

# Laying low to send a signal: Pursuing a trial of low-level cycle signals

Megan Gregory

SNUG Annual Workshop, September 2024

Absolutely Positively  
**Wellington City Council**  
Me Heke Ki Pōneke



**VIASTRADA**  
TRANSPORT PLANNING AND DESIGN

Kia ora, I'm Megan Gregory of ViaStrada and today I'll be presenting on behalf of the team applying for this trial.

## Outline

Who's involved?

What is a low-level cycle signal?

The case for low-level cycle signals

Anticipated trial methodology

Additional research outside of TCD trial req's



**VIA**STRADA

Absolutely Positively  
**Wellington** City Council  
Me Heke Ki Pōneke



I'm going to step through the who, the what and the how of this proposed trial.



## Who's involved?

WCC as lead RCA, plus AT and PNCC

- Other RCAs that want to be involved should say so now!

ViaStrada will develop the application, lead the trial etc

- RCAs will provide input for their sites – plans, publicity, local assistance etc

**VIA**STRADA

Absolutely Positively  
**Wellington** City Council  
Me Heke Ki Pōneke



The push has come from the RCAs - 3 RCAs involved so far – WCC is the lead  
VS will develop application – process in Traff Note 10  
If successful, oversee the running of the trial, analyse results, report

## Low-level cycle signals (LLCS)

- Smaller than standard – 100 mm diameter aspects
- Near-side
- Cyclist eye-level
- Visible from cycle limit line



**VIA**STRADA

Absolutely Positively  
**Wellington** City Council  
Me Heke Ki Pōneke



What is a LLCS?

<Step through slide>

There are several issues we think LLCSs could address...

## The case for low-level cycle signals – 1



### Cyclists don't see much of the primary signal

- Cyclists spend more time at the limit line
- Can't see primary signal when waiting under it

### Farside cycle signals can be hard to distinguish

- More detailed than roundels or arrows

**VIA**STRADA

Absolutely Positively  
**Wellington** City Council  
Me Heke Ki Pōneke



- 1: Cycs don't see prim sig – obvs see while approaching (main purpose prim sig)  
But consider that cyc sigs for sep cways > full protection > cycs have minimal green time, lower proportion GT cf parallel thru traffic.  
Think about cycs on their journey: see prim sig while approaching but, compared w drivers, more likely waiting at limit line, under primary, relying on the farside signals. Can fit more cyclists close to the limit line.
  2. Flipside: Farside – more detail, harder to distinguish.
- Photo: Dunedin on SH1, during AMIG site visit.

## The case for low-level cycle signals – 2

Can be hard to fit in all the signals



**VIA**STRADA

Absolutely Positively  
**Wellington** City Council  
Me Heke Ki Pōneke



As we roll out more cycleways, we have to fit the cycle signals in with all the other required signals.

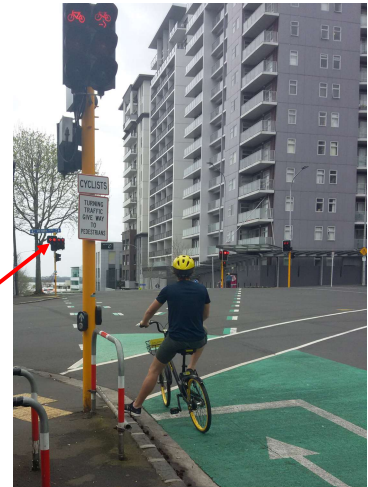
Tuam / High, Chch. Attracted a lot of attention for a record number of signal poles. They had to re-do it.

A pretty good result, but illustrates that it takes a lot of thought.

Could declutter by replacing some of the standard cyc sigs with LLCs.

## The case for low-level cycle signals – 3

Grouping cycle signals + general traffic signals  
can result in confusion



**VIA**STRADA

Absolutely Positively  
**Wellington** City Council  
Me Heke Ki Pōneke



In line with that – trying to retrofit cycle signals in, even trickier.

Akld example – Nelson / Victoria – retrofit, directional cycle signals trial site.

We did give them feedback at the time that the signal layout should reflect the lane layout. Surveys > source of confusion.

Cyclist in photo – illustrates previous 2 points - would be better to have their own signals on the pole next to them.

## The case for low-level cycle signals – 4



### Cycleways around a bend

- Doesn't make sense to look to the farside if turning left



**VIA**STRADA

Absolutely Positively  
**Wellington** City Council  
Me Heke Ki Pōneke



What about this one, Customs St W / Lower Hobson (Auckland).  
Cycleway goes around a lefthand bend, unintuitive to use farside signals.  
ATOC have since installed LLCS (easier to seek forgiveness than ask permission)  
Will be a proposed trial site.



## The case for low-level cycle signals – 5

Standard primary lantern might point towards a residential property



**VIA**STRADA

Absolutely Positively  
**Wellington** City Council  
Me Heke Ki Pōneke



Heathcote Express cycleway crossing Wilsons Rd, Chch – primary cycle signals point towards users approaching on the path, and also the neighbouring property.

Replace primary w LLCS would mitigate

John Kinghorn has an even better (worse?) example from Hamilton.

## The case for low-level cycle signals – 6

### Drivers making false starts when the cycle green leads

- Drivers react to *change*
- Ties in with difficulty in distinguishing farside cycle signals



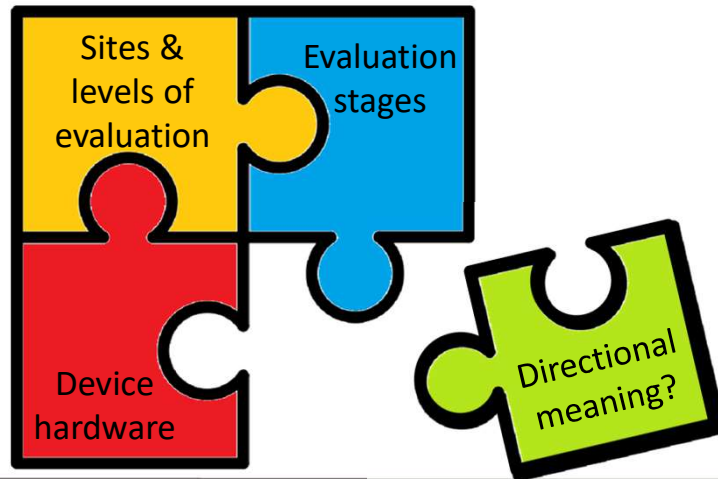
**VIA**STRADA

Absolutely Positively  
**Wellington** City Council  
Me Heke Ki Pōneke



One of the WCC sites – diagonal crossing Kent @ Cambridge / Majoribanks.  
Drivers may react to the cycle signal changing green, especially given how far away the farside signal is.  
Comp. w lead arrow – thru drivers make false start. Here, consequence worse if drivers hit cyclist on cway.

## Trial application (work in progress)



**VIA**STRADA

Absolutely Positively  
**Wellington** City Council  
Me Heke Ki Pōneke



Project just getting started... first step will be to develop the trial application.  
Critical parts: device specifications and methodology for trialling it.  
Envisage four main components, will step through.  
Directional meaning will be considered but may not fit.

## Trial application – device hardware

Source existing products  
already used elsewhere



**VIA**STRADA

Absolutely Positively  
**Wellington** City Council  
Me Heke Ki Pōneke



Will look into what's available and compatibility with NZ systems.  
Start with what's being used in Auckland, background research already done there.

## Trial methodology – sites & evaluation



	Main sites	Secondary sites
Evaluation methods	<ul style="list-style-type: none"><li>• Behaviour</li><li>• Perception</li></ul>	<ul style="list-style-type: none"><li>• Perception</li><li>• Passive monitoring</li></ul>

**VIA**STRADA

Absolutely Positively  
**Wellington** City Council  
Me Heke Ki Pōneke



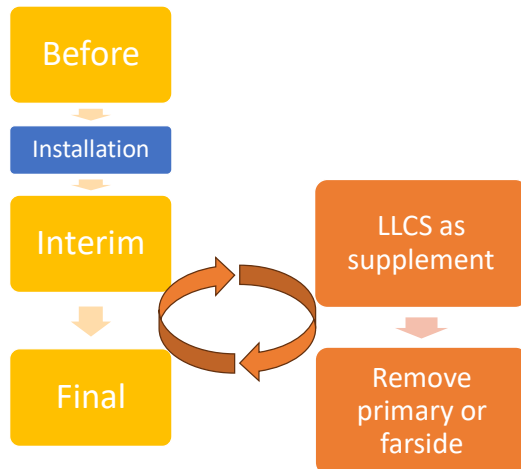
Sites and how they're evaluated.

Sites – want a mix from different RCAs, different characteristics. Cover all the issues. Envisage 2 levels: Main – full evaluation; Secondary sites – probably just include in user survey, passive monitoring, site visits.

Behaviour evaluation – video footage, analyse user compliance with signals, interactions (how close to a conflict?), infer safety. Also note any unusual events etc.

Perception – user survey (online, possibly in-person too) – do people like the LLCS, find them easy to see / use etc. Prefer LLCS over large farside signals?

## Trial methodology – evaluation stages



### TCD Rule 6.2(1A):

For each approach [...] the RCA must install:

- (a) [...] a limit line [...]
- (b) a traffic signal [...] visible to road users **approaching** the area controlled [...]
- (c) [...] at least one [...] traffic signal [...] visible to road users **stopped**

**VIASTRADA**

Absolutely Positively  
**Wellington City Council**  
Me Heke Ki Pōneke



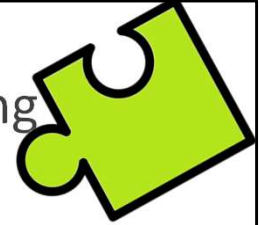
Will follow the standard process: before-interim-final

But will work in a few extra iterations after installation – start with LLCS as supplementary to standard sigs

then **at certain sites where it makes sense to do so**, remove primary or farside signals – LLCS takes over their function

Note TCD Rule 6.2(1A) requires one signal visible to approaching users, and one visible to stopped users – LLCS could perform either function.

## Trial methodology – directional meaning



- Directional cycle signals trialled, not yet approved
- Ineffective to incorporate arrow into small signals?
- Will consider on a site-by-site basis
  - Likely that LLCS can only be supplementary at directional cycle signals sites



LEFT ARROW



STRAIGHT AHEAD  
ARROW



RIGHT ARROW



BEAR LEFT  
ARROW



BEAR RIGHT  
ARROW

**VIA**STRADA

Absolutely Positively  
**Wellington** City Council  
Me Heke Ki Pōneke



Finally, consider: can we incorporate directional meaning? Tricky part of the puzzle. Gets complicated when they're small.

DCS trial: completed before my 1<sup>st</sup> kid – specified arrows included within the aspects (not supplementary plates), and allowable aspect sizes – standard or large.

Will users be able to distinguish arrows within small signals?

So, likely that LLCS could only be supplementary to directional cycle signals, at existing directional sites.

## Additional research outside TCD scope

- Maintenance & life-cycle costs
  - Compare different LED options (multiple vs single light source, different products)
  - Costs of various arrangements (LLCS, primary, farside)
  - Product that is strong enough to withstand vandalism
- Impact on streetscape / urban design
- Assessment for vision-impaired users
  - Include Blind & Low-Vision NZ in development and surveys



**VIA**STRADA

Absolutely Positively  
**Wellington** City Council  
Me Heke Ki Pōneke



Information that RCAs want to know, some could feed into the benefits and cost considerations in Traffic Note 10, but level of detail isn't really required.





ChatGPT's last plug to join the trial. If you do have sites you think would benefit from LLCs, it's a lot easier to get in now rather than wait until my kids are at high school and a trial has been conducted and approved.



# VIASTRADA

TRANSPORT PLANNING AND DESIGN  
TE WHAKAMAHERE O NGĀ ARA

Absolutely Positively  
**Wellington** City Council  
Me Heke Ki Pōneke



Thank you, any questions?