



Dunedin Sharrow Trial June to November 2014



Introduction

In 2014, the Dunedin City Council participated in a six month trial of a road marking symbol called a 'sharrow', as part of a New Zealand Transport Agency co-ordinated national trial. The sharrow symbol indicates a shared lane for cyclists and motorists. They are used where there are no alternative cycle facilities and where traffic lanes are narrow. Sharrows encourage cyclists to ride closer to the centre of the lane, clear of hazards such as car doors, kerb build outs and stormwater grates. They also provide a visual cue reminding motorists that cyclists are entitled to travel on the road, and create an expectation that if cyclists are present they will occupy the lane. Sharrows can also be used in lieu of wayfinding to mark suitable on-road cycle routes.

Sharrows are used overseas and have been shown to improve safety and general awareness of cyclists, however they are not currently a legal road marking in New Zealand. Hence a national trial has been undertaken to measure the effects and benefits of their use before a decision is made on whether to formally adopt them here. The sharrow trial was also undertaken in Auckland, Wellington, Nelson and Palmerston North.

The purpose of the sharrow trial was to:-

- Evaluate the effectiveness and safety of new road markings and the alternative use of existing road markings; and
- Enable the cycle symbol road marking, which is currently dedicated to identifying cycle lanes, to be used as a component of the sharrow symbol road marking to identify shared lanes¹.

Background

In November 2012 a National Cycling Signs and Markings Working Group identified the need for an additional tool to help in the design of cycle infrastructure. A 12-month 'sharrow' road marking trial was initiated in Auckland and formally gazetted on 12th December 2013. Other Councils were invited to take part and submit sites for the trial to complement the results from the Auckland trial.

Dunedin Transportation Group staff advised the Infrastructure Services Committee Chair and Deputy Chair of the intention to submit an application for the trial in early 2014. It was agreed at the Chairs Briefing that the trial was an operational matter that did not require formal Council approval.

An application was submitted to NZ Transport Agency on 7 May 2013. Two application sites in Dunedin were accepted along with sites in Wellington, Nelson and Palmerston North. A formal Gazette Notice was published on Thursday 22 May 2014 (see Attachment 1), legalising the trial sites and marking the commencement of the trial.

Dunedin trial

The sharrow trial in Dunedin was undertaken between June and November 2014. Two suitable sites were identified and linemarked with the sharrow symbol using skid resistant paint (see Attachment 2 for images and further details of each sharrow trial site). These were:

- George Street, between Moray Place and Albany Street

¹ This component was not undertaken in Dunedin.

- King Edward Street, between Hillside Road and Macandrew Road

Both sites have no existing cycling facilities and are low speed environments located in busy activity centres. There are considerable vehicle movements and manoeuvring, so the potential for conflict is high. Providing cyclists with the legitimacy to ride in the lane of these busy, low speed environments means that the potential safety benefits are considerable.

Sharrow Trial Evaluation Methodology

The evaluation of the Dunedin sharrow marking trial used a methodology similar to the Auckland and other Council trials to ensure final results were consistent and compatible.

Assessment methodology that was used included:

- video recording at the trial sites to determine the lateral positioning and behaviour of road users,
- tube counters to determine speed and traffic volumes, and
- analysis of whether cyclists and motorists understand the meaning and purpose of the sharrow symbol

In the Dunedin trial, the evaluation deviated from the National sharrow trial guidance to analyse cyclist and motorist understanding of the meaning and purpose of the sharrow symbol. The original methodology stated that roadside interviews be conducted, however NZ Police in Dunedin identified that this element was too difficult to implement at the two trial sites as they are both located in busy commercial centres, where there are limited parking and stopping opportunities. As an alternative, staff conducted a Peoples Panel survey to measure and understand the community's reaction and understanding of the sharrow symbol (see section below for further details on the People's Panel survey).

Consultation

Extensive communication about the trial was conducted prior to the installation of the sharrows symbols. Various formats including reports, emails, letters and a press release were disseminated to internal and external stakeholders including:

- Executive Leadership Team
- Councillors
- Relevant staff
- Spokes Bicycle Advocacy Group and other cycle groups/clubs
- Otago Regional Council
- Bus operators
- NZ Police
- Local businesses within 100m of the two trial sites
- Bicycle shops
- Automobile Association
- General public
- Local media

Media Coverage

Reporting on the sharrows trial appeared in the Otago Daily Times on 18 June, 20 June and 26 June. Information on the trial also appeared on Dunedin City Council's website, and in Council's monthly newsletter, FYI Dunedin (see Attachment 3 for media coverage). A local television station also ran a story on the trial - <http://www.dunedintv.co.nz/content/new-trial-road-symbols-aim-improve-safety-cyclists>

Installation

Installation of the sharrow marking was conducted in June 2014 . Thirty sharrows were linemarked on George Street in the Central Business District, and 16 on King Edward Street, South Dunedin. The cost of the linemarking at both sites was \$1684 in total.

Council's Traffic Engineer provided some feedback on the technical note developed by Flow Transportation Specialists² which included:

- consideration of a review of sharrow lateral placement (page 6); placement of the sharrow either 2.4m or 2.9m from kerb (dependent on lane width) where there is parking would effectively place cyclists within or very close to the 'door zone';
- no indication of the frequency of sharrow symbols along a route
- some guidance of sharrow placement near high volume intersections and through intersections, including signalised intersections, as there are often many other symbols and linemarkings here, such as turning arrows.

Evaluation and Monitoring

1. Did the sharrows contribute to a change in traffic speeds?

An analysis of the 85th percentile speed data saw no difference in speed on George Street as a result of the sharrows, however there was a 7.5km/h reduction in the 85th percentile speed on King Edward Street. This variation between the two sites is likely to be related to the fact that the posted speed limit on George Street is 30km/h, hence there is not likely to be a significant speed reduction here compared with King Edward Street, where the posted speed limit is 50km/h.

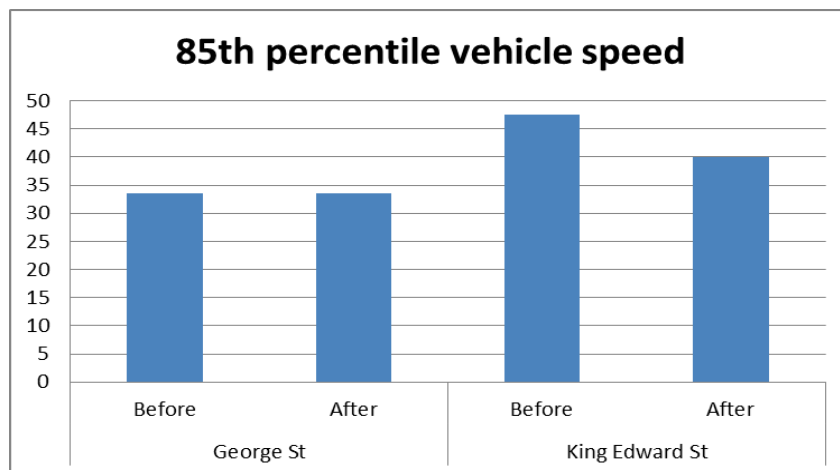


Figure 1: Vehicle speeds measured before and after the sharrow symbol trial

2. Did the sharrows contribute to a change in cyclist lateral positioning:

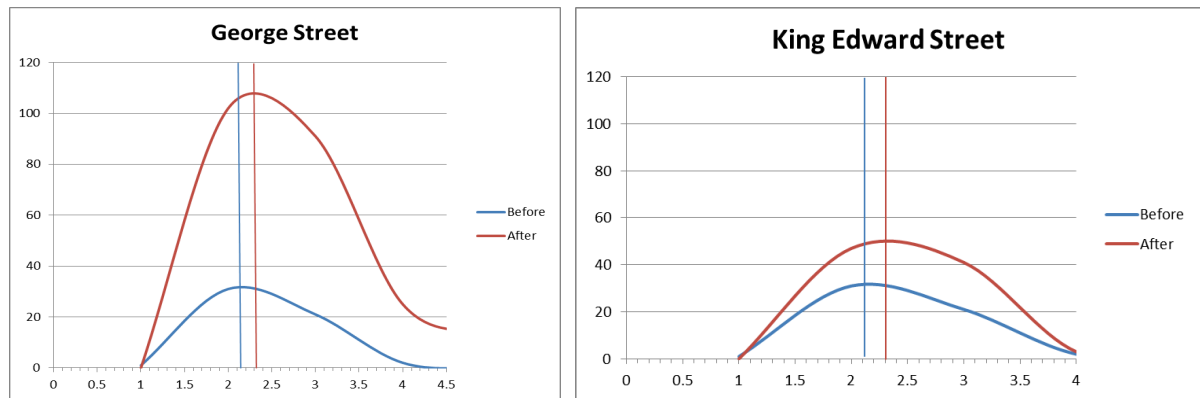
a) when adjacent to a parked car?

Miovision video footage was analysed to record changes in cyclist lateral positioning before

² Sharrow Markings: Initial Draft Implementation / Best Practice Guidelines. 24 April 2014, Flow Transportation Specialists

and after the sharrow symbol was installed at the two locations. The graphs below show the differences in lateral offsets recorded. The first two graphs (figures 2 and 3 below) show the offset recorded when a parked car was located at the recording site (distance given is that between a vehicle and cyclist).

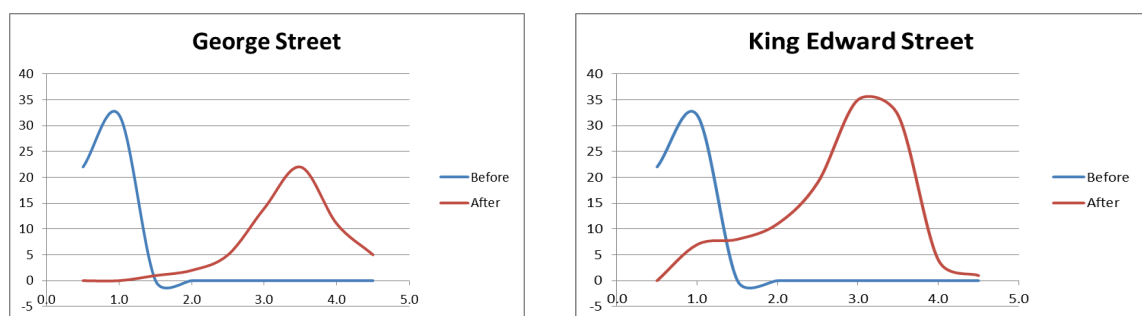
At both sites cyclists were recorded moving 15-20cm further away from the kerb following the installation of the sharrow symbol. Note that there was a significant difference in cyclist volumes due to seasonal variation (pre-trial data was sampled in June, whilst post-trial data was sampled in November).



Figures 2 & 3: Lateral positioning of cyclists measured adjacent to a parked car before and after the sharrow installation

b) when there was no parked car kerbside?

Data was also separately recorded³ when the adjacent parking space to the recording site was not occupied by a vehicle (distance between kerb and cyclist). The graphs below show that prior to the sharrow symbols being installed, cyclists would ride within the parking lane, just one metre from the kerb, however following their installation, cyclists would 'take the lane', and ride within the carriageway, often more than three metres from the kerb. This has significant safety benefits for cyclists, through improved visibility, and more predictable and consistent travel as cyclists are not swerving between parked cars. The sharrow symbols have clearly provided cyclists with legitimacy to take the lane.



Figures 4 & 5: Lateral positioning of cyclists measured when there was no adjacent parked car before and after the sharrow installation

³ The Saturday post-trial data from the King Edward Street site had to be discarded due to a local street festival event, where no traffic movements were recorded.

What was the community's response to the sharrow?

The trial in Dunedin deviated from the National guidance and it was agreed Dunedin City Council would undertake a People's Panel survey to measure and understand the community's reaction and understanding of the sharrow symbol. The People's Panel is an email-based panel that gives people in Dunedin the opportunity to provide online feedback on a range of Council issues, as well as contribute to shaping policy and decision making. The People's Panel is self-selecting and at the time of the sharrow road marking survey there were 1,318 people registered.

The sharrow survey was conducted in August 2014, two months after the installation of the markings, and was completed by 347 panel members. To view the People's Panel survey questions, see Attachment 4. Of the participants:

- 251 respondents had used George Street as a motorist only, 27 as both a cyclist and a motorist, and 10 as a cyclist only.
- 249 respondents had used King Edward Street as a motorist only, 11 had used the street as both a cyclist and a motorist, and 8 as a cyclist only.

Key findings of the survey included:

- 64% of the respondents who had used the sharrow sites (George Street or King Edward Street) in the previous two months had seen the sharrow marking.
- 57% of cyclists felt like more legitimate road users after seeing the sharrow marking.
- 54% of motorists looked for cyclists after seeing the sharrow marking.
- 66% of the respondents thought the sharrow marking meant that cars and bikes should share the road.
- 76% of the respondents thought motorists should share the road with cyclists and pass when safe to do so when sharrow markings are marked on the road.
- 72% of the respondents thought that cyclists should position themselves in the left half of the lane when sharrow markings are marked on the road.

Cyclists responded that the sharrow symbol made them feel like a more legitimate road user (57%), more visible (23%) and safer (20%). However, one third of cyclists stated that they felt no different following the installation of the sharrow symbol. In reference to Figure 6 below, most cyclists (68%) stated that they rode in position B.



Figure 6: Motorists and cyclists were asked where cyclists should be riding on the carriageway where there is a marked sharrow symbol

Of the motorists that had encountered the symbol at either location, many stated that they drove no differently to normal (45%), while others responded that they had looked for cyclists but not slowed down (28%), or slowed down and checked for cyclists (26%). Motorists were also asked where cyclists should be positioned on the road (refer to Figure 6) where there is a marked sharrow symbol; 40% stated position A and 32% stated position B.

Despite many of the reported positive road safety responses, nearly 20% of survey participants indicated they were confused about the meaning of the symbols, and/or that more education and information was needed. Extensive communication on the sharrow trial was undertaken by the Council, however there is clearly a need for wider education and information dissemination. This is in line with Auckland Transport's sharrow trial submission, which suggested that development of literature and promotional materials to educate all road users is recommended should the sharrow road markings be accepted as a Traffic Control Device (TCD).

To view the complete results of the People's Panel survey, see Attachment 4.

Conclusion

The evidence presented suggests that the sharrow encourages cyclists to take the lane, and that cyclists' feel more validated. The data also suggests the sharrow encourages drivers to look for cyclists and slow down.

Analysis of the video footage data revealed that there was 15-20cm shift in cyclist lateral positioning towards the sharrow when cycling adjacent to parked cars, taking them further away from the door zone. However it is apparent that one of the greatest benefits of the sharrow occurs when there is no parked car; sharrow encourages cyclists to take the lane, by shifting up to 2.5 metres towards the centre of the lane, rather than weaving between parked vehicles.

Results from the People's Panel Survey indicated that many cyclists reported that they felt like a more legitimate road user at the trial locations. Some motorists reported that they looked for cyclists (28%), or slowed down and checked for cyclists (26%), however 45% of motorists stated that they drove no differently to normal.

The People's Panel Survey invited comments from participants through an open feedback section. Nearly 20% of all survey participants commented that they were confused about the markings and what they meant, and/or there was a need for more education. Should the sharrow be formally adopted as a Traffic Control Device, it will be necessary to educate all road users about their purpose.

Attachments

Attachment 1: Sharrow trial gazette notice

Attachment 2: Sharrow trial site locations

Attachment 3: Sharrow media coverage

Attachment 4: People's Panel survey questions

Attachment 5: People's Panel survey report