection at Joe O'Connell Drive/Hansen Road 2. Joe O'Connell Drive signalised, Hansen Road left-in-left-out **3. Joe O'Connell Drive signalised, Hansen Road shifted 200m east and signalised**
B. Queenstown Events Centre to Ross Street	1. Conventional signalised intersection at SH6/SH6A 2. Signalised Roundabout at SH6/SH6A **3. Signalised Roundabout at SH6/SH6A shifted south-east** **4. Conventional signalised intersection at SH6/SH6A shifted south-east.**
C. Ross Street to Lucas Place	1. Signalised intersection at SH6/Ross Street **2. Retain mid-block signalised crossing** 3. Convert crossing into underpass
D. Lucas Place to McBride Street	1. No pedestrian crossing **2. Signalised crossing 80m south of Lucas Place** 3. Underpass 80m south of Lucas Place
E. McBride Street to Kawarau Falls Bridge	1. Retain priority control and pedestrian crossing at Humphrey Street **2. Signalised intersection at SH6/Humphrey Street** 3. Underpass at Humphrey Street

2.6 Prioritising the Programme

Through assessment of the shortlist programmes, priorities for the Preferred Programme were identified (namely a HCPT core supported by PT services and demand management measures). Option development was then carried out on a hierarchical basis to avoid an unmanageable set of combinations and permutations for assessment, as shown in Figure 12.

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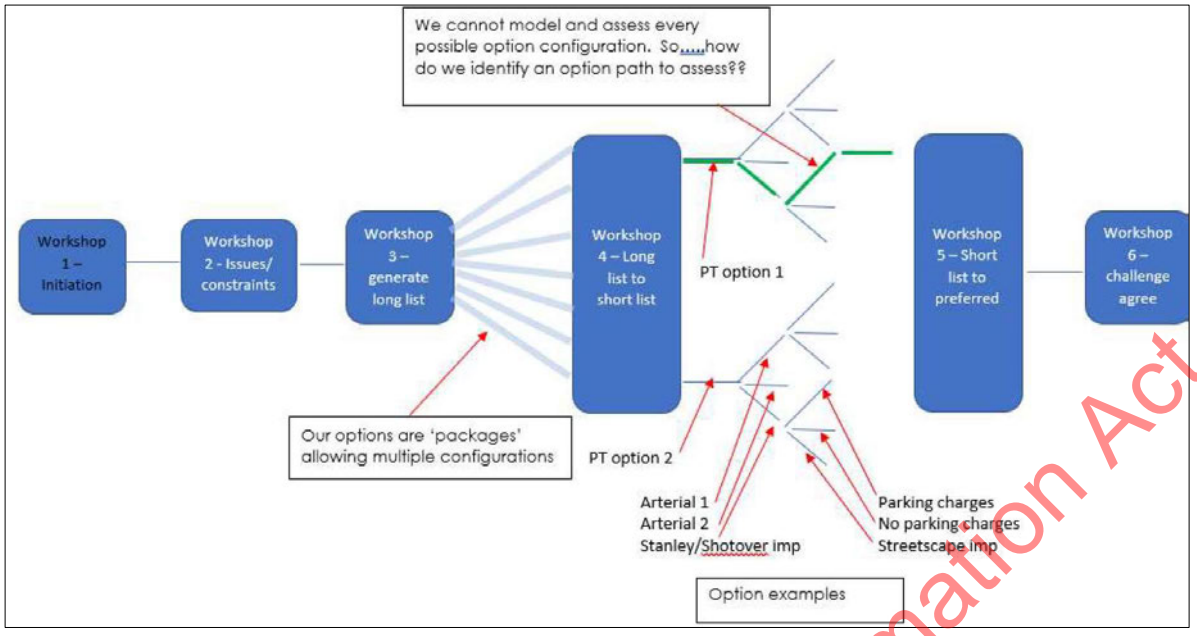

Figure 12: Option Development Pathways

In the example shown in Figure 12 (note option names are arbitrary for the purposes of the example):

1. At the first priority level, assessment found PT Option 1 better than PT Option 2 (therefore omitted).
2. Only PT Option 1 then tested with three second priority level options; assessment found performed better with "Stanley/Shotover imp" than "Arterial 1" and "Arterial 2" (therefore omitted).
3. PT Option 1 and "Stanley/Shotover imp" then tested with three third priority level options; assessment found performed better with "Parking charges" than "Streetscape imp" and "No parking charges" (therefore omitted); and so on.

Prioritising assessment of key elements in this way enabled omission of unsuitable options and eventually selection of a preferred option and meant that the project team could step through assessment without needing to test each combination of option at each priority level. Subordinate options that did not support the overriding priority option could be omitted without detailed assessment. This enabled the team to 'build' the preferred option from a robust mode-priority base.

The priority levels were agreed as follows:

1. High Capacity Public Transport (HCPT) Options and function.
2. Transport treatments to support PT/HCPT (includes access by active modes).
3. Other transport treatments to support access and function.
4. Urban Form, Liveability, Planning and Technology.

Priorities were set based on achieving the mode shift targets set out in Optioneering Context, achieving Investment Objectives and outcomes from the shortlist programme assessment, as set out in Table 4.

Priority level 1 elements (public transport vehicles and hubs), and Priority level 2 (public transport priority) were assessed using multi-criteria analyses. Lower priority (Priority 3 and 4) level options were selected or omitted based on their role in enabling higher priority options, as well as feasibility and alignment with Investment Objectives.

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Table 4: Rationale for Option Prioritisation

Priority Theme	Link to Investment Objectives	Link to Shortlist Assessment
HCPT	HCPT is the only way of ***sustainably managing growth***, as identified in transport modelling. By definition, providing HCPT ***reduces reliance on private vehicles***. HCPT generates high concentrations of foot traffic around hubs, thus ***enabling enhanced land use*** Providing additional travel choice ensures the system is ***adaptable to change and disruption***. HCPT also provides flexibility in vehicles, with potential for staged capacity increases Reducing the number of private vehicles on the road ***enhances safety*** by transferring people onto high capacity vehicles with significantly lower crash risk	HCPT was a commonly high-scoring element in the shortlist programme assessment, particularly trackless trams, gondola, high frequency services and high-quality hub in the Town Centre
Active Modes	While upgrading provisions for active modes would ***sustainably manage growth*** and ***reduce reliance on private vehicle travel***, walking and cycling alone does not offer the speed or convenience needed to support mass movement of people in Queenstown. Active modes were therefore prioritised as a supporting measure to HCPT (i.e. focus on first mile/last mile connecting with PT), with a supplementary role facilitating longer distance trips	Scores in the shortlist assessment suggest preference for localised interventions, such as pedestrianising the town centre, providing bike facilities and overpasses on SH6A, rather than wholesale changes in the network hierarchy to active modes
Travel Demand Management	Transport modelling showed that supplementary measures would be required on top of infrastructure to ***sustainably manage growth***. Travel demand measures are intended to ***reduce reliance on private vehicle travel*** and are generally softer, low-cost interventions that are more ***adaptable to change and disruption***.	Parking and coach management featured strongly in all high-scoring programmes
Private Vehicles	The first Investment Objective refers to ***reducing reliance on private vehicle travel***. Thus, interventions that encourage trips by private vehicle were deprioritised. However, the Investment Objectives retain a requirement to ***provide more efficient and reliable access for people and goods***, so treatments that support access and function, particularly for commercial purposes were prioritised	Scores for individual general traffic interventions suggest an acknowledgement that at least a minimum level of service needs to be provided for access to/from SH6A and businesses in the Town Centre
Amenity	Fundamentally the Investment Objectives of the project evolved from a need to address transport problems, not urban design problems, hence the de-prioritisation of urban design interventions. However, options need to ***enhance the liveability and quality of the natural and built environment,*** so amenity is retained as a priority, albeit a low one	Amenity interventions scored relatively well in all programmes but are considered 'nice to have' rather than fundamental to addressing transport problems

Options for each of the geographic areas need to work together for the project to achieve the Investment Objectives. For example, as a 'receiving environment', Queenstown town centre is directly impacted by the amount of traffic able to travel along the Frankton to Queenstown corridor. Similarly, the performance of the Frankton network is linked to the net flow of traffic in and out of the area. As such, the capacity and performance of each area needs to be in equilibrium to avoid queueing and delays on key parts of the network.

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3 DO NOTHING, DO MINIMUM AND COMMITTED PROJECTS

3.1 Do Nothing

Doing nothing to address transport problems in Queenstown was quickly ruled out as a realistic option, primarily because the approach would fail to achieve any of the Investment Objectives.

This effectively represents the counterfactual of the case for investment presented in the Strategic Case. Failure to invest in Queenstown's transport network will have drastic negative consequences on the local economy, the visitor experience and residents' quality of life, as summarised below:

- Residential and visitor growth remains strong which will increase travel demand on the current network. Peak day population is forecast to grow from approximately 120,000 in 2018 to 200,000 in 2048. While COVID-19 has undoubtedly had a significant impact on visitor numbers, this is a temporary phenomenon with QLDC projecting that Queenstown will be back to pre-COVID visitor numbers by 2024.
- Parts of the network are already at capacity. SH6A practical capacity was exceeded on 140 days in 2019. Without remedy, the level of service will further decline – peak spreading will occur, travel time variability will deteriorate, and significant congestion will result.
- Peak hour people trips are forecast to double on the topographically constrained SH6A, from approximately 1,500 (in 2028) to more than 3,000 (2048) (refer to Figure x). SH6A is already at capacity at certain times of the day.
- Travel in Queenstown is predominately by the private car (i.e. on private car trips make up 84% of trips on SH6A), which is not sustainable from the perspectives of resident and visitor growth, efficiency, amenity, safety and resilience. Left unchecked, the road network would be over capacity for much of the day, and it is estimated than Queenstown Town Centre would require an additional 3,000 car parking spaces should the current mode share continue into the future.
- Total emissions are forecast to increase from 178,535 total annual emissions (Co2-e) in 2018 to 227,939 in 2028 in a Do-minimum situation. The liveability of Queenstown will be reduced as will be the quality of the natural environment, which is a key factor in Queenstown's appeal. The provision of more sustainable travel options to the private car, coupled with behavioural change will be critical to enhance Queenstown's natural environment.
- Evidence shows that Queenstown Town Centre is becoming degraded in a way that threatens the cherished liveability, local resident appeal and rich visitor experience that people expect from Queenstown. Queenstown's rapid and organic growth has created a situation where the needs of the private motor vehicle are taking priority over people and the much-needed balance of transport across public, passenger and active modes cannot occur at anywhere near the required level. At the heart of this situation is the need to ensure that the experience the Town Centre provides is attractive enough to bring locals back to town and keep the visitors coming to the district.
- It is estimated that there will be between a $ 670 m to $1.2 billion loss to the Queenstown economy, over a 40 year period, through visitors travelling elsewhere should Queenstown not be invested in beyond the Do-Minimum scenario.

3.2 Do Minimum

From a conceptual perspective, the 'Do Minimum' is defined as the programme of interventions required to retain an acceptable minimum level of service in the transport system (although it should be acknowledged that, in this case, the do minimum interventions are insufficient by themselves). A suite of quick-win interventions (known as the Rapid Targeted Interventions) was identified as part of the project to resolve immediately pressing transport issues in the interim of major infrastructure projects being implemented. The programme of works comprised what would traditionally be classed as low cost, low risk projects, which were grouped to enable an integrated response to improve bus reliability and active mode accessibility while optimising the existing road network.

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Interventions proposed included bus lanes, high occupancy vehicle lanes, Shotover Street signals, parking reduction, Stanley Street optimisation and shared paths. However, funding was unavailable at the time and the project was dropped.

Many of the components proposed under the Rapid Targeted Interventions are now guaranteed through the New Zealand Upgrade Programme and Crown Infrastructure Partners Stimulus Package (refer Section 3.3). In practical terms, this represents the Queenstown Business Case 'Do Minimum', which includes:

- Roundabout at SH6/Howards Drive
- SH6/Tuckers Beach Road grade separation (opened recently)
- Quail Rise to Hawthorne Drive link
- Humphrey Street link with signals at SH6/Humphrey and Humphrey/Lucas
- Frankton bus hub
- Signals at Brecon/Man, Shotover/Rees, Lake Esplanade/Beach, Melbourne/Dublin/Frankton, Gorge/Henry
- Inclusion of Barnes Dance for pedestrians at all signals
- Closure of Ballarat Street north of Stanley as part of Project Manawa
- Additional roading links as per Lakeview structure plan
- Bus lanes Lucas Place to Frankton Hub (northbound), SH6/SH6A to Hardware Lane (eastbound and westbound), Howards Drive to Stalker Road (westbound) and Kawarau Road.

In addition to interventions listed above, the transport modelling 'Do Minimum' scenario included bus-based Park and Ride facilities at Ladies Mile and Boyd Road (not capacity constrained as per limitations of the Future PT Demand Model). This aligns with the Emerging Preferred option from the Wakatipu Park and Ride Services SSBC, which was commissioned partway through the Queenstown Business Case.

Transport modelling of the 'Do Minimum' could not be completed beyond 2018 demand sets (i.e. with 2028 and 2048 volumes) as they resulted in gridlock, indicating the scale of the problem and the need for further investment beyond the Do Minimum. Refer to the Queenstown Business Case Transport Modelling Future Modelling Option Report and the Business Case Modelling Report for full modelling methodology, assumptions and results (Appendix B03).

3.3 New Zealand Upgrade Programme and Crown Infrastructure Partners Stimulus

Several one-off infrastructure investment packages have been announced for Queenstown by central government in response to different pressing issues, such as rapid growth and the economic downturn caused by the Covid-19 pandemic.

The committed projects essentially represent the Infrastructure pillar of the Three Investment Pillars (refer 2.2) that, in isolation, will not solve Queenstown's transport problems. Without further supporting investment in public transport services and demand management measures, the committed investment could be left 'high and dry' without achieving any material benefits.

The Queenstown Business Case explores the additional investment required to ensure a fully integrated infrastructure package that unlocks the benefits intended by the already-committed funding. Non-infrastructure improvements, in areas such as Travel Demand Management and public transport services, are crucial to break Queenstown's traditional dependency on private car travel and ensure that investment in infrastructure is not undermined by continued growth in traffic volumes.

3.3.1 Economic Stimulus Package

The NZ Upgrade Programme (Figure 13), announced while this business case was underway, was born out of a surplus in the central government budget of $12bn. Queenstown received $90m in funding to build on the

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recent success of the new bus service, with new public transport projects across the network. The package of investments was heavily based on the Emerging Preferred option of the Queenstown Business Case.

As the package is funded through Crown investment, it is limited to assets on Crown land, and includes:

- Bus lanes on SH6 through Frankton
- Intersection upgrades (including SH6/SH6A) with bus priority on SH6A
- Bus hub on SH6
- Grant Road to Kawarau Falls improvements (from the GR2KF SSBC)
- New roundabout at Howards Drive (Lake Hayes Estate access)
- New underpass at Ladies Mile.

Figure 13: New Zealand Upgrade Programme Queenstown

The package is intended to promote mode shift away from private cars by prioritising public transport and making active mode access safer and more convenient. This business case provides further definition of the projects that will make up the Queenstown NZ Upgrade Programme. Construction is expected to begin in late 2021.

3.3.2 Economic Stimulus Package

As part of the government's COVID Response and Recovery Fund, $3bn has been allocated to infrastructure projects nationally, including $708m for transport. Of this fund, $85m is committed for Queenstown, namely for town centre streetscape improvements ($35m) and Stage One of the Queenstown Arterial Route ($50m).

The town centre streetscape improvements aim to enhance the amenity and quality of the public realm on Brecon Street, Beach Street, Rees Street and Park Street, completing the 'Gardens to Gondola' active mode route. The project has a target start before the end of 2020.

The Stage One Arterial project will provide a new route for traffic between Frankton Road and Shotover Street, effectively connecting and upgrading existing roads Melbourne Street and Henry Street. The project is intended to remove general traffic from the Stanley Street bus hub and enable land use development in the

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town centre. Fast Track Designation is underway for the full Arterial Route (Figure 4 – Interdependent Projects Section) and construction is expected to commence in July 2021.

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4 NETWORK WIDE PUBLIC TRANSPORT OPTIONS

As identified through transport modelling and stakeholder engagement, High Capacity Public Transport would form the core of the Queenstown Business Case programme. This section presents option development and assessment of public transport network, hub and bus priority options based on their Priority (refer to Prioritising the Programme for option priorities) and role in the Three Pillars of Investment.

4.1 Public Transport Network (Priority 1)

The Priority 1 options discussed below are:

- High-capacity Public Transport (PT Services)
- PT Hub – Queenstown Town Centre (Infrastructure)
- PT Hub – Frankton (Infrastructure).

4.1.1 High-capacity Public Transport

Figure 14 presents a summary of options considered and assessed for the future public transport network.

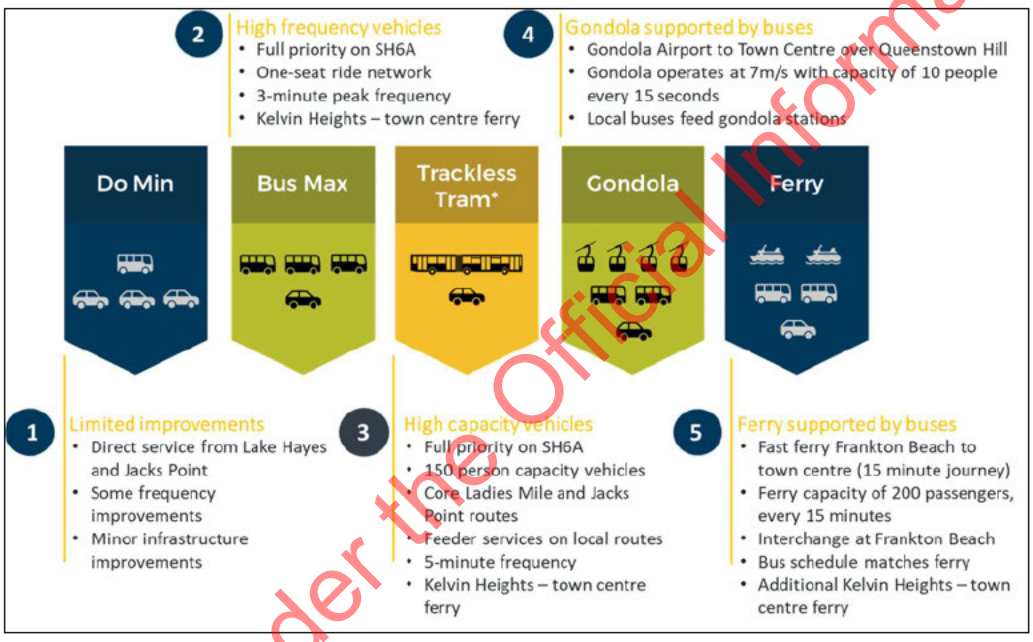

Figure 14: Options for High-capacity Public Transport

Stakeholders and the project team agreed that HCPT options shown in Table 5 should be dismissed due to fatal flaws or poor alignment with Investment Objectives.

Table 5: Omitted HCPT Options

Option	Reasons for Omission
New bridge or gondola from Kelvin Heights to Queenstown Bay	Insurmountable consenting, amenity, affordability and constructability issues.
Alternative routes via Malaghans Road or Watties	Discounted previously through other studies (primarily due to cost, constructability and effectiveness)
Allowing access to lakeside properties by ferry only	Unacceptable impact on access and liveability

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Option	Reasons for Omission
Amphibious buses	Lack of suitable vehicles, issues with reliability and travel time.
Frankton track route	Unacceptable impact on lakeside access and environment

Options Assessment

The key consideration for HCPT options was their ability to facilitate and encourage mode shift. Preliminary outputs from the Future Public Transport Demand model were used to inform decisions in the MCA. The model uses a multinomial logit equation to determine the proportion of trips made by each mode for each origin-destination pair, based on a generalised cost of travel time, fare, parking, access time, wait time, vehicle operating costs and journey penalties (transfers and mode). Refer to Appendix B04 for modelling methodology, assumptions and results, including updated modelling results from sensitivity testing for COVID-19 and Spatial Plan impacts.

Figure 15 summarises resultant car volume/capacity ratios on SH6A forecast for each HCPT option, as tested in the Future PT Demand Model (green indicates less congestion). Results show forecast private vehicle demand under each of the scenarios at the Suburb Street intersection on SH6A, which has a calculated capacity of 1,700 veh per hour.

Preliminary results showed that options with higher priority, and therefore faster and more reliable travel times, would achieve more mode shift due to their lower overall generalised cost. The Trackless Tram option achieved additional mode shift due to a better 'mode penalty', which accounts for intangible aspects such as comfort, ease of loading and security.

Of note, car volumes still exceeded capacity in all options, indicating that additional Travel Demand Management interventions would be required to support the PT network (see Travel Demand Management). Parking was identified as the single most sensitive parameter driving mode shift through the Future Public Transport Demand model. As such, the Queenstown Town Centre parking strategy and supporting Travel Demand Management initiatives will play a key role in achieving mode shift targets (further detail is provided in the parking strategy and TDM Technical Notes). Further detail on the High Capacity Public Transport evaluation is provided in TN30 – HCPT.

2028			Do Min	Bus Max	Trackless Tram	Gondola	Ferry
2028	AM Peak	Eastbound	93%	91%	89%	90%	91%
		Westbound	91%	85%	81%	81%	89%
	PM Peak	Eastbound	99%	96%	90%	92%	96%
		Westbound	104%	104%	101%	99%	103%
	Interpeak	Eastbound	95%	88%	84%	87%	87%
		Westbound	90%	87%	84%	86%	86%
2048	AM Peak	Eastbound	95%	92%	88%	92%	92%
		Westbound	94%	86%	77%	85%	90%
	PM Peak	Eastbound	100%	87%	78%	89%	94%
		Westbound	124%	117%	110%	113%	119%
	Interpeak	Eastbound	100%	93%	87%	87%	
		Westbound	91%	85%	85%	86%	

*An updated Gondola option was later modelled based on an HCPT-optimised network

Figure 15: Impact of HCPT Options on SH6A Demand/Capacity (Source: Future PT Demand Model)

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Options were then assessed using a 7 point scale (-3 to +3) for alignment with the project's investment objectives, reflected in an evaluation framework with agreed assessment criteria:

- Can achieve significant mode shift
- Sustainably manage growth
- Resilience – Network Events
- Resilience – Natural Hazards
- Reliability
- End to end journey time
- Towards Vision Zero
- Modal Integration
- Operational Flexibility
- Affordable (Capex)
- Affordable (Opex)
- Resident/Visitor experience
- Urban design and development
- Environmental impact
- Access for local communities
- Construction impacts
- Alignment with Masterplan and spatial plan.

Assessment criteria and results from the multi-criteria analysis were agreed with the Way to Go Management Team at a workshop on 2nd August 2019. Table 6 summarises the outcomes of the MCA. Detailed evidence and description of assessment criteria measures is provided in the Evidence for Queenstown PT Network Options MCA Memo (Appendix B25).

Table 6: HCPT Options MCA Results

	Status	Commentary
Do Min	Omit	• Failed to address any of the problem statements
Bus Max	Take forward for assessment	• Scored well against the Investment Objectives • Full priority sub-option manages growth, has high mode shift potential and high capacity but also has high cost, disruption, consenting and construction impacts • High cost is a potential fatal flaw
Trackless Tram	Take forward for assessment	• Low priority sub-option has low cost, disruption, consenting and construction impacts but does not manage growth as well with lower mode shift potential and capacity • Further assessment required as to level of priority to be provided
Gondola	Take forward for assessment	• Provides resilience and travel time reliability with minimal construction impacts and slightly lower cost than full priority Trackless Tram or Bus Max • Has lower mode shift potential due to challenges with integrating in wider network • Potential fatal flaw in consentability due to visual impacts
Ferry	Omit	• Failed to address problem statements • High operational cost relative to other options • Limited mode shift potential due to low density and connectivity around the lake

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	Status	Commentary
		• Considered part of overall solution but inappropriate for HCPT

Attendees at the workshop agreed that a staged approach responding to growth triggers, rather than any single HCPT option, is most likely to deliver the most appropriate response with value for money. Under this scenario, a **high frequency bus service** would provide High-capacity Public Transport in the short term. This bus service could be incrementally upgraded to a BRT service with higher capacity vehicles (similar to trackless trams) and improved frequencies provided as required.

Lifespan of a High Frequency Bus Service

The design life of a bus-based system depends on bus bunching and hub capacity. An analysis of required service frequencies and corresponding space requirements at hubs found that a road-based system (as opposed to an offline system) could provide practical capacity through to 2051 (based on adopted growth rates[2]). Increasing service frequencies beyond this point would likely lead to bus bunching and overloading of stopping and layover space at the hubs.

The analysis also found that increasing vehicle capacity by introducing double-deck buses would not translate to an increase in system capacity due to high loading/unloading times. **Articulated and bi-articulated buses are therefore considered the only feasible way of increasing capacity of the proposed on-road public transport system**. An off-road option (most likely gondola) would be required in the longer term to provide any additional step-change in capacity, but was not taken forward to the Preferred Programme in the Queenstown Business Case as it falls well outside of the next few NLTP periods. Staging is presented in the Recommended Option Assessment Report.

A High Capacity Public Transport Technical Note, including consideration of a gondola based system, is Appendix B05.

Option Development

Development of the option for the proposed public transport network is detailed in Technical Note 12 Queenstown Public Transport Network Development Story (see Appendix B06). The Technical Note details low-cost, quick-win interventions to address immediately pressing customer issues. These include:

- Plugging gaps in bus stop coverage
- Bus priority out of Shotover Country and towards the Shotover River Bridge
- Direct bus service from Lake Hayes Estate/ Shotover Country
- Bus priority on the approach to the BP Roundabout in Frankton
- Bus re-routing via Coronation Drive on the approach to Queenstown Town Centre to avoid congestion.

Options for the ultimate network were developed with the following principles:

- Each option needs to be self-contained and provide service to the whole Orbus service area
- Frequent service at all times – from 6am to 1am every day of the week - on the HCPT option between the Town Centre and Frankton, connected to frequent feeder services
- Simplicity is key to network legibility and use, particularly in a market like Queenstown with a largely transitory workforce and where travel is heavily focused on the visitor market
- Each option is "like-for-like" to the maximum extent possible within the inherent limitations of each mode so that the evaluation is on a "comparing apples with apples" basis
- Each option, apart from the do-minimum, needs some degree of "wow" factor in terms of customer experience and its role in a premier resort destination

[2] As noted previously, dates are subject to change depending on the post Covid-19 recovery.

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- Connect all current and future nodes and minimise end-to-end journey times
- Connections where they add value; efficient to operate and design to evolve over time
- Reflect Queenstown Town Centre and Frankton Masterplan direction where possible
- To address a range of customer issues identified during engagement processes.

Servicing Lakeview

As part of option development, queries were raised as to the suitability of servicing Lakeview (Figure 16), a high density residential development currently being constructed on Man Street, approximately 500m from the Town Centre. Analysis found that existing and proposed public transport routes would adequately serve the development (considering Total Mobility options for mobility impaired customers) (see Appendix B07). Stage 3 of the Queenstown Alternative Route would need to be complete to accommodate a bus route, however smaller vehicles could be used to provide connecting services to Lakeview (and other residential areas such as the Queenstown Hill). As consideration of the HCPT network has only been taken to IBC level, further consideration of these supporting services can be considered as part of a subsequent detailed business case.

Figure 16: Lakeview Development (Source: Queenstown Town Centre Masterplan)

4.1.2 PT Hub – Queenstown Town Centre

The hub requires space for stopping, (potential) layovers, manoeuvring and amenities in an area constrained by existing land use, and is therefore likely to be the capacity constraint on the overall network. The feasibility of using higher capacity vehicles on the network depends on the ability to cater for larger swept paths through the town centre. Mobility through the hub and into the town centre is also a critical factor to success, while a high-quality hub presents an opportunity to provide a gateway facility and stimulate economic activity in the vicinity.

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Option Development

Potential QTC hub sites were identified through a review of options identified in the QTC Masterplan and discussions with stakeholders at the longlist workshop. Options that were away from the highway (and therefore PT routes) and off main pedestrian routes (refer to Strategic Case) were not taken forward for assessment.

A high-level feasibility screen was then undertaken based on discussions with stakeholders as to land that was realistically available, as well as compatibility with the town centre road hierarchy (refer to Access and Movement (Priority 3) in the Town Centre Section) and the need to align with public transport routes. Sites appropriate for all network options (bus, gondola and high-capacity on-road vehicles) were taken forward for assessment to avoid prejudicing network options. Sites that were taken forward for assessment by MCA are shown in Figure 17.

Figure 17: Town Centre PT Hub Options

Town Centre PT Hub - MCA

Assessment of the remaining town centre hub options was based on the same MCA framework used for network options to ensure consistency. *Compatibility with network options* was then added as a key differentiator along with criteria specific to the Town Centre. Assessment criteria are listed below:

- Compatible with proposed High Capacity PT option
- Sustainably manage growth
- Access Arrangements
- Operational Flexibility
- Operational Efficiency
- End to end journey time
- Passenger/Pedestrian Safety

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- Modal Integration
- Site feasibility
- Affordable (Capex)
- Affordable (Opex)
- Resident/Visitor experience
- Sense of Place
- Land use enablement
- Community acceptance
- Construction impacts
- Alignment with Masterplan and spatial plan.

Preliminary scores were shared and agreed with the Way to Go Management Team at the 2nd August 2019 workshop. Table 7 summarises outcomes of the MCA.

Table 7: HCPT Options MCA Results

	Status	Commentary
Stanley Street	Take forward for concept design	• Scored strongly against the investment objectives, particularly in a 'with arterials' scenario (i.e. the QTC Masterplan recommended option) as general traffic could be removed, improving bus travel times, reliability and sense of place • Scored poorly for feasibility, modal integration and alignment with the Masterplan in a 'without arterials' scenario due to conflict with general traffic leading to worse bus travel times and reliability, and sense of place
Athol Street	Take forward for concept design (later omitted for feasibility reasons)	• Scored well against investment objectives as a through-hub (services don't terminate), which would provide less chance for bus bunching and therefore better bus travel times and reliability • Site was considered less feasible and more expensive as a terminus due to more space required for layovers, waiting and loading/unloading, all of which would make the hub less efficient in the confined space available
Shotover Street	Omit	• Considered to have a fatal flaw in urban design and construction impacts, conflicting with the retail function of the shopping area critical to the local economy • Inconsistent with Masterplan outcomes
Gorge Road	Take forward for concept design (would only be implemented if gondola in preferred option)	• Scored lower than other sites for most criteria, primarily due to being located further from the town centre resulting in lower mode integration, land use enablement and amenity • Will be required if gondola option preferred due to other sites being unsuitable

Ultimately stakeholders agreed that **Stanley Street** was the preferred town centre hub site, even if shared with general traffic due to feasibility issues at other sites. The Gorge Road site was retained as a requirement of the potential gondola option, which will be explored further in the HCPT DBC (other gondola-specific sites may be added for consideration at this stage). The Athol Street site, although deemed inappropriate for the HCPT services, was retained for the purposes of incorporating regional and tourist services.

4.1.3 PT Hub - Frankton

As the central point of the network, a hub at Frankton is required in each of the public transport network options to connect feeder routes with the future HCPT option, and to provide connectivity to destinations in Frankton via the proposed Orbital route (refer to Frankton Masterplan). The final location, form and function of the Frankton hub is therefore dependent on the preferred overall public transport option.

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Options considered for the Frankton hub had a larger geographic spread than the town centre due to a less physically constrained environment and the need to facilitate different network functions, such as connecting feeder routes with high frequency routes, while serving dispersed destinations.

Sites that were assessed, shown in Figure 18, were identified through a combination of options assessed previously through the Grant Road to Kawarau Falls Bridge SSBC and the Frankton Masterplan.

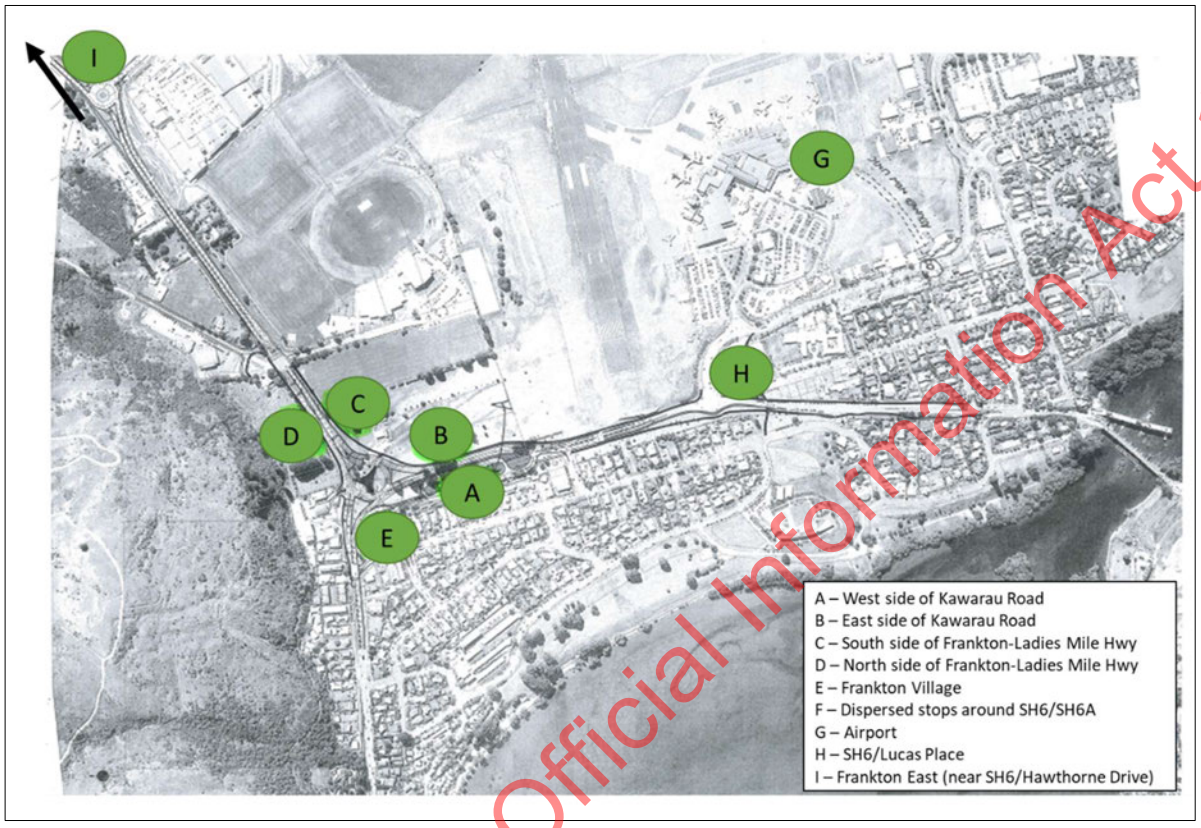

Figure 18: Frankton PT Hub Options

Frankton Hub MCA

Assessment of the Frankton hub options used the same MCA framework as the town centre hub options. Criteria were developed as a mix of those used for the Queenstown PT hub and the PT network (as the Frankton hub needs to incorporate elements of both). These were:

- Compatible with proposed High Capacity PT option
- Sustainably manage growth
- Access Arrangements
- Operational Flexibility
- Operation Efficiency
- Passenger Facilities
- Passenger/Pedestrian Safety
- Modal Integration
- Site feasibility
- Affordable (Capex)

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- Affordable (Opex)
- Resident/Visitor experience
- Sense of Place
- Land use enablement
- Community Acceptance
- Construction impacts
- Alignment with Masterplan and spatial plan.

Based on a preliminary sieve of options, the best performing options were sited on public land around the SH6/SH6A intersection. The strategic location, on bus routes close to main destinations, provides better access for bus services and a bigger catchment, while being ideally located for a potential future gondola station. Public ownership of the land also presents smaller property risks.

Sites further from the intersection of main bus routes on SH6, such as at the airport, were found to unnecessarily increase vehicle kilometres travelled (VKT) and travel times, not align with the potential gondola option and have high cost and property risks. Some options constituting multiple sites were considered but omitted for a combination of the reasons above.

Table 8 summarises results from the MCA assessment of Frankton hub options.

Table 8: Frankton Hub MCA Results

	Status	Commentary
West side of Kawarau Road	Omit	• Scored similarly to preferred option, except higher property risks and more disruption during construction (continued use of existing hub and highway would not be possible) • Does not align with future gondola option, requiring more turning stations and highway crossings
East Side of Kawarau Road	Take forward for concept design	• Well positioned for network options and proximity to local destinations • Construction could be undertaken while keeping highway and existing hub operational • Property risks are lower due to crown ownership of land
South side of F-LM Hwy	Omit	• Scored well for network options due to strategic location and proximity to local destinations • Scored poorly for integrating access with proposed changes to SH6/SH6A and local intersections
Airport + SH6/SH6A	Consider simplified second hub	• Scored the same as Option B overall, with better connectivity, capacity and access but poorly on cost • Considered prudent to instead focus investment on a centralised hub, with the airport operating as a simpler secondary hub

The "East Side of Kawarau Road" site scored best across most criteria. While the gondola option does not form part of the Preferred Programme of the Queenstown Business Case (due to being required a long way in the future), it was agreed with stakeholders that it was an additional benefit to choose a future-proofed preferred location for the Frankton Hub.

Subsequent analysis has indicated that the Frankton PT hub can be developed in two stages. The priority first stage is to upgrade the existing facility to improve efficiency and customer experience. This can then be expanded as part of a second phase. Staging is addressed in the Recommended Option Assessment Report.

4.2 Supporting Public Transport (Priority 2)

The Priority 2 options discussed below are:

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- Prioritising PT movements (Infrastructure)
- Travel Demand Management (Travel Behaviour Change)

4.2.1 Prioritising PT Movements

Public transport priority interventions presented here are now committed through the New Zealand Upgrade Programme. The funding was announced partway through the Queenstown Business Case and is based on the project's Emerging Preferred programme. Option development presented here is therefore to the level reached when funding was announced and is presented to provide context for its role in supporting the remaining Queenstown Business Case programme.

Without sufficient priority, public transport will be subject to the same congestion as general traffic and not offer an attractive alternative, thus limiting mode shift. This is particularly relevant along the Frankton to Queenstown SH6A corridor, where options for widening the carriageway for physical priority are heavily constrained by topography and property on both sides of the highway.

Option Development

A series of options with incrementally increasing priority were tested. These are described below and shown schematically in Figure 19. The diagram represents the section of the Queenstown network on SH6 and SH6A, between Ballarat St at the western extend, Hawthorne Drive at the eastern extend and Lucas Place at the southern extend. Grey and black represent general traffic lanes, red represents physical bus lanes, yellow boxes represent signalised intersections and green and orange represent variations of physical priority for the Single Track Running option.

- **Do Minimum** – based on interventions required to maintain a base level of performance on the network.
- **Virtual Priority** (refer to Section 9.1.1 for schematic concept) – buses given priority via signal control along the corridor rather than physical widening and bus lanes. Exit flow of general traffic from the SH6/SH6A roundabout restricted to ensure capacity not exceeded at downstream intersections, thus reducing queueing and delays. This option assumes that full priority is provided on SH6 through Frankton so that buses can reach the SH6/SH6A intersection unimpeded. Refer to
- **Targeted Priority** – minimum bus lanes required to bypass bottlenecks at either end of SH6A
- **Queue Jump** – as per Targeted Priority with additional bus lanes on approaches to signalised intersections
- **Single Track** – separated single lane for PT vehicles; requires layover points for eastbound and westbound vehicles to pass each other
- **Full Priority** – bus lanes along the full corridor in both directions
- **Offline** – gondola provided along Queenstown Hill, level of bus priority still required for accompanying bus services along SH6A.

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Figure 19: PT Priority Options

The following alternatives were tested and omitted in agreement with the Way to Go Management Team:

- **Split level/Double decking** – insurmountable access, amenity, affordability, consentability and constructability issues
- **Tidal flow lanes** – traffic flow in Queenstown is becoming decreasingly tidal due to growing all-day visitor demands, increasing peak spreading and growth in development away from the Town Centre (refer to Strategic Case for evidence)
- **Three laning** – as for tidal flow lanes above, plus the median is required for turning movements to hillside and lakeside access.

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PT Priority (SH6A) MCA

Assessment of public transport priority options was undertaken using the same framework as the network and hub options, to ensure consistency and compatibility. Consentability and property impacts criteria were added to capture specific risks relevant to the SH6A corridor.

Preliminary scores were shared at a workshop on 18th September 2019. Results of the amended MCA, including the Virtual Priority option, were shared and agreed with stakeholders on 5th November 2019. The off-line option was included as a benchmark for comparison with on-road options.

Table 9 summarises results from the MCA assessment of public transport priority options for SH6A.

Table 9: Public Transport Priority Options MCA Results

	Status	Reason
Do Min	Omit	• Failed to achieve any of the Investment Objectives
Virtual Priority	Take forward for assessment	• Manages growth with medium mode shift potential and medium capacity as provides for a limited number of buses per hour in the short term. Would eventually need upgrading
Targeted Priority	Take forward for assessment	• Relatively low cost, consenting and construction impacts as limited to localised areas (intersections) requiring minimal widening, property acquisition and construction
Queue Jump	Take forward for assessment	• All three options represent middle ground between no priority (low cost) and full priority (high cost). Assessment of the feasibility of operating only signal priority required to determine preferred option
Single Track	Omit	• Fatal flaw due to worse travel time than existing buses due to vehicles passing at stations (refer to in TN30 – HCPT) • High capital costs
Full Priority	Take forward for assessment; affordability potential fatal flaw	• Manages growth, has high mode shift potential and high capacity due to fully separate bus lanes but also has high cost, disruption, property, consenting and construction impacts • High cost is a potential fatal flaw – requires further assessment
Offline	N/A (not a 'priority' option – included as a benchmark for comparison)	• Outscored on-road options but has potential fatal flaws in terms of consentability, procurement and operation as a public transport service

Affordability

Affordability was identified as a potential fatal flaw for road widening along SH6A, given the topographical and property constraints on the corridor. Additional property, consenting and environmental risks were also identified. A more detailed investigation found:

- **Property**
  - based on high-level assumptions in terms of rateable value increases, total market value, injurious affection and fees associated with negotiations, the cost of property acquisition for widening SH6A to four lanes would be approximately $200m.
  - a total of 169 properties would be affected, with 77 outright purchases required. Queenstown is struggling with a housing shortage, which property acquisition would compound. Additionally, significant emotional impacts of acquisitions from a close-knit community may attract negative media representing reputational risks, particularly if there are suitable alternative options.
- **Construction**
  - accounting for uncertainty and risk, the resulting cost of geotechnical and retaining works was estimated at $160m.

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— disruption during construction would be significant on an already-congested part of the network. Long delays and frustration already occur during basic resealing and maintenance; construction of such a large project would obstruct day-to-day lives for a long period.

- **Environment**

  — QLDC announced a climate emergency on 27th June 2019 and published a Climate Action Plan, seeking to reduce carbon emissions and create a low-carbon transport system. Building a 4-lane highway would be counter to both of these objectives.

  — construction would involve a large amount of steel and concrete.

As a combination of the impacts assessed, full priority (four lanes on SH6A) was omitted from further consideration.

Initial cost estimates for signal priority (essentially the cost of signalising intersections along the corridor) were in the order of $30m (including $20m for the SH6/SH6A intersection), representing superior value for money pending an assessment of bus travel times.

The affordability of targeted physical bus priority is discussed below.

Key Constraints on Targeted Priority Option

The section between the SH6/SH6A intersection and Frankton Marina is the most constrained on the Frankton to Queenstown corridor (the only section with no flush median) due to terrain on the northern side and properties on the southern side. Two active landslides on the northern side and properties on both sides limit the feasibility of widening SH6A.

Figure 20 summarises the trade-offs involved with options to provide physical priority through the section. A four-lane option (indicated by broken red centreline) would require approximately $64m of property acquisition (parcels shown in yellow).

An alternative alignment to the north (indicated by unbroken red lines) with smaller property impacts was also tested. Construction would involve significant geotechnical risks, with improvements costing an estimated $10m. Property acquisition to the eastern end would also be required at an estimated cost of $13m, while access to properties on the southern side would need to be reinstated along the lakefront due to severance of driveway accesses on the highway. This would conflict with the Frankton Track active modes route.

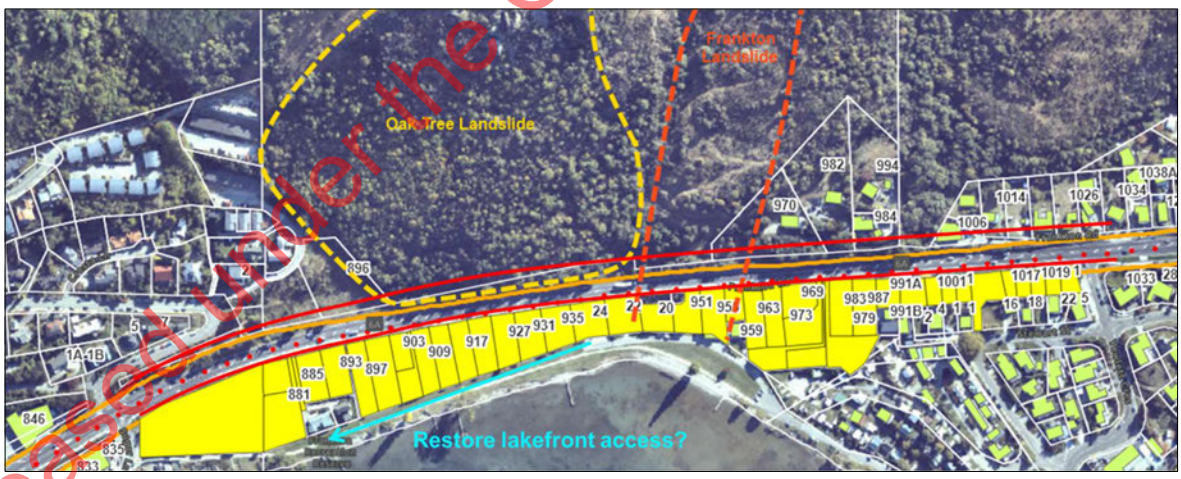

Figure 20 SH6/SH6A to Frankton Marina Constraints

Further justification of the Virtual Priority option was provided as a result of the identified property and cost implications of targeted physical priority.

Potential Travel Time Savings

An assessment of bus travel times for each of the priority options found that a large proportion of delay on SH6A is caused by the bottlenecks at each end of the corridor. Thus, providing Targeted Priority (at these

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known bottleneck locations) was found to provide 40% of the benefits of Full Priority (fully separated bus lanes for the length of SH6A). However, as described in Key Constraints on Targeted Priority Option, the feasibility of providing physical priority at the eastern end of the corridor is low due to the heavily constrained carriageway resulting in large costs and additional consenting and construction risks.

The assessment found that the Virtual Priority option would provide up to 55% of the public transport benefits achieved by the Full Priority (at less than 5% of the cost). Virtual Priority was then tested in further detail using the Paramics micro-simulation model. The model showed that forecast general traffic demands would overload downstream intersections, causing queueing and delays, making Virtual Priority ineffective. Westbound traffic volumes on SH6A would therefore need to be limited to 1,250veh/hr (through signal control at the SH6/SH6A intersection) to ensure capacity was not exceeded at downstream intersections. In combination with eastbound signal priority, this was found to provide travel time and reliability benefits for both buses and general traffic. Key conclusions from the assessment are:

- Signal priority should be provided in the eastbound direction, along with physical priority where feasible
- In combination with limiting westbound traffic volumes at the SH6/SH6A intersection, this provides the most travel time benefits
- Westbound traffic would receive a large proportion of green time regardless of interventions, due to the need for protected right turns into side roads on Queenstown Hill, thus negating the need to provide signal priority in that direction
- As a result, and to reduce conflict with eastbound bus demands, virtual priority should not be provided in the westbound direction.

This formed the new basis for the Virtual Priority option. A Technical Note setting out the assessment is provided in Appendix B08 and a conceptual schematic is provided in section 9.1.1 Virtual Priority.

Summary

The alignment of the options with the Investment Objectives and indicative costs/benefits are outlined within Figure 21. **The outcome of the process was that the 'Virtual Priority' option be included as the PT option for the programme.**

Option	Investment Objectives 1a	1b	1c	2	3	4	Cost and Benefits	
Do Minimum (RTIs)	✗	✗	✗	✗	✗	✗	SH6A Cost	$2M
							% of Full Priority Benefits	10%
Virtual Priority	✓	✓	✓	✓	✓	✓	SH6A Cost	$5M
							% of Full Priority Benefits	55%
Targeted Priority	✓	✓	✓	✓	✓	✓	SH6A Cost	$30M-$80M
							% of Full Priority Benefits	40%
Queue Jump	✓	✓	✓	✓	✓	✓	SH6A Cost	$190M-$240M
							% of Full Priority Benefits	60%
Single Track	✓	✓	✓	✗	✓	✗	SH6A Cost	$140M
							% of Full Priority Benefits	-30%
Full Priority	✗	✓	✓	✓	✓	✓	SH6A Cost	$360M
							% of Full Priority Benefits	100%
Offline	✓	✓	✓	✓	✓	✓	SH6A Cost	$5M*
							% of Full Priority Benefits	55%

*Does not include cost of offline infrastructure

Figure 21: SH6A Priority Options Preliminary Cost Benefit Analysis

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4.2.2 Travel Demand Management

Initial modelling showed car demand exceeding practical capacity by 2028 for most options, even with public transport interventions. This demonstrates that public transport improvements alone would not achieve the mode shift required (for some trips, the convenience of driving would still outweigh the benefits provided public transport).

Figure 22 shows the forecast public transport mode share for the core corridor between Frankton and Queenstown, the shortfall required to be made up by other means and the resultant remaining private vehicle mode share[3]. The shortfall will need to be filled by Travel Demand Management (TDM) and increasing active mode trips. TDM measures are also required to achieve the highly aspirational public transport mode shares.

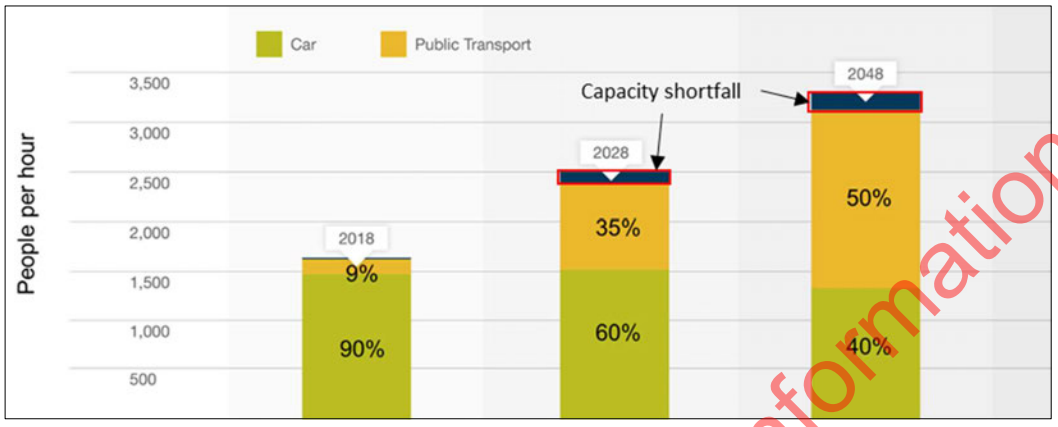

Figure 22: Forecast PT Mode Share

Travel Demand Management measures were identified in the Queenstown TDM Scoping Study through a review of existing conditions in Queenstown, examining case studies from similar towns internationally and interviewing local residents, businesses and policy makers (for full list of options identified, see Appendix B09). There are four key areas of focus:

1. **Policy** – Implementing policy changes takes time and requires public support, the list that this report recommends sets the agenda for the changes that are needed to achieve mode shift at scale. New policy or changes will be needed to support: car share; to require travel plans for large employers, key trip generators and new developments; to introduce charges for parking in areas that are presently free or cheap (where sustainable and more efficient transport choices are available); and initiatives that encourage a visitor mode shift like travel plans for popular destinations and a self-drive permit system.

2. **Travel planning and behaviour change initiatives** – This section lists items that are usually led by local government in New Zealand. Its focus is on programmes that benefit residents and the recommended measures include: enhancing the school travel plan programme; providing cycle and scooter training for adults and children; supporting the development of residential travel plans and encouraging travel behaviour change efforts through an award scheme and gamification.

3. **Wayfinding improvements** – With so many visitors each year, Queenstown needs to make it easy for people to find their way around. People use both physical signs and digital platforms to navigate. Physical wayfinding needs should be comprehensively identified by way of an audit and there is a need for a systematic, easy to use Wayfinding Game Plan. Digital and physical systems should map 'smooth walking/wheeling routes' that are accessible to wheelchair users or the best route for someone wheeling a pram or luggage.

4. **Transport Management Association (TMA) –** A TMA will be pivotal to the success of a TDM programme in Queenstown; it was a common feature of the international resort-based towns that were studied. Interviews with businesses, residents' associations and other key stakeholders indicated a strong

[3] Assumed to be the equivalent of 1,500 people/hour at the current occupancy rate of 1.3. TDM measures may increase average occupancy, which would increase the people carrying capacity of private cars

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appetite to get involved in solving Queenstown's transport problems and for a TMA to lead and coordinate effort.

Critical Success Factors for a TDM programme in Queenstown were identified through assessment of existing conditions and stakeholder engagement, as shown in Figure 23.

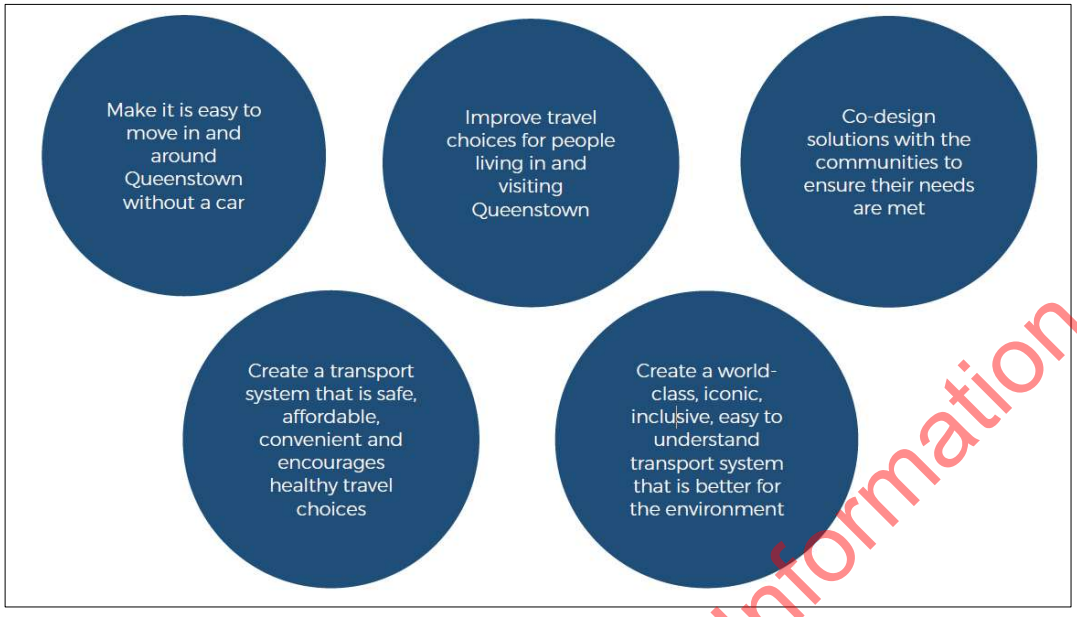

Figure 23: Critical Success Factors for a TDM Programme in Queenstown

Moves to address similar problems to Queenstown internationally are leading towards a value-based transportation system. Values and actions that are emerging as desirable for Queenstown include:

- Provision of choice in how to travel, generally by improving bus services and walking and cycling provision
- Considering equity with a focus on elderly, single, young and transport-disadvantaged people
- Balance local needs with those of tourists, for example if tourists get free bus passes with their lift pass, this should be available to locals too
- Provide clear governance, good leadership with clear lines of responsibility and a clear indication of commitment from the lead agencies along with setting performance measures
- Ensure adequate funding to undertake initiatives
- Utilise education and outreach within the community to encourage behaviour change
- Enable community participation, interest groups and multiple employers to work together to create solutions
- Ensure that the TDM programme is responsive to the changing needs of the community
- Improve transport information provision to make it more user-friendly to assist people with trip planning, trip taking and mode choice decision-making
- Ensure that the TDM programme is supported by infrastructure improvements. For example, without having safe and usable; walking, cycling and convenient and regular public transport infrastructure in place it is unlikely that large numbers of people will move to using these modes.
- Develop a programme of interventions. Case study research indicated that interventions targeted at specific modes were most effective when accompanied by improvements in quality: as part of the Sustainable Travel Towns programme in the UK, one town invested in travel planning and PT information

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promotion but did not improve service quality and experienced a decline in ridership; the other two towns increased bus system quality alongside TDM measures and experienced large patronage growth.

- Establish a TMA. Case study research indicated that successful TDM programmes required oversight, structure and mechanisms by which funding is obtained and initiatives are supported and implemented. An organisation dedicated to the provision of transportation services can increase collaboration, and public-private partnerships (like TMAs) were more influential and cost-effective than stand-alone programmes run by individual employers or destinations.

Implementation of TDM interventions identified in the Scoping Study is anticipated to be facilitated through development of a TDM business case.

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5 FRANKTON TO QUEENSTOWN

Interventions presented here are now committed through the New Zealand Upgrade Programme. The funding was announced partway through the Queenstown Business Case for projects based on its Emerging Preferred programme. Option development presented here is therefore to the level reached when funding was announced and is presented to provide context for its role in supporting the remaining Queenstown Business Case programme.

This section presents option development and assessment of options for the Frankton to Queenstown corridor based on their Priority (refer to Prioritising the Programme for option priorities) and role in the Three Pillars of Investment.

The F2Q corridor provides access to an increasing number of hillside residential and accommodation developments, requiring intersection control and active mode improvements to sustainably manage growth and enable enhanced land use.

Major option components for the corridor were partially dictated by the need to provide signal control at regular intervals along SH6A to enable the Virtual Priority public transport option (see Supporting Public Transport). As identified in Prioritising the Programme, active mode upgrades and improving access to public transport along SH6A would also be vital to achieving mode shift targets and Investment Objectives.

The extent of interventions tested for the Frankton to Queenstown corridor is shown in Figure 24.

Figure 24: Frankton to Queenstown Intervention Summary

5.1 Supporting Public Transport (Priority 2)

The Priority 2 options discussed below are:

- Bus Stops (Infrastructure/PT Services)
- Bus Lanes (Infrastructure).

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Bus Stops

In order to achieve identified mode shift targets, the public transport catchment needs to be as big as possible. An analysis of bus stop catchments was carried out (Figure 25) to test whether areas of significant population (or population growth) were poorly connected to the network.

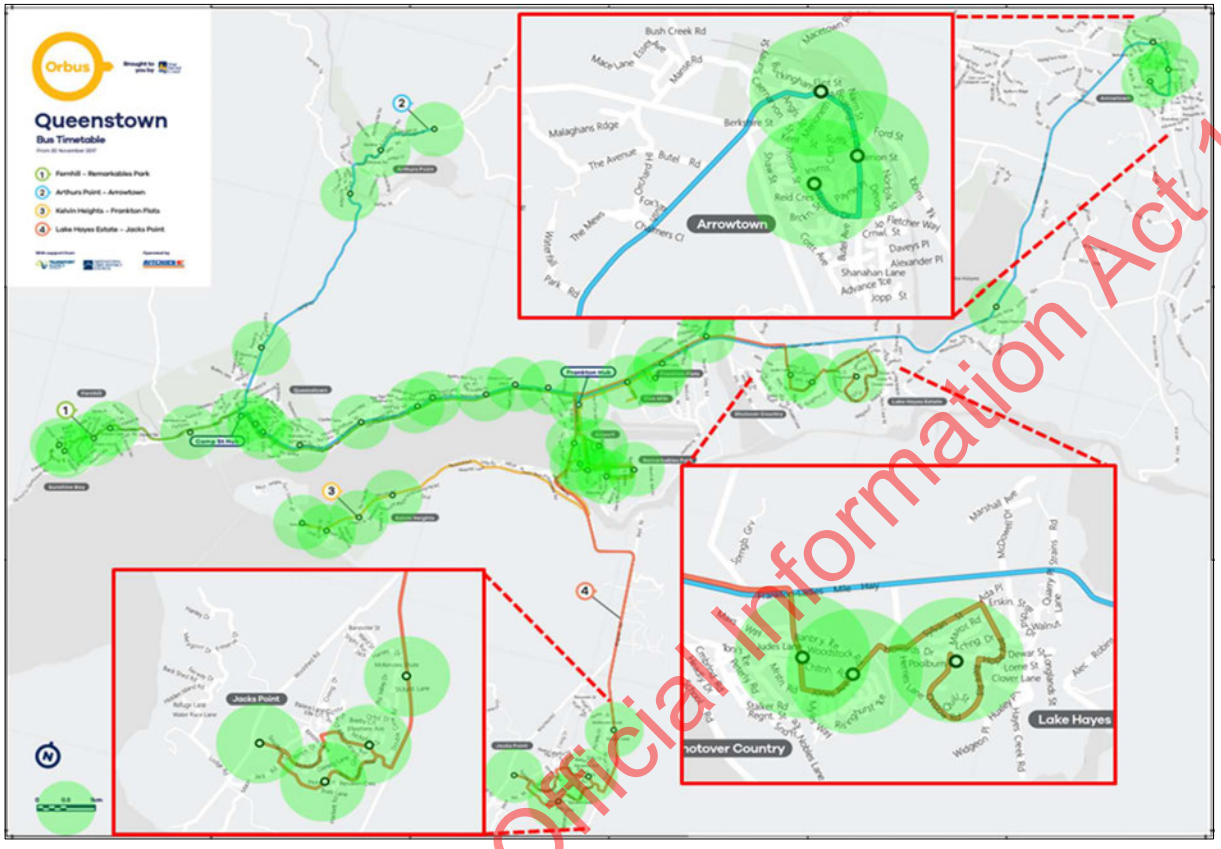

Figure 25: Existing Bus Stops 500m Catchments

A key component of the bus stop spacing analysis (refer to Figure 24) was to maximise accessibility without compromising the efficiency of the service with excessive stopping. Based on the size of individual stop catchments and existing and future boarding/alighting profiles, it is considered unlikely that travel time and reliability will be significantly reduced by new bus stops filling in existing catchment gaps. Paramics modelling was undertaken on the Preferred Option (refer to Preferred Option Assessment Report) to confirm impact on bus travel times and reliability.

An analysis of commercial bus dwell times (Figure 26) was carried out to determine existing stops suitability for capacity upgrades to provide sufficient storage space to cater for both public buses and private coaches (i.e. ski buses in winter) without one impacting on the operation of the other. Localised bus lanes were also tested for bus stop exits to assist with bus acceleration back into the traffic lane where needed.

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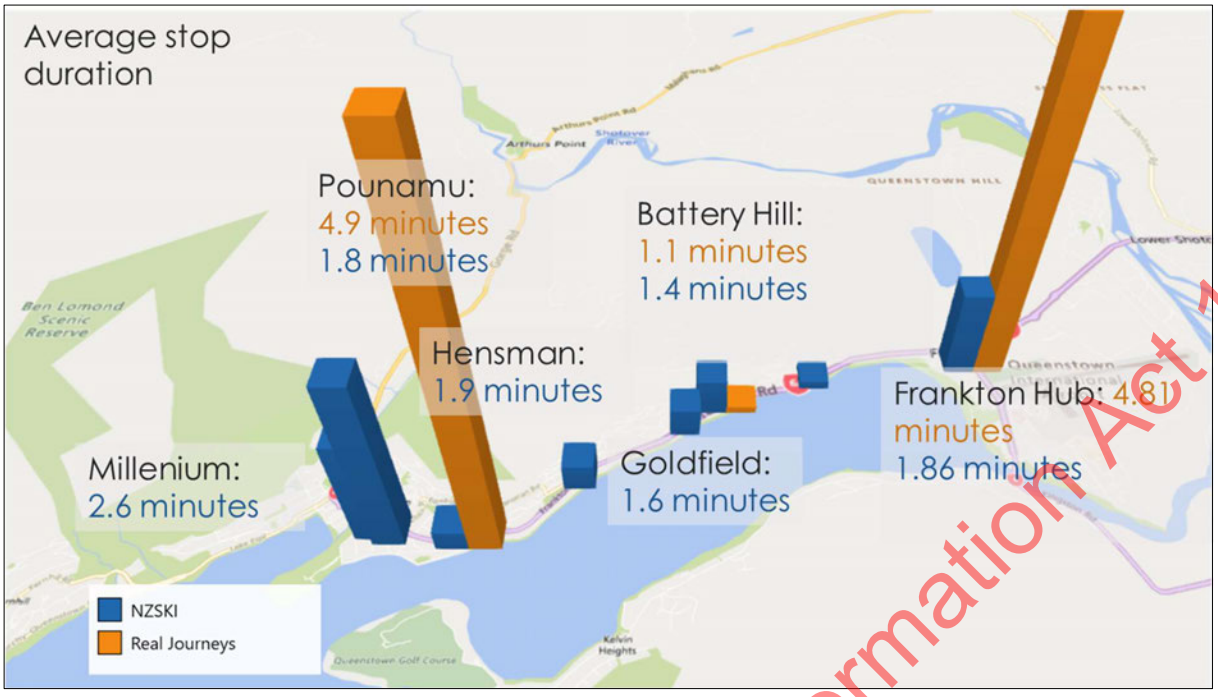

Figure 26: Average Stop Duration of Commercial Buses at Public Bus Stops in 2018 (Source: ERoads with permission from NZSki and Real Journeys)

Outcomes of the bus stop assessments are presented in the Recommended Option Assessment Report.

Bus Lanes

As described in Prioritising PT Movements, physical widening of SH6A was omitted as an option. Additionally, Virtual Priority was identified as the Emerging Preferred option for PT priority on the corridor, requiring no physical bus lanes. However, some localised sections of SH6A have been identified where physical bus priority can easily be provided, either by reallocating flush median space (where there is no turning demand) or realigning kerbs, to provide additional resilience to the Virtual Priority option without significant additional cost.

Proposed bus lanes mainly provide priority on approach to signals, where buses will be able to jump any residual queues, particularly around the Marina, which is most susceptible to queuing eastbound in the PM peak. Details of proposed bus lanes is provided in Appendix B10. Testing of the F2Q corridor through Paramics modelling is presented in the Recommended Option Assessment Report.

5.2 Access and Movement (Priority 3)

The Priority 3 options discussed below are:

- Intersection Upgrades (Infrastructure)
- Traffic Signals (Infrastructure/PT Services).

Intersections

Coordinated signals with consistent capacities along SH6A are required to ensure control over traffic volumes to enable the Virtual Priority option and prevent overloading of the network. Signal control also provides guaranteed access to key destinations and economic areas including the hillside suburbs, accommodation providers, the Frankton Marina and Sugar Lane commercial precinct. Refer to Figure 24 for intersections under consideration.

Active mode crossing demand is focussed at major intersections (Marina Drive, Goldfield Heights, Hensman Road), which are proposed to be signalised. This will provide full protection for active mode users accessing public transport, a proposed SH6A shared path and the Frankton Track alongside the edge of Lake Wakatipu.

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Intersection design was dictated by enabling the Virtual Priority option and site constraints. Options were under development for testing in SIDRA intersection software; projects were committed through NZUP before the analysis was complete.

New Marina Signals

As part of the corridor strategy to provide evenly spaced signal-controlled intersections, a new supplementary intersection was proposed for access to the Frankton Marina. As the only new (as opposed to upgraded) intersection on the corridor, stakeholders queried the necessity of a second signalised intersection at the Frankton Marina given the loss of usable land and potential impact on the active travel route on the Frankton Track.

Traffic modelling found that, as the only four-approach intersection on SH6A (all others are T-intersections), capacity of the Marina Drive intersection would be inconsistent with the rest of the corridor due to the green time required for additional movements. This was found to jeopardise the operation of the proposed Virtual Priority option by creating a capacity bottleneck on the route. To provide the required capacity, the eastbound right turn movement was removed and instead provided at a new set of signals to the west, as shown in Figure 27. Full analysis of options for the site is provided in Appendix B27.

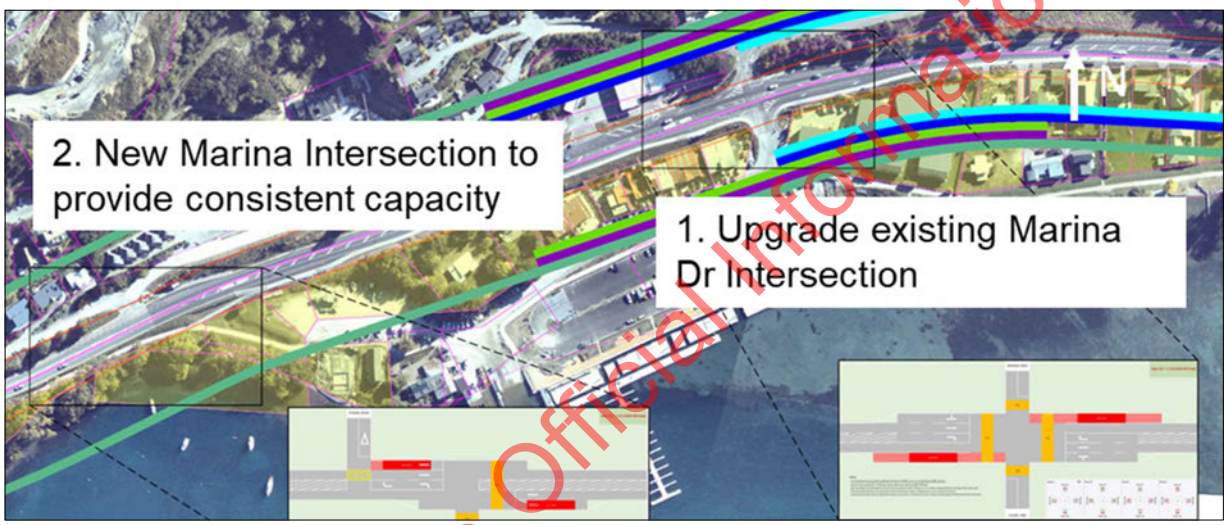

Figure 27: Marina Intersections Schematic

5.3 Active Modes and Urban Design (Priority 4)

The Priority 3 options discussed below are:

- Active Mode Improvements (Infrastructure/Travel Behaviour Change)
- Urban Design (Travel Behaviour Change).

5.3.1 Active Modes

The Wakatipu Active Travel Network (WATN) SSBC identified a series of enhancements and additions to the existing active travel network to complete the current partial network of trails, tracks and routes.

Opportunity to expand on proposed improvements for the Frankton to Queenstown corridor was identified. A gap analysis of the proposed option from the WATN SSBC found that:

- Options for shared and separated cycle facilities were scored jointly, when these would score differently for safety and ease of use
- Combined options (such as on road facilities in tandem with upgrading the Frankton Track) were not considered.

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An initial assessment of active travel options is summarised in Table 10. A 1.5m-wide on-road cycle lane in the eastbound direction and a 4.0m-wide shared path in the westbound direction are proposed to provide continuous and safe access for cyclists and pedestrians along SH6A.

A key finding of the assessment was that Level of Service improvements to the Frankton Track, such as sealing and lighting the route, would improve the journey for long distance trips by less confident users (those who wanted to avoid the road), but would not cater to existing on-road cyclists or improve access to the Frankton Track for residents and visitors on Frankton Road.

Table 10: Frankton to Queenstown Active Mode Options Assessment

Option	Rationale
4.0m wide shared path on lake side of SH6A	a. Minimum desirable width of 4.0m for a bi-directional shared path as per Waka Kotahi cycle design guidance (which references CCC Major Cycleway Design Guide, which references Austroads). b. Connections from residential areas on Queenstown Hill to public transport. c. Improved safety outcomes for pedestrians and cyclists from early community engagement and NOC safety complaints. d. Frankton Track is for through trips from beyond Frankton to/from Queenstown. e. Limited connections to Frankton Track from SH6A corridor. f. People walking from Queenstown Hill (around Goldfield Heights) into Queenstown Town Centre (this is current observed behaviour, with a lot of people connecting through Andrews Road). g. Commuters are unlikely to divert down to Frankton Track from SH6A and then need to come back up to SH6A to reach their destination. h. People walking and cycling from Queenstown Hill to Frankton as this increasingly becomes a destination in the Wakatipu Basin. i. Fewer side roads to cross, providing better priority and continuity design for shared path along the lake side. j. Given optimistic mode shift targets (40% in 2028, and 60% in 2048), a shared path represents a relatively cheap, effective option compared to major infrastructure. k. Perception that demand for active travel is low is misguided – demand is supressed by low quality or unsafe facilities. We are planning for future demands. l. To promote mode shift to walking/cycling, choice for users as a starting point has got to be preferential. Hence, option provides additional and complementary facility to Frankton Track. m. CPTED: From a personal safety perspective, Queenstown path is dark in a location with minimal passive surveillance from hotels, houses or users. There is also a risk of backlash from residents to install safe route standard lighting along the path. Hence, the SH6A route with highway standard lighting, passive surveillance from other road users, no entrapment points represents the route with best security. n. Connects land use along SH6A route more effectively as it is elevated, with land use either side. Frankton Track provides poor access, particularly on entry to Town Centre and Frankton. o. Accessibility of the SH6A route shared path will not have as much topographical challenges; hence the best opportunity to provide for mobility impaired users. p. Upgrade of the Frankton Track would likely need significant investment to meet quality standards expected if it were the only cycle route on the corridor. Some of the cost of the active transport element of the SH6a shared path may be offset by not significantly upgrading the Frankton Track. q. The Frankton Track represents a scenic, slower, less direct route whereas SH6a is the most direct convenient route.

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Option	Rationale
Footpath on hill side of SH6A:	a. Only beneficial along sections where there's a need to provide a safe connection between residential areas and PT, or safe crossing points to the lakeside of SH6A b. Will be needed to support future development along Queenstown Hill, e.g. above Middleton Road, commercial growth at the Frankton Marina catering for future development, growth and demand along SH6A for connections.
Cycle lane on hill side of SH6A	a. Beneficial for out of town cyclists, or cyclists joining from Queenstown Hill. b. Need to provide for convenience as 1(g) above + safety so need to provide separated facility c. Will merge with footpath, where provided, to form shared path and separation from vehicles.
Road cyclists	a. Potential issues with road cyclists sharing PT lane need to be resolved in detailed design. Austroads recommends 4.2m side by side, or less than 3.3m for shared space, although this is more likely to be for urban low speed environments. Adopting a shared path into town and cycle lane out of town is key to mitigating this issue. b. SH6A likely to become 60km/h but may still be too high for shared space without separate on road cycle facility, to prevent weaving of vehicles around cyclists and cyclists around vehicles into traffic lane.

5.3.2 Urban Design

Options under consideration for the F2Q corridor were reviewed from an urban design perspective to ensure alignment with Investment Objective 3: Enhances the liveability and quality of the natural and built environment. Through this process, the following observations were made:

- Crossings on SH6A should be signals or zebras to promote a safe pedestrian environment for accessing public transport
  - Signals were tested at locations with high demand near bus stops. Zebras were dismissed as inappropriate for a regionally significant State Highway due to high traffic volumes and speeds
- Vehicle crossings should be designed with level footpaths and changes in surface treatments. Vehicles should give way to pedestrians and cyclists on the shared path, with continuous footpaths where possible
- Cycle lane on the hillside should be continuous where possible
- Bus stop shelters should be set back from the shared path to allow through movement and avoid conflict with waiting passengers
- Tree and shrub planting should be added to designs
- Viewing decks should be provided at bus stops where possible (some or all will require cantilever decks).

These observations were carried through to design of the Preferred Option.

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6 FRANKTON

Interventions presented here are now committed through the New Zealand Upgrade Programme. The funding was announced partway through the Queenstown Business Case for projects based on its Emerging Preferred programme. Option development presented here is therefore to the level reached when funding was announced and is presented to provide context for its role in supporting the remaining Queenstown Business Case programme.

This section presents option development and assessment of options for Frankton based on their Priority (refer to Prioritising the Programme for option priorities) and role in the Three Pillars of Investment.

Traffic modelling undertaken for the public transport network (Priority 1) option showed that, without intervention, the proposed reduction in westbound general traffic capacity on SH6A would have significant knock-on impacts on the Frankton network, to the extent of gridlock.

In reality this would present as a combination of peak spreading and travel behaviour change. Additionally, there would be significant unmet demand, resulting in the impacts on Queenstown's tourism industry described in the Economic Context section of the Strategic Case. The scope was therefore expanded to enable a network-wide response.

A preferred option for the Frankton network was developed previously in the GR2KFB SSBC. Components of the preferred option were reviewed for compatibility with this business case and adapted based on updated information and stakeholder preferences, and to align with the recently completed Frankton Masterplan and ongoing Spatial Plan.

Much of the remaining optioneering for Frankton was based on determining the best way of supporting the public transport network (Priority 1) option. This largely revolved around balancing transport and urban design objectives for the key section of SH6 between Hawthorne Drive and SH6A.

Assessment of the Southern Corridor (SH6 between SH6A and Kawarau Falls Bridge) is summarised in the SH6 Frankton Southern Corridor Operation and Future Performance Technical Note (Appendix B11). However, assessment of options within this section of the network is presented separately here based on option priorities (i.e. the Lucas Place intersection upgrade was identified as a Priority 3 access and movement project while the Humphrey Street intersection upgrade was identified as a Priority 4 active modes project).

Additional information about Frankton can be found in Appendix B12.

6.1 Supporting Public Transport (Priority 2)

The Priority 2 options discussed below are:

- Network Controls (Infrastructure/Travel Behaviour Change)
- Intersection Improvements (Infrastructure/PT Services)
- Bus Lanes (Infrastructure).

6.1.1 Overall Network Approach

Through traffic modelling (Appendix B03), it was identified that in order to protect the operation of buses through Frankton, a system of controls would have to be implemented throughout the network to limit the flow of general traffic onto the highway. The concept proposed, and how it supports the operation of public transport on SH6A is shown schematically in Figure 28.

The potential to free up capacity through key parts of the highway network by better utilising Hawthorne Drive was investigated but determined to be counterproductive. This was primarily due to misalignment with the road hierarchy (diverting high volumes of traffic from a highway onto local road network) and reallocation of signal green time away from the highway to local roads, which would counteract the reduction in volumes on the highway.

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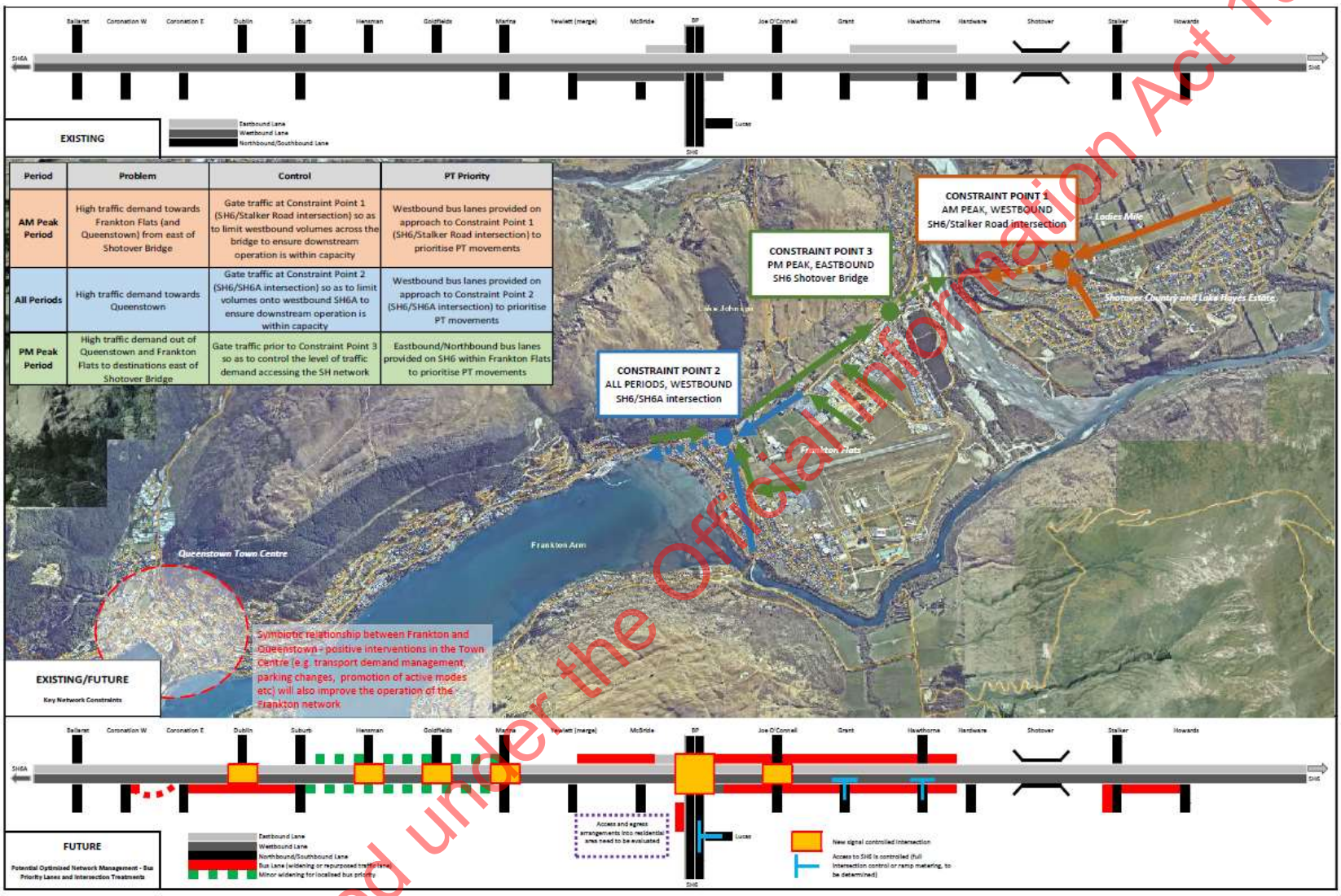

Figure 28: SH6 Network Control

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6.1.2 SH6/SH6A Intersection

Key to the functioning of the whole network, the SH6/SH6A intersection connects the Frankton to Queenstown corridor with the rest of the state highway network. The intersection also facilitates a critical role in providing access to the future public transport hub and accommodating business activity at the adjacent Frankton Village, Terrace Junction and BP service station.

The GR2KFB SSBC preferred option (the "Guavabout") included a signalised roundabout at the SH6/SH6A intersection, which was reconfirmed as the most appropriate layout as part of the Frankton scope expansion for this business case.

However, in response to concerns expressed by stakeholders over required land take, land use integration and active mode connectivity, the signalised roundabout was assessed against a more conventional option to ensure a balanced outcome between transport, land use and urban amenity.

Assessment

The assessment indicated the following:

- The two Options have a similar level of traffic capacity, albeit due to the more efficient use of green time (and spreading the conflict points out around the circulatory), the Guavabout generally results in lower traffic (and bus) delay than the Conventional Option.
- In addition, higher levels of queued of traffic are predicted in the Conventional option on all arms due to the higher cycle time required.
- Most bus movements see similar delay in both Options, although the movement from Kawarau Road to Frankton-Ladies Mile Highway is more difficult for buses in the Conventional Option (and would experience a higher level of delay).
- Although pedestrian crossing desire lines are better served in the Conventional layout, due to the high cycle time and separation of most crossing movements into two or more stages, pedestrian delay is relatively high in this option – although the Guavabout was originally intended to incorporate grade-separated pedestrian and cycle movements, it has been adapted to provide at-grade facilities, either as a replacement or in addition to grade-separated provision. Such at-grade crossings actually operate significantly better than the Conventional alternative, in terms of delay at the crossing points.
- The Guavabout requires more land take from the south-east corner of the site, although due to physical constraints on the SH6A arm in particular, the Conventional arrangement also requires a significant portion of this land.
- Access and egress to/from Frankton shops and Frankton Village is different between the two options – although most movements are possible (in combination) to and from all SH6 and SH6A links by using Gray Street and McBride Street. The only exception is in the Conventional Option, where traffic heading towards SH6 Kawarau Road (south), and towards Frankton-Ladies Mile Highway in the variation with Gray Street close eastbound, would need to use Ross Street.
- Access and egress to/from Terrace Junction and BP is possible from all directions in both Options. The only difference is that there is a greater risk of queues of vehicles blocking back into the petrol station forecourt in the Conventional Option (due to the high cycle time and therefore longer wait times at the limit line). To some degree this has been mitigated by maximising the distance between the proposed internal painted roundabout within the site and the main intersection stop line – and it could be mitigated further by running longer phase times for the Terrace Junction arm, although this would be at the expense of other movements at the intersection.
- The Guavabout maintains the ability to U-turn at the Junction, which is useful for local access (particularly in view of the potential restrictions in access/egress on Gray Street), and for service vehicles such as buses, coaches and taxis which are more likely to have non-linear routes. This ability to accommodate flexibility of movement (in the Guavabout option) is also important when viewed against the potential removal of existing roundabout layouts at SH6/Lucas Place, SH6/Grant Road and SH6/Hawthorne Drive – see separate Technical Notes on the Frankton eastern and southern corridors..

A summary of the assessment is provided in Table 11.

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Table 11: SH6/SH6A Operation and Future Performance Summary

	Signalised Roundabout "Guavabout"	Conventional Signals
Layout		
General Traffic Performance	• No access into intersection from Gray Street • Short cycle times (60s) to minimise delay • Phasing prevents blocking of intersection • Conflict points spread across circulating lanes to allow simultaneous operation of conflicting movements • Maximise exit flow from SH6A to clear traffic on section where physical priority infeasible • Enables gating of traffic towards Queenstown • Operates at safe speed for peds	• No access into Gray Street from intersection • Maximum cycle time of 120s to limit ped wait times. Longer cycle time would improve traffic operation • Similar footprint to roundabout option resulted in very poor operation • Larger footprint performed better but requires more lanes, leading to land take at intersection and along corridor • Raised tables lower speed to 30km/h for ped safety, worsens performance
Active Mode Performance	• Compatible with grade separated ped crossings • At-grade crossings would operate with no effect on operational efficiency; crossings would be in multiple stages but cause low delay due to low cycle times • On average, ~40s lower ped delay than conventional option	• Fully protected at-grade crossings on ¾ arms; crossings would be in multiple stages for some movements • Enables direct ped crossing on the south side of SH6/Gray Street, connecting potential bus hub and future land use with Frankton Village

Results from the assessment were used to inform a MCA against a range of criteria agreed with stakeholders. Scores developed by the project team were shared and revised at a workshop on 16th July 2020. Outcomes from the workshop are summarised in Table 12.

Table 12: SH6/SH6A Intersection Options MCA Results

		Status	Commentary
SH6/SH6A	Traffic Signals	Similar performance	• Marginally lower capacity and therefore marginally worse performance, mode shift potential and resilience; Potential issues with operation during online construction • Better land use enablement and liveability outcomes
	Signalised Roundabout		• Higher capacity and therefore better performance, mode shift potential and resilience; ability to construct offline; safer due to fewer conflict points • Larger footprint causing bigger property and liveability impacts; longer crossing distances

The multi criteria assessment of the two options found little overall difference, with the Guavabout scoring higher for traffic (and bus) efficiency, pedestrian delay and road safety; but scoring lower for required land take, enhancement of urban form and reputational risk (as a less conventional option).

In summary, both Options provide a high level of benefits over the existing intersection form, with the decision likely to be a choice between the relative importance of the various trade-offs in costs. Refer to SH6/SH6A Operation and Future Performance Intersection Review Technical Note for the full analysis (Appendix B13). On balance, the Way to Go management team decided to adopt the conventional signals and the rationale for this is provided in the Technical Note.

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6.1.3 Hawthorne Drive and Grant Road Intersections

The final option chosen for the SH6/SH6A intersection has wider network implications as additional lanes required for the conventional intersection option would need to be added throughout the Frankton network to provide consistent capacity.

The Frankton Transport Options Assessment weighed the benefits and disbenefits of three network options to ensure transport outcomes were balanced with liveability objectives.

The options assessed were:

1. Conventional place-based road network and intersection:
   - 1 general traffic lane and 1 bus lane in each direction
   - Compact signalised intersections across the corridor.
2. GR2KFB SSBC Preferred option:
   - 1 general traffic lane and 1 bus lane in each direction
   - Signalised roundabouts at SH6/Hawthorne Drive and SH6/Grant Road, and conventional signalised intersections elsewhere.
3. Large conventional intersections
   - 1 general traffic lane and 1 bus lane in each direction with additional widening at:
   - SH6/Hawthorne Drive
     - Extra approach lane on Hawthorne Drive
     - Extra approach lane on SH6 East, and exit lane of SH6 West
     - Extra short right turn lane on SH6 East
     - Extra short left turn lane on SH6 West
- SH6/Grant Road, SH6/Hansen Road and SH6/Joe O'Connell Drive
  - Extra westbound approach lane on SH6 East, and exit lane of SH6 West.

These were assessed under the context of changes to land use in Frankton proposed in the Frankton Masterplan and the Spatial Plan, including:

- SH6 Urban Corridor along the Frankton-Ladies Mile section
- Emergency Precinct at SH6/6a Junction
- 'Lake Link' between the airport and Frankton Arm.

In addition, the QLDC Plan Review changed land use on the north side of the SH6 corridor on the Frankton-Ladies Mile Highway section to Business Mixed Use and Medium and High Density Residential.

Assessment

Option 1, the place-based road network, comprising 2 traffic lanes, 2 public transport lanes and compact conventional signalised intersections, was omitted from further consideration following traffic modelling due to unacceptable delays and queueing. Modelling indicated that the proposed reduction in road capacity would cause queues of up to 29km (or prevent people from travelling in the area). Public transport would not be able to operate effectively under these demands, regardless of the amount of priority provided.

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Assessment of the remaining 2 options is summarised in Table 13.

Table 13: Frankton Ladies Mile Highway Intersection Assessment Summary

Signalised Roundabouts	
Layout	
Pros	• Provides capacity, efficiency and control utilising recently built infrastructure • Safe System with roundabout having lowest crash rate/severity of all intersection forms • Enables single traffic lane link (midblock sections) • Eliminates congestion at merges (as there aren't any) • Can provide at grade signalised pedestrian/cycle crossing on Hawthorne Drive arm • Can accommodate midblock staggered signalised pedestrian crossing • Public transport can be scaled for capacity through vehicle types
Cons	• At grade pedestrian crossing of SH6 long and provides a low level of service (4 signal phases), or • Requires pedestrian/cycle grade separation across SH6 (underpass proposed as part of HIF for Ferry Hill Drive extension and potentially east of Grant Road to connect to Alps Investments), which has level of service and road safety benefits, with some CEPTD considerations to be designed out • Slightly larger footprint than (large) conventional signalised intersection
Conventional Intersections	
Layout	
Pros	• Slightly smaller footprint than roundabout option • Pedestrian/cycle crossings can be provided on both side roads
Cons	• Reduced vehicle capacity over signalised roundabout • 2 traffic lanes required for capacity through intersection (and is interdependent with right turn demand at SH6/6a Junction and Hawthorne Drive) • Queuing at peaks times from merge on eastbound approach to Shotover Bridge • Midblock section 6 lanes wide, 2 x 2 traffic lanes and 2 x 1 public transport priority lanes • Eastbound bus gate required midblock, which will reduce the efficiency of public transport as buses get stuck in traffic through intersection and prior to Shotover Bridge merge (pushing bus gate further east requires it to be east of Hawthorne Drive and creates a 3 into 1 lane situation, which is even less efficient • Higher crash rate and high severity for pedestrian vs vehicle • SH6 at grade pedestrian crossings can only be provided on east arm of Hawthorne Drive and Grant Road intersections and may need to be grade separated • Replaces recently constructed high cost infrastructure

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The assessment has indicated the following:

- The two layout options have a similar level of traffic capacity at all intersections, and are both compatible with the preferred intersection layout at the key SH6/SH6A intersection.
- Bus and general traffic travel times, and individual intersection performance is similar in both options – providing a compatible level of capacity and performance to the proposed upgrades to adjacent parts of the road network.
- At-grade pedestrian provision and pedestrian delay is generally better in the conventional intersection layouts, although in this option there are still some locations where crossings cannot be provided (east side of SH6/Hawthorne Drive) or need to be staggered (at SH6/Hansen Road and SH6/Joe O'Connell). At SH6/Grant Road, a grade-separated solution (underpass or bridge) would need to be provided across SH6 in the roundabout option.
- The signalised roundabout arrangements allow U-turn movements to continue to be accommodated which is a useful feature in the network particularly as land use is built-up along the corridor (with an associated increase in kerbside activity).

Following assessment, scores were shared and revised at a workshop on 16th July 2020. Outcomes from the workshop are summarised in Table 14.

Table 14 Frankton Intersection Options MCA Results

		Status	Commentary
Hardware Lane to Grant Road	Traffic Signals	Similar performance	• Marginally larger corridor footprint due to need for more lanes at intersections, thus longer crossing distances and impact on urban amenity, higher cost and disruption in construction • Enables active mode connectivity, albeit at lower level of service
	Signalised Roundabout		• Marginally smaller corridor footprint due to improved efficiency at intersections, thus shorter crossing distances and improved urban amenity, lower cost and disruption in construction • Active modes routes less direct due to bigger intersection footprints

The MCA evaluation also showed little overall difference between the two options in terms of bus and general traffic travel times and overall network performance. The roundabout option scores higher for the need for less land-take along the corridor, alignment with the Frankton masterplan, and road safety. The conventional arrangement scores higher for pedestrian provision and supporting future land use development.

In summary, both Options provide a high level of benefits over the existing intersection form, with the decision being a choice between the relative importance of the various trade-offs in costs and benefits, and the consideration of other scheme objectives. The full assessment is provided in the SH6 Frankton East Corridor Operation and Future Performance Technical Note (Appendix B14).

6.1.4 Hansen Road/Joe O'Connell Drive Intersection

A review of the preferred option under the GR2KFB SSBC found that no updates were required to the proposed intersection upgrade, subject to the preferred option along Frankton Ladies Mile Highway.

6.1.5 Bus Lanes

Modelling indicates that queueing is expected throughout Frankton in the future, regardless of the final form of intersections and despite substantial expected mode shift to public transport, due to continued growth and reduction in general traffic capacity on SH6A. To ensure protection for public transport, bus lanes are proposed on SH6 in both directions from east of the Hawthorne Drive intersection to south of the Lucas Place intersection.

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6.1.6 Bus Stops

Since the introduction of the new bus service in 2017, substantial development has occurred in Frankton. As a result, key destinations such as the Five Mile and Queenstown Central shopping centres are inadequately served by bus stops. In anticipation of continued development, particularly on newly zoned Mixed Use and High Density Residential land on the northern side of the Frankton Ladies Mile highway, a series of new bus stops are proposed.

Rather than adopting a standard spacing, it was determined that stops should be aligned with access to significant land use and proximity to safe crossing points. Additionally, existing stops on Kawarau Road between Lucas Place and Humphrey Street were determined to be away from key desire lines and are proposed to be replaced by two new sets at Lucas Place and Humphrey Street.

6.2 Access and Movement (Priority 3)

The Priority 3 options discussed below are:

- Intersection Upgrades (Infrastructure)
- Traffic Signals (Infrastructure/PT Services).

6.2.1 Lucas Place Intersection

As part of the network controls identified in Overall Network Approach, and to ensure access to key destinations at the airport and Remarkables Park, an upgrade of the Lucas Place intersection is proposed.

Assessment of the 2 options is summarised in Table 15.

Table 15: Lucas Place Intersection Option Assessment Summary

Signalised T-Intersection	
Layout	
Pros	• Bus priority from airport and Remarkables Park area • At grade pedestrian crossing at intersection, although staggered on Lucas Place leg
Cons	• Doesn't provide flexibility/capability for 'u-turning' which would provide some resilience to the network
Conventional Intersections	

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Layout		
Pros	•	Aligns with Frankton Masterplan 'Lake Link' between the airport and Frankton Arm (although not overbridge which would require 6.5m clearance for over dimension loads)
Cons	•	Nearby crossing at Lucas Place with signalised T-intersection

The signalised T-intersection option was preferred due to the need to provide control over traffic entering the highway, to ensure access to key destinations and provide crossings for active modes, removing the need to provide a separate crossing to the south (as identified in GR2KFB SSBC).

6.3 Active Modes, Urban Form and Liveability (Priority 4)

The Priority 2 options discussed below are:

- Urban Form (Travel Behaviour Change)
- Active Modes (Infrastructure/Travel Behaviour Change).

6.3.1 Frankton Masterplan Alignment

An assessment by the project team's Urban Design specialist determined that options being considered for SH6 and SH6A are generally in alignment with the intention of the Frankton Masterplan (refer to Tech Note 29 – Frankton Masterplan Alignment). Although there are some minor areas of divergence generally related to detailed aspects, there is significant alignment between the two workstreams.

In some areas, as more detailed analysis has been undertaken in this business case, effect is given to the Masterplan in a slightly different way to originally envisaged. For example, the urban arterial along the Ladies Mile Highway as presented in the masterplan is not shown in the designs prepared for the transport elements of this business case. However, the outcome is not precluded and requires land use structure to be in place to enable it.

Overall, the SSBC follows the general direction and intent of the Frankton Masterplan with both plans showing a strong transport emphasis on public transport and completing missing links in the active travel network.

Spatial Plan Design Review Workshop

Liaison with project teams working on the Spatial Plan raised questions regarding the balance between transport solutions and liveability outcomes in the emerging preferred option for this business case, and how they could be better aligned with the Frankton Masterplan. Primary areas of focus were:

- Whether signalised roundabouts can be replaced with more land efficient and pedestrian friendly signalised intersections
- How pedestrian connectivity across highway can be improved, noting security concerns with proposed underpasses

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- Opportunities for the bus hub to be integrated with current land uses and future development opportunities
- How the place value of SH6 could be improved to create a more urban streetscape.

At a design review workshop on 3 June 2020, it was acknowledged that trade-offs would be needed between improving liveability to meet Masterplan objectives and sufficiently providing for the significant increases in forecast travel demand.

Outcomes of the workshop were for the project team to:

- Develop designs for key section of network to understand how place value could be maximised
- Develop renderings for urban streetscape on Frankton Ladies Mile Highway
- Re-run assessment of intersection options (documented in Supporting Public Transport (Priority 2).

A series of sketches and renders were then developed to show how land use, transport and place elements could be integrated under the emerging preferred option, as shown in Figure 29 and Figure 30. These considerations were taken into account as part of the corridor assessments described in Sections 6.1.2 and 6.1.3.

Figure 29: Urban Design Sketch for SH6/SH6A Intersection and Integration of Land Use

Figure 30: Render of Frankton Ladies Mile Highway Urban Corridor

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6.3.2 Active Modes

The active mode network throughout Frankton is currently disjointed, with the airport presenting a significant barrier to linking major destinations. Optioneering for this business case was broadly aligned with the Wakatipu Active Travel SSBC, with additional detailed assessment in key areas, such as the vicinity of Humphrey Street. An overview of potential active travel routes is shown in Figure 31.

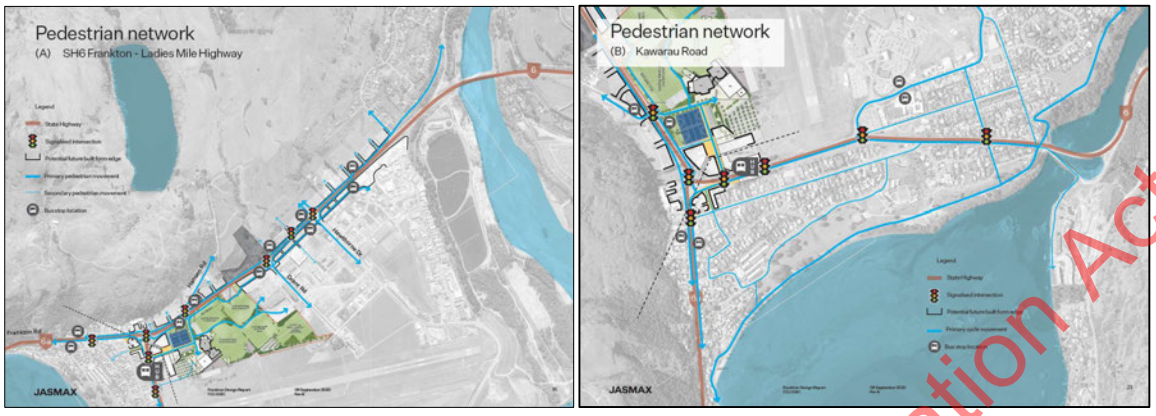

Figure 31: Active Travel Connections Through Frankton (left Ladies Mile Highway; right Kawarau Road)

Active Mode Crossings Assessment

As part of the design review to identify an appropriate balance between transport solutions and place value, an assessment was carried out on the relative benefits and disbenefits of different crossing types throughout Frankton (refer to the Frankton Urban Design report). The assessment considered road safety, levels of service, integration with land use, desire lines, security and impact on traffic.

A range of alternatives were tested, from no crossings to signalised crossings, zebra crossings and grade separated crossings (underpasses and over passes) depending on the site specific needs. Crossing alternatives were tested at:

- Ross Street
- PT Hub South
- SH6 Kawarau Road
- SH6/SH6A East
- SH6A at McBride Street
- Joe O'Connell Drive
- Hansen Road
- Grant Road
- Hawthorne Drive
- Hardware Lane.

Results and details of the assessment are presented in the Pedestrian Cycle Crossing Assessment Memo (Appendix B26) and the resulting preferred options are presented in the Recommended Option Assessment Report.

Through the GR2KFB SSBC, stakeholders agreed that SH6 acted as a barrier to walking and cycling in the vicinity of Humphrey Street. A series of options have been identified and assessed as summarised in Table 16.

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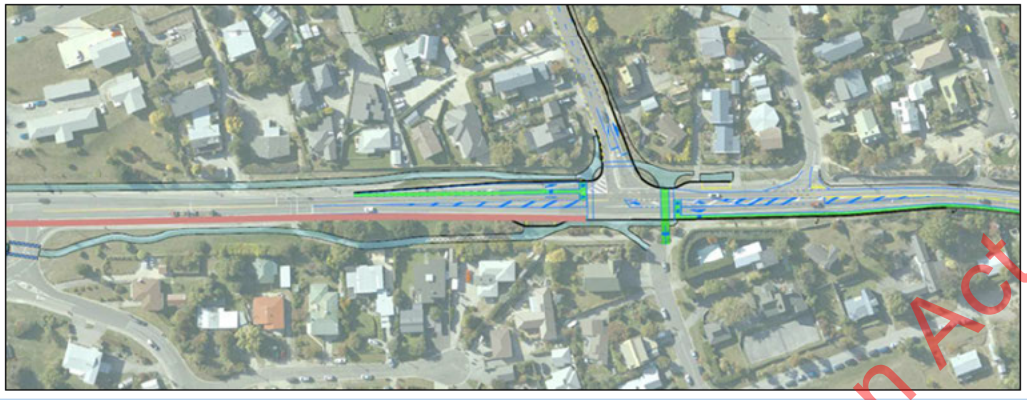
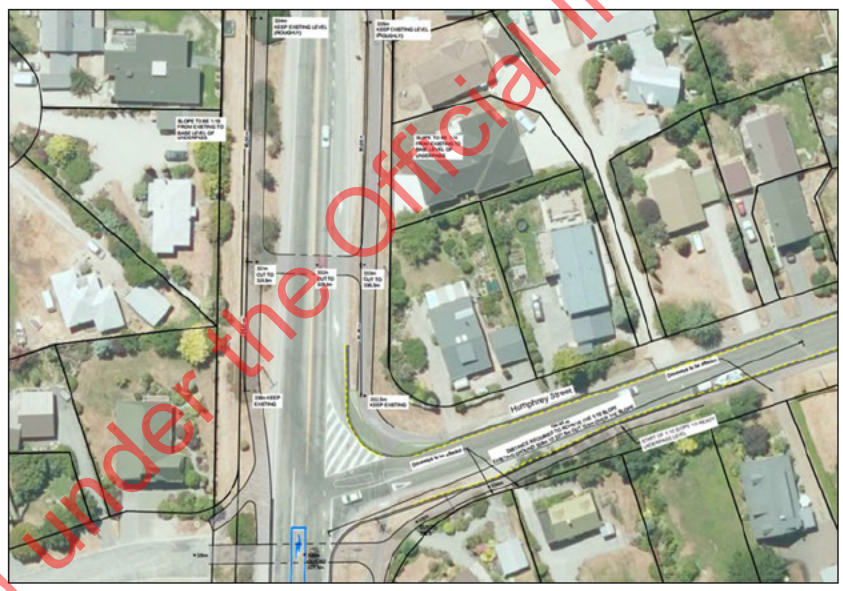
Table 16: Kawarau Road Active Modes Assessment Summary

Signalise SH6/Humphrey Street Intersection	
Layout	
Pros	• Improved walking and cycling access and safety from Remarkables Park area to Frankton Arm/Track • Improved access to public transport • Better control of traffic to/from Humphrey Street, particularly important for Jacks Point buses • Improved egress from Southberg Avenue with gaps created by signals • Provides better control for future queuing of right turn demand onto new Kawarau Falls Bridge
Cons	• Relatively high speed environment on southern approach (outside the scope of this project)
Underpasses on SH6	
Layout	
Pros	• Safest option for active modes, fully separated from vehicle traffic • No delay for both active mode users and road traffic
Cons	• Difficult to provide level change required • Long detours for users • Expensive

The signalised intersection option was preferred due to providing the most direct route for pedestrians at a significantly lower cost. The option provides secondary benefits for public transport, by both improving access for pedestrians and minimising delays for buses turning into Humphrey Street.

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7 LADIES MILE

Interventions presented here are now committed through the New Zealand Upgrade Programme. The funding was announced partway through the Queenstown Business Case for projects based on its Emerging Preferred programme. Option development presented here is therefore to the level reached when funding was announced and is presented to provide context for its role in supporting the remaining Queenstown Business Case programme.

This section presents option development and assessment of options for Ladies Mile based on their Priority (refer to Prioritising the Programme for option priorities) and role in the Three Pillars of Investment.

As part of the assessment to consider the transport effects beyond the Frankton to Queenstown corridor (Appendix B23), it was identified that Ladies Mile presented a significant constraint on public transport uptake for a large proportion of Queenstown's population, thus restricting the ability to achieve mode shift targets.

Prior to the COVID-19 pandemic, queues from the Shotover Bridge in the AM peak regularly extended beyond the Howards Drive intersection, with traffic blocked as far back as Shotover Primary School (refer to Strategic Case). Buses were of course trapped in this congestion and as such, options were identified to prioritise bus movements.

The expanded scope also provided opportunity to improve safety at a major intersection, enabling development of an adjacent potential Park and Ride site, and provide new connectivity across the highway for active modes.

Further analysis regarding Ladies Mile is in Appendix B24.

7.1 Supporting Public Transport (Priority 2)

The Priority 3 options discussed below are:

- Bus Lanes (Infrastructure).

7.1.1 Westbound Bus Lanes

The section of SH6 either side of, and including, the Shotover Bridge between Stalker Road and Hardware Lane is the key bottleneck on the eastern corridor, primarily due to single lane merges on both sides. Surveys undertaken in June 2018 found the section has a capacity of 1,515 vehicles per hour. Eastbound traffic is free flowing once past the Shotover Bridge capacity constraint. Thus, eastbound bus lanes are not required on Ladies Mile.

Analysis undertaken as part of the Ladies Mile Housing Infrastructure Fund Integrated Transport Assessment found that capacity of the bridge would be reached between 2020 and 2023 depending on realised growth rates (pre-COVID), as shown in Figure 32.

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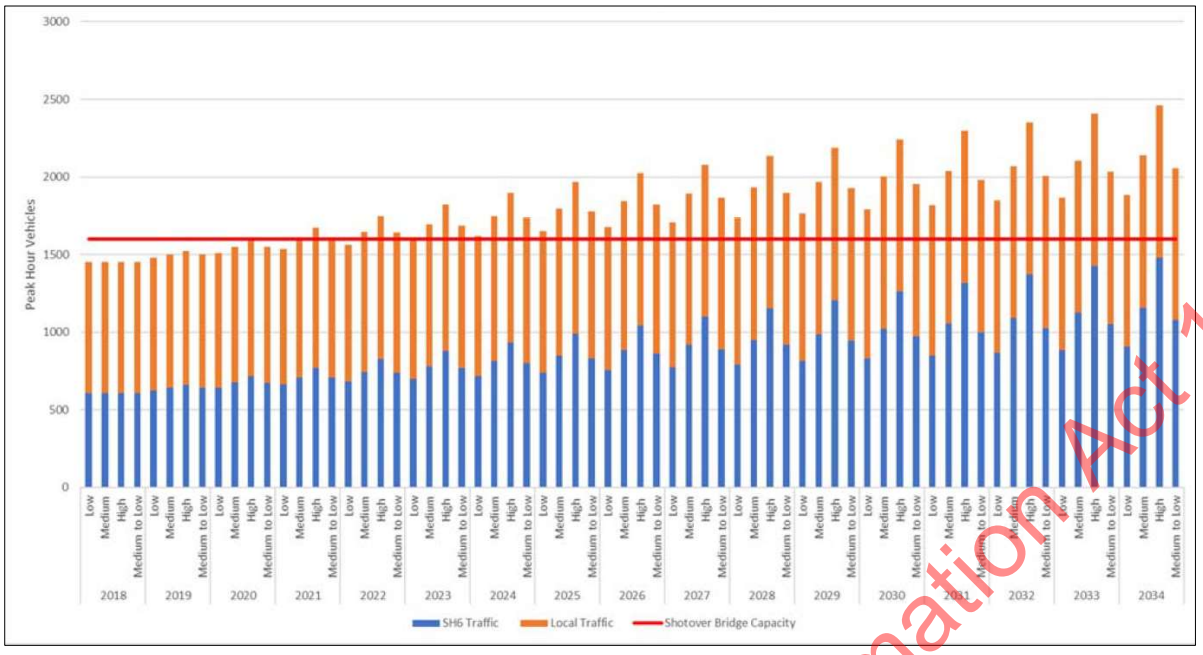

Figure 32: Forecast Traffic Demand at the Shotover Bridge

Queues on Ladies Mile during the 2019 winter season were observed to reach McDowell Drive, 1.6km from the Stalker Road roundabout, with delays regularly exceeding 15 minutes. Without the provision of bus lanes, buses are subject to the same delays as general traffic, and as such offer less incentive to drivers to switch to public transport.

As a result, westbound bus lanes are proposed from Howards Drive to the Shotover Bridge, as shown in Figure 33. This project is funded by the New Zealand Upgrade Programme.

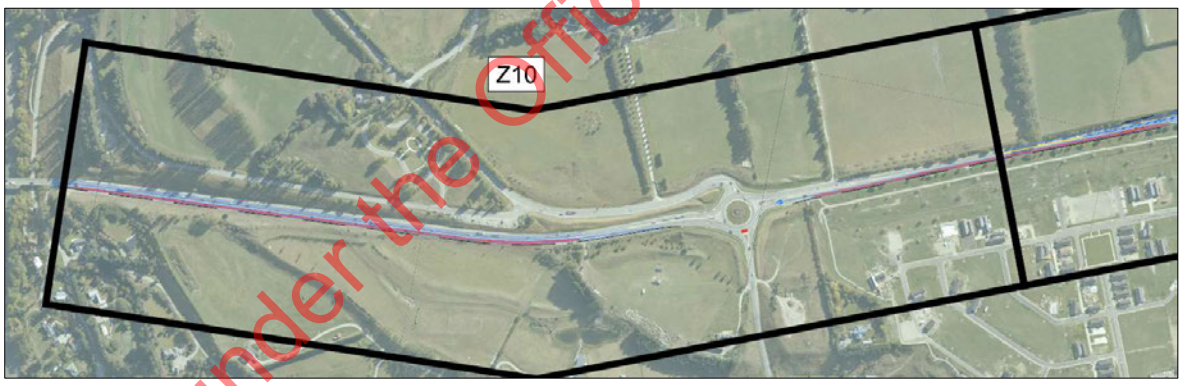

Figure 33: Proposed Ladies Mile Bus Priority

7.2 Access and Movement (Priority 3)

The Priority 3 options discussed below are:

- Intersection Upgrades (Infrastructure)

7.2.1 Howards Drive Intersection

Access to the 1,500-dwelling residential area of Lake Hayes Estate and Shotover Country is currently provided by a two-lane roundabout at Stalker Road and a T-intersection at Howards Drive. The Howards Drive intersection is in a high-speed environment (100km/h) and has become increasingly busy with development occurring in the subdivision, and traffic volumes growing on the highway.

Counts undertaken in 2018 show high demand for higher-risk crossing movements in particular (Figure 34). With the addition of new housing on the northern side of the highway, Waka Kotahi safety engineers have indicated that the intersection will need to be upgraded to a roundabout. The upgrade would also be

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required to enable a potential Park and Ride site at 516 Ladies Mile, currently being investigated in the Wakatipu Park and Ride Services SSBC.

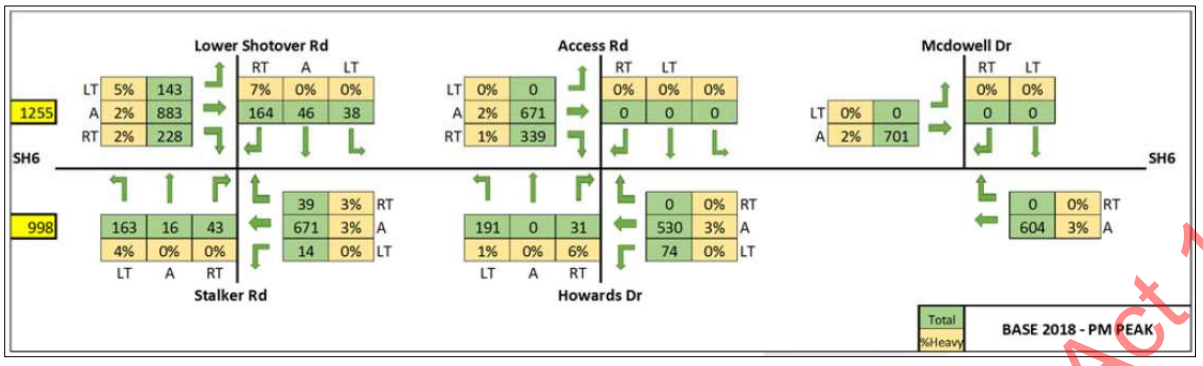


Figure 34: PM Ladies Mile Turning Count Summary (Jan 2018)

Figure 35 shows the initial concept for the proposed roundabout. Further design iterations incorporating active mode improvements are presented in the next section.

Figure 35: Proposed SH6/Howards Drive Intersection Upgrade

7.3 Active Modes (Priority 4)

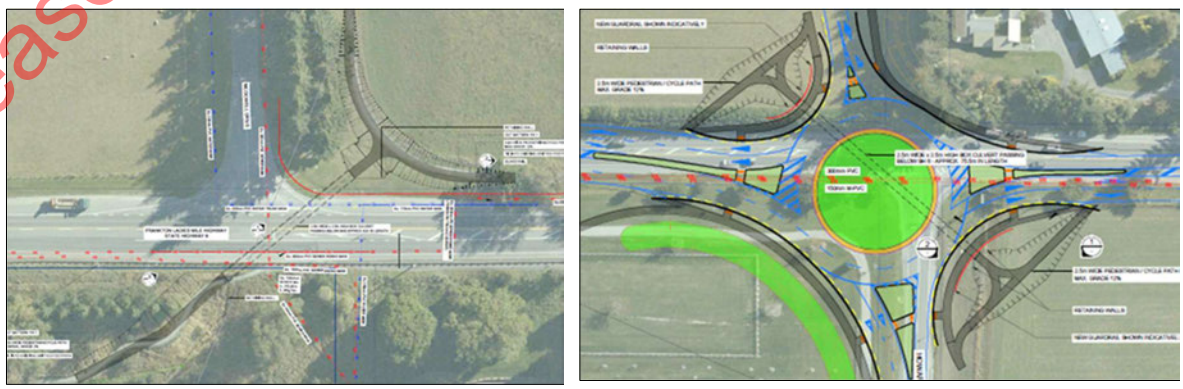
The Priority 4 options discussed below are:

- Active Modes (Infrastructure/Travel Behaviour Change).

7.3.1 Active Mode Underpasses

In response to anticipated development on the northern side of the highway on Ladies Mile, and to reduce severance of the active travel network caused by the highway, a series of underpasses could be provided at McDowell Drive, Howards Drive and Stalker Road (clockwise from top left in Figure 36).

The New Zealand Upgrade Programme has committed funding for the Howards Drive underpass only.



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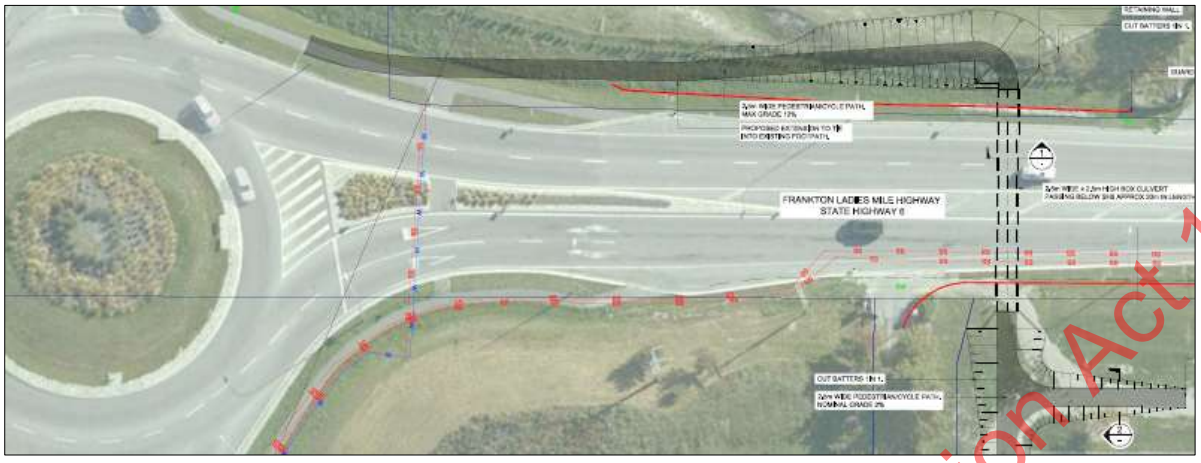

Figure 36: Potential Underpasses on Ladies Mile

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8 QUEENSTOWN TOWN CENTRE

This section presents option development and assessment of options for Queenstown Town Centre based on their Priority (refer to Prioritising the Programme for option priorities) and role in the Three Pillars of Investment.

As noted in Option Development Approach, the QTC scope of the project picks up on endorsed IBC-level options for the Arterials (now the Alternative Route project), Parking and Public and Passenger Transport. As such, the level of optioneering and assessment represents a review/confirmation of previous work and is thus less detailed than the other, less developed project areas.

The Queenstown Town Centre is constrained by steep hills to the north and Lake Wakatipu to the south, which means that historically development has been concentrated around the original town centre. Over more recent times development has extended south along the lake front towards Fernhill and east along the Frankton Arm towards Frankton and the Airport.

To balance the competing needs of visitors and residents, the Queenstown Town Centre Masterplan identified four outcomes:

- People enjoy spending time in town, because the built environment complements the natural environment, referencing local history and culture
- Improved access to the town centre for both locals and visitors
- Queenstown has a thriving and authentically NZ town centre, where visitors and locals freely mix and participate in a range of activities
- Increased commercial activity, without major negative impact on the environment or residents' enjoyment.

The 'area of focus', and 'area of influence' of the Masterplan is shown as Figure 37.

Figure 37: Queenstown Town Centre Masterplan - Geographic Scope

This section presents the Priority 2, 3 and 4 options that were considered and assessed for the Queenstown Town Centre building on the work undertaken by the Masterplan and the recommendation to consider alternative options that focused on the provision of public transport and network optimisation.

8.1 Supporting Public Transport (Priority 2)

The Priority 2 options discussed below are:

- Road upgrades – Alternative Route (Infrastructure).

Alternative Route (Previously named Arterials)

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Stage 1 of the Alternative Route project is now committed through Crown Infrastructure Partners Stimulus funding. The funding was announced partway through the Queenstown Business Case, and now forms a key part of the project's 'Do Minimum'. Option development presented here is therefore to the level reached when funding was announced and is presented to provide context for its role in supporting the remaining Queenstown Business Case programme.

A key element of the QTC Masterplan was the introduction of Stages 1, 2 and 3 of the arterials – a new/upgraded corridor that would provide an alternative route around the commercial area of the town centre. This is shown in Figure 38.

With the Alternative Route now committed, the project team tested permeability and severance impacts. The assessment can be found in Appendix B15.

Figure 38: QTC Arterials Plan

From a network perspective, these arterials form just one part of a wider package of interventions set out in the Masterplan. This includes enhanced public transport services, through to parking and travel demand management mechanisms. In isolation of the wider programme, the proposed arterials can provide both localised and general benefits which include:

- **Congestion relief.** High (and increasing) traffic volumes along Stanley and Shotover Streets are resulting in deteriorating levels of service being manifested in longer journey times and poor travel time reliability. Through expanding overall network capacity and re-distributing the traffic, congestion will be reduced, and the town centre network may operate more efficiently.
- **Amenity benefits.** Through the reduction and/or removal of traffic along Stanley, Shotover and Lake Esplanade, significant opportunity is afforded to improve the public realm and overall amenity of these areas through the widening of footpaths, increased greenspace and additional street trees etc. Such improvements are also likely to support increased pedestrian and cycling activity.
- **Enhanced Public Transport operations.** The introduction of Stage 1 (Melbourne - Henry) will enable Stanley St, between Shotover and Ballarat Streets, to be bus only, thus providing safety and operational efficiency benefits for the hub. Stage 3 (Man – Thompson) will reduce traffic on Lake Esplanade and Shotover St, which could improve public transport travel times and reliability. Alternatively, it would also enable the potential re-routing of services along Thompson/Man, thereby improving accessibility to/from the Lakeview development.
- **Town centre expansion.** The current network is perceived to limit the commercial expansion of the town centre core due to the severance created by high traffic volumes. Through reducing the volume of traffic, increased connectivity and pedestrian movement may result enhancing the overall economic activity in the town centre.

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Modelling has been undertaken to establish the magnitude of the overall network benefits that may result from the more efficient movement of vehicles throughout the town centre. In addition to this, an assessment of wider economic benefits has been undertaken (and is reported in the Economic Case).

All three stages of the arterials provide benefit however the nature and extent of the benefit varies by section. The first stage of the arterial corridor has been funded through the CIP stimulus package and is now considered as part of the Do Minimum for this project. Further detail can be found in Appendix B16.

The new intersection at Shotover Street/Gorge Road needed to accommodate the arterial was found to be critical for network operation in the town centre. Previous design iterations identified the need to remove the Memorial Hall to accommodate the link between Stages 1 and 2 of the arterials. A series of options were therefore tested and a double-T arrangement was found to be the optimum solution, necessitating the removal of the Memorial Hall. The assessment is in Appendix B28.

8.2 Access and Movement (Priority 3)

The Priority 3 options discussed below are:

- Parking (Travel Behaviour Change).

Parking

The dominance of private vehicle movements within the town centre has led to the development of a traditionally relaxed approach to parking supply and management. The substantial growth in traffic volumes over the last few years, and the consequential growth in parking demand, has resulted in QLDC implementing recent changes that included increased parking management and enforcement measures (see Appendix B17).

In 2019 the Council developed a comprehensive parking strategy to inform their future approach. The objectives of the parking strategy[4] were to:

- Support place-making, amenity and good urban design outcomes
- Facilitate a transformational shift from private vehicle travel to public transport, walking and cycling
- Actively manage parking supply and demand to support efficient and safe use of the transport system
- Support the economic development of Queenstown
- Promote the use of emerging technologies to manage demand and minimise the impact of the transport system.

The overriding philosophy is to manage parking demand rather than increase supply.

The expectation that parking will be provided near the customers' destination and without undue time or cost restrictions is no longer sustainable. The 'free' and 'accessible' provision of vehicle parking has contributed to an increase in overall traffic volumes leading to congestion, travel time variability and a reduction in overall amenity within the town centre. As a result of this, the strategy identified that the supply and distribution of parking in Queenstown must be actively managed to provide for positive transport outcomes.

Management and Enforcement

Several strategic principles were also specified in the parking strategy to frame how parking management should be implemented in the Town Centre. Of note:

- Parking management is to support the intent of a 40% mode shift by 2028 and 60% mode shift by 2048 and reduce the number of vehicles travelling to and through the town centre
- Parking management is to be implemented in coordination with service improvements to public transport, walking and cycling through the "carrot" and "stick" approach to achieving mode shift
- To achieve an equilibrium of parking supply and demand, parking demand will be reduced through parking management rather than providing an increase in parking supply

[4] Queenstown Parking Strategy 2019

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- Parking demand is managed to achieve an average occupancy of car parks of 85%
- Parking management will continue to evolve through ongoing monitoring to achieve mode shift targets and parking occupancy targets
- Emerging technologies will be used to improve the responsiveness of parking management, and to provide a better level of service to the customer
- Parking enforcement is used as a key tool to ensure that the approaches recommended in the strategy will achieve the intended outcome
- The strategy is to promote the changes in transport such as the emergence of electric scooters, electric vehicles, ride share services, and driverless technology
- The strategy recommends the adoption of a parking management system for the Historic Core and Town Centre zones for on-street and off-street parking along with wayfinding signage.

8.3 Active Modes, Urban Form and Liveability (Priority 4)

The Priority 3 options discussed below are:

- Movement and Place Hierarchy (Travel Behaviour Change)
- Management (Travel Behaviour Change).

Movement and place Framework

To achieve the modal share step change (i.e. 40% alternative modes by 2028) a movement/place hierarchy for the town centre was developed (see Appendix B18). A three-typology approach was defined, where primary movement routes prioritised active travel, and tertiary movements targeted through-traffic.

Hierarchies were developed for two scenarios – 'with the arterials' and 'without the arterials' (discussed later). These scenarios are shown as Figure 39 and Figure 40 respectively, noting that the hierarchies are not definitive structures but more a representation of general objectives. The hierarchies have helped to establish where, for example, pedestrian priority treatments should be focused.

Figure 39: Proposed Hierarchy – 'Without Arterials'

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Figure 40: Proposed Hierarchy – 'With Arterials'

Priority Modes

There is a need to move towards a new modal hierarchy in Queenstown to achieve the community goals. This agreed hierarchy, as shown in Figure 41, illustrates the desire to have a greater emphasis on active travel and public transport.

The challenge is that within the Town Centre there is currently poor definition of the movement and place relationship. For example - Stanley Street and Shotover Street experience traffic volumes upwards of 900 vehicles per hour contributing to low levels of service and compromising overall place values.

To achieve the QTC masterplan objective of modal shift, some streets will require a reduction in traffic throughput to support their place functions. However, it is also recognised the place – movement relationship may alter throughout the day as different requirements are met.

The following sub-sections outline how the recommended treatments for each of the mode were identified.

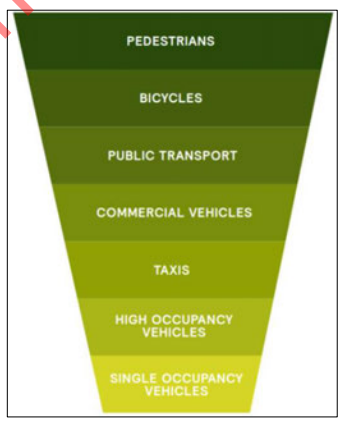

Figure 41: Modal Hierarchy

Walking

Identification of the suitable pedestrian treatments for the QTC considered:

- The preferred programme of the QTC Spatial Framework (developed as part of the QTC Masterplan).
- Estimated 2028[5] pedestrian movements from the Queenstown Pedestrian Tool (developed specifically for the QTC business case).

The assessment is set out in Appendix B19.

The Framework, and its core elements are shown as Figure 42.

[5] Taking into consideration the demands generated by developments such as Lakeview, Brecon Street, Queenstown Views, Man Street and Public Transport hub

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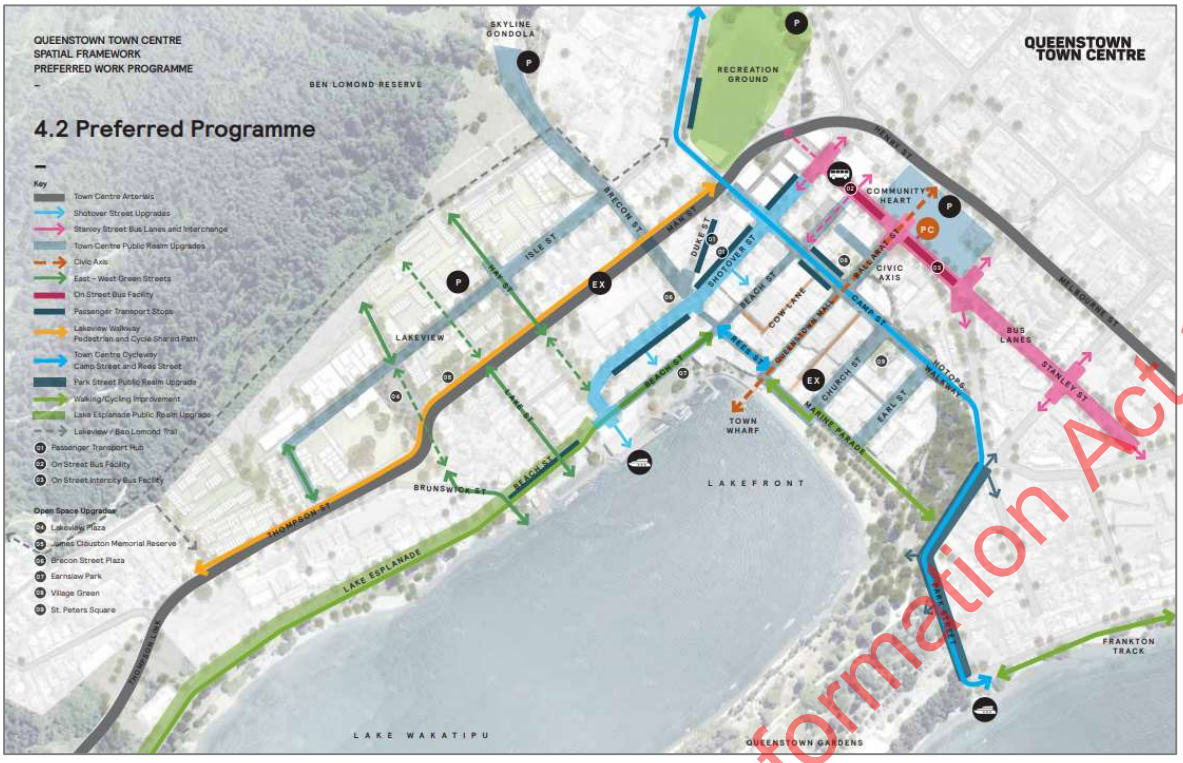

Figure 42: QTC Spatial Framework

Figure 43 shows expected pedestrian demand across the town centre.

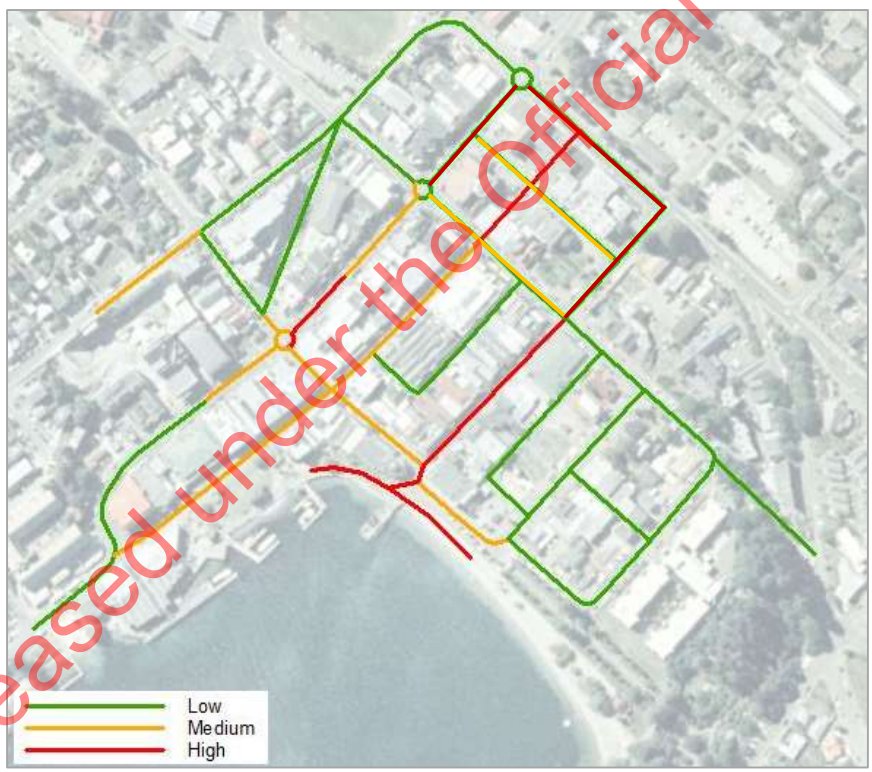

Figure 43: Expected Pedestrian Movement (2028)

In supporting both the QTC Spatial Plan and expected flows, the following measures have been included within the emerging preferred option:

- Priority pedestrian crossings throughout town centre core.
- Wider footpaths generally

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- Enhance urban comfort (seating etc) and street amenity (planting etc)
- Enhanced open spaces.

Cycling

The case for enhancing cycling across the Wakatipu Basin was detailed within the Wakatipu Active Travel Network (WATN) SSBC. The business case also provided a framework for expanding cycling provisions within the town centre.

WATN identified three primary active travel routes heading into the town centre:

- Route 3: Frankton to Queenstown (from the east)
- Route 5: Arthurs Point to Queenstown (from the north)
- Route 6: Fernhill to Queenstown (from the south).

Generally, the WATN proposals and designs have been amalgamated into the QTC emerging programme, unless they conflicted with wider design requirements. For example, at the south-eastern end of Camp Street, the cycle lane was shifted to the south (lakeside) of the road to enhance legibility and provide a better safety outcome as it integrates with the remainder of Camp St. Similarly, modifications were made to the Brecon Street steps and Brecon/Shotover/Duke Street intersection to provide better network integration.

Cycle growth projections outlined within the WATN helped to inform decisions around the level of supporting cycling infrastructure that would be required.

Public Transport

PT is a key component of achieving the Investment Objectives for QTC and this overall business case. However, the town centre's ability to influence PT mode shift is limited by the availability of space to physically accommodate facilities and bus priorities measures.

The key identified operational requirements (detailed earlier) include:

- A PT hub with 4 – 6 stops would be required within the town
- Service frequency would be between 12 – 18 vehicle per hour/direction requiring good PT priority to, and from, the PT hub and peripheral termini
- A 'T' shaped network would be introduced in the town centre operating along:
  - Stanley Street for services travelling between the town centre and Frankton.
  - Gorge Road for services travelling between the town centre and Arthurs Point.
  - Shotover Street (or stage 3 of the Arterials if appropriate) for services between the town centre and Fernhill.
- A step change to HCPT will be required in the long term
- Consideration of an off-road HCPT option will be required to provide the step change for future network capacity.

Commerical Vehicles

Commercial vehicles[6] are essential for the continued movement of goods and people to and around Queenstown and Wakatipu basin. The importance of their role is recognised in the *Investment Objective No.1 - Provide more efficient and reliable access for people and goods.*

Coaches

While 'Coaches' is often used as an encompassing term, there are three types of distinct operations which reflect different trip and customer requirements:

[6] Commercial vehicles encompass both passenger services (private coaches) - i.e. non-publicly funded/scheduled coach services as well as freight and servicing vehicles.

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- Registered services - those which are formally registered with the Otago Regional Council in accordance with the Transport Services Licensing Act. These services have fixed schedules and stopping locations such as Intercity and the Wanaka – Queenstown services.
- Activity services - relate to coach services for local tourist activities.
- Overnight services – longer distance coach trips, often as part of a larger itinerary.

Due to the operating nature of registered and activity services, their on-street coach parking requirements are essentially limited to the boarding and alighting of passengers often of limited duration (<60mins), although this may occur multiple times per day. 'Overnight' coaches however require long duration of stay ranging from 4 – 8 hours as well as overnight.

The emerging preferred option proposes a reduction in coach parking due to a desire to align with the WATN business case and the redevelopment proposals of the Boundary Street carpark site (which provide off-street coach parking). Table 17 outlines the proposed changes to coach parking.

Table 17: Coach Parking Provision

	On-Street	Off-Street	Total
Current Provision	50	27	77
Boundary Road Parking Building	0	-20	-20
WATN implementation	-6	0	-6
Future Provision	44	7	51

The net reduction of 26 coach parking spaces is likely to put further pressure on the existing coach parking in the Town Centre. This will be especially true for overnight coach parking, as the 20 spaces lost to the Boundary Street parking building were primarily used for overnight parking.

Improved demand management will be required to accommodate the increasing demand for coach parking. This is recommended to be undertaken using the following staged approach:

- **Existing coach parking should be managed to optimise its use**. This should be through appropriate time restrictions and enforcement encouraging short pick-up and drop off trips only (as is currently happening with the use of CCTV enforcement). Regular enforcement of public coach stops is recommended to manage demand.
- **Additional day and overnight coach parking should be provided outside of the town centre** to reflect the loss of coach parking from Boundary Street and Brecon Street. The overnight coach parking should be connected by shuttle buses to and from the town centre in the interim, and public transport in the future. The provision of additional overnight coach parking outside of the town centre can also facilitate the removal of additional spaces in the town centre in the future.
- Once the additional overnight coach parking is at capacity, **overnight parking should be rationalised to Frankton**, connected by public transport to key destinations.

Freight/Servicing

The reliable and efficient movement of freight and servicing vehicles is critical to the operation of the town centre. As a key factor in the shortlisting considerations, the approach has been to prioritise on-street parking for freight and servicing wherever possible.

Included within the evaluation were the following considerations:

- Where possible, increasing the provision and/or management of coach parking.
- Continued prioritisation of facilities and parking freight/servicing where possible.

Taxis

Small passenger service vehicles (SPSV), such as taxi's, play an important role in moving people to and around the town centre. However, the operation of SPSV's has changed significantly in recent years with on-demand rideshare operators entering the market. This has resulted in a declining market share for traditional SPSV operators and consequently has reduced the demand for the taxi ranks.

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The development of the preferred option included the development of complementary provisions that support QLDC's SPSV objectives.

High and Single Occupancy Vehicles

Catering for high and single occupancy vehicles will still be required. However, the road capacity constraints mean, and desire to promote alternative modes and facilitate the movement of goods and services, means that there needs to be a rebalance.

The emerging preferred programme recommends that this rebalancing takes the form of parking management and improvements to alternative modes to attract people out of the HOV/SOV and onto more sustainable alternatives.

Consideration will be given to how this can be optimised and reflect individual requirements where possible. For example, mobility and/or 75+ parking areas will be prioritised as appropriate and long stay parking will be discouraged to encourage higher parking turnover and availability of parking (see next section).

Speed Management

In May 2018, QLDC resolved to commence a Speed Management and Speed Limits bylaw review.

The review confirmed 15 urban traffic areas within the Queenstown Lakes District for speed reductions, and in all cases recommended a reduction from 50km/h to 40km/h. Included in these urban traffic areas is the QTC. The implication of this is that all roads in the Queenstown urban area will have a 40km/hr speed limit. As a result of this, any town centre speed zones will likely have speed limits of 30km/hr which will impact the final movement and place typologies.

The proposed speed limits for the Queenstown area following the bylaw implementation are attached in Appendix B20, noting that many of the roads are subject to change. These have been adopted as part of the emerging preferred option.

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9 EMERGING PREFERRED PACKAGE

9.1 Public Transport

The emerging preferred package (Figure 44) has a strong underlying public transport response, and is:

- Built on a high capacity road-based network (BRT) with core eastern and southern spines servicing areas marked for growth under the Queenstown Lakes District spatial plan.
- Delivered by virtual priority on SH6A (see Section 5.1.2).
- Delivered by bus lanes in both directions through Frankton on SH6, between SH6/SH6A and Lucas Place to the south and Hawthorne Drive to the east. Westbound bus lanes will also be provided between Howards Drive and the Shotover Bridge.
- A step change in infrastructure quality to promote mode shift. New station style bus stops across the network will support two hubs in Frankton and Queenstown. These will be located at the Frankton Golf Course and on Stanley Street.
- A scalable, flexible system with high quality, high amenity BRT vehicles that can be scaled up over time in terms of both frequency and capacity.

The emerging package also includes location-specific interventions for three geographic areas:

- On Ladies Mile, public transport will be prioritised through bus lanes while intersection and active mode improvements will enhance accessibility through the area.
- In Frankton, demand will be controlled by signalised intersections to ensure the movement function of the highway is preserved, while priority for public transport will ensure PT vehicles are not impacted by queueing and delays.
- On SH6A, PT vehicles will be given priority to reduce travel times, maximise reliability and increase the people-carrying capacity of the corridor. This is the most capacity constrained part of the network and therefore a future off-line gondola connection would provide additional capacity on the Frankton to Queenstown corridor, coupled with additional resilience and reliability.

Figure 44: F2Q Emerging Package

9.1.1 Virtual Priority

The concept of virtual priority (Figure 45) is to manage traffic volumes along SH6A to a level at which both general traffic and PT services can be provided with a reasonable level of service (and travel time) along the corridor itself, using signal control to enable buses to bypass any residual queues without the need for physical road widening.

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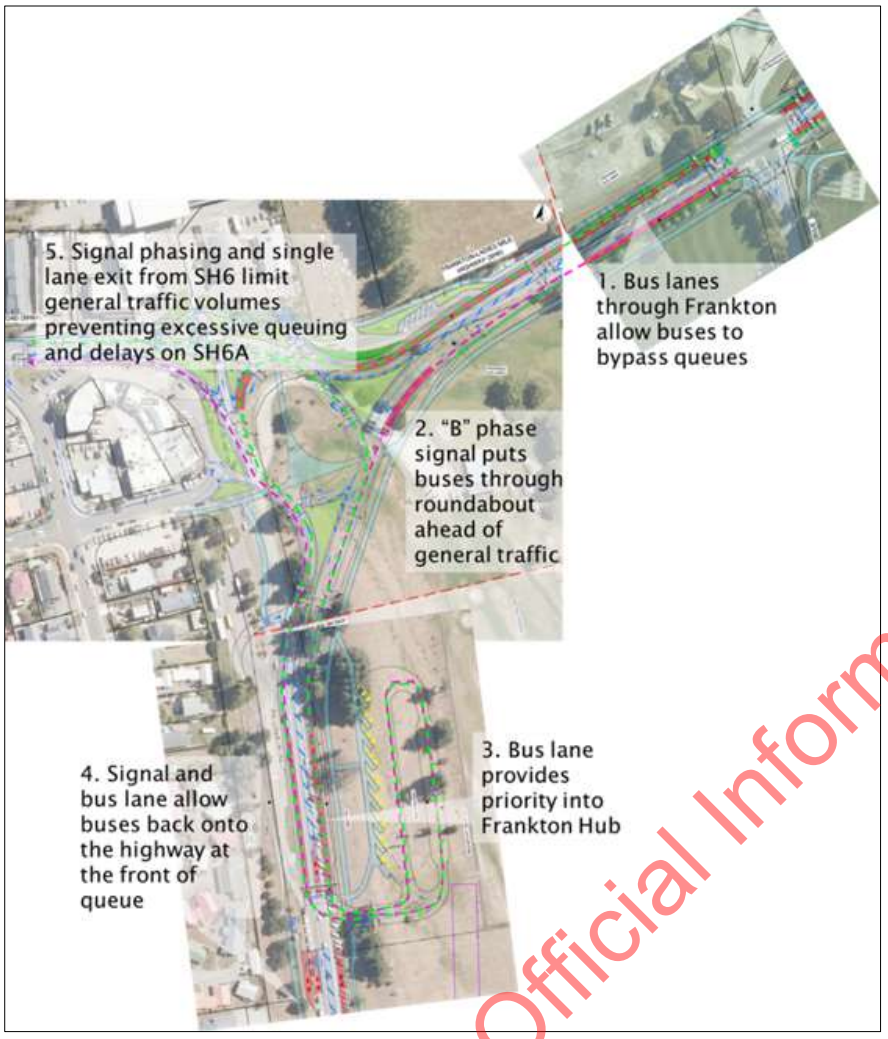

Figure 45: Virtual Priority Concept

The SH6/SH6A intersection will be used to manage general traffic on SH6A and prioritise bus movements through the network. Active modes will also be fully integrated into the network utilising signalised intersections and dedicated underpasses.

9.1.2 Physical Infrastructure

The emerging preferred package for the Frankton to Queenstown corridor is a strategic package of interventions designed to enable the public transport element of the preferred package, as well as improving access, active mode connectivity and safety. The interventions consist of:

- Intersection upgrades
- New and upgraded bus stops
- New bus lanes
- Shared path and cycle lane along SH6A
- New and upgraded active mode crossings.

9.1.3 Demand Management

A programme of TDM measures was identified through the Queenstown TDM Scoping Study. The recommended TDM programme for Queenstown has four key areas of focus:

- Policy
- Travel planning and behaviour change initiatives

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- Wayfinding improvements
- Transport Management Association

Further work on a TDM implementation plan is being progressed separately to this business case.

9.2 Queenstown Town Centre

The emerging preferred package for the Queenstown town centre has been guided by clear requirements, set out in Table 18:

Table 18: QTC Prioritisation of Package Elements

Theme	Elements
Modal Share	• Interventions will need to realise a 40% alternative mode share split on the Frankton to Queenstown corridor in 2028, increasing to 60% by 2048
Queenstown Town Centre Masterplan	• Give effect to the street scaping and amenity enhancements to achieve the masterplan requirements • Introduction of the arterials
Pedestrianisation	• Priority pedestrian crossings throughout town centre core. • Wider footpaths generally. • The ability to enhance urban comfort (seating etc) and street amenity (planting etc).
Cycling	• Cater for a substantial increase in cycling trips to and through the town centre including: • End of trip facilities commensurate with the increased demand would be required • Safe and appropriate connection between route 3 (Frankton to Queenstown), 5 (Arthurs Point to Queenstown) and 6 (Fernhill to Queenstown)
Public Transport	• A facility with 4 – 6 stops would be required for a town centre bus hub • Service frequency would be between 12 – 18 vehicle per hour/direction requiring good PT priority to, and from, the PT hub and peripheral termini. • A 'T' shaped network would be introduced in the town centre operating along: — Stanley Street for services travelling between the town centre and Frankton — Gorge Road for services travelling between the town centre and Arthurs Point — Shotover Street (or stage 3 of the Arterials if appropriate) for services between the town centre and Fernhill • Consideration of an off-road HCPT option will be required accommodate future network demand in excess of the capacity provided by the road-based network
Commercial vehicles	• Increasing demand for coach space will require a more effective coach management strategy with provision for overnight parking and the longer-term displacement of some movements to Frankton • Enhancing the access and provision for freight/servicing vehicles is essential to supporting a thriving commercially vibrant town centre
HOV/SOV/ Parking Strategy	• Focus on managing parking demand rather than supply • Reducing car dependency • Prioritisation of on-street parking for freight/servicing, taxi and mobility parking needs
Speed Management	• Development of street environment that complements the reduced speed limits that are proposed.

An annotated map which outlines the emerging preferred option for QTC is provided as Figure 46.

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Figure 46: QTC Emerging Preferred Option

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9.3 Community Engagement

In August 2020 a round of public engagement focused on seeking feedback on the emerging programme option. The transport proposals and initiatives were mapped and set out online and in printed brochures.

The engagement period was launched with a media release on Monday 3 August and promoted through social media channels, direct emails to stakeholders and the community, an update in the Scuttlebutt. The brochure was also circulated via the Mountain Scene newspaper (delivered to 8,000 households) on Thursday 13 August.

The process took place largely online. This was due to the change in COVID-19 Alert Levels that prevented face-to-face engagement taking place. Extra measures, such as increased digital advertising, extra brochure distribution and additional social media posts, were undertaken to promote the 'have your say' opportunity.

People were directed online via the QLDC Let's Talk engagement site, to the Social PinPoint platform to leave comments on the interactive map or to complete the feedback form. People could also email the Let's Talk inbox with their feedback. The engagement period closed on Monday 31 August.

Feedback (via an online feedback form and an interactive map) was sought on a range of infrastructure upgrades, including:

- wider footpaths and better connections for walking and cycling
- signalised intersections and bus priority lanes
- better public transport facilities
- streetscape upgrades
- more techniques to manage parking in town and much more.

The consultation asked specific questions about how changes would affect daily travel, business and where people choose to live, as well as people's thoughts on public transport, active travel modes and parking.

A copy of the brochure is in Appendix B21.

Results

The Social PinPoint platform had over 2,800 unique online users; 138 individuals gave feedback by leaving a comment on the map or completing a feedback form. There were 596 Social PinPoint comments[7], 74 survey responses and 34 emails to the project inbox.

The main issues and responses are set out in Table 19 below. The final Engagement Report is in Appendix B22.

Table 19: Consultation Issues and Responses

Issue	Project considerations
Parking	To achieve some recommendations within the Town Centre, a rationalisation of on-street carparks has been necessary. For those spaces that remain, the QLDC Parking Management Strategy will outline how they will be configured. Due to increasing demand for footpath and kerb space from private vehicles, freight/loading, mobility parking, public transport, tourist coaches, outdoor dining areas, public seating and safety improvements, it isn't possible to cater for all of these requirements. We are proposing that parking is prioritised for those with mobility needs and freight/loading purposes. The overall number of on-street parking available will be increased for these requirements.

[7] https://nzta.mysocialpinpoint.com/way-to-go-2020

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Issue	Project considerations
Servicing vehicles	Only a minor reduction of parking is being proposed (for freight) throughout the Town Centre. The specific distribution and prioritisation of loading spaces will be determined as part of the consultation in each area.
Traffic signals (intersections and crossings)	Access and safety for all are key and providing for more cars is not the future for Queenstown. Making other forms of transport, such as the bus, walking and cycling more convenient and safer will encourage people out of their cars. Various alternatives have been considered (and modelled). The operation of lights can be managed to keep traffic flowing.
Traffic signals (at roundabouts)	Keeping the infrastructure that exists, but using lights to manage traffic flows, especially at certain times like in the pm peak.
Humphrey Street to Lucas Place	This link will remove some of the traffic on surrounding local residential streets (Robertson Street/Douglas Street); making them more pedestrian and cycling friendly.
Hansen Road and Joe O'Connell Drive	Signalising the existing four-way intersection with Hansen Road is less efficient as you are trying to pass four lots of traffic through the same space, whereas the two intersections work more efficiently and will be coordinated together.
Shotover Bridge	The Shotover Bridge has been investigated for a cycle lane and unfortunately does not have the capacity to support further weight to provide a cycle lane.
Park and Ride	Sites on the eastern (Ladies Mile + Arrow Junction) and the southern corridor (Boyd Road + Jacks Point) are being investigated.
High-capacity transport	'Offline' options have been considered as part of this project; these are not required for some time into the future.

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WAKA KOTAHI
NZ TRANSPORT AGENCY

QUEENSTOWN BUSINESS CASE

Preferred Option Assessment

s 9(2)(a)

16 NOVEMBER 2020

FINAL

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1 THE PREFERRED PROGRAMME

This section builds on the optioneering work undertaken through the long list and short list assessment process described in the Options Assessment resulting in the emerging programme of implementations. Following stakeholder and public engagement, this emerging programme became the preferred programme of interventions.

This section outlines the benefits the programme will deliver. Definition is given around what is proposed, and how these individual elements will come together as part of a wider integrated transport strategy. Included are assessments of how well the proposed programme meets the Investment Objectives and how it delivers what the customers want.

This section is arranged in the following parts:

- Overview of the Programme, funding mechanism and phasing
- Details on wider transport strategy measures
- The alignment of the Programme with customer needs
- The alignment of the Programme with the Investment Objectives
- Assessment of the Programme against Government Policy Statement and Investment Assessment Framework
- Review of wider project impacts

1.1 Overview

The ***'Queenstown Programme'*** consists of a range of multi modal interventions which will improve transport capacity and efficiency within Queenstown and the wider Wakatipu basin.

The Queenstown Programme has been broken down into the following geographical areas:

- Queenstown Town Centre
- SH6A Corridor Improvements
- SH6 Ladies Mile Corridor Improvements
- Grant Road to Kawarau Falls Bridge Improvements, incorporating the Frankton bus hub.

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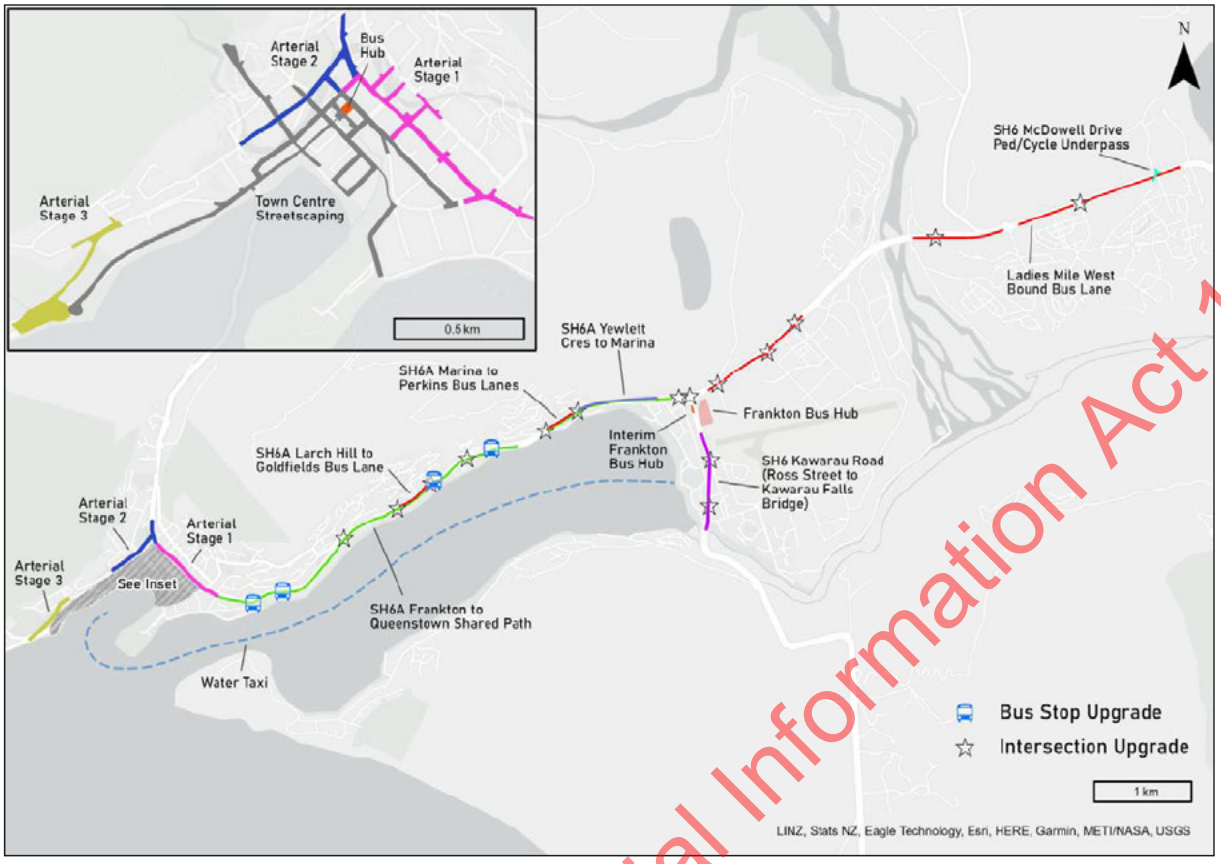

Figure 1: Queenstown Programme Intervention Overview Plan

The Queenstown Programme consists of four elements which define the levels of investment against a timeline of delivery. The figure below illustrates the four elements.

Committed Activities	Recommended Option	Supporting Activities	Other Activities
Activities which have funding committed and that provides benefits to the programme, eg. CIP and NZUP)	(Apply for funding for next phase in 21-24 NLTP)	(Re-evaluation in 24-27 or 27-30 NLTPs)	(Re-evaluation beyond 2030)

Figure 2: Queenstown Programme Defining Elements

The committed activities form the "Do-minimum" scenario. In terms of approval pathway there are no approvals required – only changes to scope, cost or programme.

The recommended option is the package of activities with complimentary outcomes that will likely receive investment priority and all funding partners will approve funding for their specific activities.

Independent activities that assist the outcomes of the recommended option but cannot be approved until 2024/27 or 2027/30 are supporting activities. Defined trigger points will have been identified for updating and re-evaluation.

Activities that do not directly assist the outcomes of the recommended option and unlikely to have an investment priority are considered possible long term measures where trigger points have not been identified.

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1.1.1 Key features

The Queenstown Programme includes a wide range of initiatives focussed on shifting the current reliance on the private vehicle and providing users with route choice.

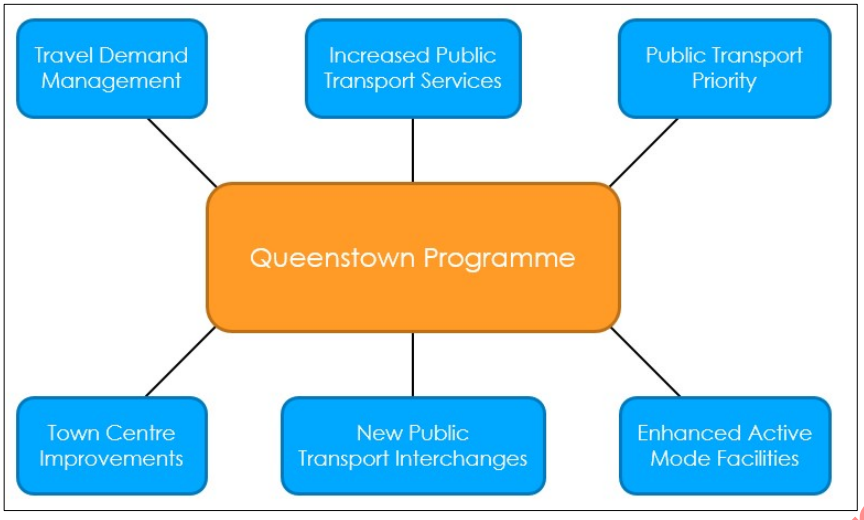
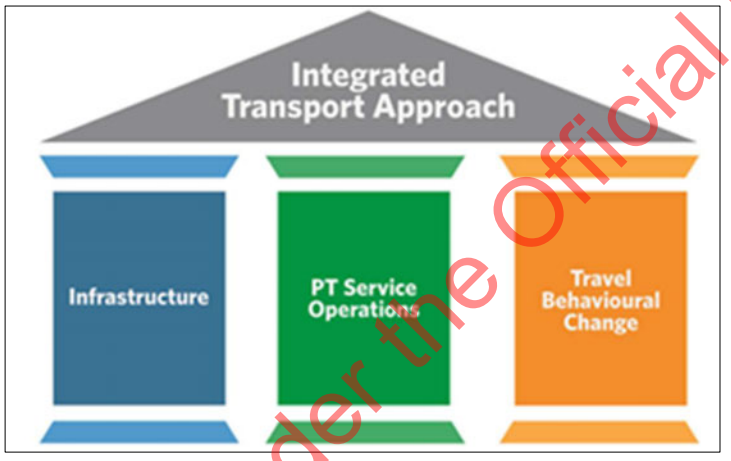


Figure 3: Queenstown Programme Key Initiatives

In order to successfully shift the reliance on private vehicle investment will need to be distributed into the key initiatives. This investment is identified through three pillars described below.



Undertaking urban realm improvements to the town centre (facilitated by the Crown Infrastructure Partner investment) and the interventions supporting in the active travel business case, physical improvements to SH6 and SH6A links and intersections facilitated by NZ Upgrade Programme investment all form a pillar of targeted infrastructure interventions.

A high quality Bus Rapid Transit (BRT) system providing increased public transport services, and improved public transport facilities (fleet and stops) form a pillar, leveraging off the public transport priority provided through the NZUP investment.

Travel Behaviour Change mechanisms comprise a suite of interventions that encourage the uptake of more sustainable transport modes through more proactive parking management and other Travel Demand Management tools.

1.1.2 Proposed interventions

An overview of the interventions is provided as a summary in Table 1. The interventions draw on the three pillars in order to develop and deliver a successful programme resulting in the required step change in travel

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mode for Queenstown. This table includes elements that are assumed as part of the do minimum for completeness and because the development of these do minimum elements has been a core component of this business case project.

Table 1: Queenstown Programme Summary

Area	Intervention
Queenstown Town Centre	• New transport hub at Stanley Street, acting as the principal gateway into the town centre. • Arterials Stage 1, that reduces general traffic on Stanley Street. This will improve the pedestrian experience and safety and provide better connections between Project Manawa (the historic core of the town centre). • Further town centre upgrades to improve pedestrian and cyclist facilities and encourage a slower street environment creating a calmer and more enjoyable experience for everyone.
SH6A Corridor Improvements	• Targeted priority bus lanes implemented between the SH6/SH6A intersection and SH6A/Marina Drive intersection. This section of SH6A is expected to operate beyond capacity by 2028 (without intervention). • Improvements focuses on signalising key intersections which will have bus priority.
SH6 Ladies Mile Corridor Improvements	• Westbound bus lane along SH6 to Ladies Mile to enable buses to travel without disruption to the Shotover Bridge. Bus priority onto the bridge is being considered. • The Howards Drive roundabout will provide access and safety to the residential area of Lake Hayes Estate. Together with the pedestrian and cycling underpass, this will provide a safer crossing point that will improve access to the bus stops and enable future housing development. • An eastbound bus lane and signalising the existing roundabouts on SH6 will enable buses to travel unimpeded towards the Shotover Bridge. Bus priority onto the bridge is also being considered. The westbound direction along this section will also have a bus lane with priority through the intersections.
Grant Road to Kawarau Falls Bridge	• Improvements to the Frankton Bus Hub. • Improvements to control the volume of traffic that can access SH6A while ensuring there is an acceptable level of service for general traffic within and around the Frankton Flats. • SH6 connections to the east and to the south will include bus lanes in both directions.
Other Measures	• An enhanced bus fleet, improved bus stops and bus depot facilities to deliver higher capacity and higher frequency services. The fleet will be upgraded incrementally with a view to delivering highly efficient and environmentally friendly bi-articulated "trackless tram" style vehicles. • Travel demand management (including improved parking management). • Improved use of technology for transport network operations management and customer information. • Ferry services that complement the bus services. • Bus priority to improve travel times to the transport hub and better connections / facilities to encourage walking and cycling.
Future suite of interventions (longer term supporting measures)	• Arterials Stages 2 and 3 will further reduce traffic from the town centre and improve access to new development at Lakeview and Man Street and Brecon Street. • Further upgrades to the bus hubs in Frankton and Queenstown Town Centre. • Further upgrades to bus services to provide connector services to key residential and development areas. • Future offline public transport service, such as a gondola, that provides a further step change in capacity along with additional resilience and amenity benefits.

The following assessment is supplemented by information provided within the following appendices:

- **Appendix C01** - Preliminary concept design plans and renderings for proposed Queenstown Town Centre improvements
- **Appendix C02** - Preliminary concept design plans for proposed SH6 corridor improvements
- **Appendix C03** - Preliminary concept design plans for proposed Frankton/Ladies Mile improvements
- **Appendix C04** – Preliminary Design Philosophy Statement for Queenstown Town Centre
- **Appendix C05** – Preliminary Design Philosophy Statement for SH6 and Frankton/Ladies Mile

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- **Appendix C06** – Preliminary Pavement Design report
- **Appendix C07** – Frankton Urban Development report
- **Appendix C08** – Safety in Design (SiD) register
- **Appendix C09** – Safe System Assessment reports

1.2 CIP and NZUP funded interventions

1.2.1 Crown Infrastructure Partner (CIP) funding

The Government has announced that funding is being made available through the Crown Infrastructure Fund stimulus package to support the delivery of preliminary town centre improvements. The Government will contribute $85m to the Queenstown Town Centre streetscape project ($35m) and Arterials Stage One ($50m).

1.2.2 NZUP funding

> *"The New Zealand Upgrade Programme (NZUP) will be delivered over the next decade and* ***provides the guaranteed, fully-funded pipeline of work*** *that industry have been calling for. It will create 800 to 1000 direct new jobs in our civil construction industry as the first five projects get underway in the next 12 months, and 7000 to 9000 direct opportunities for our wider supply chain. This will give the sector the certainty to invest in the workforce, upskill and train more apprentices. I'm proud that our Government's new investments in roads and rail will help future proof the economy, get our cities moving, and make our roads safer".*
>
> *Transport Minister's Foreword – NZ Upgrade Programme Summary Document (2020)*

Further to the CIP funding, an additional $90m funding for infrastructure improvements in Queenstown has been secured through the NZUP. The NZUP funded projects covers SH6a corridor improvements, Ladies Mile corridor improvements and, SH6 Grant Road to Kawarau Falls improvements.

An overview of the CIP and NZUP funded interventions is provided as Figure 4.

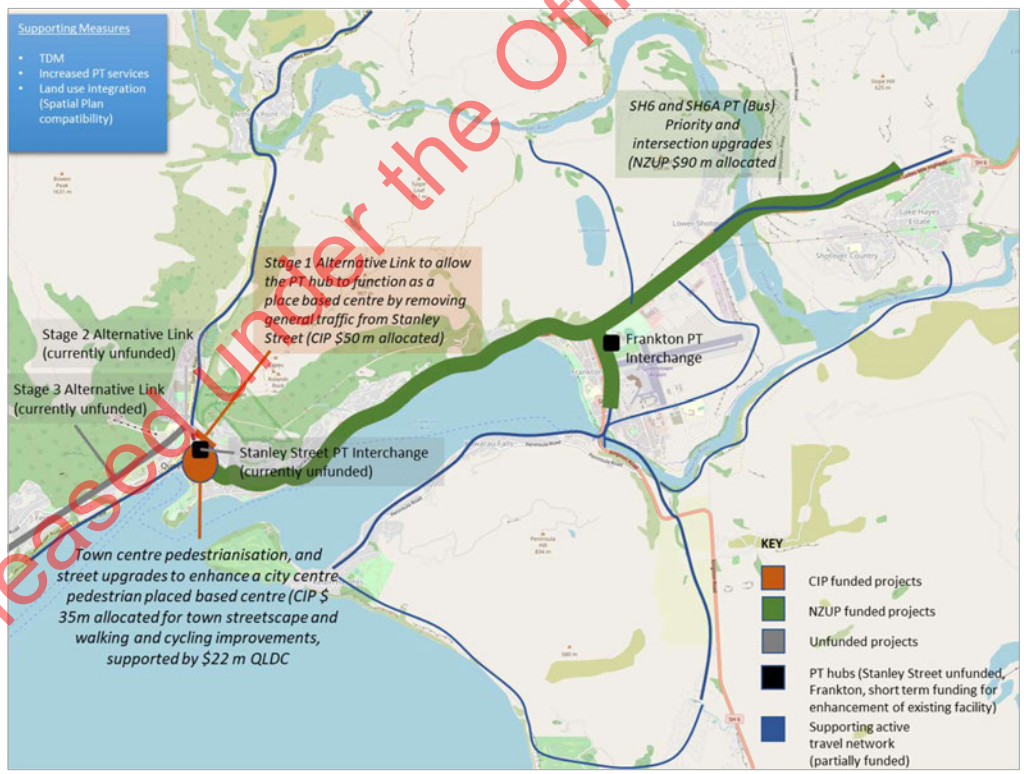

Figure 4: CIP and NZUP Funded Interventions

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The remainder of the preferred programme is unfunded and will continue along standard funding procedures seeking funding from the National Land Transport Fund (NLTF) through inclusion in the National Land Transport Programme (NLTP).

1.3 Taking a staged approach

The Queenstown Programme is a single programme that will be rolled out in several phases. This approach has been adopted because there is a need to align with the CIP and NZUP funding programmes (and limitations), and the staged approach reflects an optimal value for money proposition for the works.

The phased roll out of the Queenstown Programme is outlined in Table 2.

Table 2: Phased roll out of the Queenstown Programme

Phase		Intervention	Timing
Preferred Programme			
1	Do Minimum	Includes: • Queenstown Arterial - Stage One (funded through CIP) • ITS package • Town Centre Upgrades – Stage One. Includes Marine Parade, Rees Street, Beach Street and Brecon Street. • Travel Demand Management (TDM) package. • Public transport **infrastructure** (but not services) that is to be funded through the NZUP.	2024
2	NLTF Enabling Public Transport Services	Public transport **service** improvements which are funded through the NLTF: • Bus max core network • New rubber-tired bus fleet (as required to meet demand) • New bus depot • Bus priority lane enforcement	2025 (and ongoing)
3	Targeted improvements to Stanley Street and Shotover Street	This package focuses around streetscaping improvements for Shotover Street and Stanley Street. These upgrades will enable future stages to be introduced, including the upgraded bus hub. They will also pave the way for revocation of SH6A between Dublin Street and Steamer Wharf.	2026
4	Town Centre Upgrade – Stage Two	This captures the second stage of the town centre streetscaping enhancements to Camp Street, Earl Street, Church Street, Queenstown Mall, Cow Lane, Lake Esplanade and Ballarat Street	2027
5	Queenstown Arterial – Stage Two	Addition of the second stage of the Arterials providing a new link between Gorge Road and Hay Street. It also incorporates improvements to the Brecon Street steps.	2027
Future suite of improvements			
6	Upgrades to the Bus Hubs in Queenstown and Frankton	This includes the final stage of the upgrade to the QT Bus Hub. Includes trip end facilities integrated with Project Manawa. This constitutes a further upgrade to the Stanley Street facility and will feature the complete removal of general traffic and integration with a long distance/tourist coach facility on Athol Street. It also includes the final stage of the upgrade to the Frankton Bus Hub.	2029
7	Queenstown Arterial – Stage Three	Addition of the third stage of the Arterials between Glasgow Street and the One Mile Roundabout	2033+
8	Future offline public transport	Road based public transport services will eventually reach capacity. Therefore a "future offline PT" package has been included to demonstrate the benefits associated with providing additional capacity on the Franklin to Queenstown corridor. This consists of a future off-line gondola connection.	2050+

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1.4 What, where and when

This section provides more detail on the specifics of the interventions summarised above (including those that are now funded and form the do minimum).

Option assessment has demonstrated the interventions needed to create a step change in transport use for Queenstown. Physical change to identified intersections and corridors are required to support the service improvements and behaviour change strategies. There are a number of elements to the infrastructure improvements. Town centre urban realm improvements improve the environment for pedestrians and cyclists and deliver economic benefits to local businesses. The town centre arterials work alongside the urban realm improvements by removing traffic and allowing space for the town centre to grow. Public transport priority measures provided through a high capacity, and high priority BRT spine that links the key development areas identified through the spatial planning process. Feeder networks of public transport and active modes are also provided. This section advises on the types of intervention proposed in the Programme, all of which build upon the three pillars that form the integrated transport approach for Queenstown.

1.4.1 Ladies Mile

The Ladies Mile corridor has been identified as a significant constraint on public transport uptake for a large proportion of Queenstown's population, thus affecting the capacity to achieve mode shift targets. In order to mitigate this, options were identified to prioritise bus movements along the corridor. There were also opportunities to improve safety at busy intersections and provide improved connectivity for active modes across the main highway. Details of the traffic modelling underpinning the proposed public transport interventions are located in Appendix B24 of the Options Assessment Appendices Package. The modelling results confirm an improved Ladies Mile corridor performance with the implementation of the proposed public transport infrastructure.

Figure 5 shows the indicative location of the proposed interventions on Ladies Mile.

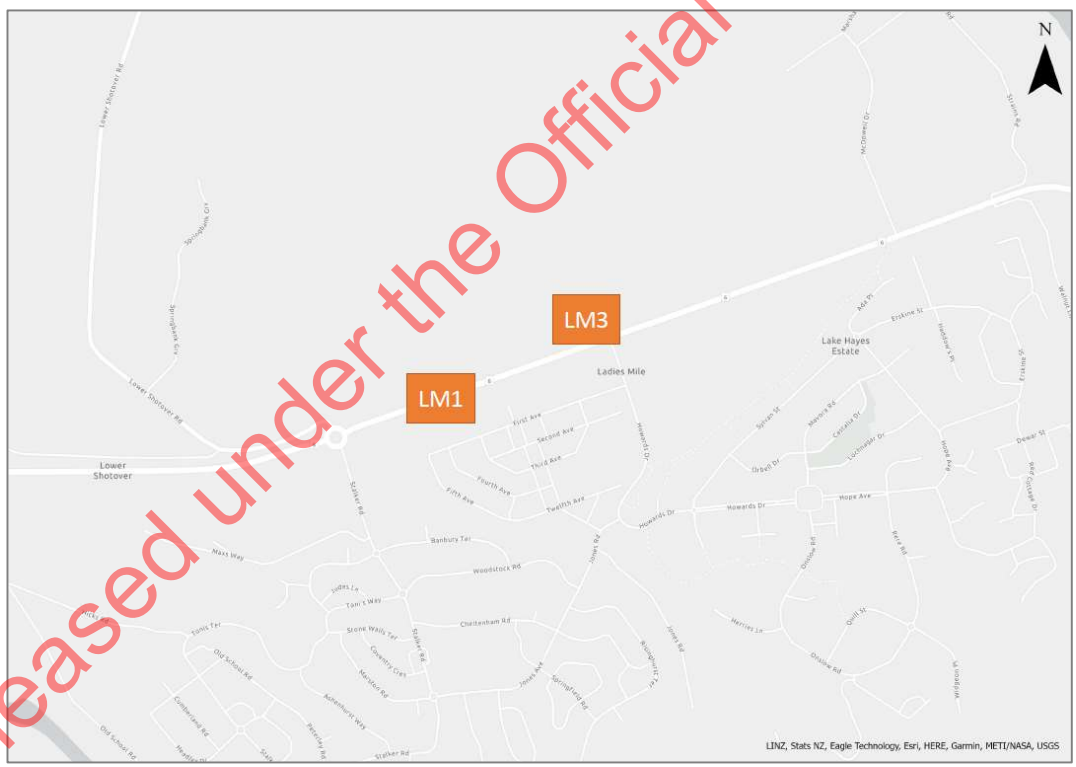

Figure 5: Ladies Mile proposed interventions location plan

Table 3 below outlines the intervention type and the proposed timing of implementation.

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Table 3: Ladies Mile corridor proposed interventions

ID	Location	Intervention	Purpose	Phase
LM3	SH6 Howards Drive Roundabout	Roundabout	Four-leg roundabout at Howards Drive intersection to provide safe and efficient access to proposed park and ride site and land north of SH6 for proposed development.	2
LM1	Ladies Mile West Bound Bus Lane	Bus priority measure	Bus lane from Howards Drive to Shotover Bridge including alterations to SH6/Stalker Road roundabout provides bus route efficiency.	2

1.4.2 Frankton

Traffic modelling undertaken for the public transport network optioneering showed that, without intervention, the proposed reduction in westbound general traffic capacity on SH6A would have significant knock-on impacts on the Frankton network, to the extent of gridlock (or significant unmet travel demand).

As described in the options assessment report, much of the optioneering for Frankton was based on determining the best way of supporting an improved the public transport network. This largely revolved around balancing transport and urban design objectives for the key section of SH6 between Hawthorne Drive and SH6A. This section presents options assessed, including public transport priority, intersection improvements and active mode upgrades.

Figure 6: Frankton proposed interventions location plan

Table 4 below outlines the intervention type and the proposed timing of implementation.

Table 4: Frankton proposed interventions

ID	Location	Intervention	Purpose	Phase
FF4	SH6 Hansen Road	Signalise intersection	Signalised T-intersection at Joe O'Connell Drive (Events Centre) with offset signalised T intersection for Hansen	2

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ID	Location	Intervention	Purpose	Phase
			Road with bus priority lanes in each direction between Grant Road and SH6/6A intersection.	
FF3	SH6/Joe O'Connell Drive Intersection		Signalised T intersection at Joe O'Connell Drive (Events Centre) with offset signalised T intersection for Hansen Road with bus priority lanes in each direction between Grant Road and SH6/6A intersection.	2
FF10	SH6/Humphrey Street		Signalise intersection future proofed for possible 4-leg intersection to connect to Boyes Crescent and down to the lake (ferry access). Signalised primarily for pedestrian and cycle access across SH6.	2
FF8	Humphrey Street Link (SH6 to Lucas Place)	New link	Connection through from Humphrey/Douglas Street intersection to Lucas Place (and potential future connection into airport). Repurpose Robertson Street as residential and active travel link.	2
FF9	SH6 Kawarau Road (Ross Street to Kawarau Falls Bridge	Intersection upgrade	Modest intersection works, northbound bus lane and improved pedestrian/cycle crossings across SH6 to reduce severance.	2
FF/FQ	SH6/SH6A Intersection		This intersection is a key node within the regional road network, as the meeting point of the SH6 through Frankton and SH6A the main link into Queenstown Town Centre. The form of intersection chosen is the signalised intersection.	2
FF2A	Interim Frankton Bus Hub	PT hub	Update the current hub to improve capacity and efficiency.	2
FF2	Frankton Bus Hub		Multimodal transport hub at Frankton to cater for growing PT demand and operations including MRT. Includes for road layout changes, e.g. possible realignment of Kawarau Road, intersection with Ross St, etc.	6
FQ2	SH6A Yewlett Crescent to Marina	Active mode measure	On-road cycle lane eastbound 4.0m wide shared path on lakeside. Shared path connection through camping ground to Frankton Track to be provided.	2
FQ19	SH6A Frankton to Queenstown Shared Path		Widen existing shared path on lake side of SH6A to minimum desirable standard of 4.0m.	2
FF6	SH6 Hawthorne Drive Intersection	Signalise roundabout	Signalise existing roundabout with some moderate geometric changes, bus priority measures and consideration of 4th leg to Frankton Flats North rezoning. 4 lanes on SH6 between Hawthorne Drive and Grant Road will become 2 traffic lanes with 2 bus lanes (outside lanes).	2
FF5	SH6 Grant Road Intersection		Signalise existing roundabout with some moderate geometric changes and bus priority measures. 4 lanes on SH6 between Hawthorne Drive and Grant Road will become 2 traffic lanes with 2 bus lanes (outside lanes).	2
FF7	SH6 Frankton Ladies Mile to SH6/SH6A	Bus Priority measure	Bus priority lanes between Shotover Bridge and SH6/6A intersection improving PT efficiency. Pedestrian and cycle facilities improve active mode connectivity.	2

1.4.3 Frankton to Queenstown Corridor

The options assessment established the need to prioritise the passage of public transport vehicles along the Frankton to Queenstown corridor. As the corridor also provides access to an increasing number of hillside residential and accommodation developments, intersection control and active mode improvements are an integral part of the interventions. Providing signal control at regular intervals along SH6A enables Virtual Priority to be provided to public transport. The figure below illustrates the indicative location of interventions along the SH6A corridor.

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Figure 7: Frankton to Queenstown corridor proposed interventions location plan

Table 5 **below outlines the intervention type and the proposed timing of implementation.**

Table 5: Frankton to Queenstown proposed interventions

ID	Location	Intervention	Purpose	Phase
FQ4	SH6A Marina Heights/Sugar Lane Intersection	Signalise intersection	Improvements to existing intersection	2
FQ6	SH6A New Marina/Perkins Rd Intersection		New signalised intersection at west end of Marina. Allows for improved efficiency and reliability at the existing signalised Marina intersection, bus priority, ped/cycle access across SH6A and access from Perkins Road.	2
FQ9	SH6A Goldfield Heights Intersection		Signalise existing intersection to provide improved ped/cycle connectivity to PT, bus priority measures, access, and intersection safety.	2
FQ14	SH6A Hensman Road Intersection		Provides improved ped/cycle connectivity to PT, bus priority measures, access, and intersection safety.	2
FQ5	SH6A Marina to Perkins Bus Lanes	Bus priority measure	Eastbound and westbound bus lanes through Marina to Perkins Road widening improve PT efficiency	2
FQ12	SH6A Larch Hill to Goldfields Bus Lane		Eastbound bus lane between Larch Hill and Goldfield Heights improves service efficiency	2
FQ8	SH6A Battery Hill Intersection	Active mode measure	Signalised ped crossing to provide improved ped/cycle connectivity to PT and bus priority measures and some associated intersection control.	2

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ID	Location	Intervention	Purpose	Phase
FQ13	SH6A Larch Hill Pedestrian Signals	Active mode measure	Signalised ped crossing to provide improved ped/cycle connectivity to PT and bus priority measures and some associated intersection control.	2
FQ19	SH6A Frankton to Queenstown Shared Path		Widen existing shared path on lake side of SH6A to minimum desirable standard of 4.0m.	2
FQ7	SH6A Middleton Road Eastbound Bus Stop	Bus Stop	New bus stop, eastbound just east of Middleton Road intersection.	2
FQ10	SH6A Goldfields Eastbound Bus Stop		Increase capacity of bus stop to cater for PT, regional, tourist and ski buses.	2
FQ16	SH6A Oaks Club Eastbound Bus Stop and Pedestrian Signals		New bus stop eastbound opposite Oaks Club improves connectivity.	2
FQ17	SH6A Pounamu Bus Stops		Expand existing eastbound bus stop at Pounamu Apartments improves connectivity.	2

1.4.4 Queenstown Town Centre

Figure 8 below provides an indicative location of the interventions for the Queenstown Town Centre.

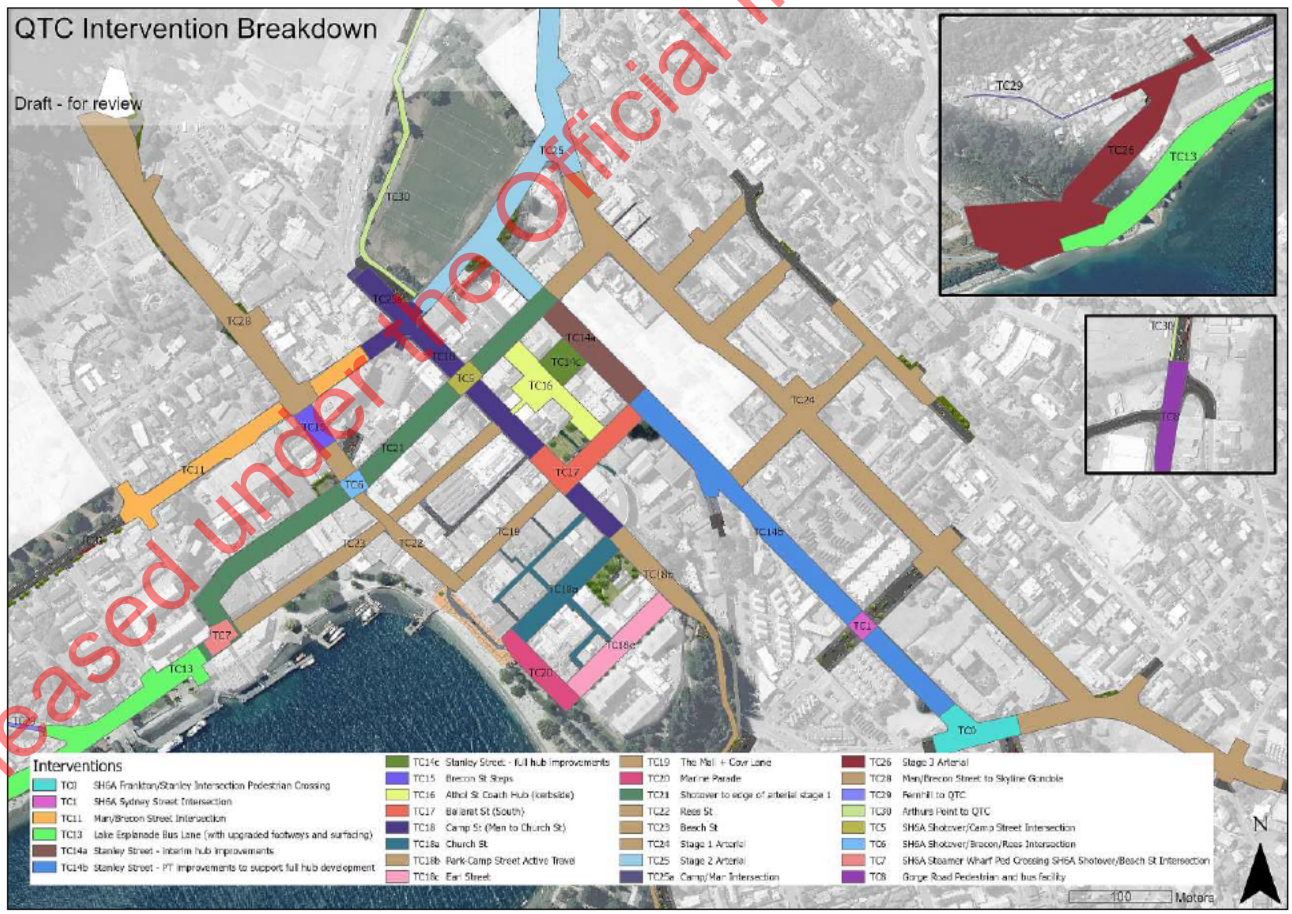

Figure 8: Queenstown town centre proposed interventions location plan

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The individual interventions are summarised by type and purpose in Table 6.

Table 6: Queenstown Town Centre proposed interventions

ID	Location	Intervention	Purpose	Phase
TC7	Steamer Wharf Ped Crossing SH6A Shotover/Beach Street Intersection	Active mode measure	Provides a safer crossing environment at this constrained road configuration. Provides the opportunity to introduce a bus priority gate for inbound bus services along Lake Esplanade.	3
TC15	Brecon Street Steps		Provide a step free environment to improve access for pedestrian movement between Man St and Shotover St with an elevator. Removes barrier to movement currently presented to mobility impaired people.	5
TC0	SH6A Frankton/Stanley Intersection Pedestrian Crossing	Signalise intersection	Signalise existing intersection to provide improved ped/cycle connectivity to PT, bus priority measures, access, and intersection safety.	2
TC1	SH6A Sydney Street Intersection		Signalise existing intersection to provide improved ped/cycle connectivity to PT, bus priority measures, access, and intersection safety.	2
TC5	SH6A Shotover/Camp Street Intersection		Assists with developing the optimisation of town centre network and improves on pedestrian movement constraints.	3
TC6	SH6A Shotover/Brecon/Rees Intersection		Assists with developing the optimisation of town centre network and improves on pedestrian movement constraints.	3
TC10	Man/Camp/Memorial Streets Intersection		Included in the suite of interventions aimed at enhancing town centre optimisation.	5
TC11	Man/Brecon Street Intersection		Included in the suite of interventions aimed at enhancing town centre optimisation.	5
TC14A	Stanley Street Interim Public Transport Hub	PT Hub	Provides interchange facility for passengers with enhanced public realm complimenting environment.	1
TC14B	Stanley Street/SH improvements to support full PT hub		Provides interchange facility for passengers with enhanced public realm complimenting environment.	3
TC14C	Stanley Street Athol St Hub		Provides interchange facility for passengers with enhanced public realm complimenting environment.	6
TC16	Athol Street Coach Hub	Public realm improvements	Improve the streetscape and pedestrian / passenger facilities to support an enhanced regional public transport interchange.	6
TC17	Ballarat Street South	Public realm improvements	Upgraded pedestrian environment with shared space design principles allows street to function as one of the main pedestrian places within the town centre.	4
TC18	Camp Street (Man to Church Streets)		Provide carriageway narrowing to increase public realm.	4
TC18A	Church Street		Provides an enhanced pedestrian friendly domain and reduces the inference of	4

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ID	Location	Intervention	Purpose	Phase
			vehicle dominated environment through introduction of shared space and removal of vehicle centric design components.	
TC27	Park – Camp Street Active Travel		Narrowing carriageway and rationalising parking increases streetscape. Provision of cycle facilities increases active travel opportunities.	4
TC18C	Earl Street		Alteration to the streetscape is desired to change the street perception from vehicle dominated parking street to valuable active mode connection to the waterfront.	4
TC19	The Mall and Cow Lane		New surfacing to harmonise with the new streetscape palette.	4
TC20	Marine Parade		This area forms an important part of the waterfront and creates a promenade. Adjustments are required at the interface with neighbouring streets to harmonise streetscape	1
TC21	Shotover to Arterial Stage 1		Upgrade public realm with carriageway narrowing, signals and pedestrian crossings.	1
TC22	Rees Street		The shared space concept and layout will reinforce a 'lane-ways' feel to this part of the town centre as it feeds into the main pedestrian core of the town centre.	1
TC23	Beach Street		Proposed shared space environment provides high quality pedestrian thoroughfare between the PT hub and Steamer Wharf. Provides setting to commercial and F&B establishments.	1
TC24	Arterials Stage 1 - Melbourne and Henry Street upgrade	New corridor	Provision of the arterial corridor will draw traffic from the town centre.	1
TC25	Arterials Stage 2 - Gorge Road to Hay Street link and upgrades	New corridor	Provision of the arterial corridor will draw traffic from the town centre.	5
TC26	Arterials Stage 3 - Thompson/Glasgow to One Mile Roundabout		Provision of the arterial corridor will draw traffic from the town centre	7

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2 WIDER TRANSPORT STRATEGIES

The wider transport strategies support the three pillars by offering the means to effect travel behavioural change through travel demand management, development of urban realm improvements in the heart of Queenstown and high quality bus facilities and infrastructure.

2.1 Travel demand management

The purpose of the Queenstown Travel Demand Management (TDM) programme is to support a mode shift away from car driving to more sustainable and efficient transport such as walking, cycling, shared modes and public transport for visitors, tourists, residents, employees and commuters. Ultimately it seeks to achieve a culture change in how people think about travel and how they choose to travel.

The recommended TDM programme for Queenstown has four key areas of focus:

- Policy
- Travel planning and behaviour change
- Wayfinding improvements, and
- Setting up a Transport Management Association

2.1.1 Policy

New policy or changes will be needed, which could include:

- Requiring travel plans for large employers, key trip generators and new developments
- Car sharing strategies/incentives
- Initiatives that encourage a visitor mode shift like travel plans for popular destinations and a self-drive permit system
- Park and ride study
- Introducing charges for parking in areas that are presently free or cheap (where sustainable and more efficient transport choices are available)
- Road pricing may also be considered in the long term.

2.1.2 Travel planning and behaviour change initiatives

This would include local government led programmes such as:

- Enhancing the school travel plan programme
- Providing cycle and scooter training for adults and children
- Supporting the development of residential travel plans and encouraging travel behaviour change efforts through an award scheme and gamification.

2.1.3 Wayfinding improvements

With so many visitors each year, Queenstown needs to make it easy for people to find their way around. People use both physical signs and digital platforms to navigate. Physical wayfinding needs should be comprehensively identified by way of an audit and there is a need for a systematic, easy to use Wayfinding Game Plan. Digital and physical systems should map 'smooth walking/wheeling routes' that are accessible to wheelchair users or the best route for someone wheeling a pram or luggage.

2.1.4 Transport Management Association (TMA)

A TMA will be crucial to the success of a TDM programme in Queenstown. It formed a common feature of the international resort-based towns that were studied; it could also be key to the economic recovery for local

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businesses because it will offer ways of collaborating on non-competitive areas to provide cost-efficient transport information and possibly services too. Interviews with businesses, residents' associations and other key stakeholders indicated a strong appetite to get involved in solving Queenstown's transport problems and for a TMA to lead and coordinate that effort. These discussions should be revisited in light of the global pandemic, but while priorities may have shifted, the need for a TMA remains. Areas of collaboration might include transport services for tourists (working together to provide transport instead of each operator providing their own service), luggage logistics and creating transport information for visitors.

A significant increase in pedestrian activity in the town centre is expected in the future (in part as a result of increased use of public transport) with less space for cars as streets are reprioritised for active modes, especially in the historic core.

TDM, along with infrastructure improvements can help create a shift away from car driving in and around the town centre through initiatives such as:

- Travel planning (workplaces, schools, and communities)
- Incentives for alternative modes
- Reduced car parking
- District plan parking rules – i.e. maximum parking requirements
- Increased parking pricing
- End of trip facilities for cycling
- Shared modes (e.g. shared bikes, e-bikes, and e-scooters)
- Greater emphasis and resources to create travel plans for events
- Improved information and wayfinding
- Coordination and collaboration with the tourism sector
- Freight management
- Dynamic ridesharing/carpooling and sharing of taxis and ride-hail services like Uber
- Bike share/E-bike share offering to connect key destinations and hotels

The above travel demand management initiatives will enable more efficient use of the available infrastructure, reduce car dependence, lower transport-related emissions and improve access to safe and sustainable transport choices in the town centre and for the F2Q corridor.

As part of Waka Kotahi's Mode Shift Plan for Queenstown a recommendation has been made to develop a Single Stage Business Case for TDM. This will sit alongside this business case and incorporates an implementation plan for the delivery of the TDM interventions.

The recommended programme of works for Travel Demand Management is summarised in the table below. It should be noted that Travel Demand Management measures will need to be maintained into the future. The indicative programme provided in the table represents the start points for these interventions. As demonstrated in the financial case, an ongoing budget will be required to maintain effective Travel Demand Management strategies.

Table 7: TDM programme for Queenstown

WBS #	TDM Programme	Quick win	Year 1	Year 2	Year 3	Organisation(s) responsible for delivery	Could be delivered by the TMA when established
1	Policy						
1.1	*Region-wide strategies*						

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WBS #	TDM Programme	Quick win	Year 1	Year 2	Year 3	Organisation(s) responsible for delivery	Could be delivered by the TMA when established
1.1.1	Develop a sustainable transport vision for Queenstown		□			QLDC	
1.1.2	Car-free tourism		□	□	□	MBIE, DQ, QLDC, Waka Kotahi	
1.1.3	Mobility co-ops for outlying areas e.g. Arrowtown, Lake Hayes (research and blueprint)		□			QLDC, Waka Kotahi	
1.1.4	Car-share policy		□			QLDC	
1.2	Park and ride study		□			QLDC	
1.3	Require travel plans for new developments, large employers and significant trip generators			□	□	QLDC	
1.4	Require new developments to provide infrastructure that supports and encourages use of sustainable transport (new developments, outlying areas that generate trips into Queenstown)			□	□	QLDC	
1.5	Require travel plans for events as part of consent/traffic impact assessments			□	□	QLDC	
1.6	Charging for parking that is currently free or cheap			□		QLDC	
1.7	Freight management plan			□		QLDC	
1.8	TDM for emergencies (eg weather, crashes, natural disasters)			□		QLDC, ORC, Waka Kotahi, Civil Defence	□
1.9	Car-free town centre and residential areas			□	□	QLDC	
1.10	Promote Queenstown as a Sustainable Tourism Destination (as options become available)		?			DQ	
1.11	Airport Access Study and travel plan		?			Queenstown Airport, QLDC	
1.12	Understand current levels of service for walking and cycling		?	?		QLDC	
1.13	***Considering wider trips***						
1.13.1	Advocate for travel plans for tourist destinations eg Routeburn Track, Milford Sound, Arrowtown, Wanaka, ski resorts, the Gondola		□			QLDC, ORC, Waka Kotahi	
1.13.2	Self-drive Permit Study (to protect sensitive areas)		□			MBIE, Waka Kotahi, MoT	
2	**Travel planning and behaviour change initiatives**						
2.1	Continue and enhance the school travel plan programme		□	□	□	QLDC, MoE	
2.2	Cycle/scooter training (adults and children)		□	□	□	QLDC, Police	

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WBS #	TDM Programme	Quick win	Year 1	Year 2	Year 3	Organisation(s) responsible for delivery	Could be delivered by the TMA when established
2.3	Community travel plans (eg Lake Hayes, Shotover, Jacks Point)					QLDC, ORC	
2.4	Awards/rating scheme (eg cycle/scooter-friendly employer or destination, link in with existing reward schemes or rewards for mode-shift/ car free journeys)					QLDC	
2.5	Gamifying mode shift within travel plans (to encourage mode shift for residents and tourists)					QLDC, TMA	
3	Wayfinding improvements (digital and physical)						
3.1	Wayfinding and Information Provision Audit and Design Guide (including wayfinding for public transport, key destinations, facilities, routes, parking)					QLDC with TMA input, NZTA	
3.2	Smooth walking/wheeling routes and CCS disability action links					QLDC and TMA	
4	Transport Management Association (TMA)						
4.1	*Set up*						
4.1.1	Establish itself (mission, values, brand, set up Incorporated society, confirm board of directors)					TMA	
4.1.2	Write Business Plan and Funding Plan					TMA	
4.1.3	Agree membership fees and recruit members					TMA	
4.1.4	Establish potential revenue sources (Parking brokerage and event management plans)					TMA	
4.1.5	Recruit staff to run the TMA and its activities; includes office rent and annual insurance cost					TMA	
4.2	*Action plan*						
4.2.1	Develop Communication Plan (document co-ordination, communication channels, stakeholder matrix etc)					TMA	
4.2.2	Develop website and promotional material about the TMA itself to raise the profile of the TMA and communicate to people what it's going to do					TMA	
4.2.3	Fund raising (depending on the level of funding secured from Waka Kotahi)					TMA	
4.2.4	Co-ordinate submissions on on-going projects, policies and strategies					TMA	
4.3	***Set up programmes***						
4.3.1	Guaranteed ride home scheme					TMA	
4.3.2	Luggage logistics action plan					TMA	
4.3.3	Journey Planning App/Travel amalgamator					TMA	

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WBS #	TDM Programme	Quick win	Year 1	Year 2	Year 3	Organisation(s) responsible for delivery	Could be delivered by the TMA when established
4.3.4	Set up bike share/E-bike share connecting key destinations and hotels					QLDC, TMA	
4.3.5	Dynamic ridesharing/carpooling					TMA	
4.3.6	Mobility Lab (based on Arlington, Virginia, USA)					TMA	
4.3.7	Identify sustainable transport workforce deficits and establish programmes to run the sustainable transport sector eg bicycle technician, e-bike and e-scooter servicing, sustainable transport ambassador programmes, cycle skills training, bus driver workforce planning and development					TMA	
4.4	*Documenting the data gaps*						
4.4.1	Work with partners and confirm what information the businesses/ member organisations are willing to share; identify what data should be collected					TMA	
4.4.2	Create an inventory of existing bus and shuttle services; understand current situation; agree if and how to collaborate; identify potential partnerships; make it happen					TMA	
4.4.3	Set up events register for Queenstown (for event travel demand management)	☐				TMA	
4.4.4	Data inventory and gap analysis (establish what data is available and where there are gaps in the data)					TMA	
4.4.5	Understand and establish a register of transport jobs in Queenstown (to identify gaps)					TMA	
4.5	*Better information provision*						
4.5.1	Collate and communicate transport information on getting around without a car through the TMA website (using tools like the Bus map movie and travel scenarios)					TMA	
4.5.2	Marketing of car-free holidays (information to support this on the TMA website)					TMA, DQ	
4.6	*Advocacy*						
4.6.1	Advocate for/ support enhanced public transport service to the airport					TMA	
4.6.2	Advocate for changes to bus timetables/routes to better meet the needs of users					TMA	
4.6.3	Gain commitment from the businesses to develop their own travel plans/ work on travel plan activities together through the TMA					TMA	
4.6.4	Advocate for/support high quality branded bus stops (eg iconic bus stops)					TMA	

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WBS #	TDM Programme	Quick win	Year 1	Year 2	Year 3	Organisation(s) responsible for delivery	Could be delivered by the TMA when established
4.6.5	Advocate for inclusion of bike technicians and others in the Immigration NZ skills shortage visa category to support sustainable transport					TMA	
4.6.6	Gain commitment from the tourism industry in the delivery of the plan (DQ, travel agents, tour providers)					TMA, DQ, MBIE	
4.6.7	Advocate for improved access to bus/ferry ticketing					ORC, TMA	
4.6.8	Advocate for supplier contracts to be reviewed and updated to include metrices to capture quality of service					TMA, ORC	
4.6.9	Advocate for Queenstown to adopt the Sustainable Travel Town vision					TMA	
4.6.10	Advocate for Queenstown to become a Blue Zone					TMA, DHB	

The TDM Technical Note is provided as Appendix C10.

2.2 Intelligent Transport System (ITS)

In addition to the physical interventions that have been proposed, an effective transport management approach is required to optimise the network in the short term, as well as maximise the benefit of the planned interventions in the longer term. This management function can be effectively achieved through the comprehensive implementation of an Intelligent Transportation System (ITS). A Technical Note (36) detailing the application of ITS in Queenstown is located in Appendix C11.

An ITS can achieve efficiency, convenience, safety, and environmental benefits by optimising the traffic system in real time and providing information to road users.

Key elements of the proposed ITS system include:

- Transport Operations Centre
- Variable Message Signs
- Advanced parking management

2.2.1 Transport Operations Centre

Transport Operations Centres (TOCs) are used to manage transport networks. They have a number of functions, covering Network Optimisation (monitoring and managing network activity), Real Time Information (providing up to date traffic information to users through road assets), Incident Management and ensuring Planned Network activities are delivered effectively and efficiently.

Currently, the Wellington TOC (WTOC) is responsible for signal operations across 80% of New Zealand, including Queenstown. Due to the significant costs of running a TOC, it is recommended that the WTOC continues to oversee Queenstown traffic operations. This maintains economy of scale and helps to ensure there are qualified and trained staff available at all times. The expansion of TOC activities in Queenstown will therefore provide opportunities to improve network management such as through implementing virtual priority.

Virtual priority involves detecting certain modes or routes and enabling additional green signal time for these vehicles. As part of the Frankton to Queenstown State Highway 6A upgrades, virtual priority has been recommended for key intersections such as Marina Drive.

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2.2.2 Variable Message Signage

Variable Message Signage (VMS) is a key element of ITS as they are used to provide real time and/or navigational advice to drivers. This can include information on network delays and incident reporting, travel time advisory and encouraging people to use alternative routes or modes such as public transport. To help ensure inbound drivers are suitably informed, it is proposed that VMS signs are installed on the key approaches to the town centre, for example on the approach to Ladies Mile, to aid drivers in choosing the best travel options such as to take park and ride.

2.2.3 Advanced Parking Management

To achieve the mode shift targets and support the investment objectives of the Business Cases, activation of the public realm in the town centre is a fundamental element. This will be realised through expanding and improving pedestrian areas however this will have an impact to on-street parking. It is important therefore that the remaining available parking is well managed and prioritised for preferred usage.

Dynamic parking management can achieve this through using a combination of infrastructure and technology, which can include sensors (in-pavement or mounted) and VMS supported by appropriate enforcement. The outcome of this process would be to ensure drivers are aware of parking availability near their destination, informed of the choices available and able to park without unnecessary delay.

2.2.4 Recommended ITS technologies for implementation

SCATS implementation

WTOC already uses SCATS for signals in Queenstown and it is understood that there is sufficient capacity to widen the scope of SCATS in Queenstown.

Currently, SCATS detect vehicles at the limit line of approaches to signalised intersections. There is opportunity to improve this using the SCATS Priority Engine software package, which can enable modal optimisation for public transport, emergency vehicles and freight vehicles. SCATS Priority Engine can improve timetable reliability and reduce journey time for public transport, reduce response time in emergencies and prioritise freight in off-peak periods. Additional on-street infrastructure and GPS capability would be required to enable detection of vehicles by type or lane. This may include induction loops on intersection approaches, infrared detectors and spatially referenced lane marking. For example, GPS beacons can be installed in buses, detectors in the network can identify buses in advance of a signalised intersection and the signal timing can be optimised to prevent buses from having to stop at the intersection.

The use of the Priority Engine Software is considered essential for the delivery of the public transport priority along SH6A to maintain service reliability and an enhanced customer experience. It should be implemented at all signalised intersections that support public transport movements throughout the network, and any other locations where demand, such as high freight movements, would be of benefit. The 'virtual' priority that the system would afford has been included in the modelling scenarios as part of the business case assessment.

Variable Message Signage

While relocatable VMS signs have been deployed previously in Queenstown to assist with traffic management, it is recommended, permanent, fixed signs be introduced at appropriate locations throughout the network.

Initial locations for the introduction of permanent VMS signs include:

- State Highway 6 on the approach to the Park and Ride locations
- State Highway 6 on the approach to the SH6/SH6A intersection (Frankton PT Hub
- State Highway 6A on the approach to the town centre
- Gorge Road/Hallenstein Street (southbound)

It is recommended that any VMS systems considered for deployment be scoped in conjunction with the operating TOC as system integration will be essential e.g. Dynac drivers for SCATS.

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Advanced parking and kerbside management

To achieve mode shift and support the investment objectives of the Business Cases, the significant activation of the public realm is proposed. This involves expanding and improving pedestrian areas, which requires a reduction in on-street parking. It is important that the remaining parking is managed to prioritise usage, for example for deliveries/loading and mobility parking. To achieve this, smart parking management is required.

Parking management, alongside dynamic kerbside, systems typically comprise a combination of infrastructure and technology, which can include sensors (in-pavement or pole mounted), variable message signs, dynamic pricing, and enforcement cameras and can include customer focused applications for mobile devices.

Due to the compact nature of the town centre, as well as the proposed overall reduction in on-street parking, it will be feasible to provide complete coverage of the historic core and any adjacent areas depending on identified demand as the town centre proposals are implemented. The overall objective would be to realise the aims of the 2019 Queenstown Parking Strategy and ensure parking remains at optimal occupancy levels for each area.

2.3 Public transport

Meeting public transport demand will be undertaken through road based public transport priority, expansion of the bus network and an upgrade of the bus fleet. This will result in the delivery of a comprehensive Bus Rapid Transit (BRT) network for the Wakatipu Basin.

The strategy is for a road-based solution with vehicles increasing in scale over time from the current single-decker bus fleet to environmentally friendly (electric or hybrid) bi-articulated vehicles (or Trackless Trams). The network is building on the “Bus Max” concept (outlined in the High Capacity Public Transport (HCPT) Technical Note – see Appendix C12) and is aimed at delivering a step change in high quality, high capacity services.

The proposed BRT network for Queenstown is made up of five core bus routes and one ferry route, as shown in Figure 9.

- Sunshine Bay to Lake Hayes Estate via Queenstown Town Centre and Frankton.
- Arthurs Point to Arrowtown via Queenstown Town Centre and Frankton.
- Queenstown Town Centre to Jacks Point via Frankton, Queenstown Airport and Remarkables Park.
- Queenstown Town Centre to Kelvin Heights Ferry. This will link to bus services to Quail Rise via Frankton and Frankton Flats.
- Frankton Circular – linking all parts of Frankton to each other and the Frankton Hub.

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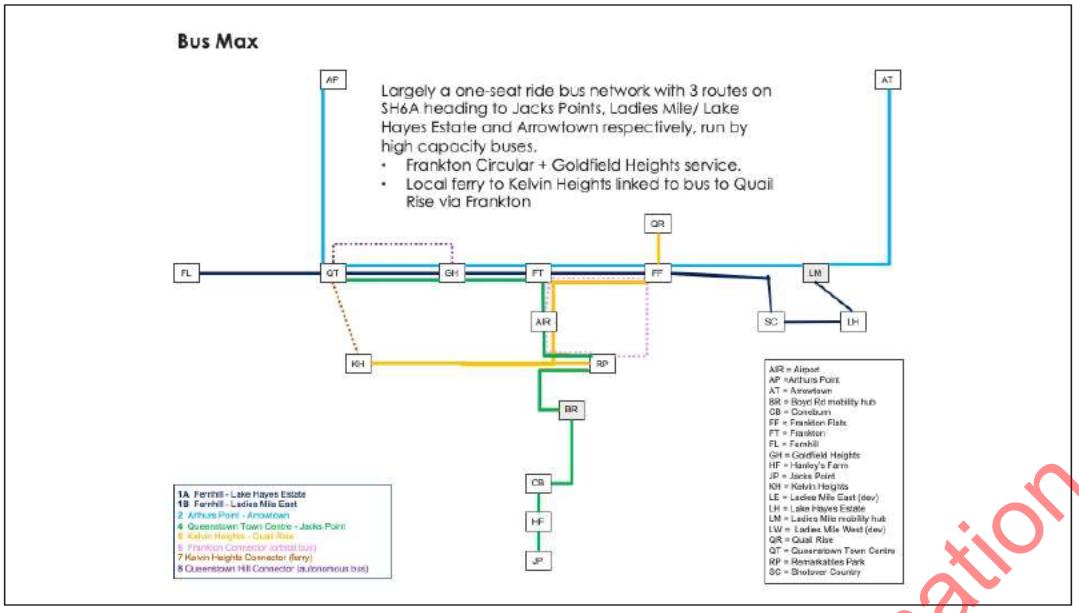

Figure 9: BRT Network Plan

The core network could be augmented by additional feeder services providing improved connectivity to key residential areas including the Queenstown Hill and Lakeview.

The public transport network improvements would enable the benefits of the NZUP investment in supportive infrastructure to last for a predicted 30 years as well as providing attractive sustainable travel options to current and planned growth areas over the same period. These benefits start to be realised from the first day of the NZUP programme roll-out but endure over this extended time. This will require a staged fleet upgrade over time and future investment in new depot facilities to provide for the expanded fleet.

2.4 Urban realm improvements

In order to support the targeted shift in travel mode in Queenstown, which forms the basis for this business case, opportunities to develop a town centre core which is high quality and active mode focussed has formed an integral component of the future streetscape. A movement and place framework has been developed for the Queenstown streets to characterise typologies that reflect the desired streetscape environment, form, and function. The forms are defined by whether provision for public transport forms a prime component of the street or whether increased opportunities develop placemaking and movement areas suited to a human scale are available as a result of the expected mode shift and a retraction in car dominance in the town centre.

Three road typologies have been established and are summarised in the table below:

Table 8: Road typology attributes

Link Type	Mode Priority	Attributes	Target Traffic Speed
Primary	1. Pedestrian 2. Cyclist 3. Local Access	• Enhanced footpaths through shared spaces • Limited, or no, on-street parking • Loading and mobility bays • Enhanced street amenity • Dedicated space, e.g. outdoor dining • On-street cycle provision with sharrow markings	<30 km/h
Secondary	1. PT 2. Pedestrian 3. Cyclist 4. Local Access 5. Commercial Vehicles and taxis	• Standard or extended footpath widths • build-outs at crossings and mid-block • Segregated and unsegregated on-street cycle provision • Enhanced street amenity	30 - 40 km/h

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Link Type	Mode Priority	Attributes	Target Traffic Speed
Tertiary	• Through traffic • Freight • Commercial vehicles • Higher Movement Function	• Standard width footpaths • Efficient vehicle through movement • Segregated and unsegregated on-street cycle provision • High level of access • Parking in accordance with parking strategy	<50 km/h

Improvements to pedestrian movement through intersections within the town centre form part of the enhancement to the public realm. This will be realised using 'Barnes Dance' scramble style pedestrian crossings at signalised intersections and raised tables / kerb buildouts where practical.

The proposed urban realm improvements are not just concentrated in the Queenstown core. Lake Esplanade is a low speed link to the town centre and is ideally suited to streetscape improvements. Two options were developed which focussed on the corridor having enhanced hard and soft landscaping and streetscape provision, and a public transport centric option offering an in-bound bus lane. The option chosen was the enhanced streetscape version.

Further detail on the urban realm improvements and design rationale for the town centre, including the arterials, can be found in Appendix C04.

2.5 Parking strategy

As part of the business case process, QLDC developed a comprehensive parking strategy. This strategy aims to meet the following key objectives:

- Support place-making, amenity, and good urban design outcomes
- Facilitate a transformational shift from private vehicle travel to public transport, walking and cycling
- Actively manage parking supply and demand to support efficient and safe use of the transport system
- Support the economic development of Queenstown
- Promote the use of emerging technologies to manage demand and minimise the impact of the transport system.

The philosophy behind the strategy is to manage parking demand, rather than increase supply, to support the aim of achieving a 40% mode for public and active transport modes by 2028 and a 60% mode shift by 2048.

Following the development of the movement and place framework for the Queenstown Town Centre and the applicable road typologies, a design workshop was held to produce concept designs of the streets in the direct town centre.

The concept designs were developed to reflect not only the movement and place framework, but the objectives of the Queenstown Town Centre DBC and the Queenstown Parking Strategy. The design workshop identified that parking space in the Historic Core and wider town centre environment required rationalisation to better meet the overall expected demand of the users of this space, with some parking lost to urban realm improvements, and active travel network upgrades.

A summary of the proposed parking reductions in the immediate town centre area is shown in Table 9. The breakdown includes the estimated parking reductions from the Queenstown Town Centre Masterplan, as well as the proposed reductions from the DBC. The estimated parking reductions from the QTC Masterplan are assumed to be an under-estimation, as parking reductions in some areas had not being determined within the masterplan detail, for instance Shotover Street. Therefore, any reduction over that because of changes stemming from the DBC are likely to be minimal in practise.

The current town centre designs are also subject to change and further design refinement which is expected as part of the pre-implementation engagement with affected stakeholders.

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The breakdown also does not include existing and proposed public off-street parking facilities. The proposed parking inventory changes by street are included in Appendix B17.

Table 9: On-Street parking (Town Centre Core) provisional breakdown

Location	Parking Supply	Parking Reduction
Existing Inventory	472	
QTC Masterplan proposed reduction	-	-247
Additional reduction from DBC	-	-78
Proposed Provision (QTC DBC)	147	-325

Concept designs have been developed to reflect not only the movement and place framework, but the objectives of the Queenstown Town Centre DBC and the Queenstown Parking Strategy. These are provided as Appendix C01.

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3 MEETING USER NEEDS

3.1 How are we delivering what our customers need?

Table 10 outlines how the preferred programme will meet customer needs.

Table 10: Programme Alignment vs Customer Needs

User	What do people want or need?	What will the programme deliver?
Local drivers	• Travel choice • To live in a town with high place values, a strong sense of belonging and clean air • Quick and reliable access to workplaces, shopping, healthcare, and recreation. • Within the Queenstown Town Centre people mostly want to see improvement in driving and walking experiences[1]. • Within the F2Q corridor people mostly want to see improvement in public transport and cycling experiences.	**Travel choice** is being provided by delivering a step change in public transport through the BRT network. By 2028 this is expected to deliver 40% of trips by alternative modes. This increases to 60% by 2048. An enhanced PT network will be supported by new high-quality PT vehicles, hubs and stops. There is potential for an offline high capacity public transport option to be introduced in the long term to help achieve these targets. **Transport Demand Management** measures will also help achieve the modal share targets such as travel planning and behaviour change initiatives. **Enhanced walking and cycling networks** (discussed below) will also mean that more residents can choose to take a mode of transport other than the car. These elements come together to provide better travel choice which in turn will improve travel time reliability and the number of people who can get through SH6A corridor during peak times.
Pedestrians	• People have a strong desire to walk to work, education, shopping, and healthcare but are put off by a lack of safe crossing points and a limited network of connected walkways. • As walking forms part of every journey, safe and direct walking routes need to connect with parking buildings and bus stops.	In supporting both the Queenstown Lakes District Spatial Plan and expected pedestrian demand, the following measures are included: • Priority pedestrian crossings throughout town centre core. • Wider footpaths generally • Enhanced urban comfort (seating etc.) and street amenity (planting etc.). • Enhanced open spaces. Safe crossing points are also being introduced within Frankton and across SH6A.
Cyclists	• Safe and quick access between Frankton and Queenstown • Safe and convenient access across SH6A • Visually appealing routes • The needs for recreational and commuter cyclists considered	The Wakatipu Active Travel Network (WATN) identified three primary active travel routes heading into the town centre: • Route 3: Frankton to Queenstown (from the east) • Route 5: Arthurs Point to Queenstown (from the north) • Route 6: Fernhill to Queenstown (from the south) The WATN proposals and designs have been amalgamated into the Queenstown Programme, unless they conflicted with wider design requirements.

[1] Queenstown Transport Engagement Feb 2019 – Community Feedback

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User	What do people want or need?	What will the programme deliver?
Visitors (international and domestic)	• Clarity around the where they can access and use the active and public transport networks. • More transport choices. • Stress-free and enjoyable experiences. • Reliable journey time to the airport. • Parking choices in the town centre	International tourists will be provided with: • Improved wayfinding • Better transport choices • More pedestrian focused streets in the town centre with high visual appeal. • Faster and more reliable travel times. • Regarding parking - the overriding philosophy is to manage demand rather than increase supply. Emerging technologies will be used to improve the responsiveness of parking management, and to provide a better level of service to the customer.
Seasonal workers	• Cheap and reliable bus services • Active travel choices	• Seasonal workers will benefit from a much-enhanced public transport network and new active mode connections. • Urban realm improvements will also make their experience of living and working in Queenstown more enjoyable.
Commercial and freight	• Reliable journey times so freight operators can complete all their deliveries during the day. • A high proportion of the workforce is made up of 'tradies', who need to carry tools and therefore cannot use public transport or active modes. • Ease of access to businesses in the town centre.	• Continued prioritisation of facilities and parking freight/servicing where possible. • Travel time reliability improvements, particularly on the core journey between Frankton and Queenstown.
Tour operators	• Tour operators want reliable travel times and convenient (and safe) places to pick up customers.	The Queenstown Programme proposes a reduction in town centre coach parking because of to a desire to align with the WATN business case and the redevelopment of the Boundary Street carpark. To meet the needs of coach operators: • Existing coach parking will be managed to optimise its use through appropriate time restrictions and enforcement encouraging short pick-up and drop off trips only. • Improved coach management through the proposed hubs in Queenstown and Frankton. • Additional day and overnight coach parking will be provided outside of the town centre to address the loss of coach parking from Boundary Street and Brecon Street. Overnight coach parking should be connected to the town by shuttle buses (in the interim) and public transport in the future.
Taxis	Taxi and ride share operators want safe convenient places to pick up customers.	The programme includes the development of complementary provisions that support QLDC's SPSV objectives.

3.2 How will it all work

Figure 10 provides a simplified Network Operating Style (NOF) map for the Queenstown Town Centre which shows how the transport network will work, and the key routes for each transport mode.

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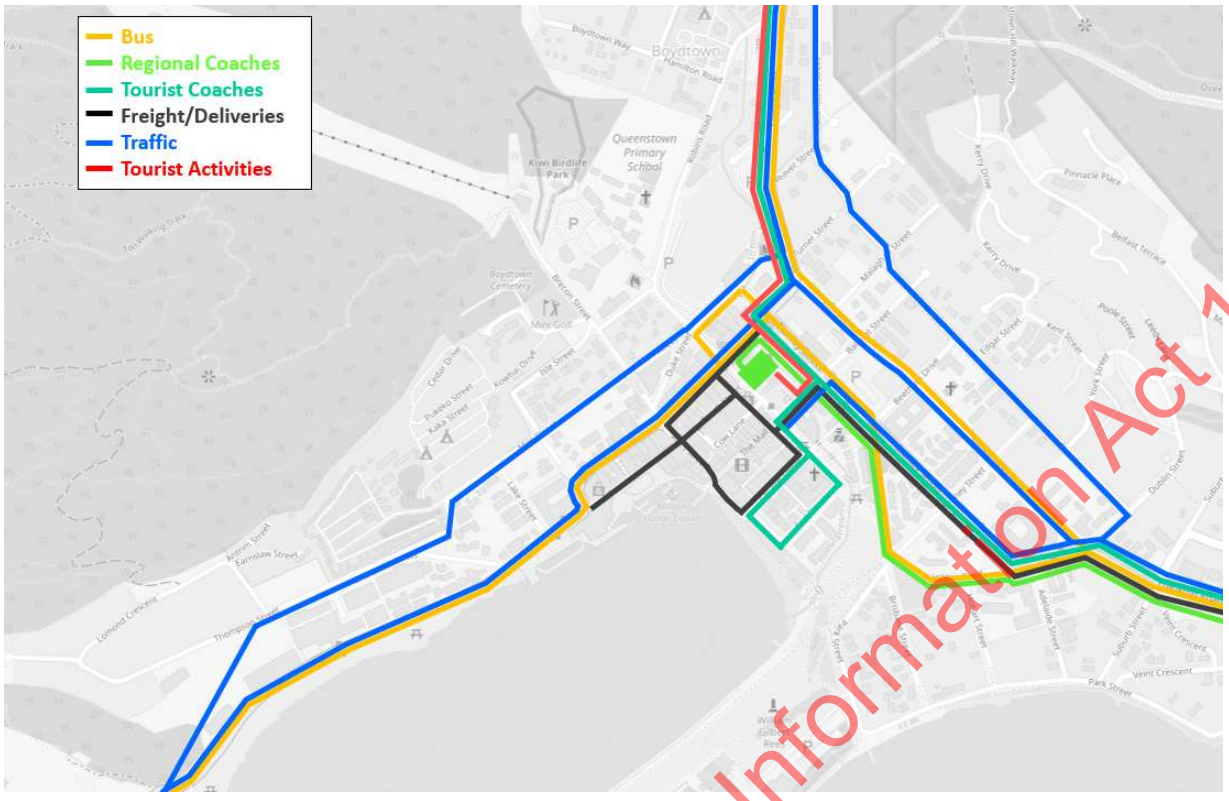

Figure 10: How the town centre will work

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4 MEETING THE INVESTMENT OBJECTIVES

This section outlines the strength of the alignment of various components of the Queenstown Programme against the investment objectives. The combined Investment Objectives were developed from a review of the desired outcomes of the problem statements relating to efficiency, amenity, safety, and resilience as agreed by the key project stakeholders during the third workshop.

The key performance indicators (KPIs), against which the success of the options will be assessed are outlined within the tables of this section.

The assessment has been broken down into:

- Alignment of the individual F2Q, QTC and Frankton/Ladies Mile packages
- Alignment of the overarching strategies for public transport, parking, travel demand, ITS, and urban realm improvements.

Demonstration of alignment with the investment objectives confirms the work undertaken to develop the interventions and mechanisms for travel behaviour change contained within the three pillars address the transport issues facing Queenstown.

4.1 Alignment of the Programme

4.1.1 Frankton to Queenstown

Table 11 provides a summary of the way the interventions within the Frankton to Queenstown corridor align with the Investment Objectives. A range of Technical Notes have been produced to provide a quantification of the benefits (modelling output, travel time savings, improved amenity etc) of the Programme. These are Technical Note 37 which is located in the Strategic Case Appendices pack (see Appendix A01), and Technical Note 35, Technical Note 38, Technical Note 39, and Technical Note 42 which are located in the Options Assessment Appendices pack (see Appendix B13, B14, B11 and B08 respectively). A road transport emissions assessment has also been undertaken to estimate and forecast annual carbon emissions after the implementation of the Preferred Programme. Emissions within the District are forecast to reduce by 15% between 2018 and 2048 despite an anticipated 89% increase in vehicle kilometres travelled. A detailed summary of the assessment is located in Appendix C17 of this report.

Table 11: F2Q Preferred Programme vs Investment Objectives

Investment objective	Key Performance Indicators	Feature		
		Signalise Key Intersections	Upgrade and Provide New Bus Stops and Bus Lanes	Upgrade Active Mode Links and Crossings
Efficiency Provide more efficient and reliable access for people and goods that: • sustainably manages high growth • reduces reliance on private vehicle travel • Enable enhanced land use	Improved travel time reliability Increased system occupancy Increased PT catchment Improved walking and cycling LOS	Enables Virtual Priority option by providing a corridor of coordinated signals Reduces general traffic throughput on the highway but improves reliability while prioritising bus movement, encouraging uptake of public transport Ensures access to and from side roads and land use on both sides of SH6A Provides additional access points to the PT network Improves crossing facilities	Improves access and visibility of public transport at future development sites and in areas of high density such as hotels, thus encouraging mode shift Prioritises buses through bottlenecks, improving travel times and reliability Improves egress times from bus stops, improving travel times and reliability	Provides new on road cycling corridor to augment the Frankton Track. Improves crossing opportunities for pedestrians and cyclists along the corridor. Encourages reduction in private car use, which enables car parking and road space in the town centre to be repurposed for more sustainable uses

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Investment objective	Key Performance Indicators	Feature		
		Signalise Key Intersections	Upgrade and Provide New Bus Stops and Bus Lanes	Upgrade Active Mode Links and Crossings
Resilience Is adaptable to change and disruption	Reduced incidence of closures	Guarantees access to and from side roads, reducing the need for risky turning manoeuvres, thus reducing likelihood of crashes and closures	Extending bus stop lengths improves capacity and enables dual use by public and private services Bus stops are futureproofed and can be converted to serve different vehicle types	Shared path alongside SH6A is much less susceptible to closures caused by crashes on the highway, enabling movement to be retained along the corridor
Amenity Enhances the liveability and quality of the natural and built environment	Positive survey feedback Reduced emissions	Signalised intersections provide safer, more convenient crossing opportunities, particularly for less mobile pedestrians	Presents opportunity to improve the place value of high-dwell areas along the corridor	High quality facilities encourage more people to use active modes and live a healthier lifestyle Reduces traffic volumes and therefore emissions.
Safety Enhances safety with a goal of Vision Zero	Reduced crashes, particularly DSIs	Signals provide more control over traffic, reducing the likelihood and severity of certain crashes (crossing/turning) Provides full protection for pedestrians and cyclists crossing SH6A Decreased risk of crashes as buses have their own lane and priority Increase in number and surface of bus stops reduces the risk of crowds and potential accidents for PT users	N/A	Segregated facility for less confident cyclists and clearly marked, continuous on-road cycle lanes for confident cyclists improves both real and perceived safety outcomes

4.1.2 Frankton and Ladies Mile

Table 12 assesses the Frankton and Ladies Mile interventions against the investment objectives.

Table 12: Frankton and Ladies Mile Programme vs IO

Investment Objective	Key Performance Indicator	Feature		
		Intersection Upgrades	Network Control	Active Mode Network
Efficiency Provide more efficient and reliable access for people and goods that: • sustainably manages high growth • reduces reliance on private vehicle travel	Improved travel time reliability Increased system occupancy Walking and cycling LOS	Enables high throughput of people without overloading downstream intersections and town centre Prioritises public transport, providing a faster and more convenient option than private car	Limits general traffic volumes, which facilitates the higher-capacity bus option Encourages use of more sustainable transport modes	Prioritises and encourages use of active modes Allows for better network operation, restricting high volumes to arterial roads and access to local roads

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Investment Objective	Key Performance Indicator	Feature		
		Intersection Upgrades	Network Control	Active Mode Network
• Enable enhanced land use				
Resilience Is adaptable to change and disruption	Smaller spread of delays throughout seasons	Higher throughput and better control by signals mean the intersections are better placed to cater for a range of future scenarios Signals provide better control during planned and unplanned events Phasing can adapt to dynamic seasonal and daily demands, ensuring consistent control over the network	Transfers congestion from highway to local roads, enabling movement function to continue through disruption Phasing can adapt to dynamic seasonal and daily demands, ensuring consistent control over the network	Provides a fully connected secondary network for travel around Frankton in the event of road closures
Amenity Enhances the liveability and quality of the natural and built environment	Positive survey feedback Reduced emissions	Provides amenity opportunities through the active mode connections. Opportunities for gateway treatments.	Signalised intersections provide safer, more convenient crossing opportunities, particularly for less mobile pedestrians	Creates a more pleasant and walkable neighbourhood by reducing traffic volumes and speed through Frankton Village
Safety Enhances safety with a goal of Vision Zero	Reduced crashes, particularly DSIs	Signal control removes impetus from drivers to pick gaps, reducing the likelihood of crashes Intersection has been designed to provide clear path for each movement to reduce chance of collisions Decreased risk of crashes as buses have their own lane and priority Increase in number and surface of bus stops reduces the risk of crowds and potential accidents for PT users	Signal control removes impetus from drivers to pick gaps, reducing the likelihood of crashes	Improves safety of Frankton Village by reducing traffic volumes and speeds

4.1.3 Queenstown Town Centre

Table 13 considers the QTC programme against the Investment Objectives.

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Table 13: QTC Preferred Programme vs IO

Investment objective	Key performance indicator	Feature		
		Public and passenger transport hub (Stanley – Athol Street)	Arterials stage 1, 2 and 3	Town centre urban realm enhancements (masterplan alignment)
Efficiency Provide more efficient and reliable access for people and goods that: • sustainably manages high growth • reduces reliance on private vehicle travel • Enable enhanced land use	Improved travel time reliability Increased system occupancy Increased PT catchment Walking and cycling LOS	A high-quality public and passenger transport (PPT) hub will increase the attractiveness of public transport and provide a high level of customer experience through enclosed passenger waiting areas, the provision of real time information and supporting PT information. The PPT hub will also incorporate supporting cycle facilities such as secure lockers and amenities, such as showers and toilets, enabling customers to make multi-modal journeys without reliance on the private vehicle.	Stages 1-3 will provide more localised network capacity which may result in an increase in overall vehicle movements and compromise SH6A interventions that seek to achieve modal shift. Stages 1 and 2 will improve PT operations as through traffic is banned on Stanley Street and intersection improvements will support PT movements. If PT were routed along Stage 3, PT catchments would increase.	The design approach has sought to complement the target SH6A modal shares for 2028/2048. This has prioritised alternative modes and will result in higher LOS, increased uptake of alternative modes and improved travel time reliability.
Resilience Is adaptable to change and disruption	Reduced incidence of closures	Increases the number of travel options by improving the public transport offering and active mode connections, reducing reliance on private cars	The introduction of an additional link provides additional network resilience during localised disruption.	Increased alternative mode usage is more resilient to network disruption as modal alternatives can be used.
Amenity Enhances the liveability and quality of the natural and built environment	Positive survey feedback Reduced emissions	The dominance of the private vehicle in and around the town centre negatively affects the experience of residents and visitors to the town centre. Through reducing private car usage through a shift to alternative modes, the overall customer experience will be improved. A well patronised and successful PPT system has substantially less emissions than a car-based network. Consideration is also being given to an electrified bus fleet which would operate with zero tail-pipe emissions.	Supports urban realm and amenity improvements through widened footpaths and reduced noise emissions, particularly on Stanley St.	Reducing the dominance of private vehicles, supported by widened footpaths, increased greenspace and reductions in on-street parking will improve the overall amenity and liveability of the town centre. Delivers significant wider economic benefits (reflected in improved economic conditions for local businesses)
Safety	Reduced crashes,	Public transport is the safest mode of road transport on a per	The shifting of general traffic onto the arterials will reduce conflicts on	Less private vehicle usage will reduce the risk of crashes, while safety

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Investment objective	Key performance indicator	Feature		
		Public and passenger transport hub (Stanley – Athol Street)	Arterials stage 1, 2 and 3	Town centre urban realm enhancements (masterplan alignment)
Enhances safety with a goal of Vision Zero	particularly DSIs	kilometre travelled basis. Increasing the ridership will improve modal share and reduce the likelihood of road incidents.	and improve safety outcomes. The new/upgraded intersection designs and operation would be in accordance with the Safe Systems approach providing greater safety. Any intervention that increases traffic volumes and the interaction with vulnerable modes is potentially detrimental.	improvements such as protected pedestrian crossings and slower vehicle speeds will reduce the severity of incidents.

4.2 Alignment of the wider transport strategies

A review of the wider transport strategies against the investment objectives has been undertaken. These strategies form an integral part of the three pillars make-up and are a vital element to demonstrating the successful outcomes of the Preferred Programme.

4.2.1 Alignment of the Travel Demand Strategy

Table 14 assesses the Travel Demand Strategy against the investment objectives.

Table 14: Travel Demand Strategy vs IO

Investment Objective	Assessment
Efficiency Provide more efficient and reliable access for people and goods that: a. sustainably manages high growth b. reduces reliance on private vehicle travel	Moderate: Developing policies to control and influence vehicle movement through the area using high capacity public transport will reduce reliance on private vehicle trips. Freight delivery management, including goods consolidation centres, will assist in managing growth and demand for services.
Resilience Is adaptable to change and disruption	Moderate: Provision of digital platforms for wayfinding provides methods to supply travel information effectively. Development travel plans will provide flexibility for sustainable parking/travel provision
Amenity Enhances the liveability and quality of the natural and built environment	High: Investigating alternative methods of movement, particularly active mode measures improve community liveability and reduces environment impact on natural, and built environment
Safety Enhances safety with a goal of Vision Zero	Moderate: Reducing unnecessary vehicle movements and providing school travel plans and road-sense education supports improved safety outcomes.

4.2.2 Alignment of the ITS Strategy

Table 15 assesses the Travel Demand Strategy against the investment objectives.

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Table 15: Intelligent Transport Strategy vs IO

Investment Objective	Assessment
Efficiency Provide more efficient and reliable access for people and goods that: • sustainably manages high growth • reduces reliance on private vehicle travel	High: Provision of virtual priority within the network will create movement efficiencies particularly in areas expecting high growth. Rationalising parking in the town centre will require progressive management techniques to ensure high level of service is achievable. Features such as VMS
Resilience Is adaptable to change and disruption	Moderate: The system relies on technology which can be upgraded and adapted to suit local conditions however power/tech disruption would diminish the effectiveness of the system
Amenity Enhances the liveability and quality of the natural and built environment	Moderate: VMS can assist in managing the network through information relay to motorists on potential route delay, incidents and parking availability
Safety Enhances safety with a goal of Vision Zero	Moderate: ITS develops a safer environment through informing route choice, monitoring network activity and communicating hazards

4.2.3 Alignment of the Public Transport Strategy

Table 16 considers the public transport strategy against the investment objectives.

Table 16: Public transport strategy vs IO

Investment Objective	Feature		
	Road based PT network	High-quality transport hubs at Stanley Street and Frankton Golf Course	Virtual Priority
Efficiency Provide more efficient and reliable access for people and goods that: • sustainably manages high growth • reduces reliance on private vehicle travel	Provides realistic transport choice and encourages use of PT with improved travel times and reliability, which in turn reduces general traffic demand. Road based PT offers flexibility with routes and frequencies and can service outer lying areas cost-effectively. Will accommodate demand growth to around 2051. An offline corridor can provide an additional step-change in capacity on the core spine when needed. Commercial transport and freight benefits from increased trip reliability and the reduction in demand.	Both the Frankton hub and town centre hub will streamline transfers between services and modes. They will also encourage significant concentrations of people, providing opportunities for economic growth. The proposed Stanley Street hub is located close to the CBD on the main route into the town centre. Although further away than the previous Camp Street hub, improvements to crossings and shared spaces will enhance accessibility and quality of the area.	Enables improved travel times (>20% improvement) and reliability for PT Accommodates growth (increases the throughput of SH6A by approximately 100%) Provides approximately 60% of the benefits of 'full priority' on SH6A at 5% of the cost. Reduces probability of bus bunching, increasing design life of PT system
Resilience Is adaptable to change and disruption	Reduces crash exposure as fewer people travel by private car. The longer-term offline option removes crash risk from SH6A entirely, while active mode connectivity	High-quality hubs will further encourage mode shift, reducing exposure. They will also have highly pedestrian-focused design philosophies and provide fully	Reduces crash exposure as fewer people travel by private car.

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Investment Objective	Feature		
	Road based PT network	High-quality transport hubs at Stanley Street and Frankton Golf Course	Virtual Priority
	between hubs and the surrounding network will be designed to minimise conflict.	protected connectivity in the town centre.	
Amenity Enhances the liveability and quality of the natural and built environment	Using flexible, modern, road based high amenity PT vehicles means that routes and frequencies can be altered or scaled as demand requires, without the need for substantial front-loading capital investment. Upgrading the fleet to electric or high-capacity vehicles would be relatively straightforward and would deliver significant amenity benefits. Further work is required to determine the power network implications of electrifying the fleet. The addition of an offline corridor such as a gondola, in the future, would deliver a unique experiential element to the PT network. While a gondola would be on a fixed route, it would be much less susceptible to closures and capacity and speed could be scaled up or down as required.	The hubs have been designed to provide capacity for on-road services and futureproofed for multiple potential future vehicle types. When road capacity (bus bunching) becomes more critical than hub space, additional long-term capacity can be accommodated in the hubs through an offline gondola system. Town centre and Frankton hubs can be integrated with surrounding developments to create high amenity transit orientated developments Hubs present urban amenity opportunities as focal points of the transport system. The Stanley Street hub will be the gateway to the town centre. Located on the edge of the CBD, public realm and active mode improvements will not be jeopardised by large buses. Integration with Project Manawa will provide highly efficient access for locals to the community heart precinct	High quality station style stops across the network, connected to active travel facilities, will provide amenity benefits. Signal phasing is easily changed to accommodate larger vehicles. Minimal localised disruption during construction.
Safety Enhances safety with a goal of Vision Zero	PT represents a safer form of transport than private motor vehicles Reduces traffic volumes and therefore emissions. Enables more sustainable and efficient use of space due to lower demand for space for cars, such as parking and roads. Adaptable to green technology such as electric buses	The removal of traffic from Stanley Street will enable safer crossing provision for pedestrians accessing the project Manawa site	Enables bus priority without the need for extensive construction and land acquisition for roading, leaving more space for amenity and active mode improvements

4.2.4 Alignment of the Town Centre Urban Realm Improvements

The urban realm improvements have been assessed against the investment objectives and this assessment is summarised in Table 17.

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Table 17: Alignment of urban realm improvements vs investment objectives

Investment Objective	Assessment
Efficiency Provide more efficient and reliable access for people and goods that: a. sustainably manages high growth b. reduces reliance on private vehicle travel	High: The urban design elements have been derived to reduce reliance on private vehicles through reduction in parking opportunity in the town centre. Space gained in this manner has created additional streetscape dedicated to pedestrians. This will help absorb the growth in pedestrian traffic expected with the improved high capacity bus services and general increased population density expected in Queenstown.
Resilience Is adaptable to change and disruption	Neutral: Success of the public realm relies on maintaining high levels of service to users.
Amenity Enhances the liveability and quality of the natural and built environment	High: reducing on-street parking and enhancing the public realm through widened footpaths and amenity improvements. Use of high quality and durable materials during the design and implementation improves appearance. Amenity benefits, as quantified through the VURT assessment will deliver significant wider economic benefits.
Safety Enhances safety with a goal of Vision Zero	High: Reducing vehicle speeds and volumes through the town centre will create safer attributes for pedestrians. Improved pedestrian only movement provision, such as Barnes Dance crossings at intersections, and high quality public realm environments with good visibility.

4.2.5 Alignment of the Parking Strategy

The parking strategy has been assessed against the investment objectives and is summarised in Table 18.

Table 18: Alignment of parking strategy vs investment objectives

Investment Objective	Assessment
Efficiency Provide more efficient and reliable access for people and goods that: a. sustainably manages high growth b. reduces reliance on private vehicle travel	High: Through reducing potential conflict, side friction and unnecessary traffic circulation (searching for parking) network movement should be enhanced reducing delays. Effective parking management is a critical mechanism to help achieve the mode shift targets and reduce reliance on private vehicles. Improved access for goods through greater provision of on-street loading facility.
Resilience Is adaptable to change and disruption	Neutral: parking changes will not affect network resilience.
Amenity Enhances the liveability and quality of the natural and built environment	High: reducing on-street parking and enhancing the public realm through widened footpaths and amenity improvements.
Safety Enhances safety with a goal of Vision Zero	Moderate: Reducing unnecessary vehicle movements and improving visibility supports improved safety outcomes.

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5 ASSESSMENT PROFILE

5.1 Overview

The National Land Transport Fund (NLTF) is the primary funding mechanism for Crown investment in the land transport system. The National Land Transport Programme (NLTP), reviewed and updated every three years in line with the release of the Government Policy Statement on land transport (GPS), identifies the activities likely to be funded by the NLTF.

Land transport activities which fit the criteria for funding from the NLTF, are assessed and prioritised against competing national priorities, to determine eligibility for funding. Activities with sufficiently high priority are included in the NLTP.

5.1.1 Approach to the assessment of the Queenstown Programme

An assessment profile has been undertaken for the entire programme under the category of **"Public transport, rapid transit and transitional rail improvements"**. Other categories of assessment are also possible – such as *'Regional, local road and state highway improvements'*; however, assessment under this category is not anticipated to result in a higher GPS priority rating alignment[2].

Other improvements such as walking and cycling also make a notable composition of the Queenstown Programme, however based on the physical size, cost, and anticipated benefits of the programmes **public transport** improvements have been considered as being the most influential under this category.

The assessment has been undertaken using Waka Kotahi's Investment Assessment Framework for the 2018-21 National Land Transport Programme. A provisional assessment has also been undertaken against the 2021 GPS which will come into effect in July 2021.

5.2 Assessment profile

Table 19 provides the assessment profile for the Queenstown Programme. It should be considered alongside the Programme Sequencing Table which provides an assessment profile for the individual elements of the programme.

Table 19: Assessment profile using Investment Assessment Framework

GPS Priority	Rating	Rationale
(GPS 2018) Access to opportunities, enables transport choice and access, and is resilient – Liveable cities	HIGH	The recommended option supports agreed integrated land use, multi-modal plans and mode shift in a major metro[3]. The following text outlines this alignment. The recommended option supports these integrated land use plans: • Alignment with the Spatial Plan • Alignment with Queenstown Town Centre and Frankton Masterplans The recommended option supports these agreed multi-modal plans • Active Travel SSBC • Queenstown Integrated Transport PBC • SH6 Grant Road to Kawarau Falls Bridge SSBC • Lake Wakatipu Public Water Ferry DBC The recommended option supporting mode shift. • The recommended option is anticipated to reduce car-based trips from the current mode share of 77% down to 40% by 2048. • The recommended option is anticipated to increase active mode share from 2% to 5%.

[2] Unless there is: a speed management approach focusing on treating the top 10 percent of the network that will result in the greatest reduction in deaths and serious injuries; or targeting areas of high collective risk with high DSI reduction measures that achieve a DSI reduction of at least 40%

[3] The Transport Agency has identified Queenstown as a specific major metropolitan area given similarities in its transport requirements to those in the major metropolitan areas listed in the GPS, and therefore the application of the IAF criteria is treated in the same way as major metropolitan areas. Source: https://www.nzta.govt.nz/assets/planning-and-investment/nltp/IAF-for-GPS-2018.pdf

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GPS Priority	Rating	Rationale
		• The recommended option aligns with the Queenstown and Frankton Parking Strategies – which are considered important for helping create mode shift.
(GPS 2021) Better travel options and improving freight connections	IAF to be developed – programme option likely to have at least HIGH alignment.	The draft 2021 GPS provides a slight change from the 2018 Access priority by splitting considerations into 'better travel options' and 'improving freight connections'. Queenstown is specifically identified in the draft GPS as a place where mode shift plan(s) should be implemented[4]. It is noted that the Minister expects Waka Kotahi will work with local government to implement agreed mode shift plans in high-growth urban areas (Queenstown included). It is therefore considered that the preferred option is likely to at least maintain a high rating under a new IAF. If the recommended option improves to a rating of 'very high' under the 2021 GPS, then the corresponding priority order rating (using the existing framework) would be 1.

Note that to achieve a 'very high' alignment the following will need to be justified with evidence:

- "Addresses a very high predicted safety risk resulting from public transport"
- "Enables a substantial increase in access to social and economic opportunities for large numbers of people along dedicated key corridors and enables transit-oriented development".

Rapid transit improvement proposals need to demonstrate that they will substantially increase the movement of large numbers of passengers on dedicated key major metro corridors.

5.2.1 Profile

Recommended Option GPS 2018/2021 Results Alignment Rating	High
Recommended Option BCR Bracket Estimate	Low
Corresponding Programme Priority Order Rating	5

[4] Page 19 - www.transport.govt.nz//assets/Import/Uploads/Our-Work/Documents/draft-government-policy-statement-land-transport-2021.pdf

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6 WIDER PROJECT IMPACTS

6.1 Social and environmental impact

In progressing the necessary approvals for the project under the RMA the following effects will need to be assessed and methods proposed to avoid, remedy, or mitigate any environmental effects.

The impacts have been arranged geographically into three zones (Frankton, F2Q, Ladies Mile, and QTC) are summarised in Table 20 to Table 22.

Table 20: Social and environmental impacts - Frankton

Effect	Comment
Natural Environment	The proposed works will not adversely affect any significant natural features, natural hazard or any significant vegetation. The existing Frankton Golf Course is reserve land and will be impacted by the proposed intersection upgrade and public transport hub options.
Cultural and Historic Heritage	There are no identified areas or features of archaeological or cultural heritage within the project area. Two identified items, being the Frankton Cemetery Walls and Gates and the Brunswick Flour Mill Turbine and Stone Buildings are listed in the district plan as a historic site. These structures will be unaffected by the proposed works.
Human Health	Whilst there are community facilities - schools, rest homes, childcare, medical, shopping and residential land uses within the vicinity of the proposal, there is limited change to the scale of activity from the existing at present. The major exception to this is the Humphrey Street extension which will introduce a new road adjacent to existing residential properties. It will also require relocation of the Fire Station. Whilst there are potential HAIL sites in the vicinity of the proposed works, it is highly unlikely there will be a disturbance of contaminated land.
Social	The proposal may affect access to a number of businesses and facilities during construction. Following completion there will not be any ongoing effects on access. Some sites will have enhanced access provision.
Landscape and Urban Design	There are no sensitive landscapes impacted by the proposed works. The works will provide opportunities some urban realm enhancements.

Table 21: Social and environmental impacts - Frankton to Queenstown

Effect	Comment
Natural Environment	Lake Wakatipu also has considerable value both from a habitat and landscape perspective. Lake Wakatipu is also subject to the Kawarau River Water Conservation Order (1997). Reclamation of the lake would have considerable environmental impacts. Ferries would require considerable 'lakeside' infrastructure.
Cultural and Historic Heritage	Lake Wakatipu was probably utilised as a māhika kai for inland bird species by Kai Tahu prior to European arrival. Lake Wakatipu is also a Statutory Acknowledgement under the Ngāi tahu Claims Settlement Act 1998. 2 listed trees are located along the route that have specific protection under the district plan. Other QLDC street trees will also require removal.
Human Health	There are a multitude of sensitive receivers adjacent to or in close proximity to the route predominantly residential properties and visitor accommodation. Generally speaking, in terms of the residential zonings adjacent to SH6A, the lakeside of SH6A is High Density Residential, and the uphill side is Low Density Residential. Those options that take land will bring traffic on SH6A closer to existing properties including residential properties and visitor accommodation. This will bring an increase in noise and vibration effects, some of which may not be able to be adequately mitigated. Widening of the corridor into the high density residential zoned land increases the theoretical number of individuals exposed to higher noise levels due to the density of development anticipated in this zone (as opposed to the Lower Density Residential Zoned Land).

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Effect	Comment
	The widening options will also require a change to the current lighting environment along the route, potentially affecting dwellings and visitor accommodation.
Social	The project will also require land currently recreation reserve of various status'. The social values of the community with regards to the recreation reserve land will need to be addressed. Access to properties also impacted, with the potential for some residential properties to be purchased in their entirety.
Landscape and Urban Design	The project offers some opportunities to enhance urban character / urban realm adjacent to the existing corridor. The gondola option could give rise to high levels of visual and landscape effects depending on alignment.

Table 22: Social and environmental impacts - Queenstown Town Centre

Effect	Comment
Natural Environment	Whilst the setting of the arterials is urban there are two natural features that will be affected being Horne Creek and Lake Wakatipu. Horne Creek is known to support populations of the native fish koaro and is identified as being habitat for trout spawning. Lake Wakatipu also has considerable value both from a habitat and landscape perspective. Lake Wakatipu is also subject to the Kawarau River Water Conservation Order (1997).
Cultural and Historic Heritage	The Queenstown Town Centre includes multiple known archaeological sites. No specific assessment of the route in this regard has been undertaken. Horne Creek has been identified as being important to Tangata Whenua. Aukaha have previously advised that Horne Creek was associated with the Pā site, Tahuna. The Pā itself is situated at Earl Street, some 600 metres south east of the Project area. However, the whole creek was probably utilised as a māhika kai for inland bird species by Kai Tahu prior to European arrival. Lake Wakatipu also has similar values and is also a Statutory Acknowledgement under the Ngāi tahu Claims Settlement Act 1998. The setting of 3 items of heritage significance (Transit of Venus Site, St Joseph's Church and Glenarm Cottage) will be affected by the proposal. It is unlikely Glenarm Cottage would be able to remain in its current location given the proximity of the footprint of the project. 3 listed trees are located along the route that have specific protection under the district plan. Other QLDC street trees will also require removal.

6.2 Implementability

6.2.1 Constructability

Disruption during the construction period will be inevitable, as temporary traffic management and lane closures will be necessary. Providing access for construction vehicles and minimising the impact for the commercial areas, all road users and the local community will be imperative. A Construction Traffic Management Plan (CTMP) will be developed identifying how construction phasing will be achieved in a safe and orderly manner. A widespread media campaign will also be developed to ensure the changes and anticipated delays during construction are communicated with the community.

6.2.2 Statutory requirements

The Frankton to Queenstown, Frankton and Ladies Mile Transport Business Case encompasses 46 discrete locations, each of which has its own specific consenting requirements. A number of these locations relate to the New Zealand Upgrade Program (NZUP). In each location Waka Kotahi, as a requiring authority, has a designation over part or all of the land involved with the proposed works. The Consenting Strategy attached as Appendix C13 identifies the consenting requirements associated with all of those locations based on the information available at this preliminary stage.

Table 23 identifies the intervention locations, planning matters to be considered during delivery process, and an indication of the perceived complexity of each intervention in planning terms. The complexity is registered under a 'traffic light' colour system with 'red' identifying complex sites, 'amber' identifying sites expected to represent some planning challenges, and 'green' sites anticipated to be straightforward.

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Table 23: Planning considerations

	Planning Matters	Complexity
SH6 Howards Drive roundabout	Requires potential alteration to designation and outline plan (additional land for drainage may be required)	
Ladies Mile westbound priority bus lane	Requires potential alteration to designation and outline plan (additional land for drainage may be required)	
SH6 Hawthorne Drive Intersection	Requires alteration to designation Requires outline plan Note: Land is required to be taken on all four quadrants of the intersection	
SH6 Frankton-Ladies Mile to SH6/6A Intersection priority bus lane	Requires alteration to designation Requires outline plan	
SH6/Grant Road Intersection	Outline plan waiver	
SH6/Hansen Road intersection	Requires alteration to designation Requires outline plan	
SH6/Joe O'Connell Drive intersection (Events Centre)	Requires alteration to designation Requires outline plan	
SH6/6A intersection	Requires new designation Requires alteration to designation Requires outline plan	
Old Frankton/Frankton Village	Outline plan waiver	
Frankton Hub	Requires new designation Site subject of existing QLDC designation, which has priority Displacement of recreational land	
SH6 Kawarau Road (Ross Street to Kawarau Falls Bridge)	Outline plan waiver	
SH6/Lucas Place	Requires alteration to designation Requires outline plan	
SH6/Humphrey Street Intersection	Outline plan waiver	
Humphrey Street Link (SH6 to Lucas Place)	Notice of Requirement required for new Humphrey Street link	
SH6A/McBride Street Intersection	Outline plan waiver	
SH6A Yewlett to SH6/6A priority bus lane	Outline plan waiver	
SH6/6A to Marina intersection	Requires alteration to designation Requires outline plan Land required for the new western intersection, plus some minor widening east of Sugar Lane and between Sugar Lane and the new intersection.	
SH6A Frankton to Queenstown shared path	Requires alteration to designation Requires outline plan Potential land requirement	
SH6A/Marina Intersection	Outline plan waiver	
SH6A Marina to Perkins Road priority bus lanes	Outline plan waiver	
SH6A/New Marina/Perkins Road Intersection	Requires alteration to designation Requires outline plan	
SH6A Middleton Road eastbound bus stop	Outline plan waiver	

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	Planning Matters	Complexity
SH6A/Battery Hill Intersection	Outline plan waiver	
SH6A/Goldfield Heights intersection	Outline plan waiver required Note: there is a protected gum tree (Council Ref. 240) on NW corner of intersection	
SH6A Goldfields eastbound bus stop	Outline plan waiver	
SH6A Goldfields Heights priority bus lane	Outline plan waiver	
SH6A Larch Hill Place to Goldfields Heights priority bus lane	Outline plan waiver	
SH6A Larch Hill Place intersection	Outline plan waiver	
SH6A Hensman Road Intersection	Outline plan waiver	
SH6A Oaks Club pedestrian signals	Outline plan waiver	
SH6A Oaks Club eastbound bus stop	Outline plan waiver	
SH6A Pounamu eastbound bus stop expansion	Outline plan waiver	
SH6A Suburb Street to Frankton/Stanley Street intersection priority bus lane	Requires alteration to designation Requires outline plan Land requirement	

6.2.3 Property impacts

Property will be required at a number of intervention locations. The property acquisition process will follow the Public Works Act process. In the first instance negotiations will be initiated with property owners to acquire the properties. This is considered the most efficient process, however, should agreement not be reached the alternative route to acquisition is through Compulsory Purchase, where applicable, once all reasonable endeavours to negotiate a fair sale have been exhausted.

The purchase of property is a lengthy process, expected 12-18 month per property with willing buyer – willing seller, and should be initiated as soon as possible as the process sits along the critical delivery path for the programme. Interdependencies between projects mean acquisition delays on one project may induce delay on other projects.

The table below summarises the currently identified property requirements, inter-dependencies and envisaged timings for acquisition.

Table 24: Property impacts

Project	Interdependency	Timing
SH6/6A Intersection	SH6A and SH6 interventions on Frankton are dependent on the control of the SH6/SH6A intersection, including priority measures.	2020/21
Interim Frankton Hub		2020/21
SH6/Hansen Road	SH6/6A Intersection	2020/21
SH6/Joe O'Connell	SH6/6A Intersection	
SH6 Frankton-Ladies Mile to SH6/6A Intersection	1. SH6/6A Intersection 2. SH6 Hawthorne Drive Intersection 3. SH6 Grant Road Intersection 4. SH6 Hansen Road New Intersection 5. SH6 Joe O'Connell Drive Intersection 6. SH6 Hardware Lane to BP bus lanes	2020/21
Ladies Mile West Bound Bus Lane		2020/21
SH6 Howards Drive Roundabout		2019/20

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Project	Interdependency	Timing
SH6A New Marina/Perkins Road Intersection	SH6/6A Intersection	2020/21
SH6A Battery Hill Intersection	SH6/6A Intersection	2020/21
SH6A Oaks Club Eastbound Bus Stop and Pedestrian Signals	SH6/6A Intersection	2021/22
Stanley Street Public Transport Hub	Project Manawa, Alternative route stage 2 Shotover/Stanley Street improvements, State Highway Revocation	2024/25
Alternative route - Stage 1 - Melbourne and Henry Street upgrade and connections includes intersection at SH6A		2019/20
Alternative route - Stage 2 - Gorge Road to Hay Street. New link and upgrades Excludes Man/Camp and Man/Brecon Streets.	1. Project Manawa (relocation of community hall) 2. Brecon Street steps (relocation)(TC15)	2022/23

Land requirement plans are attached in Appendix C14.

6.2.4 Environmental and Social Responsibility

The interventions have been assessed against the NZTA's Social and Environmental Responsibility Screen which have identified matters of further technical assessment that will be required as the project advances. For the Frankton to Queenstown section the following elements have been identified for further consideration:

- An ecological assessment will be required with regards to the activity in proximity to/within Lake Wakatipu
- Archaeological/Heritage impact assessment
- Arborcultural assessment on protected trees in proximity to the route or to be removed as part of the project
- Cultural Impact Assessment (potentially – may be avoided through engagement with Iwi)
- Noise impact assessment – current and future noise environment, mitigation
- Preliminary Site Investigation/Detailed Site Investigation with regards to potentially contaminated sites along the arterial route.
- Landscape/urban design assessment with regards to the impacts of the project on the existing streetscape
- Lighting impact assessment (both in terms of streetlighting but also in relation to the light spill from vehicles)

For the Frankton area the following elements have been identified for further consideration:

- Noise impact assessment – current and future noise environment in relation to the Humphrey Street Extension.
- As identified for the other business cases, a 'global' archaeological authority for the works should be considered.
- Preliminary Site Investigation / Detailed Site Investigation with regards to potentially contaminated sites.

Further information on the screening assessment is located in Appendix C15.

6.2.5 Geotechnical assessment

A preliminary geotechnical appraisal of the arterials route, Frankton to Queenstown alignment, and Frankton area has been undertaken as a desktop study. The purpose of the appraisal is to identify the existing pavement and ground conditions, provide economic and design feasibility advice on the derived intervention concepts, and make recommendations on further geotechnical investigations for consideration as the project progresses. The report identifies locations for Trial Pits and Boreholes to confirm current information and to inform the future pavement design. Further information on the preliminary assessment can be found in Appendix C16.

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7 SUMMARY

This section has set out the suite of interventions that make up the Queenstown Preferred Programme. The Queenstown Programme includes a wide range of initiatives focussed on shifting the current reliance on the private vehicle and providing users with travel choice. This section has demonstrated that investment into three pillars of intervention: infrastructure, public transport service operations, and travel behavioural change will develop and deliver a successful programme resulting in the required step change in travel mode for Queenstown.

The remaining sections of this business case will demonstrate how the Queenstown Preferred Programme will deliver economic benefit to the Wakatipu Basin and the wider New Zealand economy before setting out how the package will be funded and delivered.

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WAKA KOTAHI
NZ TRANSPORT AGENCY

Preferred programme sequencing report

s 9(2)(a) [redacted]

16 NOVEMBER 2020

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1 PROGRAMME SEQUENCING

1. The following table demonstrates the proposed sequencing for the interventions. This sequencing has been developed in a way that maximises the benefits provided by the committed projects through short term improvements in PT services that pave the way for the implementation of BRT services from 2027. Behaviour change components will be required to match the PT service improvements to maximise mode shift and overall network efficiency. The table summarises the degree to which the interventions deliver economic benefit (through the Benefit Cost Ratio calculations) and alignment with national and local strategies.

2. The programme contains 11 sets of interventions. The first two intervention sets are committed activities with approved funding. The following six interventions seek approval through this business case for funding to proceed to the next stage. The results alignment and IAF funding priority demonstrate that these are fundable projects. The remaining four projects require further investigation to confirm that they are feasible, contribute to the outcomes sought through the business case and align with funding criteria.

3. The location of each intervention is shown in Figure 1 and Figure 2. The far-right column in Table 1 contains a coloured key that links the details for each intervention to its location on the map.

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Table 1: Sequencing of Interventions

Element	Lead Organisation	Dependencies (Description and Completion Date)	Trigger Points	Activity Class	IAF Assessment Profile	Capital Costs	IAF Funding Priority	DBC Preferred Programme Status	NLTP Period for Implementation	Map sequencing key
SH6A Improvements GR2KFB Improvements Ladies Mile Improvements	Waka Kotahi	Requires mode shift otherwise whole network breaks down	None – committed activity	NZUP - committed activity	None – committed activity	$106M	None – committed activity	Committed Activity – No approvals required	21-24	
Arterials – Stage 1, Town Centre Upgrade – Stage 1	QLDC	Arterials requires design inputs from Project Manawa, e.g. retaining levels, access, pedestrian overbridge	None – committed activity	CIP – committed activity	None – committed activity	$120M	None – committed activity	Committed Activity – No approvals required	21-24	
Travel Demand Management package	QLDC/ORC/ Waka Kotahi	PT Services and Infrastructure, NZUP and Active Travel to help with mode shift	Monitoring of transport activity required	Promotion of road safety and demand management	Results Alignment: H CBA: M BCR = 3.5*	$1.8M	4	Recommended Option – Funding approval required	Ongoing activity over multiple periods	
PT Services Improvements	ORC	NZUP funded infrastructure, TDM	None – requires small variations within existing contract	Public Transport Continuous Programme	Results Alignment: H CBA: M BCR = 3.5	Increase in annual gross opex from $8m to $11m.	4	Recommended Option – Funding approval required	21-24 for further investigation, staged implementation from 24-27	
On Road PT Service Improvements	ORC	NZUP funded infrastructure, TDM, Stanley Street Hub, Frankton Hub	Various demand triggers will require a step-change in service improvements	Public Transport improvements	Results Alignment: H CBA: M BCR = 3.5	$80m plus gross opex costs ramping up from $11m to $24m per annum by 2027	4	Recommended Option – Funding approval required	Staged implementation over multiple periods starting 27-30	
Stanley Street and Shotover Street Improvements (including Stanley Street Bus Hub Stage 1)	Waka Kotahi	NZUP and CIP funded infrastructure, Project Manawa site clearance work along Stanley Street	Immediate benefits – dependencies provide trigger points	Local road, regional and state highway improvements	Results Alignment: H CBA: L BCR=1.6	$24M	5	Recommended Option – Funding approval required for Pre-imp and property	24-27	
Town Centre Upgrade – Stage 2	QLDC	Town Centre Upgrade – Stage 1	Immediate benefits	Walking and Cycling improvements	Results Alignment: H CBA: L BCR = 1.5	$17M	5	Recommended Option – Funding approval required for Pre-imp	24-27	
Arterial Stage 2	QLDC	Replacement of memorial hall, which becomes Performing Arts Centre at Project Manawa	Immediate benefits – dependencies provide trigger points	Local road, regional and state highway improvements	Results Alignment: M CBA: L BCR = 0.9 (1.1 with QLDC property costs discounted)	$43M (excludes replacement of Memorial Hall)	6	Recommended Option – Funding approval required for Pre-imp and Property phases	Further investigation 24-27, pre-implementation and Implementation 27-30	
Stanley Street Redevelopment (including Bus Hub stage 2)	QLDC / ORC / Developer	Stanley Street and Shotover Street Improvements, revocation of State Highway	Likely funding trigger required – to be confirmed through further investigation	Public transport improvements	n/a[1]	$46m (incl $33m property costs)	Not required	Other supporting activities – for endorsement	Further investigation 24-27	
Arterial Stage 3	QLDC	None	Low BCR – no trigger points have been identified	Local road, regional and state highway improvements	BCR = 0.2	$118M	Not required	Other activities – for later re-evaluation	Further investigation beyond 2030	
Improvements, including offline PT hubs	Waka Kotahi/ORC	Future proofed/protected corridor and terminal locations	Demand trigger – once on road capacity is reached. Anticipated beyond 2030	Public transport improvements	BCR = 1.7	$262M	Not required	Other activities – for later re-evaluation	Further investigation beyond 2030	

[1] BCR dependent on nature of development – opportunity to deliver Transit Oriented Development adjacent to Stanley Street bus hub and adjacent regional/tourist coach facility on Athol Street

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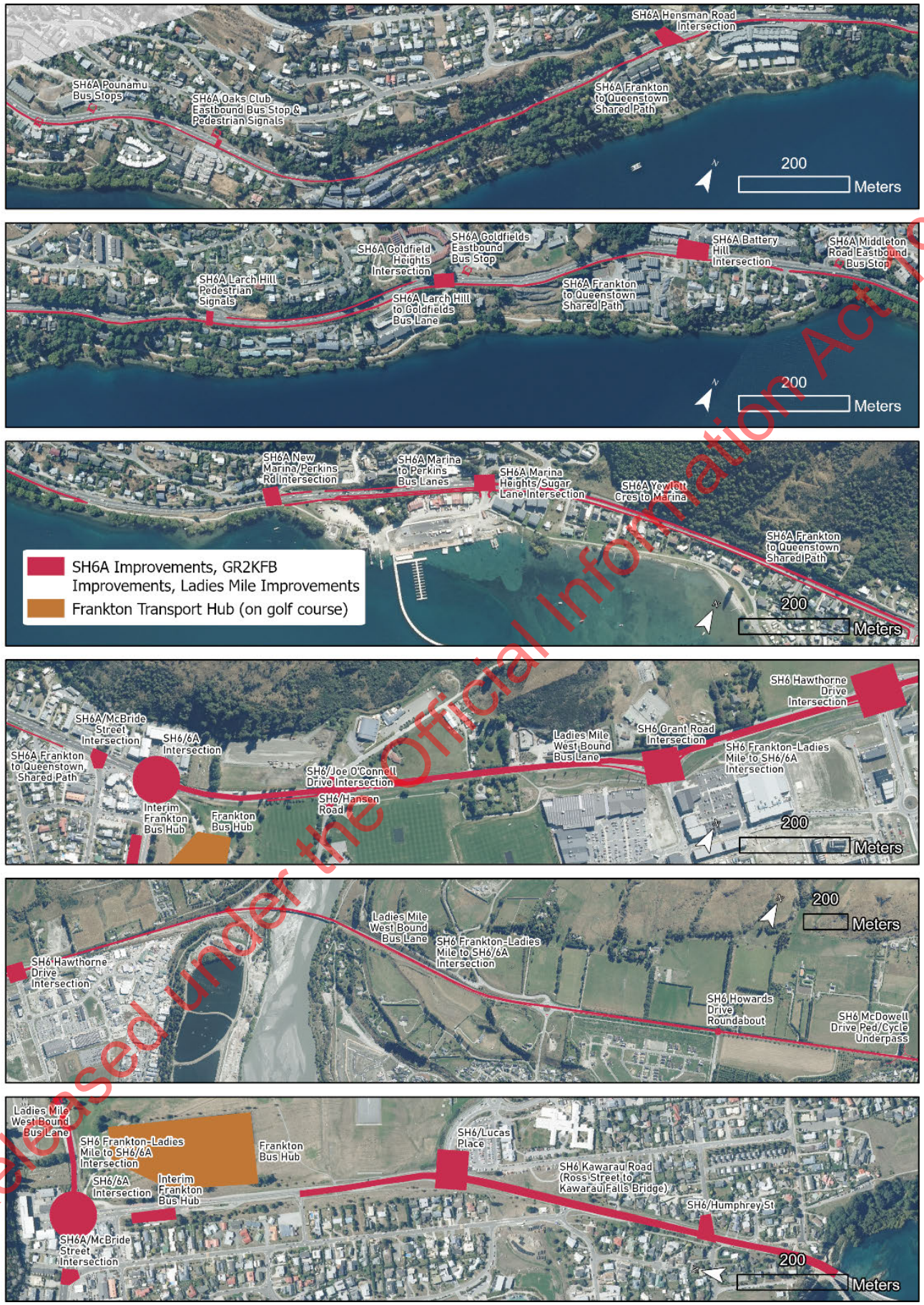

Figure 1: SH6a, GR2KFB and Ladies Mile Improvements

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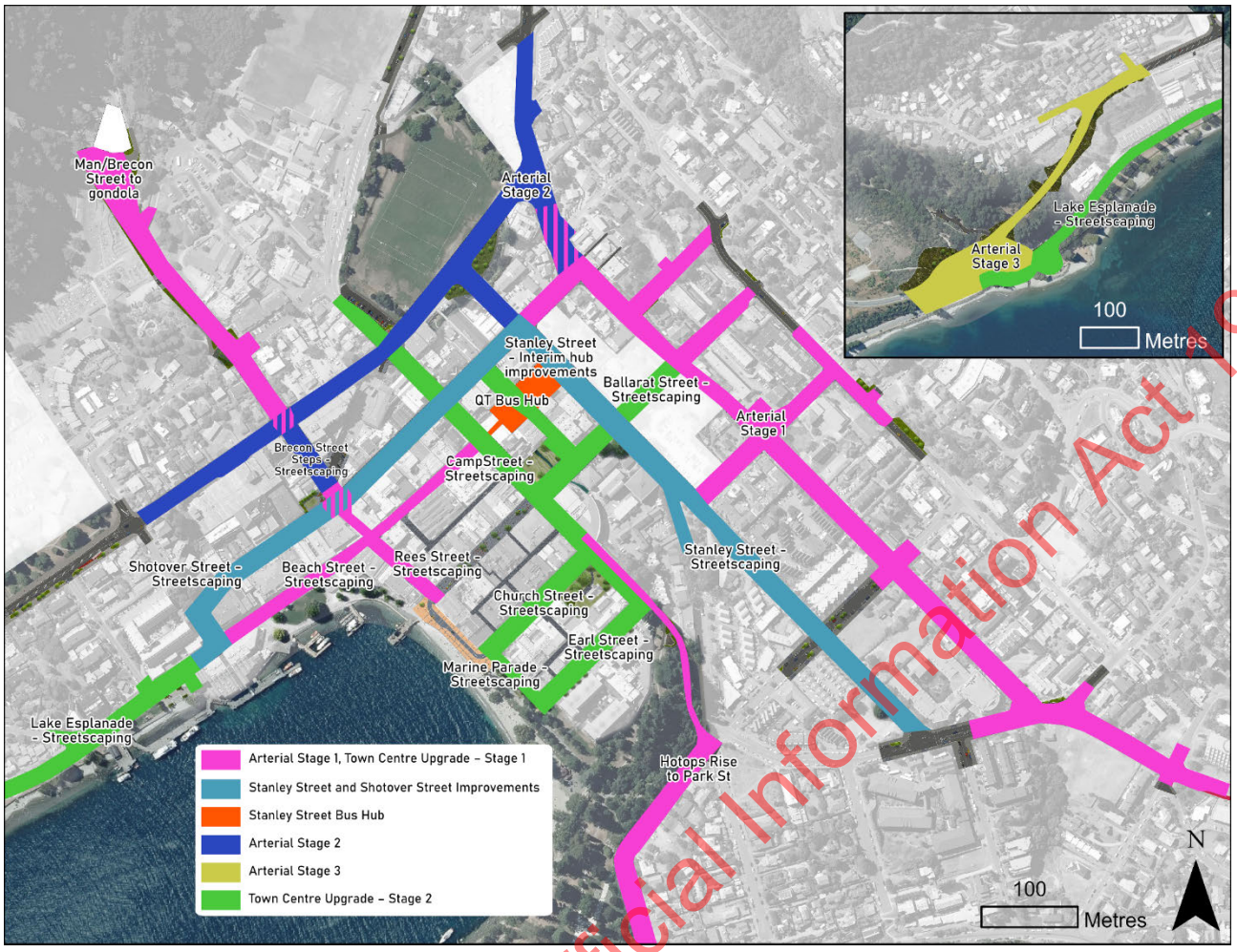

Figure 2: Queenstown town centre improvements

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QUEENSTOWN BUSINESS CASE

Economic Case

s 9(2)(a) [redacted]

16 NOVEMBER 2020

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1 ECONOMIC ANALYSIS

1.1 Overview

This chapter provides an overview of the economic analysis for both the *Queenstown Town Centre* and *Frankton to Queenstown* business cases. Given the inherent links between the projects, along with the changes in scope to incorporate Frankton and Ladies Mile, the economic evaluations have been presented together.

This chapter outlines:

- The approach taken to the economic evaluation and incremental analysis.
- The main benefit streams and the key inputs that have informed the analysis (e.g. modelling).
- Sensitivity analysis. This is key because the preferred programme of interventions will be supporting a local economy that is growing in a fast but uncertain fashion.
- The wider economic benefits (WEBS).

The economic evaluation pre-dates the release of Waka Kotahi's *Monetised Benefits and Costs Manual* (31 August 2020). The economic analysis has been carried out in accordance with the full procedures of the Economic Evaluation Manual (EEM), with the preferred programme compared against the Do Minimum. WEBS, which are applicable to the approaches outlined within both the 'Monetised Benefits and Costs Manual' and EEM, have also been considered.

The analysis is supported by peer review (Appendix D01).

1.2 Preferred Programme

The recommendation of the Queenstown business case is for one programme that will be rolled out in several phases. As such, the economic evaluation takes into consideration the incremental benefits of each phase. The phased roll out of the programme is:

- **Phase 1** - Do Minimum.
- **Phase 2** – public transport (BRT) services (incrementally rolled out and enabled by the investment already made through the NZUP) and travel behaviour change measures.
- **Phase 3** – targeted improvements to Stanley Street and Shotover Street that will deliver the first phase of an improved bus hub on Stanley Street, provide amenity improvements and enable future stages.
- **Phase 4** – Town Centre upgrade – Stage Two.
- **Phase 5** – Queenstown Arterial – Stage Two.
- **Phase 6** – Second stage of the Queenstown Bus Hub on Stanley Street, supporting future development.
- **Phase 7** – Queenstown Arterial – Stage Three
- **Phase 8** – Future offline public transport option (e.g. a gondola) – includes an offline Frankton Bus Hub.

The assumed timing of interventions is described in more detail in the management case.

1.3 EEM Benefits

The benefits for the project have been separated into those which can be calculated using the standard Economic Evaluation Manual (EEM) procedures, and those which require a non-standard approach as they relate to the more holistic tourism, environmental, social and amenity benefits (WEBS).

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1.3.1 EEM Benefits

The assessment of conventional (EEM) benefits has been mainly informed by outputs from the Queenstown Modelling Suite, which features a strategic traffic model, a bespoke public transport model and microsimulation models. The base year is 2018 and future years[1] are 2028 and 2048.

Note: The COVID 19 pandemic has had a significant effect on global travel patterns and economic activity. As agreed with the Way To Go management team, this analysis has assumed that previous levels of growth will resume at some point in the future. The pandemic has nevertheless re-emphasised the importance of delivering improvements that are adaptable to changing conditions. A major advantage of the recommended programme is the ability to scale as required.

Table 1 provides a summary of the benefits that have been derived through the EEM procedures, and the primary data sources that were used.

Table 1: EEM Benefits

Type	Benefit	Primary source
Private Transport	Travel Time[2] - for road users	Strategic model (TRACKS) with results validated using the micro-simulation models[3]
	Traffic Congestion	
	Trip Reliability	
	Vehicle Operating Cost (VOC)	
	Crash Costs	
	Vehicle Emissions (CO^2)	
Public Transport	PT Travel Time	Public Transport Model
	PT Reliability	
	Increased Frequency	
	Farebox Return	
	Infrastructure Benefits (Benefit) - Stanley Street Hub	
	Infrastructure Benefits (Benefit) - Frankton Hub	

1.3.2 Stanley Street and Shotover Street improvements

Specific additional benefits have been calculated for the Stanley Street and Shotover Street improvements. These additional benefits, which have been derived outside of a traffic model, are limited to safety benefits – derived using the Queenstown RTI safety models.

Travel time changes due to the street improvements are too subtle to be reflected in transport modelling, therefore the travel time benefits are assumed to be neutral.

1.3.3 Use of the strategic vs microsimulation models

A key limitation of the strategic model is that it does not represent queuing and delays to the same level of accuracy as the microsimulation models. This means that forecast travel times can underestimate delays.

Unfortunately, due to very high overall travel demand in both 2028 and 2048 future years, it was not possible to derive a Do Minimum microsimulation that converged (i.e. was stable). This means that the derived benefits/costs would differ each time the model was run. As such, the strategic (TRACKS) model was used to the undertake the economic analysis for all options. The consequence is that the derived benefits are likely to

[1] Documented in more detail in "Queenstown 2018 Model Update Future Forecasting November 2019"

[2] Based on model runs 2028, using average travel time (i.e. does not explicitly model travel during peak tourist days). Benefits will be higher if an option provides travel cost savings during peak tourist days.

[3] The strategic model allows the full suite of economic outputs for private transport to be output – i.e. travel time, congestion, trip reliability, VOC, crash costs and vehicle emissions. The TRACKS model also includes a run procedure where the annual crash benefit ($ value) can be automatically derived (in line with EEM procedures).

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be potentially understated – i.e. conservative, particularly for those elements that increase overall network capacity (such as the NZUP elements).

1.3.4 Benefits Captured by Other Business Cases

There is an underlying assumption that (to avoid potential double counting) the following benefits will be captured as part of other business cases:

- Parking charges (income) – captured as part of the Parking Strategy.
- Walking and cycling benefits – captured as part of the Active Travel Business Case.

1.4 Wider Economic Benefits (WEBS)

The overriding considerations for the WEBS are:

- The primary economic driver in Queenstown is tourism, which is likely to continue to be strong[4].
- High tourist numbers, in turn, create multiplier effects for the regional economy and enables higher-value tourism (i.e. a productivity increase within the national tourism sector).

The following WEBS were calculated as part of the economic evaluation:

- Productivity improvements within the town centre if 'unmet demand' is released. A major constraint on tourism growth centred in the town centre is the capacity on SH6A – i.e. it could deter (particularly international) tourists from visiting the town centre.
- This is referred to as 'unmet demand' (also referred to as suppressed demand). Removing the transport constraint will enable tourists to visit Queenstown Central who would otherwise not visit in future. In turn, this would enable continued concentration of spending growth in and around the town centre where productivity is higher. This productivity can occur through:
  - **Static and dynamic urban agglomeration**[5]. Benefits of business being located near each other, transit orientated developments or lower infrastructure costs (e.g. utilities).
  - Increased productivity due to **more labour**[6] and **less imperfect competition**[7].
  - Induced investment of dependent development (**property values**). Where higher value land-use is induced by the transport intervention and the land-use change is an additional national benefit, rather than a displacement of activity from one place to another[8].
  - Moving to more **productive jobs**[9]. Where increased employment in a specific place, because of transport changes, enables the higher productivity associated with re-positioned employees.
- **Welfare improvements** for pedestrians. This **amenity value** was measured using an amended version of the Value Urban Realm Toolkit (VURT), with a key amendment being specific account of the effects of reduced traffic.

1.4.1 Unlocking "unmet demand"

The approach applied here to estimating the economic impact of 'unmet demand' was to:

- Estimate the number of vehicles and hence people who would not be able to travel on the days when travel demand was expected to be above capacity on SH6A.
- Convert to foregone international tourism spending and associated GDP for Queenstown.

[4] It is worth noting that future tourism growth was always uncertain, and this uncertainty has been heightened by COVID-19.
[5] EEM A10.4 / DfT A2.4
[6] EEM A10.6 / DfT A2.3
[7] EEM A10.5 / DfT
[8] DfT A2.2
[9] DfT A2-3

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- Estimate a productivity premium (either due to higher prices paid than elsewhere or higher economies of scale enabled by concentrated tourism activity) that would result nationally if this foregone spending in Queenstown Central was enabled.

For the calculation of 'unmet demand' benefits applied in this report (which is partially the benefits Phase 2 and fully the benefits for Phase 8), the following should be noted:

- Benefits are in addition to the standard (EEM) transport benefits.
- Benefits are not in addition to a value uplift created from a general rise in international tourism i.e. the extra spending will also manifest itself as higher property values.
- Benefits could be additive where some spatial changes could produce further productivity gains over time (e.g. economies of scale around a high capacity transport node), which will show as value uplift in the short-term. But such local effects are not considered with the assessment.
- Benefits are partially additive to measures of pedestrian welfare gained from improvements to the town centre (see the VURT analysis). It is likely (but not known) whether the unmet demand spending estimates will include (i.e. double-counting) large changes in VURT-related spending arising from extra tourists. A second interaction arises from high pedestrian growth not being realised unless the SH6A constraint is addressed.
- Further details around the assessment of "unmet demand" are outlined within a technical paper provided as Appendix D02.

1.4.2 Pedestrian amenity benefits

Another WEB is the benefit to pedestrians of an improved town centre environment (i.e. amenity and wellbeing values), which translates into:

- 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.

The approach taken was to measure the pedestrian amenity effects and establish an indicative measure of retail sales and property value uplift. The assessment is provided as Appendix B19.

1.5 Assumptions and Considerations

1.5.1 Assumptions

The key assumptions which have informed the economic analysis are:

- Emissions reflect 4% of the vehicle operating costs
- Total operational costs reflect 3% of the total capital costs (unless specifically calculated – e.g. for public transport or travel demand management).
- For the analysis of WEBS - pedestrian numbers are as projected for 2028. Pedestrian volumes grow to reach this level by 3% p.a. from 2023 and grow by 1.6% p.a. beyond 2028.
- Street asset improvements have a life of 30 years (i.e. to 2051). There is likely to be some residual value in the street assets in 2051 but this has been ignored in this analysis based on the assumption that substantial costs will be incurred at the time to realise this value. This assumption is judged to be conservative.

1.5.2 Annualisation seasonal changes and peak days

The microsimulation model covers the AM/IP/PM periods, for years 2018, 2028 and 2048 and represents a typical 'summer' period. These outputs are scaled up to provide annual estimates, considering month-to-month and day-to-day fluctuations in demand – as shown in Figure 1.

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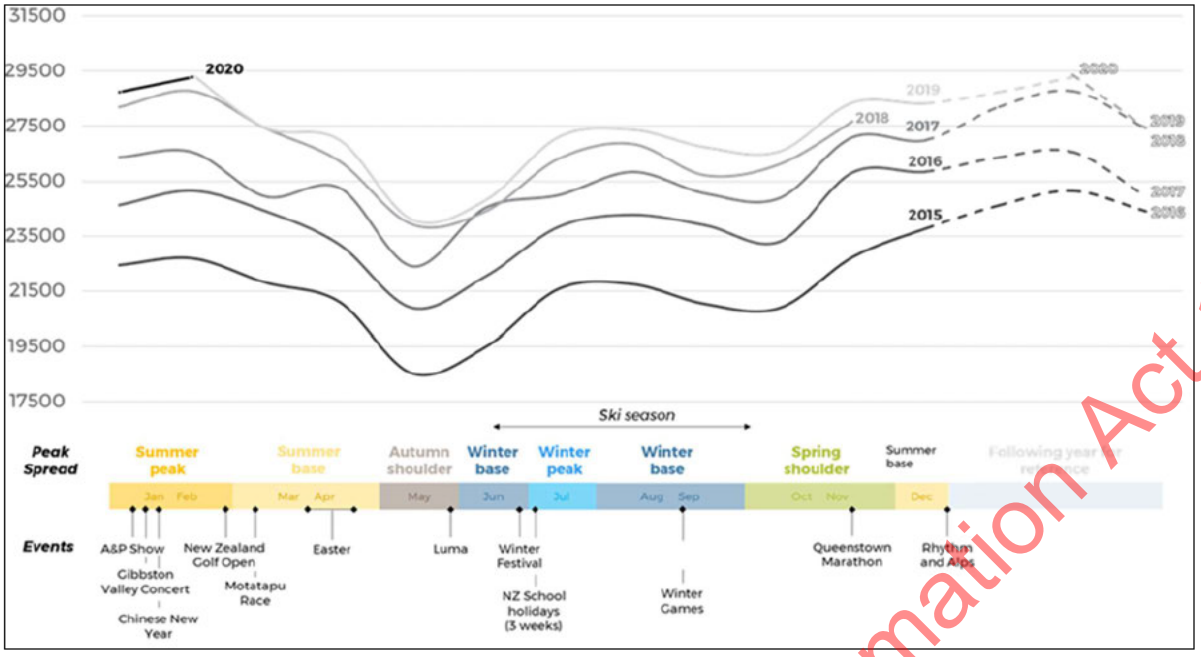

Figure 1: SH6A Seasonal Flow Profiles

To understand peak spreading, telemetry count data was sourced to develop a profile for each day of the year and each hour. For each hour in the year the most representative model period was assigned. This essentially created elongated AM, IP or PM periods for various months of the year.

Heading into the future, the 'off peak/shoulder peak' season is likely to get shorter and shorter – so 'summer' demands will become more dominant over 'winter' demands as time progresses. This was captured by applying factors that are based on data from previous years to identify trends.

Table 2 provides the annualisation factors using the model outputs, which captures seasonal variations and peak spreading effects.

Table 2: Annualisation Factors

Peak Period	Hours Per Year
AM	573
IP	2946
PM	621

1.5.3 Benefits Capping

Modelling has also been used to understand:

- The potential level of peak/trip spreading – i.e. travellers will spread their travel across a wider period of the day to avoid peak periods.
- The potential level "unmet demand".
- The scale to which travellers will adopt public transport services if made available, in response to a narrowing cost and travel time differential between private vehicles and public transport.

A cap to the benefits has been placed in order to capture the fact that people will adjust the time period when the start a trip if the network is already heavily congested – e.g. a person might not leave the house knowing they are going to wait 10 minutes to access the state highway; rather they will just make the journey at another time. Capping the benefits in this manner reduces the risk of overstating the benefits of the preferred

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programme. A review of the economic outputs and modelling identified that an appropriate year to cap the economic benefits is 2048.

1.6 Benefits

Table 3 provides an overview of the total 60-year NPV benefits (4% discount rate) – i.e. those over and above benefits delivered by the Do Minimum (Phase 1). A breakdown of the annualised EEM benefits is provided as Appendix D03.

Table 3: Benefits (60 Year NPV)

	EEM			WEBS			TOTAL
Programme Phase	Safety	Travel time (inc. PT)	Total	Unmet demand	Pedestrian amenity	Total	
Phase 2 NZUP Enabled PT Services and travel behaviour change	$30m	$259m	$289m	$61m	-	$61m	**$350m**
Phase 3 Stanley + Shotover Streets and bus hub phase 1	$1m	$0m	$1m		$31m	$31m	**$32m**
Phase 4 Town Centre Upgrades – Stage 2	-	-	-		$21m	$21m	**$21m**
Phase 5 Queenstown Arterial - Stage 2	-$2m	$36m	$34m		$5m	$4m	**$38m**
Phase 6 Queenstown Bus Hub phase 2	Not captured as will be reliant on development						
Phase 7 Queenstown Arterial - Stage 3	-$2m	-$2m	-$4m		$16m	$16m	**$12m**
Phase 8 Offline public transport (inc. Frankton Bus Hub)	-	-	-	$187m		$187m	**$187m**

The baseline economic evaluation has revealed:

- The recommended programme improves vehicle travel times by encouraging greater uptake of public transport and active modes. Without a high degree of shift away from private vehicles, congestion will increase to the degree that the network is likely to gridlock. Modelling indicates that this is likely to happen from around 2028 unless improvements are made.
- NZUP enabled PT service improvements, coupled with travel behaviour change measures will deliver $468m in benefits (over and above the Do Min).
- The small scale urban realm improvement packages delivered as part of phases 3 and 4 deliver incremental benefits of $32m and $21m respectively.
- The upgrade to the Queenstown Bus Hub is delivered over two stages. The construction of stage one of the arterial corridor, coupled with the on road improvements delivered through the Shotover/Stanley Package removes a significant proportion of the Stanley Street traffic delivering many of the sought benefits. The second stage will be dependent on the timing and nature of development (project Manawa as well as any development on the southern side of Stanley Street. Although it has not been possible to fully calculate this benefit at this time, preliminary analysis indicated that there will be benefits to pedestrians due to the direct connection that links to Beach Street, along with the development related benefit of the site itself. Further analysis will be undertaken as part of the next stage of investigation.
- Arterial Stages 2 and 3 further contribute to the removal of traffic from the town centre and are projected to deliver incremental benefits in the order of $38m and $12m respectively over the next 60 years. Stage 2 delivers conventional transport benefits through relief of upper Shotover Street and the Shotover/Stanley Streets intersection. Stage 3 delivers wider economic benefits through the removal of traffic from Shotover

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Street and Lake Esplanade (it should be noted that stage 3 delivers a very small travel time disbenefit due to the slightly longer driving distance required).

- As the offline public transport facility is unlikely to be provided until later in the programme, the analysis has focussed on the benefit it will provide in terms of facilitating further economic growth once the road based PT network reaches capacity. Although the assumed implementation date is pushed out to 2051, the benefits calculated are still significant indicating that an offline option will be worthy of further consideration at the appropriate time.

1.7 Cost Estimates

1.7.1 Capital Costs

A breakdown of the capital cost estimates (construction + design + implementation) for the preferred programme, broken down by phase, is provided within Table 4.

Costs are in terms of 60 year NPV (4% discount).

Table 4: Cost Estimates

Programme Phase	Additional Package Cost (60 year NPV)
Phase 2 NZUP Enabled PT Services	$106m
Phase 3 Stanley + Shotover Streets	$20m
Phase 4 Town Centre Upgrades – Stage 2	$14m
Phase 5 Queenstown Arterial - Stage 2	$44m
Phase 6 Queenstown Bus Hub	$36m
Phase 7 Queenstown Arterial - Stage 3	$75m
Phase 8 Offline public transport (inc. Frankton Bus Hub)	$114m

Further breakdown of the costs is provided in Appendix D04.

1.7.2 Maintenance Costs

Maintenance costs have been based on estimates provided by Waka Kotahi, QLDC and ORC. These were based on maintenance rates of 3% of capital expenditure (CAPEX) for most items and average known scheduled rates for specific other items. Various cost items have been categorised as either annual costs or periodic costs.

1.7.3 Public Transport OPEX

Patronage for the Queenstown bus network, which informed the calculations for operational costs, was estimated using the following process:

- The modelled demand for the AM peak at the BP roundabout on SH6A was used to predict patronage within the study area.
- Using 2019 patronage data supplied by ORC, the AM peak patronage was factored up to all day demand, using the same factor as occurred for actual travel in 2019.
- Annual demand was calculated by multiplying daily patronage by the number of working days in the year. Weekend and public holiday patronage were factored off the observed 2019 relationship between weekday and weekend demand.

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- The assumptions around COVID-19 patronage were for 2020 patronage to be at 60% of 2019 levels based on the pattern observed to late August 2020. Based on prevailing assumptions of Queenstown returning to pre-COVID levels of visitors and economic activity by 2024, the patronage response is assumed to ramp up to 70% of pre-COVID levels in 2021, 80% in 2022, 90% in 2023 and full recovery to 2019 levels in 2024, based on the best available information at the time of writing.
- Note that the modelled patronage response to the NZUP programme bus priority implementation is muted but evidence from other New Zealand cities is that similar interventions have a "sparks" effect leading to substantial gains in patronage. Therefore, the estimated patronage response based on modelled patronage, particularly around 2024, is likely to be on the conservative side.

This approach was used to derive the sequence of incremental improvements which in turn has been used to derive an estimate of PT Opex. PT Opex becomes a significant component of the overall cost.

1.7.4 Travel Behaviour Change Costs

As travel behaviour change (or Travel Demand Management) measures require ongoing investment, the cost of these has been captured as an ongoing cost in the analysis in a similar way to operational costs.

1.8 BCR

Table 5 provides an overview of the BCRs for each phase of the programme. Both the benefits and costs are in terms of 60-year NPV (4% discount), over and above the cost of the Do Minimum.

Table 5: BCRs – for individual phases

Programme Phase	60-year NPV		BCR
	Cost	Benefit	
Phase 2 - NZUP Enabled PT Services	$106m	$350m	**3.3**
Phase 3 - Stanley + Shotover Streets, plus Queenstown Bus Hub stage 1	$20m	$32m	**1.6**
Phase 4 - Town Centre Upgrades – Stage 2	$14m	$21m	**1.5**
Phase 5 - Queenstown Arterial - Stage 2	$44m	$38m	**0.9**
Phase 6 – Queenstown Bus Hub stage 2	Not captured		
Phase 7 - Queenstown Arterial - Stage 3	$75m	$12m	**0.2**
Phase 8 - Offline public transport (inc. Frankton Bus Hub)	$114m	$187m	**1.6**

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The overall programme BCRs are provided in Table 6.

Table 6: BCRs – for various programmes

Programme	60-year NPV		BCR
	Cost	Benefit	
PT Services and Infrastructure NZUP Enabled PT Services Stanley + Shotover Streets Queenstown Bus Hub	$162m	$374m	2.3
Full Programme NZUP Enabled PT Services Stanley + Shotover Streets Queenstown Bus Hub Town Centre Upgrades – Stage 2 Queenstown Arterial - Stage 2 Queenstown Arterial - Stage 3	$295m	$445m	1.5

1.8.1 Commentary on BCRs

Table 5 demonstrates the BCRs for the 8 phases of the programme. This indicates the following:

- The NZUP investment, coupled with the ongoing investment in the public transport network delivers very good value for money with a BCR of 3.3. This is reflective of the high level of congestion on the network and the extent to which it is forecast to continue. The investment in NZUP is the element that will allow the town to grow economically by increasing accessibility. As highlighted above, the PT opex costs have been included net of farebox revenue. Strictly speaking, therefore, this BCR should be considered as a BCR_G.
- The proposed town centre improvements covered by Phases 3 and 4 also indicate good value for money with BCRs of 1.6 for the Stanley and Shotover package and 1.5 for the second stage of the town centre urban realm upgrades. These benefits are largely wider economic benefits indicating the value of the improved urban realm to local businesses and the people who walk around the town.
- The second stage of the arterials achieves a BCR of 0.9. Although this sits marginally below the threshold value of 1.0, the cost element does incorporate costs associated with a significant amount of QLDC property. If this cost were to be removed, the BCR would increase. The case for Stage 2 of the arterial should be revisited once Stage 1 is in place.
- The BCRs for the later phases (the wider suite of improvements) are lower than those achieved for the recommended programme. The case for investment in the offline bus hubs and the third stage of the arterial route is, therefore, weak. This situation might change in the future – the provision of an offline PT route, coupled with the relocation of activity/tourist coaches to Frankton will strength the case for offline PT hubs. Further intensification or pedestrianisation in the Queenstown historic core, coupled with the implementation of a zone based congestion charge might strengthen the case for the third stage of the arterial route.

Table 6 demonstrates that the BCRs for the full and 'PT services and Infrastructure' programmes are both strong, and above 1.0.

1.8.2 National and Government BCRs

Waka Kotahi uses the national benefit-cost ratio (BCR_N) as a measure of economic efficiency from a national perspective. Waka Kotahi also uses a government benefit-cost ratio (BCR_G), which indicates the monetised benefits obtained for the government expenditure (value for money from a central and local government perspective).

The BCR_G has been reported in Table 5.

In the context of this business case, the difference between the BCR_N and BCR_G is limited to how public transport operational costs have been considered. Specifically, whether, the BCR considers farebox return.

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If fare revenue is not considered, the BCRs for Phase 2 (NZUP Enabled PT Services) reduces to below 1.0, reflecting the high operational cost of operating a BRT service. For all other phases, the BCR_N and BCR_G are equivalent.

1.9 Sensitivity Analysis

Several high level sensitivity tests have been undertaken to provide a likely BCR range for the ***'PT services and Infrastructure'*** programme, focusing around the following most influential factors:

- Increased or decreased benefits.
- Increased or decreased project costs.

Table 7 provides the summary of the economic sensitivity analysis.

Table 7: EEM Sensitivity Analysis

Variable	Variance	Upper	Base	Lower	BCR Range
Project Costs	+/- 20%	+20%	0%	-20%	1.9 – 2.9
Project Benefits	+/- 20%	+20%	0%	-20%	1.5 - 3.1
WEBs	+/- 50%	+50%	0%	-50%	2.0 – 2.6

The sensitivity analysis has shown that the preferred programme has a very strong economic case with a high BCR irrespective of the sensitivity test undertaken.

The realisation of these benefits is, to a great extent, dependent on the ability to deliver a shift to public transport. This, in turn, is reliant on effective parking management and travel demand management. Without this, the benefits will be reduced. The Management Case will set out a pathway to monitor the success of the investment so that the various levers available to deliver on the investment objectives can be adjusted as required.

1.10 Summary

This document demonstrates a strong economic case for investing in:

- Infrastructure – along with the committed infrastructure investments associated with NZUP and CIP, the upgrades to Stanley + Shotover Streets (including the first phase of the bus hub), the second stage of the Town Centre Upgrades, and the remaining BRT infrastructure elements deliver strong additional benefits.
- PT Services – the NZUP enabled PT services, which increase over time to becoming a connected network of BRT services.
- Travel Demand Management - travel behaviour change measures, which support the improved PT services and associated infrastructure.

The benefits for these elements will facilitate a significant shift to public transport (60% by 2048). In addition to these components, improvements to residential developments (delivering on the spatial plan) and pedestrian accessibility to bus stops, including improvements to bus stop infrastructure, may be required for such a modal shift to be realised.

From an economics perspective, the case for investment in Stage 2 and Stage 3 of the Queenstown Arterial is less clear. However, the benefits of these latter stages of the arterials will become clearer once Stage 1 is operational and whether land use development patterns change in response. As such, we recommend that the case for investment in Stages 2 and 3 is revisited after the 24-27 NLTP period.

While the analysis demonstrates that the PT network can operate effectively without the full offline bus hub elements (Phase 5), these components may provide the opportunity to improve integration with tourist and regional coaches and to improve pedestrian connectivity through both Queenstown and Frankton. It is recommended that the case for offline hubs is revisited once the PT/BRT concept of operations has been fully developed. Similarly, although the analysis demonstrates that an offline PT corridor is not required at this

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moment in time, the long term benefits are significant. It is recommended that the case for offline PT is revisited after the 24-27 NLTP period.

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WAKA KOTAHI
NZ TRANSPORT AGENCY

QUEENSTOWN TRANSPORT BUSINESS CASE

Financial Case

s 9(2)(a) [redacted]

16 NOVEMBER 2020

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1 FINANCIAL CASE

This section outlines the financial case for the Queenstown Transport Business Case. This financial case concentrates on the affordability of the Preferred Programme and funding arrangements.

1.1 Project Delivery Costs

The Preferred Programme of interventions includes a range of projects serving communities in Queenstown, Frankton and Ladies Mile. In addition to the committed funding already provided by the NZUP and CIP investments, costs for the Preferred Programme have been split based on the following assumptions:

- Infrastructure – The remaining town centre improvements, including the remaining stages of the arterial corridor will be funded through a combination of the National Land Transport Fund (NLTF) and local share (Council).
- Infrastructure – The improvements to Shotover and Stanley Street, will be fully funded by Waka Kotahi through the NLTF.
- Infrastructure – The final stages of the town centre public transport hub development will be funded through a combination of the NLTF and Council funding.
- PT Services – BRT fleet, stops, hubs and the depot will be fully funded through the NLTF.
- PT Services – The BRT services will be provided as part of the ORC continuous programme. A PT Services and Infrastructure DBC will be required to confirm future PT services funding.
- Travel behaviour change – A suite of behaviour change interventions will be provided, predominately by Council. A Single Stage Business Case will be required to further develop a Travel Demand Management implementation programme and it has been assumed this would be funded through Waka Kotahi.

The project delivery costs for the Preferred Programme presented in Section 1.2 to Section 1.12 below are based on the cost estimates for each project element detailed in Appendix D05. **Note these costs do not take into account funding assistance rate (FAR) by Waka Kotahi.** The full funding breakdown is included in Appendix E1.

The Preferred Programme is segmented to clearly identify those projects that will receive Crown funding from NZUP and CIP.

1.2 SH6A Corridor Improvements, SH6 Grant Road to Kawarau Falls Bridge Improvements, SH6 Ladies Mile Corridor Improvements (NZUP)

The costs associated with the NZUP funded elements of the Preferred Programme are in Table 1: *'NZUP'* with relevant cost assumptions in Table 2: *'NZUP' – cost assumptions*.

Table 1: 'NZUP'

Description	Expected Estimate
Net property cost	$16,566,063
Pre-implementation phase	$4,581,917
Implementation phase	$86,327,238
Project expected Estimate	$107,475,218

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Table 2: 'NZUP' – cost assumptions

Key cost assumptions
• Lead – Waka Kotahi • Funding – $90M committed funding through NZUP. Further cost refinement/value engineering required at the pre-implementation phase to confirm whether additional NZUP/NLTF funding will be required, or which aspects will need to be removed to meet the budget threshold. • Timing – 2021-2024 • Scope – SH6A corridor improvements, SH6 Grant Road to Kawarau Falls Bridge improvements, SH6 Ladies Mile corridor improvements, and Intelligent Transport Services (ITS). This package includes: — Targeted priority for PT implemented between the SH6/SH6A intersection and SH6A/Marina Drive intersection. — Key intersections signalised with PT priority. — Westbound PT lane along SH6 – Ladies Mile. Bus priority onto the Shotover bridge is being considered. — Howards Drive roundabout access and safety improvements. — Improvements to the SH6A/SH6 intersection. — The SH6 link to the east will include bus lanes in both directions and signalising the existing intersections. — The SH6 link to the south will include a northbound bus lane and signalising the existing intersections. — Interim upgrade to the Frankton hub. — SCATS Priority Engine Software and Variable Message Signs.

The anticipated cash flow for the NZUP funded elements (including property costs, pre-implementation and implementation) is shown in Figure 1*: 'NZUP'– anticipated cash flows*.

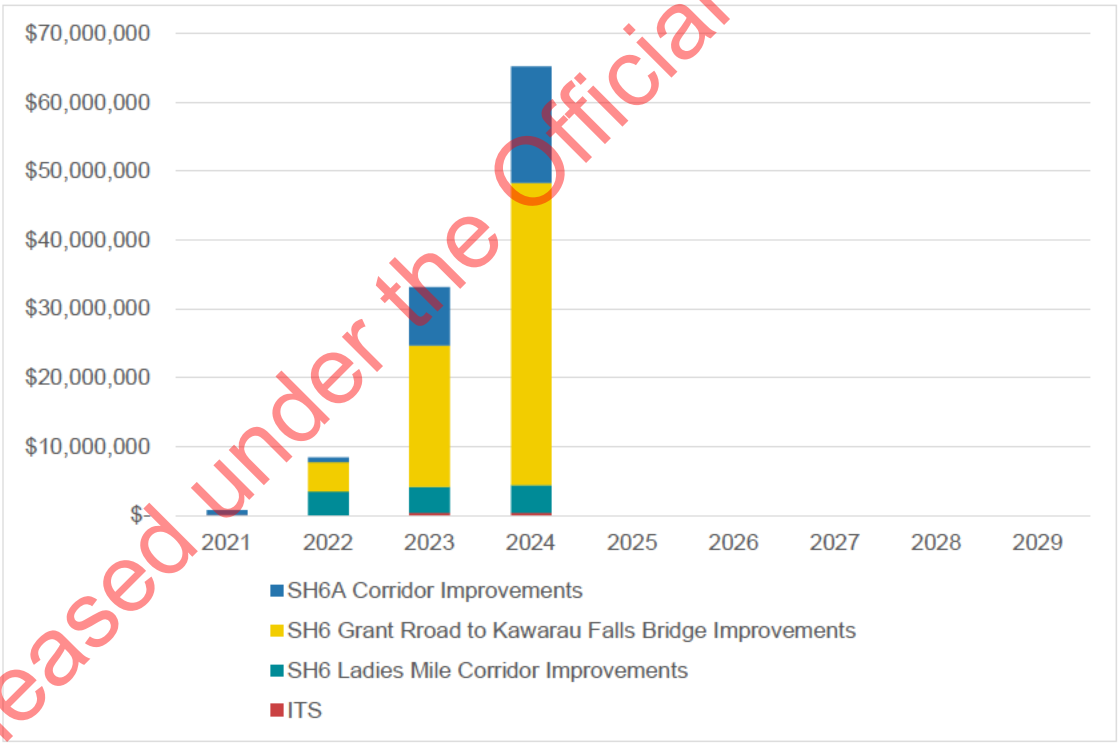

Figure 1: 'NZUP'– anticipated cash flows

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1.3 Arterials – Stage 1, Town Centre Upgrade – Stage 1

The costs associated with Stage 1 of Arterials and Town Centre Upgrade of the Preferred Programme are in Table 3, with relevant cost assumptions in Table 4.

Table 3: 'Arterials – Stage 1, Town Centre Upgrade – Stage 1'

Description	Expected Estimate
Net property cost (P50)	$2,576,481
Pre-implementation phase (P50)	$7,504,481
Implementation phase (P50)	$114,560,623
Project expected Estimate (P50)	$119,701,969

Table 4: 'Arterials – Stage 1, Town Centre Upgrade – Stage 1' cost assumptions

Key cost assumptions
• Lead – QLDC • Funding — Committed funding through CIP ($50M for Arterials Stage 1 and $35M for Town Centre Streetscape Upgrades) — QLDC funding for remaining $9.7M for Arterials Stage 1 and $25M for Town Centre Streetscape Upgrades • Timing – 2021-2024; pre-implementation in 2021 and construction in 2022 over a two-year period • Scope – This package includes: — The first stage of the arterial corridor to remove general traffic from Stanley Street (between Shotover Street and Ballarat Street). — Town Centre streetscape upgrades to improve pedestrian and cycling facilities and encourage a slower street environment (Park-Camp Street Active Travel, Park Street, Hotops Rise to Camp Street, Rees Street, Beach Street, and Gondola).

The anticipated cash flow for 'Arterials – Stage 1, Town Centre Upgrade – Stage 1' (including property costs, pre-implementation and implementation) is in Figure 2.

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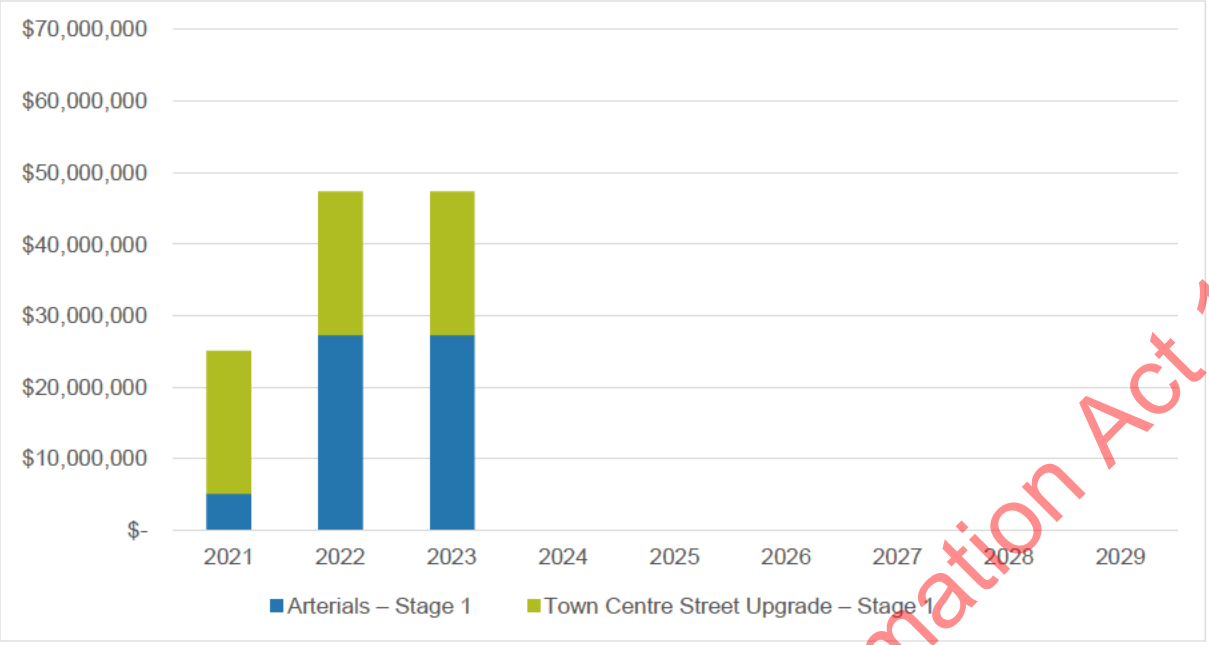

Figure 2: 'Arterials – Stage 1, Town Centre Upgrade – Stage 1' – anticipated cash flows

1.4 Travel Behaviour Change

Travel Behaviour Change mechanisms include a suite of interventions that encourage the uptake of more sustainable transport modes through proactive parking management and other Travel Demand Management tools. The Single Stage Business Case will determine the required funding and funding sources. The relevant cost assumptions for the Preferred Programme are in Table 5.

Table 5: 'Travel Behaviour Change' cost assumptions

Key cost assumptions
Travel Demand Management • Lead – Waka Kotahi • Funding – It has been assumed that a Single Stage Business Case would be delivered by Waka Kotahi and ongoing costs for TDM implementation would become an ongoing operational cost. • Timing – Single Stage Business Case in 2021. • Scope – This package includes: policy, travel planning and behaviour change, wayfinding improvements, and setting up a Transport Management Association.

1.5 PT Services Improvements

The costs associated with PT Services Improvements of the Preferred Programme are in Table 6, with relevant cost assumptions in Table 7.

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Table 6: 'PT Services Improvements'

Description	Expected Estimate
Net property cost (P50)	N/A
Pre-implementation phase (P50)	N/A
Implementation phase (P50)	$80,400,000
Project expected Estimate (P50)	$80,400,000

Table 7: 'PT Services Improvements' cost assumptions

Key cost assumptions
• Lead – ORC • Funding – NLTF and local share subject to business case and available funding. Operational revenue – not approved and included in operations and maintenance (section 1.14) below. • Timing – 2027-2030 in line with the step change in on-road PT service improvements. PT Services and Infrastructure DBC will confirm associated PT CAPEX and OPEX costs. • Scope – This package includes enhanced public transport fleet, stop and depot facilities to deliver higher capacity and higher frequency BRT services, and bus priority lane enforcement infrastructure (i.e. cameras).

The anticipated cash flow for PT Services Improvements is in Figure 3.

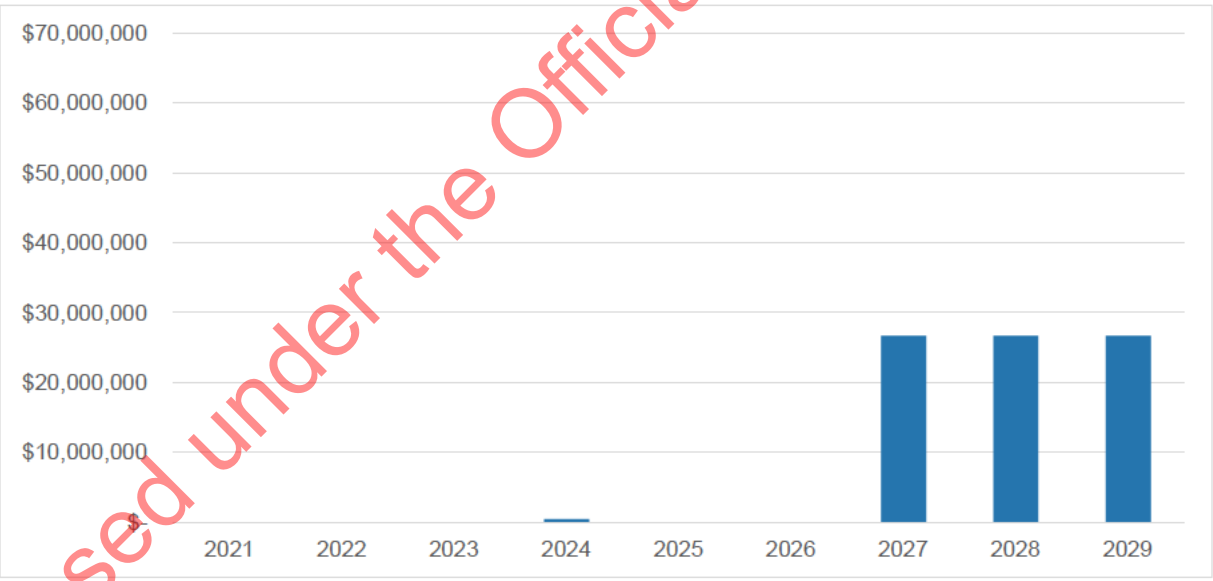

Figure 3: 'PT Services Improvements' – anticipated cash flows

1.6 Stanley Street and Shotover Street Improvements

The costs associated with the Stanley Street and Shotover Street improvement elements of the Preferred Programme are in Table 8, with relevant cost assumptions in Table 9.

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Table 8: 'Stanley Street and Shotover Street Improvements'

Description	Expected Estimate
Net property cost (P50)	$5,197,461
Pre-implementation phase (P50)	$904,068
Implementation phase (P50)	$19,179,413
Project expected Estimate (P50)	$25,280,941

Table 9: 'Stanley Street and Shotover Street Improvements' cost assumptions

Key cost assumptions
• Lead – Waka Kotahi • Funding – NLTF • Timing – 2024-2027; pre-implementation in 2024 and construction in 2025 over a two-year period. Interim hub improvements for Stanley Street is expected 2021-2022. • Scope – This package focuses on streetscaping improvements for Shotover Street and Stanley Street. These upgrades will enable future stages to be introduced, including the upgraded transport hub at Stanley Street. They will also 'pave the way' for revocation of SH6A between Dublin Street and Steamer. Specifically, it includes Shotover to edge of Arterial Stage 1, Stanley Street – Interim hub improvements, and Stanley Street – PT improvements to support full hub development.

The anticipated cash flow for the Stanley Street and Shotover Street Improvements package (including property costs, pre-implementation and implementation) is in Figure 4.

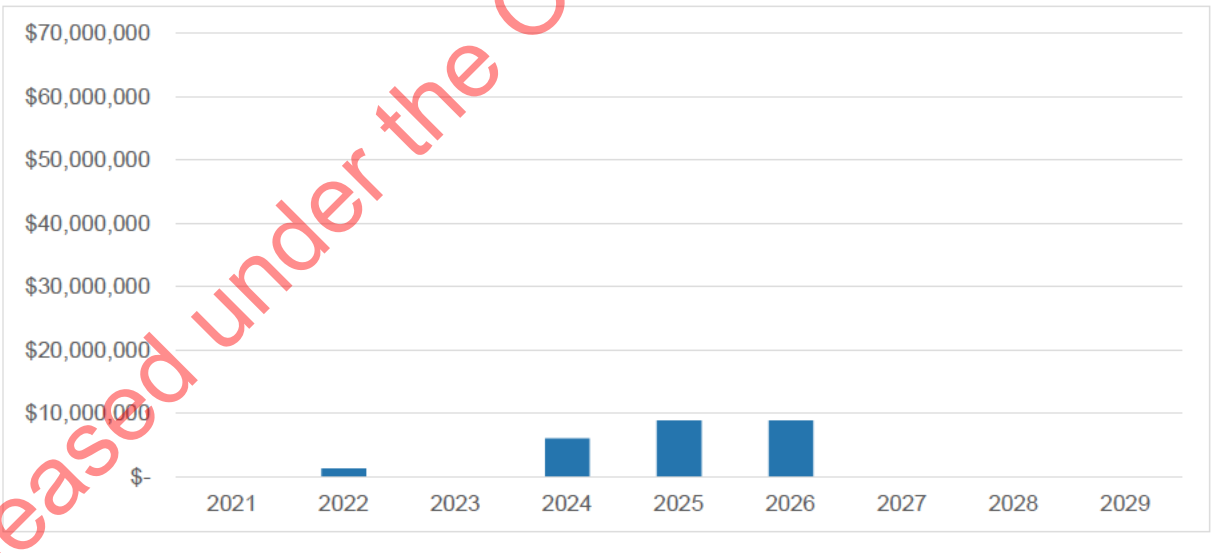

Figure 4: 'Stanley Street and Shotover Street Improvements' – anticipated cash flows

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1.7 Town Centre Improvements – Stage 2

The costs associated with the second stage of the Town Centre Improvements are in Table 10, with relevant cost assumptions in Table 11.

Table 10: 'Town Centre Improvements (Stage 2)'

Description	Expected Estimate
Net property cost (P50)	$1,337,844
Pre-implementation phase (P50)	$1,337,844
Implementation phase (P50)	$27,256,505
Project expected Estimate (P50)	$30,798,998

Table 11: 'Town Centre Improvements (Stage 2)' cost assumptions

Key cost assumptions
• Lead – QLDC (local roads) and Waka Kotahi (State Highway) • Funding - NLTF where possible, local funding – not approved, subject to business case and available funding - Gorge Road interventions are expected to be delivered via Low Cost Low Risk • Timing – 2024-27 with pre-implementation in 2024 and construction in 2025, apart from the Queenstown Mall and Cow Lane which is expected 2030-32. Pre-implementation in 2023 and construction in 2023 for Gorge Road intervention. • Scope - Second stage of the town centre streetscaping enhancements to Church Street, Camp Street (Man to Church), Queenstown Mall, Ballarat Street, Earl Street, Cow Lane, Lake Esplanade without bus lanes, and Marine Parade - Gorge Road – Hylton Place/Fresh Choice signalised pedestrian crossing, Warren Park signalised pedestrian crossing

The anticipated cash flow for Town Centre Improvements during Stage 2 (including property costs, pre-implementation and implementation) is in Figure 5.

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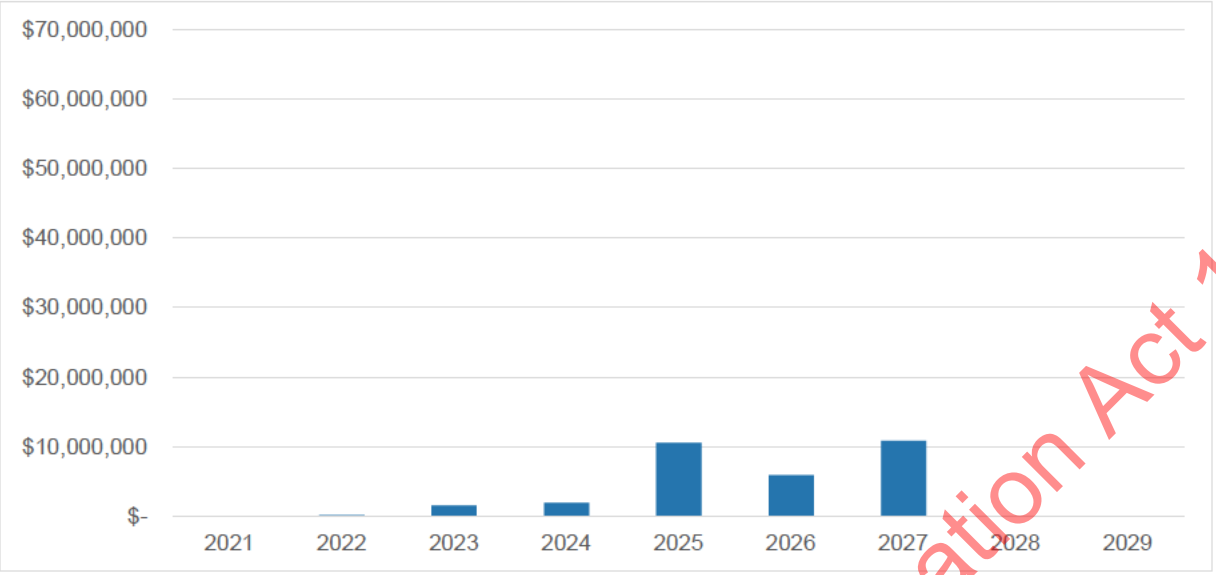

Figure 5: 'Town Centre Improvements (Stage 2)' – anticipated cash flows

1.8 Arterial Stage 2

The costs associated with Arterial Stage 2 are in Table 12, with relevant cost assumptions in Table 13.

Table 12: 'Arterial Stage 2'

Description	Expected Estimate
Net property cost (P50)	$6,201,966
Pre-implementation phase (P50)	$1,968,058
Implementation phase (P50)	$40,625,997
Project expected Estimate (P50)	$48,796,021

Table 13: 'Arterial Stage 2' cost assumptions

Key cost assumptions
• Lead – QLDC (local roads) and Waka Kotahi (State Highway) • Funding – NLTF where possible, local funding – not approved, subject to business case and available funding • Timing – 2027-2030; pre-implementation in 2027 and construction in 2028 over a two-year period • Scope – Addition of the second stage of the Arterials providing a new link between Gorge Road and Hay Street. It also incorporates improvements to the Brecon Street steps, and the Camp-Man intersection.

The anticipated cash flow for Arterial Stage 2 (including property costs, pre-implementation and implementation) is in Figure 6.

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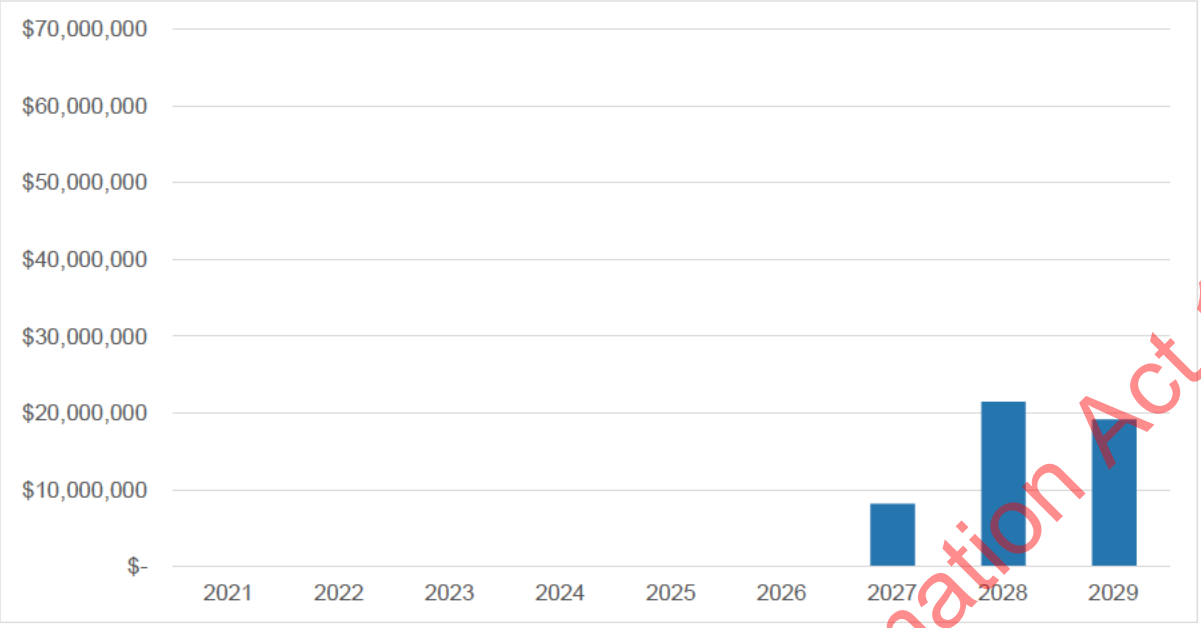

Figure 6: 'Arterial Stage 2' – anticipated cash flows

1.9 Stanley Street Bus Hub Stage 2

The costs associated with the second stage of the Stanley Street Bus Hub are in Table 14, with relevant cost assumptions in Table 15.

Table 14: 'Stanley Street Bus Hub Stage 2'

Description	Expected Estimate
Net property cost (P50)	$32,129,847
Pre-implementation phase (P50)	$650,206
Implementation phase (P50)	$13,153,067
Project expected Estimate (P50)	$45,933,120

Table 15: 'Stanley Street Bus Hub Stage 2' cost assumptions

Key cost assumptions
• Lead – QLDC and ORC • Funding – NLTF where possible, local funding – not approved, subject to business case and available funding • Timing – 2027-2030; pre-implementation in 2028 and construction in 2029. • Scope – This package focuses on full off-street hub improvements between Stanley Street and Athol Street, and integration into the Manawa Project. Includes public space, PT facilities and future proofs for commercial development.

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The anticipated cash flow for Stanley Street Bus Hub (including property costs, pre-implementation and implementation) is in Figure 7.

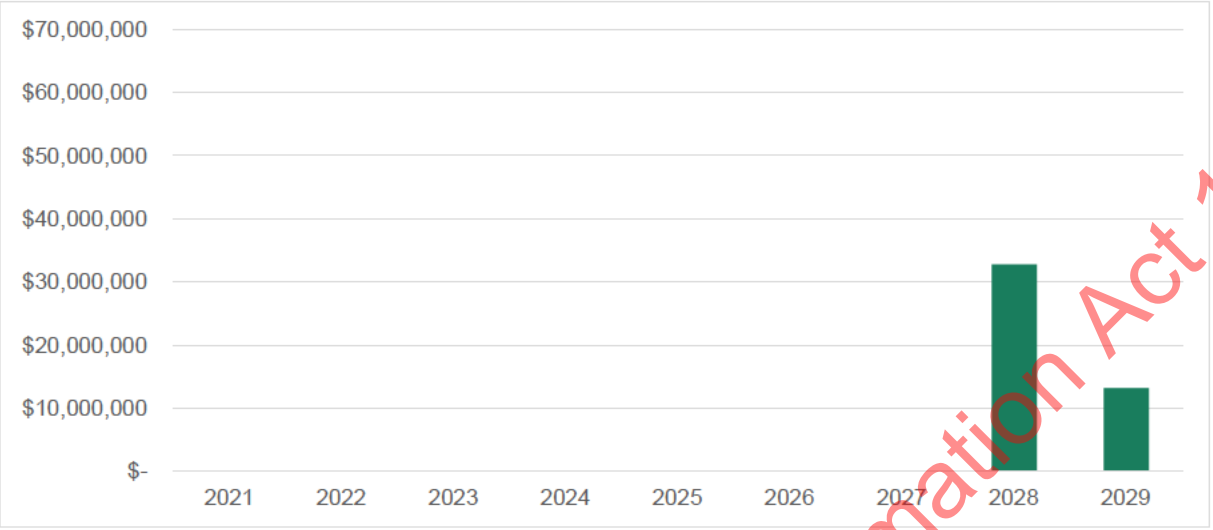

Figure 7: 'Stanley Street Bus Hub' – anticipated cash flows

1.10 Frankton Transport Hub

The costs associated with the second stage of the Frankton Transport Hub (the offline facility) are in Table 16, with relevant cost assumptions in Table 17.

Table 16: 'Frankton Transport Hub'

Description	Expected Estimate
Net property cost (P50)	N/A
Pre-implementation phase (P50)	$10,630,750
Implementation phase (P50)	$4,854,733
Project expected Estimate (P50)	$15,485,483

Table 17: 'Frankton Transport Hub' cost assumptions

Key cost assumptions
• Lead – QLDC and ORC • Funding – NLTF where possible, local funding – not approved, subject to business case and available • Timing – To be confirmed through PT Services and Infrastructure DBC. For the purposes of this assessment it is assumed to take place 2027-2030; pre-implementation in 2028 and construction in 2029 • Scope – Development of off-street transport hub. Trigger points will need to be confirmed for this – likely to be required if there is a desire to develop a joint PT/tourist/long distance coach hub, or if offline PT services are provided. Includes PT facilities, public space improvements, integration with active travel, ride-sharing, regional and tourist coaches, and neighbouring events centre; also enables surrounding commercial development.

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The anticipated cash flow for Frankton Transport Hub (including property costs, pre-implementation and implementation) is in Figure 8. The time frame and trigger points will be confirmed through the PT services and infrastructure DBC.

Figure 8: 'Frankton Transport Hub' – anticipated cash flows

1.11 Frankton

The costs associated with the Frankton elements of the Preferred Programme are in Table 18: *'Frankton'*, with relevant cost assumptions in Table 21.

Table 18: 'Frankton'

Description	Expected Estimate
Net property cost (P50)	$10,924,928
Pre-implementation phase (P50)	$158,000
Implementation phase (P50)	$1,981,928
Project expected Estimate (P50)	$10,924,928

Table 19: 'Frankton' cost assumptions

Key cost assumptions
• Lead – QLDC • Funding – NLTF where possible, local funding – not approved, subject to business case and available • Timing – Pre-implementation in 2023 and construction in 2024 for Old Frankton/Frankton Village. Pre-implementation in 2026 and construction in 2027 for Humphrey Street Link.

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Key cost assumptions
• Scope – Old Frankton/Frankton Village to prevent rat-running through local streets, and Humphrey Street Link (SH6 to Lucas Place) to provide a more direct connection from SH6 to Queenstown airport and Remarkables Park area.

The anticipated cash flow for Frankton Transport Hub (including property costs, pre-implementation and implementation) is in Figure 9.

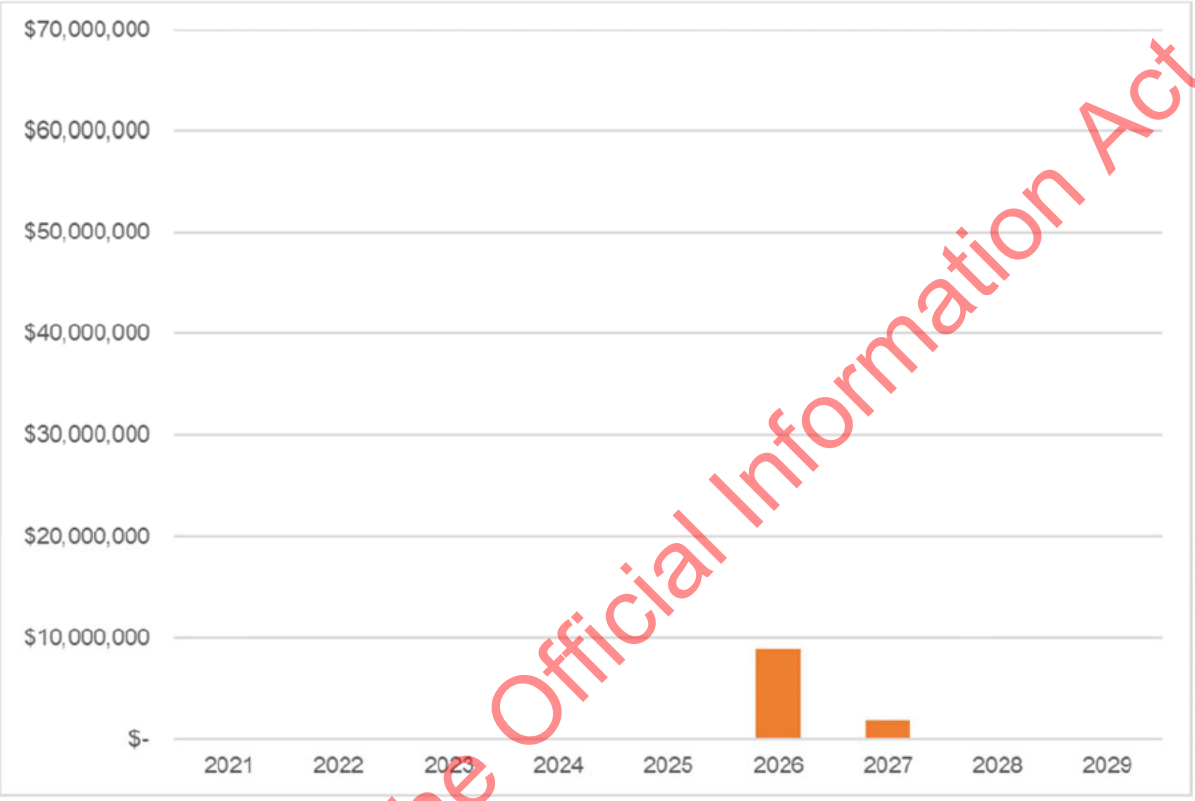

Figure 9: 'Frankton' – anticipated cash flows

1.12 Future suite of improvements

Future suite of improvements (longer term supporting measures) which require further investigation beyond 2030 are:

- **Arterials Stage 3 ($61M)** – addition of the third stage of the Arterials between Glasgow Street and the One Mile Roundabout.
- *Future offline PT service improvements ($262M)* – provides a further step change in capacity along with additional resilience and experiential benefits; consists of a future off-line gondola connection to provide additional capacity between Franklin and Queenstown.

1.13 Other activities/outside of scope

Other activities falling outside the elements listed above are:

- SH6 Howards Drive Ped/Cycle Underpass
- SH6 McDowell Drive Ped/Cycle Underpass

The following interventions are considered outside of scope:

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- Active travel elements
- Park & Rides – Ladies Mile, Boyd Road, Alec Robins, Arrow Junction
- Memorial Hall replacement for Arterials Stage 2
- Man Street (Lakeview development) – funded by Lakeview development
- SH6 Stalker Road Ped/Cycle Underpass
- SH6 southern corridor south of Kawarau Falls Bridge

Based on current estimates, the total anticipated cash flows for the project delivery costs over the next 10 years are summarised in Figure 10. The peak cashflow requirements within the next two NLTP periods occur in the 2023-2024 financial years.

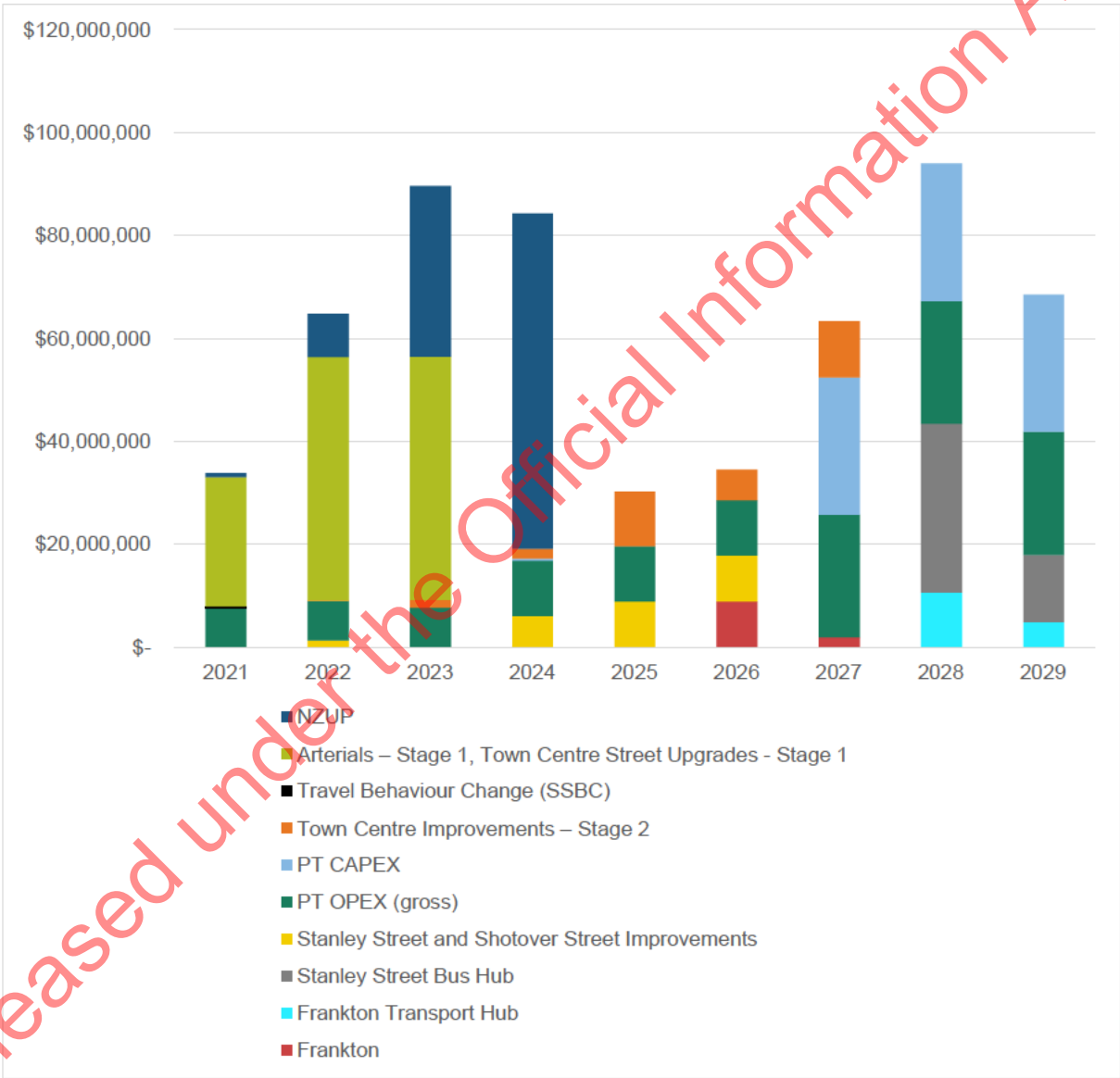

Figure 10: Summary of anticipated cash flows

1.14 Ongoing Maintenance and Operations Costs

Maintenance costs for the Preferred Programme are identified below based on the following assumptions:

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- Maintenance costs are based on maintenance rates of 3% of capital expenditure for most items and average known scheduled rates for specific other items.
- Periodic renewals (every decade) have been assumed to be 40% of the period cost proportion of the total.

This results in an annualised cost of $172,000 and total operational expenditure cost of $16.1M over the 60-year analysis period.

Operations costs for the Preferred Programme include TDM and PT Operations. These are identified below and based on the following assumptions:

- TDM operational costs have been assumed to be $813,000 in first year (2022) and $589,000 per year thereafter.
- PT operations costs are based on assumptions around Covid-19 patronage i.e. for 2020 patronage to be at 60% of 2019 levels based on the pattern observed to late August 2020. Based on prevailing assumptions of Queenstown returning to pre-COVID levels of visitors and economic activity by 2024, the patronage response is assumed to ramp up to 60% of pre-COVID levels in 2021, 80% in 2022, 90% in 2023 and full recovery to 2019 levels in 2024, based on the best available information at the time of writing. From 2024 to 2027, patronage ramps up by 20% compounding each year, based on NZUP improved priority and some service improvements.

  This approach was used to derive the sequence of incremental improvements which in turn has been used to derive an estimate of PT OPEX, highlighted in Figure 11 below.

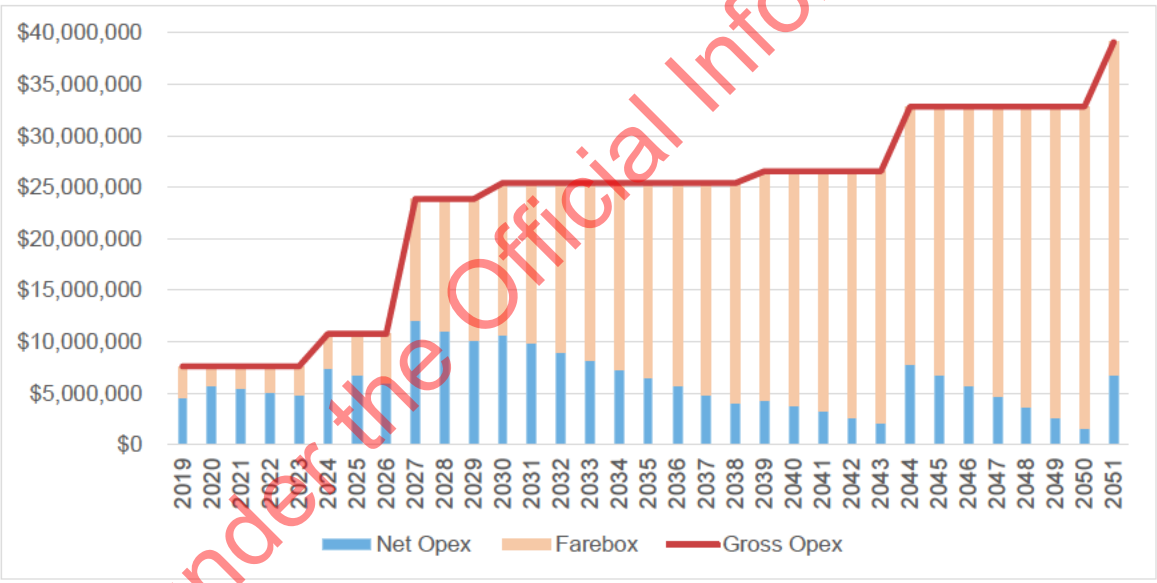

Figure 11: Summary of PT Net Revenue

The PT OPEX becomes a significant component of the overall cost ($200M once farebox recovery is accounted for).

PT Services and Infrastructure DBC will confirm associated PT CAPEX and OPEX costs.

1.15 Potential funding sources

There are three key areas that have been identified that could reduce the financial burden on QLDC, ORC and Waka Kotahi. Namely:

1. Any roads that can be partially funded by property developers i.e. Lakeview and Ladies Mile
2. Co-funding of the off-line PT corridor with private investors

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3. Opportunities around the public transport hub and Project Manawa. The hub is dependent on using part of the Project Manawa site. At the time of writing, there is no agreement in place for the land or integration of the bus hub with potential community and retail opportunities. There may be opportunities for the hub to be built as part of the Project Manawa with some form of long-term lease arrangement put in place. The key issues and interdependencies with this project are discussed further in the management case.

1.16 Funding Options

A breakdown of the costs by funding source for the Preferred Programme are presented in Figure 12. Please note that this includes both Capex and Opex costs.

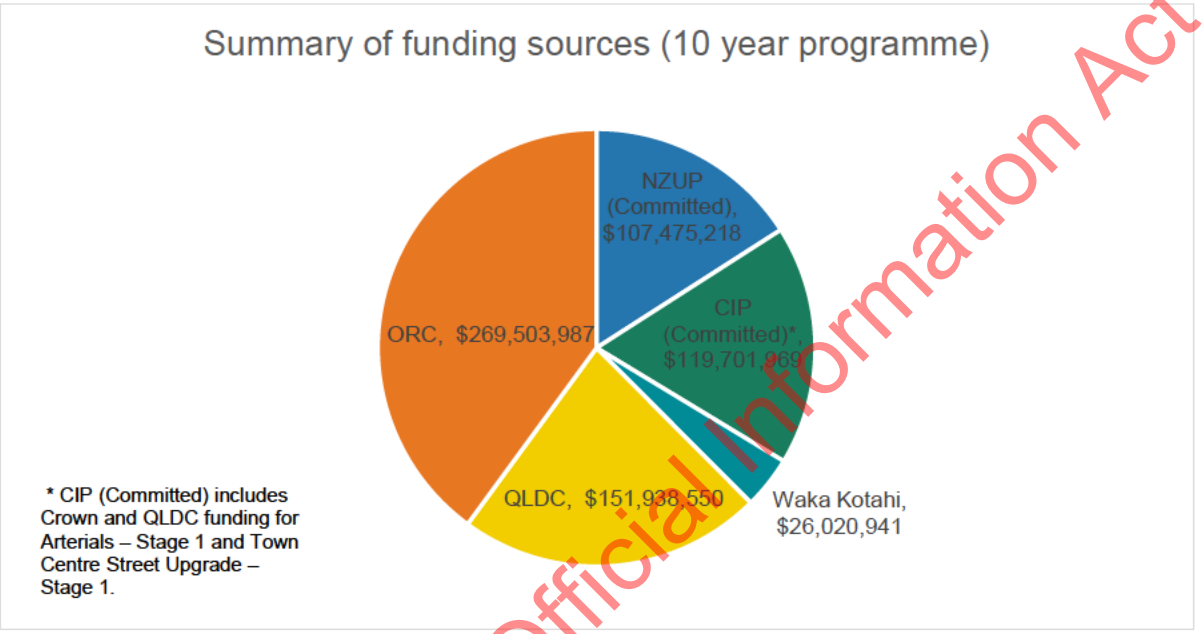

Figure 12: Total funding by source

The Preferred Programme consists of four elements which define the levels of investment against a timeline of delivery. Figure 13 illustrates the four elements.

Committed Activities	Recommended Option	Supporting Activities	Other Activities
(Activities which have funding committed and that provide benefits to the programme. CIP and NZUP).	(Apply for funding for next phase in 21-24 NLTP)	(Re-evaluation in 24-27 or 27-30 NLTPs)	(Re-evaluation beyond 2030)

Figure 13: Preferred Programme defining elements

The committed activities include activities funded through CIP and NZUP. In terms of approval pathway there are no approvals required – only changes to scope, cost or programme.

The recommended option is the package of activities with complimentary outcomes that will likely receive investment priority and all funding partners will approve funding for their specific activities.

Independent activities that assist the outcomes of the recommended option but cannot be approved until 2024/27 or 2027/30 are supporting activities.

Activities that do not directly assist the outcomes of the recommended option and unlikely to have an investment priority are considered possible long-term measures where trigger points have not been identified.

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The elements of the Preferred Programme that are committed and require funding approval are presented in Table 20 below.

Table 20: Elements committed and require funding approval

Element	Lead Organisation	Activity Class	Funding assumptions
SH6A Improvements, GR2KFB Improvements, Ladies Mile Improvements	Waka Kotahi	NZUP – committed activity	Committed
Arterials – Stage 1, Town Centre Upgrade – Stage 1	QLDC	CIP – committed activity	$85M committed through CIP $34.7M QLDC
Travel Behaviour Change	Waka Kotahi	Promotion of road safety and demand management	NLTF
PT Services Improvements	ORC	Public Transport Continuous Programme	NLTF and local share
Stanley Street and Shotover Street Improvements	Waka Kotahi	Local road, regional and state highway improvements	NLTF
Town Centre Upgrade – Stage 2	QLDC	Walking and Cycling improvements	100% QLDC
Arterial Stage 2	QLDC	NLTF and local share	NLTF and local share
Stanley Street Bus Hub	QLDC / ORC	NLTF and local share	NLTF and local share
Frankton Transport Hub	QLDC / ORC	NLTF and local share	NLTF and local share
Frankton	QLDC	NLTF and local share	NLTF and local share

The funding requirements for 2021-24, 2024-27 and 2027-30 are presented in Figure 14 below. This includes both capex and opex requirements.

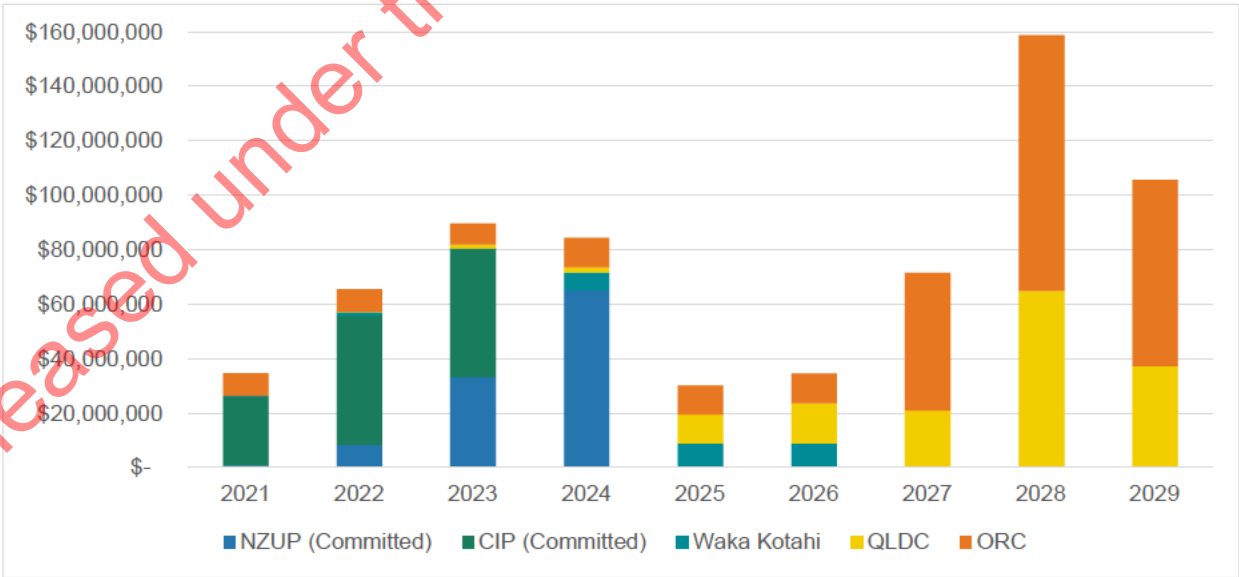

Figure 14: Funding requirement over the next three NLTP periods

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The funding requirements outside what has already been committed are substantial and alternative funding sources may be preferred.

1.17 Alternative funding sources

The level of funding currently available through traditional mechanisms is unlikely to be able to fully support the implementation of the preferred network in terms of both the scale and timing. To deliver the Preferred Programme in the timeframes proposed, alternative funding mechanisms may be needed.

Several investigations are currently underway by Treasury, Ministry of Transport (MoT) and others to consider possible mechanisms for the future funding of infrastructure including the Infrastructure Levy Model and value capture.

On the 24 July 2020, the Government passed the Infrastructure Funding and Financing Act which establishes the Infrastructure Levy Model. A key feature of the model is the establishment of an entity called a Special Purpose Vehicle (SPV), a financing tool that enables debt finance to be raised from the private sector and ring-fenced from a council's balance sheet, not affecting council debt levels or credit rating. The SPV will be responsible for financing and constructing the infrastructure. Importantly, post-construction, the infrastructure will be transferred to the relevant council for its ongoing operation and maintenance. A central element of the model is the levy paid annually, for up to 50 years, by the future landowners who benefit from the infrastructure, to fund the finance raised for its construction. This new tool is expected to complement, not replace, the existing funding and financing tools available to local government.

The more traditional and obvious ways of recovering cost of a project is through user charges. There are several situations when it may not be possible or desirable to recover the cost through user charges as presented in Table 21 below.

Table 21: Traditional funding sources

Funding/Charge	Description	Issues and Opportunities
Targeted rates	A tax on properties that benefit from the project. Will recover the project costs over time. Can be assessed on several basis, including land value, capital value, and by a fixed amount per property. Theoretically could also be assessed on land area, and only on the value of improvements. Currently could not be assessed on the increase in property value attributed to the project. One option is to use a targeted rate in conjunction with development contributions, whereby the tax is used to pay the interest on some of the council borrowing between the time the infrastructure is built and the time that development contributions are collected.	Recovers costs over a longer time period. One difficulty is to determine which properties the targeted rate should apply to, as the properties which benefit from a project may not have a fixed boundary, for example with transport projects. I.e., costs are not recovered proportionally to benefits received. Targeted rates could be imposed following a negotiated agreement with a majority of affected property owners. Whether it can be used to capture more than the costs of a project has not been tested in Court, but officials consider it would be at high risk of judicial review and a significant risk of losing.
Financial Contributions	These can be used by territorial authorities and regional councils for any RMA purpose, including offsetting environmental effects of activities on the environment	Being phased out by 2022 as a result of the Resource Legislation Amendment Act 2017The main reasons cited for the phase out are a perception that financial contributions and development contributions were in practice being used for the same purposes, and that overlap between the two charging regimes led to confusion.
Betterment levy	A one-off charge equal to the expected increase in property value attributable to the project. A limited	A localised tax on the property owner's expected capital gain attributed to the

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Funding/Charge	Description	Issues and Opportunities
	version, only applicable to properties adjoining the road, is currently available under s326 LGA741). It has not been widely used to date.	project. Likely to give rise to many disputes over valuations.
Tax on up-zoned land	A central government tax on the property owner's realised capital gain. S.CB 14 of the Income Tax Act provides that a capital gain on land sold within 10 years of acquiring it is taxable as income tax, if at least 20% of the capital gain is attributable to a change in planning rules or the granting of a consent.	
Negotiated development agreements	Voluntary development contributions negotiated between an infrastructure provider and a small number of developers.	Variable and unreliable as a revenue stream. The degree of value captured is dependent on skills and willingness of parties negotiating.
Leveraging Government land	Purchase land before it increases in value, and subsequently sell it (including development rights e.g. over the top of stations, etc).	Land values usually increase as soon as the project has been announced. In practice it is therefore necessary to purchase the land beforehand or use land that is already in public ownership.

There are several other possible funding mechanisms that have been identified that could be explored further as part of the next phase. These are explained further in Table 22 below.

Table 22: Possible alternative funding mechanisms

Funding/Charge	Description	Issues and Opportunities
Proposed Visitor Levy for Queenstown	A charge (i.e. 5 percent) applied to the cost of all short-term accommodation in Queenstown.	The levy could raise up to $40 million a year to help fund infrastructure in the resort town. However, is unlikely to be supported in the short term following the impact of COVID-19 to tourism.
Parking levies	A levy on residential or non-residential car parking spaces.	Parking revenues can be ringfenced to support certain activities. Often seen as a "money spinner" by locals and media. It is not a guaranteed revenue stream.
Bus lane enforcement	Drivers are fined for illegally driving or parking in bus lanes.	Ring fenced revenues can be used to fund PT improvements. Often seen as a "money spinner" by locals and media. It is not a guaranteed revenue stream.
New Zealand Green Investment Finance	New Zealand Green Investment Finance Ltd (NZGIF) is a green investment bank established with the purpose of accelerating investment to lower greenhouse gas emissions activities including transport in New Zealand	There may be opportunities if Council's can argue that certain investments can "lower domestic emissions" and provide "crowds-in private finance". For examples ORC with respect to funding a new or upgraded bus fleet with electric buses.
EECA's Low Emission Vehicles Contestable Fund	The Low Emission Vehicles Contestable Fund offers up to $6.5 million a year to projects that will accelerate the uptake of electric	This could support projects to electrify transport or reduce emissions, for example they have supported EV car share schemes in some areas and the electrification of buses.

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Funding/Charge	Description	Issues and Opportunities
	vehicles (EVs) and other low emission vehicles.	
Community Environment Fund	The Ministry for the Environment runs the Community Environment Fund. It supports projects that strengthen environmental partnerships, raise environmental awareness and encourage participation in environmental initiatives in the community.	A community focused fund which allows up to $300k applications that seek to reduce greenhouse emissions and improve water and air quality.

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NZ TRANSPORT AGENCY

QUEENSTOWN BUSINESS CASE

Commercial Case

s 9(2)(a) [redacted]

16 NOVEMBER 2020

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1 COMMERCIAL CASE

The commercial case describes how the preferred programme will be implemented including how it is procured, consented and how property is acquired. The case includes consideration of risk allocation and transfer, contractual management and implementation timeframes.

The management case notes that the preferred programme has three key parts for the next stages of delivery:

- New Zealand Upgrade Programme (NZUP) – committed activity with crown funding
- Crown Infrastructure Partners Stimulus Package (CIP) – committed activity with crown funding
- The remainder of the preferred programme – no funding allocated.

A decision has been made to deliver NZUP and CIP together under an Alliance, the Wakatipu Transport Programme Alliance.

1.1 Wakatipu Transport Programme Alliance

Waka Kotahi and QLDC released an RfT for the Wakatipu Transport Programme Alliance on 2 October 2020. The alliance includes professional services and physical works for NZUP and CIP from the business case along with Stage 1 of the Wakatipu Active Travel Network. It is anticipated that the alliance contract will be awarded pre-Christmas 2020 and that the programme will be delivered over four years. The estimated alliance project budget is $200M.

1.2 The remainder of the preferred programme

The remainder of the preferred programme requires approval through the Long Term Plan and National Land Transport Programme before it will proceed to the next phase. The scope of the remainder of the programme includes:

- Travel demand management package
- PT services improvements
- On-road PT service improvements
- Stanley Street and Shotover Street corridor improvements, including the first stage of the Stanley Street bus hub
- Town centre upgrade – stage 2
- Arterials route stage 2
- Stanley Street bus hub stage 2
- Frankton offline transport hub
- Arterials route stage 3
- Offline PT infrastructure and service improvements.

1.3 Procurement approach

It is anticipated that the remainder of the preferred programme is procured and delivered as discrete pieces of work following the traditional approach. The projects will be competitively tendered through GETS and would generally be procured for an individual phase and utilise the price/quality method.

1.4 Risk allocation and transfer

Risk allocation is dependent on the procurement approach and delivery model. For the projects that are delivered through the traditional approach it is expected that most risks would remain with QLDC or Waka

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Kotahi, but for the alliance it is expected that many of the risks would be transferred to the alliance. A key philosophy is that the risks will be allocated to the organisation that is best placed to manage them. This requires that the individual projects develop their own risk registers for their next stage (under the traditional approach). These would be managed together under an alliance.

The high level risks that may impact on the delivery of the overall programme are summarised in Table 1. The risk register can be found in Appendix F01.

Table 1: High level risks

Risk description	Risk cause	Risk score	Owner	Treatment strategy
That the funding available to implement business case recommendations, and the recommendations, do not align.	Future budget drivers and decisions based on a range of elements, not only this business case.	Critical	QLDC and Waka Kotahi and ORC – Shaun Hubbard	Maintain contact with levels in QLDC, ORC and Waka Kotahi that are appropriate for team. Update cases to be as realistic as possible for cost/budget profiles. Parties to signal funding priorities as early as possible.
That property(ies) required are not available.	Property owners do not wish to sell, or property costs are prohibitive.	Critical	Waka Kotahi – Tony Sizemore	Early engagement with property owners.
That decision making external to team is poor or slow.	Decision makers are not aligned or not prepared to commit to significant change.	Critical	Way to Go – Shaun Hubbard	Maintain contact with appropriate levels in Waka Kotahi, ORC and QLDC. Reinforcement of requirement for timely decisions, particularly during the collaborative review process.
That decisions made for interface projects (Stage 1 design, Stage 2 and 3 prelim design and designation, and Manawa) are inconsistent with business case recommendations (misalignment).	Interface projects are working to different timelines, and their various constraints are not the same as this project.	High	Way to Go – Shaun Hubbard	W2G maintain observation on interface projects and interaction with this project's requirements. Strong integrated project governance, with a clear agreement of roles and responsibilities.
There is misalignment between Waka Kotahi, QLDC and ORC for the multitude of interdependent projects.	Multiple interdependencies between the projects which are the responsibility of differing agencies.	Critical	Way to Go Board – Shaun Hubbard	Consistent decisions are required across design, operations, approvals, funding, programme and implementation.
There is the threat that the projects lose community support.	Community and individuals progressively understand more about the projects and the impacts on individuals.	High	Way to Go communications – Shaun Hubbard	Comprehensive engagement strategy on-going after business case completion, with frequent touch points with the community and stakeholders.
There are detail design changes required in later stages.	Detail design can identify necessary changes to scope/cost/programme.	High	Way to Go – Shaun Hubbard	Involve the right people early in frequent challenge sessions and peer review.

1.5 Payment allocations (mechanisms)

It is anticipated that standard payment mechanisms will be used across the programme except for possible incentives where an exceptional outcome is required such as completing an activity in an unusually short timeframe. The alternative is a payment (liquidated damages) for late delivery. The appropriateness of these mechanisms needs to be considered during the procurement strategy of each individual project. These would

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generally only be considered for large scale construction projects. The shared risk model is used within alliances where alliance members jointly benefit from exceeding KPIs and share costs of not achieving KPIs.

1.6 Contractual and other issues

Contracts will be managed under the guidance of relevant policies and procedures of QLDC and Waka Kotahi. The project manager for each project will be responsible for administering the contract and being the key point of contact for the supplier. Any significant contractual issues will be elevated to the Project Director or through to the governance group.

Supplier performance against the obligations of the contract should be regularly assessed by the project manager following a standardised procedure (such as PACE). Staging of contracts under the traditional approach is an opportunity to ensure that performance is maintained throughout the contract length. Alternatively, direct appointment of future stages of a project may be used as an incentive for good performance.

1.7 Property strategy

The Property Group has delivered a Property Strategy that is contained in Appendix F02. Property is required for a number of projects and is on the critical path for the delivery of the overall programme. The interdependencies between the projects mean that a property acquisition delay on one project will likely have a flow on effect to other projects.

The property acquisition process will follow the Public Works Act process. The first step is to initiate negotiations with owners of property that is required. The strong preference is that deals can be made through negotiation as it is the most efficient process. The alternative is to proceed through compulsory acquisition, however, this is only available after 'all reasonable endeavours to negotiate the sale and purchase of your land in good faith' and can be taken through the courts by appeal.

At best, with all parties willing to negotiate, property purchase will take 18 months but can take much longer. This is therefore a key process that needs to be initiated as soon as possible. It is recommended that negotiations commence for all required property following the approval of the busines case.

Table 2 outlines the property requirements, costs, interdependencies and anticipated timing.

Table 2: Property acquisition

Project	Property cost	Interdependency	Timing
SH6/6A Intersection	$4,507,250	Old Frankton to prevent rat running and breakdown of network due to courtesy stopping on SH6A inbound	2019/20
Interim Frankton Hub	$965,100		2020/21
SH6/Hansen Road	$1,341,000	SH6/6A Intersection	2020/21
SH6 Frankton-Ladies Mile to SH6/6A Intersection	$4,648,950	1. SH6/6A Intersection 2. SH6 Hawthorne Drive Intersection 3. SH6 Grant Road Intersection 4. SH6 Hansen Road New Intersection 5. 5. SH6 Joe O'Connell Drive Intersection	2020/21
Ladies Mile West Bound Bus Lane	$1,608,943		2020/21
SH6 Howards Drive Roundabout	$2,682,145		2019/20
SH6A New Marina/Perkins Road Intersection	$242,061	SH6/6A Intersection	2020/21
SH6A Battery Hill Intersection	$20,699	SH6/6A Intersection	2020/21
SH6A Oaks Club Eastbound Bus Stop and Pedestrian Signals	$17,428	SH6/6A Intersection	2021/22

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Project	Property cost	Interdependency	Timing
Stanley Street Public Transport Hub	$17,997,000	Project Manawa, Arterials route stage 2	2024/25
Arterials route - Stage 1 - Melbourne and Henry Street upgrade and connections includes intersection at SH6A	$32,274,063		2019/20
Arterials route - Stage 2 - Gorge Road to Hay Street. New link and upgrades Excludes Man/Camp and Man/Brecon.	$82,346,503	1. Project Manawa (relocation of community hall) – the property costs associated with the Memorial Hall are excluded from the economic analysis as it is a QLDC owned property. 2. Brecon Street steps (relocation)(TC15)	2022/23

1.8 Consenting strategy

Overarching preliminary consenting strategies have been developed for three key areas of the project and are contained in Appendix C13. More detailed strategies will be developed in the next stage of the project.

1.8.1 Frankton to Queenstown

This corridor, delivered through NZUP, has 37 locations with consenting requirements. The key planning requirements and complexities are highlighted in the following table. The traffic light system identifies the planning complexity of each site (red = complex, amber = some challenges, green = straightforward). This demonstrates that approximately half of the sites have some consenting challenges.

Table 3: Frankton to Queenstown planning complexity

Intervention reference	Location	Planning matters	Complexity
1	SH6 McDowell Drive pedestrian/cycle underpass	Requires potential alteration to designation and outline plan. Possible additional land requirement	
2	SH6 Howards Drive roundabout	Requires potential alteration to designation and outline plan (additional land for drainage may be required)	
3	SH6 Howards Drive pedestrian/cycle underpass	Requires potential alteration to designation and outline plan (additional land for drainage may be required)	
4	Ladies Mile westbound priority bus lane	Requires potential alteration to designation and outline plan (additional land for drainage may be required)	
5	SH6 Stalker Road pedestrian/cycle underpass	Requires potential alteration to designation and outline plan (additional land for drainage may be required)	
6	SH6 Hawthorne Drive Intersection	• Requires alteration to designation • Requires outline plan Note: Land is required to be taken on all four quadrants of the intersection	
7	SH6 Frankton-Ladies Mile to SH6/6A Intersection priority bus lane	• Requires alteration to designation • Requires outline plan	
8	SH6/Grant Road Intersection	Outline plan waiver	
9	SH6/Hansen Road intersection	• Requires alteration to designation • Requires outline plan	
10	SH6/Joe O'Connell Drive intersection (Events Centre)	• Requires alteration to designation • Requires outline plan	
11	SH6/6A intersection	• Requires new designation • Requires alteration to designation • Requires outline plan	
12	Old Frankton/ Frankton Village	Outline plan waiver	

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Intervention reference	Location	Planning matters	Complexity
13	Frankton offline PT Hub	• Requires new designation • Site subject of existing QLDC designation, which has priority • Displacement of recreational land	
14	SH6 Kawarau Road (Ross Street to Kawarau Falls Bridge)	Outline plan waiver	
15	SH6/Lucas Place	• Requires alteration to designation • Requires outline plan	
16	SH6/Humphrey Street Intersection	Outline plan waiver	
17	Humphrey Street Link (SH6 to Lucas Place)	Notice of Requirement required for new Humphrey Street link	
18	SH6A/McBride Street Intersection	Outline plan waiver	
19	SH6A Yewlett to SH6/6A priority bus lane	• Outline plan waiver	
20	SH6/6A to Marina intersection	• Requires alteration to designation • Requires outline plan • Land required for the new western intersection, plus some minor widening east of Sugar Lane and between Sugar Lane and the new intersection.	
21	SH6A Frankton to Queenstown shared path	• Requires alteration to designation • Requires outline plan • Potential land requirement	
22	SH6A/Marina Intersection	Outline plan waiver	
23	SH6A Marina to Perkins Road priority bus lanes	Outline plan waiver	
24	SH6A/New Marina/Perkins Road Intersection	• Requires alteration to designation • Requires outline plan	
25	SH6A Middleton Road eastbound bus stop	Outline plan waiver	
26	SH6A/Battery Hill Intersection	Outline plan waiver	
27	SH6A/Goldfield Heights intersection	• Outline plan waiver required Note: there is a protected gum tree (Council Ref. 240) on NW corner of intersection	
28	SH6A Goldfields eastbound bus stop	Outline plan waiver	
29	SH6A Goldfields Heights priority bus lane	Outline plan waiver	
30	SH6A Larch Hill Place to Goldfields Heights priority bus lane	Outline plan waiver	
31	SH6A Larch Hill Place intersection	Outline plan waiver	
32	SH6A Hensman Road Intersection	Outline plan waiver	
33	SH6A Oaks Club pedestrian signals	Outline plan waiver	

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Intervention reference	Location	Planning matters	Complexity
34	SH6A Oaks Club eastbound bus stop	Outline plan waiver	
35	SH6A Pounamu eastbound bus stop expansion	Outline plan waiver	
36	SH6A Suburb Street to Frankton/Stanley Street intersection priority bus lane	• Requires alteration to designation • Requires outline plan • Land requirement	
37	SH6A Dublin Street intersection	Outline plan waiver	

1.8.2 Queenstown Town Centre

Resource Management Act approvals required:

- Alteration of Designation
- Outline Plan(s).

Other approvals potentially required:

- Resource consent for any drilling associated with geotechnical investigations
- Resource consent under the NES National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health
- Archaeological Authority.

The following technical assessments will be required for the consents:

- Archaeological/Heritage Impact Assessment
- Arboricultural Assessment for those protected trees in proximity to the route
- Cultural Impact Assessment (potentially – may be avoided through engagement with Iwi)
- Noise impact assessment – current and future noise environment, mitigation
- Potential Social/Recreational Impact Assessment associated with the loss of part of the Manawa Community Centre site (despite this site being used only for public car parking at present)
- Preliminary Site Investigation/Detailed Site Investigation with regards to potentially contaminated sites along the non-arterial route
- Landscape/Urban Design Assessment with regards to the impacts of the project on the existing streetscape, as well as potential impacts on Outstanding Natural Landscapes
- Lighting Impact Assessment (both in terms of street-lighting but also in relation to the light spill from vehicles).

Additional to this, other likely technical assessments required include:

- Geotechnical assessment – retaining structures, cuts and fills
- Economic assessment (economic benefits of the project).

1.8.3 Arterial routes

Resource Management Act approvals required:

- Alternative of designation
- Outline plan

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- Resource consent from ORC.

Other approvals potentially required:

- Resource consent for any drilling associated with geotechnical investigations
- Resource Consent under the NES National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health
- Archaeological Authority.

The following technical assessments will be required for the consents:

- An ecological assessment will be required with regards to the activity in proximity to/within Horne Creek and Lake Wakatipu
- Archaeological/Heritage impact assessment
- Arboricultural assessment on those protected trees in proximity to the route or to be removed as part of the project
- Cultural Impact Assessment (potentially – may be avoided through engagement with Iwi)
- Noise impact assessment – current and future noise environment, mitigation
- Social/Recreation Impact assessment associated with the loss of Memorial Hall/Sports Club Buildings/part of Recreation Ground, as well as any community severance issues. Consultation on these matters is considered essential
- Preliminary Site Investigation/Detailed Site Investigation with regards to potentially contaminated sites along the arterial route
- Landscape urban design assessment with regards to the impacts of the project on the existing streetscape as well as impacts on Outstanding Natural Landscapes
- Lighting impact assessment (both in terms of streetlighting but also in relation to the light spill from vehicles).

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NZ TRANSPORT AGENCY

QUEENSTOWN BUSINESS CASE

Management Case

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1 MANAGEMENT CASE

The management case defines the roles and responsibilities for delivering the outcomes sought from the preferred programme. This includes outlining how the programme will be managed through to implementation, who has responsibility, and how scope changes and risks will be managed.

The business case has been developed under Wakatipu Way to Go (Way to Go) which is a collaborative partnership between Queenstown Lakes District Council, Otago Regional Council and Waka Kotahi. Way to Go is, "*a collaborative partnership committed to working together to provide an enduring, affordable, safe transport system, which will provide transport choice.*"

1.1 Governance structure

Way to Go provides high level governance oversight for a broad programme of transport improvements in the Queenstown Lakes District, including the Queenstown Transport Business Case (the business case). Figure 1 demonstrates the partner membership.

Figure 1: Partner membership

The three partners each have representation at the governance and management levels as demonstrated in Table 1. Way to Go also has its own staff, which is led by Shaun Hubbard, Project Director.

Table 1: Wakatipu Way to Go management structure

Organisation	Governance	Management
QUEENSTOWN LAKES DISTRICT COUNCIL	Peter Hansby	Tony Pickard
WAKA KOTAHI NZ TRANSPORT AGENCY	Kesh Keshaboina	Tony Sizemore
Otago Regional Council	Gavin Palmer	Garry Maloney

The Way to Go management structure is intended to apply to the project through to the completion of the business case, at which point the management and responsibility of the programme devolves for each package of work. This is in part based on the ownership of assets that are being improved or replaced (central, regional or local government), but also as a result of the NZ Upgrade Programme and the Crown Infrastructure Partners Stimulus Package which will be delivered together as an alliance with Crown funding.

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Therefore, the next stages of the preferred programme through to implementation are segmented into three parts:

- New Zealand Upgrade Programme (NZUP)
- Crown Infrastructure Partners Stimulus Package (CIP)
- The remainder of the preferred programme

A key risk for the governance of the business case and the preferred programme is the integration with other significant projects such as the Queenstown Spatial Plan Partnership and Ladies Mile Masterplan. The relationship between these projects and the governance structures is to be carefully managed and suggests that there is value in maintaining the Way to Go governance structure to oversee these interactions between these projects.

1.1.1 NZUP

NZUP is a central government programme to improve infrastructure across the country and includes Queenstown. The transport programme is being managed by Waka Kotahi and has a dedicated Project Management Office to deliver the programme.

- Scope – SH6A corridor improvements, Ladies Mile corridor improvements, SH6 Grant Road to Kawarau Falls improvements
- Next stages of work: pre-implementation and implementation
- Funding – Crown funding, $90M approved (not subject to this business case approval). There is a funding shortfall of $16.2M between the cost estimate and the available funding which will be reported to the NZUP Governance Group to provide direction on how to manage.
- Timeframe – 2021 – 2024
- Governance structure – Wakatipu Transport Programme Alliance

1.1.2 CIP

In response to the global pandemic, COVID-19, the Government funded a stimulus package to help kick start local economies via Crown Infrastructure Partners (CIP). The package includes local road elements of the preferred programme detailed below. Although the package is funded by central government, its purpose is to deliver local government assets and will be managed by the QLDC Project Management Office.

- Scope – arterials route Stage 1, town centre upgrade stage 1
- Next stages of work: pre-implementation and implementation
- Funding – Crown funding, $85M approved (not subject to this business case approval)
- Timeframe – 2021 – 2024
- Governance structure – Wakatipu Transport Programme Alliance

1.1.3 Wakatipu Transport Programme Alliance

The Wakatipu Transport Programme Alliance is being formed to deliver NZUP and CIP by Waka Kotahi and QLDC. These organisations have nominated two prospective board members each:

Table 2: Wakatipu Programme Alliance Board Members

Organisation	Programme alliance board member	
QUEENSTOWN LAKES DISTRICT COUNCIL	Peter Hansby	Geoff Mayman

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Organisation	Programme alliance board member	
WAKA KOTAHI NZ TRANSPORT AGENCY	Kesh Keshaboina	Peter Spies

1.1.4 The remainder of the preferred programme

The remainder of the preferred programme is unfunded and will continue along standard funding procedures seeking funding from the National Land Transport Fund (NLTF) through inclusion in the Long Term Plan (LTP) and the National Land Transport Programme (NLTP).

- Scope:
  - Travel demand management package
  - PT services improvements
  - On-road PT service improvements
  - Stanley Street and Shotover Street corridor improvements, including Stanley Street bus hub phase 1
  - Town centre upgrade – stage 2
  - Arterials route stage 2
  - Stanley Street bus hub phase 2
  - Arterials route stage 3
  - Offline PT service improvements, including an offline Frankton transport hub
- Next stage: Subject to approval in NTLP, then pre-implementation, implementation.
- Programme lead – varies, but QLDC for local authority assets, Waka Kotahi for elements along the State Highway, and ORC for the PT improvements.
- Funding – not approved, to be sought from the NLTF. Expectation that projects will be funded through long term planning with co-funding standard FAR.
- Timeframe – most of the programme to be submitted into the 2024 - 2027 NLTP periods for implementation, with planning stages in 2021 – 2024.
- Governance structure – individual projects will have their own governance structure with the project lead as demonstrated in Table 6.

1.2 Programme/project roles and responsibilities

Project roles and responsibilities align to the funding programme, where for the most part, the funding agency or receiving asset owner holds the primary responsibility. The key roles within the programme will be allocated following the award of the alliance contract.

At a high level the responsibilities for the preferred programme are defined by the Land Transport Management Act 2003 and Local Government Act (2002). Table 3 defines the responsibilities for each of the elements within the preferred programme.

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Table 3: Asset and service responsibilities

	QLDC	Waka Kotahi	ORC
Local roads (including footpaths, parking, cycle lanes and tracks, bus lanes, signals and ITS)	x		
State highways (including footpaths, cycle lanes, bus lanes, underpasses, signals and ITS)		x	
Public realm	x		
Bus hub and park and ride	x		
Public transport services and vehicles (including ferries)			x
Signal operations and ITS (led by WTOC)	x	x	
Travel demand management	x	x	x

Table 4 demonstrates that QLDC and Waka Kotahi have a strong responsibility throughout all aspects of the preferred programme, with ORC playing a key role in the PT improvement elements.

Table 4: Project phase responsibilities

	QLDC	Waka Kotahi	ORC	Comment
Leadership and governance	x	x	x	Leadership and governance is primarily with QLDC and Waka Kotahi in the next stages, with ORC contributing for PT.
Planning and design	x	x	x	Primary lead is QLDC and Waka Kotahi guided by the ownership. ORC to lead PT elements.
Consenting	x	x		Primary lead is QLDC and Waka Kotahi depending if it is on SH or local road.
Land acquisition	x	x		Primary lead is QLDC and Waka Kotahi depending if it is on SH or local road.
Pre-implementation	x	x	x	Primary lead is QLDC and Waka Kotahi. ORC to lead PT service elements.
Implementation	x	x	x	Primary lead is QLDC and Waka Kotahi. ORC to lead PT elements.
Maintenance and operation	x	x	x	Local road and public realm sit with QLDC including PT infrastructure and park and ride; State highways sit with Waka Kotahi, public transport vehicles and services sit with ORC
Monitoring	x	x	x	The programme is to be monitored to ensure that it achieves benefits that have been set out. Each of the partners have a role in monitoring the outcomes.

1.2.1 Integration with other projects

There is a range of planning and project delivery underway in Queenstown that is not directly addressed through this business case, but may impact on the design, delivery or operation of the programme or vice

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versa. It is critical to the success of all projects that they are considered in an integrated manner to ensure a successful outcome for Queenstown. Table 5 highlights the projects that should be considered in the management of the programme.

Table 5: Project integration

Project	Description	Owner	Timing/status	Interdependencies
Queenstown Spatial Plan	The spatial plan is reviewing district plan zones and identifying locations for growth.	QLDC	In development, preferred plan in testing.	Potential impact on the whole programme, however, the preferred spatial plan has been modelled and integrated into the programme. Any changes to the preferred plan will need to be assessed.
Housing Infrastructure Fund	Kingston, Frankton Flats, Quail Rise, Ladies Mile. Sites connect to SH6, with public transport and a pedestrian underpass. Includes support for new housing, water supply and sewage treatment.	Ministry of Housing and Urban Development, QLDC.	Announced 2018, 10 year interest free loan. First houses expected in 2020.	Underpass at Quail Rise, Hawthorne Drive roundabout improvements, SH6 improvements.
Master planning	Frankton Masterplan, Ladies Mile Master, Queenstown Events Centre Masterplan.	QLDC	Frankton Masterplan has been consulted on and is now being finalised, will provide 30-year vision to 2048. Ladies Mile Masterplan is in the early stages of development.	SH6 improvements, Frankton bus hub, BP roundabout upgrade.
Project Manawa	Located on Stanley Street. Includes a library, performance and visual arts centre, a town square, commercial buildings, and the Council's new administration building.	QLDC	Concepts are being developed and will be consulted with the community in the second half of 2020.	Arterials routes, Stanley bus hub.
Wakatipu active mode network	An integrated network of walking and cycling trails in the district including through the town centre. Parts of the programme are funded and will be delivered in conjunction with this business case.	Way to Go	Business case is approved, and first package of works is joint funded by QLDC and Waka Kotahi.	Eastern SH6 Jim's Way to BP roundabout, Frankton Track.
Lakeview development	An extension of the Queenstown Town Centre providing residential buildings, hotels, co-working and co-living spaces, hospitality and retail, and a hot pools attraction.	Ninety Four Feet, Augusta Capital QLD.	Development agreement was signed late 2019. Construction is planned in seven stages over more than 10 years.	
Park and ride on Ladies Mile	QLDC purchased land for park and ride site alongside SH6 to support residential growth and PT services.	QLDC	Investigations are underway through an SSBC.	Howard Drive roundabout.

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Project	Description	Owner	Timing/status	Interdependencies
Te Pa Tahuna development	Ngāi Tahu purchased the old Wakatipu High School site and will develop it with high density and high rise residential.	Ngāi Tahu	First stage has been approved and work underway.	
Skyline	Skyline proposes to expand its car parking at its gondola site.	Skyline Enterprises	TBC	
3 Waters Programme	Queenstown requires a 3 waters upgrade which is on the same alignment as the arterials route proposal. There is an opportunity to deliver concurrently.	QLDC	TBC	
North Frankton Flat District Plan change	Significant increase in density, business mixed use, medium and high density residential (currently rural).	QLDC	Just through mediation, commissioners.	Impact on all of SH6

1.3 Key interdependencies

The two most significant interdependencies are the Spatial Plan and Ladies Mile Masterplan as described below:

- Queenstown Lakes Spatial Plan – the Spatial Plan considers the wider Wakatipu and Upper Clutha areas identifying where growth may occur over the next 30 years until 2050. The outcomes of the Spatial Plan will have a direct impact on where people will live and work in the future and their travel patterns, ultimately determining the required future transport network. The preferred Spatial Plan option has been modelled and tested against the business case to ensure alignment. However, if the Spatial Plan changes through consultation and approvals, then an alignment test will be required to understand the impacts on the recommendations of this business case. Ongoing communications between the projects is required to ensure that the current alignment is maintained.
- Ladies Mile Master planning – a Masterplan process is underway for Ladies Mile to determine the level, type and location of development that is permitted in the area. The level of development will have a direct impact on the performance of SH6 and 6a and will impact on the success of the recommendations from this business case. The process is in the early stages and requires strong coordination between the next steps for the business case recommendations and the Masterplan.

1.4 Key issues for the successful delivery of the programme

One of the biggest issues for the preferred programme are the interdependencies between the interventions within the programme and with major external projects such as Project Manawa. The timing and staging of the programme have been developed based on a range of assumptions. A change in those assumptions will likely have a material impact on the remainder of the programme. The ongoing management and cooperation between the Way to Go partners is a key factor in managing this issue. The implementation plan will have to be actively managed, and any change will need to be tested against the programme to understand the implication on the rest of the programme.

1.4.1 State highway revocation

The current assumption is that State highway 6A will be revoked to local road from the Frankton Road/Dublin Street intersection through to the Steamer Wharf. This will allow for the conversion of Stanley Street to the bus hub and allow for traffic to be restricted to ensure the performance of the bus hub.

In order for this revocation to take place, an agreement will be required between Waka Kotahi and QLDC on the form of the road that is handed over and the funding support that will be given for the operation of the road. Generally, the revocation process will include some physical work to ensure that the road functions as a local road rather than a state highway before it is handed over.

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The revocation is therefore critical to the delivery of the preferred programme as it will need to follow the implementation of the arterials route stage 1, but before the establishment of the fully functioning bus hub (which has other interdependencies). It is understood that the delegation for revocation within Waka Kotahi sits at the General Manager level. The process itself is not particularly difficult, however, it is agreeing the terms of the agreement which can take some time. It is therefore suggested that a dedicated project is set up to form a revocation agreement, and to oversee any physical works that are required. This should be initiated as soon as possible so that it does not become an impediment to other projects. The revocation project will be a joint project between Waka Kotahi as the current owner, and QLDC as the future owner of the corridor.

It is also assumed that the arterials route will be a local road.

1.4.2 Queenstown town centre public transport bus hub (Stanley Street)

The public transport bus hub on Stanley Street is central to the business case, and to Queenstown Town Centre, not just by its location but also as a fundamental element in achieving the outcomes that are sought. However, in being a pivotal element it also has a complex interaction with many other activities.

The outcome of a fully functioning bus hub will be achieved in two stages and is dependent on outcomes from other projects. The first part of stage 1 will be a functioning bus hub like its current form but with increased capacity and amenity while remaining in the road corridor. Stage 1b requires a 2.5m strip of land from the Project Manawa site (which is currently in the concept design stage in a separate project) to provide improved customer waiting facilitates and improved pedestrian space through the bus hub. Property acquisition of the land is part of the pre-implementation phase of the Stanley Street/Shotover Street package. The PWA process could begin prior to the construction of Manawa Stage 2. It is also noted that access to the playcentre will need to be closed for the hub to efficiently operate. Stage 2 of the bus hub requires private property on the south side to provide a fully functioning bus hub and improved connections through to the rest of the town centre.

It is anticipated that the public transport services will be improved and increased in 2027 to provide the capacity that is required to meet the mode shift targets. It is expected that this will also require an increased and upgraded (assumed to be BRT) fleet. The public transport services improvement will be subject to its own business case to determine the detail of these changes.

1.4.3 Project Manawa

The Project Manawa site is being developed to include a public library, performance and visual arts centre, a town square, commercial buildings, and the Council's new administration building. It is also expected to contain some on site car parking. At the time of writing the site access has not been agreed and potentially has an impact on Stanley Street depending on the final arrangement.

As noted above, the public transport bus hub is also dependent on a wider corridor which is achieved by using some of the Project Manawa site. There is no agreement for this land swap/purchase in place or in progress. It is critical for the bus hub that this agreement is made, and it is critical for Project Manawa that this is considered in the designs as soon as possible. Achieving a property agreement will be on the critical path for all projects.

1.4.4 Frankton bus hub

The Frankton bus hub is planned on Kawarau Road (SH6) and will be delivered in two stages. Stage one will expand the existing hub within its current footprint to provide for more frequent bus services along with regional buses, tourist buses, ski buses, and walking and cycling connections. This will be delivered as part of NZUP.

Stage two will include a significant upgrade providing a full interchange, high quality public spaces, improved crossing facilities, transport-oriented development and connection to events centres and the File Mile Shopping Centre. This will only be required if stimulated through development, an off-line PT connection, or the desire to create a combined local/long distance/tourism facility.

The long-term development (beyond 2030) will require land on the eastern side of Kawarau Road which is currently a golf course. The land is owned by the Department of Conservation (DoC) and is administered by QLDC as recreation reserve. Land is also required for the new BP intersection. Simultaneously, QLDC has

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been looking for alternative locations for the golf course as part of the Frankton Masterplan which seeks more event facilities in the area and potentially an events designation over the land. The community, however, are generally in support of the golf course in its current location.

The land required for the intersection upgrade would be purchased by Waka Kotahi from DoC. It has not yet been agreed who would purchase the land for the bus hub. Arguably it could be either QLDC or Waka Kotahi.

The land required can be purchased under the Public Works Act. At best, with all parties willing to negotiate, the property purchase will take 18 months but can take much longer. This is therefore a key process that needs to be initiated subject to the case for the investment being confirmed through the PT Service and Infrastructure DBC.

1.4.5 Public transport services

Public transport is a key mechanism to deliver the outcomes sought by the business case. To attract a significantly greater mode share, improvements are proposed at bus hubs in the town centre and in Frankton. Along with this is an initial improvement to current public transport services on the existing route network in 2024 aligned to the completion of the NZUP works. Subsequent to this is a significant step change in public transport services in 2027. This demand is modelled to exceed the capacity of the current system and higher capacity public transport is required. The details of the future services need to be planned in more detail and will be progressed in two stages. For the changes to current services, there will be a Single Stage Business Case Lite and for the implementation of the BRT network, a Public Transport Detailed Business Case covering services and any supporting infrastructure not delivered by NZUP. However, any changes to the assumptions made in the development of these business cases may have an impact on other elements of the programme and will need to be planned carefully.

1.5 Future stages of the preferred programme

The future stages of the programme described below are subject to funding priorities, long term plans, funding availability from all partners and NLTP criteria and is therefore subject to change. The preferred programme includes a range of projects, with different owners, different timeframes and funding mechanisms. These are summarised in Table 6 below. Note these dates are for the next stage, not the implementation date which are described elsewhere in the business case.

Table 6: Future stages of work

Project	Next stage	Responsibility	Timing	Funding/approval
NZUP	Pre-implementation, implementation	Waka Kotahi	2020	Committed activity
CIP	Pre-implementation, implementation	QLDC	2020	Committed activity
Travel demand management package	Single Stage Business Case	QLDC	2021 – 24 and beyond	No funding, but identified in the Mode Shift Plan
Public transport services	Detailed Business Case	ORC	2021 - 24	None To be submitted to the NLTP
On-road PT Service Improvements	Detailed Business Case	ORC/Waka Kotahi	2021 - 24	None To be submitted to the NLTP
Stanley and Shotover corridor improvements and Stanley St bus hub phase 1	Pre-implementation	Waka Kotahi	2021 - 24	None To be submitted to the NLTP
Town centre upgrade – Stage 2	Pre-implementation	QLDC	2024 - 27	None To be submitted to the NLTP
Arterials Stage 2	Business case update* for pre-	QLDC	2021 – 24	None To be submitted to the NLTP

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Project	Next stage	Responsibility	Timing	Funding/approval
	implementation funding			
Stanley Street bus hub phase 2	Included in PT services and infrastructure DBC	QLDC	2024 - 27	None To be submitted to the NLTP
Frankton Transport Hub (on golf course)	Included in PT services and infrastructure DBC	QLDC	2024 - 27	None To be submitted to the NLTP
Stage 3 Arterials Route	Business case update for pre-implementation funding	QLDC	Beyond 2030	None
Offline PT corridor	Business case update for pre-implementation funding, route protection	ORC/QLDC	Beyond 2030	None

*A business case update is intended to review the case for the project without the need for a new business case

1.5.1 Investment triggers

The primary investment trigger for the programme is to enable an efficient public transport system that encourages mode shift by attracting people out of their cars and onto public transport. However, the current system does not have the capacity, nor the supporting service attributes, such as high frequency, to meet the anticipated increase in patronage and enable the realisation of the mode share targets.

The improvements to the public transport system are aligned to the renewal of the PTOM contract in 2027. Improvements comprise of a new vehicle fleet, improved services and a more frequent timetable. Targeted bus priority along SH6a seeks to reduce journey and travel time variability along this key route. An improved level of service is also required at the bus hub on Stanley Street which is achieved by providing dedicated space for buses and necessitates the transfer of general traffic onto the new arterial corridor (Stage 1 funded by CIP). The Queenstown bus hub will be complemented by improvements to the existing bus hub in Frankton to provide for connecting services. Alongside the public transport enhancements, improvements to the town centre are proposed to discourage general traffic while improving the urban amenity of the town centre. Travel demand management techniques are also utilised to further encourage a mode shift to enable an efficient transport system.

Together, the programme provides an integrated package that focuses on mode shift towards a more efficient transport system starting with the public transport system.

1.6 Scope of the preferred programme

A high-level description of the scope for each of the projects is outlined in Table 7.

Table 7: Scope of the preferred programme

Project	Scope
NZUP	**Purpose:** To improve public transport capacity along the SH6a corridor with intersection improvements and targeted priority for PT. Includes improvements to Frankton Bus Hub and traffic control improvements on SH6. **Location:** SH6a between the SH6/SH6A intersection and SH6A/Marina Drive intersection, SH6 to Kawarau Falls Bridge **Outcome:** A more efficient transport network, a transferal of priority from general traffic to public transport.
CIP	**Purpose:** To provide a new arterial traffic route (Stage 1) to free up capacity on Stanley Street for improved public transport services. To provide improvements in the town centre to enhance the urban, pedestrian and cycle environment. **Location:** Queenstown Town Centre

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Project	Scope
	Outcome: A more of efficient and user friendly town centre that is less dominated by general traffic.
Travel demand management package	**Purpose:** To identify a package of measures to encourage a change in travel behaviour away from private motor vehicle travel. Measures are unlikely to be infrastructural and will utilise the carrot and stick approach. **Location:** Wakatipu Basin. **Outcome**: To encourage people to use more sustainable and higher capacity forms of transport.
Public transport services	**Purpose:** To identify a network of interconnected BRT services with improved fleet, bus stop facilities and frequency of service. **Location:** Wakatipu Basin. **Outcome:** An enhanced PT service to encourage a higher patronage.
On-road PT Service Improvements	Purpose: To provide supporting infrastructure for the improved public transport services. Location: Wakatipu Basin. Outcome: An enhanced PT service to encourage a higher patronage.
Stanley and Shotover corridor improvements (includes bus hub stage 1)	**Purpose:** To provide urban realm improvements as the corridor changes from a traffic route to a PT, walking and cycling route and acts as the principal PT gateway into the town centre. **Location:** Stanley and Shotover Streets **Outcome:** An improved urban environment in the town centre with the transport system that supports efficient modes of travel.
Town centre upgrade – Stage 2	**Purpose:** To provide improvements in the town centre to enhance the pedestrian and cycle environment. **Location:** Camp Street, Earl Street, Church Street, Queenstown Mall, Cow Lane, Lake Esplanade and Ballarat Street. **Outcome:** An improved urban environment in the town centre with a transport system that supports efficient modes of travel.
Arterials Stage 2	**Purpose:** To extend the arterial traffic route to draw traffic away from the town centre. **Location:** A new link between Gorge Road and Hay Street. **Outcome**: An improved urban environment in the town centre with the transport system that supports efficient modes of travel.
Stanley Street bus hub stage 2	**Purpose:** To integrate with development and provide an enhanced bus hub that provides connectivity between different types of services. **Location:** Stanley Street **Outcome:** To provide an improved public transport level of service/experience to encourage higher patronage.
Frankton Transport Hub (on golf course)	**Purpose:** To provide a functional multi-modal hub that provides for service improvements in the longer term. **Location:** Kawarau Road **Outcome:** To provide an improved public transport level of service to encourage higher patronage.
Stage 3 Arterials Route	**Purpose:** To extend the arterial traffic route to draw traffic away from the town centre. **Location:** Between Glasgow Street and the One Mile Roundabout **Outcome:** An improved urban environment in the town centre with the transport system that supports efficient modes of travel.
Offline PT corridor	**Purpose:** To identify a new public transport route outside of the road network. **Location:** Between Frankton and Queenstown Town Centre. **Outcome:** To provide additional capacity for the PT system and encourage higher PT patronage.

1.7 Stakeholder engagement and communications plan

An Engagement Strategy (Appendix A06) was developed for the business case and describes the engagement process for the project. The strategy identifies a broad spectrum of key stakeholders to engage with through the project.

It is expected that most stakeholders will continue to be interested in the project, especially as more detail is developed around the concepts. It is recommended that the intent of the Engagement Strategy is carried

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through into specific plans for each of the packages/programmes/projects as they develop. The plans should be developed by a communication advisor and owned by the project director and governance group.

1.7.1 Key stakeholders

- Government Ministers and local MP

Project partners:

- QLDC and ORC councillors and Mayor
- Senior leaders QLDC, ORC and Waka Kotahi
- Technical staff and project team members QLDC, ORC, Waka Kotahi
- Managers of interdependent projects

Associate government organisations:

- Adjacent councils (Central Otago)
- Central government/consenting authorities MBIE/DIA/DoC/MoE

Iwi/Hapu

- Ngāi Tahu

Landowners (and absentee homeowners)

Industry/services:

- Queenstown Airport
- Emergency services
- Waste collectors
- Tourism groups
  - Destination QT (RTO)
  - Tourism industry assoc.
  - Rental vehicle assoc.
  - Hotel assoc.
  - Campervans companies
  - Bus and coach assoc.
  - Downtown QT
  - Chinese tourism operators
  - Operators re. vehicle movements
  - Real journeys
  - NZ Ski
  - Camping ground
- Utilities and services
  - Rock Gas
  - Telecoms

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  - Chorus
  - Telstra Clear
  - Aurora
  - Water Strategy – QLDC PMO
- PT Operators
  - Ritchies and Go bus
  - NZSki
  - Go Orange (Real Journeys)
  - K-jet
  - Taxis
  - Savy
- Chamber of Commerce
- Downtown Queenstown
- Developers

Community/interest groups:

- Frankton Community Association
- Calvin Height Community Association
- Fern Hill R&R
- Schools
- Freight
- Cycling
- Shaping our future
- Disability groups
- Marina development

1.7.2 Public engagement

The business cases have had two rounds of public engagement. The first was in early 2019 on the concepts as they were developing. The second round closed on 31 August 2020 and was focused on an interactive online map with details of the preferred programme. This also included pop ups in Frankton and Queenstown. The feedback received through the second round of consultation will be critical for the next stages of work as the projects progress into pre-implementation. The feedback should inform project scoping for pre-implementation, and the engagement plans for each of the projects.

1.8 Assurance and acceptance

The business case has been subject to internal review by the Way to Go partners, and the consultant team. It is also subject to the following assurance processes:

- Independent Challenge Team review of the emerging programme by Pete Clark (Waka Kotahi), s 9(2)(a) [redacted] (Price Waterhouse Coopers) and s 9(2)(a) (Mein Consulting Limited), February 2020
- Modelling Peer Review (s 9(2)(a) Flow Transportation Specialists), September 2020

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- Economics Peer Review (s 9(2)(a) Ernst and Young), September 2020
- Review of the draft Queenstown Business Case (Tony Sizemore (Waka Kotahi), Tony Pickard (QLDC), Garry Maloney (ORC), AECOM, September 2020
- Review of the Business Case drawings (ARUP), September 2020
- Independent Quality Assurance Review (Waka Kotahi), October 2020.

The project assurance deliverables for the pre-implementation and implementation phases are set out in Table 8.

Table 8: Project assurance deliverables

Item	Component	Description	Owner
Funding	Approval by QLDC, Waka Kotahi, and Waka Kotahi on behalf of crown funding	Internal approvals will be required for each of the projects, along with approval within the LTP and NLTP.	QLDC/Waka Kotahi
Safety audit	Independent safety audits are to be carried out at each stage	Detailed design audit to be completed and issues resolved (for pre-implementation). Post-construction safety audit to be completed following implementation.	Waka Kotahi/QLDC Carried out by independent consultant
System optimisation review	Operation of new systems	It is anticipated that signals and ITS will be operated by WTOC. WTOC to audit designs for operational issues.	WTOC QLDC/Waka Kotahi
Property	Acquisition	Internal approvals required for property purchase. Acquisition must follow all relevant legal processes.	QLDC/Waka Kotahi
Legal and planning review	Consenting review	Peer review of the consenting strategy to ensure issues are identified and appropriately managed.	QLDC/Waka Kotahi Carried out by independent consultant
Cost estimate peer review		Independent peer review of cost estimates for pre-implementation.	QLDC/Waka Kotahi Carried out by independent consultant
Economic peer review		Independent peer review of the economic appraisal for pre-implementation.	QLDC/Waka Kotahi Carried out by independent consultant
Detailed design	Design elements	Internal approvals of design standards used, particularly where standards are varied, or an innovative approach is used.	QLDC/Waka Kotahi
Technical assurance	Specification and value for money	Independent technical assurance of projects design quality and assurance.	QLDC/Waka Kotahi
Tender phase	Tender processes	A procurement strategy is required to guide all procurement process. This is subject to internal approval.	QLDC/Waka Kotahi
Construction	Oversee of construction and sign off for completion	Internal procurement and contractual processes to be followed and approvals sought, including client field assurance.	QLDC/Waka Kotahi

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Item	Component	Description	Owner
	Health and safety	Ensure health and safety plans are in place, appropriate, and followed throughout construction.	QLDC/Waka Kotahi + contractor
	MSQA	Independent external provider to provide quality assurance throughout construction	To be engaged

1.9 Change control

At the outset of each phase for each individual project it is critical that the scope of work is clearly defined and agreed between the project partners and between the client and consultant/contractor. This will enable the clear identification of change during the project development, ideally before it impacts.

Any change in the scope of the project is to be managed by the project manager and reported through to the project governance if it is at a significant level (to be determined by the governance group). It is recommended that a change control register is established for each project and across the programme to ensure that interdependencies of change are managed appropriately. Change will be managed within an understanding of the tolerances of the project (related to funding, scope, risk, quality and benefits).

The change control register will sit alongside the risk register and should be managed by the project manager. Any risk that impacts will likely result in a change in the project, and will result in an adjustment of cost, programme or quality that will be subject to approval by the programme governance.

1.10 Benefits realisation management

The benefits of the business case will be realised and measured against the targets that have been agreed with the project partners. The alignment is demonstrated from the benefit statement through to the measure for the baseline and the target performance (Table 9). These benefits will be developed further as the individual projects are developed.

The development of the benefits realisation plan has highlighted that there are significant data gaps for the baseline information. It is therefore recommended that a data improvement plan is developed between QLDC, Waka Kotahi and ORC to ensure that the right information is being collected. The gaps in data has required that the best available information has been used, rather than the best data itself. To also assist in bringing this plan together, some of the KPIs have focussed on the Queenstown to Frankton corridor where better information is available. This is also a key part of the network and it influences the outcomes achieved both up and down stream.

Finally, it is noted that COVID 19 is going to have a significant impact on behaviours and will mean that the baseline data may be quickly out of date or irrelevant. This will be a key issue for the data improvement plan to address.

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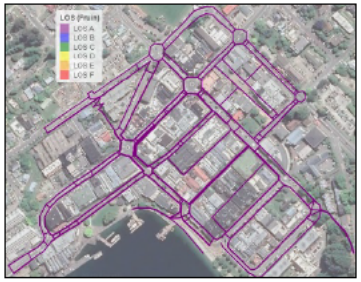
Table 9: Benefits framework

Investment objective Efficiency	Key performance indicator	Outcomes	Measure	Baseline	Target	Available
Provide more efficient and reliable access for people and goods that: a. sustainably manages high growth b. reduces reliance on private vehicle travel	Travel time reliability for all modes	Decrease the financial cost of using transport, better management of population and visitor growth	Average travel time variability	GT – interpeak variability of 30mins (fastest time 13min longest 43min) 2018 model SH6/6A to Fernhill roundabout PT – pm peak variability of 11 minutes Tom Tom data SH6/6a to CBD	Achieve consistent travel time on key routes, noting travel time for GT may increase GT – max variability of 15mins PT – max variability of 3.5 minutes	Yes for GT from models, but better to use actual monitoring Tom Tom data for PT
	Mode Share	Decrease the financial cost of using transport, reduce reliance on car travel	Number of pedestrians, cyclists and public transport boarding	2018 survey General traffic – 93% PT – 1% Pedestrians – 5% Cyclists – 1% (adjust based on long term trends) *For F2Q	<u>2028</u> 60% general traffic 40% sustainable modes <u>2048</u> 40% general traffic 60% sustainable modes *For F2Q	Yes – annual surveys
	Network accessibility	Improved accessibility to town centre by public transport	Number of residents within 400m of a bus stop (5min walk)	17,024 (62% of Wakatipu ward population in 2020 spatial plan modelling)	Target - 90% of resident population within 5min walk of a PT service Targets to be confirmed to align with the Spatial Plan	Every four years following the release of new census data
	System Occupancy (Network Productivity)	Increase vehicle occupancy	Number of passengers for general traffic and public transport	2.18 in 2018	3 in 2028	Reliant on ongoing cordon surveys
	Walking Quality of Service (LOS)	Improve the level of service for pedestrians in the Queenstown town centre	Quality of service metric based on Transport for London guidance (Fruin) – average LoS for two hour period	 LoS A for all links 12pm – 6pm	Maintain LoS A	Assessment can be made at anytime

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Investment objective	Key performance indicator	Outcomes	Measure	Baseline	Target	Available
	Cycling Quality of Service (LOS)	Improve the level of service for cyclists	Percentage travel on cycle network classified as complying with defined level of service (facility type)	As determined in Appendix E of the Wakatipu Active Travel Network Single Stage Business Case	To achieve the proposed level of service for cycling as determined by Figure 3 in the Wakatipu Active Travel Network Single Stage Business Case	Needs development
Resilience						
Is adaptable to change and disruption	Network availability	Improve resilience to natural hazards – availability of alternatives for high risk/risk impact routes	Percentage of high-risk, high-impact routes with a viable alternative	Alternative route for F2Q is via Arthurs Point an extra 17.2km and 10-20mins F2Q vulnerable to rainfall induced landslips (4L)	4VL in 2050 without remediation Target – 2UL	Risk data from NZTA National Resilience PBC, detour from resilience detour tool
	Natural Hazard Rating/Risk/QRA	Improve resilience to natural hazards – level of service and risk	Average number of road closures from natural hazards	An average of 5.1 road closures per year based on 10 years of TREIS data on F2Q	A rolling 10 year average of 3 closures per year	Available from TREIS at any time
	Future ready	Improve network resilience and travel time reliability – network redundancy	Appropriate capacity in event of system disruption (including alternative routes, alternative modes, alternative destinations)	Current travel time reliability is poor, up to 30min for F2Q. This also impacts PT.	Available alternative routes (Arthurs Point) with mode options – GT, PT and walking and cycling. Ferry also provides an alternative option.	Needs improvement
Amenity						
Enhances the liveability and quality of the natural and built environment	Quality of urban environment	Improve the amenity value of the built environment, people focused	VURT rating		An average score of 20 (light green) or better across the network.	Yes

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Investment objective	Key performance indicator	Outcomes	Measure	Baseline	Target	Available
	Transport related emissions and noise	Reduce pollution and greenhouse emissions Reduce environmental noise, people focused	VKT proxy for tonnes of CO2 equivalents emitted Measure noise level in dB Laeq over 24h	2018 baseline 178,535 tonnes CO2-e No baseline for noise, to be established 2020/21	2048 target 156,257 tonnes CO2-e (15% decrease) Target reduction of noise to be established, following identification of the baseline, in line with national, regional and local targets	Data gap – noise monitoring
	Potential for urban development	A transport system that encourages and enables development	People and goods throughput on SH6a	Considered that transport is a barrier to further development as it is at 100% capacity	85% capacity of the transport network would allow for development to occur	Data gap – alternative measures should be developed
	Quality of life survey	Improved residents' satisfaction with the transport system and built environment		Town centre 2019 respondents agree: Meets the needs of residents and tourists – 25% Traffic levels are acceptable – 25% Enough PT – 53% Easy place to spend time – 64%	Town centre respondents agree: Meets the needs of residents and tourists – 100% Traffic levels are acceptable – 100% Enough PT – 100% Easy place to spend time – 100%	Survey has been carried out 2018 and 2019. Will need to continue to provide comparison over time
	Visitor experience	Improved visitor experience	% of satisfaction	New baseline to be established post COVID	Improvements in visitor feedback over the established baseline, particularly related to transport elements	Yes
Safety						
Enhances safety with a goal of Vision Zero	Risk of death or serious injury	Support physical health, improved access for alternative transport modes	Mode share of active modes	2018 survey Pedestrians – 5% Cyclists – 1% (adjust based on long term trends) *For F2Q	2028 60% general traffic 40% sustainable modes 2048 40% general traffic 60% sustainable modes *For F2Q	Available
		Reduce deaths and serious injuries	DSI and collective and personal risk rating Number of DSIs	Collective risk – medium and Low medium Personal risk – low DSI walking – 0.32 DSI/km DSI cycling - 0.16 DSI/km DSI vehicles –1.4DSI/km SH6a from SH6 roundabout to Shotover Street	Collective risk – low Personal risk – maintain low DSi – 0 SH6a from SH6 roundabout to Shotover Street	Available

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1.11 Risk management planning

Table 10 summarises the key risks for the next stages of delivery at a management level. Individual design risks also remain for each project and will be managed at a project/alliance level. A risk register (Appendix F01) has been maintained throughout the project and contains the full risk assessment.

The ongoing management of risk in the programme into the next stages requires further planning and structure. However, it is expected that each project will have a risk workshop upon commencement to develop a specific risk register which will be continually reviewed and updated throughout the project. Risks that are rated as high or critical will be reported through the project governance with monthly reporting. It is expected that the risks are assessed and managed following the same framework that has been developed for this business case.

Table 10: Key risks

Risk description	Risk cause	Risk score	Owner	Treatment strategy
That the funding available to implement business case recommendations, and the recommendations, do not align.	Future budget drivers and decisions based on a range of elements, not only this business case.	Critical	QLDC and Waka Kotahi and ORC – Shaun Hubbard	Maintain contact with levels in QLDC, ORC and Waka Kotahi that are appropriate for team. Update cases to be as realistic as possible for cost/budget profiles. Parties to signal funding priorities as early as possible.
That property(ies) required are not available.	Property owners do not wish to sell, or property costs are prohibitive.	Critical	Waka Kotahi – Tony Sizemore	Early engagement with property owners.
That decision making external to team is poor or slow.	Decision makers are not aligned or not prepared to commit to significant change.	Critical	Way to Go – Shaun Hubbard	Maintain contact with appropriate levels in Waka Kotahi, ORC and QLDC. Reinforcement of requirement for timely decisions, particularly during the collaborative review process.
That decisions made for interface projects (Stage 1 design, Stage 2 and 3 prelim design and designation, and Manawa) are inconsistent with business case recommendations (misalignment).	Interface projects are working to different timelines, and their various constraints are not the same as this project.	High	Way to Go – Shaun Hubbard	W2G maintain observation on interface projects and interaction with this project's requirements. Strong integrated project governance, with a clear agreement of roles and responsibilities.
There is misalignment between Waka Kotahi, QLDC and ORC for the multitude of interdependent projects.	Multiple interdependencies between the projects which are the responsibility of differing agencies.	Critical	Way to Go Board – Shaun Hubbard	Consistent decisions are required across design, operations, approvals, funding, programme and implementation.
There is the threat that the projects lose community support.	Community and individuals progressively understand more about the projects and the impacts on individuals.	High	Way to Go communications – Shaun Hubbard	Comprehensive engagement strategy on-going after business case completion, with frequent touch points with the community and stakeholders.

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Risk description	Risk cause	Risk score	Owner	Treatment strategy
Parking control and management measures are not strong enough to act as a "push" factor for mode shift.	Parking implementation plan has not been developed, so uncertainty about its contents.	Critical	QLDC – Tony Pickard	Recommended W2G seek Board direction to prompt QLDC to develop implementation plan that supports this business case.
There is a threat that the different work programmes may not work together, or even against each other, over the life of this project.	Different work programmes have different governance structures.	High	Shaun Hubbard	W2G to emphasis understanding the connected projects management and governance structure and keep the connections.
The spatial plan supports land use patterns that are inconsistent with patterns assumed in this work, upon which the mode shift and infrastructure requirements are based.	Spatial plan is driven by different elements than business case project and was started after this work was mostly complete.	High	Shaun Hubbard	Pre-implementation work could do further sensitivity tests on SP options, to assess further risk of inconsistency.
There is a threat that personnel experienced in this project may leave the relevant roles (or organisations).	People move, change careers or seek promotion/different roles.	High	ORC, Waka Kotahi, QLDC managers	Management to remain aware of the vulnerabilities of staff movement/changes on this project. Recommend a second (backup) team member who is appropriately informed and current.
There are detail design changes required in later stages.	Detail design can identify necessary changes to scope/cost/programme.	High	Way to Go – Shaun Hubbard	Involve the right people early in frequent challenge sessions and peer review.

1.12 Cost management

Programme cost estimates have been developed for budgeting purposes based on scheme level design, although some projects have been developed further to a detailed design level cost estimate. It is likely that costs will change through pre-implementation and implementation phases. The ultimate responsibility for cost sits with the programme governance and is to be managed by the project director and manager at an operational level.

To enable the project governance to manage costs, consultants and contractors must provide the following information in accordance with relevant procedures to the QLDC and Waka Kotahi project managers monthly and highlight issues arising as early as possible:

- Budgeted cashflow (baseline and risk adjusted baseline)
- Value of work completed in the preceding month and contract to date (including rates and quantities for all items not listed as "lump sum" or "each" within the contract)
- Forecast value of work completed and revised cashflow through to project completion
- Exception reports outlining the reasons for not meeting the financial targets
- Any approved or proposed variations to the scope of work

It is also critical that the project scope is clearly defined at the start of each phase, and that any changes to the scope are recorded along with the impact on cost. The Waka Kotahi Cost Estimation Manual (SM014) 2015 sets procedures for scope and cost management that should be utilised.

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2 LESSONS LEARNED AND POST IMPLEMENTATION MONITORING

2.1 Lessons learned

The preferred programme has a long life span, and therefore provides a good opportunity to feed lessons learned from the early projects in the programme into the projects delivered later in the programme. This will require a good level of coordination and cooperation between the project partners.

It should be required by each of the partners to deliver a project close out report which includes a lesson learned review. For large projects, it may be appropriate to engage an independent facilitator to go through a full review. The review should be careful to capture both positive and negative lessons.

The close out report would be the responsibility of the project manager and would be shared with the governance group and to the other partners. The close out reports should be reviewed as part of developing the scope and tender documentation for any subsequent phases or projects.

The close out report should be funded by the project's managed costs and be delivered within two months of the project/phase completion.

2.2 Post implementation monitoring

A monitoring programme has been developed as set out in Table 11. This is the recommended approach to monitoring the outcomes of the business case to track how well the benefits are being achieved. Monitoring will be a joint responsibility of each of the partners.

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Table 11: Post implementation monitoring

Investment objective	Key performance indicator	Outcomes	Measure	Method	Owner
Efficiency					
Provide more efficient and reliable access for people and goods that: a. sustainably manages high growth b. b) reduces reliance on private vehicle travel	Travel time reliability for all modes	Decrease the financial cost of using transport, better management of population and visitor growth	Average travel time variability	GT – traffic model, but another method should be found PT – Tom Tom data	QLDC, Waka Kotahi, ORC
	Mode Share	Decrease the financial cost of using transport, reduce reliance on car travel	Number of pedestrians, cyclists and public transport boarding	Annual traffic surveys	QLDC, Waka Kotahi, ORC
	Network accessibility	Improved accessibility to town centre, integrated and sustainable transport system	Number of residents within 400m of a bus stop (5min walk)	Spatial analysis of census data analysis (4 yearly)	ORC, QLDC
	System Occupancy (Network productivity)	Increase vehicle occupancy	Number of passengers for general traffic and public transport	Annual cordon and screen line surveys	QLDC, Waka Kotahi
	Walking Quality of Service (LOS)	Improve the level of service for pedestrians	Fruin level of service/Pedestrian Comfort Level metric	Based on Transport for London guidance	QLDC
	Cycling Quality of Service (LOS)	Improve the level of service for cyclists	Percentage travel on cycle network classified as complying with defined level of service (facility type)	Annual maintenance survey	QLDC
Resilience					
Is adaptable to change and disruption	Network availability	Improve resilience to natural hazards – availability of alternatives for high risk/risk impact routes	Percentage of high-risk, high-impact routes with a viable alternative	Resilience assessments and detour assessment	QLDC, Waka Kotahi
	Natural Hazard Rating/Risk/QRA	Improve resilience to natural hazards – level of service and risk	A rolling 10 year average of closures per year	TREIS data	QLDC, Waka Kotahi

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Investment objective	Key performance indicator	Outcomes	Measure	Method	Owner
	Future Ready	Improve network resilience and travel time reliability – network redundancy	Appropriate capacity in event of system disruption (including alternative routes, alternative modes, alternative destinations)	To be established	QLDC, Waka Kotahi
Amenity					
Enhances the liveability and quality of the natural and built environment	Quality of urban environment	Improve the amenity value of the built environment, people focused	VURT score	VURT assessment	QLDC
	Transport related emissions and noise	Reduce pollution and greenhouse emissions Reduce environmental noise, people focused	CO2 surveys analysis based on transport modelling Measure noise level in dB Laeq over 24h	Modelling assessment Noise surveys to begin	ORC/QLDC
	Potential for urban development	Ensure that transport does not block future development	Transport capacity as a proxy	Transport models	QLDC
	Quality of life survey	Improved residents' satisfaction with the transport system and built environment	Continuation of current survey questions	Quality of life survey	QLDC
	Visitor experience	Improved visitor satisfaction	% satisfaction	Visitor survey	QLDC
Safety					
Enhances safety with a goal of Vision Zero	Risk of death or serious injury	Support physical health, improved access for alternative transport modes	Mode share for active modes	Aligned to Active Modes Business Case monitoring	QLDC, Waka Kotahi
		Reduce deaths and serious injuries	DSI and collective and personal risk rating Number of DSIs	Provided through Waka Kotahi safety analysis tools (CAS)	QLDC, Waka Kotahi

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WAKA KOTAHI
NZ TRANSPORT AGENCY

QUEENSTOWN BUSINESS CASE

Assurance Process

s 9(2)(a)

25 NOVEMBER 2020

FINAL

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WAKA KOTAHI NZ TRANSPORT AGENCY | QUEENSTOWN LAKES DISTRICT COUNCIL | Otago Regional Council | WAY TO GO

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1 ASSURANCE AND REVIEW PROCESS

It is recognised that the Quality Control and Assurance process is important for a document of this nature. This appendix details the QA process that has been applied during the progression of this business case development; the responses to the Business Case iterations; and the peer reviews.

1.1 QA During Project Development and Delivery

All technical notes, drawings and plans, and assessments involving calculations are subject to either:

- Check and Review prior to release
- Review only where there is no technical/ factual content to 'check' per se.

For the release of this business case after Waka Kotahi's IQA review, all documents, Technical Notes, plans and cost estimates have been marked Final. It is recognised, however, that there may be a further review and updates required from the Way to Go Board, QLDC and/or ORC, prior to completion of the Business Case for Waka Kotahi Board delivery. It is not expected that these updates will change the technical content of the appendices, but rather the presentation of information in the Options and Case documents. In which case the "Final" status and date of delivery will mark them as updated from the "Final" documents delivered up to the 25th November 2020.

The Business Case was also subject to a Peer Review process during its development, by a Challenge Team. An independent Challenge Team provided review of the emerging programme. The team were given a presentation and briefing in February 2020. Subsequently, their issues and questions were responded to and presented to the W2G Board and are not presented separately as an Appendix to this report.

The Independent Challenge Team comprised of Pete Clark (Waka Kotahi), Geoff Cooper (Price Waterhouse Cooper) and Barry Mein (Mein Consulting Limited).

1.2 Internal Review of 7th September Draft

The business case main documents (Exec Sum, Strategic Context, Options Assessment, Preferred Option and the other Case documents), were subject to Internal review by two Senior Stantec personnel who had no connection with development of the business case. They reviewed the document against the 16 IQA questions and a general review of the Strategic Case.

Their summary document is the first Appendix to this to this document. Their specific track changes and comments are held on file and available for review if required.

The project team endeavoured to respond to the feedback in the re-writes of their sections for the IQA release of the document (8th October 2020).

1.3 External Review of 7th September Draft

1.3.1 Client reviews

The business case was subject to review by several forums following the 7th September 2020 Provisional Draft issue. Comments and feedback were provided from the following partner organisations:

- Waka Kotahi NZ Transport Agency (Tony Sizemore),
- Otago Regional Council (Garry Maloney)
- Queenstown Lakes District Council (Tony Pickard)

QLDC provided a table with their queries and a response for team commentary which is appended with the project teams' actions/thoughts.

Waka Kotahi provided general feedback discussion (through review calls) and track changes to a number of the documents, which the authors have considered in their updating and review.

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In addition, and on behalf of QLDC, reviews were undertaken by:

- AECOM (business case documentation)
- ARUP (drawings)

AECOM and ARUP provided an excel spreadsheet with their comments, to which the project team authors have responded with point by point comments.

Appendices 2, 3 and 4 to this document contain the comments and project team responses to QLDC generally ARUP and AECOM respectively.

1.3.2 Review by Matt Roberts

Matthew Roberts of QLDC provided a comprehensive review of the suite of Business Case main documents, and the design plans. Unfortunately, Matt's comments were not viewed by the project team until the closing stages of the Post-IQA review. A number of Matt's concerns had been addressed throughout the review as a matter of responses to other reviews, but others have not, and the project team responses reflect this. Where there is an opportunity for further review and update, the project team will review Matt's comments and respond where appropriate.

Matt's comments and the project team response are Appendix 5.

1.4 Independent Quality Assurance Review (IQA)

The business case and all appendices were submitted for Waka Kotahi's IQA review on 8th October 2020. The documents were reviewed by the IQA team, and other review agencies as detailed below.

1.4.1 IQA Review

The IQA team provided a suite of comments. Each was considered and the how the project team has responded is detailed in Appendix 6.

1.4.2 Commute Review

Commute consultancy [redacted] provided an overall review of the main business case document. Commute made a few comments related to improvement of presentation and evidence, and the project team's comments are appended to the rear of his document. Appendix 7.

1.4.3 Economics Review

Both Ernst and Young, and Flow provided a review of the project economics (EY predominantly the non-transport WEB, and Flow transport economics). Both found the business cases work adequate. The project team has not developed any responses to their reviews, which are included in Appendices 8 and 9.

1.4.4 Way to Go Board Review

The Way to Go Board members reviewed the Summary Document (considered the key document for communication of the Business Case to a broader audience). Each member (Peter Clark – Waka Kotahi; Peter Hansby – QLDC; Kesh Keshaboina – Waka Kotahi and Gavin Palmer – ORC) provided comments in the document text. Appendix 10 includes the Summary Document with all annotations, and the response from [redacted] is similarly recorded as a comment. Turning the document into a PDF does not permit the content of the comments to be recorded, however the full word document is retained and can be reviewed when required.

1.5 Next Steps

As of 25 November, the business case documents have been fully reviewed and resubmitted for the next stage of the review process, which is believed to require the review and support of the respective Councils and Committees, before presentation to the Waka Kotahi Board in December. At this stage is it uncertain whether further update is required for completion to Waka Kotahi Board. It is understood a Modelling Peer Review is in process.

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APPENDIX A STANTEC INTERNAL REVIEW (AGAINST IQA 16 QUESTIONS)

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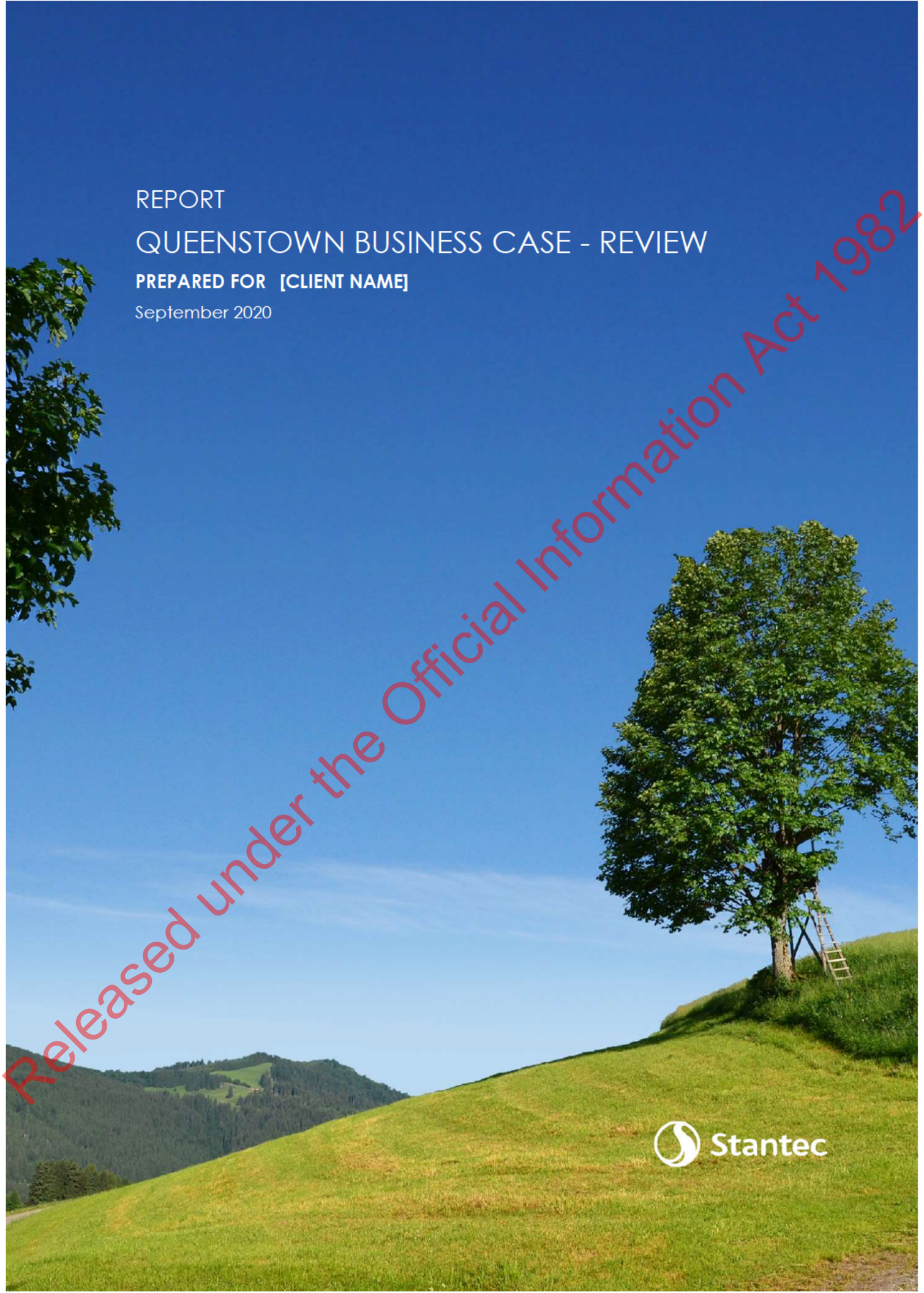
REPORT

QUEENSTOWN BUSINESS CASE - REVIEW

PREPARED FOR [CLIENT NAME]

September 2020



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			Prepared by	Checked by	Reviewed by	Approved by

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1. Introduction

This independent review considers the following documents which were prepared for the Queenstown XX business case:

- r_Waka Kotahi Strategic Context_QTBC_Draft v1
- r_Waka Kotahi Options Assessment_QTBC_Draft v1
- r_Waka Kotahi Exec Summary_QTBC_Draft v1
- r_Waka Kotahi Preferred Option QTBC_Draft v1

The review focuses on the extent to which the business case meets the Waka Kotahi Investment Questions, and highlights any gaps. Gaps may be addressed in three different ways:

- accept that there is a gap but agree that it doesn't need to be filled;
- provide other sources/reports to address the gap; and
- undertake further analysis and investigations to address the gap.

Agreement of the above will assist Waka Kotahi and Queenstown Lakes District Council in developing the scope for the next stages.

2. Review

Comments have been added to each document reviewed. Some of the more significant comments are also summarised below, along with provision of other, more general, comments.

2.1 Covid-19 Questions

Investment Question	Currently Provided	Gap
Does Covid-19 affect the problem, benefits, or option/preferred solution selection?	In the main the problems (pre-Covid-19) were linked to rapid growth in visitor numbers, residents, development, economic activity and traffic. However, Covd-19 travel restrictions have led to economic contraction and widespread job losses. The business case states that it is expected that business as usual will resume in 2024. This is not certain. Different growth rates were tested in the traffic modelling. The benefits will not accrue if international visitor numbers do not return to pre-Covid levels.	Uncertainty log testing different possible future scenarios. There are still benefits that will be realised through immediate investment – however this would be in job creation and economic stimulus. An evaluation of these aspects would help to justify the investment.
Will Covid-19 impact the delivery of the proposed solution?	The business case suggests that the solution will be easier to implement now due to lighter traffic volumes due to the economic downturn. Temporary traffic management will be less disruptive given there are no international tourists.	Covid-19 may affect the attractiveness of public transport in the future. This is not touched on in the business case.

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2.2 Executive Summary

Comments have been added to the Executive Summary document including suggestions for further improvements. The key action is to ensure that what is in the Executive Summary is also in the other documents, for consistency.

2.3 Strategic Case

Covid-19: Covid-19 travel restrictions have weakened the case for investment in the normal sense. I would recommend a re-read of the document to weave through comments about the effects of the travel restrictions, and I have tried to highlight places where a comment would help to clarify or strengthen the case. In general, the case presented still reads very much like a traditional business case – we have lots of visitor and residential growth and more is coming, the economy is booming, roads are becoming congested, we need to better manage travel demand. However, with Covid-19 travel restrictions this is not the case.

The case for investment, in my view, relates to:

1. Confirming shovel ready projects that will create jobs in construction and in public transport service improvements to support recovery of the Queenstown Economy post-covid. This will allow Queenstown to proactively prepare for a future when international visitors return, stimulating other economic activities and unlocking benefits quickly, at that time.
2. It is the ideal time now to progress these transport projects as the effects of disruption will be far less, as there are far less visitors and traffic compared to constructing when activity is at normal or increasing levels
3. Due to the economic downturn and high unemployment rate it is critical to provide better travel choices now, that are cheaper than driving, to ensure continued access for those who may have their incomes affected.

Background: The 'Background' section tends to dominate, and the investment story does not come through clearly. The background is complicated and difficult for someone outside the project to follow. A concise summary which draws out the main points with the remainder in an appendix could help a reader unfamiliar with the history to quickly understand what is important and of relevance to the project.

It is not clear where this business case sits on the continuum – is it a Programme Business Case? This should be stated in the title so the reviewer knows what to expect and how to assess the business case.

Strategic Alignment: The 'Strategic Alignment' is very detailed and could be summarised in a table with the detail in an appendix. It would be helpful to have some overall conclusion about where the alignment to organisations strategies/policies is strongest.

Uncertainty Log: There is no uncertainty log and this needs to be added. Different scenarios need to be considered as Covd-19 travel restrictions add considerable uncertainty.

Consideration has been given to the Waka Kotahi Investment Questions for the Strategic Case, with responses provided in the following table.

Investment Question	Currently Provided	Gap
Problem/Opportunity Statements		
Is it clear what the problem is that needs to be addressed (both the cause and the effect)?	Four problem statements provided for SH6A, Frankton/Ladies Mile. Three problem statements provided for Queenstown Town Centre. The primary problem appears to relate to growth in traffic causing congestion and access difficulties.	No
Is there evidence to confirm the cause and effect of the problem?	Evidence is provided to confirm: • Growth • Mode share	No evidence to confirm: • Scale of congestion e.g. intersection and link levels of service from traffic model • Rat running

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Investment Question	Currently Provided	Gap
	• Alternative routes • Traffic volumes • Congestion • Travel time reliability • Crashes • Visitor satisfaction Evidence supports better integrated transport system providing more choice and reducing car dependence. Evidence weak around whether not acting would have negative consequences. It is not clear if there is a strong case for investment. Problem statements have not been tested or refined in light of evidence.	• Erosion of liveability due to transport problems • Threat to future tourism growth • Scale of resilience issue e.g. TREIS data and ONRC level of service assessment • Perception of safety supressing active mode use e.g. survey data • Noise and air quality issues • Safety risk e.g. common metrics –high risk intersections, high collective risk roads • Transport issues are constraining expansion of centre and limiting economic opportunities • Resident's satisfaction with transport There are comments in the 'customer insights' section which could be used to strengthen the evidence sections. Test/refine problem statements in light of evidence. Build stronger case based on broader evidence base.
Does the problem need to be addressed at this time?	The case for acting now is made around rapidly increasing visitor and resident numbers, and a booming construction industry and economy.	This needs updating as the covid-19 travel restrictions mean that the urgent need to respond to growth has disappeared for the short-medium term. There is still a case to invest now but it is quite different (see comments in 2.1.1 above).
Is the problem specific to this investment (or should a broader perspective be taken)?	The problems are specific to this investment.	No – although many of the problems are common across NZ (e.g. urban sprawl, lack of integrated land use and transport planning) this is partly social and political and needs to be addressed at a higher level.
Benefits		
Have the benefits that will result from fixing the problem been adequately defined?	A set of 12 outcomes have been identified.	Explain the outcomes more fully, some are not clearly defined.
Are the benefits of high value to Waka Kotahi (furthering its objectives)?	When comparing the outcomes to the Strategic Alignment, some are clearly of high value.	Some are of higher value than others, but this does not come across. Consider the outcomes that have been articulated alongside the 'Strategic Alignment' section. This may help clarify which are benefits are of highest value.
Will the measures specified provide reasonable evidence that the benefits have been delivered?	The measures will provide adequate evidence that the benefits have been delivered.	Other KPIs that could be considered based on the narrative in the strategic case: • Perception of safety • Suppressed demand for active travel • Liveability surveys • Resident's satisfaction with aspects of the transport network • PT patronage

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Investment Question	Currently Provided	Gap
Are the measures both attributable and quantifiable to this investment?	Most measures presented are measurable. Information is in Appendix B.	Move Appendix B into the main document so the details of the KPIs are clear to the reader. Most are attributable to this investment, but there will be other factors at play that may influence whether they are achieved or not e.g. travel time reliability could be achieved in the current climate because there are no international visitors.

2.4 Options Assessment

Investment Question	Currently Provided	Gap
Have a sufficient range of strategic alternatives and options been explored (demand, productivity and supply)?	A long list of options is provided – 240 options for Queenstown Town Centre, 140 for Frankton to Queenstown. These are in Appendix B. These included options identified previously. Excluded options are only listed for public transport priority 1.	Identify which options in Appendix B are demand, which are productivity, and which are supply. Land use planning options seem to be omitted – be clear if these have been excluded. They are top of Waka Kotahi Investment Hierarchy and need to be mentioned. Public transport will work best when integrated with land use, with residential intensification along high frequency public transport networks and key network hubs or interchanges. Provide full list of excluded options with rationale.
Is it clear what strategic alternatives and options are proposed and the rationale for their selection?	Queenstown Town Centre Programmes (9) are presented in the report. There is no logical flow explaining how the team got from the long list to short list and to recommended programme. It is not clear how the long list of options were grouped into programmes. It could appear the long list was generated and put to one side.	Identify which options are included in which of the 9 programmes or provide a summary overview of each programme so the reader can understand each programme.
Are the proposed alternatives and options the most effective response to the problem (comprehensive and balanced)?	Rationale for the preferred programme direction appears to be based around stakeholder preference and direction.	It would be helpful if the scored MCAs were included for the more significant items. This would help justify the choice. Land use planning system is missing but critical to achieve the right residential densities to support PT, and the right approach to parking provision in new developments.
Are the proposed programmes feasible?	Yes they have been assessed to be feasible at this stage.	No

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2.5 Detailed programme of packages/activities intervention

Investment Question	Currently Provided	Gap
Consistent with the strategic alternatives and options, have a reasonable range of project options been analysed?	It is a difficult to follow how the options have evolved between the Options Assessment Report and the Preferred Option Report. A consistent mutli-criteria analysis approach does not appear to have been used (unless it is in an Appendix) – instead advantages and disadvantage tables are used. This makes it more difficult to confirm alignment with the agreed project outcomes and understand which options contribute to which outcomes. I can see that different options have been considered for some locations. However, in the preferred option it would help if there was reference as to why some locations are proposed to have underpasses and some pedestrian signals. I am not clear whether overbridges were also considered or not.	Great transparency and clarity would be beneficial in demonstrating this requirement has been met.
Is the proposed solution specified clearly and fully (all business changes and any assets)?	The proposed solutions have a high level description and justification and drawings have been provided in an Appendix.	No
Is the proposed solution the best way to respond to the problem and deliver the expected benefits?	Some justification is provided.	It would be helpful to have reference throughout to the desired outcomes, demonstrating the proposed solution is best. See comments under 2.4 also.
Can the solution really be delivered (costs, risks, timeframes, governance, etc)?	I did not see any detailed assessment of risks or costs in the preferred option report or others I reviewed and this is a gap – unless they are covered later	Risks not adequately covered.

2.6 Economic, Commercial, Financial and Management Case

Investment Question	Comments
Economic Case - Does the preferred option optimise value for money?	Be more overt drawing line of sight linkage with case for change. What benefits are we quantifying, how do these link into the overall case and what is their materiality? How reliable are the outputs and what have we done to acknowledge this degree of reliability in other parts of the business case? Have not reviewed economic analysis.
Commercial Case - Is the proposed deal commercially viable?	Would like it presented in a more systematic way as you would in a procurement strategy making it more transparent where decisions have been made, responsibilities taken by whom, and where there are still unanswered questions and a range of options available alongside overall timing (so clear linkage through to the preferred option phases). Have not reviewed adequacy of property strategy. Have not reviewed adequacy of consenting strategy.

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Investment Question	Comments
Financial Case - Is the investment proposal affordable?	Highlights that an SPV may be needed for some of the programme but does not really provide enough transparency on when this may be required, what particular elements it may be required for, and why it might be required. Also does not summarise costs in a way that it is easy to understand the elements that have more funding certainty compared to others.
Management Case - How can the proposal be delivered successfully?	Some really key information is in here, but it was hard to draw it out. For all of these sections, is there more tabulated information rather than narrative because of the scale and complexity of the programme? The business case should be more definitive on what the governance arrangements should be across the programme; essentially a proposal that the Client can either adopt or change to suit their own organisation.

3. Summary

Overall, the business case would benefit from being presented in a single, focused, and consistent document as it was difficult following the story when moving between different documents. This would really help in telling the investment story.

The Strategic Case needs to focus on better demonstrating the case for change by providing evidence to support the claims, and in summarising the overarching background and context. Currently this section is very unclear and challenging to someone who is not familiar with the project. Suggestions have been made within the document as to how this could be achieved.

The long list to short list process was somewhat unclear, as a clear rationale was not provided explaining how the team progressed from the two long lists to the preferred programme. It was unclear how the initial programmes were selected, and how/whether the long lists were used. In the absence of explanation, it appeared there may have been a strong reliance on 'stakeholder preference' in terms of the programme that was developed. No information was provided regarding scoring of the programmes with respect to one another against the criteria, which may help to justify the course of action. The detail is more thorough in later stages although it would be helpful to see the scored MCAs for the significant items.

It is not clear which options have been excluded. Land use/transport planning integration is talked about in the Executive Summary as being important, but there do not appear to be any specific options on this, but neither is it stated as excluded. This needs to be clarified as this should be in the initial focus of interventions.

The Economic, Commercial, Financial and Management Cases seemed reasonably comprehensive overall, but would be improved by:

- some more detail warranted in some areas
- clearer line of sight of preferred option packages for consistency through the documents
- consistent formatting of data to minimise amount of manual interpretation and flicking between sections needed by reader (so it is easier to see if there are information gaps), and
- reinforcement throughout on why we are doing this and how the 'why' of the business case is supported by the delivery of the solution. Note that the rationale and critical thinking behind a business case should not stop just because we are delivering the projects; there needs to be ongoing flexibility throughout to ensure overall programme outcomes are eventually delivered

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APPENDIX B QLDC INTERNAL FEEDBACK AND RESPONSE

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Extract from QLDC Internal Staff Review **23 September 2020**		**Project Team comment**
Executive Summary	Overall the Executive summary provides a good overview, but there are a number of areas outlined below that need to be addressed. References for quotes needed (footnotes) e.g. “Insatiable desirability” is the term used by Queenstown Lakes District Council (QLDC) CEO Mike Theelen to describe the Queenstown conundrum of the attractiveness of the area..... And "The potential economic loss of failing to act has been estimated at $750 million." What does 'high place quality' mean - Case for change para 3. "This is compounded by the high place quality of the historic core of Queenstown Town Centre attracting a large number of people, mostly by car". 3rd from last para pg 4 "There is no single solution or silver bullet will do it on its own" sentence needs a review. Diagram on Pg 5 - where is NLTF defined? Diagram on Pg 6 is not well presented and has numerous acronyms which will be lost on most readers. Diagram on Pg 8 introduces 'Vision Zero'. A footnote would help readers who are not familiar with Vision Zero. Diagram on Pg 9 Includes new acronyms and terms not defined e.g. MCA, Ios Diagram on Pg 9 - note that reference is made specifically to gondola (long term), rather than MRT. Is it intentional to narrow focus on gondola solution?	These points and others from other external review sources have been noted. The entire Executive Summary document has been completely rewritten.

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	Diagram on Pg 9 - could the second Outcome under priority 3 be more clearly articulated? Typo in last bullet point of Page 10 "Improvements to the town centr;" I am surprised that the Preferred option assessment does not include Enhanced active mode routes, it includes Enhanced active mode facilities only. The first intervention pg 11 notes 'Project Manawa'. What is the scope and if this has changed recently, what are the implications? Also, does Project Manawa need to be defined (footnote?). Should it not be noted that funding through CIP has also been provided for design , consenting and land acquisition for stage 2? Should the stages be defined here (or referenced elsewhere)? The interventions do not appear to reference PT service improvements to support the network and facility improvements in the short to medium term. i.e. Bus frequency and improved routing. While this is inherent, I think it should be more clearly articulated (assuming it is costed?), otherwise it appears that there are no service improvements until 'longer term supporting measures' are implemented (first reference to upgrades to bus services). Map on Pg 13 is not particularly helpful here without the additional context and detail - annotation of the key elements would be useful. Why is there is no direct linkage from airport to lake/track, or improved Humphrey's to Hawthorne linkage? SH6 appears to continue to provide severance for active travel from development in Frankton. Pg 15 - I note that Investment Objective 1 provides for more clarity on 'operational regime' improvements for public transport that are not detailed in the initial summary. Pg 15 para 2. The following sentence requires more clarification "Vehicles servicing the businesses in the town centre will have more reliable travel times improving the efficiency of the supply chain." I assume this means that although we are providing options that limit the need for people to travel via the road network, the improvements to the road network are intended to enable more efficient and effective deliveries of product, raw materials etc...? OK this is	

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	explained a little later. I note that Pg 15 appears to be the first mention of interventions that support 'those with mobility needs'. Should accessibility for all, be a standalone objective? Pg 15 para 3 It is not clear to me whether $143m of benefits attributed to Objective 1, are $143m reduction in the costs (of $750m over 60 years) associated with limits to economic growth and development in Queenstown? In addition, over what timeframe are the $143m in benefits realised? Pg 15 Objective 2, last paragraph, introduces the term 'offline public transport link'. There is no reference back to the earlier use of 'gondola' or MRT (usually the term used). Page 15 objective 3. There is no reference here to the liveability benefits of stage 3 of the arterial. Is the improvement in the VURT future assessment of Lake Esplanade (VURT rating 0 to VURT rating 40) attributed at least in part to arterials stage 3? Page 16 diagram introduces VURT which is undefined. It is also unclear what the assessment of the streets would be without intervention in the future. I assume current is now, without intervention and future is with intervention? Pg 18, the summary for 'commercial case' does not address commercial matters, beyond reference to an alliance.	
	Page 6 alignment of strategies - 30 Year Inf. Strategy should get a play here - its a legislative document	These points and others from other external review sources have been noted. The entire Executive Summary document has been completely rewritten.

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	1. The paragraph below (second paragraph) should be removed "Insatiable desirability" is the term used by Queenstown Lakes District Council (QLDC) CEO Mike Theelen to describe the Queenstown conundrum of the attractiveness of the area driving significant growth which, in turn, generates housing affordability and transport challenges. This comment has been taken out of context and should not be used for an opening statement in this business case. Nor should the CE of a local authority be quoted in such manner. This sort of language reduces the overall integrity of the document. 2. What and where is the data source for this widely quoted $750 Million?? 3. What and where is the data source for the 2024 tourism numbers to return?? Stats such as the above should be referenced. Overall quality of the summary is poor in terms of grammar.	These points and others from other external review sources have been noted. The entire Executive Summary document has been completely rewritten.
	In general: Lots of focus on economic benefits - how do the environmental, carbon, social, wellbeing benefits fit? Where does the Southern Corridor fit? And connection to Arthurs Point? Does it say why these are excluded? Good to see Land Use spatial planning is key part of the solution. Can give ourselves endless transit issues to solve if schools, supermarkets, office, and open space integration with residential is not well planned. Comment about the amazing rates of growth on uptake of public transport in QT. Is that relevant? It would have been off a very small base? Does the preferred program have a name? Is it stated in the exec summary?	These points and others from other external review sources have been noted. The entire Executive Summary document has been completely rewritten.

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	'Serving public transport and tourist coaches'... and buses to the ski hills?, which can serve both residents and tourism.	
	I see the need to take these steps and work towards workable solutions; I believe the outlined will benefit the Town Centre and surrounds. Everyone has done a fantastic job on the work done so far, there has been a lot of effort and thoughts go into these plans. We will need to consider the effect that vehicles may become non-compliant further out of the CBD, which may require additional vehicles if officers are used and or technology ie CCTV or the likes to manage further afield. Possibility to re deploy CBD officers to other locations however consider the need for parking ambassadors still in the CBD to educate and offer guidance on options. we may need to consider, if we haven't already bikes / electric scooters etc being left on footpaths and how we will manage this as we don't have any legislation to enforce bikes in non-preferred places in the CBD and or at bus stops, ferry pick up locations etc.	These points and others from other external review sources have been noted. The entire Executive Summary document has been completely rewritten.
Strategic Case	Overall a sound evaluation of the options. There are a number of aspects that need to be addressed, many of which have already been highlighted through my comments on the executive summary The Options Assessment refers to Gondola, e.g. gondola and offline interchangeably. This needs to be consistent. 3.1.1 Were any options considered for airport to lake/Frankton track links via SH6 from North of Lucas place to McBride (through QAC owned land) and down through existing ROW to lakefront (access to Ferry)? Also (as referred later) a link via PT hub on QAC land opposite runway West of SH6? Pg 17. There is a statement that trackless tram has better 'mode penalty', to buses. I am not clear on why, particularly if it is single seat on a bus? pg 17. The % referenced in the table need to be defined/explained. Pg 17 table In general, it is not clear how combination options were assessed and evaluated. The approach appears to be transition from one mode to another, with options being evaluated on	In general - Diagrams clarified. P17 generally higher quality modes have a higher mode attractiveness factor while one seat rides perform better in travel times.

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	their independent merits, rather than combined merits. e.g. active travel/bus options bus/ferry options, etc... Pg 18 Options development. Was any analysis undertaken of wider traffic inputs into the network e.g. Cromwell, and associated predicted growth? Pg 19, Option Development. Were some options excluded that could be considered through Public Works? What considerations were made to determine whether options were 'realistic'. Has this/will it be revisited in light of Covid-19? 3.1.3 Immediately opposite the end of the runway on the western side of SH6 QAC owns a number of properties (assumed to be a result of noise impacts). Was this location considered for a PT hub/link to lake through the existing ROW from McBride to Lake Ave? Page 23. The useful bus priority diagram is not well explained. How is the Transport Management Associations Role incorporated into the Management Case? (for review later). Page 30. The useful diagram is not well explained/introduced. Page 49 Figure 33 and 34. I am confused by the road hierarchy. Why would the arterial be a tertiary road?	P18 Transport modelling incorporates trips coming from outside of the study area P19 Not sure what is meant by public works 3.1.3. Detailed locations for hubs were considered but adjacent to Frankton Intersection was considered best. While TDM is part of the strategic case, the details of how this would be implemented would best be in the management case. Of note is QLDC resistance to the TMA.
	2. Strategic Case Part A / B– The strategic case provides a good overview of the differing elements feeding into the Queenstown Transport Business Case. A recurring theme in the review of existing documents is the need to accommodate extra growth. It is noted that the issue surrounding the constrained nature of Queenstown due to physical constraints places extra demand on the highway network. The assumption is the PT mode shift will ensure most of this growth is accommodated (refer to economic case below), but the question should be asked is the level of growth anticipated sustainable considering this location and does this portray a place	It wasn't within the scope of the BC to consider whether this growth per se is desirable – as this is largely within the control of QLDC as the land-use planning authority.

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	where I would want to live in the next 30 years – the "growth" mindset should be balanced and the strategic case produces some inadequacies, when considering economic benefits referred to below and the achievement of mode shift to the extent forecasted. The level of growth to be sustainable requires a certain level of "gambling". Extensive sensitivity should be incorporated into the growth mitigation. All planning should be done to a high standard (i.e. further master-planning), the models should be built and forecasting as accurately as possible and PT must be delivered to a truly high standard, accessible etc for this growth to pay off in a sustainable manner. Specific reference to the Queenstown Town Centre Arterials Business Case is made in s.4, however the provision of extra road anywhere in Queenstown at the potential expense of further investment in alternative modes should be approached with caution.. further highway capacity ultimately results in less PT usage. The calculation of BCR and Wider benefits should be considered fully in this context.	Argument for town centre arterials is not around traffic capacity but supporting a more public transport and active modes-oriented town centre.
	In terms of the big picture there is a high focus in increasing the road capacity, but in real terms that simply allows for more cars. The phrase "if you build it, they will come" springs to mind. Also is 30% non car mode share by 2045 slightly too late? Would 2030 or 2035 not be more achievable if much of the work is to be completed prior to 2030? There are 2020 population projections that were released at the end of July - these are more accurate in terms of the Covid 19 Recovery picture so perhaps should be utilised. Also the spatial plan will be utilising the 2020 projections. 1.6.6 the Southern Corridor. The Southern Corridor has been identified as one of the priority development areas in the Spatial plan. I am not sure where the housing numbers have come from but they are incorrect. "As of 2018, Jacks Point was the only residential area to the south with 280 households. By 2048, there are anticipated to be further developments at Hanley's Farm and Homestead Bay, plus an approved Special Housing Area at Coneburn, constituting 2,370 dwellings in total." Suggest this is amended to:	Updated projections from QLDC used. Southern Corridor is outside of the scope area but best available information was used at the time the BC was written. . .

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	As of 2018, Jacks Point was the only residential area to the south with 280 households. By 2050, there are anticipated to be further developments at Hanley's Farm, Homestead Bay, and an approved Special Housing Area at Coneburn, constituting 4,425 (the 2050 demand projections) dwellings in total. 1.8.4 the Spatial Plan. This diagram is the old strategic framework, the new one which has slightly different wording needs to be used. It would also be good some of the interdependencies in terms of the joint work programme 3.7.2 Technology. This seems rather limited in terms of the significant opportunities technology brings to transport solutions. According to the Intelligent Transport Solutions World Congress we are on the cusp of an extraordinary revolution in transportation, this document does not reflect potential opportunities to any great degree at all. 6. Summary. The sentence that reads "more transit oriented spatial planning active travel demand management" should be reworked to something more coherent Finally - the Spatial Plan key transport initiatives should be referenced throughout this document.	Spatial plan strengthened in the strategic case but the spatial plan developed while this BC was well progressed – we have done our best to integrate and cross-reference the Spatial Plan/ Whaiora. 3.7.2. Pathway to autonomous vehicles highly uncertain in NZ and adoption internationally is very slow. Current NZ thinking is around 2055 Summary comment noted
Economic Case	The review of the economic case in terms of the assessment of conventional (EEM) benefits has been mainly informed by outputs from the Queenstown Modelling Suite, which features a strategic traffic model, a bespoke public transport model and microsimulation models. The methodology of calculating the economic case through these means is deemed acceptable, however it should be noted that the existing strategic model has limitations that should be considered when considering the model outputs. The economic case identifies a potential cost benefit ratio of 2.69 for Phase 2. This represents a good rate of return on investment, however some caution should be applied when considering this. For this BCR to be realised, in addition to the infrastructure elements, the report states; "the	A comment has been added into the economic case – acknowledging that significant amount of further work is

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	following public transport service improvements are assumed to form part of the NZUP package (acknowledging that these will not be funded through NZUP): ● Staged bus service improvements – introduced as demand changes require them ● Bus max core network ● Frankton Flats Loop ● Kelvin Heights to Quail Rise bus ● New bus fleet – introduced when required to meet demand ● New bus depot ● Bus Priority Lane Enforcement" The shift in demand as identified from the traffic modelling undertaken, requires a significant shift to Public Transport (60% by 2048). A significant amount of further work is required, including improvements to residential developments and pedestrian accessibility to bus stops, including improvements to bus stop infrastructure to realise such a modal shift. In order to ensure this switch to PT is realised, further guarantees should be obtained, such as QLDC taking control of Public Transport operations and ensuring the financial deliverability of more regular services etc. The report states "Staged bus service improvements - introduced as demand changes require them", however it is likely that improvements will have to come first to enable modal shift and subsequent PT demand increase. Caution should also be considered when considering the Arterial Stage 1 and Subsequent stage calculations taking into account the BCR. The modelling takes into account the provision of car parking facilities for which funding is not yet guaranteed, e.g. Boundary Street Car Park and so any benefits associated with this should also be considered with due caution. It is now accepted that the funding of Stage 1 of the Arterial, through the CIP means this is considered as part of the "Do Minimum" Package of works, which is acceptable. Further works should be considered with greater scrutiny. The strategic TRACKS assignment model is acceptable for the current suite of business case work whilst the council develops a more modern and versatile strategic model, however the calculation of economic benefits (or otherwise) from such a model should be used with some degree of caution. Issues with the model assignment methodology, and the use of poor or sparse	required, including improvements to residential developments and pedestrian accessibility to bus stops, to realise a 60:40 modal split. The benefits from the model have been capped at 2048 as a means of reducing the risk of overstating benefits. Sensitivity analysis has also been undertaken to understand the BCR with a 20% reduction in overall benefits.

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	data for the model calibration/validation and the calculation of demand matrices from dated household survey data, should all be considered when assessing the BCR and potential for error.	
Commercial Case	Nothing specific to note, however from reading it is clearly demonstrated the preferred package of works will result in a net benefit to the economy of Queenstown in the short-term, particularly with the CIP funding of Arterials Stage 1. This will provide a clear and necessary stimulus to the economy in Queenstown.	
Management Case	There remains uncertainty regarding R&Rs for delivery and this makes it difficult to finalise a Management Case. The current management case provides a high-level overview only and there are a number of implementation questions that aren't addressed. At this stage therefore the Management Case does not demonstrate a well structured delivery plan, with appropriate management and resource allocation. It is an outline only, as this is reflective of the current uncertainty regarding delivery models. Whilst roles for Governance are explained the responsibilities and associated processes are not defined. Change and contract management activities are not clearly set out. The processes, and associated escalation requirements for risk management are also not clearly outlined.	Agree – happy to receive more information from QLDC on R&R
	In terms of specific comments: Section 1.1.1 acknowledges the NZUP PMO. Section 1.1.2 should also identify that QLDC also has a PMO. There is no reference to QLDC's PMO throughout the Case.	Accepted / updated
	Section 1.2 remains TBC and the table as well as the R&Rs will need to be defined and articulated.	Noted, not actioned, information to be provided
	Table 5, section 1.2.1, references the opportunity for integration with QLDC's 3 Waters Programme. There are also interfaces with BP roundabout, Streetscapes projects and the active travel network.	Active travel is in the table. The other two are part of the scope of the project.
	Section 1.3.1 states that traffic will be "banned" from Staneley Street. Should this state "limited"?	Changed to restricted

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	Paragraph 3 of section 1.3.1 states that a dedicated project is set up for a revocation agreement. Roles and responsibilities need to be defined.	Revocation will need to be a separate project – it is not at the moment.
	Section 1.3.2 states that it is anticipated that public transport services will be improved and increased in 2027. There will be improvements prior to 2027, on an ongoing basis. Should this state 'step change' improvements (as described elsewhere)?	Accepted/updated
	1.6.1 Key Stakeholders should include other Minsters as well as the Transport Minister (given funding mechanisms).	Accepted/updated
	Under Utilities and services, I am included for "water Strategy". This should state Programme Director QLDC PMO, and there should be wider reference to QLDC's PMO (which has an existing Governance and delivery framework).	Accepted/updated
	Section 1.7.Table 7 headed Project Assurance Deliverables, lists "items" that appear to be Governance milestones, rather than project assurance (acknowledging that Governance provides assurance)? What are the assurance activities?	Disagree. Consider table to be appropriate
	Section 1.7 There is no consideration of Technical Assurance beyond Safety Audit. Consideration should be given to within Programme Technical Assurance (Specification and Value for Money) and Technical Governance (outside Programme).	Accepted/updated
	Section 1.7 Table 7 includes Construction Assurance. Consideration/reference and detail should be provided in relation to various levels of construction assurance (inclusive of responsibilities for Health & safety) - MSQA (external provider) and Field assurance (QLDC?). Consideration should be given to 3 Lines of Defence (Contractor assurance, MSQA and Client assurance).	Accepted / updated
	Section 1.8 Consideration needs to be given to tolerance and governance - $ tolerance (inc. contingency management), schedule tolerance, risk tolerance, scope tolerance, quality and benefit tolerances.	Accepted/updated

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	Section 1.8 paragraph 2 states that any change in scope "at a significant level" will be reported to Governance. Significant-level needs to be defined and consideration should be given to the role of governance for significant changes, beyond receiving a report. Section 1.8 paragraph 3 states that "change control register will sit alongside the risk register and should be managed by the same person". Is that person the PM, or Project Controls/Controls Manager (or equivalent)? Section 1.9 references a Data Improvement Plan - Who is responsible for the data improvement plan? Section 1.10 Provides a summary of the Key Risks, but the approach to risk management is not outlined, neither are associated management or governance responsibilities.	Accepted/updated Accepted/updated Accepted / updated Risk management appendix update
	1.1 Government Structure - am assuming this is a typo and should be "governance" 1.2.1 The table in 1.2.1 needs to be updated to include a summary of the below: Town centre and SH6A corridor – A liveable, thriving and authentically New Zealand town centre Five Mile Urban Corridor – A mixed use, high-density, multi-modal urban corridor Ladies Mile – A new transit-oriented neighbourhood offering new housing choices Southern Transit Corridor – A string of centres centred on a new frequent public transport route	
Financial Case	The source of funding for PT OPEX costs and infrastructure improvements not already identified, as part of NLTF should be guaranteed early on before relying on PT mode shift estimates. At the current stage, ORC are in control of bus services and reduced frequency services of 1 hour are being retained, at ORC's discretion. Demand increases are almost entirely dependent on increases to frequency and for model results for future years to be accurate, OPEX funding needs to be guaranteed, along with extra CAPEX for PT infrastructure including accessibility to stops.	Noted. The updated draft includes PT OPEX and further detail has been provided on the elements seeking funding approval including PT infrastructure and OPEX funding
Please describe any technical	Severance of active travel by SH6 from Frankton Town Centre/Airport	

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inputs you would like considered.		
	Is there any impact on the proposed State Highways Speed review and SH6 and SH6a dropping the speed limit	
Does any aspect of this business case affect or support Council projects you are involved in?	There are a number of proposed interventions that provide an opportunity for integrating QLDC 3 Waters infrastructure upgrades.	
	There is no acknowledgement of QLDC's PMO or its role in delivery of QLDC led projects	
	Potential future speed reductions in QT urban area	
Do you have any general comments on the detailed business case?	3. Recommended Options – The emerging preferred package contains a strong underlying Public Transport Response, which is encouraged. Arterial Stage 1 has been secured funding through the CIP and will provide economic stimulus to Queenstown. Further work to increase capacity should be balanced adequately with the need to provide a Public Transport Response, including the guarantee of funding to ensure this. Guarantees should be sought that the funding of further Stages of the Arterial, associated costs and car parking buildings are not at the expense of PT investment.	It is not the role nor the ability of the project team to determine guarantees related to funding. The funding comes from different sources which would speak to coordination between the funders to offer such guarantees.
	This detailed business case reads like a programme business case. Agree with the investment objectives but would expect more granularity within the management case in particular. The high growth areas of the spatial plan should be incorporated into the strategic case, as well as indicating alignment to the spatial plan. It is a shame that the newly released Land Transport Benefits Framework has not been utilised (I	

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	am aware of the timelines on adoption), as apparently the new framework is broader in nature, particularly with the inclusion of details such as treasury's living standard framework. As a suggestion, it would be good to see a clearly described Benefits Management Strategy (unless I have missed it). This is a pre-requirement for any benefit realization plan.	
	General comments - the business case is unnecessarily large and indigestible, and the timeframe they have given us to review is far too short (nor particularly well aligned with our internal planning processes). At no stage has anyone from the DBC reached out (that I'm aware of) to assess whether the local component of the recommended option – or any option for that matter - is aligned with our own strategic direction, affordable for our community, of relative economic benefit compared to other ways we would spend the money, or consistent with community/elected-member sentiment.	This is an interesting series of comments: • The scope of work does not offer the opportunity for a convincing and robust business case to be presented in any smaller package. • The review process timeline was not set by the project team • There were multiple forums of interaction between the project team and QLDC

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APPENDIX C ARUP DESIGN REVIEW AND RESPONSE

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Drawing Information			Arup Comments			Design Team Response
Drawing number	Sheet number	Drawing Name	Details:	Date Finalised:	Comment Author:	Response
SK-0001	Plan Sheet 1	Queenstown Town Centre Renderings	No on street cycle lane facilities for cyclists to safely access parking destinations provided under bus station and within public park on Athol Street from any surrounding streets. This includes for cyclists who will not be part of the official cycling network.	9/21/2020	Phil Carter	Segregated cycleways are a big-city concept, and not needed in small town's center's. Segregated cycle facilities would displace pedestrians, as such cyclists are expected to share the road.
SK-0002	Plan Sheet 2	Queenstown Town Centre Renderings	Radius of corner of Athol and Ballarat Streets to accommodate coaches appears to create a pinch point for pedestrians.	9/21/2020	Phil Carter	Athol Street is part of the Bus Hub, as such a bus must be used as the design vehicle. A lateral shift of the carriageway towards *BAR 1876* can be considered in pre-implementation stage. Location looks narrow compared to the generous footway provided on both Athol and Ballarat streets, however 2.8 m is achieved at the pinch point.
SK-0003	Plan Sheet 3	Queenstown Town Centre Renderings	Private vehicle routing due to restricted access onto Stanley St results in potential conflict between pedestrians and cyclists on Ballarat and Camp Streets.	9/21/2020	Phil Carter	Such potential conflict always exists, unless particular type of users is prohibited from accessing the public space. Stanley street will have restrictions put in place only once the Arterials are constructed, and the majority of the traffic is expected to be directed to use Arterials.
SK-0001	Plan Sheet 1	Queenstown Town Centre Renderings	The tapering at the entrance of Athol Street from Shotover Street unnecessarily reduces footpath width for pedestrians. A reduced lane width will still be able to accommodate buses turning in.	9/21/2020	Swaraj Baral	To be considered in pre-implementation stage.
SK-0002	Plan Sheet 2	Queenstown Town Centre Renderings	There is potential for confusion of what modes the street is prioritising along Church Street with changing road and pavement types.	9/21/2020	Phil Carter	The pavement change is similar to that used on Marine Parade. The pedestrian section between two lanes aims to funnel the pedestrians and give drivers a clear message that a pedestrian desire line across the corridor exists. The section adjacent to the underground car park attempts to limit the area used by vehicles i.e. drivers may try to overtake a vehicle turning/waiting to turn to the car park
SK-0002	Plan Sheet 2	Queenstown Town Centre Renderings	No safe pedestrian crossing between the Novotel and Church Lane on Earl Street.	9/21/2020	Phil Carter	Existing bus stop needs to be retained. Relocation of the bus stop and provision of a crossing point can be considered in pre-implementation stage. Coordination with Novotel will be required to propose alternative drop-off facility.
SK-0002	Plan Sheet 2	Queenstown Town Centre Renderings	Some trees along Earl Street appear to block the sightlines of cars reversing from angled carparks.	9/21/2020	Phil Carter	In low-speed environment limited visibility can offer increased safety benefits as users will adjust the behaviour to maintain comfortable level of risk (risk of homeostasis). Tree species with canopy starting at 1.5 m height should be selected during the pre-implementation stage.
SK-0002	Plan Sheet 2	Queenstown Town Centre Renderings	Not joining the two strategic ends of WATN along Camp Street with high quality cycle infrastructure seems like a missed opportunity. The existing separated cycleway between Church Street and Earl St is very short and treatment at either end (the roundabout and pedestrian crossing at the other) creates conflict points with vehicles and pedestrians.	9/21/2020	Phil Carter	There is no existing segregated cycleway along Camp Street. The referred to WATN links serve as a connection between *Arthur's Point and Queenstown* and *Frankton and Queenstown* , and are a mean to allow residents to access town centre. It is undesirable to construct a cycle boulevard through the town centre as it would displace footways and on street mobility bays. Cyclists are expected to share the place in the town, the same way other users are.
SK-0002	Plan Sheet 2	Queenstown Town Centre Renderings	The priority at Marine Parade is for pedestrians given its waterfront location. The loading zone should be managed and use kept to a minimum to serve its primary function. Unclear how access is restricted and speed limits are managed at all times.	9/21/2020	Phil Carter	Management and enforcement of parking, loading, etc is outside of the scope of this business case.
SK-0002	Plan Sheet 2	Queenstown Town Centre Renderings	Unclear what the use of the remaining parking on Marine Parade is for and whether sufficient accessibility parking has been provided.	9/22/2020	Phil Carter	Management and enforcement of parking, loading, etc is outside of the scope of this business case.
SK-0003	Plan Sheet 3	Queenstown Town Centre Renderings	Unclear who the parking spaces are for on Camp Street. Parking space / taxi stand on the north side of the street contribute to the need to turn around at the roundabout.	9/21/2020	Phil Carter	These are mobility bays, taxi stands, possible future charging stations, and drop-off areas.
SK-0003	Plan Sheet 3	Queenstown Town Centre Renderings	The intersection of Mall St/Camp St/ Ballarat St prioritises vehicular movement and does not serve the natural desire lines of pedestrians connecting the Town Square and Mall as opposed to the current location directly in front of the mall.	9/21/2020	Phil Carter	The mode separation is due to the significant traffic volumes reported by the model on Camp and Ballarat Streets. These vehicles attempt to access/egress from the Historic Core
SK-0004	Plan Sheet 4 - 5	Queenstown Town Centre Renderings	Unclear how have the over dimensional routes been selected. Shotover St and Stanley Street have been identified as being for over-dimensional vehicles however this conflicts with their proposed urban street design and does not have enough horizontal or vertical clearance with trees.	9/21/2020	Swaraj Baral	it is unclear what alternative is being proposed. Shotover and Stanley Streets currently form the over dimension route. This route must be retained until all stages of Arterials are constructed. Clearance to be considered in pre-implementation stage.
SK-0005	Plan Sheet 5	Queenstown Town Centre Renderings	High potential for conflict between pedestrians and cyclists on Beach St (and vehicles on the western end facilitating one way car movement) given the design reflecting it intention as a pedestrian-oriented street, yet also being identified as a key strategic link for cyclists as part of the WATN.	9/21/2020	Phil Carter	Beach street has been designed by BECA as part of Streetscape project which is in implementation stage. The design is shown on the drawings for the completeness requested by the Client. We cannot comment on this arrangement.

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SK-0006	Plan Sheet 6	Queenstown Town Centre Renderings	Loading zone appears close to bus stop - may limit safe manoeuvrability of both.	9/21/2020	Phil Carter	The proposed layout replicates existing arrangement with no known issues.
SK-0006	Plan Sheet 6	Queenstown Town Centre Renderings	Footpath is quite narrow behind bus stop on the Lake Street side of Beach Street. Potential to reconfigure the bus stop placement to allow for more space for pedestrians to wait.	9/21/2020	Phil Carter	To be revisited in pre-implementation stage.
SK-0006	Plan Sheet 6	Queenstown Town Centre Renderings	Pedestrian crossing on Shotover St prioritises vehicular traffic rather than enhancing visibility and safety of pedestrians.	9/21/2020	Phil Carter	it is an intersection with Beach St. Due to the constrained alignment a signalised form was selected in consultation with Waka Kotahi and includes an all pedestrian phase.
SK-0006	Plan Sheet 6	Queenstown Town Centre Renderings	The bend on Shotover street is generous. If this is to cater for OD vehicles to turn the empty spaces will need deterrents for people to not park at this bend. Suggest tightening the corners more to help with deterring illegal parking.	9/21/2020	Swaraj Baral	The bend referred to has the carriageway narrower than the existing scenario. Further, the carriageway allows for the bendi-bus swept paths. No illegal parking is currently observed. NSAAT provided.
SK-0007	Plan Sheet 7	Queenstown Town Centre Renderings	Pedestrians will not go up street to crossing on Brunswick St as design currently suggests. Instead they will cross dangerously. Suggest bringing crossing near to intersection.	9/21/2020	Swaraj Baral	Crossing point as per WATN. Alternative crossing / intersection layout can be considered in pre-implementation stage.
SK-0007	Plan Sheet 7	Queenstown Town Centre Renderings	Visibility over the shoulder at the give way for the driver is limited with the current location of the stop line on Brunswick Street.	9/21/2020	Swaraj Baral	No change form existing layout - no such issues are known. To be revisited in pre-implementation stage.
SK-0008	Plan Sheet 8	Queenstown Town Centre Renderings	Lake Esplanade is a key cycling and public transport route for the western suburbs however there is no infrastructure to support or prioritise either of these modes.	9/21/2020	Phil Carter	The presented layout is one that has been requested by the Client.
SK-0011	Plan Sheet 11	Queenstown Town Centre Renderings	Potential risk of conflict of cars coming down hill and making left turn straight into pedestrian crossing as those approaching downhill from the new roundabout.	9/21/2020	Phil Carter	Pedestrian crossings create a conflict by default. STOP control used at car park exits. To be revisited in pre-implementation stage - assess visibility of the crossing and whether additional enhancements are required e.g. beacons.
SK-0012	Plan Sheet 12	Queenstown Town Centre Renderings	Stanley Street is marked as a Public Transport Priority Route however no clear measures to support this. .	9/21/2020	Phil Carter	Physical priority not required due to low volumes expected on Stanley Street
SK-0013	Plan Sheet 13-14	Queenstown Town Centre Renderings	Insufficient bus infrastructure on Stanley Street to the north of the Sydney Street intersection given width of street and function as a bus priority route.	9/21/2020	Phil Carter	Physical priority not required due to low volumes expected on Stanley Street
SK-0015	Plan Sheet 15	Queenstown Town Centre Renderings	Cyclists appear underserved on this street where vehicular movements are prioritised. Unclear road markings on West Man Street.	9/21/2020	Phil Carter	WATN requires a 5 m wide shared path on the hill-side of Man Street. No additional facilities are required.
SK-0015	Plan Sheet 15	Queenstown Town Centre Renderings	No provision for pedestrians to cross on the western side of the Brecon Street / Man Street intersection.	9/21/2020	Phil Carter	Location has been designed by BECA as part of Streetscape project which is in implementation stage. The design is shown on the drawings for the completeness requested by the Client. We cannot comment on this arrangement.

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SK-0016	Plan Sheet 16	Queenstown Town Centre Renderings	Insufficient priority for cyclists at this intersection	9/21/2020	Phil Carter	Location has been designed by BECA as part of Streetscape project which is in implementation stage. The design is shown on the drawings for the completeness requested by the Client. We cannot comment on this arrangement.
SK-0016	Plan Sheet 16	Queenstown Town Centre Renderings	Exit point from car park potential conflicts with the main road traffic near intersection. Suggest moving this entry point to Camp Street	9/21/2020	Swaraj Baral	Elevation difference prohibits such arrangement.
SK-0018	Plan Sheet 18	Queenstown Town Centre Renderings	Intersection seems large. Tighten up for pedestrian movements as much as possible and straighten west crossing so it is more perpendicular to the road.	9/21/2020	Phil Carter	Straightening the crossing will increase crossing length. Realigning it as perpendicular will result in the intersection area being bigger. Opportunity to revise design in pre-implementation
SK-0018	Plan Sheet 19	Queenstown Town Centre Renderings	Insufficient priority for cyclists at Shotover / Henry St intersection and inconsistencies with sharrows.	9/21/2020	Phil Carter	Cyclists are not the priority given the gradient on this route. No sharrows. This has been discussed with WK.
SK-0018	Plan Sheet 19	Queenstown Town Centre Renderings	The intersection at Shotover / Henry Street seems messy. Unclear how vehicles traveling northbound on Henry Street will merge once they've gone through intersection.	9/21/2020	Phil Carter	opportunity to revise design in pre-implementation
SK-0019	Plan Sheet 19	Queenstown Town Centre Renderings	Insufficient provision for pedestrians at Shotover / Henry St intersection, particularly at entry and exit to lanes on northern side of Henry. Opportunities to tighten and straighten the intersection. Potential risk of people crossing Henry Street at end of Malaghan Street if nearby crossing is insufficient.	9/21/2020	Phil Carter	opportunity to revise design in pre-implementation
SK-0019	Plan Sheet 19	Queenstown Town Centre Renderings	Need to understand how the pedestrian overpass from Ballarat Street will land on the south - cannot rely entirely on an elevator. Curvature of foot bridge without piers needs to be justified. From Ballarat St requires a slope of 1:14 to be DDA Compliant. Path needs to land in a footpath rather than a road. CPTED for trees and underpass need to be considered further.	9/21/2020	Phil Carter	The adjacent roads have gradient steeper than 1:14, as such DDA compliant structure would be considered out of place. The overbridge is linked to Manawa development.
SK-0020	Plan Sheet 20	Queenstown Town Centre Renderings	No safe pedestrian crossing provided across Henry Street for those walking down Beetham Street.	9/21/2020	Phil Carter	Noted - see new appendix
SK-0021	Plan Sheet 21	Queenstown Town Centre Renderings	Unclear whether intersection is signalised and pedestrians have a safe way to cross.	9/21/2020	Phil Carter	it is signalised.
SK-0022	Plan Sheet 22	Queenstown Town Centre Renderings	Confirm no right turn from Melbourne Street onto Frankton Road.	9/21/2020	Phil Carter	confirmed
SK-0022	Plan Sheet 22	Queenstown Town Centre Renderings	Confirm no left turn from Frankton onto Dublin Street - footpath very sharp	9/21/2020	Phil Carter	confirmed
SK-0023	Plan Sheet 23	Queenstown Town Centre Renderings	Confirm how vehicles will manoeuvre in and out of carparks on Brecon Street pedestrians lane and potential conflict with cyclists and pedestrians will be managed. Tree appears to create tight space.	9/21/2020	Phil Carter	Location has been designed by BECA as part of Streetscape project which is in implementation stage. The design is currently being revised. We cannot comment on this arrangement further.

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SK-0024	Plan Sheet 24	Queenstown Town Centre Renderings	Confirm how vehicles crossing straight through Stop signs on Suburb Street are expected to cross safely. Consider operational value of bus lane - could narrow intersection and improve sightlines by removing bus lane and an additional lane to cross.	9/21/2020	Phil Carter	Opportunity to revise design in pre-implementation Add a red box on other side of the road.
SK-0024	Plan Sheet 24	Queenstown Town Centre Renderings	Confirm if one median pedestrian crossing is sufficient for this length of road and how pedestrians will cross safely at all intersections.	9/21/2020	Phil Carter	Existing layout has been upgraded. No coordination with the school has taken place. Final layout must be consulted and agreed with the school during the pre-implementation phase.
SK-0025	Plan Sheet 25	Queenstown Town Centre Renderings	Pedestrian safety zone appears to be short on Edgar Street.	9/21/2020	Phil Carter	Existing layout has been upgraded. No coordination with the school has taken place. Final layout must be consulted and agreed with the school during the pre-implementation phase.
SK-0025	Plan Sheet 25	Queenstown Town Centre Renderings	No demarcated crossing provided for those entering school zone from the park to the east of Edgar Street (as there is to the north)	9/21/2020	Phil Carter	Footway is on the southern side of the road. The steep re-vegetated area is not a designated pedestrian facility.
SK-0026	Plan Sheet 26	Queenstown Town Centre Renderings	Insufficient provision for pedestrians to cross at intersections. Mallaghan Street is particularly wide.	9/21/2020	Phil Carter	Now outside of the scope
SK-0027	Plan Sheet 27	Queenstown Town Centre Renderings	On road Bus Stop near Boundary Street is in a very unusual position. Consider reworking this bus stop layout to allow better traffic flow and not stopping traffic behind the bus	9/21/2020	Swaraj Baral	opportunity to revise design in pre-implementation
SK-0027	Plan Sheet 27	Queenstown Town Centre Renderings	Opportunities to tighten Boundary Street intersection to shorten distance for pedestrians to cross the road.	9/21/2020	Swaraj Baral	Now outside of the scope
SK-0028	Plan Sheet 28	Queenstown Town Centre Renderings	Suggest an alternative design layout for this intersection here which is easier to follow for drivers and safer for pedestrians and car users. Currently no provision for vehicles turning right onto Robins Road will merge with those turning left from George Road.	9/21/2020	Swaraj Baral	Location has been designed by BECA as part of WATN project. We cannot comment on this arrangement further.
SK-0028	Plan Sheet 28	Queenstown Town Centre Renderings	The left turning lane seems too wide, confusing lane markings at intersection.	9/21/2020	Swaraj Baral	Location has been designed by BECA as part of WATN project. We cannot comment on this arrangement further.
SK-0029	Plan Sheet 29	Queenstown Town Centre Renderings	Pedestrian safety needs to be further considered, particularly across Halenstein Street where the road is very wide.	9/21/2020	Phil Carter	Now outside of the scope. Only two signalised crossings, bus stops, and refreshed road markings are in scope.
SK-0029	Plan Sheet 29	Queenstown Town Centre Renderings	Unclear what the purpose is of the northbound right turn lane near Hylton Place	9/21/2020	Swaraj Baral	Access to Caltex
SK-0029	Plan Sheet 29	Queenstown Town Centre Renderings	Footpath on Gorge Road opposite Hylton Place looks very narrow. Please check width is min limit as per standard	9/21/2020	Swaraj Baral	Constrained environment. opportunity to revise design in pre-implementation

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SK-0029	Plan Sheet 29	Queenstown Town Centre Renderings	Suggest an alternative design for right turns into Hylton and Hallenstein. A good example of an alternative design is attached beside this comment. This layout is located between Parker Avenue and Croydon Road in Auckland	9/21/2020	Swaraj Baral	Constrained environment. Access and egress to/from Caltex needs maintained. Opportunity to revise design in pre-implementation
SK-0032	Plan Sheet 32	Queenstown Town Centre Renderings	Tree on corner of Isle Street appears very large. Confirm is will not block sight line especially for those turning left onto Brecon Street.	9/21/2020	Phil Carter	Location has been designed by BECA as part of Streetscape project which is in implementation stage. The design is shown on the drawings for the completeness requested by the Client. We cannot comment on this arrangement.
SK-0032	Plan Sheet 32	Queenstown Town Centre Renderings	Stop sign at Isle Street to the west could be more perpendicular to Brecon road to tighten intersection and improve sightlines.	9/21/2020	Phil Carter	Location has been designed by BECA as part of Streetscape project which is in implementation stage. The design is shown on the drawings for the completeness requested by the Client. We cannot comment on this arrangement.
SK-0033	Plan Sheet 33	Queenstown Town Centre Renderings	Potential for those turning right from Stop sign onto Brecon to block the road or turn onto pedestrians crossing. Opportunities to tighten intersection to improve safety.	9/21/2020	Phil Carter	Location has been designed by BECA as part of Streetscape project which is in implementation stage. The design is shown on the drawings for the completeness requested by the Client. We cannot comment on this arrangement.
SK-0035	Plan Sheet 35	Queenstown Town Centre Renderings	Pedestrian path on bend at Thompson Street implies people can cross here yet it is on a curve and there is no infrastructure to support safe crossing.	9/21/2020	Phil Carter	Location has been designed by BECA as part of Lake View. The design is shown on the drawings for the completeness requested by the Client. We cannot comment on this arrangement.
SK-0036	Plan Sheet 36	Queenstown Town Centre Renderings	Tighten intersection to improve pedestrian safety.	9/21/2020	Phil Carter	Location has been designed by BECA as part of Lake View. The design is shown on the drawings for the completeness requested by the Client. We cannot comment on this arrangement.
SK-0037	Plan Sheet 37	Queenstown Town Centre Renderings	Confirm if Glasgow Street enables right turn and maintains safety for cars and pedestrians.	9/21/2020	Phil Carter	Location has been designed by BECA as part of Lake View. The design is shown on the drawings for the completeness requested by the Client. We cannot comment on this arrangement.
SK-0037	Plan Sheet 37	Queenstown Town Centre Renderings	Give Way line on Brunswick Street is quite far back and will make it difficult for vehicles to see traffic on Thompson Street they are trying to merge with.	9/21/2020	Phil Carter	opportunity to revise design in pre-implementation. A raised table with a pedestrian crossing is located in the vicinity of this merge; this will enforce a low speed environment.
SK-0038	Plan Sheet 38	Queenstown Town Centre Renderings	Unclear how pedestrians will cross safely across Thompson Street, especially with cars coming down a steep street.	9/21/2020	Phil Carter	Location has been designed by BECA as part of Masterplan. The design is shown on the drawings for the completeness requested by the Client. We cannot comment on this arrangement.
SK-0040	Plan Sheet 40	Queenstown Town Centre Renderings	Line markings at roundabout to ensure people look right before crossing appear to be missing.	9/21/2020	Phil Carter	Location has been designed by BECA as part of Masterplan. The design is shown on the drawings for the completeness requested by the Client. We cannot comment on this arrangement.
SK-0041	Plan Sheet 42	Queenstown Town Centre Renderings	Unclear how the walking and cycling shared path connects with Te Araroa Trail path at the end of Park Street.	9/21/2020	Phil Carter	Location has been designed by BECA as part of Streetscape project which is in implementation stage. The design is shown on the drawings for the completeness requested by the Client. We cannot comment on this arrangement.

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SK-0041, 0042 and 0043	Plan Sheet 41 to 43	Queenstown Town Centre Renderings	The existing parking layout will make manoeuvring tight, and challenging for cars on the road to pass each other safely.	9/21/2020	Swaraj Baral	Location has been designed by BECA as part of Streetscape project which is in implementation stage. The design is shown on the drawings for the completeness requested by the Client. We cannot comment on this arrangement.
SK-0001 to SK-0042	General Comment All Sheets	Queenstown Town Centre Renderings	Please ensure all Over Dimension Vehicle routes Traffic signals with overheads have a minimum 6.5m height.	9/21/2020	Swaraj Baral	To be considered in pre-implementation stage.
SK-0001 to SK-0042	General Comment All Sheets	Queenstown Town Centre Renderings	Ensure the median islands on these roads have socket signs and mountable kerbs for the Over dimension Vehicles routes.	9/21/2020	Swaraj Baral	To be considered in pre-implementation stage.
SK-0001 to SK-0042	General Comment All Sheets	Queenstown Town Centre Renderings	Make sure light posts are 1.5m away from kerb on the OD routes	9/21/2020	Swaraj Baral	To be considered in pre-implementation stage.
SK-0001 to SK-0042	General Comment All Sheets	Queenstown Town Centre Renderings	Intersection corner spaces will need improvement to allow more space for pedestrians to wait without having to move closer to the road when its busy to avoid other pedestrians.	9/21/2020	Swaraj Baral	To be considered in pre-implementation stage.
SK-0001 to SK-0042	General Comment All Sheets	Queenstown Town Centre Renderings	Red hatching on the bus stops - some have them while others don't. Not sure what this indicates whether they are new bus stops or signalling all bus lanes and stops in general.	9/21/2020	Swaraj Baral	To be considered in pre-implementation stage. Red Hatching is shown under PT only bus stops.
SK-0001 to SK-0042	General Comment All Sheets	Queenstown Town Centre Renderings	GENERAL NOTE: Cyclists seem underserved in general across all drawings, particularly at intersections.	9/21/2020	Phil Carter	To be considered in pre-implementation stage.
6-XT014.40-WSP-01-ZZ-DR-C-5102	General Comment All Sheets	SH 6/6A Concept Design - Plan View	In lane cycling infrastructure is not provided for across many side street intersections and cycling priority through the use of sharrows at crossings is not consistent.	9/21/2020	Phil Carter	In lane cycle markings are shown across side road intersections where applicable. There are no sharrows in the SH6A design.
6-XT014.40-WSP-01-ZZ-DR-C-5102	General Comment All Sheets	SH 6/6A Concept Design - Plan View	Confirm rationale for why cycling lane is provided out-bound from Queenstown Centre rather than inbound.	9/21/2020	Phil Carter	Cycle lane is provided outbound for road cyclist as there is no other facility on the hillside of SH6A. There is a bi-directional shared path on the lakeside of SH6A for cyclists to use and an on road cycle lane cannot be provided due to space/cost/property impacts. There is also the Frankton Track on the lakeside for cyclists who are commuting through from Frankton to Queenstown and vice versa.
6-XT014.40-WSP-01-ZZ-DR-C-5102	2	SH 6/6A Concept Design - Plan View	The Footpath seems to abruptly end past the bus shelters approaching Sugar Lane/Marina Drive. Bus Shelters on Sugar lane side is obstructing shared path. Suggest to move bus shelter behind the shared path also there is no provision of cycle box at the intersection	9/21/2020	Swaraj Baral	There is a connection to the footpath up to Marina Heights, however there is no continuous footpath on the hillside of SH6A east of Marina Drive due to topographical and geotechnical constraints (Oak Tree and Frankton landslides) and subsequently no demand. Location of the shelters behind the shared path will be considered during pre-implementation due to geotechnical, property and topographical constraints. Cycle boxes will be added.
6-XT014.40-WSP-01-ZZ-DR-C-5103	3	SH 6/6A Concept Design - Plan View	Footpath appears to discontinue near Middleton Road.	9/21/2020	Swaraj Baral	There is no continuous footpath east of the Middleton Road bus stop on the hillside of SH6A due to topographical and geotechnical constraints.
6-XT014.40-WSP-01-ZZ-DR-C-5105	5	SH 6/6A Concept Design - Plan View	The footpaths near Larch Hill Place and Rees Hotel are disconnected. Bus stop is close to driveway.	9/21/2020	Swaraj Baral	There is no continuous footpath between Larch Hill Place and The Rees Hotel on the hillside of SH6A due to topographical, geotechnical, property and cost constraints, however crossings are provided for people to cross to the lakeside and use the shared path. There is really no demand to walk between Larch Hill and Andrews Road with people coming down form Queenstown Hill from as far east as Goldfield Heights using Andrews Road to access SH6A. Unsure as to bus stop and driveway? Just east of Andrews Road? This is an existing bus stop and driveway proximity is okay.

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6-XT014.40-WSP-01-ZZ-DR-C-5106	6	SH 6/6A Concept Design - Plan View	Consider alternate intersection treatment with Frankton/Hensman/Andrews, closing Andrews Road access and provide access through Hensman Road. Also consider moving the existing driveway at the intersection to a safer location.	9/21/2020	Swaraj Baral	Closing of Andrews Road has been considered in the past and was most recently considered with QLDC's upgrade of the Andrews Road intersection and wasn't progressed. Connecting Andrews Road to Hensman Road has very challenging topographical and geotechnical issues and property impacts.
6-XT014.40-WSP-01-ZZ-DR-C-5107	7	SH 6/6A Concept Design - Plan View	Potential retaining wall along with barrier should be proposed along this stretch near 125 Frankston Road due to steep drop at edge of shared path.	9/21/2020	Swaraj Baral	The proposed shared path will need to be retained along its majority with suitable safety barrier installed as along other existing sections.
6-XT014.40-WSP-01-ZZ-DR-C-5107	7	SH 6/6A Concept Design - Plan View	Potential visibility issue along this corner due to steep hill face.	9/21/2020	Swaraj Baral	Unsure what this comment is relating to? There are existing access visibility issues that will be looked at during pre-implementation and improved where possible, e.g. with earthworks, vegetation removal, suitable access gradients, certain movements only.
6-XT014.40-WSP-01-ZZ-DR-C-5102 to 510	2 to 8	SH 6/6A Concept Design - Plan View	Investigate widening the current road where the corridor allows to provide for more dedicated bus lanes - however this may provide more retaining works for neighbouring properties.	9/21/2020	Swaraj Baral	Physical bus priority lanes are problematic due to a number of constraints, i.e. topography, geotechnical, property, cost and social and environmental impacts. Therefore the overall strategy of managing traffic and providing virtual and physical (where possible) bus priority provides consistent and reliable bus travel times along SH6A. The cost of providing further physical bus priority lanes for very minimal travel time savings outweighs the benefits. Refer to SH6A Virtual Priority Tech Note.
6-XT014-64-WSP-01-ZZ-DR-C-0002	Page-6	Frankton Works Overview Plan - Concept Design	SH6 / SH6a intersection: New Zealand drivers have little experience of the use of Traffic signalised roundabout. There is a a lot to take in and for those visiting Queenstown. This will be daunting for visitors to maneuverer through roundabout. Also this design takes up a considerable amount of land needlessly and can be easily addressed with a well designed signalised intersection.	9/21/2020	Swaraj Baral	Disagree with comments relating to use of signalised roundabout by NZ drivers as movements are controlled by signals. Signalised roundabouts are the safest form of at grade intersection as evidenced by Austroads Safe System Infrastructure Assessments. However the signalised roundabout has now been replaced by a conventional signalised intersection based on direction by the client group.
6-XT014-64-WSP-01-ZZ-DR-C-0002	Page-6	Frankton Works Overview Plan - Concept Design	SH6 / SH6a intersection: and approaches: Unclear how cyclists will safely use intersection and connect with cycling infrastructure on SH6A, as well as with pedestrian / shared paths (in blue). Opportunities to have continuous cycle lane given the amount of space here.	9/21/2020	Phil Carter	Signalised roundabout has been replaced by a conventional signalised intersection based on direction by the client group. Cyclists heading west, who do not continue on-road, are directed to Gray St, which then connects down to the Frankton Track away from SH6A, although there is a connection back to SH6A via McBride St to join the Shared Path on SH6A. Cyclists heading eastbound will have their own on-road cycle lane consistent with the rest of SH6A and will be provided with off-road options as they approach the SH6/6A intersection.
6-XT014-64-WSP-01-ZZ-DR-C-0002	All	Frankton Works Overview Plan - Concept Design	In lane cycling infrastructure is not provided for across many side street intersections and cycling priority through the use of sharrows at crossings is not consistent.	9/21/2020	Phil Carter	In lane cycle markings are shown across side road intersections where applicable. There are no sharrows in the SH6 designs.
6-XT014-64-WSP-01-ZZ-DR-C-0002	Page-6	Frankton Works Overview Plan - Concept Design	Intersections along SH6 could be tightened to improve pedestrian safety and on road markings for pedestrians provided. Clarity on how pedestrians will cross SH6 at intersections is required. For any overbridge designs must be DDA compliant.	9/21/2020	Phil Carter	Intersection design have been based on vehicle tracking as per RTS18 and predominantly 4-axle semi-trailer as required for State Highway design. This seems to be a general comment with no specific review intent? Pedestrians will cross SH6 intersections mostly via signals, or underpass where at grade facilities cannot be provided. There are no over bridges proposed as part of this business case, however accessibility requirements will be considered for all users in line with NZ requirements as part of the pre-implementation stage.
6-XT014-64-WSP-01-ZZ-DR-C-0002	Page-6	Frankton Works Overview Plan - Concept Design	GENERAL NOTES: Suggest to establish a Road Safety Audit team to conduct the thorough review of this intersection functionality & safety	9/21/2020	Swaraj Baral	Which intersection? Assuming SH6/6A? A peer review has been completed. The signalised roundabout has now been replaced by a conventional signalised intersection based on direction by the client group. A Road Design Safety Audit will be completed on designs as part of the pre-implementation stage as is standard practice. A Safe System Assessment, involving Waka Kotahi's Principal Safety Engineer, has been completed for all interventions as part of the business case and will also be addressed as part of the pre-implementation stage.
6-XT014-64-WSP-01-ZZ-DR-C-0002	Page-6	Frankton Works Overview Plan - Concept Design	Potential conflict along SH6 heading south from the roundabout where two lanes merge into one that may cause traffic to back up into the roundabout. Further conflict may occur with buses and general traffic merging together and de-merging. Dedicated and continuous bus lane should be investigated.	9/21/2020	Swaraj Baral	The signalised roundabout has now been replaced by a conventional signalised intersection based on direction by the client group. However, that signal control and co-ordination meant that any merges weren't flooded with traffic beyond capacity.

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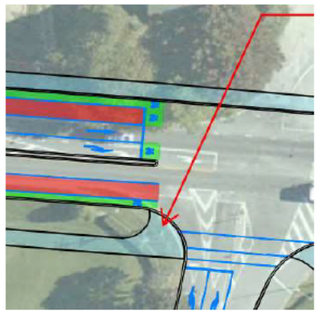
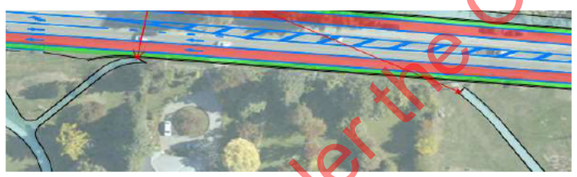
6-XT014-64-WSP-01-ZZ-DR-C-0002	Page-6	Frankton Works Overview Plan - Concept Design	Footpath Connection Missing near the bus station	9/21/2020	Swaraj Baral	This are is all footpath as part of the bus hub (which does only show up in the renders).
6-XT014-64-WSP-01-ZZ-DR-C-0002	Page-6	Frankton Works Overview Plan - Concept Design	Lanes coming out of the petrol station needs reviewing. Potential clashes with either bus or car coming from the right and having to cross an extra lane	9/21/2020	Swaraj Baral	The signalised roundabout has now been replaced by a conventional signalised intersection based on direction by the client group. However, the traffic was controlled to avoid any clashes.
6-XT014-64-WSP-01-ZZ-DR-C-0002	Page-6	Frankton Works Overview Plan - Concept Design	Hansen Rd/ SH6 Intersection there is a footpath flaring upward. Is there supposed to be a crossing here? 	9/21/2020	Swaraj Baral	No crossing here (due to right turn conflict). Design will be amended.
6-XT014-64-WSP-01-ZZ-DR-C-0002	Page-6	Frankton Works Overview Plan - Concept Design	Seems to be footpath disconnected in front of 60 Frankton-Ladies Mile Highway. 	9/21/2020	Swaraj Baral	Connecting paths have been removed following consultation with the neighboring landowner (the design did allow for a path along the frontage of the property).
6-XT014-64-WSP-01-ZZ-DR-C-0002	Page-6	Frankton Works Overview Plan - Concept Design	At Grant Rd/SH6 roundabout & Hawthorne/Sh6 roundabout, limited storage space available near stop line on circulating lane to stop bus, which will obstruct the exit lane of Southern approach of roundabout. Suggest to remove the signal and stop line on roundabout circulating lane.	9/21/2020	Swaraj Baral	Due to signal phasing no vehicles will be stopped at the circulating lane stop lines, apart from the odd vehicle that may make a U-turn around the roundabout. Therefore the signal and stop line need to remain.
6-XT014-64-WSP-01-ZZ-DR-C-0002	Page-6	Frankton Works Overview Plan - Concept Design	At Grant Rd/SH6 roundabout & Hawthorne/Sh6 roundabout, Full signalised roundabouts would appear to offer some overall safety benefits, especially for cyclists, however the proposed design doesn't address the safety of cyclists or pedestrians to cross along SH-6. Suggest to provide signalised crossing of pedestrians in front of stop line rather than give way crossing for ped and cyclist.	9/21/2020	Swaraj Baral	Signalised pedestrian and cycle crossings are provided where possible, i.e. Hawthorne Road leg, SH6 west of Hawthorne Drive, Grant Road leg. Where signal crossings can't be provided at intersections other at grade signals or grade separated (underpass) options have been considered - refer to SH6 Frankton Eastern Corridor Tech Note.
6-XT014-64-WSP-01-ZZ-DR-C-0002	Page-7	Frankton Works Overview Plan - Concept Design	Pedestrian crossing at Lucas Place is further away from intersection. Suggest to bring towards intersection and combined with signal phasing for safe crossing of pedestrians.	9/21/2020	Swaraj Baral	There is a pedestrian crossing at the Lucas Pl intersection? The midblock crossing between Lucas Pl and McBride St has since been removed.
6-XT014-64-WSP-01-ZZ-DR-C-0002	Page-7	Frankton Works Overview Plan - Concept Design	Humphreys Street/SH6 Intersection Review left turn into Humphreys for vehicle/pedestrian conflict as crossing is set a slight distance away from intersection. Suggest to proposed ped crossing closer to intersection	9/21/2020	Swaraj Baral	All pedestrian crossings a fully protected for walk and clearance time, so no conflict. Pedestrian crossing is located for local topography.

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6-XT014-64-WSP-01-ZZ-DR-C-0002	Page-7	Frankton Works Overview Plan - Concept Design	Humphreys Street/SH6 Intersection - consider applying another cycle stop box in front of staging right turn. Confirm how bicyclists are intended to use this intersection in relation to surrounding streets and how conflict with pedestrians will be minimised.	9/21/2020	Swaraj Baral	Cycle box on staging turn will be considered during pre-implementation stage. Cycle demand comes from Robertson St via an existing cut through at Southberg Ave. Shared path facilities will be updated and provided to minimise conflict. Cyclists will be encouraged to (and do) use the detuned Robertson St with the proposed Humphrey St link.
6-XT014-64-WSP-01-ZZ-DR-C-0002	Page-7	Frankton Works Overview Plan - Concept Design	Proposed alignment should tie-in with the newly built Kawarau Bridge alignment	9/21/2020	Swaraj Baral	Alignment ties into newly built Kawarau Falls Bridge (aerial photo is off a bit).
6-XT014-64-WSP-01-ZZ-DR-C-0002	Page-7	Frankton Works Overview Plan - Concept Design	Short section of cycle lane proposed from Kawarau Bridge to Humphrey St intersection. Has any consideration for Cycle lane through out this stretch of section from Kawarau bridge up to Lucas Pl roundabout.	9/21/2020	Swaraj Baral	Yes. Design has been updated to include shared bus/cycle lane from Humphrey St to Lucas Pl, as well a continuous and connecting off-road facilities.
6-XT014-64-WSP-01-ZZ-DR-C-0002	Page-8	Frankton Works Overview Plan - Concept Design	Howards Dr/SH6 Roundabout: North-East corner Exit curve along Eastern approach of roundabout seems to be not large enough as per Austroads. Consider large exit curve.	9/21/2020	Swaraj Baral	Roundabout design complies with Austroads and RTS18 tracking for 4-axle semi-trailer.
6-XT014-64-WSP-01-ZZ-DR-C-0002	Page-8	Frankton Works Overview Plan - Concept Design	Howards Dr/SH6 Roundabout: Eastern approach of the roundabout geometry should be consider redesign to reduce the speed of entry to roundabout which will minimises the rear-end type crashes at this location and also reduces the potential risk of a fatal or serious injury to pedestrians and cyclists.	9/21/2020	Swaraj Baral	Roundabout entry geometry complies with Austroads and other visual clues will be added to design to slow traffic. At grade pedestrian crossing facilities will likely be replaced with an underpass depending on the outcome of the Ladies Mile Masterplan and potential development on the north side of SH6.
6-XT014-64-WSP-01-ZZ-DR-C-0002	Page-8	Frankton Works Overview Plan - Concept Design	Howards Dr/SH6 Roundabout: South-West corner Entry curve radii is too large. Suggest to reduce the radii to control the speed of entering traffic and consequently the safety performance of the roundabout.	9/21/2020	Swaraj Baral	Roundabout design complies with Austroads and RTS18 tracking for 4-axle semi-trailer.
6-XT014-64-WSP-01-ZZ-DR-C-0002	Page-8	Frankton Works Overview Plan - Concept Design	Howards Dr/SH6 Roundabout: Proposed Northern approach of roundabout splitter island is not large enough to shelter pedestrians and could be improved to control entry speed and guide traffic onto the roundabout.	9/21/2020	Swaraj Baral	Noted.
6-XT014-64-WSP-01-ZZ-DR-C-0002	All	Frankton Works Overview Plan - Concept Design	GENERAL NOTE: Please ensure storage spaces within median islands are suitable to cater to hold at least a person and pram.	9/21/2020	Swaraj Baral	As above, minimum width is 2.0m.

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APPENDIX D: AECOM REVIEW AND RESPONSE

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Executive Summary

ID	Section	Page	AECOM review comment	Problem	Project team response
1			The Executive Summary should target a public audience, however the approach followed is still quite technical and the history of this project not clearly conveyed.	Details of options	Noted - amended
2	Context	5	The document is lacking a clear statement indicating the level of this business case. What does 'Queenstown Transport Business case' mean? Is it a PBC, SSBC-IBC/DBC? Is it for implemention?	Gaps	Noted - updated
3	Context	6	The diagram is not clear. It is difficult to understand the process and read the text. Speaks more to the interrelationships rather than alignment.	Details of options	Noted
4	Case for change	4	Some unsubstantiated claims	Details of options	Noted
5	Problem, Benefits and IO	8	Image has typos and investment objectives are not fully formed. These are outcomes rather than SMART IOs.	Process errors	Noted
6	Preferred option assessment	10	IOs are not fully formed making it hard to provide an assessment of them. Missing the measures particularly.	Process errors	Noted
7	Preferred option assessment	10	IO1 speaks more to capacity rather than efficiency and reliability. Where is the evidence to support these statements? What are the outcomes and the level of change achieved? This is what the reader of the executive summary wants to know.	Details of options	
8	Overall	Throughout	Some typos and sentence construction could be improved.	Details of options	Noted

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Strategic Context

ID	Section	Page	AECOM review comment	Problem	PROJECT TEAM RESPONSE
1	1.4	10	Font used in Figure 5 is hard to read. This diagram needs further explanation. What is actually included in this business case? Timing of these projects/documents. What are completed documents, and what are in progress.	Gaps	Replace with Abley graphic. Refine and focus on directly relevant projects
2	1.5	11	This should be part of an Economic context section, developing the economic strand to the investment context.	Other	Noted and Economic context section added
3	1.6.1	12	Unclear what the last sentence in the 2nd paragraph relates to.	Other	Removed. Doesn't add to story
4	1.6.1	12	Bus patronage source reference missing	Statements not supported by evidence	Updated
5	1.6.1	12	Evidence to support claim that system is reaching capacity missing.	Statements not supported by evidence	Updated
6	1.6.2	13	What has informed Table1?	Evidence not supported	Updated, moved to Problems section
7	1.6.2	13	It is not clear if Table1 is about the types of customers in the system, or each customer's needs? Currently a hybrid. Need to describe clearly both the customer and their individual needs of the transport system in Queenstown.	Evidence not supported	Separated description and problems
8	1.6.6	15	Needs separate land use planning and development section - not part of transport context. The Spatial plan is	Other	Noted. Clarification text added
9	1.6.6	16	No evidence to support claim about future of Southern corridor	Statements not supported by evidence	Which bit? Referenced growth projections, masterplans and developers
10	1.6.6	17	Figure 12 missing source reference	Evidence not supported	Noted
11	1.6.6	18	Airport section to go up in transport context ahead of the land use discussion	Other	Updated
12	1.6.6	18	Missing source reference for arrivals information	Statements not supported by evidence	References QAC masterplan
13	1.6.6	18	Figure 13 missing source reference	Other	Noted
14	1.6.6	18	Airport social and economic impact assessments not supported or referenced.	Statements not supported by evidence	Reference added
15	1.6.6	18	Statement that arrivals to Queenstown increasingly likely to be by car not supported by evidence	Statements not supported by evidence	forecast to continue, visitors must arrive by other means
16	1.7	18	Section 1.7 Committed Funding does not fit well here in terms of the flow of the story. Should it not be in a section "What has changed since the PBC" or as part of the Strategic Policy Alignment section? Or	Other	This is a hot potato. Different people have moved it to different places in the report
17	1.8	20	This section needs an introduction to understand what a 'Related project" is, and what does it mean to this BC.	Gaps	Updated
18			Needs graphic or flow chart with dates to inform the reader of how all the work wrapped up in this business case and the interrelationships of other workstreams. Its currently very confusing.	Gaps	Improved graphic and separate document (Biii) clarifies.
19	1.8	20	Figure 15 is hard to read and what do the coloured lines on the map represent?	Gaps	Removed.
20	1.8.2	20	This section is very confusing. Is the Queenstown Town Centre Masterplan 2017, different from the Queenstown Town Centre Masterplan PBC? What is the QTC DBC and Project Manawa? Are they related projects or part of this BC. Needs further explanation as connections are not clear at all! In section 3.8 Project Manawa is described as having a key interdependency with this project, yet no where in this document does it outline what it is (other than a community heart), who is running it, timeframes	Gaps	Noted. Clarification text added
21			The Ladie's Mile ITA is stated as key to the development of the options in the options assessment, but there is no mention of it in the Strategic case. Without reading it, I would expect it to be referred to somewhere.		Added to Related Projects
22	1.8.3	22	Date of this document/project	Gaps	Updated
23	1.8.4	23	Not clear if the Spatial plan is being developed or operative. Needs date and better explanation. If this BC needs to align with the outcomes of this plan, it should sit in the strategic alignment section, not related projects.	Other	Updated and added to Local Strategies (though dictated by national strategy)
24			It feels like there are a whole lot of packages of works to be included in this BC, but this is not adequately described anywhere. A structure diagram is needed to understand the history of the work packages and how each are going to be addressed as part of this DBC.	Gaps	Noted. Clarification text added
25	2.4	26	A change in government is a risk, not strategic alignment	Other	Moved to Constraints
26	2.4.1	27	Table 2. Make clear that this is speaking to the alignment of the programme to these priorities and objectives. Additional explanation required.	Gaps	Updated
27	2.4.1	28	Table 3 repetitive and would value from additional information/explanation.	Gaps	Noted - information is sufficient
28	2.4.2	30	Figure 19 too small to read	Other	Increased size
29	3	33	Major issue themes stated here are different to the key challenges introduced in Section 1.2.1. Why the difference? Confusing. Needs explanation.	Other	Updated section on key issues to clarify these are not problem statements

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30	3.1	33	These are principles in relation to the solutions, not the problems.	Other	Removed.
31	3.1	33	Overall the problem statements are ok, but they are not mapped well to the benefits, KPIs and IO. Consider Access as the problem instead of Efficiency.	Process errors	Noted. Updated
31	3.1.3	33	Missing reference of evidence such as ILM to support the development of the problem statements. Would expect to be in an appendix.	Gaps	Noted. Added
32	3.2.1	34	Visitors rank transport issues as most negative aspect. Where is the evidence to support this?	Statements not supported by evidence	Reference added
33	3.3.1	36	Figures 23/24/25 missing source references	Gaps	Reference added
34	3.3.2	41	More information on reference to low incentive to take PT. The introduction of the $2 fare and improved services surely was incentive. (And touted to be so successful in the Exec summary.	Statements not supported by evidence	Evidence added
35	3.3.2	41	Last four bullet points speak to safety, not efficiency	Other	Moved
36	3.3.4	43	Economic cost figures need supporting evidence	Statements not supported by evidence	Reference added
37	3.4.1	44	Figure 30 missing key	Other	Resolved
38	3.4.1	45	More quantitative data to support this. How many outages occur annually? Is there data to support this getting worse over time?	Statements not supported by evidence	Added TREIS data
39	3.5.1	46	Where is the evidence to support these statements and figures quoted?	Statements not supported by evidence	Added CAS reference
40	3.5.1	46	Reference to community engagement. Where is this engagement material?	Statements not supported by evidence	Reference added
41	3.5.1	46	Where is the evidence to support these statements and figures quoted?	Statements not supported by evidence	Reference added
42	3.5.1	46	Site observations? Are these anecdotal, or is there a report to support these findings?	Statements not supported by evidence	Reference added
43	3.5.1	46	Photos to illustrate some of these safety concerns would be useful.	Statements not supported by evidence	Evidence added
44	3.5.2	46	Broad, unsupported statement on traffic volume and congestion. This heading is also duplicated.	Statements not supported by evidence	Updated
45	3.5.2	47	Missing reference to support crash figures quoted.	Statements not supported by evidence	Reference added
46	3.5.3	47	Reference – where has this data come from?	Statements not supported by evidence	Reference added
47	3.5.3	47	Figure 33 needs reference and date of data.	Other	Reference added
48	3.5.4	47	Last bullet point needs clarity	Other	Updated
49	3		Liveability and attractiveness was considered a key problem and consequence to the transport issues in Queenstown in the PBC. Liveability is mentioned in Problem Statement 1, and is an investment objective, but the problems and evidence section contains no discussion	Gaps	Covered in Amenity problem
50	3		If a 'housing affordability crisis' really exists, does it not warrant a problem statement of its own. Then the benefits and investment objectives can be defined. Needs	Gaps	Stakeholders agreed not. Not explicitly relevant to WK business case
50	3.7.1	51	Reference the quoted figures? As a result of the is PT update, it would be good to evidence with what impact the increase in patronage on PT had on traffic volumes? Was a reduction in car use evident?	Gaps	Too many factors to disaggregate, data doesn't exist
51	3.8.2	52	This isn't political is it? More appropriate heading I would have thought would be 'Conflicting organisational interests". Is this really a constraint? Is it not an opportunity for a programme to address multiple interrelated challenges in the region. Isn't this why these organisations are partnering this project?	Other	Updated but still argued political
52	3.8.3	53	This is an issue – may sit better in the land use context section 3.2.1, rather than here.	Other	Updated
53	3.8	52-53	What about other constraints such as historical, cultural, ecological, utility, or geotechnical constraints?	Gaps	Covered the ones we're aware of. Could have more detail on cultural integration?
54	4.1	55	Would be good to include a discussion on Economic outcomes. Especially when there is a lot of talk about the economic cost of not doing something.	Gaps	Economic context section added
55	4.1	55	Do investors also want to know the likely outcomes for other key community aspects such as liveability, environmental, sustainability and social benefits.	Fatal flaw	Agreed with stakeholders not to further complicate
55	4.2	55	IOs are weak and not SMART objectives. Do all the problem statements relate to all the IOs? Need to show each Problem statement with link to benefit and investment objective. It is not clear here what addresses what and the link to benefits of investing. Some of this is shown in Appendix C notes, but needs to be summarised better and brought through into the body of the report.	Gaps	ILM and discussion added
56	4.3	55	KPIs should be able to be directly linked to the outcomes and described in measures.	Fatal flaw	Updated
57	4.3	56	Tables are not complete in the Appendix B. A lot of baseline and expected results incomplete. Some KPIs in the appendix material are not in this table.	Gaps	Havent checked appendices

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58	4.3	56	Given the emphasis on PT and active modes for this project it would be good to have a measure relating specifically to PT. Eg New PT users, or increased active	Gaps	In updated measures
59	4.3	56	Amenity: Should this not have a measure such as 'Reduction in traffic volumes on Town Centre roads.	Gaps	In updated measures
60	5.2	57	What are the key objectives, principles or messages and approach to engagement in this plan? Investors need to have an overview and go to the appendix for greater	Gaps	Section has been updated to be clearer.
61	5.3.1	60	Duplicate from bottom of section 5.3	Other	
62	General		No environmental context. Reference to QLDCs climate action plan is made in the options assessment, yet not in here. The Climate Action Plan is a key strategic document that needs to have the alignment demonstrated.	Gaps	Broad commentary provided
63	General		No economic context section. Plenty of mention of the economic cost to the community of not investing being used, but this is not explained anywhere in the case for change. Needs an economic context section to clearly convey the economic make up of the region, the economic impact of Covid etc.	Gaps	Economic context section added
64	General		Would benefit from a section near the front of the strategic document summarising 'why investment is needed?	Gaps	Overarching compelling story added and infographic to come
65	General		Include a section around 1.4 that outlines to the investor what's changed since the proceeding PBC's.	Gaps	Updated
66	General		Linkage of ideas is poor.	Other	Noted
67			Missing the "so what"? Broad statements used without clarification of what this means for the people of Queenstown.		Addressed by other updates
68	General		Timings of interrelated projects missing.	Gaps	Updated
69	General		No need to have workshop minutes included in an appendix.	Other	
70	General		Sometimes referred to as Queenstown Transport Business Cases and sometimes Business case. Make consistently singular.	Other	Updated
71	General		Full check of acronym use required. In full the first time and then acronym for then.	Other	Noted
72	General		Consistency of bullet point punctuation.	Other	Noted
73	General		Check consistency of capitalisation	Other	Noted

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Options Assessment

ID	Section	Page	AECOM review comment	Problem	PROJECT TEAM RESPONSE
1	General		The programme has followed the option intervention hierarchisation of low cost first. It has a focus on developing a strong public transport network and priorities, as well as improving active transport network, to promote mode shift. Then the other options are secondary and are suggested as a means to achieve the first. However, there is a lack of evidence that supports the option assessment. It is not clear to understand what options have been tested and why.	Statements not supported by evidence	Updated commentary throughout to clarify prioritisation and three pillars approach
2	General		The document itself is very difficult to read. It is disorganised, not engaging and does not present a clear history that explains to the reader what has been done, why and how. It repeats the same arguments through the whole document and does not provide a clear conclusion.	Gaps	Difficult to arrange the option assessments with so many different approaches and level of detail. Have attempted to clarify; optioneering process now clearer and accompanied by diagrams
3	General		It is difficult for a reader that is not familiar with the study area to fully understand the what and the where. There is often no context presenting the targeted area or plan. Also, some figures and plans are very schematic or technical, not suitable for a non-technical reader.	Gaps	Haven't added maps due to time constraints but have added clarity on project areas
4	General		With regards to the options, on some occasions the document presents what we are seeking to improve with the tested option. However, there is no evidence supporting the statements. On other occasions, the document presents what options or opportunities would be good to pursue, but it does not specify what exactly can be done, how, where and when.	Statements not supported by evidence	Added NZUP context to clarify much of the programme is already committed, before some detailed analyses were complete. Details on implementation are in Part Bii
5	General		Options seems to be assessed individually, but not as part of a whole.	Fatal flaw	Developed as a whole, but assessed as individual packages. PT services and infrastructure had to be assessed together but other parts are completely different activities. Tony S happy with this approach
6	General		Most plans do not indicate where North is, with some of them having been rotated.	Other	Noted, not updated due to time
7	General		Need to include maps along the report showing the location of the options being assessed.	Other	Noted, not updated due to time
8	General		A description of the DoMin option is not provided	Gaps	Updated
9	Figure 1, 4, 5	6	Fonts are too small to be read comfortably	Other	Updated
10	2.4	11	Figure 5 reference is wrong. Should point to Figure 6	Other	Updated
11	2.4	11	Clarification and reference should be made on how the priorities were chosen.	Gaps	Updated, linked to ILM and shortlist assessment
12	2.4	11	Why these priorities? Rather than just agreeance these need to show the linkage back to the evidence, solving the problem, the benefits and investment objectives.	Gaps	Updated, linked to ILM and shortlist assessment
13	2.6	12, 13	Long list of options is available in Appendix B. The document would benefit from a list or table of all tested options, including a short description in the main document.	Evidence not supported	Added to main body of report
14	2.7.1	13	It is not clear to me how the long list to short list was made. What are the Strawman programmes? What does this mean? It is not clear how the long list – short list process was made. The document should provide: 1. Explanation of the different options being showed in the document. What options did they include? 2. How they were score? In what basis? 3. What was the outcome of the stakeholder workshop? 4. Why QTC Masterplan was scored 5? What were their flaws/benefits? Please add more detail to this section, so the reader can understand how the process has been made.	Statements not supported by evidence	Process and outcomes fleshed out with more detail
15	2.7.2	14	This section would benefit from a map	Other	Noted, not updated due to time
16	2.7.2	14	Please include clearer and more detailed explanation on how the options (and preferred) were selected.	Gaps	Updated, reference to evidence added
17	3.1.1	16	Please include reference.	Other	Not sure what this refers to
18	3.1.1	16	Are these the only options discounted from long list? Were there not options that were a fatal flaw in the first cut? Options that were eliminated need justification.	Gaps	First cut of longlist only identified interventions out of scope or covered elsewhere. PT network options were assessed separately in detail. Justification provided
19	3.1.1	17	How car V/C ratios were assessed? How is the congestion measured? How is the mode shift assessed? Why options with higher priority and faster and reliable TT would achieve mode shift?	Statements not supported by evidence	Updated with info from PT model
20	3.1.1	17	This section needs more context and evidence that supports the statements.	Statements not supported by evidence	Updated with evidence from MCA
21	3.1.1	17	What is the agreed assessment criteria? Please state.	Gaps	Updated
22	Table 3 Stanley St	20	"Scored poorly for feasibility, modal integration and alignment with the Masterplan without arterials being used for general traffic". Please explain this sentence. QTC Masterplan considered Stanley St as preferred location for the PT hub. Why did it score poorly against the Masterplan? Arterials are for general traffic, so why they are not used with this purpose? Where does general traffic go? Why is not feasible? Why has low integration? Please explain clearer what this sentence means. Provide evidence and references.	Statements not supported by evidence	Updated with more detail

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23	3.1.3	21	Please state evaluation criteria. And explain how the option selection was made.	Gaps	Updated
24	3.1.3	22	Please include reference on HCPT service and infrastructure DBC. How does it relate to this DBC. This is not mentioned in the Strategic Case. Please explain or refer the reader to where it is explained.	Gaps	Updated with correct name - referring to MRT scope to IBC level
25	Table 4	22	What is the evaluation criteria? Is the gondola the preferred option? In the preferred options the gondola option is not clear.	Gaps	Updated and added clarifying statements
26	3.2.1	23	Please provide more detail on the different types of bus priorities. (eg difference between offline and full priority). The figure is difficult to understand. Suggestion to update it with a map background and legend.	Gaps	Added explanation paragraph but didn't add maps - point of schematic was to simplify and graphic would be too big
27	Table 5	24	Please complete with reason.	Gaps	Updated
28	Table 5	24	Why is not applicable?	Gaps	Updated
29	3.2.1	24	Affordability is based on a 4lane widening option. However, this has been disregarded. What is the affordability of the other options? Please state.	Gaps	Commentary on affordability of other options added
30	Table 5	24	Do min has been omitted due to not addressing problem statements. It should be tested against the IOs not the problem. This is why it is important to clearly map the link from problem to benefit to investment objectives.	Gaps	Updated - typo
31	3.2.1	25	Not available	Gaps	Not sure what this refers to
32	3.2.1	25	This explanation is not clear. Pease provide more detail and evidence.	Statements not supported by evidence	Updated
33	3.2.2	26	More detail is needed. What specific options have been considered? How have they been assessed?	Statements not supported by evidence	Updated
34	4	28	What does it mean it was simplified? Why? Is this not the Virtual Priority option? Please clarify.	Gaps	Updated with reference to modelling assessments
35	4		What does this mean for the program? What are the implications?	Statements not supported by evidence	Not sure what this refers to
36	4.2	29	It will benefit from a map highlighting the intersections being assessed.	Gaps	Map provided in overarching section
37	***New Marina Signals***	29	This section is not clear. Please re-write with clearer statements and references. Also figures should refer to 20, not 21.	Gaps	Rewritten
38	***4.3***	30	This sentence is uncompleted. It lacks conclusion or conjugated verb.	Gaps	Updated
39	Figure 21		Include legend and N	Gaps	Updated
40	5	32	The text makes reference to TN 19, but this one is not available in the appendices	Gaps	Appendices
41	5.1.2	34	Reference to TN 35 SH6/SH6A Operation and Future Performance, which is not available in Appendices.	Gaps	Appendices
42	5.1.3	35	Please provide more detail on those 3 options.	Gaps	Updated with reference to new tech notes
43	5.1.5	37	What does this mean?	Statements not supported by evidence	Updated with reference
44	5		No reference to how the options have been assessed is made (not even in appendices), so it is not possible to assess how the options have been determined. Please provide evidence.	Statements not supported by evidence	Updated with reference to eastern/southern corridor tech notes
45	5.3.1	39	TN 29 Frankton Masterplan Alignment is not available	Gaps	Appendices
46	5.3.1	39	Please provide more detail on the objectives and outcomes of the workshop and how the options were evaluated.	Gaps	Not considered necessary - text to show alignment with masterplan
47	Active mode crossing assessment	41	Please provide a conclusion	Gaps	Added reference to assessment memo
48	6	43	Statement reads "As part of the Frankton and Ladies Mile Scope Expansion, it was identified that Ladies Mile presented a significant constraint on public transport uptake for a large proportion of Queenstown's population, thus restricting the ability to achieve mode shift targets". Need to add in WHY it is a constraint? Access?	Gaps	Updated
49	6	43	If all components of the Ladies Mile programme are committed through NZUP funding why are they in here. Needs explanation. Are they now in the Do min? Is this section for information/context only?	Statements not supported by evidence	Almost all of the infrastructure programme is in NZUP - statements added throughout to provide context
50	6.1.1	43	Have eastbound bus lanes been assessed?	Gaps	Updated
51	6		This section presents a lack of evidence. No references are being made to calculations, designs or assumptions, so it is difficult to understand how the assessment of options has been done.	Statements not supported by evidence	Added reference to Ladies Mile HIF and Ladies Mile tech note
52	7	46	There is no explanation of results, findings or assessment. Just reference to the Appendix. The Arterials section does not add any new information. Please provide detailed information on assessed options.	Gaps	Added clarifying context - much of Town Centre programme developed previously, our job to text/reconfirm. Reference added to Arterials tech notes
Appendix A_Workshop Notes					
Appendix B_Long List Options					
53	1	1	The document provides a list off all assessed options. I would have expected to also provide a description of the option and selecting process criteria assessment.	Statements not supported by evidence	Noted
Appendix C_TN 30: High Capacity Public Transport					
54			This document is technically poor as it does not present enough evidence on the assessment that has been conducted. In addition, it is not clear if the gondola will proceed. Available information is confusing.	Statements not supported by evidence	Noted.
55	2.6	3	2.6 mentions ORC has agreed to fund a basic level of ferry service. There is also a Ferry DBC. But the Main Doc discounted the ferry option from the PT improvements, with only one ferry route in the preferred option. Please explain.	Details of options	Noted. Amended.

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56		3	"There are challenges around fleet, but for example, Wellington is acquiring significantly more electric buses which will free up some of its current diesel bus fleet." Does this mean Queenstown can have Wellington diesel buses? Please explain.	Details of options	Noted.
57	3	4	Figure 3. How the forecast demand and capacity have been assessed? Please provide detail. Graph shows car demand descends from 2045, but text say 2039. Please rectify.	Statements not supported by evidence	Noted.
58	3	4	Although the doc is dated from Jul 2020, it seems it has not been updated to the latest outcomes/results from the assessment. - Figure 3 shows (green) "capacity with double-decker or articulated buses up to 2039 and with bi-articulated buses or trackless trams thereafter". Both having been removed from the optioneering due to geometry constrains. - "The mode shift numbers are modelled outputs based on a typical generalised cost model with the price and availability of parking in Queenstown Town Centre being a significant lever to mode change". What are the assumptions? Parking is one of the targets of the BC. Validity of the presented results will depend on assumptions, as they might no longer be current.	Statements not supported by evidence	Noted.
59	4	6	There is a ferry section to say that ferry option was dismissed. But above it mentions the ferry as a potential option (with funding).	Gaps	Noted..
60	5		Not enough evidence is provided in this section'	Statements not supported by evidence	
61		7	Frankton hub - the document states the need, how it should be and where should be located, also provides a solution to connect it to the airport. But there is no evidence on the work done of the options. Please include possible locations, designs, pros and cons, why we choose 1, reasons, feasibility. Also it ends with questions. This doc should be the reference doc for the study and it does not provide evidence.	Statements not supported by evidence	Noted.
Appendix D_TN 12: Queenstown Public Transport Network Development					
62			The TN reviewed in May (Feb 2020) is more recent than the one presented in Appendix D (Sep 2019)	Gaps	Noted - no feedback received in May
Appendix E_TN 18: Queenstown Lakeview Bus Service Analysis					
63			Same TN as the one reviewed in May (Oct 2019).	Gaps	Noted - no feedback received in May
Appendix Modelling TN (TBC)					
64			Not included	Gaps	Noted
Appendix G_TN 11: Travel Demand Management					
65			Same TN as the one reviewed in May (Sep 2019).	Gaps	Noted - no feedback received in May
Appendix H_Bus Stop Improvements (1 page)					
66			This is a list of proposed new bus stops between Queenstown and Frankton. It includes a brief reason on why these bus stops should be created; however, more information should be included: - Reason for preference for this bus stops and not others - Amenity - Catchment (more specific numbers that show that there is an assessment behind these "purposes") - Access	Statements not supported by evidence	Analysis/optioneering added to main body
67			Suggestion to add a map with the location of existing and new bus stops.	Other	In main body
Appendix I_Bus Lane Improvements					0
68			Frankton. It includes a brief reason on why these bus lanes should be created; however, more information should be included: - When it says "queues are expected to be significant", indicate why. - Reason for preference for this locations among others should be indicated - Show all the work behind these statements. This table could be easily go into the main report. More evidence on the work done and the results is needed.	Statements not supported by evidence	Analysis/optioneering added to main body
69			Suggestion to add a map with the location of existing and new bus lanes.	Gaps	In main body
Appendix J_Intersection Improvements					0
70			This is a list of proposed intersection upgrades. It includes a brief reason on why these should be created; however, more information should be included: - Problem we are willing to solve with the upgrade (reason why) (not in all) - Suggestion to include plans	Statements not supported by evidence	Analysis/optioneering added to main body
71			Suggestion to add a map with the location of the intersections being updated.	Gaps	In main body
Appendix K_Active Mode Crossing Improvements					0
72			This is a list of proposed active mode crossing improvements. It includes a brief reason on why these should be created; however, more evidence on how they have been assessed and decided should be included.	Statements not supported by evidence	Analysis/optioneering added to main body
73			Suggestion to add a map with the location of existing and new active transport crossing facilities.	Gaps	In main body
74			What is a "dummy" gap for buses? Please explain	Details of options	Haven't updated due to time
Appendix L_TN 24: Arterials					
75			Same TN as the one reviewed in May (Apr 2020). Therefore highlighted problems have not been addressed.	Gaps	Noted - no feedback received in May
Appendix M_TN 10: Parking					
76			Good TN. It presents the problem and how it will be solved. It also explains the differences between what has been agreed and what was proposed in the Masterplan and DBC. It is clear and easy to read. It says that the final outcomes might defer from what is presented as it still need to be refined, but in general it provides a god base.		Noted
77			Reference to "QTC Coach Management Technical Note", but is not available	Gaps	

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Appendix N_TN 9: Movement and Place Review					
78			Document updated from last time. It is clear and well explained. Presents an evolution of the MP framework used in QTC, as well as the problems willing to be solved and targets to be achieved.		Noted - no change
79			Based on QTC only	Gaps	Noted - no change
80			The new MP framework considers only 1 place category and 3 movement. While this caters for the different mov priorities, how does it consider different place values? Do all 3 categories cater for high place value?	Details of options	Noted - no change
81			Traffic speed on Primary and Secondary link is defined as 30-40km/h. However, speed limits in QTC have been set to a min of 40km/h. Please explain.	Details of options	Noted - no change
Appendix O_TN 25: Pedestrian Wellbeing Benefits					
82			Same TN as the one reviewed in May (Mar 2020). A summary page has been added, but the rest of the document is the same.	Gaps	Noted - no feedback received in May
Appendix P_Proposed Speed Limits (1 page)					
83			Map with current and future speed changes. Information in the map contradicts other information in the BC. QTC speed will be 30km/h or 40km/h?	Gaps	Noted
Appendix Q_Community Engagement Material					

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Preferred Option

ID	Section	Page	AECOM review comment	Problem	PROJECT TEAM RESPONSE
1	General		The document itself is very difficult to read. It is disorganised, not engaging and does not present a clear history that explains to the reader what has been done, why and how. It repeats the same arguments through the whole document and does not provide a clear conclusion. It is difficult to understand what has exactly been assessed (or not). Some sections present an idea / intervention very clearly and in another section it is a "maybe". In general it exposes a problem and what is the expected outcome,	Evidence not supported	Noted. Changes made to layout
2	General		The document would highly benefit from plans showing the extend of the study area and the location of each intervention.	Gaps	Noted. Diagrams added
3	General		Would expect an assessment of the programme against the outcomes listed in the Strategic case section 4. This should be described in terms of the KPIs. Eg If the KPI is 'New PT users" The outcome is x number of new PT boardings at Airport = x , at Stanley	Gaps	KPIs are referenced in Section 4 and Appendix
4	1.1.2	5	It is unclear if Stage 1 of the Arterials has been considered as part of the DoMin option. If that is the case, they should not probably be listed as intervention for this BC.	Risks	Arterials Stage 1 as Do minimum intervention referred in Table 2
5	1.1.2	5	"An eastbound bus lane and signalising the existing roundabouts on SH6 will enable buses to travel unimpeded towards the Shotover Bridge. Bus priority onto the bridge is also being considered. The westbound direction along this section will also have a bus lane with priority through the intersections." Should not this be part of the Ladies Mile interventions?	Other	Yes. Moved to correct cell.
6	1.1.2	5	Technical Notes 12 states that buses are a better option than trackless trams: "Other higher capacity modes, such as trackless tram or bi-articulated buses have been ruled out due to capacity constraints in Queenstown Town Centre, short block lengths and tight corners." Uncertainty on what kind of vehicles will be used for the Public	Risks	Noted. To be clarified in next stage
7	1.1.2	5	Please state which is the preferred option as offline PT service. It is not clear if gondola will proceed.	Risks	Noted. Reference added
8	1.2.1	6	If funding has been made available for Stage 1 of the Arterials and QTC realm improvements, why are those part of the preferred options?	Risks	These interventions form part of the Queenstown Programme.
9	Table 2	7	Definition of Do Min option is not clear. Is this option being defined with only allocated funding? Does the allocated funding include an ITS package and interim hub improvements on Stanley Street? Those two interventions have not been mentioned before as being part of the DoMin option. Please explain.	Fatal flaws	Noted. Do-minimum package content updated.
10	Table 2	8	Some interventions described in the following tables are missing in Table 2: - All SH6 interventions - Some SH6A interventions - Frankton interventions At the beginning of this document the "Queenstown package" is	Gaps	Noted. Table updated
11	1.3	7	This section would benefit from a summary on the preferred off line option. From this paragraph it seems that the option has not fully been contemplated, that it is just a "maybe". More clarity on what has been assessed should be provided.	Details of options	Noted. Information added.
12	Figure 2	10	This figure is too small, and the text is very difficult to read (colour and size). Would suggest to add a map in a A3 page.	Other	Noted. Size increased
13	Table 4	10	Intervention purpose is not clear. Would suggest developing explanation to include What, Where and Why.	Statements not supported by evidence	Noted
14	Table 5	13	1st intervention: Should not this be located on Table 3 rather than Table 5?	Other	Tables have been updated to reflect new location diagrams
15	Table 5	13	This measure has not been mentioned before.	Risks	Noted
16	2.1	15	This section only describes ideas / actions that could be done. It should be expanded to include specific interventions, who and how will do them as well as an implementation plan (what, where, when,	Evidence not supported	This has not been developed further (as noted in TN22, dated Feb 20 2020)
17	2.1	16	Why the development of a new Single Stage Business Case for TDM is recommended? This section is based on the information provided in Technical Note 22, which at the same time is based on a "deeper" previous study in the area. It is confusing why it is necessary to undertake more studies. Please explain why the studies made up to date are not sufficient.	Risks	Statement considers Queenstown Lakes District mode shift plan referenced in NZTA 'keeping cities moving' and being developed to final endorsement by Way2Go and NZTA
18	2.2		This section only describes ideas / actions that could be done. It should be expanded to include specific interventions, who and how will do them as well as an implementation plan (what, where, when,	Evidence not supported	Noted. Section updated
19	2.2.2	17	This is poor. State what has been assessed and selected as preferred, not the likely outcomes of a potential VMS option.	Evidence not supported	Noted. VMS locations included in update
20	2.2.3	17	This section is poor and does not relate to any of the work done. Make reference on the Parking Strategy.	Evidence not supported	Noted. Section updated

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21	2.3	17	Please refer to review comment above. TN 12 mentioned that articulated buses and trackless trams were not an option due to geometric constrains. Additionally, at this stage a decision on the type of vehicle type should have been already made. Please provide clarification on which kind of vehicle type will be used.	Risks	\\nzdun1s01\projects_2012 Onwards\NZ Transport Agency\80510559 NZTA Qtn BC\F. Reporting\8. Technical Notes\TN # 12 PT Story\200218 Queenstown Public Transport Network Development Story v3 .docx does not refer to longer vehicles not being an option.
22	2.3	17	Why the development of a Detailed Business Case to assess public transport services to complement the already developed Technical Note 30 (High Capacity Public Transport) is recommended? My understanding is that the purpose of this BC was to assess those	Risks	Paragraph included in error. Removed.
23	2.4	18	This section should be a summary on what is described in Appendix G. The reader should not have to read the appendices to understand what are the interventions being considered. Appendices are just for reference. Please expand this sections.	Evidence not supported	Noted. updated
24	2.4	18	Those 3 typologies do not align with the ones described in TN 9, where a primary, secondary and tertiary are described. Please explain or update.	Gaps	Typology obtained from design philosophy statement. Report updated to reflect TN9.
25	2.4	18	This section would benefit from an explanation and a map showing the location of the interventions as well as the defined street	Statements not supported by evidence	
26	2.4	19	Please explain what the two assessed options at Lake Esplanade are and the preferred one.	Statements not supported by evidence	Report updated with preferred option
27	2.5	19	This section should provide a summary of the developed parking strategy, not an introduction of what we want to achieve with the parking strategy.	Statements not supported by evidence	Section updated
28	Table 6	20	Link narrative with the investment objectives, as those are what we are willing to achieve.	Evidence not supported	Noted
29	Table 6	20	Drivers user mode is missing.	Gaps	Updated
30	Table 6	20	Expand to include freight, as not all commerce vehicles include deliveries (Supermarket supplies, Waste services…)	Other	Updated
31	Table 6	20	Can we join them in Visitors?	Other	updated
32	4.1.1	23	Please state which documents are relevant and in which appendix can be found.	Other	Noted. Updated
33	4.2	26	Suggestion to reintroduce IOs. Also IO1 has three dot points, but only two have been considered.	Gaps	Noted. Updated
34	4.1	23	Suggestion to reintroduce KPI	Gaps	Noted. Updated
35	Table 7	23	Decreased risk of crashes as buses have their own lane and priority Increase in number and surface of bus stops reduces the risk of crowds and potential accidents for PT users	Gaps	Updated to include
36	4.1.3	24	QTC. Please update	Other	Updated
37	Table 9	25	This intervention is new, has not been raised before. In addition, it does not seem the correct location for this statement.	Risks	unclear comment
38	4.1 4.2	23 26	The assessment lacks supporting evidence. Those statements have not been demonstrated in the document.	Evidence not supported	Evidence developed through previous assessment tables
39	4.1 4.2	23 26	Provide mark: High, Moderate, Low	Evidence not supported	Noted
40	5.2	30	Text suggests that the assessment profile was primarily undertaken using the Waka Kotahi's Investment Assessment Framework for the 2018-21 National Land Transport Programme. Additionally, it was done against the 2021 Draft GPS. However, Table 15 only shows GPS criteria. Please explain	Evidence not supported	Noted. The table 15 refers to priorities from both GPS priorities. The 2021 assessment was undertaken as a sensitivity test as it does not come into effect until July 2021
41	6.1	32	Why Ladies Mile is not included in this assessment?	4	Noted. Reference updated
Appendix D_TN 22: Travel demand management					
42			Same TN as the one reviewed in May (Feb 2020). Therefore highlighted problems have not been addressed.		noted
Appendix E_TN 36: Intelligent transport systems					
43	1	1	Error! Reference source not found Please update		noted - amended
44	1	1	"The successful implementation of ITS supports the investment objectives of the Frankton to Queenstown and Queenstown Town Centre Business Cases and help realise the mode shift required to keep the transport network operating effectively and efficiently." Please state why.		noted - amended
45	3.1	4	"The benefits of a successfully implemented TOC accrue from improved organisational and operational outcomes as well as providing an enhanced customer experience." Please provide reference.		noted - amended
46	3.1	4	Explain what is a Network Operating Plan (NOP) and why it is needed in Queenstown.		noted - amended

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47	ALL		This is a good informative note on what is ITS and which measures have been considered. However, it does not provide details on WHAT and WHERE needs to be done. For example, if SCATS Priority Engine software is a measure to be adopted, I would have expected to see a plan and a table showing the locations and what would the system achieve at each location and overall for the whole network. Same for the VMS and the parking management. In addition, for the parking management system there is a need to clearly explain what the writer is willing to install, where, how and how it will work and which benefits/outcomes will exactly bring. It mentions the system has a big cost (300-500k), but we don't actually		noted - amended
Appendix F_TN 30: High Capacity Public Transport					
48			Same TN reviewed as part of the Option Assessment Appendices		Noted
Appendix G_QTC design philosophy statement					
49	1.2	1	The document mentions there is a document recording the concept design philosophy for the F2Q SSBC. However, it is not provided in		No change - discussed with Reece
50	1.2	1	Please define what DPS means.		Definition added to abbreviations
51	1.3	8	"The DBC has redefined the lengths of Arterials Stage 2 and Stage 3."		Section updated
52	1.3		The definition of the arterials is not clear. It repeats the same arguments without apporting anything new and telling what has been changed from the initial Masterplan design.		MATT N, discussed with Reece defonition to be added to 2.5.2
53	2.4	9	Design objectives are not clear and not well framed / targeted.		MATT N, discussed with Reece
54	2.5.1	9	Maximum speed at the Town Centre will be posted and designed at 30km/h. HOWEVER, in the defined options it clearly said it will be 40km/h.		40 km/h Error corrected.
55	2.5.1	9	Why the design and posted speed of the Arterial will be different (50 vs 40)? Shouldn't this help drivers to travel faster?		in urban environment where most of the streets are straight this will have negligible affect on the operating speed, however will improve safety on steep gradients.
56	2.5.1	9	"The on-street parking is to be removed from Shotover Street, Stanley Street, and streets forming the Arterials; loading bays are proposed to be retained (although may be relocated)." The parking strategy does not expect to remove parking completely from Shotover Street and Stanley. In fact it estates 56 and 8 parking spaces respectively. Please explain		The reviewer used incorrect reference table to list parking provision (correct numbers are 24 and 8). Wording amended to be inclusive of parking stalls and parking strategy.
57	2.5.2	10	Defined MP framework (TN 9: Movement and Place Review) had primary, secondary and tertiary typologies (some of them with several designs or sub-typologies). Please explain why this is different.		DPS updated
58	2.5.2	10	A bus lane of 3.2m to be shared with cyclist is very narrow. Also 3.5m for traffic lane is generous… It does not have much sense that the traffic lane is wider then the bus lane.		Provision based on NZTA Cycle Network Guidance
59	2.5.3	11	Please indicate HOW and WHY the preferred street typologies outlined in the Masterplan have been modified.		Provision based on NZTA Cycle Network Guidance
60	Note 3		Indicate WHAT streets and WHY?		Note updated
61	2.5.5	15	"The proposed lane widths (3.2 m) allow for a 90% Passenger Vehicle. When turning it is expected that buses will temporarily encroach into the opposing lane. At signal-controlled intersections, the stop lines must be sufficiently set-back to allow for this intrusion, while on the non-controlled intersections the bus driver will have to judge the timing of the manoeuvre to ensure its safety." Have all this been considered in the intersection design? It seems like unnecessary risks that could be avoided with better		To be read in conjunction with Tables 2-2 and 2-3. The proposed is in line with the modern approach for town centres which reduces the length of pedestrian crossings, yet requires the occasional large vehicle to temporarily encroach onto opposing lane
62	2.5.6	15	Why mid-block ped crossing should not be encourage? What are the distances between signalised intersections? Do they cater for desired lines?		Re-worded. Opportunity to cross the road exists at signalised crossing points which are approx. 120 m apart.
63	2.5.7	15	This section would benefit from a map indicating the location of bus stops		Indicative map added
64		15	Indicate why those are the most suitable locations.		Additional criteria added to support location selection
65		15	Bust stop location should be part of PT assessment.		noted
66	2.5.8	16	"Most of the current on-street parking availability will be removed." Please make reference to the parking strategy study.		reference added
67	2.6.1.4	16	This section lists a number of suggested mid-ped crossings. In section 2.5.5 of the same documents it says that they should not be encourage.		see above. [#62]
68		16	This section would benefit from a map indicating the location of ped crossings		Indicative map indicating the location of ped crossings added
69	2.8	18	This section would benefit from a map indicating the location of ped crossings		Indicative map indicating the location of signalized intersections added
Appendix H_TN 10: Parking Strategy					
70			Same TN reviewed as part of the Option Assessment Appendices		noted

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Economic Case

ID	Section	Page	AECOM review comment	Problem	PROJECT TEAM RESPONSE
1	General		The economics should be presented as a chapter within Part B of the business case document	Fatal flaws	Yes - the economics will be presented within Part B of the business case.
2	1.1	4	Full list of assumptions not included	Gaps	Refer to new section 1.5.1
3	1.3	6	Are these being measured? If so add a description of how. They appear to be more like the overall benefits of investing from the strategic case?	Gaps	Yes - these are more the overarching (holistic) benefits. Previously included as the intent was that this would be a standalone document (so there for context), but not required now as this will form part of one complete business case. Text/bullets have been removed to make the chapter more consise and relevant to the $ benefits being reported.
4	1.3.	7	Each benefit component for each project in the package needs stating. A table outlining the benefit type (travel time/congestion/ trip reliability etc) by project and sum of package would be good for the reader to understand what percentage of the benefits come from what.	Gaps	A breakdown of the benefits that were derived from the TRACKS model have been included as a new appendix. These breakdown the relative benefits for each phase of the programme for VOC, emissions, congestion etc.
5	Table 1	7	What are the assumptions of these benefits. Ie Are CO2 benefits 5% of VOC? What assumptions have been made with regards to the PT reliability benefits etc. Please state	Gaps	4% of VOC. List of assumptions included as part of the new section 1.5.1.
6	1.3.2	8	Safety, active mode and general road improvement benefits need stating. What are the $$	Statements not supported by evidence	Table 4 updated
7	1.3.3	8	Have safety, active mode and general road improvement benefits been calculated for anywhere else on the network?	Gaps	Safety was considered as part of the benefits calculation for Shotover/Stanley Streets
8	1.3.3	8	The lack of convergence of the Microsim is a concern and suggests that there are major delays. Need more information on how this has been de-risked and accounted for. Is this explained in the modelling report? If so, needs	Risks	Refer to the modelling report. Note that benefits were capped post 2048 to remove some potential risk around overstating benefits (due to high delays in the DM). Reference to appendix added
9	1.4.1	9	What is the value of the 'Unmet demand'"? This is what the reader needs to know. Use the Tech note to give all the information regarding approach. Need to summarise here the findings of that work.	Gaps	Refer to the updated section 1.4
10	1.3.4	8	I'm confused why the active travel benefits for the Stanley Street and Shotover Street improvements been treated separately? But all other active mode benefits have been captured in the Active Travel Business case. Does the Active Travel BC assume all the improvements from this BC are in? I think this needs more information.	Gaps	Active travel benefits not considered as part of the economics (refer to 1.3.4). Only safety benefits considered for Stanley/Shotover
11	1.3.4	8	Check the Active Transport benefits. It was my understanding that the Active Travel BC was covering the Wakatipu Basin rather than Queenstown. Clarity required.	Other	As above, active travel benefits not considered as part of this economic evaluation.
12	1.4.2	9	What is the conclusion of the Pedestrian Amenity analysis. What is the value of this benefit that has been included? Please state.	Gaps	Unmet demand and pededestrian amenity benefits in Table 1.4 have been split. Also please refer to Section 1.4.2.
13	1.4.2	9	Check if the benefits of Stage 1 arterials has been removed as now in Do Minimum. The tech note in the appendix still refers to it being in.	Risks	Benefits of Arterials Stage 1 included within the DM. Reference to appendix added
14		10	Would benefit from some conclusions or observations regarding the benefits. What are the main sources of the benefits, PT, WEBs etc?. Help the reader have a better understanding the investment economics.	Other	Refer to Table 4.
15	1.6	11	Unclear if property costs have been included. Appendix C is empty.	Gaps	Property costs have been included.
16	1.6	11	Based on what is in the Financial Case, it would appear property/pre implementation and implementation costs have been omitted from this analysis.	Fatal flaws	Property costs have been included.
17	1.7	12	Needs further explanation on how PT fare revenue been accounted for? The fare revenue should be stated separately and included in the BCRG to reflect the net cost to government.	Gaps	Fare revenue based on $2 average fare per customer (current average fare per customer in Queenstown is $2.01). Agree that fare revenue should be separately identified and included in BCRG.
18	1.7	12	Benefits section should be all together before the costs are discussed.	Other	Report updated to discuss benefits prior to costs
19	1.7	12	Would like to see more information on how the benefits for the different stages of the arterials have been managed and accounted for. Have the stage one benefits been	Other	Refer to response to comment 13 and updated Table 4 (for breakdown of benefits)
20	1.8	13	Please show complete package BCR too.		Advice from the Waka Kotahi IQA was not to report the aggregated (complete package BCR) to maintain transparency around which elements of the programme deliver the strongest benefits/value for money
21	Table 5	13	Why are the costs in Table 5 different to the ones in Table 3? Table five should also include the Year of each phase.	Other	Table 3 and 5 now consistent (both 60 year NPV). First year of benefit also stated.
22	1.8	13	Please state BCRs as BCRg and BCRn correctly reflecting the PT revenue.	Gaps	BCRg and BCRn now reported.
23	1.9	14	Sensitivity analysis of 40 year analysis period and 6% discount factor missing. Should also include sensitivity testing of changes in Time) and the staging of each phase.	Gaps	Sensitivity analysis for 40 years and 6% included.
24	1.9	14	Does the sensitivity of the benefits include testing of WEBs? Would be good to see the sensitivity of WEBs tested separately as the WEBs will have different sensitivity to the transport benefits.	Gaps	Sensitivity analysis for +/- 50% of WEBS included

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25	General		It would benefit from some additional context of the evolution of the analysis and then how the new Do Minimum components have been accounted for.	Gaps	Above changes to economic case help clarify the phasing and elements included within the Do Minimum.

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Financial Case

ID	Section	Page	AECOM review comment	Problem	PROJECT TEAM RESPONSE
1	1.1	4	Would be good to include a high level discussion as to whether these costs are in line with the earlier business case estimates.	Other	Amended
2	1.1	4	The description of the Frankton PT hub works is not consistent with what is described in the Economic case	Other	Updated to align with other cases
3	1.1	4	How has contingency cost been handled? Please describe.	Gaps	Continugency costs for project elemnts covered in cost estimates
4	1.1	4	Cost estimate Appendix X is missing	Gaps	amended
5	1.2	4	The project expected cost is the only cost listed in the Economic case for each of the phases. Have the property and implementation costs been omitted from the BCR calculations in the Economic case? Or are the figures in the financial case wrong?	Fatal flaws	Project expected cost have been updated. Note property costs in the FC include only the additional costs above that already purchased/owned by QLDC. The economics case includes the full property costs
6	1.2	4	The timings and descriptions in Tables 2,4 and 6 are inconsistent with those given in the Preferred option report.	Fatal flaws	Amended to align with PO and economics reports
7	1.2	4	It would be useful if the cash flow graph for each phase/package showing the different cost components (property, preimplementation, implementation and contingency)	Details of options	Amended
8	1.2	4	Is the NZUP funding subject to a Business case?	Other	No - commited funding
9	1.2	4	Unclear if NZUP funding is committed or allocated. Please add additional detail. Be good to include a discussion on the conditions of each of these funding sources.	Other	Amended
10	1.3	4	It would be logical to include the CIP section first as this is the Do Minimum (or Phase 1) of the package. I'm not convinced it should be there at all, as it is the Do Minimum so I would expect it to be shown later in the cost share graphs as a committed/funded projects. Suggest there is the addition of a clear statement somewhere saying that it is shown for contextual purposes, but the Do Minimum is not part of this business case.	Other	Noted
11	1.5	9	Please explain 'fare box recovery', I think the reference is actually to fare revenue.	Other	These are the same things
12	1.6	9	Check the heading of this section. The section talks about potential funding sources rather than project revenues. Revenue suggests an ongoing stream of funds.	Other	Amended.
13	1.7	10	This section doesn't provide the level of detail or insight required by investors. It would be clearer for investors to see a pie chart of the total package cost with the split of funding organisations likely contribution. In addition, a graph representing the cost share of each organisation by phase would also be useful. Figure 5 should differentiate the committed/approved and non committed components allowing the funding gap to be understood.	Gaps	Amended to include this information
14	1.8	10	It would be good to include a discussion of which of these are being investigated further and what the likely value range of the cost savings opportunities could be. With implementation for some package components imminent, an understanding of the likelihood and timing of these to happen would be good. This feels more like a PBC level of discussion rather than DBC.	Details of options	Noted.
15	General		The financial case seems to be written like a programme business case rather than a SSBC/DBC. It discusses the delivery of a programme of works, rather than packages of work to a DBC level. The investor really wants to know how much each project/package costs each year and who is paying for it.	Other	Further information on costs by funder by year has been provided

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Commercial Case

ID	Section	Page	AECOM review comment	Problem	PROJECT TEAM RESPONSE
1	1.3	5	How was this procurement process developed? When and how will a decision be made on a preferred approach? Why were other delivery models discounted?	Risks	Has been updated to reflect that alliance is now in procurement. Justification not included as this has not been provided by client.
2	1.4	6	Are there any consenting, environmental or geotechnical risks to consider?	Risks	Consenting in section 1.8. The full risk register will be appended.
3	Table 2	6	It would be good to see an additional column added to the end of this table showing the new level of risk/risk score after the suggested treatment strategy has been applied.	Risks	See full risk register
4	1.7	7	Property strategy missing from Appendix X	Gaps	To be appended
5	1.8	8	Unclear if the preliminary consenting strategies are the content of section 1.8 or whether they should be attached in an appendix. Would be good to understand if there will be a full consenting strategy done, and when this will occur.	Risks	Summarised in the section, and are in appendices
6	General		Would be good to include a summary of the level of confidence that an appropriate contractual/commercial arrangement can be defined to make the structure and risk transfer work in practice?	Risks	Unsure what this comment means or what it relates too.

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Management Case

ID	Section	Page	AECOM review comment	Problem	PROJECT TEAM RESPONSE
1	1.1	4	I'm still confused about what this BC is called. The governance structure lists what I think are legacy names of iterations of this BC, but not this business case – "The Queenstown Transport Business case"? Need consistency of naming throughout the document or it is confusing.	Other	Accepted/updated
2	1.1.1-1.1.3	5	As previously stated, there needs to be clarification if the NZUP and CIP funding requires a business case.	Other	Accepted/updated
3	1.1.1-1.1.3	5	Project descriptions and dates are different to those stated in the Financial and Preferred option sections. Need to be consistent.	Other	Accepted/updated
4	1.1.3	5	I am so confused about what is in each stage and what is a package or a project and it seems to differ across each of the documents.	Other	Accepted/updated
5	1.2.1	7	The inconsistent and interchangeable use of the terminology such as programme, package and projects is confusing. In the same paragraph it is referred to as both the Queenstown Package and programme.	Other	Accepted/updated
6	Table 5	7	This is a good table which should be used right up front in the strategic case to understand the related projects and interdependencies.	Other	Noted
7	Table 5	7	Would be good to add the a criticality rate of each of these projects to projects in this package.	Other	Noted - not actioned
8	1.3.4	10	Add in a reference to where the property strategy can be found	Gaps	Accepted/actioned
9	1.4	10	To be completed.	Gaps	Accepted/updated
10	Table 6	10	Additional context of what 'Business case update' means please	Other	Accepted/updated
11	1.6	11	Where can the reader find the Engagement strategy?	Other	Accepted - to be actioned
12	1.7	13	What are the assurance and acceptance processes for acceptance with the other funding organisations?	between the partners	Accepted/updated
13	1.7	13	The document would also benefit from some discussion and context of the risk for each organisation if there is misalignment or differing priorities/timings between organisations.	Other	Specific risk covers.
14	1.9	13	Concern that the benefits realisation are at programme level, rather than package of projects level suitable for a DBC. Different measures may well be more suited to some packages and projects than others.	Other	Accepted/updated
15	Table 8	16	This table is really good and needs to be brought through to the strategic case and also the outcomes shown in the preferred option assessment. The outcomes in here do not align with those stated in the Strategic case. Make sure there is clear mapping and consistency with the ILM.	Other	Noted
16	1.10	18	Where can the reader find the Risk Register?	Other	Risk register in later issue
17	1.10	18	This is a repeat of what is in Table 2 of the Commercial case. No need to repeat. This section would benefit from a discussion on what risks are left for the owners, the cost implications and HOW are they to be managed.	Gaps	Accepted/updated
18	1.10	18	Include a discussion on how issues will be managed (identified, logged, periodically reviewed and evaluated, escalated, reported, etc.) to ensure they are resolved and avoid negative impact on the project? What are the escalation triggers?	Gaps	Future issues management for next stages of project. Not actioned

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APPENDIX E: QLDC OVERALL REVIEW AND RESPONSE

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General

ID	Section	Page	Reviewer	Review comment	Project Team Response
1	Climate change	General	s 9(2)(a)	Climate change is arguably the greatest challenge facing our transport system but is barely mentioned in this business case. Transport causes 50% of this district's emissions; in the 30 year time horizon of this business case, we need to effectively decarbonise transport, by law. QLDC has declared a climate emergency. It is essential to include consideration of climate change throughout. - The problems, objectives and programme are already aligned to good climate change outcomes - we just need to document it. This will add to the compelling investment story. - Information on current emissions and effects are provided here: https://www.qldc.govt.nz/your-council/our-vision-mission/climate-action-plan - Climate change effects should be considered as a constraint: https://www.qldc.govt.nz/media/tjgdjtuc/24-4-19_bodeker_final_report_qldc.pdf	Latest reporting iteration includes specific update on projected emissions changes as part of Preferred Option Assessment report. Climate change has been touched on a little more in the early part of the project documentation, but has not been reported as extensively throughout the report as requested
2	Missing elements		s 9(2)(a)	- High level schedule of implementation - Full project risk assessment - Network Operating Framework for Queenstown	Implementation information is well reported in new updated sequencing report. Risk included in final edition. Network Operating framework was expected to have been provided to the project team, however in its absence, team developed "Network Operating Framework Lite" in the form of Movement and Place framework, to help prioritise interventions.
3	Peer reviews		s 9(2)(a)	Please can we see the peer reviews? A road safety audit is required.	Completed reviews attached in latest edition QA document. Safety audit not yet completed.

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Executive Summary

ID	Section	Page	Reviewer	Review comment	Project Team Response
1	Case for change	4	s 9(2)(a) [redacted]	Great, impassioned introduction, but it takes a while to get going. Could we have some punchy statements to start, i.e. what the purpose of the business case is?	Executive summary has been significantly worked over since original review copy. Intended to be more punchy now.

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Strategic Context

ID	Section	Page	Reviewer	Review comment	Project Team Response
1	1.2 Background	6	s 9(2)(a) [redacted]	Organisational overview: It would be useful to include an overview of the Client organisation, to clarify how this project has arisen.	We believe that the reason the project has arisen is well articulated in the strategic case. Which has been noticeably updated since 7 Sep version. Note "Client organisation" is NZTA, but document reflects Way to Go Wakatipu also
2	1.5 Covid 19 Impacts	11	s 9(2)(a) [redacted]	QLDC have provided updated demand forecasts. We also have data on the economic impact and projected recovery: https://www.qldc.govt.nz/recovery/data-reports	We have used the QLDC forecasts for Covid recovery in the business case.
3	Figure 12 QTC Planned Developments		s 9(2)(a) [redacted]	Skyline development missing.	Aim was to give a flavour of the amount of development happening, not necessarily list every single development.
4	1.7.2 Economic Stimulus Package	19	s 9(2)(a) [redacted]	The correct title for this project is now Queenstown Town Centre Street Upgrades. As well as improving amenity, the purpose is to improve capacity and priority for pedestrians.	This was correct at the time of writing noting that things can or do shift but that the BC reflects the point in time when it was completed.
5	2.5 Local Strategies	31	s 9(2)(a) [redacted]	Key QLDC strategies to consider: - Vision Beyond 2050 https://www.qldc.govt.nz/your-council/our-vision-mission - Infrastructure Asset Management Strategy (from page 22) https://www.qldc.govt.nz/media/klrow5dx/qldc-10-year-plan-2018-2028-volume-2-21jun18.pdf - District Plan https://www.qldc.govt.nz/your-council/district-plan/proposed-district-plan - Frankton Network Operating Framework: part of the Frankton Integrated Transport Programme Business Case - Climate Action Plan https://www.qldc.govt.nz/your-council/our-vision-mission/climate-action-plan	The Strategic Case by its very nature looks at higher level national, regional and local strategies for its strategic context.

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Strategic Context

ID	Section	Page	Reviewer	Review comment	Project Team Response
6	3.5 Safety	45	s 9(2)(a) [redacted]	There is a growing conflict between pedestrians and e-mobility users, particularly in constrained areas like Queenstown Town Centre and the Frankton Track. There are significant risks with the introduction of companies like Lime.	A range of pedestrian related conflicts were noted in the Strategic Case.
7	3.7.2 Future Technologies	50	s 9(2)(a) [redacted]	Changing technology needs to be considered as a constraint, as well as an opportunity. The following will significantly impact travel patterns over the time horizon of this business case: - Electric vehicle uptake - E-mobility - Mobility as a service - Autonomous vehicles - Forms of technology we haven't yet considered	The Strategic Case focused on the key network issues in the present but takes into account the evolution of technology, noting considerable uncertainty as to the rate of change. But in essence, the case is around non-car alternatives to meet the bulk of travel demand.
8	4.2 Investment Objectives	54	s 9(2)(a) [redacted]	Investment objectives need to be SMART to properly define the project. They are currently vague and it is unclear what success will look like.	Investment objectives were set at the outset of the project in 2018 and agreed by the project partners. Further work has been done to improve the KPI reporting to address this comment
9	Appendix B Key Performance Indicator Details	27	s 9(2)(a) [redacted]	Baselines and targets need to be specific and populated - even if they are estimates or placeholders at this point.	This work is being developed. Baselines updated in latest (Nov) edition of reporting.

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Options Assessment

ID	Section	Page	Reviewer	Review comment	Project Team Response
1	Multi-criteria analysis evidence	Overall	s 9(2)(a) [redacted]	Please provide the multi-criteria analysis as evidence of decision making. High level tables are sufficient.	MCA and evidence provided in Tech notes (HCPT, PT Network Development Story, Evidence for Queenstown PT Network Options MCA). Acknowledge that the SH6A and hub MCA results are not included and we will look at this addition for the next iteration (noting Final Draft v2 has just been posted, and some review expected before fully finalising)
2	5.1.1 Overall Network Approach	32	s 9(2)(a) [redacted]	Please provide evidence to support the decision to not utilise Hawthorne Drive.	While Hawthorne Drive provides an alternate route around Frankton, it is not State Highway, is single lane. Directing traffic from a highway onto local roads, thus contradicting the road hierarchy and taking away signal green time from the highway, considered sufficient evidence for its omission.
3	5.3.2 Active Mode Crossings Assessment	41	s 9(2)(a) [redacted]	Where is this assessment provided?	The assessment has not been formally written up. Our assessment based on combination of modelling information (see Frankton tech notes) which show accommodation of pedestrian/active crossings, and the Deep dive workshops where underpasses were vocally disavowed by client group participants.
4	6.1.1 Westbound Bus Lanes	43	s 9(2)(a) [redacted]	Why was the Stalker Road bus lane omitted?	Not sure it was omitted, perhaps just needs clarification that westbound buses will enter highway at Howards Dr, primarily to service proposed P&R
5	7.2 Parking	47	s 9(2)(a) [redacted]	The QLDC Parking Strategy is draft only.	Noted, hence we developed the parking assessments to provide some guidance to considering parking.
6	7.3 Coaches	52	s 9(2)(a) [redacted]	Should overnight coach parking be included in the scope?	So far it hasn't been included in the scope. We started a conversation on this matter in June 2019, but it did not progress.
7	7.3 Coaches, Freight/Servicing, Taxis	53	s 9(2)(a) [redacted]	What is the projected demand for coaches, freight and taxis? Can the proposed supply meet this? Please provide evidence.	Query on level of supply of what. We have attempted to provide current or improved supply of parking/stops for these modes.

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Options Assessment

ID	Section	Page	Reviewer	Review comment	Project Team Response
8	7.3 High and Single Occupancy Vehicles	53	s9(2)(a) [redacted]	Did we ever consider the level of pedestrianisation of the historic core: detune for vehicles (current preferred option)/shared spaces throughout/full pedestrianisation (service vehicles only)? This is an opportunity to think big.	We would like to think we have covered this (may not be explicit enough) - narrowed roads, widened pathways, reduced parking and significant urban enhancement was felt to be quite "think big" by the project team.
9	8.1 Demand Management	56	s9(2)(a) [redacted]	What input did QLDC have into the TDM Scoping Study? This is a key part of our work.	The TDM scoping study was derived from a Wakatipu wide business case investigation, whcih had QLDC participation. Our business case took the TDM study and refined somewhat to meet the expectations of our scope. Project was comissioned by WtG through Waka Kotahi. so unfortunately QLDC representation not reported in our business case.
10	Appendices H-K	144	s9(2)(a) [redacted]	Really useful in understanding design intent. Please could you provide for the rest of the network?	Appendices H-K are Frankton and F2Q oriented. Additional detail is provided in other formats for the town centre, which covers our scope, but not presented in same format. Expectation is that additional detail will be covered in (recommended) subsequent PT services DBC.
11	Appendix M Parking	163	s9(2)(a) [redacted]	What parking implementation measures are included in the scope of this business case, and what is QLDC expected to deliver separately?	This BC has not gone to the detail of parking implementation, and this project team has not considered that our scope would demand this level of detail. Expectations were that the parking strategy would contain such detail.
12	Appendix N: Movement and Place Review	182	s9(2)(a) [redacted]	This is a great assessment to include, and extremely useful for the Town Centre. However, the movement/ place hierarchy and typology appear to be non-standard and not intuitive. Can we align with the emerging One Network Framework (which QLDC are trialling for the town centre)?	Movement and Place framework was developed originally in July 2019, as there was no Network Operating Plan available. A bespoke framework was developed that responds to the particular challenges of Queenstown. It can be aligned with the One Network Framework in due course, but not as part of this business case delivery.

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Options Assessment

ID	Section	Page	Reviewer	Review comment	Project Team Response
13	Appendix P: Proposed Speed Limits	225	s9(2)(a) [redacted]	QLDC have agreed that speed limits within the urban boundary will drop to 40km/h. What will the speed limit on State Highways 6 and 6A be, including Ladies Mile and Frankton?	NZTA are pursuing their own review of their road network. NZTA have participated in the Council's speed limt review and it is anticipated that there will be some alignment with the QLDC review. This will be confirmed once the reviews are complete.

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Preferred Option

ID	Section	Page	Reviewer	Review comment	Project Team Response
1	Overall		§ 9(2)(a) [redacted]	It would be good to understand the plan for future recommended studies: especially timing and funding.	Report updated to include list of expected further technical assessment requirements. Timing and funding of these yet to be determined.
2	Table 2: Phased roll out of the Queenstown Package	7	§ 9(2)(a) [redacted]	What is included in the NZUP programme? Table 2 indicates public transport services, street upgrades and travel demand management are included.	Sequencing Table updated to reflect appropriate funding stream
3	3.2 How it will all work	21	§ 9(2)(a) [redacted]	Please can we have a more detailed map showing how the town centre will work? Some colours don't match.	Plan updated, so colours match, to the level of detail required for the business case. Further detail will be developed as the project moves into the next phase
4	Appendix E 3.2 Implementation	23	§ 9(2)(a) [redacted]	In principle the recommendation to use WTOC is pragmatic, but how was this arrived at? What options were considered?	WTOC already oversee QT traffic operations. An alternative option for a dedicated TOC has been considered and is discussed in the implementaion section.
5	Appendix E 4.4 Costs	25	§ 9(2)(a) [redacted]	We need full cost estimates to support the business case.	Initial costings are provided. Once the technologies are confirmed a more detailed cost estimate can be undertaken
6	Appendix G 3. Signs and Markings	99	§ 9(2)(a) [redacted]	QLDC are proposing to develop a district-wide signage strategy and wayfinding strategy over the next few years.	Noted

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Economic Case

ID	Section	Page	Reviewer	Review comment	Project Team Response
1	Overall		[redacted]	A good high level summary of a complex issue, however there are some missing sections: - Please provide detailed economic assessments in appendices - Full benefits appraisal	A new Appendix has been added which provides a breakdown of the benefits. Detailed economic assessment has been provided to peer review, however, it does not feature in the Case Report
2	1.9 Sensitivity Analysis	14	[redacted]	Spatial Plan test: great result to see alignment of Spatial Plan and Business Case.	Noted
3	Appendices A and B: tourism constraint and pedestrian wellbeing		[redacted]	Excellent pieces of analysis.	Noted

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Commercial Case

ID	Section	Page	Reviewer	Review comment	Project Team Response
1	Overall		s 9(2)(a) [redacted]	While this high level section is easy to understand, I would expect it to be more specific to the particular projects to be delivered.	Yes, the commercial aspects of the business case have been moving quickly outside of the business case team hence the high level nature. Latest iteration will offer current understanding.
2	Overall		s 9(2)(a) [redacted]	Missing sections: - Market capacity to deliver - Consideration of operational phase	Agreed a market capacity analysis would be useful once the business case has been through funding approvals to understand what may come to the market and when.
3	1.4 Risk allocation and transfer	6	s 9(2)(a) [redacted]	Additional high level risks: Client/market capacity to deliver, climate change, rate and nature of growth, COVID-19.	Agree with the first risk, the others don't relate to the commercial case. Risk management has been expanded since this version.

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Financial Case

ID	Section	Page	Reviewer	Review comment	Problem
1	Overall		s 9(2)(a) [redacted]	High level document is easy to understand but lacks the necessary detail for us to fully understand funding requirements.	Further detail has been provided in the final draft to ensure funding requirements are clear between the different organisations
2	1.1 Project Delivery Costs	4	s 9(2)(a) [redacted]	We need to compare funding requirements with Long Term Plan/National Land Transport Programme affordability, to determine if the requirements are affordable.	Noted
3	1.2-1.6	4	s 9(2)(a) [redacted]	Funding requirements are high level only. QLDC will need full cashflows (capital and operational) broken down by organisation and year to understand our funding requirements.	Provided in the final draft
4	1.6 Project Revenues	9	s 9(2)(a) [redacted]	Please could you provide more detail on co-funding of offline public transport?	This has not been actioned. Offline PT is too far in the future an too uncertain, at this stage, to seek this level of detail. In line with overseas examples, some form of sponsorship agreement could be reached, or it could be incorporated into a development
5	1.7 Funding Options	10	s 9(2)(a) [redacted]	The funding principle is vague. What is it based on?	The funding principles are based on discussions/ agreement between the funding partners
6	1.8 Alternative funding sources	11	s 9(2)(a) [redacted]	Useful list of possible alternative funding mechanisms, but we need to show how the project is affordable by proposing a mechanism and showing how it works.	This has not been actioned at this stage as it is acknowledged that further conversation will be required between the funding partners at the appropriate time.

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Management Case

ID	Section	Page	Reviewer	Review comment	Problem
1	Overall		[redacted]	Generally not enough detail for QLDC to be confident we can deliver. There's lots of good thinking, but what are our actual management processes going to be? For example, what QLDC teams are going to carry out project management and assurance?	The level of detail sought should realistically be for QLDC to determine - business case should not direct actions to that level of detail. Happy to discuss further
2	Table 6 Future stages of the preferred programme	10	[redacted]	Table 6 is useful in showing the next steps. It would be helpful to have more detail on rough scope and costs.	An additional section has been added with high level description of scope
3	1.7 Assurance and acceptance	13	[redacted]	Is a safety audit required for this business case?	That would be generally expected, yes. However the audit is for NZTA to commission and direct.
4	1.9 Benefits realisation management	16	[redacted]	Benefits framework looks thorough. We will need a full plan for benefits management, including what additional data collection is required (and associated capital and operational costs).	Agreed, this is a recommendation of the business case but not within scope to deliver
5	1.11 Cost Management	19	[redacted]	How will we manage cost increases? What level of contingency/optimism bias is allowed for? QLDC have a track record of cost increases as projects progress.	This is not an issue for QLDC alone. It is common that costs increase as more is know about design and construction. Can be managed through risk management and allowing appropriate contingencies
6	2.2 Post implementation monitoring	22	[redacted]	Are annual surveys enough? We see significant variation across days and seasons due to weather. The trends we see in our modal split surveys are generally weather-related.	Annual surveys are appropriate for assessing the impact of investment. More regular monitoring may be useful from an operational point of view. Recommendations are made in latest version about obtaining monitoring data.
7	2.2 Post implementation monitoring	22	[redacted]	Are there more innovative ways to collect data? Video analysis etc.	Yes, and should be researched through the benefits framework and data gathering plan

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Plans

ID	Section	Page	Reviewer	Review comment	Project Team Response
1+B 5:G1 5G4 B5: G65	Overall		[redacted]	Drawings are missing many elements that would be expected as part of a preliminary design: - Preliminary design of structures, especially bridges. For example, a blanket $1.5 million cost estimate for the Ballarat Street overbridge is too high-level and a significant risk. - Preliminary design of intelligent transport solutions (variable messaging signage etc.) - Long sections	Note that the Business Case scope does not specify the extent to which design must be completed. We have aimed for adequate detail to reduce cost risk for the next stage, recognising that some estimates will be high level. In addition, Survey and Geotechnical investigations were not specified for this work, so designs could not progrsess to any great detail. In the case of the Ballarat Street overbridge, it is dependent upon Manawa for which no details exist. Some elements (such as ITS) can only be at high level in this stage of development
2	**State Highway 6A**				
3	SH6A bus stops		[redacted]	It is great to see new bus stops. Some questions: - Which bus stops are designed to accommodate future articulated buses/trackless trams and tourist buses? Many look tight on space. - Some bus stops are less than 200m apart - too much stopping? - Some bus stops are only east or westbound, not a pair. It would be helpful to show some of this information on the drawings.	1. A number of key bus stops have been increased in length to accomodate a number of buses based on curent and future demand with the current vehicle fleet, which could also accomodate longer vehicles (should they be introduced). It's likely that regoinal buses will shift out to Frankton so there won't be as much competition for space. 2. Bus stops are spaced where there is demand from Queenstown Hill current and future development within the physical constraints of the corridor. 3. Majority are a pair where physical/cost constraints allow, however bus stops pairs within close proximity (Middleton Road is the only single eastbound stop).
4	Sheet 1: Old Frankton traffic calming		[redacted]	There are some references to old Frankton traffic calming - is that part of this project?	Yes Old Frankton traffic calming is part of the project, however cannot be funded through NZUP as it won't become a Crown asset.
5	Sheet 1: Frankton Village shared path		[redacted]	Do the SH6A shared path and cycle facilities continue through the Frankton Village area? These are currently not shown.	Yes the shared path and cycle facilities connect to the existing facilities constructed as part of the Stage 1 works.
6	Sheet 2: Frankton Marina intersection		[redacted]	What does the new intersection tie in with in the Marina, and who is responsible?	Work in progress with the Lakes Marina Developer and should be resolved shortly. Combination of NZUP and Marina Development.

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Plans

ID	Section	Page	Reviewer	Review comment	Project Team Response
7	Sheet 3: SH6A cycle lane		s 9(2)(a)	1.5m width with no shoulder is a safety risk where there are retaining walls. Is it possible to locally widen or provide a shoulder where there are retaining walls?	The 1.5m is to lip of kerb and there is a small shoulder behind the kerb to the toe of the retaining walls to provide and offset and is not a lot different from the current layout along Frankton Road, which is fine.
8	Sheet 2: SH6A intersections		s 9(2)(a)	Why are there not pedestrian crossings on all legs? These are all desire lines, especially with the bus stops.	Pedestrian crossings cannot be provided on all legs at every intersection as there isn't capacity. Pedestrian phases are often run at the same time as non conflciting turn movements.
9	Sheet 4: Footpath Potters-Goldfield		s 9(2)(a)	Great to have this new footpath, but only if it is an acceptable width.	A footpath of acceptable (TBC) width can be easily accomodated.
10	Sheet 7: SH6A shared path		s 9(2)(a)	Fantastic facility. Please could you clarify what the 'challenging to widen' note means near the Frankton end?	There are a number of accesses to residences on the lake side of towards the Frankton end of SH6A, which will make this challenging to widen the path and maintain access from SH6A (potential alternative from the lakeside, but would require QLDC acceptance and approval).
11	Sheet 7: Oaks Club Shores pedestrian crossing		s 9(2)(a)	Is it possible to move this west to align with the link from the Frankton Track? It is essential we provide crossing points at all links to the Frankton Track.	At Cecil Road? Too far away from the bus stop and likely to have visibility issues on the east approach.
12	**Frankton/Ladies Mile**				
13	Howards Drive roundabout	8	s 9(2)(a)	What options have been considered for this intersection? The Ladies Mile Masterplan team have highlighted that a roundabout and underpasses do not match the future urban environment.	Assessing and urban environment for Ladies Mile was not part of the scope. The roundabout will likely be reduced to single lane. The current design came from the Ladies Mile HIF work in 2017.

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Plans

ID	Section	Page	Reviewer	Review comment	Project Team Response
14	Frankton active travel	6	s 9(2)(a) [redacted]	The proposed design prioritises vehicles at the expense of active travel. Staggered crossings, large detours round roundabouts, indirect paths and a lack of mid-block crossings are not supportive of the Frankton Masterplan, Wakatipu Active Travel Network or the investment objectives. This work is a chance to make a statement about Queenstown's focus on active travel. For an urban arterial I suggest the following principles: - Protected crossings on all intersection legs - Shared paths on both sides of every road, as direct as the road itself - Clear pedestrian prioritisation at key intersections and gateways	See the Frankton Urban Integration Technical Note. These points have been considered and will come later as the corridor is urbanised. However there are constraints to providing protected crossings on all intersection legs due to capacity, which have significant impacts on the transport network.
15	Frankton bus stops	6	s 9(2)(a) [redacted]	Are these located in the bus lanes? I can't see them on the drawings. These are key to understanding how this network will function.	Yes bus stops are located in the bus lanes and these are marked on the drawings.
16	Hawthorne/Grant Road intersections	6	s 9(2)(a) [redacted]	Please could you provide some examples of signalised roundabouts working in an urban arterial setting?	Will provide examples seperately.
17	SH6/6A intersection	6	s 9(2)(a) [redacted]	My preference is wavy arm guy: - Tried and tested - Better land use outcome - Simpler to provide high quality active travel - Simpler to navigate	Noted.
18	Frankton interim bus hub	6	s 9(2)(a) [redacted]	Please can we see a preliminary layout of the interim upgrade?	Design has been provided, along with render
19	Lucas Place pedestrian crossing	7	s 9(2)(a) [redacted]	What is the pedestrian crossing to the south of Lucas Place? - The active travel route towards McBride Street does not tie in with existing path/crossing - Great to see the path through the car park to the Sir Henry Wigley Drive roundabout - has this been agreed?	1. Pedestrian crossing to the south of Lucas Place is to connect bus stops. 2. Plan sets have been updated, however survey, which is still to come, will sort out tie-ins. 3. No this hasn't been agreed with QAC.

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Plans

ID	Section	Page	Reviewer	Review comment	Project Team Response
20	Humphrey/Lucas intersection	7	s9(2)(a) [redacted]	Is a priority intersection sufficient?	Yes. Considered signalised roundabout but it was too small to provide required PT priority and constructing a larger roundabout was not practical. See SH6 Kawarau Road Technical Note.
21	**Queenstown Town Centre**				
22	Beach/Shotover intersection	SK-0006	s9(2)(a) [redacted]	What is pedestrian crossing treatment - Barnes Dance?	please refer to the PDPS
23	Athol Street	SK-0001	s9(2)(a) [redacted]	Is there adequate entry and exit taper for the bus stops?	The distance between bus stalls allows for the bus maneuvering . PT services further investigation will provide more info on bus selection, and detail design of stall length will need to follow.
24	Athol Street	SK-0001	s9(2)(a) [redacted]	Is there still provision for the KFC drive-through?	The current arrangements would suggest this facility is not retained (as part of the goal to reduce vehicle trips within town centre). Given the timeframes for implementation, further review and design will inevitably need to occur.
25	Ballarat Street (south)	SK-0012	s9(2)(a) [redacted]	There are some references to the Horne Creek bridge being replaced - is this proposed as part of this business case?	no
26	Brecon/Duke intersection	SK-0023	s9(2)(a) [redacted]	We have agreed to proceed with the Beca/LandLAB shared space design. Please update accordingly.	We are not planning to further update the plans at this stage. Also noting timeframes involved, such an update would be wise to occur when implementation decisions have been made.
27	Camp Street plaza	SK-0003	s9(2)(a) [redacted]	The plaza will provide good flow to the Village Green. However, there is a risk of confusion of priority with the adjacent Camp/Ballarat/Mall intersection. Is there anything you can do to mitigate?	Mitigation measures would be pragmatic to pick up at the next stage of design.
28	Lake Esplanade	SK-0007	s9(2)(a) [redacted]	I suggest another pedestrian crossing point should be provided between Lake and Brunswick. This is a key desire line, especially with the Active Travel Network.	There are no issues with this in theory, however the fit will need to work in with the bus stops to be provided. Such a decision should be made at detail design investigations.

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29	Marine Parade	SK-0003	s9(2)(a)	Existing issues on Marine Parade: width of shared space, paving pattern and lack of street furniture create confusion of priority and high vehicle speeds. QLDC have discussed increased street furniture to create a slow speed environment.	We were directed to retain the Marine Parade. Any suggested changes are outside of scope. to be considered in Detailed Design
30	Shotover St	SK-0001	s9(2)(a)	Is it possible to provide a pedestrian crossing at the intersection with Athol Street?	An informal crossing is provided, however a conflict exists between the pedestrian desire line and providing priority to mass transport. Improvements to be considered in detailed design.
31	Shotover St	SK-0006	s9(2)(a)	Shotover Street s-curve: wide carriageway and wasted space encourages higher speeds. Is there anything we can do to better utilise the space, or is width needed for over-dimension vehicles?	Both, over dimension vehicles, and articulated buses will require overruns. An alternative was proposed where the lanes are AC while overrun areas are cobble, however this approach is no longer practical with the signaled Beach-Shotover intersection, The signals will have a slowing effect on vehicles.
32	Stanley St	SK-0001	s9(2)(a)	When are the Stanley/Shotover and Stanley/Ballarat intersections proposed to be converted to Barnes Dance?	The implementation/sequencing programme should provide this detail.
33	Gorge Rd	SK-0029	s9(2)(a)	The Wakatipu Active Travel Network route is not shown on Gorge Road.	Our plans show the widened path on the south side where our work will influence Gorge Road geometry. Where our design does not influence geometry, any current plans remain relevant.
34	Gorge Rd	SK-0029	s9(2)(a)	What was the outcome of the optioneering for Gorge/Hallenstein/Hylton?	The intersection is not intended to be signalised. Crossing points provided on Gorge Road, some distance from intersection.
35	**Queenstown Town Centre Arterials**				
36	Overall		s9(2)(a)	How have the retaining wall types been determined? What options have been considered?	Limited geotechnical data is available, no ground investigations nor survey was undertaken, and assumptions are made around ground levels in relation to Manawa. Therefore the selection reflects the most likely outcome based on the available right of way and the known parameters. Investigations followed by Detailed Design are required to determine the type and locations of retaining structures.

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37	Overall		s 9(2)(a) [redacted]	All proposed retaining walls to be shown on the drawings	as above. Walls are shown where we were able to confirm the need for them. Other locations may require retaining. Lengths shown are indicative only.
38	Safe System assessment recommendations	SK-0018	s 9(2)(a) [redacted]	The recommendation for raised tables at intersections in the Safe System Assessment (included in the Arterials handover document) has not been applied to the design.	We recognise that there may be inconsistencies in the design information, as a result of the haste for arterials hand over ahead of completion of our work.
39	Gorge/Henry intersection	SK-0019	s 9(2)(a) [redacted] s 9(2)(a) [redacted]	Can the design be modified to eliminate the following land take? - Corner of Turner Street: move Gorge Road approach south into area of wide road reserve - Sliver of 8 Henry Street (Plunket) and 2 Shotover Street: move Henry Street approach slightly north to avoid the need to reconstruct retaining walls and fences	These considerations would / should be considered during detailed design.
40	Gorge/Henry intersection	SK-0019	s 9(2)(a) [redacted]	Confirm that the left turn lane length is sufficient to eliminate blocking of the through lane. Investigate extending the left turn lane and realigning the through lane by reducing the flush median along Henry Street	Lane length is currently considered adequate based on modelling information.
41	Gorge/Henry intersection	SK-0019	s 9(2)(a) [redacted] s 9(2)(a) [redacted]	Please remove the limit line on the Gorge - Henry movement before the driveway exit.	Detailed positioning of limit lines can be determined during detailed design.
42	Gorge/Henry intersection	SK-0019	s 9(2)(a) [redacted]	Please review the through movement design from Gorge Road to Henry Street to remove the merge as this will be confusing to drivers	Has been reviewed - see plan 19A
43	New cul-de-sacs	SK-0026	s 9(2)(a) [redacted]	What assessment has been made on the effects on the intersections of the roads to be converted to cul-de-sacs (e.g. Ballarat Street, Beetham Street, Malaghan Street)?	In essence the cul-de-sac intersections with other roads are unchanged from the current situation, other than reduced vehicle movements as they are no longer through movements. No other assessmetns
44	New cul-de-sacs	SK-0026	s 9(2)(a) [redacted]	Confirm the cul-de-sac designs for Malaghan Street, Ballarat Street and Beetham Street meet QLDC design Standards and as appropriate redesign to comply.	these were designed to fit within the land constrains. QLDC will need to determine if compliant designs are to be pursued where land constraints may otherwise restrict this.

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45	Arterial side roads	SK-0019	[redacted]	Is it possible to provide an accessible design (ramps etc.) from the side roads, including Malaghan Street, given the constraints? If not, we need to provide a clear plan for accessibility.	The gradient of side streets is prohibitive and the grade separation between arterial and sides streets is significant. These are not 'accessible' in the current sense of the word. It is questioned whether these streets, without the arterial, would be 'accessible' anyway.
46	Malaghan St	SK-0019	[redacted]	Confirm if footpaths are required on both sides on Malaghan Road or at all as this road will be cal-de-saced	Our study has not determined whether footpaths are necessary on both sides. Footpaths have been drafted to provide some form of pedestrian accessibility (even where none exists now) using the available corridor. Detail design will need to decide whether two, one or any footpaths are provided.
47	Ballarat St	SK-0019	[redacted]	What is the timing of Manawa and the overbridge, and do we need an interim pedestrian crossing facility?	Please contact Manawa Developer. The reason no at grade facility has been drafted is due to safety concerns, and we would apply this concern to the 'interim' question.
48	Melbourne Street	SK-0020	[redacted]	There is 300m between the Ballarat and Sydney pedestrian crossings. This will lead to severance and informal, unsafe crossings in the flush median. The risk is exacerbated by the proximity of the school. I acknowledge the permeability assessment but this is a poor urban design/active travel outcome. - What is the maximum grade for an at-grade pedestrian crossing?	This has been thoroughly assessed, and the project team stand by the decisions made for the crossing positions.
49	Frankton/Melbourne /Dublin intersection	SK-0022	[redacted]	Distance between the intersection and a number of driveways does not meet the District Plan requirements. Please mitigate.	These are existing driveways. QLDC will need to determine how it would manage the proximity of the driveways during the detail design phase and engagement. Our investigations did not get to this level of detail prior to handover.

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50	Frankton/Melbourne /Dublin intersection	SK-0022	[redacted]	What trade-offs in performance have been considered to arrive at the current intersection? - No pedestrian crossing point on Frankton Road east leg means pedestrians from Dublin Street may need to cross three roads - this is a poor outcome. - Banned left turns from Frankton to Dublin will potential lead to lengthy circulation if drive misses Sydney Street. Please review analysis undertaken to determine proposed preferred intersection design.	This intersection has been thoroughly considered and assessed and is subject to considerable constraints. The team stands behind the current design as the best balance.
51	Melbourne St	SK-0021	[redacted]	Concide the impact of reducing St Joseph School on-street parking from 11 spaces to 6 on Melbourne Street	This sort of decision should now be part of the arterial design process.
52	Melbourne Street vertical alignment	SK-0021	[redacted]	Why is the alignment of Melbourne Street approximately 600mm above the current road survey between Sydney Street and Frankton Road	Note that the initial geometries were developed based on multiple sources of original information (no topo survey as part of this work). As the project has been handed over, it would be expected that survey would be part of detailed design and alignments updated.
53	Stages 2 & 3		[redacted]	What is the assumption for services? Will all services be underground?	only 3 power poles within S 2&3 are within the scope. Remaining power poles are within Lake View, and it is unknown what is being proposed, please contact beca
54	Camp/Man intersection	SK-0016	[redacted]	What is pedestrian crossing treatment for Duke Street leg?	informal, dropped kerb. Barnes dance movements would accommodate crossing when no vehicles move.
55	Camp/Man intersection	SK-0016	[redacted]	Active Travel Network not shown at Camp/Man intersection.	Active Travel terminates at the car park. the path is indicatively shown. the Active Travel design will clash with the pump station.
56	Gorge/Templeton intersection	SK-0018	[redacted]	Driveways are closer to the intersection than allowed in the District Plan. Please outline how this will be mitigated.	These are existing driveways. QLDC will need to determine how to consider this issue.
57	Man St	SK-0034	[redacted]	Why is the alignment of Man Street upto 400mm above the current road surface between Hay Street and Camp Street	Note that the initial geometries were developed based on multiple sources of original information (no topo survey as part of this work). This issue would be addressed during detailed design, when survey info provided.

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58	Templeton Way	SK-0018	[redacted]	Review proposed 5% gradient upto Gorge Road. Queued truck, buses and coaches will reduce the capacity of the intersection duie to the slow acceleration	There are a lot of decisions still to be made around Arterial 2 which will influence its size, gradient and position. It is not intended to review at this stage.
59	Stanley St	SK-0016	[redacted]	Confirm that Stanley Street intersection design meet the approach sight distance requirements for vehicle approaching from Camp Street	This intersection is 50m from camp street with clear lines of sight at the moment. Not sure understand the issue.
60	Camp St	SK-0016	[redacted]	Is the footpath wide enouph on the east side of Camp Street to include retaining wall and fence	Proposed footpath does not follow the existing path. Realignment is required and shown on the drawings, and subsequently will require full design to include wall and fence.
61	Thompson Link	SK-0040	[redacted] [redacted]	The business case needs to reconfirm the preferred option.	Our scope was to identify the preferred option, which we have done - it did not include a full suite of optioneering. We are comfortable the option shown (with refinements during detail design) is preferred.
62	One Mile roundabout	SK-0040	[redacted] [redacted]	Path network needs to be reconciled, especially: - Connection to off-road path to petanque court - Connection to One Mile Track	Design at this stage is necessarily conceptual, and we are not sure this level of detail provides any greater information to support (or not) this configuration. This information can be considered in Detailed Design
63	Thompson/Stage 3 intersection	SK-0038	[redacted]	Footpath along Arterial has a significant detour as it crosses Thompson Street.	Layout from Masterplan. We do not see better options at t this stage of development.
64	Brunswick St	SK-0037	[redacted]	Active Travel Network route not shown on Brunswick Street. First section has an extremely narrow footpath on the south side.	Active travel proposed raised tables are shown. No other works are proposed as part of ATN
65	Thompson St	SK-0036	[redacted] [redacted]	Lakeview section is not up to date: - Isle Street intersection is now one-way out of Isle Street - Vertical alignment is incorrect - Narrow footpath on south side of S-curve needs to be removed	Acknowledge information presented may not be the latest. We have chosen to not update or modify our information as this section of Thompson Street is completely out of our control - it is unlikely any one is relying on our information for the latest configuration of Lakeview.

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66	One Mile roundabout	SK-0040	[redacted]	Please show the one Mile Creek, existing culvert under the existing roundabout and potential culvert under Thompson Street link.	Agree this information is currently not shown. As our scope was to identify preferred alignment only, and Stage 3 is so far out on the programme, this information can be shown on subsequent issues of the plans, as further design detail progresses.
67	Thompson St	SK-0038	[redacted]	Alignment of Thompson Street Link could be pushed south to reduce the impact on 62 Thompson Street if 38 -54 Brunswick Street is to be purchased	This is a possibility, and would be best resolved during more detailed design, when survey available.
68	Brunswick/ Thompson intersection	SK-0037	[redacted]	Significant safety concerns with this left turn design from Brunswick Street. Brunswick Street approach angle is greater than 70 degrees and thier is no merge lane. There is a high safety risk with vehcile traveling from Brunswichk Street to Thompson Street. Needs to be reinvestigated to develop an appropriate and safe connection	Acknowledge this is not a perfect design, but there are significant constraints and 70deg cannot be achieved. This will not be reinvestigated as part of this business case, but there is a case for further optioneering. Need to recognise the constraints imposed by Lakeview design proceeding without consideration of Art 3 and this intersection.
69	Thompson St	SK-0037	[redacted]	Why is the alignment of Thompson Street upto 1.3mm above the current road surface west of Glasgow Street and 0.9m below the current road surface between Glasgow Street and Lakeview connection. The vertical alignment of Thompson Street does not change.	Plans based on levels data from multiple sources. Vertical alignment will be resolved when topographical survey completed. At this stage we don't believe levels different is an issue at this stage of design process.

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APPENDIX F: IQA REVIEW AND RESPONSE

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Feedback to Way to Go on Queenstown Business Case IQA

October 2020

Work required to fill gaps and improve the business case (particularly financial and management cases)

The Management Case has some shortcomings that need to be addressed prior to the completion of the business case documentation:

1. Other work programmes have different governance structures, e.g. the Spatial Plan is an initiative of a new Urban Growth Partnership between government, Kai Tahu and QLDC, and the Ladies Mile Masterplanning has its own governance structure. The Transport Governance Group provides another layer of governance. There needs to be visibility of these and their linkages.

Recommended Action to Resolve: Noted that governance structures are different, but there is not necessarily clarity about what they all are at this point. Will defer to Lead of W2G Management Team to provide some wording to recognise the differences and linking organisation.
Completed Action Taken: Added in a sentence paragraph 1.1, and into the risk table. It is also raised in the interdependencies table and section 1.3.

2. Project roles and responsibilities have not been completed in the Management Case for the Alliance nor non-Alliance projects.

Recommended Action to Resolve: Realistically, such roles and responsibilities cannot be identified at this time until they have been clearly defined with the projects/project organisations. Note this in the Cases.
Completed Action Taken: Table removed, and text added stating roles will be allocated following the award of the alliance contract.

3. Property Group has delivered a Property Strategy. Stage 2 upgrade to full bus hub facilities at Frankton requires a complex land acquisition on the eastern side of Kawarau River which is currently a golf course. The business case recommends a process is initiated to proceed with this as soon as possible but the case for a full offline facility has not been made with a clear evidence base. Further justification is required before any land acquisition process can be made, and this will need to be an update to the business case in the 2024-27 period.

Recommended Action to Resolve: Note that Property Group has <u>not</u> delivered a Property Strategy at this time. Where our Cases "recommend a process initiated to proceed with (Stage 2 Frankton Hub property) as soon as possible", we need to modify this statement, as we have not or should not. Record that PT Services and Infrastructure DBC will follow this Business Case, and justification will be recorded in there.
Completed Action Taken: Text has been updated in section 1.3.4 as per wording above.

4. Management Case – Sub-section 1.10. This sub-section should state why these other activities are outside of scope.

Recommended Action to Resolve: Note: it is the FINANCIAL CASE, section 1.10 that details out-of-scope activities. Each of the out of scope bullets to have a few additional words noting why out-of-scope.
Completed Action Taken: No action for management case. Financial case added comments

5. Opportunities around the public transport hub and Project Manawa in Stanley Street are uncertain. This opportunity needs to be considered as part of any pre-implementation phase for Stanley Street bus hub in 2024-27.

Recommended Action to Resolve: No further action.

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6. The business case highlights the importance of acquiring a 2.5m strip of land from the Project Manawa site (critical dependency). There is no provision for this work set out in the Management Case therefore this issue will need to be part of the PT services DBC scope.

Recommended Action to Resolve: Several actions: • The 2.5m hub is part of the Stanley Street hub improvement and can be part of the State Highway Improvement project for Stanley St work. • Clarify that obtaining this strip of land is dependent on Manawa Stage 2 work before it can be built on, however, property can be obtained through the PWA process prior • Note it is necessary for the access to the Playcentre to be closed before the hub can be properly operational • Email enquiry to Manawa/Pickard as to whether there is any clarity about timeframe that might indicate when this property can be acquired.
Completed Action Taken: Section 1.3.2 updated reflecting the above comments.

7. Impact and alignment of the Queenstown Spatial Plan is mostly absent in the Strategic Case and Management Case. This has significant flow-on effects for the introduction of PT infrastructure on State Highway corridors ie infrastructure going in with land use plans not fully developed. How this risk will be managed needs to be clearer in the Management Case.

Recommended Action to Resolve: Several actions: • Add integration with Spatial Plan to risk register • Note in Cases (Management and Strategic) that SP preferred option has been modelled and integrated into the project, but also not SP has not been approved
Completed Action Taken: Updated text in table 6 - project integration and in table 10 - key risks. Explanatory text added in section 1.3.

8. An Engagement Strategy is attached as Appendix A06 but appears to be for the DBC phase only. Current communications announcements are being coordinated and operating effectively under Way to Go.

Recommended Action to Resolve: No further action.

9. Critical dependencies have been identified at a high level through the Preferred Programme Sequencing Report. It would be beneficial to clearly set out <u>why</u> the various activities are dependent on these other activities.

Recommended Action to Resolve: Provide some more detail around why these dependencies are dependencies.
Completed Action Taken: Team reviewed the table and consider the dependencies are appropriate described.

10. The Management Case would benefit from a clear scope for each additional business case phase eg SSBC/DBC and business case update/Pre-Implementation phase required to be able to implement any additional supporting improvement activities. Scope of future critical phases of business cases eg TDM SSBC and PT DBC has not been made, nor estimated costs of this work.

Recommended Action to Resolve: We're not entirely sure we need to provide a clear scope, however we should advise that the other cases "are envisaged to cover…." And add in a broad outline of the scope and what needs to be included in that future work.
Completed Action Taken: Added a new table 7 to cover the high level scope.

11. Waiting for Peer review of cost estimates (Appendix D05). No parallel cost estimate is required for NZUP/CIP non-NLTF funded projects. Our understanding is that the Alliance will fully review project costs that fall within the Alliance's scope.

Recommended Action to Resolve: Parallel cost estimation being done by Bond CM for NZUP (and a TOC for the full Alliance works). No other peer review is planned/intended.
Completed Action Taken: No modification to cases.

12. NZUP programme costs estimated in business case at $106.2m, which is a $16.2m funding shortfall ($90m of central government funding has been approved). Unclear how this shortfall will be accommodated or whether a scope change is required, and if the latter what the impact will be on the project outcomes.

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Recommended Action to Resolve: The higher estimated cost is known and needs to be acknowledged in the cases. Report that the higher cost is/will be presented to the NZUP Governance Group, who will provide direction on how to manage.
Completed Action Taken: Text added to section 1.1.1 as per above.

13. Not clear who is leading the TDM SSBC, scope and what the cost is.

Recommended Action to Resolve: Agreed that it is uncertain who is leading the TDM SSBC. Financial Case to recognise this uncertainty, and defer to W2G to give direction.
Completed Action Taken: Table 7 of management case allocates this to QLDC as the lead, scope added in new table 7.

14. Not clear who is leading the ITS component or scope but an estimate is $5.3m for improved operations through WTOC, VMS and advanced parking management. WTOC changes and fixed VMS should be part of NZUP

Recommended Action to Resolve: As per above, need to recognise the uncertainty, and reflect that further work is required to understand where funding responsibility sits (as parts could be the responsibility of each of QLDC, Waka Kotahi and ORC), with overarching integration with W2G
Completed Action Taken: Not discussed in the management case.

15. Need to include the precise names for each intervention using Waka Kotahi's project naming guideline which is a requirement for 2021-24 NLTP.

Recommended Action to Resolve: Naming convention information received. To be incorporated in Cases.
Completed Action Taken: TBC

16. There is a risk around Otago Regional Council's ability to plan, operate and co-fund a step change in public transport provision envisaged in 2027-30. The Financial Case assumes BRT fleet, stops hubs (presumably Frankton hub as Town Centre assumes co-funding arrangement) will be 100 percent funded by Waka Kotahi. This has NOT been agreed, and it is proposed that this issue is considered - as part of the Public Transport Services Detailed Business Case scheduled for the 2021-24 period. TDM SSBC assumes this is funded 100 percent Waka Kotahi but this would be funded at normal FAR and be a Queenstown Lakes District Council-led activity. The Financial Case has also assumed incorrectly that Waka Kotahi will fund a TDM SSBC 100 percent when this is likely to be a QLDC-led activity with WK supporting at normal FAR.

Recommended Action to Resolve: Case authors to note our incorrect comments/assumptions (highlighted by this author). Discussion to be organised with Cases authors and Shaun and Tony Sizemore to clarify responsibilities and agencies and Case documents updated accordingly.
Completed Action Taken: Not applicable to the management case.

17. There is a risk around the different strands of governance of the various work programmes currently being delivered, i.e. the Way to Go, the Spatial Plan partnership and the Ladies Mile masterplanning all have different governance structures.

Recommended Action to Resolve: Governance mentioned in Para 1 above, and guidance will be provided by W2G
Completed Action Taken: An additional paragraph has been added in section 1.1. A new risk has been added to Table 10, and additional text in section 1.3.

18. Would be helpful to have a single table with the capex and opex for each improvement activity (include by phase) with cash flows up to the end of 2029/30. What is the total cost of the programme, both capex and opex with and without the NZUP and CIP projects?

Recommended Action to Resolve: Table is under action and will be included as an Appendix to financial case.
Completed Action Taken: No action for the management case.

19. The Management Case would benefit from a clear understanding of when the network is approaching key travel demand triggers that can be used to determine the appropriate timeline and development of the supporting activities. The current proposed timeline for the implementation of activities is as below:

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20. PT services improvements – staged implementation from 2024 onwards

21. Stanley/Shotover Streets improvements – 2024-27. It looks like this activity includes interim Stanley Street hub improvements coinciding with a reasonably substantial increase in PT services starting in 2024-27 (from existing capacity of 360 people per hour to 873 per hour), therefore should the interim Stanley Street hub improvements be included in PT services DBC?

22. Town Centre upgrades Stage 2 – implementation 2024-27 or when affordable and able to be prioritised. There is a question as to what Waka Kotahi will be able to fund eg level of amenity, and regional/commercial passenger transport hub in Athol Street does not currently fit within any current work category definition for funding.

23. Arterials Stage 2 – implementation 2027-30

24. Bus hub improvements (investigation only 2024-27 – therefore exclude from PT services DBC?) – implementation 2027-30.

25. Arterials Stage 3 ($61m) and offline PT solution ($262m) unlikely to be supportable at this stage – low BCR and too far in the future respectively. Costs different for Arterials Stage 3 in Financial and Management Cases $118m vs $61m

Recommended Action to Resolve: Seems to indicate that we need to clarify the triggers in the management cases. Can we turn our responses into triggers (i.e. demand/patronage etc) instead of/as well as years? However, need to note that the 2027 "trigger" is also alignment with the PTOM contract

Para 20: No comment
Para 21: should reflect that interim Stanley St hub is part of SH improvements. Should also separate Full Stanley hub justification from PT services DBC (but run in parallel).
Para 22: No comment
Para 23: Arterial 2 trigger is external factors as has BCR >1 so can happen anytime funding avail
Para 24: There is no defined Stanley Street hub trigger (no monetised current evaluation), but complements on benefits of Arterial Stg 1. There is an immediate trigger to realise the vision of a high quality experience for international visitors arriving in town centre. The trigger for the Frankton hub is essentially the point at which offline transport infrastructure needed.
Para 25: Clarify price difference (suspect with/without property). Current economic evaluations don't account for town centre vision of tourist experience by removing vehcilses from town centre (goal might even conflict with hard economics)

Note whole trigger discussion shines a light on Monitoring and Benefits Realisation requirements.

Completed Action Taken: Project team agreed best for these triggers to be confirmed through the PT service DBC for the PT elements. Some commentary has been added in section 1.5.1

26. The Management Case is reasonably clear about the work required, key issues to manage and the timing of interventions to progress to the next phases of business cases and pre-implementation through to implementation for the NZUP and CIP versus "remainder of the preferred programme". There is a heavy reliance on programme-level risks and interdependencies being managed through input into the relevant governance, delivery and project lead arrangements in Queenstown and overseen and coordinated through the Way to Go partnership. The Way to Go Programme Director will need to play a pivotal role in ensuring the multiple moving parts (land use development, spatial plans, transport improvement projects and other infrastructure implementation such as Queenstown's three waters programme) are coordinated and risks managed to deliver the best overall economic and social outcomes that can be achieved within the well canvassed challenges and constraints. .

Recommended Action to Resolve: All the best to the W2G programme director.

Comments on business case robustness

27. The business case is predicated on the roading network being unable to accommodate future predicted growth, grinding to gridlock. Widespread road capacity upgrades are not proposed to meet this challenge,

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with physical constraints and stakeholder feedback, as well as current Government land transport policy and funding settings all pointing to a public transport step change to manage the growth forecast in travel demand of residents and visitors.

Recommended Action to Resolve: No further action

28. Transport modelling identifies that unless there is a significant shift to public transport and active modes (a minimum of 40 percent of trips on SH6A PM peak in 2028 and a minimum of 60 percent of trips on SH6A PM peak in 2048 on pre-Covid forecasts), achieved through infrastructure and service provision supported by strong parking management and travel demand management approach, the network will breakdown and with it significant economic loss. The evidence for the cause and effects of the traffic growth are well known and adequately covered in the business case Strategic Context document.

Recommended Action to Resolve: No further action

29. The business case presents the most compelling case in relation to rapid visitor and residential growth resulting in significant traffic growth, congestion and unreliable travel times on the network. Future modelling for 2028 and 2048 indicates that a greater number of vehicles at existing mode shares will not be able to be accommodated on a physically constrained roading network resulting in gridlock. The connection between Frankton and Queenstown (SH6A) is already exceeding its theoretical capacity regularly e.g. 140 days were recorded in 2019 where this capacity was exceeded. Disparate and disconnected residential development on the periphery of urban boundaries and away from the key activities centres of Queenstown Town Centre and Frankton have exacerbated the roading capacity issues as residential growth and housing development in these locations has increased as a result of significant visitor growth. The data and evidence for safety, resilience and amenity is secondary and less compelling. Negative liveability and visitor experience effects rely on the previous evidence base provided in the Queenstown Integrated Transport Programme Business Case, Queenstown Town Centre Programme Business Case/Indicative Business Case, Frankton Masterplan, stakeholder and public consultation, and little new compelling evidence is presented. More use of existing and new level of service evidence by mode would have been beneficial, as well as more detailed impacts of visitor travel on the transport system and clearer analysis of customer survey information.

Recommended Action to Resolve: No further action

30. The business case presents a phased approach to delivery with activities scheduled in the current NLTP, the next NLTP and those that follow, with the potential for further investment after 2030. Unfunded (i.e. not funded by NZUP and CIP) activities signalled for the 2021-24 period are appropriately timed and should be progressed. The timing of the investments (NZUP and CIP aside) are scheduled to correspond with the forecasted timeframes for emergence of the problems. Covid-19 impacts on growth have complicated this picture somewhat, however there is flexibility in the next phases of development to establish a clearer picture of the required timing of future investments, such as for PT hubs, PT services and arterial stages 2 and 3.

Recommended Action to Resolve: No further action

31. The longer-term impacts of Covid-19 on economic, population and visitor growth are uncertain, but updated Queenstown Lakes District Council population projections indicate a short-term 3 to 5-year lull in growth then continuing to grow back towards the previous population projection trajectory. It is presumed that Queenstown will continue to be a place where people want to live and the eventual return of international visitors once border restrictions ease to what is undoubtedly New Zealand's premier tourism export earner and drawcard. Peak day population is predicted to grow from approximately 120,000 in 2018 to 200,000 in 2048.

Recommended Action to Resolve: No further action

32. With Central Government committed to $90m of public transport-focussed transport infrastructure investment as part of the NZ Upgrade Programme and $85m Stimulus Package for the Queenstown Town Centre Upgrades (walking and cycling) and Stage 1 of the Alternative roading link in the Queenstown Town Centre (taking some of the existing and future traffic off Stanley Street), there needs to be a focus on completing the job that these projects will start ie there is little benefit to providing public transport priority without a significant step-up in public transport service frequency and quality of

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experience and facilities, although robust economic cases for the latter appear to present a challenge. First priorities include further investment in active travel in 2021-24 depending on affordability and prioritisation of activities by all investors, completing a travel demand management SSBC and completing a public transport services Detailed Business Case (high capacity public transport has only been investigated to Indicative Business Case level). There is also a need for further investigations for phase 2 bus hub improvements in Queenstown Town Centre and Frankton, as well as identifying the required increase in public transport services in 2024-27, and the subsequent expected "significant" step change in the provision of public transport services and operation in 2027-30, subject to a demonstrable level of travel demand.

Recommended Action to Resolve: No further action

33. This business case could be considered a "detailed programme business case" and is designed to address the highest priority transport issues in the Wakatipu transport system, with close alignment to Queenstown's whole-of-Government Spatial plan and location specific land use plans eg in Queenstown Town Centre, Frankton Masterplan and Ladies Mile Masterplan in development.

Recommended Action to Resolve: No further action

34. A broader perspective has been taken, but it is clear that additional work is required integrating the transport improvements with the direction and intent of the land use plans through the detailed design process, and more detailed business case work is required to understand and finalise the scope and priorities of the travel demand management interventions in the short term and across the life of the programme (2021-2030+), as well as the step change public transport service and infrastructure provisions and supporting measures requirements, and a clear implementation plan for Queenstown Lakes District Council's parking strategy. The latter needs to be a condition of funding.

Recommended Action to Resolve: No Business Case action. We recognise parking implementation plan required.

35. The business case has attempted to use some of the measures contained within Waka Kotahi's new Benefits Management Framework, but this business case predates the implementation of the new Framework so does not completely align to the Outcomes Framework categories nor related cluster of measures. Measures have been adequately defined as they relate to impact on system reliability and some aspects of impact on user experience of the transport system and impact on mode choice. Other measures are of interest but have a lower relevance to the critical problem areas with a robust supportive evidence base and it is unclear how the targets for these have been arrived at and why these levels have been set.

Recommended Action to Resolve: No further action

36. The business case does not utilise LoS analysis for waking and cycling which was produced for the Wakatipu Active Travel Network endorsed SSBC. There are limited measures relating to visitor and resident satisfaction of the transport system LoS and operation, which is a key part of the investment story for Queenstown. No measures have been adopted for parking management, which is a key lever in achieving the substantial/unprecedented mode shift targets.

Recommended Action to Resolve: the need for a Parking Implementation Plan is discussed later.
Completed Action Taken:

37. We strongly agree with the recommendation that a data improvement plan and final benefit realisation plan is delivered as soon as possible, and that this is coordinated and signed off by the Way to Go Board.

Recommended Action to Resolve: Shaun/Tony are checking on how/whether to take this further – where does this fit, how is it funded.
Completed Action Taken:

38. It is unfortunate that very limited baseline measurement has been completed to date and this will be a priority prior to construction commencement so that future performance can be benchmarked, notwithstanding the impacts that Covid-19 have already had on travel demand and behaviours during the development of the business case.

Recommended Action to Resolve: Note earlier point on monitoring
Completed Action Taken:

39. The benefits sought by this investment, if realised, will enhance safety, efficiency and effectiveness of the transport system in the Wakatipu, in the public interest.

Recommended Action to Resolve: No further action

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40. Benefits will include enhanced safety, access, efficiency, resilience and liveability.

Recommended Action to Resolve: No further action

41. Whilst a DBC, the early stages of the business case did consider a range of strategic alternatives ranging from a strong car focus to a strong public transport focus. This reflected the large geographic area under consideration and the need to work at a network level of thinking in the first instance, building on previous work. There is evidence of bringing through the work from previous phases and thinking

Recommended Action to Resolve: No further action

42. The subsequent short-listing process and development of the preferred package at a network level was generally appropriate to the scale and complexity of the problems. Translating the network level response to detailed proposals at the street level is where complexity came into the process, made more difficult by decisions to integrate multiple business cases into one, followed by the need to integrate NZUP decisions and spatial plan direction into the business case and the onset of Covid-19 and further funding decisions made as a result of CIP economic stimulus funding. These CIP funding decisions were made in light of a broader set of goals (including employment creation) outside of those established in the business case process and this required a realignment of the preferred package.

Recommended Action to Resolve: No further action

43. At the strategic response level, options were wide ranging and assessed well in accordance with generally accepted MCA practice. It is clear that a public transport strategy emerged from the optioneering process, supported by multiple rounds of stakeholder and public engagement. Along with demand management (education, promotion and parking management) the public transport strategy clearly emerged as the only feasible, effective and affordable way forward to manage the projected growth in population and visitor numbers whilst maintaining a functioning transport system.

Recommended Action to Resolve: No further action

44. The programme is comprehensive and balanced but as stated elsewhere, the detail of the programme is sketchy in places with limited supporting justification and this may need to be tested further in later phases, with greater emphasis on PT customer levels of service realisation (frequency, access time, transit time and reliability) as a driving design philosophy if the ambitious mode shift goals are to be achieved.

Recommended Action to Resolve: No further action

45. The programmes are feasible provided Waka Kotahi, QLDC and ORC maintain a determination of purpose to deliver the essential components of the programme that will make active and shared modes the modes of choice to travel in and around the Wakatipu in the years to come. This includes delivering on the outcomes and vision of the Spatial Plan. This will also include courageous conversations with developers, businesses and residents around land use, transport rates, parking provisions and road space allocation so that other modes to the private car are available, affordable and become an easier and more preferential travel option for peak hour trips in particular.

Recommended Action to Resolve: No further action

46. The described (if not evident in concept designs) level of public transport performance sought from the investment is feasible but will require careful integration of land use development with PT service planning, infrastructure planning and technology investment to establish an operating plan that maximises seamless customer levels of service. Implementation of the plan will require strong collaboration between all funders and the service operator(s).

Recommended Action to Resolve: No further action

47. This will require a high degree of specialist capability in the design and operation of transit systems and care should be taken in the procurement of pre-implementation and implementation to secure the PT expertise and capacity required.

Recommended Action to Resolve: No further action

48. Convoluted and complex optioneering process due to the need to amalgamate a suite of existing business cases and land use plans in various stages of development to provide an integrated investment story and proposal for Queenstown. However, there is no doubt a wide

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range of interventions have been considered (but clearly more work has been completed on the on-road infrastructure requirements). These were prioritised into a preferred programme option with stakeholder input and through an iterative process applying fatal flaws, engineering and funding constraints, intimate local network knowledge from WSP Opus, Waka Kotahi intervention hierarchy, other standard considerations and building on previous business case work, in particular Queenstown Integrated Transport Programme Business Case, Queenstown Town Centre Masterplan Programme Business Case/Indicative Business Case, Stanley Street Corridor Improvements and Grant Road to Kawarau Falls Bridge Detailed Business Cases.

Recommended Action to Resolve: No further action

49. Queenstown Town Centre interventions are fairly well specified (though the presentation of background supporting design work is limited) and SH6A is also fairly well described with a good explanation of how the preferred option was decided upon. Fundamentally the PT strategy is to maintain free flow of all (PT and general) traffic along SH6A by metering general traffic at the SH6/6A intersection, where the resultant traffic queues can be most effectively overcome by bus priority on approaches. SH6A is significantly constrained by adjacent geology and land use, making the provision of full bus priority unfeasible and unaffordable, though occasional priority facilities are recommended where feasible and affordable.

Recommended Action to Resolve: No further action

50. SH6 elements are generally clearly specified however there is limited documentation to explain the evolution of design thinking towards the preferred option. For example, the long-term preferred option at Frankton involves the development of a major new Frankton PT Hub on the east side of SH6 in the current golf course. This potentially introduces a considerable time penalty for through passengers yet there is no analysis of why this is desirable and how it functions in relation to the wider network.
The Frankton design report (Appendix C7) presents images and explanations of the future layout but there is no real discourse on the drivers for it or discussion of alternatives. Perhaps this was litigated in the previous IBC but it does not appear to have been revisited as part of this SSBC other than around statements claiming its importance for integrating public and private passenger transport services. The long-term Frankton Hub should be considered in the context of the network planning proposed to be completed in the 2021-24 period via a PT Services DBC, along with a richer understanding of the Covid recovery trajectory, land use development staging and the emergence of a clearer picture of high priority origin-destination pairs to cater for with fast, reliable single seat bus journeys.

Recommended Action to Resolve: No further action

51. Identified infrastructure is well defined to concept/scheme design level, and multiple options and permutations have been tested through the transport model as well as sensitivity tests (different growth rates were tested in the modelling and land use changes; growth rates assume international visitor numbers will return to pre-Covid numbers from 2024), and in some cases higher where more detailed cost estimates were required.

Recommended Action to Resolve: No further action

52. The public transport services requirements are reasonably well understood for the 24-27 period (but more work is required on actual implementation requirements eg timetabling and procurement), but the step change envisaged from 2027 has only been developed to Indicative Business Case level, particularly for the rapid transit-light requirements, and more detailed work on the operational elements eg depots, vehicle and stop-types, lead agency, funding and procurement models and future Frankton and Queenstown bus hub upgrades are required through a proposed Detailed Business Case to be developed in 2021-24 period.

Recommended Action to Resolve: No further action

53. Likewise, a wide-ranging study on travel demand management measures has been scoped, and a list of potential interventions, but a Single Stage Business Case is required to scope and prioritise short term and ongoing interventions for implementation (eg policy, travel planning, wayfinding, transport management association).

Recommended Action to Resolve: No further action

54. Intelligent Transport Systems: Proposal is to continue to manage signals through WTOC, virtual priority provided via SH6A project through SCATS priority engine software and installed at signalised intersections on bus routes. Plus, four fixed VMS signs linked to TOC at key identified locations. It is not clear how these components will be developed and funded. It would make sense to include these as part

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of NZUP, and this needs to be clarified with the Project Team. It is not clear how parking management technology will be developed and funded. The latter could be part of the scope of the TDM SSBC.

Recommended Action to Resolve: No further action

55. There is a slight disconnect between the needs of the prospective public transport customer, the conceptual design of the network of public transport services and the design of the infrastructure intended to support those services. Perhaps this was as a result of the numerous preceding business cases to align with, the need to integrate live and as yet incomplete parallel business cases and masterplans and the arrival of NZUP and CIP funding. The proposed Public Transport Services Detailed Business Case can resolve these issues and should be progressed urgently alongside NZUP projects pre-imp and the Park and Ride SSBC (currently being led by QLDC). This will ensure integration and alignment of land use, infrastructure and service planning. The following paragraphs highlight some of the concerns identified.

Recommended Action to Resolve: No further action

56. The stated PT network design philosophy of a single seat bus ride is a good one given the relatively short trip distances and travel times across the Wakatipu and the need for bus journeys to be as fast as possible in order to compete with the private vehicle and achieve the challenging mode shifts required. Yet, non-park and ride elements of the "bus max" network design force (what would be) large volumes of passengers to interchange between services or be subjected to circuitous routing. The consequent bus travel times, even with the benefit of relatively modest bus priority (see below) will remain un-competitive with private car travel, even late into the assessment period when congestion is forecast to worsen.

Recommended Action to Resolve: Recommend further discussion on this in the PT Services DBC
Completed Action Taken:

57. Further concerns are the reliance on park and ride to achieve the mode shift required. The detailed patronage demand analysis results indicate a very high reliance on park and ride (around one-third of all future peak direction PT trips) successfully capturing large volumes of car-based trips (dependant on limited town centre parking and higher fees) yet there is no evidence presented to show how this is going to be achieved or if it is realistic given the time sensitivity of people making short distance trips from the suburbs to Frankton and Queenstown. Park and ride is usually (most successfully) used to capture long distance inbound car trips on the urban fringe and not as an inner urban service. As a result there could be unintended consequences such as local congestion, safety issues, an increase in car trips and emissions and spill over car parking into neighbouring suburban streets. Cannibalisation of urban bus service patronage could also be a risk as the park and ride services sit within the urban network. There is a separate ongoing SSBC for park and ride being led by QLDC but there are no details provided on this and it would appear to be a critical missing piece of information upon which the success of the PT strategy hinges.

Recommended Action to Resolve: Include some commentary around current status of Park and Ride SSBC work and how it supports the overall functioning of the network in general (discuss with Reece as p n r included in modelling)
Completed Action Taken:

58. The bus priority interventions could be more comprehensive and by the business case's own admission, will become less effective over time as traffic volumes grow and block access and egress to / from the lanes. This will occur because there has been a design philosophy to essentially only provide bus priority to the extent that it appears necessary now and that also maintains acceptable general traffic levels of service. This is in conflict with the stated aim to achieve (unprecedented outside Auckland) an order of magnitude increase in public transport use over a short period of time. Examples include set back distances of bus lane terminations from limit lines that increase the risk of buses missing green phases and being delayed (e.g the SH6/6A intersection), bus lane terminations that require the bus to merge (give way) with general traffic rather than have priority over it (e.g. approaches to Shotover Bridge) and bus lanes that are discontinuous or missing where they could easily be provided to reduce the risk of spill over queues blocking buses getting into bus lanes. The SH6/6A intersection designs also assume a certain bus routing pattern in its priority lane configurations that may change as a result of long-term network planning.

Recommended Action to Resolve: Believe these issues should be dealt with in the pre-imp and specimen design. There is the ability to extend the bus lanes should queue lengths be exceeded.
Completed Action Taken:

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59. In the context of all the above, the consultant team have used “Bus Rapid Transit” to characterise the level of service. However, aside from the potential for different types of buses in the future, the level of service experienced by passengers in the future is likely to fall far short of what BRT is commonly known for.

Recommended Action to Resolve: Discussed. Will retain the term – might not meet some definitions, but has elements thereof
Completed Action Taken:

60. The focus on road-based public transport solution with optimised existing network infrastructure (excepting the new arterials which may induce general traffic demand, but improve the quality of public transport operations by removing some/all traffic off Stanley Street and allowing for more space for pedestrian amenity) with supporting travel demand management and parking management measures is likely to be the most cost- effective response in the constrained topographical and outstanding natural landscape environment of Queenstown. Road-based public transport offers flexibility and can service outlying areas relatively cheaply, and ostensibly can accommodate projected growth for the next three decades. It does enable improved travel times and reliability for PT but these benefits gradually reduce as the network reaches severe over-capacity by 2048 and a new offline solution is considered the only feasible option from that point onwards. The focus on public transport also increases the throughput of SH6A by over 100% in the PM peak, and the virtual priority approach on SH6A provides 60 percent of the benefits at 5 percent of the cost compared to adding more lanes to SH6A.

Recommended Action to Resolve: No further action

61. It should be acknowledged that the long-term success of this mode shift strategy relies on a number of initiatives all being delivered in an aligned and integrated way. The physical measures like bus and bike lanes and hubs, and service measures like new vehicles and bus services, whilst costly, are in some respects the low hanging fruit. As the business case explains, parking supply and fees are a critical element for the success of the strategy, and these are a challenge in any jurisdiction. In Queenstown this challenge is likely to be especially pointed for QLDC given the significant impacts Covid-19 has had on the local economy. Accordingly, there needs be a concerted effort to maintain good relationships and collaboration at the governance level throughout implementation.

Recommended Action to Resolve: No further action

62. Preliminary design philosophy statements, referencing appropriate design standards, have been completed for Queenstown Town Centre works and the works proposed on SH6A and SH6. There are no form, function or standards issues flagged by the design team.

Recommended Action to Resolve: No further action

63. Safety audits on the concept designs have not been completed to date however a Safety in Design Register (Appendix C8) and Safe Systems Assessment (Appendix C9) have been completed. The safety in design register considers safety risks to workers and users during construction, operation, maintenance and decommissioning. The ‘operation’ sections consider generic safety risks to users during operation but they do not constitute a safety audit of the concept designs.

Recommended Action to Resolve: No further action

64. Safe System Assessments are presented in Appendix C9 and cover the town centre, SH6A and SH6. These do consider crash risks at specific locations across the network and make recommendations to further reduce crash risk. It is unclear if these are proposed to fulfil the role of concept design safety audits, as is appropriate for a project of this scale. This is unlikely however since the assessments were not completed by independent reviewers, a key requirement for safety audit.

Recommended Action to Resolve: No further action

65. Further advice has been sought from the local Waka Kotahi safety expert and project manager as to whether further safety consideration is needed at this time or if an exemption is to be sought for formal safety audits to be completed in the next phase.

Recommended Action to Resolve: No further action

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Risks

- Infrastructure and services plans not being coordinated with land use plans in development. This could result in lock-in of sub-optimal service solutions not likely to achieve patronage gains.
- Mode shift to alternative modes, especially PT, relies on parking policies and management that meaningfully impact on mode choice, as well as step change levels of PT service investment. Both carry political risk.
- Not all parking facilities are in public ownership (e.g. Frankton Flats) and cannot be used to leverage mode shift unless private sector on board.

Recommended Action to Resolve: Risk elements will be added to risk register, where relevant (note latter point not a risk – it's a fact.
Completed Action Taken:

Comments on economic case robustness

[Comments to follow.]

Other comments: Strategic Case

1. 1.2 Has due consideration here been given to the Arataki Infometrics and MJ impacts of Covid -19 research that suggests a medium term (10 year) impact on economics and growth (ie not just short term).

Recommended Action to Resolve: We have included the QLDC projections but note considerable uncertainty about Covid-19 recovery, noting that a trigger based approach will be considered in the PT DBC as to the phasing of PT service improvements.
Completed Action Taken: No further action

2. 1.2 Para 2 – no mention here of congestion or emissions.

Recommended Action to Resolve: Add reference to congestion and emissions.
Completed Action Taken: Updated as above

3. 1.2 3rd to last para graph – role of integrated land use planning to address the issue (not mentioned). Also is the mode share matter just "non-car" or is it single occupancy (ie ride share in private vehicles will need to be a big part of the solution to reach the mode share target I feel).

Recommended Action to Resolve: There is a separate section on land use planning where this issue is well canvassed. Note that modelled bus volumes are very high, between Frankton and Queenstown, meaning that allowing carpools would significant degrade bus performance and reliability.
Completed Action Taken: No modification to case.

4. 1.2.3 There exists a HIF DBC (only talks about the ITA – or have I got this wrong?).

Recommended Action to Resolve: Reference to HIF ITA already in document, clarified to include the HIF business case
Completed Action Taken: Updated as above

5. 1.8 Spatial Plan – could beef up this section with public info from the August Cabinet paper (link below)

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https://www.hud.govt.nz/assets/News-and-Resources/Proactive-Releases/Cabinet-paper-Urban-Growth-Partnership.pdf

Recommended Action to Resolve: Grow Well/ Whaiora is well canvassed in section 1.8.1 noting that this work is not yet complete.
Completed Action Taken: No modification to cases.

6. Should make mention of the NPS-UD land use transport policy direction directions changes namely prohibiting minimum car parking requirements, requiring intensification commensurate with PT and walk cycle accessibility and responsive planning (which is a risk to the agreed growth patterns via the spatial plan).

Recommended Action to Resolve: Agreed and included in new section 2.4.2. Note intensification requirements around rapid transit don't apply in Queenstown as a tier 2 centre – but all relevant requirements, including around carparking, included in this new section.
Completed Action Taken: Updated as above

7. 1.8.2 Ladies Mile. This part should make mention of the Mode Share targets (as this urban area will need to do heavy lifting in terms of mode share – and has a good opportunity to do so in terms of land use and other interventions.

Recommended Action to Resolve: Agree. Make specific the need for Ladies Mile to achieve a very high public and active travel mode share
Completed Action Taken: Updated as above

8. 1.8.3 Southern Corridor is only reflecting base line and not the SP aspiration for up to 10,000 dwellings here (could allude to significantly more growth here in general).

Recommended Action to Resolve: Agree. Section updated to include the higher growth aspiration
Completed Action Taken: Updated as above

9. 2.0 National Strategies should include the MoT Outcomes Framework, Toitu (WK Sustainability action plan) https://www.nzta.govt.nz/about-us/about-waka-kotahi-nz-transport-agency/environmental-and-social-responsibility/toitu-te-taiao-our-sustainability-action-plan/, the Urban Growth Agenda and NPS-UD and they both provide for a high level of LUTI integration.

Recommended Action to Resolve: There is a separate appendix AO2 which explores national strategic context in more detail. We have focused in the core business case narrative on the key strategic drivers such as the GPS, Arataki, the Queenstown mode shift plan + new content on NPS-UD.
Completed Action Taken: Updated as above with new content on NPS-UD.

10. Regional Strategies should include the CAB paper principles for Spatial Plans and other QT related info on the QT spatial plan direction approved by Cabinet.

Recommended Action to Resolve: There is a separate appendix AO2 which explores regional strategic context in more detail. We believe that this section in the main business case more than adequately covers key regional strategies, noting that a great deal of previous strategic work has taken place.
Completed Action Taken: No modification to case.

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Missing documents

The following documents were not provided:

- Economics peer review
- Review of cost estimates
- Risk Register
- Property Strategy.

Recommended Action to Resolve: Noted. Risk register follow this update review. All others in the hands of Waka Kotahi.
Completed Action Taken:

Chad Barker, Rob Woods, Graeme Belliss and Brian Waddell Waka Kotahi October 2020.

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APPENDIX G: COMMUTE REVIEW AND RESPONSE

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Queenstown Business Case

Peer Review Report

2 November 2020

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Project:	Queenstown Business Case
Report title:	Peer Review Report
Document reference:	J00886 Peer Review Report
Date:	2 November 2020

Report Status	Prepared By	Reviewed By	Approved By
Final Report	s 9(2)(a)	s 9(2)(a)	s 9(2)(a)

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1 PEER REVIEW SUMMARY FINDINGS

s 9(2)(a) from Commute was asked to undertake a review of the Queenstown Business Case in line with Waka Kotahi peer review guidelines. Overall, s 9(2)(a) considers that this business case **is fit for purpose and able to allow investors to make an informed decision on the programme**.

The Business Case has identified a programme for Queenstown that appropriately responds to the complexities and challenges of the study area. The investment case is made trickier by the recent COVID pandemic and the fundamental impact this has had on the region and the transport system. The Business Case acknowledges this and seeks to respond accordingly and is a programme that is scalable.

The recommended programme is based on sound analysis. The review notes that the Business Case is made up of a suite of documents and it is incredibly difficult for a reader to follow the thread of all of the separate documents and providing an overall document structure or reference system in the summary document could greatly enhance the readability of the Business Case.

There are a number of key risks associated with the business case (including demand uncertainty due to COVID and the criticality of mode shift assumptions) and showing these are understood through increased sensitivity analysis could assist in the case for investment (as the reviewer suspects that even with reduced demand or mode share that the case for investment would still be relatively strong), giving investors further confidence in the case for investment. These suggestions for consideration (in order of importance as considered by the reviewer) include:

1. Total programme BCR to provide overall economic performance of the programme
2. Provide and overall structure within the summary document showing how all of the different business case documents link together and where readers can find specific information to greatly improve the readability of the document
3. Greater emphasis on the importance of mode shift being achieved and importance of interventions to deliver these outcomes (such as TDM and PT services) and the criticality of investment in these areas to maximise the return on investment of the committed CIP and NZUP funding
4. Greater range of impacts of COVID and emphasis on need for early triggers for interventions
5. Enhanced sensitivity tests (and economic performance) if mode shift not achieved

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2 INTRODUCTION

The Queenstown DBC was completed in early October 2020. The business case proposes a programme of interventions in the recommended package with a total capital cost in the hundreds of millions.

The Waka Kotahi business case guidelines require an independent review of business cases of this scale to be completed. This report summarised the approach and findings of this review.

The business case reviewer ([redacted] s 9(2)(a) notes that there are also a number of specialist peer reviewers that have been relied upon when undertaking this overarching business case review. [redacted] s 9(2)(a) was requested to undertake this review. [redacted] s 9(2)(a) is a leading business case proponent in New Zealand and was also the original Programme Director of Way to Go. In this role [redacted] s 9(2)(a) was not involved in the development of the business case but it provides him with relevant knowledge of the programme.

The suite of business case documents provided via the Stantec download site were used in the period 12th to the 19th of October 2020.

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3 APPROACH TO REVIEW

3.1 PEER REVIEW GUIDANCE

This review has been based on the Waka Kotahi guidance on what a business case peer review should consider[1]. This includes consideration of the following:

- ***Conformity***

The reviewer must first determine whether the project is eligible for funding in that it fits the description of one of the activity classes in the current Government Policy Statement on Land Transport (GPS).

The reviewer must ensure that the project evaluation conforms to the requirements of this Knowledge Base, including that it has been assessed by the applicant in conformance with Waka Kotahi's Investment Assessment Framework.

To check credibility, the reviewer must:

  - *Ensure the transport issue, priority or opportunity has been identified, is reasonable and is adequately described.*
  - *Critically assess the results of each stage of the project's economic efficiency evaluation, avoiding unnecessary detail where possible. The test as to the level of detail to consider is whether the conclusion reached in the report is a reasonable and a credible result from the information and data used in the analysis.*
  - *Assess the costs estimated for the project and consider how realistic these are, taking into account current market rates.*
  - *Identify the key benefits and determine whether they are realistic (eg are the travel time savings realistic or are excessive delays being forecast under congested conditions in the do-minimum?). Some quick 'back-of-the-envelope' calculations are necessary to check the level of forecast benefits.*
  - *Identify the factors or assumptions, particularly forecasted estimates that have a major influence on the evaluation. Describe each of these factors/assumptions and include a commentary on the sensitivity of the evaluation to each factor or assumption.*
  - *Highlight any significant areas of risk for costs and benefits.*

- ***Choice of do-minimum***

The reviewer must assess the do-minimum as stated in the project report and must determine whether it is realistic, and does not represent another option to be considered in the analysis

- ***Identification and selection of alternatives and options***

[1] https://nzta.govt.nz/planning-and-investment/planning-and-investment-knowledge-base/201821-nltp/2018-21-nltp-investment-assessment-framework-iaf/peer-review-of-proposals/

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The reviewer must examine the evaluation and judge whether all feasible alternatives and options have been identified and considered adequately. These should include alternative transport modes, where applicable, and low cost options.

The reviewer needs to be satisfied that the process to select the preferred alternative and option(s) has been robust and includes incremental assessment where appropriate.

- ***Results alignment rating***

The reviewer needs to be satisfied that the results alignment rating for the activity is correct.

- ***Cost estimate***

The reviewer shall check compliance with parallel cost estimate process requirements, where applicable.

- ***Cost–benefit appraisal rating***

The reviewer must determine whether the cost-benefit appraisal has conformed to all the relevant requirements of the Waka Kotahi Monetised benefits and costs manual (MBCM; from August 2020) and Economic evaluation manual (EEM; superseded August 2020). The reviewer must determine whether there are any outstanding issues not addressed in the project report.

If there is a departure from the requirements, or any defect or omission, the reviewer must comment on its significance.

Where the reviewer considers that there have been discrepancies and departures from procedure, or has concerns on cost and/or benefit estimation, the reviewer will determine the project benefit–cost ratio (BCR) and compare this with the applicant's calculations.

The reviewer must determine whether the options identified in the analysis are mutually exclusive options of the same project.

In special cases, other economic impacts may be considered (eg wider economic benefits). These are to be shown as sensitivity analyses, in addition to the MBCM (from August 2020) and EEM (superseded August 2020) procedure economic analysis.

Where supplementary (third party) funding is involved, a government BCR must be determined in addition to the national BCR.

- ***Risk assessment, analysis and mitigation***

The reviewer must ensure that:

  - *risks have been assessed adequately in the applicant's evaluation*
  - *realistic mitigation measures have been considered*
  - *a full risk analysis has been undertaken for large/complex and high-risk projects.*

- ***Sensitivity analysis***

The reviewer must consider whether the sensitivity of critical aspects of the project evaluation has been covered off adequately, paying particular attention to:

  - *key assumptions that underlie the project and its delivery of desired outcomes, in particular future growth and demand assumptions*

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- *information and data values that are 'out of the ordinary' or unusual*
- *the sensitivity of the project's outcomes to the input parameters.*

This guidance has been used as the basis for reporting back on this business case

3.2 APPROACH TAKEN

The Queenstown Business Case documentation is extensive with multiple reports and files in separate files. The reviewer was given access to the project files and accessed these as part of the review.

Where issues or questions were identified that could likely be resolved readily (such as where to find certain information) the reviewer simply requested this before finalising this report.

Once all the information was obtained the reviewer completed the review and provided this report to the client for consideration.

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4 REVIEW FINDINGS

When undertaking this review, the findings have been provided in two parts, being:

- Review against the specific criteria
- Overall review of document readability

The following sections summarise the findings of this review in these two parts.

4.1 SPECIFIC CRITERIA

Using the guidelines outlined in this report the table below summarises the findings of this peer review

Consideration	Review Findings
Conformity The reviewer must first determine whether the project is eligible for funding in that it fits the description of one of the activity classes in the current Government Policy Statement on Land Transport (GPS). The reviewer must ensure that the project evaluation conforms to the requirements of this Knowledge Base, including that it has been assessed by the applicant in conformance with Waka Kotahi's Investment Assessment Framework. To check credibility, the reviewer must: 1. Ensure the transport issue, priority or opportunity has been identified, is reasonable and is adequately described. 2. Critically assess the results of each stage of the project's economic efficiency evaluation, avoiding unnecessary detail where possible. The test as to the level of detail to consider is whether the conclusion reached in the report is a reasonable and a credible result from the information and data used in the analysis. 3. Assess the costs estimated for the project and consider how realistic these are, taking into account current market rates. 4. Identify the key benefits and determine whether they are realistic (eg are the travel time savings realistic or are excessive	The reviewer considered that the projects are eligible for consideration for NLTF funding as they fit within the activity classes identified in the GPS. In general, the Business Case is considered to have been undertaken in accordance with the Investment Assessment Framework. Comments on the specific areas for review are provided below: 1. The Business Case has appropriately identified problems, benefits, investment objectives and outcomes sought. These are appropriately evidenced. 2. Whilst this peer review has not undertaken a critical review of the BCR calculations (being done by others) it is noted that the BCR's are reported at a 'package level' (and are quite healthy which is encouraging) and there is no overall programme BCR. This would be useful to provide for two reasons: • If it is not provided it is likely that people will add up the individual package benefits and costs to give an overall programme BCR and this is likely to be misleading • It is usual to provide an overall programme BCR as this allows the investor to understand what the sum of the parts of the programme are when considering investment decisions It is also noted that the BCR sensitivity testing appears to be at the programme

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delays being forecast under congested conditions in the do-minimum?). Some quick 'back-of-the-envelope' calculations are necessary to check the level of forecast benefits. 5. Identify the factors or assumptions, particularly forecasted estimates that have a major influence on the evaluation. Describe each of these factors/assumptions and include a commentary on the sensitivity of the evaluation to each factor or assumption. 6. Highlight any significant areas of risk for costs and benefits.	level (Table 6), not at the package level (table 5), which is inconsistent. 3. The costs are being reviewed by a specific cost estimation reviewer. This should confirm these numbers. 4. There are two key areas the reviewer has focused on, being the wider economics benefits and also the mode split assumptions. The wider economic benefits associated with the programme are not insignificant. This is not necessarily surprising given the scale of the economic activity in Queenstown, however needs close scrutiny, given the forecast scale. It is understood that these costs have been peer reviewed by EY who consider them robust. The reviewer therefore considers them appropriate. It is understood that the transport analysis is predicated/requires a significant mode shift to non-car modes and that is based on analysis but is effectively an assumption. This is critical to the benefits stream as this mode split reduces demand on the heavily congested transport network and is therefore likely to be a significant part of the benefits being claimed. Understanding the sensitivity of the benefits to this assumption would be useful. The reviewer considers the approach for mode shift appropriate and the proposed TDM interventions critical, however it is such a critical assumption and understanding the risk associated with this assumption would be important for decision makers. 5. There are a number of critical assumptions or factors in the business case, with the reviewer considering the main ones to be: • Growth (and COVID) • Staging of interventions • Level of mode shift **Pre COVID**, Queenstown growth was some of the highest in the country and driving considerable and sustained transport demands. COVID has changed that dramatically and there is

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	considerable uncertainty on these forecasts moving forward. The business case indicates that the final assumed growth profile allows for a delay in the original forecast growth (due to COVID), but that growth will return to the high growth rates overtime. This could well occur, however there is considerable uncertainty around this and greater mention and testing of this uncertainty would provide a more informed basis for decision makers to make a decision. The **intervention staging** has been based on a number of factors, including demands, network performance and funding availability. All of these things will change over time and the timing needs to be flexible enough to deal with these. The business case acknowledges this challenge. If these timings changed considerably the assumed economic benefits may also change. It is noted that the programme proposed is scalable which goes some way to mitigate these risks. As outlined above, the **mode shift** assumed is significant and understanding the implications of not achieving this are important (and also helpful to make the case for the investment in TDM) for decision makers given the likely significant of this assumption. 6. The main area of risk for this business case relates to the demand forecasts and the related intervention staging and mode shift predictions as outlined above. These topics have been covered off in this review in point 5 above.
Choice of do-minimum The reviewer must assess the do-minimum as stated in the project report and must determine whether it is realistic, and does not represent another option to be considered in the analysis	It is understood that the Do Minimum does not include the CIP and NZUP projects. This makes sense to the reviewer as these interventions are key aspects of the package to address the identified problems and it was not until late in the development of this business case that funding was identified. These interventions are also significant and not 'Do Minimum' works.

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	It is also understood that this funding was based in part on the work undertaken by the business case. It is considered that this approach to the Do Minimum is appropriate.
Identification and selection of alternatives and options The reviewer must examine the evaluation and judge whether all feasible alternatives and options have been identified and considered adequately. These should include alternative transport modes, where applicable, and low-cost options. The reviewer needs to be satisfied that the process to select the preferred alternative and option(s) has been robust and includes incremental assessment where appropriate.	A sound approach to option development has been undertaken. A wide range of options were initially identified, and this included stakeholder involvement. These options were then reduced down progressively through MCA analysis until a recommended package of interventions were identified. Importantly the level of option development and assessment increased as the projects were reduced, providing greater information upon which to base the recommended option.
Results alignment rating The reviewer needs to be satisfied that the results alignment rating for the activity is correct.	The reviewer has been through the results alignment assessment undertaken. This concludes that the majority of the projects assessed have been given a **High** rating with the exception of the Arterials Stage 2 which has been assessed as **Medium**. This rating combined with BCR has been used to give an IAF funding priority which has been correctly calculated. It is noted that a number of the projects have not been assessed. It is understood that this is on the basis of their stage of development (more detailed work required) and on advice from the Waka Kotahi IQA team. The reviewer considers the ratings appropriate. With regards to the Arterials Stage 2, the reviewer was unable to confirm if the Queenstown area has an endorsed High Priority RED programme. The reason this is important is that a case could be made for the national importance of Queenstown from a tourism perspective which could have this project pushes the case for a High rating.
Cost estimate	At the time of this review a review of the costs was being undertaken by an appropriate reviewer. This review was not complete at the

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The reviewer shall check compliance with parallel cost estimate process requirements, where applicable.	time of this report being finalised and hence no comment on this issue is made in this review.
Cost–benefit appraisal rating The reviewer must determine whether the cost-benefit appraisal has conformed to all the relevant requirements of the Waka Kotahi Monetised benefits and costs manual (MBCM; from August 2020) and Economic evaluation manual (EEM; superseded August 2020). The reviewer must determine whether there are any outstanding issues not addressed in the project report. If there is a departure from the requirements, or any defect or omission, the reviewer must comment on its significance. Where the reviewer considers that there have been discrepancies and departures from procedure, or has concerns on cost and/or benefit estimation, the reviewer will determine the project benefit–cost ratio (BCR) and compare this with the applicant's calculations. The reviewer must determine whether the options identified in the analysis are mutually exclusive options of the same project. In special cases, other economic impacts may be considered (eg wider economic benefits). These are to be shown as sensitivity analyses, in addition to the MBCM (from August 2020) and EEM (superseded August 2020) procedure economic analysis. Where supplementary (third party) funding is involved, a government BCR must be determined in addition to the national BCR.	A detailed review of the economics is being undertaken by a specific economics peer reviewer. It is understood that this review has concluded the economics are appropriately robust. The only comment from this reviewer is as mentioned above an overall programme level BCR is considered helpful for decision makers.
Risk assessment, analysis and mitigation The reviewer must ensure that:	The business case sets out a number of risks associated with the package. These are summarised in Table 10 of the Management Case and are generally focussed on decision

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• risks have been assessed adequately in the applicant's evaluation • realistic mitigation measures have been considered • a full risk analysis has been undertaken for large/complex and high-risk projects.	making and funding risks. These are appropriately addressed in this table. A key underlying risk associated with this programme is not outlined in this table, being the demand side risk associated with COVID. Whilst not in this table, the risk is addressed throughout the business case. The risk relates to the demand assumptions (when demand will return) not occurring when assumed in the business case, or not occurring at the rate as assumed, this is the great unknown and uncertainty attached to this business case. To mitigate these risks some elements of the programme have trigger points. These are however relatively vague at this time. **Firmer triggers would strengthen the management of this risk.** The business case also makes the argument that there is an opportunity to undertake the works now whilst there is a window of opportunity with suppressed demand, which if funding was available has merit. The review considers that the business case uses the appropriate information, being the best forecasts of potential COVID impacts available. However the risks of the uncertainty, whilst outlined are not as prevalent as they could be given the potential impact these assumptions have on the findings of the business case, and the case for investment.
Sensitivity analysis The reviewer must consider whether the sensitivity of critical aspects of the project evaluation has been covered off adequately, paying particular attention to: • key assumptions that underlie the project and its delivery of desired outcomes, in particular future growth and demand assumptions • information and data values that are 'out of the ordinary' or unusual • the sensitivity of the project's outcomes to the input parameters.	A number of cost and benefit sensitivities have been undertaken within the business case. As outlined above a key risk for this business case relates to the demand forecasts and the likely response to COVID. There is considerable uncertainty associated with the COVID response. Another key risk relates the mode shift. The mode shift focus of the programme will mean the need to prioritise investment focussed on interventions that achieve these outcomes. This is proposed by the business case. It will also be important that the CIP and NZUP investment is supplemented by TDM measures

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	and PT services to realise the benefits of this early investment. Sensitivity tests of different outcomes (less mode shift or a slower COVID recovery) would be helpful for decision makers, however the reviewer also acknowledges that this is difficult and simply making a further assumption and therefore also fraught. It is acknowledged that the proposed programme is scalable which reduces the impact of this uncertainty risk.

4.2 OVERALL

The reviewer also notes that whilst it is acknowledged that the business case is for a large number of interventions over a large area and there is therefore a significant amount of information, splitting the document as provided to the reviewer makes it very difficult to understand all elements of the business case.

Splitting the business case into manageable sections in itself is not an issue. However it is suggested that there needs to be more effort made to set out to the reader how all of the documents come together (probably in the summary report) so that a reader can relatively easily navigate to the sections they are most interested in.

5 SUMMARY

Based on the above review it is considered that the business case (assuming a satisfactory economics and cost peer review, which is understood to be the case) is fit for purpose.

The reviewer considers that the business case could be strengthened to give the strongest case for investment with consideration of the following (in order of importance as considered by the reviewer):

1. Total programme BCR to provide overall economic performance of the programme
2. Provide and overall structure within the summary document showing how all of the different business case documents link together and where readers can find specific information to greatly improve the readability of the document
3. Greater emphasis on the importance of mode shift being achieved and importance of interventions to deliver these outcomes (such as TDM and PT services) and the criticality of investment in these areas to maximise the return on investment of the committed CIP and NZUP funding
4. Greater range of impacts of COVID and emphasis on need for early triggers for interventions to manage this risk (or both growth coming back faster, or taking longer)
5. Enhanced sensitivity tests (and economic performance) if mode shift not achieved

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Project Team Response

Based on the above review it is considered that the business case (assuming a satisfactory economics and cost peer review, which is understood to be the case) is fit for purpose.

The reviewer considers that the business case could be strengthened to give the strongest case for investment with consideration of the following (in order of importance as considered by the reviewer):

1. Total programme BCR to provide overall economic performance of the programme
   Project Team Comment:
   Project team has received various feedback suggesting an overall programme B/C should be both included and not included. There have been minor updates to costs, benefits and economics while this response is being prepared, however, immediately following the IQA submission, the economic situation was:
   - The first column is the programme BCR for the foreseeable future, Combining all three columns would give an overall programme BCR.

NZUP + Bus Hub + Stan_Shot + Art 2 + Art 3	TC Improvement - Stage 2	Future Long Term Offline PT
$25,050,825	$0	
-$251,956,098	$0	
$654,622,750	$0	
$115,101,566	$20,742,561	$186,751,988
$542,819,042	$20,742,561	$186,751,988
$427,153,040	$13,776,417	$84,053,753
$56,739,465	$135,434	$24,671,482
$483,892,505	$13,911,851	$108,725,235
$286,017,234		
1.90	1.49	1.72

2. Provide and overall structure within the summary document showing how all of the different business case documents link together and where readers can find specific information to greatly improve the readability of the document
   Project Team Comment:
   Business Case framework/structure document has been provided as part of summary document.

3. Greater emphasis on the importance of mode shift being achieved and importance of interventions to deliver these outcomes (such as TDM and PT services) and the criticality of investment in these areas to maximise the return on investment of the committed CIP and NZUP funding
   Project Team Comment:
   This is similar to IQA comments and the general reporting for the next iteration of the business case has tried to give more emphasis to mode shift achievement.

4. Greater range of impacts of COVID and emphasis on need for early triggers for interventions to manage this risk (or both growth coming back faster, or taking longer)
   Project Team Comment:
   The modelling used the QLDC COVID-19 growth sensitivity update that was provided through the Spatial Plan tests, which lowered the growth to 2028 and increased the growth through to 2048 to land us back at the same point. I don't think we need too many growth scenarios as they're all guesses but point about triggers is relevant and tied to data improvement plan and monitoring as noted in the business case and the IQA review.

5. Enhanced sensitivity tests (and economic performance) if mode shift not achieved
   Project Team Comment:
   Sensitivity testing around reduced mode share will require a run of suite of the models with different PT share(s). This was not done during the project delivery phase due to time pressures (note that the business case options were changing up to very late stages, with decisions on CIP

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components, BP intersection configurations). To complete further model suite runs would require the model to assume *(say) a 50% reduction in mode shift numbers, and use this to:*

- run the Tracks again to get new road user charges
- re-calculate all the PT benefit streams.
- for the PT travel times, re-run Paramics models.

Not a particularly quick process. Should the further review process, or pre-implementation process require/seek this data, it can be completed, but it is not intended to do this for the project finalisation process.

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APPENDIX H: FLOW ECONOMIC REVIEW

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flow
TRANSPORTATION SPECIALISTS

20 October 2020

Tony Sizemore
Waka Kotahi NZ Transport Agency
PO Box 5245
DUNEDIN 9058

Dear Tony

QUEENSTOWN BUSINESS CASE ECONOMIC EVALUATION

Flow Transportation Specialists Ltd (Flow) has been requested to peer review the transport economics associated with the Queenstown transport business cases. These include Queenstown Town Centre (QTC) and Frankton to Queenstown (F2Q).

As part of this review, we have been provided several documents. These include

- Waka Kotahi Queenstown Business Case, Economic Case Report, dated 7 October 2020
- Queenstown Economics (011020) spreadsheet.
- Queenstown Lakes District Model: Business Case Modelling Report, prepared by Abley, dated 10 September 2020
- Queenstown Business Case Transport Modelling, Future Modelling Option Report (FMOR), prepared by Stantec, dated 16 September 2020
- Wakatipu Basin Future Public Transport Demand Analysis, Technical Note 3b – Future Scenario Update (Sept 2020) prepared by WSP

We have liaised directly with those responsible for evaluating the business case, with matters identified being discussed. The outcome of these discussions and our view on the economic evaluation completed is set out below.

The scope of our economic review relates solely to the tangible economic benefits which have been derived from information predicted from the public transport and traffic models. Wider economic benefits associated with the programme are being reviewed by EY.

We note that the assessment of the programme and therefore our review of the economic evaluation is on the basis of pre Covid travel demand, travel patterns and therefore network operation. As per the project reporting, the Way 2 Go management team has undertaken the business case with the view that previous Covid travel demand and behaviour with resume at some point following the reopening of New Zealand's international borders.

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1 ASSESSMENT SUMMARY

Following our review of the Queenstown Business Case, we are of the view that some level of risk exists with regard to the current evaluation. In noting this, we are of the view that there is sufficient confidence in the assessment to progress to the next stage, with greater detail being included during the next phase of the project. We note the following

- During the course of the evaluation, NZUP network changes have been placed into the Do Minimum scenario. As a result of this change, a traffic model scenario does not exist which reflects this assumption.
- Implementing NZUP infrastructure is likely to worsen network performance for general vehicles. As a result, some level of vehicle suppression and mode shift will likely occur prior to interventions associated with the Queenstown Business Case being introduced. This has not been captured within the assessment. It is likely that this omission will be small, based on the current bus network (pre Covid and post the Covid recovery) having limited residual capacity.
- A sizeable step change in demand exists between the Do Minimum and Option scenarios (either supressed or induced demand), which suggests that a Variable Trip Matrix (VTM) assessment is required. Undertaking this assessment appears to be challenging based on the current modelling platforms being used. The assessment currently relies on individual modelling tools and the transfer of information between the platforms to derive economic outputs. Applying a VTM methodology using the platforms set up would be difficult when needing to model various scenarios to deliver a VTM assessment.
- Acknowledging this difficulty, we have reduced VOT and VOC benefits by 20% and 33% to assess the impact this could have on the reported benefit cost ratio. We have also corrected the evaluation by removing Farebox Recover benefits from the benefit stream, noting that these costs were determined to be double counted.
- The sensitivity analysis and corrections applied to the BCR indicate that each BCR remains above 1.0, which provides some degree of confidence in the programme (while appreciating some risks with the evaluation) that should be sufficient to allow the programme to advance to the next stage
- We support the possibility of investing in a new transport modelling platform (as currently being investigated by Way 2 Go) that could assess general vehicle and public transport demands within the single platform. This may be of greater use when assessing economic benefits attributed to projects with variable traffic demands. We would support the use of the new platform when progressing to the Detailed Business Case.

2 ECONOMIC APPROACH

2.1 Framework

As set out in the Economic Case report, the economic evaluation predates the release of Waka Kotahi's Monetised Benefits and Cost Manual (MBCM). As such, the economic evaluation and therefore this peer review focusses on the economic procedures set out in Waka Kotahi's Economic Evaluation Manual (EEM).

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This approach is acceptable. The introduction of the Investment Decision Making Framework (IDMF) notes that any business case already underway at 30 June 2020 can continue to meet existing requirements. Only those starting on or after 1 July 2020 need to apply the new IDMF which includes the Benefits Framework, the Appraisal Summary Table and the MBCM and Non-Monetised Benefits Manual (NMBM).

Appreciating the above, we note that the economic evaluation uses the more recent evaluation period and discount rate (60 years and 4%), rather than the EEM evaluation period and discount rate (40 years and 6%). The 60 year evaluation period is generally that being considered by the funders at this time, and as such is acceptable.

2.2 Inputs to economic assessment

The key inputs to the economic evaluation are sourced from the Queenstown Lakes District Strategic TRACKS Transportation model (general road users) and the public transport model (public transport users). The micro-simulation model for Queenstown (Queenstown Transport Model (QTM)) has not been used to inform the economic evaluation. This is due to the unstable outputs generated by the micro-simulation model, given the high level of congestion present in the forecast Do Minimum models.

As set out in Section 1.3.3 of the Economic Case, the TRACKS model does present some limitations, relating to the representation of queues and delays as predicted in the micro-simulation model.

We have reviewed the predicted delay changes reflected in the TRACKS model. We note that the delay differences predicted (in TRACKS) about the network are generally less than 90 seconds. We agree with the evaluator that the economic benefits, particularly those predicted in the forecast years for the Do Minimum, may be understated, given the inability for TRACKS to reflect delays associated with queuing. The flip side of this, however, is that TRACKS may also be underestimating possible delays associated with the project options, in particular along the State Highway, with the Paramics model visualisations showing heavy volumes along this Arterial route.

Nevertheless, we are comfortable with the approach taken to use the TRACKS outputs to inform the economic evaluation.

2.3 NZUP – Do minimum

The evaluation of the business case has been made somewhat complex due to a rethink (during the course of the evaluation) on where NZ Upgrade Programme (NZUP) intervention costs and benefits/dis-benefits should lie. We provide a conversation around how the NZUP costs and benefits are captured in the evaluation below.

The descriptions of the options tested, as set out in the economic case and traffic modelling report are as follows:

1. Phase 1 (Do Minimum). Model Scenario 1 includes the Arterial Stage 1 investment and other committed projects about Queenstown.

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2. Phase 2 (Phase 1 plus NZUP). Model Scenario 3 includes the projects listed above in Phase 1 and includes NZUP infrastructure plus improvements to public transport services.

There are two significant differences in Phase 2 when compared to Phase 1. The first relates to infrastructure, being NZUP, which will have effects on the network performance, with the second being the change to public transport services and the expected mode shift from private vehicles to PT.

The project now proposes that NZUP infrastructure costs are incurred in the Do Minimum (Phase 1). Public transport service levels however are not part of the NZUP works, with this element being captured within the business case. We support the placement of NZUP network changes being included as part of the Do Minimum in that these interventions are now committed and are being delivered through a separate process. By doing so however, the evaluation has created a slight issue in that a modelled scenario that specifically reflects the new Do Minimum (committed works, NZUP network changes and Stage 1 Arterial) does not exist.

An updated Do minimum model (if created) would be based on Phase 2 (Scenario 3 network) but without the public transport service improvements. This updated Do Minimum scenario would therefore include the NZUP interventions, such that the benefits and costs associated with NZUP are excluded from the Queenstown Business Case assessment. We would expect to see the following transport characteristics in this scenario

- Increase in delay to general road users within the network, and as such
- Some potential mode shift to public transport, noting that the changes introduced by NZUP interventions will reduce vehicle capacity in lieu of public transport, safety and amenity improvements. We understand that the level of mode shift may be minor based on there being limited residual capacity on the public transport system (pre Covid and post the return to pre Covid conditions)

Should an updated Do Minimum be created, it would likely provide a network that performs much worse than Phase 1 (as currently presented) which is currently used in the evaluation. Because of this, we would suggest that the use of the existing Phase 1 model as a Do Minimum is acceptable and presents a conservative assessment.

This however presents a secondary issue, related to how projects with differing demands are evaluated. This is discussed further below.

2.4 Variable demands

There is a difference in demand sets applied to the Do Minimum (which includes NZUP network changes, but no change in PT service levels) and the subsequent options (which include an improvement in PT service levels and therefore reduction in general traffic demand).

Transport economics is typically completed using two methods, being either a Fixed Trip Matrix (FTM) approach or a Variable Trip Matrix (VTM) approach. Given the type of traffic models available at this time, as well as time constraints associated with this business case, the FTM approach has been used. FTM evaluations however generally rely on travel demands being consistent, with the only difference between the Do Minimum and option scenarios being limited to the route of travel, as set out in A11.12 of the EEM.

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The issue with applying a FTM approach for this evaluation is that a sizeable step change in demand exists (either supressed or induced demand), which then suggests that some form of VTM assessment is required.

As there are inconsistent demand sets between the Do Minimum and option scenarios, the economics currently reports

- a significant benefit to general vehicles, resulting from a reduction in vehicles on the network through mode shift to public transport
- a significant dis-benefit to public transport, being a result of a sizeable increase in public transport demand.

We have looked into the impact of the FTM outcomes presented, as it carries through the entire evaluation, and in some respects, the benefit cost ratios are being driven by the large benefits being predicted for general vehicles.

We asked whether TRACKS has the ability to undertake a VTM economic approach as set out in EEM A11.12. We were informed that this is not possible, with timeframes also being a factor. We also note that having two separate platforms, being TRACKS for general vehicles and the PT model for public transport, adds a further complication when seeking to obtain outputs that have all modes converge.

To try and gauge the impact of the different demands being used we asked for two sensitivity tests to be completed for the PM Peak (2028), being

- Do Minimum demand on the Option Network
- Option demand on the Do Minimum Network

While not strictly following the cross-load procedure in the EEM, the above tests provide outputs which allow a proxy cross-load test to be checked for general traffic when coupled with the existing outputs, being

- Do Minimum demand on the Do Minimum Network
- Option demand on the Option Network

The result from this evaluation was a switch from a positive benefit stream, to a negative benefit stream for general traffic. This highlighted our perceived risk with the current FTM procedure. Our assessment however should not be read as presenting negative benefits, but a reduction in the level of benefits currently presented.

Appreciating the work that has been completed to date, our preference would have been for the evaluation to be based on a VTM method between Phase 1 and Phase 2, with the subsequent phases (Phase 3 onwards) being assessed using the FTM method to derive benefits, given that demand through these phases would be similar/constant to Phase 2. We appreciate however that this is not possible.

To appreciate the sensitivity of the evaluation, we have considered the impacts on the BCR if general vehicle travel times and vehicle operating costs and public transport benefits were to reduce by 20% and 33% (a third). The effects are set out below.

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Table 1: Reduction in VOT&VOC Benefits

	DM (inc. Art S1) + NZUP PT Enabling	NZUP + Stan_Shot	NZUP + Bus Hub + Stan_Shot	NZUP + Bus Hub + Stan_Shot + Art 2	NZUP + Bus Hub + Stan_Shot + Art 2 + Art 3
20% Reduction in VOT&VOC	3.9	3.6	2.5	2.1	1.6
33% Reduction in VOT&VOC	3.4	3.2	2.2	1.9	1.4

The results indicate that each scenario continues to achieve a BCR above 1.0.

2.5 Assessment platform

We understand that the 'Way 2 Go' project team are currently looking into the merits of investing in a new model platform for the Queenstown area. Having the ability to assess general vehicle and public transport demands within the single platform and having the ability to evaluate mode shift would give greater confidence in the economic evaluation. We would support this investment and its use in the next phases of this project, being the Detailed Business Case.

3 ANNUALISATION FACTOR

Table 1-2 of the Economic Case report provides a summary of the factors used to annualise the traffic modelling outputs. Following our initial review, we requested further information on how the annualisation factors have been calculated, noting that the factors need to be cognisant of the period that the model represents (ie peak season) and that delays may not change linearly with changes in flows.

A revised set of values was provided, with factors being updated due to the initial values capturing traffic volumes from an older data source. We have reviewed the spreadsheet provided, and we note the following

- Annualisation factors have been based on 2018 information
- Factors are based on annual totals being divided by the March (peak season) totals
- For 2018, the 7-8am period reflects 75% of the peak hour. We accept this period being captured within the annualisation calculations on the basis that it captures peak spreading which is apparent today and will become more apparent in the future.
- We note that aside from 7-8am, the two-way traffic volume on SH6A is generally consistent (at around 1,200 vehicles per hour) between 8am and 7pm at night.
- While the typical daily volumes across the year for SH6A are lighter than those experienced in March (the period modelled), the differences are relatively small, being 1% lighter for the AM, 5% lighter for the interpeak and 2% lighter than the PM.

We are satisfied with the methodology used to annualise benefits.

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4 COST ESTIMATES

Cost estimates have been summarised in Section 1.6.1, as well as in the supporting economic spreadsheet. While not being specified within the economic spreadsheets, we understand that the costs used in the evaluation relate to Expected Estimate Costs. A 95th percentile cost is typically used to provide a higher range, and this issue was raised with the project team.

When raising this with the project team, it was confirmed that the Expected Estimate has been used, with a sensitivity test being undertaken on the Expected Estimate cost, based on ±20%. While not strictly a 95th Percentile Estimate, the sensitivity test, provided in Table 6 is considered sufficient by the project team and client.

5 FAREBOX RECOVERY

When assessing project benefits, we note that Farebox Recovery is included in the project benefit summary. In questioning this with the project team, they confirmed that farebox recovery had been double counted, with farebox recovery costs also being captured within the OPEX cost assessment. We have taken the evaluator's feedback on this matter, as the detail that sits behind the OPEX costs used in the evaluation has not been made available.

We have therefore removed the Farebox Recovery costs from the benefit stream, with the resulting BCRs being presented below, when coupled with the benefit reduction discussed above.

Table 2: Reduction in VOT&VOC Benefits and Removal of Farebox Recovery Costs from Benefit Stream

	DM (inc. Art S1) + NZUP PT Enabling	NZUP + Stan_Shot	NZUP + Bus Hub + Stan_Shot	NZUP + Bus Hub + Stan_Shot + Art 2	NZUP + Bus Hub + Stan_Shot + Art 2 + Art 3
20% Reduction in VOT&VOC	2.9	2.8	1.9	1.7	1.3
33% Reduction in VOT&VOC	2.6	2.5	1.7	1.5	1.2

The sensitivity analysis and corrections applied to the BCR show that each BCR remains above 1.0, which provides some degree of confidence in the programme (while appreciating some risks with the evaluation) that should be sufficient to allow the programme to advance to the next stage.

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Should you wish to discuss any of the above further, please contact us directly.

Yours sincerely

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APPENDIX I: EY ECONOMIC REVIEW

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Frankton to Queenstown / Queenstown Town Centre Programme Business Case

Peer Review

October 2020

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EY

Building a better working world

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Transmittal Letter

Frankton to Queenstown / Queenstown Town Centre Programme Business Case
Peer Review

29 October 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 of the peer review 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 notes available 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

s 9(2)(a)
Partner, Strategy and Transactions

1 Programme Business Case Peer Review

1.1 Purpose

Queenstown Lakes District Council (QLDC), Otago Regional Council (ORC) and the 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).

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The purpose of the peer review is to assess the completeness and adequacy of the 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 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 assessment frameworks have 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 notes that its assessment methodology 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 Investment Decision Making 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).

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 sensitivies 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. WEB monetised estimates, as stated in the draft economic case, are therefore likely to represent the lower-bound of benefits that can be expected.

The unmet demand technical note[1] 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 if the programme is successful in enabling higher density, higher amenity development in Queenstown.

[1] NZTA Contract 2018235 - F2Q SSBC & QTC DBC
Technical Note # 26: Effect of Transport Constraint on Tourism, 7 September 2020

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2 Review of Methodology

2.1 Overview of methodology

Options evaluation within the draft Economics 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 (31 August 2020), hence it is not necessary for the more recent guidance to be applied. While a full reconciliation between the EEM and WBCM 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.

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.

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 PT and demand management projects regularly create benefits greater than the sum of their parts.

Analysis seeks to explore and quantify 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 considered 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. Additional commentary on the standard benefits and traffic modelling can be found within section three, as well as the appended Flow report.

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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 appropriate. 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 unmet travel demand
- Convert to 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 above calculated benefits are either 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.

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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. 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*". 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.

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.

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 MBCA notes 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.*' ▶ 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 "*more spending in Queenstown [could] translate into a productivity increase for NZ*". 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.

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Review of Analysis & Methodology	
Key Point	**EY Comments**
Updates to Waka Kotahi Guidance (EEM -> MBCA)	▶ While a full reconciliation between the EEM and WBCM 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, despite the draft Economic Case noting that investment has the potential to enable higher density, higher amenity development. We would appreciate an opportunity to better understand Stantec's reasoning and ensure you are not missing out on a source of value.
Conservative assumptions within WEB analysis	▶ Underlying WEB analysis errs on the side of caution in many of its data input and modelling methodology choices. ▶ 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.

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APPENDIX J: WAY TO GO BOARD COMMENTS AND RESPONSES

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QUEENSTOWN BUSINESS CASE

Summary Report

[redacted]

2 OCTOBER 2020

FINAL DRAFT

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WAY TO GO

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ABBREVIATIONS

Abbreviation	Full Name
ADT	Average Daily Traffic
BCR	Benefit Cost Ratio
bn	billion
BRT	Bus Rapid Transit
CAPEX	Capital Expenditure
CBD	Central Business District
CCT	Closed circuit television
CIP	Crown Infrastructure Partners
COVID-19	2019 novel coronavirus
DBC	Detailed Business Case
DSI	Death and Serious injury
EECA	Energy Efficiency and Conservation Authority
EV	Electric Vehicle
F2Q	Frankton to Queenstown
GPS	Government Policy Statement
GR2KF	Grant Road to Kawarau Falls
HOV/SOV	High Occupancy Vehicle/Single Occupancy Vehicle
IBC	Indicative Business Case
ITS	Intelligent Transport Systems
KPI	Key Performance Indicator
LCLR	Low Cost Low Risk
LOS	Level of Service
M	Millions (where adjoining monetary value)
MCA	Multi criteria analysis
MOT	Ministry of Transport
MRT	Mass Rapid Transit
NLTF	National Land Transport Fund
NLTP	National Land Transport Programme
NZUP	New Zealand Upgrade Programme

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Abbreviation	Full Name
OPEX	Operational Expenditure
ORC	Otago Regional Council
PBC	Programme Business Case
PPP	public/private partnerships
PT	Public Transport
QIT	Queenstown Integrated Transport
QLDC	Queenstown Lakes District Council
QRA	Quantitative Risk Assessment
QTC	Queenstown Town Centre
RLTP	Regional Land Transport Plan
RMA	Resource Management Act
RTC	Regional Transport Committee
SC	Strategic Case
SH	State Highway
SHA	Special Housing Area
SPSV	Small passenger service vehicles
SPV	Special Purpose Vehicle
SSBC	Single Stage Business Case
tbc	To be confirmed
TDM	Travel Demand Management
TMA	Travel Management Association
VKT	Vehicle kilometres travelled
vpd	Vehicles per day
Waka Kotahi	Waka Kotahi NZ Transport Agency
WATN	Wakatipu Active Travel Network
WTOC	Wellington Transport Operations Centre
W2G	Way to Go

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1 EXECUTIVE SUMMARY

1.1 Overview[KK1]

1. The purpose of this business case, referred to as the Queenstown Business Case, is to provide a more detailed assessment of options developing on previous work undertaken, with evidence that the preferred programme provides the best feasible option that will deliver the outcomes identified in the Strategic Case, and that it is affordable.

2. The Queenstown area is one of New Zealand's fastest growing regions, driven by population growth, the tourism industry and supporting activities. This growth is placing increasing pressure on the infrastructure of the area and, in particular, the transport system.

3. As part of the planning to address transport challenges a number of studies and investigations have been undertaken by Waka Kotahi NZ Transport Agency (Waka Kotahi[PH2][KA3]), Queenstown Lakes District Council (QLDC) and Otago Regional Council (ORC[GP4][KA5]).

4. Most recently this has included the development of the Queenstown Integrated Transport (QIT) Programme Business Case (Waka Kotahi, June 2017)[PH6][KA7], Queenstown Town Centre (QTC) Masterplan Programme Business Case (QLDC November 2017) and associated Indicative Business Cases for the arterial roads, public and passenger transport and parking infrastructure.

5. These business cases identified a number of transport interventions to address the transport challenges facing the area. This business case is the next step in the business case process.[PH8][KA9]

6. Two Business Cases were required to address the interventions identified in the above Programme Business Cases (and subsequent Indicative Business Cases for Queenstown Town Centre), being:

   - Frankton to Queenstown (F2Q) Single Stage Business Case
   - Queenstown Town Centre (QTC) Detailed Business Case.

7. These business cases also required potential High Capacity Passenger Transport options to be identified, particularly applicable for SH6A (without the detailed development of these options). This was to ensure that SH6A interventions are appropriately sized, and if the long-term solution for the corridor is to provide for these solutions.[KK10][PH11][KA12]

8. A single contract was developed for the delivery of the Single Stage Business Case and Detailed Business[PH13][KA14] Case. The Frankton to Queenstown Single Stage Business Case was to be developed straight from the Programme Business Case, and therefore requires a greater level of optioneering and analysis of shortlisted options to identify the preferred interventions identified in the Programme Business Case. The Queenstown Town Centre Detailed Business Case is a Detailed Business Case, with Indicative Business Cases completed for the public transport elements identified. These business cases have been amalgamated to form this one single Queenstown Business Case with an integrated programme[PH15][KA16] of interventions. [KK17]

9. As the Queenstown Business Case developed, several changes occurred which had implications for the programme and scope of works.

   a. It was recognised that Frankton[KK18] had a key role to play in growth and network connectivity (in particular the SH6 / SH6A (BP) intersection) and that a connected network-wide response would be required to avoid misalignment between packages and to maximise the benefits. The geographic extent was expanded to include Frankton and Ladies Mile.

   b. Funding was secured for infrastructure through:

      - The New Zealand Upgrade Programme (NZUP), a $6.8 billion investment to get New Zealand NZ cities moving, to save lives and boost productivity in growth areas. Queenstown was allocated $90M funding for SH6A corridor improvements, Ladies Mile corridor improvements and SH6 Grant Road to Kawarau Falls Bridge improvements.

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- Crown Infrastructure Partners "shovel ready" key infrastructure projects for projects that would add significant value to the nation's economic recovery from COVID-19. Queenstown was allocated $50M towards Stage 1 of the town centre arterials and $35M towards the streetscape component of the Queenstown Town Centre transformation.

10. These factors have been included in the Queenstown Business Case, which has been compiled as a single document to report on the integrated programme of works.

11. The Queenstown Business Case is seeking approval for the recommended option[GP19][KA20] in the next phase in the next period (2021-24), and support for the remainder of the programme. The next phase in the next period of the programme includes:

- the Frankton to Queenstown package proceeding from Single Stage Business Case to Pre-implementation (including the NZ Upgrade Programme)
- the Queenstown Town Centre package proceeding from the Detailed Business Case to Pre-implementation (including the CIP funded Stage 1 of the Arterial and streetscape improvements)
- the Public Transport Services package proceeding from an Indicative Business Case to Detailed Business Case
- Support that Travel Demand Management and behavioural change initiatives can proceed from a Scoping Study to Single Stage Business Case.

1.2 Assurance Process

13. The assurance process undertaken for the Queenstown Business Case is as follows:

- Independent Challenge Team review of the emerging programme by Pete Clark (Waka Kotahi), s 9(2)(a) (Price Waterhouse Cooper) and s 9(2)(a) (Mein Consulting Limited), February 2020[PC21][KA22]
- Modelling Peer Review (s 9(2)(a) Flow Transportation Specialists), September 2020
- Economics Peer Review (s 9(2)(a) Ernst and Young), September 2020
- Review of the draft Queenstown Business Case (Tony Sizemore (Waka Kotahi), Tony Pickard (QLDC), Garry Maloney (ORC), AECOM (business case documentation only), ARUP (drawings only).
- Independent Quality Assurance Review (Waka Kotahi) – to be undertaken early October 2020[PH23][KA24].

1.3 Business Case Composition

14. The Queenstown Business Case is comprised of the [KK25]culmination of many planning studies at different levels of detail as presented in Figure 1. The level of detail of the Queenstown Business Case is as follows:

- The Queenstown Town Centre Detailed Business Case builds on the work undertaken through the Queenstown Integrated Transport Programme Business Case, Queenstown Town Centre Masterplan Programme Business Case and associated Indicative Business Cases for the arterial corridor, public and passenger transport facilities and parking infrastructure.
- The Frankton to Queenstown Single Stage Business Case confirms and develops an activity and how it will be implemented.
- High Capacity Passenger Transport has been prepared to an Indicative Business Case level, where solutions are long-listed then short-listed. As the high capacity passenger transport options have an impact on the design of the town centre and Frankton to Queenstown elements, a preferred network of improvements has been identified from the short list.

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Figure 1: Queenstown Business Case composition[KK26]

1.4 Business Case Geographic Extent

15. The Queenstown Business Case covers the Wakatipu Basin. As stated above, the extents originally comprised Queenstown Town Centre and the Frankton to Queenstown corridor, with the objective of developing investment cases for each geographic area. The geographic extents of the project were expanded to include Frankton and Ladies Mile as presented in Figure 2.

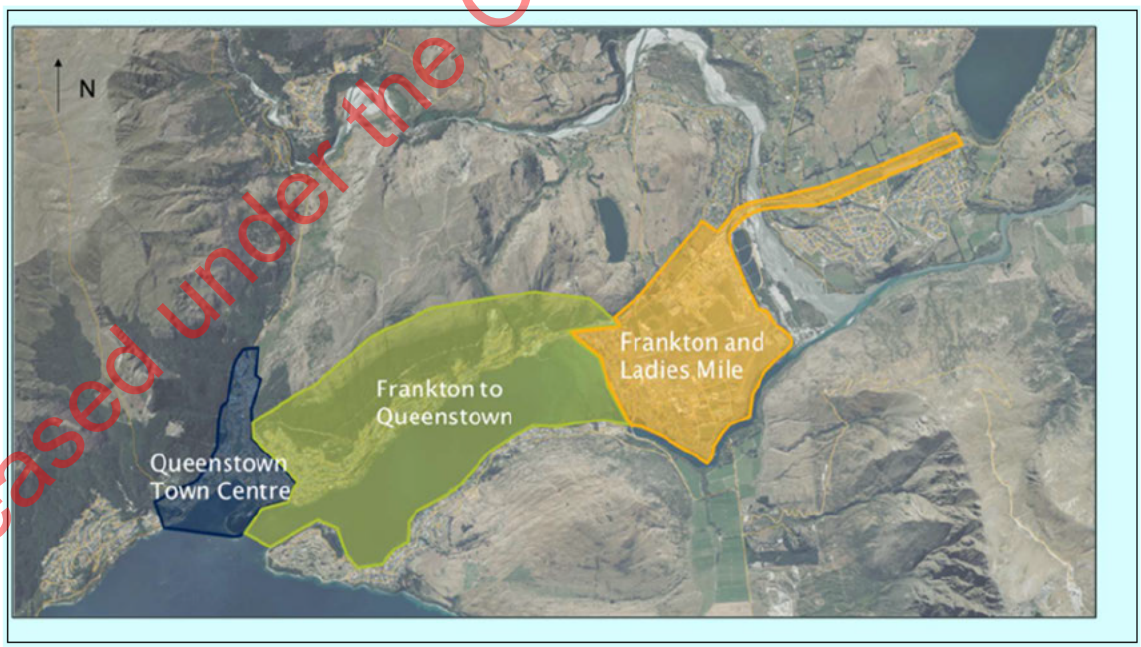

Figure 2: Project Extent[KK27]

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1.5 Case for Change

16. There is a compelling Case for Change and investment in improving the multi modal transport network in Queenstown. Evidence suggests there is a problem, and the scale of the problem is significant. Key stakeholders are aligned and behind the need to address the agreed problems.

17. The Case for Change and scale of the problem is presented [KK28]below:

- Residential and visitor growth remains strong which will increase travel demand on the current network. Peak day population is forecast to grow from approximately 120,000 in 2018 to 200,000 in 2048 (refer to Figure 3). While COVID-19 has undoubtedly had a significant impact on visitor numbers, this is a temporary phenomenon with QLDC projecting that Queenstown will be back to pre-COVID visitor numbers by 2024[PC29][KA30][KK31].

- Parts of the network are already at capacity. SH6A practical capacity was exceeded on 140 days in 2019. Without remedy, the level of service will further decline – peak spreading will occur, travel time reliability will deteriorate and increasingly significant congestion will result[PC32][KA33].

- Peak hour people trips are forecast to double [PC34][KA35]on the topographically constrained SH6A, from approximately 1,500 (in 2028) to more than 3,000 (2048) (refer to Figure 4). SH6A is already at capacity at certain times of the day.

- Travel in Queenstown is predominately by private car (i.e. private car trips make up 84% of trips on SH6A). This is not sustainable from the perspectives of resident and visitor growth, efficiency, amenity, safety and resilience[PC36][KA37][KK38]. Left unchecked, the road network would be over capacity for much of the day, and it is estimated than Queenstown Town Centre would require an additional 3,000 car parking spaces should the current mode share [KK39]continue into the future.

- Total emissions are forecast to increase from 178,535 total annual emissions (Co2-e) in 2018 to 227,939 in 2028 in a Do-minimum situation. The liveability of Queenstown will be reduced[GP40][KA41] as will be the quality of the natural environment, which is a key factor in Queenstown's appeal. The provision of more sustainable travel options to the private car, coupled with behavioural change will be critical to enhance[GP42][KA43] Queenstown's natural environment.

- Evidence shows that Queenstown Town Centre is becoming degraded in a way that threatens the cherished liveability, local resident appeal and rich visitor experience that people expect from Queenstown. Queenstown's rapid and organic growth has created a situation where the needs of the private motor vehicle are taking priority over people and the much-needed balance of transport across public, passenger and active modes cannot occur at anywhere near the required level. At the heart of this situation is the need to ensure that the experience the Town Centre provides is attractive enough to bring locals back to town and keep the visitors coming to the district.

- It is estimated that there will be between a $670M to $1.2 billion loss to the Queenstown economy, over a 40 year period, through visitors travelling elsewhere should Queenstown not be invested in beyond the Do-Minimum scenario.[PC44][KA45][KK46]

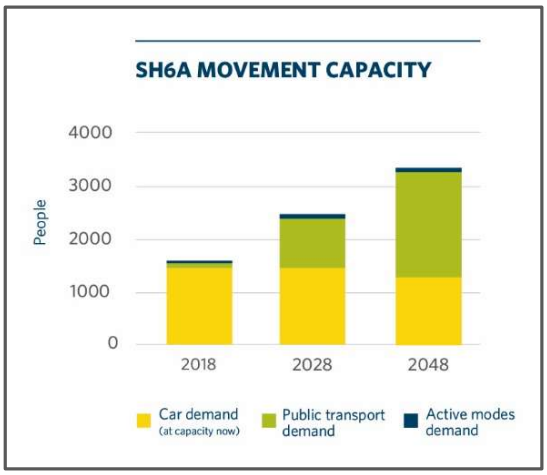

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Figure 3: Queenstown Resident and Visitor Growth numbers *Figure 4: People per hour along SH6A*

18. Investment in Queenstown's transport network supports safer transport, encourages mode shift by providing alternative choices to the private vehicle, supports future growth, and improves customer levels of service. This business case is strongly aligned with national, regional, and local policies and is consistent with both the current Government Policy Statement on Land Transport (GPS 2018) and the new GPS 2021-24.[PC47][KA48]

Problems, Benefits, Opportunities and Investment Objectives

19. The preceding Queenstown Integrated Transport Programme Business Case identified rapid growth and car dominance as the two fundamental transport problems. The problem statements and benefits for this business case were developed from the investment objectives agreed as part of the Queenstown Integrated Transport Programme Business Case and were confirmed through stakeholder workshops. These investment objectives are consistent for all aspects of the Queenstown transport business cases.

20. The Queenstown Integrated Transport Programme Business Case problem statements were retested during an October 2018 workshop with Waka Kotahi, QLDC, ORC and other key stakeholders. It was agreed that, although they remained applicable, they should be modified for the purposes of the F2Q and QTC business cases. Stakeholders also agreed that Queenstown Town Centre has sufficiently unique problems to warrant separate statements, while Frankton to Queenstown, Frankton and Ladies Mile share consistent themes[PC49][KA50]. The following Problem Statements were agreed for the respective areas:

Frankton to Queenstown, Frankton and Ladies Mile

21. **Efficiency:** Rapid growth, the high relative attractiveness of car travel over other modes and a lack of alternative routes are leading to increasing traffic volumes along SH6A. This is causing more congestion, longer/more unreliable travel times and rat-running, which limits opportunities for future tourism growth and reduces the liveability of Queenstown.

22. **Amenity:** High traffic volumes, limited connections to active travel routes and unattractive adjacent land use means that SH6A is not presenting as a high-quality gateway into Queenstown. This does not align with the community's aspiration for high levels of amenity and an enhanced place value for Queenstown.

23. **Safety:** High traffic volumes limit opportunities to safely cross or turn onto SH6A, increasing frustration for all road users and limiting access to PT/active travel modes. This raises the likelihood of injury or death, causes community severance and reduces the LOS for all road users.

24. **Resilience:** SH6A provides the only direct transport link between Queenstown and Frankton but is subject to landslides and is constrained in width. This means that the road is susceptible to delays caused by minor planned or unplanned disruptions, which creates severance between the two centres and makes access to essential services (i.e. emergency services and the airport) vulnerable.

Queenstown Town Centre (QTC)

25. **Efficiency:** Unattractive[GP51][KA52] PT/active travel options, coupled with growth in resident and visitor numbers will lead to increasing congestion and parking demand. This further discourages people from visiting the Town Centre, has negative environmental effects and reduces Queenstown's liveability and visitor experience.

26. **Amenity:** Severance created by high traffic volumes on SH6A together with the effect of drivers searching for parking is devaluing the pedestrian/cyclist experience, constraining the expansion of the town centre and limiting economic and placemaking opportunities.

27. **Safety:** Roads performing both place and access functions introduce conflicts between vehicles and other modes, which increases the likeliness for injury and reduces the quality of the public realm.

28. Although these problem statements were developed separately for each of the two areas, there was enough commonality to create a common set of investment objectives, as shown in Figure 5 below.

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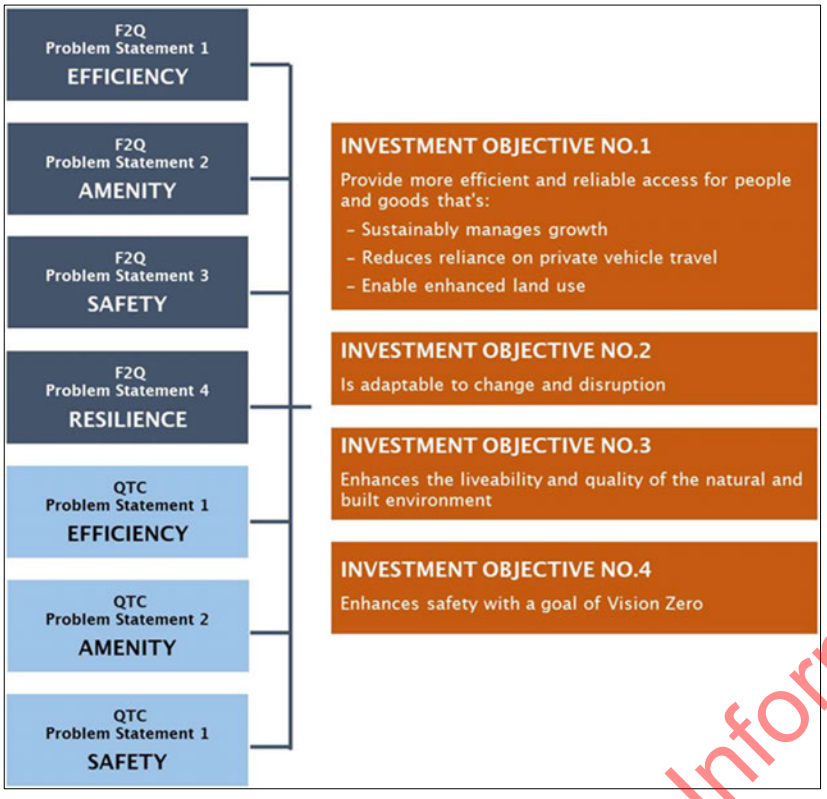

Figure 5: Problem Statements and Investment Objectives

1.6 Option Development and Assessment

29. The development of the recommended programme involved an iterative optioneering process alongside stakeholders representing local Iwi, businesses, and community groups, as follows:

- More than 300 options were put forward (240 ideas for Queenstown Town Centre and 140 ideas for Frankton to Queenstown).
- These ideas were tested and distilled into nine packages.
- The scope was extended to bring in Frankton. 13 options that were initially identified for the SH6/SH6A intersection as part of the Grant Road to Kawarau Falls Bridge Indicative Business Case, July 2017 were retested along with the Investment objectives in July 2020 – one further option was added.
- The emerging [KK53]programme was tested through Councillor meetings and also stakeholder and public engagement (August 2020).
- The recommended programme was developed.

The process is shown in Figure 6.[KK54]

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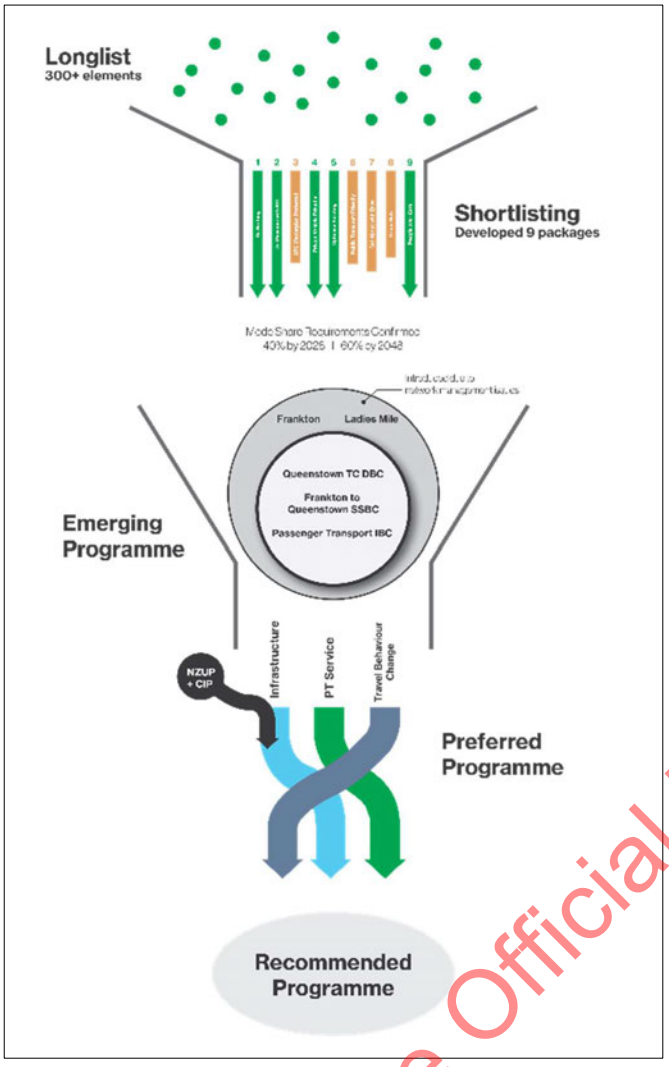

Figure 6: Development of the Preferred Programme

1.7 Emerging Programmes

30. As demonstrated in the case for change above, the current rate of traffic growth is not sustainable. In order to support the ongoing development of the area, a significant shift to non-car modes of transport is required[GP55][KA56]. Modelling demonstrates that 40% of people will need to travel by non-car modes during peak periods on the key route between Frankton and Queenstown by 2028. This number increases to 60% by 2048 if growth continues. [KK57]This ambitious target has been the key determinant in the development of the emerging programmes.

31. The programme emerging from the optioneering processes was publicly consulted on during August 2020. This, coupled with further technical assessment, allowed the preferred programme to be identified.

32. This engagement showed general support for the proposed interventions, noting that some questions were raised about specific interventions that will need to be considered further as the interventions progress to the next stage. This includes more detailed consideration of Town Centre parking requirements as well as park-and-ride, are currently being developed to a greater detail by QLDC.

1.8 Preferred Option Assessment

33. The optioneering and engagement processes have demonstrated that the mechanism to deliver on the investment objectives will need to include a wide range of initiatives focussed on shifting the current

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reliance on the private vehicle, providing users with choice. It is therefore important that investment is distributed to infrastructure and non-infrastructure as identified through the 'three pillars of investment' (Figure 7) described below:

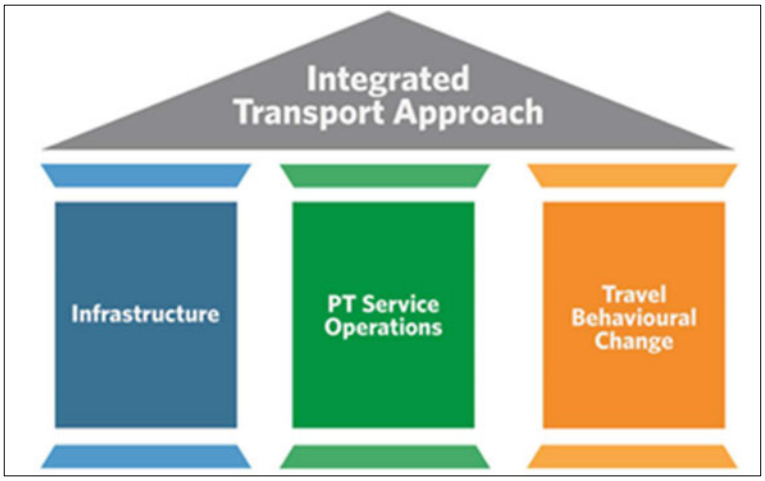

Figure 7: Three pillars of investment

- Targeted infrastructure investment – Urban realm improvements to the town centre facilitated by the Crown Infrastructure Partner investment and the interventions identified in the active travel business case[KK58], improvements to SH6 and SH6A facilitated by NZ Upgrade Programme investment.
- Public Transport services – A high quality Bus Rapid Transit (BRT) system providing increased public transport services, and improved public transport facilities (fleet and stops), leveraging off the public transport priority provided through the NZUP investment.[KA60]
- Travel Behaviour Change mechanisms – A suite of interventions that encourage the uptake of more sustainable transport modes through more proactive parking management and other Travel Demand Management tools[PH61][KA62].

34. The analysis demonstrates that the interventions need to be built around a step change in public transport, provided through a high capacity, high priority BRT spine [PH63][KA64]that links the key development areas [KK65]identified through the spatial planning process. Feeder networks of public transport and active modes are also provided. This needs to be supported by the infrastructure and behaviour change aspects for it to be successful.[KK66]

35. The preferred programme also includes a future suite of interventions that could be implemented at a later date when required, or as funding becomes available. The interventions that make up the preferred programme are presented by funding period in Figure 8 and set out in a map in Figure 9.

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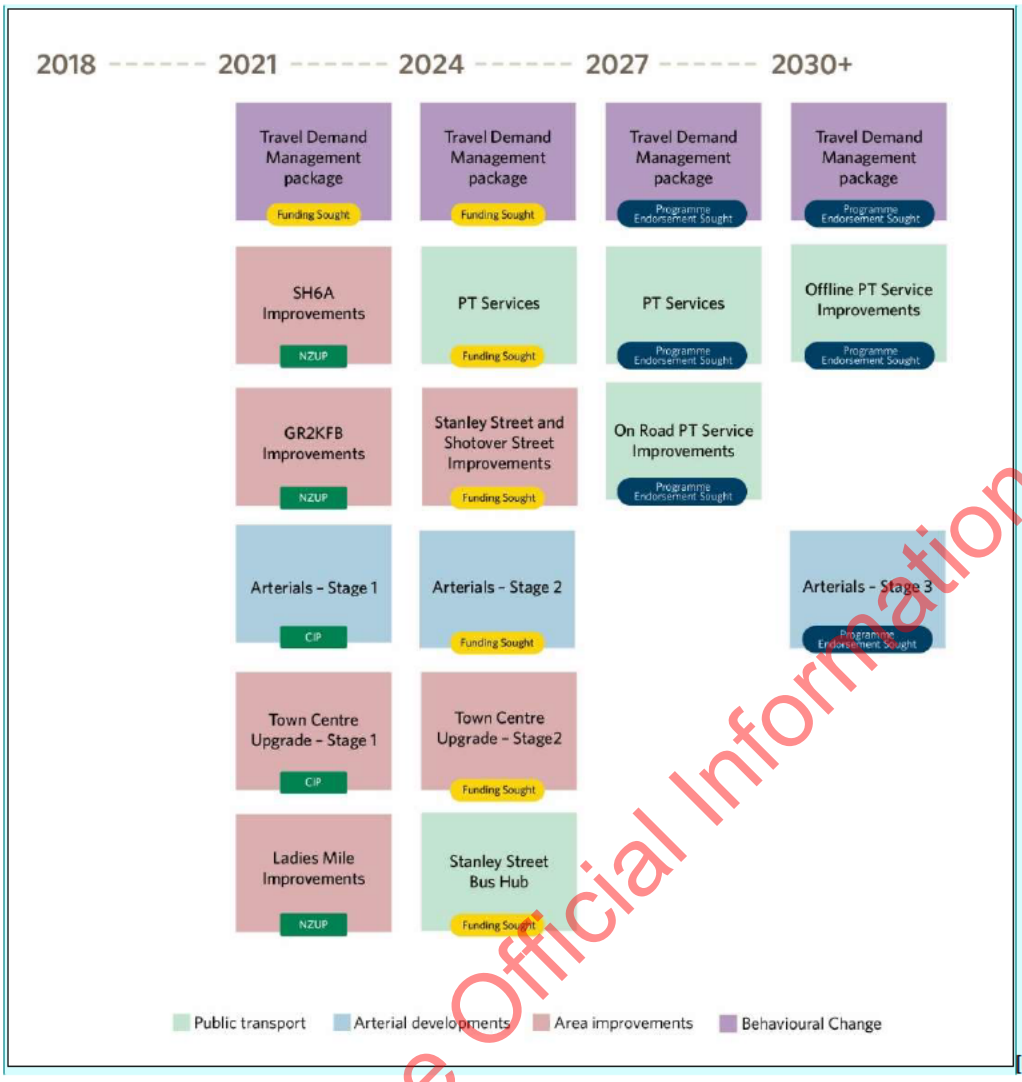

[KK67]

Figure 8: Programme of Interventions[GP68][KA69] *by Funding Period*[PC70][PH71][KA72][KK73][PH74][KA75][PH76][KA77][PC78][KA79][GP80][KA81]

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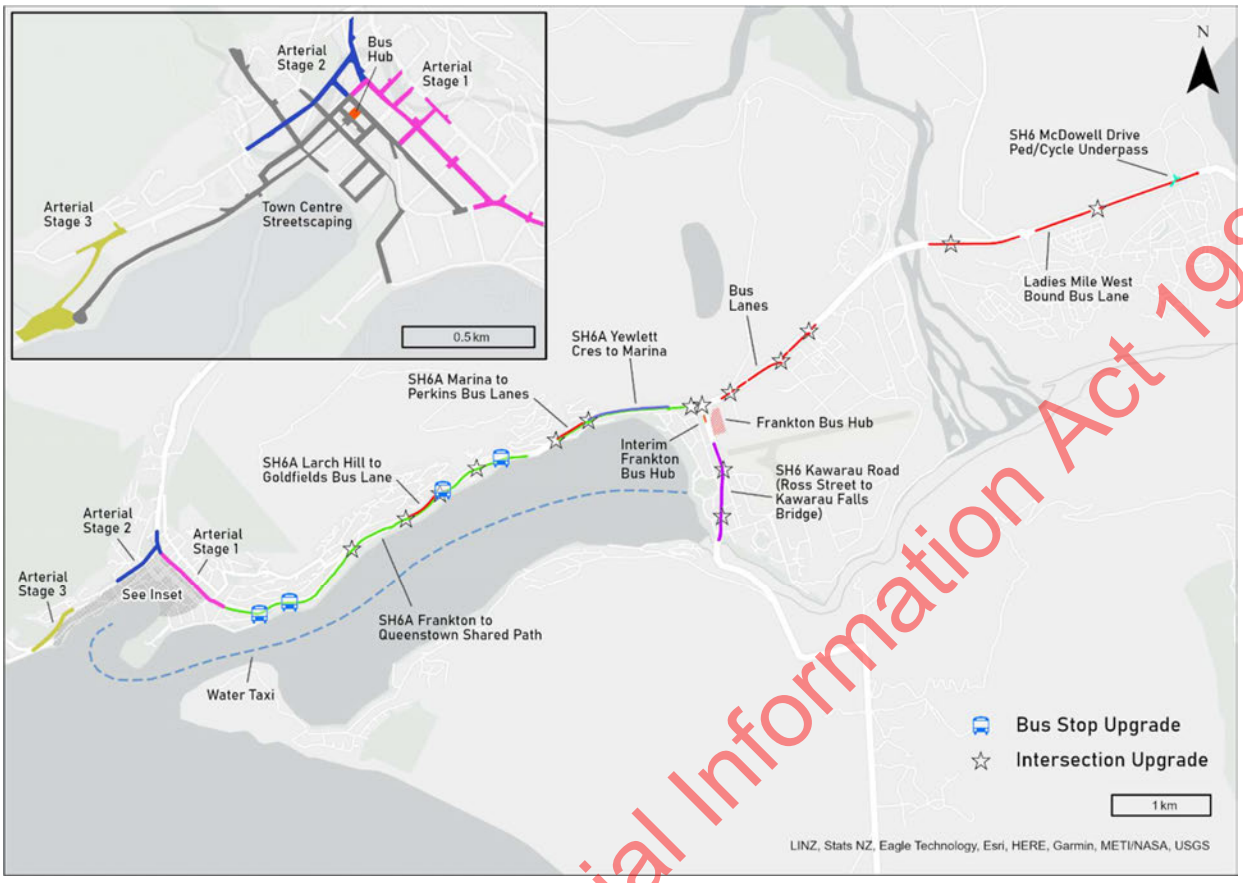

Figure 9: Mapped Programme of Interventions[PH82][KA83][GP84][KA85][PH86][KA87]

1.9 Preferred Programme[PC88][PH89][KA90][PC91][KA92][GP93][KA94]

Infrastructure Committed – Town Centre (CIP/NZUP funded[PH95][KA96])

36. The first stage of the arterial corridor to remove general traffic from Stanley Street (between Shotover Street and Ballarat Street). This will improve pedestrian experience and safety, and provide better connections between Project Manawa, the historic core of the town centre and the lake.

37. Town Centre streetscape upgrades to improve pedestrian and cyclist facilities and encourage a slower street environment creating a calmer and more enjoyable experience for everyone.

Infrastructure Committed – SH6A Corridor Improvements (NZ Upgrade Programme funded)

38. Targeted priority for PT implemented between the SH6/SH6A intersection and SH6A/Marina Drive intersection.

39. Key intersections signalised with PT priority.

Infrastructure Committed - SH6 Ladies Mile Corridor Improvements (NZ Upgrade Programme funded)

40. Westbound PT lane along SH6 - Ladies Mile. Bus priority onto the Shotover bridge is being considered.

41. Howards Drive roundabout access and safety improvements

Infrastructure Committed - SH6 Improvements (NZ Upgrade Programme funded)

42. Improvements to the SH6A/SH6 intersection

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43. The SH6 link to the east will include bus lanes in both directions and signalising the existing intersections.

44. The SH6 link to the south will include a northbound bus lane and signalising the existing intersections.

45. Upgrade to the existing Frankton hub[GP97][KA98].

46. A series of town centre upgrades to improve pedestrian and cyclist facilities, supporting the significant increase in expected active mode usage while encouraging a slower street environment creating a calmer and more enjoyable experience for everyone. Some of these upgrades are provided as part of the Do Minimum, the remaining elements are included as part of the preferred programme.

47. Urban realm improvements along Stanley Street and Shotover Street. This will pave the way for revocation of these sections of SH6A and also provide improvements to the transport hub on Stanley Street, acting as the principal gateway into the town centre.

Infrastructure recommended (unfunded)

48. An upgraded[GP99][KA100] transport hub at Stanley Street, acting as the principal gateway into the town centre[KK101]..

49. An extension to the arterial route (Stage 2 and 3[KK102]) that reduces general traffic in the town centre – particularly on Stanley Street and Shotover Street. This will further improve pedestrian experience and safety, and provide better connections between Project Manawa, the historic core of the town centre and the lake. The second stage of the arterial route extends from Gorge Road to Hay Street and is covered by this business case. The third stage connects through to One Mile Roundabout in the longer term.

50. A widened shared path along the lakeside of Frankton Road provides improved connectivity for pedestrians and cyclists, and improved travel choice.

51. Improved first and last mile connectivity to the bus stops and hubs across the BRT network improves access to the PT services.

Public Transport Services (unfunded)

52. Enhanced public transport fleet, stop and depot facilities to deliver higher capacity and higher frequency BRT services. The fleet will be upgraded incrementally with a view to delivering highly efficient and environmentally friendly bi-articulated “trackless tram” style vehicles as demand increases.[PH103][KA104]

53. Ferry services that complement the bus services[GP105][KA106].

54. Further upgrades to the bus hubs in Frankton and Queenstown Town Centre in the longer term to provide improved connectivity with regional and tourist coach services. A network of enhanced BRT station stops will be provided with enhanced first mile/last mile connectivity.

55. Further upgrades to bus services to provide connector services to key residential and development areas, as required through the delivery of the spatial plan.

56. Future offline public transport services that provide a further step change in capacity along with additional resilience and experiential benefits.

Travel Behavioural Change (unfunded)

57. Travel Demand Management to encourage people to use more sustainable and higher capacity forms of transport.

58. Improved parking management in both Queenstown Town Centre and Frankton to reduce circulating traffic volumes.

59. Improved use of technology for transport network operations management and customer information[GP107][KA108].

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1.10 Performance of preferred programme against objectives[GP109][KA110]

60. The preferred programme performs well against all four investment objectives and provides numerous multi-modal benefits across all transport user modes. [PC111][KA112]

Investment Objective 1 – Provides more efficient and reliable access for people and goods

61. Fundamentally, the preferred programme delivers a step change in capacity across the network. A focus on more efficient modes of transport (PT and active modes) means that more people can move around with less delay. The focus on PT services improves the capacity of the core route between Frankton and Queenstown by over 100%.

62. By 2028, the preferred programme network is able to incorporate around 15% more growth than the existing network and still deliver travel time savings of around 21% for Public Transport for the journey between Lake Hayes Estate and Queenstown. The proposed BRT services will deliver significant travel time reliability benefits for public transport users. The priority measures will allow the public transport services to run reliably to schedule and the service frequency increases will deliver a "turn up and go" service for the Wakatipu Basin. Due to the nature of the improvements, there will also be some reliability improvements for motorists – particularly those travelling between Frankton and Queenstown and accessing Frankton Road from the residential areas to the north. Vehicles servicing the businesses in the town centre will have more reliable travel times improving the efficiency of the supply chain.

63. Although increasing levels of traffic congestion (as demonstrated in the do minimum modelling) would force mode shift, this represents a negative and "blunt stick" approach. Through the implementation of the preferred programme, people will be enticed onto the alternative modes through a step change in provision, capacity and amenity. This will be accompanied by an effective travel demand management package (incorporating QLDC's new town centre parking management approach). This will allow capacity on the traffic network to be freed up for the people who really need to use it (local businesses, servicing vehicles, those with mobility needs etc).

64. The additional capacity provided across the network, coupled with the town centre urban realm improvements will present opportunities to stimulate development. Analysis of wider economic benefits indicates that the preferred programme could deliver $143M of benefits that would manifest themselves as land use development or intensification[GP113][KA114].

Investment Objective 2 – Adaptable to change and disruption

65. The onset of the COVID-19 pandemic has demonstrated the importance of adaptability. Although the working assumption is that growth will return to previous levels relatively quickly, there is now a great deal more uncertainty. As such, the preferred programme has been developed to be scalable. The core infrastructure elements delivered through the CIP and NZUP investment enable public transport services to be improved incrementally and in a way that meets demand and growth requirements.

66. The emerging spatial plan for the Queenstown Lakes District is well aligned with the preferred programme. As land use becomes more structured and focussed on key transport nodes, the services can be modified to maximise the potential of these nodes to become transit oriented developments.

67. The preferred programme also provides improved resilience to unplanned events. Dedicated provision for public transport across Frankton, coupled with investment in the active travel network and improved information provision will provide people with more travel choice. Delays caused by accidents will therefore have a lower impact[GP115][KA116].

68. Longer term, the provision of an offline public transport link between Frankton and Queenstown will deliver an alternative corridor that provides full separation from the road network.

Investment Objective 3 – Enhanced liveability and quality of the natural and built environment

69. The streetscape and urban realm improvements in the town centre will deliver significant amenity improvements that will have a positive effect on town centre businesses. Analysis has been undertaken using two (similar) amenity assessment tools and both demonstrate that the quality of the urban realm in

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the town centre will improve (see below – green coloured streets indicate areas of higher amenity). The graphics in Figure 10 indicate that the current urban fabric is highly variable and this will be improved.

Figure 10: Amenity Assessment (current and potential future)

70. It is important to note that the enhanced liveability and quality of the natural and built environment will not be limited to the Queenstown Town centre. Corridor improvements along SH6 and SH6A will assist with the delivery of the urban realm improvements envisioned in the Frankton Masterplan. High quality public transport facilities and vehicles will also improve the look and feel of the corridor.

Investment Objective 4 – Safety improvements

71. Intersection improvements coupled with improvements to infrastructure for pedestrians and cyclists will deliver improved safety outcomes. A focus on public transport will also encourage more people to use an inherently safer form of transport.

1.11 Sequencing[KK117]

72. The following table demonstrates the proposed sequencing for the interventions. This sequencing has been developed in a way that maximises the benefits provided by the committed projects through short term improvements in PT services that pave the way for the implementation of BRT services from 2027. Behaviour change components will be required to match the PT service improvements to maximise mode shift and maximise overall network efficiency. The table demonstrates the degree to which the interventions deliver economic benefit (through the Benefit Cost Ratio calculations) and alignment with national and local[GP118][KA119] strategies.

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Table 1: Sequencing of Interventions

Element	Lead Organisation	Dependencies (Description and Completion Date)	Trigger Points	Activity Class	IAF Assessment Profile	Capital Costs [GP120] [KA121]	IAF Funding Priority	DBC Preferred Programme Status	NLTP Period for Implementation [GP122][KA123]
									Project Team Response: Comment….
SH6A Improvements GR2KFB Improvements Ladies Mile Improvements	Waka Kotahi	Requires mode shift otherwise whole network breaks down	None – committed activity	NZUP - committed activity	None – committed activity	$106M	None – committed activity	Committed Activity – No approvals required	21-24
Arterials – Stage 1, Town Centre Upgrade – Stage 1	QLDC	Arterials requires design inputs from Project Manawa, e.g. retaining levels, access, pedestrian overbridge	None – committed activity	CIP – committed activity	None – committed activity	$120M	None – committed activity	Committed Activity – No approvals required	21-24
Travel Demand Management package	QLDC / ORC / Waka Kotahi	PT Services and Infrastructure, NZUP and Active Travel to help with mode shift	Monitoring of transport activity required	Promotion of road safety and demand management	Results Alignment: H CBA: M BCR = 4.7*	$1.8M	4	Recommended Option – Funding approval required	Ongoing activity over multiple periods
PT Services Improvements	ORC	NZUP funded infrastructure, TDM	Small variations within existing contract	Public Transport Continuous Programme	Results Alignment: H CBA: M BCR = 4.7	$0.75M[PC124] [KA125]	4	Recommended Option – Funding approval required	21-24 for further investigation, staged implementation from 24-27
						Project Team Response: Comment….			
On Road PT Service Improvements	ORC	NZUP funded infrastructure, TDM, Stanley Street Hub, Frankton Hub	Various demand triggers will require a step-change in service improvements	Public Transport improvements	Results Alignment: H CBA: M BCR = 4.6	$80M[PC126] [KA127]	4	Recommended Option – Funding approval required	Staged implementation over multiple periods starting 27-30
						Project Team Response: Comment….			
Stanley Street and Shotover Street Improvements	Waka Kotahi	NZUP and CIP funded infrastructure, Project Manawa site clearance work along Stanley Street	Immediate benefits – dependencies provide trigger points	Local road, regional and state highway improvements	Results Alignment: H CBA: L BCR=2.0	$19M	5	Recommended Option – Funding approval required for Pre-imp and property	24-27
Town Centre Upgrade – Stage 2	QLDC	Town Centre Upgrade – Stage 1	Immediate benefits	Walking and Cycling improvements	Results Alignment: H CBA: L BCR = 1.5	$17M	5	Recommended Option – Funding approval required for Pre-imp	24-27
Arterial Stage 2	QLDC	Replacement of memorial hall, which becomes Performing Arts Centre at Project Manawa	Immediate benefits – dependencies provide trigger points	Local road, regional and state highway improvements	Results Alignment: M CBA: L BCR = 0.9 (1.1 with QLDC property costs discounted)	$43M (excluding the rebuild of the Memorial Hall)	6	Recommended Option – Funding approval required for Pre-imp and Property phases	Further investigation 24-27, pre-implementation and Implementation 27-30
Stanley Street Bus Hub	QLDC / ORC / Developer	Stanley Street and Shotover Street Improvements, revocation of State Highway	Likely funding trigger required – to be confirmed through further investigation	Public transport improvements	BCR = -0.1[PC128][KA129]	$45M[KK130]	Not required	Other supporting activities – for endorsement	Further investigation 24-27
Frankton Transport Hub (on golf course)	QLDC / ORC / Developer	Relocation of golf course, integration of Frankton Masterplan and Events Centre Masterplan	Triggered once upgraded existing hub capacity is reached	Public transport improvements	BCR = -0.1[KK131]	$25M	Not required	Other supporting activities – for endorsement	Further investigation 24-27
					Project Team Response: Comment….				

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Arterial Stage 3	QLDC	None	Low BCR – no trigger points have been identified	Local road, regional and state highway improvements	BCR = 0.2	$118M	Not required	Other activities – for later re-evaluation	Further investigation beyond 2030
Offline PT Service Improvements	Waka Kotahi/ORC	Future proofed/protected corridor and terminal locations	Demand trigger – once on road capacity is reached	Public transport improvements	BCR = 1.7	$262M	Not required	Other activities – for later re-evaluation	Further investigation beyond 2030

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1.12 Funding

73. In addition to the committed funding already provided by the NZUP and CIP investments, costs for the preferred programme have been split based on the following assumptions:

- Infrastructure - the remaining town centre improvements, including the remaining stages of the arterial corridor will be funded through a combination of the National Land Transport Fund (NLTF) and local share (Council[GP132][KA133]).
- Infrastructure – the improvements to Shotover and Stanley Street, will be fully funded by Waka Kotahi through the NLTF.
- Infrastructure - The final stages of the town centre public transport hub development will be funded through a combination of the NLTF and Council[GP134][KA135] funding.
- PT Services – BRT fleet, stops, hubs and the depot will be fully funded through the NLTF[GP136][KA137].
- PT Services – The BRT services will be provided as part of the ORC continuous programme. A PT Services DBC will be required to confirm future PT Services funding.
- Travel behaviour change – A suite of behaviour change interventions will be provided, predominately by Council[GP138][KA139]. A Single Stage Business Case will be required to further develop a Travel Demand Management Plan implementation programme.

38. Based on current estimates, the total anticipated cash flows for the investment proposal over its intended life span are summarised in Figure 11 below[GP140]. The costs will be spread over an extended period and are based on the implementation staging identified below. A breakdown of costs by funding sources is in Figure 12.[PC141][KA142]

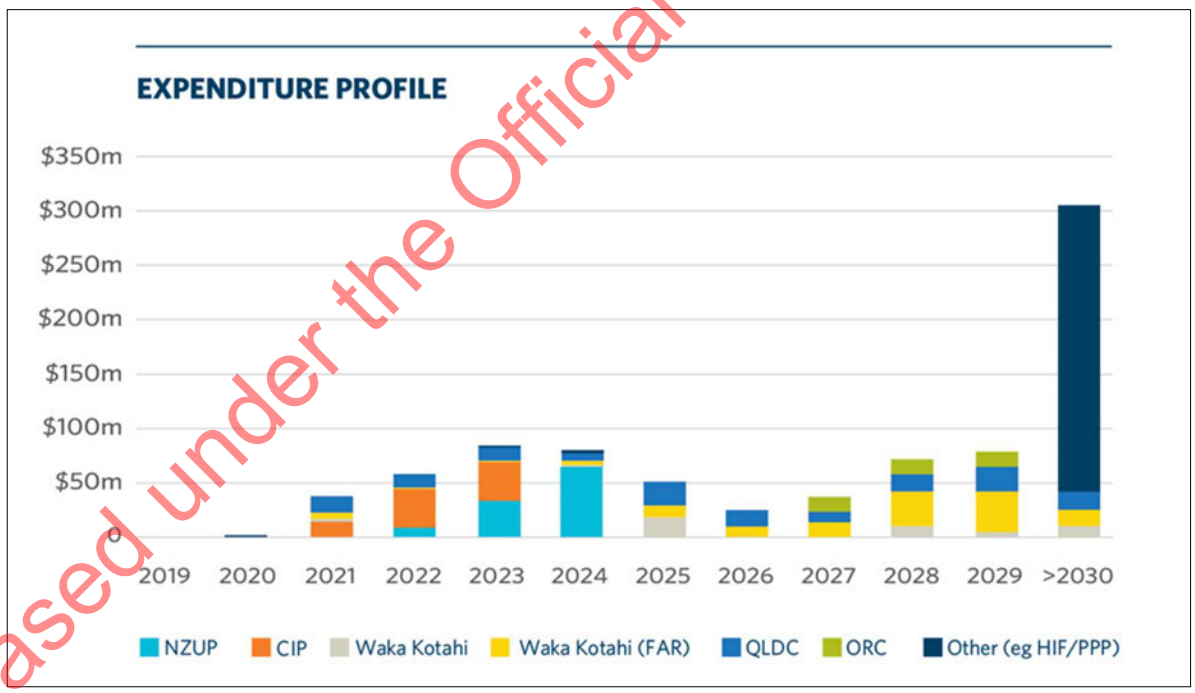

Figure 11: Expenditure Profile[GP143][KA144]

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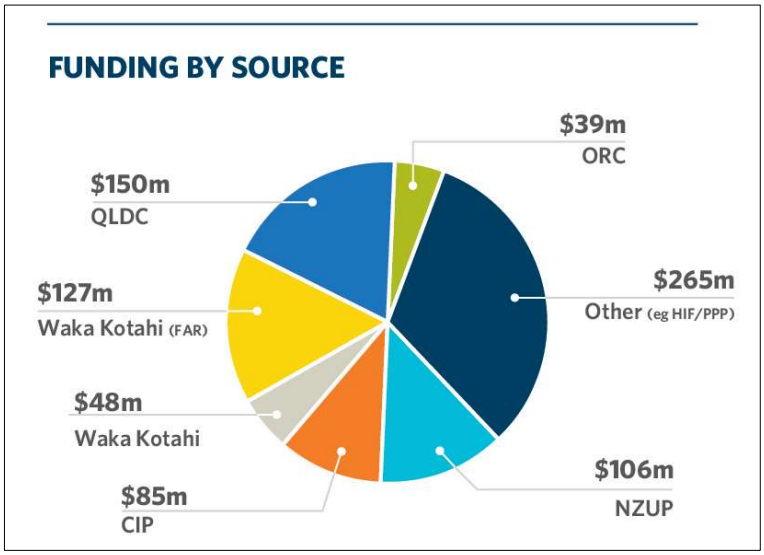

Figure 12: Funding by Source[GP145][KA146]

1.13 Commercial Case

75. The implementation of the programme has two parts – those already committed and funded, and those that are not. Implementation decisions on parts that are funded (outside the direct control of this business case) may impact on how the remainder of the programme is delivered.

76. An Alliance approach has been agreed between Waka Kotahi and QLDC for construction. A tender will be let and a preferred supplier secured Quarter 4 2020.

77. Property purchase will be on the critical path for the delivery of the programme.

78. One of 37 consent locations in the NZ Upgrade Programme has been identified as complex, the remaining consents are split between having some challenges and being straight forward. No complex issues were identified in the strategies for the remaining programmes[KK147].

1.14 Management case

79. The next stages of work from the business case are well understood. Appropriate governance, plans and processes are already in place to help ensure the successful delivery of the programme. The existing governance structure can continue on through to the next stages of the business case.

80. The New Zealand Upgrade Programme and the Crown Infrastructure Partners Stimulus Package are approved packages of work with allocated funding and will form their own governance structures [KK148]under an Alliance.

81. The remainder of the preferred programme will be delivered as individual projects but remain subject to funding approval. The roles and responsibilities for the programme and the packages are clearly defined.

82. Interdependencies and remaining outstanding issues are clearly described, to ensure that they are carefully managed into the next stages. Understanding interdependencies within the programme and also with other projects that are delivered by the partners is a key issue for delivery.

83. The management case identifies the next stage for each of the projects, which organisation is responsible, the timing for delivery and approval/funding status. The case demonstrates that the programme can be reasonably delivered.

84. Quality assurance processes for the key items are clearly defined to ensure that quality continues, supported by change control approaches, and clear identification and treatment strategies for risks.

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85. A benefits realisation plan sets a programme to monitor the key performance indicators to demonstrate that the investment objectives have been achieved.

1.15 Summary

86. The proposed interventions identified in these business cases maximise the benefits of the committed investment in the NZ Upgrade Programme projects, as well as the Crown Infrastructure Partners investment in town centre improvements and will deliver transformational change for Queenstown. The significance and effectiveness of these changes, as demonstrated through these business cases has been carefully tested through a robust review process. The analysis, process and design has been reviewed internally within the project team, externally by the Way 2 Go management team and designated external peer reviewers, and by an independent specialist challenge team.

87. These business cases present a compelling case for investment in a suite of multi modal transport interventions built around the three pillars of targeted infrastructure improvements, BRT services and behaviour change. Together, they will allow the Queenstown Lakes District to continue to grow sustainably and continue to be a highly desirable place to live, work and play.

88. In summary, the proposed interventions will deliver the following key benefits:

- Corridor capacity increases in excess of 100% on the most constrained parts of the network will allow the Queenstown area to continue the grow and flourish as a tourist destination of international standing and a high quality place to live. This is estimated to unlock between $670M and $1.2 billion of economic growth.
- The delivery of a BRT based transport system, coupled with travel demand management measures, will improve travel times across the network by over 20[GP149][KA150]%, along with significant reliability improvements.[KK151] The suite of improvements in the town centre will increase the quality of the built environment stimulating development.
- Safety and access improvements across the network.

87. With the COVID-19 pandemic temporarily suppressing demand across the network, now is the time to act. There is an unprecedented opportunity to reset the approach to transport planning and operations in Queenstown in a way that will facilitate more sustainable levels of growth into the future.

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