SGS Economics & Planning

IMPACTS OF INTRODUCING CLEARWAYS AND REMOVING PEDESTRIAN CROSSINGS ALONG MACQUARIE AND DAVEY STREET

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1. BACKGROUND

1.1 Aim and scope

The Tasmanian Government is working towards transferring the ownership and management of Macquarie and Davey Streets from Council to State Government. This change is expected to result in a change of use of the parking lanes to clearways reserved for priority traffic (public transit) as indicated in the Greater Hobart Transport Solution and the possible removal of right turn pedestrian crossings; including one at Harrington Street and one at Murray Street[1].

SGS Economics and Planning have been engaged by City of Hobart to prepare a high-level report into the impacts of possible changes into the management and use of Macquarie and Davey St.

This paper lists at a high level the anticipated social, environmental and economic costs and benefits to the City of Hobart and the community of introducing a clearway lane on Macquarie and Davey Streets during peak hours to be used as a priority bus lane and to accommodate for other priority modes, and the possible removal of two right turn pedestrian crossings; one at Harrington Street and one at Murray Street. The paper is informed by a literature review and an assessment of Council data on the use and management of the lanes and pedestrian crossings.

1.2 Background

The use of clearways provides a means to improve road capacity by utilising existing road infrastructure which can be relatively easy to implement without the need to build new infrastructure (Transport for NSW, 2016)

Macquarie and Davey Streets are two key highway connections into the City feeding commuters and other travellers from and to the Southern Outlet, Tasman Highway and Brooker Avenue, along with other streets connecting to the CBD and waterfront. Each street has 3-4 general traffic lanes, with on-street parking on both sides of the road at many locations. The roads are intensely used and congestion is increasingly an issue during peak hours.

As shown in Figure 1, the activities along Macquarie and Davey Streets include high density commercial, offices, professional consulting rooms, medical services, education, accommodation and residential uses. The key locations where kerbside parking is viewed as particularly important are the areas surrounding St Michael's Collegiate School (pick up and drop off activity), near the bus interchange, and outside the Grand Chancellor hotel on Davey Street[2].

The sections of the two streets that are particularly congested are [3]:

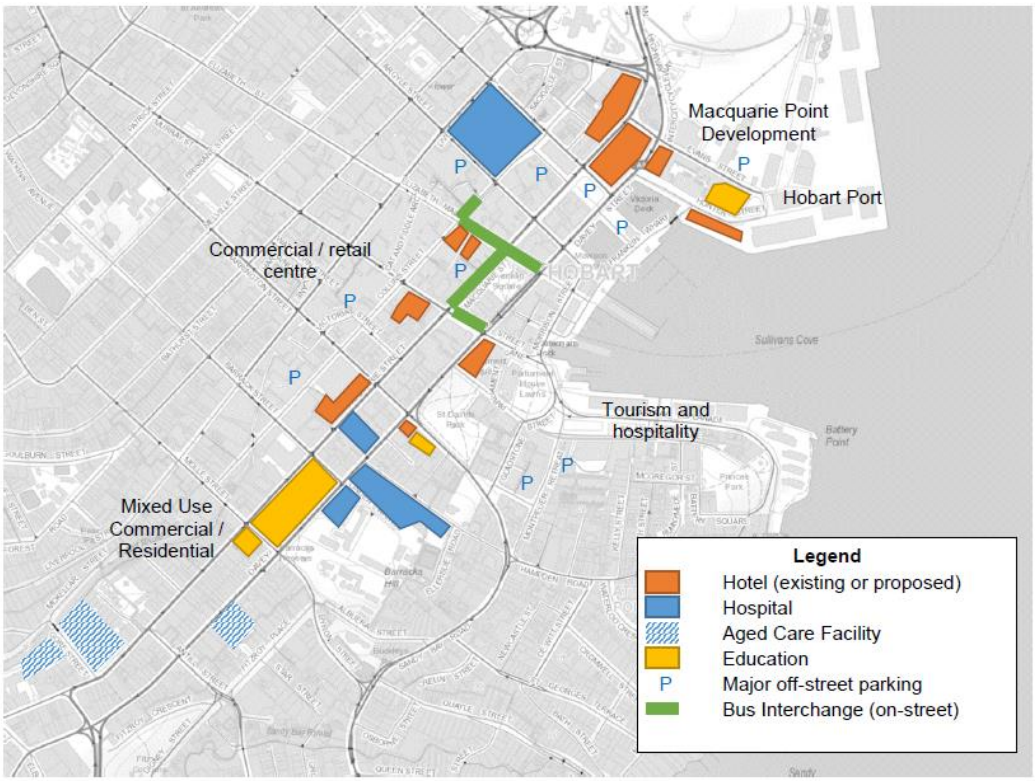
- Macquarie Street – Approaching Antill Street (AM peak), and approaching Molle Street (AM peak)
- Davey Street – Approaching Campbell Street (AM peak), approaching Argyle Street (AM and PM peak), approaching Harrington Street (PM peak), approaching Molle Street (PM peak), and approaching Antill Street (PM peak).

[1] Midson Traffic (2016), Hobart Traffic Congestion Analysis 2016
[2] GHD (2018)
[3] GHD (2018)

The most common crash types are rear end type crashes, representing 62% of crashes along both Macquarie Street and Davey Street. However, in some locations this proportion is much higher, including:

- Macquarie Street – Between Murray and Elizabeth Street (76%), between Campbell Street and Evans Street (79%), and Evans Street and the Tasman Highway / Brooker Highway (86%)
- Davey Street - Between Evans and Campbell Streets (77%), and between Argyle and Elizabeth Streets (80%)

FIGURE 1: ACTIVITIES ALONG MACQUARIE AND DAVEY STREET



Source: GHD, 2018

2. COSTS AND BENEFITS

2.1 Overview of Potential Economic Impacts

The introduction of clearways is meant to improve the flow of traffic in a street or highway. The designation of the clearways for public transit during peak hours enables an increased number of commuters to travel into the City during these times, reduction of travel times for public transit users and a possible shift in transport mode from car to public transport (and associated environmental benefits and reduced demand for long term parking).

At the same time this measure would result in a loss of parking spaces both short term on-street and permit, with some residents and users along Macquarie and Davey Streets losing access to on-street parking and related conveniences. Some residents and users do not have off-street parking as an alternative.

The possible reduction in the number of pedestrian crossings would be aimed at enhancing the flow of traffic during peak hours. At the same time, this change would adversely affect pedestrian accessibility and travel times within the City. It is at direct odds with the Gehl report for the City of Hobart[4].

Based on literature research and independent insight, the following costs and benefits have been identified.

Costs

- Net reduction in parking spaces and related reduced accessibility of homes and businesses, especially those without off-street parking
- Potentially reduced property values on those uses (dwellings and businesses) losing on-street parking when having no off-street alternative
- Reduced accessibility for pedestrians and reduced urban amenity due to poorer walkability outcomes

Benefits

- Improved travel times and reduced congestion costs for commuters into the City, especially those using public transport
- Enhanced environmental outcomes (lower emissions)
- Reduced operating and maintenance costs to Council, due to a transfer of ownership and management to State Government
- Enhanced road safety by reducing the number of rear-end type crashes

The introduction of clearways with priority public transit would generate improved travel times, enhanced environmental outcomes, reduced costs to the City of Hobart and enhanced road safety outcomes. The costs include a loss of parking spaces and a possible loss of parking revenue to the City. While it is considered that the value of properties without off street parking may reduce slightly in value, evidence on whether such values would drop and by how much is inconclusive.

The possible removal of pedestrian crossings would likely generate traffic improvements, but also generate significant adverse impacts in terms of pedestrian accessibility, tourist experiences and economic development. It is also a step in the reverse direction from the vision in Gehl's report of Hobart as a city that puts people first.

[4] Gehl (2010), Hobart 2010. Public Spaces and Public Life. A city with people in mind. The first stage of Hobart's inner city development plan.

While this study has not tried to quantify the costs and benefits, on balance, the overview suggests that introducing clearways in favour of public transit generates net benefits, while the removal of pedestrian crossings generates net costs.

2.2 Description of Costs and Benefits

The cost and benefits are outlined below, supported by evidence from the literature, case studies elsewhere, and using data provided by Council where available.

Costs

Net reduction in parking spaces and related reduced accessibility of homes and businesses, especially those without off-street parking.

The left lanes of Davey Street (south-side) and Macquarie Street (north-side) offer a total of 91 short-term on-street (paid) parking[5]. There are 14 permit parking spaces for residents[6]. In addition, these lanes provide for a number of loading bays and entries and exits to off-street parking. These spaces would not be available for the periods that these lanes were being used as clearways.

The number of lost parking spaces is limited and the lanes on the opposite side and all off-street parking would remain. If these lanes are designated as clearways for only part of the day such as during peak periods, then they may be available for parking at other times.

Occupancy levels of on-street parking on Macquarie and Davey Streets are between 50% and 65% according to City of Hobart officer estimates[7]. This suggests that the loss of spaces can easily be absorbed, noting however that parking would become less convenient.

Nonetheless, the loss in parking spaces may likely have adverse impacts on the revenue of retailers, based on earlier research. In 2010, SGS Economics & Planning Pty Ltd (SGS) investigated the impact of clearway extensions on turnover, shopper behaviours and retailer confidence in High Street, Armadale in Victoria and found that the adverse impact on turnover in High Street was -2.9%.

The loss in parking spaces will likely result in a reduction of parking fees revenue by the City. The majority of the lost spaces will be absorbed by higher occupancy levels (and revenue) elsewhere, and therefore generating little loss in revenue. The maximum possible loss -if the loss of spaces was **not** absorbed by other on-street paid parking spots – would be $2,400 to $3,000 per space per annum or $221,914 to $288,488 in total. The maximum possible loss in infringement notices would be approximately $199,722 in total (Table 1). Again, in reality, the loss of revenue at these spaces will largely be offset by higher revenue at other spaces and losses will also be dependent on whether the clearway lanes revert to parking outside of peak periods.

TABLE 1: MAXIMUM POSSIBLE LOSS IN PARKING FEES AND INFRINGEMENT NOTICES

Street	Nr on-street parking	Average revenue per annum at 50% occupancy	Average revenue per annum at 65% occupancy	Estimated average revenue from infringements
Davey Street - south-side only	47	$103,705	$134,816	$93,334
Macquarie Street - north-side only	44	$118,209	$153,672	$106,388
Total	91	$221,914	$288,488	$199,722

Source: City of Hobart, 2018

[5] Data from City of Hobart, received by email on 8 October 2018
[6] Data from City of Hobart, received by email on 26 October 2018
[7] Data from City of Hobart, received by email on 8 October 2018

The permit parking spaces (14 in total) may need to be relocated elsewhere. Assuming this would be at the expense of on-street paid parking, the maximum cost would be $2,400 to $3,000 per space per annum.

Potentially reduced property values on those uses (dwellings and businesses) losing on-street parking when having no off-street alternative.

If dwellings, shops or businesses have no parking, either on-site or on-street, it reduces the accessibility of the buildings and the living or use amenity for residents, employees, visitors and clients.

Nearly all commercial uses and dwellings have access to off-street parking. On-street parking will be reduced, but will still be available nearby and may also be available at non-peak periods if the clearways are to revert to parking lanes outside of peak times.

The literature review did not result in identifying evidence quantifying losses in property values from such a loss of parking.

Given the availability of parking alternatives (which will largely be less appealing than the current situation), the impact on property values is expected to be small. The evidence of impacts that have occurred elsewhere is however limited.

Reduced accessibility for pedestrians and reduced urban amenity due to poorer walkability outcomes.

The removal of pedestrian crossings would result in pedestrians walking further to reach services, work, home or other destinations.

Pedestrians will experience travel time losses and these will impact on the efficiency of tourists visiting the city, people doing business, running errands and accessing services. Multiple studies have demonstrated the relationship between walkability and economic development[8]. The Victorian Transport Planning Institute states *Walking and walkability provide a variety of benefits, including basic mobility, consumer cost savings, cost savings (reduced external costs), efficient land use, community liveability, improved fitness and public health, economic development, and support for equity objectives. Current transportation planning practices tend to undervalue walking*[9].

The vision for Hobart as expressed in the Gehl report envisages Hobart to move from a car oriented city to a city that puts people first. Removing pedestrian crossings is a move in the opposite direction.

Pedestrian crossings at Harrington and Murray Streets are in the middle of the CBD and key pedestrian connectors between the CBD and the foreshore and Salamanca area. There are no recent pedestrian counts available. Aged counts from 2010 indicated foot traffic of between 2,000 and 3,000 on a weekday (in March). This would have increased markedly since, and is probably much higher during the tourist seasons.

This cost is likely the most significant but would require collection of primary research data to further quantify and assess the economic impacts.

Benefits

Improved travel times and reduced congestion costs for commuters into the City, especially those using public transport

[8] Including Leinberger & Rodriguez (2016), Foot Traffic Ahead. Ranking Walkable Urbanism in America's Largest Metros. George Washington University School of Business

[9] VTPI (2018), Economic Value of Walkability

A study completed by Transport for London (2016) following the introduction of clearways (or 'Red Routes') in the UK's West Midlands found:

- Journey times were reduced by over 8%
- Reliability improvements of up to 40%
- Bus journey times were 21% faster and 30% more reliable

The NSW Government (2018) found introducing clearways along Mona Vale Road and Victoria Road in NSW reduced weekday travel times by up to 46% and weekend travel times by up to 40%.

The Transportation Research Board of the National Academies (2011) completed a cost-benefit analysis of converting an arterial lane (not kerbside parking) for Bus Rapid Transit (BRT). The study found the benefits for transit riders to be approximately $4 million (2009 dollars) based on approximately 40,000 users daily. This benefit was based on savings in travel time, which was valued at $26.29 per hour per person (2009 dollars). For comparison, GHD estimates approximately 1,960 users of bus in the AM peak at the Southern Outlet intersection of Macquarie Street. Given the number of bus patrons along Macquarie and Davey Streets during peak hour are not as high, and bus stops are relatively close together (some only 180m apart) and not as frequent as a BRT service, the travel time savings for users, are likely to be less, but significant.

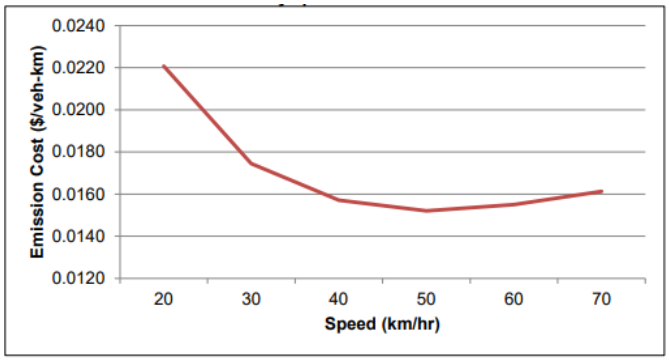
The travel time improvements will likely result in more commuters using public transit, and hence, more people experiencing improved travel time savings.

Enhanced environmental outcomes (lower emissions)

The introduction of clearways with priority public transit will likely result in a reduction of emissions per commuter. Car emissions are relatively high in congestion and will likely fall if congestion drops, and an increase in public transit use will reduce emissions further.

Transport for NSW (2016) found there is a reduction in vehicle emissions due to increased speeds. The figure below shows the estimated relationship between speed and environmental cost.

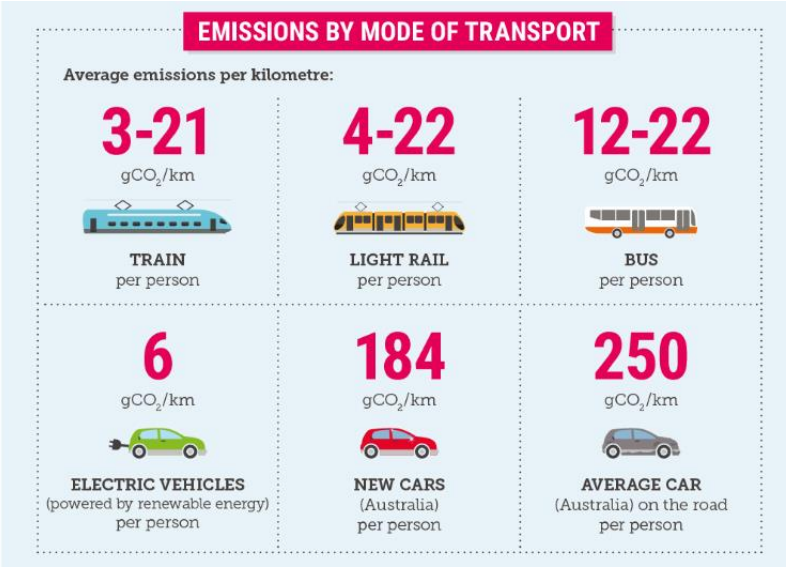
FIGURE 2: ENVIRONMENTAL EMISSION COST BY SPEED



Source: Transport for NSW, 2016

Travelling by bus is about 10 times more efficient in terms of emissions than travelling by car (alone). The emissions per person per kilometre travelled for a person travelling by bus is about 17 gCO_2/km, and by car 184 gCO_2/km.

FIGURE 3: EMISSIONS BY MODE OF TRANSPORT



Source: Climate Council, www.climatecouncil.org.au (12 November 2018)

Reduced operating and maintenance costs to Council, due to a transfer of ownership and management to State Government

The transfer of ownership and management would result in a reduction of approximately $150,000 in costs per annum (maintenance, street lighting, asset renewal)[10].

Annual depreciation is estimated at $435,000 while the road surface, underlying road pavement and land value is $38.7M.

Enhanced road safety

Removal of kerb side parking improves sight distances for pedestrians which can potentially reduce the number of crashes involving pedestrians (Transport for NSW, 2016). Further, The University of Adelaide (2005) found countermeasures that reduce traffic congestion, such as the use of clearways, would reduce the number of rear-end collisions.

Between 2013-2017, there were a total of 32 crashes involving a pedestrian (e.g. crossing road, standing on roadway), which could have potentially been avoided by removing kerb side parking and improving sight lines. Currently, approximately 62% of incidents on both Macquarie and Davey Streets are rear end type crashes, this translates to approximately 48 rear end type crashes per year on Macquarie Street and 40 rear end type crashes per year on Davey Street[11].

Monash University estimates the average hospital costs for each person in a traffic-related pedestrian injury to be $8,525. This figure does not include the emotional and physical pain and reduced quality of life for the injured and their families, as well as the loss of productivity due to temporary or permanent work absenteeism.

The Insurance Commission of WA reported the average claim for each rear-end crash was $59,000. This cost is only associated with personal injury claim and does not include vehicle costs.

[10] Estimates received from Council by email on 13 November 2018.
[11] GHD (2018)

APPENDIX - REVIEW OF EXISTING RESEARCH

The following documents were reviewed as part of the background research for this discussion paper:

- Transportation Research Board of the National Academies (2011) Cost Benefit Analysis of Converting a Lane for Bus Rapid Transit
- SGS Economics and Planning (2010) Impact of Clearways on High Street in Armadale, Victoria
- Transport for NSW (2016) Economic Appraisal of Road Clearways
- NSW Government (2018) Sydney Clearways Strategy Fact Sheet
- Transport for London (2016) West Midlands Local Transport Plan 2011 to 2026.
- NSW Government (2018) New and extended clearways frequently asked questions
- The University of Adelaide (2005) Centre for Automotive Safety Research
- Monash University (2010) Traffic-related pedestrian injury in Victoria

It is widely recognised in the research that clearways help reduce congestion where the road is close to capacity and parking disrupts the flow of traffic. The key benefit in CBAs of clearway projects generally relate to travel time savings.

Transport for NSW (2016) Economic Appraisal of Road Clearways

Transport for NSW (2016) completed a CBA on extending a clearway to weekends (as opposed to only peak periods on weekdays) on a high-volume arterial road carrying approximately 1,700 vehicles per hour per lane. For comparison, Macquarie and Davey Street carry approximately 1,000 vehicles per hour per lane[12].

The Transport for NSW (2016) cost benefit analysis indicated that the proposal would generate a BCR of 9.6.

The main benefits are travel time savings for drivers because of increased road capacity as parked cars are removed, as well as travel time benefits for bus passengers and environmental cost savings due to increases in speed and decreased reliance on private cars.

The primary costs associated were relatively small and include the following:

- Signage – new clearway signage and installation on both sides of the road is required due to the change in clearway times. It is assumed a unit cost of $240/sign including installation
- New road markings – new road markings (materials and labour) for clearways such as broken yellow lines on the kerb side lane. The cost of road markings is estimated as $2,178/lane-km
- Road marketing operating and maintenance costs assumed to be $500/lane-km p.a., and
- Other infrastructure costs such as costs to identify alternative parking estimated at $3 million p.a.

[12] GHD (2018) Davey and Macquarie Streets Options Review, page 11

Transportation Research Board of the National Academies (2011) Cost Benefit Analysis of Converting a Lane for Bus Rapid Transit

The Transportation Research Board of the National Academies (2011) completed a cost-benefit analysis of converting an arterial lane (not kerbside parking) for Bus Rapid Transit (BRT). The study found the benefits for transit riders to be approximately $4 million (2009 dollars) based on approximately 40,000 users daily. This benefit was based on savings in travel time, which was valued at $26.29 per hour (2009 dollars).

For comparison, GHD estimates approximately 1,960 users of bus in the AM peak at the Southern Outlet intersection of Macquarie Street. Given the number of bus patrons along Macquarie and Davey Streets during peak hour are not as high, and bus stops are relatively close together (some only 180m apart) and not as frequent as a BRT service, the travel time savings for users, is likely to be significantly less.

Interestingly, the study also found the length of the corridor did not make a significant difference to the resulting cost benefit ratio.

Transport for London (2016) West Midlands Local Transport Plan 2011 to 2026.

Introduction of clearways (or 'Red Routes') in the UK's West Midlands have been found to deliver the following results[13]:

- Reduced journey times of over 8%
- Reliability improvements of up to 40%
- Bus journey times 21% faster and 30% more reliable
- Illegal parking reduced by 60%
- Accident reduction of approximately 8%

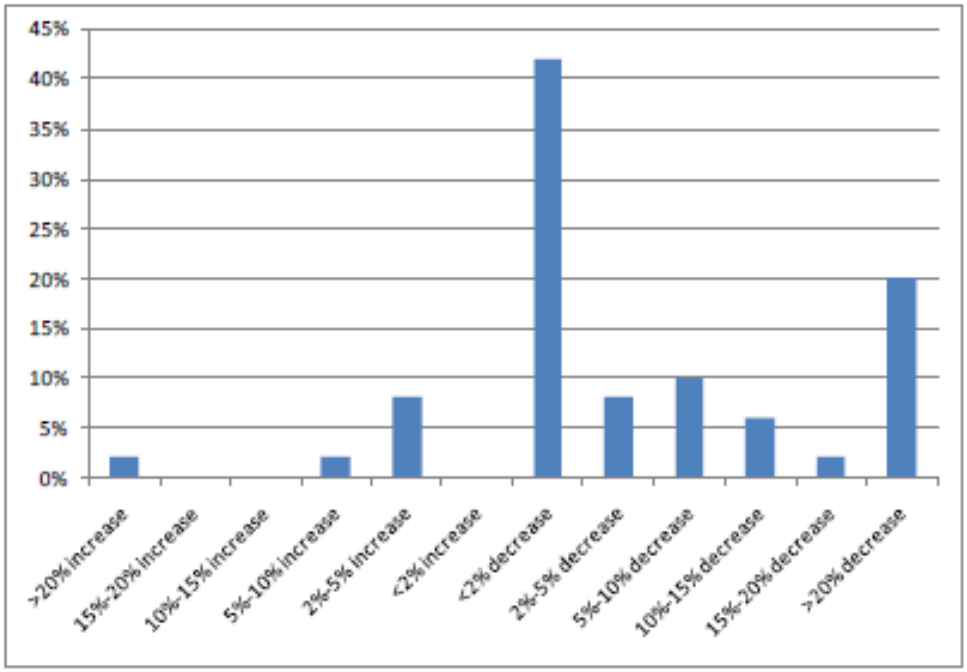
SGS Economics and Planning (2010) Impact of Clearways on High Street in Armadale, Victoria

SGS Economics & Planning Pty Ltd (SGS) investigated the impact of Clearway extensions (in place from February 2010 to December 2010) on turnover, shopper behaviours and retailer confidence in High Street, Armadale in Victoria. Unlike Macquarie and Davey Street, High Street in Armadale is intensely retail centric. Therefore, the impacts of clearways on businesses and shoppers would likely be greater than the impact on businesses and shoppers along Macquarie and Davey Street. SGS found that the adverse impact on turnover in High Street which is directly attributable to the Clearway extensions was -2.9%.

A stratified random sample survey of 50 traders in High Street, Armadale was carried out. All respondents cited loss of parking due to the clearway extensions and customer confusion about these extensions as the reasons why sales have declined. The following chart shows the distribution of respondents according to the sign and scale of the impact from the clearway extensions. The biggest single grouping of respondents (42%) said that the negative impact was less than 2%. However, 20% of respondents reported sales declines of more than 20%.

[13] http://m.letzgogreen.org/associated-groups/red-routes/the-benefits-of-red-routes/

FIGURE 4: REPORTED IMPACT OF CLEARWAY EXTENSIONS ON SALES – PERCENTAGE OF RESPONDENTS



Source: SGS, 2010

NSW Government (2018) Sydney Clearways Strategy Fact Sheet

The NSW Government (2018) found introducing clearways along Mona Vale Road and Victoria Road in NSW reduced weekday travel times by up to 46% and weekend travel times by up to 40%. The study also found a reduction in rear end crashes on the road.

NSW Government (2018) New and extended clearways frequently asked questions

The benefits of clearways identified by NSW Government (2018) are:

- Reduce congestion by making an additional lane available to traffic
- Improve journey times, allowing drivers to get to their destination sooner and more reliably
- Improve safety by removing parked vehicles from the kerbside lane
- Have an immediate positive impact on traffic flow as it uses existing road space for the movement of vehicles
- Improve the efficiency of intersections along the corridor, as all lanes are used.

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