



NZTA Shared Pedestrian and Cycle Lantern Trial

SNUG 2019 Update

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- For those of you who don't know me, my name is Alex Lumsdon and for the next 10-15 minutes or so I will be providing the group with an update to the NZTA Shared Aspect Lantern Trial.
- For the last 3 years or so I've been heavily involved with delivering traffic signals for Peloton, which is a consortium group consisting of Beca, Stantec and GHD.
- Peloton's Major Cycleway routes is about delivering safe, efficient and enjoyable cycling routes for the 'interested but concerned user' from Christchurch suburbs to the central city
- If some of you were present at last years SNUG workshop in Hamilton, myself and Oliver Brown presented at the workshop on the trial.
- Unfortunately Olly could not be present today, however the idea of the presentation it to provide an update to the group and it's progress with NZTA.

Proposal and Objectives

31 March 2018 to 2020

1. Install two-aspect shared cycle and pedestrian signals as an alternative to three-aspect cycle signals
2. Evaluate the safety and effectiveness of combined two-aspect cycle and pedestrian signals
3. Assess pedestrians' and cyclists' understanding of and compliance with combined lanterns
4. Assess the behaviour of cyclists approaching two-aspect signals
5. Investigation whether separate call buttons for pedestrians and cyclists is required, including any independent signal phasing.
6. What detection requirements are needed for pedestrians and cyclists
7. Investigate safety and efficiency



For those of you who are unaware of the trial, the main focus was to:

- Install shared two-aspect lanterns at possible locations on Quarrymans Trail Major Cycleway (MCR) in Christchurch
- The trial was to be undertaken in accordance with the NZTA Traffic Note 10 – Trials of traffic control devices guidelines
- The key objective and takeaway from the trial was to carry out surveys and document user compliance with regards to cyclists and pedestrian behaviours (compared to the conventional crossing arrangement) – Separated pedestrian and cycle arrangement.
- Some of the key proposals were to investigate detection requirements and whether or not separate call buttons were required at the crossings to improve safety and efficiency

Re-cap - trial benefits?

1. Reduce traffic signal hardware
2. Reduction in street furniture
3. Using a shared button for pedestrians and cyclists
4. Improve pedestrian and cyclist interaction
5. Improve lantern displays

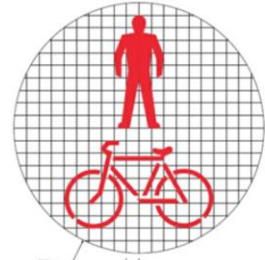


- Reducing capital cost and signal maintenance costs by removing additional poles and lanterns
- Improving streetscape and amenity for more enjoyable journeys for cyclists and pedestrians
- Likely to ease confusion associated with cycle call accept buttons and intermittent detection at signalised intersections
- Improve interaction with removal of white line that determines this is ped space, and that is cyclists space

Selected Trial Locations

Road Controlling Authority	Location	Signal or crossing detail
Auckland Transport	Quay Street and Lower Hobson Street intersection	Two-aspect cycle signals
Auckland Transport	Stanley Street and Alten Road intersection	Two-aspect cycle signals
Christchurch City Council	Armagh Street at Oxford Terrace	Combined pedestrian and cycle signal aspects at mid-block crossing
Christchurch City Council	Barrington Street at Strauss Place	Combined pedestrian and cycle signal aspects at mid-block crossing
Christchurch City Council	Colombo Street at Oxford Terrace	Combined pedestrian and cycle signal aspects at mid-block crossing
Christchurch City Council	Garlands Road (SH74A) at Cumnor Terrace	Combined pedestrian and cycle signal aspects at mid-block crossing
Christchurch City Council	Hansons Lane and Suva Street intersection	Combined pedestrian and cycle signal aspects with shared pedestrian and cycle Barnes Dance phase
Christchurch City Council	Sparks Road near Pablo Place	Combined pedestrian and cycle signal aspects at mid-block crossing
Christchurch City Council	Strickland Street at Roker Street	Combined pedestrian and cycle signal aspects at mid-block crossing
NZ Transport Agency	SH1 (Arthur Street and Buckle Street) and Taranaki Street intersection, Wellington	Two-aspect cycle signals
NZ Transport Agency	SH1 (Rugby Street) and Adelaide Road intersection, Wellington	Two-aspect cycle signals

Built



Example: steady red combined standing pedestrian and cycle signal

To be constructed



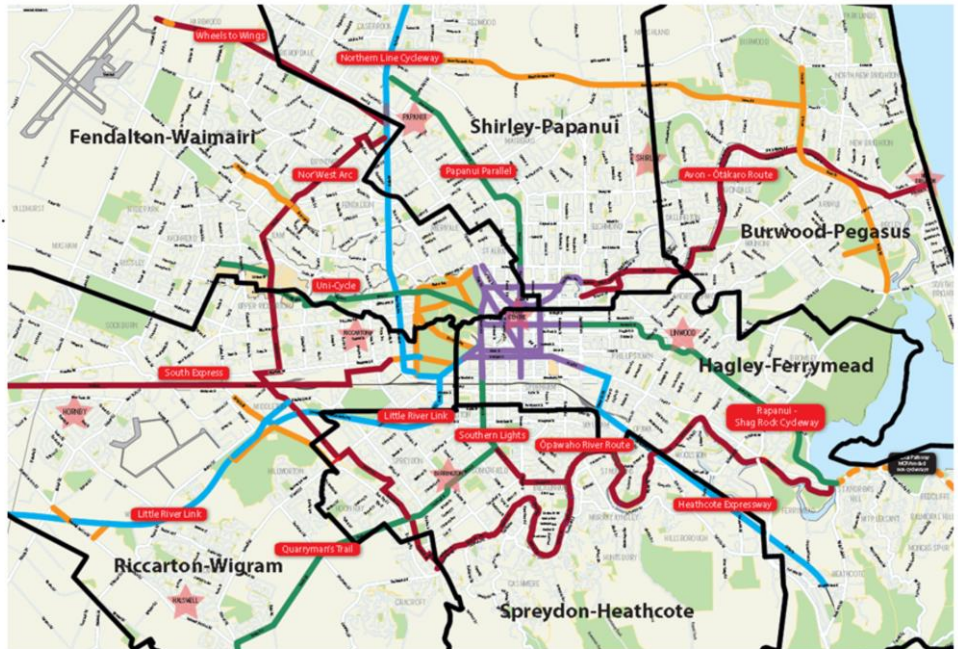
Example: steady green combined walking pedestrian and cycle signal



- Formal trial location can be seen in the gazetted table on the slide.
- Auckland and Wellington have installed two-aspect cycle signals, however Christchurch have combined the ped/cycle signal within a two-aspect lantern.
- The trial so far has been positive and a number of RCA's have shown a keen interest, the likes of Dunedin City Council and Tauranga City Council to name a few.

CCC MCR Routes

- 13 Major Cycleway Routes
- 101 km of cycleway for the 'interested but concerned' demographic to give cycling a go.
- \$206 million committed over 10 years
- Peloton has designed 8 routes

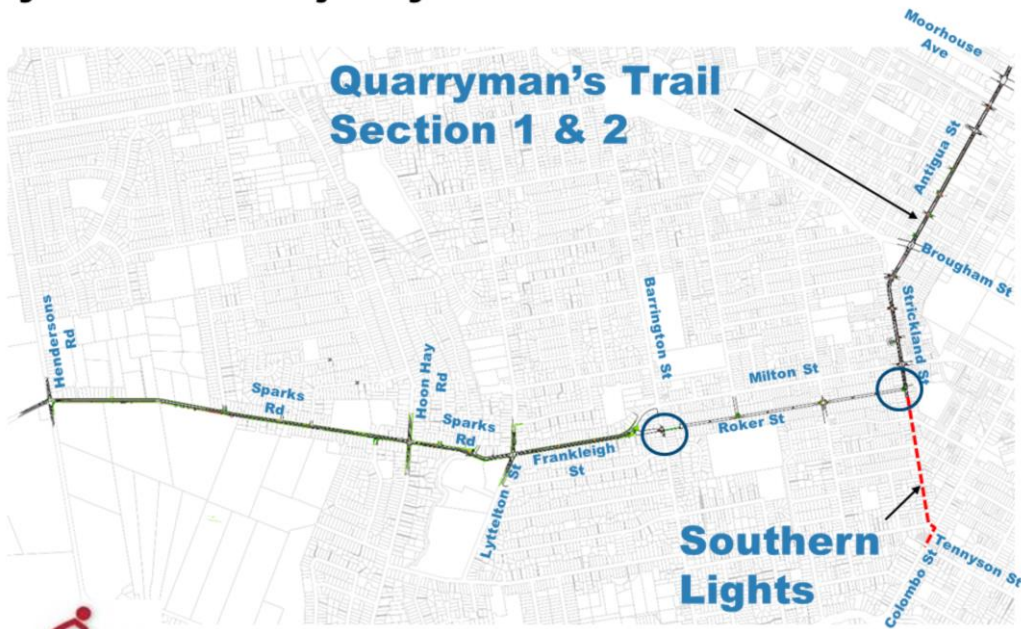


Extensive MCR network within Christchurch City.

Mention MCR's that have already been built and currently operating.

Quarrymans Trail MCR section 2 and 3 have been built which were completed by two different contractors FH & Isaac

Quarryman's Trail Major Cycle Route



Focus of 'The Trial' area Quarrymans Trail MCR

Section 3 completed by FH

Section 2 completed by Isaac

Southern Lights will eventually tie into Quarrymans Trail once built

Trial Crossing 1 – Strickland St / Roker St

Trial Crossing 2 – Barrington St / Strauss Place

Site Selection

Characteristic	Barrington Street	Strickland Street
Road Classification and AADT	Minor Arterial 14,970 vpd (August 2016)	Collector Road 6,667 vpd (July 2017)
Nearby Amenities	Barrington Mall and corner shops are located approximately 200m northwest of the site.	An entrance to Bradford Park is located on the north-eastern side of Strickland Street, adjoining the signals.
Adjacent Land Use	Predominantly residential	Predominantly residential
MCR	The Quarryman's Trail MCR runs from Roker Street via a shared path to Barrington Street. The route crosses Barrington Street midblock and continues west on Strauss Place via a neighbourhood greenway. Predicted to cater for 1,900 cyclists per day (2031).	The Quarryman's Trail MCR runs along Strickland Street via a one-way separated facility. The route crosses Strickland Street midblock and continues west on Roker Street via a neighbourhood greenway. Predicted to cater for 1,900 cyclists per day (2031). Strickland Street is a popular cycle commuter route and forms part of the future potential Southern Lights MCR which is predicted to cater for 900 cyclists per day (2031).
Signal	Two-aspect with combined pedestrian and cycle aspect, dia. 300mm. Co-ordinated with Barrington/Milton traffic signals.	Two-aspect with combined pedestrian and cycle aspect, dia. 200mm. Co-ordinated with Strickland/Milton traffic signals.
Signal Phasing	Two phase intersection, Barrington Street and the pedestrian/cycle phase. There is also an All Red phase.	Two phase intersection, Strickland Street and the pedestrian/cycle phase. There is also an All Red phase.



Site selection for the trial were based on the characteristics shown in the slide:

- Amount of pedestrian and cycle demand from local amenities for example the Barrington St Mall and school, and Bradford Park at Strickland St.
- The area is predominantly residential with the MCR predicted to cater for a reasonably high cycle and pedestrian by 2031
- Additionally

Traffic Signal Operation & Effects

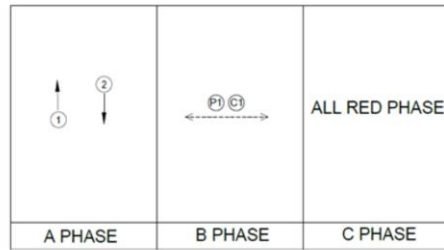
Combined two-aspect signals are based on the traditional pedestrian signals

Green time for cyclists will be based on pedestrian walking speeds and less than the traditional cyclist green time

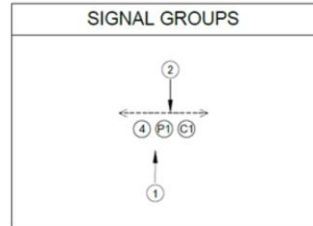
The effect of this reduction in green time will reduce cyclist crossing time from around 10 seconds to 6 seconds

This results in a reduction in level of service due to cyclists not being permitted to start crossing the road at commencement of the flashing red phase

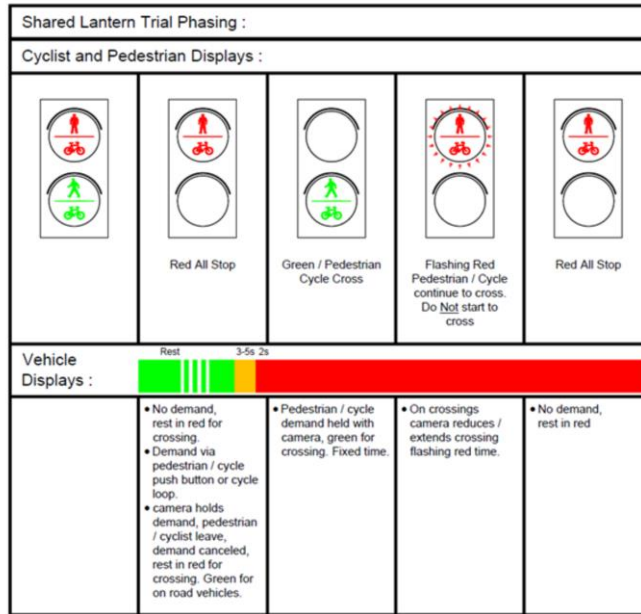
SIGNAL PHASING



SIGNAL GROUPS



- The combined aspects are based on the traditional ped signal arrangement
- The green time for cyclists is currently based on pedestrian walking speeds and less than the traditional cyclist green time
- The reduction time is from around 10 seconds to 6 seconds and this means a reduction in level of service for cyclists.
- This because cyclists are not permitted to cross at commencement of the flashing red phase.

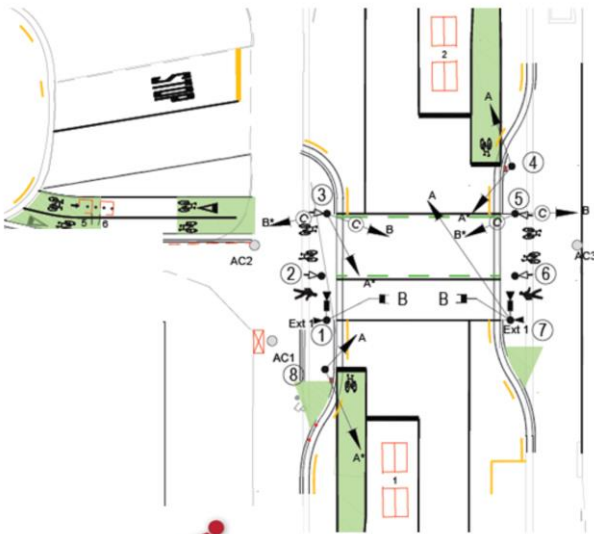


As you can see from the slide, a graphical staging diagram can be seen showing some context to the vehicle display sequence and intended operation

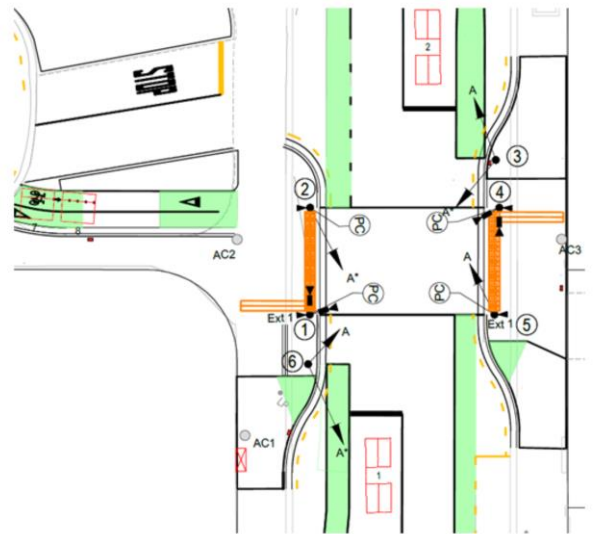
- Pedestrian or cyclist will indicate a demand either through the push button with the addition of kerbside detector
- The ped and cyclist will be given the invitation to cross, which is a fixed time
- The on-crossing detector cameras will either extend or reduce the crossing time depending on the user crossing speed

Design

Traditional Layout



Trial Layout



The design differs from the conventional traditional layout:

- Remove the central stub pole and removal of the white line separating pedestrians and cyclists
- Removing the ped and cycle lanterns and installing combined 2-aspect displays

Site Evaluations & Report

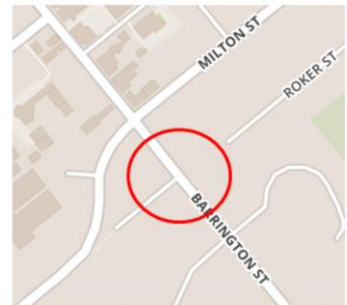
- Surveys were undertaken as part of the pre and post installation evaluations
- The surveys involved observing users at both a combined two-aspect trial site and benchmark site with the traditional separated cycle and pedestrian lanterns
- A report was undertaken and supplied to NZTA to present an interim evaluation of the trial



**Traditional Layout
Straven Road**



**Trial Layout
Barrington Street**



- The Straven Road crossing was identified to the team as a good location to undertake a survey for the traditional layout
- This is because the route currently has 25,000 vpd, with an expected 700 cyclists per day on Uni-Cycle route near Deans Avenue
- Barrington Street was selected for the trial layout due to the existing ped and cycle demands from SCATS data received by CTOC

Conclusions (interim)

Traditional site:

- Higher number of pedestrians crossing on flashing red compared to trial – likely due to group behaviour.
- Comparable number of cyclists crossing on red or flashing red / yellow at both sites
- Higher number of pedestrians and cyclists crossing without demand input
- Cyclists cross using the pedestrian area, partially due to stub pole being located in manoeuvring space

Trial site:

- More pedestrians and cyclists use push button – possibly due to new site
- Shared pedestrian / cyclist lanterns must be 300mm diameter
- No notable safety issues or confusion of users
- Shared pedestrian / cyclist button is well used by cyclists



Moving Forward / Lessons Learnt

- Second survey proposed at trial site in early 2020, end of summer period, when user volumes and familiarity will be greater
- Appears to be benefit in combining the crossing area (removal of central white line) and removal of the stub pole with majority to cyclists traversing the pedestrian area
- Shared pedestrian and cyclist lanterns and combined push buttons warrant ongoing evaluation.



NZTA Feedback

- Interim report was sent to NZTA for the shared aspect signal trial
- The trial was extended to include 3 additional sites
 - Two Barnes Dance sites in Dunedin
 - Combined pedestrian and cycle signals at a site in Otaki, Kapiti Coast District
- Final report is due in May 2020
- TCD Steering Group Meeting – June 2020



Shared Pedestrian & Cycle Signals/Two Aspect Signals Trial

TDC group members have received the Interim report for the Shared Aspect signals/Two Aspect Signals Trial,

The trial was extended to include 3 additional sights:

Two Barnes Dance sites in Dunedin

Combined Pedestrian & Cycle signals site in Otaki

The final reports are due in May 2020 with then most likely going to the June 2020 TCD Steering Group Meeting.

Any favourable recommendation from this would await the next Omnibus amendment rule change package to go to the Minister.

Cycle Directional Signals Trial

TCD Steering Group have received the final report for the Cycle Directional Signals Trial from AT and CCC (They complemented Via Strada their consultants the standard of the report)

The TCD Steering Group approve the use Cycle Directional Signals. NZTA are endeavouring to get them included in the next Omnibus Amendment Rule Change package to go to the Minister for sign off in the new year.

There was no interest in trialling additional supplementary small signals for

the primary pole from either CCC or AT.