6 September 2022

Let’s Get Wellington Moving

Travel Behaviour Change- Single Stage Business Case

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Supporting documents:

- **Critical Review Report** (LGWM, 2020a): Let's Get Wellington Moving (LGWM) TBCh Critical Review Report provides an initial desktop review of current travel behaviour change activity, existing and future travel conditions. It then considers (at a high level) what has been achieved elsewhere in the world and what this means for the ability to influence travel behaviour in Wellington. This report has informed the development of this business case.
- **Wellington Commuter Parking Levy** (LGWM, 2021): This is an Evidence Base Review Report that provides a critical review of the Parking Levy assumptions and impacts that have been made by LGWM and its partners in developing the initial demand scenarios which underpins the other LGWM packages.
- **Strategic Case** (LGWM, 2020c)**:** Let's Get Wellington Moving TBCh Strategic Case outlines the strategic context and the contribution that a TBCh package can make to the LGWM travel choice and mode shift goals. The objectives for TBCh set out in this report have guided the development of the indicative package.

Glossary

- **Travel behaviour change:** for the purposes of this business case, travel behaviour change refers to reducing travel by car (reducing car kms travelled)
- **Travel behaviour change programme:** usual term given to a group of travel behaviour change measures implemented as a bundle, region, city or organisation wide
- **Travel behaviour change package:** recommended travel behaviour change programme for Wellington (abbreviated as recommended package)
- **Interventions:** channels through which measures are delivered (e.g. workplace, schools, events)
- **Initiatives:** measures that enables people or organisations to change (e.g. Guaranteed ride home scheme, wayfinding, cycle to work-day, travel plan)
- **Enabler:** these are modifications to people's environments that make new behaviours easier, safer, more enjoyable, or reduce the perceived risk of new behaviours
- **Travel Plan:** is a package of actions designed to encourage safe, healthy and sustainable travel options by reducing private car travel
- **Parking levy:** is a charge placed upon parking places to encourage car park occupiers/operators to reduce the number of parking places provided
- **Travel Demand Management:** an application of strategies, policies and initiatives to reduce travel demand or redistribute demand across multiple modes of transport
- **Transport Management Association:** A TMA is a not-for-profit organisation that represents an area's businesses and residents, with local government support. TMAs are member-controlled and take on roles ranging from advocacy and promotion of sustainable transport, through to running services such as vanpooling, shuttles or parking brokerage (OIC&KMC 2015). Generally speaking, they are focused on workplaces. The Wynyard Quarter TMA in Auckland is a New Zealand example of a TMA: https://www.wqtma.co.nz/
- **Soft measures:** refer to methods of reducing car use through promotion, marketing, personalised travel planning, training etc.
- **Voluntary behaviour change:** change that occurs when individuals make choices for personal reward without a top-down mechanism, regulation of any sort, or a feeling of external compulsion

- **Creating a ripple effect:** encouraging people to use public transport and active modes for many trip types (without a focus on commute and school trips)
- **Creating a culture change**: changing the way people think about things that impact on their travel choices such as where to live; whether to buy a car; how they travel for recreation, leisure, exercise, and holidays; as well as alternative ways to carry out activities, e.g. where they are done, who does them

Abbreviations

Abbreviation	
BCR	Benefit-Cost Ratio
GWRC	Greater Wellington Regional Council
JTW	Journey to work
KPI	Key Performance Indicator
LGWM	Let's Get Wellington Moving
LOS	Level of Service
MRT	Mass Rapid Transit
NLTP	National Land Transport Programme
NZ	New Zealand
PBC	Programme Business Case
PT	Public Transport
SSBC	Single Stage Business Case
SOV	Single occupancy vehicles
TBC	Travel Behaviour Change
TDM	Travel Demand Management
TMA	Transport Management Association
VKT	Vehicle kilometres travelled
Waka Kotahi	Waka Kotahi NZ Transport Agency
WCC	Wellington City Council
WTSM	Wellington Transport Strategy Model

Executive Summary

The Let's Get Wellington Moving (LGWM) vision for Wellington City is a great harbour city, accessible to all, with attractive places, shared streets, and efficient local and regional journeys through moving more people with fewer vehicles. LGWM has set the following targets for the city:

LGWM will achieve these targets primarily by increasing the capacity of the public transport network and reallocating road space to more efficient transport modes through improvements planned under the LGWM programme.

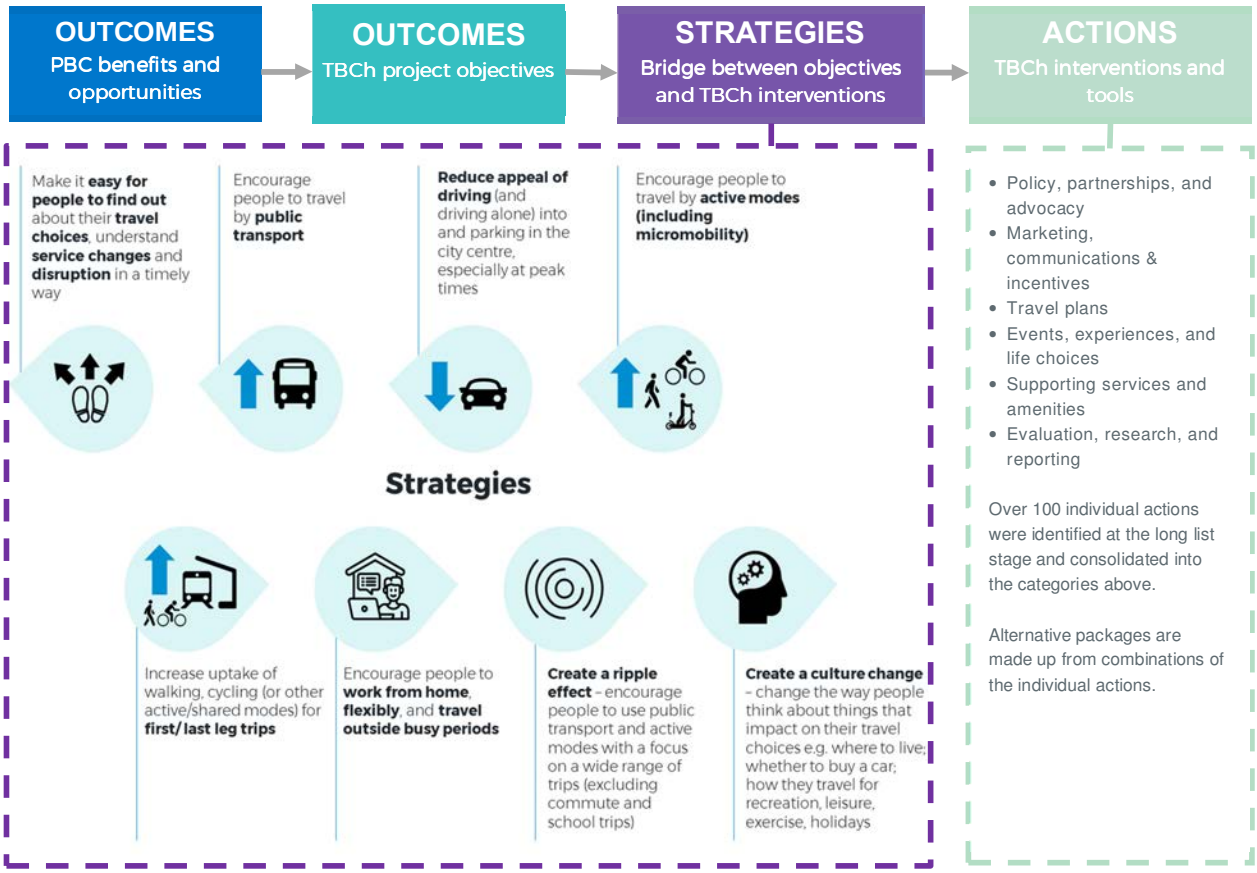
This Single Stage Business Case (SSBC) makes the case for a Travel Behaviour Change (TBCh) package that will "wrap around" the service and network changes helping to achieve Wellington's mode shift targets. It builds the case by highlighting the key pressures on Wellington's transport system, and the planned improvements. The SSBC documents current travel behaviour trends and the performance of existing travel behaviour change initiatives. The SSBC then describes the TBCh strategies and options that were considered when developing a recommended package for Wellington.

The TBCh package is designed to achieve the following objectives:

a Improve access to and through the central city ensuring people know that the available travel choices will work for them (15%)
b Minimise disruption to people and businesses by making sure they are aware of upcoming changes, how changes will affect their journeys, and that they understand their travel options during delivery of work to improve and renew the city (15%)
c Make best use of the transport network by encouraging people to travel less often and at less busy times (20%)
d Make best use of the available transport options by reducing the proportion of people that drive alone during busy times or for short trips (25%)
e Improve the health, safety and wellbeing of communities by increasing the number of trips that involve active modes and public transport (25%)

The SSBC highlights eight strategies to achieve these objectives. The recommended package was developed by considering the circumstances in which each strategy would be most effective, and

considering the best timing for each part of the package. Each strategy contributes to achieving the project objectives and varying combinations of these strategies form the basis for the alternative packages that have been considered. There are synergies between some of the strategies. For example, making 'it easy for people to find out about their travel choices, understand service disruption and changes in a timely way' is relatively low-impact on its own, but combined with initiatives to 'encourage people to work flexibly or to use alternative modes' will have a greater impact. Several TBCh interventions and tools are available to deliver each strategy.



Strategies that guided the development of alternative travel behaviour change packages

Developing alternative packages

Travel behaviour change can be induced using three key mechanisms:

- **voluntary travel behaviour change** – "change that occurs when individuals make choices for personal reward without a top-down mechanism, regulation of any sort, or a feeling of external compulsion" (Ampt 2003);
- **supply measures,** e.g. providing infrastructure; and
- **demand measures,** e.g. regulation, pricing, technological changes, education/marketing.

All the packages considered during the development of the SSBC focus on travel behaviour change using demand measures including:

- Policy, partnerships, and advocacy;

- Marketing, communications & incentives;
- Travel plans;
- Events, experiences, and life choices;
- Supporting services and amenities; and
- Evaluation, research, and reporting.

While the TBCh package can deliver benefits on its own, it will be more effective when co-ordinated with the delivery of wider transport system improvements. For example, encouraging people to take public transport at peak times is only effective if there is available capacity on the public transport network. Similarly, encouraging people to walk or cycle is best achieved when conditions and the street environment are appropriate.

The process of developing alternative packages involved understanding which strategies best meet the objectives in which locations and when. To do this, four key dimensions of choice were used:

- which strategies best achieve the objectives during periods of disruption;
- where in Wellington will these strategies have most impact;
- when, relative to other system changes, will the strategies have most impact; and
- who would be the target audience.

Five alternative packages (A-E) were developed:

- **Package A** focuses on scaling up the current travel behaviour change effort in response to the planned transport network improvements and construction related disruption;
- **Package B** builds on Package A and adds a focus on the 'first-last leg' travel - connecting people with active and shared modes to rail stations removing barriers to travel by train to Central Wellington;
- **Package C** builds on Package B expanding the package to wrap around a commuter parking levy; and
- **Packages D and E** add a focus on achieving long-term culture change within Wellington and the Wider region.

Recommended package

The packages were evaluated to assess their performance under different circumstances based on which, the SSBC recommended a staged approach with an incremental delivery of Package A, building up to Package E over time. An overview of the recommended package is shown in Figure 1-1, below. The immediate focus will be on the delivery of Package A and Package B (removing barriers to first-last leg) retaining the flexibility to respond to the introduction of a parking levy (i.e. Package C).

Packages focused on achieving a cultural change (Packages D & E) are not related to specific triggers and could be implemented now or at some point in future. Given that these are relatively new concepts for New Zealand it is recommended that a 'pilot, test and grow' approach is adopted following establishment of Packages A and B.

Adopting a flexible, learning approach alongside co-design and engaging partners early, will build support and readiness for change. It will allow new initiatives to be tested before being implemented on a broader scale.

The recommended TBCh package is designed to expand and evolve as the LGWM programme matures. The implementation philosophy recommends starting with a manageable package and growing it through time, responding to the community and environmental context of a city or suburb. Triggers for expanding the scope or resourcing for the TBCh Package include the:

- introduction of a parking levy or congestion charge for Wellington central city;
- introduction of metro rail network capacity improvements;
- introduction of new rolling stock for long distance rail services (i.e. Wairarapa line and Manawatu Line);
- construction and completion of a Mass Rapid Transit in Wellington City; and
- greater recognition of the regional impacts of LGWM.

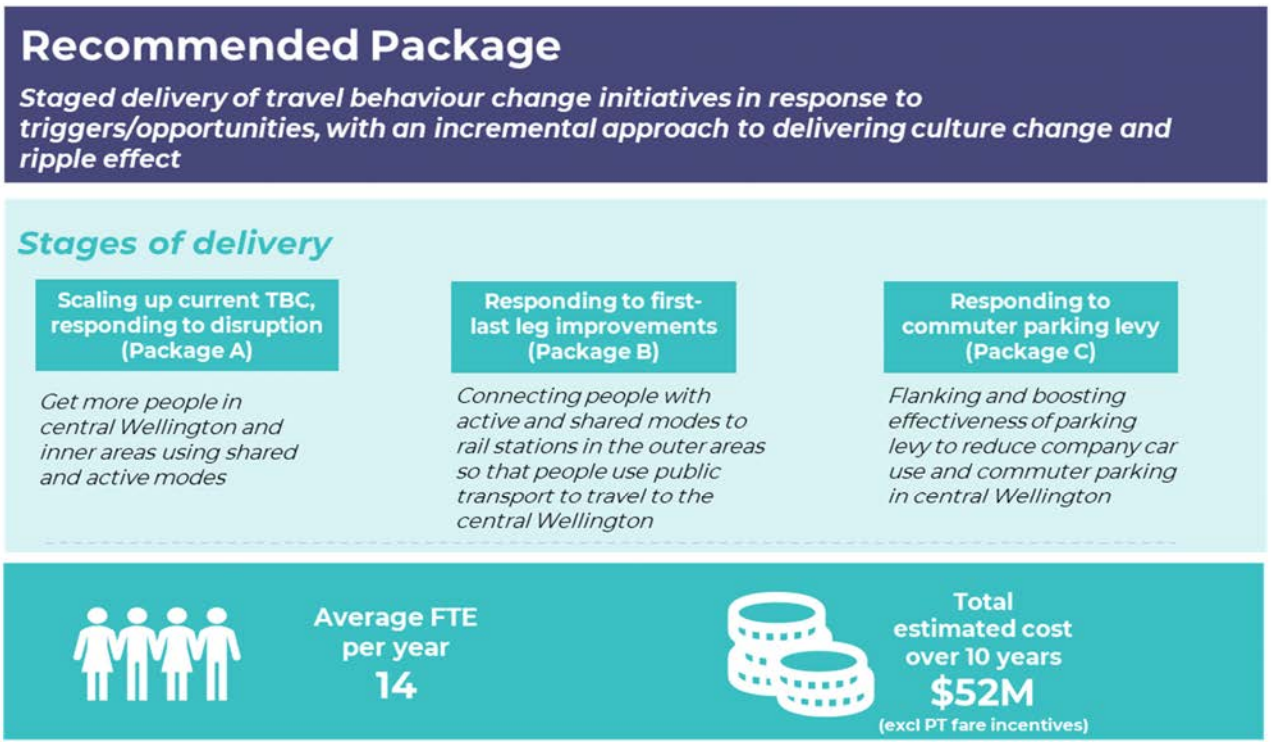


Figure 1-1 - Overview of the recommended package for travel behaviour change.

The cost of delivering the recommended package over a 10-year period is estimated at $52 million (excluding public transport fare incentives and including the cost of 14 Full Time Equivalent staff). This estimate assumes that all the triggers are reached and that packages A to E are implemented within the 10-year timeframe. If the LGWM TBCh package is expanded at a slower rate or if some elements are not included, the 10-year cost would be less than this. Initiatives that influence changes in non-commute trips to support a shift in the travel culture of the community will be gradually phased in and expanded using a trial, test and grow approach.

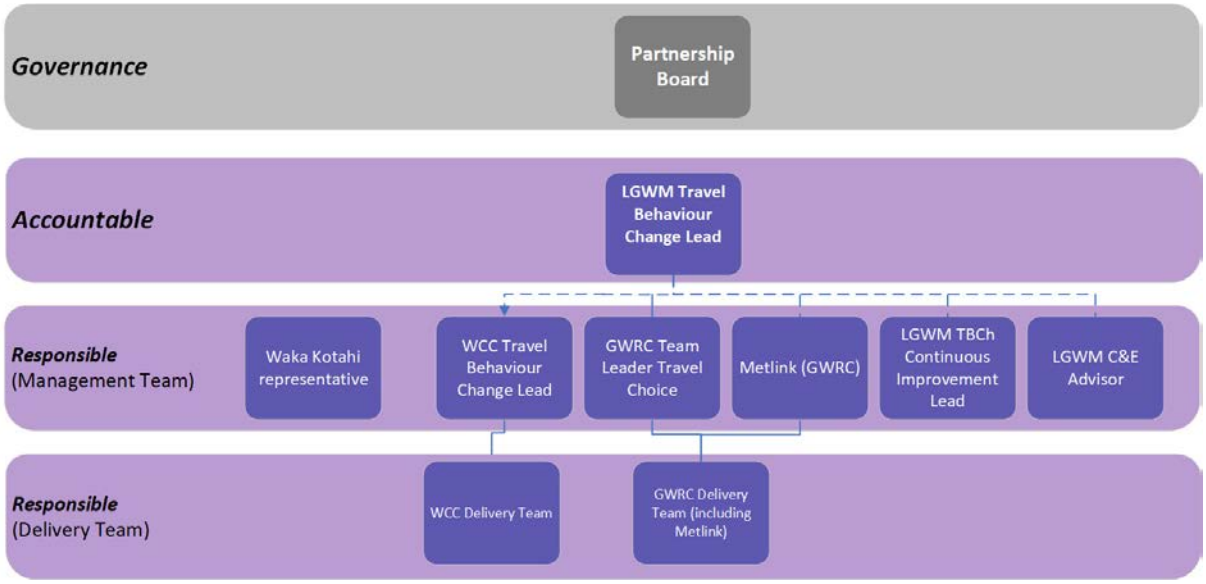
An economic evaluation found that the benefit to cost ratio for Package A could be expected to be between 1.5 and 4.1. The BCR for Package B (which builds from and incorporates Package A) is expected to be between 2.1 and 5.0. Sensitivity tests that explored assumptions about the reach and effectiveness of travel behaviour change initiatives found that it was reasonable to conclude that the BCRs for the recommended package would sit between 2.0 and 4.8.

Delivering the TBCh package

The LGWM TBCh package will be delivered as a continuous improvement programme with a ten-year outline of the activities.

LGWM will be accountable for delivery of the package and supported by a management team made up from a TBCh lead from Wellington City Council and Greater Wellington Regional Council. The proposed management structure is show in Figure 1-2, below.

Figure 1-2 - Proposed Management Structure



The Management Team will develop Implementation Plans for each three-year period in advance of each NLTP. This will provide the flexibility needed to ensure initiatives continue to be fully integrated within the LGWM programme as it evolves and changes through time. Delivery of the TBCh package will be supported by rigorous monitoring and evaluation to ensure the value of travel behaviour change in Wellington is maximised and initiatives respond to the needs and environmental context of individual communities.

Collectively the Management Team will support the LGWM TBCh Manager and be responsible for:

- integrating TBCh delivery with LGWM and the work of the partner organisations;
- co-ordinating the delivery of other initiatives by the partner organisations;
- regularly evaluating the performance of the TBCh package and working to agree refinements or enhancement to maximise impact;
- supporting the TBCh Manager to develop and agree three-year plans and funding applications in advance of each NLTP;
- leverage from existing workstreams and relationships
- building on and learning from TBCh work that is already underway within the city and wider region;
- sharing lessons learned and supporting partners to plan-deliver-monitor-improve
- sharing lessons learned with others for the benefit of other cities in NZ

To be successful, Travel Behaviour Change initiatives need to respond to the communities and environmental context of a city or suburb. Continuous improvement is vital for ensuring the value of travel behaviour change in Wellington is maximised. Rigorous application of continuous improvement will also allow the team to apply innovative approaches, retaining what works and discarding or improving other initiatives. The team will apply an Agile management approach. Monitoring and evaluation will be an essential element because it will:

- allow LGWM to understand the extent to which benefits are being realised
- capture lessons learnt and pave the way for continuous improvement (pilot, test, grow)
- allow the LGWM partners to demonstrate the value being delivered and support applications for funding from in advance of each three-year NLTP period
- share experiences and learning thereby contributing to the body of evidence for TBCh in New Zealand.

Next steps

Implementation of TBCh over the coming decade will be sequenced to respond to the triggers and opportunities as they emerge. A flexible approach will be adopted whereby the package can respond to changes within the wider LGWM programme and wider city.

In the first year, much of the effort will need to focus on establishing the building blocks from which to deliver the package with confidence. This will include:

- establishing management arrangements:
- establishing partnerships with private and public sector organisations[1];
- establishing workplace / educator communications channels;
- confirming the appetite for a central city private sector Transport Management Association (agreeing its remit); and
- planning activities and initiatives to "wrap-around" implementation of the LGWM three-year programme.

During this time work can be completed on branding and identity for LGWM travel behaviour change.

As the LGWM infrastructure delivery plans become clearer it will also be possible to identify the cohorts expected to be affected by disruption. Work will begin to co-design travel behaviour change initiatives and campaigns, tailoring to these groups in year 1-2. This will serve to 'warm the pot', readying them for change.

By year two, the focus will be on setting up the TMA, supporting organisations to implement travel plans and designing or enhancing programmes e.g. for schools and workplaces.

In year three, disruption is expected to occur, TBCh efforts will need to be integrated with communications relating to construction or service changes. The TBCh team will also seek opportunities

[1] i.e. academic institutions, major employers and regional destinations, the Public Service Commission responsible for staffing Government departments.

to leverage from disruption related to the renewal or repair of utilities and services (e.g. water pipes/ infrastructure).

A new, updated three-year implementation will need to be developed and agreed before the start of the 2024/25 – 2026/27 NLTP period. This will need to make account of the updated LGWM Programme including any moves to implement a Congestion Charge or Parking Levy.

Part B: Package development and evaluation

1 Introduction

Wellington frequently ranks highly as a liveable city[1] in comparison to major centres throughout Australasia. Its population is growing. One of the consequences of this growth is increasing pressure on the transport system which is already at capacity during peak times. Traffic congestion is a regular occurrence, indicating that the transport network is unable to support current or expected growth in travel demand. Bus service efficiency and reliability is significantly affected by this congestion, especially during peak periods. In addition, there will be localised disruption during the Let's Get Wellington Moving (LGWM)[2] programme construction phase.

Growth in numbers of people entering the CBD by car will negatively impact the region's liveability. This risks undermining the LGWM vision for a great harbour city, accessible to all, with attractive places, shared streets, and efficient local and regional journeys through moving more people with fewer vehicles. Ultimately the LGWM programme is seeking to support a changed urban form by changing the transport system so that it can "move more people using fewer vehicles". LGWM is focused on trips entering or passing through the central city, many of which start or end in the wider region outside Wellington City.

1.1 Outlining the purpose and scope

The purpose of this report (Part B of the SSBC) is to outline the recommended TBCh package, describe the expected impact and explain the arrangements that need to be in place to deliver the package. The report builds on the Critical Review Report (LGWM, 2020a) and the Strategic Case (Part A of the Single Stage Business Case (SSBC): LGWM, 2020c).

Travel behaviour change can be induced using three key mechanisms:

1. **voluntary travel behaviour change** – "change that occurs when individuals make choices for personal reward without a top-down mechanism, regulation of any sort, or a feeling of external compulsion" (Ampt 2003)
2. **supply measures**, e.g. providing infrastructure
3. **demand measures**, e.g. regulation, pricing, technological changes, education/marketing.

The package is focused on travel behaviour change using demand measures including the provision of information, marketing and communication, advocacy for regulation and policy change, technology, and demand management measures (specifically, a parking levy) to complement the delivery of other projects by partner organisations as demonstrated in Figure 1-1. The next steps following this Business Case will be an action plan for implementation that will build detail into a TBCh package and identify specific targeted initiatives.

[2] LGWM is an alliance between Wellington City Council (WCC), Greater Wellington Regional Council (GWRC), and the New Zealand Transport Agency (the Transport Agency). LGWM seeks to deliver an integrated transport system that supports the community's aspirations for how Wellington City will look, feel and function.

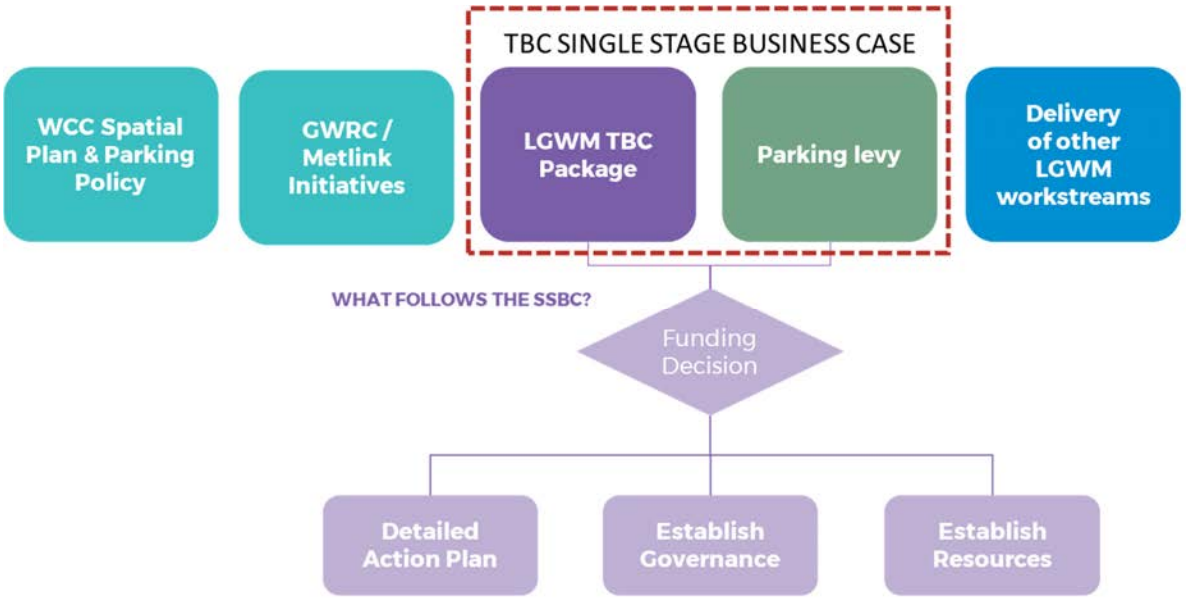


Figure 1-1 Scope of the TBCh Single Stage Business Case

1.2 Understanding why people travel and how people can change

This section considers why people travel and how they can change because several important principles underlie travel behaviour change. These include:

- People do not travel for travel's sake, but to carry out activities – it is a 'derived demand' (see Figure 1-2)
- This means that we are not simply looking at people choosing modes – they are choosing activities and locations, and the people they want to do things with, and the times of day they want to do them - and they need to get there in some way if it is not taking place where they are. So travel behaviour change is really much bigger (and has a lot more potential than just travel behaviour change) it is behaviour change.
- Experience in travel behaviour change programmes elsewhere (e.g. Households in West Adelaide, Stopher et al, 2007) where there was an 18% reduction in car use by participants at the same time as a 6% increase by non-participants) suggests that the package/programme needs to have a strategic framework that includes opportunities for changes in mode shift as well as in the following non-mode shift areas:
  - locations of activities
  - the time of day of activities
  - the way activities are planned
  - the linking of activities on a given trip to reduce individual trips (trip chaining)
  - the allocation of activities to different people.

These observations show how the goals of many packages of LGWM (to encourage mode shift) can be enhanced by the travel behaviour change package which achieves a reduction of car use (kms and trips) by both mode shift and other vital strategies of making choices without necessarily changing mode.

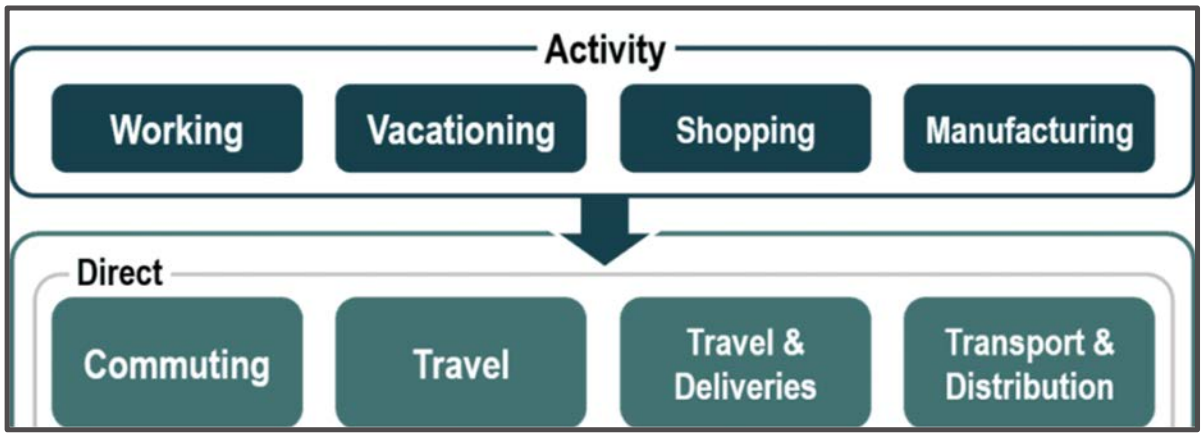


Figure 1-2 Travel behaviour is a derived demand *Source: Rodrique, J-P (2020)*

1.3 How does the behaviour change package fit within LGWM?

The Travel Behaviour Change (TBCh) package is one of five workstreams which aims to remove real and perceived barriers to reducing the use of private vehicles. The Strategic Case highlights relevant projects and how they are linked or dependent with TBC. Work undertaken during the development of the LGWM Programme Business Case found that:

- increasing traffic capacity, without also influencing travel behaviour, undermined the benefits of investment in public transport and non-motorised travel.
- there are synergies between the Transformational Package (Mass Rapid Transit, Strategic Highways) and Travel Behaviour Change packages[3].

The recommended TBCh package is designed to:

- be implemented alongside the wider LGWM programme and support the (existing and future) transport system, enable growth and help maximise benefits of the other packages within the LGWM programme
- take advantage of the opportunity presented by construction-related disruption and encourage sustained behaviour change
- focus on both latent and new demand for travel using public transport and active modes, and reduce demand for travel in single occupancy vehicles
- be integrated with a parking levy to enhance mode shift by acting as a catalyst to stimulate organisations to review fleet or parking benefits, provision and policies alongside voluntary travel behaviour change initiatives.

[3] These conclusions are being revisited by LGWM now that each package has been further developed and refined.

1.4 Overall objectives

The overall objective of the TBCh Package is to achieve a reduction in private vehicle trips and kms travelled into and within in the CBD in the morning peak (7am-9am).

A secondary objective stems from the fact that public transport in Wellington is already heavily used. This means that there is also an objective to encourage people to travel at less busy times when they use public transport.

These objectives can be achieved by encouraging people to:

- carry out activities at different destinations (closer – or at home in the case of work)
- travel less often (i.e. rethink the need to travel)
- combine several activities into one trip (trip chaining)
- change their mode of travel to shared or active forms of transport at any time
- alter times of travel for public transport where possible (away from the peak).

We also propose eight strategies (see section 3.2) to achieve these objectives. The overall targets (level of change) are described in Section 3.

2 The Current Situation

This section provides a summary of the key pressures on the transport system in Wellington, key travel behaviour trends and existing travel behaviour initiatives. It also frames the opportunities for TBCh in Wellington. The Critical Review Report and Strategic Case provide a more comprehensive description.

2.1 Key pressures on the transport system

The Strategic Case (LGWM 2020c) identifies the following key pressures on the transport system impacting travel to and through central Wellington:

- Central city intensification, as well as job growth, is increasing travel within, to and from the central city area.
- The population of the Wellington Region continues to grow and expand outwards. This growth in population and employment will continue to increase travel demand to and through Central Wellington. Section 3 of the Strategic Case (LGWM 2020c) provides a detailed discussion on population and employment growth.
- Regional growth is increasing demand for travel to the airport, hospital and port requiring trips to or through the central city area.
- Traffic congestion is occurring at peak times and peak spreading due to the road network operating at capacity.
- Bus service efficiency and reliability are significantly affected by congestion. Metlink's performance monitoring of their bus network (2017–2020) shows that service reliability and punctuality vary substantially and frequently underperform by Metlink's own measures. Metlink's performance monitoring also indicates a reliability and punctuality variation in the train network.
- Heavy traffic impacts the amenity and safety of those walking, cycling and using micro-mobility (e.g. e-scooters).
- Much of the Wellington road and bus network operates at, or close to, capacity during peak travel times and cannot accommodate additional demand. Until public transport improvements are delivered there is a limited opportunity to convert peak time drive alone trips to public transport. See section 2.3 of the Strategic Case for further details (LGWM 2020c).
- Data indicates that recent growth in travel demand has been accommodated by public transport and active modes, due a variety of factors, including increasing preferences for walking and cycling, capacity constraints on the road network, peak spreading and a growing inner-city population.
- Availability of travel options (i.e. active modes, public transport and alternatives to private car travel) varies across the region.
- Passenger rail terminates at the northern end of Wellington central city, requiring journeys to or from other parts of Wellington City to be completed by other modes, primarily foot or bus. Bus services passing through the central city to southern and eastern suburbs (and the regional airport and hospital) stop frequently, making car-based travel to these locations relatively quick compared to the bus despite traffic congestion.
- Covid-19 is impacting travel patterns. See section 3.2 of the Strategic Case (LGWM 2020c). There will be a period of disruption before an increase in capacity is delivered by LGWM packages.

One opportunity for TBCh in Wellington is that increasing vehicle congestion associated with growth of the population and employment is likely to make people receptive to a programme of change.

2.2 Planned improvements to the Transport System

Improvements to the transport system (infrastructure changes and service enhancements) will be delivered by the LGWM programme and other parallel workstreams progressed independently by LGWM partners. Appendix D identifies critical projects being delivered over the next 15 years and the impact they will have on the TBCh package being delivered as part of this workstream.

Metlink plans capacity improvements to both the bus and the rail network. Subject to successful trials other system improvements such as enabling the use of Snapper cards on rail are also planned. Figure 2-1 shows the current draft aspirational activity plan for Metlink between 2020-2030. The timeline is a draft and indicative only at the time of writing this report. This aspirational plan may be subject to revision depending on funding and policy. These system changes will increase the effectiveness of a TBCh package, however, the timing of is uncertain.

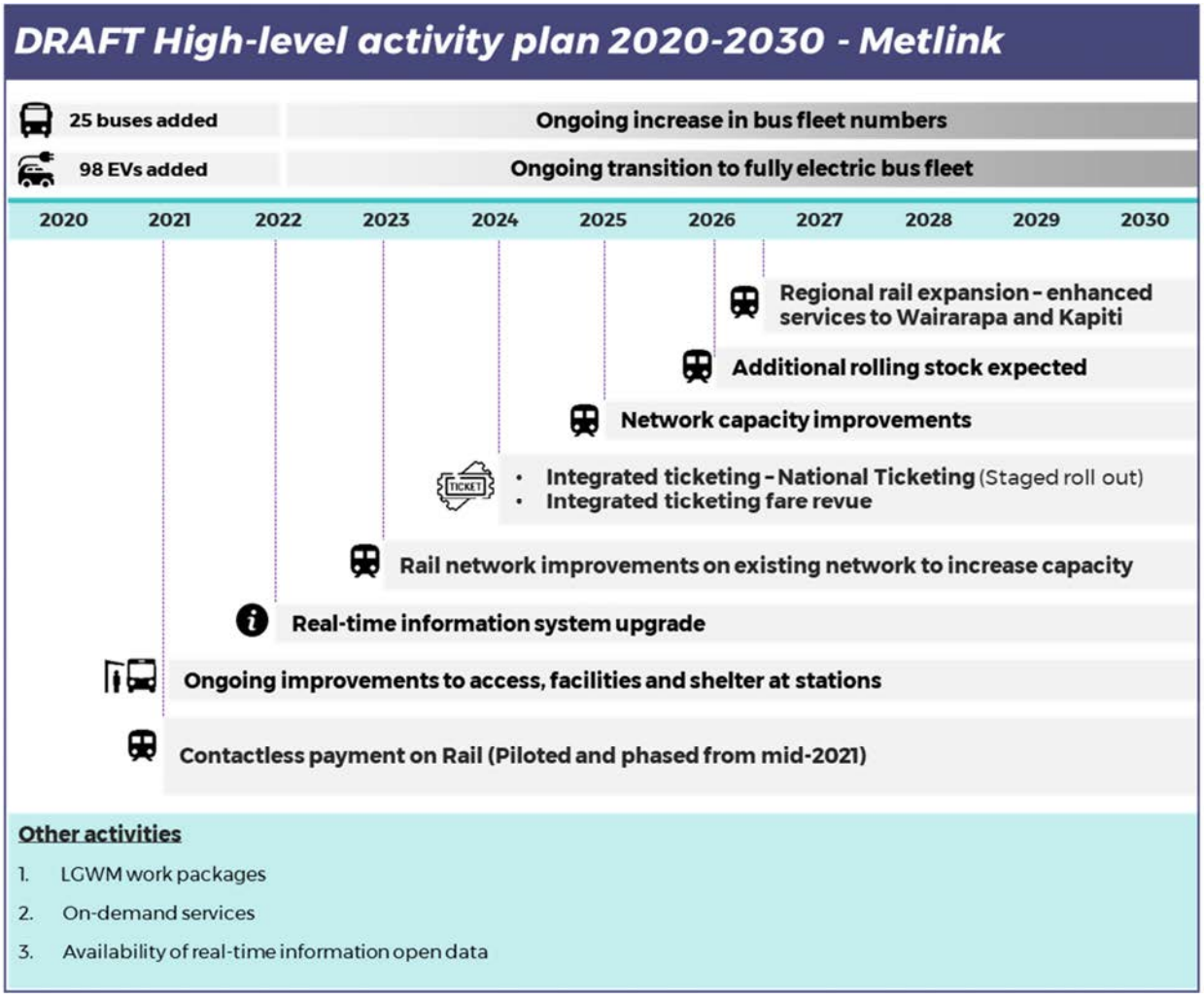


Figure 2-1 Indicative timeline for Metlink activities between 2020 and 2030 (this aspirational plan may be subject to revision depending on funding and policy)

2.3 Travel behaviour data and trends

A vital step in developing a TBCh package for Wellington is understanding how people currently travel, for what purpose, which modes they use and how the transport system is performing so that changes

over time can be measured. This section begins with a note on data quality and then provides a summary of key travel behaviour trends. The main sources are listed in Appendix E.

2.3.1 Data Quality

The data to describe the current situation and trends is from many sources (see Appendix E). There are four main types of data. While all data sources have strengths and weaknesses, some of these are listed below to assist considerations of evaluation and measurement over time.

1. Household Travel Survey (HTS) data

This ongoing survey (a sample, but rigorously selected) and data base gives very granular data and would allow the following types of data to be used without variation in survey questions and methodology over time:

- Detail on mode split for all trips to and from the CBD in peaks
- Detail on time of day or day of week of travel
- Socio-demographic data associated with trips
- Knowledge of which trips to the CBD are linked with other trip purposes (e.g. dropping children at school, shopping, personal business). This data would make it possible to pinpoint where change is more possible (e.g. single occupancy car trip without passengers)
- Information on working from home.

Only publicly available HTS data was able to be used for this project. It is recommended that during the implementation phase this data is used as part of the base case and ongoing.

2. Census data

This is valuable as it collects data for all people. It is ideal for weighting HTS data. It also provides data on one specific type of trip (the journey to work). The question asks for 'usual mode of travel' meaning that it will underestimate some modes and overestimate others. It can be used to find broad data on where people work and attend education relative to where they live.

3. Traffic counts and TomTom data

The counts obtained in cordon surveys give data on modes used to enter the CBD. Care needs to be taken when comparing person and vehicle trips to ensure no double counting. They will provide a valuable check on HTS data if done at the same time each year using the same method. TomTom data provides interesting background data on travel times – it would need to be collected at the same time of day, day of week and season.

4. Specific surveys

These provide valuable insights, often of attitudes. They are often non-random samples with different method and need to be carefully understood and repeated exactly if they are to be used to measure change over time.

2.3.2 Base case data

The key base data is discussed in detail in the Strategic Case, but a summary is provided below. First, we summarise base data for the entire Wellington Region (Table 2-1) and then data for the CBD (Table 2-2) since that is the focus of the initial packages. While the data informing this business case was

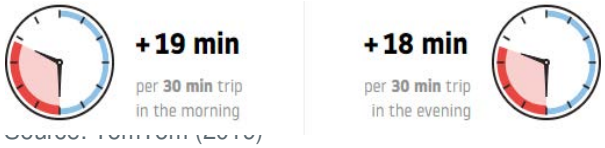
collected prior to the Covid19 pandemic, the recommended agile management approach will enable implementation to flex and respond to the changes in travel behaviour and travel demand as appropriate.

Table 2-1 Region wide base case data and trends

Characteristics of trips regionwide - to give context	
Mode share for the region	Around 71% of travel (all trips) across all Wellington regions is by car driver, compared to 80% nationwide (MoT 2020). Higher mode share of people traveling by public transport (3 in 10 people), walking and cycling (1 in 10 people) compared to the national average (Nexus 2019b).
Mode share to destinations outside the central city	Driving is the most common mode of travel to work in destinations outside the central city, e.g. hospital (65%), airport (82%), and areas like Miramar (75%); Vehicle use is higher than for work trips by vehicle driver? to CBD (35%) (GWRC analysis, 2018 Census data).
How people get to train stations	Train stations are accessed on weekdays in the am peak by foot (46%); motor vehicle (46%); bus (6%) and cycle (2%). Of those who travel by motor vehicle to train stations, 66% of trips originate within 3km, and 23% from within 1km. Only 13% of trips are from more than 5km (Macbeth 2019).
Frequency of commute	74% of respondents commute at least 3 days per week; 54% commute at least 4 days per week; and 41% commute every day. Only 3% of respondents drove because there were no other options (LGWM 2020a).
Train patronage	21% increase in train patronage over the last decade 2001-2021; 5.7% increase in the year 2018/19 (Waka Kotahi 2020a).
Flexible working	There is appetite amongst Wellingtonians for working flexibly (changing work hours and working from home) (WKNZTA 2019).
Bus passenger trips	Almost 25 million per year regionally; 5% increase in 2018/19 with off-peak bus patronage 47% of regional patronage (WKNZTA 2020a).
Light vehicle ownership rates	Wellington has one of the lowest average light vehicle ownership rates at about 67%, compared to the national average of 80% in 2018 (WKNZTA 2020a).

Table 2-2 CBD data and trends

Characteristics of trips to the city centre	
People travelling to CBD	Over 82,000 people travel into the CBD on typical weekday morning between 7am and 9am. Of these, approximately 50% are motor vehicle occupants and the other half are walking, cycling or using public transport (WKNZTA 2020a).

Characteristics of trips to the city centre	
	18% are rail passengers which mostly come from the north, 16% are bus passengers with the greatest share of these coming from the east, 14% are pedestrians with the greatest share of these coming in from the west and 2% are cyclists (WKNZTA 2020a).
Mode share to work in the CBD	Work trips by car to CBD (35%) (GWRC analysis, 2018 Census data).
Mode share	Around 71% of travel across all of the region is by car, compared to 80% nationwide (MoT 2020).
Trips for education	For trips to education, half are by walking, cycling or public transport; 42% by car (drivers and passengers); and 6% of people study mostly from home (WKNZTA 2020a). Three percent of these trips are reported to be for school drop offs. A subsequent survey in November 2020 that sought to understand travel behaviour of people that drive to work in Wellington central city at least once a week, confirms some of the findings of the earlier survey but reports a higher percentage (15%) of people driving for school pick-up/drop- offs (LGWM 2020b).
Journey to work trips	Wellington's CBD is the dominant destination for journey to work trips within Wellington city, with over 66,000 journeys for work from around the region. South Wellington is the second largest destination with 9,500 trips (WKNZTA 2020a).
Weekend congestion	In Wellington City there is at least 20% weekend congestion between 11am and 5pm, adding 6 minutes to every half hour trip (Waka Kotahi 2020a).
Travel trends over time	Between 2000 and 2017, 45% increase in city centre population, 13% decrease in motor vehicles entering the city during morning peak, 44% increase in public transport patronage, 150% increase in cyclists; 22% increase in pedestrians (GWRC 2019); Micro- mobility use has also increased in recent times but information about the extent of its impact was not available at the time of writing this business case.
Parking	71% of car users **do not pay** for parking. Those travelling to the Central City or North Central are more likely to pay for parking (Nexus 2019b).
Travel purpose	66% of morning peak car driver trips in Wellington are for work, usually for a sole purpose. The remaining breakdown of trip purpose comprises recreation (8%), shopping (6%), social (6%), education (5%), drop-off at school/childcare (3%), and other (7%). Half are single occupancy trips (Nexus, 2019a).
Time lost in rush hour in CBD (per trip)	
Through traffic	Through traffic makes up approximately 20% of the traffic in the central city (LGWM 2017).

Characteristics of trips to the city centre	
Socio-economic characteristics	At least half of those who drove to Wellington's central city for work had a total household income of more than $100,000. Those with a high household income (100k and over) are significantly more likely to drive than use another mode of travel (LGWM 2020b).
Parking	 Source: LGWM (2020a)

2.3.3 Journey to work

A large proportion of people's trips to the city centre during peak times are for work and made by car drivers. This section explores journeys to work in more detail using 2018 Census data. Figure 2-2 shows how the mode share for journeys to the central city vary according to the trip origin. Trips closer to the central city are most commonly on foot or by bus. Trips from the Hutt Valley areas are dominated by train travel, followed by car driver. Trips from the Porirua area are slightly more likely to be made by vehicle drivers, followed by rail. It is probable that these trends largely reflect the relative utility of the travel options available in those locations.

Figure 2-3 highlights the locations in the Wellington Region that have larger populations and higher proportions of people commuting to Wellington central city as demonstrated by dark purple. These areas represent a significant opportunity for mode shift, however that is dependent upon access to travel options. This type of analysis should inform the detailed design of the initiatives within the recommended TBCh package and to tailor initiatives to specific locations. Note that the aim of LGWM TBCh is to achieve a reduction in vehicle trips into the city in the morning peak, some of this will be achieved with mode shift, but as the population of Wellington grows, mode shift alone may not achieve this.

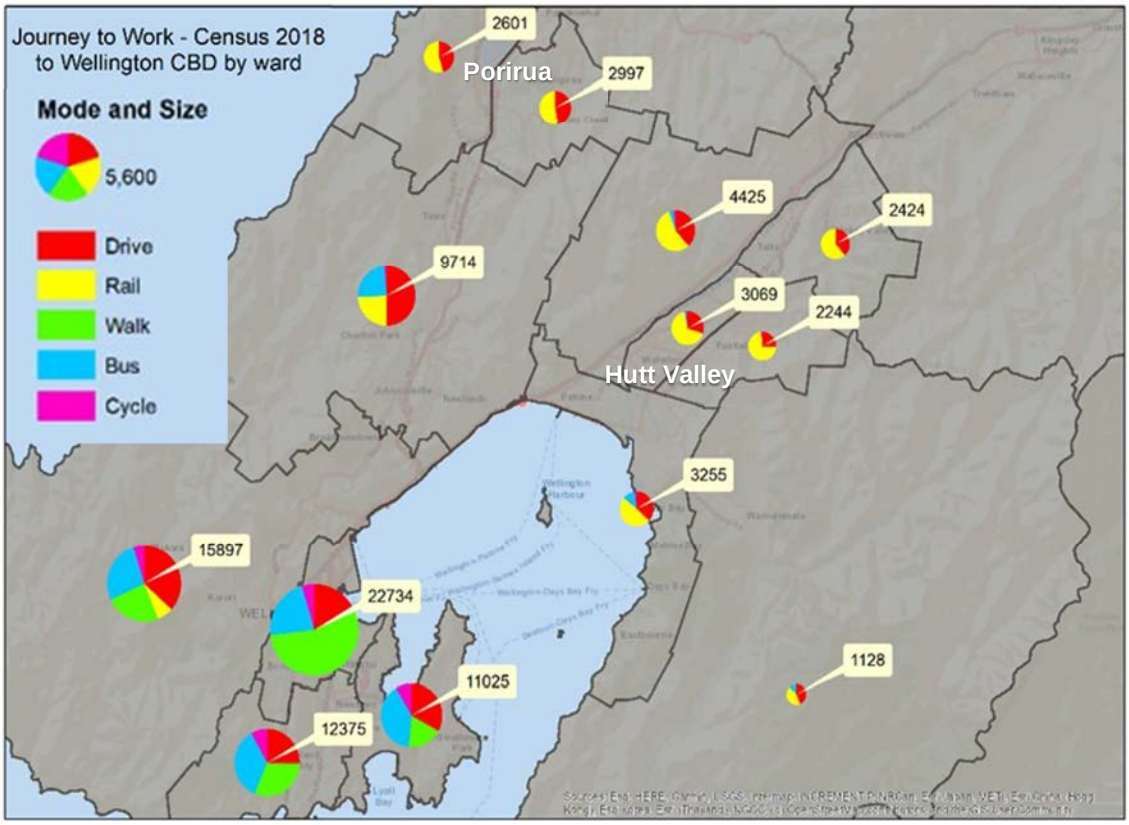


Figure 2-2 The origin and travel mode of journey to work trips ending in Wellington central city (GWRC, 2018)

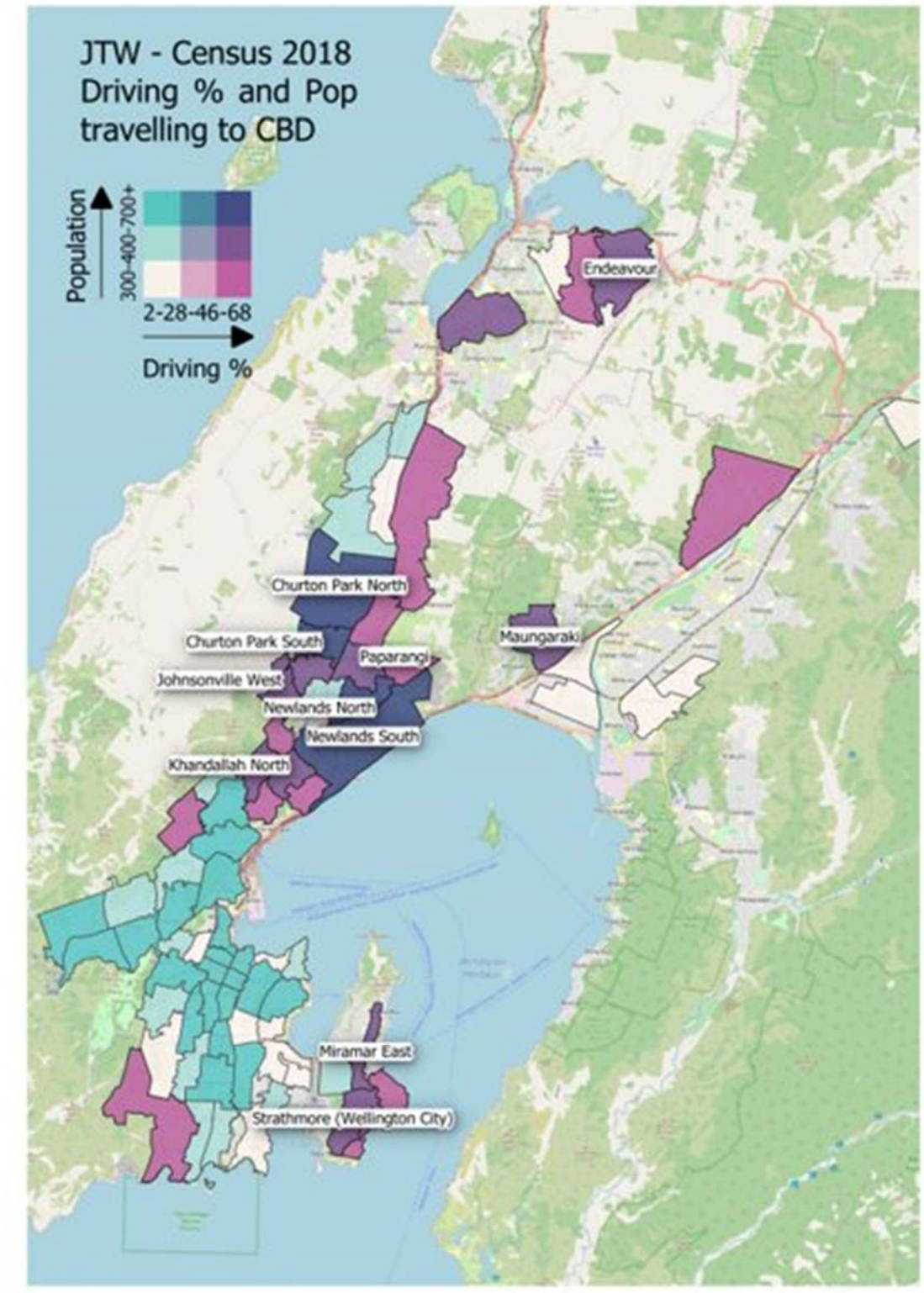


Figure 2-3 Trips to work in Wellington central city by population size and proportion of trips driven (GWRC analysis, 2018 Census data)

2.3.4 Journey to education

2018 Census data shows that 21.5 percent of people within the Wellington region are in full-time study, and 3.6 percent are in part-time study (this includes school students and tertiary students). Of these, 42 percent reported usually travelling to education travel by car (either driving or being driven), 26 percent walk, 15 percent travel by bus or train, and 3 percent cycle, as shown in Figure 2-4 (GWRC 2020).

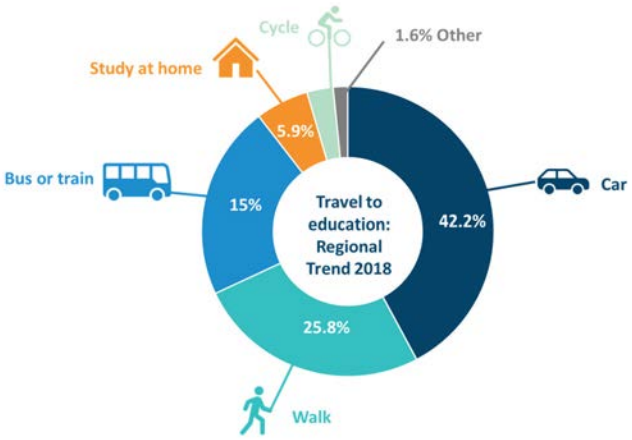


Figure 2-4 Mode share, travel for education in the Wellington Region (2018 Census)

Across the region, access to tertiary institutes within 30 minutes by public transport or bicycle is limited when compared to driving access, as shown in Figure 2-5. As the cost of renting rises, some students may find it more viable to live further away and commute by car (WRGF 2020) instead of living closer to their place of study. There is a need to further investigate and understand the spatial distribution of travel mode for journeys to tertiary institute trips to better inform the design of the behaviour change package.

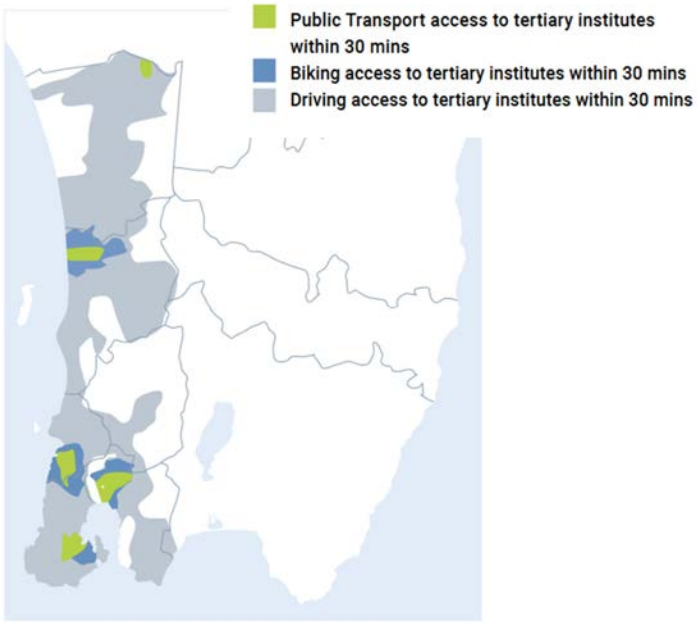


Figure 2-5 Tertiary institute access by mode (GWRC 2020)

Analysis of 2018 Census Journey to Education data was completed by the GWRC Analytics Unit (2020). This showed that for trips to all education locations within Wellington City, the predominant mode of travel is by foot, bus (school or public) or train, while travel to locations in the Hutt City and Porirua areas had higher levels of driving (see Figure 2-6). Further analysis of education trips made by car to places in and around central Wellington revealed that the trip origin points are spatially dispersed. It also appears that most trips within a walkable distance are walked.

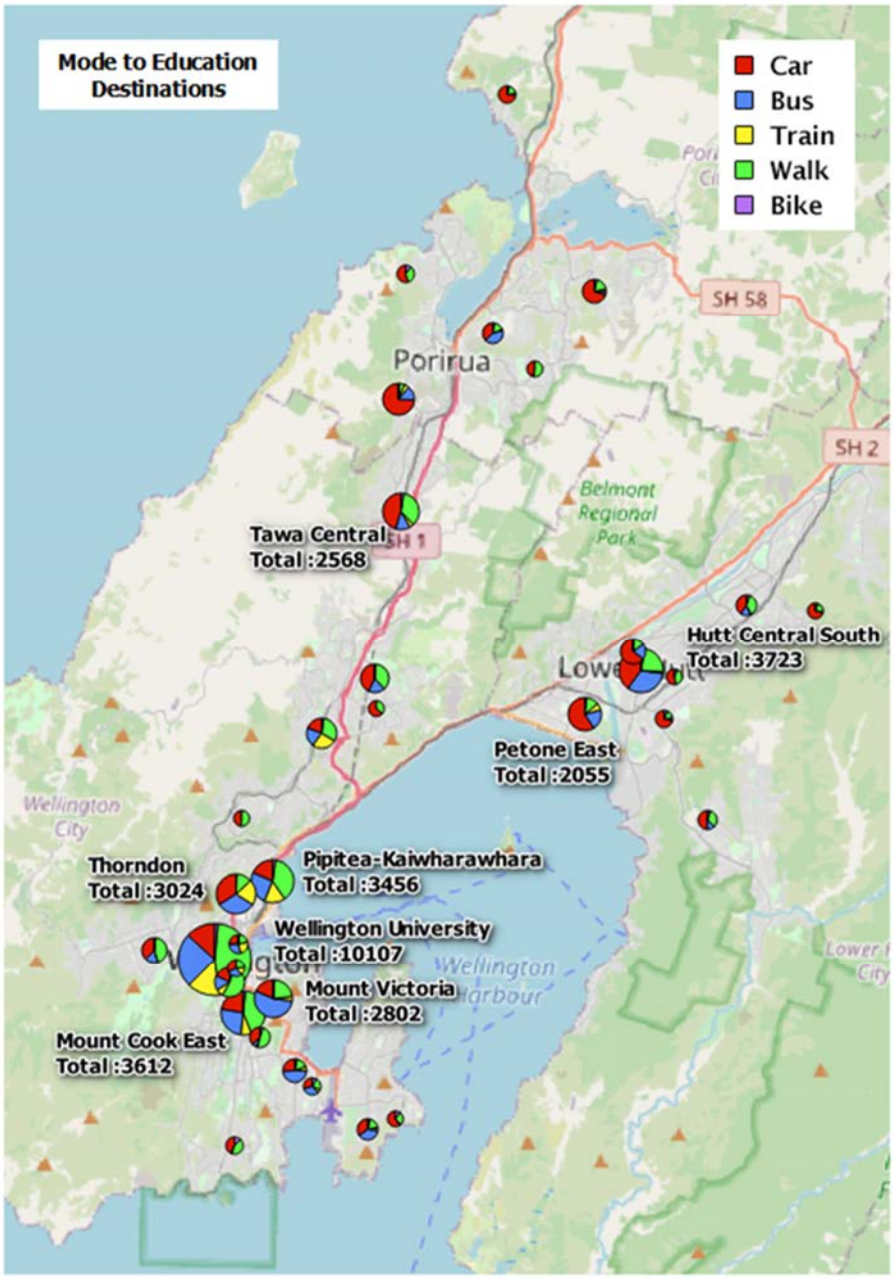


Figure 2-6 Mode of travel to education destinations in Wellington (GWRC, 2020)

2.4 Potential for change

The 2018 Census Journey to Work data showed that about 15 percent of the 22,734 trips to central Wellington from within central Wellington were made by car drivers. Are these the hard to shift trips that are made, for example, by someone who has complex trip chaining requirements, needs a car for work, or who has limited personal mobility? Or are they made by someone who could reasonably travel using other modes but simply prefers not to?

A recent survey (LGWM, 2020a) indicated that for people driving to work at peak times:

- 61 percent have no intention of changing their behaviour,
- 72 percent of people in this group do not directly pay for car parking

This perhaps indicates that some of the remaining portion of car-based travel (up to 39% of commuters) could potentially be made less often, by other modes, at other times or with increased vehicle occupancy.

The appeal of free parking will be difficult to address through voluntary behaviour change initiatives alone. This will need to be addressed through demand management measures (such as a parking levy) that change the appeal of driving.

2.5 Performance of existing travel behaviour change initiatives

The Greater Wellington Regional Council has a well-established TBCh programme[4]. It is targeted in its approach, with a focus on encouraging workplace[5] and school travel planning with the aim of 'increasing numbers of people travelling to work by low carbon modes'. Greater Wellington Regional Council in recent years has also improved its rail network, and bus network, enabled e-scooter sharing in Wellington City and Hutt City, encouraged workplace travel plans, seen employers move towards supporting more flexible working and home working, and conducted travel promotion initiatives that have encouraged cycling and scooting to school. Further information on the existing initiatives is available in section 6.1.1.

In its Mode Shift Plan for Wellington, Waka Kotahi reports that the combined effect of these initiatives has been:

- an increase in rail patronage of 21 percent over the last decade due to improvements in infrastructure, service quality, frequency and reliability
- a steady increase in bus patronage: one percent p/a from 2003-2018, and a five percent increase in 2019. The bus network was redesigned in 2018 to better align with international best-practice and increase service frequencies. Other initiatives like integrated ticketing, bike racks on buses and bike parking have helped with the increase in patronage.
- the number of cyclists entering the Wellington CBD each day increased from 700 to 1,600 between 2000 and 2017. Recent investments include progress on the city's cycle network facilities to develop a network by gradually improving and adding connections to the north, east and south of the city. Recent projects include cycling connections in the city centre, Newtown, Mt Cook, Berhampore, Island Bay, Kilbirnie and Miramar as well as the use of sharrow road markings. Improved central city connections are expected to be developed as part of the wider LGWM programme.
- increased perceived safety: due to improvements such as 30km/hr zones, painted cycle lanes, separation, and off-road paths (WKNZTA 2020).

[4] Key personnel at the Greater Wellington Regional Council (GWRC), the five districts and four city councils were contacted and asked for information to inform this Critical Review.
[5] Workplace schemes are typically aimed at large workplaces, or amalgamations of similar workplaces (eg Capital and Coast District Health Board).

These achievements are all likely to have contributed to the target for LGWM of reducing car trips and vehicle kilometres travelled.

One main observation about the existing Travel Behaviour Change programme was that within the five district councils, most related initiatives tended to be led by the Road Safety teams and any travel behaviour change activities largely leveraged off the GWRC programme.

Road safety education and promotion initiatives are generally tied to the GWRC programme and included initiatives such as Movin' March (active travel to schools) and Pedal Ready (cycling skills for Wellington Region). Local initiatives delivered by local authorities were limited by budget restrictions, priorities (safety was prioritised over behaviour change) and staffing constraints. Initiatives that sit within the minor works budget are determined at a local level. Kāpiti Coast District Council runs a database for prioritising minor works in response to issues raised through school travel plans (e.g. needs for a road pedestrian crossing, cycle access).

The councils regularly meet with GWRC at a quarterly forum to discuss plans and progress. Each district tailors its focus to the circumstances in its area. Kāpiti Coast for example runs mobility scooter courses and courses for e-bike users in response to the high proportion of retirees in its area. Monitoring and evaluation are not always undertaken.

The most readily available information was for initiatives being undertaken by the GWRC which has had a regional TBCh programme in place since 2006 to coordinate and deliver travel behaviour change programmes.

There are presently 9.25 FTEs employed at GWRC and WCC. GWRC employees are responsible for delivering TBCh focused activities throughout the region. WCC employees are focused on the city. Some of these employees also have responsibilities for road safety and active/sustainable transport and are not solely focused on TDM. The impact of the current programme is discussed further in the Critical Review Report (LGWM 2020a).

The infographic in Figure 2-7 shows the various workplace and business travel programmes implemented in the Wellington Region before 2014. According to the Workplace and Business Travel Programme 2006-2014 report (GWRC 2014), an evaluation of the workplace travel plans component of the GWRC's Workplace and Business Travel Programme in 2012 indicated a benefit-cost ratio (BCR) of 18.3 (based on the Waka Kotahi Economic Evaluation Manual). The review was also able to evaluate the impact of programmes such as evaluation of the Active a2b 2014 programme that ran over 13 weeks had a BCR of 11.6. The objectives of these programmes were to:

- Reduce congestion
- Increase public transport user
- Improve health of the region and
- Reduce greenhouse gas emissions.

The existing programmes run by GWRC and WCC remain similar to those evaluated in 2014, and they provide a good foundation from which to build the LGWM TBCh package. There is some evaluation information available, however, the region's TBCh programmes would benefit from a more robust evaluation approach which includes measurement of the key objectives of the LGWM packages. A larger programme may be able to justify this.

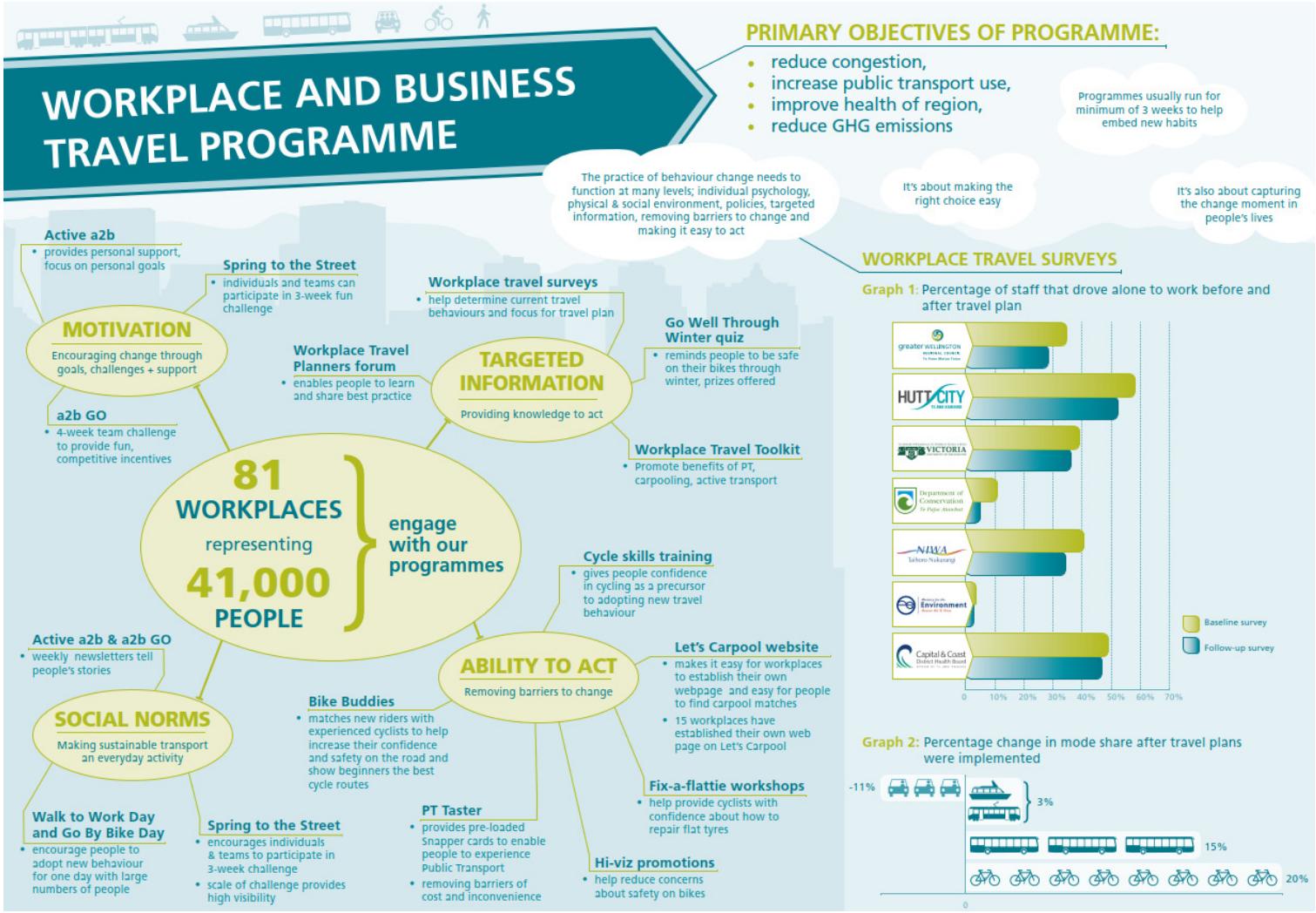


Figure 2-7 An overview of the initiatives aimed at a broad approach to behaviour change (GWRC 2014)

3 Developing a TBCh programme

This section outlines what the SSBC is intended to achieve and the strategies for realising these goals.

3.1 Setting targets

The transport principles and the opportunities identified within the LGWM PBC were used as the basis for developing the investment objectives for the TBCh package. The investment objectives and their associated key performance indicators (KPIs) are shown in Table 3-1.

Table 3-1 Project Objectives

TBCh package objectives	Weighting	KPIs
A. Improve access to and through the central city ensuring people know that the available travel choices will work for them	**15%**	Awareness of travel choice Perception of active mode convenience Perception of active mode safety
B. Minimise disruption to people and businesses by making sure they are aware of upcoming changes, how changes will affect their journeys, and that they understand their travel options during delivery of work to improve and renew the city[6]	**15%**	Awareness of when and how the transport system is changing Awareness of how travel will be affected
C. Make best use of the transport network by encouraging people to travel less often and at less busy times[7]	**20%**	Weekday traffic peak intensity as proportion of demand Weekday bus peak intensity as proportion of demand Weekday rail peak intensity as proportion of demand Numbers working from home
D. Make best use of the available transport options by reducing the proportion of people that drive alone during busy times or for short trips	**25%**	Travel to work mode share (incl. work from home) Travel to school mode share vehicle occupancy Walking, cycling and public transport cordon counts Weekend traffic peak intensity
E. Improve the health, safety and wellbeing of communities by increasing the number of trips that involve active modes and public transport	**25%**	Number and length of walking trips Number and length of cycling trips Number walking and cycling leisure trips Number people who know their neighbours Number personal connections within communities Reduction in tonnes of CO2 equivalents emitted

The investment objectives are designed to work together as a group. The weighting indicates the relative importance of each objective. In response to the challenges of attributing benefits within the programme, the first two objectives (A & B) are focused on outputs (rather than outcomes). Delivery of these two objectives can only be attributed to the TBCh package. These last three objectives are the ultimate objectives or 'end game' but will be influenced by other packages within the LGWM programme.

A benefits map summarising proposed measures and baseline for the TBCh package is attached as Appendix A. Appendix B shows the relationship between the investment benefits and objectives. The proposed approach to monitoring and evaluation is discussed later in this report within the Management Case.

While the TBCh package can deliver many improvements on its own, it will be most effective when co-ordinated with the delivery of wider transport system improvements. For example, encouraging people to take public transport at peak times is only effective if there is available capacity on the public transport network. Similarly, encouraging people to walk or cycle is best achieved when

[6] Disruption may be created by delivery of Let's Get Wellington Moving, three waters renewals, building construction, major events

[7] Busy times include weekends

conditions and the street environment are appropriate. This is in line with the Ministry of Transport (MoT) guidelines for travel demand management attached as Appendix C.

3.2 Strategies to achieve the targets

Growing the travel behaviour change offering will provide the Wellington community with the opportunity to re-think how they get around, and contribute to a transport system that supports liveability, access, reduced car reliance, improved safety and resilience. LGWM's vehicle reduction strategies are outlined below, and they are expanded further in Figure 3-1 which links the project objectives, with these strategies and travel behaviour change initiatives.

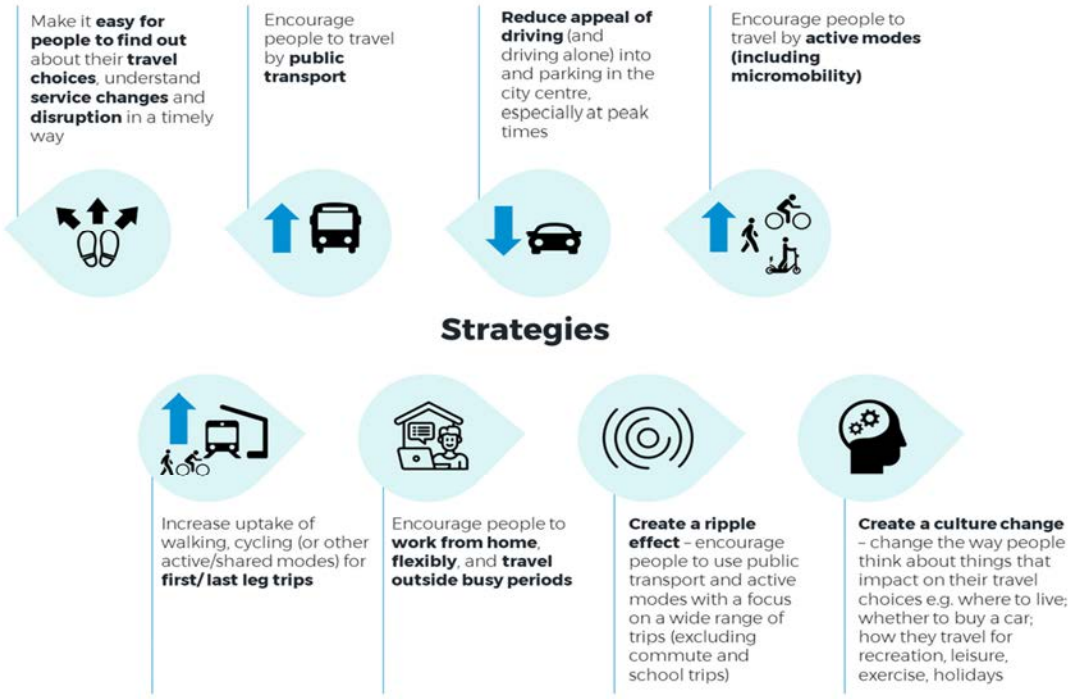


Figure 3-1 Strategies to achieve the LGWM TBCh targets

3.3 Travel behaviour change within the context of travel demand management (TDM))

Travel behaviour change programmes are one component of a broader approach termed 'travel demand management' (TDM). Waka Kotahi NZ Transport Agency (Waka Kotahi) define TDM as *"an application of strategies, policies and initiatives to reduce travel demand or redistribute demand across multiple modes of transport" (Thomas et al 2020)*.

Figure 3-2, below, shows how "soft" travel behaviour change sits within a TDM spectrum

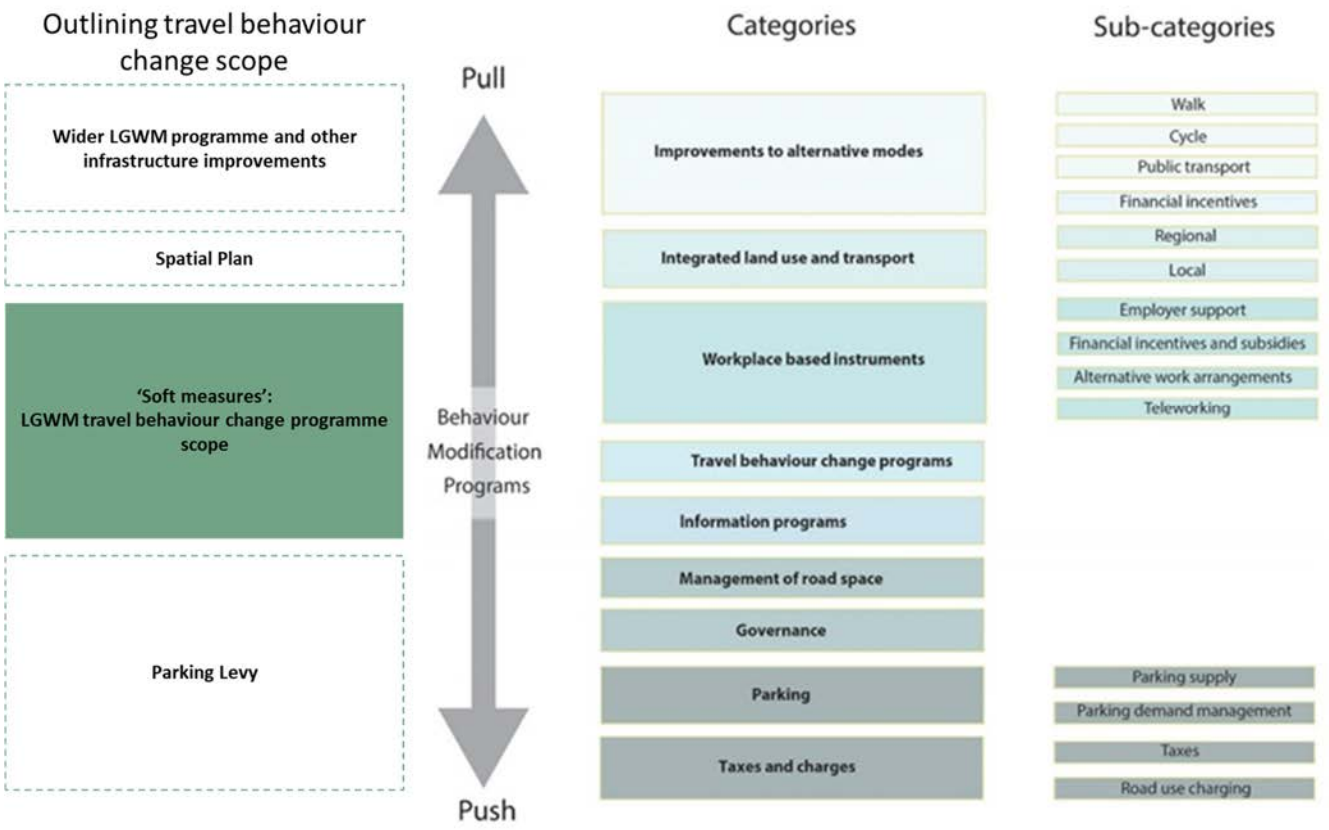


Figure 3-2 Outlining the travel behaviour change scope within the push and pull factor spectrum adapted from Babb et al (2016) in Bierman et al (2016).

TDM instruments can be identified as either providing incentives for travel by modes other than car alone (shown in the diagram as 'pull' factors) or providing disincentives for travel by car alone ('push' factors).

'Push' initiatives (e.g. parking levy) discourage people from driving alone and parking in the city centre. 'Pull' initiatives (e.g. improvements to alternative modes, first last leg infrastructure and service improvements) increase the attractiveness of and encourage a shift toward other modes. "Pull" initiatives will only be effective when conditions are appropriate. For example, encouraging people to use public transport at peak times is only effective if there is available capacity.

Another example of a 'pull' initiative is 'supportive land use' that make it easier to change behaviour. These include areas with higher density, mix of land uses, access to local amenities, and near reliable and frequent public transport that will create attractive places where people can live and work while also reducing their dependence on their private vehicles. The Wellington Spatial Plan is starting to pave the way towards addressing the underlying systemic socio-economic factors that impact travel choices, e.g. lack of affordable housing near the city centre or land use that requires a car.

Working as the 'glue' between 'push' and 'pull' initiatives are travel behaviour change programmes, often referred to as the 'soft' measures (e.g. social marketing campaigns, travel plans, programmes that 'help people to help themselves' overcome things they do not like about travelling by car, and information platforms) that provide a nudge to change people's perception of or willingness to use different modes, alter the time of travel or even reconsider the need to travel.

TDM can also include increases in transport capacity or level of service and 'hard' measures such as road pricing. This business case highlights the impact of a Commuter Parking Levy for Wellington. Other packages in the LGWM programme and initiatives being progressed by partner organisations are focused on changes to infrastructure that to encourage more efficient use of the transport system.

The right mix and timing of push and pull factors combined with behaviour change measures increase the effectiveness and public acceptance and support of the programme. If 'push' measures are implemented in advance of having alternatives in place, it can be harder for people in the community to reduce their car use - meaning the measures can be negatively perceived. An imbalance of 'push' and 'pull' measures can also reduce the potential mode shift by not pushing people enough to change their current mode of travel.

These assertions are supported by the findings of the Critical Review report which highlights an increased uptake of active and shared modes when infrastructure / amenity improvements are combined with travel behaviour change initiatives, e.g. bikeshare programmes in the US, travel plans, guaranteed ride home etc (LGWM, 2020b). See Box 1 demonstrating impact of behaviour change measures being delivered alongside transport system improvements.

Box 1: Case studies demonstrating the impact of a combination of infrastructure improvements and soft travel behaviour change measures

Sustainable Travel Towns, UK (DoT, 2010)
Impact: Over five years, reduction of 7-10% in the number of car driver trips per resident. Soft measures were more effective when they were delivered alongside public transport improvements.

Model Communities project, New Zealand (NPDC, 2020)
Over two years, the initiatives observed a 44% decrease in cars at schools, 12% decrease in cars at workplaces. 30% increase in active travel compared to control sites.

3.4 Considerations for developing a TBCh package

The previous section introduced the concept of travel behaviour change and described how it fits within the wider context of LGWM and TDM. This section explores travel behaviour change from a theoretical point of view.

One way to explain behaviour change is through a widely used psychological theory of the 'transtheoretical model of change' which helps develop an understanding of people's psychological readiness to change (Hutchinson et al 2010). It theorises that people fall within one of five stages of the following stages (this is illustrated in Figure 3-3):

- pre-contemplation – no intention to change
- contemplation –considering a change, but not yet making it
- preparation – intention to make a change
- action – trying new behaviour
- maintenance – habit

Based on this understanding, we developed a willingness and opportunity for mode shift framework shown in Figure 3-4. It represents the potential for behaviour change based on a matrix of people's level of willingness (characteristics of the person) and level of opportunity (contextual factors). Use of models like these can help with developing an understanding of the audience, setting realistic goals and developing programmes based on people's readiness to change. This is because initiatives and interventions that are appropriate for someone in one stage are not effective for someone in another stage.

Figure 3-3 Propensity to change behaviour for individuals (image adopted from Lester 2016)

Detailed design of individual initiatives within the TBCh package will need to include evidence-based strategies that seek to advance people's state of mind culminating in desired behaviour change.

Figure 3-4 Market segmentation conceptual framework

3.5 What type of trips and behaviours can be targeted by a TBCh package for Wellington?

As noted earlier, travel is a 'derived demand' as people travel to carry out activities or access goods and services. Travel behaviour change therefore is much bigger than a change in mode and requires a multi-pronged approach. People can (and do) travel to carry out many different activities, including to go to work or make a work-related trip; to go to a place of education or study; to shop; to access services and for appointments; to socialise and for entertainments; to accompany, drop-off or pick-up someone else; for, or to get to, sport, exercise and recreation; or to return home.

Of all the reasons to travel, travel to work and education are made during peak times on a routine and frequent basis, and thus are more likely to have very established daily patterns of travel time and mode choice. Given that the main focus of this travel behaviour change programme is to target trips that occur at peak time, trips to work and education have been the focus of our attention. They are also the trips we know the most about, as they tend to attract the most data collection and analysis.

A successful travel behaviour change programme must also focus on trips for other purposes (e.g. recreational, social and personal business). Firstly, these trips still account for a quarter of Wellington Region's peak time travel (Nexus, 2019a), and secondly, because how people travel when they are not going to work or education can have a 'ripple effect' i.e. it influences how they choose to travel to work or education.

Research indicates that in Wellington people who cycle for recreation are more prepared and willing to cycle to work than those who do not cycle at all (Randal 2013). The implication is that promoting recreational cycling in Wellington may be a gateway to increasing commuter cycling – particularly if combined with safe and comfortable cycling infrastructure.

Encouraging people to think about how they travel to the shops or for leisure will help to shift mindsets, build preparedness and start to remove mental barriers that prevent people from considering alternative modes or ways of doing

Box 2: Defining ripple effect and culture change

Creating a ripple effect: encouraging people to use public transport and active modes for all trips, region wide. Creating a ripple effect is about choosing not to drive for a trip to the grocery store, to a social event, to the gym or the soccer game. Evidence indicates:

- People who *sometimes* use non-driving modes have more receptive attitudes to using non-SOV modes, and/or are more likely to shift their behaviour in response to TBC, than those who *always* drive (Sadat 2018, Molin et al 2016, Diana and Mokhtarian 2009)
- People who are exposed to transit and bicycling as children and young adults are more likely to use these modes as adults (Smart 2017, Dill and Voros 2007)
- Recreational and/or non-commute mode shift can have a knock-on effect for commute mode choice (Gardner 1998, Stinson 2004, TFL 2011, Kroesen and Handy 2014, Park et al 2011, Boyer 2018)

Creating a culture change: changing the way people make decisions that have a flow on effect to their travel choices such as where to live; whether to buy a car as well as alternative ways to carry out activities (eg where they are done, who does them). Evidence indicates:

- TBCh initiatives aimed exclusively at individuals are less effective than those that target/acknowledge the larger societal context in which people make transport choices (Spotswood et al 2015)
- Cultural shift and societal-level interventions can be particularly effective ways to change behaviour; it is possible to intentionally change culture (Andersen 2016)
- Helping employees select the work site closest to their home can dramatically reduce vehicle kilometres travelled for the work commute (Mullins and Mullins 1995)
- Research on car sharing schemes show they reduce vehicle ownership (Cervero 2007, Giesel and Nobis 2016, Namazu and Dowlatabadi 2018, Martin et al 2010)

things. These types of trips will be targeted with initiatives to create a 'ripple effect' (Box 2) while experience in TBCh programmes elsewhere also suggests that a successful behaviour change programme needs to have a strategic framework that includes opportunities for changes in mode shift as well as in the following non-mode shift areas to induce a long term, sustained 'culture change' away from generating car driver trips and vkt towards:

- changing locations of activities to places that are nearer home or other activities
- changing the time of day of activities to reduce peak kms and trips
- planning activities so that less are needed (e.g. creating a shopping list to reduce the number of trips for missed shopping items
- the linking of activities on a given trip to reduce individual trips and kms (trip chaining)
- the allocation of activities to different people as part of their existing travel and activities

Some of the evidence for a culture change achieving mode shift is from projects co-funded by the health sector, e.g. Blue Zones and other programmes such as "goDCgo" from Washington DC and UK Sustainable Towns which resulted in a mode shift away from car driving (see Appendix F for a list of case studies and the LGWM, 2020a: Critical Review Report for details on results). These programmes highlight the importance of a more holistic approach that seeks to build healthier neighbourhoods/ communities and works to change the way people think. They also raise the importance of working with partners in health, community and with other social change agents. This is reaffirmed by MoT's guidance on travel demand management attached in Appendix C.

The concepts of 'ripple effect' and 'culture change' are explained in Box 2, above. The concepts of 'ripple effect' and 'culture change' are explained in Box 2, above.

3.6 What are the characteristics of a successful TBCh package?

Delivering a behaviour change package requires an understanding of what people think, how they feel, their readiness to change, what their travel choices are and what is going to trigger a change. A TBCh package for Wellington will therefore need to respond to the city's unique characteristics, challenges and needs of the people. To be effective it must:

- **Be effective and deliver value for money**: Wellington will need a bold TBCh package to achieve the ambitious LGWM targets for the city; a bold package however does not necessarily mean large scale and costly, but staged, targeted, and effective, as affordability will be an important consideration in the current economic conditions
- **Be easy to assess its impact, report, and make continuous improvements**
- **Be aligned and coordinated with other projects and organisations:** A successful TBCh package will be aligned with the wider LGWM programme of works to maximise the behaviour change away from car driving to and through the city centre, both during construction-related disruption and to maximise uptake once improvements have been delivered. It will also be aligned to, for example, future improvements to public transport services
- **Be flexible and responsive to changing conditions:** Wellington is changing in terms of its land use and transport offerings. COVID-19 has also altered travel patterns. Other changes such as the introduction of Mobility as a Service (MaaS)[8], integrated ticketing and first-last leg improvements are also planned but timeframes and scale are yet to be determined. This means a travel behaviour

[8] "Mobility as a Service (MaaS) is a business model that is enabled by smartphone technology and the aggregation of data onto a single digital platform. The app allows a person to plan, book and pay for an end- to-end journey whether it involves one or several forms of transport" (Waka Kotahi 2020b).

change package for Wellington will need to remain flexible, agile and respond to transport system changes as they are made

- Use a variety of messages and offerings that will speak to different audiences, different situations, and different moments in time: Life changes are a prime opportunity for people to rethink their travel choices and can provide an opportunity for a targeted nudge
- **Speak to a variety of motivators:** People will respond to different motivators, e.g. environmental sustainability, improved health outcomes, or increased safety and liveability. Using a variety of motivators will reach people who might not otherwise be responsive
- **Be embedded with the principle of equity:** The TBCh package should be grounded in an understanding that not all people have equal access to social and economic opportunities. Communities where housing is more affordable are often underinvested in, lacking shared paths, cycle lanes and public transport linkages. A successful TBCh package in Wellington should ensure that those who live further away from the city centre, who need to work multiple jobs or are shift workers and suffer from transport inequity are not disproportionally impacted.
- **Enable innovation:** Taking a 'pilot test and grow' approach will enable innovation and manage the risk around uncertainties.

3.7 What are the components of a successful TBCh package?

Changing behaviour is complex as our choices are influenced by a wide range of external and internal influences. In policy terms, travel behaviour change programmes are 'complex systems' i.e. they require a blend of initiatives all working towards the same goal to be successful. Implementing initiatives on their own would not have the same impact when compared to a system approach (FP 2016). Any successful TBCh package for Wellington should include the following components:

- **Clear goals and objectives:** to enable a common understanding of what the programme is trying to achieve and what the measures of success are.
- **Policy, Partnerships and Advocacy:** working with partners e.g. employers/ employees/ travellers to induce mode shift and advocate for change. Example activities include establishing a Transport Management Association (TMA)[9]; guidance around parking and company car cash out (linked to the proposed commuter parking levy); and personalised journey planning and outreach (targeting individuals/households).
- **Marketing, communication and incentives:** provide consistent information, persuasive messaging, and convenient assistance to travellers. Example activities include branding; communication platforms; targeted social marketing campaigns; ongoing marketing and communications integrated in all transport communication, particularly that from LGWM; and wayfinding. Evidence indicates:
  - **Gamification/challenges:** can increase the use of non-driving modes (Weber et al 2018)
  - **Incentives – financial and non- financial:** can change commute mode choice (Halvorsen et al 2016, Hamre & Buehler 2014, Herzog et al 2016, Zhu et al 2015, Bueno et al 2017).
- **Travel Plans:** packages of measures, initiatives and promotions aimed at encouraging a shift away from single use car trips towards walking, cycling, using public transport or other sustainable modes by those making trips to or from a destination such as a workplace, place of education, construction site or an event. They can also be used to target trips at the origins by targeting communities or new developments as well as personalised journey planning which provides personalised travel advice

[9] A TMA is a not-for-profit organisation that represents an area's businesses and residents, with local government support. TMAs are member-controlled and take on roles ranging from advocacy and promotion of sustainable transport, through to running services such as vanpooling, shuttles or parking brokerage (OIC&KMC 2015).The Wynyard Quarter TMA in Auckland is a New Zealand example of a TMA: https://www.wqtma.co.nz/

and outreach. Effective travel plans provide people with options to do things differently and empower them to make their own decisions, which is important in creating long term, sustained behaviour change e.g. mode choice post-disruption. Evidence indicates:

  - Workplace and school travel plans are effective in reducing car use (Chatterjee 2009, Moser and Bamberg 2008, Fujii 2006, Meloni et al 2016)
  - People who are exposed to transit and bicycling as children and young adults are more likely to use these modes as adults (Smart 2017, Dill and Voros 2007)
  - That changing the behaviour of secondary school and tertiary education students will have lasting benefits when students transition into the workforce (Smart and Klein, 2017). Any TBCh package targeting travel behaviour change in schools located further from the central city (i.e. not listed above), may therefore, in the longer term, contribute to reduced car-based journeys to work.

- **Events, experiences and life choices:** to help people overcome barriers and form new habits through experiential and social learning. Evidence indicates that:
  - Cultural and social norms can affect commuting choices (Kormos et al 2015, Riggs 2017, Biggar 2019)
  - Recreational or non-commute mode shift can have a knock-on effect for commuter mode choice (Gardner 1998, Stinson 2004, TFL 2011, Kroesen and Handy 2014, Park et al 2011, Boyer 2018)
  - Habit plays a major role in mode choice (Verplanken et al 1994); events & experiences can disrupt that habit
  - Events can create lasting mode shift among participants (Rose and Marfurt 2007).
- **Supporting services and amenities:** to remove barriers to choosing shared and active modes e.g. insurance, training and skills, end of trip facilities etc. Example activities include bicycle Maintenance/Repair stations; e-bike/e-scooter charging stations; planning, incentivising and funding network-wide end of trip facilities; tactical local changes that respond to feedback (e.g. through citizen science); and pocket park & rides. Evidence indicates:
  - Shared mobility schemes result in significant mode shift away from drive-alone trips (Xu 2020, Cervero et al 2007) and reduced vehicle ownership (Martin et al 2010)
  - Inadequate first/last-mile connections to transit limit job access (Boarnet 2017)
  - Trip-end facilities (parking and showers) make cycle commuting much more appealing (Hamre & Buehler 2014, Abraham et al 2002, Hunt and Abraham 2007)
  - Lack of access to bicycle maintenance and storage is a reason people do not cycle (Community Cycling Centre 2012).
- **Measuring, monitoring and evaluation:** Building an evaluation plan (including detailed measurement) alongside the travel behaviour change programme is critical to understanding:
  - to what extent and how the management of travel behaviour change can be improved
  - the extent to which LGWM travel behaviour change vision and objectives are being achieved
  - to what extent and how programmes or initiatives can be improved; this is particularly important in a 'pilot, test and grow' approach where new ideas can be trialled and depending on their success, can either end, change or grow
  - how to build knowledge about effective strategies
  - provide transparency for the public and decision makers.

An evaluation plan should be designed to enable an evaluation of the:

- effectiveness of individual initiatives
- effectiveness of the package as a whole
- the root cause underpinning the level of success (e.g. capacity or funding, faulty theory of change, and/or external factors, such as transport system changes).

Each of the components described above are needed to complement each other. Components cannot be removed without damaging the effectiveness of the TBCh package. The costs and resource requirements for each component can, however, be scaled up or down depending on the emphasis and focus of the TBCh package.

It is important to note that the following components are already being considered by GWRC and Metlink:

- **Incentives and disincentives:** Nearly all of the research on travel behaviour change programmes indicated the effectiveness of incentives, disincentives and pricing strategies. Subsidised or incentivised public transport encouraged mode shift and parking measures implemented as part of a broader suite of initiatives increased the effectiveness of the travel behaviour change programme.
- **Supporting services:** provide flexible services that can solve gaps and first-last leg problems and provide a safety net. Example activities include journey planning tools/ MaaS; bike breakdown & maintenance service; car share; first-last leg schemes; guaranteed ride home scheme; micro-mobility share partnerships; and new movers journey planning.

4 Tying in the commuter parking levy

This section describes the proposed parking levy. Further information about how the scheme design was optimised is provided in Appendix G, which is the Wellington Commuter Parking Levy Final Report (LGWM, 2021).

4.1 Background

The LGWM PBC Recommended Improvement Package suggested the introduction of a "road pricing mechanism to manage private vehicle demand and promote alternative modes". It included a statement that 'the recommended package includes congestion pricing. This will include one or several tools that charge motorists to drive into the central city, such as a central city cordon charge or parking levies' (LGWM, 2019a).

Much of the work informing the development of the recommended improvement package was progressed on the assumption that that pricing would take the form of a cordon charge for vehicles entering and exiting the central city.

Preliminary modelling of a cordon charge, by the LGWM team, adopted an outcome-based approach. The aim was to reduce car trips to the CBD by 20 percent at peak times. Modelling was used to determine the necessary level of charge. It was concluded that a $5 inbound charge for the AM peak; $2.50 for the interpeak and $5 outbound charge for the PM peak was needed to achieve a 20% traffic reduction. Implicit in this forecast was the assumption that commuters would be directly charged thereby bearing the full cost.

Following consideration of the LGWM Programme Recommended Package, the Government directed that a parking levy is the only demand management tool which should be considered for Wellington.

As part of work to refine the LGWM Indicative Package, tests were undertaken to explore the effect of a parking levy. This change was made late in the development of the indicative package when there was limited time to develop and adopt a sophisticated modelling approach. The parking levy modelling work was based on a levy of:

- Scenario 1: $4 - $6 per space/per day
- Scenario 2: $9 - $14 per space/per day.

These prices are at 2002 levels and would be the equivalent to $6 - $9 per space/per day and $13.5 - $21 per space/per day in 2020 levels.

These price increases are the equivalent of about $2,250 - $3,500 p/a per space per annum (assuming 250 working days per year). Compared with existing international parking levy projects, these levies would be by far the highest levy charge in the world, even before it is inflated to today's prices. The forecasts are also founded on the assumption that the levy would be fully passed through to commuters which evidence from other jurisdictions, would suggest is unlikely.

Scenario 1 was forecast to reduce car trips to the central city in the AM peak in 2036 by around 10 percent (relative to the Indicative Package (IP)) and Scenario 2 was found to reduce car trips to the CBD by around 20 percent (relative to the IP).

4.2 What can a parking levy deliver for Wellington and the LGWM programme?

When considering the design of a parking levy for Wellington, it was assumed that any scheme would need to:

- encourage a reduction in single occupancy trips using private vehicles to or through the central city

- improve the efficiency of the transport system
- provide a potential revenue source for LGWM partners.

A parking levy may also contribute to the wider LGWM vision. By reducing the numbers of cars in the central city, a parking levy may help to improve the liveability of Wellington city centre and reduce per person carbon emissions.

4.3 Which parts of the central city should the commuter parking levy apply?

The parking levy has been designed to focus on commuters who drive to work in Wellington central city. The design of the levy has not sought to influence the use or management of residential parking, any non-employment related short stay parking nor on-street parking.

The geographic area in which Wellington City Council's targeted rate applies (the 'WCC Downtown Targeted Rate' area) has been selected, refer to Figure 4-1. It is a definition that is well known to the Wellington City business community. It is also seen to be the most useful and closest approximation of individual and business understanding of 'Wellington city centre'.

The proposed area in which the parking levy would apply excludes some (but not all) of the areas covered by on-street coupon-parking zones. If the parking levy is implemented, it is recommended that Wellington City Council considers the relative pricing and placement of coupon parking zones that operate within the 'Downtown Targeted Rate' boundary area. Consideration should be given to increasing the price of (long-term) coupon parking or reducing the number and amount of on-street, long-stay coupon parking spaces, either by transitioning these parking spaces to on-street resident only, short-stay car parks or by removing the carparks entirely.

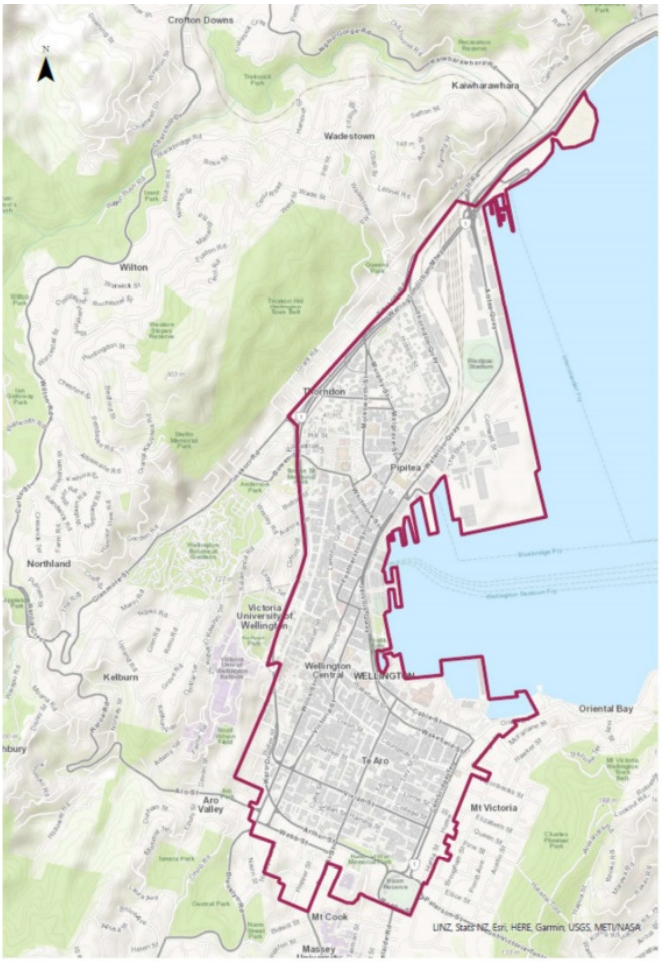


Figure 4-1: Proposed Boundary for the Commuter Parking Levy

4.3.1 Opportunity for future expansion

The parking levy has been designed to focus on commuters who drive to work in the Wellington central city. There are however several large employers that generate commuter traffic, some of which passes through the central city. These are:

- Wellington Regional Hospital[10], located on Adelaide Road, in Newtown, south of the CBD boundary
- Massey University, primarily located on Wallace Street, in Mount Cook, south of the CBD boundary
- Te Herenga Waka / Victoria University of Wellington[11], primarily located along Kelburn Parade, in Kelburn, northwest of the CBD boundary area.

While the travel behaviour change 'softer measures' will target these organisations, future consideration should be given to extending the parking levy to these sites.

4.4 Where can people park in Wellington?

Information on the supply of carparks is based on Wellington City Council's Rating Information Database (RID) and RCG Realty's commercial car park inventory analysis. There are approximately 27,660 car parks in total in the CBD. Excluding retail and residential parks, which will not be captured by the levy, there are 22,050 commuter or casual (short-stay) parks. It is estimated that currently about 19,527 of these are used as long-stay parks available for commuters.

The car parks can be categorised as shown in Table 4-1. The starting assumption is that all publicly available off-street commuter parks and all private car parks with 11 or more parks are levied. There are approximately 17,052 car parks in the '11 and over' category and 2,475 car parks that would be exempt from the levy being part of a group of 10 or fewer parks.

Table 4-1 - Off Street Parking Inventory

Category	Type of car park		Number of car parks, 2020		
			Core CBD zone	Te Aro + Stadium	Total
Off-street available to public: Operator run	Commuter		4,190	2,802	6,992
	Casual (short-stay)		1,397	934	2,331
	Total		5,587	3,736	9,323
Off-street available to public: Council-operated	Commuter		424	155	578
	Casual (short-stay)		141	52	193
	Total		565	206	771
Off-street private not available to public	Commercial offices	11+ parks	5,194	3,062	8,256
		10 or fewer parks	1,487	877	2,364
		Total	6,681	3,939	10,620
	Government entities	11+ parks	200	50	250
		10 or fewer parks	0	0	0
		Total	200	50	250
	Foreign embassies	11+ parks	128	0	128
		10 or fewer parks	19	0	19
		Total	147	0	147
	Educational	11+ parks	35	0	35
		10 or fewer parks	15	13	28
		Total	50	13	63
	Not for profit organisations	11+ parks	441	341	782
		10 or fewer parks	10	36	46
		Total	451	377	828
	Health services	11+ parks	30	0	30
		10 or fewer parks	10	8	18
		Total	40	8	48
Total commuter parks		**11+ parks**	10,642	6,410	**17,052**
		10 or fewer parks	1,541	934	**2,475**
		TOTAL	12,183	7,344	**19,527**
Total casual (short-stay) parks			1,538	986	2,524
Commuter + Casual CBD car parks					**22,050**
Retail			516	765	1,281
Residential			2,213	2,116	4,329
Total CBD car parks					**27,660**

10 WCC are reviewing on-street parking controls in streets surrounding the hospital. GWRC are working with the hospital to develop a travel plan.

11 Te Herenga Waka / Victoria University of Wellington has a well-established travel plan that includes parking management to influence travel behaviour.

4.4.1 Parking prices

Parking charges vary according to location and car park provider. Current average parking prices in different parts of the central city are shown in Table 4-2. These prices were calculated as a weighted average based on early-bird parking prices in public car parks, then multiplied by 250 business days per year to calculate the annual average price. Early-bird prices were used as a proxy for average prices as there is little difference between daily early-bird prices and monthly unreserved prices. Commuters that pay for reserved parks on a monthly or annual basis are only a small proportion of total commuters and therefore have only impact on the weighted average.

Table 4-2 Current Weighted Average Parking Prices

Core CBD (high price zone)	$20.64	$5,160
Te Aro + Stadium (low price zone)	$14.04	$3,510

Source: Calculations based on RCG car park inventory

4.5 Factors influencing impact of a commuter parking levy

The main factors that can influence the impact of a parking levy are:

- car park suppliers' response to a levy
- commuter response to a levy.

Work to develop the recommended design for the parking levy involved research into motorists' response to parking levies elsewhere in the world; response to increases in the cost of parking and interviews with representatives of commercial car park operators. Information gathered was used to develop a model to understand the potential impact of the parking levy, to test options and refine the scheme design. Full details of the options considered, and model development are included in Appendix G.

4.6 What are the choices when designing a parking levy?

The main choices when designing a parking levy relate to:

- the types of parking spaces to which the levy is applied
- how exemptions are managed
- who is responsible for paying the levy
- how the numbers of parking spaces to which the levy is applied is calculated
- whether to apply a different level of levy in different parts of the central city
- the size of the levy.

Appendix G presents the alternatives considered for each of these choices and explains the rationale for the recommended scheme. The following section describes the design of the parking levy proposed for Wellington.

4.7 Recommended parking levy

To influence the behaviour of commuters that drive to work in Wellington, the levy should be applied to all long-stay (commuter) parking spaces in the central city. There are two types:

- Type 1 – Private (employer) off-street car parks
- Type 2 – Public off-street car parks (both publicly and privately operated).

4.7.1.1 Type 1 – Private (employer) off-street car parks

There are two alternatives for determining the private (employer) off-street car parks to which the levy is applicable. They differ in terms of their simplicity and ease of administration. The recommended scheme starts with the assumption that none of the private parking spaces are leviable unless they fit within a definition explicitly identified. In this case, the levy would only apply to spaces that are occupied by a motor vehicle used by:

- an employee
- a regular business visitor, and / or
- a student.

An alternative way of determining the Private (Employer) off-street car parks takes a top-down approach in which every space is included unless specifically exempted. This approach is likely to lead to an exemption list that is overly long, complicated, open to interpretation and difficult to manage. This alternative is not well aligned to the description of a commuter parking levy since, at the outset, it infers all private parking spaces are leviable.

Regardless of whether option A or B is adopted for the definition of Private (Employer) off-street car parks, it is recommended that the following types of car parks are exempt:

- locations where there are 10 or less parking spaces in total
- emergency services vehicles
- parking spaces allocated for Mobility Parking permits
- embassies and high commissions
- parking spaces provided by registered charities (the exemption does not apply if the person providing the parking space charges a fee for parking in the space)
- parking spaces allocated for customers (the exemption does not apply if the person providing the parking space charges customers a fee for parking in the space)
- parking spaces allocated for loading/unloading
- parking spaces allocated for cycles and motorcycles.

4.7.1.2 Type 2 – public off-street car parks (both publicly and privately operated)

The recommended approach would see the levy applied to all public off-street car parks except casual car park spaces that are unused at 10:00AM on a working day. Records would need to be maintained by the owner/operator daily detailing both the number of spaces available (both casual and reserved) and the number of unused casual car park spaces on a weekday at 10:00. This approach is preferred because it provides car park operators more flexibility. They can lower prices to fill more parks but pay more levy. Alternatively, operators can raise prices, fill fewer parks but pay less levy. This flexibility creates more opportunity for the levy to encourage behaviour change. The following types of car parks would be exempt:

- parking spaces allocated for Mobility Parking permits
- parking spaces allocated for cycles or motorcycles.

4.7.2 Changing the levy for different parts of the central city

Applying a uniform parking levy to the central city was rejected for equity reasons. The average cost of parking in Te Aro is lower than in the Lambton ward of the city. More importantly driving mode share is

higher, even though workers there are on lower incomes. Te Aro is further from the train station and, therefore, has less public transport access than the northern part of the central city.

Table 4-3 shows the extent to which possible parking levies would increase median annual parking charges for different parts of the city. It highlights the inequity if the parking levy is not varied in different parts of the city. It shows that prices are lower in Te Aro than in the rest of the CBD, due to different land-use and commuter patterns that present themselves in this area.

Prices for parking are also lower in the northern portion of Pipitea. This is driven by the outsized presence that the Stadium car park holds in driving prices and the walking distance from the rest of the central city.

Parking prices in 'lower-priced' portions of the CBD tend to be about 70 percent of the prices charged in to the 'core' Thorndon and Lambton quarter area.

Table 4-3 - Median Annual Parking Costs in Wellington Central City

Zone	Median annual parking costs, calculated on the basis of early-bird parking rates	$2,250 Parking Levy Increase	$3,500 Parking Levy Increase
Pipitea – Stadium Area	$3,510	$5,760 (+64%)	$7,010 (+100%)
Thorndon / Lambton Quarter	$5,160	$7,410 (+43%)	$8,660 (+67%)
Te Aro	$3,510	$5,760 (+64%)	$7,010 (+100%)

4.7.3 Size of a levy: the amount that could be charged to carpark owners and operators

Research into the appropriate level of parking levy for Wellington found that a levy set at $3,500 per annum (the higher charge modelled during the development of the LGWM Indicative Package) would make the Wellington parking levy the most expensive parking levy in the world. A levy set at $2,250 per annum would make it slightly less expensive than the most expensive levy in Sydney. Setting a parking levy in Wellington at more than $2,500 per annum is likely to be publicly unacceptable even if introduced incrementally. It would represent an increase of parking prices of close to 100%.

The team also explored the cost, revenue and demand implications for four possible levy levels. Based on this review, it is recommended that the parking levy amount is set at $2,500 per annum in the Thorndon/Lambton Quarter sector and $1,750 per annum in Te Aro and Pipitea (equivalent to 70 percent of the higher levy). This is expected to result in a 10% reduction in daily trips to the central city by car.

A three-year phased implementation is proposed such that, in year one of operation, only 33 percent of the full amount of the levy is charged; in year two, 66 percent, and from year three onwards, 100 percent of the proposed levy.

4.8 Expected impacts of a Wellington commuter parking levy

4.8.1 Mode shift impacts

Depending on the size of the levy, it is forecast that there would be between a one percent ($500 annual levy) and 14 percent ($5,000 annual levy) reduction in car trips to the CBD compared to an environment where a parking levy was not introduced. This is shown in Figure 4-2 below. Figure 4-3 shows the forecast change in absolute traffic volumes.

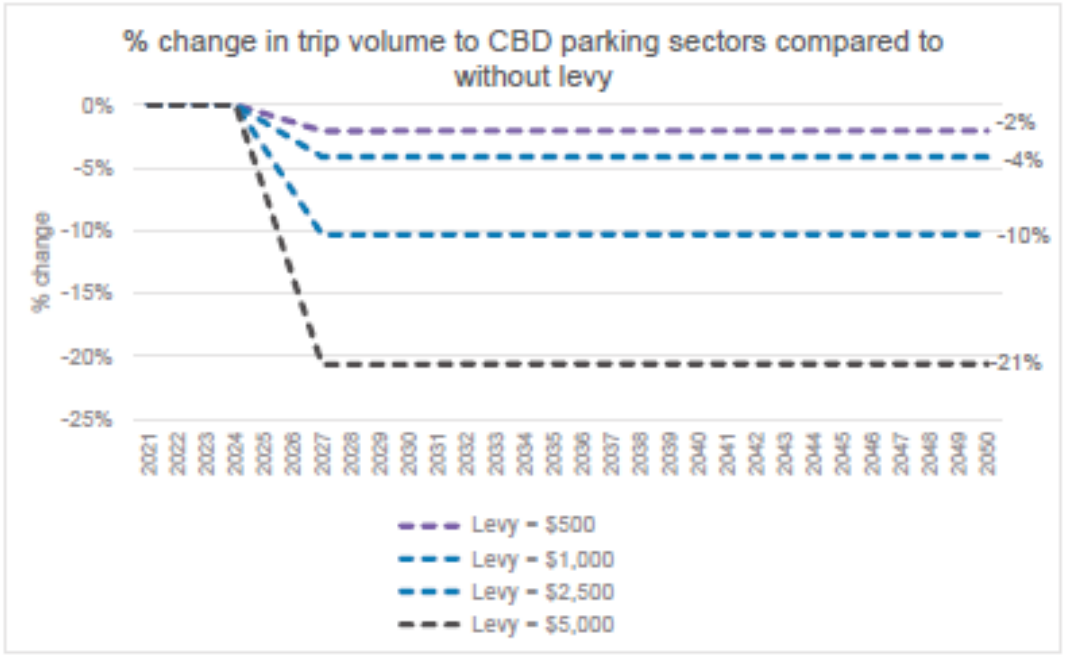


Figure 4-2 Percentage Change in Traffic Volumes to the Central City

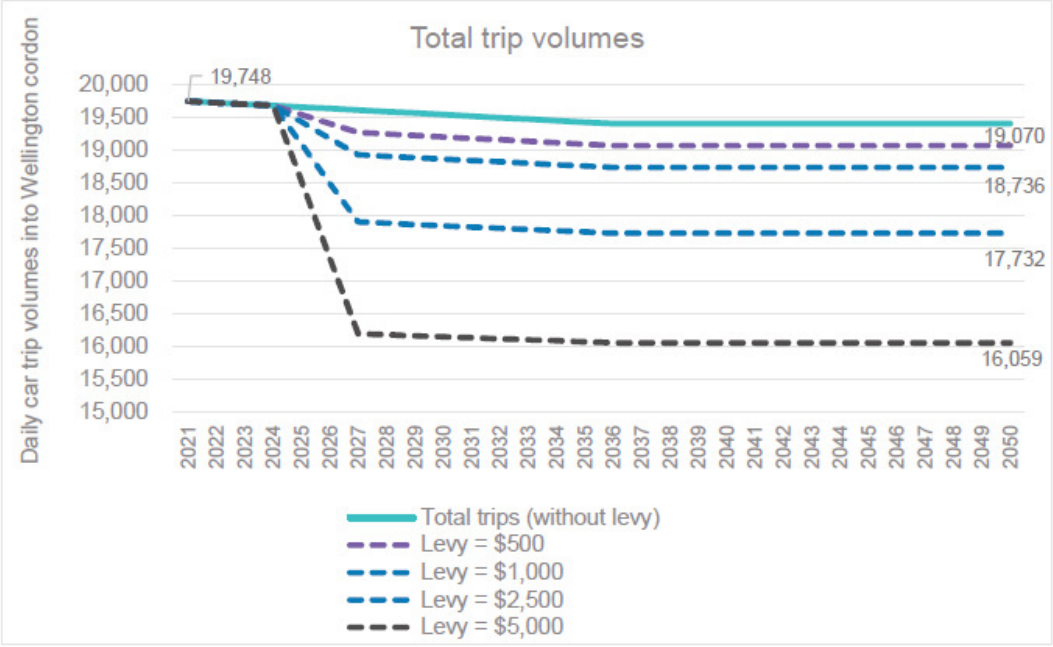


Figure 4-3 Change in Traffic Volumes by Car as a Result of Different Levy Levels

The figures show that, in future, independent of any other factors, the introduction of a parking levy of $2,500 would be expected to reduce the total volume of car trips from 19,748 to 17,732 - a reduction of 2,016 car trips each weekday. The percentages do not entirely correlate with the absolute traffic reduction because a small proportion of car trips to the central city are expected to instead be diverted to on-street parking areas at the fringes of the central city.

4.8.2 Parking supply impacts

The reduction in parking demand is expected to lead to a reduction in supply of long-stay parking supply over the period that the levy is in force. This would come about as carpark owners' transition long-stay car parks to short-stay commuter carparks or as the car parks are converted to other land use.

4.8.3 Influences affecting forecast impact

The above forecasts are based upon the recommended form of the levy. Any changes to the underlying assumptions will influence the revenue raised and level of demand reduction. The main influences include:

- the amount of the levy
- whether all carparks or only occupied car parks are levied
- the phasing-in rate of the levy, from a period of as little as one to five years
- whether a differential levy is applied in high-priced and low-priced areas of the CBD
- the extent to which the levy is passed from owners and operators to commuters
- the elasticity of demand scenarios
- the displacement of cars from the CBD levy parking zone to areas outside the levy zone (this is estimated as five percent of total demand following the introduction of the levy based on estimated existing capacity of coupon parking)
- whether carparks with ten or fewer carparks are excluded from the levy
- which off-street carpark types are included in the scope of the levy (such as commercial, government entity, foreign embassies, educational, not for profit, and health-service carparks).

4.8.4 Further considerations

There are a range of other potential considerations that would need to be resolved if a parking levy were to be adopted. These include:

- a possibility that residents would seek to lease their carparking spaces to commuters (this happens to some degree today) – these parking spaces would not be liable for the levy as currently proposed
- if the levy amount is high enough, the exclusion of carparks with 10 or fewer spaces could make it more economic for some commuters to consider purchasing carparking spaces outright. These spaces would not be liable for the levy as the 'owner' of the carpark would have 10 or fewer carparking spaces. This scenario would be particularly attractive and a likely market response if the levy was set too high. Car park operators could sell off individual parking spaces to commuters, and these car parks would then not be subject to a levy
- a private business owner who is a commuter would be able to claim back GST on the levy in many instances as a cost of doing business, meaning that the 'actual' cost of the levy was 15 percent less to this commuter compared to others who were not able to claim back GST (i.e. PAYE employees)
- the current interpretation of fringe-benefit tax law and employer-provided carparking spaces is that fringe benefit tax is effectively not charged on employer-provided carparks. This reduces the actual cost of parking for commuters who are provided with an employer-provided carpark, and carparking is advantaged in fringe-benefit tax compared to public transport and active transport mode subsidies (which, somewhat ironically, do attract fringe benefit tax).

5 How did we develop the Travel Behaviour Change packages?

This section explains the process used to develop alternative packages to identify the approach that best meets the project objectives.

5.1 What do we want to achieve?

The overall aim of the LGWM programme is to reduce 6,000 private vehicles from entering the CBD in the morning peak and increasing the person/vehicle ratio from 2.6 in 2006 (82,000 in 31,000 cars) to just under four by 2036 (100,000 in 26,000 cars). The objectives for the travel behaviour change package are:

Travel behaviour package objectives:

A. improve access to and through the central city ensuring people know that the available travel choices will work for them (15%)

B. minimise disruption to people and business by making sure they are aware of upcoming changes, how it will affect their journeys and understand their travel options during delivery of work to improve and renew the city[12] (15%)

C. make best use of the transport network by encouraging people to travel less often and at less busy times[13] (20%)

D. make best use of the available transport options by reducing the proportion of people that drive alone during busy times and/or for short trips (25%)

E. improve the health, safety and wellbeing of communities by increasing the number of trips that involve active modes and public transport (25%)

5.2 Summary of approach

Figure 5-1 shows the approach used for identifying the recommended package with references to where each stage is discussed.

12 Disruption may be created by delivery of Let's Get Wellington Moving, three waters renewals, building construction, major events

13 Busy times include weekends

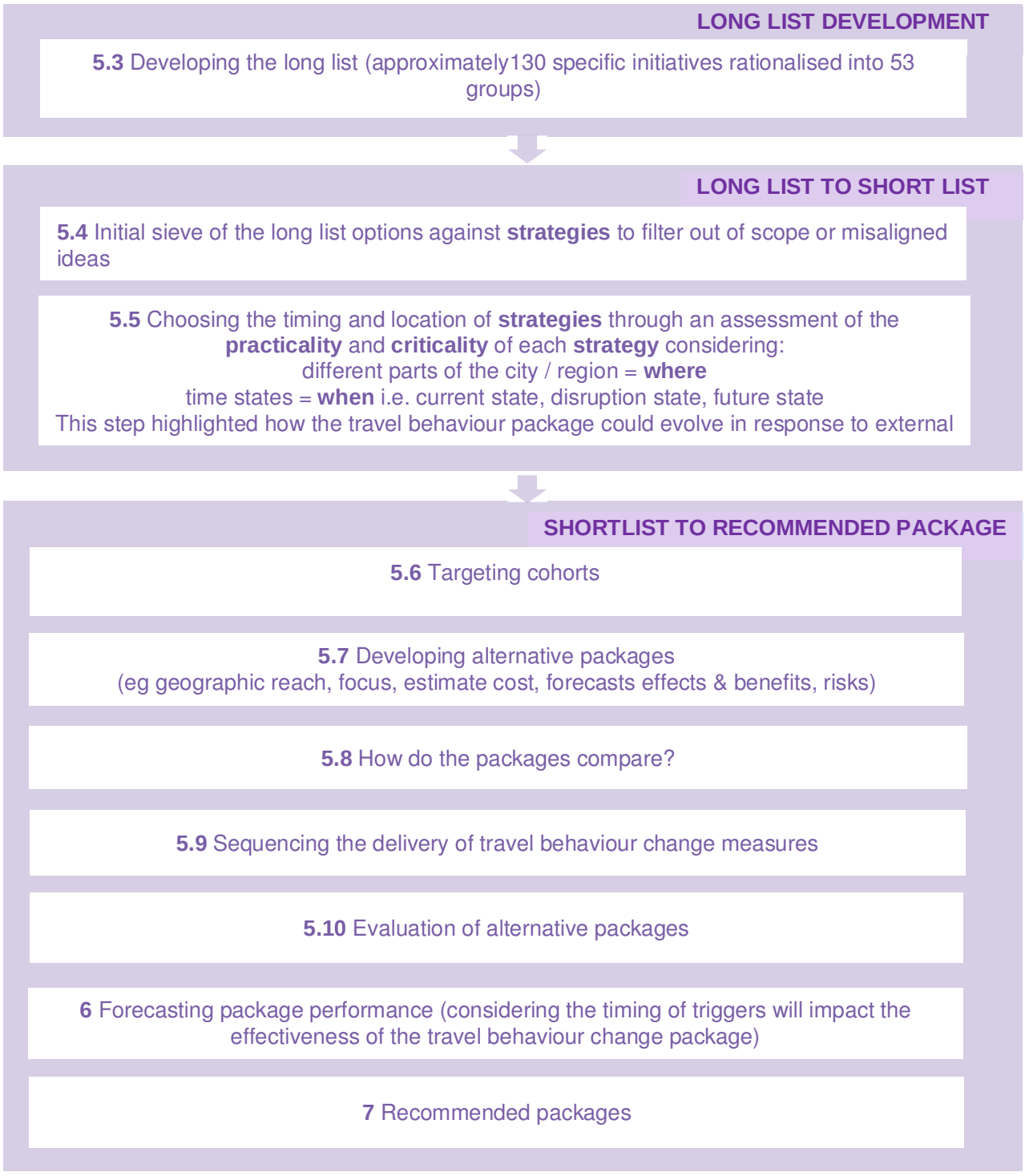


Figure 5-1 Package development process

5.3 Long list development

Long list development included brainstorming within the consultant team and with the representatives of LGWM that are actively involved with delivering travel behaviour change. This resulted in a long list of specific travel behaviour change interventions, initiatives and tools. This drew from previous reports including the Critical Review Case Studies, the Waka Kotahi TDM Research Report (Waka Kotahi 2019) and the group's collective knowledge.

5.4 Developing strategies to provide focus to the development of packages

To enable the development of alternative travel behaviour change packages, the project team developed **strategies** as a bridge between the TBCh package objectives and the granular level of initiatives. This is illustrated in Figure 5-2. These were used to filter the long list and later assess the alternative packages. The strategies were needed to simplify the formation of alternative packages which were complicated by the extent to which the transport system is expected to change through time.

Figure 5-2 Relationship between the project objectives, strategies and travel behaviour change initiatives

The strategies were refined based on feedback from GWRC, WCC and Waka Kotahi TBCh practitioners. Culture change and creating a ripple effect were identified in discussions with these practitioners as being particularly important to achieving long term, sustained travel behaviour change.

Each strategy contributes to achieving the project objectives and varying combinations of these strategies are later used to develop the alternative packages. There are synergies between some of the strategies. For example, making 'it easy for people to find out about their travel choices, understand service disruption and changes in a timely way' is relatively low-impact on its own, but combined with initiatives to 'encourage people to work flexibly or to use alternative modes' will have a greater impact than awareness alone.

5.4.1 Consolidating the long list

The long list was then mapped against the strategies which ultimately helped remove options that did not deliver on the objectives. This exercise also allowed the team to develop an understanding of the initiatives that are aligned with each of the strategies. A key finding here was that many of the initiatives could be tailored to achieve different outcomes. As a simple example, a social media campaign can be tailored to encourage people to shift mode, time of travel or raise awareness of the upcoming disruption.

Following the mapping of the long list to the strategies objectives, which ruled out any interventions or initiatives that were out of scope or not aligned with the objectives, the remaining were then grouped according to the categories below (initially identified in section 3.7).

Policy, partnerships and advocacy	
Purpose	Work with employers and employees/travellers to induce mode shift

Activities	▪ Establish a TMA
	▪ Identify partners (including government departments and Crown entities)
	▪ Tools, materials and incentives for employers
	▪ Policy development (flanking parking levy) to encourage company car cash out and daily parking charges or cash out option
	▪ Parking management software (to support daily charges/ cash out)
	▪ Flexible working and home working guidance
	▪ Cap or reduce parking supply
	▪ Advocacy for:
	  ▪ policy changes for urban design and land use
	  ▪ unbundling of parking and improved parking enforcement
	  ▪ new developments to provide facilities, services, and subsidies
	  ▪ for TDM as a requirement for large events and new developments

Marketing, communications and incentives	
Purpose	Provide consistent information, persuasive messaging, and convenient assistance to travellers

Activities	▪ TBCh Branding
	▪ Social marketing campaigns targeted to specific TBCh initiatives
	▪ Marketing, communications, incentives including:
	  ▪ Awards and certificates/ recognition e.g. cycle friendly employer/ school etc, or recognition for exceptional TDM program
	  ▪ New movers (Journey Planning for)
	  ▪ Off-peak incentives and peak time disincentives for example discount fares during peak periods as part of specific promotions/ trials or short-term initiatives
	  ▪ Challenges, competitions and recognition
	  ▪ Giveaways
	▪ Communication platforms e.g. Websites, Apps, Social Media page

	▪ Ongoing marketing and communications
Travel plans	
Purpose	Create and deliver customised packages of TDM initiatives for people travelling to or from the same site to assist in changing mode or doing things differently to reduce vehicle kms and trips
Activities	▪ Programmes for schools to encourage travel by shared and active modes ▪ Workplace travel plans, including encouraging the Public Service Commission to require government departments and Crown entities to develop or revitalise their own travel plans ▪ Community travel plans ▪ Event travel plans ▪ Building a team of champions who understand behaviour change principles to have conversations with employees, students/teacher and residents to help them help themselves to change.
Events, experiences and life choices	
Purpose	Help people overcome barriers and form new habits through experiential and social learning
Activities	▪ Change work or home location to reduce commute length (e.g. schemes to change work location include assigning worksite location at multi-site employers based on home location; location-efficient mortgage initiatives and employer-assisted or employer-provided housing) ▪ Promotional events (e.g. Innovating Streets; open streets events; temporary activations like cycleways or playground; Bike/Walk to Work Month; free PT days; Walk to Work day; car-free days; bus/ train taonga hunt; Metlink safari; family cycling events/festivals; #urbanhiking With Walking Access Commission; Events/holiday by PT; Open streets events; temporary activations like cycleways or playground; how to ride a bike for *adults*) ▪ Promotional packages (e.g. e-bike/e-scooters/bikes/cargo-bikes promotion package; guidance on suitability/rental/ trial/financial support; Give-it-a-go programmes)
Supporting services and amenities	
Purpose	Remove barriers to choosing shared and active modes, provide flexible services that can solve gaps and first/last-mile problems, and provide a safety net
Activities	▪ Enhanced personal journey planning delivered through digital platforms e.g. journey planning tools/ MaaS ▪ Bike breakdown service ▪ Bike maintenance and repair stations ▪ Car share ▪ First/last-leg schemes ▪ Pocket park & rides ▪ Guaranteed ride home scheme ▪ Micro-mobility share partnerships ▪ New movers journey planning ▪ E-bike/e-scooter charging stations ▪ Planning, incentivising and funding network-wide end of trip facilities ▪ Tactical local changes that respond to feedback (e.g. through citizen science programmes that empower citizens and enable community participation in transport projects from crowd-sourcing data collection through to bringing people together to participate in solving challenges)

Evaluation, research and reporting	
Purpose	Before and after measurement, and evaluate on an ongoing basis the impact of TBCh activities; build knowledge about effective strategies; transparency with public and decision makers; provide evidence to enable projects to fail fast or grow if successful
Activities	▪ Academic partnerships ▪ Requirement of clear evaluation frameworks from all initiatives ▪ Annual report on accomplishments and progress towards goals and targeted KPIs - equity, health, liveability ▪ Dashboard providing accountability towards adopted plan goals ▪ Data collection

5.5 Choosing strategies to achieve the objectives

The next step in the option development process involved understanding which strategies best meet the objectives in which locations and when. To do this, we used four key dimensions of choice shown in Figure 5-3 below:

- **what** strategies (presented in section 5.4) were appropriate (achieved the objectives) for different areas and in periods of disruption
- **where** in Wellington were these strategies most appropriate
- **when** would they have most impact in achieving the objectives
- **who** would be the target audience (discussed in section 5.6).

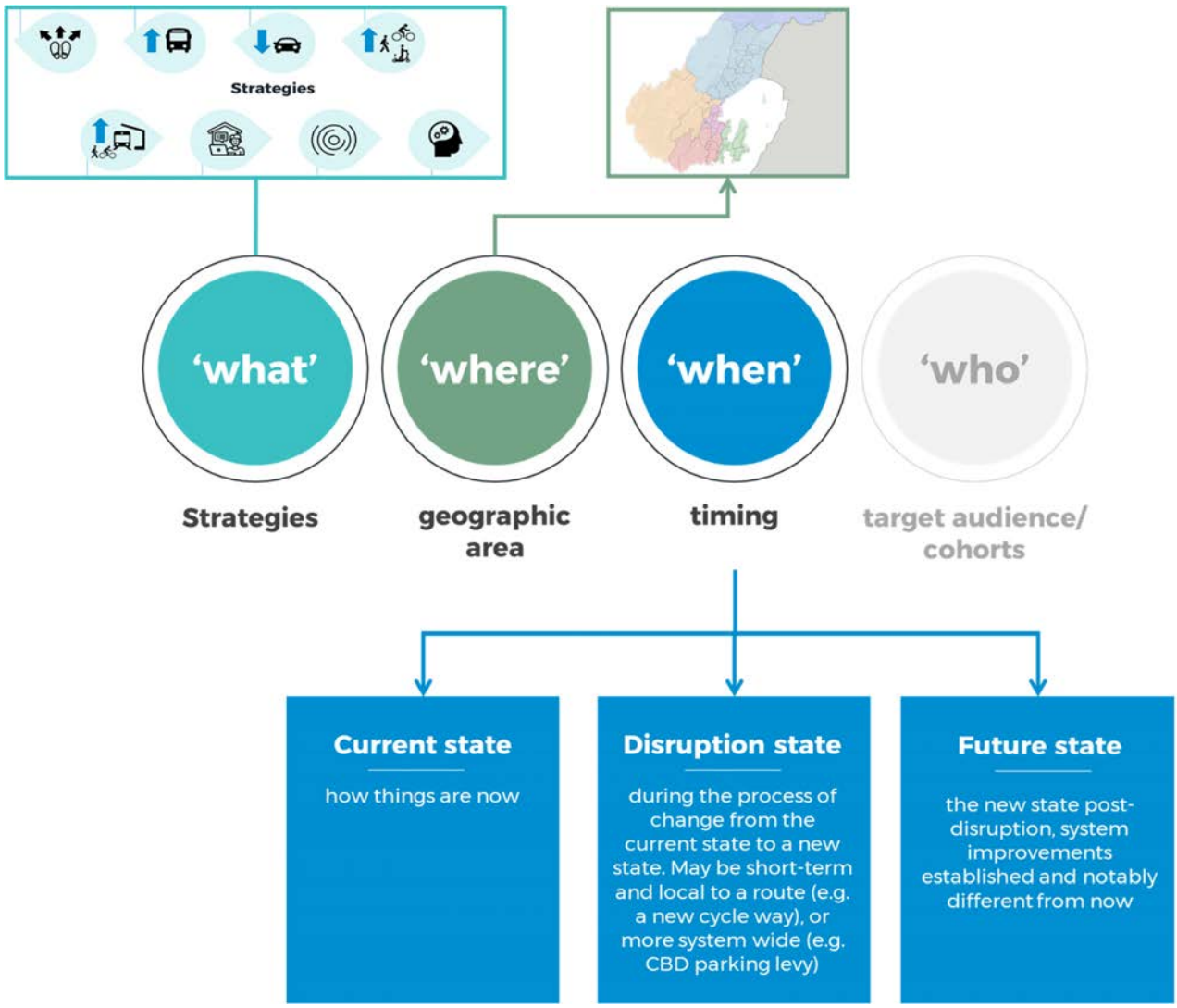


Figure 5-3 Choosing 'when' and 'where' 'strategies' should be deployed

For the purposes of this report the Wellington Region has been divided into the following areas as shown in Figure 5-4:

- **Central Wellington**
- **Inner areas:** Southern suburbs (Island Bay, Newtown, etc); Eastern suburbs (Seatoun, Miramar, Kilbirnie, etc); Western suburbs (Karori, Wadestown, etc); and Northern suburbs (Johnsonville, Ngaio, etc)
- **Outer areas**: Tawa, Kenepuru, Upper Hutt, Porirua, Hutt Valley and Wairarapa; and Porirua and Kāpiti Coast.

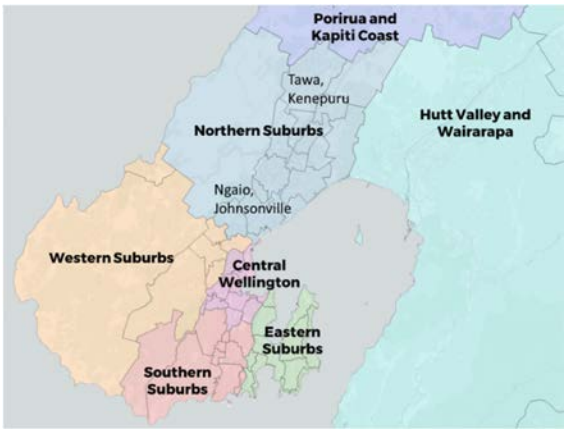


Figure 5-4: Geographic Areas

Guided by the matrix shown in Figure 5-5, the assessment considered:

- criticality (e.g. effectiveness, magnitude, scale of impact); and
- practicality (e.g. political risk, social acceptability, time taken to see impact)
- the strategies ('what') would be for each disruption state ('when') and for different parts of the city/region ('where'). For example, encouraging people to travel by public transport close to the city centre would not always be appropriate as the public transport network is currently operating at capacity during peak times. It would be better to encourage people closer to the city centre to travel by active modes to enable long distance commute by public transport.

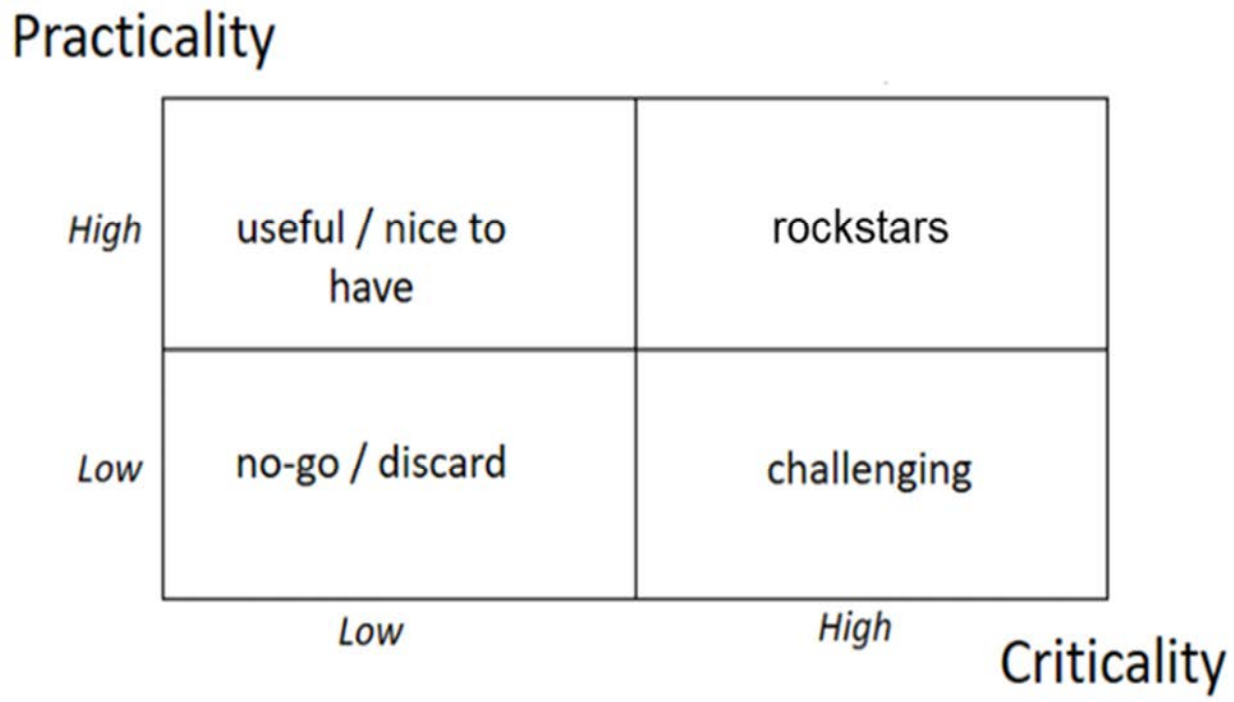


Figure 5-5 Criticality and practicality assessment scale

Key findings from this assessment were:

- Long distance travel by public transport (rail) from the outer areas should be prioritised over people travelling shorter distances to get to central Wellington given the network capacity constraints. Encouraging the uptake of active modes for short trips to and from central Wellington will be critical to ensuring capacity is preserved for longer trips from the outer areas.
- Encouraging the uptake of walking, cycling (or other active/shared modes) for first-last leg trips in the outer areas is critical but not practical until first-last leg improvements are delivered
- Reducing the appeal of driving (and driving alone) into and parking in the city centre will be challenging until 'pull factors' are in place
- Encouraging people to work from home, flexibly, and traveling outside busy periods could be included in every package and is highly critical and practical during and after disruption, noting that COVID is disruption and there is a need to leverage this.
- Creating a ripple effect, i.e. encouraging people to use public transport and active modes for a range of trips (without a focus on commute and school trips) can be delivered at any time to build

preparedness for when opportunities arise for people to change their commute travel behaviour e.g. a new cycleway or a new bus route in the locality, but efforts will be most effective when 'pull factors' are in place.

- Creating a culture change, changing the way people think about things that impact on their travel choices such as where to live; whether to buy a car; how they travel for recreation, leisure, exercise and holidays, can also be delivered at any time, again, to build preparedness and change hearts and minds early and in all walks of life.
- Making it easy for people to find out about their travel choices, and understand service changes and disruption in a timely way, should be included in every package. It performs well now and in every future state. On its own may not create much change but is needed to support the other strategies.
- Encouraging people to travel by active modes (including micro-mobility) is highly critical and practical in the central, eastern, southern (except during disruption caused by delivery of MRT) and western suburbs (after delivery of city streets corridor improvements).
- Encouraging people to travel by active modes was considered to have low criticality and practicality in the northern suburbs or outer areas.

The criticality and practicality assessment also identified that the following strategies would be common to all packages but vary by scale and geographic reach depending on the package emphasis and focus:

- Encouraging people to rethink their travel needs, travel outside busy periods, and work flexibly and from home will allow the packages to capitalise on the opportunities presented by COVID-19 and manage the transport network during times of constrained capacity.
- Making it easier for people to find out about their travel choices so they can understand service changes and disruption in a timely way is considered an enabler and an essential component of any TBCh package.
- Initiatives to create a ripple effect and induce a culture change can be delivered before network improvements are delivered to build preparedness.

5.6 Targeting cohorts

A key component of developing a TBCh package for Wellington is understanding 'who' to target. Based on the trends discussed in section 2.1, the following cohorts should be targeted for maximum impact:

1. **Employers and people working in the central city:** Travel for work is the most common purpose for travel, especially during the peak when capacity on the transport network is most constrained. For maximum impact and depending on political appetite, travel plans for workplaces can be delivered as a policy measure making them mandatory for workplaces over a certain employee count. As a voluntary measure, workplaces can be encouraged to develop them or part-take in individual travel behaviour change campaigns. Employers can also be targeted through a TMA.

   In the 2018 Census, 18.6 percent of all employees in Wellington City are in the Government sector. This means that in 2018 there were nearly 20,000 people working in the public sector in Wellington. This means that the **government sector** sub-group presents an opportunity to lead by example and build the evidence base needed to encourage other employers. Comprehensive travel plans for large trip generators like Wellington Hospital Travel Plan (underway) and the airport could also lead the way.

2. **Students:** according to Mackie (2010), "there is tangible evidence of a relationship between school travel and overall traffic congestion, so ineffective school travel places an economic burden on communities and on the nation". Although section 2.3 indicates a small proportion of trips for education (including those associated with the 'school-run') make up peak time travel demand in Wellington, that may be because caregivers who are driving to work are dropping off or picking up children on their commute. Reducing the need to be driven to school would reduce the number of car trips to schools, improving road safety and achieving second-tier benefits of improved health and wellbeing while reducing the need to drive to work. Additionally, targeting schools is key in embedding appetite for sustainable travel modes, forming habits early and in creating preparedness for travel behaviour change when they enter adulthood.

3. **Communities:** most initiatives and interventions catch people at their destination (e.g. through a workplace travel plan) but targeting people at the beginning of their trip can help manage demand at the origin. This can be achieved through community travel plans, first and last-leg schemes, or community initiatives that build willingness to change travel behaviour so that people are ready when opportunities present themselves (e.g. a new cycling facility, new bus route, increased capacity on rail, etc), because they have tried that mode already for a trip in their neighbourhood.

Personas within cohorts will be identified as the recommended package is readied for implementation so that accompanying campaigns/ messages encourage those targeted to engage with them because they recognise themselves in the messaging. It is not possible to provide much more granularity about every location and cohort that can be targeted in Wellington at this stage due to the uncertainly around the sequencing of the LGWM programme and other improvements.

Possible cohorts identified during the long list development stage are mentioned below. These represent sub-groups within the larger cohorts (above) that the design of specific initiatives should consider, noting that targeting will vary depending on where initiatives are implemented and when.

- peak time commuters
- off-peak users
- weekend travellers
- people driving a trade vehicle
- people starting late or early
- people with high income
- immigrants, refugees, new arrivals
- employers
- employees
- job-seekers
- company car drivers and people with access to free/ cheap parking
- seniors and elderly
- mobility and visually impaired
- people with low-incomes / low socio-economic status
- people who are transport disadvantaged or challenged
- people living in underserved areas (lacking access/ opportunities)
- people running or supporting events and festivals
- people attending events, churches etc
- construction workers
- tradespeople
- neighbourhoods
- people encouraging or generating travel to major destinations
- families
- schools
- children
- people who work nights or are shift workers
- tourists

6 Alternative Packages

Five alternative packages of travel behaviour change measures were developed as follows:

- Package A: Scaling up travel behaviour change initiatives already being delivered (section 6.1.1 describes the current approach)
- Package B: Package A + respond to first-last leg improvements in the outer areas
- Package C: Package B + reduce the appeal of driving
- Package C – B: Respond to the parking levy but excludes initiatives corresponding to first-last leg improvements
- Package D: Package C + encourages the use of public transport everywhere + ripple effect and culture change in the inner suburbs
- Package E: Package D + encourages the use of public transport and active modes regionwide + ripple effect and culture change regionwide.

Figure 6-1 presents a summary of the alternative packages and illustrates the necessary conditions for the implementation of each package. Information provision, peak spreading, encouraging / enabling flexible working are common to all packages. The differences between the packages are the:

- strategic focus
- locations to which the travel behaviour change strategies are targeted.

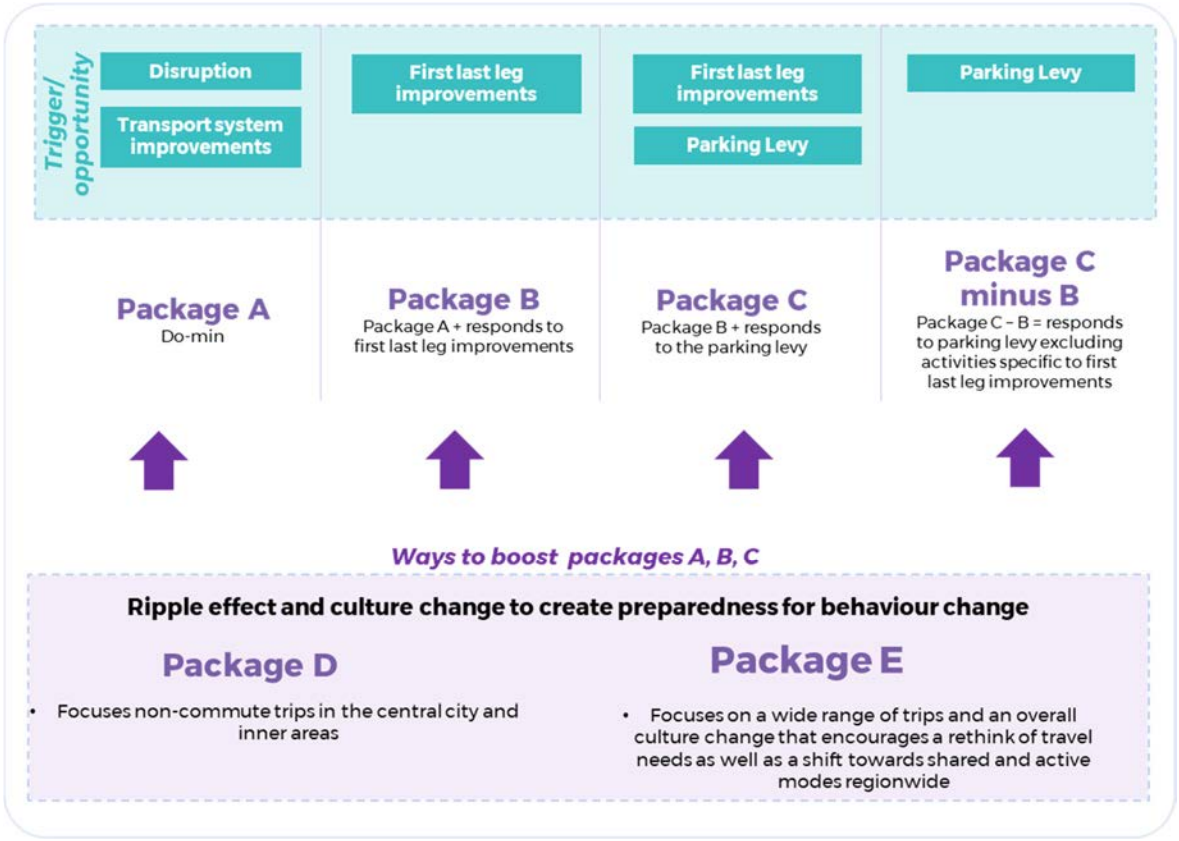


Figure 6-1: Summary of packages

6.1.1 Understanding the status quo

Table 6-1 below describes the existing TBCh effort in the Wellington Region (based on information gathered from GWRC and local council staff at the time of writing this business case) to provide context for the alternative packages discussed in the following sections.

Table 6-1 Existing TBCh effort

Existing TBCh programme	Current Situation
Policy, partnership and advocacy	WCC: ▪ flexible working as an initiative being undertaken at the Council (largely as a result of Covid-19) ▪ supporting the change of use of on-street parking for car sharing (including EV vehicles)- c. 20 spaces had been reallocated ▪ 30kph in Wellington CBD to improve safety for vulnerable road users. Porirua City Council reported that it had partnered with Kāinga Ora to intensify state housing stock and link developments to public transport. The council was also exploring ways to connect the currently segregated east/west divide through greenways.
Number of Workplace travel plans	▪ 81 workplaces; targeting 41,000 people ▪ workplace initiatives including Sustainable Transport Friendly Workplace.
Schools participating in active travel	▪ GWRC provides an Active Travel School's Toolkit which can be used by the city and district councils. ▪ Over 30 schools in Wellington have engaged in active school travel planning (14 schools in Kāpiti Coast).
Events, experiences and life choices	▪ active modes in schools, including Movin' March and Scooter training. Half of Wellington's schools are taking part in Movin' March ▪ promotion of cycle skills and safety messages to support new cyclists to gain confidence including Pedal Ready cycle skills training and 'Bus and Bike to Improve' workshops.
Marketing, communication, incentives	WCC: ▪ cycleway promotion through a dedicated website to encourage cycling www.bikethere.org.nz ▪ parking Management: Smarter Ways to Manage Parking (video) socialised through the Let's Talk Wellington website ▪ Smart Energy Challenge – eBike on waterfront – trialling with Victoria University with 20 bikes between the three campuses ▪ bikes free of charge on trains during off-peak Region: ▪ Travel Awareness campaign: Aotearoa Bike Challenge ▪ a regional cycling map is planned with practical information for cyclists (e.g. location of fix-it stands, school bike tracks, quiet roads)

Existing TBCh programme	Current Situation
Supporting services and amenities	▪ A bike rack on bus trial was undertaken in Newlands between October 2016 and March 2017. This was for buses between the CBD and Newlands. It was well received and bike racks on buses will be included in the new regional bus operations contracts due mid-2018 (GWRC, 2017a). ▪ GWRC car-pooling resource ▪ Guaranteed Ride Home Scheme ▪ public transport trials for new users ▪ WCC does not provide any staff parking other than for staff vehicles ▪ GWRC is looking at the provision of car parking at Railway Station Park and Rides. It has a programme of extending bike parking facilities at stations. ▪ GWRC is current working on new strategy for 'park and ride' across the region, which includes wider Station Access Planning WCC and GWRC both offer staff pool bikes and ebikes, in some cases these e-bikes were won as prizes in the Aotearoa Bike Challenge run in partnership with WCC and GWRC.
Evaluation, research and reporting	WCC has KPIs in its annual plan for measuring progress e.g.: ▪ Active modes promotion: number of pedestrians and cyclists entering and leaving the CBD (cordon count) ▪ Network safety: Residents (%) who are satisfied with walking on Wellington's footpaths and cycling on Wellington's cycleways- annual surveys ▪ PT enablement: Bus stops (%) that have a shelter (co-delivered with GWRC) ▪ WCC has an annual cordon count (bike and foot) during March (manual count from 4 locations north, south, east and west). Electronic cycle counters on some key routes (over 20 locations). Data provides year-round 24/7 counts GWRC has KPIs in the annual monitoring report of the Regional Land Transport Strategy e.g.: **Public transport:** ▪ Increased peak period public transport mode share from previous year ▪ Increased off peak period public transport mode share etc. ▪ Improved public transport accessibility for all, including the transport disadvantaged ▪ Reduced public transport journey times compared to travel by private car ▪ Increased public transport reliability **Active modes:** ▪ Increased mode share for pedestrians and cyclists ▪ Improved level of service for pedestrians and cyclists ▪ Increased safety for pedestrians and cyclists **Land use and transport integration:** ▪ improved land use and integration ▪ improved integration between transport modes GWRC hosts the Wellington Analytics Unit which works alongside Metlink and the Regional Transport teams to collate and analyse together on the performance of the transport system.
FTE	▪ 9.25 FTEs employed: 6 at GWRC and 3.25 WCC
Programme cost	GWRC: approx. $750K pa excluding personnel/overheads, across Road Safety and TDM (National Land Transport Fund) WCC: historically set total budget for cycleways promotion at $204K pa

Existing TBCh programme	Current Situation
Framework for prioritising or delivering travel behaviour change	GWRC: ▪ Focus on mode shift, road safety and carbon emissions reduction targets (RLTP, Road to Zero, Wellington Regional Mode Shift Plan (draft), GW LTP draft Strategic Framework, MoT Transport Outcomes Framework) ▪ Currently reviewing forward work programme, 2021-24. WCC: ▪ Alignment with physical works where the focus has mainly been on cycling promotion.
Existing partnerships	Wellbeing kura crew (health agencies who work with schools including Heart Foundation, Cancer Society, Regional Public Health, Sport Wellington and others)
Limitation	While councils benefit from the GWRC-run TBCh programme, initiatives delivered by local authorities were limited by budget restrictions, priorities (safety was prioritised over behaviour change) and staffing constraints. Initiatives that sit within the minor works budget are determined at a local level. For example, Kāpiti Coast District Council runs a database for prioritising minor works in response to issues raised through school travel plans (e.g. need for a road pedestrian crossing, cycle access).

The risks of continuing with the status quo are:

- Lack of resources and planning to optimise on the disruption-related opportunities and triggers
- Maintaining current mode share will not meet LGWM programme objectives and without additional measures, the transport network will be under more pressure during and after disruption
- Fragmented approach to delivery
- Success is measured on an initiative level, not as a package
- Limited scope for testing new approaches to encouraging travel behaviour change
- Current workplace TBCh programme works only with large employers individually, missing the opportunity to focus on workplaces collectively and to encourage the government sector to lead by example.

6.1.2 Package A: Scaling up travel behaviour change that is already underway

Package A focuses on building upon travel behaviour change programmes and initiatives that are already in place in the Wellington Region by aligning efforts to match the focus of this package:

- Encouraging people to use public transport in the outer areas first
- Encouraging people from the inner suburbs to travel by active modes in the current state, throughout disruption and into the future, only encouraging public transport use in the inner areas when capacity improvements have been delivered

This package works within the existing constraints in the transport network and expands as improvements to the network are made, taking a reactive approach to disruption and behaviour change. The table below shows 'where' and 'when' specific strategies will be implemented within package A based on the assessment discussed in Section 0.

Strategy	Geographic area	Time state
1. Encourage people to travel by public transport	Hutt Valley Kāpiti Porirua	Current, Disruption and Future
1. Encourage people to travel by public transport	East, South, West, North	Future
4. Encourage people to work from home, flexibly, and outside busy periods	Entire Region	Current, Disruption and Future
7. Make it easy for people to find out about their travel choices, understand service changes and disruption in a timely way	Entire Region	Current, Disruption and Future
8. Encourage people to travel by active modes (including micro-mobility)	Central, East, South, West	Current, Disruption
8. Encourage people to travel by active modes (including micro-mobility)	Central, East, South, West, North, Hutt Valley	Future

Additional workplace travel plans have been identified in consultation with GWRC. These would be developed for:

- three tertiary institutions
- 18 large workplace trip attractors in central Wellington - buildings that accommodate several organisations (Majestic Centre, 10 Customhouse Quay, State Insurance Building), as well as the government sector (NIWA, Department of Conservation, MPI).
- to get the largest impact workplace travel plans will also take an industry-based approach and expand to include retail and hospitality sector.

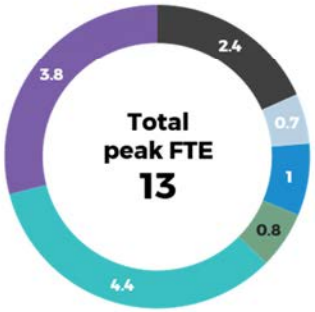
Schools will be a key focus for this package targeting six private schools as well as 39 public schools that are expected to be affected by disruption. Schools will be encouraged to participate in programmes, spanning multiple schools, focusing on increasing travel to and from schools by active and shared modes. Wellington College, Wellington East Girls College and St Marks (combined roll of approximately 3,000) will be key as they are located near to the Basin Reserve. The Reserve will undergo a significant transformation causing disruption.

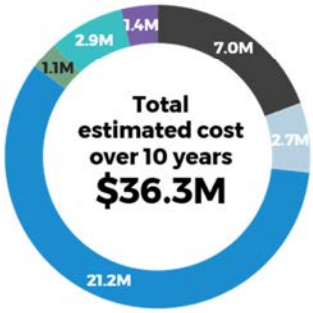
The central, southern, western and eastern suburbs will be targeted for shifting trips to active modes. Marketing and communications will focus on opportunities presented by recent and upcoming cycleway and pedestrian infrastructure improvements e.g. Brooklyn, Island Bay, Miramar and Strathmore Park. Supporting amenities such as bike/e-scooter charging stations, bicycle maintenance/repair stations and micro-mobility share schemes will also be increased in these areas. Figure 6-2 presents the components of Package A and Figure 6-3 provides examples of initiatives that could be delivered as part of Package A.

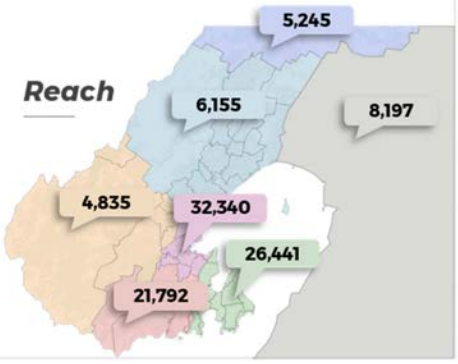
Package A

Scaling up 'business as usual'

Policy, partnerships and advocacy	• Establish governance group (Y1 informal group (expand), Y2 establish TMA- recruit TMA manager, co-ordinator and funding expert; membership base, Y3 staffed and running, membership grows) – 1.4M over 10 years • Working region-wide on policy development to support travel behavior change (e.g. advocating for policy changes for urban design and land use; advocating for new developments to provide facilities, services, and subsidised parking) • Building partnerships, working with existing partners eg transport and health/environment campaigns; identifying co-funding opportunities • Developing and distributing tools, material, incentives for employers
Travel plans	• **21** additional workplace travel plans (government sector; city centre – retail and entertainment sector; universities; large employers) – 2.85M over 10 years • **45** additional schools across the region (private schools and schools impacted by disruption) participate in programmes to encourage travel by active and shared modes
Events, experiences and life choices	• Delivering promotional events (car-free days, bike/walk to work month, free PT days, open streets events) and promotional packages such as 'give-it-a-go' programmes for active modes in central Wellington, eastern and southern suburbs – 110k per year over 10 years
Marketing, communications, incentives	• Targeted social media campaigns – walking & cycling in Brooklyn, Island Bay, Miramar; cycling in Strathmore Park – 200k per year over 10 years • Sponsored award and events; challenges; competitions; giveaways in Central Wellington, eastern and southern suburbs and TDM for new routes or services as they launch – 1.8M over 10 years • Coordinating regional branding build on Metlink's work on customer segments for PT based social media campaigns – 600k over 10 years • Communication platforms (dashboards, brand specific website (like MobilityLab), social media posts) – 285k over 10 years • Ongoing marketing and communication – 50k per year over 10 years • Off-peak incentives and peak time disincentives for example discount fares during peak periods as part of specific promotions – 16M over 10 years
Supporting services and amenities	• Coordinating journey planning App/MaaS – 950k over 10 years • Landside luggage service (airport), carpooling, skills workshops, micromobility and peer to peer parking services region-wide (TMA to implement and partners to implement) – 120k over 10 years • Ensuring supportive amenities are provided such as micromobility/bike/e-bike share schemes; peer to peer parking apps and marketplace; wayfinding and route maps region-wide; e-bike/e-scooter charging, repair stations focused in central Wellington, eastern, southern and western suburbs – 1.65M over 10 years
Evaluation, research and reporting	• Measuring progress towards goals, targeted KPIs, process and impact evaluation for individual interventions and across the programme; annual reporting – 7M over 10 years







Total FTE cost over 10 years $13.0M

Figure 6-2 Components of Package A[14]

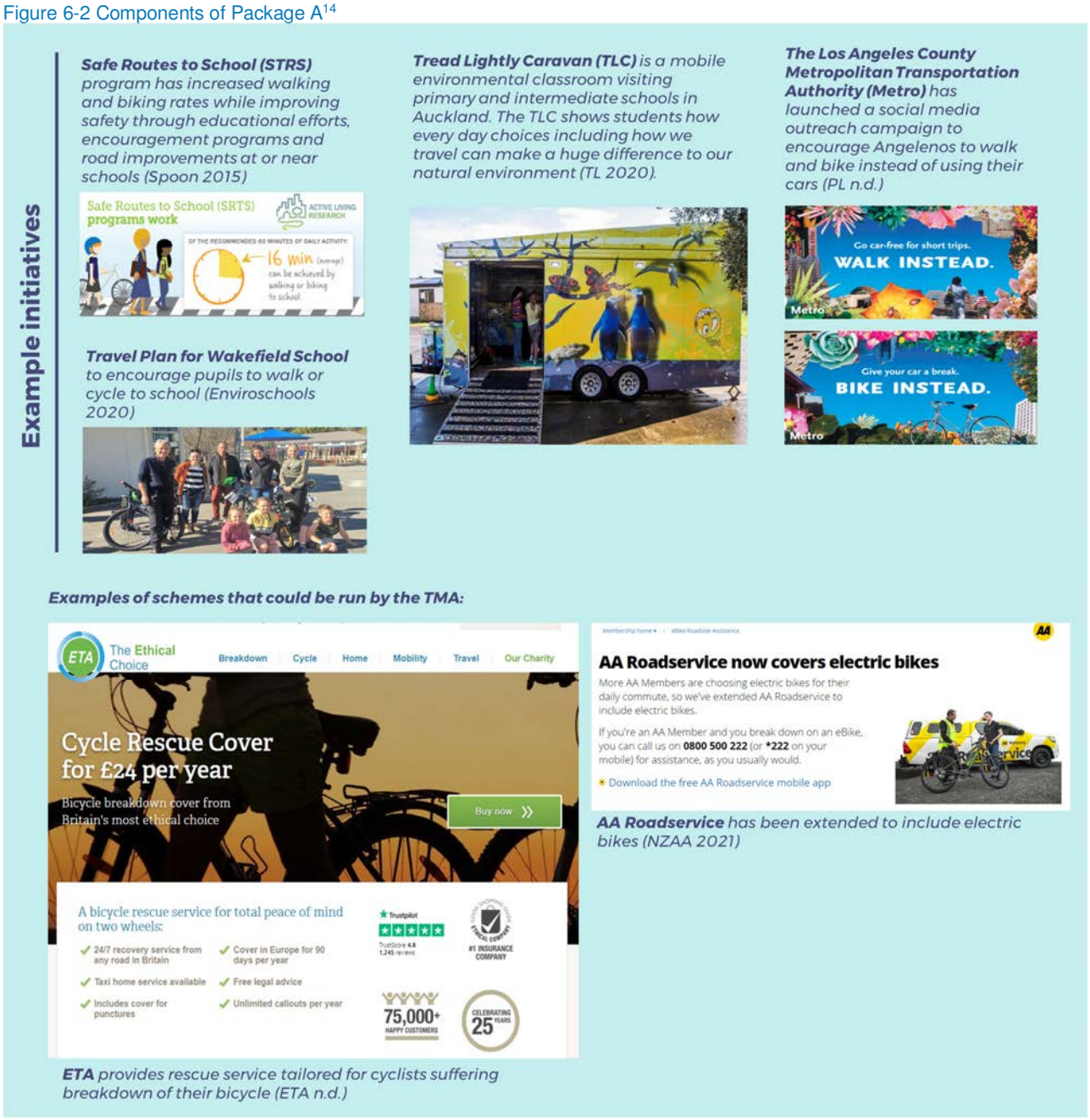


Figure 6-3 Example initiatives for Package A

Package A is estimated to cost $49.3M over the next ten years (inclusive of $13.0M in FTE costs), require approximately 13 FTEs to deliver and reach a population of approximately 105,000 people across the Wellington Region. Note: FTE costs do not make allowance for the 9.25 FTE already employed by GRWC and WCC to implement the existing TBCh programme.

[14] Note that the incentives allowed for in Package A are in addition to the Metlink fare trials and will be associated with targeted LGWM TBCh campaigns

The reach of Package A was estimated from a combination of school rolls in central Wellington, tertiary institute rolls, those employed in Wellington city centre, and assuming a social media campaign reaches approximately 10 percent (identified in the Critical Review, LGWM (2020a)) of the 80,000 population in Central Wellington, Southern and Eastern suburbs. These data sets were then allocated to each region based on the proportion of trips in Travel to Work and Travel to School data.

The approaches to disruption will be common across all packages. Behaviour change strategies were developed for four disruption scenarios with the aim of actively managing demand, leveraging disruption and achieving long-term travel behaviour change. The four examples were:

- Scenario 1: Disruption to the central city associated with delivery of Golden Mile improvements
- Scenario 2: Linkages to the suburbs through bus priority lanes alongside cycle improvements, using Karori to the City as an example
- Scenario 3: Network disruption associated with MRT / bus development on the Quays
- Scenario 4: Network disruption associated with the Basin Reserve grade separation

This is further discussed in section 8.1 and a disruption scenarios report and infographics can be found in Appendix H.

6.1.3 Package B: Package A + first-last leg efforts in the outer areas

Package B builds on package A and tops up TBCh efforts to include additional focus on:

- encouraging people to use public transport in the outer areas first
- encouraging people from the inner suburbs to travel by active modes during the current state, throughout disruption and into the future only encouraging public transport use in the future
- increasing the uptake of active modes for first/last leg trips only in the outer areas.

This package builds upon Package A by adding first/last leg services in targeted areas subject to the delivery of improvements (i.e. Rail Access Plans and first-last leg services) - these could include:

- cost efficient schemes such as walking and cycling improvements[15] or (subsidised) station bike share,
- moderate cost schemes such as subsidised Ubers / shared taxis, or
- higher cost schemes such as on-demand shuttle routes which can be costly but do reduce parking demand at stations and increase public transport ridership.

The fundamental difference between Package A and Package B is the increased focus on home locations further from the central city. This focuses efforts on encouraging people to travel by active and shared modes between public transport stops and home locations. Focusing on the home end of the trip is not worthwhile in some parts of the region until first-last leg services, and rail access plans are in place. Package B will target Lower Hutt, Upper Hutt and the Wairarapa (Featherston, Carterton, Masterton) as well as Kāpiti Coast and Porirua. Lower Hutt and Upper Hutt both have good train coverage. Master-planning exercises around these railway stations and rail access plans as part of the Wellington Regional Growth Framework (WRGF, 2020) will make it easier to encourage people to use public transport.

[15] Surveys in the Wellington Region have shown that 85 percent of trips to a public transport stop, and 92 percent of trips from the stop to the destination, were made as a pedestrian (GWRC, 2015). Walking and cycling are space efficient and comparatively cheap to provide for.

The table below provides detail on 'where' and 'when' specific strategies will be implemented within package B based on the assessment discussed in Section 0.

Strategic Intervention	Geographic area	Time state
1. Encourage people to travel by public transport	Hutt Valley Kāpiti Porirua	Current, Disruption and Future
1. Encourage people to travel by public transport	East, South, West, North	Future
3. Increase uptake of walking, cycling (or other active/shared modes) for first/ last leg trips	North, Hutt Valley Kāpiti Porirua	Current, Disruption and Future
4. Encourage people to work from home, flexibly, and outside busy periods	Entire Region	Current, Disruption and Future
7. Make it easy for people to find out about their travel choices, understand service changes and disruption in a timely way	Entire Region	Current, Disruption and Future
8. Encourage people to travel by active modes (including micro-mobility)	Central, East, South, West	Current, Disruption
8. Encourage people to travel by active modes (including micro-mobility)	Central, East, South, West, North, Hutt Valley	Future

This package would help address the challenge of overcrowded park and ride car parks and could potentially shift some longer distance commuters from driving to travel by rail. The scope of the first-last leg schemes is assumed to be limited to walking, cycling, and micromobility for this package. Other higher cost initiatives, such as on-demand shuttles or subsidised Ubers are being investigated / progressed by Metlink. In other parts of New Zealand, these services have been funded from public transport budgets, e.g. AT Local service in Auckland and the Timaru on-demand shuttle service (trial stage only). It is recommended that these higher cost services be considered to maximise impact from this package.

A risk of this package is that first/last leg efforts could increase patronage on public transport beyond capacity by improving accessibility to the network. This can be mitigated by encouraging passengers to work flexibly and travel at less busy times. Nonetheless the implementation of package B should be carefully planned to correspond with rail capacity enhancements

Figure 6-4 provides a flavour of the kinds of initiatives that could be part of Package B.

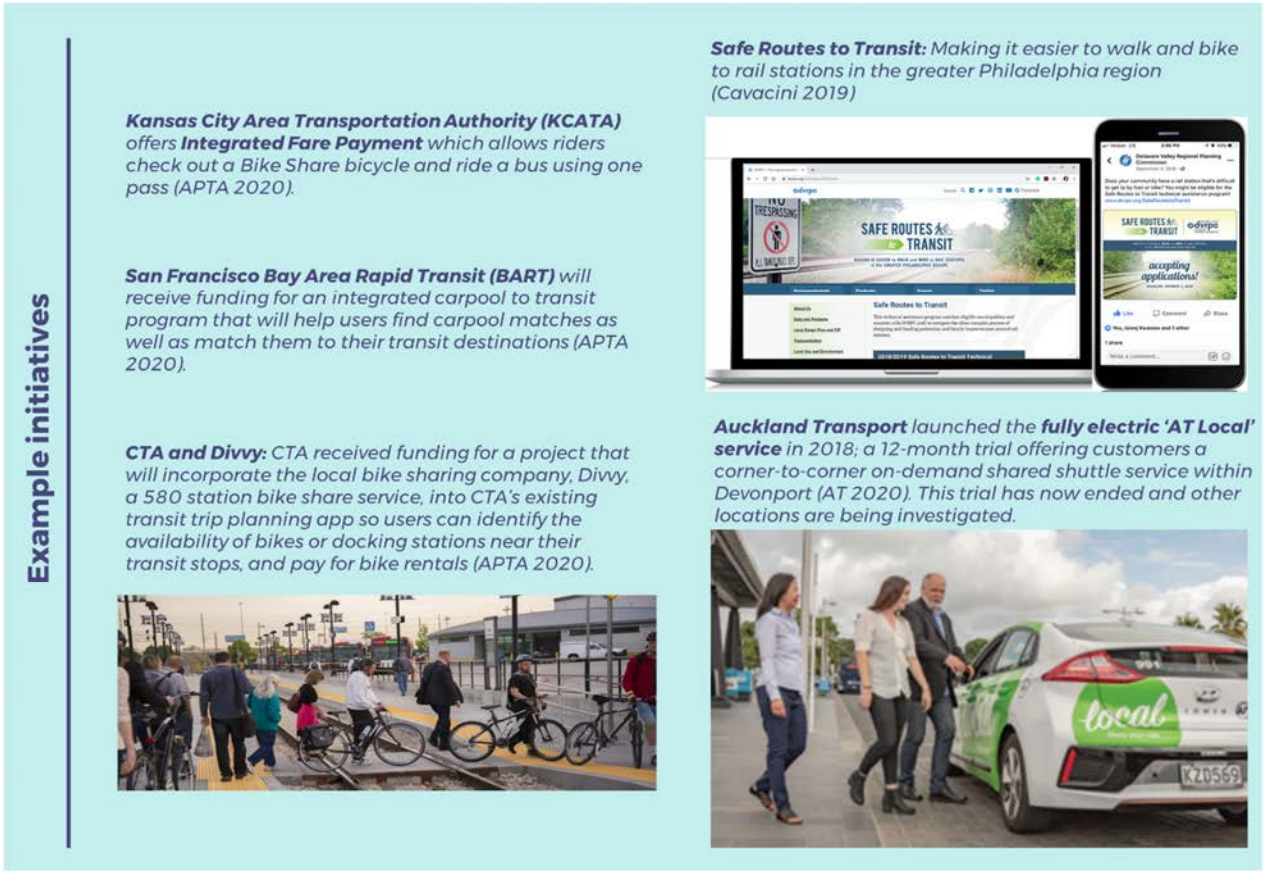


Figure 6-4: Example initiatives for Package B

Package B is estimated to cost $43.7M over the next ten years, inclusive of the $14.0M cost of fourteen FTE required for delivery. Figure 6-5 presents the components of Package B. Green text indicates initiatives that are additional to those included in package A.

Package B

Package A + first-last leg in the outer area

Policy, partnerships and advocacy	• Establish governance group (Y1 informal group (expand), Y2 establish TMA- recruit TMA manager, co-ordinator and funding expert; membership base, Y3 staffed and running, membership grows) – 1.4M over 10 years • Working region-wide on policy development to support travel behavior change (e.g. advocating for policy changes for urban design and land use; advocating for new developments to provide facilities, services, and subsidised parking) • Building partnerships, working with existing partners eg transport and health/environment campaigns; identifying co-funding opportunities • Developing and distributing tools, material, incentives for employers
Travel plans	• **21** additional workplace travel plans (government sector; city centre – retail and entertainment sector; universities; large employers) – 2.85M over 10 years • **45** additional schools across the region (private schools and schools impacted by disruption) participate in programmes to encourage travel by active and shared modes
Events, experiences and life choices	• Delivering promotional events (car-free days, bike/walk to work month, free PT days, open streets events, etc) and promotional packages such as 'give-it-a-go' programmes for active modes in Central Wellington, Eastern and Southern suburbs expanding to outer areas serviced by rail with a cap of 110k per year
Marketing, communications, incentives	• Targeted social media campaigns – Walking & cycling in Brooklyn, Island Bay, Miramar; cycling in Strathmore Park – 200k per year over 10 years • Sponsored award and events; challenges; competitions; giveaways expanding to outer areas serviced by rail and TDM for new routes or services as they launch – 1.8M over 10 years • Coordinating regional branding build on Metlink's work on customer segments for PT based social media campaigns – 600k over 10 years • Communication platforms (dashboards, brand specific website (like MobilityLab), social media posts) – 285k over 10 years • Ongoing marketing and communication – 50k per year • Off-peak incentives and peak time disincentives for example discount fares during peak periods as part of specific promotions – 16M over 10 years
Supporting services and amenities	• Coordinating journey planning App/MaaS – 950k over 10 years • Luggage service, carpooling, skills workshops, micromobility and peer to peer parking services region-wide (TMA to implement and partner to implement) – 120 k over 10 years • Ensuring supportive amenities are provided such as micromobility/bike/e-bike share schemes; peer to peer parking Apps and marketplace; wayfinding and route maps region-wide; e-bike/e-scooter charging, repair stations focused in Central Wellington, Eastern, Southern and Western suburbs – 1.75M over 10 years • Co-ordinating co-working spaces and Ensuring supportive amenities are provided as part of the first-last leg journey in Featherston, Carterton, Masterton, Kapiti Coast; Porirua (improvements related to Transmission Gully); Lower Hutt and Upper Hutt (Good train coverage but long distances to get to the rail for some people and park and ride is at capacity) – 250k per location
Evaluation, research and reporting	• Measuring progress toward goals, targeted KPI's, process and impact evaluation for individual interventions and across the programme; annual reporting – 7M over 10 years

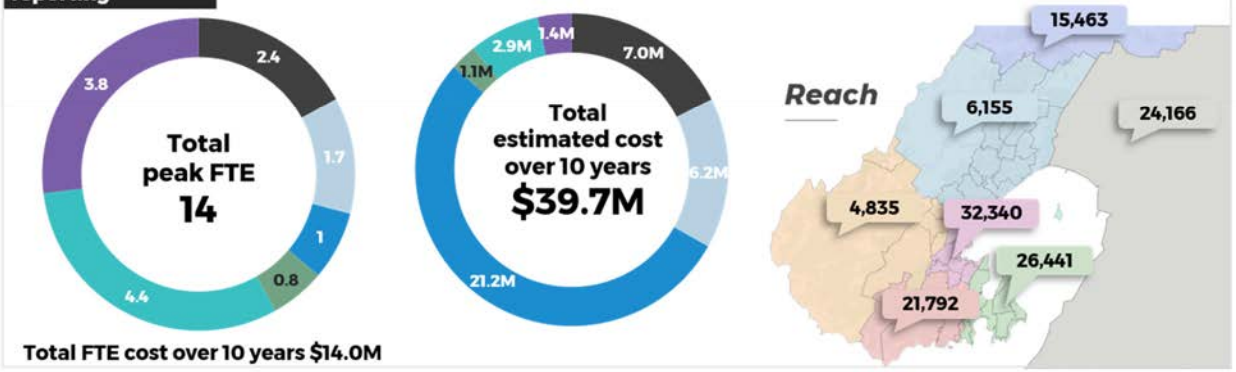


Figure 6-5 Components of Package B

6.1.4 Package C: Package B + reduce the appeal of driving

In addition to the scope of Package B, this package focuses on:

- encouraging people to use public transport in the outer areas first
- reducing the appeal of driving in the entire region but only in the disruption and future states
- increasing the uptake of active modes for first/last leg trips in the outer areas
- encouraging people to travel by active modes in the inner suburbs.

This package builds upon Package B by adding initiatives that will reduce the appeal of driving into and parking in the city centre. The table below provides detail on 'where' and 'when' specific strategies will be implemented within package B based on the assessment discussed in Section 0.

Strategic Intervention	Geographic area	Time state
1. Encourage people to travel by public transport	Hutt Valley Kāpiti Porirua	Current, Disruption and Future
1. Encourage people to travel by public transport	East, South, West, North	Future
2. Reduce appeal of driving (and driving alone) into and parking in the city centre	Entire Region	Disruption and Future
3. Increase uptake of walking, cycling (or other active/shared modes) for first/last leg trips	North, Hutt Valley Kāpiti Porirua	Current, Disruption and Future
4. Encourage people to work from home, flexibly, and outside busy periods	Entire Region	Current, Disruption and Future
7. Make it easy for people to find out about their travel choices, understand service changes and disruption in a timely way	Entire Region	Current, Disruption and Future
8. Encourage people to travel by active modes (including micromobility)	Central, East, South, West	Current, Disruption
8. Encourage people to travel by active modes (including micromobility)	Central, East, South, West, North, Hutt Valley	Future

An advantage of this package is that it introduces critical 'push' initiatives to reduce the appeal of driving (and driving alone) into and parking in the city centre. By doing this, package B will engage with people who may not otherwise consider shifting behaviour with 'pull' initiatives alone. 'Push' factors, in this case, are through additional effort on policy, partnerships and on advocacy for:

- Advocate for:
  - unbundling of parking from employment packages so that employees can opt out more easily or choose other transport benefits instead
  - improved parking enforcement
  - new developments to provide facilities, services, and subsidies
  - changes to New Zealand's Fringe Benefit Tax (FBT). As its current structured, the FBT encourages employers to provide more staff parking than they otherwise would, encouraging more staff to drive on a daily basis.
- Policy development (flanking Parking Levy) to encourage company car cash out and daily parking charges or cash out option. Daily parking charges emphasise the real cost of parking rather than longer-term (monthly) parking charges that encourage drivers to get their 'money's worth' from their parking payment
- Development of parking management software to support (to support daily charges/ cash out). The TBCh workstream might also advocate the use of technologies like Spot Parking (as used by TfNSW) for their amalgamator/ inventory, mapping and display functions for parking and kerbside use.

Advocacy would also include encouraging WCC, GWRC, and the Government as the largest employer in Wellington city centre, to reduce the number of carparks they lease and reduce the number that are provided to staff for commuting purposes. These changes, if implemented, will increase the effectiveness of the parking levy by maximising the visibility of actual parking charges.

This package seeks to capitalise on the net reduction in on-street car parks resulting from delivery of the other LGWM workstreams.

Providing tools, materials and incentives that enable employers and car park operators in Wellington city centre to optimise the use of the available car parks to:

- enable more efficient use of the parking assets which should result in needing fewer over time
- Encourage people to book a park before deciding to drive to work to:
    - use the parking availability to discourage driving if there's no park
    - direct people to their booked parking spot to reduce the volume of traffic 'hunting' for a spot
    - allow employers to introduce needs-based parking schemes to allocate parking to people who need to drive

The package will build on the existing travel plan activities by adding travel plans for construction workers in the central city. These construction workers will be supported by shuttle services, tools, e.g. providing lockers, and potentially reviewing contractor coupon parking.

In the outer areas, package C will focus on maximising the catchment for stations (rail) to encourage greater public transport use. As a priority, this means encouraging walking and cycling to the stations as a low-cost measure. Other measures for example using peer to peer parking apps (which work like Airbnb but for parking spaces e.g. Parkable) will enable more efficient use of private parking assets which could encourage more 'park and ride' where car parks are full and first/ last leg services aren't viable but it would be beneficial to achieve mode shift to PT nonetheless.

Package C is estimated to cost $56.5M over the next ten years, which includes an estimated $15.1M for fifteen FTEs to deliver the package.

Disadvantages and risks of Package C include a potential low gain for high effort and a need to maintain participation of employers, schools and other organisations over years to create momentum and achieve the desired shift in reducing the appeal of driving (and driving alone) into and parking in the city.

Figure 6-7 details the components of Package C and Figure 6-6 below provides examples of the kinds of initiatives that could be part of Package C.

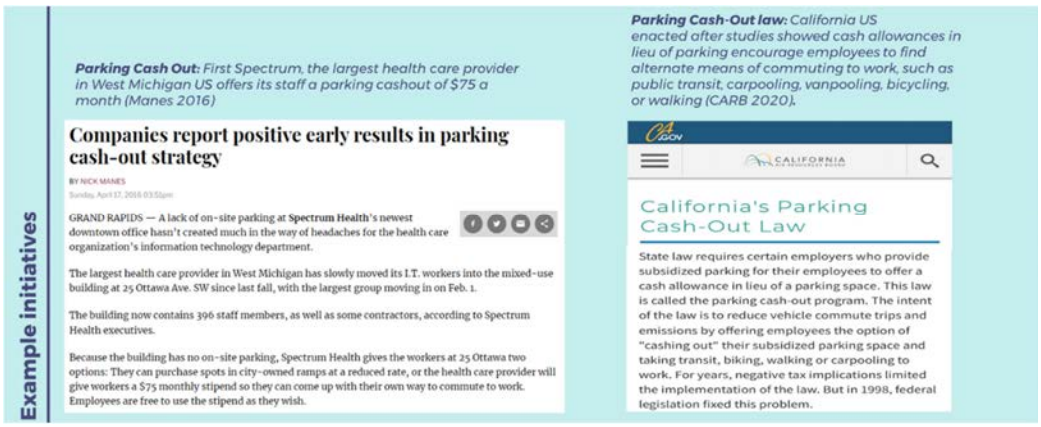


Figure 6-6 - Example initiatives for Package C

Package C

Package B + reduce the appeal of driving

Policy, partnerships and advocacy	• Establish governance group (Y1 informal group (expand), Y2 establish TMA- recruit TMA manager, co-ordinator and funding expert; membership base, Y3 staffed and running, membership grows) – 1.4M over 10 years • Working region-wide on policy development to support travel behavior change (e.g. advocating for policy changes for urban design and land use; advocating for new developments to provide facilities, services, and subsidised parking) • Building partnerships, working with existing partners eg transport and health/environment campaigns; identifying co-funding opportunities • Developing and distributing tools, material, incentives for employers • Policy development (flanking Parking Levy) to encourage company car cash out and daily parking charges or cash out option – 250k budgeted for the first 2 years for policy and guideline development • Parking management software (to support daily charges/ cash out) – 875k over 10 years for software development • Advocate for unbundling of parking (from commercial units and residential developments) and improved parking enforcement
Travel plans	• **21** additional workplace travel plans (government sector; city centre – retail and entertainment sector; universities; large employers) – 2.85M over 10 years • **45** additional schools across the region (private schools and schools impacted by disruption) participate in programmes to encourage travel by active and shared modes • Construction worker travel plans – 300k during the disruption period over 10 years
Events, experiences and life choices	• Delivering promotional events (car-free days, bike/walk to work month, free PT days, open streets events, etc) and promotional packages such as 'give-it-a-go' programmes for active modes in Central Wellington, Eastern and Southern suburbs expanding to outer areas serviced by rail – 110k per year over 10 years
Marketing, communications, incentives	• Targeted social media campaigns – Walking & cycling in Brooklyn, Island Bay, Miramar; cycling in Strathmore Park – 200k per year over 10 years • Sponsored award and events; challenges; competitions; giveaways expanding to outer areas serviced by rail and TDM for new routes or services as they launch – 1.8M over 10 years • Coordinating regional branding build on Metlink's work on customer segments for PT based social media campaigns – 600k over 10 years • Communication platforms (dashboards, brand specific website (like MobilityLab), social media posts) – 285k over 10 years • Ongoing marketing and communication – 50k per year • Off-peak incentives and peak time disincentives for example discount fares during peak periods as part of specific promotions – 16M over 10 years
Supporting services and amenities	• Co-ordinating first-last leg improvements and co-working spaces in the outer areas eg Featherston, Carterton, Masterton, Kapiti Coast, Porirua, Lower Hutt and Upper Hutt – 1.5M over 10 years • Ensuring supportive services and amenities are provided such as end of trip facilities, wayfinding and route maps; e-bike/e-scooter charging, repair stations bike riding and maintenance skills workshops, micromobility share schemes, peer to peer parking services, car pool scheme 95k guaranteed ride home scheme focused in Central Wellington, Eastern, Southern and Western suburbs • Establish pocket park and rides in outer areas (trial in Karori due to disruption; Porirua with the trigger of Transmission Gully) - partner with eg Parkable & user pays; 150k over 10 years for a study to identify potential locations & planning requirements (consulting fees or contractor)
Evaluation, research and reporting	• Measuring progress toward goals, targeted KPI's, process and impact evaluation for individual interventions and across the programme

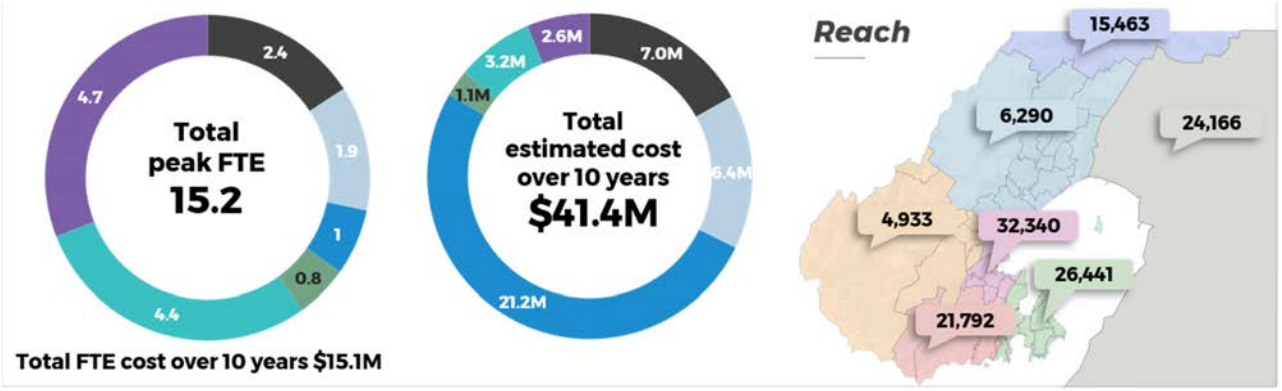


Figure 6-7 - Components of Package C

6.1.5 Package D: Package C + encourages the use of public transport everywhere + ripple effect and culture change in the inner areas

In addition to the scope of Package C, this package D focuses on:

- encouraging people to use public transport in the entire region (except for short trips in the central city)
- reducing the appeal of driving in the entire region but only in the disruption and future states
- encouraging people to travel by active modes in the inner suburbs only
- increasing the uptake of active modes for first/last leg trips in the outer areas
- creating a ripple effect only in the inner suburbs during disruption and in the future
- creating a culture change only in the inner suburbs during disruption and in the future.

Package D integrates initiatives that create a series of changes that culminate in a systemic cultural shift away from car driving. The table below provides detail on 'where' and 'when' specific strategies should be implemented within package D based on the assessment discussed in Section 0.

Strategic Intervention	Geographic area	Time state
1. Encourage people to travel by public transport	Entire Region (except central city)	Current, Disruption, Future
2. Reduce appeal of driving (and driving alone) into and parking in the city centre	Entire Region	Disruption and Future
3. Increase uptake of walking, cycling (or other active/shared modes) for first/ last leg trips	North, Hutt Valley Kāpiti Porirua	Current, Disruption and Future
4. Encourage people to work from home, flexibly, and outside busy periods	Entire Region	Current, Disruption and Future
5. Create a ripple effect- encourage people to use public transport and active modes with a focus on travel for a range of trips (without a focus on commute and school trips)	Central, Eastern, southern, Western, Northern	Disruption and Future
6. Create a culture change- change the way people think about things that impact on their travel choices, e.g. where to live; whether to buy a car; how they travel for recreation, leisure, exercise, holidays	Central, Eastern, southern, Western, Northern	Disruption and Future
7. Make it easy for people to find out about their travel choices, understand service changes and disruption in a timely way	Entire Region	Current, Disruption and Future
8. Encourage people to travel by active modes (including micromobility)	Central, East, South, West	Current, Disruption
8. Encourage people to travel by active modes (including micromobility)	Central, East, South, West, North, Hutt Valley	Future

Package D will influence mode shift and culture change through additional investment in interventions that influence travel to school and organisations, but also targeting event travel plans and community-based travel initiatives that encourage people to think differently about travel for non-commute trips.

- Programmes for schools will be expanded to include all large schools (primary, intermediate, and college) in the eastern, southern and western suburbs. This includes the five primary schools[16] with the largest roll and all secondary schools that have a roll over 1,000 students[17]. This is in addition to those school affected by disruption. This is expected to have an indirect effect on trips to the central city, for example if a parent does not feel the need to drive a child to school, they will be more able to shift mode for their work trip. Also, if children travel by active and sustainable modes, they are more likely to continue to choose sustainable modes for a trip to work or university
- In addition to the central city, organisations in the eastern and southern suburbs will be targeted for travel plans such as Wellington Hospital (currently underway), Wellington Airport and Weta, Park Road Productions and associated businesses. This will improve the reach of trips 'through' central Wellington.
- Event travel plans would promote and encourage use of public transport or active modes to get to an event for example a show in the central city or a sporting event at the Basin Reserve. While this could have a beneficial influence on central city traffic, the economics have not measured this benefit, instead we are expecting the event travel plan to provide people with an experience using shared or active modes when they might not usually do so, thereby creating a ripple effect i.e. encouraging mode shift for commuting, perhaps when targeted via a workplace travel plan
- Community travel plans are planned for new central city developments and after piloting approaches, can be implemented for growth areas and retrofitted to existing neighbourhoods. These might include:

    A. pop-up events that let people try out cycling locally, tying in with Innovating Streets events, with a view to encouraging more walking and cycling locally so that this behaviour ripples into school or work travel over time

    B. pop-up bike maintenance workshops (in partnership with local bicycle shops)

    C. working with partners to co-ordinate the availability of car share, bike share and other modes in a neighbourhood to support MaaS and reduce overall car dependency

    D. setting up a city-wide scheme, perhaps in partnership with a sponsor, like:

        - the Mapnificent tool (refer to Figure 6-8) that was operating in London a few years ago and allowed people to view houses for sale or property to rent against public transport and bicycle commute times and distances to their workplace, the idea being that you could nudge 'big' choices like where to live because people who wanted to travel by PT or bicycle, or plan their lives in a way that reduces car use, would be able to make informed choices about where to live; and
        - New Movers schemes providing travel information packs and incentives for people moving to new houses in areas where they might commute to Wellington for work, to encourage them to make new habits by trying out the local buses or active travel options
        - 'Culture change' initiatives to reduce car use or car ownership might be locally focused, e.g. a community travel plan may offer an app like FutureFit (refer to Figure 6-8) to gamify behaviour changes that lighten a household's environmental impact across more than just travel to work or school. Or they could link in with initiatives encouraging

[16] Karori Normal School, Karori West Normal School, Brooklyn School, Seatoun School, Johnsonville School
[17] Wellington College, Wellington East Girls' College, Wellington Girls' College, Wellington High School

healthy living or getting more exercise, building on the experience of the Blue Zones where greater mode shift was seen when a more holistic approach was taken to changing the travel, eating and social culture in combination within a community. Any culture change scheme will need to involve the cohort it targets to enable them to identify things that will help them to change.

This package will also focus on shaping behaviours before the triggers arise and includes non-commute journeys in the city centre and the outer areas of the Wellington Region. Section 3.5 presents evidence supporting the focus of package D. The focus will be on encouraging people to try out new modes and this could happen ahead of, say, a new cycleway opening, so that people are ready to roll when that new infrastructure comes on line.

The culture change and ripple effect initiatives, alongside co-design and engaging partners early, will build support and readiness for change. It is recommended that a 'pilot, test and grow' approach is adopted for culture change and ripple effect elements of Package D. These are relatively untested in New Zealand. Adopting a flexible, learning approach will allow new initiatives to be tested before being implemented on a broader scale.

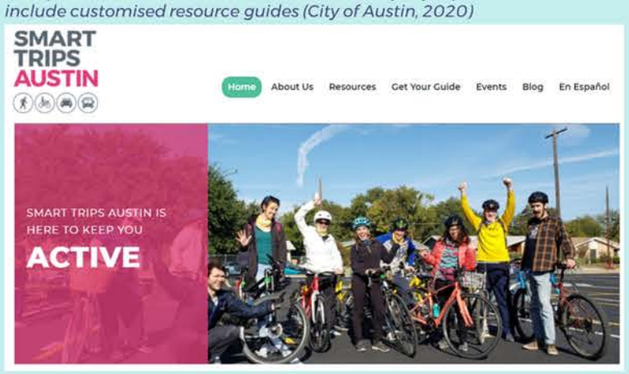
Culture change and ripple effect initiatives could be initiated at any time and are not necessarily linked or dependent on external triggers. They could be implemented immediately and integrated with Package A. Being relatively new ideas for New Zealand, they involve new approaches in which practitioners are not yet experienced. Figure 6-8 provides a flavour of the kinds of initiatives that could be part of Package D.

These initiatives will be delivered through travel plans (focusing on workplaces, communities and events) and programmes for schools.

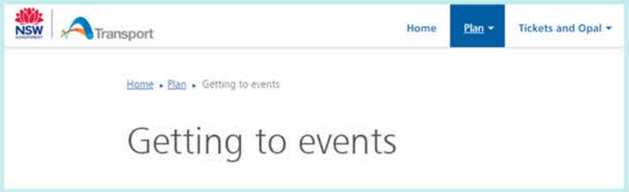
It is estimated to cost $66.8M over the next ten years including $20.4M for eighteen FTEs to deliver Package D. The reach of Package D widens to include more schools, including large secondary schools in Wellington. Figure 6-10 describes the components of Package D.

Example initiatives

***'Smart Trips Austin** program is designed to help Austinites find transportation solutions that work for their everyday trips. Resources include customised resource guides (City of Austin, 2020)*



***'Transport for New South Wales** provides information on how to get to events using various modes. The website provide information on how and where to buy tickets when using public transport, other events on at the same time and any disruptions that may be in place as well as links to a journey planner (TfNSW, 2020)*



***Bicycle Network** offers bike events, social rides and behaviour change programs to bring the bike riding community together (BN 2020)*

Women's Community

Towards 50/50.

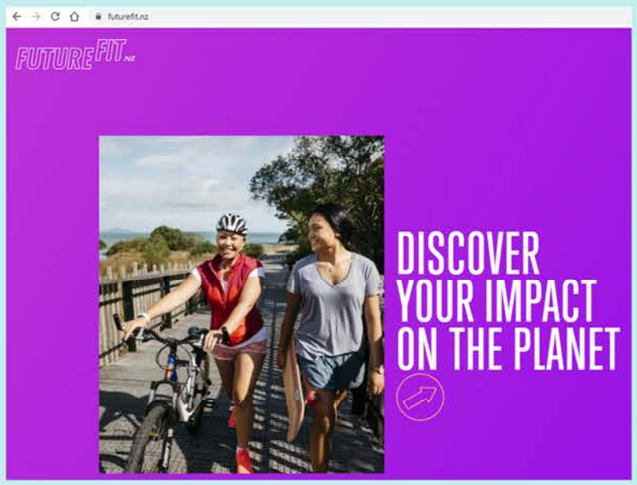
Bicycle Network's Women's Community program breaks down the barriers preventing more women from riding.

East Gippsland Social Rides

Join Bicycle Network this summer for three social rides as we explore the beautiful East Gippsland rail trail accompanied by our fantastic WARBYs.

***'Transport for New Homes'** is an initiative that has a vision for new housing areas to be built so that residents can walk, cycle and use public transport to go about their daily lives (Transport for New Homes, 2020).*

***Future Fit** is a programme run by Auckland Council under it's efforts to encourage residents to live sustainably. FutureFit is a way people to engage with climate change. FutureFit provides a snapshot of people's impact on the planet and helps them make positive changes in the way people live to help reduce them reduce their footprint (Auckland Council, 2020)*



***'Mapumental Property'** is tool that narrows property results by houses that fall within a decent commute time from the places people visit regularly – like work, school, or the shops (myScociety, 2020).*

Mapumental Property – extra insight for househunters

Posted by Myfanwy
10th November 2012

Mapumental Comments Off

If you're searching for a new home, give Mapumental Property a try. It narrows property results down, only showing you houses that fall within a decent commute time from the places you visit regularly – like work, school, or the shops. Here, have a go – it's fun.

Irritation is the mother of invention

Several years ago, some of our colleagues were looking for a house to rent.

***ActivAsian** aims to engage the growing Asian community to be more active in sport and active recreation with a range of initiatives that target different age groups and cater to all abilities. (Aktiv, 2020)*

Figure 6-8 Example initiatives for Package D

Figure 6-9 Example initiatives for Package D

Package D

Package C + PT everywhere + ripple effect and culture change (inner suburbs)

Policy, partnerships and advocacy	• Establish governance group (Y1 informal group (expand), Y2 establish TMA- recruit TMA manager, co-ordinator and funding expert; membership base, Y3 staffed and running, membership grows) – 1.4M over 10 years • Working region-wide on policy development to support travel behavior change (e.g. advocating for policy changes for urban design and land use; advocating for new developments to provide facilities, services, and subsidised parking) • Building partnerships, working with existing partners eg transport and health/environment campaigns; identifying co-funding opportunities • Developing and distributing tools, material, incentives for employers • Policy development (flanking Parking Levy) to encourage company car cash out and daily parking charges or cash out option – 250k budgeted for the first 2 years for policy and guideline development • Parking management software (to support daily charges/ cash out) – 875k over 10 years for software development • Advocate for unbundling of parking (from commercial units and residential developments) and improved parking enforcement
Travel plans	• **26** additional workplace travel plans (expanding to workplaces in central wellington, Eastern and Southern suburbs eg Wellington Airport, hospital, Weta caves) - 3.3M over 10 years • **48** additional schools reaching over 32,000 students across the region (private schools, schools with over 1000 students in Central Wellington and inner areas) participate in programmes to encourage travel by active and shared modes – 2.9M over 10 years • **4** community travel plans (eg Kianga-Ora developments, central Wellington) – 450k over 10 years • **9** event travel plans in central Wellington (eg Te Papa; Basin reserve, Evans Bay, TSB arena, Waterfront, Sky Stadium, Weekend farmers markets) – 1.1M over 10 years • Construction worker travel plans – 300k during the disruption period over 10 years
Events, experiences and life choices	• Coordinating promotional events (car-free days, bike/walk to work month, free PT days, open streets events, etc) and supporting promotional packages such as give-it-a-go programmes in Central Wellington, Eastern and Southern suburbs – 110k per year over 10 years
Marketing, communications, incentives	• Targeted social media campaigns – Walking & cycling in Brooklyn, Island Bay, Miramar; cycling in Strathmore Park – 200k per year over 10 years • Sponsored award and events; challenges; competitions; giveaways expanding to outer areas serviced by rail and TDM for new routes or services as they launch – 1.8M over 10 years • Coordinating regional branding build on Metlink's work on customer segments for PT based social media campaigns – 600k over 10 years • Communication platforms (dashboards, brand specific website (like MobilityLab), social media posts) – 285k over 10 years • Ongoing marketing and communication capped at 50k per year • Off-peak incentives and peak time disincentives for example discount fares during peak periods as part of specific promotions – 16M over 10 years
Supporting services and amenities	• Co-ordinating first-last leg improvements and co-working spaces in the outer areas eg Featherston, Carterton, Masterton, Kapiti Coast, Porirua, Lower Hutt and Upper Hutt – 1.5M over 10 years • Ensuring supportive services and amenities are provided such as end of trip facilities, wayfinding and route maps; e-bike/e-scooter charging, repair stations bike riding and maintenance skills workshops, micromobility share schemes, peer to peer parking services, guaranteed ride home scheme focused in Central Wellington, Eastern, Southern and Western suburbs • Establish pocket park and rides in outer areas (trial in Karori due to disruption; Porirua with the trigger of Transmission Gully) - partner with eg Parkable & user pays; 150k over 10 years for a study to identify potential locations & planning requirements (consulting fees or contractor)
Evaluation, research and reporting	• Measuring progress toward goals, targeted KPI's, process and impact evaluation for individual interventions and across the programme

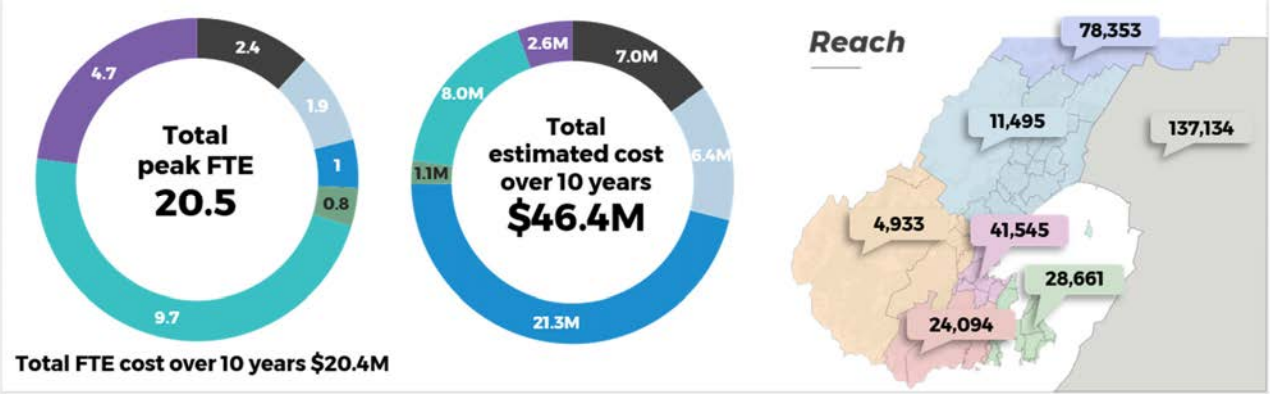


Figure 6-10 Components of Package D

Package D will be able to leverage from disruption created by delivery of other LGWM packages, which provide a 'push' incentive for people and businesses to reconsider their normal travel patterns. Disadvantages and risks include significant effort on retention; and systemic behaviour change efforts could be misinterpreted by the public as being frivolous. This package also emphasises partnerships and these will require additional resources to establish and maintain.

6.1.6 Package E: Package D + encourage the use of public transport and active modes everywhere + ripple effect and culture change everywhere

Package E focuses on:

- encouraging people to use public transport in the entire region
- reducing the appeal of driving in the entire region but only in the disruption and future states
- encouraging people to travel by active modes in the entire region
- increasing the uptake of active modes for first/last leg trips in the entire region
- creating a ripple effect and culture change in the entire region.

Package E expands the geographic reach of travel behaviour change to regionwide but still taking a staged, targeted approach. It will increase investment in travel plans, events, experiences and life choices, promotional events and packages, competitions and challenges, supporting services and amenities as well as initiatives to create a ripple effect targeting non-commute trips throughout the region. The table below provides detail on 'where' and 'when' specific strategies will be implemented within package B based on the assessment discussed in Section 0. Initiatives will be the same as Package D, but will target more areas/ communities.

Strategic Intervention	Geographic area	Time state
1. Encourage people to travel by public transport	Entire Region	Current, Disruption, Future
2. Reduce appeal of driving (and driving alone) into and parking in the city centre	Entire Region	Disruption and Future State
3. Increase uptake of walking, cycling (or other active/shared modes) for first/ last leg trips	North, Hutt Valley Kāpiti Porirua	Current, Disruption and Future State
4. Encourage people to work from home, flexibly, and outside busy periods	Entire Region	Current, Disruption and Future State
5. Create a ripple effect- encourage people to use public transport and active modes with a focus on travel for a range of trips (without a focus on commute and school trips)	Entire Region	Current, Disruption and Future State

Strategic Intervention	Geographic area	Time state
6. Create a culture change- change the way people think about things that impact on their travel choices, e.g. where to live; whether to buy a car; how they travel for recreation, leisure, exercise, holidays	Entire Region	Current, Disruption and Future State
7. Make it easy for people to find out about their travel choices, understand service changes and disruption in a timely way	Entire Region	Current, Disruption and Future State
8. Encourage people to travel by active modes (including micromobility)	Entire Region	Current, Disruption and Future State

Workplace travel plans (in addition to Package A and D) have been identified in consultation with GWRC targeting:

- 5 large workplace that are major trip attractors outside central Wellington, such as, large organisations (Johnsonville Shopping Centre, Kenepuru Hospital, Queensgate Shopping Mall, Hutt Valley DHB, Wairarapa DHB)).

Package E is based on the premise that if people use shared and active travel modes in other parts of their lives, they are more likely to consider using them for commute purposes. Ripple effect activities can begin immediately without the need to wait for infrastructure/network capacity improvements. Although focusing on the wider region will not have an immediate effect on people travelling to and through the town centre, this package is about 'warming the pot' and preparing people over time and through different stages of life.

On this premise the package's focus on schools will be extended regionwide, reaching approximately 80,000 students. Tertiary institution travel plans will also be extended to include Whitireia Community Polytechnic and Te Wananga O Aotearoa in Porirua and Wellington Institute of Technology in Lower Hutt. Capturing people young and enabling people to experience alternative modes, modes and to think about non mode change travel choices that reduce car trips and vkt, means they will be more willing to consider them as options when bus priority or cycle improvements are made.

Community travel plans will be extended beyond Wellington city centre into the western suburbs, e.g. Karori where disruption from the bus priority and cycle improvements create an opportunity for mode shift. Supporting amenities such as bike repair stations, e-bike and scooter charging stations and wayfinding will also be extended region-wide.

By having a holistic, region wide approach, this package can also target hard to reach audiences that experience transport disadvantage and may not be targeted by programmes focusing on commuters or schools. The Social Impact Assessment of Mode Shift report refers to people who suffer most from transport inequities as those on "low incomes, Māori and Pasifika, women, youth, older adults, disabled people, members of ethnic minorities, and those living in high-deprivation rural or peripheral areas" (Waka Kotahi 2020c)

It is estimated to cost $81.7M over the next ten years, including $25.9M for 24 FTEs to deliver Package E. The higher cost reflects the extended geographic reach. The reach for Package E widens to include all schools in Wellington, tertiary institutes in all areas, organisation travel plans in the outer areas and broadening social media campaigns.

Packages D and E employ approaches new to New Zealand, the evidence suggests these measures will work. Pilot, test and grow approach allows for trialling (in NZ) before rolling out resulting in lower risk. Regardless of other budgets, localised initiatives can still be implemented to prime people for when improvements are made.

As initiatives in this package are like those that could be deployed in Package D, refer to Figure 6-8 (in the previous section) for examples. Figure 6-11 details the components of Package E.

Package E

Package D + PT everywhere + active modes everywhere + ripple effect everywhere and culture change everywhere

Policy, partnerships and advocacy	• Establish governance group (Y1 informal group (expand), Y2 establish TMA- recruit TMA manager, co-ordinator and funding expert; membership base, Y3 staffed and running, membership grows) – 1.4M over 10 years • Working region-wide on policy development to support travel behavior change (e.g. advocating for policy changes for urban design and land use; advocating for new developments to provide facilities, services, and subsidised parking) • Building partnerships, working with existing partners eg transport and health/environment campaigns; identifying co-funding opportunities • Developing and distributing tools, material, incentives for employers • Policy development (flanking Parking Levy) to encourage company car cash out and daily parking charges or cash out option – 250k budgeted for the first 2 years for policy and guideline development • Parking management software (to support daily charges/cash out) – 875k over 10 years for software development • Advocate for unbundling of parking (from commercial units and residential developments) and improved parking enforcement
Travel plans	• **36** additional workplace travel plans (expanding to workplaces in the outer areas eg universities; Queensgate shopping mall, Jonsonville shopping centre, Kenepuru hospital, Hutt Valley and Wairapa DHB) • **238** additional schools reaching over 82,000 students across the region participate in programmes to encourage travel by active and shared modes • **5** community travel plans (location examples include Kainga-Ora developments, Karori, Porirua East development- pilots can be run to test effectiveness) • **9** event travel plans in central Wellington and construction worker travel plans
Events, experiences and life choices	• Coordinating promotional events (car-free days, bike/walk to work month, free PT days, open streets events, etc) and supporting promotional packages such as give-it-a-go programmes region-wide – 220k per year over 10 years • Schemes to influence a change in home locations to reduce commute length eg location-efficient mortgage initiatives, etc
Marketing, communications, incentives	• Targeted social media campaigns – Walking & cycling in Brooklyn, Island Bay, Miramar; cycling in Strathmore Park; expanding to public transport in Upper Hutt, Porirua, Tawa and Johnsonville; cycling in Lower Hutt (when Te Ara Tupua is delivered) – 400k over 10 years • Sponsored award and events; challenges, competitions; giveaways and TDM for new routes or services as they launch – 3M over 10 years (region-wide) • Coordinating regional branding build on Metlink's work on customer segments for PT based social media campaigns – 600k over 10 years • Communication platforms (dashboards, brand specific website (like MobilityLab), social media posts) – 285k over 10 years • Ongoing marketing and communication – 50k per year • Off-peak incentives and peak time disincentives for example discount fares during peak periods as part of specific promotions – 16M over 10 years
Supporting services and amenities	• Co-ordinating first-last leg improvements and co-working spaces in the outer areas eg Featherston, Carterton, Masterton, Kapiti Coast, Porirua, Lower Hutt and Upper Hutt – 1.5M over 10 years • Tactical local changes that respond to feedback (eg through citizen science) – 20k per year over 10 years • Ensuring supportive services and amenities are provided such as end of trip facilities, wayfinding and route maps; e-bike/e-scooter charging, repair stations bike riding and maintenance skills workshops, micromobility share schemes, peer to peer parking services, guaranteed ride home scheme – 2.7M over 10 years (region-wide) • Establish pocket park and rides in outer areas (trial in Karori due to disruption; Porirua with the trigger of Transmission Gully) - partner with eg Parkable & user pays; 150k over 10 years for a study to identify potential locations & planning requirements (consulting fees or contractor)
Evaluation, research and reporting	• Measuring progress toward goals, targeted KPI's, process and impact evaluation for individual interventions and across the programme

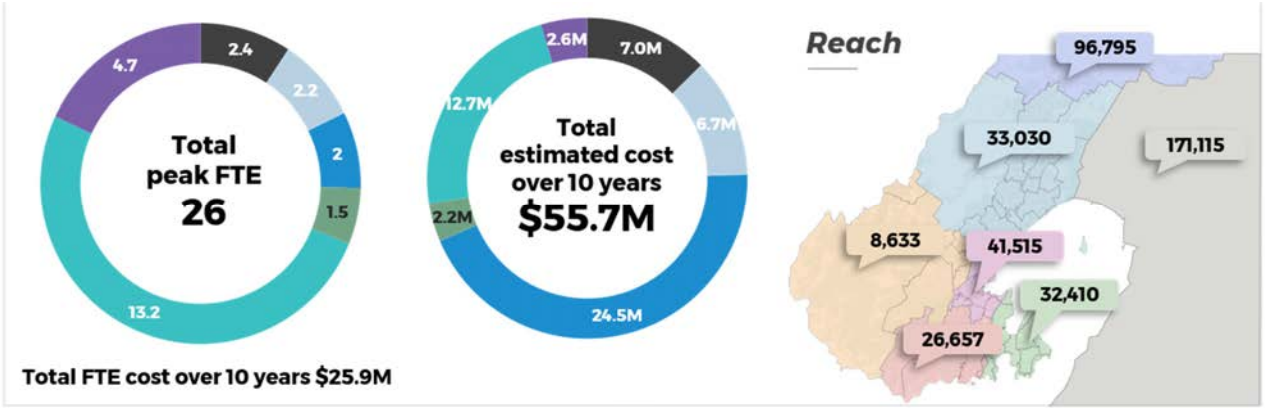


Figure 6-11 Components of Package E

6.2 How do the packages compare?

Each of the alternative packages deliver on the project objectives to varying degrees. Packages A, B and C are particularly focused on delivering against the project investment objectives.

Packages D and E go further, delivering regional benefits by investing in ripple effect initiatives to enable a long-term sustained culture to shift away from car driving. They accelerate culture change and create new social norms around all types of trips, not just commuting. Their intention is to create preparedness and to reach people early (e.g. reaching children not just through programmes focused on schools but also in their neighbourhoods), thereby creating opportunities for travel behaviour change in all aspects of life. Perhaps most importantly, by boldly tackling the entire city's travel behaviour, packages D and E can enable systemic culture change making regression (i.e. going back to the car) post disruption less likely.

While Packages D and E will require more resource, achieving culture change should in the longer term require less maintenance. It is expected that efforts may be scaled back as new societal norms are established. There is some uncertainty regarding the long-term (10 years +) maintenance costs for these packages because it is an emerging, relatively new concept.

Figure 6-12 to Figure 6-13 presents a comparative summary of the packages including a visual representation of the packages, average peak FTE, average cost over 10 years, the number of trips to and through the CBD diverted, and the reach of each package. The diverted trips are broken down by the mode that a car user is shifted to.

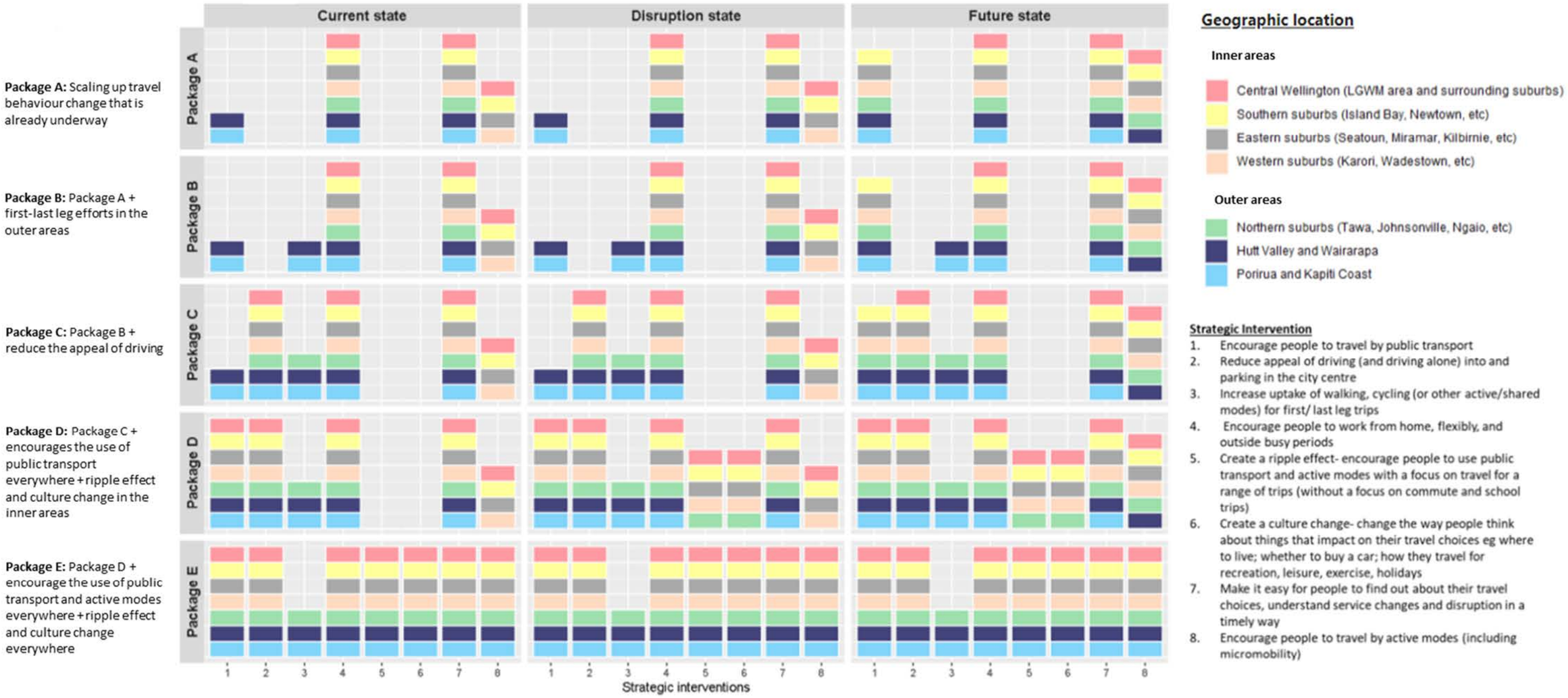
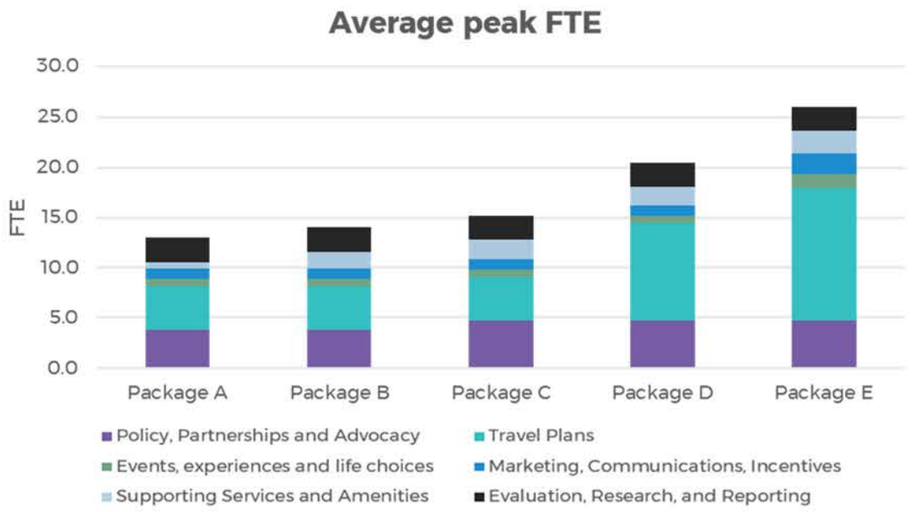
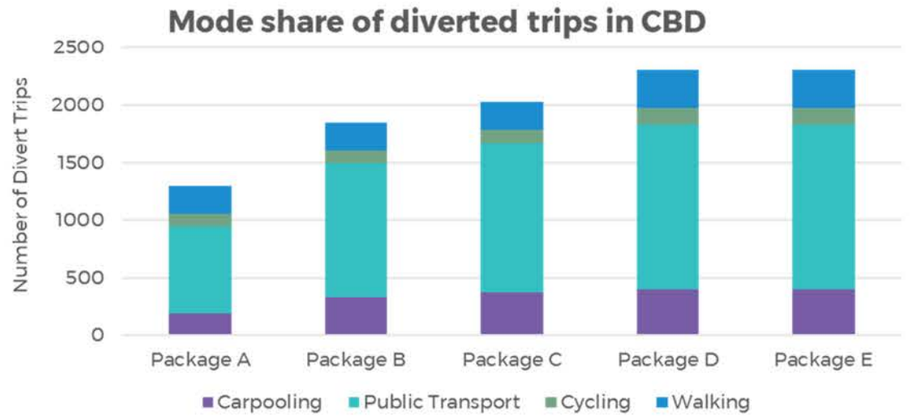


Figure 6-12 Visual representation of the alternative packages

	Current arrangement	Package A	Package B	Package C	Package D	Package E
Focus	Focus of the current TBCh programme is on reducing congestion, increasing public transport use, improving the health of the region and reducing GHG emissions	Scaling up current arrangement and refocusing effort to align with TBCh package objectives	Connecting people with active and shared modes to rail stations across the region	Flanking and boosting effectiveness of parking levy	Ripple effect and culture change in Wellington City	Ripple effect and culture change in the entire region
Example of what a customer might expect	Some employers have travel plans, and some schools offer cycle training, but the reach of these schemes is not large due to budget and resource constraints.	New on-site cycle facilities at work, better information about travel choices, online or wayfinding. Training and support from schools for cycling. Access to schemes run by employers together through the TMA, like a bike breakdown service.	Services in their neighbourhoods to help them to connect with the rail service without driving e.g. information advising about a new local bikeshare scheme or a promotion about a new on-demand shuttle launching in their neighbourhood	Car drivers with company cars may be able to access more appealing cash out schemes from their employer or opt into a daily payment scheme for parking that encourages more flexible commuting patterns (i.e. not driving every day)	A pop-up cycling event or cycle maintenance service on their street. A treasure hunt by public transport. A website or app that lets them make informed decisions about their next house move by letting them view public and active travel routes to their workplace or school alongside rentals and houses for sale. An option for a facilitated conversation to find ways to make changes that suit the individual.	Like D, but more people will benefit because there will be a greater number of local schemes.
Number of travel plans: ▪ Workplaces ▪ Community ▪ Schools ▪ Events ▪ Communities	81 workplaces 30 schools	▪ 102 (21 additional) workplaces ▪ 45 (15 additional) schools	▪ 102 (21 additional) workplaces ▪ 45 (15 additional) schools	▪ 102 (21 additional) workplaces ▪ 45 (15 additional) schools ▪ Construction worker travel plans	▪ 107 (26 additional) workplaces ▪ 48 (18 additional) schools ▪ 4 community travel plans ▪ 9 event travel plans ▪ Construction worker travel plans	▪ 117 (36 additional) workplace travel plans ▪ 238 (208 additional) schools ▪ 5 community travel plans ▪ 9 event travel plans ▪ Construction worker travel plans
Creates preparedness	No information available	Works within the existing constraints in the transport network and is reactive to improvements in the transport network.	Similar to Package A.	Similar to Package A.	Holistic, co-design approach to achieving mode shift by changing the way people think. Cultural change via school, community and event travel plans. Cultural change and ripple effects are not reliant on external triggers.	Broadens reach for cultural change and ripple effects beyond Wellington city. If people use shared and active travel in other parts of their lives, they are more likely to consider this for commuting purposes. Travel behaviour targets.
Peak FTE (that this effort may be outsourced at times)	9.25	13.0 (+ 3.75)	14.0 (+4.75)	15.2 (+5.95)	20.5 (+11.25)	26.0 (+11.75)
Reach	41,000	105,000 (+ 64,000)	131,000 (+ 90,000)	131,500 (+ 90,500)	150,500 (+ 109,500)	420,000 (+ 379,000)
Cost over 10 years (excluding FTE)	$7.5M (based on recent $0.75M per annum)	$36.3M ($3.6M per annum)	$39.7M ($4.0M per annum)	$41.4M ($4.1M per annum)	$46.4M ($4.6M per annum)	$55.7M ($5.6M per annum)
FTE cost	Approx. 10M (1M pa assuming staff cost of 100k pa including overhead costs)	$13.0M (+ ~$3M)	$14.0M (+ ~$4M)	$15.1M (+ ~$5M)	$20.4M (+ ~$10M)	$25.9M (+ ~$15.9M)
Total package cost over 10 years	$10.75M	$49.3M	$53.7M	$56.5M	$66.8M	$81.7M
Estimated No. diverted daily car trips into Central Wellington	No information available	1,300	1,850	2,000	2,300	2,300 (trips not entering Wellington central city are not reflected in this figure).

Summary of packages

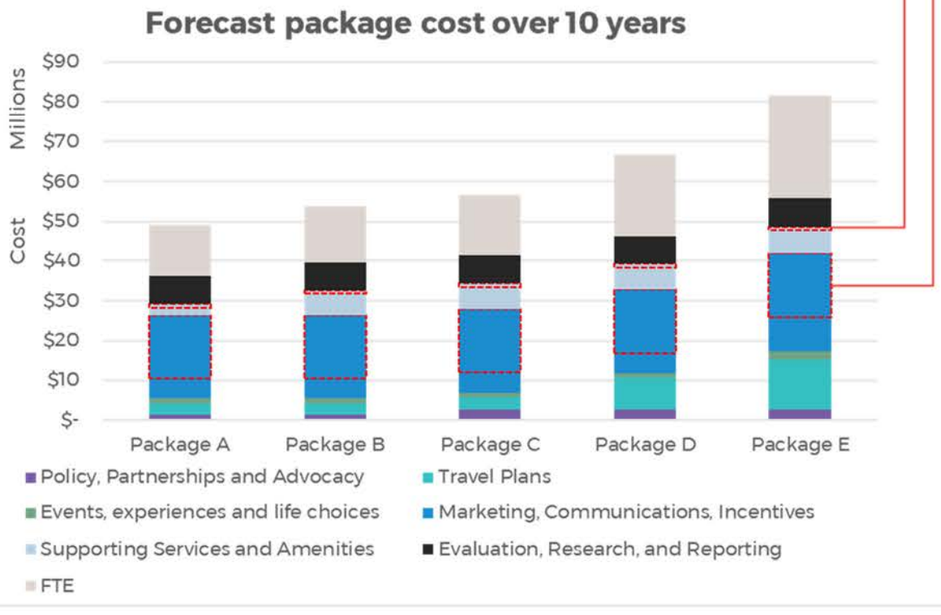




Limitation: MBCM assumes all trips are re-mode rather than a trip not made. Note. Mode share of diverted trips is the same for package D and E. We expect to achieve a shift in trips outside of central Wellington with Package E, but these have not been recorded in this graph, above)

Cost of off-peak incentives and peak time disincentives (e.g. discount fares during off-peak periods as part of specific promotions)

Includes cost for journey planning app/MaaS



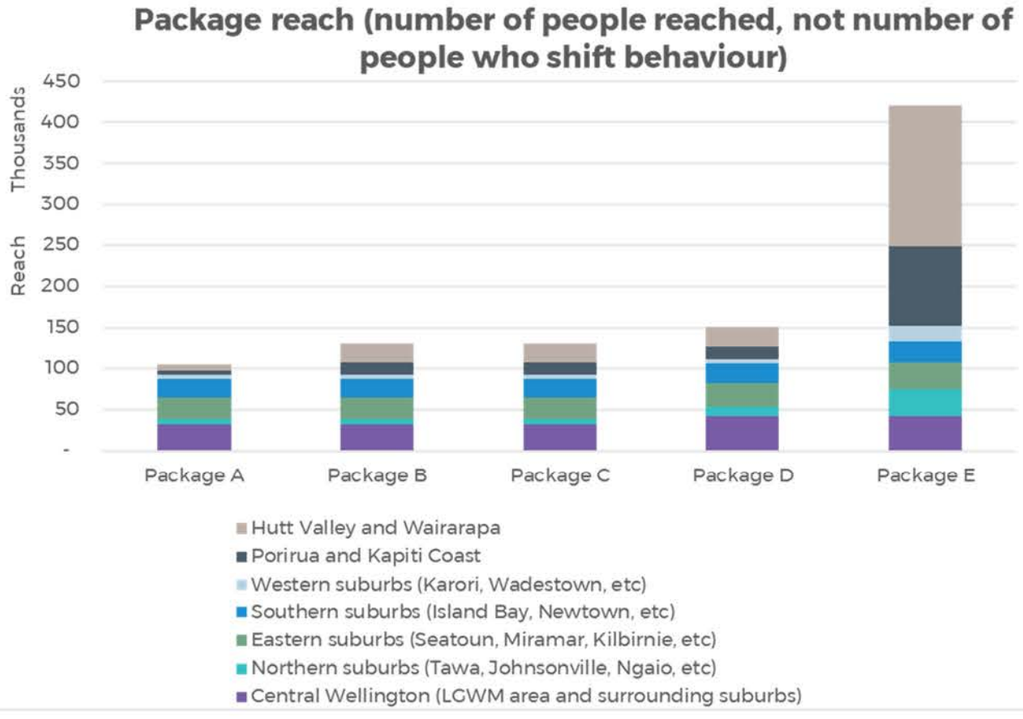


Figure 6-13 Summary of packages A to E - average peak FTE; forecast cost over 10 years across all packages; reach and diverted trips

6.3 Sequencing the delivery of travel behaviour change measures

There are several external triggers that should influence the choice and timing of the TBCh package. The three most significant are listed below and shown in Figure 6-14:

1. introduction of the parking levy in Wellington
2. delivery of first and last leg improvements for rail and larger PT stations in the outer areas of Wellington (subject to funding and policy decisions)
3. planned rail capacity improvements (not yet funded).

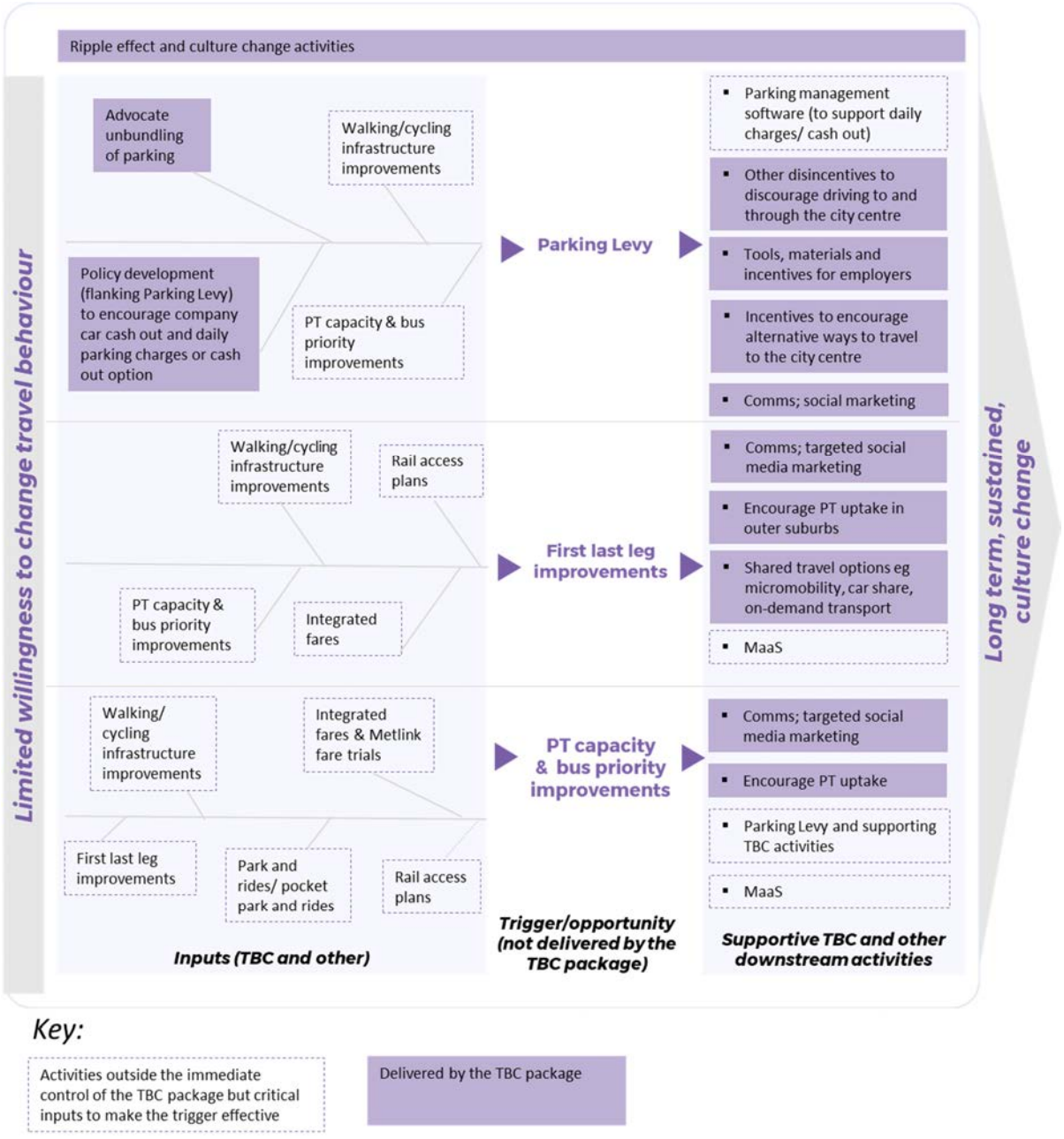


Figure 6-14 Dependencies between travel behaviour change activities and other transport system changes

Figure 6-14 shows that some TBCh initiatives should be delivered in in preparation for external system changes. For others integration should be integrated with external system changes to boost its effectiveness. Key points to note are:

- Some travel behaviour change measures will be ineffective without an external change, e.g. a social marketing campaign to increase rail use from the outer areas is reliant on first/last leg access improvements to the rail stations, especially when parking at most park & rides is at capacity.
- In some areas, capacity improvements (bus and rail) are needed before encouraging a greater uptake of public transport as it would be counterproductive if people were to shift modes only to find themselves on overcrowded PT or left behind when buses were full.
- Cycle infrastructure improvements should precede travel behaviour change efforts to boost cycling in neighbourhoods that presently don't have attractive infrastructure-temporary measures from Innovating Streets approaches could be used to forerun harder infrastructure changes. TBCh will be wrapped around Ngā Uranga ki Pito-One and the wider Te Ara Tupua connection.
- Development of travel behaviour change initiatives to flank the parking levy and boost its effectiveness should begin about two years ahead of the levy's planned introduction so that they can be launched together. Other initiatives including advocacy for unbundling of parking, policy development to encourage company car cash out, are also precursors to the parking levy and should be underway prior to it being implemented.

Many other system changes are expected that will either trigger or create the opportunity to focus TBCh efforts. These changes will be much more frequent. The TBCh package should be sufficiently flexible to take advantage of these opportunities as they arise.

Examples are the construction of a shared path facility around Oriental/Evans Bay that when completed will provide a continuous high-quality cycle facility from the CBD to Miramar and the Te Ara Tupua shared cycle facility linking Lower Hutt and Wellington. TBCh initiatives should also look to capitalise on changes to the public transport system such as a new airport flyer service or integrated ticketing. These opportunities provide the right 'pull' factors which, when combined with travel behaviour change initiatives, will lead to more people using public transport.

As noted earlier, cultural change can occur at any time and is not necessarily reliant on system changes. This is because it is based on people having existing problems with their mobility and access to activities which they want to remove.

6.4 Evaluation of alternative packages

Each alternative package delivers on the objectives to varying degrees. Table 6-2 presents an assessment of the extent to which each package is aligned with the project objectives.

Table 6-2 Extent to which the alternative packages achieve the objectives

Objectives	Packages				
	Package A: **Scaling up current arrangement and refocusing effort to align with TBCh package objectives**	Package B: **Connecting people with active and shared modes to rail stations across the region**	Package C: **Flanking and boosting effectiveness of parking levy**	Package D: **Ripple effect and culture change in Wellington City**	Package E: **Ripple effect and culture change in the entire region**
Improve access to and through the central city ensuring people know that the available travel choices will work for them (15%)	++	++	++	+++	+++
	Packages A, B and C will likely have a similar impact in achieving this objective as the number of people targeted or the potential impact is not significantly different within the three packages.			Packages D and E score higher than the other packages by incorporating measures to achieve long term culture change. Important to note that benefits of D and E are realised over a longer time period and that the benefits are also realised in the wider region, not just the LGWM area.	
Minimise disruption to people and businesses by making sure they are aware of upcoming changes, how changes will affect their journeys, and understand their travel options during delivery of work to improve and renew the city[18] (15%)	+	+	+	+	+
	Most people in Wellington already know of the available travel options but not necessarily how the options could work for them. All packaged will deliver the same level of effort on this objective, so they are scored the same.				
Make best use of the transport network by encouraging people to travel less often and at less busy times[19] (20%)	+	+	++	+++	+++
	Packages A, B will not have as much impact as packages C, D and E due to the absence of measures to reduce the appeal of driving.		Packages C, D and E include measures that will actively reduce the appeal of driving (and driving alone) and start to shift behaviour of people that are currently less willing (e.g. people with access to company cars and car parks). Packages D and E add an additional dimension of culture change and ripple effect by targeting much more of people's lives. Over time these packages will start to change/shape places that people live in how they experience it and therefore, the impact is felt over a longer period and in the whole region.		
Make best use of the available transport options by reducing the proportion of people that drive alone during busy times or for short trips (25%)	+	++	+++	+++	+++
	Packages A and B score lower than C, D and E as the latter packages introduce initiatives to reduce the appeal of parking. Package B will have a greater impact compared to A by targeting people in their home locations.				
Improve the health, safety and wellbeing of communities by increasing the number of trips that involve active modes and public transport (25%)	+	+	+	++	+++
	Packages A, B and C will deliver on this objective to varying levels, but the packages D and E are more closely aligned with its intent. Package E will be more effective than package D in the long term as it has a wider geographic reach. Packages D and E are about winning hearts and minds focus on trips wider than commute and journey to education trips. They are about creating a societal change by reaching children (not just through school travel plans, but for how they play/ meet each other in their neighbourhoods); being there for 'life' triggers that provide opportunity for travel behaviour change whole-of-life. Through Packages D and E, it will be possible to scale back on travel behaviour change initiatives as societal norms change.				

[18] Busy times include weekends

[19] Disruption may be created by delivery of Let's Get Wellington Moving, three waters renewals, building construction, major events

Other key points to note are:

- The key difference between the packages is that packages A, B and C will meet the objectives to varying degrees, but they will not deliver the systemic culture changes over time that packages D and E will.
- The risk of not delivering on the objectives as expected is considered low for package A (but it will be less effective compared to the other packages due to its narrow scope). Packages B and C carry a higher risk compared to package A as they rely on other budgets for delivery. Packages D and E will have more impact, but they carry a high risk around the ability to achieve the predicted impact as initiatives focusing on culture change have not been adopted at this scale in New Zealand.
- Package E will reach the greatest number of people (resident population, workers, education) as it has the largest geographic reach and is hence likely to affect the largest reduction in vkt. The other packages have a similar number of people working, travelling to education or living within areas targeted.
- Creating a ripple effect and cultural change will also deliver secondary benefits by changing behaviour in ways that are aligned with the GWRC objectives, but not strongly aligned with LGWM outcomes. For example, an initiative that reduces the number of trips from Lower Hutt to sporting events will help to change regional travel culture and have flow-on effects for journeys to and through central Wellington. The change in mode for the specific sporting trip may not, however, contribute to the LGWM objectives.
- Packages D and E offer the opportunity through LGWM to initiate a step change that delivers a systemic cultural shift away from car driving, prevent regression post disruption, and in the long term affect the day-to-day decisions Wellingtonians make. While Packages D and E will require more resources , achieving culture change should in the longer term require less maintenance. There is some uncertainty regarding the long term (10 years +) maintenance costs for these packages because it is an emerging, relatively new concept.
- Packages A and B do not reach enough people to have a transformative impact on Wellingtonians' transportation culture and behaviour and may not lead to a sustainable change over time. Regression to old habits could be expected post disruption.

7 Forecasting Package Performance

The Waka Kotahi Monetised Costs and Benefits Manual (MCBM) defines a methodology for forecasting the effects and economic efficiency of travel behaviour change initiatives. The simplified and full procedures outlined in the MCBM are primarily designed for forecasting the effects of workplace and school travel plans. A methodology is also suggested for household and community-based travel behaviour change activities. The methodologies described in the MCBM are designed for evaluating individual initiatives rather than for a travel behaviour change package. The MCBM full procedure has therefore been adapted for use evaluating options for a travel behaviour programme for LGWM. This chapter describes the methodology adopted.

The methodology and forecasts were subject to independent peer review in early 2022. In response to the feedback received, some refinements to the assessment were made. This chapter describes the approach that was finally adopted including these refinements.

7.1 Uncertainty

Historically, travel behaviour change activities were focused on workplace and school travel plans with some marketing and communications focused on the wider community. In recent years travel behaviour change approaches have evolved, becoming more holistic and more innovative. While there is a variety of empirical evidence about what can be achieved from targeted travel behaviour change programmes (e.g. personalised journey planning or travel plans), there is less evidence for how much of a role TBC plays in larger TDM programmes or more innovative initiatives (LGWM, 2020a). There remains a good deal of uncertainty.

A literature review (LGWM, 2020a) undertaken to inform this business case found that:

- the effectiveness of "soft" travel behaviour change initiatives is very sensitive to local context, i.e. the quality / maturity of the local transport land-use system;
- the same travel behaviour change initiative delivered in two different places could have very different impacts both in terms of diversion rate (from traffic) and mode-share of trips diverted;
- while there is empirical evidence about the level of diversion resulting from individual travel behaviour change initiatives, there is little information about how different initiatives delivered in parallel may interact with each other (i.e. how to deal with double counting or synergistic effects);
- while there is empirical evidence about the level of diversion resulting from travel behaviour change programmes, often there was little information about how hard different parts of a package were pushed. It was also difficult to understand the relevance of case studies to Wellington given differences in the transport system and land use in the case study locations.

The Centre for Urban Transportation Research (part of the University of South Florida), in its Trip Reduction Impacts of Mobility Management Strategies (TRIMMS) tool, identifies "soft" travel behaviour change initiatives as "carrots" that usually "consist of measures geared either at increasing the knowledge of alternative modes and programs or at internalizing some of the costs associated to driving that would otherwise be borne by others". They state that "although these programs do not directly affect the cost of using a mode, they tend to impact travel behaviour when part of a program consists of hard measures." They state that "Generally, it is not possible to directly estimate change in travel behaviour from these TDM strategies."

Given these uncertainties a "top down" approach has been adopted that emphasises the inherent uncertainties in forecasting the effects and benefits of "soft" travel behavioural change initiatives. The approach that has been applied is built on a series of assumptions and seeks to demonstrate, how wrong these assumptions need to be before decision-making is affected.

7.2 Approach

The economic efficiency evaluation is derived from the following procedure:

- collect baseline data to assess the target population, existing demand, and mode share
- estimate the likely traffic reduction (based on assumed diversion rate)
- forecast the response of people who reduce car trips (to and from or in the central city) by changing their behaviour (e.g. working from home, making shorter car trips, etc.)
- measure and monetise the impacts of this behaviour change[20].
- undertake sensitivity tests for key assumptions.
- compare to do-nothing (the cost of each package includes the cost to maintain existing travel plans)

Adopting full procedures forecasting approach

- means that Wellington specific cost savings and benefits can be estimated;
- means that we can manipulate the diversion rates;
- enables the forecasts to be more sensitive to the different parts of Wellington; and
- allows a broad set of sensitivity tests to be applied

The full procedure calculations are included within Appendix K.

When looking at city or region-wide travel behaviour change, the ability to manipulate diversion rates is important. For example, it is almost inconceivable that anyone would walk from Porirua or Kāpiti to work in central Wellington. They are most likely to divert to rail or possibly bus. It is also important to be able to calculate the benefit or costs savings for trips from discrete geographic areas that have varying base mode share and distance from central Wellington.

Our approach is to use the diversion rates in the Monetised Benefit and Cost Manual as a base assumption, revising them where appropriate. We then apply sensitivity tests that explore different diversion rates or target populations (reach of each package).

Travel behaviour change programmes are strongly influenced by the wider social and environmental context. Forecasts beyond ten years are therefore very uncertain. A ten-year evaluation period is therefore adopted.

The fact that the procedure is intended for single travel plans rather than city or region-wide programmes introduces the risk of double counting diverted trips. This risk has been managed throughout forecasting the package's performance through transparent definition of target populations and reach to reduce the likelihood of counting the same trip twice.

7.3 Assumptions

7.3.1 Target population

Table 7-1 presents information about the target population of the travel behaviour change package. It presents:

- the residential population of each defined geographic area
- the number of people employed in central Wellington that live in each geographic area

[20] A limitation of the MBCM, is that is assumes that trips are diverted to another mode rather than not made at all (i.e. working from home).

- the number of children that go to school in each geographic area
- the number of tertiary students that travel to institutions (Victoria University, Massey University and Wellington Polytechnic) that live in each geographic area

The 2018 Census has been used to define the population in Greater Wellington and employment in central Wellington. This data source gives 105,300 jobs in Central Wellington. The origins of the travel to work trips that ended in the central city on census day have been used to pro-rata the number of jobs in the central city to a home location.

Roll data, as of July 2020, from the New Zealand Schools Directory has been used to calculate the number of pupils at primary, and intermediate/secondary school in each part of the city and region.

The effects of the travel behaviour change packages are forecast to be enable differentiation between benefits that are aligned with the LGWM objectives from those that are not. Forecast effects for initiatives focused on travel to work are focused on trips that end in, or pass through, the central city. Forecast effects for initiatives focused on travel to education will largely focus on trips that end in Wellington central city.

Table 7-1 Target Population data

Geographic Area	Population (2018)	Employed in Wellington City Centre (2018)	Primary School Rolls (2020)	Intermediate / Secondary School Rolls (2020)	Tertiary Rolls (2020)
Central Wellington	46,600	10,100	2,796	6,409	5,500
Northern suburbs	67,800	17,700	4,335	5,205	8,000
Eastern suburbs	38,100	9,400	3,749	2,200	4,500
Southern suburbs	31,400	15,600	2,563	2,302	3,700
Western suburbs	28,000	12,800	3,700	0	3,300
Porirua and Kāpiti Coast	112,900	15,500	12,033	6,409	
Hutt Valley and Wairarapa	197,600	24,200	18,422	15,559	

7.3.2 Reach

Workplaces

It is unlikely that any workplace element of a travel behaviour change package will reach every employee (or employer) in the city.

The package includes approximately 21 additional travel plans that include:

- broad retail and entertainment plans,
- central and local government agencies; and
- large office premises in the city centre that house multiple organisations.

Education and tertiary travel plans will also reach employees not included in the target population of those travel plans. Those not directly reached by workplace travel place will be reached by other aspect of the TBhC package, such as promotional events, marketing, and incentives as well as initiatives that wrap around transport network changes in the city.

The target population reflects employees who work in government, education, retail, entertainment and professional services sectors. This represents 81.4% of total employees in central Wellington. The target population has been further reduced to reflect the challenges and inefficiencies associated with reaching employees in multiple small business. This also reflects that smaller business are unlikely to have employment mass to participate in incentives or promotional activities. For forecasting purposes, it is assumed that reach includes only employees of organisations with 100 or more employees. This gives a workplace target population of between 30 – 35% of total employees in central Wellington.

The Government employs a significant number of employees in Wellington. We have assumed that travel plans would be targeted at Government departments with greater than 100 employees to increase the reach per travel plan. 67% of the Government departments have greater than 100 employees. This infers that approximately 13,200 government employees could be reached through workplace travel plans.

Schools / Tertiary

The school target population is defined as those pupils who attend school in Wellington City. The target population is those who travel to school by car. Schools located within the central city are treated differently to those in the wider city.

The target population was estimated from Ministry of Education role data. Package A through C represent 39 schools (total role = 16,800) and 6 private schools (total role = 2,300) in Wellington that are affected by the construction of the LGWM programme and the three tertiary providers. Package D expands to include all large schools in Wellington and Package E expands to include all schools in Wellington.

There are existing TBhC programs in Wellington that target approximately 30 schools. As the packages are compared to a do-nothing, these school have been included in the economic appraisal. The MCBM suggests that TBhC benefit could decay overtime if not maintained through ongoing 'maintenance' expenditure. This is because schools experience a high number of staff and student turnover. On this assumption, it was considered appropriate to include the benefits from the 30 schools with existing travel plans.

Some of the key secondary schools in Wellington City Centre where the benefits of travel behaviour change may be aligned to the objectives of LGWM are:

- Wellington High School
- Wellington East Girls College
- Wellington College
- Wellington Girls' College
- Queen Margaret College
- St Mary's College

Some of the key primary schools in Wellington City Centre where the benefits travel behaviour change may be aligned to the objectives of LGWM are:

- Te Aro School
- St Mark's School
- Mt Cook School
- Clyde Quay School

- Clifton Terrace Model School
- Sacred Heart Cathedral School
- Thorndon School

Smart and Klein (2017) suggest that the changing the behaviour of secondary school and tertiary education students will have lasting benefits when students transition into the workforce. Any TBC package targeting travel behaviour change in schools located further from the central city (i.e. not listed above), may therefore, in the longer term, help to reduce the number of car-based journeys to work.

Smart & Klein did not quantify the proportion of students that maintain their behaviour change (after finishing school). This is likely to be location and context specific. For this forecast it has been assumed that 20% of students will enter the workforce in central Wellington each year and 20% of these will maintain their travel. On this basis, the population whose behaviour is aligned to LGWM objectives grows year on year (if household and community focused initiatives are maintained). For example:

- In year 2 20% of the secondary school and tertiary population enter the workforce and 20% maintain their travel behaviour change. Giving 4% maintained benefits.
- In year 3, a further 20% of the secondary school and tertiary population enter the workforce and 20% maintain their travel behaviour change. Giving 8% maintained benefits. Etc.

Marketing Campaigns / Community

The target population for community travel plans could reach all the population of a geographic area. This will depend on the scale and strength of each community travel plan.

The target population for marketing campaigns has been defined as the residential population of each geographic area within the ages of 20 – 65. This is to reduce the overlap with school travel planning and exclude those who are less likely to drive, or be reached by social media and marketing campaigns.

To reduce the double counting with school and workplace travel plans, the marketing and community travel plans focus on 'other' trip purposes. The household travel survey (2018-2021) estimated that 44%[21] of travel purpose is for social visit / entertainment and shopping / personal business for people aged between 25 and 65.

Marketing and community TBCh initiatives are expected to divert approximately 1% of the target population that are reached. This is described further in Table 7-4.

Waka Kotahi Research Report 453 estimates that the average suburban dwelling generated 10.9[22] trips per day. This includes any and all trip purpose. The research paper indicates that approximately 4.8 trips per day could be targeted by marketing and community travel plans i.e. not associated with travel to, or from, or for work. Given the potential for overlaps with workplace / commuter focused travel behaviour initiatives, and to take a conservative approach, we only calculated benefits associated with two of the possible 10.9 trips per dwelling per day.

Marketing and community campaigns will be designed so that personal trips (i.e., recreational, shopping, social) lead to a reduction in vehicle driver trips/ vkt in the CBD. It is assumed that areas within Wellington City will result in benefits aligned with LGWM. Where the target population is outside of LGWM we have quantified the benefits separately. For example, Package E increases marketing campaigns outside of Wellington City. Trips diverted by marketing or community

[21] Te karore ā-whānau, Household travel survey https://www.transport.govt.nz/statistics-and-insights/household-travel/
[22] Waka Kotahi Research Report 453 https://www.nzta.govt.nz/resources/research/reports/453/

campaigns may not terminate in Wellington and would not have a benefit directly aligned with LGWM.

Overall Assumptions

Journey to work data, in Table 7-2 , has been used to calculate the mode share of work trips to Wellington City Centre. Car mode share includes those who travel to work as a passenger in a car. Journey to education data, in Table 7-3 , has been used to calculate the mode share of education trips in Wellington. This includes all trips to education, including university, primary school and secondary school. The data does not differentiate between trips to the different types of institutions.

Working from home has been excluded from the mode share in Table 7-3 . This is because working from home in the travel to work data does not specify the individual's usual workplace destination. Therefore, we could not differentiate the proportion of the population who typically working in the central city.

Table 7-2 Base travel to work mode share (Destination: Central Wellington)

Region	Car	Public Transport	Cycling	Walking
Central Wellington	5%	8%	1%	86%
Northern suburbs	50%	47%	3%	0%
Eastern suburbs	39%	44%	8%	9%
Southern suburbs	24%	36%	8%	32%
Western suburbs	34%	32%	5%	29%
Porirua and Kāpiti Coast	57%	43%	0%	0%

Table 7-3 Base travel to education mode share

Region	Car	Public Transport	Cycling	Walking
Central Wellington	23%	42%	1%	34%
Northern suburbs	48%	15%	1%	36%
Eastern suburbs	42%	23%	5%	30%
Southern suburbs	26%	31%	2%	40%
Western suburbs	21%	31%	1%	47%
Porirua and Kāpiti Coast	59%	11%	6%	24%

7.3.3 Diversion rates

The level of diversion (from travel by car as a driver) is used to estimate mode share of the mode change to car as a passenger, public transport, cycling, and walking. These values have been used to calculate user benefits for new and existing pedestrians/ cyclists and road traffic reduction benefits. The diversion rates used are summarised in Table 7-4.

A literature review of case studies showed a broad range of diversion achieved by varying travel behaviour strategies. To demonstrate the range of car trip reduction found in the literature review we note that the Commuter Connections Programme in Washington, USA, achieved a 14%

reduction in vehicle trips. A similar travel plan programme in Santa Monica (Roberts 2020)[23] achieved only a 4% reduction in single occupancy vehicle trips.

The diversion rates below were applied to the reach of each intervention as outlined in the package descriptions above. Each reach cohort has been collated to provide the total number of diverted trips (i.e., re-mode, work from home or take shorter trips). A limitation of the MBCM is that it assumed all trips are re-mode rather than work from home or take a short trip.

For the purpose of this economic appraisal, it has been assumed that trips are made by another mode rather than a trip not made or worked from home.

The diversion rates are documented further in Appendix K.

Table 7-4 Summary of diversion rates and evidence

Initiative	Diversion Rate	Evidence
Travel Plan (Workplace) – Soft Measure	5%	Evidence from the Netherlands and the United States, borne out by early examples in the UK, has shown that even the most "basic" travel plans can achieve 3-5% reductions in the numbers of employees travelling to work alone by car (DfT 2002). The nearest diversion rate in MBCM was 5%.
Travel Plan (Workplace) – Soft Measures to support Parking Levy	**7%**	Parking management in the Netherlands achieved a 5-15% reduction in car use. This increased to 20 – 25% reduction in car use when accompanied with soft measure. The soft measure increased the diversion by approximately 5-10% (Friman et al 2012).
Travel Plan (Workplace) – Soft Measure with improved public transport links.	**12.9%**	This is the default high diversion rate profile from the MBCM. This rate is applied where there are public transport service improvements and other measures like a travel subsidy or parking management strategy.
Travel Plan (School)	**9%**	This is the default diversion rate profile for schools from the MBCM.
Community Travel Plan	**3%**	This is the default diversion rate profile for community travel plans from the MBCM. This is the rate that has been used to quantify the ripple effect and cultural change aspects of the package.
Marketing, Education and Outreach Marketing, Education and Outreach	**1%**	The literature review of case studies highlights that marking, education and outreach could achieve diversion rates between 4 and 13%. The case studies failed to define the proportion of the target population reached. As the diversion rates in the Monetised Benefit and Cost Manual are applied to the target population (rather than the population reached), we adopted a low community diversion rate of 1%. This means that marketing, education and outreach will need to reach 10% of the target population to achieve similar diversion rates to those in the case study. This is the rate that has been used to quantify the ripple effect and cultural effect that does not involve any travel planning.

[23] Roberts, Jessica. "Case Study: Santa Monica TDM," Alta Planning + Design, July 2020.

Initiative	Diversion Rate	Evidence
Disruption State	**+1%**	We have assumed an increase of 1% in diversion rate during disruption. This is to represent people's 'willingness to change' increasing during phases of construction. The increase in diversion rate means that there will be higher diversion of those who are reached by the travel behaviour package. There is evidence that traffic 'disappears' in response to reductions in road capacity. Cairns, Atkins, and Goodwin (2002)[8] provide a comprehensive review of over 70 case studies from eleven countries. In 82% of cases, traffic volumes reduced, sometimes by a large amount. The mean traffic reduction was equal to 22% of total traffic volumes on the affected road and parallel corridors, while the median reduction was 11%. A case study in Wellington implied elasticity of traffic volumes with respect to average travel times of -2.5 to -2.8. Our diversion rates are applied for the region.

The parking levy diversion has been forecast using a different methodology to other parts of a travel behaviour change package. The introduction of a parking levy of $2,500 alone would be expected to reduce the total volume of car trips from 19,748 to 17,732, a reduction of 2,016 car trips to the CBD each weekday, refer to Section 4.8.

7.4 Inputs

Table 7-5 lists the benefits of travel behaviour change activities that can be quantified. It also lists the inputs that are needed to estimate these benefits.

Table 7-5 MBCM Monetisable Benefits

Benefits	Description	Inputs
Car Travel Time Cost Savings	The car travel time benefits (or cost) relate to the value of reduced (or increased) vehicle travel times for car users due to decongestion benefits. These benefits would be normalised against the number of trips to calculate an average travel time saving for the trips that remain on the network. There are additional travel time benefits for people who choose to work from home and no longer commute to the city.	1. Vehicle demands by region 2. Travel times from WTSM models 3. Table 15 MBCM – Values of time by trip purpose
Vehicle Operating Costs Savings	The operating cost of vehicles depends upon the distance and time spent travelling. This will include benefits for diverted trips that no longer occur and those who remain in the same mode.	1. Vehicle demands by region 2. Vehicle kilometres travelled from WTSM models
Vehicle Emission Reduction Benefits	The emission benefit from vehicle travel refers to reduced (or increased) vehicle emissions mode shift to walking and cycling. Emissions benefits associated with mode shift to public transport have not been quantified	For the indicative economics, the MBCM rule of thumb (4% of the vehicle operating cost savings) is applied.
Walking and Cycling Benefits	The walking and cycling benefits refer to the health benefits when a user switches mode to walking and cycling.	1. Walking and cycling demand 2. Education and Community: Average one-trip length derived from national travel survey. 3. Work: Average trip length by region from WTSM.
User Safety Benefits	The crash cost benefits are from the reduced traffic exposure on mid-blocks when a user switches to walking and public transport. No crash cost benefits will be calculated at intersections. Crash costs associated with an increased uptake in cycling are excluded.	1. Vehicle kilometres reduced from WTSM. 2. Percentage travelled on collectors and arterials

7.4.1 Wellington Transport Strategic Model

WTSM outputs have been used as the basis for estimating traffic reduction cost savings: travel time cost savings and operating cost savings. Outputs from the following WTSM tests were provided:

- no demand management – whereby 2% of home-based work car commuter trips to CBD shift to other modes
- medium demand management – equivalent to a ~4% reduction in car commuter trips
- high demand management – equivalent to an 8% reduction in car commuters

The outputs from the model were car driver trips, vehicle kilometres travelled, vehicle hours travelled, average speed by sector for the AM peak, interpeak, and PM peak.

These outputs have been used to quantify the average distance travelled on the network and the average travel time saving to the network per trip removed. Further information is presented in Appendix K.

The static outputs from WTSM are considered suitable to enable comparison between TBCh packages Package A to E and to enable a comparative assessment of the efficiency of the Packages through time. A variable matrix approach would involve changes to the base trip matrices to reflect diversion rates and reach within the target populations. This would require a new matrix to be developed and run for five packages. As stated in Section 7.1, a matrix estimation approach would have high precision outputs while still relying on uncertain input assumptions. A matrix estimation approach was therefore not considered an appropriate method for this evaluation.

Travel Time Savings

Static outputs from the Wellington Transport Strategy Model (WTSM) have been used to quantity the travel time savings for those users who continue to drive using private vehicles. The WTSM tests were used to approximate the delta in vehicle hours travel per person 'diverted' on the network. These are summarised in Table 7-6.

The relationship between each vehicle removed and network travel time savings is not linear. The benefit will diminish as more vehicles are removed and the network moves away from capacity. Thus, there are limitations on the use of static outputs. In recognition of these limitations, we selected the lower, 0.511 hours per vehicle removed, noting that it is not a linear relationship and benefits will diminish the more vehicles are removed.

Table 7-6. WTSM static outputs for travel time savings per vehicle removed.

Aggregate Model Output	Network Travel Time Savings (hours):
Δ 2% reduction to 4% reduction	0.643 per vehicle removed
Δ 4% reduction to 8% reduction	0.511 per vehicle removed

It is noted that a more precise method for estimating travel time savings would be to use a variable demand matrix looking at origin-destination pairs. To apply this method to a city-wide or regional level, it would be necessary to make assumptions about the level of behaviour change affecting each origin-destination pair. While more precise, this method would be founded on uncertain assumptions. This approach was therefore rejected on the basis that it could provide a false sense of certainty. Instead, it has been agreed that the static outputs from the WTSM are suitable for comparing TBCh packages and indicating an approximate quantum of benefits.

WTSM is a regional demand model and does not have sufficient resolution to provide forecast changes in walking or cycling travel times. Therefore, travel time saving for 'diverted' users have not been quantified. Instead, it has been assumed that on balance for a trip to be diverted to another mode the journey time would need to be comparable.

The Australian Transport Assessment and Planning (ATAP) Guidelines provide estimates for the benefit of TBCh initiatives that reduce car use. The benefits are calculated as a $ value per km travel avoided. A sensitivity test will be completed by applying the ATAP benefits to the traffic reduction estimated to arise from the TBCh package. For large cities (i.e. an upper estimate) the reduction of a car travel in peak times would deliver a benefit of A$0.42/km saved, and AUD$0.11/km in the off-peak. For other cities, the values are AUD$0.11/km in the peak and zero otherwise.

These values do not reflect the local conditions, such as Wellington's spatial constraints that lead to higher congestion relative to population size than experienced in other cities in New Zealand.

Vehicle Operating Cost (VOC)

Static outputs from the WTSM have been used to quantity the vehicle operating costs for those users who 'divert' to another mode. The WTSM tests were used to estimate the average trip length between sectors of the city and the average speed of a trip. These outputs were used to estimate the VOC saving based on the method in the MBCM.

VOC savings for those users who remain on the network have not been quantified. VOC benefits are variable depending on speed and grade, which cannot be appropriately estimated using a regional strategic model.

7.5 Forecast efficiency of parking levy

7.5.1 Parking levy non-quantifiable benefits

Non-quantifiable benefits are the impacts on Land Use, Economic Competitiveness and Agglomeration. These parking-specific externalities are difficult to quantify, and the park levy team expected that they are relatively minor compared to the other costs and benefits.

If a levy was implemented without any corresponding measures, the value of CBD properties would of course reduce, since the value of carparks is reduced. However, hypothecation cancels this out. CBD businesses benefit from the funds being reinvested in the city centre, or in ways which improve access to the CBD. Depending on the exact mix of transport projects, the value of CBD land (and properties) is likely to increase. This means that the overall effects of a parking levy are likely to be positive, rather than negative.

Wellington City's Gross Domestic Product (GDP) was estimated at $25.7 billion in 2019.18 The CBD is likely to account for at least 70% of this figure, since it has around 70% of the jobs in the city and those jobs are significantly higher-income than those outside the CBD.

Conservatively, therefore, the CBD's contribution to GDP can be estimated at $18 billion. By comparison, the parking levy is estimated as costing/ raising less than $30 million a year, less than 0.2% of GDP but not insignificant by comparison to current rates bills. There are options to mitigate that burden, including changing parks to non-levied uses or even non-parking uses. Even so, the levy does add to their 'cost of doing business'.

Using reasonable assumptions, we find that the levy cost is only a very small share of the 'cost of doing business' in the Wellington CBD. It is likely to be more than offset by the CBD's other advantages. This is assisted by the levy funds being used to improve its accessibility further. The overall effects on land use, economic competitiveness and agglomeration are expected to be positive.

It is highly unlikely that any major displacement of economic activity would occur. To the extent that any activity did relocate elsewhere (e.g. a new office building was redirected outside the levy area), this would probably be to elsewhere in the same labour market, i.e. smaller hubs such as Newtown, Kilbirnie or Lower Hutt.

It is considered that a parking levy will perform well in terms of vertical equity: most drivers earn high incomes, with people on low incomes much less likely to work in the CBD or to drive if they do work there (Census 2018). The exemption for disabled spaces also promotes equity. Perhaps the only issue for vertical equity from the list in Nunns et al (2019) is "people without access to public transport". This issue could be mitigated by applying levy funds in ways that improve public and active transport access.

7.5.2 Parking levy quantifiable benefits

The main benefit from the levy is the net revenue raised, estimated at $28 million per year (for the year 2030). Commuters who take the opportunity to offset their costs by changing mode will have additional benefits from a parking levy due to the travel behaviour change. These are congestion reduction for other road users, GHG emissions, and accidents/ injuries/ deaths etc.

CBD property owners and businesses would bear part of the burden of the levy, but (assuming levy funds are hypothecated) they would also benefit from the funds being reinvested in ways which improve access to the CBD. Overall, the value of CBD land and properties is likely to increase

Overseas academic studies and a review of local economic indicators also suggests that the overall economic effects of a parking levy are likely to be positive. The levy cost is only a very small share of the 'cost of doing business' in the Wellington CBD. It is likely to be more than offset by the CBD's other advantages, particularly if the levy is used to increase accessibility.

Given that the levy is just 1% of total occupancy costs for a typical office tenant, it is unlikely that any major displacement of economic activity would occur. If any activity were relocated (e.g. a new office building was developed outside the levy area), this would probably be to elsewhere in the same labour market, i.e. smaller hubs such as Newtown, Kilbirnie or Lower Hutt. There might be some very minor implications for agglomeration, but residents near those areas would also appreciate the local employment opportunities.

The New Zealand Government generates most of its revenue from income tax, GST and company tax. Most of these taxes create a 'deadweight loss': a cost to society created by lost economic efficiency, which arises when we tax things that we would like more of. Deadweight losses are an issue for most forms of taxation. As such, the Treasury recommends that Cost Benefit Analyses allow for a deadweight loss of 20%Pigouvian taxes (taxes for businesses and individuals who engage in activities that create adverse effects for society) aim to address these negative externalities, and they actually reduce an existing deadweight loss rather than creating a new one. This makes Pigouvian taxes a very effective system of taxation, where externalities exist. Since a parking levy is largely Pigouvian, it is likely to improve economic efficiency, as opposed to most taxes which reduce efficiency.

7.5.3 Benefit cost ratio

The total implementation costs for a parking levy are estimated at $3.76M between 2024 and 2026. The total operational costs beyond 2026 are estimated at $1.33M per annum.

The benefits for the parking levy have been forecast using the methodology outlined in the MBCM and Section 7.3.3 of this business case. The total benefits of diverting approximately 2,000 car trips to the CBD each weekday is estimated at $9.9M per annum. The benefits streams are walking and cycling health benefits, travel time savings, vehicle operating cost savings, vehicle emission reduction benefits and crash cost savings. Furthermore, a Parking Levy of $2,500 (and $1,750 per annum in low-price zones) is forecast to generate up to $28m in gross revenue per annum.

Table 7-7 summarises the BCR for the parking levy. The values in the table below are 2020 net present value.

Table 7-7 BCR parking levy

	Parking Levy
Cost ($M) (2022-2031)	$9.0
Revenue ($M) (2022-2031)	$117.4
Benefit ($M) (2022-2031)	$38.0
BCR (excluding Revenue)	4.2
BCR (including Revenue)	17.2

Section 8.2 of the Parking Levy Report (attached as Appendix G), summarises the estimated benefits of diverting approximately 1,700 daily car trips using two rule-of-thumb methods. Method one used the cost of congestion per kilometre, and method two used the cost of congestion per vehicle. These gave benefits of $2.8M and $10.4M per annum, respectively. The annual benefits calculated using outputs from the WTSM model ($9.9M per annum) sits within this range.

7.6 Forecast efficiency of the travel behaviour change package

7.6.1 Travel behaviour change package cost

When assessing the individual package performance, we have used the average cost per year to implement the package. The total cost for 10 years is shown in Figure 7-1. The average cost has been calculated by dividing the total cost by the number of years.

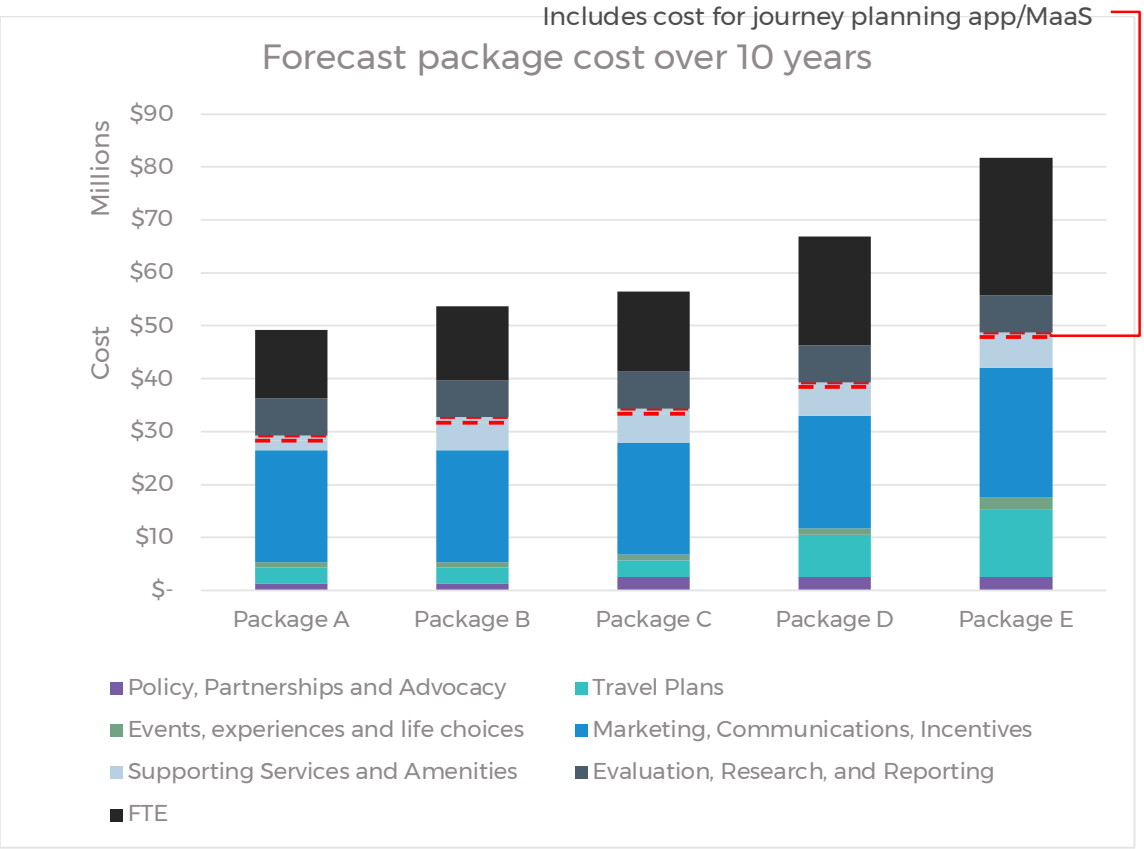


Figure 7-1: Summary of total cost of each package over 10 years

Table 7-8. Total package costs.

	Package A	Package B	Package C	Package D	Package E
Travel Behaviour Change	$19.3M	$22.7M	$24.4M	$29.4M	$38.8M
FTE	$13.0M	$14.0M	$15.1M	$20.4M	$25.9M
Sub-Total	**$32.3M**	**$36.7M**	**$39.5M**	**$49.8M**	**$64.7M**
Supporting Activities (not typically funded by TBC)	$1.0M	$1.0M	$1.0M	$1.0M	$1.0M
Grand-Total	**$33.3M**	**$37.7M**	**$40.5M**	**$50.8M**	**$65.7M**

An element of the cost for each package (shown in Figure 7-1) will result in benefits that have not been estimated. For example, journey planning app or Mobility as a Service (MaaS). While these initiatives are expected to create benefits, it is not possible to quantify them without knowing more about the specific initiative. For the purposes of assessing the efficiency of each package, we have therefore looked at the cost of each package with and without these costs which relate to.

- Journey planning app / MaaS ($0.95M over 10 years)

Cost of monitoring and evaluation

Each package included a cost of $5.7M over 10 years for monitoring and evaluation. The cost of monitoring and evaluation has been based on the cost of the BEATS study (Dunedin). A conversation with the MoT Chief Science Advisor in 2020 highlighted that there is an appetite to monitor wellbeing and other outcome framework aspirations. The Advisor also cautioned that monitoring and evaluation can be costly and recommended that some of our monitoring could be progress through partnership with Academia by setting up a longitudinal lifestyle study or expanding the household travel survey.

7.6.2 Assumptions

The following assumptions have been made to approximate the average effect on individuals of each package.

- a 10-year evaluation period.
- base date of evaluation is 1st July 2021.
- 230 working days (excluding 20 days annual leave) annually
- 193 school days annually
- gaining the full mode shift/ vkt/ trip reduction impact usually takes around two years.

7.6.3 Quantifiable benefits: Step One – individual package performance

Each package requires different conditions to perform optimally. These conditions have been identified as triggers, for example the parking levy or first-last leg improvements.

This initial step will analyse the merits of each package. In this, artificial, test it is assumed that all the necessary conditions (external factors) for the package to be successful are in place. Their economic efficiency will be assessed for a 10-year evaluation period.

Assessing the packages individually for 10 years of future state allows comparison of the packages relative to one another. It removes the complexity associated with changes to the transport and land-use system through time and allows focus on the differences between packages. This assessment is designed to highlight the differences between the travel behaviour change packages alone. The costs and benefits associated with the external triggers are not accounted for within the forecast.

Table 7-9 summaries the BCR for each package for the scenario where the conditions are in place for them to perform optimally.

Table 7-9 BCR for packages

	Package A	Package B	Package (C-B)	Package C	Package D	Package E (excludes non-LGWM benefits)	Package E (includes Wider Benefits)
Cost ($M)	$26.4	$29.9	$28.6	$32.1	$40.1	$51.7	$51.7
Benefit ($M)	$69.0	$102.0	$90.4	$107.7	$125.7	$141.9	$280.0
BCR	2.6	3.4	3.2	3.4	3.1	2.7	5.4

Some of the benefits of packages D and E that can be monetised are realised beyond the 10-year evaluation period (assuming some level of travel behaviour change initiative continues). These benefits, outside the evaluation period, are not included because they are not aligned to our TBC project objectives.

In Table 7-9, Package E includes two columns, one which shows the forecast benefits aligned to the LGWM programme and another that shows benefits for the Wellington region (including those which are aligned with LGWM).

7.6.4 Incremental benefits

Table 7-10 Incremental analysis summary, below shows the incremental efficiency of the step change from one package to another. It is intended to be a pure incremental analysis as the packages are not mutually exclusive. They build on one another to reach a wider target audience. Therefore, the incremental benefit cannot be the sole deciding factor in selecting the optimal activity.

The BCRs represent the ratio of the additional benefits derived from each subsequent package moving to the additional cost. As before, this analysis does not attempt to capture the cost, or the benefits associated with the triggers (external factors) such as a parking levy or first/last leg improvements.

The BCR of the packages range between 2.9 and 3.7. Therefore, where the efficiency of the incremental step change is greater than 3.0, it is considered value for money. The incremental BCR have been subject of sensitivity tests to show how this analysis is affected by the input assumptions.

The analysis shows that the step change increase in travel behaviour change activities from enhanced status quo to first and last leg improvements (increment from Package A to B) or the introduction of a parking levy (increment from Package A to Package B minus C) are highly efficient.

The analysis indicates that the step change from a scenario where first and last leg improvements are in place (Package B) to the introduction of measures to accompany a parking levy (Package C) is less efficient. This makes sense intuitively as the incremental cost of package C, relative to B are small, as are the increment in quantifiable benefits.

The sensitivity tests show that if the packages were to be delivered for a lower cost, reach more people, or divert more people, the efficiencies between the packages improves. Using this analysis, the optimal solution could be either Package B or C.

Table 7-10 Incremental analysis summary

	Package A to B	Package A to (C–B)	Package B to C	Package C to D	Package D to E
Incremental Cost ($M)	$3.5	$2.2	$2.2	$8.0	$11.6
Incremental Benefit ($M)	$37.4	$24.1	$6.3	$19.7	$18.2
BCR	**10.9**	**10.9**	2.9	2.4	1.6
Sensitivity Tests					
20% Lower Cost	**13.6**	**13.7**	**3.6**	**3.1**	2.0
20% Higher Cost	**9.0**	**9.1**	2.4	2.0	1.3
Diversion Rate 1% Lower for Workplace and School and 0.5% lower from Marketing, Education	**9.2**	**8.4**	2.8	2.2	1.5
Diversion Rate 1% higher for Workplace and School and 0.5% higher from Marketing, Education	**12.5**	**13.5**	2.9	2.7	1.7
Diversion Rate 2% higher for Workplace and School and 1% higher from Marketing, Education	**14.1**	**16.1**	**3.0**	**3.0**	1.8
Reach 20% less people	**9.2**	**9.6**	2.3	2.0	1.2
Reach 40% less people	**7.6**	**8.3**	1.7	1.5	0.9
Reach 20% more people	**12.5**	**12.2**	**3.4**	2.9	1.9
Decongestion Travel Time Saving Benefits (Other City)	**7.6**	**7.0**	1.4	1.1	0.7
Decongestion Travel Time Saving Benefits (Large City)	**12.8**	**10.7**	2.6	1.6	0.9

7.6.5 Quantifiable Benefits: Step Two – Evolution of Travel Behaviour Change through time

The first step kept time constant and allowed us to compare the individual merits of each package. This step will identify associated cost and benefit profiles through time. As time is no longer constant, we have had to make assumptions as to the timing for triggers that will influence the effectiveness of a travel behaviour change package.

It is recommended that the parking levy becomes operational in 2026 (LGWM,2021). Package C needs to be in place two years ahead of the parking levy. On the basis of discussions with GWRC and Metlink we have assumed that first and last leg improvements will also be in place within the region from 2025. The potential step-change pathways are shown in Figure 7-2.

Package D and E have not been included in the analysis of the pathways as these packages are scalable. Therefore, they can be applied at any point in time and are not solely dependent on triggers. Not all benefits from these packages are aligned with LGWM programme. They are expected to have enduring benefit that will not be fully realised in the 10-year analysis period. It was therefore decided that these packages would be excluded from the pathways identified below. Any aspects implemented from package D or E will add additional benefits to any of the pathways.

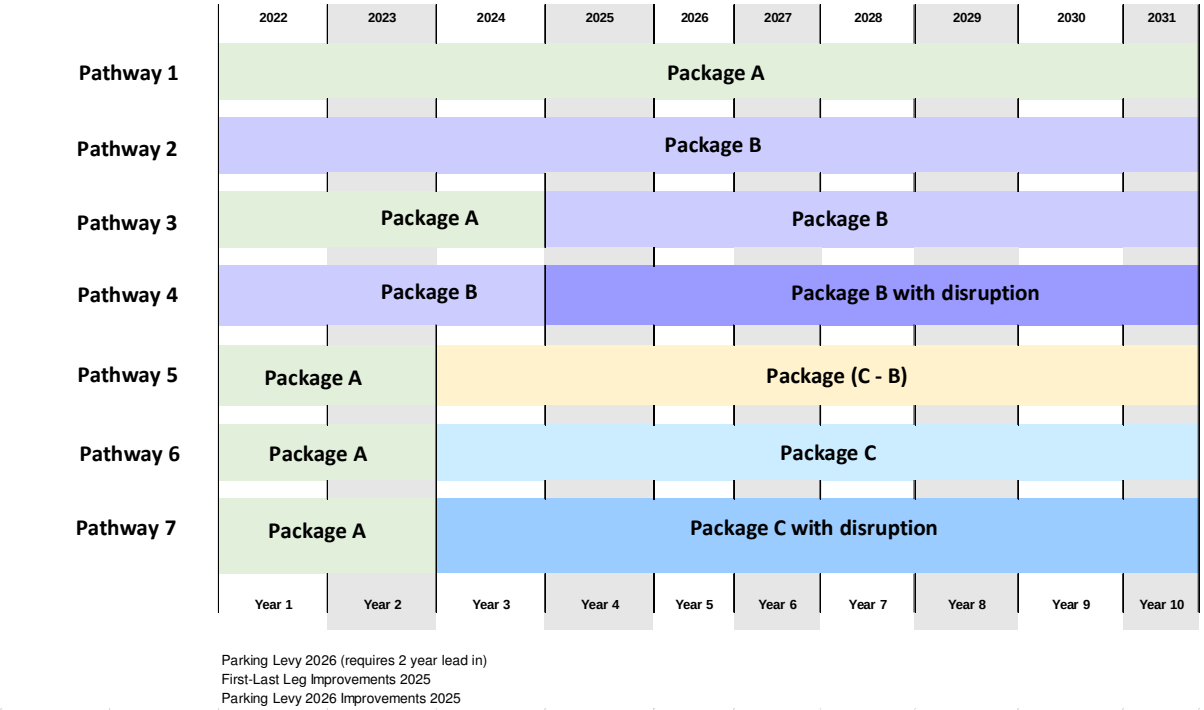


Figure 7-2 Possible pathways through time

Table 7-11 summaries the BCR for each package assuming that the conditions are in place for them to perform optimally.

Table 7-11 BCR for pathways

	Pathway 1	Pathway 2	Pathway 3	Pathway 4	Pathway 5	Pathway 6	Pathway 7
Cost ($M)	$24.7	$28.1	$27.1	$28.1	$28.8	$29.3	$26.8
Benefit ($M)	$66.3	$90.2	$90.3	$158.4	$84.3	$98.9	$167.7
BCR	2.7	3.5	3.3	5.6	3.1	3.4	6.3

The table shows that:

- disruption creates a natural step change in travel behaviour change that should be used as a lever
- pathways 2, 3 or 6 (which include a step change to parallel the introduction of first and last leg improvements or a parking levy or both) are similarly efficient
- a step change in travel behaviour activities designed to flank a parking levy alone, is slightly less efficient that delivering the same activities in combination travel behaviour change activities that accompany first and last mile improvements

7.7 Sensitivity tests

The method of sensitivity testing involves manipulating a single variable, such as diversion rate, for a range of values to produce a BCR range. We have tested interactions between assumptions and manipulated multiple variables at the same time, such as cost and diversion rates.

The following input parameter have been sensitivity tested to determine if there is a large change in the evaluation outcome:

- differing levels of diversion
- different response (i.e. mode share)
- differing levels of estimate user demand (i.e. scale of target population)
- capital and operation costs
- with and with-out enduring secondary school benefits
- scale of decongestion travel time benefits

The sensitivity tests are summarised in Table 7-12. The sensitivity tests show the BCRs stay above 1.5 and could be as high as 5.3. The range of BCRs emphasise that travel behaviour change is sensitive to the environment that it is delivered in.

The tests indicate that you will get a lower return on investment from travel behaviour change if the transport system does not change as quickly as anticipated. For example, a package that coincides with disruption or targets areas with good accessibility will have a higher return on investment.

The sensitivity tests do not change the order of BCRs for pathways.

Table 7-12 Summary of sensitivity tests.

	Pathway 1	Pathway 2	Pathway 3	Pathway 4	Pathway 5	Pathway 6	Pathway 7
BCR	2.7	3.5	3.3	5.6	3.1	3.4	6.3
BCR Sensitivity Tests							
20% Lower Cost	3.8	4.9	4.7	7.9	4.4	4.7	8.8
20% Higher Cost	2.1	2.7	2.6	4.4	2.4	2.6	4.9
Diversion Rate 1% Lower for Workplace and School and 0.5% lower for Marketing, Education	2.0	2.7	2.6	5.4	2.4	2.7	5.3
Diversion Rate 1% higher for Workplace and School and 0.5% higher for Marketing, Education	3.4	4.3	4.1	5.8	3.9	4.1	7.2
Diversion Rate 2% higher for Workplace and School and 1% higher for Marketing, Education	4.1	5.0	4.8	6.0	4.7	4.8	8.1
Reach 20% less people	2.1	2.8	2.7	5.5	2.6	2.7	5.1
Reach 40% less people	1.6	2.2	2.1	5.3	2.0	2.1	4.0
Reach 20% more people	3.2	4.1	3.9	5.8	3.7	4.0	7.4
No maintained secondary school benefits	2.5	3.3	3.2	5.2	3.0	3.2	5.8
Double maintained secondary school benefits	2.8	3.6	3.5	6.0	3.3	3.5	6.7
20% Higher cost AND Diversion Rate 1% Lower for Workplace and School and 0.5% lower for Marketing, Education	1.5	2.1	2.0	4.2	1.8	2.1	4.1
Decongestion Travel Time Saving Benefits (Other City)	1.5	2.2	2.0	3.3	1.9	2.1	3.6
Decongestion Travel Time Saving Benefits (Large City)	2.2	3.3	3.1	4.7	2.7	3.2	5.2

7.8 Unquantified benefits and disbenefits

We have not attempted to quantify benefits or disbenefits associated with changes to:

- noise pollution
- overcrowding on public transport
- road user safety

- new trip costs (i.e. public transport fare)
- maintenance and operating cost; or
- economic activity.

These are in addition to the benefits mentioned in Section 7.5.1. These travel behaviour change-specific externalities are difficult to quantify, and we believe on balance the benefits and disbenefits will be minor.

There is a potential benefit that the diversion of private vehicles to walking and public transport will reduce the social cost of crashes on the network. As the exposure to crashes deaths and serious injuries will have reduced at intersections. The regional scale of this package will make it difficult to determine which intersections will see a reduction in traffic volumes.

Road construction, maintenance and operating cost savings are assumed to be negligible for the number of private vehicle trips and/or vehicle kilometres that are likely to be removed.

There is a potential disbenefit that the increased uptake of public transport will impact on the existing user experience of the public transport system due to overcrowding. This could result in additional costs to Metlink, to provide additional services to minimise overcrowding on the network.

Those users who switch modes, for example from private vehicle to public transport, may experience a of new trip costs like fares (disbenefit), which will erode the vehicle operating cost benefit calculated.

There is also a potential disbenefit that working from home will have negative impacts on economic activity with the target area by reducing spending. However, this disbenefit is likely to be neutral when looking at a larger area, such as Greater Wellington.

7.9 Delivering accompanying travel behaviour change to a parking levy

Package C is designed to accompany the parking levy. This package will flank the parking levy to encourage further travel behaviour change through policies that enable companies to reduce their parking supply for benefits. Package C does not claim benefits derived only from the parking levy.

The UK Department for Transport (2002)[24] found that travel plans with restrictions or charging for car parking can achieve a 15 – 30% reduction in the number of employees driving to work, over a period of two to four years. This is compared to travel plans without demand management, which can achieve a 3-5% reduction in the number of employees driving to work. The parking levy approximates a 10% diversion. Based on the research above, we can assume an extra diversion of 7% from Package C (refer Table 7-4).

Table 7-13, below, summarises the BCR for the parking levy and the travel behaviour change package.

[24] Department for Transport (2002). Making travel plans work Lesson from UK case studies. Department for Transport, UK. 2pp

Table 7-13 Summary of BCR for the parking levy and travel behaviour change.

	Parking Levy + Package C (2022-2031)
Cost ($M)	$41.0
Revenue ($M)	$117.4
Benefit ($M)	$158.3
BCR (excluding Revenue)	6.7
BCR (including Revenue)	9.6

7.10 Interdependencies

The TBCh package has interdependencies with the wider LGWM programme. The case study review of TBCh programme around the globe indicated a high range of mode shift (diversion rate) depending on the transport environment they were delivered in. TBCh packages achieve higher diversion rates where they are implemented alongside improvements to active mode networks and public transport improvements. The MBCM says impact of decay is less likely where people have not been persuaded to change to a less convenient travel option.

The economic analysis is sensitive to assumptions about the transport environment within which the TBCh package is delivered and the interdependencies with other parts of LGWM. When implementing the package and designing specific initiatives, thought should be given to the transport context in which the package is to be delivered. This is also important to consider when evaluation and monitoring the TBCh programme. Initiatives that have be successful in one geographic area of the city may not be achieve the same diversion rates in another location.

7.11 Summary / conclusions

Step One, individual package performance, assessed each package's economic efficiency irrespective of time. This is because some of the packages are dependent on triggers through time. This step assumes that all triggers are in-place for the packages to perform at their optimum.

The evaluation shows that each package delivers incremental benefits. When considering only benefits that are aligned to LGWM objectives, the incremental benefit diminishes as you move through the packages. This seems reasonable, as packages D and E are designed to create long term, sustained benefits from the cultural and ripple effect, some of which are not realised within a 10-year analysis period. These packages will also see benefit realised outside the target area of LGWM. The benefits that have not been realised in the LGWM target area have been excluded from the reported BCRs.

Both quantifiable and unquantifiable benefits have also been summarised in the Appraisal Summary Table are attached as Appendix J.

Sensitivity tests highlighted the package's BCRs are most sensitive to the cost reach of each package and diversion rates. The literature review highlighted that the diversion rate achieved is heavily influenced by the transport system in which these strategies and interventions are implemented. There is a lot of uncertainty as to the timeframe that will see the transport system in Wellington change significantly. This suggests that if there are delays to triggers or enablers, the travel behaviour change package will not be as effective.

Step Two, evolution of Travel Behaviour Change through time, assessed multiple pathways through time. The introduction of time means that we have made assumption as to when trigger or enablers

will be implemented. Package D and E have been excluded from each pathway as these packages are scalable These packages can be applied at any point in time and are not solely dependent on triggers.

Based on the current assumptions regarding the timeline for triggers, Pathway 6 or 7 is the most likely to occur. This pathway is the combination of package C along with periods of disruption. Findings of the Step One evaluation suggests that package D and E's, culture and ripple effects, should be scaled-up in parallel with the evolution of the transport system. The package should seek to evolve and expand its reach as barriers in the wider transport system (e.g. first and last leg) are removed.

7.12 2022 Recommended Package Update

The uncertainty regarding the Parking Levy timeline assumptions means that either Pathway 3, combination of Package A and B, or Pathway 6, combination of Package A and C, are possible. The economic evaluation recommends the immediate focus will be on the delivery of Package A and Package B (removing barriers to first-last leg). The incremental analysis in Section 7.6.4 shows that the recommended package should retain flexibility to respond to the introduction of a parking levy (i.e. Package C). Packages focused on achieving a cultural change (Packages D & E) are not related to specific triggers and could be implemented now or at some point in future.

Table 7-14 below, summarises the BCR for the recommended package with or without a parking levy.

Pathway 2, in Section 7.6.5, compared to Pathways 3 and 6, show the impact of economic efficiency if larger capital costs in Year 3 are brought forward in the programme. The economic efficiency improves if the larger capital cost is brough forward, since this also brings forward greater benefit streams.

Table 7-14. Summary of BCR for the recommended package with or without a support parking levy.

	Pathway 3 (2022-2031)	Pathway 6 (2022-2031)
Description	Package A (0-3 years) Package B (4-10 years)	Package A (0-2 years) Package C (3-10 years) Assume parking levy in year 5
NPV Cost ($M)	$27.1	$29.3
NPV Benefit ($M)	$90.3	$98.8
BCR	3.3	3.4

8 Recommended package

Following evaluation of the five packages and discussion with the Technical Working Group, agreement was reached that implementation of the recommended package should be staged to respond to changes in the wider transport system.

It is recommended that the immediate focus is Package A (see section 6.1.2) and that the travel behaviour change programme is sufficiently flexible to respond to the introduction of first-last leg services (Package B, section 6.1.3) and a parking levy (i.e. Package C, section 6.1.4)

Cultural change and ripple effect approaches are not related to specific triggers and could be implemented now. Given that these are relatively new concepts for New Zealand it is recommended that, following initial establishment of Packages A and B in the first two years, a 'pilot, test and grow' approach is adopted for culture change and ripple effect elements of Package D (6.1.5) and E (section 6.1.6). Adopting a flexible, learning approach alongside co-design and engaging partners early, will build support and readiness for change. It will allow new initiatives to be tested before being implemented on a broader scale.

Figure 8-1 below shows how the recommended package will be staged in response to opportunities and triggers.

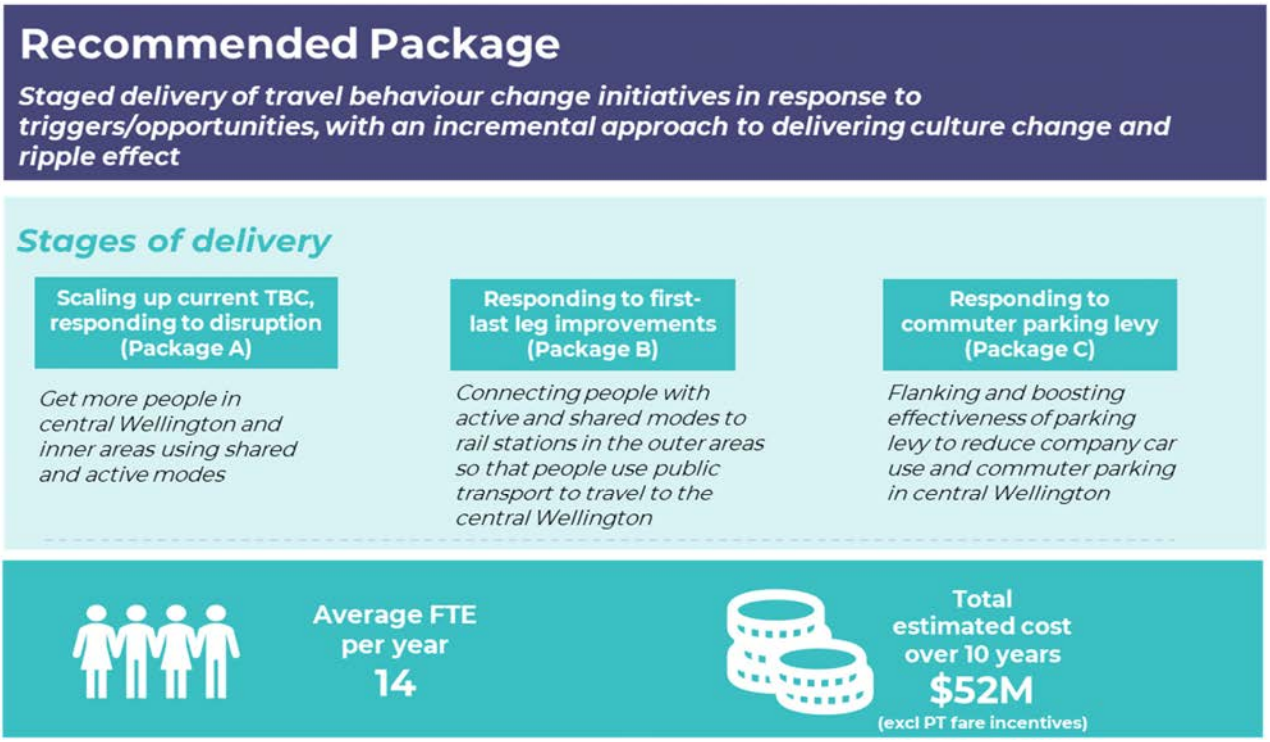


Figure 8-1 Overview of the recommended package

Staging of the recommended package is explained below:

- The first few years would entail **scaling up travel behaviour change** that is already happening, improving first/last mile connections, demonstrating success, establishing partnerships and avenues for community engagement, and beginning the co-design process for the targeting of future measures. At this stage, the key focus will be on the Wellington city centre and inner suburbs through travel plans, events and experiences, marketing, communication and incentives and will respond to LGWM improvements and related disruption due to capacity constraints on

public transport. The focus will be on influencing trip choice by engaging with people at the 'work' or 'education' end of their trip. See details on the existing behaviour change programmes in section 6.1.1 and Package A in section 6.1.2 for details.

- As **first/last leg connection improvements** are made (e.g. shuttle services, walking, cycling and scooting infrastructure improvements, rail access plans, MaaS), efforts will be focused on connecting people with active and shared modes to the rail stations across the region through activities such as targeted social marketing campaigns, incentives and by working through employers to encourage change. See Package B in section 6.1.3 for details.
- When the **timing of the parking levy's introduction** is clearer, the package will focus efforts on flanking and boosting its effectiveness; this will require engagement and co-design two years ahead of the anticipated launch date and will include reducing the appeal of driving, especially to and through Wellington city centre. This would include working with employers to encourage changes to parking management (supported by software which will need to be specified and procured), providing guidance on fringe benefit implications and finding MaaS alternatives to company car schemes. These measures are reliant on the parking levy being introduced to be worth investing in. See Package C in section 6.1.4 for details.
- As discussed in section 3.5, a successful TBCh package must also focus on a wide range of trips because how people travel when they are *not* going to work or education can influence how they choose to travel to work or education. Influencing travel choice for non-work/trips increases the willingness and opportunity for change, which enhances the effectiveness of travel behaviour change efforts that target trips to/from/within the central city, and reduces the need to maintain travel behaviour change efforts over the long term because there will be a culture shift away from car dependency over time. This tactic is ideal for testing in a pilot, test and grow approach once Package A has been established – an approach which will also contain costs.
- Taking guidance from packages D and E, the recommended package will build upon previous steps by moving forward **ripple effect and culture change** activities in the inner areas, expanding to the outer areas of the region, taking a pilot, test and grow approach. Delivering this level of change means a higher spend and an understanding that the sum of the benefits isn't directly applicable to central Wellington, but it will be felt across the wider region. Refer to sections 6.1.5 and 6.1.6 for details.

Based on emerging evidence, ripple effect and culture change initiatives are expected to boost the effectiveness of other components of the travel behaviour change package and their value over the long term will be that less effort is needed to maintain travel behaviour change programmes because the culture will shift away from car dependency.

Critical to the success of the package, timing of implementation of complementary measures should be aligned with the LGWM programme infrastructure improvements to increase synergies and support the use of active and shared modes (refer to section 6.3).

8.1 Travel behaviour change strategies for disruption

The recommended package will also focus on delivering travel behaviour change during periods of construction-related disruption. To demonstrate how a TBCh package can be tailored to specific disruptions, a targeted TBCh plan was developed for four disruption scenarios, to help ease pressure on Wellington roads by enabling people to make informed travel choices both during disruption and in the long-term. The specific strategies supported by a report are attached as Appendix H. The four disruption scenarios considered include:

- Scenario 1: Disruption to the central city associated with delivery of Golden Mile improvements
- Scenario 2: Linkages to the suburbs through bus priority lanes alongside cycle improvements, using Karori to the City as an example

- Scenario 3: Network disruption associated with MRT / bus development on the Quays
- Scenario 4: Network disruption associated with the Basin Reserve grade separation.

The overall strategy is to ease pressure on Wellington roads while supporting people to make informed travel choices that are right for them, both during periods of disruption and in the long-term by:

- making sure people are aware of upcoming changes and how these might affect their journeys
- helping people to understand their travel options during periods of disruption
- managing travel demand so Wellington City can keep moving
- leveraging the disruption to encourage travel behaviour change away from driving.

Figure 8-2 presents the core themes that would be used in messages and campaigns. These have been developed in line with the MoT guidelines attached in Appendix C.

Figure 8-2 Disruption scenario travel behaviour change strategy: core themes

Using the rethink, reduce, re-route, re-mode, re-time themes could also support post-disruption messaging to 'return' or 're-set' that might signal an end to a disruption period and encourage people back into the city, making use of new active and shared mode improvements. This would address a concern that has been raised by businesses. For all disruption scenarios, it is assumed that construction will be managed in way that minimises impact on people walking, on bicycles and in buses by providing wayfinding and well-considered routes past construction sites, communicating alternate routes or re-routing bus services when necessary.

These scenarios were explored to develop an overall approach to periods of disruption which includes: ensuring people are aware of upcoming changes and how they might be affected, helping people understand the travel options that work for them during periods of disruption, managing travel demand so Wellington can keep moving, and leveraging disruption to encourage travel behaviour change away from driving. These approaches can be tailored according to the specifics of periods of disruption.

The disruption-related messaging and actions should be targeted to those who travel to and through the disrupted areas. This will require identifying trips, modes and times most impacted, and proposing viable alternatives, as well as providing advanced communication and undertaking further actions to minimise the impact of disruption.

The key action in the recommended package is to introduce measures prior to the disruption to avoid people getting into their cars during the disruption, and, during road network disruption, encouraging people to prepare by thinking in advance about alternatives to single-car occupancy.

A communications and engagement plan is discussed Appendix H. Construction-specific communication should also be coordinated with the travel behaviour change governance group to ensure consistency and opportune timing of communication.

Other opportunities during the disruption state include:

- **Provision of alternative routes for active travel users** - Construction teams should prioritise the safety and comfort of cyclists during construction by creating alternate routes. Smooth walking routes should also prioritise the safety and comfort of pedestrians including the visual and mobility impaired. These provisions should be communicated in a timely manner as part of the communicationsplan.
- **Freight management and servicing -** A freight management plan is recommended for large and small freight movements and servicing as a reliable and efficient supply of goods and services to businesses and residents in the city. This is vital through and during disruption. Initiatives it could include are:
  - consolidation of deliveries
  - encouraging the use smaller vehicles and human powered transport, particularly for distribution in urban areas (e.g. cargo e-bikes)
  - change freight delivery times to reduce congestion
  - improve vehicle operator training to encourage more efficient driving
  - as part of workplace travel plans, encourage businesses to organise orders for minimum number of deliveries (e.g. stationery ordered once per week or fortnight instead of on demand).
- **Traffic Management Plans (TMP) –** Historically TMPs have been focused on minimising impacts on motorised traffic. As part of LGWM there is an opportunity for some TMPs to be used to minimise the impact on the whole transport system. Opportunities to prioritise use of shared and active modes should be explored. TMPs could also aim to create an integrated network of alternate routes and diversions to ensure individual TMPs work together to minimise any additional disruption. Consideration of temporary traffic management priority lanes for public transport and emergency services could also be explored.

8.2 Pre-implementation approach

This SSBC has identified the types of initiatives, high level cohorts that could be implemented. The next stage following this SSBC will add more granularity to the TBCh package and also sequence the delivery of measures when the timing of the wider LGWM programme is clear. Next steps are outlined below:

Confirm specific cohorts, geographic area and communities

Develop an understanding of the demographics of each cohort

For each cohort, develop an understanding of the readiness to change based on the work presented in section 3.2

Develop an understanding of the barriers, motivators and triggers specific to the cohorts being targeted (refer to the Strategic Case: LGWM, 2020 section 7.2 for more details)

Develop personas to further the understanding of the cohorts (refer to the Strategic Case: LGWM, 2020 section 7.2 for more details)

Design specific initiatives using co-design principles and a pilot, test and grow approach

Confirm a Detailed Implementation Plan including:
- Key Performance Indicators
- Agile Project Management Systems
- Outcome Evaluation Systems; and
Continuous Improvement Systems

Some of the ways that initiatives could be introduced include:

- implementing additional complementary measures in locations or with partners already involved in travel behaviour change related programmes
- as part of programmes to encourage travel by shared and active modes to and from school, focusing on encouraging children within 800m - 2km from schools to increase walking, cycling, and scooting; geofencing a messaging campaign for parents to 'nudge' them, e.g. benefits of increasing physical activity for children; setting an example by walking, cycling or scooting with their kids to school; highlighting the dangers of congestion around schools and air quality impacts of idling cars
- analysing demographic data to understand how many people live within 800m-2km of public transport stops to target for first/last leg initiatives, e.g. free trial of e-scooters or bikeshares, reduced public transport fares if using active or shared modes; identifying employers near public transport stops to target for participation in active travel challenges or Workplace Travel Plans;

overlaying public transport access and Journey to Work data to understand who has access to public transport but still chooses to drive for targeted information, marketing and incentives

- posting public transport improvements, geofenced social marketing campaigns or incentives to 'give it a go' for people who live within 800m - 2km of bus stops or train stations
- using deprivation data to target low socio-economic suburbs or neighbourhoods for collaboration, partnerships and co-design of measures; incentivising active and shared modes for specific populations in these areas; education and media campaigns on potential cost savings associated with traveling differently
- targeting areas identified for increased density; advocating for increased public transport services in these areas as new developments are built; targeting new movers into new developments.

Part C: Planning for Implementation

9 Commercial Case

This section provides a high-level introduction to the commercial arrangements associated with delivering a travel behaviour change package for Wellington. Information about the commercial arrangements or procurement strategy for goods services needed as part of the delivery of a parking levy is not currently available.

9.1 What needs to be procured?

It is anticipated that much of the work to deliver a travel behaviour change package for Wellington will be delivered in-house, by LGWM. Most procurement activity will be routine, small- scale and low risk. The types of things that will need to be procured will include:

- professional services such as:
    A. training internal staff on principles of behaviour change to achieve the specific LGWM objectives
    B. ad-hoc marketing and communications advice
    C. software development services
    D. web-development
    E. delivery of questionnaire and surveys
    F. design of targeted travel behaviour change programmes (and campaigns).
- promotional materials for events and competitions
- publications and printed materials
- temporary staff to cover periods of high demand

These services could be procured on an “as and when” basis. Wherever possible, and unless specialist services are required, LGWM should make use of existing supplier arrangements. Efficiencies may be achieved through the establishment of supplier panels for specialist skillsets.

A greater level of procurement effort is expected for the Parking Levy. It is proposed that the parking Levy will be operated in-house by Wellington City Council. Nonetheless, professional services will be required. While these are yet to be specified, they could include:

- project management services;
- communications and engagement support;
- legal advice to inform legislative change;
- professional services associated with the detailed scheme development & design; and
- information technology services (e.g. database & systems design, web interface)

Further development of the parking levy proposal will involve specifying the necessary services and establishing a procurement strategy. This work will need to identify which of these services can be delivered in-house or by existing suppliers and which should be subject to market sounding and procurement processes.

It will be necessary to decide whether to procure these services as a package or whether individual packages should be let and managed by LGWM. This decision may be influenced by LGWM capacity to manage multiple, smaller packages. It is anticipated that most risk is associated with the procurement of information technology services.

9.2 Procurement rules

Each of the partners to LGWM has well established procurement policies, strategies and plans. LGWM are working in accordance with Waka Kotahi's procurement policy strategy.

9.3 The procurement strategy

Further work is needed to develop a procurement strategy and plan for services needed to establish a parking levy for Wellington. This work should consider:

- the market capability / capacity
- the potential for risk sharing with any suppliers (e.g. IT solutions)
- the most appropriate commercial models (form of contracts etc) for the various services
- any specific contract clauses that should be included

10 Financial Case

The chapter outlines the costs and funding requirements for the recommended investment. It highlights the financial implications of the proposed investment and highlights possible funding sources and cost sharing arrangements.

10.1 Indicative cost envelope

The LGWM PBC (Draft, 21 June 2019)[25] included estimated costs for the different elements of the Indicative Package agreed for Wellington[26]. The indicative package included a "Smarter Transport Network" component which was estimated to have a capital cost of $80M. No revenue cost estimates were presented. The PBC described this component as including: "*full integrated ticketing, transition to integrated transport network operating systems, travel demand management measures including Mobility as a Service, parking policy improvements and education and engagement*." The amount assumed for each element was not provided.

The Indicative Package was an evolution of the Recommended Programme (2018)[27], developed by LGWM. The 2018 Recommended Package (which was superseded by the 2019 Indicative Package) included a "Smarter transport network with road pricing" component which was to include:

- implementing smarter pricing (e.g. parking/cordon charges)
- establishing Mobility as a Service (MaaS) for Wellington
- network optimisation including safety and operational improvements
- enhancement of existing travel behavioural change programmes
- establishing an integrated network operating system
- aligning parking policy and management with the programme

$30M was signalled for the development of a smarter transport network. A further $30M was allowed for smarter pricing which was described as "a suite of travel demand management measures including greater use of pricing mechanisms, changes to parking charges and the introduction of congestion charging." The Recommended Package did not identify a separate cost for enhancement of existing travel behavioural change programmes.

The following sections summarise the expected costs and revenues associated with a commuter parking levy and associated travel behaviour change package.

10.2 Costs and revenue associated with a commuter parking levy

Section 4 describes the proposed design of a commuter parking levy for Wellington. It explains the geographical area to which it would apply, the numbers of car parks that would be subject to the levy and the levy amount proposed for Lambton, Pipitea and Te Aro parts of the central city. The following sections present the expected costs and revenues associated with a commuter parking levy. It is assumed that the parking levy will be enacted in 2026.

[25] https://lgwm.nz/assets/Documents/Programme-Business-Case/LGWM-PBC-Report-21-June-2019-Draft.pdf (June 2019)
[26] The Minister of Transport (with advice from the Ministry of Transport and LGWM) worked with the WCC Mayor and GWRC Chair to develop an "Indicative Package"
[27] https://lgwm-prod-public.s3.ap-southeast-2.amazonaws.com/public/Documents/The-Plan/LGWM-RPI.pdf (October 2018)

10.2.1 Expected costs

The costs are described in terms of the:

- establishment / implementation costs; and
- ongoing operational costs.

Costs estimates are derived from representative information provided by Nottingham City Council (UK). This information included detailed copies of the Financial Case for their workplace parking levy. Costs which were provided in 2009 GBP have been inflated to 2020 GBP and then converted to NZD at the prevailing NZD/GBP conversion rate as of 14 October 2020.

Estimated costs and forecast revenues presented in this chapter are not non-discounted or adjusted for inflation and presented solely in 2020 dollars. The levy calculation which drives demand reductions is calculated inclusive of GST. The revenue calculations are exclusive of GST. This means that a $2,500 annual levy generates $2,125 of gross revenue per leviable carpark.

10.2.1.1 Implementation Costs

Table 10-1 below provides a breakdown of the estimated implementation / establishment costs. Costs are shown for each financial year. Nottingham City Council provided low, medium and high costs estimates where the upper and lower bounds were ±33% of the central estimate.

Table 10-1 - Estimated Implementation Costs

			Levy year 1	
NZ$, inflated to 2020$	2024	2025	2026	Total
Public consultation > Approval				
Public consultation preparation	325,733			
Public consultation	465,333			
Parking levy approval	430,433			
Levy scheme development	267,567			
Project management (A)	407,167			
Subtotal	1,896,233	0	0	
Implementation > Operation				
Levy implementation		1,047,000		
Scheme goes live			465,333	
Levy charging commences	0	0	0	
Project management (B)		174,500	174,500	
Subtotal	0	1,221,500	639,833	
Total establishment cost	**1,896,233**	**1,221,500**	**639,833**	**$3,757,567**

All the implementation costs have currently been estimated as operating expense, rather than capital costs. The only potential for capital costs is related to developing information communications technology (ICT) infrastructure and systems needed to support operations. It can largely be expected that these functions would be procured on an as-a-service basis. Capital costs will be minimal.

10.2.1.2 Operating Costs

Nottingham City Council also provided a breakdown of their operating costs for running and operating their workplace parking levy scheme. These costs have been converted to 2020NZD and are presented in Table 10-2 below.

Table 10-2 - Estimated Operating Costs

Opex contingency	10%

Operating costs (NZ$, inflated to 2020$)	**Levy year 1 2026**	**2027**	**2028**	**Outyears**
Parking levy team salaries	$828,158	$754,296	$754,296	$754,296
IT costs	$151,224	$151,224	$151,224	$151,224
Equipment	$69,800	$69,800	$69,800	$69,800
Consultant support	$232,667	$232,667	$232,667	$232,667
Legal services contingency	$100,000	$0	$0	$0
Subtotal	$1,381,849	$1,207,987	$1,207,987	$1,207,987
Contingency (10%)	$138,185	$120,799	$120,799	$120,799
Total opex	**$1,520,034**	**$1,328,785**	**$1,328,785**	**$1,328,785**

At this stage, it is estimated that $1.520m should be allowed for the first year of levy operations, reducing slightly to $1.328m in the second year. The financial model also accounts for an additional operating cost: an allowance for bad debts from the levy collection. This is conservatively estimated at 1% of all revenue associated with the levy.

10.2.2 Forecast revenues

Four parking levy scenarios have been modelled. These allow gross and net revenue to be forecast. Gross revenue is the amount of levy revenue collected against the in-scope carparks. A summary of these gross revenue figures for the four levy scenarios are included in Figure 10-1 below. As can be seen a levy set at $2,500 per annum (and $1,750 per annum in low-price zones) would generate up to $26m in gross revenue per annum.

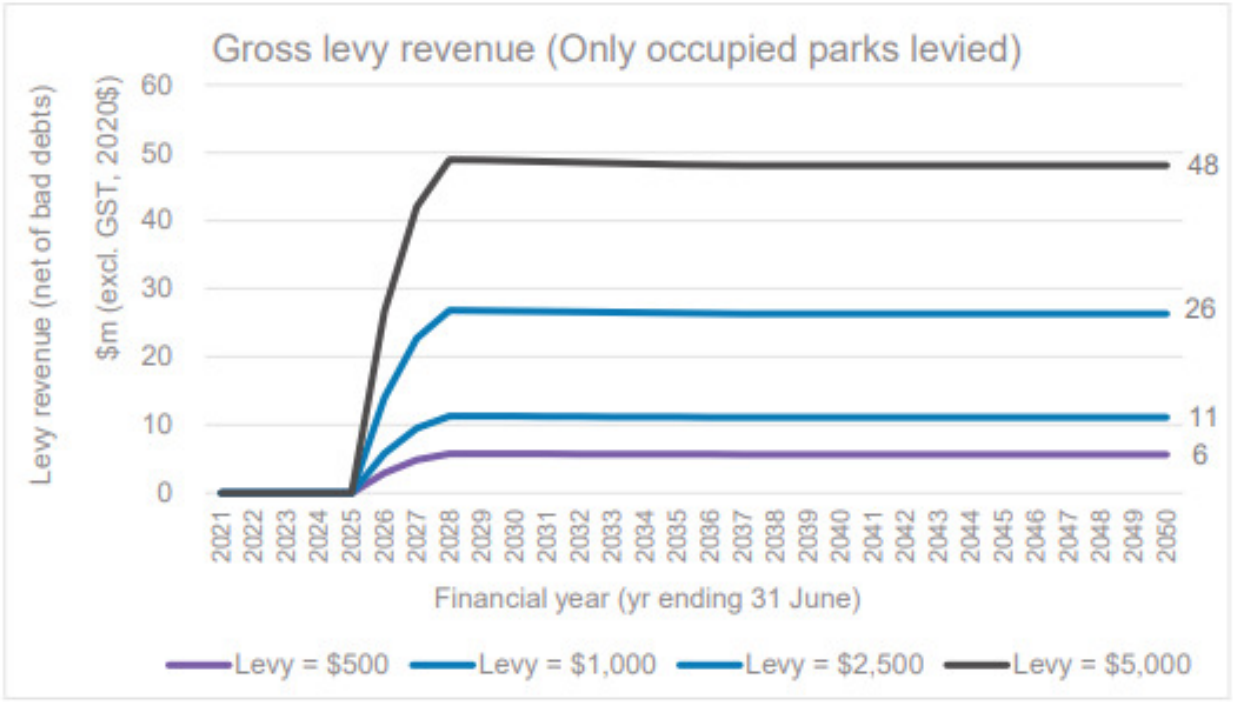


Figure 10-1 - Forecast Revenue for Four Levy Scenarios

10.2.3 Projected cashflow - $2500 parking levy

Levy revenue - CALENDAR YEARS

REVENUE	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Levy revenue																
High price CBD sector	0	0	0	0	7,249,316	14,063,823	20,046,837	19,985,682	19,924,526	19,863,370	19,802,214	19,741,058	19,679,903	19,618,747	19,557,591	19,496,435
Low price CBD sector	0	0	0	0	3,088,139	6,002,942	8,573,375	8,571,330	8,569,285	8,567,240	8,565,195	8,563,150	8,561,105	8,559,060	8,557,015	8,554,970
Total gross revenue	0	0	0	0	10,337,455	20,066,765	28,620,213	28,557,012	28,493,811	28,430,610	28,367,409	28,304,209	28,241,008	28,177,807	28,114,606	28,051,405
Less: Allowance for bad debts	0	0	0	0	(103,375)	(200,668)	(286,202)	(285,570)	(284,938)	(284,306)	(283,674)	(283,042)	(282,410)	(281,778)	(281,146)	(280,514)
Levy revenue (net of bad debts)	**0**	**0**	**0**	**0**	**10,234,080**	**19,866,098**	**28,334,011**	**28,271,442**	**28,208,873**	**28,146,304**	**28,083,735**	**28,021,166**	**27,958,598**	**27,896,029**	**27,833,460**	**27,770,891**
Less: Levy paid by Council-operated car parks																
High price CBD sector	0	0	0	0	287,445	555,018	787,172	784,775	782,378	779,980	777,583	775,186	772,789	770,392	767,995	765,598
Low price CBD sector	0	0	0	0	74,137	143,457	203,893	203,846	203,798	203,751	203,703	203,656	203,608	203,561	203,513	203,466
Total paid by Council-operated car parks	0	0	0	0	361,582	698,475	991,065	988,620	986,176	983,731	981,287	978,842	976,397	973,953	971,508	969,064
Levy revenue (net of bad debts, and levy paid by Council-operated parks)	**0**	**0**	**0**	**0**	**9,872,498**	**19,167,623**	**27,342,946**	**27,282,821**	**27,222,697**	**27,162,573**	**27,102,449**	**27,042,324**	**26,982,200**	**26,922,076**	**26,861,952**	**26,801,827**

Levy revenue - FINANCIAL YEARS

Financial years (yr ending 30 June) >>	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
REVENUE																
Levy revenue																
High price CBD sector	0	0	0	0	0	10,656,570	17,055,330	20,016,260	19,955,104	19,893,948	19,832,792	19,771,636	19,710,480	19,649,325	19,588,169	19,527,013
Low price CBD sector	0	0	0	0	0	4,545,540	7,288,159	8,572,353	8,570,308	8,568,263	8,566,218	8,564,173	8,562,128	8,560,083	8,558,038	8,555,993
Total gross revenue	0	0	0	0	0	15,202,110	24,343,489	28,588,612	28,525,411	28,462,211	28,399,010	28,335,809	28,272,608	28,209,407	28,146,206	28,083,006
Less: Allowance for bad debts	0	0	0	0	0	(152,021)	(243,435)	(285,886)	(285,254)	(284,622)	(283,990)	(283,358)	(282,726)	(282,094)	(281,462)	(280,830)
Levy revenue (net of bad debts)	**0**	**0**	**0**	**0**	**0**	**15,050,089**	**24,100,054**	**28,302,726**	**28,240,157**	**28,177,588**	**28,115,020**	**28,052,451**	**27,989,882**	**27,927,313**	**27,864,744**	**27,802,176**
Less: Levy paid by Council-operated car parks																
High price CBD sector	0	0	0	0	0	421,231	671,095	785,973	783,576	781,179	778,782	776,385	773,988	771,591	769,194	766,797
Low price CBD sector	0	0	0	0	0	108,797	173,675	203,870	203,822	203,774	203,727	203,679	203,632	203,584	203,537	203,489
Total paid by Council-operated car parks	0	0	0	0	0	530,028	844,770	989,843	987,398	984,953	982,509	980,064	977,620	975,175	972,731	970,286
Levy revenue (net of bad debts, and levy paid by Council-operated parks)	**0**	**0**	**0**	**0**	**0**	**14,520,061**	**23,255,284**	**27,312,884**	**27,252,759**	**27,192,635**	**27,132,511**	**27,072,387**	**27,012,262**	**26,952,138**	**26,892,014**	**26,831,890**
COSTS																
ESTABLISHMENT COSTS																
Public consultation > Approval																
Public consultation preparation	0	0	0	325,733	0	0	0	0	0	0	0	0	0	0	0	0
Public consultation	0	0	0	465,333	0	0	0	0	0	0	0	0	0	0	0	0
Parking levy approval	0	0	0	430,433	0	0	0	0	0	0	0	0	0	0	0	0
Levy scheme development	0	0	0	267,567	0	0	0	0	0	0	0	0	0	0	0	0
Project management (A)	0	0	0	407,167	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	0	0	0	1,896,233	0	0	0	0	0	0	0	0	0	0	0	0
Implementation > Operation																
Levy implementation	0	0	0	0	1,047,000	0	0	0	0	0	0	0	0	0	0	0
Scheme goes live	0	0	0	0	0	465,333	0	0	0	0	0	0	0	0	0	0
Levy charging commences	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project management (B)	0	0	0	0	174,500	174,500	0	0	0	0	0	0	0	0	0	0
Subtotal	0	0	0	0	1,221,500	639,833	0	0	0	0	0	0	0	0	0	0
Total establishment costs	0	0	0	1,896,233	1,221,500	639,833	0	0	0	0	0	0	0	0	0	0
OPERATING COSTS																
Parking levy team salaries	0	0	0	0	0	828,158	754,296	754,296	754,296	754,296	754,296	754,296	754,296	754,296	754,296	754,296
IT costs	0	0	0	0	0	151,224	151,224	151,224	151,224	151,224	151,224	151,224	151,224	151,224	151,224	151,224
Equipment	0	0	0	0	0	69,800	69,800	69,800	69,800	69,800	69,800	69,800	69,800	69,800	69,800	69,800
Consultant support	0	0	0	0	0	232,667	232,667	232,667	232,667	232,667	232,667	232,667	232,667	232,667	232,667	232,667
Legal services contingency	0	0	0	0	0	100,000	0	0	0	0	0	0	0	0	0	0
Subtotal	0	0	0	0	0	1,381,849	1,207,987	1,207,987	1,207,987	1,207,987	1,207,987	1,207,987	1,207,987	1,207,987	1,207,987	1,207,987
Contingency (10%)	0	0	0	0	0	138,185	120,799	120,799	120,799	120,799	120,799	120,799	120,799	120,799	120,799	120,799
Total operating costs	0	0	0	0	0	1,520,034	1,328,785	1,328,785	1,328,785	1,328,785	1,328,785	1,328,785	1,328,785	1,328,785	1,328,785	1,328,785
NET REVENUE	**0**	**0**	**0**	**(1,896,233)**	**(1,221,500)**	**12,360,193**	**21,926,499**	**25,984,098**	**25,923,974**	**25,863,850**	**25,803,725**	**25,743,601**	**25,683,477**	**25,623,353**	**25,563,228**	**25,503,104**

Table 10-3 - Projected cashflow for a $2500 parking levy.

10.2.4 Fundamental assumptions

The financial model is based upon assumptions related to the:

- consistency of staff and professional services costs in the UK and New Zealand;
- extent to which the levy costs are passed from car park operators/owners to commuters;
- price elasticity of commuter parking demand;
- extent to which existing commuters choose, and are able, to park outside the levy area in order to avoid an additional charge;
- car park owner and operator response to a reduction in parking demand;
- number of short-stay car parks currently provided in off-street public car park facilities;
- ability for the future transport system to accommodate the additional demand for public transport resulting from the parking levy - this is part of the reason for suggesting that the parking levy does not become operational until 2026.

10.2.5 Uncertainties

The main uncertainties that could affect the cost estimates and revenue forecasts are

- establishment costs are estimated on the introduction of the levy in Nottingham; if the levy operations were to be paired with 'smarter' travel demand management tools, the cost of implementation and operation may be higher than what is indicated in this model.
- the ease in which commuters can transition to public or active transport modes. If there is not readily available public or active transport modes for a car commuter to substitute to, the only alternative may be to simply pay the increase in levy and drive. Therefore we propose that the levy is not introduced until at least 2025, as this timing aligns with some of the initial planned public transport and active mode improvements as part of the Let's Get Wellington Moving Programme.
- the extent to which certain commuters are driving because of other factors, such as intermediate stops (school or day-care drop offs[28], for example), or health and safety considerations (such as a desire to remain away from public transport during the COVID-19 pandemic).
- the pass-through of the levy - where a parking levy is charged to owners and operators of carparks, the full cost of the levy is unlikely to be fully passed through to commuters, judging from evidence in other jurisdictions. Our estimate is that at least 60% for public carparks and 50% for private/business carparks
- the extent to which there are unintended market movements (such as towards individual ownership and purchase or carparks by commuters, rather than use) which could further reduce the supply of leviable carparks.
- the estimated supply response of carpark operators. The model currently presumes that some carpark operators would transition some long-stay commuter carparks to casual carparks, leading to a reduction in the overall supply of commuter carparks.

[28] This will be able to be determined when Household Travel Survey data is available

10.2.6 Hypothecation

Hypothecation, also known as “ring-fencing”, is where a government or council earmarks some or all its tax revenue for clearly identified spending purposes. There are arguments for and against hypothecation of tax revenue, which can be summarised as:

- it reduces the government’s ability to spend on the highest-value items;
- it reduces the government’s flexibility;
- it assures continuity of funding for programmes, helping long-term planning;
- it can make a tax more politically and publicly acceptable; and
- it can make a tax more equitable as there is a degree of ‘user pays’.

Three of the four parking levies overseas (refer Parking Levy Final report in Appendix G) have hypothecated their levy revenue. This was a key factor in establishing political and public buy-in. Hypothecation also creates a notional link between the tax and the positive improvements for which revenue is “ring-fenced”. A large share of New Zealand’s transport system is already built on hypothecated funding, most notably the National Land Transport Fund. Other precedents for hypothecation in New Zealand include Regional Fuel Tax, Road User Charges (notably diesel vehicles such as heavy commercial vehicles) and the waste disposal levy framework.

For a Wellington parking levy, the pros of hypothecation outweigh the cons. LGWM seeks to “move more people using fewer vehicles” so hypothecated funds should be invested in ways that will reinforce this. Given that people who drive are indirectly paying the levy, it could be argued that some levy funds should be directed towards car infrastructure. This would however be contrary to the objective of the levy. Hypothecation closely aligned to the rationale for the levy would see funds only spent on travel behaviour change initiatives, public and active transport services and infrastructure.

10.3 Costs for a travel behaviour change package

This section presents estimated costs for the recommended package as well as the expected cashflow requirements.

10.3.1 Cost Categories

Section 3.7 has explained the elements that need to be included in a successful travel behaviour change package. In summary, these are

- Policy, Partnerships and Advocacy
- Travel Plans
- Events, experiences and life choices
- Marketing, Communications, Incentives
- Supporting Services
- Supporting Amenities
- Evaluation, Research, and Reporting

Delivery of initiatives within each of these cost categories will incur different types of cost including:

- staff costs (both internal and procured)
- operational expenditure such as:
    A. marketing

B. communications

C. trial incentives such as giveaways, prizes or temporary subsidies

D. competition prizes

E. seed funding for shared mobility initiatives

F. development of web and mobile phone applications (apps)

G. surveys

H. data collection equipment

No allowance is made for capital costs, which are expected to form a negligible portion of the budget. It is assumed that additional staff will be accommodated by LGWM or one of the partner organisations with only negligible additional accommodation costs.

10.3.2 Estimating approach

The above list of resources will be needed for any successful travel behaviour change initiatives. The costs involved are driven by the planned "dose" which is the combination of effort to achieve the greatest range of change and planned. Packages with a larger reach will have larger costs. Packages that involve more effort will also increase costs.

For this proposal costs estimates have been developed using a combination of:

- information provided by GWRC and WCC about the costs to deliver existing travel behavioural change programmes
- information about costs of travel behavioural change programmes delivered elsewhere in New Zealand and the world (refer to the LGWM, 2020a)
- professional experience of travel behavioural change specialists within the project team and Technical Working Group

Professional judgement was used to interpret this information and estimate the costs for a travel behaviour change programme in Wellington. In developing the estimate consideration has been given to the:

- number and size of third-party organisations (employers) that would be targeted
- number of schools that would be expected to participate
- population that would be targeted
- planned geographical reach
- annual number of programmes, campaigns, competitions and events proposed each year.

Input to the estimates from travel behaviour change specialists within the Technical Working Group helped to ensure there were no gaps or anomalies.

10.3.3 Uncertainties

There are several uncertainties that may affect the package costs. The main uncertainties are the:

- ***variation in the efficiency of travel behaviour change programme delivery*** - The cost efficiency with which travel behaviour change initiatives are delivered around the world varies. For example, two different teams could deliver the same initiative in the same place. The more effective team could deliver the same results for half the cost of the second team. This inherent variation makes it difficult to develop precise cost estimates. Effective monitoring and systematic continuous improvement processes will help to drive effective and efficient delivery, as with agile approaches of pilot, test and grow.

- ***The ability of the programme to evaluate the effectiveness of activities***, and use agile approaches to shift resources to the most effective activities.
- ***third-party participation that is achieved*** - in developing costs estimates the team have identified major employers and specific schools that should be targeted by a travel behaviour change programme. It is assumed that the disruption anticipated as a result of Let's Get Wellington Moving infrastructure packages will provide an incentive for these organisations to participate. Nonetheless, participation will be voluntary which means not every organisation targeted will necessarily participate. In this instance, different organisations would be approached. This may have some impact on cost.
- ***timing for transport system and land-use changes that could trigger a step change in travel behaviour change intensity*** - The cost estimate includes a step change in cashflow to reflect the delivery of travel behaviour change and associated resource requirements to correspond with the implementation of a commuter parking levy and/or delivery of first-last leg transport improvements in the 2025/26 financial year. Changes to the delivery of system changes would change the cashflow for the travel behaviour change package.
- ***evolution of the travel behaviour change programme as feedback is received from continuous improvement systems*** - The travel behaviour change programme will need to be flexible and evolve as the LGWM programme is delivered. This evolution should be based upon regular evaluation and well-established continuous improvement systems

10.3.4 Cashflow

Table 10-4 below shows the cashflow for the recommended package. It assumes a step change in the provision of travel behaviour change from year 3, two years prior to the anticipated introduction of a commuter parking levy and delivery of first-last leg transport improvements across the region. It also includes an allowance for public transport fare incentive ($2M each year from year three) and the cost of redeploying 4.5 existing FTE TBCh staff from their current roles within GWRC and WCC to work on LGWM.

This cashflow projection also includes a small allowance for initiating Packages E and F (Culture Change and Ripple Effect). These costs would not be accrued if these initiatives are postponed until the next NLTP period (i.e. until 2024/25).

Table 10-4 - Travel Behaviour Change Cashflow

RECOMMENDED PACKAGE											
	Cost										
	Total	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Policy, Partnerships and Advocacy	*2,450,000*	75,000	150,000	200,000	375,000	650,000	200,000	200,000	200,000	200,000	200,000
Travel Plans	*3,150,000*	550,000	650,000	650,000	650,000	650,000					
Events, experiences and life choices	*1,100,000*	110,000	110,000	110,000	110,000	110,000	110,000	110,000	110,000	110,000	110,000
Marketing, Communications, Incentives	*21,160,000*	750,000	415,000	2,465,000	2,465,000	2,665,000	2,440,000	2,440,000	2,440,000	2,640,000	2,440,000
targeted PT incentives within above line item	*16,000,000*	*0*	*0*	*2,000,000*	*2,000,000*	*2,000,000*	*2,000,000*	*2,000,000*	*2,000,000*	*2,000,000*	*2,000,000*
Supporting Services	*3,655,000*	630,000	160,000	1,710,000	165,000	165,000	165,000	165,000	165,000	165,000	165,000
Supporting Amenities	*2,233,000*	70,000	66,000	218,750	146,500	144,250	312,000	314,750	317,500	320,250	323,000
Evaluation, Research, and Reporting	*7,000,000*	200,000	600,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000
Sub-total	**40,748,000**	**2,385,000**	**2,151,000**	**6,128,750**	**4,686,500**	**5,159,250**	**4,002,000**	**4,004,750**	**4,007,500**	**4,210,250**	**4,013,000**
FTE costs	*14,695,000*	*1,045,000*	*1,295,000*	*1,670,000*	*1,600,000*	*1,660,000*	*1,545,000*	*1,475,000*	*1,475,000*	*1,465,000*	*1,465,000*
Existing WCC/GW FTE's expected to redeploy to LGWM in above line item	*4,500,000*	*450,000*	*450,000*	*450,000*	*450,000*	*450,000*	*450,000*	*450,000*	*450,000*	*450,000*	*450,000*
Total	**55,443,000**	**3,430,000**	**3,446,000**	**7,798,750**	**6,286,500**	**6,819,250**	**5,547,000**	**5,479,750**	**5,482,500**	**5,675,250**	**5,478,000**
Cultural And Ripple (Scaling Up)	***6,857,050***	*48,750*	*96,300*	*144,675*	*193,200*	*239,375*	*1,127,700*	*1,211,175*	*1,464,800*	*1,288,575*	*1,042,500*
FTE costs (Extra Over)	*5,917,500*	*93,500*	*217,000*	*385,500*	*454,000*	*567,500*	*681,000*	*724,500*	*828,000*	*931,500*	*1,035,000*
Grand Total	**68,217,550**	**3,572,250**	**3,759,300**	**8,328,925**	**6,933,700**	**7,626,125**	**7,355,700**	**7,415,425**	**7,775,300**	**7,895,325**	**7,555,500**
Adjusted total excluding PT incentives and existing staff	*46,300,050*	*3,478,750*	*3,542,300*	*5,943,425*	*4,479,700*	*5,058,625*	*4,674,700*	*4,690,925*	*4,947,300*	*4,963,825*	*4,520,500*

Table 10-5, overleaf is an adjusted cost estimate for the first two years of the delivery (to the end of the current NLTF period) The estimate is adjusted to reflect the timing for funding decisions and the initial focus only on Packages A and B. The process described in the Management Case will then allow the timing of future packages and cashflows to be determined within the overall funding envelope set out above.

Table 10-5 shows the funding sought for 2022/23-2023/24 financial years.

Table 10-5 - Cost Estimate for Years 1 and 2

	2022/23	2023/24
	Total	**Total**
Policy partnerships and advocacy	116,500	233,000
Travel planning and life changes	393,750	850,000
Events, experiences	166,500	336,000
Marketing and comms	192,000	401,500
Supporting services	578,000	1,158,000
Supporting activities	25,000	50,000
Evaluation and research	567,000	1,084,000
Estimated Annual Implementation Cost	**2,038,750**	**4,112,500**

Total Pre-implementation Costs (planning and mobilisation)	*$1.121M*
Total Implementation Cost for 2022/23-2023/24	*$6.151M*
Total Waka Kotahi Administration Fee	*$0.581M*
Total Cost (Incl. implementation cost and administration)	**$7.854M**

10.4 Funding tools, financing, partner shares and affordability

Following significant public engagement, the LGWM programme business case developed a vision for Wellington and a recommended programme of investment (RPI) to support delivery.

Following the development of the RPI in October 2018, the programme completed financial analysis to understand if the full RPI was affordable in the medium term. The analysis showed the full RPI was not affordable in the medium term. While the full programme was supported as a long-term vision, it would need to be staged, with only the first stage with committed funding.

Following discussion between the funding partners and the Crown, an Indicative Package (IP) of work was developed for the first stage. This IP represented a $3.7b capital investment and a $6.4b funding requirement including operating and financing costs (before accounting for Council financing costs) over 30 years.

In March 2019 this IP was endorsed by the Cabinet and in May 2019 the IP was announced by the Minister of Transport supported by the Mayor of Wellington and the Chair of the Greater Wellington Regional Council.

The March Cabinet paper anticipated detailed business cases would be developed. It made a range of assumptions which would need to be explored in more detail through the subsequent phases including:

- A cost share of 60% central government 40% local government
- The central government share was anticipated to come from the NLTF

- Financing was anticipated for the rapid transit project
- NLTF funding projections included petrol excise duty and road user charges increasing broadly in line with inflation over the 30 years

10.4.1 Funding partner affordability

LGWM is a step change in transport for Wellington and represents a major investment for all three funding partners. Due to the scale of the programme and other financial pressures facing the partners it is anticipated affordability will need to be reassessed at each phase as the programme progresses. This will take advantage of the improved understanding of the benefits and costs of the programme as it matures.

The following reflects the approach to the key financial arrangements as the programme prepares to move forward to the next phase.

10.4.2 Financing

The LGWM programme is not the only funding pressure that funding partners have and therefore funding partners will need to make wider decisions about on their cashflow and financing.

For the projects within the 3-year programme, of which this is one, a central financing mechanism operated by LGWM programme is not intended to be used. This may be revisited as the programme progresses through later phases.

Therefore, the cash funding required of each funding partner will be provided and it will be up to that partner to determine the financing arrangements for their own cashflow management, if any.

It is expected Councils will debt fund the next phase and Waka Kotahi use the NLTF on a paygo basis

10.4.3 Funding

The LGWM programme has completed a comprehensive inventory of funding tools in use across the world. This includes funding tools which fall under the broad categories of “value capture” and “user charging”.

Any use of new funding tools would need to go through the appropriate approvals and in some cases legislative change. No decisions about any potential new funding tools are expected before the end of 2023. It is expected further investigations into new funding tools will occur ahead of the start of construction of higher cost components of the programme as part of clarifying the level of spend the funding partners can commit to.

The Council partners have included funding for the next phases of work expected over the next few years in their long-term plans using their existing rating tools.

Waka Kotahi is expected to fund the central government share from the NLTF for the next phase work. This funding requirement is expected to be included in the National Land Transport Programme (NLTP).

10.4.4 Funding partner cost shares

Project costs need to be allocated to funding partners including each local Council (which was not determined by Council at the IP stage). This allocation sets out what each funding partner must fund and over what period. Cost shares may vary by phase (business case development, implementation and on-going).

The final decision on cost allocation, across the programme, has not yet been made.

There is an explicit LGWM programme work stream to provide funding partners with analysis to assist them in agreeing the more enduring agreement for cost allocation. That analysis and partner

agreement is expected to be developed once preferred options have been identified and using the analysis from the business cases.

This cost allocation is expected to consider the implications for various groups including; who benefits and who should bear costs.

For the next phase of work the programme will use the interim agreed funding arrangement documented in schedule 5 of the 2020 LGWM Relationship and Funding agreement (RFA) to allocate cost shares to funding partners.

During the development of the Councils' Long Term Plans and their last NLTF applications, it was assumed that GWRC were the "asset owner" for the travel behaviour change programme. For this reason it has been agreed that in the short term, for the remainder of this NLTF period, GWRC will contribute the local share of funding for pre-implementation and implementation of the LGWM TBCh package. The applicable Waka Kotahi Funding Assistance Rate will also apply. The funding share will be reassessed in advance of councils' 2024/25 NLTF funding applications, taking into consideration the allocation of resourcing and initiatives being led by each of the partners.

10.4.5 Scope of Project costs

Cost are uninflated and denominated in 2020/21 dollars.

On-going costs (such as O&M and capital renewals) are not included in the numbers in this section. Where applicable to projects, any lost parking revenue (as an operating cost) is also excluded.

Who bears on-going costs though will be factored into the final cost sharing agreement between partners.

This financial case does not include Central programme and cross-programme costs (those costs shared across all projects during the business case development and implementation). These costs will be recharged to individual projects by phase, pro-rated on project budgeted spend.

(However, full costings for this project, which include re-charged central and cross-programme costs and which include inflation, are included in the WFA which seeks the required funding approval)

Any partner overheads and recharges (such as Waka Kotahi/ NZTA's administrative fee and non-core fees) are not re-chargeable to the programme and therefore not included in this financial case or the WFA which seeks funding approval.

10.4.6 Travel Behaviour Change funding partner cost shares

The Relationship Funding Agreement (RFA), which is used for this financial case for allocating costs to partners, on an interim basis, splits Business case development costs 60:40 between central (NZTA) and local (Wellington Central Council, WCC and Greater Wellington Regional Council, GWRC).

The local share (the 40% of the above) is split 50:50 for business case development between each of the Councils.

The table below sets out the project costs each partner will be required to fund.

10.4.7 Timing of requests to partners for funding

Costs have not been scheduled in detail, at this stage, in the financial numbers so the funding requirements of each partner are spread as a percentage evenly across the DBC phase.

There will be a cashflow cost ramp up as the phase progresses. Cash funding forecasts and requests to partners will need to be developed further closer to commencement but given the

relative size of this project to the funding partners' working cashflows the timing of these funding requests should be manageable.

11 Management Case

This management case outlines the governance and management structure for delivery and monitoring/evaluation of the Let's Get Wellington Moving (LGWM) Travel Behaviour Change (TBCh) package, as outlined in the Single Stage Business Case (SSBC). Specifically, this includes how the delivery partners of Wellington City Council (WCC) and Greater Wellington Regional Council (GWRC) will work together with oversight from LGWM and Waka Kotahi (WK) to deliver a combination of initiatives from Packages A (initiatives mostly focused on travel within Wellington City) and B (additional initiatives that focus on travel outside of Wellington City) of the SSBC. This combined approach will be phased in over the next two years, as funding and staffing levels allow.

As discussed earlier in this SSBC, beginning delivery with a combination of activities from both Packages A and B is underpinned by the logic that up to 50% of all people travelling into Wellington City begin their journeys outside the city, in the wider Greater Wellington region. Behaviour change initiatives are most effective when they include an immediate 'call to action', a catalyst to encourage someone to consider their usual behaviour and decide which option to take. In the case of those travelling into Wellington City, this 'call to action' needs to be before they get in their car. This will become more urgent as disruption from construction of other LGWM activity becomes more pronounced within Wellington City.

These management arrangements will allow the delivery partners to:

- deliver a well-organised travel behaviour change programme that is completely integrated within the wider LGWM programme
- continuously monitor and review package initiatives, by adopting a plan, deliver, evaluate, re-prioritise framework for delivery

Operational documentation, including Risk Registers and Evaluation and Monitoring Plans will be developed during the pre-Implementation Phase, prior to dedicated delivery commencing. A detailed Implementation Plan will also be finalised during this period. While continuous improvement will be embedded within the programme, these documents are expected to be reviewed every three years in future, in advance of each National Land Transport Programme (NLTP).

This management case addresses:

- Governance Arrangements
- Management Arrangements
- Structure
- Work allocation principles
- Expected resourcing
- Change Management Arrangements
- Continuous Improvement
- Reporting and Accountabilities
- Managing change
- Risk Management Arrangements
- Next steps

11.1 Governance Arrangements

The LGWM TBCh is an integral part of the LGWM programme. It is intended that delivery will be managed by the LGWM Programme Team and that existing governance arrangements will apply.

As with all other activities managed by LGWM:

- the Partnership Board (representing all 3 partners[29] with an independent Chair) is ultimately responsible for the success of the programme
- the Partnership Board, when making strategic decisions, will take advice from, and consider the views of the Governance Reference Group (again, representing partners)
- the Programme Director is ultimately accountable for the management of the programme and its component parts
- The LGWM Programme Leadership Team, involving LGWM senior managers and Partner Leads, will consider Partnership Board papers and provide advice to the Programme Director.

The Partnership Board is responsible for strategic decisions relating to programme direction, funding and programme delivery. Its role will be to act as the partner and political interface and hold the LGWM Programme Team accountable for delivery. The Partnership Board will initially approve any significant changes that are needed to the TBCh initiatives as the result of monitoring and evaluation.

It is envisaged that the Partnership Board would be asked to initially endorse any significant changes to the scope of the travel behaviour change package, for example if resources were proposed to be shifted to support a successful mode shift initiative, or if delivery of part of the package were to be discontinued. Any changes requiring a change to resources would then go to partners for approval and funding.

11.2 Management Arrangements

Attributes of local and international examples of large-scale, successful TBCh programmes include:

- a clear leader accountable for delivery.
- formal partnership arrangements with all partner organisations.
- close co-ordination and integration with infrastructure delivery and land use changes.
- strong links with transport management and operational teams.
- consistent messaging, integrated with all programme communications.
- flexible delivery with public and private sector organisations.
- co-design and co-implementation with stakeholders.
- a strong culture of continuous improvement.

These attributes are reflected in the structures set out below.

11.3 Management Structure

While LGWM is not a legal entity, nor approved organisation for receiving budget from the National Land Transport Fund (NLTF), it is the organisation that has been established by the LGWM

[29] Greater Wellington Regional Council, Waka Kotahi New Zealand Transport Agency, Wellington City Council

partners to co-ordinate delivery of the LGWM programme. LGWM is therefore best placed to coordinate delivery of the TBCh package.

A LGWM TBCh Package Lead will be accountable for the successful delivery of the TBCh package. The LGWM TBCh Lead will be fully embedded within the LGWM Programme Team. The LGWM TBCh Lead will initially report to the Programme Integration Manager and be accountable for:

- integration and co-ordination between the various TBCh initiatives ensuring they are appropriately integrated with LGWM project delivery and periods of disruption;
- embedding TBCh within LGWM communications, social marketing and branding;
- monitoring and reporting on the performance of the LGWM TBCh package;
- developing multi-agency three-year plans in advance of each NLTP application – if needed, these will accommodate any additional work to support congestion pricing or a parking levy;
- ensuring adequate resource is available to deliver each three-year implementation plan;
- managing delivery of any TBCh initiatives that are agreed to be the responsibility of LGWM.

There are two mechanisms for ensuring significant integration of travel behaviour change activities.

The first is a management team to support the LGWM Travel Behaviour Change Package Lead, comprised of:

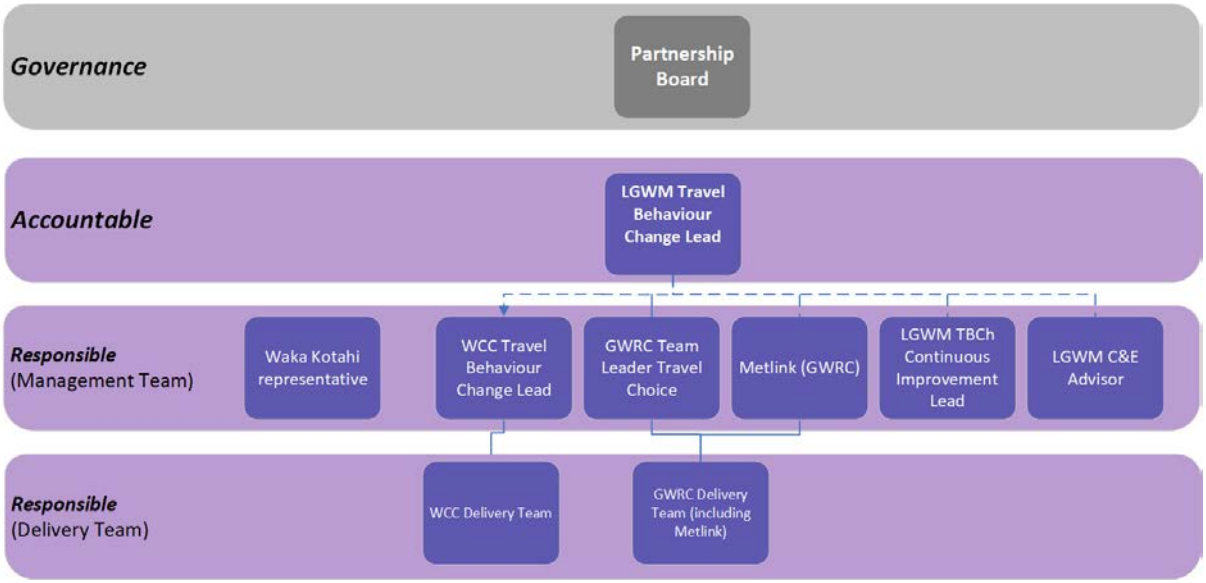
- **WCC (Wellington City Council) Travel Behaviour Change Lead** – responsible for on-time, on-budget delivery of initiatives assigned to WCC;
- **GWRC (Greater Wellington Regional Council) Team Leader Travel Choice** – responsible for on-time, on-budget delivery of initiatives assigned to GWRC;
- **Metlink Representative** – responsible for delivering Metlink Travel Behaviour Change initiatives
- **LGWM C&E advisor** – responsible for working closely with the WCC, GWRC, Metlink and LGWM Communications Teams to weave TBCh into all transport communications;
- **LGWM TBCh Continuous Improvement Lead** – responsible for developing and administering a continuous improvement evaluation framework. This will involve collating process, output and outcome data and information required of the delivery teams, with outcome data generated by the Wellington Transport Analytics Unit to communicate the performance of the package.
- **Waka Kotahi Representative** – responsible for linking initiatives within a national context, and relevant Waka Kotahi policies.

- Collectively the Management Team will support the LGWM TBCh Lead by:
- integrating and coordinating TBCh delivery with LGWM and the work of the partner organisations;
- co-ordinating the TBCh activities in this SSBC with the delivery of other related TBCh initiatives by the partner organisations;
- regularly evaluating the performance of the TBCh package and working to agree refinements or enhancement to maximise impact;
- supporting the TBCh Lead to develop and agree three-year implementation plans and funding applications in advance of each NLTP;
- leverage from existing workstreams and relationships

- building on and learning from TBCh work that is already underway within the city and wider region;
- sharing lessons learned and supporting partners to plan-deliver-evaluate-re-prioritise
- sharing lessons learned with others for the benefit of other cities in NZ

The proposed management structure for TBCh is shown in Figure 11-1, below.

Figure 11-1 - Proposed Management Structure



The TBCh Lead will feed back into LGWM by chairing an internal regular LGWM TBCh Coordination Group comprising the TBCh Lead, relevant LGWM workstream leads, LGWM Communications, and where relevant the Three-Year Programme Director and/or Programme Integration Manager. On occasion joint meetings of LGWM TBCh Coordination Group and the Management Team may be needed. The TBCh Lead will be responsible for ensuring coordination between the Management Team and the internal LGWM team.

These coordination meetings will:

- ensure the integration and coordination of TBCh activity by LGWM and partners with LGWM workstreams;
- discuss how refinements or enhancements to TBCh activities might be integrated with LGWM workstreams to maximise impact;
- support the TBCh Lead to develop and agree three-year plans and funding applications in advance of each NLTP;

11.4 Work Allocation Principles

The LGWM TBCh package will be delivered as a continuous improvement programme. The package will need to evolve and grow in response to changes in Wellington and as the LGWM Programme progresses. This means that there is potential for the way in which the delivery of TBCh initiatives is shared between the partners to change through time

Officers representing the LGWM partners have agreed on the principles demonstrated in the Figure (right) when allocating work packages to each of the delivery partners. In short;

- WCC will lead initiatives which occur within Wellington City (the bulk of package A in the SSBC)
- GWRC will undertake initiatives which occur outside of Wellington City (including regional first/last leg initiatives, referred to in the SSBC as package B initiatives)
- LGWM will undertake a broader, strategic role to develop relationships at central government level. The TBCh Manager (with support from the Management Team) will also use these delivery principles when developing each three-year implementation plan, and will consolidate delivery partner funding bids to be submitted under GWRC (as per 4 -Financial Structure)
- As the nature of travel behaviour change activities means that sometimes an 'all hands-on deck' approach is required, all delivery partners will collaborate and support each other on initiatives as required.

To aid future decisions, officers representing the LGWM partners have agreed the following principles for allocating work packages. It is intended that these principles will be used by the TBCh Lead (with support from the Management Team) as each three-year plan is developed in advance of a funding application to the NLTF. A final decision will be made by the LGWM Programme Director or Partnership Board (depending on the scale of the change proposed).

The LGWM partners have used these guiding principles to assign initiatives planned to be delivered within the remainder of the current NLTP (the 2022/23 and 2023/24 financial years). In many cases the principles will identify a clear lead organisation e.g. GWRC is best placed to lead initiatives associated with public transport or encouraging change outside Wellington City. Table 11-1, below summarises how work is to be allocated between the partners. Details of how each initiative is allocated for 2022/23 and 2023/24 are included in the first implementation plan.

Table 11-1 – Work Allocation Principles

Intervention Stream	Work Allocation
Policy, partnerships and advocacy	• Policy, partnership and advocacy led by LGWM. LGWM to establish partnerships with Government Departments and Agencies based in central Wellington. LGWM to promote the establishment of a private sector Travel Management Association.
Travel Planning and Life Changes	• School and workplace travel planning to be delivered by WCC. • GWRC to deliver travel planning to regionally significant destinations

(Workplace and Educational Influence / Communications Channels)	• GWRC to deliver specific activities (e.g. Movin March) in support of travel planning work. • GWRC to deliver Metlink branded activities to promote public transport
Events, experiences and incentives	• Different types of promotional events, activities and incentives will be led by the partner most suited to lead that particular type of initiative.
Marketing and communications	• The use of social marketing (including key messages and overall narrative) will be the responsibility of the management team. Delivery of specific marketing, communications and incentives interventions will be led by the partner most suited to lead each programme. For example, LGWM will lead communications related to network changes delivered by the programme. Metlink will continue to lead social marketing related to public transport. • TBCh Communications will be guided by the management team and delivered by LGWM. There is a preference for using existing channels established by LGWM or partner organisations.
Supporting services and amenities	• Supporting services and amenities will be led by the partner most suited to lead that particular intervention. • GWRC to deliver the training initiatives (e.g. Pedal Ready, scooter training, or Share the Road Training) using channels established by the wider team (i.e. via employers or schools).
Evaluation, research and reporting	• Any initiative delivered as part of the LGWM TBCh Package will have a documented plan including aims, resource requirement, outputs, expected outcomes and monitoring. Plans that are integrated with LGWM project infrastructure delivery will need to be developed within inputs from the relevant LGWM Project Manager and communications lead. • Performance information will be collated by LGWM who will use it to provide a report annually on the performance with reference among other things to its contribution to KPIs. The performance of the package will also be informed by work from the Wellington Transport Analytics Unit and WCC Research and Evaluation team as required. Performance reporting and lessons learned information will be used as key inputs to future funding applications. Quarterly reporting will be provided to the LGWM Board and Waka Kotahi.

11.5 Expected Resourcing Requirements

The TBCh package will need to be flexible and evolve in response to changes in the timing for the delivery of the LGWM programme. It is anticipated staff will be brought on incrementally as required during the 2022/23 year. For example, staff employed to work predominantly on school related activities may not come onboard until the beginning of the 2023 school year. Table 11-2 shows the resource requirements for the 2022/23 - 23/24 period. The estimates make no allowance for changes in the scope of TBCh and assume that the work share between partners stays stable. It is likely to change over time, in particular in the next NLTP as the scale of the work is further expanded , and additional elements such as the expansion of the BEATS programme are added. The Management Team will update the estimates in advance of each NLTP period.

Table 11-2 – Resource Requirements for 2022/23 - 23/24 Period

Org.	Total FTE (Full Time Equivalent) Required	Role / Functions Summary		Current FTE *(Can be Reassigned)*	Additional FTE Required	Non-staff Costs / Budget
LGWM	3.8	0.5 FTE 1 FTE 1.35 FTE	Behaviour Change Manager Monitoring, Evaluation, continuous improvement and reporting Partnerships, Outreach & Advocacy	1	($.39M)	$.557M
WCC	9.5	0.5 FTE 2 FTE 2 FTE 1.45 FTE 2 FTE	Social Marketing Specialist (Seconded to LGWM) School Travel Planners (scaling over time) Workplace Travel Planners Activation (Supporting Amenities + Events, Experience & Incentives) BEATS and Evaluation	2.3	($0.77M)	$2.1M
GWRC	5.8	2 FTE 0.5 FTE 2 FTE	First / Last Leg Activities Tertiary Educational Institutes Travel Planners - Regional Destinations	1.3	($0.78M)	$1.54M
Total	**19.2**			**4.6**	**($1.93M)**	**$4.22M**

Total Funding for 2023/24 = $6.151 million

Partner organisations have begun planning for changes in staffing levels.

11.6 Change Management Arrangements

The recommended TBCh package has been designed to expand and evolve as the LGWM programme matured. The implementation philosophy is to start with a small manageable package and grow this through time. A number of triggers for expanding the package were identified. This section describes how the TBCh Management should use these triggers when delivering the package.

11.6.1 Triggers for Change

Triggers for expanding the scope or resourcing for the TBCh Package include the:

- introduction of a parking levy for Wellington central city;
- introduction of rail and bus capacity and priority improvements[30];

Triggers for reducing the scope or resourcing for the TBCh Package include:

- discontinuation of the LGWM programme;
- inability to adequately demonstrate reach or impact of the initiatives within the package;
- inability to secure sufficient staff resource to deliver the package;
- insufficient interest from potential public and private sector delivery partners (i.e. organisations do not wish to participate)
- inability to establish the Transport Management Association proposed in this SSBC.

[30] Noting that Metlink will deliver their own wrap-around activities related to these and other changes

In addition, changes to the scope and direction of the package can be expected from consideration of how initiatives perform against the KPIs that will be developed during the pre-implementation phase.

Any changes to the scope of the package must be agreed initially before being approved by funders by the LGWM Partnership Board. The Management Team may agree to change which of the partner organisation is to lead initiatives within the package. Changes to the way in which work packages are allocated will be agreed by the Management Team except when consensus cannot be reached, in which case the decision will be elevated to the LGWM Programme Leadership Team.

Management of the TBCh package will need to be forward-thinking. Many of the triggers identified above will need to be planned for in advance. For example, planning for TBCh communications and social-marketing activities designed to support a pricing tool would need to start at least a year in advance of a charge becoming operational.

The adoption of a three-year planning cycle and ongoing evaluation of the package performance will be the key mechanism for maintaining flexibility and considering what resource will be needed within the coming NLTP period. There may be exceptional circumstances when scope changes need to be agreed outside the three-year planning cycle.

11.7 Continuous Improvement

To be successful, TBCh initiatives need to consider and respond to the diverse communities and the environmental context of a city or suburb; an initiative that is successful in one part of the city, or with a particular community, may not be successful if delivered elsewhere. Continuous improvement is vital for ensuring the value of travel behaviour change in Wellington is maximised. Rigorous application of continuous improvement will also allow the team to apply innovative approaches, retaining what works and discarding or improving other initiatives.

Monitoring and evaluation is essential because it will:

- allow LGWM and the delivery team to understand the extent to which benefits are being realised
- capture lessons learnt and pave the way for continuous improvement (pilot, test, grow)
- allow the LGWM partners to demonstrate the value being delivered and support applications for funding from each three-year NLTP period
- share experiences and learning thereby contributing to the body of evidence for TBCh in New Zealand.

Ultimately the continuous improvement system will need to answer the following questions:

- what outputs has the travel behaviour package delivered?
- how many people have been reached and are aware of the package?
- how many people have participated?
- how much is travel behaviour changing within the target audience?
- how much has readiness to change shifted?
- which initiatives have been successful? why? why not?
- how could initiatives be changed to achieve more?

An active learning programme methodology will be used as part of the continuous improvement method. This will involve the use of the Waka Kotahi Project Management Plan template.

Evaluation will be undertaken at two levels:

- initiative level by the delivery team (supported by the Continuous Improvement Lead); and
- package level by the LGWM TBCh team.

To bake continuous improvement into the DNA of the package, it will be a requirement that a concise plan is developed for each initiative within the package. Each plan should document:

- aim & objective / a problem statement;
- inputs, resource requirements, timing external influences, outputs, and desired outcomes;
- a monitoring and evaluation plan documenting what will be measured for each initiative.

As far as possible data and information shall be sought on the outcomes from each initiative (i.e. level of short, medium, and long-term change). Additional guidance is provided in Table 11-3 as an example of the tools that are possible for process evaluation. A detailed evaluation process will be developed in pre-implementation.

Table 11-3 – Initiative Evaluation Planning Guide

Problem statement	Inputs	Outputs: (Activities)	Outputs: (Participation / Reach)	Short Term Outcomes	Medium Term Outcomes	Long Term Outcomes
What is the underlying issue that you are trying to address? Who is affected by it? What are the root causes of the issue? The problem statement should be targeted and specific, but not simply state the need for your program. What are the KPIs that you are working towards?	What resources do you have? Consider: people funding time knowledge networks places and spaces equipment partner organisations community groups	Describe and count the activities that are part of your program. What will have been done when you have finished delivering the program?	Who is the target group for your program? What are the demographics of this target group? Who else is involved and what is their role?	What will be different if your activities are completed? These outcomes would usually be expected on completion of a program, and often include changes in skills, knowledge, attitudes, awareness, or motivation.	What changes will happen as a result of your program? Medium-term outcomes may take some time to see, such as changes in behaviour, practice or systems, or the application of skills and knowledge.	This should link to your goal and resolve the issue in your problem statement. It is likely to take a long time to see these outcomes, and they will usually be influenced by a range of factors outside of your program.
		Be careful not to confuse outputs (what is delivered) with outcomes (what changes are caused). Is there evidence to suggest that the activities will lead to the outcomes?		Will the short-term outcomes logically lead to the medium-term outcomes?	Is the connection between long- and medium-term outcomes supported by theory or evidence?	
Assumptions What unexamined beliefs do you have about how or why the program will work? This could include assumptions around the participants, engagement, activities, etc.				External Factors What is outside your control but will impact your program? Programs are situated in political, social, cultural, and geographic environments that influence program delivery and outcomes.		

It is acknowledged that attribution will be a major challenge. It can be almost impossible to separate the level of travel behaviour change attributable to "soft" interventions from those associated with network or infrastructure changes. Evaluation of human behaviour change programs is a specific field and requires a mixed method approach of qualitative and quantitative evaluation. The scale of LGWM activity in Wellington will require behaviour change to be considered at a city scale as a component of the larger LGWM Programme. The LGWM TBCh team will be responsible for working closely with the Wellington Analytics unit (WAU), combining information about delivery of TBCh initiatives with wider transport and land-use metrics. . The evaluation and monitoring plans developed in the pre-implementation phase will consider a range of inputs to gather an overall picture of success

Table 11-4 describes the types of evaluations that could be used across the LGWM TBCh package. Evaluation of individual initiatives will largely be focused on outcomes with focus on impact where information is available. These evaluations will be informed by information and data gathered at the initiative level and supplemented by other data source.

Table 11-4 – Evaluation Types Required Across the Package

Evaluation type	Considerations
Organisational structure / community capacity building evaluation	Travel behaviour change programme FTE, FTE in partner/community organisations implementing travel behaviour change initiatives; travel behaviour change programme funding; number of partnerships; diversity of partnerships; NGOs and other organisations implementing or supporting travel behaviour change measures in the travel behaviour change programme
Process evaluation / programme monitoring	Evaluation of how well an initiative or activity (the 'process') has been delivered. This can involve collection of data including: number of activities and events annually; number of people reached; number of people participating in activities and events; number of communication actions against a target.
Outcome evaluation	Evaluates the performance of a suite of activities against the planned outcomes. For example, an increased awareness/recognition/positive opinion of overall travel behaviour change programme brand and offerings; satisfaction with experience of using non-SOV travel; personal anecdotes about changes in travel behaviour, improvement in quality of life; resident satisfaction with the overall travel behaviour change programme
Impact evaluation	Reduction in number of vehicle driver trips/kms over the longer term (central city plus elsewhere) Reduction in tonnes of CO2 equivalents emitted; reduced congestion and parking demand; increase in leisure/recreation trips using active modes; long-term changes in attitudes/beliefs/intentions (overall/community level) - if using Stages of Change behaviour change model, this is assessed here. This may include beliefs related to safety, convenience, social norms, cost, time, etc. Changes in programme participants' lives that are attributable to the travel behaviour change programme - increase in social cohesion; increase in economic mobility; improved equity outcomes; improved health and wellness outcomes; improved quality of life

A range of information sources will be needed for evaluation. Some of this might be information gathered from the individual initiatives. Additional data and information will be needed to inform impact evaluation. Much of this may be sourced from the WAU or the partner organisations including:

- socio-economic demographic data;
- travel diaries;
- multi-modal traffic data;
- journey to work / school mode share

- system occupancy
- vehicle kilometres travelled;
- estimated transport CO2 emissions

The budget allows engagement and facilitation of partnerships with academic institutes who can support evaluation of the package and bring additional vigour to the work. An exemplar is the Built Environment and Active Transport to School (BEATS) programme[31]: an interdisciplinary and multi-sector research programme founded as a partnership between academia, schools, local government, and the wider community (UoT 2020). The findings from this programme are helping inform future interventions for change, education campaigns and policy development in its area of focus, in the same way the TBCh programme can inform travel behaviour change in New Zealand.

11.8 Reporting and Accountability Framework

Monitoring and Evaluation activity will be ongoing, and carried out within the continuous improvement framework that will be developed (a position at LGWM is proposed for funding, part of whose role will be continuous improvement). Interim package evaluation reports will be prepared by the LGWM TBCh Lead quarterly and provided to the Management Team who will meet to discuss the performance of the package and agree any areas where improvements or changes are needed. Quarterly and annual performance reports will be developed by the LGWM TBCh Lead and provided to the LGWM Programme Leadership Team, Partnership Board and Waka Kotahi.

Interim and annual reports will be available to everyone within the LGWM team and partner organisations. The results of the evaluation process will inform the funding applications in advance of each three-year NLTP period.

Budget has been allowed to enable reporting to be available via dashboards (some showing real-time data) and annual reports documenting insights and tracking progress. Reporting obligations for the LGWM TBCh team and partner organisations are listed below:

LGWM TBCh Team

- three-year TBCh programme implementation plan to secure funding for each NLTP period
- Quarterly interim evaluation reports
- Annual reporting on package performance
- Support to delivery teams on their reporting obligations
- Coordination of continuous improvement, monitoring and evaluation

Delivery Teams

- Initiative Delivery and Monitoring
- Initiative Completion Evaluation or, for longer running initiatives, bi-annual evaluation updates
- Input into the three-year TBCh programme implementation plan for each NLTP period

[31] https://www.otago.ac.nz/beats/otago615929.pdf

11.9 Managing Change

The discussion earlier highlighted the circumstances that could trigger a change in the delivery of the package. These triggers and any others that emerge during the delivery of the package will be discussed at each quarterly review meeting. A programme methodology using the Waka Kotahi Project Management Plan methodology will be used to handle the high degrees of uncertainty and rapidly changing nature of the work. Small changes to the scope or focus of individual initiatives will be agreed by the TBCh Management Team. Any more significant changes affecting staffing requirements or total budget will need to be agreed by the LGWM Partnership Board. Waka Kotahi, as funding partner, will have the ability to probe funding applications in advance of each NLTP application

Using the ongoing monitoring data and evaluation findings the Management Team will decide:

- how has the package risk profile changed since the last quarter? what are implications moving forward?
- which initiatives should be revised / improved? how?
- which initiatives should be discontinued? why?
- which new initiatives should be introduced to respond to a particular gap or need? why?

The performance of individual initiatives should be reviewed every quarter. Underperforming initiatives will be reviewed and improved to improve their performance. Continued failure of a particular initiative within a three-year period should result in that initiative being discontinued.

11.10 Risk Management Arrangements

This section highlights the key risks associated with delivering the LGWM TBCh package. Table 11-5 identifies the key risks that have been identified to date as well as the proposed controls. This register will be continued to be updated as the implementation plan is developed in the pre-implementation phase The LGWM TBCh Lead will be accountable for managing these risks and maintaining the risk register. The TBCh Management Team will be collectively responsible for identifying new risks or opportunities, and for implementing agreed controls.

Table 11-5 – Risk Register

Risk Description (Cause & Consequence)	Impact	Probability	Risk Score	Controls
Sufficiently skilled resource pool for delivering the programmes is not available in in New Zealand / Wellington.	Very High	Possible	High	Include training and associated budget to grow the capability within existing teams and develop new staff
Minimal external engagement means that it is difficult to reduce the uncertainty around the effectiveness of the package	High	Unlikely	Medium	SSBC (Single Stage Business Case) explains the benefit of co-design with target communities (e.g. employers and State Services Commission).
The TBCh package proposed doesn't deliver the outcomes we expect.	High	Unlikely	Medium	Based on best practice; staff expected to deliver the package interventions are involved in its development, using social marketing principles that should help with customer uptake/ public receptiveness. Business case needs to incorporate ongoing and regular monitoring and continuous improvement – pilot, test and grow
Victim of its own success - too many people try to get the bus and they get left behind. We lose trust from people who might otherwise have changed	Moderate	Possible	Medium	Metlink will be engaged as part of the Management Team. Recommended package will have geographically targeted messaging. Business case needs to incorporate ongoing and regular monitoring and continuous improvement + pilot, test and grow
Push back from the community	Moderate	Unlikely	Low	Engage with the press at key points and provide material for stories that align with our messaging; TBCh team to build this into their approach. We are being careful with tone to make TBCh understandable presenting concepts in a way that sounds inclusive and not patronising
Timing of package implementation could have an impact on the ability of the package to deliver on its objectives. If the package implementation is not aligned with disruption, the opportunity to capitalise on the trigger presented by disruption may be missed.	Moderate	Possible	Medium	Continue to work closely with other workstreams
Change of government - different priorities and less emphasis on mode shift/soft measures (funding changes, policy changes) could derail the ability of the travel behaviour change package to deliver on its intent	High	Possible	High	Outside of the realm of influence. The existence of an easy-to-understand programme - clearly articulating the benefits and reasons for funding – could help mitigate the risk
Equity Concerns - Additional investment in certain parts of the city (e.g. central city and inner suburbs) can be a clear win from a return on investment or affordability perspective but is less defensible from an equity perspective. This means those that could benefit the most from travel behaviour change are the hardest to reach (e.g. people on low incomes, ethnic minorities) and therefore it is costlier to work with them. This could lead to people benefitting from travel behaviour change inequitably due to budget or resource constraints.	High	Possible	Medium	This could be managed through co-design and by working specifically with people facing transport inequity. Pre-implementation engagement will be essential to ensure the greatest impact for spend is reached. Consideration of impacts on equity will be included in the planning phase Building capacity and partnerships by increasing collaboration with community organisations, local iwi, and kaumatua
The package does not deliver the full objective of the programme. This is due to a limit as to how much can be achieved through voluntary measures alone.	Moderate	Possible	Low	The travel behaviour change package could start with voluntary measures and shift to mandatory programmes as the programme matures.
Congestion charging may be introduced instead of the Parking Levy	High	Possible	High	Outside of the realm of influence, but the TBCh interventions designed to flank the Parking Levy would need to be redesigned to focus on using a congestion charge as a trigger for TBC
TMA (Transport Management Association) does not achieve what is expected of it	High	Possible	High	Comprehensive plan for TMA including business plan, memorandum of understanding and set up based on successful (overseas) case studies

12 Next Steps

Implementation of TBCh initiatives over the coming decade will be sequenced to respond to the triggers and opportunities as they emerge. A flexible approach will be adopted whereby the package can respond to changes within the wider LGWM programme and wider city, and the willingness of stakeholders to participate.

The implementation phase for TBCh initiatives will commence with 'Package A' initiatives – these are predominantly the existing initiatives already being delivered by the Delivery Partners. Some Package B activities will also commence in the first two years.

It is anticipated that development and delivery of the pre-implementation phase activities, including undertaking engagement with identified target audience groups, and development of the evaluation and monitoring framework will run concurrently with Package A (BAU) activities. Development of new initiatives, including new region-wide, 'first/last leg' initiatives, will be developed using the insights from the pre-implementation engagement process, and will be implemented once planning has been completed and new staff have been employed.

Pre-implementation work will also involve:

- The development and approval by the LGWM Partnership Board and the three LGWM Partner Chief Executives of a detailed 2022/23-2023/24 Implementation Plan;
- Detailed planning and coordination of TBCh with other parts of the LGWM Programme, and in preparation for the next NLTP/LTP;
- Standing up the LGWM TBCh team and function, including establishing the TBCh governance and integration arrangements set out in this Management Plan;
- The development of KPIs for TBCh, including their approval by the LGWM Partnership Board;
- The development of a monitoring and evaluation framework;
- A review of the risks and their management set out in the SSBC;
- The detailed development of a change process for adjusting priorities and moving resources to new activities or existing well-performing activities.
- The hiring of staff by WCC and GW;
- Gathering insights to create an understanding of target audiences.

In the first year, much of the effort will need to focus on establishing the building blocks from which to deliver the package with confidence. This will include

- establishing and further deepening existing partnerships with private and public sector organisations[32],
- establishing workplace / educator communications channels
- confirming the appetite for a central city private sector Transport Management Association (agreeing its remit) and
- planning activities and initiatives to "wrap-around" implementation of the LGWM three-year programme,

In the first three years, TBCh efforts will need to be integrated with communications relating to construction or service changes to minimise the impact of disruption caused by LGWM initiatives,

[32] i.e. academic institutions, major employers and regional destinations, the Public Service Commission responsible for staffing Government departments.

and disruption related to the renewal or repair of utilities and services (e.g. water pipes/ infrastructure).

A new, updated three-year implementation plan will be developed and agreed before the start of the 2024/25 – 2026/27 NLTP/LTP period. This planning will need to align with the timeframes developed by Waka Kotahi and Councils. This will need to take account of the updated LGWM Programme including if there are any moves to implement a Congestion Charge or Parking Levy. It will also address the way that the new Implementation Plan will incorporate First/Last leg activities, and any new TBCh proposals that might enhance the SSBC, including BEATS programme enhancement and TBCh activities that address regional destinations.

The TBCh Lead will be responsible for coordinating this activity.

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Appendix A: Benefits map

Let's GET Wellington MOVING

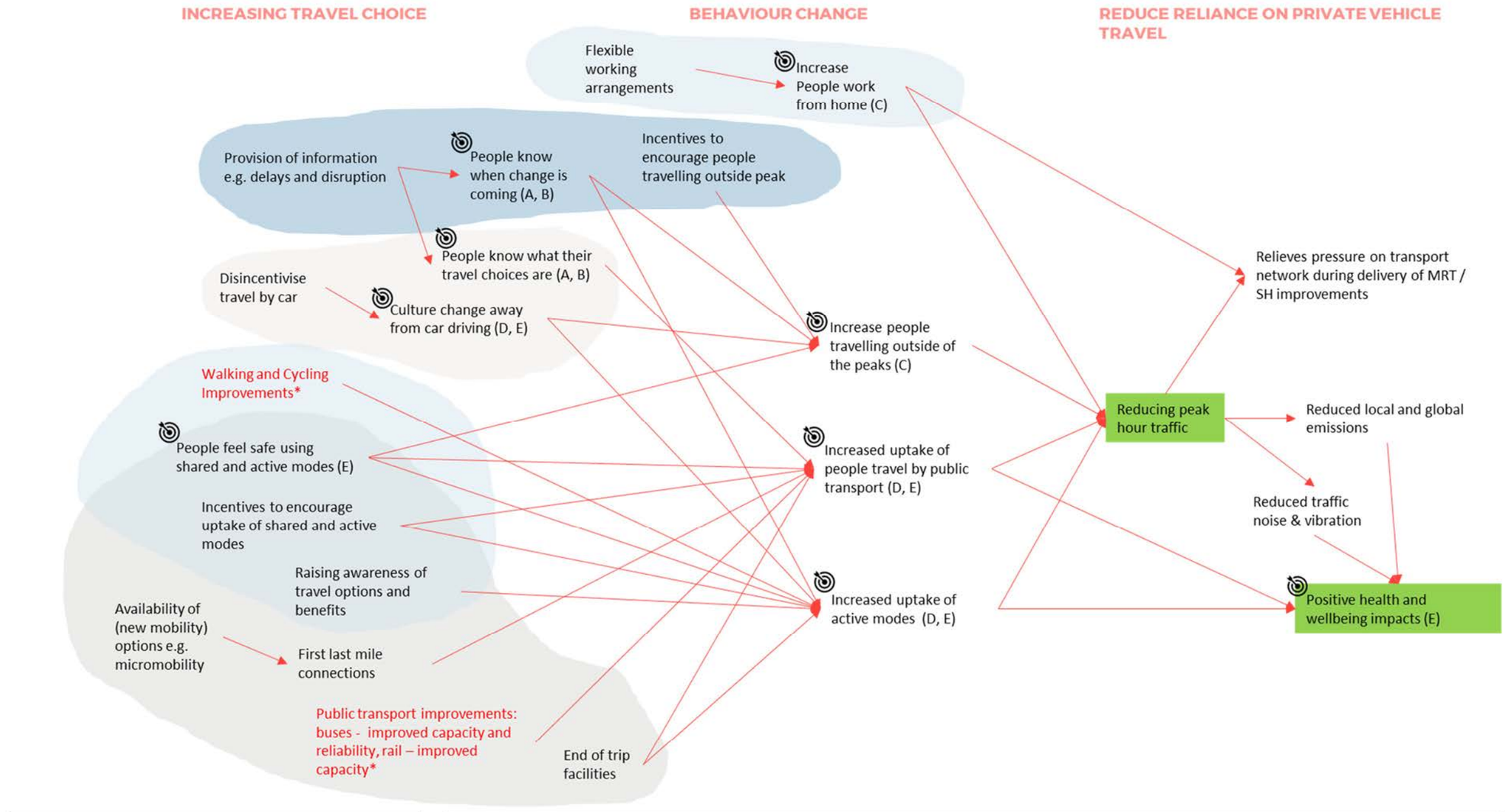
R1
28/10/2020

LGWM TBC Package: Benefit Map

BENEFIT	INVESTMENT BENEFIT	MEASURE	DESCRIPTION	BASELINE	TARGET
Less traffic in the city centre	More people using active modes	Access – Perception (active modes)	Perception of safety and ease of walking and cycling through customer and travel surveys	52% perceive the overall state of cycling in Wellington to be good based on a survey of 500 people in 2018 (May 21st – June 24th 2018)	To be confirmed Value Mm/yyyy
		Mode share	JTW Mode to Wellington CBD (2018 GWRC analysis, 2018 Census data) TTS mode share for Wellington Region (2018 Census data)	**National Travel Survey - JTW Mode to Wellington CBD** : drive 35%, bus 20%, rail 20%, walk 20%, cycle 5% **Census - TTS:** Wellington Region - 34.6% passenger in vehicle, 25.8% walk or jog, public bus 9%, drive vehicle 7.6%, study at home 5.9%, train 5%, bicycle 2.9%	To be confirmed Value Mm/yyyy
	More people take public transport	Nos. using active travel and PT	Central city annual cordon counts	**2019 Cordon counts**: Pedestrians 10,587; Cyclists 1,862 Public Transport (Rail, Bus, Ferry, Cable) 29,748 Vehicles (cars, motorbikes, vans, taxis, light and heavy trucks) 27,377	To be confirmed Value Mm/yyyy
		Access – Perception (Public Transport)	Metlink customer satisfaction surveys (bus and rail)	91% of customers are satisfied with the public transport in Wellington. 93% of train customers are satisfied and 90% of bus customers are satisfied (Nov 2019)	To be confirmed Value Mm/yyyy
	make best use of the transport network	Vehicle occupancy	Average number of people per vehicle (for trips to the city centre)	Private vehicle occupancy was 1.36 in 2019	Peak period private vehicle occupancy 1.45 by 2025
		People working from home	Calculated from TTW 2018 census (people with employment location in Wellington City)	Wellington Region 9%; Wellington City 8.1% 2018 Census	To be confirmed Value Mm/yyyy
		Peak intensity	Weekday traffic, bus and rail peak intensity as proportion of daily demand	To be confirmed Value Mm/yyyy	To be confirmed Value Mm/yyyy
Improve community health and wellbeing	Improved community health and wellbeing	Physical health benefits from active modes	Increased activity levels (as monitored in the NZ Health Survey)	**NZ Health Survey** Wellington Region 2014-17 Physically active 55.1% Highly physically active 48.5% Little or no physical activity 9.5%	To be confirmed Value Mm/yyyy
		Social connectedness	no. personal connections within communities	Collect baseline data as part of the 'Neighbours day' initiative; phone survey/ geo-fenced social media campaign	To be confirmed Value Mm/yyyy
		Social connectedness	no. people who know their neighbours	Collect baseline data as part of the 'Neighbours day' initiative; phone survey/ geo-fenced social media campaign	To be confirmed Value Mm/yyyy
		Tonnes of CO_2 equivalent emitted*	Reduction in tonnes of CO_2 equivalent emitted* (regional)	1,655,812 tCO_2e May 2020 (2019 emissions)	To be confirmed Value Mm/yyyy

Appendix B: The relationship between benefits and objectives

The benefit map below demonstrates the interplay between the investment benefits and objectives .



Key:	
*	being delivered outside the scope of this project
	Investment Objectives (X refers to objective A-E on the right)
	Investment Benefits

TBC package objectives (for reference purposes)

A. improve access to and through the central city ensuring people know that the available travel choices will work for them

B. minimise disruption to people and business by making sure they are aware of upcoming changes, how it will affect their journeys and understand their travel options during delivery of work to improve and renew the city

C. make best use of the transport network by encouraging people to travel less often and at less busy times

D. make best use of the available transport options by reducing the proportion of people that drive alone during busy times + or for short trips

E. improve the health, safety and wellbeing of communities by increasing the number of trips that involve active modes and public transport

Appendix C: Ministry of Transport guidance on travel behaviour change

Travel Demand Management (TDM)

The application of strategies, policies and interventions (infrastructure and non-infrastructure) to create and manage (passenger and freight) transport system capacity by redistributing trips across a variety of transport modes and routes, at a range of times, or by removing them completely.

TDM OUTCOMES – THE FOUR Rs

RE-MODE (MODESHIFT)
Changing the mode of travel people use from private vehicles to public, active and micromobility transport modes

REDUCE (TOTAL TRIPS / VEHICLE KILOMETRES TRAVELLED)
Reducing the number of (primarily) private vehicle trips on the network (eg increased working-from-home, car-sharing)

RE-TIME
Encouraging travel at different times of the day (e.g. increased off-peak travel for commuters and freight)

RE-ROUTE
Encourage / require people to avoid (primarily) driving on specific routes (eg outside schools at certain times of day)

TDM CAN CONTRIBUTE TO A NUMBER OF BENEFITS

1. Reduced greenhouse gas emissions and improved local (street level) air quality
2. Reduced transport-related fatalities and injuries
3. Improved public / mental health outcomes through increased physical activity
4. Economic efficiencies, cost savings, and recovery
5. Improved neighbourhood / street level liveability and amenity
6. Improved land-use integration and removed need for some road infrastructure
7. Improved access to opportunities
8. A more efficient and optimised transport system
9. Provide people with a greater range of transport options

TDM MEASURES ARE BETTER APPLIED IN COMBINATION – FOR EXAMPLE
Investment: dedicated bus-lane and separated cycle way on a congested corridor
Pricing: a congestion charge administered along the corridor
Information: campaign to raise awareness of new charges (what, where, why, how) with information about improved alternatives to the private vehicle travel
Incentives: Free/discounted bus pass and e-bike subsidy

TYPES OF TDM LEVERS

Coordinated Strategic Planning	Specific Plans, Policies and Regulations	Integrated Transport / Land-use Planning	Capital Works and Service Improvement	Information and Promotion
eg coordinated and aligned goal setting across different government strategies to ensure key outcomes are met	eg transport pricing, emissions regulations, travel plans, removal of minimum parking requirements and parking management, flexible working	eg transit-oriented development, master-planned development that encourages alternatives to private vehicle ownership and single occupant travel	eg new or improved public transport infrastructure and services, walking/cycling paths, cycle parking, car-share services	eg Mobility as a Service (MaaS), journey planning apps, social marketing including direct and mass

TDM methods can be categorised in polarised ways - incentives and disincentives, push and pull, sticks and carrots. The most effective TDM approach is the application of both categories together as people do not respond to methods uniformly.

TDM, where possible, should undertaken in a cross-sector manner as levers do not always sit within transport organisations and benefits are broad (eg addressing school travel challenges requires collaboration with the education sector).

Ministry of Transport
TE MANATŪ WAKA

Draft TDM Principles

1. The '4 Rs' (desired travel outcomes) should guide transport (and related) policy, planning and investment decisions
   - **Re-mode** - Changing the mode of travel people use from private vehicles to public, active and micromobility transport modes
   - **Reduce** - Reducing the number of (primarily) private vehicle trips on the network (eg increased working-from-home, car-sharing)
   - **Re-time** – Encouraging / requiring travel at different times of the day (e.g. increased off-peak travel for commuters and freight)
   - **Re-route** - Encouraging / requiring people to avoid (primarily) driving on specific routes (eg outside schools at certain times of day)
2. Opportunities to achieve Re-mode and Reduce outcomes should be considered ahead of Re-time and Re-route
3. Integrated land-use and transport planning be undertaken to achieve the '5 Ds' built environment outcomes
   - **Destinations** – Major destinations and centres located at public transport stations (eg Transit Oriented Development) or along corridors
   - **Distance** – A walking network that enables fast, safe and direct walking connections to various opportunities and public transport services
   - **Density** – Higher levels of residential and employment density to support more local amenities within walking and cycling distance, and justify high levels of public transport service
   - **Diversity** – A diverse mix of land uses and housing types makes it easier to live, work, shop, and play without having to travel far
   - **Design** – Well-designed buildings and public realm create places that feel interesting, pleasant and safe to walk or cycle in
4. To improve effectiveness, interventions should be applied in combination and in a manner that reflects specific contexts and stated objectives (eg infrastructure improvement, pricing and marketing) – there is no silver bullet
5. Planning and construction of new developments and neighbourhoods must:
   - cater for multi-modal access, both internally (if large-scale) and externally, as applicable
   - be designed in ways that discourage single occupancy vehicle dependency e.g. car share car parking is planned from outset.
6. Interventions should where possible (and equitable) seek to reduce vehicle kilometres travelled (VKT) on the network
7. TDM should be considered and undertaken (as much as possible) in a cross-sector manner because levers do not always sit within transport organisations and benefits accrue for other sectors (eg economic, health and education) too
8. To encourage sustainable travel and reduce GHG emissions the low carbon transport hierarchy should be applied to policy, planning and investment decision-making
   - Walking > cycling > micromobility > public transport > electric car > petrol/diesel car > air

Appendix D: Significant Projects in the Wellington Region over the next 15 years

The table below identifies critical projects being delivered over the next fifteen years and the impact they will have on the TBC package being delivered as part of this workstream.

While a project is yet to be established, GWRC will also working to facilitate availability of technology and apps to support shared or active mobility choice and parking management tools. It understood that this project will be completed before 2025.

Project	Planned years until completion	Links or dependencies with the TBC outcomes
Central City Pedestrian Improvements	1	This project will make walking safer and faster for pedestrians through adjustments to traffic signals and other relatively small changes to improve pedestrian safety.
*Golden Mile	2–3	The Golden Mile is the busiest part of the Wellington central city and is also the main bus route. The Golden Mile project is focused on improving this section of road for pedestrians, cyclists and buses. The project provides opportunity for mode shift for people traveling to/from and through the central city and improved safety.
*Thorndon Quay & Hutt Road Improvements	3–4	This project will deliver priority for buses with improvements for walking and cycling including enhanced safety. It will provide an opportunity to people travelling to the central city from northern suburbs to change their travel behaviour.
*City Streets	3–7	This project involves road space reallocation and improvements on streets within the central city and along radial routes in order to provide access to the central city from surrounding suburbs to enable the transport system to move more people with fewer vehicles and to improve access for all modes. The TBC package needs to be developed with an understanding of the bus priority plans and provisions proposed for cycleways and pedestrians. The construction of City Streets will also create disruption in the normal transport network which is an opportunity for TBC.
*Mass Rapid Transit (MRT)	10–15	This project is to deliver an MRT system from Wellington Railway Station, through the central city and to the south and east of the city. (the final route is still to be confirmed). MRT is a new opportunity for mode shift as it may relieve capacity on cycleways and buses. The construction of MRT will also create disruption in the current transport network which is an opportunity for TBC.
*Parking Levy	5–10	This project has the potential to enhance mode shift by acting as a catalyst to stimulate organisations to review fleet or parking benefits, provision and policies. The opportunity for TBC as a result of the levy would need to be harnessed by delivering a package of interventions built on behavioural economics principles to influence commuter behaviour
*Strategic Highway Improvements	10–15	This project is tasked with unblocking congestion on SH1 particularly around the Basin Reserve, with the possibility of a second Mount Victoria Tunnel (final route to be confirmed). The construction of Strategic Highway Improvements will create

Project	Planned years until completion	Links or dependencies with the TBC outcomes
		disruption in the current transport network which is an opportunity for TBC.
Transmission Gully	1–2	The construction of a four-lane motorway running from MacKay's Crossing to Linden through Transmission Gully will significantly cut journey times from the Kāpiti Coast to Wellington City. It is expected that the opening of the motorway will shorten travel times by road and lead stronger growth in the north of the region. Transmission Gully and other significant transport projects that connect Wellington City to the wider region allow people to live further away than they may have otherwise.
National Integrated Ticketing Programme	2 (rollout in Wellington)	This project, also known as Project NEXT, is to establish a nationally consistent integrated ticketing system for public transport. A new ticketing system would supersede the Snapper cards, encouraging public transport patronage and contributing to mode shift due to the simplification of multi-modal travel.
Bike Racks on Metlink Buses	Ongoing	All new Metlink buses added to the fleet will come with a bike rack to safely carry two standard bikes. Plans are in place to retrofit the interim with this feature. This would support multi-modal transport and would improve the perception of being a more reliable way to travel.

*To be delivered as part of the LGWM programme.

Appendix E: Travel behaviour trend sources

- Travel Demand Management Customer Insight Survey (Nexus 2019b): 1404 respondents in the Wellington region (aged 15+), 15-minute online survey
- Wellington Commuter Parking Levy Draft Survey (LGWM 2020b): A random sample was drawn from 40,000 phone numbers in the Wellington Region (including mobiles) Of these, 1,500 respondents agreed to participate in the survey,
- In late 2019, Wellington City Council undertook a parking survey that was emailed to the council's "secondary online panel". There were 2,225 self-selected respondents who were not necessarily representative of all CBD users.
- Greater Wellington Regional Council (GWRC analysis, 2018 Census data): Primary analysis of 2018 Census data by the Wellington Analytics Unit at Greater Wellington Regional Council
- TomTom data (TomTom 2019): real traffic data in Wellington
- NZ Household Travel Survey (MoT 2020), only limited information from the 2018 travel survey was available at the time of writing this business case
- Regional Mode Shift Plan (WKNZTA 2020a)

Appendix F: Case study summary

Our team completed case studies of 32 regional/citywide TDM schemes and individual TDM programmes. Of these, we selected 12 that show the most relevance to the Wellington effort, and whose evaluation methodology was (unlike many) rigorous and defensible. The case studies selected also reported on the reduction in single occupancy vehicle trips.

Case Study name	Outcome	Type of initiative	Supporting infrastructure
Case Study: Seattle Children's Hospital	This comprehensive TDM campaign at a hospital campus achieved a reduction of 6% in single occupancy vehicles (SOV) trips over 10 years and indicates sustained change. As a condition of approval to do a large-scale expansion on site, the City of Seattle required the hospital to commit to reducing their drive-alone employee mode share from 38% to 30% between 2008 and 2030, and the hospital is on track to accomplish this.	Travel plans	Major transit investments; served by premier bicycle path in the region. Surrounded by affluent residential region, making offsite parking difficult.
Case study: Santa Monica TDM	Santa Monica, a Blue Zone[33] with a leading micromobility offerings, light rail and active transport amenity, implemented a mandatory employee commute reduction plan, monitoring, and reduction in fees if targets were met. The first year of implementation achieving a 4% reduction in resident drive alone rates.	Mandated employee commute reduction plan, monitoring, reduction in fees if targets were met, 'Blue Zone' initiatives	Leading city on micromobility (e-scooters, bike share); new light rail line opened in 2016; outstanding bicycle and pedestrian network.
Commuter Connections, Washington, USA	Collaborative regional programme in greater Washington DC area which has an excellent, but challenging subway service, strong cycling infrastructure and programmes. In three years between 2014-2017, the programme achieved a reduction of 14% in vehicle trips.	Targeting commute to workplaces	Excellent but troubled subway service; strong bicycle path network; improvements in on-street bicycling facilities but conditions still stressful; excellent bike share; congestion is very challenging.

[33] **Blue Zones** are regions of the world where Dan Buettner claims people live much longer than average. Through a project funded by the health sector, Blue Zone principles were retro-fitted into some California suburbs and the programme achieved increases in active travel- see bluezones.com for more information.

GoDCGo TRANSPORTATION PROGRAM, Washington, DC USA	This programme in Washington, DC The programme overall achieved a reduction of 45,500 vehicle trips over the reporting period of 2018-19.	Focus on hotel guests, schools, commuters, workplaces and residential areas	Excellent but troubled subway service; strong bicycle path network; improvements in on-street bicycling facilities but conditions still stressful; excellent bike share; congestion is very challenging.
Arlington Mobility Lab and County Commuter Services, Arlington, VA USA	A collaborative multi-party community wide programme reduced number of daily trips between 32,940 and 63,038.	Regulatory and soft measures	Excellent but troubled subway service; strong bicycle path network; improvements in on-street bicycling facilities but conditions still stressful; excellent bike share; congestion is very challenging.
Austin TDM Programme, Austin, TX USA	In 2017, the overall programme led to a 3.7% decrease in driving trips. City of Austin employees can earn additional vacation time by not driving to work. The Austin TDM programme is relatively new, energetically implemented, and a departure for this very auto-oriented region.	Regulatory and soft measures, increasing availability of transit, bicycle, and pedestrian infrastructure to increase travel by these modes.	Austin is sprawling and auto-oriented and has experienced crippling congestion as the population has grown. Non-SOV mode share is low but growing, and the city is making transit and bicycling investments.
The Mayor's Commute Challenge, Durham, USA	High-quality research testing the impact of personalised commute journey planning. During the initial test, delivering the journey planning to council employees resulted in a 9.3% reduction in SOV and a 9.3% increase in sustainable. A subsequent trial sending personalised journey plans to University students at North Carolina Central University led to a reduction in SOV of 7.1% and a 6.5% increase in sustainable	Automated journey planning	Durham is part of the sprawling Triangle Region, which is auto dependent and has poor transit and bicycling infrastructure.

	trips. The journey planning is automated, allowing for large-scale scaling.		
Seattle King County In motion TDM programme, King County Metro, USA	Over 12 years, this series of residential TDM campaigns saw a self-reported reduction in drive-alone trips among participants; over 18 different programmes, the majority resulted in a reduction in drive-alone trips ranging between 12 to 25 percentage points.	All trips all modes	King County Metro's transit offerings are quite good and have grown better in the last few years thanks to investment and smart planning. Cycling infrastructure varies a great deal depending on the specific location in the county.
Sydney Travel Choices, Sydney, Australia (TNSW, 2020)	Since 2015, the TDM programme (implemented over a period of disruption to the public transport network) which relied on participation of 850 businesses, achieved a 13% decrease in the number of vehicles entering the CBD in the morning peak.	Commuter trips	Comprehensive public transport network, growing walking/cycling infrastructure, heavy reliance on motor vehicles for short distances (within a 10km radius of Sydney's CBD)
Sustainable Travel Towns, UK (DoT, 2010)	Over five years, reduction of 7-10% in the number of car driver trips per resident. Soft measures were more effective when they were delivered alongside public transport improvements.	Combination of PT, walking, cycling infrastructure and soft measures	Public transport network, varying quality cycle networks

Model Communities project, New Zealand (NPDC, 2020)	Over two years, the initiatives observed a 44% decrease in cars at schools, 12% decrease in cars at workplaces. 30% increase in active travel compared to control sites.	Combination of walking, cycling infrastructure and soft measures	Public transport network, moderate level of walking and cycling infrastructure
From 5To4: promoting smart mobility to employees, Europe	The game succeeded in changing the travel to work behaviour of employees. The modal share of private car reduced from 65% to 42%. The game reached 100,000 employees with 23,400 players directly in the game	Gamification	Varying levels of public transport and cycling in the five participating towns

Appendix G: Wellington Commuter Parking Levy, Final Report, March 2021

Appendix H: Disruption scenario report and visuals

Appendix I: Option Comparison Framework

Appendix J: Appraisal Summary Tables

Appendix K: Economics Summary