

Cycle Audit and Cycle Review:

A Scoping Study

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Cycle Audit and Cycle Review: A Scoping Study

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Executive Summary

The Institution of Highways and Transportation in the United Kingdom published "Guidelines for Cycle Audit and Cycle Review" (1998)

These guidelines define cycle audit as:

"a systematic process, applied to planned changes to the transport network, which is designed to ensure that opportunities to encourage cycling are considered comprehensively and that cycling conditions are not inadvertently made worse."

They define cycle review as:

"a systematic process, applied to existing transport networks, which is designed to identify their positive and negative attributes for cycling, and to assess ways in which those networks could be changed in order to encourage cycling."

The purpose of this project was to find out whether the process of Cycle Audit and Cycle Review would be of benefit in New Zealand.

The researchers approached cycle planners, cycle advocates, traffic engineers and road safety co-ordinators in Christchurch, Nelson, Wellington, Palmerston North, Hamilton, Tauranga and Auckland and asked them the following questions:

1. Is the road safety audit process (following the TNZ 1993 guidelines or not) used in your area?
2. How are cyclists considered, in the design process
3. How much cycling is undertaken in your area? Should there be more?
4. What is the reported crash rate for cyclists? Is it good or bad?
5. Is the present design process adequate for ensuring the safety of cyclists?
6. Does the present design process encourage cycling?
7. Does your council want to encourage cycling?
8. Do you think that your council would like to adopt the Cycle Audit and Cycle Review process?

UK contacts involved with the Cycle Audit and Cycle Review process told researchers that Cycle Audit has been accepted better than Cycle Review. Many of those using the processes have developed a simplified process, as they find the official one too cumbersome.

In interviews with staff from road controlling authorities it was found that cycling was not, except in a few authorities, regarded as an important mode of transport, and integrated transport planning was not given the priority that it is in the UK and European countries.

Deficiencies in the safety audit process, especially for low cost projects, were found. There was a lack of understanding of cyclist needs among auditors and designers and lack of consistency in the use of standards and guidelines for designing for cyclist safety and convenience. The extent to which cyclists were considered varied according to the staff working on each project.

New design guidelines to be published by Transit New Zealand in July 2000 may encourage consideration of cyclist needs, but a consistent set of guidelines is needed to provide for cyclists in road design.

Lack of resources may lead to cycle facilities that do not comply with standards and may be unsafe. Cycling is sometimes given a lower priority than issues such as parking or traffic flow. The way the benefit/cost process is currently used works against provision for cyclists.

K. Wood (1999) in his thesis "Bicycle Crashes in New Zealand" found that although road factors did not often appear in cycle crash reports, there were many cases where road factors may have been involved and changes to road design would have an impact of cyclist casualties.

Most councils in the survey said officially that they wished to encourage cycling, but they were not always willing to contribute the resources to carry out strategies to do this.

Cycling was decreasing in most areas, but few authorities carried out reliable cycle counts.

Cycle Audit and Cycle Review as proposed in the IHT guidelines provides for ways to encourage cycling as well as providing safety. At present some road controlling authorities are considering specialist cycling routes to encourage cyclists but the degree to which the road network is designed to provide safe and convenient travel for cyclists is limited by lack of resources, lack of motivation and lack of understanding of cyclist needs.

Most respondents agreed that Cycle Audit and Cycle Review, with some modifications for use in New Zealand, had potential to improve the way cyclists are provided for on our roads. There was, however, concern about extra cost.

Both Hamilton City and Christchurch City are already investigating the process of Cycle Audit and Cycle Review and would be keen to trial parts of it, or modify it for use in New Zealand.

Low cost road design changes might benefit from a simplified safety audit process. A simplified cycle audit could be made part of this process and could include consideration of convenience and ease of travel for cyclists.

Road controlling authorities would probably be willing to use the full audit for special cycle routes and major projects. A simplified form of cycle audit should be promoted for use in all road design.

Cycle Review would formalise the process of identifying parts of the existing network to be modified to encourage cyclists. This process is already happening in some areas. Its introduction might put pressure on local authorities to provide for cyclists as identified in their plans and strategies.

There would need to be adequate training of auditors and modification of the Cycle Audit and Cycle Review guidelines for New Zealand conditions.

A national cycling strategy would give leadership and encouragement to road controlling authorities in the way they consider cycling. Local cycle strategies focus attention on cyclist needs. The development in the UK of integrated transport strategies and accessibility audits that include pedestrians and public transport as well as cycling may be helpful in New Zealand.

Recommendations

Cycle Audit and Cycle Review

- 1 That those local authorities that have expressed a readiness to take on Cycle Audit and or Cycle Review be included in a national group to write guidelines for using the processes in New Zealand.
- 2 That when guidelines for the use of Cycle Audit and Cycle Review in New Zealand have been developed, the processes be promoted to road controlling authorities as a way of implementing their expressed desire to encourage cycling as a transport mode.
- 3 That the current use of the safety audit process be investigated and a way to apply some form of audit to all projects including low cost projects be developed and promoted.
- 4 That a form of cycle audit be investigated that would be cost effective and likely to be used with all road design projects including low cost projects. This audit should include cycle friendliness as well as safety.
- 5 That the process of audit for accessibility, which is being developed in the UK, and includes cycling, walking and public transport, be considered in New Zealand.
- 6 That training for safety auditors in New Zealand include training in how to provide for the safety and convenience of cyclists.

The Cycling Environment

- 1 That cycling as a valid mode of transport, with equal importance to other modes, be promoted in transport planning as part of an integrated efficient sustainable transport system.
- 2 That a national cycling strategy be developed, adopted and promoted.
- 3 That local authorities be encouraged to develop cycling strategies and include cycling in their transport plans.
- 4 That the major players in designing for cyclists keep in touch with developments and training overseas so that New Zealand can benefit from the use of best practice. A formal process may be needed to ensure this happens.

- 5 That road controlling authorities be encouraged to increase the priority of providing safe cycling facilities when allocating funding, thus contributing to the health of the community, the health of the environment and the efficiency of the transport system.
- 6 That the decision makers in road controlling authorities be encouraged not to compromise the safety of road users for issues such as parking spaces and traffic flow.
- 7 That standards for providing for cyclists be developed and adopted in New Zealand, and that road controlling authorities be encouraged to use a consistent set of standards.
- 8 That road controlling authorities be helped and encouraged to carry out reliable counts of cyclists on their roads.
- 9 That the investigation of factors in cycle crashes include more analysis of road factors by implementing the relevant recommendations from “Bicycle Crashes in New Zealand” (Wood, 1999).
- 10 That the Land Transport Safety Authority be encouraged to record cyclist-only crashes, and that there be more investigation into the road factors involved in these crashes.
- 11 That the development of integrated transport strategies in New Zealand be encouraged.

Abstract

This study was an investigation to see whether the process of Cycle Audit and Cycle Review developed by the Institution of Highways and Transportation in the United Kingdom should be introduced in New Zealand. The researchers interviewed traffic engineers and planners, road safety co-ordinators and cycle officers in nine local authorities, as well as cycle advocates, regional authority staff and Transit New Zealand staff.

The results include: information on the safety audit processes currently used, how cyclists are considered in the design process, whether cycling is encouraged, whether cyclist safety is provided for, and whether road controlling authorities would be likely to use the process of Cycle Audit and Cycle Review. Information on how the process is being used in Britain is included.

The study identifies gaps in providing for cycling in the current design processes and makes recommendations for improvements.

1. Introduction

The purpose of this project was to investigate the need for the Cycle Audit and Cycle Review processes in New Zealand. Cycle Audit and Review is a process defined in the Institution of Highways and Transportation Guidelines (IHT 1998).

In the UK, the Cycle Audit and Cycle Review processes are:

- **Cycle Audit:** A separate check process of new road design to ensure that it is good for cyclists (and may even encourage them).
- **Cycle Review:** A systematic method of checking roads to see that they are good for cyclists.

1.1 Project Objectives

The objectives of this project were:

- to gain information on the use of cycle audit and cycle review in Britain,
- to get information from cycle groups and traffic engineers on the current situation and gaps which might be filled,
- to investigate present safety audit processes and their outcomes, and
- to study cycle crash records and see whether road design was a factor.

1.2 Form of this Report

This report describes the process used to gather information for the project. The experiences of those who developed and used Cycle Audit and Cycle Review in the UK are recorded. Information gathered from cycle advocates, traffic engineers, cycle planners, and road safety co-ordinators in Christchurch, Nelson, Wellington, Palmerston North, Hamilton, Tauranga and Auckland is summarised. Information on cycle crashes in relation to infrastructure in New Zealand and Australia is recorded. Conclusions are drawn from the results of the study, and recommendations are made for the future.

1.3 Background

The Institution of Highways and Transportation (IHT) in the United Kingdom has published a document "Guidelines for Cycle Audit and Cycle Review" (1998). These guidelines have the following definition of cycle audit:

"Cycle Audit is a systematic process, applied to planned changes to the transport network, which is designed to ensure that opportunities to encourage cycling are considered comprehensively and that cycling conditions are not inadvertently made worse."

The same document says:

"The purpose of cycle audit is, therefore, to review new schemes to determine whether adequate safe and convenient provision has been made for cyclists, taking into account potential demand. As a minimum, cycle audit should

ensure that conditions for cyclists are not made worse by the new scheme; at best, it will examine every reasonable opportunity to improve conditions or cyclists.”

Cycle Review is the process of auditing the existing network in relation to cycling. The definition of cycle review is as follows:

“Cycle Review is a systematic process, applied to existing transport networks, which is designed to identify their positive and negative attributes for cycling, and to assess ways in which those networks could be changed in order to encourage cycling.”

1.4 The Problem

In recent years 13-15 cyclists have been killed each year on New Zealand roads, while between 630 and 800 cyclists are injured in reported crashes. The real figure will be much higher than that because research has shown that only about 50% of crashes with motor vehicles, where cyclists receive serious injuries, are reported.

Cyclist casualties have declined in recent years. This is due to a variety of factors including the wearing of cycle helmets and a decline in the numbers of regular cyclists. However there may be gains in cycle safety to be made by improving the roading environment. Some of these improvements will be low cost.

Cycling has been declining in most parts of the country. There are a variety of reasons for this, including the perception that cycling is unsafe, lack of facilities to make cycling trips easy and convenient, and the increasing availability of cheap cars. This decline in cycling comes at a time when local authorities are becoming more aware of the need for sustainable transport and integrated transportation planning, and is therefore of concern to politicians and planners.

The guidelines for safety audits on New Zealand roads, Safety Audit Policy and Procedures (TNZ 1993), include cyclist safety. The question this study asked was whether the audit process as presently used identified the safety needs of cyclists adequately. This project also investigated whether the UK process of Cycle Audit and Cycle Review might provide both increased safety for cyclists and a roading infrastructure which is more convenient for cyclists.

Roading improvements that increase numbers of cyclists may result in changes to safety, environmental effects, travel behaviour and traffic management. Cycle Audit and Cycle Review might be used to take account of these effects.

This project investigated the effects that new roads and roading improvements had on cyclists and whether under the current safety audit system such roads may sometimes result in a situation where conditions were worse for cyclists than they were before the changes.

2. Investigation Method

A review of some overseas projects was conducted to ascertain reaction to Cycle Audit and Cycle Review and similar schemes.

The researchers also approached cycle planners, cycle advocates, traffic engineers and road safety co-ordinators in Christchurch, Nelson, Wellington, Palmerston North, Hamilton, Tauranga and Auckland and asked them the following questions:

1. Is the road safety audit process (following the TNZ 1993 guidelines or not) used in your area?
2. How are cyclists considered, in the design process?
3. How much cycling is undertaken in your area? Should there be more?
4. What is the reported crash rate for cyclists? Is it good or bad?
5. Is the present design process adequate for ensuring the safety of cyclists?
6. Does the present design process encourage cycling?
7. Does your council want to encourage cycling?
8. Do you think that your council would like to adopt the Cycle Audit and Cycle Review process?

The results of these interviews form the basis of this report.

3. Overseas Investigations

3.1 David Davies Associates

One of the key people involved in developing the UK Cycle Audit and Cycle Review was David Davies. The researchers interviewed him by telephone and subsequently discussed the process with him at a seminar on cycle planning in the UK.

David Davies did not know how much use had been made of his Cycle Audit and Cycle Review Guidelines. It was only a year since they had been issued, and so too early to assess their impact. He had run six seminars based on the guidelines, that had so far concentrated on Cycle Audit.

Cycle Review was operating on a more ad hoc basis than Cycle Audit, as it was taking longer for people to adopt it, and the large number of forms seemed to be daunting.

The notes for David Davies' 'Cycle Audit and Cycle Review, The Intentions? The Reality!' address to the Sustrans/CTC Cymru Seminar, 3 May 2000, Cardiff, are attached as Appendix 1.

3.2 Bristol City Council & Ove Arup and Partners

Mike Ginger of the Bristol City Council identified a number of major radial routes into the city centre on which they wished to concentrate improvements for cyclists. A comprehensive Cycle Review (Ginger and Smith 2000) of these routes was undertaken. The data requirements for a Cycle Review were driven by the Level of Service determinants. These determined the overall quality for cyclists of a route using a six-point scale.

Peter Smith of Ove Arup and Partners developed an electronic version of the Cycle Review proformas for scoring the Level of Service. It was used for each route to identify the types of measures that could be considered to improve conditions for cyclists.

3.3 City of Edinburgh Council

Phil Noble of the City of Edinburgh Council was also on the IHT Working Group, that developed the guidelines for Cycle Audit and Cycle Review, and had been in touch with people who used the guidelines. In Edinburgh they found both processes (Cycle Audit and Cycle Review) to be useful, but to his knowledge, most users were using a simplified version.

The concept was useful in ensuring schemes did as much as possible to benefit cyclists. It was a cost-effective way of getting cycle benefits added to projects.

He had a 'Cycle Friendly Design Guide', prepared by City of Edinburgh Council, which he considered to be as useful as the IHT guidelines.

3.4 Somerset County

Alex Sully, cycling officer for Somerset County Council, had as part of his duties strong links with an organisation called the Local Authorities' Cycle Planning Group. He says that many local authorities did not use the recommended Cycle Audit procedures because of the amount of work they were thought to generate. He had some sympathy with that view, working for a relatively small rural local authority.

His county had not adopted a policy of auditing all new schemes even though there was a high level of cycling in several of the towns in the area. But this was about to change as the county's cycling strategy was about to be published with auditing as one of the new policies. He expected that, like many other authorities, they would develop a simplified check list to make those involved in the design process focus on the needs of cyclists.

Further, they expected to introduce cycle audit as part of a wider "accessibility audit" which would aim to ensure that cyclist, pedestrian and public transport needs were considered. This was included in the recommendations to the county council as part of the preparation of their Integrated Transport Strategy.

3.5 Australia

A report from Australia 'Recent Development in Pedestrian and Cyclist Safety' (Cairney 1996) discusses ways of assessing Level of Service for cyclists. He says that different approaches to bicycle Level of Service had been suggested in Australia. Some were based on such considerations as kerb lane width and traffic speed.

He felt that there was considerable scope for retrofitting the urban road network with cycle routes at very modest cost. This however, left unresolved the question of how to cater for cyclists at intersections? It was essential to improve intersection safety if cycling was to be encouraged without greatly increasing the number of bicycle casualties. Projects aimed at bicycle safety were not usually included in black spot programmes because of the scatter of bicycle crashes across the network, and under-reporting.

The majority of crashes in Australia happened at intersections. Cairney reports that in a study by Brindle and Andreassen (1984) 58% of bicycle crashes in Melbourne were at intersections. In this study 37% of crashes occurred away from the arterial system. Most crashes involving child riders occurred on local streets and were characterised by right angle crashes (including driveway crashes) and crashes where the cyclist was struck from behind.

Studies from Cairney and Catchpole (1991, 1995) show that in bicycle crashes, 85% of drivers failed to see the cyclist, and 38% of cyclists failed to see the vehicle. Cairney (1992) found that only 9% of crashes involved cyclist conspicuity when viewed from the rear, although this did increase to 17% at night.

In relation to Cycle Audit, Cairney states:

“Safety audit principles are equally applicable to cycling, and bicyclists should be amongst the road users considered in any general audit process. A special audit from the cyclists’ point of view may be justified if the facility is likely to cater for large numbers of cyclists.”

4. Summary of Responses to Questionnaire

This section summarises the interviews with cycle planners, cycle advocates, traffic engineers and Road Safety Co-ordinators in Christchurch, Nelson, Wellington, Palmerston North, Hamilton, Tauranga and Auckland.

4.1 Question 1: Is the road safety audit process used in your area?

Most of the local authorities spoken to do safety audits on major projects, but only a few audit smaller projects. In most local authorities smaller projects get a safety check or a peer review. Cycle officers, where they are employed, take part in peer reviews and represent the interests of cyclists. Where work is contracted out, a safety audit may be included in the brief.

Transit New Zealand audits 20% of projects costing over \$50,000 and all projects costing over three million dollars. All other projects get a peer review check.

The extent to which these reviews and audits include safety for cyclists is variable even within the same authority. Some auditors are very aware of cyclists and their needs. Others have little understanding of how to identify safety issues for cyclists.

In most authorities the staff carrying out safety audits have no specialised understanding of the safest design for cyclists, and there is no consistency in the use of standards for cyclist design.

Cycle advocates point out that very small changes in design features make a great difference to the safety and comfort of cyclists because cycles are fragile vehicles and have little horse power.

Except on very high cost projects, safety audits are usually done by internal staff who are often imbued with beliefs and cultures similar to the designers.

Comments from two separate respondents suggest that at the moment safety audits sometimes disadvantage cyclists.

4.2 Question 2: How are cyclists considered in the design process?

There is huge variation in the means and the extent to which cyclists are considered. In many places this depends on who happens to work on the designs. In others, a cycling officer or someone who feels they keep cyclist interests foremost sees all designs and has the opportunity to put the cyclists' case. Awareness of cyclist needs varies among these people. The checking process is usually informal.

Transit has no policy at present to provide for cyclists. Austroads standards are used. However, new design guidelines due out in July 2000 will include design standards for cyclists and pedestrians.

Even where there are cycle officers or cycle aware engineers, safety issues identified by them are sometimes compromised because of the need to cater for parking, traffic flow,

or resident concerns. Economic issues also often compromise safety and convenience for cyclists. Sometimes a compromise is made because the project would not get a good enough benefit cost ratio if the design were changed to be more cycle-friendly.

Several respondents commented about the way the benefit cost process works against getting funding for cyclist facilities. Beca Carter Hollings Ferner produced a set of guidelines for doing benefit costs on cyclist works.

Christchurch and Auckland City have a strong culture of encouraging cycling and make a real attempt to include their needs in the design process. Hamilton is doing well on new projects. Palmerston North has appointed a cycle officer and their systems are improving, although the cycle advocates there are not happy about some issues.

There is a lot of disharmony between engineers and planners on the one hand and cycle advocates on the other, in relation to the degree to which cyclists should be involved in the design process. Christchurch City was the only local authority where all road designs for new work and improvements were automatically sent out to the community for comment. Some of the others are making attempts to get comment on cycling issues from cyclists. Asking for comment sometimes generates further ill feeling because the comments received are not always acted on and there is no process to document why the final decisions are made.

Christchurch, Palmerston North and Auckland City have cycling officers. However it is difficult for these people to please everybody. They have to work within the systems of the Councils that employ them and are subject to conflicting pressures. The attitude of the elected members of a council can have an impact on the way staff respond.

There is a huge variation in the standards and guidelines used. Guide to Traffic Engineering Practice, Part 14 Bicycles, published by Austroads Standards Australia, is the most common, but Sustrans, CROW, and the Dutch standards are also used. Some local authorities have their own procedures and some use combinations of standards.

Generally, catering for cyclists in the design process is informal and not systematic. It can vary according to which engineer is doing the design and who does the safety checks or safety audits. The level of knowledge and understanding of cyclist needs is not good in New Zealand because we do not have a long history of designing for cyclists, compared to countries such as Holland.

Auckland City is combining cycling with footpaths and bus lanes. Christchurch is developing on-road cycle ways. Traffic lanes are sometimes narrowed to provide space for cycle lanes. In Nelson parking has been removed on several stretches of the waterfront cycle way. In Wellington, where cyclists are allowed to make submissions on design such as in the redesign of Courtenay Place, cycle friendly details were incorporated, such as a wider space behind the angle parking to give cyclists time to react to cars reversing out.

Intersection treatment is a problem and the cause of unhappiness among cycle advocates. The problems in this area may reflect the lack of experience of designers in catering for cyclists and the lack of consistent standards and guidelines.

Cyclists are sometimes disadvantaged to provide safety features for other road users, according to some respondents. When road user needs are prioritised, cyclists sometimes lose out.

Respondents from North Shore and Wellington City identified a gap between a desire to encourage cycling expressed in city plans and transport strategies, and projects to address cyclist needs being implemented.

Cycle advocates said they felt there was a lack of understanding and experience among traffic engineers. High turnover of staff in some local authorities means that there is no consistency in the engineers representing cyclist interests. Where work is contracted out, consultants often have no culture of designing for cyclists. Many engineers simply do not think to consider cyclists.

The traffic engineers point out that there are three different groups of cyclists with very different needs. School students, commuter cyclists and recreational cyclists ask for different facilities and often present conflicting ideas about their needs.

Christchurch and Auckland City see provision for cyclists as an essential part of transport planning to solve traffic congestion. In most other areas provision for cyclists is seen as an add-on. Concern was expressed that the government does not realise the potential of cycling as part of transport planning.

However, new roads in some areas are being designed with cyclists in mind. In Kapiti a new road is being built to cater for cyclists and in Hamilton even the cycle advocates admit that cyclists are being considered on new roads currently being designed.

But in Wellington we were told that changes to the state highway system do not consider cyclists, and new routes that have been designed to give cyclists easy access to the city have not been implemented because of lack of funding.

4.3 Question 3: How much cycling is undertaken in your area? Should there be more?

Cycling is declining in most areas. In Wellington City travel to work by cycle seems to have increased by 24% between the 1991 and 1996 census counts. In many places schools discourage students from cycling because they see it as hazardous.

The latest counts in Christchurch City indicate that the decline in cycling has halted in the last year, but there has been no sign of an increase in spite of the increased provision of on-street facilities.

Most of the information on cycle numbers comes from census data. Most road controlling authorities have not in the past allocated resources to counting cycles. Transit has no information on cyclist numbers on state highways. This contrasts with the information available about motor vehicle numbers. Good counts will be needed if cycling is to be regarded as part of an integrated transport system.

4.4 Question 4: What is the reported crash rate for cyclists?

Crash numbers are high in the areas with larger numbers of cyclists. There are concerns about specific areas such as the bridge approaches in Tauranga, but there is not always any plan to deal with them.

Cycle casualties have declined in numbers, but in several areas they have not declined as a percentage of all road casualties. At the same time there has been a decline in the numbers of cyclists and an increase in the numbers of motor vehicles.

There have been several cyclist fatalities recently on State Highways.

Wood in his thesis "Bicycle Crashes in New Zealand" (1999) feels that the fatality rate in New Zealand is rising per billion kilometres ridden.

It is difficult to get good information on cycle crashes as only a small proportion of them are reported to the Land Transport Safety Authority. In some areas, information from hospitals is included in cycle strategies and gives a fuller picture of what is happening.

4.5 Question 5: Is the present design process adequate for ensuring the safety of cyclists?

The answers to this question were very subjective. Many of our respondents answered in the negative. Two councils felt that consultants, who did a lot of the design work, did not have a culture of looking out for cyclist needs and that projects that were contracted out did not always make things safe for cyclists. In several cases the engineers felt that safety was adequate, but cycle advocates felt that it was not. In three cases, the engineers admitted that compromises were made or there were gaps in the process. It may depend on the individual staff involved. Consultants working for developers are often under pressure to design at minimum cost and may not consider cyclists.

The new design guidelines being developed by Transit should help make design of state Highways safer for cyclists. They will attempt to define where there is a need to provide for cyclists. A review of cross sections of state highways has identified the issue that some roads, especially two lane rural roads, have inadequate shoulders. Work will begin on addressing this in the next financial year.

What is safe for one group of cyclists may not be safe for others. For example commuter cyclists may be able to negotiate the links between cycle paths and arterial roads, where less experienced cyclists and school students are at risk of conflict with traffic.

Specialist cycle routes have been designed in Wellington with cyclist safety in mind, but resources are not available to build them. The plans get dropped during the city annual plan process. On the normal roading network cyclist safety may be forgotten, or compromised in the interest of other road users.

Some cycling officers acknowledged that designs are not always adequate for safety because of compromises that are made.

In some cases there is pressure to provide for cyclists but insufficient resources to provide for them adequately. The result is facilities that are not safe, and may be less safe than not having the facilities at all. Standards and guidelines are often disregarded. There seems to be a culture in New Zealand of designing according to conditions and individual preference rather than to standards.

4.6 Question 6: Does the present design process encourage cycling?

In some places road design encourages recreational and school cyclists, but there is little for commuter cyclists. In other areas respondents felt that commuter cyclists were encouraged but not inexperienced cyclists.

Christchurch City is making real attempts to cater for commuters so that cycling is taken seriously as a transport option. Auckland City is trying to cater for commuter cyclists but their infrastructure and motor vehicle traffic is such that it is very difficult. The desirability of making provision for cyclists early in the development of infrastructure is obvious in the Auckland region.

In Wellington new routes have been designed to encourage cyclists to ride into the city centre. However they have not been built because of lack of funding. A similar situation was discussed in North Shore City.

Some areas such as Kapiti and Waitakere are designing routes to encourage cycling in the future. Other respondents including those in Hamilton and Hutt City felt that the situation was neutral, cycling was neither encouraged nor discouraged.

Transit encourages cycling in some places where they can provide separate cycleways. Other places may be dangerous for cyclists because of traffic volumes and speed.

Cycling strategies were seen by some respondents as having a positive effect on the degree of provision for cyclists. The cycle advocates in Christchurch City pointed out that positive discrimination is needed to encourage people to cycle.

There was a variation in opinion about the extent to which engineering can encourage cycling, from the view, from one respondent, that it will make little difference to cycling numbers, to the comment: "If there were no roads you wouldn't drive your car".

4.7 Question 7: Does your Council want to encourage cycling?

Most councils say officially that they wish to encourage cycling. Many have written objectives in relation to cycling into their city plans or transportation planning documents. Several have developed cycle strategies. In some areas it depends on the make-up of the council. Respondents from two councils told the researchers that changes in the last council elections had resulted in a council that did not see provision for cyclists as important. In another council the opposite had happened with councillors becoming more committed to providing for cyclists. In some areas the cyclists feel the politicians are just paying lip service. They talk about providing for cyclists, but are unwilling to provide funding.

Respondents from Auckland City, Hamilton and Christchurch felt that their councils were committed to increasing the numbers of cyclists and were willing to commit funding to achieve this aim. In Palmerston North the cycle advocates felt that although most councillors were positive they did not see cycling as part of an overall transport strategy, but rather as an add on.

4.8 Question 8: Do you think that your Council would like to adopt the Cycle Audit and Cycle Review Process?

Generally, respondents were positive about the idea of Cycle Audit and Cycle Review, although there were some exceptions.

The Cycle Planning Officer in Christchurch is already investigating the process of Cycle Review. The Hamilton City Council has been investigating both processes. These two cities are keen to trial Cycle Audit and Cycle Review. Auckland City has been looking for processes like this to identify ways to develop cycle friendly routes and encourage cycling.

Several of those interviewed saw the processes as a way of involving the community and showing cycle activists that something positive is being done. Several respondents suggested that a combined cycle and pedestrian audit might be appropriate.

Some council staff would rather not see cycle enthusiasts involved in audits, others see it as a way of giving them some ownership of the design process.

There is concern about the extra cost of improvements identified by the cycle audit process. Several respondents felt Cycle Audit should be part of the existing safety audit process so that there would be no extra cost, though some felt it should be kept separate.

Transit New Zealand would rather see the road safety audit process strengthened so that more consideration is given to cyclists in the normal audit process.

Cycle Audit and Cycle Review was seen by some as a way of educating engineers in cyclist needs and formalising the checks and peer reviews that happen now. Use of the processes could lead to identification of good practice design for cyclists in this country.

Some felt that it might be a way to bring pressure to bear on politicians to be involved in a national process that encourages provision for cyclists. However some expressed concern that it might force provision for cyclists to the detriment of other road users.

Training of auditors would be a key to the success of the process whether it was done by existing auditors or by specialists. Cycle advocates from Christchurch felt that the level of expertise in New Zealand is not great and that training by cycling experts from Britain or Holland would be necessary.

Most respondents felt that the UK guidelines would need some modification for use in New Zealand especially in the case of Cycle Review. The guidelines make frequent reference to design standards used in the UK. Many respondents mentioned the lack of consistent use of standards and guidelines in New Zealand as an issue. This would need to be addressed if Cycle Audit and Cycle Review were to be adopted.

Cycle advocates in Auckland and Wellington felt that investigating the process should not allow us to lose sight of the need for good strategic planning and national leadership to encourage provision for cyclists.

A Wellington cycle advocate felt that it might be difficult to persuade engineers to use Cycle Audit and Cycle Review. Advocates in Christchurch expressed concern that the processes might be taken on in name but not implemented properly. The engineer from North Shore City pointed out that audits may be done, but unless the recommendations are implemented by the client who commissioned the audit, it makes little difference to the outcome.

5. Road Factors in Cycle Crashes

One of the objectives of this project was to study cycle crash records and see whether road design was a factor in crashes. This proved very difficult because of the lack of details in the crash records. However, Wood (1999) has investigated reported cycle crashes and identified some issues.

He found that, in cycle crash reports, factors contributing to the crash mainly centred around cyclist and driver behaviour. Wood used two data sets: fatal crashes for the period 1980-1996 and serious injury crashes for the period 1994-1996. He then selected all crash types where the total of either fatal or serious injury crashes was 10 or more for further study. A 10% sample of these crashes were reviewed from the original police reports. At least 10% of the 10% sample was found to have the movement code wrong, and at least 10% was found to have the cause code wrong, in Wood's opinion.

A number of issues were identified from the crash data, but very few road design issues emerged. However, roundabouts were identified as a significant problem. "In New Zealand 11% of all roundabout fatalities are cyclists, for a mode that accounts for only 1.1% of vehicle kilometres (MoT, 1992)" Wood (1999).

Wood (1999) quotes from McClintock (1992) when discussing the lack of road design factors identified in cycle crashes:

"Rather than simply condemn all signs of (cyclist's) non-compliance with the traffic rules it is essential that traffic planners study these clues for the very useful evidence they can yield of cyclist's desire lines, on the one hand, and on the other of areas they avoid as being too dangerous. Such behaviour may also reveal evidence of poor design, encouraging conflicts rather than making them less likely."

Wood identifies 35 fatal crashes and 28 serious injury crashes which may have factors indicating problem areas for cyclists.

He has several recommendations in relation to the lack of road design factors identified in cycle crashes:

"Investigate methods of improving the accuracy of data gathering.
Provide police training in advanced crash investigation.
Investigate the high rate of citing conspicuity as a factor in cycle crashes."

Wood (1999) also describes an audit he carried out at nine junctions improved on safety grounds by the Wellington City Council. He found that six have been made more dangerous for cyclists, three of them substantially so. He quotes from Kingston Morrison (1997) who say, in a report to the Wellington Regional Council:

"The presently poor availability of safe routes for cyclist is slowly getting worse. Each new road scheme that is built without some consideration of the needs of cyclists is progressively squeezing cycle users off the roads. This

process will continue until the requirements of cycles (are) integrated into the routine road planning and design methodology.”

Wood provides figures showing how crucial vehicle speed is in determining the frequency and severity of cycle crashes. Investigating vehicle speeds on cyclist routes is central to the Cycle Review process.

One of the issues identified by cycle advocates and others interviewed in this project, is that of provision for cyclists using designs that may make the situation more risky than if no provision was made. The project team saw several instances of shared cycle and parking lanes painted on the road where the lane width made the cyclist ride out into the traffic lane wherever there was a parked car in the shared lane.

Wood, referring to McClintock (1992), points out that poor facilities may make a bad situation worse by increasing driver’s expectations that cyclists will keep out of their way; increasing cyclists’ safety expectations; discouraging cyclists from riding in a safe position on the road; and increasing conflicts with parked cars.

6. Conclusions

6.1 Integrated Transport Planning

In Britain and Europe there is an increasing emphasis on integrated transport planning. Cycling is seen as playing an important part in reducing vehicle use and therefore congestion and pollution. Cycling is a healthy form of transport both for the individual undertaking it, and for the environment. Planning for cyclists, designing roads to encourage cycling and ensuring that cyclists, who are more vulnerable than car drivers, are safe and perceive themselves to be safe, are seen as essential to an efficient sustainable transport system.

In Britain, the development of guidelines for Cycle Audit and Cycle Review is seen as a way of ensuring that cyclists are given their place in the transport system, not as an add on, but as an integral part of transportation planning and design. Cycle Audit and Cycle Review is a way of making sure that new roads, changes to roads, and existing networks identify ways of providing for cycling as a safe efficient transport mode.

In New Zealand road controlling authorities such as Christchurch and Auckland City have acknowledged cycling as a significant transport mode. Christchurch in particular is working towards giving cyclists their share of road space in the city. However, many of the road controlling authorities in the study do not see cycling in this way although local authority transport strategies and Regional Land Transport Strategies identify cycling as having an important role, and suggest that an increase in cyclist numbers should be encouraged.

6.2 Safety for Cyclists

Even at the most basic level of providing safe facilities for those who choose cycling as a transport mode, most road controlling authorities in the study admitted there were deficiencies especially for low cost projects. Peer reviews were often carried out on projects rather than safety audits. A peer review is not the same as a safety audit, and does not use a systematic process to identify problems. Where these reviews are carried out in a group situation, there is the opportunity for one person to be overruled by the group. Organisational, culture and political issues may be allowed to cloud the identification of unsafe features.

In the audit process safety issues are identified and recorded. A decision is then made as to whether the recommendations for change are carried out or overruled by other considerations. Reasons for not addressing the problems are recorded so that the process is transparent.

A modified audit process for use with low cost projects might be a way to provide a systematic process at minimal cost.

Lack of understanding of cyclist needs among auditors and designers and lack of consistency in the use of standards and guidelines for designing for cyclist safety and convenience mean that the present processes for design and safety audit often do not

cater for cyclists as well as they might. In addition, the extent to which cyclists are considered at all in the audit and design process varies according to the staff working on each project and varies between different road controlling authorities. The extent to which consultants consider cyclists in the design and audit process is also variable.

Even where auditors identify changes that might make a situation safer for cyclists, compromises may be made when the recommendations are implemented. The extent to which this is done depends on the culture of the client organisation and the priority accorded to cycling.

There are gaps and compromises in relation to providing for cyclist safety in the present design process. Cycling officers in some local authorities are advocates for cyclist issues, but they too may have to make compromises as part of the system.

6.3 Standards for design of cycling facilities

The new design guidelines to be published by Transit New Zealand in July 2000 may encourage consideration of cyclist needs, but it is unlikely that they will replace the need for a consistent set of guidelines providing for cyclists in road design.

Lack of resources may lead to cycle facilities that do not comply with standards and may be unsafe. Cycling is sometimes given a lower priority in terms of funding allocation than issues such as parking or traffic flow. The way the benefit/cost process is currently used works against provision for cyclists.

Where cycle advocates have been involved in making submissions or helping with design, changes have sometimes been made to increase safety for cyclists, as in the case of Courtenay Place in Wellington.

Standards and guidelines for the provision of cyclists' needs, and a process for encouraging road controlling authorities to use them appropriately, would improve safe design for cyclists.

6.4 Cyclist Crashes

Cyclist crash numbers are declining but so are the numbers of cyclists. Without good exposure data it is difficult to get a good idea of risk. Cycle crashes are not declining as fast as motor vehicle crashes. Areas with larger numbers of cyclists invariably have a higher number of crashes.

An analysis of cycle crashes (Wood 1999) shows that although road design does not show up often among the factors in crash reports, design factors especially at roundabouts and intersections may have an impact on cycle crashes. There is little information available at present on road design factors in cyclist-only crashes as these crashes are not currently recorded by the Land Transport Safety Authority, although this may change in the future.

6.5 Encouraging Cycling

Most councils in the survey say officially that they wish to encourage cycling, but they are not always willing to contribute the resources to carry out strategies that might do this. Auckland, Hamilton and Christchurch seem to be committed to increasing cycling and willing to fund cycling facilities to encourage cycling.

Cycling is decreasing in most areas. In Christchurch the decrease seems to have levelled off with little change between the last two counts. As far as we know, the only places it is increasing are Wellington and Dunedin. Few authorities carry out reliable cycle counts. If cycling is to be regarded as a transport mode, cycle counts should have the same status as motor vehicle counts.

Only in Auckland City and Christchurch City do staff and politicians seem to regard cycling as a valid transport option and a way of reducing congestion and contributing to an efficient transport system. In some other places new routes designed to encourage cyclists have not been built because of funding priorities. But there is an emerging realisation of the need to provide for cyclists especially when new roads are being designed. Retrofitting cycle facilities to existing infrastructure is usually more difficult and expensive than building them into the original design.

Considering cyclists in the safety audit process focuses on cyclist safety whereas Cycle Audit and Cycle Review as proposed in the IHT guidelines provides for ways to encourage cycling as well. At present some road controlling authorities are considering specialist cycling routes to encourage cyclists but the degree to which the road network is designed to provide safe and convenient travel for cyclists is limited by lack of resources, lack of motivation and lack of understanding of cyclist needs.

This can be complicated by different groups of cyclists such as school students and commuter cyclists advocating conflicting road provisions.

6.6 Cycle Audit and Cycle Review in New Zealand

It was agreed by most respondents that Cycle Audit and Cycle Review, with some modifications for use in New Zealand, was a positive process that had potential to improve the way cyclists are provided for on our roads. Most respondents also agreed that cycling should be encouraged as a mode of transport, and that the process of Cycle Audit and Cycle Review would help to implement transport strategies which seek to increase numbers of cyclists.

Both Hamilton City and Christchurch City are already investigating the process of Cycle Audit and Cycle Review and would be keen to trial parts of it, or modify it to suit their needs. Most other road controlling authorities were positive about the process, but several were concerned about added cost and suggested that it should be part of the safety audit process. This would mean a continuation of the system where only high cost projects are audited.

Low cost road design changes which currently usually get a peer review at best, might benefit from a simplified safety audit process. A simplified cycle audit could

be made part of this process and could include consideration of convenience and ease of travel for cyclists. A documented process would ensure that cyclists were considered in every project.

If the process of Cycle Audit were introduced in New Zealand, the extra cost of carrying out full cycle audits would mean that in most road controlling authorities it would probably not be used for all projects. Road controlling authorities would probably, however, use the full audit for special cycle routes and major projects. A simplified form of cycle audit should be promoted for use in all road design.

Cycle Review would formalise the process of identifying parts of the existing network to be modified to encourage cyclists. This process is already happening in some areas. Its introduction might put pressure on local authorities to provide for cyclists as identified in their plans and strategies.

To make the process work there would need to be adequate training of auditors and modification of the Cycle Audit and Cycle Review guidelines for New Zealand conditions.

Consistent counts of numbers of cyclists are needed to evaluate the effect of cycling strategies and to determine levels of service for cyclists.

6.7 Cycling Strategies

A national cycling strategy would give leadership and encouragement to road controlling authorities in the way they consider cycling. Local cycle strategies focus attention on cyclist needs. The development in the UK of integrated transport strategies and accessibility audits that include pedestrians and public transport as well as cycling may be helpful in New Zealand.

7. Recommendations

7.1 Cycle Audit and Cycle Review

- 1 That those local authorities that have expressed a readiness to take on Cycle Audit and or Cycle Review be included in a national group to write guidelines for using the processes in New Zealand.
- 2 That when guidelines for the use of Cycle Audit and Cycle Review in New Zealand have been developed, the processes be promoted to road controlling authorities as a way of implementing their expressed desire to encourage cycling as a transport mode.
- 3 That the current use of the safety audit process be investigated and a way to apply some form of audit to all projects including low cost projects be developed and promoted.
- 4 That a form of cycle audit be investigated that would be cost effective and likely to be used with all road design projects including low cost projects. This audit should include cycle friendliness as well as safety.
- 5 That the process of audit for accessibility, which is being developed in the UK, and includes cycling, walking and public transport, be considered in New Zealand.
- 6 That training for safety auditors in New Zealand include training in how to provide for the safety and convenience of cyclists.

7.2 The Cycling Environment

- 1 That cycling as a valid mode of transport, with equal importance to other modes, be promoted in transport planning as part of an integrated efficient sustainable transport system.
- 2 That a national cycling strategy be developed, adopted and promoted.
- 3 That local authorities be encouraged to develop cycling strategies and include cycling in their transport plans.
- 4 That the major players in designing for cyclists keep in touch with developments and training overseas so that New Zealand can benefit from the use of best practice. A formal process may be needed to ensure this happens.
- 5 That road controlling authorities be encouraged to increase the priority of providing safe cycling facilities when allocating funding, thus contributing to the health of the community, the health of the environment and the efficiency of the transport system.
- 6 That the decision makers in road controlling authorities be encouraged not to compromise the safety of road users for issues such as parking spaces and traffic flow.

- 7 That standards for providing for cyclists be developed and adopted in New Zealand, and that road controlling authorities be encouraged to use a consistent set of standards.
- 8 That road controlling authorities be helped and encouraged to carry out reliable counts of cyclists on their roads.
- 9 That the investigation of factors in cycle crashes include more analysis of road factors by implementing the relevant recommendations from “Bicycle Crashes in New Zealand” (Wood, 1999).
- 10 That the Land Transport Safety Authority be encouraged to record cyclist-only crashes, and that there be more investigation into the road factors involved in these crashes.
- 11 That the development of integrated transport strategies in New Zealand be encouraged.

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Appendix

CYCLE AUDIT AND CYCLE REVIEW THE INTENTIONS? THE REALITY!

Sustrans/CTC Cymru Seminar

3 May 2000, Cardiff

DAVID DAVIES

DAVID DAVIES ASSOCIATES

CYCLE AUDIT - A DEFINITION

Cycle Audit is a systematic process, applied to planned changes to the transport network, which is designed to ensure that opportunities to encourage cycling are considered comprehensively and that cycling conditions are not inadvertently made worse.

CYCLE REVIEW - A DEFINITION

Cycle Review is a systematic process, applied to existing transport networks, which is designed to identify their positive and negative attributes for cycling, and to assess ways in which these networks could be changed in order to encourage cycling.

HOW IT ALL STARTED

The bad old days

Highway schemes that made cycling more difficult and dangerous, and.....

Cycle facilities that ignored cyclists' needs

NATIONAL CYCLING STRATEGY 1996

Cycle Audit Procedures should be adopted by all highway authorities.

The existing highway network, including cycle facilities, should be evaluated using cycle audit procedures.

And....

Initial guidance to LAs on Cycle Audit Procedures to be agreed by end 1997

Cycle Audit to be considered as a requirement for future local transport funding bids.

DEVELOPING CA & CR PROCEDURES

David Davies Associates appointed by DETR in June 1997

Work through a Steering Group

Consult with a wider Reference Group

Test draft procedures

Published September 1998 as one of IHT's Guideline series

TAL 7/98 ENDORSEMENTS

Launched by Transport Minister
Transport White Paper (1998)
Local Transport Plan Guidance (1999 and 2000)

THE TRANSPORT WHITE PAPER

'We endorse the NCS target.....

'We are looking to LAs to...

*Institute Cycle Reviews of the road system and
Cycle Audits of proposed traffic schemes'*

GUIDANCE ON LOCAL TRANSPORT PLANS

IHT Guidelines endorsed
Minimum LTP requirements (cycling)
review of road network
Good LTP (cycling)
Plans based on IHT Cycle Review
Cycle Audit of all road and traffic schemes

False dawn?

- No comprehensive information, but....
- Most local authorities have not formally implemented Cycle Audit procedures
- Most local authorities have not undertaken Cycle Reviews of their road networks

Unreal expectations?

- Time needed
- Learning process
- Many other pressures

Learning Curve

- 753 copies of IHT Guidelines sold (Feb 2000)
- Conference presentations - all over!
- 8 Local Authority seminars (300 people)
- Other consultants also providing training
- Presentations to Australia and USA

Take Up - Cycle Audit

- London Cycle Network (review)
- 3 London boroughs
- Edinburgh - within Safety Audit
- Used by transport consultants
- Trial period - Leeds
- Many ad hoc, informal users - B'ham
- Scrutiny Groups - Solihull

Take Up - Cycle Review

- Bristol - Major Radial Roads (23 km)
- King's Lynn - town wide
- Cardiff - Pontcanna district
- Surrey - encouraging local cyclists to do reviews
- Informal reviews - B'ham

Take Off?

- Commitments being made.....
- Cycling Strategies, eg B'ham, So'ton
- LTPs, eg Essex, Bristol,
- Best Value indicator?
- Trunk Roads in Scotland - *Cycling By Design*
- New Zealand considering it

Achievements to date

- Raised awareness of technical standards and guidance
- Improved Safety Audit for cyclists
- Improved internal communications with Cycling Officers
- Level of Service concept established
- Important tool for cycling reps
- Other modes want similar approach

IHT Guidelines

Hierarchy of Measures to Improve Cycling Conditions

1. Traffic reduction
2. Speed reduction
3. Junction treatment & traffic management
4. Redistribution of the carriageway
5. Off-road provision

Traffic reduction

The Future

- Formal adoption of Cycle Audit as part of LTP implementation
- Informal adoption - by osmosis
- Cycle Review as standard for cycling strategy commissions
- Part of Shared Use decision-making
- Product development