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NZTA Contract 2018235 - F2Q SSBC & QTC DBC

Technical Note #24

23 April 2020

Arterials Discussion Note

Executive Summary

This note provides a summary of the analysis undertaken to date regarding the town centre arterials.

As part of the Queenstown Town Centre Detailed Business Case, and the supporting Frankton to Queenstown Single Stage Business case, significant analysis and assessment has been undertaken on how to address the residential and tourism growth, and its impacts on the transport network, that has occurred in Queenstown.

A key element of the options being considered include Stages 1, 2 & 3 of the arterials – a new/upgraded corridor that would provide an alternative route around the commercial area of the town centre. From a network perspective however, the arterials would form one part of a wider package of interventions, that include 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 including:

- Congestion relief
 - o 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
 - o 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
 - o 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
 - o 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
 - o 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

Modelling is currently being undertaken to establish the magnitude of the overall network benefits that may result from the more efficient movement of vehicles throughout the town centre.

While the stakeholder engagement has yet to identify any developments that are contingent on the arterials proceeding, further engagement is to be undertaken and the project team will seek to

ascertain the full impact that the arterials could have. Due to the current lockdown situation, the final engagement stage has been delayed which will help inform the final elements of the emerging preferred programme. This is expected to occur in April/May.

From the analysis that has been undertaken to date, the overall scale of the benefits that the arterials will provide are being overshadowed by their cost. While the project team has sought to maximise the benefits and reduce the costs wherever possible, the benefit-cost ratio is proving challenging with regard to standard business case assessment and may compromise the overall evaluation of the business case and the likelihood of funding through the National Land Transport Programme. A summary of the benefits against the investment objectives is included as an Appendix to this document.

It should also be noted that the benefits directly attributable to the arterials are reduced slightly by the proposed package of interventions on State Highway 6 and 6A from Frankton and within Queenstown. The proposed package facilitates significant growth in travel demand into the Town Centre, but the majority of this growth will not be in single occupancy vehicles and therefore the majority of the benefits come through the PT improvements, Travel Demand Management measures and urban realm upgrades.

The next steps on the assessment of the arterials will include a completion of the modelling and economic analysis and a more detailed assessment of funding sources available. Sufficient design work has been completed at this stage to enable these tasks to progress.

Scope

The scope of the assessment is as per the Frankton to Queenstown SSBC and Queenstown Town Centre DBC: Contract 2018235 RFT, March 2017, which is to undertake a Detailed Business Case of the Queenstown Town Centre building on interventions in the Queenstown Town Centre Programme Business Case and Indicative Business Cases. The business case has been developed in accordance with Waka Kotahi requirements which considers an investment's suitability for funding against the GPS and Waka Kotahi's Investment Decision Making Framework

It is noted that the work and these findings are not tailored to a scope to provide economic stimulus to the region and enhance economic activity which could be a driver post Covid-19. If this was a driver, further exploration on why the Arterials could be brought forward in a different funding environment would need to be explored.

Purpose

The purpose of this technical note is to summarise how the Arterials (Stages 1 - 3) have been considered as part of the business case process currently being undertaken. While the project team is very conscious of partner and stakeholder expectations related to the arterials, the team is required to demonstrate robust, evidence based, technical judgement in determining and recommending a preferred programme for consideration and funding.

Background

The concept of a new/ upgraded road network within the Queenstown Town Centre (QTC) has been under consideration for much of the last 20 years¹. Primarily identified as a response to the significant residential and tourism growth that has occurred, the arterials (previously known as the 'CBD Bypass' and 'Inner Links') have been seen as a key part of the overall solution to address the increased demand on the QTC road network.

It is important to recognise that the proposed arterials are seen as *part* of the solution to Queenstown's issues and not *the* only solution. This approach is also consistent with that taken in previous studies, including the 2017 QTC Arterials Programme Business Case which referred to earlier work noting that '*business case planning for the Inner Links is required to be progressed if parking and public transport initiatives "fail to achieve the required mode shift"*'. It should be noted that recent improvements to the public transport system have seen a significant increase in public transport patronage, however a longer monitoring period is required to see if this mode shift can be sustained in the longer term.

Business Case Development

With the completion of the 2017 Queenstown Integrated Transport and separate 2017 QTC Masterplan Programme Business Cases, the client team (QLDC, NZTA & ORC) sought the delivery of

¹ Previous studies have included the Future Links Transport and Parking Strategy (2005), Inner Queenstown Transportation Study (2008), Queenstown Inner Links Hybrid/ Indicative IBC (2014) through to the Queenstown Integrated Transport Programme Business Case (2016) and the Queenstown Town Centre Masterplan (2017).

a Frankton to Queenstown Single Stage Business Case (SSBC) and a QTC Detailed Business Case to develop the proposed programmes and interventions further. A specific requirement of the DBC was that a public transport focused option was also to be considered along with enhanced optimization of the existing transport network. As the SSBC was being developed straight from a Programme Business Case, a greater level of optioneering and analysis was also required.

The key outcomes, as stated in the request for tender, included:

- A collaborative and integrated approach to addressing the transport challenges in Queenstown that balances the cities liveability (for locals), visitor experiences and provides an integrated network response to these challenges.
- An investment case that is affordable, fundable and offers a strong value proposition aligned with the draft 2018 Government Policy Statement (on Transport)
- Confirm the preferred form of interventions identified by the QIT PBC and QTC PBC and IBC's that are sufficiently robust to deal with the rapidly changing transport environment of Queenstown, including the financial, economic and commercial and management case.

Problem Statements

Following the initial stakeholder workshops, three problem and benefit statements were agreed (see Appendix 1) that sought to increase the use of alternative modes, improve the place and access functions of the roading network and reduce severance, expand opportunities and enhance amenity levels.

Four investment objectives were also agreed²:

1. Provide more efficient and reliable access for people and goods that:
 - a. Sustainably manages high growth
 - b. Reduces reliance on private vehicle travel
 - c. Enables enhanced land use
2. Is adaptable to change and disruption
3. Enhances the liveability and quality of the natural & built environment
4. Enhances safety with a goal of Vision Zero

The project scope also recognises that the assessment is to give effect to the transport elements of the masterplan and, while acknowledging the interface with land use and planning framework, it is not within the scope of the QTC DBC to address these wider elements.

Emerging Preferred Programme

In giving effect to the Masterplan through the development of the DBC, the project team have been particularly considerate of the Masterplan's preferred programme, while also recognising the Masterplan's scope was only the town centre and its immediate environs as shown in Appendix 3.

While proposed interventions, such as public transport services outside of this area were considered, no detailed analysis was undertaken with regard to State Highway 6A (Frankton Road). This activity has been included as part of the SSBC and is particularly important when considering that the town centre is a receiving environment for SH6A traffic.

Based on the modelling and analysis that has been undertaken, as part of the SSBC, it has been identified that a much more determined approach is required to ensure SH6A can continue to function effectively and efficiently. While options such as four-laning have been considered, these have currently been assessed as impractical due to their cost, social and environmental impact and feasibility issues. As such, the focus has been on optimising the use of the road corridor through providing public transport priority and demand restraint. This approach seeks to cap private vehicle movement on the 6A corridor and, as a result, mitigate the impact of increasing vehicle movements within the town centre. Given the long-term forecast demand growth, this has identified the need to achieve a 40% alternative mode share by 2028, rising to 60% in 2048.

² Appendix 2 provides a summary assessment of the arterials against the investment objectives.

DBC Proposed interventions

As a result of the SH6A analysis, particularly the 40% alternative mode share target for 2028, the focus for the town centre intervention has been to deliver the Masterplan objectives while supporting the outcomes of an investment case that is affordable, fundable and offers a strong value proposition. The emerging programme therefore contains a mix of interventions that seek to achieve a change in behaviour through soft (behavioural/policy) and hard (physical) mechanisms. Soft interventions are generally more affordable and therefore achievable; however, they will need to be complemented by physical interventions as appropriate. Appendix 4 provides a brief summary of the emerging preferred programme.

The project team considers this emerging programme to be an effective and efficient way to realise the Masterplan as well as the investment objectives of the DBC. This programme is expected to provide increased network capacity to move people and goods into, through and around the town centre. It achieves this through giving effect to the modal hierarchy approach that was adopted and endorsed in the Masterplan as shown in Figure 1.

A further key dimension to note regarding the emerging programme is that it seeks to provide for the needs of the Queenstown town centre through to 2048. This 30-year time horizon has required consideration of phasing across the short, medium and longer term, from both a transport need and financial affordability perspective. Once the programme elements have been confirmed through the stakeholder and investor engagement processes, further consideration of phasing can be undertaken.

As per the requirements for a DBC, preliminary Design work for Stage 1 & 2 of the arterials has been advanced to address issues with the IBC phase design. This has demonstrated that the Stages 1 & 2 can be built within the proposed corridor and are ready for further development if supported. Some finer details, such as retaining wall design, pedestrian crossing facilities and interaction with Manawa access is still to be confirmed. While Stage 3 meets the DBC assessment standard, its design work is less advanced due to deficiencies in the pre-existing designs (which will be identified in the business case documentation). Furthermore, elements of Stage 3 are also being advanced by adjacent development teams, i.e., the Thompson Street S-bend, and have therefore been excluded from further design consideration.

The arterials are comprised of three stages: Stage 1 – Melbourne to Henry, Stage 2 – Henry/Gorge to Man/Camp, Stage 3 Man/Camp to One Mile Roundabout (See Appendix 5). As such, differing levels of benefit, and cost, are associated with each stage. For example, Stages 1 & 2 provide programme benefits related to the removal of through traffic from Stanley St and the public transport hub along with their ability to support related urban realm and amenity improvements through widened footpaths and reduced noise emissions. They may also support the expansion of the town centre core through reducing the severance effects associated with heavily trafficked corridors. Consideration has also been given as to whether redesigning the arterials would be beneficial. For Stages 1 & 2, this is not expected to be advantageous, however there may be potential in limiting the Stage 3 intervention to support the Lakeview development only and not extending it through to the One Mile Roundabout.

As noted earlier, significant modelling and analysis has been undertaken to inform the approaches being considered. From a network management perspective, this has further enhanced our understanding related to the interface between how the network would operate with, and without, the arterials. A key consideration has been how the overall net benefits to Queenstown can be maximised and ensure that traffic is not just displaced. In addition to the links themselves, subsequent intersection upgrades are also required to ensure they can operate effectively due to demand changes i.e., the introduction of Stage 1 requires a significant intersection upgrade at Henry/Gorge/ Shotover to cater for this increased volume of traffic; Stage 2 requires a significant upgrade at Camp/Man and so on.

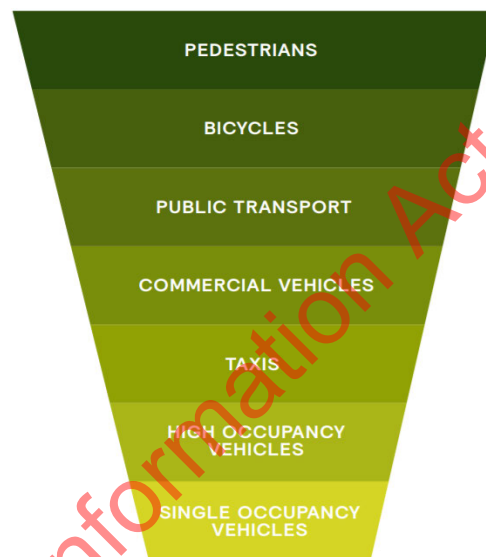


Figure 1 QTC Masterplan Modal Hierarchy

As the capacity of these intersections would increase, there is a redistribution of traffic movements across the wider network which would alter demand flows in other areas, which may necessitate further interventions and management. This reinforces the importance of the 6A corridor, and the need to actively manage traffic volumes before they reach the town centre. This is not to preclude the arterials but reinforces the need to optimise the network through other interventions, such as parking and public transport to reduce overall demand.

It should also be noted that, through engagement with local developers and property owners, no proposed developments have been identified as contingent upon the arterials, and while they may have been considered as a factor in initial planning activities, such as for Lakeview and Project Manawa, the respective development timeframes also indicate a lack of dependency. While it could be argued that construction related traffic, for example for Lakeview, may require the arterials, no strong case has been identified that could not be addressed through a robust construction management plan and behavioural based interventions.

Similarly, the project team has not been able to identify any significant broader programme benefits that would be unlocked through the introduction of the arterials, other than amenity benefits. For other major transport programmes, such as Let's Get Wellington Moving, road capacity improvements have been identified as a requirement to unlock the benefits of the public transport improvements through the removal of traffic from key city streets. While the arterials do remove traffic from the section of Stanley Street between Ballarat Street and Shotover Street, the wider PT network improvements mean that the economic benefits can be realised with, or without, the arterials. The amenity benefits associated with the removal of traffic are considered to be the most significant benefit delivered by the arterials. These benefits are greatest, and most enduring along Stanley Street where the removal of traffic will facilitate improved urban realm and will enhance the quality of adjacent developments (such as Project Manawa). Approximately 25% of the traffic removed from Shotover Street is associated with Stage 3 – as a result, the expected benefits will be less enduring than the benefits demonstrated for Stanley Street as it is anticipated that they will be eroded by traffic growth over time.

Strategic Alignment

Waka Kotahi assesses business cases to ensure they will be effective and aligned with the strategic priorities outlined in the Government Policy Statement (GPS) on Land Transport which guide land transport investments. The 2018 GPS identifies Safety and Access as the primary strategic priorities, supported by Value for Money and Environment. At present however, the Government is also consulting on the 2021 GPS which proposes slightly amending the strategic priorities to Safety, Better Travel Options, Improving Freight Connections and Climate Change.

Under both the current and proposed GPS, the case for the arterials will be dependent on whether the broader package of interventions can, or cannot, effectively achieve the specific investment objectives as well as the wider GPS priorities and objectives. While the proposed short - medium interventions are aligned, the arterials are not likely to achieve the requisite threshold until other measures, such as parking management and public transport improvements have been implemented.

Economic and Financial Case

The business case process is focused on optimising value for money and ensuring that the investment proposals are affordable. While the present emerging programme is indicatively costed at between \$400 and \$500 million (including the arterials), and the overall affordability of the programme to the investment partners is still to be confirmed, the project team have been conscious of the currently available funding envelopes.

Although the recently announced NZ Upgrade programme can potentially provide for up to \$90million worth of investment in a number of other interventions, a large shortfall remains that would need to be met through either central government (NLTP) and regional and/or local rates³.

While the overall programme has an indicative BCR >1, the work to date has only identified approximately \$30million of urban realm and traffic reduction benefits for the arterials whereas the indicative cost exceeds \$140million for Stages 1 & 2, with a further \$52million for Stage 3.

While the arterials deliver benefits from year 1, these are relatively modest compared to the estimated costs, resulting in an indicative BCR range of 0.2 to 0.4.

³ While other funds may be available e.g., public-private partnerships, this analysis has only considered existing funding streams. Further work on this will be undertaken as part of the financial/commercial case.

In addition to the transport economics analysis, the project team has undertaken a considerable amount of effort to maximise, and evidence, the wider economic benefits⁴ (these are included in the indicative BCR range outlined above). These elements are more significant than the conventional transport benefits. However, as both a standalone investment, and as a component of the wider programme, their cost-benefit ratio is unlikely to be sufficient to attract NLTP funding and therefore alternative mechanisms will need to be explored to fill this funding gap.

Challenge Session Feedback

The Challenge Session members identified two key issues related to the arterials:

- 1) *That the economic case has not been clearly established;*
The project team agrees with this assessment, and as noted above, further work is being undertaken to resolve this issue.
- 2) *That if excluded from the final programme, there is a risk to stakeholder acceptance of the overall business case.*
Stakeholder, including wider community, input is an essential element of the project plan and, while this engagement has been currently impacted, it is the priority for the next phase of project development. At present however, the arterials are incorporated into the emerging programme and further work is being undertaken to understand their overall benefits.

Appendix 7 contains a brief summary of how the arterials may, or may not, impact on some of the wider considerations raised by the challenge group.

Stakeholder Feedback

Significant public engagement has occurred as part of this DBC, as well as preceding business cases and studies. With respect to the arterials, previous feedback has indicated strongly divergent views related to the arterials, especially with regard to the potential loss of the Memorial Hall and perspectives on a car versus public transport dominated alternatives. Prior to any final recommendations being made, it is essential that feedback from the wider community is sought. This will be achieved through the engagement programme that is currently being progressed.

Covid-19 Response

The Covid-19 situation has created significant disruption across New Zealand with the Government currently considering a range of stimulus activities and investments to mitigate the significant economic and social impacts that are expected to arise. It is therefore proposed that Stage 1 & 2 of the arterials are submitted for consideration as an infrastructure investment. While under the existing investment assessment criteria, their efficacy is comparatively low, under an expedited investment approach, they may be eligible for funding. This is due to the advanced level of design that has been undertaken, which is not the case for Stage 3, and the significant amount of land in public ownership that would be affected simplifying implementation.

Summary

In summary, while the arterials can provide benefits, particularly stages 1 & 2, when compared against the costs associated with their construction, the case for NLTF funding may be challenging. It should be noted that the business case has been developed in accordance with Waka Kotahi requirements which considers an investment's suitability for funding against the GPS and Waka Kotahi's Investment Decision Making Framework. If funding, outside the National Land Transport Fund, could be secured, either fully or partially, this would have a material effect on the final assessment and/or sequencing of the DBC preferred programme.

Similarly, when considered against the confirmed investment objectives, while the arterials will provide some benefits (largely attributable to Stages 1 & 2), the magnitude of benefit is insufficient at this stage to justify the early implementation prior to other interventions in a constrained funding environment. As such, the project team is recommending that alternative funding streams are investigated prior to any further design development work on the arterials, as implementation for them is unlikely to be justified under the NLTP within the 10-year land transport investment programme. The priority for this time period should on be the implementation of the NZ Upgrade

⁴ For a detailed analysis of the pedestrian benefits as currently assessed, please see Appendix 6.

Programme interventions for SH6A, combined with public transport, parking management, active travel and Travel Demand Management interventions which should deliver significant benefits for the town centre and wider environs at a significantly lower cost.

Appendix 1

Problem Statements

Agreed and adopted problem and benefits statements for the Queenstown Town Centre Detailed Business Case Problem Statements

Problem 1	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
Benefit 1	Increased use of alternative travel modes reduces congestion and improves the attractiveness of the town centre for residents, visitors & business
Problem 2	Roads performing both place and access functions introduce conflicts between vehicles and other modes, which increases the likelihood for injury and reduces the quality of the public realm.
Benefit 2	Improved clarity of place and access functions will reduce the potential for conflict, increasing safety and the quality of the public realm
Problem 3	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.
Benefit 3	Reduced severance will expand community and commercial opportunities and enhance the town centre amenity.

Appendix 2

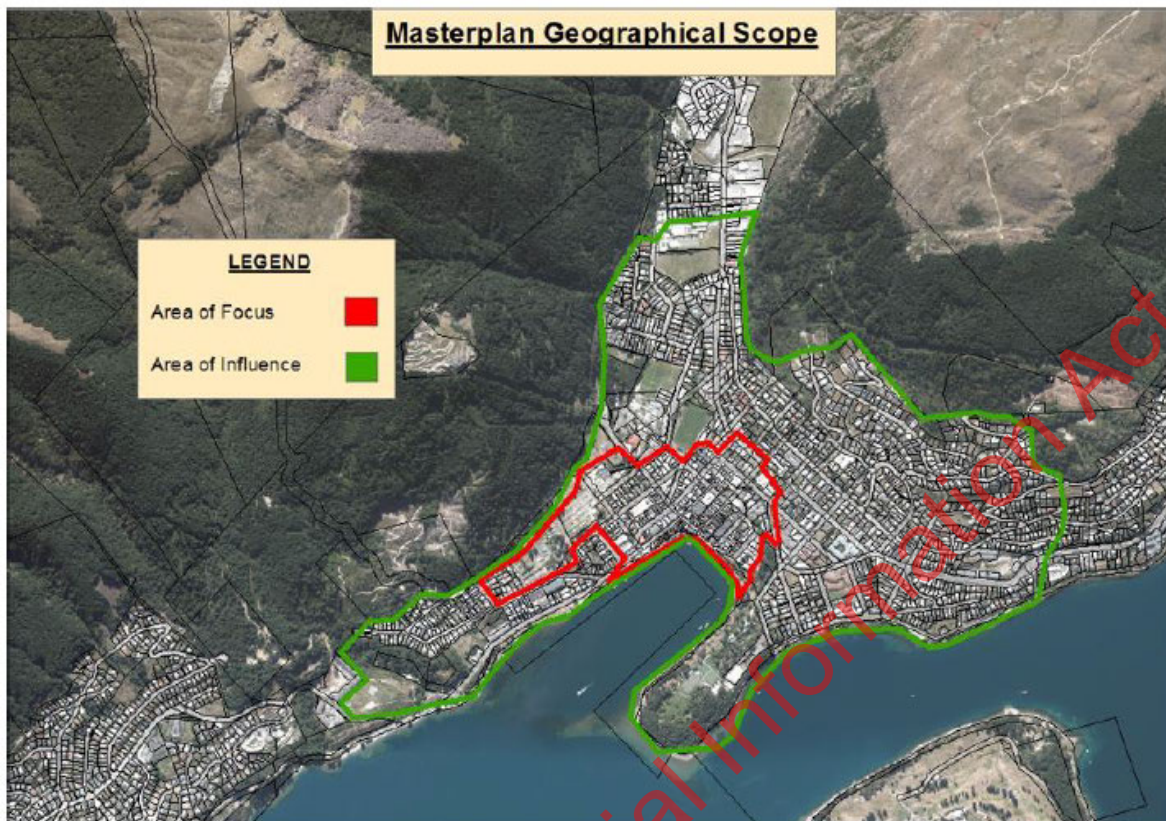
Summary alignment with Investment Objectives

Investment Objectives		No Arterials	Arterials		
			Stage 1: Melbourne – Henry	Stage 2: Henry/Gorge – Man/ Camp	Stage 3: Man/Camp to One Mile Roundabout
Provide more efficient and reliable access for people and goods that:	a) Sustainably manages high growth	Yes. The required public transport priority supported by active traffic management seeks to improve the attractiveness of PT compared to other modes and increase network efficiency. If the required mode shift does not occur, the level of service experienced will deteriorate.	Maybe. Stage 1 will provide more localised network capacity which may result in an increase in overall vehicle movements however this may compromise SH6A interventions that seek to achieve modal shift.	Yes. Stage 2 will help improve intersection performance at Shotover/ Stanley supporting enhanced public transport movements.	No. Additional link capacity is expected to encourage more vehicle movements across the network while only providing limited transference of vehicles off Shotover St.
	b) Reduces reliance on private vehicle travel	Yes. Enhancing the performance of PT relative to private vehicle travel will encourage greater usage and reduce reliance on private vehicles	Maybe. Increasing network capacity will encourage greater network usage, however it would improve PT operation on Stanley St as through traffic is banned.	No. Increasing network capacity will encourage greater network usage.	No. Increased capacity will provide additional incentive for private vehicle usage.
	c) Enables enhanced land use	Neutral. No developments have been identified that are constrained by the existing network. Engagement with developers indicates that they desire certainty for planning purposes but are equivocal regarding the arterials.	Maybe. May provide enhanced access to Project Manawa, however Manawa design plans are still under development.	Neutral. May remove some development constraints in the vicinity of the Shotover/Stanley intersection, however no evidence has been found suggesting the absence of the arterial would limit development.	Neutral. Land use is primarily informed by the District Plan however no limitations have been identified due to the transport network.
Is adaptable to change and disruption		Neutral. No change to current performance.	Yes. An additional link provides additional network resilience during localised disruption.	Yes. An additional link provides additional network resilience during localised disruption.	Yes. An additional link provides additional network resilience during localised disruption.
Enhances the liveability and quality of the natural & built environment		Yes. Proposed town centre upgrades will deliver improved built environment	Yes. Supports urban realm and amenity improvements through widened	Maybe. Community feedback indicates it may compromise the built environment rather than	No. Removal of some traffic off Lake Esplanade/ Shotover would be positive, however the

Investment Objectives	No Arterials	Arterials		
		Stage 1: Melbourne – Henry	Stage 2: Henry/Gorge – Man/ Camp	Stage 3: Man/Camp to One Mile Roundabout
	and enhanced liveability without requiring new roads to be constructed.	footpaths and reduced noise emissions on Stanley St.	enhance it through the loss of the Memorial Hall. Awaiting stakeholder feedback to determine final impacts.	environmental impact of the new connection between Thompson St and One Mile Roundabout is expected to be significant.
Enhances safety with a goal of Vision Zero	Yes. Improved use of alternative modes and reduction in private vehicle usage should result in improved safety outcomes.	Yes. The shifting of general traffic onto the arterial will reduce conflicts on Stanley Street and improve safety outcomes	Neutral. Intersection design and operation would be in accordance with the Safe Systems approach providing greater safety. However any intervention that increases traffic volumes and the interaction with vulnerable modes, is potentially detrimental.	Neutral. Intersection design and operation would be in accordance with the Safe Systems approach providing greater safety. However, any intervention that increases traffic volumes and the interaction with vulnerable modes, is potentially detrimental.

Appendix 3

Queenstown Town Centre Masterplan Geographical Scope



While the Masterplan acknowledged the role of the transport network outside of its specific Area of Focus and Area of Influence, this did limit the consideration of some aspects that have been further assessed as part of the SSBC and DBC process – namely the significant constraints related to State Highway 6A and the need to control vehicle growth on the corridor.

Appendix 4

DBC Emerging Programme

Soft interventions	
Travel Demand Management	- Policy changes e.g., for car sharing, travel plans for large employers, key trip generators and new developments. - Travel planning and behavior change through school travel plans, cycle and scooter training, residential travel plans and award schemes/gamification - Wayfinding improvement - Transport Management Association - Freight Management
Parking Management	Implementation of the 2019 Queenstown Parking Strategy including active management to encourage shift to alternative modes through pricing mechanisms
Intelligent Transport Systems (ITS)	Utilizing existing and developing technologies to increase the efficiency of the transport system e.g., digital communication methods to inform drivers of the fastest/ cheapest modal choices, dynamic pricing of car parking as occupancy exceeds 85%, active network management to prioritise public transport and/or freight over private vehicles.
Public Transport operations	Measures relating to operational improvements, including frequency, fares and service quality (including information provision) that achieve enhanced patronage.
Active Travel	Implementation of the Wakatipu Active Travel Network programme including network linkages and end of trip facilities.
Hard Interventions – NOTE: Due to the overlap with the QTC Masterplan Preferred Programme, these interventions have been aligned with the equivalent masterplan element	
Civic Access	Ballarat Street improvements align with Masterplan objectives to connect project Manawa to Lake.
High capacity mass transit	This includes step change service provision such as large scale fleet expansion and/or off-line high capacity services.
Lake Esplanade Public Realm Upgrade	Included as part of business case designs. Augmented to include bus priority improvements for Fernhill services
Lakeview Walkway	Initial pedestrian and cycling improvements planned to access Man Street. Further development will be incorporated into the design of Stage 3 of the Arterials if required.
Passenger Transport Stops	Consolidation of passenger transport (commercial operator) facilities on Athol Street and Duke Street.
Public Transport Hub and supporting bus priority	Provided for on Stanley Street linking through to Athol St with provision of enhanced passenger facilities.
Shotover Street Upgrades	Included – removal of parking allows more space to be provided to pedestrians. Intersection improvements facilitate safe pedestrian crossing and movement of traffic and buses. Loading zones provided for businesses.
Town Centre Arterials	Currently included as a long-term intervention.
Town Centre Cycleway	Masterplan improvements along Camp Street incorporated into town centre business case designs
Town Centre Public Realm Upgrades	Suite of public realm upgrades following Masterplan design palate and overall philosophy

Appendix 5 – Queenstown Arterials Map



Appendix 6

Pedestrian wellbeing benefits

This note summarises the analysis of pedestrian wellbeing undertaken for the Queenstown town centre. The analysis proceeded in three steps:

- The **Valuing the Urban Realm Tool (VURT)**, previously used in London and Auckland, was applied. This required 17 street attributes to be scored under 'before' and 'after' improvement scenarios for moving and static pedestrians on the affected streets, with these scores then translated in NZ dollar present values using willingness to pay values that had been derived for the tool.
- Research by the Transport Agency⁵ has shown that alternative measures of pedestrian wellbeing benefits produce results that are around fourfold higher than VURT. Rather than repeat a round of (time-consuming) scoring using alternative but similar street attribute measures, the VURT-derived benefits in this project were simply multiplied by 4. These results formed the measure of benefit for planned urban realm improvements in the town centre.
- Transport Agency research showed specifically that VURT under-weighted the benefit to pedestrians of reduced traffic flows on the street, relative to other studies. The value derived for traffic reduction from the Transport Agency research was applied in this project and is used as a measure of the benefit to pedestrians within the town centre of the provision of arterials roads around the town centre.

The results show:

- Street design changes on Stanley, Athol, Ballarat, Shotover Streets and Lake Esplanade, without arterials, are expected to produce wellbeing benefits to pedestrians of around **\$44 million**, in present value (PV) terms. The combination of enhancements and high pedestrian numbers lead to large contributions from Stanley St, the mid-section of Shotover St and Lake Esplanade.
- Street design changes within the remaining inner town centre show pedestrian wellbeing gains of around **\$32 million**, with largest contributions on Rees and lower Beach Streets.
- Arterials phase 1 and 2, effectively bypassing Stanley Street, are expected to create improved wellbeing benefits to pedestrians on Stanley St and Shotover St of order of magnitude **\$15 million**.
- Additionally Arterials 3 is estimated to provide welfare benefits to pedestrians on Shotover Street and Lake Esplanade of order of magnitude **\$16 million**.

It is likely that this higher wellbeing of pedestrians translates into:

- Higher volumes of pedestrians than would be the case without the improvements
- Higher retail spending due to both the improved wellbeing of pedestrians and higher pedestrian numbers as a response to the improvements
- Higher values for properties on or near the improved streets, due to the higher anticipated spending.

However international research is unclear as to the magnitude of these effects and there is the likelihood that not all of these effects are additive to the wellbeing measure, nor an incremental benefit to the district. The approach taken here is to provide an indicative measure of retail sales and property value uplift responses in the town centre to the urban realm improvements and to provide a sensitivity analysis of pedestrian wellbeing gains using a higher and lower pedestrian growth rate.

The indicative change in retail spending and retail property values resulting from the urban realm improvements – not claimed to be additional benefits – are of order:

- Retail spending in the town centre, including on tourism activities, is estimated to be around \$300 million in the March 2018/19 year. The urban realm improvements are likely to cause a stepwise increase in spending by around 10-15%, or \$30-45 million p.a. in current dollars.
- Higher spending will translate into higher rents. Anticipation of higher rents is likely to cause a one-off property value uplift in the town centre by around 5-6%. Based on 2017 valuations

⁵ Nunns and Dodge (2019)

and 80 town centre retail/commercial properties valued in total at \$820 million, the likely property value increase would be of order \$50 million. Additionally there would be extra rents earned by property development yet to occur which has not been quantified, where the benefit of extra rents will be offset to some degree by the cost of development.

Alternative higher- and lower-growth estimates of pedestrian wellbeing benefits are provided as a proxy for explicitly estimating the pedestrian volume response to the improved urban realm. The aforementioned 'base scenario' benefits assumed pedestrian growth rates in the town centre of 3.0% p.a. through to 2028 plus a one-off addition of bus passengers at and near Stanley Street, and 1.6% general pedestrian growth beyond 2028. These non-bus forecasts are similar to those used by QLDC for people presence per day in the Wakatipu ward and exceed the QLDC projections for growth of people present in the statistical areas⁶ that include the town centre, implicitly allowing for high levels of regular travel to town by locals living outside the town centre. Using growth rates beyond 2028 that are 0.5% higher and 0.5% lower produce benefit estimates that, at the lower end, are similar to the initial QLDC people per day projections around the town centre and, at the higher end, allow for a larger pedestrian response over time to the street improvements. The difference in pedestrian numbers after 30 years, relative to the lower pedestrian growth scenario, is 12% more pedestrians in the base scenario and 26% more pedestrians in the higher growth scenario. The range of lower- to higher- growth scenario pedestrian wellbeing benefits are provided below, again in present value terms.

- Street design changes on Stanley, Athol, Ballarat, Shotover Streets and Lake Esplanade, without arterials, are expected to produce wellbeing benefits to pedestrians of around **\$42 million to \$46 million**.
- Street design changes within the remaining inner town centre show pedestrian wellbeing gains of around **\$31 million to \$33 million**.
- Arterials phase 1 and 2, effectively bypassing Stanley Street, are expected to create improved wellbeing benefits to pedestrians on Stanley St, Shotover St and Lake Esplanade of order of magnitude **\$14 million to \$17 million**.
- Additionally Arterials 3 is estimated to provide welfare benefits to pedestrians on Shotover Street and Lake Esplanade of order of magnitude **\$14 million to \$17 million**.

A further uncertainty for the arterials is the extent of traffic reduction resulting from the arterials. Again sensitivity analysis has been used to show a range of possible benefit outcomes.

- The range of pedestrian benefit outcomes for Arterials phase 1 and 2 from combined traffic reduction and pedestrian growth could be from **\$6 million to \$27 million**.
- Additionally Arterials 3 is estimated to provide welfare benefits to pedestrians on Shotover Street and Lake Esplanade of order of magnitude ranging from **\$7 million to \$26 million**.

The street improvement results were estimated using a 30-year asset life and a 4% p.a. real discount rate. Sensitivity analysis shows use of a 6% discount rate would decrease expected base scenario benefits to \$34m and \$25m for the street improvements respectively.

The results for the arterials were estimated using a 60-year asset life and a 4% p.a. real discount rate, as proposed by the Transport Agency for use after Jun-20. Sensitivity analysis using the current Transport Agency default of 40 years and 6% show expected base scenario benefits to pedestrians of \$8m and \$9m for arterials 1+2 and 3 respectively.

In sum, the pedestrian benefits of the urban realm improvements are estimated to be \$73-79 million and the pedestrian benefits of the arterials to be \$28-34 million. The benefits to pedestrians of the arterials could be as high as \$53 million should even higher traffic reductions be achieved. The pedestrian wellbeing benefits are likely to manifest as higher spending and property values in the town centre. These estimates assume that no constraints exist that would prevent pedestrian growth occurring as modelled (e.g. Frankton Road does not constrain access to the town centre, labour availability does not constrain construction and service provision, viruses do not constrain international travel). And these pedestrian benefits have to be offset against capital and operational costs incurred to measure a net benefit.

⁶ The QLDC 2018-2048 projections were provided for the 2013 Statistical Areas. These areas have subsequently been redefined.

Appendix 7

Challenge Session Considerations

As part of the Challenge session, the relative importance of the following issues were identified. While these considerations are more general in nature, a brief commentary from the perspective of the town centre has been provided with particular consideration of how the arterials may, or may not, address them.

Consideration	Town Centre Perspective
Capacity constraints and congestion on SH 6A and SH 6 and town centre?	Overall traffic and transport demand within the town centre will be managed via State Highway 6A interventions and the town centre's performance will be dependent on the effectiveness, or otherwise, of those interventions.
Town centre amenity	The most significant improvements to town centre amenity are expected to occur through a reduction in overall vehicle movements within the town centre complemented by enhanced public realm upgrades through the reallocation of road space. This will be as a result of improved public transport services, as well as complementary interventions related to parking management, TDM and ITS techniques. The introduction of the arterials will provide localised amenity improvements, such as to Stanley and Shotover Streets, however, increased severance is likely as a result of the arterials due to the new corridors focusing on a movement, rather than place function. While this could be partially mitigated, it would likely impact network efficiency.
Limits on Queenstown's growth potential	No evidence has been found to support the assertion that the transport network <i>within the town centre</i> , and its operation, is constraining Queenstown's growth potential. Travel time variability and longer journey times are more significantly experienced along the SH6A corridor and addressing those have been the focus of the major interventions.
Housing affordability	The District Plan is the key determinant with respect to the provision of housing within the town centre, particularly with regard to zoning, densities and height limits for buildings. The introduction, or otherwise, of the arterials is not expected to impact housing affordability metrics.

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Technical Note #10

7 September 2020

Parking Management

Introduction

The Queenstown Lakes District Council have developed a comprehensive parking strategy with its key objectives being 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; and
- Promote the use of emerging technologies to manage demand and minimise the impact of the transport system.

From a customer perspective, there has been a traditional expectation that parking, irrespective of mode, will be provided in close proximity to the customers' destination and without undue time or cost restrictions. However, within the Queenstown context, this approach is no longer sustainable. The 'free' 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 supply and distribution of parking in Queenstown must be actively managed to provide for positive transport outcomes.

The purpose of this technical note is to detail how the activities within the Queenstown Town Centre DBC align with the parking strategy and seek to give it effect, while supporting the broader objectives of the DBC. Of particular note is the need to support the aim of achieving a 40% public and active transport mode by 2028 which will increase to 60% by 2048 if projected growth is realised.

Management and Enforcement

Strategic principles were outlined in the parking strategy to frame how parking management decisions should be made in the Queenstown Town Centre and these have been applied in the development of the town centre proposals:

- 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 achieve these mode shift targets.
- 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.
- Parking demand is managed to achieve an average occupancy 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. The parking system should include:

- A system to monitor car park occupancy;
- Provide an easy payment system;
- Link to parking enforcement;
- Link on-street and off-street parking to wayfinding signage; and
- Provide web and mobile app payment and wayfinding services.

Regular monitoring and evaluation of parking supply and demand is also recommended in the strategy, alongside multi-modal travel surveys, to track progress against the principles of 85% parking occupancy, and mode shift targets/

Parking Requirements

The approach to parking provision acknowledges that different modal types from bicycles through to private vehicles, require locations whereby the vehicle can safely, and legally, park for varying periods of time. This can range from short term loading zones (<10mins), through to longer term, often covered, vehicle storage that are suitable for residential purposes (e.g. garages). The management of parking in the Queenstown Town Centre will aim to reflect the modal hierarchy devised in the masterplan, as shown in Figure 1.

Bicycles

Historically, the provision of cycle parking has occurred on an ad-hoc basis with little thought for user requirements. However, increasing the number of cyclists is recognised as a key mechanism to help reduce private vehicle usage, improve community health and reduce transport related emissions.

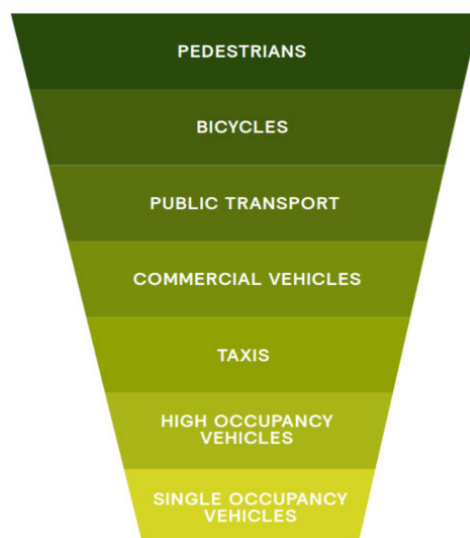


Figure 1. QTC masterplan modal hierarchy

The Wakatipu Active Travel Network (WATN) Single Stage Business Case has estimated that by 2048, there will be over 8,000 daily cycling trips to and from the town centre, translating into a demand for approximately 4,000 cycle parks. The required cycle parking is expected to be made up with a combination of public and private parking.

Public Transport

There are three key types of operational parking required by public transport:

- regular bus stops where services pick up and drop off passengers on route,
- interchange/hub stops where services align, a higher level of passenger facility is required and bus dwell (stopping) times may be higher than regular bus stops
- peripheral stops, located at the beginning/end of routes where dwell time may be considerable (up to 20mins) and some driver facilities may be required e.g., toilets and rest areas.

Commercial Vehicles

Commercial vehicles refer to any vehicles required for the movement of goods and freight that are essential for businesses to function. These can range from small vehicles through to large truck and trailer units. Due to the nature of the commercial businesses within the town centre however, servicing requirements are generally met by vehicles not exceeding 10metres¹. The location and suitability of parking for commercial vehicles is also dependent on the type of freight being transported i.e., heavier/ bulkier goods require closer proximity to their destination compared to lighter smaller deliveries.

Taxis

Taxis and other passenger transport services such as ride share are an integral part of Queenstown's transport system and included as high occupancy vehicles under the mode hierarchy. Taxis are currently regulated by a permit system, administered by QLDC. This will limit supply of taxi stands into the future. Other passenger services such as Uber, will not be discouraged in these zones but will not be provided with dedicated parking areas but they may use P5/10/15 car parks.

High Occupancy Vehicles

High occupancy vehicles (HOV) refer to other types of passenger transport such as coaches and activity transport. The provision for, and management of these users is outlined in the QTC Coach Management Technical Note.

Single Occupancy Vehicles

The provision of on-street parking spaces for single occupancy vehicles (SOV) i.e, general private vehicles, is generally undesirable as it occupies space in the public road reserve that can be used to better achieve the desired area outcomes. For example, instead of dedicated on-street SOV parking, the space can be used for loading zones, pedestrian and/or cycle space, enhanced urban amenity through planting and streetscape amenity or general traffic movements. While the importance of private vehicles movement cannot be understated, where overall road space is limited and under significant competing pressures, it is more appropriate and efficient to encourage this into off-street parking facilities.

Within the town centre however, there are also certain areas where on-street parking is particularly important such as around St Peter's Church, though some compromises will be required to meet the competing demands for road space.

¹ Larger vehicles may service specific locations, such as the supermarket, but in the town centre, these are the exception.

Movement and Place

A movement and place hierarchy has been agreed on as a framing approach for the Queenstown Town Centre DBC. This approach has been reflected in the parking strategy as the application of the hierarchy is likely to affect the management of parking in the town centre.

Under the proposed hierarchical classifications:

- **Primary corridors** would have little or no general public parking with provision primarily for loading and mobility parking purposes. This allows road reserve to be reallocated to pedestrians and active modes.
- **Secondary corridors** would also have prioritised parking for freight and mobility parking purposes, as well as taxis etc. This will enable widened footpaths, build outs at crossings and mid-blocks to aid pedestrian movement in addition to support for other alternative modes; and
- **Tertiary corridors** would provide some parking in accordance with volumes and the parking strategy developed.

For more information about the movement and place approach, refer to the Movement and Place technical note.

Off-Street Public Parking

While off-street parking is outside the scope of the business case process, due to the inter-related nature of off- and on-street parking provision, the following assumptions have been made regarding the provision and operation of publicly accessible off-street parking:

- The **Boundary Street** car park site will be redeveloped to provide for 264 car parks (including 7 mobility spaces) as well as motorcycle and secure bike storage. This is an expansion from the current 133 car parks and 11 carpool spaces provided. It should be noted that currently 33 campervan sites are also provided which will not exist following redevelopment.
- The **Ballarat Street** car park will be redeveloped as part of Project Manawa. While it was originally envisaged that Project Manawa would include a large public parking facilities, this is no longer expected to be realised. Some private e.g., staff, car parking will be provided along with a limited number of public parks for people accessing the library and civic offices which will be relocated to this site. Total parking numbers are yet to be determined.
- The **Skyline** development has approval to provide 348 public parks, 100 staff parks, along with 17 motorbikes and seven coach spaces for users of the reserve and Skyline attraction.
- **Church St** underground car park will remain open to the public however, it is recommended that parking charges would be increased in line with the overall aim of maintaining a target 85% occupancy² and also that its primary purpose alter to leasehold and longer term parking rather than short term, casual parking. Some reduction in overall capacity may also occur as parks are re-purposed for other uses e.g. bike or Council fleet parking.
- It is understood that the pending **Lakeview** development will not be providing any public parking, although there is some provision for private parks, the final capacity is yet to be determined.
- The **Man Street** car park development will proceed as planned and is due for completion in 2020/21.
- **Athol Street** currently provides 60 public car parks and two mobility spaces. This area will be repurposed as part of the development of the central public and passenger transport hub and these parks will be removed.

Consideration has also been given to the introduction of a new carparking facility to the east of the town centre. While modelling has indicated that there would be some benefit from this, particularly in removing the through movement of traffic to the west of the town, the lack of an

² Optimal parking occupancy is generally recognised at 85% as this is the level by which drivers should be able to meet their needs without resulting in an oversupply of parking or an under supply that creates congestion and delay due to circulating traffic seeking parking. A common mechanism to manage this is through the setting or charging rates and/or time restrictions. While no determinations have been regarding these, it should be note that a doubling in parking charges has been considered as part of the modelling assessments.

appropriate available location, and that this would potentially encourage further unnecessary private car trips along SH6A, this option was not considered further.

While it is also assumed that no further public off-street parking facilities will be provided³, as this would be contrary to the aims and objectives of the parking strategy, private parking developments may still occur however it is recommended that a parking management approach should be taken to maintain availability rather than through an increase in parking supply.

On-Street Public Parking

With respect to the on-street parking provision:

- The commercial/retail/historic core area will in general be prioritised for loading/services and mobility parking.
- The historic core urban realm improvements, as indicated in QTC masterplan, will be implemented.
- Parking in the Camp/Earl/Church Street area will be strongly managed (i.e time limited with higher parking fees) with a reduction in overall supply. This will be complemented by urban realm improvements that prioritise active modes. The extent of the parking management will be in line with achieving 85% occupancy levels.
- Residential areas within the town centre area will be for residents' purposes only – not for commuters/day visitors, although some mobility/loading zones may be installed as required.
- In the transition zones between the commercial/retail/historic core and the residential areas, parking management would be focused on achieving the overall objectives with consideration for local sensitivities.
- Pedestrian linkages from the Public and Passenger Transport (PPT) hub will be also prioritised, particularly given the substantial pedestrian flows that are expected. Consequently, the designs for the hub include enhanced pedestrian access through to Camp Street with connections to Beach Street which have affected the parking provision on Camp Street.
- It is assumed that registered public transport services e.g., timetabled, as well as intercity type services, will be catered for within the town centre/historic core at the PPT hub further reducing the potential for kerb side private vehicle parking.
- The overall design approach applied to the town centre under the movement and place hierarchy will affect the opportunities for on-street activity coach parking such as the Milford day or Skippers Canyon trips. It is proposed that these are catered for through managed pick-up/drop-off stops at the PPT hub or at the Frankton PPT hub. Further industry engagement will be required to implement such changes once funding and final designs are confirmed.
- Passenger coaches e.g., long distance tourist charters, will not be provided for in the town centre except for drop off/loading zones. It is expected that some parking may be provided through repurposing of potentially suitable locations, such as the Gorge Road car parking site, however limited capacity will likely result in the need for coach parking in Frankton.
- The provision of freight and servicing facilities will also be prioritised however overall specification will be affected by demand and the limited amount of kerb space available.

A table showing the current public on-street parking supply by mode is found in Appendix A.

Town Centre Concept Designs

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.

³ For the purposes of this technical note, the incorporation of 'public' parking in developments such as hotels, are excluded due to the expectation that these will be for guests only and not general visitors to Queenstown.

A summary of the proposed parking reductions in the immediate town centre area is shown in Table 1. 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 been 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 practice.

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.

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 A. It is important to note that the allocation of public parking in the historic core and town centre area has not been confirmed and can be adapted to meet the specific demands of that area. For example, Shotover Street which has a significant loading demand could be allocated increased loading spaces at the expense of public parking, noting that this would be consistent with the modal hierarchy. These changes would not affect the total supply in these areas, but the makeup of parking dedicated to each mode.

Table 1. On-Street parking (Town Centre Core) provision breakdown

	Parking Supply	Parking Reduction
Existing Inventory (2019)	472	
QTC Masterplan proposed reduction	-	-247
Additional reduction from DBC	-	-78
Proposed Provision (QTC DBC)	147	-325

As seen in Table 1, the proposed parking inventory generally aligns and reflects the original QTC masterplan proposed reductions, with only a 78 parking space reduction in the immediate town centre area over the masterplan. This additional reduction is primarily as a result of proposed changes to Shotover and Camp Streets which were not catered for in the masterplan and are a result of the public realm upgrades on both Shotover and Camp Street, as well as Camp St becoming part of the core cycle network as outlined in the Wakatipu Active Travel Network. Rise. Both of these variations are shown in Table 2.

It is anticipated that the proposed public realm improvements will result in a similar provision of loading and mobility spaces in the town centre and historic core, though the exact split between mobility and loading spaces is yet to be determined. A further breakdown of the parking reductions in the immediate town centre are shown in Table 2.

Table 2. Parking reduction by street cluster

	Camp/Church/Earl	Shotover/Athol/Stanley
Existing Inventory (2019)	168	133
Estimated Future Inventory (QTC Masterplan)	111	51
Proposed Inventory (QTC DBC)	51	39

As with the QTC Masterplan, the on-street parking reductions proposed in the Historic Core and Town Centre are expected to be catered through displacement to off-street locations as well as a transference to alternative modes.

Parking Management

The parking strategy is to be used as the framework for managing the supply and demand of parking in the historic core and town centre. Using the carrot and stick approach referenced in the parking strategy, there are many options that can be used by QLDC to achieve an 85% occupancy rate⁴ for the on-street parking supply. For example:

- Variable time restrictions – Time restrictions can apply at different times of day for different users. This can provide for a range of demands and ensure that the space is efficiently utilised. This can be achieved through static signs, or by electronic signage that enables a lot more flexibility, and is potentially easier for the customer to understand
- Variable pricing – Parking fees are a useful tool to manage parking demand. Variable pricing is when the parking fee changes in response to the level of demand. When parking demand increases, the price increases to reduce the demand. It can also be used as an incentive by decreasing the parking fee in locations where it is preferred that cars are parked, for example off-street or out of the town centre. This system requires real-time monitoring of all car parks, and therefore may be relatively expensive.
- Variable messaging - Electronic signs (often called variable message signs – VMS) located strategically around the network can provide drivers with real time information on where parking is available. The primary purpose is to reduce circulating traffic looking for parking, and to provide useful information to drivers. This is particularly valuable in an environment with a high proportion of unfamiliar drives and can be linked to other technologies such as in-ground sensors.
- Enforcement through smart technology - Parking sensors can assist in enforcement (and provide a further benefit in improving wayfinding). Sensors can identify when a vehicle is parked, and the duration of stay. The information can be remotely sent, stored and analysed to understand parking duration, turnover and occupancy. It can also assist with other options such as variable pricing.

With the aim of enhancing the current environment and in recognition of the parking strategy, the use of active kerbside management is recommended to implement the above options. Additionally, its application will further realise the potential/opportunities of kerb space to support economic growth/vibrancy in the town centre.

Active kerbside management is an inclusive term that covers a range of smart parking technologies and kerbside activation measures. Acknowledging that parking is to be managed to 85 percent occupancy, the two tools often used to achieve this are time restrictions and parking pricing. Smart parking technologies aim to replace traditional methods through the introduction of variable pricing, sensor and camera technology and dynamic time restrictions.

The implementation of a parking technology provided has been recommended as part of the parking strategy.

Alignment with Investment Objectives

Investment Objective		Alignment
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: Through reducing potential conflict, side friction and unnecessary traffic circulation (searching for parking) network movement should be enhanced reducing delays. 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.

⁴ 80-85% occupancy is regarded as the optimum parking occupancy. See Appendix B for more detail.

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.

Summary

The proposed parking approach has sought alignment with the QTC Masterplan, QLDC Parking Strategy and the objectives of the business case process, particularly to achieve the desired modal shift. The above assumptions have been informed by our understanding of the town centre but should not be taken as an endorsement of any specific elements.

The proposed parking changes in the town centre and historic core are in alignment with the parking strategy principles and objectives, as well as the investment objectives of the DBC.

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Appendix A – Parking Inventory

Attached in this appendix are the on-street parking inventories for the existing parking in Queenstown, the proposed parking from the Queenstown Masterplan, and the proposed parking inventory following the town centre designs in the Queenstown Town Centre DBC.

Existing Town Centre On-Street Parking Inventory (Stantec 2019 Survey and MWH 2017 Survey)

Road Name	Public	Mobility	Loading	Bus	Taxi	Motorcycle	Carpool	Total
ATHOL STREET	57	2	0	2	0	0	0	61
BALLARAT STREET	0	0	4	1	2	0	0	7
BALLARAT STREET(EAST)	0	0	0	0	0	0	0	86
BEACH STREET (LOWER)	19	1	10	6	4	0	0	40
BEETHAM STREET	30	0	0	2	0	0	0	32
BOUNDARY STREET	6	0	0	0	0	0	0	6
BRECON ST (UPPER)	75	1	1	6	0	0	0	83
BRECON ST(LOWER)	6	1	2	0	2	0	0	11
CAMP STREET(WEST)	38	2	6	9	2	1	0	61
CHURCH STREET	48	1	4	0	0	0	0	53
DUKE STREET	18	0	0	5	0	0	0	23
EARL STREET	50	1	2	1	1	0	0	54
GORGE ROAD	26	0	0	1	0	0	0	27
GORGE ROAD	45	0	0	1	0	0	0	46
HAY STREET(NORTH)	17	0	0	0	0	0	0	17
HENRY STREET	48	1	0	0	0	0	0	49
ISLE STREET	31	0	0	0	0	0	0	31
LAKE ESPLANADE	108	0	0	3	0	0	0	111
MAN STREET	0	0	0	0	0	0	0	86
MARINE PARADE (EAST)	22	0	0	0	0	0	0	22
MELBOURNE STREET	71	0	0	0	0	0	0	71
MEMORIAL STREET	10	1	3	0	0	0	0	14
PARK STREET	117	1	0	0	0	0	0	118
REES STREET	15	0	2	0	0	0	0	17
ROBINS ROAD	64	0	13	10	0	0	0	89
SHOTOVER STREET	35	0	16	1	2	2	0	56
STANLEY STREET	16	0	0	0	0	0	0	16
THOMPSON STREET	31	0	0	2	0	0	0	33

Proposed Town Centre On-Street Parking Inventory (Queenstown Town Centre Masterplan)

Road Name	Public	Mobility	Loading	Bus	Taxi	Motorcycle	Carpool	Total	Comment
ATHOL STREET	12	0	0	0	0	0	0	12	Assumed that all parking other than on Athol Street would disappear
BALLARAT STREET(EAST)	76	0	0	0	0	0	0	76	Parking removed as part of arterial design.
BEACH STREET (LOWER)	0	0	0	0	0	0	0	0	Access for loading would be restricted by Historic Core Loading Strategy
BEETHAM STREET	19	0	2	0	0	0	0	21	Parking impacts by severance of arterial
BOUNDARY STREET	6	0	0	0	0	0	0	6	To be updated as part of detailed design
BRECON ST (UPPER)	21	1	1	2	0	0	0	25	To be updated as part of detailed design
BRECON ST(LOWER)	0	0	0	0	0	0	0	0	It is assumed that all parking will be removed. Pick up/Drop Off would occur within shared space zone
CAMP STREET(WEST)	38	2	6	9	2	1	0	61	Impact on parking yet to be determined
CHURCH STREET	12	1	4	0	0	0	0	17	To be updated as part of detailed design
DUKE STREET	9	0	0	7	0	0	0	16	No change
EARL STREET	29	1	2	0	1	0	0	33	To be updated as part of detailed design
GORGE ROAD	26	0	1	0	0	0	0	27	Impact on parking yet to be determined
GORGE ROAD	45	0	0	1	0	0	0	46	Impact on parking yet to be determined
HAY STREET(NORTH)	17	0	0	0	0	0	0	17	Impact on parking yet to be determined
HENRY STREET	0	0	0	0	0	0	0	0	Parking removed as part of arterial design
ISLE STREET	18	0	0	0	0	0	0	18	To be updated as part of detailed design
LAKE ESPLANADE	160	0	0	4	0	0	0	164	To be updated as part of detailed design
MAN STREET	22	0	0	0	0	0	0	22	Parking removed as part of arterial design

Road Name	Public	Mobility	Loading	Bus	Taxi	Motorcycle	Carpool	Total	Comment
MARINE PARADE	0	0	0	0	0	0	0	0	To be updated as part of detailed design
MELBOURNE STREET	50	0	0	0	0	0	0	50	On-street parking reduced as part of Gateway and urban design elements
MEMORIAL STREET	4	0	0	0	0	0	0	4	Parking to be retained on cul-de-sac Memorial Street accessed from Shotover Street
PARK STREET	109	1	0	0	0	0	0	110	Impact on parking yet to be determined
REES STREET	0	0	0	0	0	0	0	0	Access for loading would be restricted by Historic Core Loading Strategy
ROBINS ROAD	64	0	13	11	0	0	0	89	Impact on parking yet to be determined
SHOTOVER STREET	35	0	16	1	2	2	0	56	Impact on parking yet to be determined
STANLEY STREET	4	0	0	4	0	0	0	8	To be updated as part of detailed design
THOMPSON STREET	36	0	0	0	0	0	0	36	Impact on parking yet to be determined

Future Queenstown On-Street Parking Inventory (Queenstown Town Centre DBC)

Road Name	Public	Mobility	Loading	Bus	Taxi	Motorcycle	Carpool	Total	Comment
ATHOL STREET	5	0	0	4	0	0	0	9	QTCDBC
BALLARAT STREET	0	0	2	0	0	0	0	2	QTCDBC
BALLARAT STREET(NORTH)	0	0	0	0	0	0	0	0	Manawa
BEACH STREET (LOWER)	0	0	10	5	4	0	0	19	Crown Infrastructure Program
BEETHAM STREET	13	0	0	0	0	0	0	13	Manawa
BOUNDARY STREET	6	0	0	0	0	0	0	6	No change
BRECON ST (UPPER)	16	0	0	2	0	0	0	18	Crown Infrastructure Program
BRECON ST(LOWER)	4	0	0	0	0	0	0	4	Crown Infrastructure Program
CAMP STREET(WEST)	4	3	2	0	10	0	0	19	QTCDBC/WATN
CHURCH STREET	0	0	6	0	0	0	0	6	QTCDBC
DUKE STREET	18	0	0	5	0	0	0	23	QTCDBC
EARL STREET	21	0	4	1	0	0	0	26	QTCDBC
GORGE ROAD	0	0	0	2	0	0	0	2	QTCDBC
GORGE ROAD	19	0	0	1	0	0	0	20	WATN
HAY STREET(NORTH)	17	0	0	0	0	0	0	17	Lakeview
HENRY STREET	0	0	0	0	0	0	0	0	Crown Infrastructure Program
ISLE STREET	31	0	0	0	0	0	0	31	Lakeview

Road Name	Public	Mobility	Loading	Bus	Taxi	Motorcycle	Carpool	Total	Comment
LAKE ESPLANADE	13	0	0	0	0	0	0	13	QTCDBC
MAN STREET	5	0	0	1	0	0	0	6	QTCDBC
MARINE PARADE (EAST)	9	0	0	0	0	0	0	9	QTCDBC
MELBOURNE STREET	7	0	0	0	0	0	0	7	Crown Infrastructure Program
MEMORIAL STREET	14	0	0	0	0	0	0	14	QTCDBC
PARK STREET	47	2	0	1	0	0	0	50	Crown Infrastructure Program
REES STREET	15	0	2	0	0	0	0	17	Crown Infrastructure Program
ROBINS ROAD	15	0	13	10	0	0	0	38	WATN
SHOTOVER STREET	0	10	14	0	0	0	0	24	QTCDBC
STANLEY STREET	8	0	0	8	0	0	0	8	QTCDBC
THOMPSON STREET	20	0	0	0	0	0	0	20	
SUM⁵	299	15	53	40	14	0	0	421	

⁵ Demand for road frontage for all transport modes is increasing across Queenstown. The public, mobility and loading provision in the town centre and historic core is to be determined based on resulting demand of road frontage. The proposed split is not definitive and can be changed to reflect increasing demand.

Appendix B – Parking Performance

Parking occupancy is expressed as a percentage and is calculated as the number of spaces occupied divided by the total number of spaces available. To assist the understanding of parking occupancy it is necessary to quantify the parking performance. The results of the occupancy survey have been assessed using the performance definitions as shown in **Error! Reference source not found..**

Parking Performance Relative to Occupancy (Source Victoria Transport Policy Institute 2012)

Occupancy	Definition	Consequence
80%+	Traffic circulation will be high as motorists 'hunt' for an available car park and motorists may not be able to find an available car park space at all. Parking infringements may be widespread and illegal parking common.	80% - 85% is the optimum occupancy range. Higher than 85% occupancies create difficulties for motorists searching for a car park.
60-79%	May be difficult to find a car park immediately and some parking circulation may be required to find an available car park. A park is unlikely to be found immediately outside the motorist's destination. Parking infringement is common although illegal parking is infrequent.	Utilisation slightly lower than optimum however occupancy rates in this range do not provide poor outcomes.
40-59%	High probability that a motorist will be able to find an available car park with ease. Vehicle circulation might be necessary to find a car park very close to the motorists' destination. Parking infringements will generally be low, illegal parking uncommon.	In priced areas parking prices may be too high or time restrictions are too short. Measures should be taken to encourage better utilisation in areas where several activities can be accessed using on-street parking.
20-39%	Easy to find a car park close to the motorists' destination, vehicle circulation is unlikely to be necessary to find a car park very close to the motorists' destination.	Inefficient use of space. It may be appropriate to allocate land used for parking to other travel modes/ activities or review time restrictions.
<20%	Very easy to find an available car park and it will be very close to the motorists intended destination. Vehicle circulation will not be required to find an available car park very close to motorist's destination.	Severely under-utilised parking. Land resources could be better allocated to a different activity / mode e.g. wider footpaths or landscaping. Paid parking not required (or too expensive).

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NZTA Contract 2018235 - F2Q SSBC & QTC DBC

Technical Note # 9

19 November 2020

Queenstown Town Centre Movement and Place Framework

1. Background

This technical note outlines the approach, considerations and recommendations related to the Queenstown Town Centre transport network in support of the Queenstown Town Centre Detailed Business Case (QTC DBC) and the State Highway 6A Single-stage Business Case (SH6A SSBC). The overall purpose is to give effect to the transport elements contained within the Queenstown Town Centre Masterplan while reflecting the continually evolving evidence base and community requirements.

The recommendations and findings in this technical note have been informed through community feedback and stakeholder workshops as well as traffic modelling and other workstream outcomes that have contributed to the QTC DBC.

2. Introduction

The Queenstown town centre is extremely dynamic and been experiencing high levels of growth for a number of years¹. Due to its challenging topography however, catering for this growth is difficult. The limited amount of developable land, a dense road network and a planning framework that seeks to protect the high natural amenity values of the area all imposes significant constraints.

A properly function transport system can act as a significant enabler for economic and community development, however if compromised, a poorly functioning network results in congestion, journey time delay and travel time variability will affect both the quality of life and commercial viability of the area.

Impacts of COVID 19

The development of this Movement and Place assessment occurred primarily in 2019 prior to the onset of the COVID 19 pandemic situation. While the short-term implications that have arisen are well understood, particularly with regard to the effective closure of the international tourism market, its longer-term implications are still to be determined.

From a technical perspective, the business case process has focused on the 2028 and 2048 design years, supported by the transport modelling, land-use and growth scenarios. While the analysis is still sound, the COVID situation has introduced uncertainty with regard to future growth rates and their timing. The key implications of this arise when determining intervention sequencing e.g., if growth was occurring at 2019 rates, the public transport system would need to be expanded to address capacity issues earlier than the current rates being experienced due to COVID. Overall however, while COVID may affect short term growth, over a 20 year time horizon its impacts with regards to the transport environment, are not expected to be significant.

¹ More detail can be found in the QTC DBC Strategic Case

3. Movement and Place

Traffic and transport management play a key role in the realisation of QLDC and community outcomes for mobility and places within the Queenstown Town Centre. Due to the limited road space however, there are competing priorities between transport modes and adjacent land uses. A Network Operation Plan (NOP) aims to guide the understanding and management of the road network in an integrated fashion. It enables the realisation of movement related objectives and outcomes by setting out how these competing priorities are to be managed.

The 2017 QTC Masterplan recommended the development of a NOP, however no such plan was developed. To assist with the development of the Queenstown Town Centre Detailed Business Case, the project team formulated a roading typology based on the movement and place philosophy to help guide the prioritisation of modal demands within the town centre. While not as comprehensive as a full NOP, it is considered a significant tool to help understand and communicate recommended network priorities.

3.1 Formulation Approach

Road classification is a fundamental part of planning and managing the road network. It involves assigning all the roads within a prescribed jurisdiction to a category, according to their function. Every road has a movement and place function. A road's movement function is the expected vehicle throughput of the road; its place function is the value of activities along the road frontage and adjacent land uses. The assigned category then helps guide future decisions about the operation, maintenance, planning and development of the network.

An example of movement and place hierarchies that have been defined in other urban environments can be seen in Figure 1 which shows the Auckland and London movement and place hierarchies. Roads and streets with less place function have the sole purpose of providing traffic throughput. Those with a higher place function are more often found in city centres and plazas and are concerned with the quality of the space and how individuals can move through and spend time there.

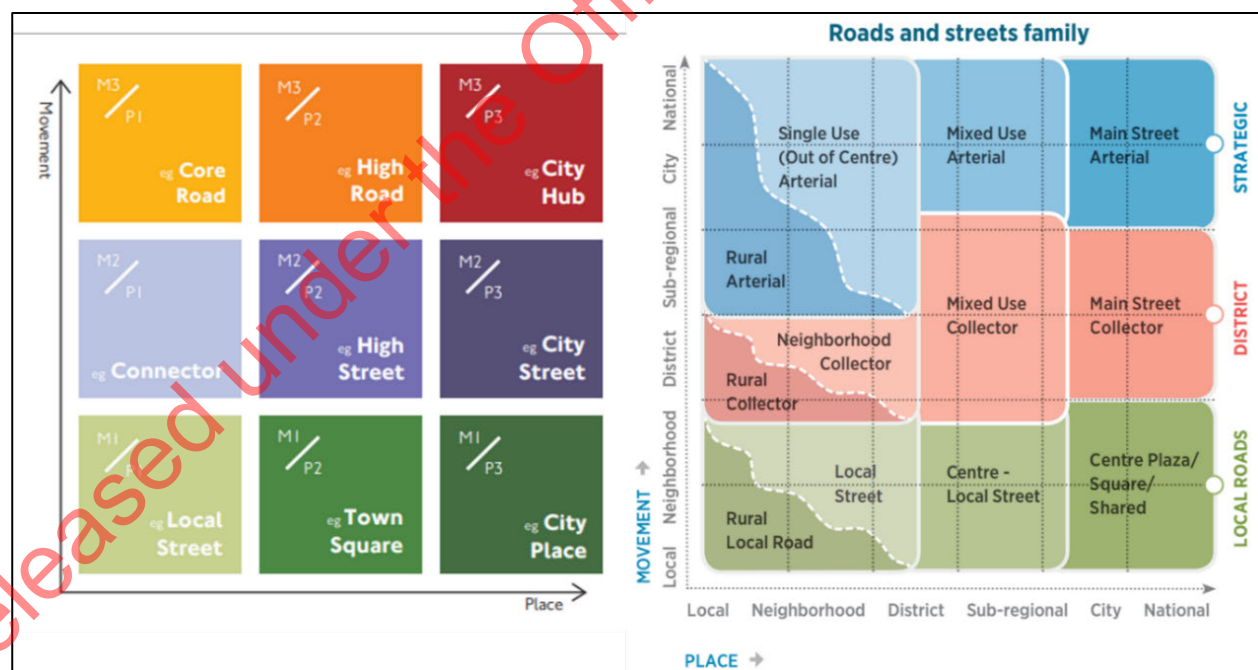


Figure 1. London Movement and Place Hierarchy (left) and the Auckland Movement and Place Hierarchy (right)- note axis progression change

3.2 Current Network

As developed in the QTC masterplan process, there is a need to move towards a new modal hierarchy in Queenstown to achieve community goals. This new hierarchy, as shown in Figure 2, illustrates how active travel, public transport and freight requirements are prioritised over less efficient modes such as single occupancy vehicles (SOV).

The existing movement and place hierarchy in the QTC is poorly defined, with traffic volumes in excess of 15,000 vehicles a day through the town centre. As an example, the Stanley and Shotover Streets 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 (movement functions) to support their place functions.

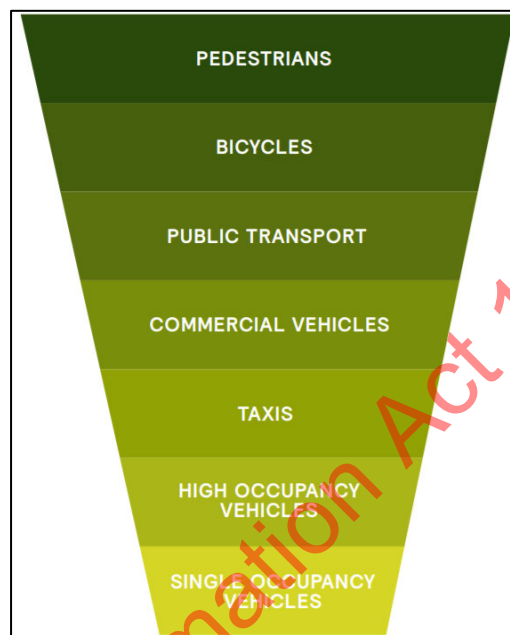


Figure 2 Mode Hierarchy

3.3 Proposed Hierarchy

While focused only on the town centre, a simplified movement – place hierarchy had been defined for application to the network as shown in Figure 3. Roads in the QTC would have a typology applied to them based on their movement and place function.

An example of how this would be applied to in terms of key Queenstown roads is as follows:

- Shotover Street could be assigned a main street collector typology whereby active travel and public transport may assume a higher priority than private vehicles.
- Camp Street, between Shotover Street and Ballarat Street, could be assigned a centre/ local street typology where active travel, service and private vehicles would be prioritised; and
- Man Street would be assigned a mixed-use collector typology.

It should be noted however that the typologies are not single, discrete determinations but reflect relative modal priorities for a given network link. As such, their application does allow some flexibility to reflect differences in the environment.

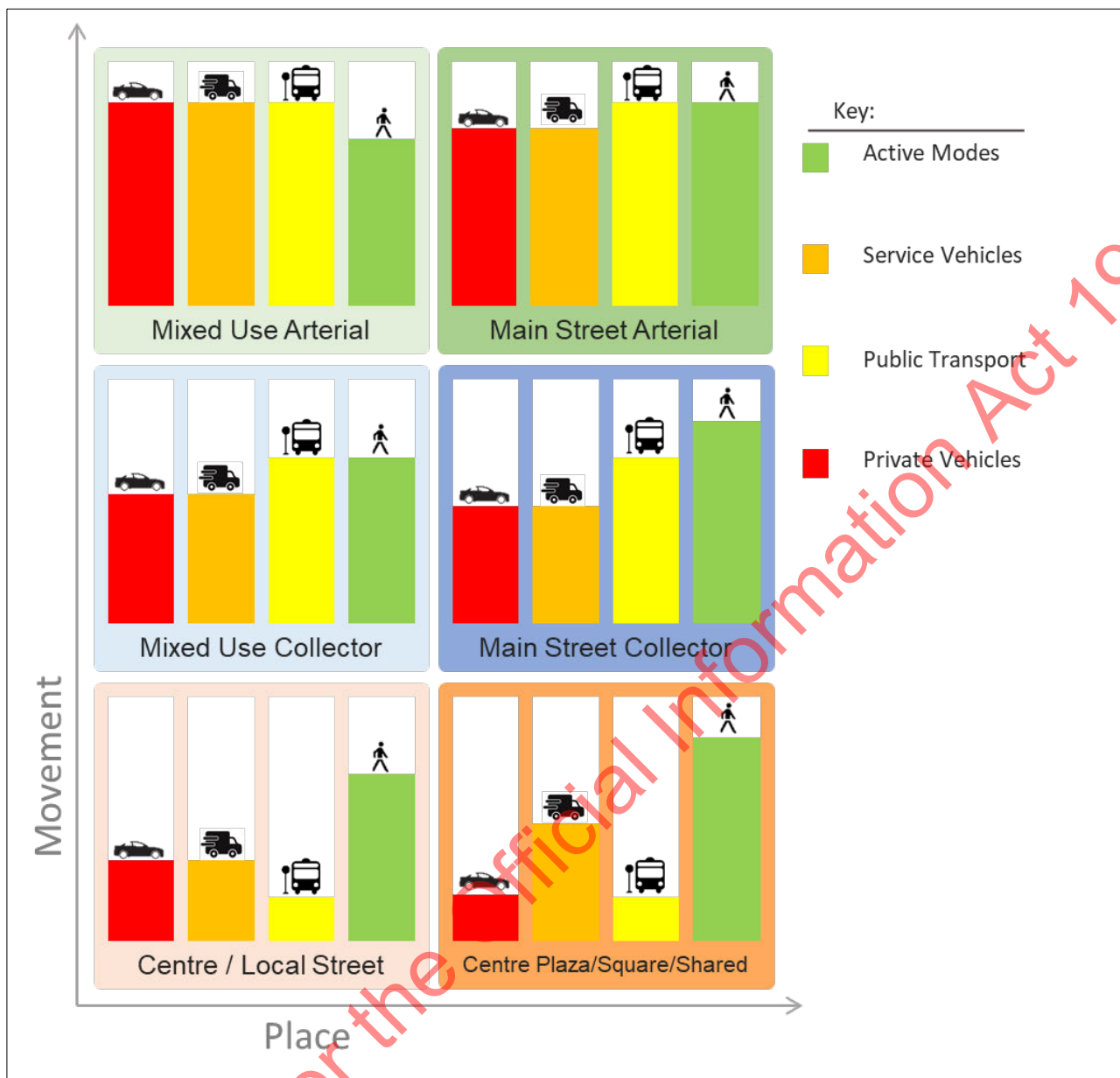


Figure 3 QTC Initial Movement and Place hierarchy

Hierarchy Application

The existing arterial and collector road classifications as listed in the District Plan can be seen in Figure 4 with all other roads being local roads. These classifications are focused on movement requirements and do not actively consider the place function that roads also have.

The confirmation and categorisation of the movement and place hierarchy within a NOP framework is generally determined through an expansive assessment and analysis process including targeted stakeholder engagement. In the absence of this, the project team identified two possible scenarios (see Figure 5 & Figure 6) that also consider the introduction of new arterials.

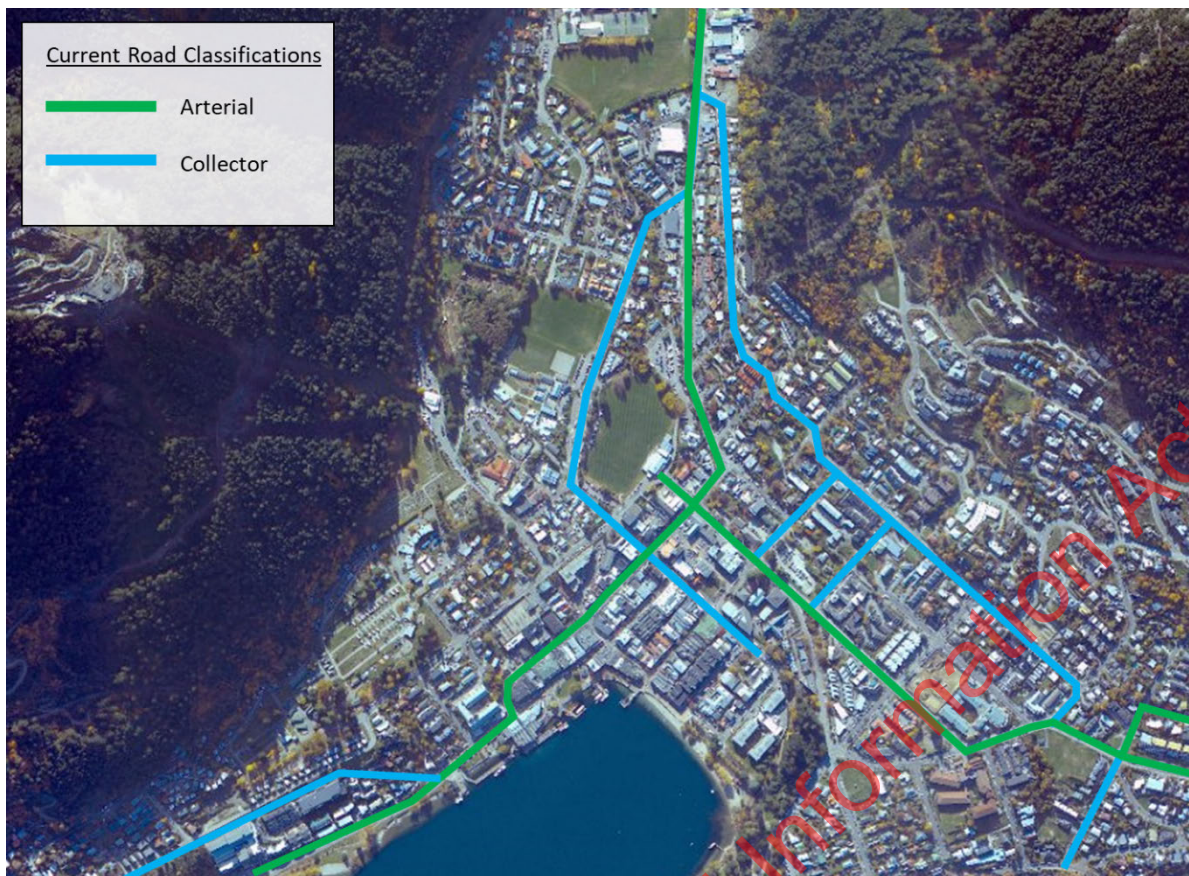


Figure 4 Queenstown Town Centre Road Classifications

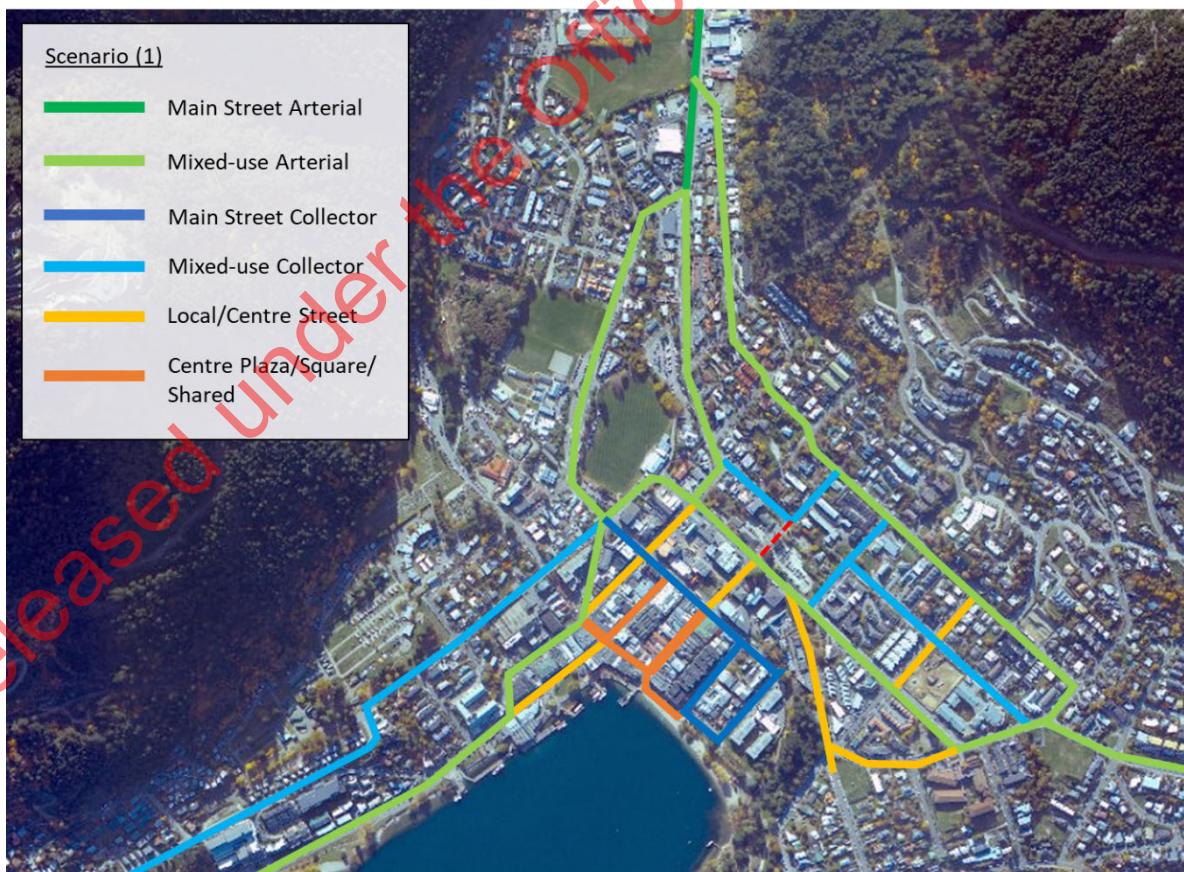


Figure 5 Possible Movement-Place Hierarchy (without Melbourne/Henry Street arterial)



Figure 6 Possible Movement-Place Hierarchy with arterial

While these are simplified applications of the hierarchy, it enabled key areas of potential conflict to be identified. For example, the Man/ Camp/ Memorial/ Duke Street intersection would need to cater for different typologies which would impact on both the modal priority and functioning of the intersection.

3.4 Modal Encouragement by Place Type

To achieve the QTC masterplan objective of modal shift from single occupancy vehicles (SOV) usage, multi-modal movement and place functions have been defined. The level of encouragement of movement is shown for each type of place significance. Additionally, the level of encouragement has been presented based on traffic flow, as modes may also be prioritised differently throughout the day, for example peak and off-peak periods. Generally, the movement function of public transport and active modes are prioritised over private vehicle modes to reflect the proposed PT routes in the town centre.

The level of encouragement of private vehicles is shown in Table 1. Private vehicles are not specifically encouraged at any point in the town centre area. With increasing place function, the focus is on encouraging local access only and for the highest level of place, movement is restricted to local access only. This is consistent with the QTC masterplan objectives of enabling modal shift away from private vehicles.

Table 1 Personal vehicle level of encouragement in terms of place value

Private vehicle		Place significance				
	Time of Day	Very Low	Low	Moderate	High	Very High
All routes	AM Peak	No Specific Encouragement	No Specific Encouragement	Encourage Local Access Only	Encourage Local Access Only	Local Access Only
	Interpeak	No Specific Encouragement	No Specific Encouragement	Encourage Local Access Only	Encourage Local Access Only	Local Access Only
	PM Peak	No Specific Encouragement	No Specific Encouragement	Encourage Local Access Only	Encourage Local Access Only	Local Access Only
	Outside Peak	Encourage Movement	Encourage Movement	No Specific Encouragement	No Specific Encouragement	Local Access Only

Table 2 indicates the level of encouragement of service vehicles in the town centre. Service vehicles are not excluded from roads of high place however they are to be encouraged on roads and streets with low place values. Where this is not feasible, the timing of access should be when it does not compromise the safety and efficiency of the road. For example, from 12.30pm to 6.00pm (interpeak and PM peak), pedestrian volumes are likely to be at their greatest and as such, general servicing access is discouraged.

Table 2 Service vehicle level of encouragement in terms of place value

Service vehicle		Place significance				
Route	Time of Day	Very Low	Low	Moderate	High	Very High
All routes	AM Peak	Encourage Movement	Encourage Movement	No Specific Encouragement	Encourage Local Access Only	Encourage Local Access Only
	Interpeak	Encourage Movement	Encourage Movement	No Specific Encouragement	No vehicular access	No vehicular access
	PM Peak	Encourage Movement	Encourage Movement	No Specific Encouragement	No vehicular access	No vehicular access
	Outside Peak	Encourage Movement	Encourage Movement	No Specific Encouragement	Encourage Local Access Only	Encourage Local Access Only

As public transport has a higher priority, its movement is encouraged relative to other modes. Table 3 shows the level of encouragement of public transport in the Queenstown Town Centre. Public transport in general is strongly encouraged on routes with low - moderate place functions, however due to the limited network overall, this may not always be achievable. This reflects the modal shift to public transport and active modes as well as being mindful of the conflict between PT and pedestrians.

Table 3 Public transport level of encouragement in terms of place value

Public transport		Place significance				
Route	Time of Day	Very Low	Low	Moderate	High	Very High
All routes	AM Peak	 Strongly Encourage Movement	 Strongly Encourage Movement	 Encourage Movement	No vehicular access	No vehicular access
	Interpeak	 Strongly Encourage Movement	 Strongly Encourage Movement	 Encourage Movement	No vehicular access	No vehicular access
	PM Peak	 Strongly Encourage Movement	 Strongly Encourage Movement	 Encourage Movement	No vehicular access	No vehicular access
	Outside Peak	 Strongly Encourage Movement	 Strongly Encourage Movement	 Encourage Movement	No vehicular access	No vehicular access
PT Corridor (Stanley Street)	All Times	 Strongly Encourage Movement	 Strongly Encourage Movement	 Strongly Encourage Movement	 Strongly Encourage Movement	 Strongly Encourage Movement

The level of encouragement of active modes is shown in Table 4. With active modes at the top of the mode hierarchy, active modes are always encouraged at all levels of place value. Active modes are especially encouraged on roads and streets with increased place value.

Table 4 Active modes level of encouragement in terms of place value

Active modes		Place significance				
Route	Time of Day	Very Low	Low	Moderate	High	Very High
All routes	AM Peak	 Encourage Movement	 Encourage Movement	 Strongly Encourage Movement	 Strongly Encourage Movement	 Strongly Encourage Movement
	Interpeak	 Encourage Movement	 Encourage Movement	 Strongly Encourage Movement	 Strongly Encourage Movement	 Strongly Encourage Movement
	PM Peak	 Encourage Movement	 Encourage Movement	 Strongly Encourage Movement	 Strongly Encourage Movement	 Strongly Encourage Movement
	Outside Peak	 Encourage Movement	 Encourage Movement	 Strongly Encourage Movement	 Strongly Encourage Movement	 Strongly Encourage Movement
PT Corridor ²	All times	 Strongly Encourage Movement	 Strongly Encourage Movement	 Strongly Encourage Movement	 Strongly Encourage Movement	 Strongly Encourage Movement

² Active mode encouragement on public transport corridors is mainly for access to and from bus stops.

Local Examples

The application of the level of encouragement for each mode results in different modal priorities during different times of the day.

For example:

- Stanley Street (between Ballarat and Shotover) – Wider footpaths and priority bus lanes are all factors that contribute to the encouragement of public transport and pedestrians, with no specific encouragement for private vehicles such as limiting accessways and the removal of on-street parking.
- Shotover Street (Rees to Camp) – Wider footpaths are provided to encourage pedestrian, while increased loading spaces are also provided to encourage service vehicles. Loading spaces can be time restricted to encourage loading outside of peak hours with the spaces becoming available for mobility restricted parking at other times.
- Ballarat Street (between Stanley and Camp) – Some loading zones are provided on the upper section of Ballarat Street to encourage service vehicles, with the lower section transformed into a shared space type street to encourage active modes.

The use of variable time restrictions in the Queenstown Town Centre will enable further encouragement of different modes during different periods. For example, on-street parking could be restricted for loading in the AM period and then restricted for Taxis in the PM period. The implication for the hierarchies on any given corridor will be dependent on site-specific constraints and movement and place functions of each street.

Stakeholder Engagement

The approaches to Movement and Place were undertaken with regular engagement with the stakeholder group. It was agreed that a movement and place hierarchy approach would be the best way to frame the DBC work, with a six-typology hierarchy initially implemented.

However, it was acknowledged that initial thinking had sought to maintain current network expectations and with changes in the evolving capacity constraints for the network has meant that this is no longer feasible.

3.5 Evolving Requirements

Subsequent to the development of the above hierarchy, traffic modelling of the Frankton to Queenstown corridor identified that a 40% non-private vehicle mode share is required in 2028 to retain a manageable network level of service. Additionally, a 60% non-private target mode share is required in 2048, as shown in Figure 7.

The implications of this were that less consideration would be given to maintaining current network expectations, but rather the focus would shift to delivering a roading environment that actively supports the mode shift targets that are required and the agreed upon hierarchy. As such pedestrian, cycling and public transport requirements have evolved.

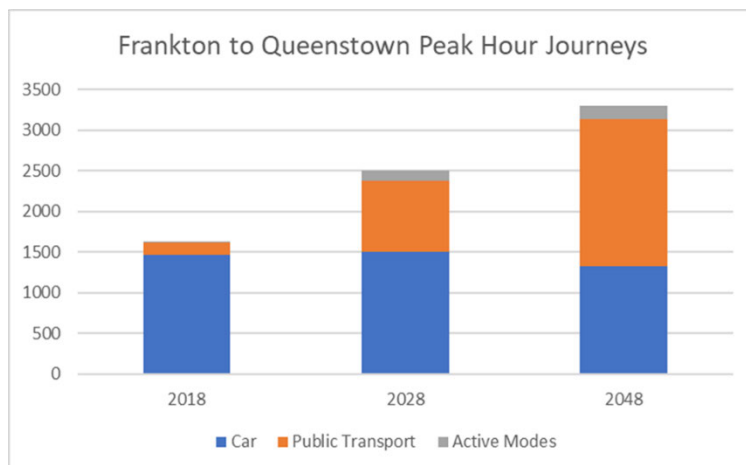


Figure 7. Frankton to Queenstown peak hour journeys by mode share

Pedestrian Requirements

The Stantec pedestrian modelling tool was used to forecast pedestrian movement in 2028, with the Lakeview Brecon Street, Queenstown Views, Man Street and Public Transport hub developments established.

Significant pedestrian movement was expected on Mall Street, Beach Street and Shotover Street. To accommodate these expected flows, the following measures are required:

- Priority pedestrian crossings throughout town centre core;
- Wider footpaths generally; and
- The ability to enhance urban comfort (seating etc) and street amenity (planting etc).

Cycling Requirements

In September 2019 the Wakatipu Active Travel Single Stage Business Case (WATN SSBC) was finalised. Expected daily cyclist volumes were forecasted to the years 2029 and 2046. It was forecasted that there would be 4829 average daily cyclist trips in 2029, to and from the Queenstown Town Centre area, with a large majority expected on the Frankton to Queenstown route. Additionally, it was forecasted that these cyclist volumes would increase to 8150 average total trips in 2046. A 60% commuter/40% non-commuter split was assumed for these projections. To accommodate these expected flows, the following measures are required:

- A reduction in parking on Robins Road, Camp Street and Park Street;
- An increased need for cycle infrastructure in the town centre; and
- Additional cycling infrastructure to be provided on an as/when required basis in the town centre.

Public Transport Requirements

Stanley Street and Athol Street were identified as the preferred public transport hub options, subject to the arterial network implementation. Following technical analysis and stakeholder feedback Stanley Street was confirmed to provide the on-street public transport hub requirements complemented by Athol Street catering for registered services. This approach is highly aligned with the Masterplan and helps strengthen connectivity to Project Manawa and the prioritisation of pedestrian movement through the historic core via improved connection through Athol, Camp and Beach Streets.

Pre-COVID growth estimates predicted a 3 to 4 factor increase in public transport patronage by 2028 across the AM period. While the full implications of COVID are yet to be understood, it is expected that while the timeframe will shift out, given the overall time periods under consideration (out to 2048) catering for this future demand is still necessary. Similarly, PM and interpeak period demand is anticipated to grow substantially and to accommodate the expected future patronage uptake, the following measures are required:

- Clear public transport priority on SH6A;
- Clear public transport priority and access around potential hub locations; and
- Enhanced pedestrian amenity on pedestrian routes that are expected to have high pedestrian volumes from the public transport hub.

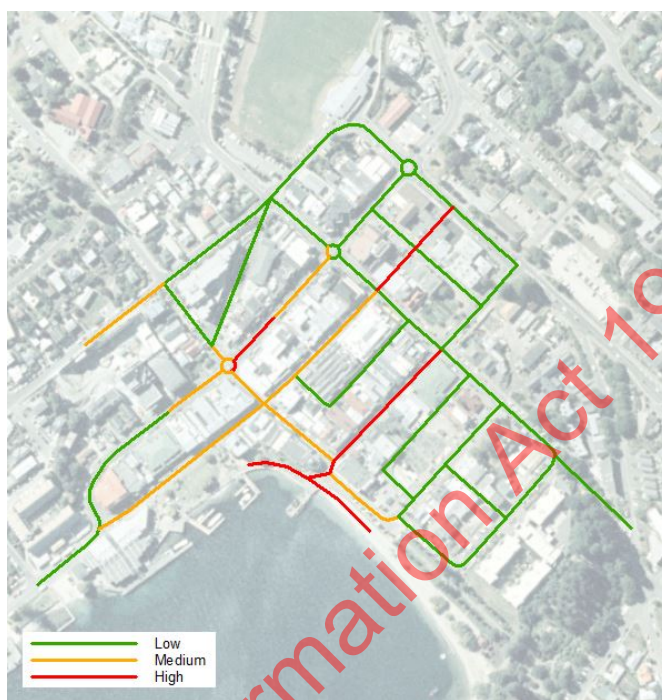


Figure 8. Expected pedestrian movement

QLDC Speed Limit Bylaw (2019)

In May 2018, QLDC resolved to commence a Speed Management and Speed Limits bylaw review, consistent with requirements of the Land Transport Act 1998, the NZ Transport Agency's Speed Management Guide and the Land Transport Rule: Setting of Speed Limits 2017.

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 Cs noting that many of the roads are subject to change.

3.6 Revised Movement and Place Framework

To achieve the step change related to modal share for 2028 and 2048, and to reflect evolving requirements, the movement/place hierarchy for the town centre has evolved. A three-typology approach was defined, effectively inverting current network thinking with primary movement routes prioritising active modes, and tertiary movement accommodating through traffic.

The hierarchy has been applied to the network with the arterials and is shown in Figure 9. The June 2020 funding announcement has confirmed Stage 1 arterial funding and the network application has been modified to reflect that.



Figure 9 Proposed hierarchy with full arterials

Typology Attributes

Typical attributes for each link type are defined in Table 5, with specific typologies included in Appendix D.

Table 5. Attributes for each typology link type

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
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

The revised movement and place hierarchy represents the evolution in thinking necessary to achieve the required target mode share, and to reflect the mode hierarchy in the Queenstown Town Centre masterplan.

The implementation of the proposed movement and place hierarchy approach will have some implications on the existing transport network such as:

- Some additional reductions in private vehicle parking in the historic core/ Camp Street and other key links. Note that other workstreams such as the WATN SSBC and the QTC Masterplan PBC have resulted in a parking reduction of approximately 400 spaces in the historic core and town centre area.
- The network is mode agnostic, prioritising movement by people movement and place significance.

A key factor in the success of the implementation of the proposed network hierarchy is the management and activation of the kerbside area.

On-street management

With the increasing demand for kerb space across customer groups (e.g. mobility/coach, taxis, service/loading etc) in the town centre, the utilisation of on-street space for parking purposes cannot be maintained in the long-term. With the aim of enhancing the current environment and in recognition of the parking strategy, transitioning to active kerbside management is seen to further realise the potential/opportunities of kerb space to support economic growth/vibrancy in the town centre.

Active kerbside management is an inclusive term that covers a range of smart parking technologies and kerbside activation measures. Acknowledging that parking is to be managed to 85 percent occupancy, the two tools often used to achieve this are time restrictions and parking pricing. Smart parking technologies aim to replace outdated methods through the introduction of variable pricing, sensor and camera technology and dynamic time restrictions.

For the Queenstown Town Centre, there are two main considerations for the management of the kerb front and to provide better urban design outcomes for the town centre. These include the use of:

- Smart parking technologies such as vehicle detection sensors or smart CCTV monitoring to record occupancy and parking trends, and to allow for easier enforcement.
- Variable messaging signage for wayfinding, with aim of reducing circulatory trips in the town centre. This would be integrated with smart parking technologies to direct vehicles to off-street parking buildings that have capacity, or otherwise direct them away from the town centre.

Typology Application

Following the revision of the movement and place framework, standardised cross sections were designed for each typology. These cross sections are shown in Appendix B. With standard typologies for each of the link types, each with variations regarding active mode and public transport provision, as well as different parking arrangements.

The typologies were then tested in a design workshop, in which each road was designed based on their movement and place value. Noting that site specific constraints required changes to some typologies, some street designs were done with mixtures of different typologies. Further detail can also be found in the Design Philosophy Statement.

4. Summary

A Movement and Place framework has been developed as a framing approach for the design of the roads in the Queenstown Town Centre. As modelling of the Frankton to Queenstown corridor found that a 40% mode share is required over the next 8 – 12 years and a 60% required in 2048, the implications were that less consideration would be given to maintaining current network expectations but rather the focus would shift to delivering a roading environment that actively supports the mode shift targets that are required.

With this in consideration, standardised typologies were developed and applied to streets in the immediate town centre area, that encourage active modes, loading and servicing and public transport on key corridors and provide a clear modal hierarchy in the town centre.

Prepared by:

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Design Manager

Appendices

- Appendix A – Road Dimensions by Hierarchy
- Appendix B – Revised Typology Overview
- Appendix C – Queenstown Speed Limit Changes
- Appendix D – Town Centre Function and Design Considerations

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Appendix A – Road Dimensions by Hierarchy

Each hierarchy type is likely to have a standard road cross section dependent on its movement and place value. The proposed road dimensions for each hierarchy type is unlike the proposed road dimensions outlined in the QTC Masterplan which offers a standard road layout (including footpath dimensions) for the town centre. The suggested footpath and carriage way dimensions in the QTC Masterplan are shown below.

TOWN CENTRE

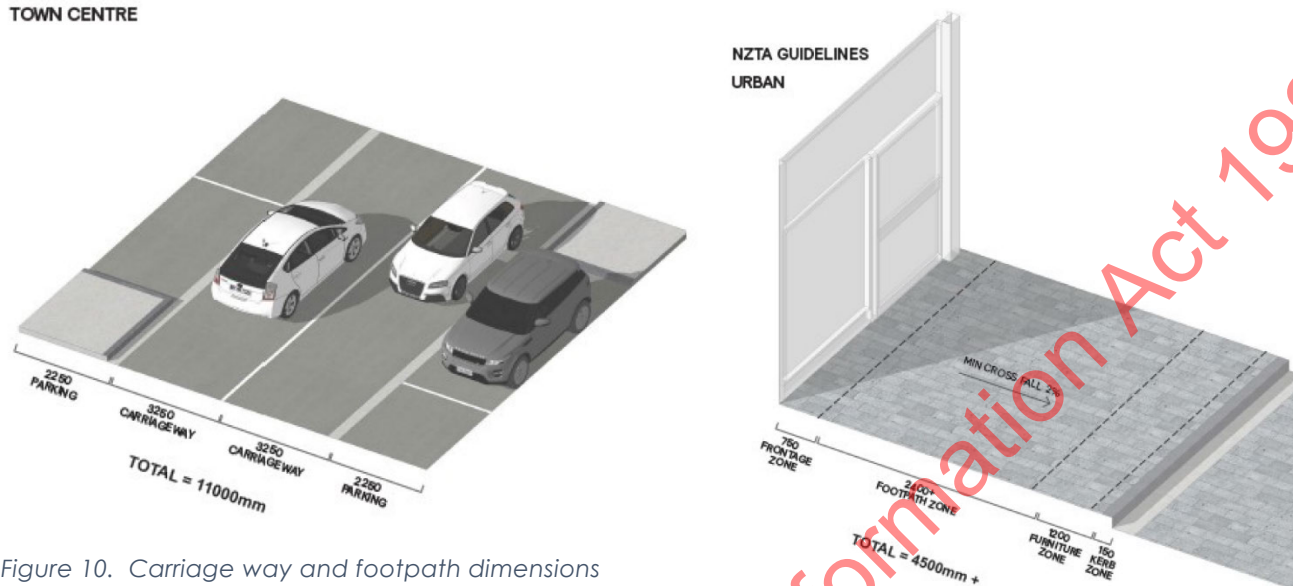
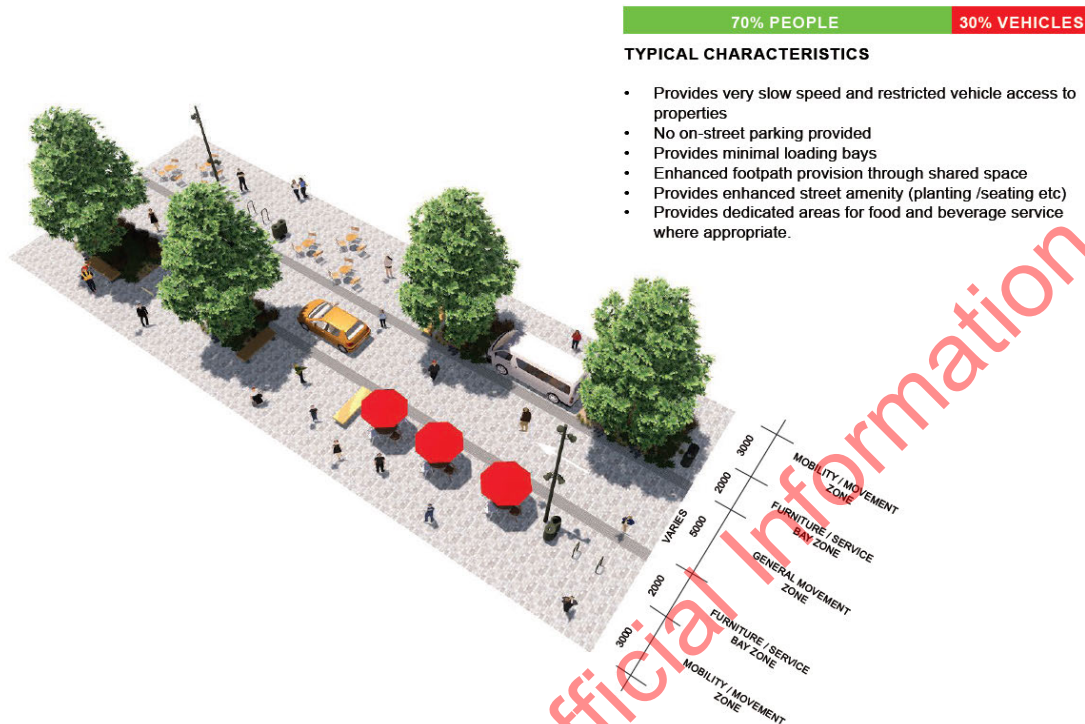


Figure 10. Carriage way and footpath dimensions

These designs have also been informed by the Queenstown Town Centre Spatial Framework that had been developed as part of the Masterplan process. While a review of the Spatial Framework has reinforced the currency of these documents, some modifications have been made to reflect evolving requirements such as a significantly increased public transport requirement and/or active travel requirements.

SPACE ALLOCATION



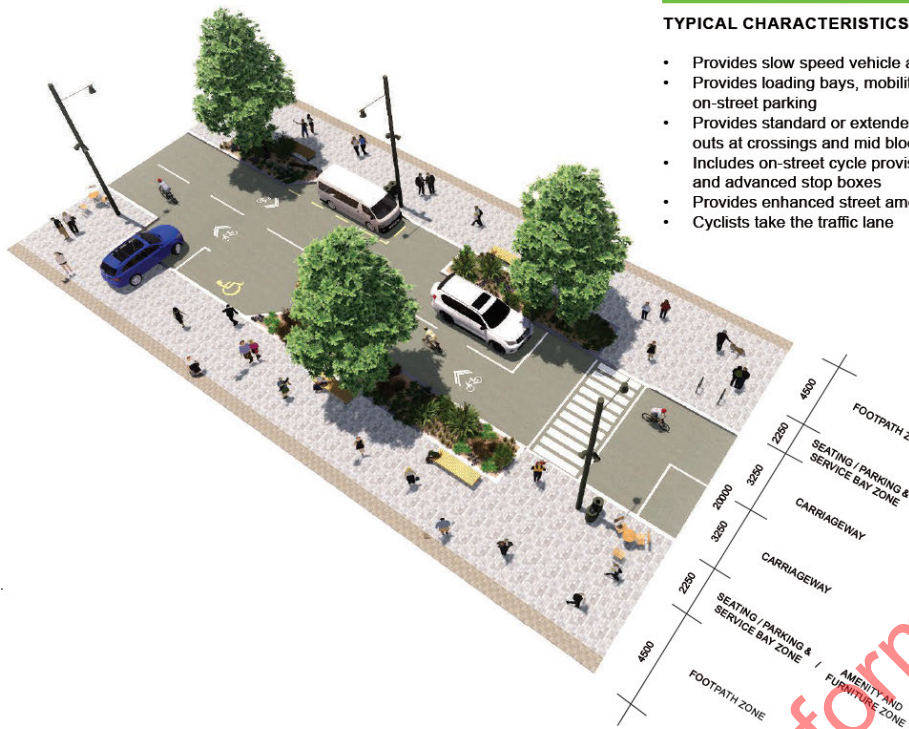
Primary Typology Example 2: People 65% - Vehicles 35%

SPACE ALLOCATION

65% PEOPLE	35% VEHICLES
------------	--------------

TYPICAL CHARACTERISTICS

- Provides slow speed vehicle access to properties
- Provides loading bays, mobility parking and minimal or no on-street parking
- Provides standard or extended footpath widths with build-outs at crossings and mid block locations
- Includes on-street cycle provision with sharrow markings and advanced stop boxes
- Provides enhanced street amenity (planting /seating etc)
- Cyclists take the traffic lane



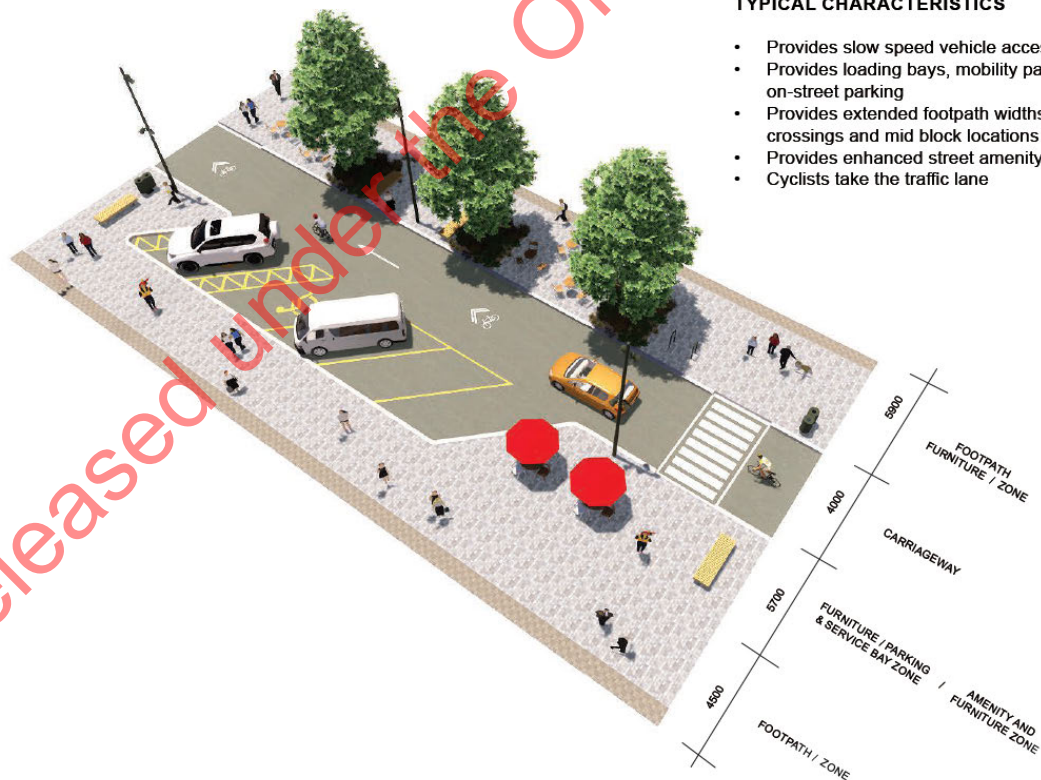
Primary Typology Example 3: People 65% - Vehicles 35%

SPACE ALLOCATION

65% PEOPLE	35% VEHICLES
------------	--------------

TYPICAL CHARACTERISTICS

- Provides slow speed vehicle access to properties
- Provides loading bays, mobility parking and minimal or no on-street parking
- Provides extended footpath widths with build-outs at crossings and mid block locations
- Provides enhanced street amenity (planting /seating etc)
- Cyclists take the traffic lane



Secondary Typology Example 1: People 60% - Vehicles 40%

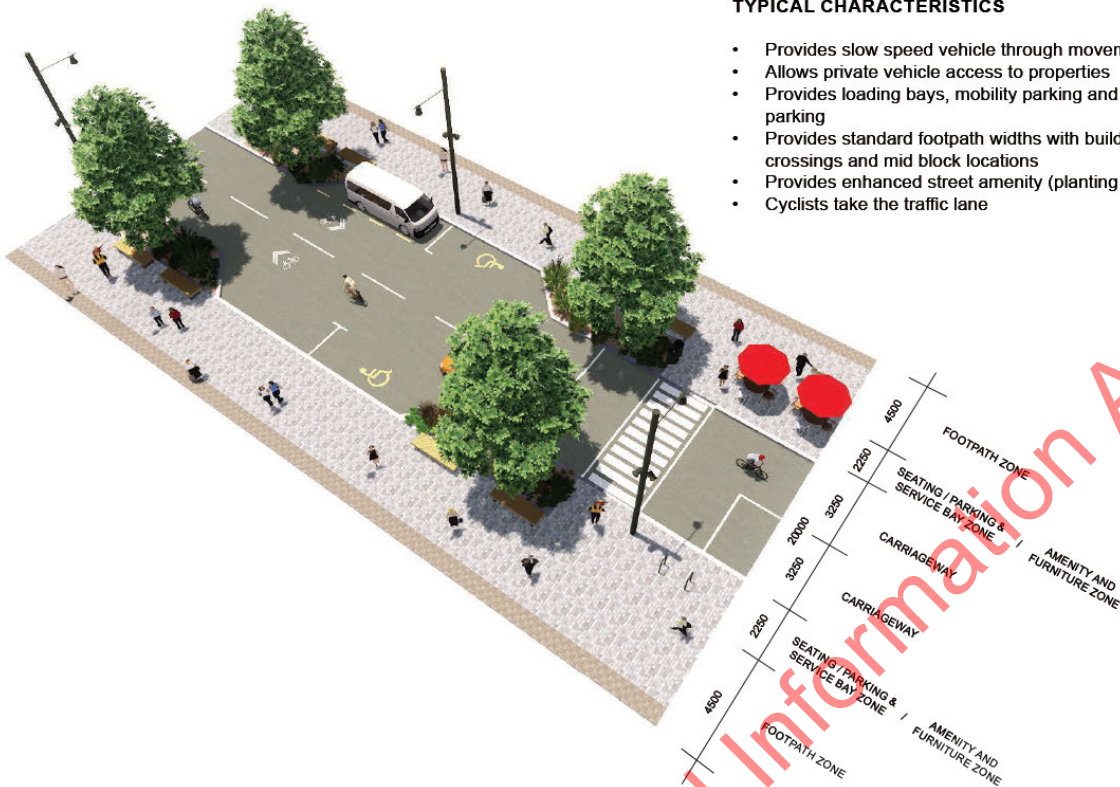
SPACE ALLOCATION

60% PEOPLE

40% VEHICLES

TYPICAL CHARACTERISTICS

- Provides slow speed vehicle through movement
- Allows private vehicle access to properties
- Provides loading bays, mobility parking and some on-street parking
- Provides standard footpath widths with build-outs at crossings and mid block locations
- Provides enhanced street amenity (planting /seating etc)
- Cyclists take the traffic lane



Secondary Typology Example 2: People 55% - Vehicles 45%

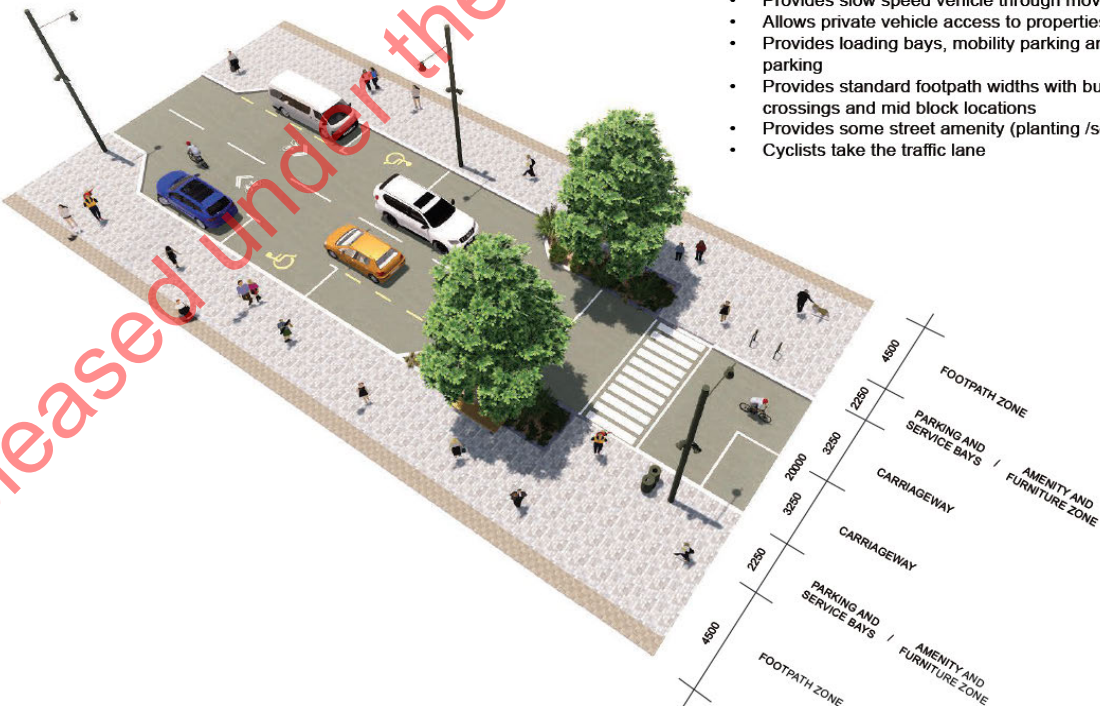
SPACE ALLOCATION

55% PEOPLE

45% VEHICLES

TYPICAL CHARACTERISTICS

- Provides slow speed vehicle through movement
- Allows private vehicle access to properties
- Provides loading bays, mobility parking and some on-street parking
- Provides standard footpath widths with build-outs at crossings and mid block locations
- Provides some street amenity (planting /seating etc)
- Cyclists take the traffic lane



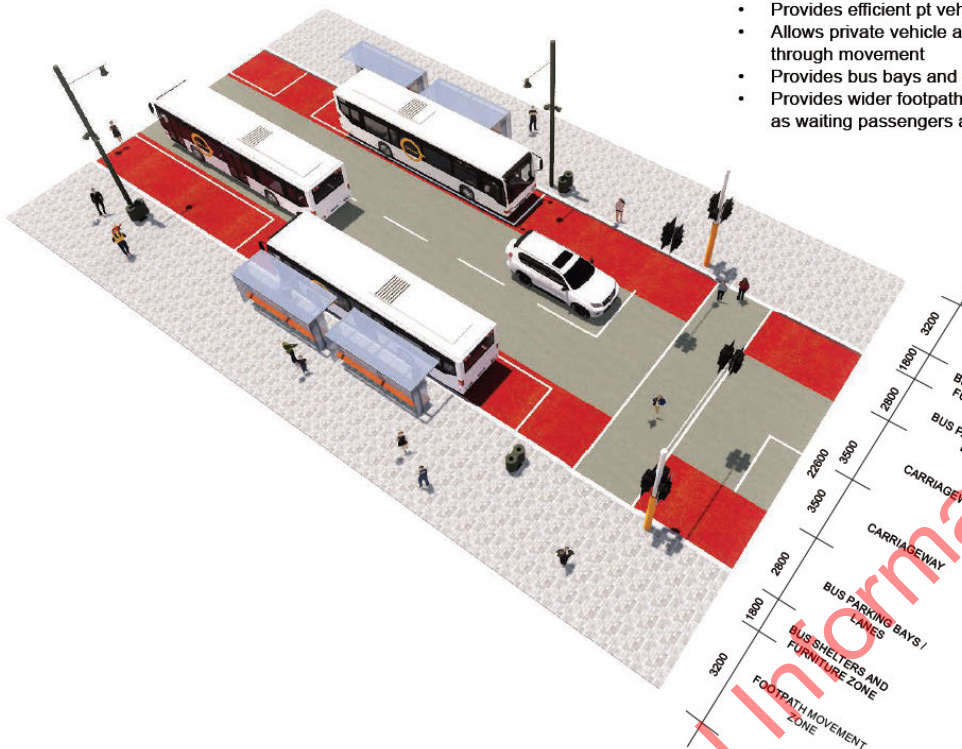
Secondary Typology Example 3: People 45% - Vehicles 55%

SPACE ALLOCATION

45% PEOPLE	55% CARS & BUSES
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TYPICAL CHARACTERISTICS

- Provides efficient pt vehicle through movement
- Allows private vehicle access to properties but discourages through movement
- Provides bus bays and priority
- Provides wider footpath zone to allow for movement as well as waiting passengers and shelters if required



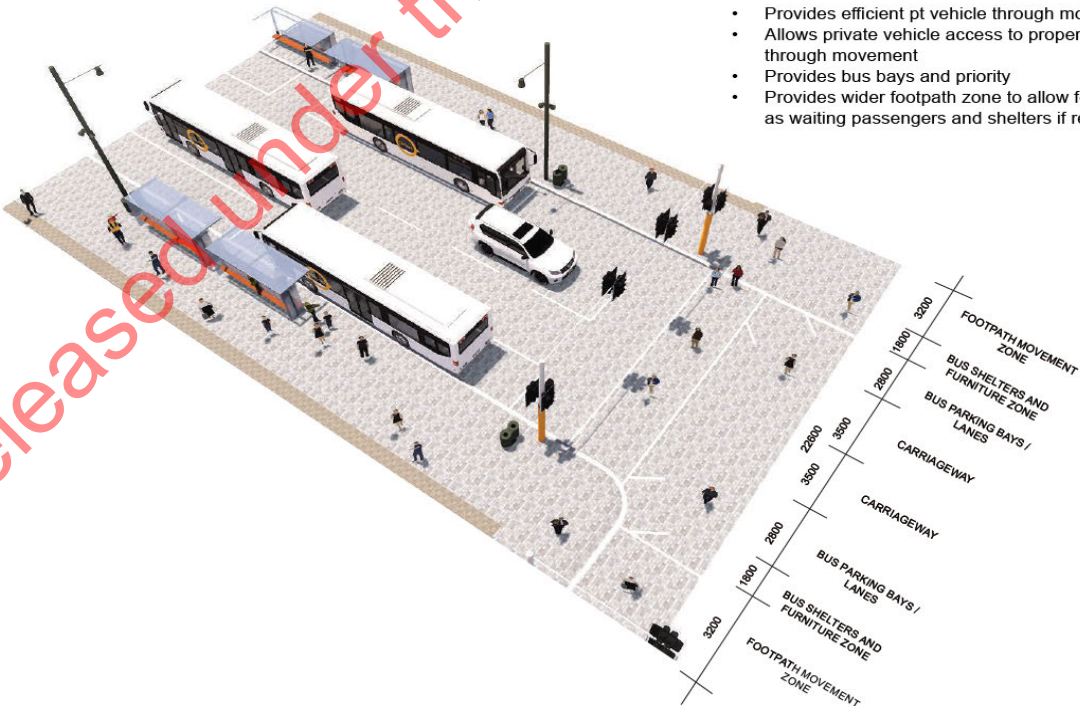
Secondary Typology Example 3 alternate: People 45% - Vehicles 55%

SPACE ALLOCATION

45% PEOPLE	55% CARS & BUSES
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TYPICAL CHARACTERISTICS

- Provides efficient pt vehicle through movement
- Allows private vehicle access to properties but discourages through movement
- Provides bus bays and priority
- Provides wider footpath zone to allow for movement as well as waiting passengers and shelters if required



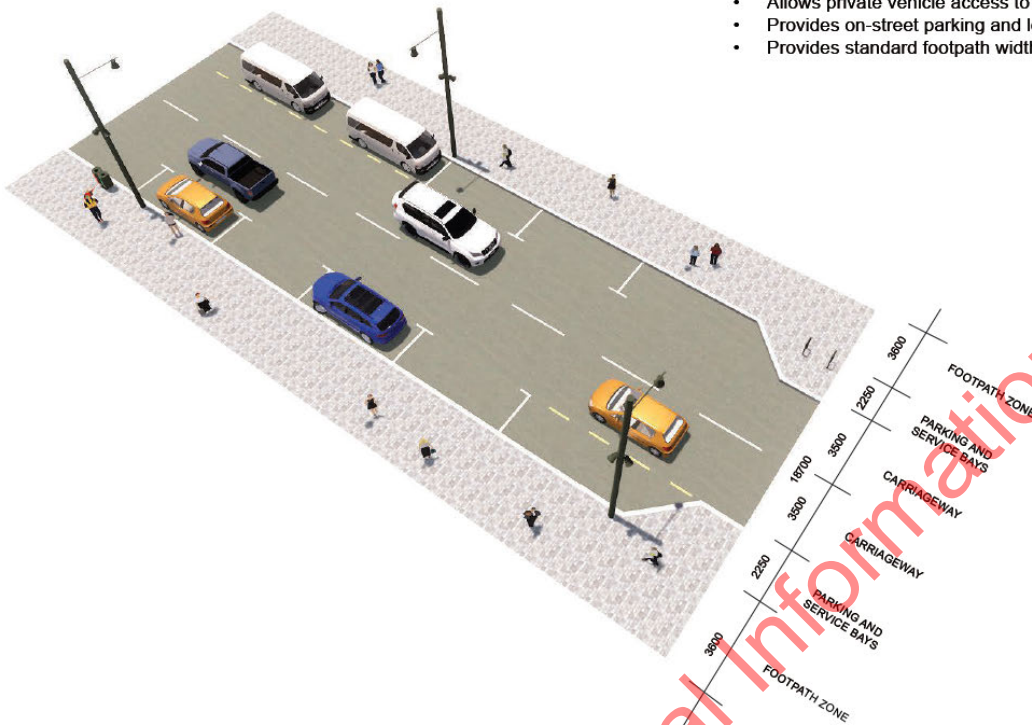
Tertiary Typology Example 1: People 40% - Vehicles 60%

SPACE ALLOCATION



TYPICAL CHARACTERISTICS

- Provides efficient vehicle through movement
- Allows private vehicle access to properties
- Provides on-street parking and loading bays
- Provides standard footpath widths



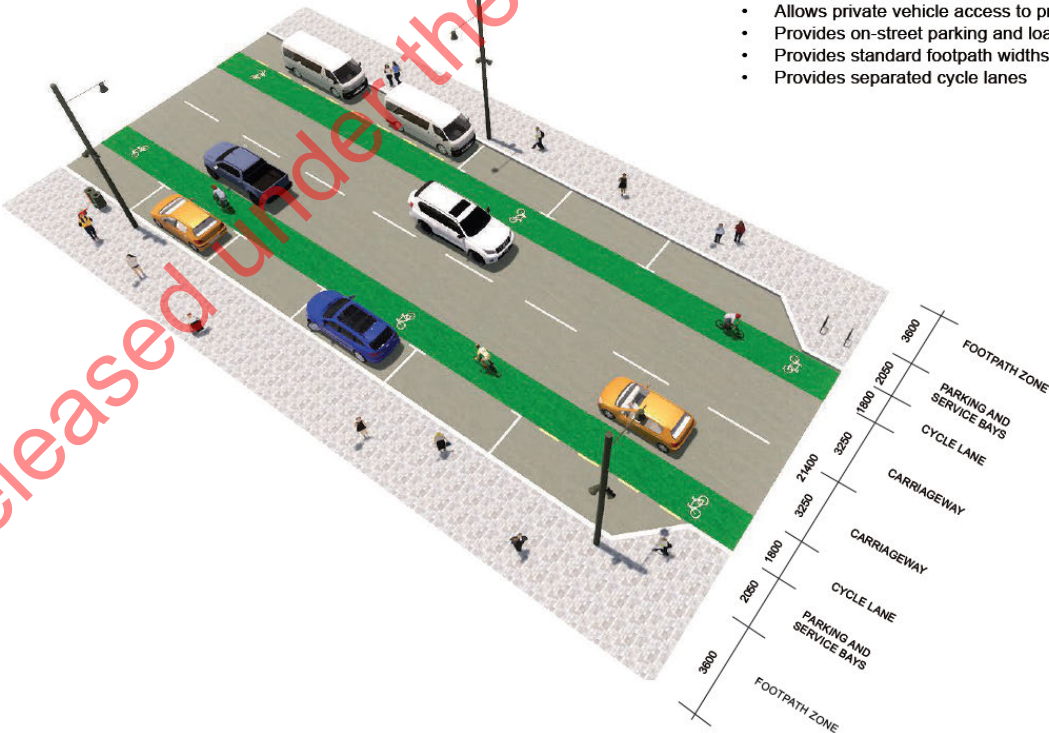
Tertiary Typology Example 2: People 40% - Vehicles 60%

SPACE ALLOCATION

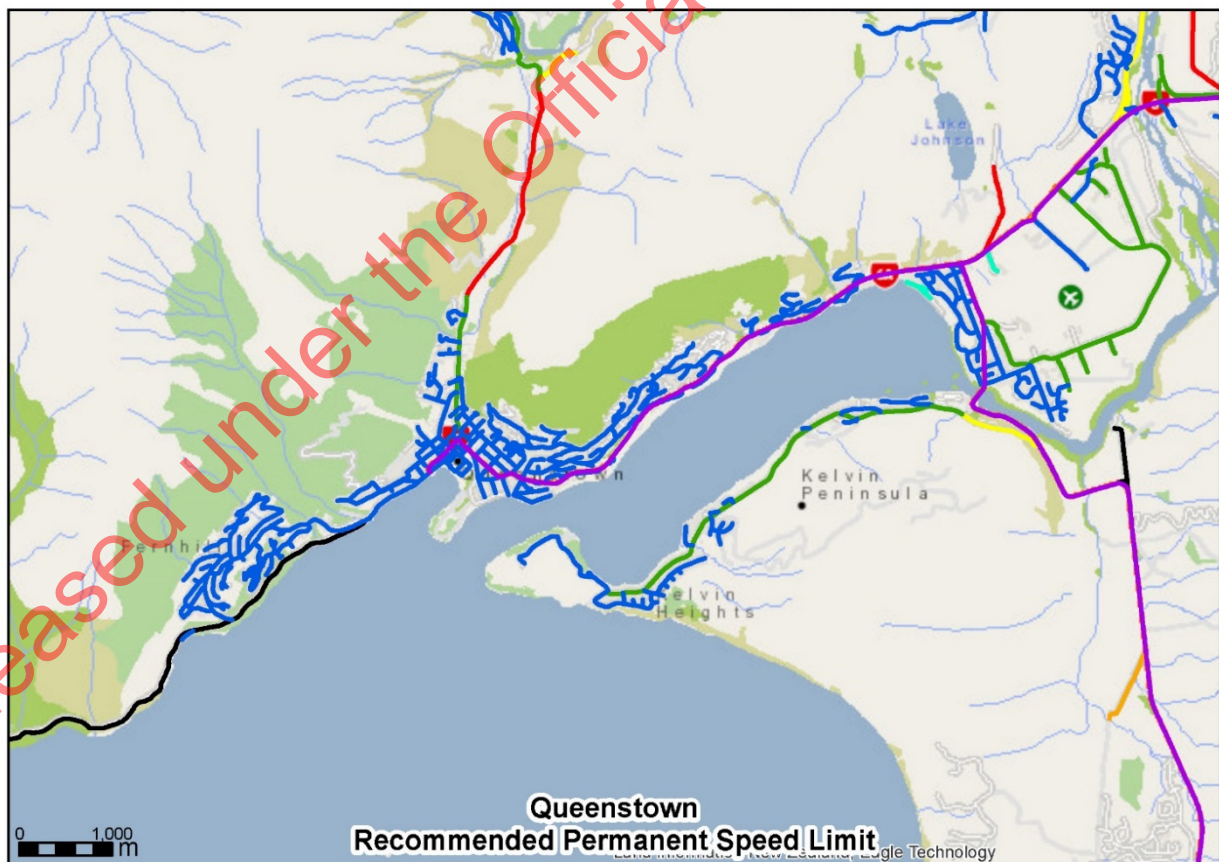
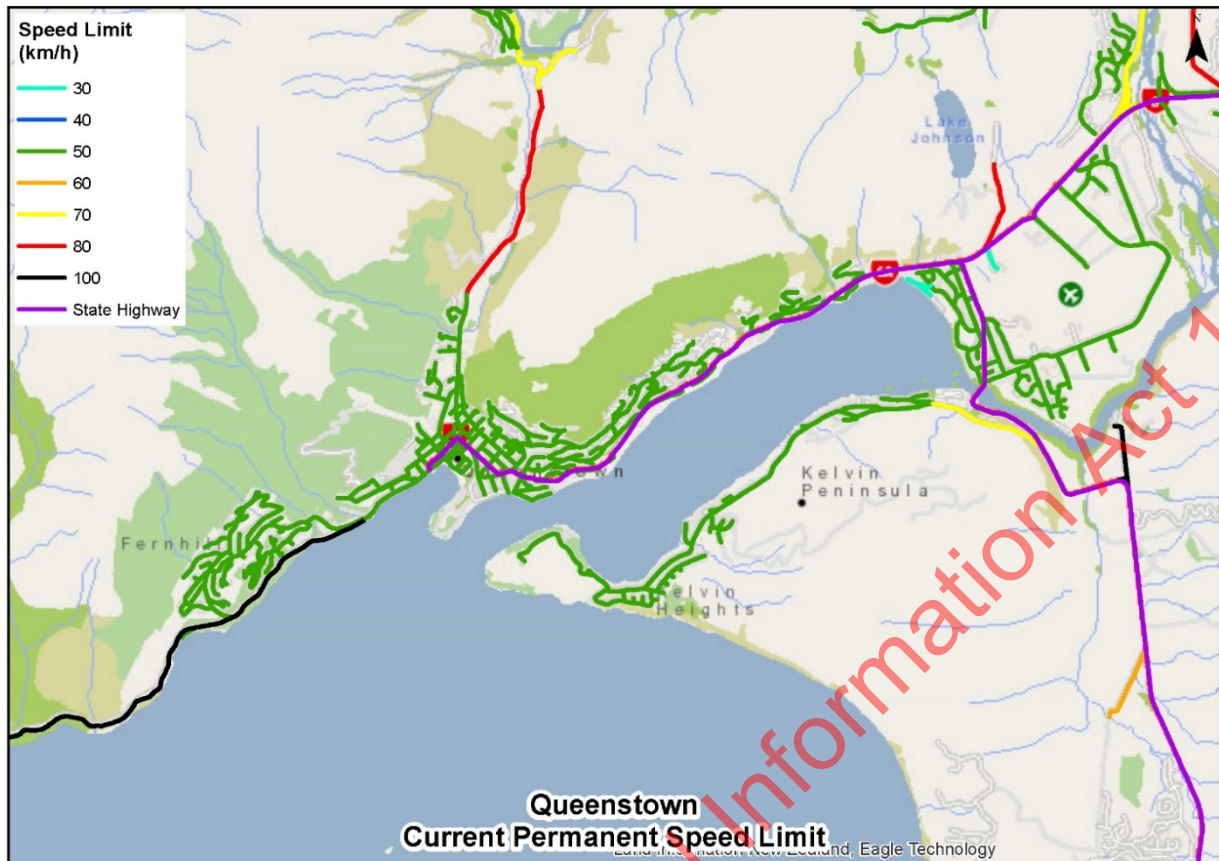


TYPICAL CHARACTERISTICS

- Provides efficient vehicle through movement
- Allows private vehicle access to properties
- Provides on-street parking and loading bays
- Provides standard footpath widths
- Provides separated cycle lanes



Appendix C – Queenstown Speed Limit Changes



Appendix D – Town Centre Function and Design Consideration

The Queenstown Town Centre is a highly dynamic transport environment with competing modal demands, combined with evolving land uses. As such, a fundamental element of the approach taken to street design has been to recognise this interface while giving effect to the requirements of the business case and enabling the growth in people and goods required to sustain a thriving and vibrant town centre.

The previously adopted town centre masterplan detailed the modal hierarchy that should be applied, and the design approach has built on this while seeking to realise a much higher than envisaged alternative mode share target. Achieving the requisite 40% alternative mode share along State Highway 6A that is required, will significantly increase the number of pedestrians and cyclists filtering along Stanley, Shotover and Camp Streets, particularly given the overall increase in resident and visitor numbers that are expected over the next 10 – 30 years.

The type and nature of demands placed on the transport network also vary by time of day, day of the week, and time of year. Early morning demands are more focused on the delivery of goods as businesses open for the day and employees going to work. Through the morning period this shifts as shoppers, tourists and workers become more dominant. By the end of the day, commuters are leaving for home, while others may be coming to town to socialise, have a meal or a movie before staying onto to enjoy the various evening hospitality venues. At the same time, recreational and commuter cyclists will be travelling throughout the network; bus services will be providing a continual flow of people into and out of the town centre; activity coaches will be taking tourists to destinations outside of the town centre or ski buses up the mountains; trades people with vehicles carrying tools and materials will be requiring close access to their worksites; construction vehicles will be supplying the many building sites around town with concrete, steel and other necessary requirements while taxis will be dropping people off, picking passengers up or waiting for their next fare. This small snapshot of demand demonstrates the many challenges in trying to provide a transport network that is effective and efficient within the small geographical area available.

Consequently, the only changes to access have been outside of the town centre core: the closing of Malaghan, Ballarat and Beetham Streets as a result of Arterial Stage 1, and Coronation Drive at Stanley Street as a result of Project Manawa's site access. In summary, the most significant change has only been a reallocation of road space away from on-street parking to enable widened footpaths to be provided as a response to the high levels of pedestrians in the town centre. It must be noted however that the design horizon for this network is 10 – 30 years. Businesses that are in place today may grow and shift location, peoples' consumer demands may change which will then be reflected in different commercial and retail experience offering, the proposed network needs to reflect this but also the fact that the infrastructure will be in place for decades. As part of the final implementation design, it is also expected that localised changes will be made reflecting current, and future, land uses, but through maintaining a network perspective the objectives of the Queenstown Town Centre Masterplan can be met.

Design Considerations

As noted earlier, street typologies were developed (tertiary, secondary and primary) and have been used to inform the design approach for each corridor in the town centre, while also considering the adjacent land uses and street function in the wider network.

The overall design approach was also based on the following assumptions:

- Stage 1 of the arterials will be implemented with Stage 2 included in the preferred programme. Stage 3, while desirable in the longer term, will not be constructed prior to 2027.
- The final designs seek to give effect to the Queenstown town centre masterplan while acknowledging significant changes in modal demand profiles over the design period.
- The public and passenger transport hub will be located on Stanley Street and Athol Street.
- The designs will complement the objectives of the QLDC Parking Strategy.

The designs have also been informed by outputs from the traffic modelling which have, in certain locations, required the designs to be modified to meet vehicle volumes. Similarly, the design features/assumptions noted in the table may also have been amended in the concept design draughting to reflect site specific constraints and therefore some minor variation may be expected. For further technical detail on the designs, please also refer to the design philosophy statement.

Lastly, the design approaches detailed here reflect a network approach to the town centre. Prior to any works being undertaken on-street, further consultation and engagement with affected stakeholders will be required that may also result in additional design amendments.

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Road Section (Typology)	Key User Requirements	Design Features/Assumptions
Stanley Street - Shotover to Ballarat (Secondary) 	• Provide for the safe and efficient functioning of the Public and Passenger Transport (PPT) Hub. • High pedestrian movements associated with passenger boardings and alighting. • Longer term closure of Stanley St between Ballarat and Shotover to through vehicles except public transport services. • Integration with the still evolving Project Manawa.	• Wide footpaths are required as the corridor is a key pedestrian route and due to alighting and boarding passengers at the PT hub • Bus stops required on both sides of the street • Bus stops are located within a bus lane • Cyclist movements along Stanley St as well into the plaza which will have cycle parking. • Traffic lane widths optimised for PT priority and requirements. • Upon the completed implementation of Stage 1 & 2 of the arterials, Stanley Street will be closed to regular traffic and be PT-only from Melbourne Street to Shotover Street. • No on-street parking. • Signalised pedestrian crossing mid-block • Additional land required on the north side of the street to fit the desired cross section and that space may be made available for a covered waiting facility. • An accessway has been provided on the north side to enable oversized vehicles servicing the performing arts centre within Project Manawa to safely exit the site. This is expected to occur only infrequently and not compromise the function of the PPT hub nor the safety of pedestrians and passengers. • Ballarat Street (north side) will be closed due to Project Manawa, south side is maintained as two-way to accommodate traffic movements through to historic core and to retain network resilience in the Historic Core.

Road Section (Typology)	Key User Requirements	Design Features/Assumptions
Stanley Street - East of Ballarat (Secondary) 	• Priority is for public transport • Additional amenity provided for pedestrians through this route.	• Bus stops located within the regular traffic lane. • Coronation Drive will be closed to through traffic onto Stanley Street to aid pedestrian movements and prevent conflict with vehicles accessing Project Manawa. • The vehicle lane shown on Coronation approaching Stanley will be accessible only by police vehicles exiting the station. • No on-street parking will be provided on Stanley. • A right turn bay is provided for access to Project Manawa. • Route provides improved pedestrian connections from the PT hub, through the Project Manawa frontage up to the hotels on Sydney Street.
Athol Street (Secondary) 	• Part of PPT Hub • Management of coaches • Parking required for loading and mobility	• Comprises part of the PPT hub in the town centre. • Wider footpaths and urban spaces are required as a key pedestrian environment • A raised midblock zebra pedestrian crossing is proposed to provide connection between the Hub and the south side of the street, as well as the new walking link through to Camp Street. • Increased pedestrian provision via an at-grade pedestrian crossing at the Shotover end of Athol Street, due to large crossing distance. • Allow for four coach stops, these spaces could double as taxi stands in the evenings. • One-way flow eastbound • Only a left turn permitted into Ballarat Street (right-turn banned) • Removal of existing contra-flow lane through to Athol Street • Larger traffic lane width to cater to for coaches accessing and egressing coach stops. Although the general lane width is

Road Section (Typology)	Key User Requirements	Design Features/Assumptions
Ballarat Street (Primary) 	• High place function • Interaction with Athol Street PPT Hub • Currently plays an important part in the traffic network, with high pedestrian demand and network requirements for a connection between Camp and Stanley Street	considered undesirable, cyclists can share the traffic lane over this short section with raised platforms to keep speeds low • A key pedestrian environment • Some parking required for loading and mobility • No bus stops required • Cyclists can share the traffic lane • Existing taxi stand to move to Camp Street • Significantly enhanced public realm, particularly for area to the south of the village green.

Road Section (Typology)	Key User Requirements	Design Features/Assumptions
Shotover – Camp Street to Stanley Street (Secondary) 	• Higher movement function with medium-high place function • Parking prioritised for loading and mobility • Access to Athol Street • Management of coaches	• Wider footpaths are required as the corridor is a key pedestrian environment. • No bus stops required due to proximity to PT hub • Cyclists to share the traffic lane as speeds reduced. • On-street loading/mobility parking spaces provided. • Camp Street roundabout to become signalised with a Barnes Dance phasing, • Stanley/ Shotover Street intersection improved and converted to a T intersection. • Right turn into Stanley Street (Bus only) with east bound traffic diverted to Arterial Stage 1.
Shotover - Camp Street to Rees Street (Secondary) 	• High movement function with High place function • Parking prioritised for loading and mobility • Management of coaches	• Wider footpaths are required as the corridor is a key pedestrian environment. • No bus stops required due to proximity to PT hub • Cyclists to share the traffic lane as speeds reduced. • On-street loading/mobility parking spaces provided. • Rees Street intersection to become signalised to improve pedestrian safety, particular as part of the 'Gardens to Gondola route. • Additional outdoor seating areas provided. • Mid-block crossing introduced to enhance ease of movement.
Shotover - Rees to Beach Street (Secondary)	• High movement function with High place function • Parking prioritised for loading and mobility • Management of coaches	• Increased loading and parking through this section. • Additional outdoor seating areas provided. • Increased amenity value at reserve on the corner of Duke/Brecon and Shotover Street

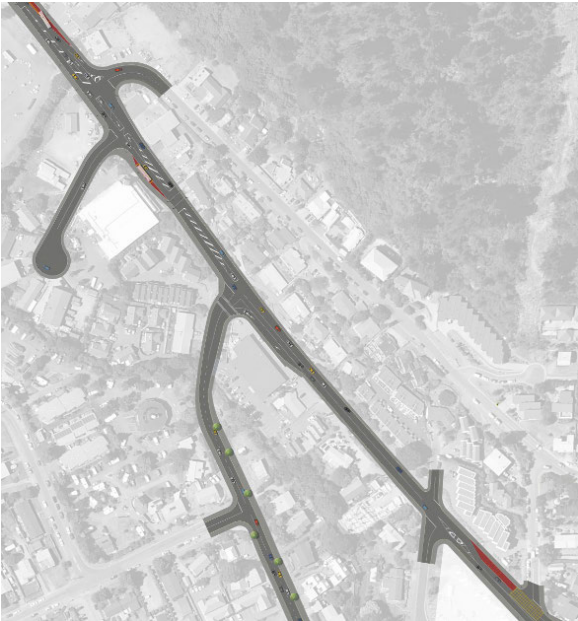
Road Section (Typology)	Key User Requirements	Design Features/Assumptions
		• Pedestrian crossing at intersection of Beach Street and Shotover Street to provide improved pedestrian and cycling connectivity through Beach Street. • Mid-block crossing introduced to enhance ease of movement. • Duke Street and Shotover intersection redesigned from Wakatipu Active Travel Business Case (WATN) proposal to better accommodate movement patterns. • Bus priority provided at the Beach Road, Shotover intersection.
Camp Street (Primary)³ 	• Medium movement function and high place function • Access to Historic Core • Core cycle route • Taxis operate from Camp Street • Heavily pedestrianised	• Wider footpaths are required as key walking environment • Improved connections between Project Manawa and PPT Hub to the north and the lake front • Part of the key east - west cycle route identified in the WATN, due to the low speed environment sharrow will be introduced. • Zebra on raised platform directly opposite Beach Street to provide connection to pedestrian lane through to Athol Street. • Cow Lane vehicle access maintained. • No bus stops required, with existing activity coaches expected to move to Athol St hub. • On-street loading spaces provided • Taxi stands on the eastern section of Camp Street are required as removed from Ballarat Street

³ The segment of Camp Street between Earl Street and Church Street is part of the CIP funded streetscape proposals and is not included for funding as part of this business case.

Road Section (Typology)	Key User Requirements	Design Features/Assumptions
		No on-street parking between Cow Lane and Ballarat Street along the Village Green frontage.
Church and Earl Street (Primary) 	- High place function - Highly pedestrianised area - Connections with Gardens to Gondola corridor	- Reduced on-street parking, some retained on Earl Street. - Improved pedestrian connections and amenity - Slow speed zone - Consideration has been given to Camp Street's connection with the Frankton to Queenstown cycle route and Marine Parade through to Camp street. - Loading and mobility provision on Church Street - Some outdoor dining areas provided in key locations.

Road Section (Typology)	Key User Requirements	Design Features/Assumptions
Brecon Street and Rees Street (Primary)⁴ 	• Key component of Gardens to Gondola corridor. • High pedestrian movement function. • Key vehicle route (coaches/vehicles) to Skyline gondola parking.	• Increased pedestrian amenity provided to support pedestrian connection to and from the town centre. • Parking reduced to enhance safety and enable widened footpaths. • Raised zebra pedestrian crossings at key desire lines to improve pedestrian safety/amenity and slow speeds through corridor. • Low speed shared space through Rees Street.
Lake Esplanade (Variable) 	• Remains a public transport corridor until introduction of Stage 3 Arterial. • Key access to Fernhill and Glenorchy until introduction of Stage 3 Arterial. • Following introduction of Arterial, Lake Esplanade converted to a primary typology with high levels of pedestrian amenity • Access is primarily to hotel/accommodation developments.	• Raised zebra pedestrian crossings at key desire lines to improve pedestrian safety/amenity and control speeds. • General removal of car-parking to enable road narrowing and significantly widened footpaths. • Improved amenity value throughout corridor • Coach stops provided at northern end of Lake Esplanade. • Connects with cycle network along Brunswick Street (WATN).

⁴ The design of Brecon Street through to Marine Parade (Gardens to Gondola) is funded as part of the streetscape improvement project.

Road Section (Typology)	Key User Requirements	Design Features/Assumptions
Gorge Road (Tertiary) 	• High movement function with low place function • Corridors primary function is movement. • Adjacent to key development site at old Wakatipu High School • Increasing demand for walking and cycling connections.	• Widened footpaths introduced to support off-road shared paths as path of WATN cycle way. • On-street parking removed to facilitate widened footpaths. • Signalised pedestrian crossings provided adjacent to Hallenstein Street intersection to improve pedestrian safety, access to bus stops and facilitate movements out of Hallenstein Street.
Arterials – Stage 1 (Tertiary) 	• High movement function. • Arterial pedestrian permeability provided through signalised intersections at Shotover, Sydney and Frankton Road, supported by an overbridge into Project Manawa site. • Limited on-street parking provided	• Enables through traffic to be removed from Stanley St and introduction of enhanced pedestrian and public transport facilities. • Pedestrian permeability across the arterial a key consideration. The arterial design process has included a focus on design compliance with the Safe System objective to eliminate death and serious injuries for all road users, and in particular, vulnerable road users such as pedestrians and cyclists. Signals and overbridge introduced to maximise safety. • Vehicle access is provided to existing properties. • Malaghan, Ballarat and Beethem Streets have been closed to the arterial due to safety and engineering requirements.

Road Section (Typology)	Key User Requirements	Design Features/Assumptions
		
Arterials – Stage 2 (Tertiary)  	• Stage 2 of arterial network to relieve traffic demands on Stanley and Shotover Streets. • High movement function.	• New road introduced as part of arterial network. • Signalised intersections introduced at Gorge and Camp and Hay Streets to improve safety and performance. • Man / Camp Street intersection operating with a Barnes Dance signal phasing to enhance pedestrian priority. • Connection with the WATN cycle connection through the recreation ground and down Robins road. • Stanley Street West is closed at the intersection with Shotover Street, access provided from arterial for existing activities. • Pedestrian underpass provided following Horne Creek alignment, connecting the proposed Boundary Street parking building with the town centre. • Camp Street West provided with increased vehicle capacity to accommodate turning movements onto the arterial.

Road Section (Typology)	Key User Requirements	Design Features/Assumptions
Arterials – Stage 3 (Tertiary)⁵ 	• High movement function with limited connections to adjacent activities. • Primary function is to enable movement through to Fernhill and Glenorchy, enabling traffic to be removed from Shotover St and Lake Esplanade. • Provides enhanced access to Lakeview development. • Relocated One Mile roundabout due to topography constraints and to enable safe operation.	• Significantly enhanced pedestrian facilities provided along road to address poor levels of service. • Raised pedestrian platform provided adjacent to Brunswick St supporting pedestrian movement as well as cycle network from Thompson St/Fernhill and connection to Lake Esplanade. • Additional pedestrian connectivity provided through easements between arterial and Lake Esplanade (under development). • No parking provided along the corridor due to road width limitations. • Underpass provided to service the Ben Lomond Track and parking area.

⁵ The design for the section of the Stage 3 arterials that shares frontage with the Lakeview development will be undertaken as part of the Lakeview development.

Road Section (Typology)	Key User Requirements	Design Features/Assumptions
		