PLANNING AND DESIGN FOR CYCLING - DEVELOPING BEST PRACTICE IN NEW ZEALAND

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Abstract

New Zealand, like much of the western world, has for a long time had a land transport system highly dependent on (and designed for) automobiles, but this is beginning to change. Cycling, for example, is now being encouraged in this country via both central and local government initiatives and strategies. Amongst other issues, one of the biggest impediments to developing a more cycle-friendly environment has been the lack of national standards, guidelines and training in this area for professional practitioners, such as engineers and planners.

Recently a number of new initiatives in New Zealand have begun to fill this void. A "Cycle Network and Route Planning Guide" has been produced to provide a best-practice framework for local cycle planning strategies. Similarly, a "Cycle Design Supplement" (based on the Australian "Guide to Traffic Engineering Practice, Part 14: Bicycles" but with a number of significant differences) now provides consistent guidelines for the design of cycle facilities in New Zealand. An industry training course "Fundamentals of Planning and Design for Cycling" has also been developed and delivered to practitioners throughout New Zealand, to introduce the new technical information and "good practice" principles.

This paper summarises the development of these initiatives and outlines the various topics that they address. Specific points of difference to some of their overseas counterparts are also highlighted. Impressions on the success to date of these tools are also discussed, as well as thoughts for further development.

Introduction

New Zealand is a typical western world country with a tradition in the land transport arena of focusing largely on automobile transportation in the past 50 years. Invariably this has been to the detriment of public transportation, walking and cycling, which have suffered in terms of priority and investment. Over time this has also led to a decline in appreciation for and expertise in the planning and design skills required for these travel modes (although it is accepted that transportation engineering itself was a relatively new discipline 50 years ago).

In the past decade, this situation has started to change in New Zealand. Cycling, for example, is now being encouraged via both central and local government initiatives and strategies. Partly this has followed the observations elsewhere in the world that car-focused policies and programmes are not successfully meeting travel demand and may in fact be creating far greater social and environmental problems. Most western societies have come to the conclusion that it is not possible to "build one's way out of congestion". Cycling advocates in New Zealand have also come to the fore in New Zealand in the past 5 years as cycling conditions have become less tolerable, and their efforts have influenced both local and national decision- and policy-makers.

Some notable initiatives in the past few years have included:

- Dedicated Walking/Cycling fund in the National Land Transport Programme since 2002, albeit only NZ$3-4million out of $1 billion
- Development from 2003 of a "Pedestrian and Cyclist Safety Framework" by Land Transport New Zealand[1]
- Release of a national Walking/Cycling Strategy (Ministry of Transport 2005)
- The holding of four national cycling conferences since 1997, with a fifth planned for October of this year (2005).
- The development of over 30 cycling (or walking and cycling) strategies by local councils[2].
- Development of specific health benefits for cycle projects and simplified procedures for evaluating cycle projects for government subsidy (Transfund 2004).

While these initiatives have set the stage for a far greater take-up of provision for cycling in New Zealand, there is another big impediment to the optimal implementation. This is the skills of and resources for professional practitioners such as engineers and planners. It has been recognised elsewhere that implementation of cycle-friendly environments "on the ground" falls largely in the hands of these people. However, whilst they invariably have extensive training and mature standards available for "traditional" land transport provision such as roads (and to a lesser extent, public transport) there are few similar resources for cycling.

A number of complementary threads have been identified to fill these gaps, namely:

- National guidelines on planning cycle networks
- National guidelines for designing cycle facilities
- National guidelines for preparing cycling strategies
- Industry training to introduce practitioners to the concepts contained in the above guidelines.

The authors of this paper have been involved to varying degrees in the development of all of these initiatives. This paper summarises the progress to date.

Cycle Network and Route Planning Guide (CNRPG)

This initiative was flagged as part of the pedestrian and cyclist safety framework in August 2002. In an impressive display of urgency by LTSA, the project was targeted for a 12 months development schedule, largely during 2003. Some editing changes delayed final publication, but it was finally released for general use in September 2004.

The project was also notable for its widespread collaboration during development. A consortium of cycle planning experts from New Zealand and overseas, led by Opus International Consultants Ltd, was commissioned to prepare the document for LTSA. A stakeholder group was also convened to direct the structure of the document and to provide feedback on drafts; this included representatives from road controlling authorities, cycling advocates and educators, and government agencies. A draft of the document was also released for public consultation (October 2003), attracting about a dozen submissions from interested individuals and organisations. An international peer review of the final draft was also commissioned. All of these steps ensured that a world-class guide relevant to New Zealand and incorporating international and local best practice was attained.

The structure of the final (88 page) CNRPG is outlined in Figure 1 below:

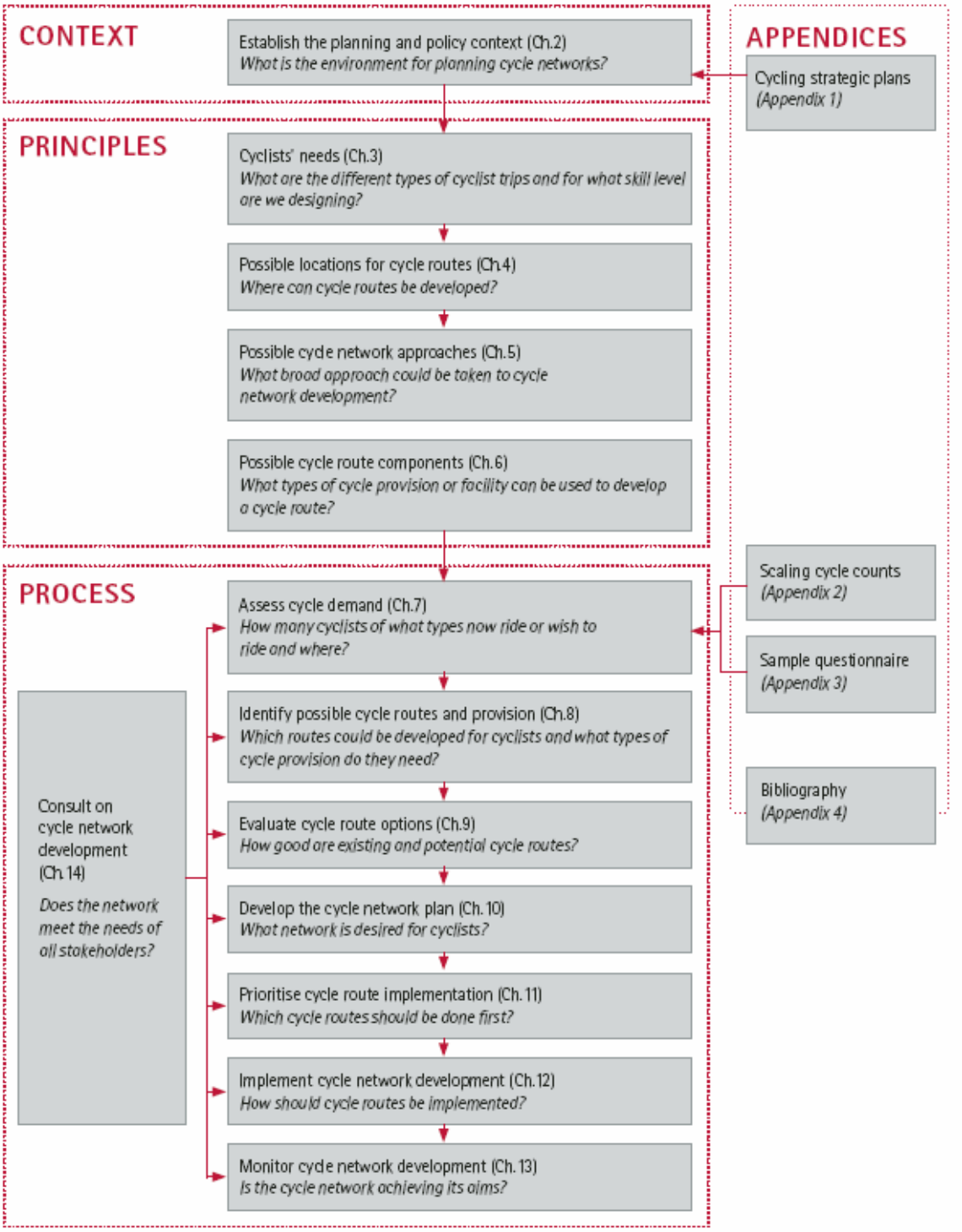

Figure 1: Structure of the *Cycle Network and Route Planning Guide*

The content has been a delicate balance between providing enough detail about the relative merits of various techniques and policies, whilst remaining concise and simply referring readers to other documents where necessary.

An interesting debate arose about where to draw the line regarding selection of appropriate cycle facilities between this guide and the parallel cycle design guide (discussed later). For example, Figure 2 suggests appropriate on-road cycling treatments for various combinations of traffic volume and speed.

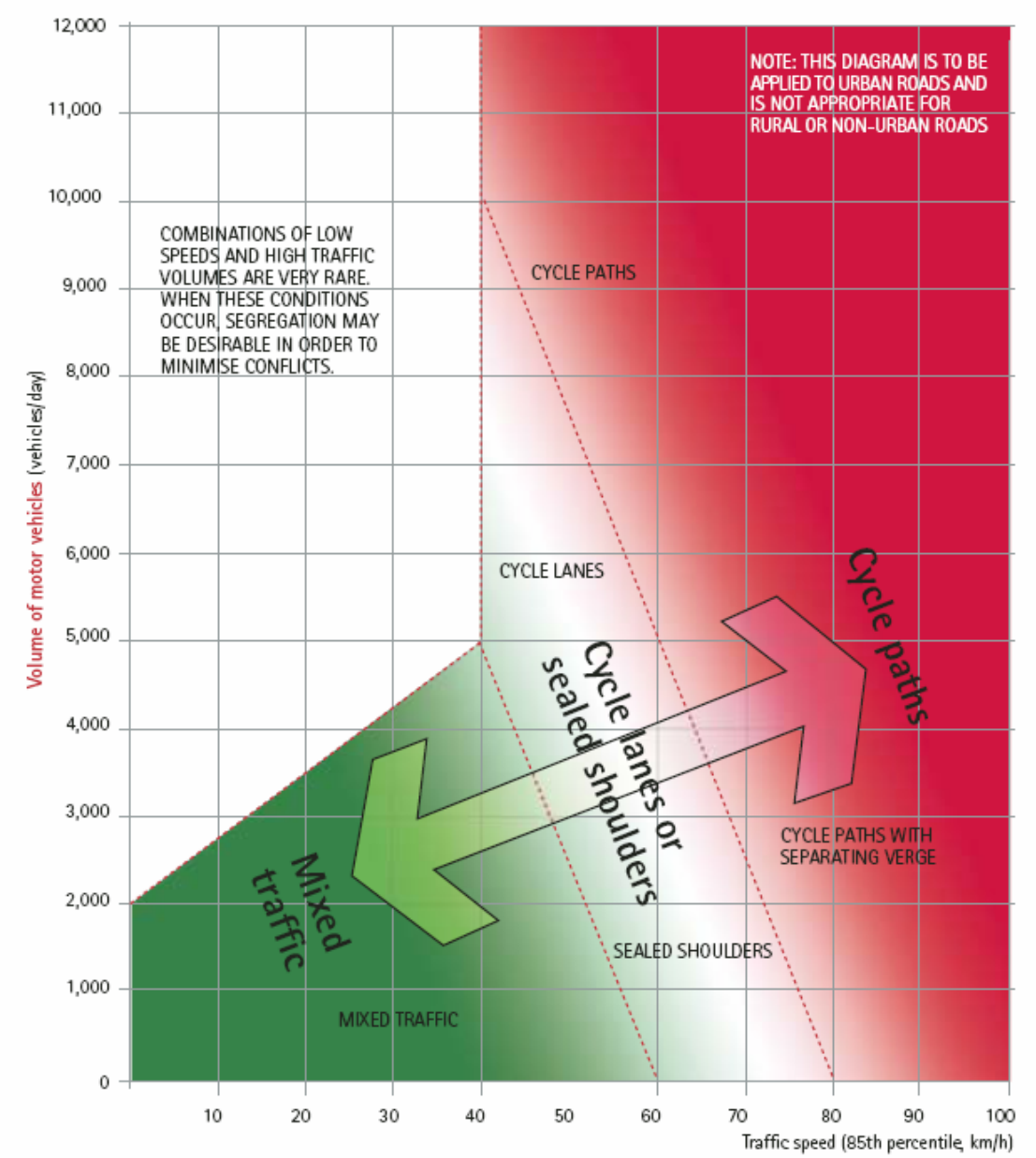

Figure 2: *Cycle Network and Route Planning Guide* facility selection diagram

Readers familiar with overseas guides such as CROW (1993) and IHT (1996) will recall similar diagrams in them. Indeed the CNRPG diagram is largely based on the one produced by RTA (2003).

To date, the CNRPG has been well received by the cycling fraternity and local government. It has also received two national awards, from the Cycling Advocates' Network (a national cycling advocacy group) and the NZ Planning Institute respectively.

Cycle Design Supplement (CDS)

New Zealand road controlling authorities (RCAs) have largely followed the guidelines specified by Austroads (The Australasian road authority forum comprising Australian states and New Zealand), because of our links with our near neighbour and similarities in road environment and culture. New Zealand's state highway agency Transit NZ as a member of Austroads, also helps develop these guidelines by providing New Zealand representation on relevant panels. As a result, many New Zealand agencies have looked to *Austroads Guide to Traffic Engineering Practice Part 14: Bicycle*s ("Austroads Part 14", 1999) as a basis for designing cycle facilities within their jurisdiction.

The situation has been complicated however by the presence of other somewhat contradictory standards. Firstly in 1985 the National Roads Board and Urban Transport Council produced a "Guide for Cycling Facilities", ostensibly New Zealand's first national design standard (NRB/UTC 1985). The New Zealand *Manual of Traffic Signs and Markings* (MOTSAM) also provides some very basic plans outlining how cycle lanes should be marked at mid-block and intersection locations (Transit NZ/LTSA 2004). With reference to Austroads Part 14 and other modern overseas guidelines, it was quite evident that neither of the New Zealand documents provided "best practice" for cycle provision in New Zealand at the turn of the 21st century. However, technically, in the absence of any formally mandated alternative, they constituted New Zealand's national guidelines. Hence there was a variety of standards in use in New Zealand.

Around 2000 there was a call to formally adopt Austroads Part 14 as a consistent basis for all cycle facilities in New Zealand. It was acknowledged however that some parts of Austroads Part 14 were not appropriate for New Zealand, due to legislative differences and signing conventions. Some expert practitioners also felt that parts of Austroads Part 14 were in fact not "Best Practice" either. Transit NZ therefore undertook in late 2001, to develop a New Zealand-specific Cycle Design Guide on behalf of all RCAs. An advisory group of interested practitioners determined that a New Zealand "supplement" to Austroads Part 14 was the most appropriate way forward (i.e. a document that referred to Austroads Part 14 and highlighted any differences for New Zealand practitioners). MWH New Zealand Ltd was commissioned in August 2002 to prepare a draft document.

Like the CNRPG, this document also followed a collaborative approach, albeit at a slower pace. The consultant's initial recommendations following assessment of Austroads Part 14 were reviewed by the advisory group, and a draft Cycle Design Supplement document was then prepared and released for public comment in July 2003. The guide was revised in light of feedback received and finalised by the consultant by the end of 2003 but Transit NZ undertook further revisions to ensure that

the guide was compatible with its other road standards and guidelines. These modifications resulted in a reduction in width requirements for cycle lanes and shoulders, amongst other things. The revised document was finally published (on-line) in October 2004.

The CDS (Transit NZ 2004) is 34 pages long or about 20% of the size of Austroads Part 14. The document is structured exactly in the same way as the Austroads guide in terms of section numbering. Where the content in Austroads Part 14 is considered adequate then the CDS simply refers the reader to this document. Otherwise, the CDS provides additional material to replace or supplement the equivalent section in Austroads Part 14. Some observers have suggested that it may not be long before a completely stand-alone New Zealand guide is warranted. Indeed, a single document approach may be preferable to practitioners instead of having to leaf though two documents anyway. Note that the structure of the *Austroads Guide to Traffic Engineering Practice* series is currently under review and is likely to result in all cycling design guidance provided through more general documents rather than in a specific cycling guide.

Some notable differences from Austroads Part 14 include:

- Outlining the New Zealand context with regards to cycling strategies and Government agency policies.
- A revised guide for the choice of cycle facilities, largely based on motor traffic volumes and speeds.
- Amended “desirable widths” and “acceptable ranges” for cycle lanes and other related facilities, based on default NZ speed limits.
- The rejection of some design concepts (e.g. advisory cycle lanes, safety strips).
- Some revised intersection treatment layouts.
- NZ-specific signs and road markings.
- Less support for shared off-road cycle paths, especially where driveways and intersecting roads exist. More emphasis is placed on ensuring roads are able to safely accommodate cycling.
- Reference to other useful New Zealand guidelines where relevant.

The guide has been released for provisional use in New Zealand and will be monitored over the next few years for any issues that arise.

Cycling Strategy Best Practice Guidelines

One of the notable policies introduced by national transport funding agency Transfund NZ in 2002 was the requirement that cycling projects seeking Government funding assistance had to be based on a local "cycling strategy" (Transfund 2002) (a similar approach was also required for pedestrian projects). A cycling strategy is a high-level policy document that sets out the objectives and goals that a local council wishes to achieve with regard to providing for and promoting cycling, usually with some kind of implementation plan included as well.

While this policy had the worthy aim of ensuring that projects submitted and funded helped to ultimately form a coherent cycle network and cycle friendly environment, a practical problem with this approach was the relatively small number of councils that actually had a strategy in place. At the time of the initial policy only about 12 out of 74 local councils in New Zealand had a cycling strategy (even fewer had a walking strategy); as a result one of the first things funded was often the development of one. In the past 3 years, at least 20 councils have begun developing such a strategy. Although this urgency is commendable, a key concern was the relative level of robustness and completeness to be found in all of these strategies; certainly there was considerable variation in their quality, content and scope. This reflected a lack of clear guidance on what should be considered in a "good" strategy.

In July 2004 a consortium led by MWH New Zealand Ltd successfully bid for research funding to develop a best practice guideline for both walking and cycling strategies in New Zealand. The basic methodology involved collating and reviewing all available strategies in New Zealand, together with a few notable overseas ones, summarising the different items and viewpoints contained, and highlighting those sections considered "best practice".

Because many of the research team had been involved in developing some of these strategies, a multi-organisation consortium was used to minimise concerns about bias or conflict of interest. As well as formal peer reviewers, a wider stakeholder group (including interested practitioners, policy makers, advocates, etc) was also used to provide feedback on the process and its findings. The final report is currently going through the editing stages for publication.

The research suggested the following structure for walking/cycling strategies, outlined in Figure 3.

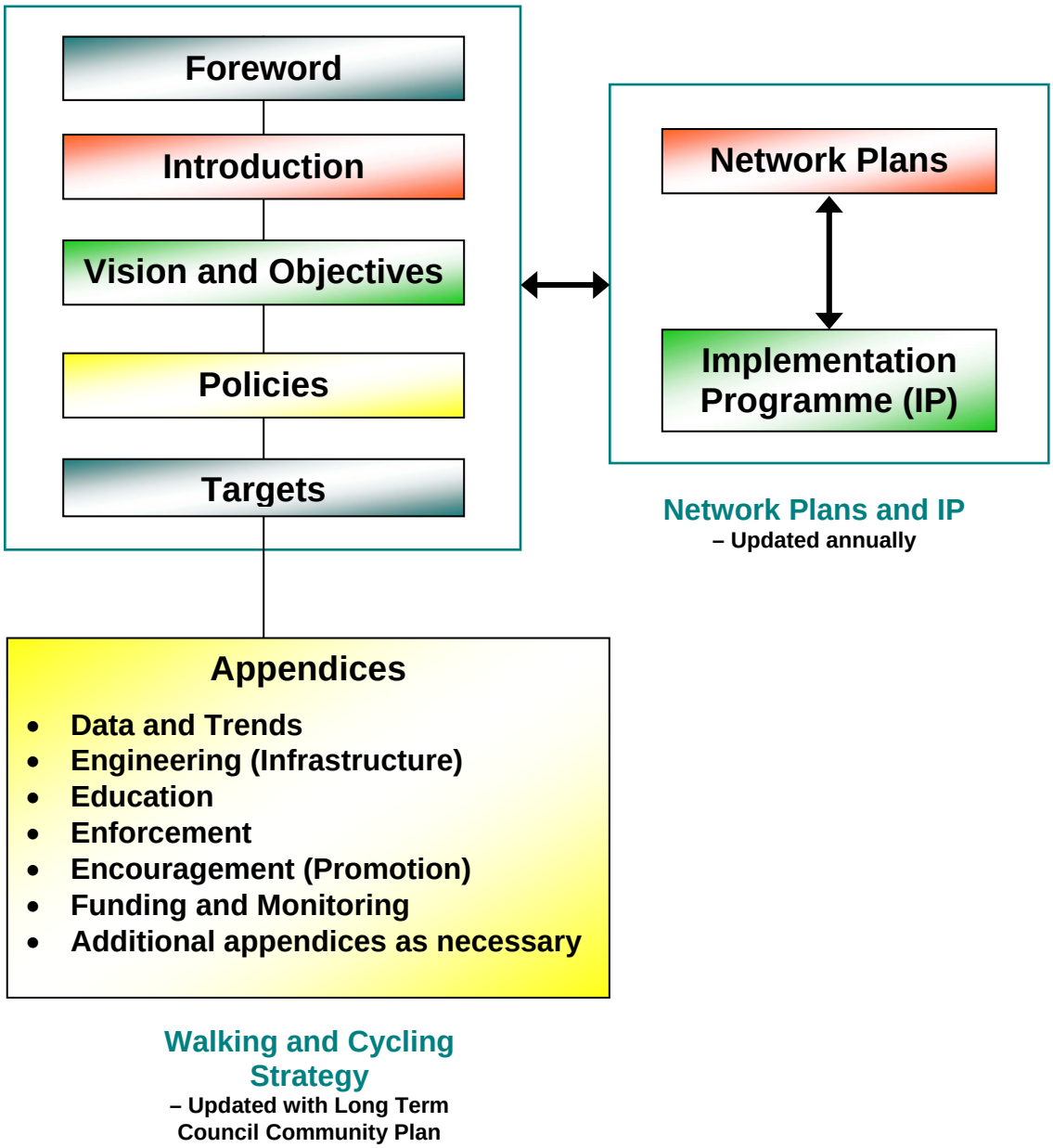

Figure 3: Suggested structure for walking and cycling strategies

As well as outlining typical content to include or consider for each section, the report also provided examples from actual strategies where these were considered worthy of emulation elsewhere. For example, 16 sample vision statements were reproduced to illustrate good ideas for possible re-use. More general considerations were also discussed, such as appropriate lengths (the report suggests a good walking and cycling strategy can be written in under 25 pages, with key sections affecting Council decisions and policies in fewer than 10 pages) and the merits of separate or combined walking/cycling strategies.

The report notes that earlier strategies often spent many pages building a case for support for cycling (and walking). In the new policy environment in NZ, the report

argues that this is no longer necessary, and a strategy can “cut to the chase”, with a vision, objectives, policies and targets or indicators all being near the front of the document for busy readers to find easily.

Significant emphasis is placed on implementation through an implementation plan or action plan within the strategy. It is recommended that this be integrated with existing Council budget and public consultation processes through the Long Term Council Community Plan (LTCCP) process recently introduced throughout New Zealand.

“Fundamentals of Planning and Design for Cycling” Course

The above documents provide a useful basis for any council wishing to provide for cycling in its area. The existence of national planning and design guidelines and a local strategy however are no guarantee that they will be used properly or indeed understood. The final element in producing best practice is therefore specialist training of practitioners on how to apply the principles contained within these documents.

The need for such industry training was recognised as long ago as December 2000 by a group of practitioners with expertise in this area. A consortium led by Christchurch City Council was formed to bid for funding to develop training material for such a course and, after some delays, funding was approved in August 2002. At the time there were no nationally recognised guidelines in this area with the above-mentioned documents non-existent. Therefore a key element of the project was to determine “best practice” and recommend that in the course.

Recommending such practice however was of little use if the “clients” (i.e. RCAs, funding agency Transfund, and the Land Transport Safety Authority) rejected the use of something championed by the training course. Therefore a peer review process was put in place to seek “sign-off” from the key transport agencies of what was proposed. As part of the review and refinement process, a pilot training course was run in June 2003, and a feedback session following this was useful in ironing out any perceived deficiencies. The first public training courses were held around New Zealand at six venues in September and October 2003. Additional courses have since been held at further venues around the country, as well as for in-house groups and as part of a university Masters course. To date, over 200 people have been trained through these courses.

The basic structure of the course is outlined in Figure 4 below:

Section 1: Introduction

- Course presenter introductions
- Housekeeping and course outline
- Relationship of Course Material to CDG and CNRPG

Section 2: Meeting Cyclists' Needs

- Taking Cycling Seriously
- The Five Main Requirements
- Crashes and Road Danger Reduction

Section 3: Planning for Cycling

- Philosophy or Approach to Planning
- Data gathering options
- Identifying Cycle Route Options
- Network Plan
- Prioritisation
- Monitoring
- Public consultation processes

Section 4: Cycling between Intersections

- Cycling on roads with no specific provision
- Cycle lanes
- Cycle paths along roads and away from roads
- Other useful on-road facilities
- Bridges and tunnels
- Making space for cycle facilities including case studies

Section 5: Cycling through Intersections

- The six elements of cycle continuity
- Cycle-friendly intersections without cycle provisions
- Bypasses
- Path crossings
- Signal control
- Roundabouts

Section 6: Putting it all together

- Creating a practical implementation plan
- Transfund funding Criteria
- Simplified Cycling Procedures
- Typical Costs and Benefits

Bouquets and Brickbats

- Good and bad Examples
- Discussion

Figure 4: "Fundamentals of Planning & Design for Cycling" Course Structure

This material is presented to participants in a full one-day programme. Early on in the development process, a survey was sent to transportation practitioners to gauge feedback on the demand for and content of such a course. There was a clear desire for a single-day course, no doubt both for practical reasons for out-of-town participants and probably also (for many) the perceived level of time and attention that cycle planning/design training warranted. This necessitated a very concentrated (and

sometimes cursory) course programme, hence the “Fundamentals” moniker attached to the course title to reinforce the fact that further training and experience was desirable. Possibly in the future an advanced (perhaps 2 day) course can be introduced to complement the original one.

Two presenters are used per course to share the teaching and to provide some breadth of expertise; it would be feasible however to use just one. Each participant receives a hard copy of the Powerpoint presentations to make notes on, as well as a copy of more detailed course notes (Transfund 2003) for later reference. The course material has been made copyright-free by its sponsor (Land Transport NZ) allowing it to be picked up and used by any suitably experienced trainer or practitioner.

Discussion

The development of best practice resources in New Zealand has followed an interesting path, albeit less than ideal. In order of initiation the projects have been:

- Training Course (2001)
- Cycle Design Supplement (2002)
- Cycle Network/Planning Guide (2003)
- (Walking and) Cycling Strategy Best Practice (2004)

In real life however, the process tends to work in reverse, i.e. a cycling strategy is initiated, a cycle network is planned, and then specific cycle facilities are designed. Attempting to develop a training course when nationally agreed standards and guidelines had not been confirmed was also exceptionally difficult; it was often a case of making a “best call” on the likely outcome of the standard development process. The fact that the course developers were also somewhat involved in the other processes has helped to improve the odds (it has also helped in providing advance information on final documents). Nevertheless, the training course material has had to see revisions as each guideline has been released.

New Zealand is a relatively small country (population 4 million). For the development of cycling planning and design practices and procedures, New Zealand’s small size has been a distinct advantage. The country has a small but cohesive group of key researchers and practitioners who have made great advances over recent years. Many of the people involved in one cycling initiative are also involved in others, so there is ample opportunity to “cross-fertilise” one project with good ideas from another.

As these guidelines have appeared, and greater awareness of cycling issues has come to the fore, planning and design for cycling in New Zealand has improved in quantity and quality. The biggest deficiency still is in “general” roading projects not adequately catering for cycling (or walking). A potential future improvement therefore is to introduce better auditing processes by the funding section of Land Transport NZ to avoid those shortcomings (i.e. any project attracting Government subsidy should not contravene New Zealand’s Transport Strategy by making walking and cycling less safe or less

attractive). This may require the development of further resources for specialist cyclist auditing of projects.

Conclusions

In less than five years, New Zealand has gone from having virtually no officially recognised and best-practice standards and guidelines for cycling to having a full suite of tools for planning and designing for cycling. This gives transport practitioners the confidence that they are using best practice and consistency when providing for cyclists. It is now in the hands of the decision-makers to increasingly support cycling in the transport mix and for practitioners to provide the best outcome "on the ground".

Acknowledgements

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All three authors are current or former members of the Cycling Advocates' Network (CAN) executive and have been active in cycling as professionals and advocates for many years.

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[1] On 1 December 2004, the Land Transport Safety Authority (LTSA), the national road safety agency, and Transfund New Zealand (Transfund), the national transport funding agency, merged to form Land Transport New Zealand (Land Transport NZ).

[2] New Zealand has 74 territorial local authorities, either City Councils or District Councils.