QUEENSTOWN PUBLIC TRANSPORT BUSINESS CASE

Summary Report

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VERSION 0.6

Document Version History

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Document Review

ROLE	NAME	REVIEW STATUS
Principal Transport Planner	Chris Groom	Final

Contents

Glossary of Terms

ABBREVIATION	TERM
AADT	Annual Average Daily Traffic
Business Case	Queenstown Public Transport Business Case
District	Queenstown Lakes District Council
FY	Financial Year
GDP	Gross Domestic Product
GHG	Greenhouse gases
GPS	Government Policy Statement (on Land Transport)
ILM	Investment Logic Map
IQA	Investment Quality Assurance
KPI	Key Performance Indicator
MoE	Ministry of Education
MoT	Ministry of Transport
NZ	New Zealand
NZUP	New Zealand Upgrade Programme
ORC	Otago Regional Council
PAX	Passenger
PBC	Programme Business Case
PT	Public transport
QBC	Queenstown Business Case Also referred to as Queenstown Transport Business Case
QLDC	Queenstown Lakes District Council
QLSP 21	Queenstown Lakes Spatial Plan
QPTBC	Queenstown Public Transport Business Case
RLTP	Regional Land Transport Plan
RPTP	Regional Public Transport Plan
SH6	State Highway 6
SH6A	State Highway 6A
SSBC	Single Stage Business Case
TDM	Travel Demand Management
VKT	Vehicle kilometres travelled
W2G	Way to Go Partnership
NZTA	New Zealand Transport Agency Waka Kotahi

1 OVERVIEW

The Summary Report is presented in two parts:

- Part A summarises a response to the key questions that the business case needed to address.
- Part B summarises the business case including the project context, problem definition and key elements from each of the five case documents (strategic case, economic case, commercial case, financial case and management case).

2 PART A: RESPONSE TO KEY QUESTIONS THE BUSINESS CASE NEEDED TO ADDRESS

2.1 Context

Queenstown's strategic road network is heavily congested which is eroding a well functioning urban environment. This negatively impacts the visitor experience, liveability for residents, and the outdoor lifestyle which Queenstown is known around the world for. The forecast growth in population and visitor numbers will put further pressure on the road network if current travel patterns continue into the future. Greater travel choice is needed to enable people to get to where they are going whilst enabling those that need to use the road network (including freight and construction traffic) to do so efficiently.

This Queenstown Public Transport Business Case (QPTBC) sets out the public transport system that will achieve the greatest mode shift towards public transport. The proposed step change in public transport service provision would see a frequent, high-capacity bus and ferry network running from the early morning to late at night. The simple, frequent public transport network would make it easy for locals and visitors to travel around the Whakatipu Basin without having to plan ahead. In addition, the QPTBC contains a pathway to decarbonise the public transport fleet through the adoption of modern battery electric bus technology in alignment with the Queenstown Lakes Climate and Biodiversity Plan 2022-2025.

The scope of the Business Case is the existing public transport network and services within the Whakatipu Basin, as shown in Figure 1. The business case that the New Zealand Upgrade Programme (NZUP) priority measures will be in place on SH6 and SH6A by 2028. In the Queenstown Town Centre it is assumed that the following interventions will proceed:

- Arterials Stage 1 completed by 2024
- Arterials Stage 2 completed by 2030
- Arterials Stage 3 completed by 2032
- Project Manawa completion date 2030

Figure 1. Geographical Area, QPTBC

2.2 Travel Demand

Queenstown peak hour trip demand is forecast to more than double over the next 30 years with the largest increase coming from the Southern Growth corridor. Improving public transport services alone will not be enough to meet the non-car mode share targets needed to avoid significant congestion on the strategic road network. Modelling results for the preferred option in the 2053 morning peak show a non-car mode share of 34% on SH6A (towards Queenstown), 16% on Shotover Bridge (towards Queenstown) and 24% on Kawarau Falls Bridge (towards Queenstown), so achieving roughly half of the investment objective. These non-car mode shares emphasise that significant operational and demand management initiatives are required, in addition to infrastructure and public transport service requirements, to help maximise the benefits of the public transport programme.

The availability of free parking in Frankton was found to be a limiting factor in the level of mode shift that could be achieved through public transport service improvements alone. Therefore, travel demand management will need to be utilised along with public transport priority measures to achieve the required non-car mode share. This will require an integrated approach and commitment to investment by the Otago Regional Council (ORC), the NZ Transport Agency Waka Kotahi (NZTA) and the Queenstown Lakes District Council (QLDC).

2.3 The Bus Fleet

Several technologies have been considered to decarbonise Queenstown's public transport network, including battery electric, hydrogen fuel cell, biodiesel, hybrid, liquid natural gas and compressed natural gas. Battery electric buses have been chosen as the preferred technology as this technology is readily available, poses few health and safety risks and best meets the decarbonisation objectives of the Emissions Reduction Plan.

Articulated buses are seen as the most feasible public transport mode due to the relative ease of implementation (they do not require rails), they are high capacity (around 110 passengers per vehicle) and have fast boarding/alighting from multiple doors. This additional capacity will improve the passenger experience, and reduce the risk of requiring additional bus driver being required to service overcrowded bus routes; hiring and retaining bus drivers is a challenge both in Queenstown and nationally.

Due to Queenstown's strong tourism market, including winter sports tourism, the passenger requirements are nuanced compared to a standard urban fleet. It is recommended that internal layout of the vehicle is strongly considered during fleet procurement, including the ability to safely transport luggage, ski equipment, mobility devices, prams, and other items that people are likely to need to transport with them. This will enhance their travel experience and remove barriers to uptake of public transport.

2.4 Staging

The implementation of the recommended programme is proposed to be staged over the next 12 years with service levels increasing towards the goal of walk out and catch frequencies (a bus every 15 minutes or better). The first tranche of work would be the implementation of the new routes through a variation to the existing contracts and improvements to the Stanley Street and Frankton Bus Hubs. The second tranche would be implementing large buses to increase capacity, bus lanes on SH6 south of Kawarau Falls bridge and preparation work for the articulated buses. Tranche three would be the electrification of the bus fleet, implementation articulated buses and operation of new bus depot.

The staging of the programme has been designed to service anticipated growth whilst making best use of existing assets (fleet and depot), to align with contract end dates and provide sufficient time to develop an ORC owned electric bus depot. The electrification of the full bus fleet is planned to occur in 2035 with the new bus depot however a proportion of bus fleet could be changed to battery electric buses within the limitations of the existing bus depot site. There would be an interim bus operating contract after the current contracts expire that would utilise large diesel buses and an operator owned depot.

2.5 On demand services

The potential role of on-demand services within the Queenstown public transport network was evaluated as part of the business case. Queenstown Hill and Goldfields were identified as having the most potential for on-demand public transport due to the short trip distances, the steep topography and the concentration of hotels and short stay rental accommodation. On demand vehicles would be smaller than a standard bus (around 10 seats) and would pick passengers up from close to where they live and drop them off in Queenstown. On demand services would follow the same delivery model as other public transport services, i.e. ORC would contract the delivery of the service to a private company such as a taxi company or bus company.

It is recommended that, given the importance of integrating land use and transport, on-demand services should be developed and factored with consenting and approvals, such that there is an ability to service growth as it happens.

2.6 Park-and-ride

No park-and-ride sites are included in the preferred Queenstown public transport network. This is because most of the population is within a comfortable walking distance to fixed route bus services with on-demand services supplementing the network in areas with limited walkability. Also, the CAPEX costs for developing park-and-ride sites are expensive due to the need to purchase land and construct the parking spaces and a bus stop. Ongoing OPEX costs would also be required to maintain any park-and-ride sites.

The analysis undertaken considered the ability of park-and-ride sites located on the peripheries to extend the reach of the public transport system, for example Speargrass Flat being a rural area that

is unviable to serve with a fixed route, or a location on SH6 to 'intercept' trips from Wānaka. The significant investment that would be required was not justified due to the limited patronage uplift seen in the demand modelling results. The low value for money was in part due to the high cost of land in the Whakatipu Basin.

2.7 The Bus Depot

The provision of a suitable bus depot is a key requirement for the implementation of future public transport services as more space is required to house the larger bus fleet. It is also a key driver for when electric buses are implemented due to the need for depot charging facilities. A bus depot will be required to have a minimum footprint of approximately 10,000 m^2.

There is a severe lack of industrial land in Queenstown that is of sufficient size to serve as a bus depot. Frankton (the preferred option) and Coneburn have been identified as areas for further investigation. Alternatively, two smaller sites could be developed, reflecting the restrictive land availability in Queenstown.

The ownership of the depot(s) could either be public (ORC) or private (bus operator), a decision to be made in the next phase of work. Presently in Queenstown, the bus depot is privately owned. Opting for public ownership offers advantages such as:

- Safeguarding the investment in charging infrastructure, and
- Reducing barriers to entry for new bus operators - the difficulty in securing a depot would limit bus operators' ability to deliver the required increase in public transport services and result in less competitive bus contract tendering.

However, these benefits come at the expense of upfront public capital investment. The estimated cost for the depot is $54.4M + land or lease, with $17M of this being for charging infrastructure and power connection.

Preferred Option

The bus depot(s) is considered the key constraint to decarbonisation of public transport in Queenstown. Therefore, the preferred option is to progress the bus depot(s) at the earliest opportunity.

Secondary Option

The secondary option is premised on delaying the outlay of capital investment in an electric bus depot(s) as long as possible. This option recognises the cashflow challenges in the current fiscally constrained environment and provides ORC a longer lead time to plan for the bus depot(s). It is recognised that this option may not be as financially advantageous in the long-term however due to cost escalation and expected land price increases in the Whakatipu Basin as a result of land scarcity.

The latest possible implementation of the electric bus depot(s) has been assessed to be 2035. This is based on contract extension of the current bus contracts 2026-2028 to align end dates of contracts, followed by an interim diesel bus contract of six years (2029 to 2034), then an electric bus contract with depot from 2035. It is estimated that it will take a minimum of four years to plan, design, and build the depot, which means that work on a depot needs to commence in 2031 to meet a 2035 implementation date.

As a result of delaying the electric bus depot(s), it is likely that bus operators will use aged fleet during the interim diesel bus contract. It is anticipated that bus operators are unlikely to struggle with supply of second-hand diesel vehicles with many expected to become available as other main centres in New Zealand and Australia decarbonise. A trade-off however is that more buses, and drivers, will be required than if articulated buses were used (as per the preferred option) as the latter have greater seating capacity.

2.8 The Bus Hubs

The Preferred Option has Bus Hubs in Frankton and in Queenstown Town Centre (Stanley Street).

The Frankton Bus Hub will require minor modifications to the NZUP design to accommodate articulated buses. The estimated number of bus stops required to accommodate the future service levels is two stopping points per direction. The current design has three stopping points per direction. It is proposed to alter the design to lengthen the stops to accommodate the longer, articulated buses. The estimated cost for the modifications is $1.9M. With modifications to the Frankton Bus Hub design to accommodate articulated buses, the hub will have the capacity to service public transport services until 2053.

The Stanley Street Bus Hub's ultimate layout will need to accommodate longer articulated buses, but timing is dependent on Project Manawa and other arterial projects. An interim option is proposed to change the layout of bus bays and provide supporting infrastructure, such as bus shelters, at a cost (95th percentile) of $0.7M.

2.9 The Interchanges

The Preferred Option has interchanges at Five Mile and Remarkables Park.

Five Mile is a major retail and employment destination which will attract trips and people, and therefore a higher level of amenity and facilities is warranted. The preferred long-term location is State Highway 6 once the intersection with Grant Road is signalised and Frankton North is developed.

Remarkables Park is also a major retail and employment destination. The preferred location for an interchange is Hawthorne Drive near Tex Smith Lane.

The estimated cost to deliver the interchanges is $1.2M.

2.10 Ferries

There is not a strong investment case for additional ferry routes in Queenstown for public transport purposes. The preferred option proposes increasing the frequency of the existing Kelvin Heights ferry initially to 60 minutes within the 2024-27 NLTP period. Subject to negotiations with the operator the ferry frequency would be further increased to 30 minutes within the 2027-30 NLTP period.

Other ferry options were considered at the ‘long list’ stage and were discounted, primarily as they did not provide the required passenger capacity (which was a critical success factor). Ferry options were also more expensive to operate, had a more limited passenger catchment and required significant capital expenditure in infrastructure.

2.11 Land Acquisition

Land acquisition will be required for a new depot as outlined above; $14m has been budgeted so far based on a rough estimate of property values in Frankton. Further consideration of candidate parcels is to be undertaken in the next phase of work. Other changes are expected to be made within the road reserve and on the existing land.

2.12 Investment

The capital costs to support public transport service improvements are estimated at $63.7M. The major component of these costs is the bus depot at $45.5M (excluding land or lease costs). This can be disaggregated as:

- ORC, depot $45.5M plus land;
- NZTA, Stanley Street interim solution $0.6M; Frankton hub modifications $1.6M; Southern Corridor bus lane $3.6M; bus stops on state highway $0.6M
- QLDC, Local road intersections $0.5M; local road bus stops $0.6M; Remarkables Park hub $0.8M; Five Mile hub $0.4M

The forecast operational cost for the proposed public transport service improvements is $25.0M by 2035. Increased fare revenue is expected to accompany the increase in public transport service levels.

2.13 An Off-line Solution

Given the rapid growth occurring in Queenstown, an offline solution such as a gondola is suggested to be further investigated in the 2024-27 period. This will allow a lead time for investigation, consultation, land acquisition, design, procurement and construction.

2.14 The Indicative Scope for the Next Phase

The indicative scope for the next phase is:

- Detail timetabling of the new public transport services.
- Further detailed investigation is required on the bus depot(s), including design on a preferred site, plus property procurement.
- Each of the supporting activities will require further work, e.g. design of bus lanes, local road intersections and bus stops.
- Investigation of off-line public transport route to supplement the bus and ferry based public transport network.

2.15 Funding required for the 2024-27 NLTP

The following elements will be required for funding in the 2024-27 period:

- Public Transport Service Improvements, ORC lead organisation, $11.0M per annum
- Stanley Street interim bus hub changes, NZTA lead organisation, $0.6M
- Frankton Bus Hub changes, Way to Go lead organisation, $1.6M
- Remarkables Park hub, ORC lead organisation, $0.8M
- Five Mile hub, ORC lead organisation, $0.4M
- Electric Bus Depot under preferred staging, ORC lead organisation, $45.5M
- Local intersection improvements, QLDC lead organisation, $0.5M
- Bus stop changes on local roads, QLDC lead organisation, $0.6M
- Bus stop changes on state highway network, NZTA lead organisation, $0.6M

3 PART B: THE BUSINESS CASE SUMMARY

3.1 Introduction

The Queenstown area is one of New Zealand's fastest-growing regions which has been driven by increases in population and visitor numbers. This growth is placing increasing pressure on the strategic road network. In 2020, the Queenstown Business Case (QBC)[1] was completed, which looked at options to accommodate this growth and outlined the case for investment in multi-modal transport interventions over the next 30 years. These transport interventions focus on targeted bus priority, walking and cycling infrastructure improvements, rapid bus transit services and travel behaviour change initiatives to reduce growth in private car use.

The QBC was approved by Otago Regional Council (ORC) and Queenstown Lakes District Council (QLDC) in January 2021 and Waka Kotahi in February 2021. The QBC identified that further work is required, including preparing a Queenstown Public Transport Business Case (PTBC) to inform future investment decisions for public transport service provision. This indicative business case responds to the request and focuses on what the public transport system will look like over the next 30 years and a funding plan to support a step change in public transport service provision and decarbonisation of the bus fleet.

The Government's Emissions Reduction Plan sets out how New Zealand will meet its first emissions budget (2022-2025) and a path towards meeting our long-term climate targets. This business case outlines the role that public transport will play in meeting these targets for Queenstown.

The work also assumes that as part of the QPTBC, the New Zealand Upgrade Programme will deliver bus priority, active travel and safety improvements on SH6 and SH6A. Future population and visitor forecasts have been derived from the Queenstown Spatial Plan dated July 2022 (QLSP21).

To support the QPTBC, nine Advisory Papers were prepared, which provide details on the critical components of the public transport assessment. These are:

- **Forecasting demand**, which discusses the Spatial Plan for future land growth, land use characteristics, and how this will inform land use and travel demand changes.
- **Fleet decarbonisation**, which describes the relevant transport and emissions policies and how they relate to the Project, the benefits/disbenefit of slow or fast fleet decarbonisation implementation and potential technologies for decarbonising the public transport system.
- **Service patterns**, how the public transport network should best meet future demand over the next 30 years, different bus types, service patterns and a staged approach to developing a preferred public transport system.
- **On-demand services**, identifies the potential for on-demand services to be included within Queenstown's proposed public transport network for areas that cannot be easily served by services on the fixed bus route network.
- **Park-and-ride,** tests the options for park-and-ride as part of Queenstown's future public transport network.
- **Public transport hubs and depot**, which describes the staging and life of the Frankton and Stanley Street bus hubs, and a new bus depot taking into consideration forecast fleet numbers and bus size required to accommodate public transport user demand.
- **Ownership and operating management**, which discusses relevant factors affecting the choice of ownership and operating models, including decarbonising the public transport system, and recommends an operating model for future public transport services in Queenstown.

[1] Also referred to locally as the Queenstown Transport Business Case

- **System management**, identifies the management and labour requirements to deliver the the step change in upgraded service and whether these proposals are deliverable.
- **Funding paper**, which sets out the appropriate funding mix from ratepayers, central government, and other alternative sources of revenue, including parking and developer/third party contributions.

This Business Case has been prepared in accordance with the NZTA guidelines and presents a compelling case for investment.

3.2 Assurance Process

The following parties were engaged to review the business case:

- Case documents, Invise Limited
- CAPEX costs, AECOM
- OPEX, MRCagney.

The NZTA Investment Quality Assurance Advisor has also been engaged throughout the development of the business case.

3.3 Case for Change

The Case for Change is compelling and clear:

- In the face of population growth that will double in the next thirty years, tourism growth, worsening traffic congestion, and pressing environmental concerns, the need for significant investment in public transport has never been more critical in Queenstown.
- Queenstown currently stands at a crossroads, where a congested network needs rapid intervention through a mode shift to non-car modes. Investing in robust public transport services is a pivotal step towards supporting a sustainable, efficient and more accessible Queenstown that will thrive in the future and bring economic benefits to Aotearoa New Zealand.
- There is also a risk of not acting – which may cause Queenstown to stagnate resulting in poor liveability for residents, and negative economic and reputational outcomes for the area and the rest of New Zealand. Visitor feedback indicates that traffic congestion is the single biggest negative in an otherwise highly regarded visitor destination, with the consequent risk of Queenstown being bypassed by visitors and impacts for NZ Inc.
- Significant investment has already been committed to infrastructure improvements in the Whakatipu Basin. This provides the opportunity to review public transport services and ancillary infrastructure in line with the committed infrastructure improvements to make the best use of this investment.

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

Specifically, the Queenstown Business Case (endorsed in 2021) stated:

…a step change is required to achieve the 40% alternative mode share needed during the afternoon peak on SH6A by 2028.

This QPTBC represents a pivotal moment to help shape future growth and mobility patterns. This Business Case will confirm the case for investment in a 30-year plan for Queenstown's future public transport investment decisions.

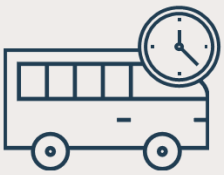
3.4 Problems, Benefits, Opportunities and Investment Objectives

The agreed Problem Statements for the QPTBC relate to the key themes of **effectiveness** and **attractiveness** of public transport:

Problem One

Current capacity of Queenstown's transport network means the public transport service will not accommodate the future mode share targets (40 percent).

Problem Two



Current Queenstown public transport service does not provide an attractive alternative to private car travel, leading to low public transport usage in Queenstown (60 percent).

Benefits of Investment

The benefits of successfully investing to address the problems were identified and agreed by the Project Partners:

- Improved public transport mode choice (40 per cent).
- Improved access to economic and social destinations (40 per cent).
- Reduced emissions from land transport (20 per cent).

Investment Objectives

The agreed Investment Objectives of this Business Case are:

Investment Objective 1: Increase public transport patronage and mode share in Queenstown to maintain a functional network.

Investment Objective 2: Reduce public transport CO_2 emissions in Queenstown to meet Government policy.

Investment Objective 3: Increase the number of jobs and social destinations accessible by public transport in line with Queenstown spatial planning.

Looking forward, public transport modelling shows that, in order to maintain a functioning transport network in Queenstown, a significant mode shift to public transport is required (as shown in Table 1. Public Transport mode share required to maintain a functioning strategic road network. Specifically, in the morning peak hour the number of people travelling by public transport on SH6A will need to be:

- 592 people by 2027
- 1,082 people by 2039
- 1,466 people by 2053.

These numbers far exceed the capacity of the current public transport network which is 260 people per hour on SH6A.

Table 1. Public Transport mode share required to maintain a functioning strategic road network

YEAR	ROUTE	MORNING PEAK HOUR		AFTERNOON PEAK HOUR	
		PAX. / HOUR	PT MODE SHARE	PAX. / HOUR	PT MODE SHARE
2027	SH6A	592	27%	594	28%
	Shotover Bridge	323	18%	369	18%
	Kawarau Falls	186	11%	123	7%
2039	SH6A	1,082	40%	1,028	40%
	Shotover Bridge	514	25%	657	29%
	Kawarau Falls	1,033	40%	909	37%
2053	SH6A	1,466	47%	1,384	48%
	Shotover Bridge	772	34%	869	35%
	Kawarau Falls	1,687	53%	1,489	49%

Consequences of Not Investing

To accommodate the growth anticipated for Queenstown, it is critical that public transport mode share increases. However, the consequences of an already over-capacity public transport system and road network are deemed to be considerable barriers to achieving the required uplift in mode share and could have a significant economic impact as shown below.

Impact on system reliability

Without intervention there is risk that travel time of public transport will become more unreliable.

↓

A public transport system with poor travel time reliability results in poor access to employment, education, amenities, and other key services.

↓

This means more time is spent commuting to these destinations. This impacts quality of life and has an economic impact in terms of productivity.

↓

Passengers experiencing delays and uncertainity in journey time undermines the appeal of public transport. Ultimately this discourages usage and hinders urban mobility and transformation, and environmental sustainability goals.

Impact on user experience of the transport system

Without intervention there is risk that public transport will have poor user experience.

↓

Over-capacity buses results in crowding, people unable to be seated and having to stand, increased driver distraction, and increased likelihood of not being able to board the bus (due to it being full) and having to wait for a later bus.

↓

Passengers subjected to discomfort, unreliability, and inconvenience become increasingly dissatisfied, discouraging them from using public transport.

↓

This decline in ridership exacerbates traffic congestion as frustrated people opt for personal vehicles, or do not make the trip at all, resulting in transport inequity.

Impact on Tourism sector

Without intervention there is risk that tourism will be negatively impacted.

↓

Tourists will encounter overcrowded buses and congested roads, and their travel experiences will be marred by longer travel times and uncomfortable bus journeys when trying to get to their travel destinations around Queenstown.

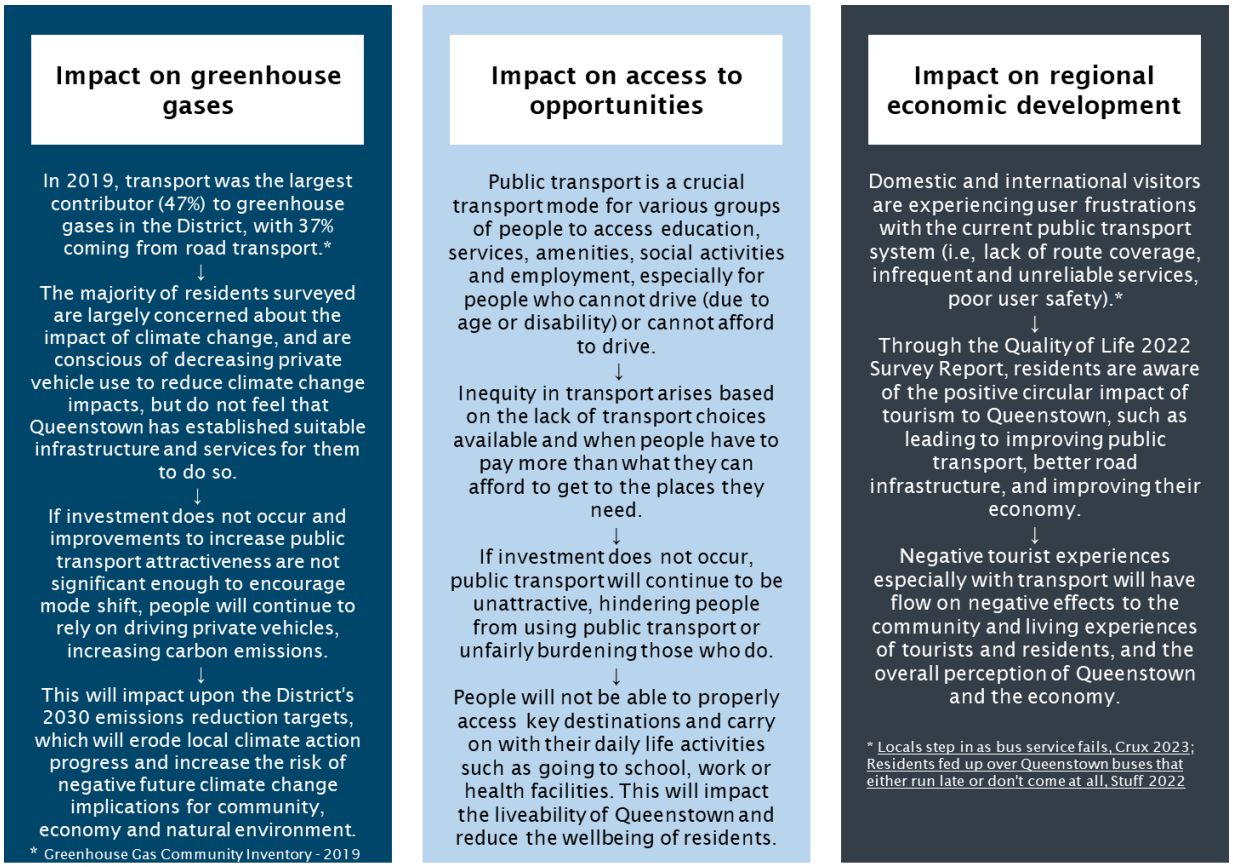
↓

These factors could deter potential visitors away from visiting Queenstown in the future.

↓

This means that current and future negative tourism experiences associated with transport could have significant economic implications for Queenstown as well as for the New Zealand economy.

The consequences of a public transport service that is considered unattractive will result in continued car dependency and emissions, social and transport inequity and impacts on tourism as shown below.



3.5 Option Development and Assessment

The options development process adopted for this Business Case is consistent with the NZTA guidelines and intervention hierarchy. Increasing public transport services will make best use of the existing road infrastructure as more people are able to be moved with fewer vehicles.

The Economic Case identifies and assesses options to address the problems and opportunities for public transport in the Whakatipu Basin. The analysis builds on the Case for Change and evaluates how options will help achieve an effective and attractive public transport system.

As a benchmark to compare and assess options, the 'do minimum' assumes no additional investment beyond what has already been committed to and/or funded. It assumes maintaining the status quo service levels and, while it is not a 'do nothing' scenario, it can be described as a 'do nothing beyond current practice' scenario.

Options for this Business Case were developed through a dual-track process that involved the creation of two sub-lists in parallel, one for **service patterns** and one for **decarbonisation technologies**.

- **Service Patterns:** The objective was to identify the most suitable service routes, vehicles and service frequencies to meet the projected demands of the local population and visitors in an effective and attractive way.
- **Decarbonisation Technologies:** The objective was to identify technologies and solutions to minimise the environmental impact of the public transport system. Each technology was evaluated in terms of its feasibility, cost-effectiveness, and potential to reduce carbon emissions.

Then, alongside the emerging preferred option, this Business Case considered the complementary elements of the system, including **supporting infrastructure requirements** and **physical network changes.**

Seven service design principles were agreed with Project Partners, informed by international and national practices for network design.

The Long List stage was completed in two parts. The first considered service pattern options, building on the previous work presented in the QBC. The second sub-list considered technologies to decarbonise the public transport system. Each sub-list was assessed via a Multi-Criteria Analysis (MCA) process with Subject Matter Expert (SME) input and partner organisation decision conferencing to produce a short list for further consideration.

The emerging preferred solution was found by evaluating the short list via an MCA process with SME input and partner organisation decision conferencing. This confirmed that the 30-year investment plan best aligned with the need for an effective and attractive public transport system is to operate an enhanced Bus Max service pattern (the 'composite' option) with battery electric vehicles (buses and ferries).

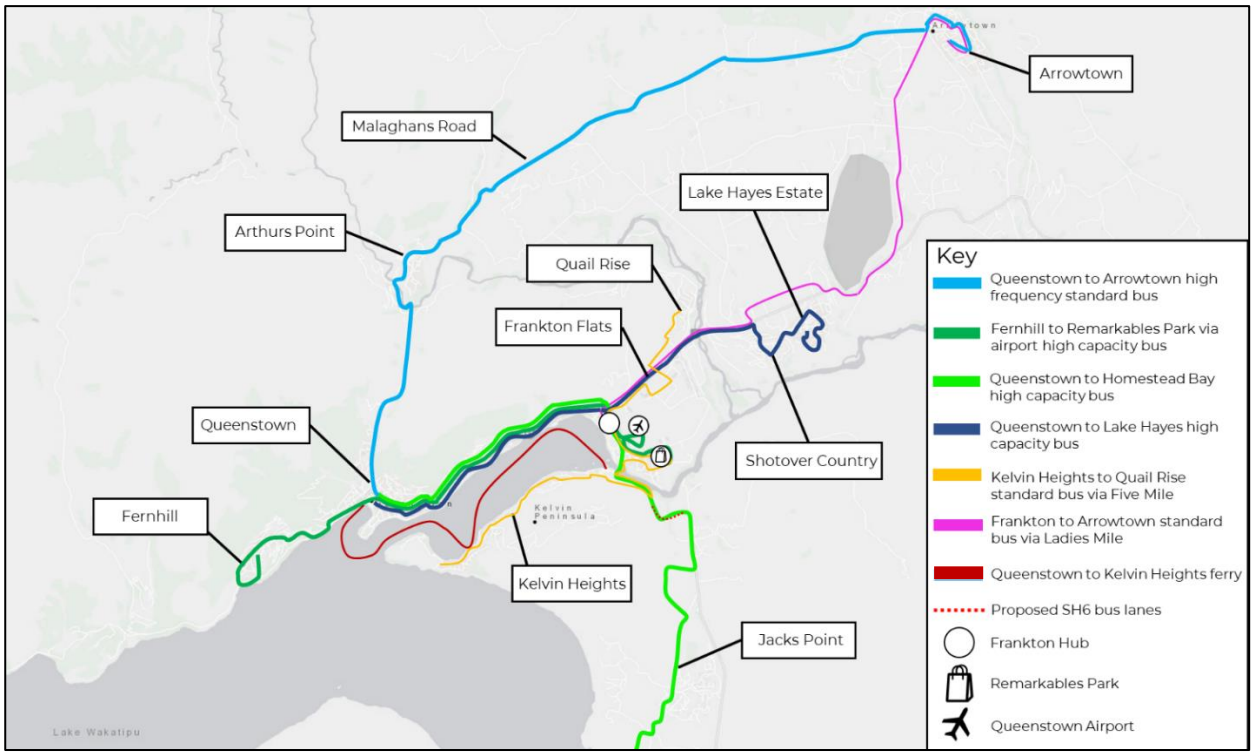
Public consultation was also undertaken on two short listed service pattern options in order to understand how well the options met customer needs and to make refinements to the options based on feedback received. A total of 231 public submissions were received from the online, postal and in person engagement survey. Feedback showed that the Bus Max and adding the Malaghans Road sub-option was preferred by most members of the public and stakeholder organisations. Key themes from the engagement was the desire to minimise transfers, to increase frequencies, to provide a direct route between Queenstown and Arrowtown via Arthurs Point and to increase the span of service to accommodate airport workers.

3.6 Preferred Programme

The preferred option is an enhanced Bus Max service pattern (the 'composite' option) with battery electric buses with supporting infrastructure improvements, and a Kelvin Heights ferry service.

Once fully realised, the preferred option will provide a high frequency, high-capacity bus network with core routes running from Queenstown to main suburbs and secondary routes connecting at Frankton. This public transport network supports the planned housing growth in the southern and eastern corridors, provides public transport travel times that are competitive with driving and provides greater access to employment, shops and services.

The initial public transport service changes would be made using the current bus fleet and by varying the existing operating contracts. The largest changes would be aligned with the new bus depot in 2035 when electric articulated buses would be implemented on core routes. As an interim step large diesel buses would be used to accommodate patronage growth with this fleet type being able to use existing infrastructure (bus stops, interchanges and depot).



Preferred option, QPTBC

The preferred option comprises eight core interventions:

- Public Transport Service Improvements.
- Stanley Street Hub changes.
- Frankton Hub changes.
- Establishment of a depot for electric buses.
- SH6 bus lanes (approximately Kawarau Falls Bridge to William Rees Cottage).
- Local road minor intersection improvements (to accommodate articulated buses).
- Bus stop changes and related infrastructure/signage on local roads.
- Bus stop changes and related infrastructure/signage on state highways.

The secondary staging option, premised on delaying the outlay of capital investment in an electric bus depot(s) as long as possible. This would involve having interim diesel buses and a contractor owned bus depot. The secondary staging option the same core interventions as above however the decarbonisation benefits will be realised at a later date.

Capital Costs

A breakdown of the 50th percentile capital cost estimates for the preferred option is provided within the table below.

Capital Cost Estimates

PROGRAMME ELEMENT	CAPITAL COST ESTIMATE
Stanley Street Bus Hub	$564,000
Frankton Bus Hub	$1,572,000
Nine Bus Stop Modifications	$1,185,000
Four Intersection Changes	$544,000

Five Mile and Remarkables Interchange	$1,212,000
Bus Depot (including land)	$59,529,000
Northbound Bus Lane	$3,615,000

Operating Costs

A comparison of the annual Public Transport operating estimates for the Current and Preferred Option in 2039 is provided below.

Operating Cost Estimates, QPTBC

PROGRAMME ELEMENT	OPERATING COST ESTIMATE
Current	$6,700,000
Preferred	$25,000,000

Benefit Cost Ratio (BCR)

The Benefit Cost Ratio for the Preferred Option is estimated to be **2.3**.

3.7 Performance of Preferred Programme Against Objectives

The table below provides a summary of how the preferred option achieves the investment objectives.

Preferred option investment objectives assessment, QPTBC

INVESTMENT OBJECTIVE	LTBF MEASURE	ALIGNMENT
Increase public transport patronage and mode share in Queenstown to maintain a functional network		
KPI 1-1: Increased mode share / mode shift from single occupancy private vehicles	8.1.2 Mode shift from single occupancy private vehicles	The preferred option is predicted to increase PT mode share at all key points (SH6A, Shotover Bridge, and the Kawarau River Bridge). The greatest shift is in the morning peak on SH6A where PT mode share is predicted to increase from 14% to 34% in 2053. However, this is short of achieving the investment objective of 47% PT mode share at this location.
KPI 1-2: More reliable journey times for public transport	5.1.3 Travel time delay	The preferred option reduces travel time variability for key PT services in 2053. For example, the variability for the key Jack's Point to Queenstown service is predicted to reduce from eight to four minutes.
Reduce public transport CO_2 emissions in Queenstown to meet Government policy		
KPI 2-1: Reduce CO_2 emissions	8.1.1 Public transport CO_2 emissions	The preferred option fully decarbonises the public transportation system through the use of battery-electric technology.
KPI 2-2: Reduce VKT by 2053	8.1.3 Light vehicle use impacts	The preferred option reduces morning peak period vkt by 4.2%, interpeak by 1.5% and PM peak by 3.3% compared to the do min in 2053.
Increase the number of jobs and social destinations accessible by public transport in line with Queenstown spatial planning		
KPI 3-1: Jobs accessible within 20-minute trip on public transport	10.3.1 Access to key social destinations	The preferred option reduces PT waiting and travel times and is within 20 min, except for the Arrowtown link.
KPI 3-2: Social destinations accessible within 30-minute trip on public transport		The preferred option reduces PT waiting and travel times and is within 20 min, except for the Arrowtown link.

A key finding of the Preferred Option assessment is that the Investment Objective to "maintain a functional network" cannot be fully achieved by the public transport services alone. It is recommended that additional travel demand measures such as congestion charging are investigated by the project partners.

While outside the scope of this business case, an offline public transport system has the potential to drive further uptake in public transport. It is also recommended that the project partners investigate offline public transport options within the next NLTP period.

3.8 Service levels

As part of the implementation of the preferred option the public transport service levels are to increase with the aim of having a walk out and catch frequency across the network. The following table provides the indicative date for route and timetable changes taking into account expected patronage growth.

Current routes	**2024-27**	**2027-30**	**2030-33**	**2033-39**
Sunshine Bay – Remarkables Park	Sunshine Bay – Remarkables Park	Sunshine Bay – Remarkables Park	Sunshine Bay – Remarkables Park	Sunshine Bay – Remarkables Park
Every 15 mins until 7pm	Every 15 mins until 7pm	Every 15 mins until 10pm	**Every 30 mins 4am to 6am**	**Every 15 mins until midnight**
Every 30 mins 7pm-midnight	Every 30 mins 7pm-midnight	Every 30 mins 7pm-midnight	**Every 15 mins 6am until midnight**	**Every 30 mins 4am to 6am and midnight to 2am**
Medium buses	Medium buses	**Large buses**	Large buses	**Articulated buses**
Arthurs Point – Arrowtown via Frankton	**Arrowtown – Queenstown (via Malaghans)**[2]	Arrowtown – Queenstown (via Malaghans)	Arrowtown – Queenstown (via Malaghans)	Arrowtown – Queenstown (via Malaghans)
Every 30 mins peak and 60 mins off-peak	Every 30 mins peak and 60 mins off-peak	**Every 30 mins until 7pm**	**15 mins until 10pm**	15 mins until 10pm
Medium buses		**Every 60 mins 7pm-midnight**	**Every 30 mins 10pm-midnight**	Every 30 mins 10pm-midnight
	Arrowtown – Frankton	Arrowtown – Frankton **(via Ladies Mile)**	Arrowtown – Frankton (via Ladies Mile)	Arrowtown – Frankton (via Ladies Mile)
	Every 30 mins peak and 60 mins off-peak	**Every 30 mins until 7pm**	**15 mins until 10pm**	15 mins until 10pm
	Medium buses	**Every 60 mins 7pm-midnight**	**Every 30 mins 10pm-midnight**	Every 30 mins 10pm-midnight
		Large buses	Large buses	Large buses
Kelvin Heights – Quail Rise	Kelvin Heights – Quail Rise	Kelvin Heights – Quail Rise	Kelvin Heights – Quail Rise	Kelvin Heights – Quail Rise
Every 60 mins all day	**Every 30 mins peak and 60 mins off-peak**	**Every 30 mins until 7pm**	**15 mins until 10pm**	15 mins until 10pm
Medium buses	Medium buses	**Every 60 mins 7pm-midnight**	**Every 30 mins 10pm-midnight**	Every 30 mins 10pm-midnight
		Medium buses	Medium buses	Medium buses

[2] It is envisaged that the Arrowtown to Queenstown via Malaghans Road route would be introduced as a trial initially and then evaluated and refined based on feedback

Jacks Point – Frankton Every 60 mins all day Medium buses	Jacks Point – **Queenstown** **Every 30 mins peak and 60 mins off-peak** Medium buses	Jacks Point – Queenstown **Every 15 mins until 7pm** **Every 30 mins 7pm-midnight** **Large buses**	Jacks Point – Queenstown **Every 15 mins until 10pm** **Every 30 mins 10pm-midnight** Large buses	Jacks Point – Queenstown **Every 15 mins until midnight** **Every 30 mins midnight until 2am** **Articulated buses**
Lake Hayes – Queenstown Every 30 mins peak and 60 mins off-peak Medium buses	Lake Hayes – Queenstown Every 30 mins peak and 60 mins off-peak Medium buses	Lake Hayes – Queenstown **Every 15 mins until 7pm** **Every 30 mins 7pm-midnight** **Large buses**	Lake Hayes – Queenstown **Every 15 mins until 10pm** **Every 30 mins 10pm-midnight** Large buses	Lake Hayes – Queenstown **Every 15 mins until midnight** **Every 30 mins midnight until 2am** **Articulated buses**
Kelvin Heights ferry Every 1-2 hours	Kelvin Heights ferry **60 mins**	Kelvin Heights ferry **30 mins**	Kelvin Heights ferry 30 mins	Kelvin Heights ferry 30 mins
Contracts	Ferry contract renewal 2024	Contract extension 2026-28 to align end dates of bus contracts	Interim diesel bus contract 2029-34	New electric bus contract with ORC owned depot from 2035
Infrastructure	NZUP changes to Frankton Hub and SH6/6A	Upgrade hubs ($2.1million) Jack's Point to Hanley Farm link road	Bus lanes on SH6 New Edith Cavell bridge (two-lane)	New ORC-owned electric bus depot ($46.9million) Intersection modifications ($360k) Upgrade bus stops and routes to accommodate articulated buses ($830k)

Indicative staging of service enhancements, QPTBC

Investment Prioritisation Method Profile

The proposal shows strong multi-outcome alignment, and therefore has been assessed as a **HIGH** draft GPS alignment.

The proposal has been assessed as a **HIGH** rating for both criticality and interdependency. This is because the timing to deliver these activities and their importance to realising the benefits of the integrated package require immediate and sustained effort.

The proposal has a BCR of 2.3 and therefore an efficiency rating of **LOW**.

Applying the draft 2024-27 IPM prioritisation matrix with **H** for GPS alignment, **H** for Scheduling, and **L** for Efficiency, this proposal has an overall investment priority score of **2**.

An initial assessment indicated that this proposal aligns with NZTAF policy and is eligible for NLTF funding from the **Public Transport Services**, **Public Transport Infrastructure**, **Local Road Improvements**, and **State Highway Improvements** activity classes.

3.9 Commercial Case

The preferred option has two broad components: provision of public transport services and supporting infrastructure.

Currently, ORC contracts out the operation of public transport services to private transport operators, in accordance with the Public Transport Operating Model (PTOM). There are three units (groups of services) within Queenstown, which are as follows:

Unit	Description	Contract Start Date	Contract End Date
6	Queenstown Airport to Fernhill; Jack's Point to Arrowtown	18 September 2017	19 November 2028
7	Arrowtown to Arthur's Point; Lake Hayes to Queenstown; Kelvin Heights to Frankton Flats	18 September 2017	19 November 2026
8	Trial Frankton Arm to Queenstown Bay ferry service	18 September 2017	30 June 2024

Units 6 and 7 were awarded to Ritchies Transport and are operated out of a depot in Frankton. Unit 8 was awarded to Go Orange, whose parent company is Real NZ.

Procurement - Bus Services

It is recommended that the contract for Unit 7 be extended to match the completion date of Unit 6 – 19 November 2028. The year 2028 offers ORC the opportunity to procure a new bus contract under the SPTF. Changes to existing contracts include the following requirements:

- Purchase of electric buses to serve the new network, including 18 high-capacity, articulated buses
- New bus depot arrangements which will see either ORC or an investor owning a bus depot
- Recruitment of higher number of drivers to serve new network
- Integration between services and private operators such as NZ Ski.

The proposed electric bus depot will require property. Other elements of the preferred option are expected to be accommodated within the existing road reserve/ existing property owned by the partners.

A new bus depot for Queenstown is necessary to serve the increased frequencies of the new bus network. A bus depot is a place to store buses when they are out of service. They also include electric charging facilities, as well as cleaning and maintenance facilities. They house office space and facilities for drivers on breaks. The scale of a new bus depot to accommodate an enlarged, electric fleet in Queenstown is likely to be beyond the financial capacity of bus operators. Therefore, a new bus depot needs to either be publicly owned or owned by a private third-party investor.

It is considered that Frankton Flats is the preferred location for a bus depot, with Coneburn an alternative option with land available and power connections which has the potential to be increased. Further detailed investigation is required on the bus depot (including design of site, and property procurement).

Once the business case has been endorsed by partners and the preferred ownership for the Queenstown bus depot confirmed the next steps to identify a preferred location would be:

- Engage with Aurora early in the process to confirm electric grid capacity and plan high voltage power connection.

- Engage with landowners in Frankton and Coneburn on timeframes for subdivision and willingness to sell. Consider lease of land only if long term lease can be secured as a large investment in site improvements would be required to develop a depot.
- Engage with current and potential bus operators on their requirements for a depot.
- Undertake due diligence on preferred sites that investigates cost of development and consenting risks.

It is also recommended to engage with Queenstown Airport regarding a potential long term (20+ year) lease of Airport land for the depot, particularly currently undeveloped land off of Hawthorne Drive on the north side of the runway.

Procurement – Ferry Services

For the Kelvin Heights ferry service it is recommended that ORC creates a new unit and contracts out this service to a ferry operator. This would replace the current exempt service which has proven uneconomical to run without a subsidy. The tendering of the ferry service provides an opportunity to improve the frequency of the service to hourly and to revisit the fares policy for the ferry. The bus and ferry contract dates do not need to be aligned as there is little synergies between operating buses and ferries.

3.10 Management Case

The next stages of the preferred option have been clearly defined.

There needs to be a commitment from all partners to deliver the programme as all parties are responsible for essential components of the programme. This includes a commitment to prioritise public transport in the operation of traffic signals and the enforcement of bus lanes.

It is envisaged that, being the partner with the most invested, ORC will appoint a Project Sponsor/ Project Director to oversee the programme.

The table below describes the role of each partner, under the current Way to Go framework.

Organisation	Role	Functions
Otago Regional Council	Procuring organisation	• Planning the network • Procuring services • Funding partner • Monitoring services • Marketing the network
Queenstown Lakes District Council	Road controlling authority	• Provision of bus stops on local roads • Funding partner • Provision of bus priority on local roads • Provision of wharf and jetty assets to support ferry services
NZTA	Road controlling authority and regulator	• Provision of bus stops on the state highway network • Funding partner • Provision of bus priority on the state highway network • Regulation of vehicles, including buses

ORC will be the agency responsible for the delivery of the new bus network and electric bus depot, with critical support from QLDC and NZTA to deliver infrastructure improvements.

The key risks include:

- The electric bus depot is not implemented in time to provide for the intended public transport service improvements due to delay in funding, acquiring, and/or developing a site.
- Sufficient power is not available to provide for charging of electric buses due to delays in securing the available power.
- Public transport service improvements programme (or parts thereof) is not implemented due to the programme exceeding available funding.
- SH6 bus lane delayed or not implemented, resulting in no bus priority on the southern corridor.
- Full public transport service improvements not able to be realised due to shortage of bus drivers.
- Uncertain if electric buses can be run on Malaghans Route due to weight limitations on Edith Cavell Bridge.
- Growth happens faster/slower than planned, affecting patronage and operating costs.
- Local road / intersection improvements (to accommodate articulated buses) are delayed or not progressed (e.g. due to lack of funding).

A proposed benefits realisation plan includes a programme to monitor KPIs, demonstrating progress against the investment objectives.

Project Dependencies

Implementation of the Preferred Option programme has complexity, being in a fast-growing urban area with a number of Project Partners and project dependencies, including:

- The delivery of bus lanes and signal optimisation on SH6 as part of NZUP is critical to delivering on the objectives of the business case.
- Delivery of the Queenstown Arterials project is not critical to delivering on the QPTBC objectives in the short-term, but without this project it would make bus services from Sunshine Bay less reliable and affect the circulation of buses within the town centre.
- The Queenstown Town Centre Street upgrades (alongside Project Manawa) are not critical to delivering QPTBC with buses able to use current dead run routes until the street upgrades occur.

It is also acknowledged that demand management tools will be critical to achieving the headline mode share targets for the Whakatipu Basin and will support the success of the QPTBC and NZUP investment. The implementation of these tools, both in terms of timing and scope, will be part of a subsequent project.

3.11 Financial Case

The table overleaf summarises the recommended interventions from the QPTBC, which includes both the public transport programme and public transport improvements. The table includes a lead organisation, the indicative cost, and the National Land Transport Programme (NLTP) period for implementation.

Public transport services are funded from a combination of fare revenue, regional council rates, and fuel excise duty. The funding mix for the region (including Dunedin and Queenstown) in FY2023/24 is 31 per cent rates and charges, 41 per cent fuel excise duty, and 28 per cent from fares. Some parking revenue also supports public transport.

Public transport fares in Queenstown have a flat structure where all trips are charged the same fare regardless of distance, with concession fares available. Fares are reduced (by at least half) by using a Bee Card. Changes to fare structure and pricing is out of scope of this business case.

Public transport infrastructure such as bus stops and shelters are usually funded through the territorial authority. In Queenstown, $0.5 - $1 million per year is budgeted for bus infrastructure

improvements. Transport capital works are normally funded through a 49 per cent local share and 51 per cent from the National Land Transport Programme (NLTP).

The operating costs would continue to be the responsibility of ORC. By 2039, the operating cost estimate is expected to be $14.3 million and $22.6 million by 2053. The new network is expected to increase revenue share by 2039 through increasing patronage, increasing the share of operating costs covered by fares. It is assumed that fares will increase with inflation over time.

A suitably-sized electric bus depot in Queenstown will likely be beyond bus operators' financial means. The ownership of the depot(s) could either be public (ORC) or private (bus operator), a decision to be made in the next phase of work. If public ownership of the bus depot is decided, the depot(s), like most other infrastructure projects, could be funded through debt with there being a saving on contract values compared to if the debt was privately owned. The debt could be repaid through the targeted rate on properties within Whakatipu and offset by a reduction in operating costs relative to having the depot in private ownership. Another approach is for ORC to partner with a private infrastructure investor (such as a Kiwisaver funds) who would develop the depot(s) and lease it to bus operators.

Interventions

ELEMENT	LEAD ORGANISATION	DEPENDENCIES	TRIGGER POINT	ACTIVITY CLASS	INDICATIVE COST[3]	PROGRAMME STATUS	NLTP PERIOD FOR IMPLEMENTATION
Public Transport Services Improvements	ORC	Timing of existing PT contracts	Contract renewals. Demand triggers for PT service improvements	**Public transport services** WC 511: Passenger services - bus	Increasing to $25.0M / per year in 2035	Recommended option – funding approval required	2024-27+ / Ongoing
Stanley Street hub interim changes[4]	NZTA	Interim improvements to Stanley Street hub to accommodate articulated buses, ahead of Queenstown town centre upgrades	Needed for shift to articulated buses before 2028	**Public transport improvements** WC 532: Low-cost, low-risk public transport improvements	$0.6M	Recommended option – funding approval required	2024-27
Frankton hub changes[5]	NZTA / QLDC / ORC	Timing of NZUP improvements. Modify NZUP design to accommodate articulated buses	Needed for shift to articulated buses before 2028	**Public transport improvements** WC 532: Low-cost, low-risk public transport improvements	$1.6M	NZUP	2024-27
Remarkables Park hub	ORC	Routing of Remarkables Park to Fernhill route	Further development along Hawthorne Drive	**Public transport improvements** WC 532: Low-cost, low-risk public transport improvements	$0.8M	Recommended option – funding approval required	2027-2030
Five Miles hub	ORC	Signalisation of Grant Road as part of NZUP	Provision of bus lanes and pedestrian crossings on SH6	**Public transport improvements** WC 532: Low-cost, low-risk public transport improvements	$0.4M	Recommended option – funding approval required	2027-2030
Electric bus depot preferred option staging	ORC	Timing of existing PT services contracts. Existing depot not large enough/ equipped to service electric buses	Shift to electric buses plus PT services improvements	**Public transport improvements** WC 561: Passenger facilities and infrastructure improvements - bus	$45.5M plus $14M land or lease	Recommended option – funding approval required	2024-27
Electric bus depot secondary option staging	ORC	Timing of existing PT services contracts. Existing depot not large enough/ equipped to service electric buses	Shift to electric buses plus PT services improvements	**Public transport improvements** WC 561: Passenger facilities and infrastructure improvements - bus	$45.5M plus $14M land or lease	Recommended option – funding approval required	2030-33
SH6 bus lane – Kawarau Falls Bridge to William Rees Cottage	NZTA	SH6 active travel project	Demand trigger related to growth on southern corridor	**Public transport improvements** WC 561: Passenger facilities and infrastructure improvements - bus	$3.6M	Recommended option – funding approval required	TBC - 2027-30

[3] Indicative high level cost (50th percentile). Not based on design. Assumes NZUP is in place
[4] Interim option to be developed ahead of town centre upgrade, including bay lengthening, shelters, signage
[5] Assumes incremental difference on top of NZUP design

Local road intersection[6] improvements (to accommodate articulated buses)	QLDC	Proposed PT service improvements	Needed for shift to articulated buses before 2028	**Local road and state highway improvements** WC341: Low-cost, low-risk improvements	$0.5M	Recommended option – funding approval required	2024-27
Bus stop changes and related infrastructure on local roads	QLDC	Proposed PT service improvements	Needed for shift to articulated buses before 2028	**Public transport improvements** WC 532: Low-cost, low-risk public transport improvements	$0.6M	Recommended option – funding approval required	2024-27
Bus stop changes and related infrastructure on state highway	NZTA	Proposed PT service improvements	Needed for shift to articulated buses before 2028	**Public transport improvements** WC 532: Low-cost, low-risk public transport improvements	$0.6M	Recommended option – funding approval required	2024-27

[6] Sylvan/Howards, Sylvan/Hope, Rare/Acheron, Jacks Point/Māori Jack

3.12 Next Steps

The key initial next steps for the Queenstown Public Transport programme are:

- Endorsement of this Business Case by Way to Go partners.
- Reconfirmation and reframing of Way to Go partnership, which will define responsibilities and accountabilities.
- Necessary funding applications from NLTP and forward-work planning.
- Review of the business case at least once per NTLP period to review service levels and adjustments to meet growth, development, and changes in policies.

The indicative scope for the next phase is:

- Detail timetabling of the new public transport services.
- Further detailed investigation is required on the bus depot(s), including design on a preferred site, plus property procurement.
- Each of the supporting activities will require further work, e.g. design of bus lanes, local road intersections and bus stops.
- Investigation of off-line public transport route to supplement the bus and ferry based public transport network.