WORKING PAPER

The Congestion Question

Could road pricing improve Auckland's traffic?

Workstream 2

Illustrative tariff concepts

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Working draft vD

Auckland Council · NZ Transport Agency · Ministry of Transport · The Treasury · State Services Commission · New Zealand Government

Table of contents

1 Introduction

1.1 Purpose

The purpose of this paper is to summarise the tariff concepts and illustrative parameters that make up the two congestion charging schemes identified as having the most potential for Auckland, being:

- City Centre Cordon scheme
- Strategic Corridors scheme.

The primary objective of a congestion pricing scheme is to improve the performance of the transport network by ensuring motorists are aware that trips undertaken during congested conditions will incur a tariff (or charge) and therefore consider altering their travel behaviour at that time.

The tariff concepts and illustrative parameters described in this paper represent the necessary components of an operational scheme that could potentially be introduced in Auckland. In order to provide advice, the paper makes a number of assumptions about the design of a scheme that would be expected to be subject of review and final decision making before any scheme was implemented.

The illustrative tariff parameters are not intended to be 'set in stone', nor do they necessarily represent the ultimate state of a congestion pricing scheme in the future. The values associated with the parameters are preliminary and further refinement is likely to be undertaken over time to enhance and expand any scheme. This paper should not be taken as a recommendation for any specific tariff element or value.

This paper should be read in conjunction with the TCQ Tariff Policy Working Paper, August 2019 ("the Tariff Policy"). It is intended to provide the technical specifications, evidence and rationale for the specific tariff settings.

1.2 Tariff principles

The development of a preliminary tariff policy for the purposes of TCQ was based on insights from the economics literature and real-world considerations from a review of international congestion pricing schemes. The work undertaken by TCQ found that an optimal tariff policy for Auckland will reflect sensible trade-offs between improving network performance as a result of modifying travel patterns, the need to ensure charges are workable and the requirement to minimise adverse social impacts. To achieve these goals, congestion charges in Auckland should be based on the following agreed principles:

1. Be effective in terms of generating sustainable improvements in network performance.
2. Be flexible to achieve target levels of service by time and location.
3. Target travel in congested conditions.
4. Target travellers with potential alternatives and discourage lower value discretionary trips.
5. Support functionality to ensure tariffs can be regularly reviewed to continue to generate target levels of service.
6. Vary for different vehicle classes according to the contribution they make to congestion.
7. Be technologically achievable, cost effective, practical and efficient.

8. Be understandable and avoid undue complexity.
9. Have minimum exemptions and discounts to avoid undermining the efficacy of the scheme.
10. Support ability to spatially extend and modify the scheme.
11. Support the requirement to promote fairness and minimise adverse social impacts.
12. Support liveable communities and improve urban, environmental and safety outcomes.

Evolution of the scheme is expected to occur over time, as people become more comfortable interacting with the scheme, and the scheme is adapted to improve its stated objectives.

2 Network performance

The tariff policy needs to be underpinned by a view around the level and nature of the improvement in network performance that would be required from the introduction of congestion pricing for the two preferred short-list options. The target level of improvement in network performance has to reflect the ability for peak period car trips to realistically respond to congestion charges through mode and time changes and deferred trips. The expected congestion response will in turn reflect existing travel patterns, mode shares and transport infrastructure availability within the Auckland region.

International schemes were observed to have demand responses to the introduction of congestion pricing within the range of 15-20% reductions in traffic. An achievable improvement in network performance for Auckland is however more likely to be in the order of the 8-12% long-term reduction achieved by Gothenburg, a small city with a comparable PT mode share. This level of improvement is currently evident during the school holidays.

Social considerations will also limit the level of network performance that might otherwise be achieved through higher tariffs. However, greater levels of improvement may be achievable once some of the planned public transport investment programmes are completed as the viability of realistic alternatives improves.

3 Tariff structures

3.1 Background

The Tariff Policy discussed two potential structures that could be applied to an Auckland congestion pricing scheme: [1]

- Point-based charges
- Access charges

[1] A distance-based tariff was also considered as part of the Phase II evaluation exercise which identified practical constraints, high capital and operating costs, and implementation risks associated with the supporting technology. *Evaluation of shortlist of road pricing options for Auckland: practical considerations, D'Artagnan Consulting,* (2018).

Underpinning each potential tariff structure are a number of elements that collectively make up a consistent and workable tariff policy. This section explains the unique features of each tariff concept and also their common elements. Tables in the next section set out each tariff's key characteristics, illustrative metrics and supporting rationale in more detail.

3.2 Point-based charges

All the international cordon congestion pricing schemes reviewed, with the exception of London, levy point-based charges for vehicles detected crossing a boundary in both inward and outward directions. The Singapore ERP, which is a combined cordon/corridor scheme, also employs a point-based tariff, where vehicles are automatically charged whenever they pass a roadside charging point. Point-based charges have the following features:

- Vehicles are automatically charged whenever they pass a roadside charging point
- Charges are cumulative
- Charges could vary by time and location.

3.3 Access charges

An access-based tariff represents a variation on a point-based tariff, where every vehicle faces the same charge regardless of the location of the chargeable event. An access charge is typically linked with the implementation of an Area based congestion scheme, but in theory it could also be compatible with a Cordon or Corridor based scheme. Internationally, London is the only the jurisdiction that has implemented a flat access charge, from 0700-1800 weekdays (except public holidays), to support its Area based charging scheme. Access charges have the following features:

- Every vehicle faces the same charge regardless of the location of the chargeable event
- Charges could vary by time
- Charges are not cumulative, no matter how many times a vehicle is detected by the roadside infrastructure within a given defined window

3.4 Common tariff parameters

Point-based and access tariff structures share a number of features:

- Charges can vary by time, day and vehicle class
- Initial implementation can be simple to understand (noting significant complexity could be introduced to either structure)
- Can incorporate a variety of mitigation measures and exemptions/discounts
- Readily implemented using proven ANPR technology.

3.5 Future structure changes

A recommendation to adopt either charge structure for any near-term introduction of a congestion charging scheme does not preclude a future change to the tariff structure.

As an ANPR camera network can deliver both charging structures, a revised set of scheme rules could be applied to the back-office system in the future if required (with associated time and cost) to enable a change to the existing tariff structure.

Similarly, as an ANPR camera network is required for enforcement of a distance-based charging structure (delivered through in-vehicle hardware), a revised/new back office system could be developed and implemented if a future decision was made to adopt distance-based congestion charging.

3.6 Review

An initial period of 6 months is recommended post 'go-live' to review:

- Tariff parameters
- Charging schedule
- Cordon and/or corridor scheme coverage

The review period is able to be adjusted, and it may be appropriate to move to a shorter or longer review in the future, but undue complexity and excessive changes will raise legitimate concerns and, potentially, public opposition. A formal review process will require the impact on network performance to be evaluated, and so consideration will need to be given to developing network performance metrics that can be observed (i.e. real-world measurement) before and after implementation to monitor performance.

4 Illustrative tariff parameters

The illustrative parameters that provide the detail on how the Tariff Policy is implemented and operated are provided in the Tables below. The unique parameters for each structure are presented first, followed by the parameters that are common to both structures.

4.1 Point-based charge parameters

Parameter	Definition / value	Rationale
Structure	• Point-based charge • Any vehicle movement detected is defined as a trip. • A trip that is captured by an ANPR camera within a chargeable time band triggers a charge levied against the vehicle.	Point-based charge levied when vehicle detected by ANPR network – crossing City Centre Cordon or detected on Strategic Corridors network. All vehicles in the same class travelling at the same time face the same charge regardless of the location where vehicle is detected (the chargeable event). Charges vary according to travel time (or day) like Swedish/Singapore schemes (see below). Charges are cumulative dependent on number and time of vehicle detection.

Parameter	Definition / value	Rationale
Charge levels **(per passenger car unit (PCU))**	City Centre Cordon • $3.50: Peak period • $2.50: Peak/Shoulder period • $1.50: Shoulder period • $0: Interpeak period • $0: Off peak period Strategic Corridors scheme • $.35: Peak period • $.25: Peak/Shoulder period • $.15: Shoulder period • $.00: Interpeak period • $.00: Off peak period Assumes ANPR cameras located at 1km intervals.	The illustrative tariff rates were derived from: • transport modelling exercise • existing journey to work patterns • achievable target levels of service for Auckland • benchmarking against results achieved by international congestion pricing schemes. Traffic modelling and international examples demonstrate that there are declining and marginal benefits to network performance achieved through higher tariffs. Social considerations are also likely to cap the level of tariffs. The starting tariff values will be further analysed and amended if a decision is made to implement a congestion charging scheme (either option). Once operational, congestion charges will be reviewed along with network performance achieved and social and equity impacts (discussed below).

4.2 Access charge parameters

Parameter	Definition / value	Rationale
Structure	• Access charge	All vehicles in the same class travelling at the same time face the same charge regardless of the location where vehicle is detected (the chargeable event). Access charge levied when vehicle detected by ANPR network – crossing City Centre Cordon or on Strategic Corridors network. Similar to London flat fee charge but varies according to travel time (of day) like Swedish and Singapore schemes (see below).

Parameter	Definition / value	Rationale
Charge levels **(per passenger car unit (PCU))**	City Centre Cordon and Strategic Corridors scheme • $3.50: Peak period • $2.50: Peak/Shoulder period • $1.50: Shoulder period • $0: Interpeak period • $0: Off peak period	The illustrative tariff rates were derived from: • transport modelling exercise • existing journey to work patterns • achievable target levels of service for Auckland • benchmarking against results achieved by international congestion pricing schemes. As a general comparison, the starting peak tariff value aligns with the adult two-zone fare using a HOP card, ($3.45). Traffic modelling and international examples demonstrate that there are declining and marginal benefits to network performance achieved through higher tariffs. Social considerations are also likely to cap the level of tariffs. The starting tariff values will be further analysed and amended if a decision is made to implement a congestion charging scheme (either option). Once operational, congestion charges will be reviewed along with network performance achieved and social and equity impacts (discussed below).

Parameter	Definition / value	Rationale
Trips and Journeys	Any vehicle movement is a defined as a trip. A trip that is captured by an ANPR camera within a chargeable time band triggers a charge levied against the vehicle. A journey includes all trips within a two-hour period from the time the vehicle is first detected by the ANPR network.	An objective of the scheme is to ensure motorists are aware that trips undertaken during congested conditions will incur a charge. However, many trips are of a stop-start nature (trip-chaining), such as school drop-offs undertaken before the driver commutes to work. Because the access charge is not cumulative, a definition of a chargeable event is required. The concept of a journey, which is defined as any number of vehicle movements detected within a two-hour period, provides certainty for motorists around the potential charges they will face and helps avoid artificially distorting travel patterns. This gives people a two-hour 'journey window' where they will only incur one charge (see below). This is a familiar concept, as Auckland's public transport network provides for journeys across multiple bus and rail trips using a HOP card (up to five trips in a four-hour window depending on the fare zone) Two hours has been defined as the initial journey window as it needs to be sufficiently long to ensure that the majority of single purpose trips can be completed (e.g. commute to work). It also needs to be sufficiently long as to avoid perverse outcomes where chained trips are incentivised to occur in shorter timeframes, potentially increasing congestion. The journey window can be reviewed over time, though it is unlikely that a duration of less than 90 minutes would be appropriate, especially if daily caps are applied.
Charge rules	Vehicles incur the highest charge detected within the journey window (two hours). The two-hour journey window is defined as beginning when a vehicle is first detected by ANPR network.	The scheme's primary objective is to ensure motorists are aware that trips undertaken during congested conditions will incur a charge. However, trips within the two-hour journey window may take place over multiple time bands. Because the access charge is not cumulative, a rule is required to determine which tariff should apply to the vehicle's journey. The concept of charging motorists for the highest tariff incurred during their journey captures their maximum estimated contribution to congestion and best supports the scheme's objectives. The charging rule is simple and helps avoid perverse behaviour or artificially distorting travel patterns.

4.3 Common tariff parameters

Parameter	Definition / value	Rationale
Time	• Charges vary by time bands • Time bands are 30 minutes • Refer Illustrative Tariff Schedule below	Banded charges help to manage and spread demand and avoid perverse time-boundary behaviour, such as that observed with the London scheme that has a single charge levied for the entire workday. A graduated series of steps in charges up to a peak rate (and down again). 30 minutes chosen as it enables a meaningful level of graduated steps across a 3-hour peak period charging period, while not being overly complex to understand at the introduction of a scheme.
Travel days	• Monday – Friday only • Weekends and Public Holidays are exempt	Reducing congestion is desirable to increase economic productivity. As weekday (Monday – Friday) travel is dominated by work related (economically productive) trips, charging these days will deliver greatest gains in productivity. In international schemes, weekends and holidays are also exempt from congestion charges (Singapore charges on Saturdays). Nothing precludes the introduction of weekend/holiday charging in the future.

Parameter	Definition / value	Rationale
Exemptions	• Emergency vehicles • Buses (vehicles with >9 seats) • Motorcycles/Scooters • Non-powered road registered vehicles (eg trailers)	A small number of road-registered vehicles should be exempt from charges for a number of reasons, while not undermining the effectiveness of the scheme. Internationally emergency vehicles are universally exempt. Public transport buses are exempt in all schemes except Singapore, because there is no demand response expected from them and they are helping to reduce congestion. Complications arise around buses where scheduled and/or private chartered services can be delivered by the same buses. To avoid undue complexity in administering bus exemptions, it is proposed that all buses, defined as having more than nine seating positions (including the driver's seating position), should be exempt. Any unintended consequences of this exemption are expected to be negligible. Motorcycles and scooters are exempt on the grounds that they make a minor contribution to congestion in Auckland. Mobile machinery (eg forklifts, tractors) are exempt on the grounds that they make a minor contribution to congestion in Auckland. Non-powered vehicles such as trailers are exempt on the grounds that to be contributing to congestion, they will be attached to a powered vehicle that is already subject to the charge. **There may be other minor vehicle classes considered for exemption (e.g. military vehicles) as the scheme policy is refined during detailed design.**
Discounts	TBC [Mitigations workstream]	The application of targeted discounts (or rebates) may be a valid response to mitigate undesirable social and spatial impacts associated with congestion charging. It is important to be careful about applying discounts to maintain scheme credibility and other support mechanisms may be more effective.

Parameter	Definition / value	Rationale
Direction of travel	For the City Centre Cordon scheme, charges only apply: • Inbound in the morning charging period • Outbound in the afternoon charging period For the Strategic Corridor scheme, no application of directional charging (outside the motorway network) is practical or necessary at this time.	Traffic congestion is often related to the direction of travel and therefore charges should ideally reflect trip directions. For the city centre, there is a clear directional flow in the morning/afternoon and directional charging should be applied. The ANPR scheme supports this approach for the City Centre Cordon scheme. For the Strategic Corridor scheme, applying directional charging would need to be applied on a corridor-by-corridor basis. This introduces undue complexity regarding both technical application and user understanding. From a technical perspective, the exception to this might be the motorway network, where each direction could be treated independently (each direction is treated as a separate road – e.g. SH16 east bound would be charged in the morning, but not the afternoon and SH16 west bound vice versa). However, the dispersed nature of Auckland's congestion means that in most locations congestion is rarely in a neat, single direction. Most journeys at peak times on strategic corridors will be contributing to congestion, at least for part of the trip, and should be charged accordingly. Future evolutions of the scheme may deem some level of directional charging appropriate and practical, and this is not precluded.

5 Illustrative tariff schedule

The illustrative tariff schedule showing the 30 minute charging time bands and associated charges for the point based tariff (per km) and for the access based charge are shown in Figure 1. These are preliminary and would be subject to refinement (particularly the start and end of the charging period) through detailed design. Both the time bands and charges would be subject to periodic review as described in Section 3.6 above.

FIGURE 1 ILLUSTRATIVE TARIFF SCHEDULE

Illustrative Congestion Charges - Monday:Friday

Time	Period	Point-based		Access
		SC	CCC	SC and CCC
06:30-06:59	Shoulder	$0.15	$1.50	$1.50
07:00-07:29	Peak/Shoulder	$0.25	$2.50	$2.50
07:30-07:59	Peak	$0.35	$3.50	$3.50
08:00-08:29	Peak	$0.35	$3.50	$3.50
08:30-08:59	Peak/Shoulder	$0.25	$2.50	$2.50
09:00-09:29	Shoulder	$0.15	$1.50	$1.50
09:30-15:59	Interpeak	$0.00	$0.00	$0.00
16:00-16:29	Shoulder	$0.15	$1.50	$1.50
16:30-16:59	Peak/Shoulder	$0.25	$2.50	$2.50
17:00-17:29	Peak	$0.35	$3.50	$3.50
17:30-17:59	Peak	$0.35	$3.50	$3.50
18:00-18:29	Peak/Shoulder	$0.25	$2.50	$2.50
18:30-18:59	Shoulder	$0.15	$1.50	$1.50
19:00-06:29	Off-peak	$0.00	$0.00	$0.00

6 Illustrative examples – Strategic Corridors scheme

Below are six illustrative examples of how the tariff parameters would apply to some hypothetical journeys using the Strategic Corridors scheme and the charges those trips would incur.

Any specific roads named are assumed to have ANPR cameras installed to capture passing traffic. For the purposes of the exercise, it is assumed that cameras would be installed at approximately 1km intervals to support the illustrative tariff structures.

In addition to the illustrative charge, the impact of a daily cap of $7 is presented to demonstrate the impact from applying this form of mitigation. The daily cap is assumed to be twice the peak charge for the access charge structure. The same cap is used for the point-based charge structure for consistency. Note also that the daily cap value could be adjusted.

1. Short distance commuter

A Remuera resident works in Newmarket and they drive their car to work. The travel distance is 3km each way. They leave home at 07:40 and arrive at work at 07:55. They make the return journey in the afternoon, leaving work at 17:05 and arriving home at 17:20.

	Point-based charging	Access-based charging
Total charges incurred	$2.10	$7.00
Apply rule: daily cap of $7	$2.10	$7.00

2. Long distance commuter

A Takanini resident works in Mt Wellington and they drive their car to work. The travel distance is 20km each way. They leave home at 07:10 and arrive at work at 08:15. They make the return journey in the afternoon, leaving work at 16:45 and arriving home at 17:40.

	Point-based charging	Access-based charging
Total charges incurred	$12.90	$7.00
Apply rule: daily cap of $7	$7.00	$7.00

3. Commute journey in the morning peak only

A Northcote resident works in the city centre, leaves home at 07:15 to drive to work (8km journey). They arrive at 08:17. They return home at midday.

	Point-based charging	Access-based charging
Total charges incurred	$2.70	$3.50
Apply rule: daily cap of $7	$2.70	$3.50

4. Courier vehicle driving around the network all day

A courier van travels around the city and covers approximately 50km on chargeable corridors during both chargeable and non-chargeable periods.

	Point-based charging	Access-based charging
Total charges incurred	$8.80	$8.50
Apply rule: daily cap of $7	$7	$7

5. Long travel with an example of the impact if they shifted time of travel

A Henderson resident is going to visit their friend in Clevedon for lunch. They decide to leave home at 09:05 and go to Sylvia Park on the way to Clevedon.

	Point-based charging	Access-based charging
Total charges incurred	$5.70	$3.00
Apply rule: daily cap of $7	$5.70	$3.00

Variation:

If the driver had postponed their morning departure by 20 minutes, they would have started their morning journey outside the morning congestion charging period. The resulting charges would be:

	Point-based charging	Access-based charging
Total charges incurred	$3.45	$1.50
Apply rule: daily cap of $7	$3.45	$1.50

6. Multi-purpose morning peak travel

A Grey Lynn resident uses their vehicle to make an early morning trip to the gym and home again, then drops their children to school on their way to work in the city centre.

	Point-based charging	Access-based charging
Total charges incurred	$3.30	$3.50
Apply rule: daily cap of $7	$3.30	$3.50

Variation:

The next day, they repeat their trip to the gym at the same time but decide to walk their children to school and then walk to work afterwards as the weather is nice. The resulting charges are:

	Point-based charging	Access-based charging
Total charges incurred	$1.55	$1.50
Apply rule: daily cap of $7	$1.55	$1.50

7 Tariff assessment

7.1 City Centre Cordon scheme

All the international cordon congestion pricing schemes reviewed, with the exception of the London Area scheme, levy point-based charges for vehicles detected crossing a boundary in both inward and outward directions. There is also the opportunity to adopt an access charge to a cordon scheme, with the main distinction being that vehicles are only charged once per time period according to the rules adopted by the scheme. Given the same charge levels, the two tariff models are expected to yield very similar network impacts and become virtually equivalent when combined with potential mitigation measures such as daily caps.

7.2 Strategic Corridors scheme

The proposed scope and nature of a strategic corridors congestion pricing scheme suitable for Auckland has no direct international precedent. The selection of the preferred tariff concept therefore needs to be based on an evaluation against criteria developed in the context of Auckland's spatial and travel characteristics. The following table presents a preliminary assessment of the potential tariff concepts against the evaluation principles adopted by the Steering Group and derived from the TCQ's Terms of Reference.

7.3 Tariff assessment

Evaluation criteria	Point-based charge	Access charge
1. Be effective in terms of generating sustainable improvements in network performance.	Well aligned with efficiency objectives. But network performance could be undermined because low charges provide insufficient incentive for shorter trips to change their behaviour, noting some 60% of morning peak trips are under 6km in length.	Well aligned with improving network performance. High effective charges for short trips will encourage mode shift by travellers with flexibility. May provide inadequate incentive for drivers making long trips to change their behaviour.
2. Be flexible to achieve target levels of service by time and location.	Flexible to enable drivers to face different charges by time and location. But with potentially hundreds of charging stations this would add significant complexity and could be difficult for users to understand and respond.	Flexible to enable drivers to face different charges by time. An access charge could also vary by location, though practically this would have limitations as to how granular the differentiation could be.
3. Target travel in congested conditions.	Scheme design can target travel in congested conditions.	Scheme design can target travel in congested conditions

Evaluation criteria	Point-based charge	Access charge
4. Target travellers with potential alternatives and discourage lower value discretionary trips.	Low per km charges for short trips will undermine incentives to defer trips or shift to PT and active modes. [2]	High effective per km charges for short trips will encourage to shift to PT and active modes or defer trips.
5. Support functionality to ensure tariffs can be regularly reviewed to continue to generate target levels of service.	Supports regular review to ensure network performance according to time and charge location.	Supports regular review to ensure network performance, but limited granularity because blunt nature of charge.
6. Vary for different vehicle classes according to the contribution they make to congestion.	Can vary charges for different vehicle classes.	Can vary charges for different vehicle classes.
7. Be technologically achievable, cost effective, practical and efficient.	Supported by ANPR technology, but cumulative charges add complexity and raise back-end costs. Strong risk of potential legal challenge because same trip could incur different charges.	Supported by ANPR technology, and fixed trip charge simple to process and manage. Practical and low risk of errors.
8. Be understandable and avoid undue complexity.	Cumulative charges add complexity and makes it difficult for drivers to predict the total charges that will be incurred for their journey. Transparency could be assisted by software application but would require frequent user engagement.	Simple to understand and drivers can easily predict the total charge they will face for their journey. This provides a simple price signal that people can use to consider changing their travel behaviour
9. Have minimum exemptions and discounts to avoid undermining the efficacy of the scheme.	Supports wide range of exemptions and discounts as required.	Supports wide range of exemptions and discounts as required.
10. Support ability to spatially extend and modify the scheme.	Supports scheme modification and extension.	Supports scheme modification and extension.

[2] A highly complex point-based tariff structure using reducing cumulative point charges, applied in combination with charging caps could provide a stronger behaviour change incentive for short trips, but this would be very difficult to implement, communicate and understand.

Evaluation criteria	Point-based charge	Access charge
11. Support the requirement to promote fairness and minimise adverse social impacts.	Cumulative charges will generate poor social impacts because lower income households are disproportionally located in outer suburbs with limited PT services (and so will face higher charges due to longer average journeys. [3] Low charges for short trips will favour higher income suburbs located in Auckland Isthmus.	An access charge helps to minimise adverse social impacts because many lower income households required to make longer average journeys because they are disproportionally located in outer suburbs.
12. Support liveable communities and improve urban, environmental and safety outcomes.	Encourages urban intensification but provide a strong incentive to rat-run around camera locations as each time the vehicle is detected a charge is incurred. This could lead to neighbourhood severance and poor safety and environmental outcomes.	Significantly reduces the potential/incentive to rat-run because a vehicle only has to be detected once during a journey, making avoidance of the charge very difficult. High effective charges for short trips will encourage mode shift and consequently improved local, environmental and health benefits.

8 Recommendations

For an untested congestion charging environment like Auckland, the TCQ has adopted an incremental, simple first steps approach to implementation. Evolution of the scheme can occur over time as people become more comfortable interacting with and more informed about the scheme. Going forward, the concept of future differentiated location charging adds complexity to both administration and communication regarding the charge. Ultimately this becomes a trade-off between complexity, transparency and efficiency.

To take the preferred schemes forward for subsequent analysis, reporting and engagement, the Steering Group endorse:

- The tariff structure being an access charge
- The initial tariff parameters as defined in this paper.

[3] The application of a daily charging cap as a mitigation mechanism would effectively create an asymmetric access charge whereby longer trips face a fixed charge, and short trips would face low per km charges. This is likely to be complex to implement and undermine scheme effectiveness.