

21. CHRISTCHURCH CYCLE LANES: PROPOSED COLOURED SURFACING CHANGE



General Manager responsible:	General Manager City Environment, DDI 941-8608
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PURPOSE OF REPORT

1. The purpose of this report is to seek the Council's approval to change the coloured surfacing of Christchurch Cycle Lanes from the red that is presently used to green.

EXECUTIVE SUMMARY

Current Practice

2. The current Council practice is to apply red coloured surfacing in selected sections of cycle facilities to heighten the awareness of motorists and cyclists regarding the presence of cycle facilities such as cycle lanes, cycle bypasses, advanced stop lines, advanced stop boxes and hook turn boxes. Christchurch was the first city in New Zealand to implement coloured surfacing in cycle facilities and decided upon red. However, apart from Waimakariri District, the rest of the country subsequently adopted green surfacing for cycle facilities, as well as for bus lanes and hence recent updates to the Manual of Traffic Signs and Markings (MOTSAM) guide have included the specification of green surfacing, with an exception for Christchurch due to historic reasons.

History

3. Christchurch marked its first red coloured cycle lane, a 200 metre section on Kilmarnock Street, in 1998 for a trial of the effectiveness of coloured surfacing. Various colour alternatives were considered with the two most probable candidates being red and green. The most influential factor was a German study (no longer available) where psychologists assessed the influence of colours on road users and concluded that red produced the highest response rate. Thus the Kilmarnock Street cycle lane and all subsequent coloured cycle facilities in Christchurch were coloured red.
4. At the 1999 IPENZ Traffic Management Workshop (1 to 3 November, Palmerston North) one of six sessions was completely devoted to new cycling developments. After this session, a meeting was held for attendees to further discuss the appropriate colour for cycle lanes and bus priority lanes. About 30 practitioners from local authorities, Transit New Zealand (now NZTA), traffic engineering consultancies, road safety co-ordinators, the Land Transport Safety Authority (now NZTA) and road marking companies attended the meeting.
5. Attendees desiring to achieve consistency within New Zealand in terms of traffic management, specifically cycle facility colouring, concluded that green was the most appropriate colour based on a majority vote. Some Christchurch attendees, however, supported red based on the aforementioned study and the considerable length of red coloured cycle lanes already installed in Christchurch. The group then made an informal recommendation to New Zealand's road controlling authorities that if colour is used to delineate cycle, bus and combined bus and cycle facilities it should be green (Wilke, 1999).
6. Based on the outcome of the 2000 workshop, Council staff proposed to the Sustainable Transport and Utilities Committee that Christchurch adopt green surfacing instead of red. The Councillors at that time, however, opposed this decision given the aforementioned German study and the fact that Christchurch, then, had approximately the same amount of coloured surfacing for cycle facilities as the rest of the country combined.
7. The only other local authorities to adopt red as their preferred colour for cycle facilities were Nelson City and Waimakariri District. Nelson City changed their preference to green several years ago. Waimakariri District still uses red, however, they have approximately only 200 metres of coloured surfacing in total.

8. In 2008, MOTSAM (Manual of Traffic Signs and Markings) was revised to include markings for cycle facilities. This included the specification of green as the colour for coloured surfacing, although it included a note allowing Christchurch to continue using red coloured surfacing. Thus, to this day, Christchurch has red coloured surfacing in cycle facilities whereas the rest of New Zealand (except 200 metres at Waimakariri District Council) uses green. It is of note that the New Zealand Transport Agency (NZTA) office in Christchurch also uses red for cycle facilities on State Highways, because of the previous Council decision, so that there is consistency between the various intersection approaches within Christchurch. Tony Spowart of NZTA Christchurch, who was on the MOTSAM Working Party, expressed a strong desire for Christchurch City to start using green, so that NZTA could comply with national guidance.

Reference Manuals

9. All the current, major traffic engineering manuals used as guides/references by the Traffic Engineering industry within New Zealand specify green as the coloured surfacing of choice for cycle lanes.

Manual of Traffic Signs and Markings (MOTSAM)

(New Zealand Transport Agency, 2008) NZ.

Austrroads Guide to Traffic Management part 6: Intersections, Interchanges and Crossings

(Austrroads, 2007) Australia and NZ.

Austrroads Guide to Traffic Management part 8: Local Area Traffic Management

(Austrroads, 2008) Australia and NZ.

Cycle Note 14 – Coloured Surface Treatments for Bicycle Lanes
(VicRoads, 2005) Australia.

CONSIDERATIONS

Scientific evidence

10. Based on current literature, there is little scientific evidence to support either green or red over the other. There are few documented studies of the effects on quantifiable aspects such as accident rates, conflict occurrences, motor vehicle positioning or cyclists' perceptions of safety of using red versus green surfacing.
11. The Executive Director of the New Zealand Road Markers Federation (2009) revealed that green is superior to red in terms of longevity. This is due to the red pigments reacting differently to UV light and thus causing red surfacing to fade more quickly. This occurs regardless of the surfacing material (eg epoxy chipseal, thermoplastic or coloured emulsion) used. There are methods of avoiding this fading, but these are generally considered prohibitively expensive.

Purpose of coloured surfacing

12. In New Zealand, like most other countries, it is uncommon to colour full lengths of cycle lanes, generally only the major conflict points are highlighted. Highlighting only the conflict points has a significant financial advantage given the high cost of coloured surfacing. More importantly, there is less chance road users will become complacent and unresponsive to colour if it is used only in locations where particular care is required.

Relationship with other special vehicle lanes

13. Christchurch's "bus priority lanes" are technically shared bus and cycle lanes. This is a popular approach internationally and is used almost exclusively throughout New Zealand (with the exception of some bus only lanes in Wellington). The shared nature of bus lanes means using different colours makes more sense from the point of view of where buses can travel, (ie buses can travel in green lanes but not in red ones). However, from the point of view of where cyclists can travel, applying one colour is more logical (ie cyclists can travel in all green lanes).

14. The use of green will also simplify the road environment along the newly implemented bus corridors. Rather than switching between sections of green (where bus lanes are present) and sections of red (where bus lanes are continued for small sections, but at intersection cycle lanes - are introduced) there will be one consistent colour giving the message to general motorists that they are not supposed to be in this lane (see Para 17 and 18, Christchurch Consistency and **Attachment 1**).
15. Bus priority lanes generally operate for only three hours per day during the working week and revert to parking and cycle lane for the rest of the time.

National Consistency

16. International literature and common sense suggest that a consistent approach to colouring is required throughout a city/district. It also makes sense that the larger an area with consistent facilities the better. This is particularly true for New Zealand, which has high rates of cross-over between various districts. Being a relatively small country, it should be easy to apply consistent coloured surfacing standards throughout New Zealand. While Christchurch may have been first to research and implement coloured surfacing in cycle facilities, the reality is that the rest of the country now uses green.
17. It is important for road users to be able to travel throughout the country with consistent road markings that are easy to understand. This is especially important for tourists who often encounter a road environment significantly different to that in their home countries. It is also increasingly important given the imminent development of the National Cycleway projects that will likely bring greater numbers of cycle tourists to locations throughout the country.

Christchurch City Consistency

18. In 2009, by default due to the introduction of the new bus priority lanes which are shared cycle lanes, Christchurch's special vehicle lanes are now coloured both green and red, as the portion of the bus priority lane acting as the cycle lane is coloured green (see **Attachments 1 and 3**). In many locations along Papanui Road the designated cycle lane on one side of the road is coloured red while directly opposite on the other side of the road the new bus/cycle lane is green (see **Attachment 4**). Evidence of existing red cycle lanes are provided in **Attachment 2**.
19. There are several other locations along Papanui Road, where the new green shared bus lane/cycle lane terminates and the designated red cycle lane continues on. Effectively, when the bus priority lane is not operating the coloured surfacing indicating the cycle lane changes from green to red (see **Attachment 1**).

Logistics of Change

20. If Christchurch were to adopt green surfacing for cycle facilities it would be expensive to replace all the existing red surfacing in Christchurch with green in one go. Therefore it is proposed that any transition would occur over time, as part of general carriageway resurfacing programmes and in line with the remarking schedule for the coloured surfaces (see **Attachment 5**).
21. It is believed that road users are sensible enough to react to two different colours being used in different locations for the same purpose without confusion or a decrease in safety occurring. The situation will be comparable to the change in limit line marking styles, or the change to the give way triangle. The new limit lines were marked site by site as part of general road maintenance and thus it took a long time for all limit lines throughout the country to be upgraded but the in-between time did not incur any safety hazards.
22. The timing of the decision to change the coloured surfacing from red to green of Christchurch is critical. The introduction of the first bus priority lanes late last year has highlighted the extent of the coloured road surfacing being used in Christchurch. The next bus priority lanes are programmed for installation in February 2010 and the coloured surfacing will need to be ordered soon. The time to make the decision is therefore timely now as any delay would make the change over in the future more difficult.

Practical benefits

23. From the initial installation and the maintenance point of view, it would be easier to only have to apply one colour when marking and re-marking cycle and bus facilities. This would eliminate the need to clean out gear for the change over and separate tanks on the applicators for storage of the two colours. This would result in time savings and therefore cost savings to the Council. The cost of the materials could also be less due to bulk purchasing. Green epoxy surfacing is approximately \$7.00-\$10.00 cheaper per square metre than red; this equates to an estimated saving of \$13,000 on the Queenspark and Colombo Street bus priority lanes alone. The savings over time for all new or remarking of coloured surfacing within cycle lanes would be significant.

FINANCIAL IMPLICATIONS

24. Nil. It is proposed that any colour change would be undertaken as part of general carriageway resurfacing programmes in line with the remarking schedule and paid for from existing budgets.

Do the Recommendations of this Report Align with 2006-16 LTCCP budgets?

25. The installation and removal of road markings and signs is within the LTCCP Street and Transport Operational Budgets.

LEGAL CONSIDERATIONS

26. The installation of any signs and markings must comply with the Land Transport Rule: Traffic Control Devices 2004, Rule 54002, part 1 Sections 4 and 5.

27. The installation of any coloured surfacing within a Special Vehicle Lane(Cycle Lane) must comply with the Land Transport Rule: Traffic Control Devices 2004, Rule 54002, part 1 Sect 11.2(2)c being; *a surface treatment of contrasting colour or texture to that of adjacent lanes used by other vehicles:*

(i) at locations along the length of the lane; or

(ii) along the length of the lane.

Have you considered the legal implications of the issue under consideration?

28. Yes, as above.

ALIGNMENT WITH LTCCP AND ACTIVITY MANAGEMENT PLANS

29. Aligns with the Streets and Transport activities by contributing to the Council's Community Outcomes-Safety and Community.

Do the recommendations of this report support a level of service or project in the 2006-16 LTCCP?

30. Yes, as above.

ALIGNMENT WITH STRATEGIES

31. The recommendations align with the Council Strategies including the Road Safety Strategy 2004, Safer Christchurch Strategy 2005 and the Cycle Strategy 2003.

Do the recommendations align with the Council's Strategies?

32. Yes, as above.

CONSULTATION FULFILMENT

33. ViaStrada, who are recognized as the leading cycleway planning consultancy within New Zealand were engaged to prepare an issues paper on green versus red coloured surfacing within Christchurch. ViaStrada support the proposal. The issues paper recommends:
 - (a) Green be adopted as the colour for cycle facilities in Christchurch.
 - (b) This is done over a course of time.
 - (c) This is discussed with the Highways and Network Operations part of NZTA first.
34. The New Zealand Transport Agencies (NZTA) Christchurch, Traffic and Safety Manager, Toney Spowart was consulted. NZTA supports the proposal. Tony Spowart has voiced a strong desire that Christchurch conform to national guidelines so that NZTA can conform to national guidelines within Christchurch City.
35. Representatives of "Spokes" the Canterbury cycling advocacy group attending the Christchurch Transport Plan meetings were spoken to by Christchurch city engineering staff and support the proposal stating "that it is keeping in line with national practice".
36. Engineering staff from the Waimakariri District Council, (the only other local authority in New Zealand to use red coloured surfacing for cycle lanes) were consulted and stated that they used red coloured surfacing in cycle lanes for consistency because Christchurch City Council did. They further stated that they had only approximately 200 metres of red coloured surfacing and this was nearly due for repainting.

STAFF RECOMMENDATION

That the Council approve that the coloured surfacing used in cycle lanes within Christchurch City be changed from red to green, and that this be undertaken immediately for any new projects, but over a course of time as part of general carriageway resurfacing programmes in line with the remarking schedules for existing coloured surfacing.