

# The Congestion Question

WORKING PAPER

Could road pricing improve Auckland's traffic?

Workstream 5

## Demonstration project

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Working draft vA



New Zealand Government

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# 1 Introduction

## 1.1 Background

With the selection of the preferred Options for further refinement and consideration, the Project Team now has the opportunity to undertake initial investigations into the work required to support a demonstration project. Perceptions by some stakeholders and the general public regarding congestion pricing are likely to reflect a limited understanding of the concept and this could be a significant hindrance to its advancement. A successful demonstration of a simple congestion charging concept could be a key building block for developing future support for introducing a scheme in Auckland.

## 1.2 Purpose

The purpose of this paper is to provide an overview of the tasks required to support a potential congestion charging demonstration as part of the TCQ investigation. A demonstration project could provide an opportunity to gather a wide range of information about the potential benefits of congestion pricing and could assist in building community support for introducing a scheme in Auckland. It could also provide an opportunity to gain exposure to potential technologies and systems and allow agencies to identify and address the challenges and risks associated with operating a congestion pricing scheme.

## 1.3 Demonstration description

The terms 'pilot', 'trial' and 'demonstration' are frequently used interchangeably, but for the purposes of a potential Auckland project, given practical and legal constraints, the paper adopts the following description:

- The Auckland project would be a demonstration of a congestion pricing concept applicable to the local environment.
- The Auckland project would not be a small-scale enactment (pilot) of the preferred scheme options, and is not intended to be a pre-implementation stage, or a test of the final technology, charging system and enforcement model, and would not include the collection of revenue from users.

## 1.4 Outline

The briefing note is organised as follows:

1. **Introduction:** This section introduces the paper and contents.
2. **International Review:** This section presents a review of some international pilot and demonstration projects undertaken as part of investigations into urban congestion pricing as well as Road User Charge research.
3. **Evaluation Approach:** This section discusses the evaluation approach to assess the results from a potential demonstration project.



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4. **Auckland Demonstration Project:** This section sets out considerations for a potential Auckland congestion charging demonstration project, including the charging concept, demonstration size and coverage, technology and record-keeping model.
5. **Implementation:** This section discusses the proposed approach to project implementation including participant recruitment, project phasing, resources, budget and potential timetable.
6. **Conclusion:** This section presents the main findings around developing a congestion charging demonstration project for Auckland.

## 2 International review

### 2.1 Introduction

The international review conducted by D'Artagnan Consulting for the Steering Group found that only two jurisdictions currently operating congestion charging schemes conducted some form of pilot or demonstration project. Their review concluded that although not essential, these projects can be helpful, noting that Stockholm and Singapore both successfully implemented their schemes following a major pilot (6 months) and demonstration, respectively. As both cities learned, pilots or demonstrations can help for both external and internal reasons. Outwardly, they focus public discourse on something concrete, making the feedback more meaningful and relevant to the final scheme design. Inwardly, they prepare agencies for the challenges of delivery by identifying gaps in competence, systems, or inter-agency linkages. They can also reveal opportunities for technical improvements, such as Stockholm's decision to abandon costly and redundant DSRC and utilise ANPR exclusively for vehicle detection.

In addition to Stockholm and Singapore this section also discusses the 2016 Melbourne road usage study which used a light vehicle demonstration to examine issues around both congestion pricing and the sustainability of traditional transport funding mechanisms. In addition, we review the 2006 Dutch field demonstration which was designed to analyse the potential of rewards as a policy instrument aimed at incentivizing people to shift their travel away from peak periods. Finally, this section summarizes a number of recent road user charge (RUC) demonstration projects undertaken in the United States. Although these projects were not targeted at improving urban congestion, they provide insights on scale, technology, operations, participant recruitment, and communications.

### 2.2 Stockholm

As part of the political debate surrounding the idea of a congestion scheme, it was agreed to undertake a full-scale pilot for a period of six months prior to holding a referendum at the time of the 2006 general election. The decision to build a pilot scheme represented a substantial undertaking and required significant resources and funding.

The pilot was designed with charge rates set at what demand modellers assessed would be sufficient to reduce traffic volumes by around 10-15%. The cordon design was based on the topography and geography of Stockholm. This minimised the number of charging points and largely encompassed the CBD and inner city residential districts. The option of having different charges at each charging point was rejected as being too complex for users in the first instance.



The pilot ran from January to June 2006 and required everyone who wished to cross the cordon to pay the congestion tax. The pilot was considered a success, as volumes of traffic crossing the cordon dropped by 22% per day on average with emissions dropping over 30%. Based on these results media coverage significantly improved and in the following 2006 referendum a small majority (53%) voted in favour of reintroducing the congestion tax.

## 2.3 Singapore

Singapore was the first jurisdiction to introduce a paper based congestion pricing scheme in 1975 with its Area Licensing Scheme. The scheme evolved over the following 14 years, as exemptions for taxis, goods vehicles and cars with four or more occupants were removed in 1989, charging extended to the evening peak in the same year, and applied all day from 1994. The system was expanded further in 1995 and called the Road Pricing Scheme (RPS) by requiring licences for three major expressways. The Electronic Road Pricing (ERP) scheme replaced both the ALS and RPS in 1998, and over the following years it has evolved into a refined cordon and corridor based configuration.

Development of the ALS, RPS and ERP all involved public consultation and engagement. The government authority conducted a large scale public engagement exercise, including stakeholders such as road freight companies, fleet operators and motor vehicle associations, prior to introducing all three schemes. The public learned when and where the systems would operate and how they could pay and be compliant.

Although several technical trials occurred in advance of the introduction of ERP, the final trial demonstrated how it would work and helped with public familiarisation. The scheme was introduced on one road as a demonstration, before rolling it out to other roads to replace the ALS and RPS, helping build familiarity further.

## 2.4 Melbourne

The Melbourne Road Usage Study conducted in 2016 by toll operator Transurban was aimed at capturing insights into how Australian motorists responded to user-pays road-charging options. The study involved 1,635 private light vehicle motorists from Melbourne testing five user-pays charging options. It was designed to meet three objectives:

- to gauge motorists' knowledge and understanding of our current road-funding system and assess their attitudes and preferences toward user-pays charging options.
- to understand motorists' behavioural responses to different charging and implementation options.
- to prove that technology is not a barrier to implementing a practical user-pays system.

Conducted over 17 months, the study was undertaken in stages including a 12 month demonstration study with a sub-set of 70 participants who tested two road-charging models:

- Usage-based model – this tested participant responses to three usage-based charging options: charge per kilometre; charge per trip; and flat rate (capped kilometres).



- Congestion-based model – this tested how motorists responded to demand-management road charging that used pricing signals in congested area or at peak travel times.

Participants were recruited from three geographical zones within the Greater Melbourne region, with different levels of public transport services available. Upon recruitment, in-vehicle GPS devices were installed in participants' cars and their usual (baseline) driving data was collected for a minimum of 35 days (not including the end-of-year holiday period). Following this, participants drove under one of the usage-based charging options. For the final stage, a group of participants was transitioned onto the congestion-based charging options.

A control group of approximately 300 participants did not experience any of the charging options and continued driving as usual throughout the study period. This group was used to adjust observed behavioural changes for seasonal and external factors that would have been experienced by all participants.

Quantitative data was collected via the GPS devices and analysed to understand potential behavioural changes as a result of the charging options. Additionally, qualitative feedback was captured through a series of surveys completed by participants at key points throughout the study.

In line with common market research practices, participants were provided a \$100 gift card on joining the study. To simulate the financial impact of a real-world charging system as much as possible, virtual 'travel accounts' were created for each participant. By changing their road use, participants could be credited a maximum of \$80 per month, which was accumulated and paid out at the end of the study.

A bespoke solution was assembled to create an end-to-end system for the field-testing of road charging. This included integrating the sub-components, being the in-vehicle GPS devices, billing system, payment processing, exception-handling, and customer management.

## 2.5 Dutch peak avoidance reward demonstration

The 2006 Dutch demonstration was designed to analyse the potential of rewards as a policy instrument aimed at changing people's travel behaviour. Its purpose was to collect a large sample of empirical or revealed preference (RP) data regarding the effects of a reward on daily commuting behaviour during the morning rush-hour on the heavily congested A12 motorway. The demonstration engaged 341 volunteers (221 men and 120 women) living in Zoetermeer, a satellite city of Hague, who were observed to commute by car at least 3 times per week. Over a period of 13 consecutive weeks participants would receive daily rewards, either monetary (between € 3 and € 7) or in the form of credits allowing them to earn a Smartphone. These figures were estimated based on an initial stated preference exercise. 232 participants chose the monetary reward, while 109 chose the Smartphone. Participants could avoid peak-hour travel, here defined between 7:30-9:30 AM and earn a reward, either by driving at off-peak times (before or after the peak), switching to another mode of transportation (cycling, public transport or carpooling) or by working from home.

The first two weeks of the Dutch demonstration project were conducted without the rewards. The pre-test data on travel behaviour was then used to establish the reference travel behaviour and allocate



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participants to one of four reward classes which defined the maximum number of rewards they could receive each week. Participants who opted in favour of a monetary compensation were the subject of three consecutive reward “treatments” lasting 10 weeks in all: a reward of € 3 (lasting three weeks), a reward of € 7 (lasting four weeks) and a mixed reward (lasting three weeks) of up to € 7 - of which € 3 for avoiding the high peak (8:00-9:00) and an additional € 4 for also avoiding the lower peaks (7:30-8:00, 9:00-9:30). The order of the reward “treatments” followed a blocked randomization design that allocated participants to the 6 possible treatment order schemes. The final week (post-test) was also conducted without rewards.

The third stage of the study was the evaluation, in which questions were asked about the participants' subjective experience during the experiment. This dealt with their retrospective assessment of the adjustments in their behaviour (was it easy / difficult to adjust travel behaviour and how). Other questions were asked about their experience with the organization of the trial (provision of information, performance of the project's back office, etc.).

## 2.6 USA RUC demonstration projects

A number of states in the USA have been exploring alternative road funding mechanisms in responses to concerns around the long-term sustainability of fuel excise taxes. To support public and political engagement and explore technical and practical issues there have been a number of large-scale Road User Charge (RUC) demonstrations. In parallel, a few urban jurisdictions, notably New York, are actively considering the introduction of congestion pricing. Although no North American jurisdiction has undertaken a demonstration project with the objective of validating a potential congestion pricing regime, the RUC demonstrations do provide some helpful insights around communications, participant and vendor engagement. The demonstrations also identified that privacy and security concerns need to be pro-actively addressed.

### 2.6.1 Oregon RUC program

Based on the results of two previous demonstrations and the legislative support those efforts engendered, in 2015 Oregon implemented a road usage charge program for passenger vehicles in 2015. Called OReGO, the pilot program is limited to 5000 volunteer participants who are charged a rate of \$0.015 per mile, and credited for any state fuel taxes paid.

Motorists wishing to participate can sign-up online and provide their vehicle identification number, odometer reading and license plate number. From there they select an account manager and create an online account. Account managers are responsible for providing a mileage reporting device, assessing mileage, and collecting payment. OReGO offers both commercially operated and government operated account managers as options for participants. The Commercial Account Managers (CAMs) offer both a GPS enabled device that allows for the crediting of out-of-state miles and a “basic” non-GPS enabled plug-in device for participants who do not want their location collected. Participants who enrol with a CAM are offered a menu of value added services including:

- visual trip logs
- “achievements” for good driving behaviour



- safe Zones that notify when the vehicle has crossed a user defined zone
- engine health, diagnostic and other telematics based reports
- advanced navigation
- car finding service for use by smartphone
- remote vehicle use monitoring.

Government operated account managers are not GPS enabled, do not credit out-of-state miles and do not offer value added services.

### 2.6.2 California RUC demonstration

The California Road Charge operational demonstration began in July of 2016 and was completed in March 2017. A total of 5,100 vehicles were included in the demonstration, where they were assessed against a \$0.018 per mile charge, although unlike OReGO pilot, the Californian demonstration did not collect any money from participants. The demonstration relied on a number of private account managers offering different value-added services in addition to different road use assessment plans. As such, participants were able to choose from several mileage-reporting options, including:

- Time Permit - Participants purchase unlimited road use over a specific period of time
- Mileage Permit - Participants pre-pay for a certain number of miles and a certified reading was required at the project's beginning and end
- Odometer Reading - Participants pay based on periodic odometer readings which was verified at an official vehicle inspection station or via a smartphone app and photograph
- Plug-in Device (Location-based) - Participants use OBDII port in-vehicle equipment that transmits travel information to the account manager for fee assessment with out-of-state mileage and travel on private roads being credited
- Plug-in Device (Non-location-based) - Participants use OBDII port in-vehicle equipment that transmits road usage data but does not use (or transmit) location data)
- Smartphone - Participants use a smartphone app to record and report road usage.
- Telematics - Participants use professionally or factory installed, on-board systems within their vehicle to record and report road usage.

### 2.6.3 Colorado road usage charge demonstration program

Compared with Oregon pilot and California demonstration, the Colorado RUC demonstration was of a smaller scale with only 100 participants, including key stakeholders and members of the public. The design was intended to illustrate in practice how a road usage charge system could work in Colorado, to test technology and administrative systems, and to sample participants' impressions and opinions on road usage charges.

Demonstration participants were selected to achieve representation among geographic regions of the state and among different types of vehicles. No commercial trucks, motorcycles or passenger vehicles using diesel were included. The Colorado demonstration was designed to simulate payment mechanisms and mock "invoices" were issued to participants representing road usage charges and fuel tax credits. No



money changed hands, and there was no refund of participant expenses on fuel taxes. Participants were able to select one of three types of mileage reporting options, including:

- Odometer reporting – the participant provides a monthly odometer reading via a vendor website or mobile app. Before and after odometer readings are verified through odometer pictures at the beginning and end of the demonstration.
- Non-GPS enabled mileage reporting device – the participant utilizes an OBDII port device that records distance travelled, and fuel consumed.
- GPS-enabled mileage reporting device – the participant utilizes an OBDII port device with GPS, allowing vehicle location information to determine chargeable and non-chargeable miles driven.

## 3 Evaluation approach

### 3.1 Principles for evaluation

To maximise the value of any demonstration project, it is important to develop and agree on evaluation measures that capture the key points of interest. The following principles could potentially be applied in developing the evaluation measures for a potential Auckland demonstration project:

- Be measurable, concise and understandable
- Support the options development and evaluation exercise
- Support the social and equity assessment
- Provide insights around usability, design and technology
- Provide insights around driver behaviour and travel patterns resulting from a congestion charge
- Provide insights around public and motorist acceptability
- Support decision-makers to understand the findings of the wider TCQ project.

### 3.2 Evaluation framework

The Steering Group has adopted an evaluation framework based on the guiding principles set out by the TCQ's Terms of Reference. The framework identified three groups of assessment criteria (broadly: network performance; social impacts and practical considerations) that were used to undertake evaluations of various charging schemes. The same framework could potentially be modified and applied to the evaluation of an Auckland demonstration project where practicable, although, it is recognized that the small-scale nature of a demonstration means that useful data will not be generated for many of the individual measures. In addition, many of the potential demonstration impacts may be difficult to quantify, and in these circumstances, more qualitative measures will be required.

### 3.3 Public and participant surveys

In addition to data analysis, surveys would represent a major part of the demonstration development and evaluation exercise. In particular, a demonstration project provides an opportunity to present participants and stakeholders with information to explain the case for congestion charging and respond to negative information over the course of the demonstration program. International evidence shows that personal



experience as a participant appears to have a more significant impact on acceptance than general education efforts. In addition to supporting communications activities, on-going feedback from participants can also support improvements in the demonstration project.

The Auckland demonstration project is likely to undertake the following surveys:

1. Baseline survey of Auckland public
2. Pre-demonstration survey of participants
3. Mid-demonstration survey of participants
4. Closing survey of participants.

## 4 Auckland demonstration project

### 4.1 Introduction

This section discusses the key elements required to design and undertake a potential congestion pricing demonstration suitable for the Auckland environment, and supportive of the TCQ's main objectives and considerations. It draws on the international review and discusses the potential charging concept, the project size and coverage, technology and record-keeping model.

### 4.2 Objectives

Before embarking on a demonstration project, the objectives of the demonstration need to be considered and defined. There may be a number of reasons for carrying out a demonstration, for example:

- To prove a technology
- To test ability to influence driver behaviour
- To undertake a soft introduction of congestion charging concept to the public
- To test ease of use/complexity of a new policy with users

Ideally, the objectives set at the beginning of the project would be used to evaluate the project and observe areas of improvement for the design of a full-scale congestion pricing scheme, were a scheme to go ahead.

### 4.3 Charging concept

Congestion pricing is an economics-based approach to traffic congestion that focuses on discouraging driving during peak hours through financial penalties. Legal and practical constraints around directly charging motorists for peak period travel in a demonstration situation means that another charging concept is required. Internationally this has focused on the opportunity to influence behaviour through a rewards-based model whereby drivers are incentivized to reduce their peak period vehicle trips. There are two broad potential charging concepts that utilize a rewards mechanism to modify travel behaviours:



- Participants receive a credit in a demonstration travel account for each time they do not use their vehicle to undertake a peak period trip. At the end of each travel period (month, week etc.) the total balance is transferred to the participant.
- Participants begin each travel period (month, week etc.) with a positive credit balance in a project travel account. Each time a vehicle is used for a peak period trip the travel account is debited. At the end of the travel period, the remaining balance is transferred to the participant.

Credits or rewards can be monetary or represent a prize that could be a good or service, such as a mobile phone or gift card, or consist of some kind of formal recognition for each milestone achieved.

The time period adopted can vary and potentially differ between participants. It would also be feasible to operate both reward models during the demonstration project, noting that excessive change and complexity could potentially confuse participants and undermine the demonstration. This was the experience of the Melbourne demonstration which suffered from undue complexity.

#### 4.4 Size and coverage

Defining the demonstration project's size and coverage are key design considerations. In particular:

- Participant numbers and characteristics
- Spatial boundaries, which need to consider both trip origins and destinations.

Auckland's demographic profile combined with statistical techniques provide a logical basis to determine the target demonstration size and preferred participant profile. Ideally, the participant pool should reflect the age, ethnicity, employment and income diversity of Auckland. In addition, because the TCQ is primarily interested in better understanding how travellers respond to incentives to discourage peak period trips made by vehicles, participants need to be undertaking this type of journey. However, this does not mean that all participants need to be regular commuters undertaking home based work trips. Some participants might have flexible employment arrangements or undertake peak period trips for other reasons including education or shopping. These participants are important because they might have more capacity to respond to pricing incentives to alter trip patterns.

The question of demonstration coverage is more complex. Ideally, the demonstration should recruit participants that are geographically diverse, and are undertaking peak period trips representative of existing travel patterns. However, an overly diverse demonstration population could undermine efforts to compare and benchmark participant responses, create an effective control group, and monitor driver behaviour changes. For these reasons it may be preferable to limit participants to a small number of locations based on Auckland Council Local Board Areas.

#### 4.5 Record-keeping

The demonstration would require a solution to record participant travel behaviour during the field test period. Because participants are volunteers and the demonstration will take place without enabling legislation, the reporting and recordkeeping process should not be confused with a statutory compliance and enforcement regime. Participants would be asked to commit to support the integrity of the exercise



by signing a demonstration cooperation agreement (discussed below) but ultimately the data will be generated and collected on a 'best intentions' basis. For these reasons the record-keeping system needs to be as simple as possible and ideally will support the independent verification of the trips made by participants. A number of potential solutions are available:

#### 4.5.1 In-vehicle hardware

There are a large number of companies that offer GPS tracking services using in-vehicle hardware and supporting applications. OBDII port (plug-in) hardware has been used for a number of light vehicle RUC demonstrations in America. Alternatively, commercial fleet tracking services can also be deployed noting this requires the in-vehicle hardware to be professionally installed, and this may be seen as intrusive for some participants. For this reason, GPS tracking services could be offered as an option for participants, in-line with the approach adopted by a number of international demonstration projects.

#### 4.5.2 Mobile phone

Mobile phone-based tracking and supporting applications are widely used and cost effective because they do not require the purchase and installation of in-vehicle hardware and expense of supporting data services. Mobile phone-based reporting does however require participants to carry their phones and engage the application when travelling.

#### 4.5.3 Automatic number plate recognition

ANPR camera and supporting applications are widely used and have been successfully deployed by the NZ Transport Agency for its toll road installations, including the Northern Gateway. ANPR provides independent verification of travel but relies on having a network of sites that are potentially available to record trip patterns. There are a number of ANPR installations in Auckland, but an investigation is required to establish whether these would be sufficient to support a large scale demonstration. Alternatively, the use of ANPR potentially suits a project based on a spatial area characterized by a monopolistic arterial route such as Devonport or Whangaparaoa.

#### 4.5.4 Self-reporting

Self-reporting would take the form of a daily web-based logbook, recording whether or not participants had commuted to and from work (and if not, why not), which mode of transportation they had used, and at what time they had made their trip. This mechanism could also be used to supplement any technology-based tools to record trips. Self-reporting is necessary to know whether participants had used some other form of transportation (public transport, walk or cycle) or whether they had not commuted due to vacation, illness, etc.

#### 4.5.5 Conclusion

All of the above solutions are proven, and it would therefore seem practical to design a demonstration record-keeping system that has the ability to utilise all of the available tools. In addition, although the primary goal of the demonstration project is not to be a test of a potential congestion pricing technology platform and supporting security/enforcement model, the exercise would provide the opportunity to gain



familiarity with some of the various sub-systems underpinning a road charging system, especially ANPR. Ideally the record-keeping solution and its sub-systems should also be aligned where possible with the preferred options recommended for further consideration.

The ability to offer participants a choice of record-keeping solutions also helps overcome privacy concerns which are often considered a top challenge to implementation of road charge programs. In this context the record-keeping solution adopted for the project would also require the establishment of a protocol that protects the personal data collected and prohibits unauthorized use or third-party access. Internationally this has been shown to be a key concern for potential projects participants and more generally a significant public policy issue that needs to be addressed.

## 5 Implementation

Once the preliminary design of the demonstration project has been resolved, the next step is to consider implementation matters. This section discusses the proposed approach to participant recruitment, project phasing, resources, budget and potential timetable.

### 5.1 Recruitment

#### 5.1.1 Recruitment approach

Once the main parameters underpinning the demonstration project have been agreed, potential participants can be identified and targeted for recruitment. There are a large number of digital and traditional recruitment channels available to identify potential demonstration participants. Interest in joining the demonstration could be generated through the following channels:

- National and local print media
- Agency and third-party websites
- Social media
- Radio and television advertising
- Public meetings and other engagement forums
- Public surveys

Ideally demonstration participants would encompass different types of passenger vehicles, including electric and hybrid models. It is not proposed to include any commercial vehicles or motorcycles.

#### 5.1.2 Participant agreement

As a condition of enrolment participants would be asked to sign a Participant Agreement that sets out each party's responsibilities to ensure that the goals of the demonstration project are met. The agreement would cover the collection and treatment of personal and trip information, and practical matters including reporting requirements and vehicle availability.



## 5.2 Project phases

### 5.2.1 Pre-demonstration survey

The first stage of the demonstration is likely to involve participants undertaking a web-based preliminary survey aimed at gathering information regarding their existing travel behaviour: home to work locations, travel routines usual daily commutes, other trips purposes and mode choices. In addition, information would be collected about their personal characteristics, household composition and factors that could influence their response to the demonstration rewards, such as flexible work schedules, family obligations, the availability of alternative modes of transportation, and their attitudes towards alternative modes.

### 5.2.2 Field test

The second stage of the demonstration is likely to be the live field test which involves recording the travel behaviour of the participants. Following international examples, the first part of the field test would be conducted without any rewards in place. The data collected during the pre-test is then used to establish the reference travel behaviour for each participant. The establishment of the baseline trip patterns can also be used to refine the reward structure and assists in preventing a situation that could be open to exploitation, including the possibility that participants attempt to manipulate the baseline by traveling more in peak periods so subsequent behaviour looks better.

To illustrate, consider participants with flexible employment arrangements and/or with good access to PT alternatives, meaning that they are not required to drive during peak-hours. It is sensible that these participants would be rewarded in relation to their existing peak driving frequencies, which then acts as a ceiling to the number of eligible rewards per week/month. That is, a participant who travelled in the pre-test only three times per week would only be rewarded for not travelling in the peak for three days but not four or five. This would help discourage any possible manipulation of the reward scheme for personal gains.

The Dutch experiment allocated all participants to four possible travel groups. It seems reasonable that Auckland could adopt a similar approach, noting this methodology also has the advantage of including occasional peak-period travellers who might be more responsive to the introduction of congestion pricing than regular commuters.

Once the baseline and reward structure has been determined and implemented, the field demonstration is undertaken for the agreed period.

### 5.2.3 Mid-demonstration survey

It is proposed to conduct a second survey of participants mid-way through the demonstration. The second survey would ask respondents to provide input on their experience with the demonstration to date including their perceptions of the reward program, support services, the record-keeping system and technology, and their wider views around congestion charging. The mid-demonstration survey provides a logical point to amend and improve the project, attend to any outstanding issues and more generally provide a channel for participants to provide feedback on their experiences.



### 5.2.4 Closing survey

The closing survey would ask respondents to provide input on their experience with the demonstration project, including their perceptions of the reward program, support services, the record-keeping system and technology, and their wider views around congestion charging. The closing survey provides an opportunity to measure how participant understanding and attitudes have changed over the course of the demonstration.

## 5.3 Timetable

The proposed demonstration timetable needs to include the time required for design and communication activities, participant recruitment and training, the live field test, the participant surveys, and the evaluation exercise and final reporting phase. Internationally the duration of a live demonstration has varied from a couple of months to a year or even longer. It is difficult to determine a suitable demonstration project timetable, but it would be expected to be in the order of 12-18 months for completion following a decision to proceed.

## 5.4 Resources

### 5.4.1 Who is doing what and when?

The establishment, operation and evaluation of a congestion pricing demonstration in Auckland would be a major undertaking. Internationally, demonstration projects have been managed by a consortium consisting of decision-makers and agency representatives, external contractors, and communication specialists. As part of the planning for the project, a detailed work schedule and resourcing plan will need to be developed and agreed. This will include the clear identification of the management and accountability structure to support the project and deliver the required outputs.

### 5.4.2 Budget

Internationally, the implementation and evaluation of a credible demonstration program has required a significant budget. Once the broad parameters of the Auckland congestion charging demonstration have been agreed it will be possible to estimate the likely costs associated with the various supporting activities.

## 5.5 Communication plan

The proposed demonstration and supporting surveys, in addition to an information gathering exercise, also represent a powerful communications tool. A demonstration project has the potential to focus public discourse on something concrete, making the feedback more meaningful and relevant to the scheme design.

As part of the pre-implementation process, a Communication Plan will be required that develops key messages, identifies the main delivery platforms, and outlines the public, stakeholder and media strategy. The TCQ website could be extended to be the key demonstration project resource to inform and educate, as well as support recruitment and engagement activities.



## 6 Conclusion

A review of international projects that have undertaken congestion pricing and RUC demonstrations provides many valuable lessons for Auckland. Although a demonstration project does not have to precede a full-scale implementation, it provides an opportunity to gather a wide range of information about the potential benefits of congestion pricing and could assist in building community support for introducing a scheme in Auckland. A demonstration project could help prepare agencies for the challenges of delivery by identifying gaps in competence, systems, or inter-agency linkages, and may also reveal opportunities for technical improvements.

Going forward, a demonstration project represents a substantial undertaking and there are many issues to resolve before a final decision could be made to proceed. In particular, next steps would be to:

1. Confirm the demonstration project will be designed to obtain user feedback, assist with the preferred scheme design and specification, gain familiarity with potential technology and systems, and support stakeholder/public engagement and wider communications activities.
2. Confirm the demonstration project is not intended to be a pre-implementation stage, or a test of the final technology, charging system and enforcement model, and will not include the collection of revenue from users.
3. Confirm the evaluation principles and measures, and evaluation process.
4. Prepare a detailed proposal encompassing the following matters:
  - charging and reward concept
  - participant numbers and characteristics
  - spatial boundaries and coverage
  - record-keeping system
  - technology options
  - participant recruitment approach
  - number and nature of project stages
  - project timetable
  - required resources and management arrangements
  - estimated budget.

