Non-Motorised User Review Procedures

Interim Guideline – for trial and comment

Land Transport
Ikiiki Whenua Aotearoa

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Interim Guideline – for trial and comment

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GLOSSARY OF TERMS

Roading projects: All works that involve the construction of a new road or a permanent change to the existing road layout or features, including kerbs, signs and markings, lighting, signalling, drainage, landscaping and installation of roadside equipment. In addition, for the purposes of this Guideline, it also encompasses off-road footpaths, cycle paths and bridleways and other locations where non-motorised users (NMUs) can be expected to be found including car parks and passenger transport interchanges.

Design Organisation: The organisation(s) commissioned to undertake the various phases of project preparation.

Design Team: The group within the Design Organisation undertaking the various phases of project preparation. All members of the Design Team should contribute to the NMU Review.

Project Sponsor: A person within the Road Controlling Authority (RCA) responsible for managing the progression of the roading project.

Design Team Leader: A person within the Design Team responsible for managing the project design and coordinating the input of the various design disciplines.

Non-Motorised User (NMU): A collective term for a group of road users that include pedestrians, cyclists and equestrians.

NMU Review Leader: A member of the Design Team, with the appropriate training, skills and experience, who has responsibility for overseeing the NMU Review process and for liaison with the Project Sponsor and Design Team Leader. The Review Leader is responsible for preparing the NMU Context Report and NMU Audit Report

NMU Context Report: The first stage of NMU Review. The NMU Context Report is a statement of background information on current or potential NMU issues relevant to the project. The NMU Context Report sets out the objectives for the project for NMUs and should ensure that the Design Team have the necessary information to take appropriate decisions on design elements that may affect NMUs.

NMU Audit Report: An NMU Audit Report is produced for each relevant design stage of a project, as approved by the Project Sponsor. The NMU Audit Report should document the decisions taken in relation to providing for NMU needs during the design stage, note how the project meets (or fails to meet) the objectives set down in the Context Report and identifies considerations for subsequent stages of design.

1. INTRODUCTION

1.1. General

This guideline sets out the procedures for undertaking reviews of roading projects with due regards to the travel needs of non-motorised users (NMUs). NMUs are considered to include the following modes of transport:

- Pedestrians.
- Cyclists.
- Equestrians.

For the purposes of this guideline, a 'pedestrian' is deemed to be any person on foot or who is using a means of conveyance propelled by human power (other than bicycle) such as wheeled recreational devices, notably skateboards, kick scooters, roller skates and in-line skates. In addition, users of electrically assisted pedal cycles or powered wheelchairs that conform with the Land Transport (Road User) Rule 2004, and may legally be used on pedestrian or cycle facilities, are also considered to be NMUs.

NMU reviews require particular consideration to be given to the needs of disabled people such as the mobility impaired, who may use equipment such as wheelchairs as well as those with visual or hearing impairments.

A NMU review is defined as:

a systematic process applied to new roading projects by which the Design Team identifies and documents existing and potential issues affecting NMUs, sets project objectives to improve conditions for NMUs, audits designs and construction to assess how well the objectives have been achieved, and documents the design decisions that have been made.

The NMU review considers how the roading project recognises and balances the needs of all the existing and forecast groups of users. In this way the NMU review is not constrained to simply checking that NMU facilities are adequate and that the design accommodates NMUs but also examines how opportunities for NMUs can be maximised and enhanced.

Specifically, the review process seeks to:

- Put NMU issues into context with respect to the size and location of the project, taking existing and potential patterns of use by NMUs into account.
- Audit the design with respect to the needs of NMUs. Audits may be undertaken at different stages during the design process, as well as during construction and post construction.

1.2. Background

Government policy as set out in the New Zealand Transport Strategy and 'Getting there – on foot, by cycle' encourages consideration of the needs of NMUs and supports efforts to increase safety and accessibility by non-motorised modes, in particular walking and cycling. Accordingly, a number of planning and design guidelines for pedestrians and cyclists have been prepared over recent years. However, given the rural nature of many parts of New Zealand, many local authorities in New Zealand also have concerns with regards to the interaction of equestrians with other road users and have included the needs of horse riders in their strategy documents. Therefore, it is appropriate and fitting that the needs of such users are taken into account when considering roading projects, just as the needs of equestrians are considered when undertaking road safety audits.

1.3. NMUs and the Law

The main laws relating to NMUs can be found in the Land Transport (Road User) Rule 2004 and the Land Transport Rule: Traffic Control Devices 2004. The obligations and requirements of NMUs are set down within these Rules. It should be noted that as part of these Rules, cyclists and equestrians are often considered as drivers of vehicles and their obligations are, in most respects, the same as those of motor vehicle drivers. This has an impact on NMUs with respect to the legal obligation of the various conflicting road users, for instance at shared crossing facilities. An example of where NMUs are treated differently (from a legal perspective) includes cyclists and mounted horse riders not being able to use a pedestrian crossing. Similarly, a shared pedestrian and cycle crossing phase at a signalised intersection should not operate at the same time as turning vehicles are permitted to conflict with them - at present, turning vehicles can conflict with pedestrians crossing in compliance with the traffic signal display, but should not conflict with cyclists, suggesting that cyclists need their own separate phase.

1.4. Objectives

NMU reviews should promote the consideration of NMU interests, through a dialogue between the Project Sponsor and the Design Team, in order to achieve optimum provision for NMUs within the constraints of the project. A review's objectives are to:

- Encourage the Design Team to take all reasonable opportunities to improve the service offered to NMUs.
- Ensure that the current and future needs of NMUs are recognised and developed within a roading project.
- Prevent conditions for NMUs being worsened by the introduction of roading projects.
- Document design decisions that affect NMUs.

It is recommended that this Guideline be used for the planning and design of all new roading projects in New Zealand and, in particular, those projects that are either partly or totally funded by Land Transport NZ.

It is not the intention that the use of these NMU review procedures should remove a designer's duty of care. Instead, the Guideline should be complementary to the detailed design guides in existence. While this Guideline gives some general guidance on the requirements of NMUs, reference should also be made to those documents named in Appendix A along with any other appropriate guides and standards.

1.5. Benefits of NMU Review

A NMU review will:

- Enhance project designs to fully cater for the needs of NMUs and potentially promote and encourage a modal shift towards walking and cycling.
- Minimise the need for re-work and physical remedial works caused by design deficiencies created during the various stages of project development.
- Meet the requirements of the Land Transport Management Act during project design by ensuring the needs of all road users are taken into account.
- Improve awareness of design practices incorporating NMU requirements.

A NMU review is a means of documenting design decisions in a formal and consistent manner. Naturally, the extent of work required to carry out the NMU review process will vary depending on the context of the roading project's location, and the scale and type of project under consideration.

2. NMU CHARACTERISTICS

NMUs have the same basic concerns as any transport user and roading project designs should reflect this. For routes to be viable for NMUs, they should be:

- Connected - link origins and destinations without detours or delays in a legible, continuous and consistent manner.
- Attractive - in terms of the built and natural environment and the interaction with other road users.
- Safe - not give rise to road safety or personal security concerns.
- Accessible - designs fit for purpose for all NMUs, and in particular vulnerable NMUs such as sensory or mobility impaired users, and people with children and pushchairs.

However, individual NMUs are diverse, and it is recognised that there is a potential for conflict to occur between some of the requirements considered above.

Personal Criteria and Journey Purpose

Decisions made by individual users will vary according to personal characteristics as well as the purpose of their journey. Users may be willing to trade-off advantages in one respect against disadvantages in another.

e.g. ***Pedestrians may choose to climb safety barriers rather than divert from their desire line thereby making a choice between safety and connectedness; or***

Connectedness is likely to be valued higher on a commuter trip than on a leisure trip. Conversely, a desire for attractiveness is likely to be much higher on a leisure trip than on a commuter trip. Indirect routes away from traffic that may be more attractive may also have personal security issues attached to them.

Where appropriate, a NMU review should help minimise the extent of any compromise and should rationalise and balance the provision of facilities according to the expected scales and types of user demands.

Each mode of NMU

While pedestrians, cyclists and equestrians may share a number of similar characteristics, the optimum solutions for meeting their needs may vary significantly.

e.g. ***The noise made by a skateboarder moving fast over pavers may be in conflict with an equestrian's desire for a calm environment to keep horses under control; or***

The provision of pedestrian refuges and kerb build-outs to assist crossing movements may act as a 'pinch-point' for on-road cyclists.

A NMU review should identify the characteristics of the various users and seek to identify appropriate balanced treatments to address their needs. Interactions between NMU modes can be considered along routes and also at intersections of routes.

Skills and Experience of Individual NMUs

In contrast with designing for motorised users, the designer cannot assume any given level of competence or familiarity with traffic law and conventions on the part of the NMU.

e.g. ***Novice cyclists may prefer to use a busy footpath rather than the road due to perceived safety issues on the road whereas experienced and confident cyclists may travel at similar speeds to motorised users and prefer to cycle on the road; or***

At a signalised pedestrian crossing, pedestrians may make their own choice of when to cross the road rather than wait for the 'green-man' whilst others will wait for the cross signal.

A NMU review may consider where ambiguous behaviour can be managed or where ambiguities arising from the project design can be clarified so that consistent behaviour is encouraged.

It is therefore important that designers have a clear understanding of the characteristics of different NMU types, and recognise the implications of their designs for each of those users. The challenge for the Design Team is to attempt to balance these factors in a way that is likely to be acceptable to most users.

Consideration of *vulnerable* NMU will encourage the formulation of a project that satisfies the needs of the majority of each user type. Vulnerable users may be considered to include those with:

- Sensory impairment.
- Mobility difficulties as a result of physical disability or because of the need, for example, to use a pushchair.
- Particular sensitivity to personal security concerns, including older and very young users and females.

Providing for the needs of all possible users requires the exercise of judgement and understanding on the part of the Design Team. It is also important to enter into effective consultation with user group representatives at all stages of the design of a project (see Section 3.5).

A list of frequent problems experienced by NMUs is included in Appendix B.

3. THE NMU REVIEW PROCESS

3.1. Scope of NMU Review

The NMU review should be used as a design tool during project development to assist the Project Sponsor and Design Team in ensuring that the transport needs of all road users are met in project design.

It is not an independently applied process, separate from the project design, but an integral part of the design development. As such, a NMU review must actively involve members of the Design Team.

The NMU Review consists of two elements:

- NMU Context

  This involves the collation of background information of relevance to NMUs at the earliest possible stage in a project. Ideally, this should be when project objectives are being defined and prior to preliminary design. This base information is presented in the form of a NMU Context Report (see Section 4), and leads to the agreement on each of the stages that an NMU audit is required.

- NMU Audit

  This involves ensuring NMUs are fully considered as part of the design and construction process by undertaking NMU audits at agreed stages. The audit information is to be presented in the form of a NMU Audit Report (see Section 5), prepared for each agreed stage of audit.

The NMU review process for projects is represented in Figure 3.1.

3.2. Projects to Review

NMU reviews are applicable to all types of road projects on all types of roads. As with road safety audits, it is not the scale of the project that is important, but the scale of the impact on the NMU that may result. For instance, it may be appropriate to undertake a NMU review for a new motorway project. Whilst the Transit New Zealand Act specifically excludes pedestrians, cyclists and horses from using motorways, a new motorway proposal may still have an impact on NMUs by acting as a barrier to movement across the motorway, or by replacing an existing route that they had previously been able to use.

NMUs are not restricted to road corridors and so the review process should not be either. Accordingly, NMU reviews can be undertaken for both on-road and off-road locations as the elements of detailed design in both instances are crucial to the success or otherwise of a particular route.

Opportunities should also be taken to review private development projects that may be expected to generate NMUs, in particular those developments with car parks provided where motor vehicles can be expected to conflict with pedestrians (albeit at a low speed) or where large-scale private development projects may affect the permeability of an area and the availability of connected and direct routes for NMUs.

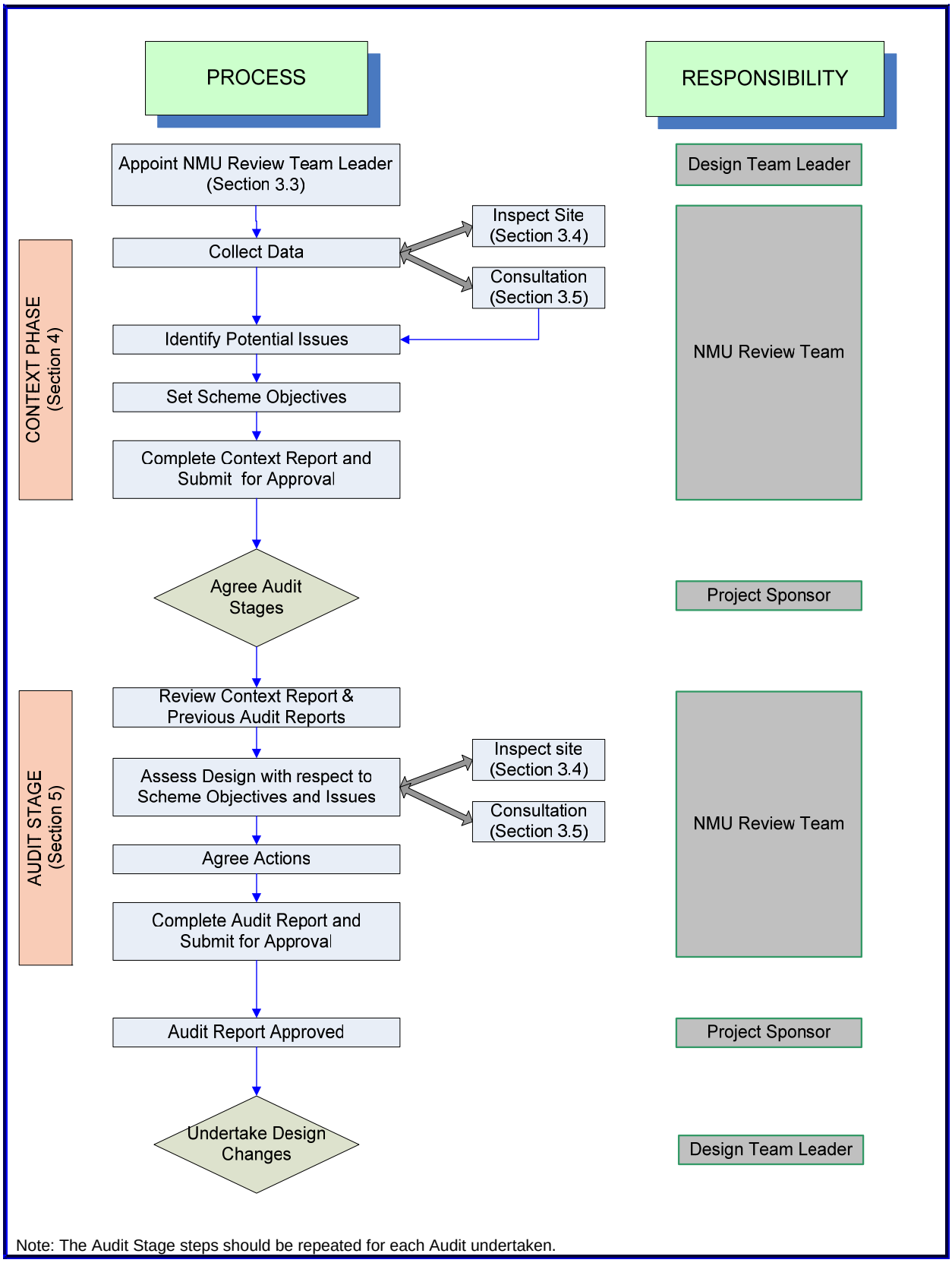

Figure 3.1 Summary of the NMU Review Process

3.3. Parties to a NMU Review Team

Appointment of NMU Review Leader

The Design Team Leader must propose an NMU Review Leader to the Project Sponsor for approval, including details of Leader's qualifications and experience relevant to the role. If it is necessary to change the NMU Review Leader during the course of project development, the new appointment must be subject to the approval of the Project Sponsor.

The NMU Review Leader must act as a focal point for NMU issues and be responsible for managing the NMU review process and the quality of the outputs. As such, the NMU Review Leader must be responsible for ensuring that NMU review processes achieve the objectives as set out in this Guideline.

The NMU Review Leader must have sufficient relevant and up-to-date professional experience and appreciation of NMU needs as well as experience in roading project development to be able to exercise judgment reliably as to the effect of a design proposal on NMUs. In addition, the NMU Review Leader should possess demonstrated management and report writing skills.

The NMU Review Leader and the Design Team Leader may be the same person. However, it is recommended that the Review Team consists of more than one person if this is the case.

3.4. Site Inspections

Inspections of the site are recommended during the context phase of work as well as for each stage of NMU audit.

It is desirable that site inspections take place in a range of weather and lighting conditions, and in particular when it is anticipated that NMU demands, in terms of flows or vulnerability of users, are likely to be greatest. The location of the project relative to nearby trip generators such as schools will assist in anticipating both the type, e.g. commuter, leisure, education, and time of use.

When conducting a site visit, the members of the Design Team should walk any NMU routes to be affected by the project. Where appropriate the route should also be cycled and if practicable, ridden by an experienced horse rider (who may not necessarily be a member of the Design Team).

Traffic Management Plan (TMP)

A TMP must be prepared and approved in accordance with the RCA's requirements, such as the Code of Practice for Temporary Traffic Management (COPTTM). The TMP sets out the protective equipment and procedures required for the team members, where and how they can operate. The team should be briefed on the TMP prior to the location visit and should preferably sign the document to declare that they are familiar with its requirements. (While Appendix C provides an outline of a TMP, the relevant RCA must be contacted to establish their specific requirements.)

3.5. Consultation

The Land Transport Management Act and Local Government Act have requirements to undertake community consultation. Consultation with interested parties, particularly local authorities, user groups, community groups as well as the police is valuable in assisting in identifying issues and opportunities for NMUs. These stakeholders can contribute to the quality of the project design and should be consulted as early as is practical in the development of a project.

User groups can contribute significant information, particularly in cases where use of a mode or the needs of people with certain disabilities are not within the direct experience of those undertaking the design. It is recommended that user groups are consulted at the agreed stages of the NMU audit process in order that the Design Team is aware of their views as designs are progressed.

Local user group representatives should be contacted where possible as they are able to appreciate local issues and concerns. In the first instance, contact details of representatives should be sought through the local authority. However, many local user groups are also affiliated to national groups (details included in Appendix D) and it may be necessary to contact local representatives or potentially affected users via those national organisations.

It is acknowledged that pedestrian and cyclist representative groups are often already consulted throughout the life of a project design. Furthermore, equestrian groups may also often be consulted where roading designs are identified as having an impact on their needs. However, the NMU review process ensures that these user groups are all considered at the beginning of the project, and that the needs of the mobility and sensory impaired are fully considered during the design process.

Consultation techniques as well as appropriate stakeholders to consult with in terms of pedestrian and cycling issues are contained in the relevant New Zealand network, route planning and design guides[1]. Horse riding however is a relatively specialist activity compared for instance to walking - where everyone has the potential to be a pedestrian. Accordingly, it is recommended that following discussions with the local authority, local riding schools, horse/pony trekking centres and general equestrian centres be contacted in the first instance as part of the consultation process and to also help identify any other local equestrian interest groups.

The process described above does not replace or act as a substitute for the consultation requirements as set down in the Land Transport Management Act and/or the Local Government Act. As part of the wider impact of any roading project, it is envisaged that other transport stakeholders and the wider community would be consulted on proposals as part of the normal consultation process for any project design in order to achieve a balanced set of views.

[1] Land Transport NZ. Cycle Network and Route Planning Guide (2004). Wellington , New Zealand
Land Transport NZ. Pedestrian Network Planning and Facilities Design Guide – Draft (2005). Wellington , New Zealand

4. NMU CONTEXT REPORT

The purpose of the Context Report is to ensure that the Design Team and Project Sponsor have sufficient information to allow them to fully consider the interests of NMUs within the project design. As such, it provides a summary of all available information relevant to existing and potential patterns of use by NMUs over the design life of the project. The NMU Context Report must also set out the opportunities and objectives to improve conditions for NMUs.

Compiling the Context Report stimulates broad consideration of likely NMUs including:

- Who the NMUs may be and their personal and mobility characteristics.
- What is the breakdown in NMU modes and what are the flows.
- Where the NMUs may travel.
- When the NMUs may travel.
- Why the NMUs may travel as they do.

Maintaining this broad and balanced outlook of all NMUs is key throughout the full NMU Review.

Compilation of the NMU Context Report need not be an excessively time-consuming task, particularly for small projects. Much of the information necessary for a NMU Context Report may already be available through the current data collection process undertaken during the project assessment phase and/or project initiation as the design process should already be taking the needs of all road users into account. However it may be necessary in some cases to gather further information.

It is recommended that the steps described in Figure 4.1 should be carried out in compiling the NMU Context Report. For smaller projects a less detailed approach may be appropriate.

The information collected as part of the Context Report stage of the review process can either be shown on a map/plan and/or be incorporated within the Report template contained in Appendix E.

Examples of NMU Context Reports are provided in Appendix F.

The NMU Context Report must be submitted to the Project Sponsor for approval. Project development should not proceed until the Project Sponsor has accepted the specific objectives to be achieved for NMUs.

Following acceptance of the NMU Context Report, the Project Sponsor must specify which design stages of the roading project should be subject to a NMU audit. If no issues and no objectives for NMUs are identified within the NMU Context Report, then no NMU Audit Reports may be required.

The validity of the NMU Context Report should be monitored as the project design progresses and, if conditions change from expectations, the report should be updated and re-submitted to the Project Sponsor for approval.

DATA COLLECTION

Step 1: Strategic Data
Identify and present in an appropriate form the strategic issues for the area. These may include:

- Relevant NMU routes (existing and planed) within the study area defined by the local authority or user groups, for instance as set out in local and regional strategies.
- Locations of any known planned developments, changes to land use or other factors that may affect the flows of NMUs and/or motorised traffic within the study area during the design lifetime of the project (making reference to strategic and local planning documents).
- The views of relevant user groups, local authorities, the police and public transport operators as applicable.

Step 2: Operational Data
Identify and present in an appropriate form information pertaining to the existing travel behaviour patterns. This may include data such as:

- NMU flows and activity (peak/off-peak) in the study area.
- Motorised Vehicle flows (peak/off-peak) and speeds.
- NMU crash information (including non-police reported data if available).
- Potential routes and desire lines not currently used, e.g. due to personal security or road safety fears.
- Existing and any planned NMU facilities.
- Existing NMU routes and desire lines.
- Public rights of way.
- Routes used by NMUs for which no reasonable alternative exists.
- Existing trip generators (eg schools, bus stops, horse riding centres) in the area.
- Unknown information or data that may be significant to the project but which isn't currently available.

IDENTIFICATION OF POTENTIAL ISSUES

Step 3: Impact
Define the impact that the existing operational and strategic information will have upon the project (and vice versa) with due regards to long term trends. Document locations and instances of potential conflict between road users.

PROJECT OBJECTIVES FOR NMUs

Step 4: Objectives
Propose the specific objectives for NMUs within the project as a whole.

NMU Audit Stages

Step 5: Recommendations
Based on the known information, recommend appropriate stages of NMU Audit for the different stages of design.

Figure 4.1 Steps involved in the Context Phase

5. NMU AUDIT

5.1. Stages of NMU Audit

The NMU Audit is not a technical design check. Rather, it should be carried out from the users' perspective and offers an opportunity to assess the value of proposed designs to the end users.

The NMU Audit should consider the implications of projects for NMU connectedness, attractiveness, safety and accessibility. It does not however duplicate a road safety audit. While issues of both road safety and personal safety for NMUs should be included within NMU Audit, these should be balanced against consideration of all elements likely to affect NMU travel. NMU audit is a continuous process, unlike road safety audit which is staged, and should minimise NMU issues identified at road safety audit. The NMU audit should intercept NMU safety issues prior to the road safety audit.

Whilst it is an on-going process, for simplicity it is appropriate to undertake formal Audits during different stages of design. The most likely stages of NMU Audit to be reported back on are:

Preliminary Design: During the development of the preliminary concepts and design.

Detailed Design: Throughout the development of the detailed design.

Construction: During the construction period. It is noted that during construction, traffic management plans will vary - as might its implementation on the ground. Input into the preparation of traffic management plans is recommended, particularly for urban sites, whilst inspections of work sites may be undertaken as an additional task during a formal safety audit of the temporary traffic management of work sites.

Post Construction: Prior to, or shortly after, scheme opening. An NMU audit at the completion of construction must, as a minimum, include site visits during daylight and after dark. The completion of a post construction audit may be undertaken in consultation with user groups.

For smaller projects where design stages are combined, NMU audit may be applied to the combined stage.

An NMU Audit Report must be produced at each design stage specified by the Project Sponsor.

NMU audit should promote a continuous assessment of NMU needs at all appropriate stages of the project, leading to a documentation of decisions as an NMU Audit Report for each specified stage. This Audit Report must describe the issues for NMUs considered during each stage and the actions taken to resolve those issues.

The NMU Audit Report must:

- Identify any material changes to the information in the NMU Context Report since its approval and ensure actions from earlier audits have been included within the design.

- Make reference to the project objectives for NMUs set out in the NMU Context Report and identify design features that have been incorporated to satisfy the objectives and to enhance the project for NMUs.
- Identify issues compromising the needs of NMUs during the design and identified as part of the audit process, and note the actions taken to resolve the issues.

All NMU concerns identified in the report should be of sufficient importance to require action. The report should not be cluttered with trivial matters.

It is recommended that only once the opportunity to observe and exercise independent judgement as part of a site inspection has been taken should detailed notes be made using the audit *checklists* in Appendix G. The checklists should only complement the review to encourage its comprehensiveness. They should not however be regarded as exhaustive.

Examples of a NMU Audit Report are provided in Appendix H.

The NMU Audit Report must be prepared and approved at the conclusion of each project stage specified by the Project Sponsor. The project should not proceed to road safety audit and the next stage until the Project Sponsor has approved the NMU Audit Report for the current stage.

APPENDIX A
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REFERENCES

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APPENDIX B
FREQUENT PROBLEMS

FREQUENT PROBLEMS

This Appendix contains a number of examples of some of the problems that affect NMUs that can occur within project design. The examples are intended to inspire thinking of the project as it will be experienced and interpreted by NMUs.

The examples are grouped as issues relating to:

- Desire lines/routes.
- Crossing locations and route intersections.
- Signage and facilities.
- Aesthetics and urban form.
- Layout and space.
- Obstructions and street furniture.
- Personal security.
- Surfaces.
- Maintenance.
- General.

1. DESIRE LINES/ROUTES

1.1 Issues common to all modes of NMU

Connectedness:	Lack of continuity and consistency of routes.
	Routes and crossings that require deviations away from desire lines.
	Routes are not self-explaining/legible and easy to navigate.
Accessibility:	Gradients, including cross fall, are too steep or the change of grades are too abrupt.
	Lack of provision of ramps as alternative to steps.

Crossing desire line(from a side road) has worn out the planting in the central median

Lack of continuity of crossing facility

1.2 Additional Issues for Pedestrians, including Sensory Impaired People and Wheelchair and Pushchair Users/Mobility Impaired People

Connectedness	Particular sensitivity to additional distance.
Accessibility	Inadequate provision of resting platforms or seating on ramps.

1.3 Additional issues for cyclists

Safety:	Provision for crossing intersections inadequate.
Accessibility:	Poor detailing where cyclists move from on-carriageway to off-carriageway and vice versa.
	Inadequate routes through traffic calming measures.

2. CROSSING LOCATIONS AND ROUTE INTERSECTIONS

2.1 *Issues common to all modes of NMU*

Connectedness:	Crossing facilities at intersections not provided for all movements.
	Crossings located away from desire lines.
Attractiveness:	Water 'ponding' in channels at crossing points.
Safety:	Inadequate crossing facilities: at-grade or grade separated.
	Insufficient segregation between different modes of NMU.
Accessibility:	Inadequate crossing times at traffic signal controlled locations.
	Crossing facilities not sufficiently responsive.
	Gullies located at crossing points. Insufficient space at refuges or at footpath waiting locations.

2.2 *Additional Issues for Pedestrians, including Sensory Impaired People and Wheelchair and Pushchair Users/Mobility Impaired People*

Connectedness:	Crossing layout leaves pedestrians 'stranded' between motorised traffic streams.
Accessibility:	Crossing layout too complicated for some users.
	Poor location/orientation of push button units at signal controlled crossing points.
	Lack of provision of audible bleeper/rotating cones at signal controlled crossings.
	Height of push buttons at signal controlled crossings.

Split pedestrian crossing without a raised central refuge – note the potential for right turning traffic to use the hatched median area potentially conflicting with waiting pedestrians

No tactile paving at the end of this pedestrian crossing. Note lack of dropped kerb in the central island.

2.3 *Additional issues for cyclists*

Safety:	Provision for crossing of intersections inadequate.
Accessibility:	Push buttons too close to the carriageway and poor located at signal controlled crossings so that the front wheel encroaches into the road.
	Crossings catering solely for pedestrians on shared pedestrian/cycle routes

2.4 *Additional Issues for Equestrians*

Connectedness:	Bridlepaths having to cross over roads.
Safety:	Holding area position too close to the road.
Accessibility:	Push buttons too low and too close to carriageway at signal controlled crossings.
	Requirement to dismount/provision of mounting block. Signal controllers located too close to the holding area (maintenance vehicles/personnel in bright jackets can worry horses).

3. SIGNAGE AND FACILITIES

3.1 Issues common to all modes of NMU

Connectedness: Lack of NMU direction maps or signs, particularly at complex junctions.
Poor signing (information, warning and regulatory) along routes.
Signing and pavement markings incorrect or misleading.

Safety: Poorly located signs impacting on sight lines.

Accessibility: Failure to sign available alternative routes.
Signing poorly located and not legible or informative of surrounding development and public facilities.

Large car parking sign located at a height that blocks a driver's view of pedestrians stepping out from the footpath

Aesthetically pleasing direction signage

4. AESTHETICS AND URBAN FORM

4.1 Issues common to all modes of NMU

Attractiveness: Sensitivity to environmental elements such as graffiti or poor quality building facades.
Ill defined routes, spaces or 'entrances'.
Landscaping doesn't support 'legibility'.
Materials and fixtures that are easily damaged, either deliberately through vandalism or accidentally through their placement or their construction.
Places where litter can easily accumulate, perhaps encouraged by a lack of suitable disposal facilities.

Street sculpture enhancing the pedestrian environment

Innovative and functional signing to the cable car in Wellington

Safety: Design and layout don't support safe movement and don't help with orientation or way-finding.

5. LAYOUT AND SPACE

5.1 Issues common to all modes of NMU

Connectedness:	Inconsistent and/or inadequate width of routes.
	Pinch points along paths due to the provision of street furniture or lighting columns.
Safety:	Potential conflicts between different NMU groups, e.g. cyclists and pedestrians.
Accessibility:	Inadequate provision of separate routes/tracks between users with different movement characteristics or different journey purposes/ requirements.
	Inadequate headroom.
	Inadequate turning radius for cycles, pushchairs, wheelchair users.

Footpath and car parking all at the same level – note intrusion of planters into footpath space.

Narrow footpath with street furniture adjacent to six lanes of traffic

5.2 Additional issues for cyclists

Connectedness:	Pinch points at refuges, parking, stormwater catchpits, service covers, intersection approaches or where kerb lines change.
Safety:	Narrow motorised traffic lanes impeding the sharing of road space
	Narrow cycle lanes along roads.
	Inadequate width at refuge crossings.
	Inadequate capacity of refuges serving substantial generators, e.g. schools.
Accessibility:	Facilities provided inadequate (on-carriageway and off-carriageway) for all the different types and numbers of cycle users.

6. OBSTRUCTIONS/STREET FURNITURE

6.1 Issues common to all modes of NMU

Obstruction of routes by:

- overgrown trees and vegetation/low branches
- insufficient headroom under signs, subways, structures etc.
- motor vehicles parked/loading
- rubbish awaiting collection
- shop display boards and canopies
- street furniture
- temporary street furniture and roadworks.

Furniture or vegetation obscuring user's vision and visibility on the approach to a conflict point.

Advertising display boards reducing the available footpath width on a busy shopping street, coupled with the proximity of a bus stop and pedestrians waiting to catch the bus

6.2 Additional Issues for Pedestrians, including Sensory Impaired People and Wheelchair and Pushchair Users/Mobility Impaired People

Safety:	Guardrailing obstructs inter-visibility between drivers and young pedestrians.

7. PERSONAL SECURITY

7.1 Issues common to all modes of NMU

Safety:	Fear of 'stranger danger'
	Project features or vegetation obscuring NMUs from general view or provide potential hiding places for assailants, giving rise to personal security concerns
	Subway designs that promote personal security concerns
	Inadequate inter-visibility with other users for personal safety
	Poor lighting and/or sudden changes in lighting levels
	Isolated 'destinations' such as recreational areas, offices, shops.
	Publicly accessible spaces not visible from neighbouring properties or passers-by
	Crime risk not identified

8. SURFACES

8.1 *Issues common to all modes of NMU*

Safety: Insufficient skid-resistance of surfaces, particularly on gradients.

Trip and slip hazards, e.g. drain gullies, pot holes, slippery surfaces (when wet) including chamber and inspection covers.

Accessibility: Dropped kerbs missing or insufficiently low.

8.2 *Additional Issues for Pedestrians, including Sensory Impaired People and Wheelchair and Pushchair Users/Mobility Impaired People*

Accessibility: Absence of tactile information or inappropriate tactile information.

Inadequate colour and tone contrast between tactile paving and surrounding surfaces or between street furniture and surrounding area.

Inadequate definition of kerb edge.

Inadequate warning of steps and changes of level.

Step nosings lacking non-slip edges and colour contrast.

Redesigned intersection with old tactile paving unchanged - directing visually impaired pedestrians into on-coming traffic.

Poor colour contrast between the footpath and the road. Note courier van parked half on the road/half on the pavement in the middle of a pedestrian crossing.

8.3 *Additional issues for cyclists*

Accessibility: Gullies acting as wheel traps on or off-road.

8.4 *Additional Issues for Equestrians*

Accessibility: Unsuitable surface of routes or holding areas.

9. MAINTENANCE

9.1 *Issues common to all modes of NMU*

Accessibility: Designs that do not support effective maintenance, e.g. leading to poor cleaning, sunken gully grates, graffiti etc.

Inappropriate or inadequate maintenance systems in place.

9.2 *Additional issues for cyclists*

Accessibility: Accumulation of debris in facilities.

10. GENERAL

10.1 Issues common to all modes of NMU

Accessibility:	Inadequate height of bridge parapets.
	Inadequate height of fencing on approach to bridges.
	Poor access to public transport and poor design of bus stops.

10.2 Additional Issues for Pedestrians, including Sensory Impaired People and Wheelchair and Pushchair Users/Mobility Impaired People

Accessibility:	Lack of notification of changes to disability/access officer and local groups representing impaired people.
	Sudden changes in lighting levels.

10.3 Additional issues for cyclists

Safety:	Failure to provide Advanced Stop Lines at traffic signal controlled intersections where they would be beneficial.
	Roundabout layouts that do not restrict motorised traffic entry and circulatory speeds.
	Lack of provision of facilities at junctions.
Accessibility:	Poor detailing of design – designer hasn't visited or cycled the route.
	Lack of secure and convenient cycle parking.

APPENDIX C
GENERIC TRAFFIC MANAGEMENT PLAN

GENERIC TRAFFIC MANAGEMENT PLAN

The following generic traffic management plan (TMP) can be used as a basis when undertaking field inspections as part of a NMU review.

The NMU Review Team must contact the RCA to clarify its particular requirements for a TMP on the roads included in the study prior to the field inspections. The details in a particular TMP could vary depending on the road level, speed limit, type of inspection being undertaken as well as other factors.

<table>
<tr><th colspan="6">Traffic Management Plan</th></tr>
<tr><td>Traffic management plan reference</td><td colspan="5"></td></tr>
<tr><td></td><td colspan="5">For office use only</td></tr>
<tr><td>Organisation</td><td colspan="2">Contractor
[NMU Review team]</td><td colspan="3">Client
[RCA]</td></tr>
<tr><td>Contract name / number</td><td colspan="2"></td><td colspan="3">RCA consent reference</td></tr>
<tr><td rowspan="2">Location</td><td rowspan="2">Road name(s)</td><td rowspan="2">Road level (LV, 1, 2, 3)</td><td rowspan="2">Speed limit</td><td>From RP</td><td></td></tr>
<tr><td>From RP</td><td></td></tr>
<tr><td>Description of activity</td><td colspan="5">NMU location inspections. This may include:
• Walking the route/site, typically from the footpath or off the live traffic lane and/or walking across the route/site.
• Riding the route (crossing the route) on either a bicycle or a horse, typically using any facility provided, including live traffic lanes.</td></tr>
<tr><td>Work programme</td><td colspan="5"></td></tr>
<tr><td>Proposed / restricted work hours</td><td colspan="5">Day and night time inspections</td></tr>
<tr><td>Traffic details (main route)</td><td colspan="2">AADT</td><td colspan="3">Peak hour flow</td></tr>
<tr><td rowspan="2">Proposed traffic management method
The team may need to be as inconspicuous as possible to observe driver behaviour. This should only be done from a safe place off the traffic lanes.</td><td colspan="5">Active: Daylight
During daylight hours the team vehicle is to park safely near the site; this could be in a nearby car park in urban situations, or in rural situations: on the berm, completely clear of the road and shoulder.
All team members shall wear high visibility jackets.
As a pedestrian, cyclist or horse rider where it is necessary to cross the road, they should take due care as normal road users.
As a cyclist or horse rider travelling along a road, it may be necessary to travel within live traffic lanes. Where separate/off-road facilities exist, cyclists and equestrians are expected to take due care as normal users of such facilities. Where they must travel on the road with live traffic, a following vehicle with a rear mounted 'Site inspection' and flashing beacon should be provided to provide advance warning to drivers approaching the on-road cyclist/equestrian.
Care should be taken that the flashing beacon does not startle the horse.</td></tr>
<tr><td colspan="5">Unattended: Not applicable</td></tr>
</table>

	Night: During the hours of darkness the team vehicle is to park safely near the site; this could be in a nearby car park in urban situations, or in rural situations: on the berm, completely clear of the road and shoulder. If there is overhead lighting they should seek to operate in the vicinity of this light. All team members shall wear high visibility jackets. As a cyclist or horse rider travelling along a road, it may be necessary to travel within live traffic lanes. Where separate/off-road facilities exist, cyclists and equestrians are expected to take due care as normal users of such facilities. Where they must travel on the road with live traffic, a following vehicle with a rear mounted 'Site inspection' and flashing beacon should be provided to provide advance warning to drivers approaching the on-road cyclist/equestrian. Cycles and horse riders should be suitable equipped with lights (as set out in the Rode Code). Care should be taken that the flashing beacon does not startle the horse.
Proposed speed restrictions	None
Positive traffic management measures	None
Contingency plans	In the event of poor visibility, heavy rain, or other inclement conditions that may pose a higher risk than normal, the inspection may be cancelled by the team leader.
Public notification	Not necessary
Personal safety	Team must use the provided facilities in a discreet manner, from a position away from live lanes and if required to go on the roadway, should always move to avoid traffic and not expect traffic to slow down or move for them. For activities on a Level 2 (AADT >10,000 vpd) or Level 3 road (AADT >10,000 vpd, speed limit >75km/h), a Level 2/3 STMS–NP should be on-site at all times.
On-site monitoring	**Attended:** Check that all team members maintain safe practices **Unattended:** Not applicable **Overnight:** Check that all team members maintain safe practices **Other times:** Not applicable
Other information	Not necessary
Layout diagrams	
EED applicable?	Y/N **Attached** Y/N
Traffic controllers	**Name (STMS)** **Phone** (24 hours) **Cert no:** **Name (TC)** **Phone** (24 hours) **Cert no:**
TMP prepared accurately to represent site conditions and submitted by	**Contractor / applicant** **Date** **Cert no:**
Requires amendment	**Engineer:** **Date** **Cert no:**

This TMP is approved on the following basis

1. To the best of the approving engineer's judgement this TMP conforms to the requirements of Transit New Zealand's *Code of practice for temporary traffic management*.
2. This plan is approved on the basis that the ***activity, the location and the road environment have been correctly represented by the applicant***. Any inaccuracy in the portrayal of this information is the responsibility of the applicant. The STMS for the activity is reminded that it is the STMS's duty to 'postpone, cancel or modify' operations due to the adverse traffic, weather or other conditions that affect the safety of this site' (reference A4.5).

Approving engineer:

Name and certificate number

Signature

Acceptance by TMC	**TMC:** **Cert no:** **Signature:**	**Date**

APPENDIX D
STAKEHOLDER ORGANISATIONS

STAKEHOLDER ORGANISATIONS

Walking:
Living Streets Aotearoa
National Office
Level 6, 120 Featherston Street, Wellington
PO Box 25-424
Panama Street, Wellington
Tel (04) 472 8280
www.livingstreets.org.nz

Details of other branches and Walk Auckland can be found at:
http://www.livingstreets.org.nz/contacts.html

People with Disabilities:
Royal New Zealand Foundation for the Blind (RNZFB)
National Office
Awhina House, 4 Maunsell Road, Parnell
Private Bag 99941,
Newmarket, Auckland
Tel: (09) 355 6900
Fax: (09) 355 6919
www.rnzfb.org.nz/

Details of specific offices throughout New Zealand can be found at:
www.rnzfb.org.nz/aboutus/howtofindus

Deaf Association of New Zealand
National Office
PO Box 15 770, New Lynn
1836-1848 Great North Road
Avondale
Auckland
Tel: (09) 828 3282
Fax: (09) 828 3235
www.deaf.co.nz

Details of specific offices throughout New Zealand can be found at the above website:

Disabled Persons Assembly (New Zealand)
Tel: (04) 801 9100
Fax: (04) 801 9565
www.dpa.org.nz

Details of specific offices throughout New Zealand can be found at:
www.dpa.org.nz/links.html

Cycling:
Cycling Advocates' Network (CA)
National Office
PO Box 6491
Auckland
Tel/Fax: (04) 972 2552
www.can.org.nz

Details of local CAN advocacy groups throughout New Zealand can be found on the above website.

Equestrians:
New Zealand Equestrian Federation
Chief Executive Officer/ Secretary General
PO Box 6146
L4, 3-9 Church Street
Wellington
Tel: (04) 499 8994
Fax: (04) 499 2899
www.nzequestrian.org.nz/

New Zealand Pony Clubs Association
P.O. Box 8626
Havelock North
New Zealand
4230
Tel/Fax: (06) 873 5464

New Zealand Thoroughbred Breeders Association
Gate 8, Derby Enclosure
Ellerslie Racecourse, Morrin Street , Ellerslie
Private Bag 99908, Newmarket
Auckland
Tel: (09) 525 2428
Fax: (09) 525 2434
http://www.nzthoroughbred.co.nz/

New Zealand Trainers Association
PO Box 711
Taupo
Tel: (07) 377 0090
Fax: (07) 378 2590
www.nztrainers.co.nz

Others:

Age Concern New Zealand
Level 4, West Block, Education House
178 Willis Street
WELLINGTON
New Zealand

Tel: (04) 801 9338
Fax: (04) 801 9336
www.ageconcern.org.nz

Grey Power
Federation Office
PO Box 200-129
Papatoetoe Central
65 St George Street
Papatoetoe
Auckland
Tel: (09) 277 7954
Fax: (09) 277 7958
www.greypower.co.nz

Details of specific offices throughout New Zealand can be found at:
www.greypower.co.nz/index_page0002.html

APPENDIX E
NMU CONTEXT REPORT TEMPLATE

NMU CONTEXT REPORT TEMPLATE[2]

1. Introduction

2. Existing Conditions and Scheme Description

3. Strategic Issues
3.1 Local/Regional Strategies and Policies
3.2 Identified Strategic NMU routes
3.3 Planned developments/proposed land use changes
3.4 Views of User Groups and Interested Parties

4. Operational Data
4.1 NMU Activity
4.2 Motor Vehicle Flows/Speeds
4.3 Crash Data
4.4 NMU Facilities
4.5 NMU Desire Lines
4.6 Trip Generators

5. Conflict Points/Impact on Design

6. NMU Objectives

7. NMU Audit Recommendations

NMU Review Leader:
Date:

Design Team Leader:
Date:

Approved by Project Sponsor:
Date:

[2] Information presented in the Context Report may include, but not be restricted to the data requirements set down in this template

APPENDIX F
NMU CONTEXT REPORT EXAMPLES

EXAMPLE 1: NMU CONTEXT REPORT

SH13/DAVEY STREET/TAYLOR ROAD INTERSECTION IMPROVEMENT PROJECT

1. Introduction

This NMU Context Report has been prepared as part of a project feasibility study in relation to proposed improvements to the SH1/Davey Street/Taylor Road roundabout in Northtown, Northern District (see Appendix A).

It has been prepared by Dennis Irwin, NMU Review Leader and Andy Ritchie, Reviewer, following a site visit during daylight hours in fine weather on Wednesday 9 November 2005 on foot.

2. Scheme Description

The current four arm roundabout operates well within its capacity during off-peak periods. However during peak periods, queues and delays start to increase for main road traffic; these become significant on Friday and Saturday evenings due to the tidal nature of traffic during these periods, as well as during public holidays.

Improvements to the intersection will aim to address capacity problems at the existing roundabout and reduce road user travel time through the intersection. A range of options, including a two lane roundabout and traffic signals, have been identified as potential intersection improvements.

3. Strategic Issues

3.1 Local/Regional Strategies/Policies

Northern District Council has a joint Cycling and Walking Strategy which seek to increase the proportion of people walking and cycling to work by 5% and increase the number of school children walking and cycling to school by 10% by 2010. It also seeks to maintain or reduce the number of crashes involving pedestrians and cyclists from the 2005 level by 2010.

The Strategy contains a number of strategic cycle routes in the District. However, none of the roads under consideration within this intersection improvement project are defined as being part of any specific walking or cycling route network, although cycle facilities in the vicinity of the intersection are provided and signed.

The town is currently experiencing a period of growth with pressure for additional development in the area to occur. A plan for the area is being developed as part of the Long Term Council Community Plan process.

3.2 Views of User Groups and Interested Parties

Northtown Cycle Group (Roger Palmer)

- Vehicle speeds east of the roundabout quite high – less cycling activity here than west of the roundabout. Feels increasing numbers of cyclists in the vicinity of the roundabout over the past 6-12 months.

- Existing facilities used according to journey purpose. Westbound school children walking or cycling on SH13 and turning into Davey Street tend to cross over SH13 east of the railway overbridge onto a shared cycling/walking path on the northern side of SH13. Westbound shoppers/people walking or cycling into Northtown make greater use of Carpenter Street. Overall this results in a 50/50 split in use of the two available routes.
- Proposed plan to work with Regional Council and the railway to try to get an off-road cycle path accessed off Carpenter Street and Taylor Road around the back/south of shops as far as the station to avoid need to use SH13.
- Commented that a pedestrian crossing facility closer to the existing roundabout to cater for the Tourist Information Centre that acts as a trip generator would be helpful for pedestrians.

Northtown Trekkers Equestrian Centre (Mike Milligan)

- Undertake on-road pony treks. Currently tend to ride within the cycle lanes on Davey Street.
- When crossing over SH13 with novice riders, typically uses the pedestrian 'zebra' crossing located to the south of the roundabout – lead/experienced rider dismounts and stands on the crossing whilst other trekkers remain mounted and cross over the road. Otherwise, to cross SH13, they will wait at the roundabout with a group of riders – but felt frustrated at length of time they have to wait.

Road Safety Coordinator (with walking and cycling strategy remit), Northtown District Council (Frank Bunn)

- Great deal of work underway in Northtown as part of the LTCCP Northtown Development Project.
- Northtown getting busier all the time with increased shopping/parking requirements.
- Not pleasant to cross SH13 along whole section of road through Northtown, despite some pedestrian crossings.
- Unofficial walking path under the railway bridge adjacent to the railway line been closed down due to safety concerns. Whilst this may reflect a desire lane, pedestrians walking along side the railway tracks is not seen as appropriate without additional safety work.
- Noted issue of pedestrian/cycle conflicts for shared facilities, particularly at the western end of Davey Street with school children cyclists using the footpath - although it was acknowledged this was outside the scope of the Intersection improvement project.

4. Operational Data

4.1 NMU Activity

Pedestrian and cycle movements around the intersection are shown below. This data has been obtained from pedestrian counts undertaken in November 2005.

Average Hourly Numbers of Pedestrians Crossing Intersection

Date/Time	Northern Approach	Eastern Approach	Southern Approach	Western Approach
Tue 15 May (7-9am, 11-12pm, 4-6pm)	6	0	1	4
Sat 19 May (11-1pm, 4-6pm)	8	0	4	7

The survey indicates the greatest pedestrian movement occurs across the southern and western arms of the roundabout albeit crossing movements are very low. No pedestrian crossing movements across the northern arm of the roundabout were recorded during the survey periods.

Cycle Counts (Tue 15 May)

From	To	7-9am	11-12pm	4-6pm
SH13 East	Taylor Road	0	0	0
	SH13 West	4	2	3
	Davey Street	10*	2*	2*
Taylor Road	SH13 West	5	5	4
	Davey Street	0	1	1
	SH13 East	0	0	0
SH13 West	Davey Street	12	4	2
	SH13 East	6*	8*	5*
	Taylor Road	0	0	0
Davey Street	SH13 East	0*	1*	12*
	Taylor Road	1	0	1
	SH13 West	0**	1**	8**

*Turning movement to/from the shared facility
**Turning movement via footpath

The vast majority of cyclists travelling between SH13 and Davey Street were school children whilst those using Taylor Road and turning west were classed as 'neighbourhood' cyclists – these tended to return eastbound using the shared facility on SH13 east of the roundabout rather than use Taylor Road. In addition, a small number of recreational/tourist cyclists were noted travelling eastbound using the shared facility.

4.2 Motor Vehicle Flows/Speeds

2004 traffic count data for the traffic monitoring sites to the north and south of Northtown indicate annual average daily traffic (AADT) flows of between 14,000 and 17000 vehicles on the State Highway.

Hourly flows during the morning and evening peak for SH13 traffic in 2004 were approximately 1100 and 1200 vehs/hr respectively. For Taylor Road, morning and evening peak hour flows are in the order of 150 vehs/hr and for Davey Street, 450 vehs/hr.

4.3 Crash Data

Crash data for the past five years at the intersection, as well as on the approaches to the intersection indicate no crash records involving pedestrians, cyclists or equestrians (Source: Land Transport NZ Crash Analysis System CAS database).

4.4 NMU Facilities

The only specific pedestrian crossing facility at the intersection is a pedestrian crossing point located as part of the splitter island on the southern arm of the roundabout. It should also be noted that a formal pedestrian crossing is located approximately 100m west of the intersection.

To the northeast of the intersection, pedestrians share a widened footpath with cyclists from the roundabout towards a narrower path on the rail overbridge.

Along the northern arm of the roundabout, on-road cycle lanes are provided within the carriageway in between parking bays and traffic lanes. These lanes extend along the road up to around 30m from the intersection.

Westbound cyclists approaching the intersection from the east have a traffic signed option of using a parallel 'back' road (Carpenter Street) which leads back to Taylor Road (and the roundabout) permitting cyclists to avoid the narrow rail overbridge and also to reduce cyclists exposure at the roundabout in terms of turning movements.

No footpaths have been provided at the south-western corner of the roundabout, with pedestrians having to use a petrol station forecourt. No footpath exists on the southern side of the eastern SH13 approach to the intersection.

4.5 Desire Lines

No formed footpath exists on the southern side of the eastern approach to the intersection, although pedestrians were observed using the verge adjacent to the westbound lane. On-site observations indicate a crossing desire line over the western SH approach to the roundabout to/from Davey Street.

4.6 Trip Generators

- A nearby race course exists close by to the intersection with access via Taylor Road.
- The railway station is located approximately 300m to the west of the intersection.
- The local secondary school is accessed via Davey Street – school access is some 500m from the intersection, along with a local swimming pool and park .
- There are also a number of other schools in the area that generate pedestrian and cycle movements.
- The Northtown Trekkers Equestrian Centres operate from premises along Taylor Road and seek to access locations to the north of SH13.

5. Conflict Points/Impact on Design

The potential conflict for this scheme is limited to the intersection itself, particularly if an intersection improvement scheme encourages higher vehicle speeds.

6. NMU Objectives

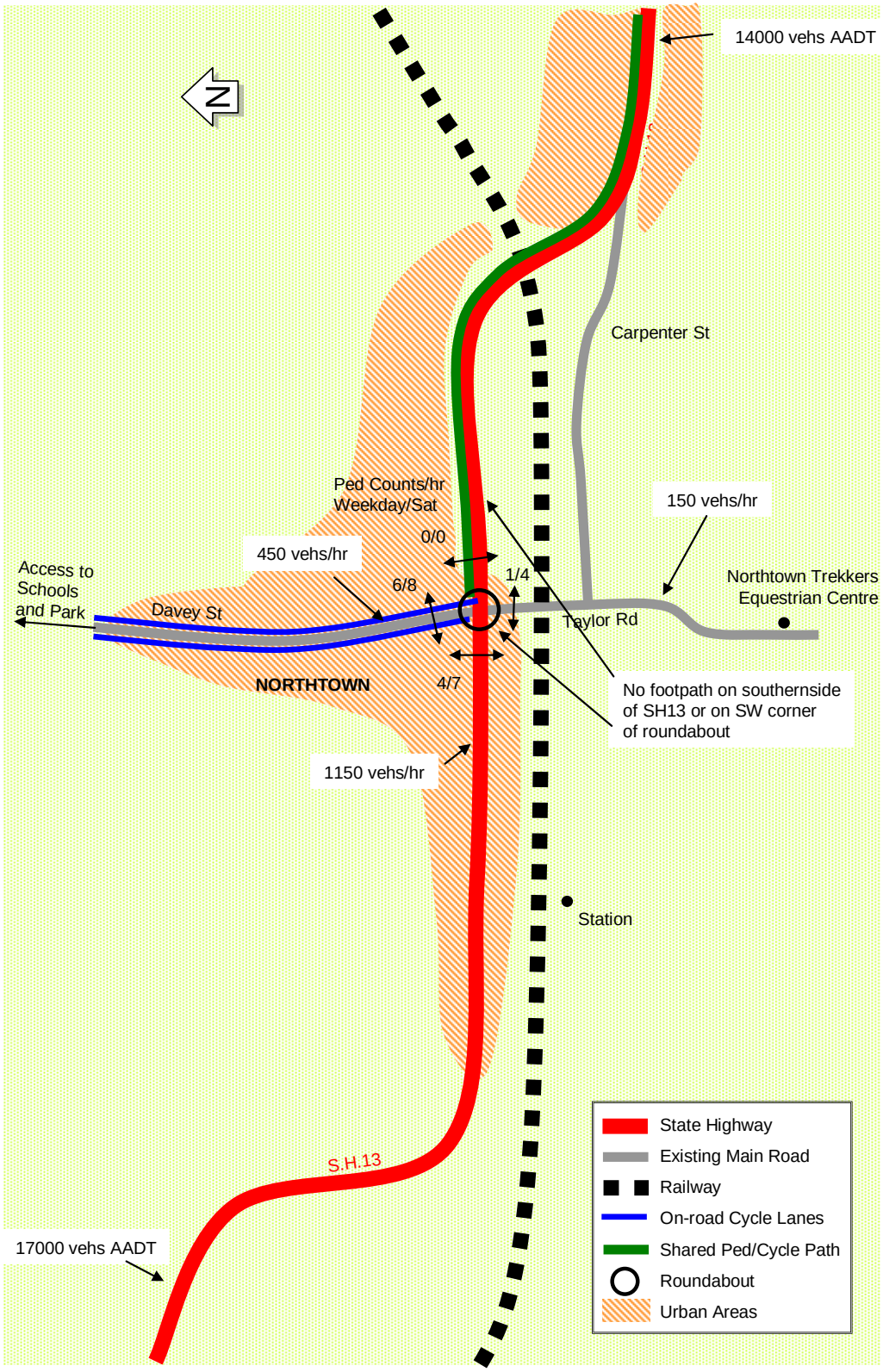
Based on this background information, the objectives for this project for NMUs are:

- Review signing and clarify the signed cycle routes for eastbound and westbound cyclists either along the shared facility on SH13 or Carpenter Street, with provision of additional cycling facilities at the intersection as required. Provide a safe crossing facility on the eastern arm of the roundabout to allow westbound cyclists to access the shared facility.
- Provide pedestrian facilities where current provision is insufficient.
- Ensure safe pedestrian crossing measures that are currently provided continue to be provided at the intersection.
- Ensure proposed intersection improvements are designed with the needs of pedestrians and cyclists in mind – e.g. roundabout to ensure slower speeds although with two lane approaches on the SH with single lane approaches on the side roads to address the capacity issues; or pedestrian crossing facilities at a signalised intersection if such an option is appropriate. Conditions for horse riders should not be made worse than those provided by the current approach to crossing SH1 and where possible, enhanced.

7. NMU Audit

Based on these objectives, it is proposed that a NMU Audit should be carried out at the preliminary design stage and at completion of construction with due regards to the preferred intersection improvement.

Appendix A – Schematic Plan



EXAMPLE 2: NMU CONTEXT REPORT

Southtown Link Road

1. Introduction

This NMU Context Report has been prepared for Southtown District Council (SDC) as part of the concept design stage in relation to the proposed Southtown Link Road.

It has been prepared by Bill Smith, NMU Review Leader and Jon Devine, Reviewer, following a site visit during daylight hours in fine weather on Tuesday 16 May 2006.

2. Scheme Description

The Southtown Link Road has been identified as a key component of the road network in the Southtown District. The Southtown Link Road is planned as being an arterial road as well as serving as an efficient local distributor at either end of the route. It will also relieve congestion on SH13 by removing local traffic between Oldhamville and Ashton. Parts of the Southern Town Link Road are envisaged as being four lanes with other sections being two lanes – but with the potential to upgrade to four lane as land use growth and hence future demand requires.

The total route runs to the north of the existing State Highway between Rochdale Street in the west and Green Lane in the east (see Appendix A) although construction is likely to be undertaken in stages. The new road will cross over a number of existing north-south local distributor routes that need to be tied in to the Southtown Link Road. The road will be 3km long with the intention to pass 0.5km north of the Southtown. New/enhanced intersections, likely to be a roundabout at Rochdale Road and a larger roundabout at Green Lane to link to the new road will be necessary.

The scheme envisages catering for walkers, cyclists and equestrians with initial concepts including the provision of a walking/cycling/horse riding trail off-road along one-side of the route with additional on-road cycle provision within the road shoulder. As a minimum, initial requirements are for a footpath on one side of the road depending upon the urban or rural nature of the location.

3. Strategic Issues

3.1 Local/Regional Strategies/Policies

Southtown District Council has a Cycleway, Walkway and Bridleway Strategy. The Strategy sets out a number of basic route and design parameters and seeks to separate walking and cycling routes from horse-riding routes where possible, whilst acknowledging that horse riding is an important recreational in the District.

Whilst the Strategy has no specific targets for increasing NMU use, the Regional Council has a general target of increasing the proportion of people walking and cycling to work and school by 5% over the next 5 years.

The District Plan has also identified an old frozen meat works located on Beaumont Road as a potential location for a new business park area.

A strategic cycle route between Southtown, Newtown and Oldhamville is shown in the Strategy as being proposed along Newtown Road and SH13 respectively, although there are limited specific facilities currently provided on either road.

3.2 Views of User Groups and Interested Parties

Community feedback from initial workshops and the Long Term Council Community Plan (LTCCP) consultation during 2005 indicated that over 30% of respondents wanted a continuous provision for walkways, cycleways and bridlepaths along the route of the designation, with links to various connecting paths. Commuter aspects of these facilities plus recreational opportunities were strongly supported by the community. In order to ensure walking, cycling and horse-riding needs are met as part of the long term planning of the road, the Council is planning on having a appropriate representative as part of their internal Project Team.

Walking/Cycling/Bridleway Coordinator, Southtown District Council (Karen Smith)

- Intention is to separate walkers and cyclists, and different types of cyclists in particular (commuters versus recreational/children) through different facilities.
- Council seeking to develop a consolidated plan of NMU movement in the area over which the proposed route traverses.

Cycle Aware Southtown representative (Mark Rutherford)

- Strong feelings about safe facilities across the proposed route as well as along it.
- Supports the on and off-road facility approach for different users given the anticipated potential for both younger and older children to cycle to and from and school.
- Problems with existing shared use paths exist elsewhere in the District and would like to see wide, high quality facilities where shared use is to be provided.

Walk Southtown representative (Calvin Rodger)

- Keen to ensure link to Newtown not compromised.
- Acknowledges potential to improve links to Oldhamville.
- Beaumont Road is a useful walking route to nearby countryside.
- Walking path and bridleway currently exists along the western side of Long River.

Trotters Equestrian Centre, Middle Lane (Shiela Trotter)

- Undertakes regular pony treks along a number of existing off-road paths in the area that the route is planned to pass through. Typical organised treks occur throughout the weekend (3 or 4 per weekend with up to 8 riders) and during the evenings on a weekday depending upon demand – typically during the summer.
- Currently experiences difficulty in crossing Newtown Road to reach Long River Bridlepath.
- It was also noted that there were also a number of other equestrian centres north of Oldhamville that occasionally used the bridlepath next to the river.

4. Operational Data

4.1 NMU Activity

Cycle counts at the Rochdale Street roundabout indicate 30 cyclists on SH13 during the two-hour morning peak and a further 45 cyclists on SH13 between Southtown and Oldhamville. A 2004 cycle count at the SH13/Newtown Road intersection showed a one-hour morning peak cycle count of 20 using Newtown Road. The majority of cyclists observed during the peak hours for all of the count locations were commuters with approximately a quarter generally classed as school children.

Pedestrian counts along Wilkinson Road, Beaumont Road and Newtown Road have been carried out for different times of day/day of week. Morning and evening peak hour pedestrian flows on Newtown Road varied between 60 and 80 whilst on Wilkinson Road, the peak hour counts vary between 20 and 30.

Sunday morning counts were undertaken along and across Beaumont Road at a single location where horse riders were known to cross the road. Pedestrians, cyclists travelling along the road and equestrians crossing (and any travelling along!) were counted. Trampers amounted to 10 over a three hour period with a further three cyclists. An organised pony trek amounting to 8 riders crossed over Beaumont Road along the bridle path and 3 other riders were observed using the bridlepath during the 3 hour period.

4.2 Motor Vehicle Flows/Speeds

Forecast traffic flows for the Southtown Link Road for 2016 are between 10,000 and 15,000 vehicles per day depending upon the section of the road. Proposed speed limits are expected to be 50km/h along the eastern section of road between Oldhamville and Newtown Road with an 80km/h speed limit west of Newtown Road. Further agreement over the speed limit on the western end of the route between Wilkinson Street and Ashton town centre is expected.

4.3 Crash Data on existing State Highway

Crash data for the past five years between 2001 and 2005 for SH13 between Oldhamville and Ashton indicate a total of 110 crashes (1 fatal crash; 12 resulted in serious crashes; 34 resulted in minor injuries; and 63 non-injury crashes). (Source: Land Transport NZ Crash Analysis System CAS database).Over half of the drivers in the SH injury crashes were local drivers on the SH network from the Oldhamville, Southtown, Newtown and Ashton area.

Seven pedestrian injury crashes and 3 cycle injury crashes were recorded for SH13 in Southtown itself. A further 2 crashes involving cyclists and 3 pedestrian crashes were recorded along Newtown Road.

Over the five year period, 1 serious crash involving a cyclist and a further 4 slight injury crashes were reported at the SH13/Rochdale Street intersection. Five slight crashes, including 2 cycle crashes were recorded at the SH13/Green Lane roundabout.

4.4 NMU Facilities

At present, on-road cycle lanes in both directions have been provided on Newtown Road south of Newtown School. However, they stop short of the Southtown Roundabout.

4.5 Desire Lines/Trip Generators

- The locations of existing horse riding and equestrian centres in the vicinity of the proposed route are shown in Appendix A. These, along with other riding centres in the District can be expected to want to use the provided horse trail and to cross the route.
- The route passes through/between a number of built up areas such as the intersection with Wilkinson Street and Newtown Road. These are likely to generate walking and cycling movements that need to be catered for – both alongside the road and across the road, particularly between Newtown Road and Oldhamville which is the site of a large secondary school (see below).
- Secondary schools in Oldhamville and Southtown will each generate walking and cycling demands. Their location and catchment areas relative to the proposed route will require school children to walk alongside and across the road. The Newtown Primary school located near the proposed route will also be affected.
- Established pony trek routes cross the proposed route at Beaumont Street and pass alongside the road as far as Long Rover before travelling alongside the river.

5. Conflict Points/impact on Design

Possible conflict points for NMUs include:

- Locations where the single sided proposed off-road cycle/walkway/bridlepath, proposed as part of the scheme crosses over the new road, particularly where no formal crossing facilities are provided.
- Proposed roundabout intersections at Rochdame Street, Wilkinson Street and Newtown Road for the on-road cyclists if vehicle speeds are not sufficiently low.
- Conflicts between different NMUs on the shared path.

6. NMU Objectives

Based on this background information, the objectives for this project for NMUs are:

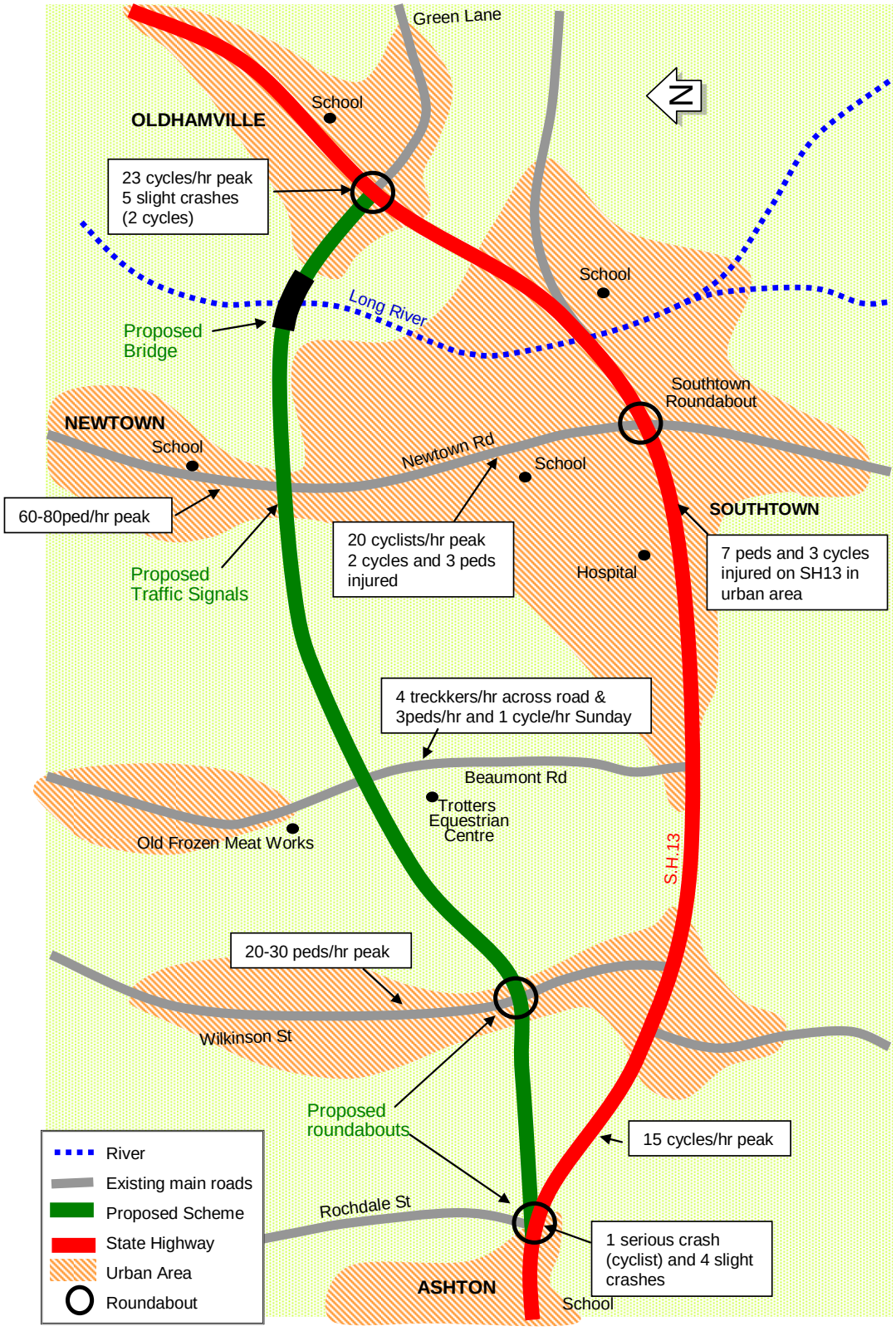
- Ensure a continuous walking, cycling and horse riding facility and suitable measures be provided along the length of the route (including tying into existing pathways from adjoining land) to provide ‘transport’ and recreational opportunities.
- Ensure that the route does not sever cross-route movements by NMUs and provide safe and appropriate measures to allow cross-movements.
- Detailed consideration should be given to locations and facilities to be provided where the single-sided off-road walkway/cycle path/bridleway crosses over the proposed route.
- All intersections should fully cater for the needs of pedestrians and cyclists as well as motor vehicles.
- Ensure existing walking and cycling facilities alongside the Long River are maintained and can be accessed from the new route.
- Designs should specifically take into account likely types of NMUs such as elderly pedestrians, including those using mobility scooters, commuter and recreational cyclists and pony trekkers including less confident/learner riders in groups. In particular, an aim is to create a clear ‘safe route’ to encourage more school children to cycle to school at Oldhamville.

- Facilities provided for NMUs will meet minimum design standards including cross-sectional width.
- At the preliminary design stage when a preferred route and alignment have been identified, specific traffic (including pedestrian and cycle) generators should be identified close to the route in order to allow a detailed assessment of the impact.
- At the preliminary design stage, consideration as to the type and location of crossings over the link road be given due attention.

7. NMU Audit Recommendations

Based on these objectives, it is proposed that NMU Audits should be carried out at the preliminary design, detailed design and post construction stages.

Appendix A – Schematic Plan



APPENDIX G
AUDIT CHECKLIST

AUDIT CHECKLIST

These prompts are intended to assist in the NMU auditing of roading projects. The prompts provided are not prescriptive but merely indicate a sample of the NMU issues that should be considered at each stage of a project. The prompts should be used to guide consideration of opportunities to improve conditions for NMUs and to highlight possible areas of difficulty for NMUs.

In addition to these specific prompts, particular attention should be given to the problems which can arise for NMUs, as noted in Appendix B, and to the information and project objectives set out in the NMU Context Report.

Consider the different types of NMU as well as vulnerable NMU groups such as:

- People with mobility impairments.
- People with visual impairments.
- People with hearing impairments.
- Children and younger people.
- Older people.
- Inexperienced cyclists.

Detailed consideration should also be given to any particular issues that have emerged from consultation with stakeholders or user groups.

Checklist 1 - Preliminary Design Stage Audit

ISSUE	YES	NO	COMMENT
1.1 Connectedness Are existing or predicted NMU desire-lines either disrupted or better served by the project? (comment) Are NMUs forced to deflect significantly from desire lines? Are appropriate types of crossings provided? Are direct and obvious connections between the NMU route and other nearby NMU routes provided? Are direct and obvious connections between the NMU route and origins/destinations provided? Are direct and obvious connections between the NMU route and public transport services provided? Has a road user hierarchy to promote NMUs been considered? Will NMUs have to give way to motorised traffic? Where may the priority and safety of NMUs need particular attention? (comment) Are there locations where the level of service provided to NMUs will be adversely affected by changes in natural lighting levels or weather? (Dawn, day, twilight, night.../Wind, dry, wet, hot, cold…)			
1.2 Attractiveness Are there locations where the aesthetic qualities of the NMU route are inconsistent with the general standard of the route?			

ISSUE	YES	NO	COMMENT
1.3 Safety Are there locations where there is no segregation between different types of NMU? Are there locations where NMUs require particular separation and protection from motorised traffic to ensure their safety but hasn't been provided? Have different types of NMU been fully considered? Is inter-visibility between various types of NMU sufficient? Does the visibility of NMUs on the route to motorised traffic need raising or particular attention? Are there personal security issues for NMUs along the route?			
1.4 Accessibility Do significant gradient/level changes occur? Are there vertical or lateral constraints that may affect the dimensions allowed for NMUs? Are there any locations where significant manoeuvring or directional changes for NMUs are required? Have the special needs of vulnerable NMU groups been considered throughout the entire scheme?			

Checklist 2 - Detailed Design

ISSUE	YES	NO	COMMENT
2.1 Connectedness			
Have NMU routes been designed to optimise the balance between safety and convenience?			
Are NMU routes designed to closely align with desire lines without deviation?			
Are proposed crossing types appropriate?			
Have connections to other NMU routes been considered over the length of the scheme?			
Have connections to origins/destinations and NMU facilities been considered over the length of the scheme?			
Have direct and obvious connections to public transport services been considered throughout the design of the project?			
Has a sufficient level of priority been given to NMUs?			
Are NMU routes given priority over private accesses?			
Is the signing/marking of routes (including directions) appropriate?			
Are widths along the whole route (including crossings) appropriate for all classes of NMU, including wheelchair users?			
Is tactile information provided at all appropriate points on pedestrian routes?			
Are cyclists and horse riders able to use the routes without dismounting?			
Are there locations where the level of service provided to NMUs will be affected by changes in natural lighting levels or weather? (Dawn, day, twilight, night.../Wind, dry, wet, hot, cold…)			

ISSUE	YES	NO	COMMENT
2.2 Attractiveness Have the aesthetic qualities of the NMU route been considered throughout its design?			
2.3 Safety Are (lateral and vertical) clearances sufficient to deliver conflict-free shared use along non-segregated sections of the project? Has adequate inter-visibility between various types of NMU been provided? Have NMUs been separated and protected from motorised traffic over the length of the NMU route? Have NMUs on the route been made visible to the motorised traffic on the main road? Is headlight glare an issue? Are there any personal security issues for NMUs? Is direction signing for NMUs adequate? Does the tactile paving correctly direct and warn visually impaired pedestrians? Is the street lighting provision sufficient?			
2.4 Accessibility What maximum gradients have been allowed to ensure that NMUs can manoeuvre themselves throughout the route with ease, safety and control? (comment) Is adequate headroom available on all NMU routes? Have surface textures and tones been considered throughout the route, including non-slip surfaces and colour contrast at appropriate points? Are (lateral and vertical) clearances sufficient to ensure that			

NMUs can manoeuvre themselves around corners, and over crests and dips throughout the route? Are dropped kerbs specified at all appropriate points on NMU routes? Are appropriate rest-points provided for NMUs? Are ramps provided as alternatives to steps? Have the special needs of vulnerable NMU groups been considered throughout the design of the project, including the design and location of facilities to ensure that all different types of NMU may use them?			

Checklist 3 - Construction Stage Audit

ISSUE	YES	NO	COMMENT
3.1 Connectedness Are existing or NMU desire-lines disrupted? Are NMUs forced to deflect significantly from desire lines? Have alternative provisions for NMU been made and are they adequate? Is the NMU route signing clearly visible, clear and complete? Could it be improved? Where may the priority and safety of NMUs need particular attention? (comment)			
3.2 Attractiveness Are there locations where the aesthetic qualities of the NMU route are inconsistent with the general standard of the route during long term construction phases?			
3.3 Safety Have different types of NMU been provided for to the same or better standard as prior to construction? Is inter-visibility between various types of NMU still sufficient? Are there locations that NMUs require particular separation and protection from motorised traffic to ensure their safety? Does the visibility of NMUs on the route to motorised traffic need raising or particular attention? Does the construction work give rise to personal security issues for NMUs along the route?			

ISSUE	YES	NO	COMMENT
3.4 Accessibility Do significant gradient/level changes occur as a result of the construction work? Are there vertical or lateral constraints that may affect the dimensions allowed for NMUs? Are there any locations where significant manoeuvring or directional changes for NMUs are required? Have the special needs of vulnerable NMU groups been considered throughout the entire scheme?			

Checklist 4 – Post Construction

ISSUE	YES	NO	COMMENT
4.1 Connectedness Is the signing to origins/destinations and NMU facilities clearly visible, clear and complete? Could it be improved? Should the time taken for an NMU to traverse a junction, including routes requiring multi-stage crossings, be reduced by adjusting signal timings? Can NMUs, including vulnerable people, traverse crossings within the signal phase allowed? Are buttons to activate crossings accessible to all potential users, including cyclists, equestrians and wheelchair users as appropriate? Could measures be installed to further minimise the effects of changes in natural lighting and weather? (Dawn, day, twilight, night…/Wind, dry, wet, hot, cold…) Could signs to public transport services be improved?			
4.2 Attractiveness Do environmental features (such as overhanging branches or bushes) obstruct the NMU route or reduce visibility unacceptably? How could the aesthetic qualities of the NMU route be improved? (comment) Does drainage of the NMU route need to be improved?			
4.3 Safety Should greater segregation between different types of NMUs be provided? Can NMUs awareness of possible hazards be improved?			

ISSUE	YES	NO	COMMENT
Can inter-visibility between various types of NMU be improved? Can greater separation and protection from motorised traffic be provided to NMUs? Are NMUs visible to motorised traffic? Is the provision of lighting for NMUs sufficient? Is all information, including signing and tactile information, correct and compliant with Traffic Control Devices Rule, MOTSAM and RTS15? Are hazards including steps and obstructions fenced off and/or marked with coloured and tactile surfaces or other information? Have personnel security issues for NMUs been addressed? Does the location or variety of soft landscaping need to be changed to prevent future problems of visibility or personal security? Are there obstructions, including tapering obstructions, street furniture or parked vehicles that should be removed from the route? Are drainage facilities adequate to minimise route flooding? Do drainage gullies and gratings need to be repositioned away from NMU routes and crossings? Have old road markings/defunct tactile paving been removed?			
4.4 Accessibility Do gradient changes require additional smoothing or kerbs need dropping further? Are there locations where changes in gradient and surfacing textures or tones create difficulties for NMUs? Can the location or conspicuity of features to assist vulnerable NMUs, such as tapping rails, handrails etc, be improved?			

APPENDIX H
NMU AUDIT REPORT EXAMPLES

NMU AUDIT REPORT – EXAMPLE 1

PRELIMINARY DESIGN STAGE - SH13/DAVEY STREET/TAYLOR ROAD

1. Introduction

This NMU Report has been prepared as part of a Preliminary Design Stage NMU audit of the proposed improvements to the SH13/Davey Street/Taylor Road roundabout in Northtown, Northern District.

An NMU Context Report was previously prepared by the Design Team in November 2005.

The preferred intersection improvement identified through the preliminary design stage in order to meet the overall project brief of improving capacity through the intersection is a two-lane approach to the roundabout for the eastbound and westbound state highway traffic with a single approach for each of the minor roads.

2. Audit Team

This preliminary design stage audit was conducted by the Design Team between December 2005 and May 2006, in accordance with the draft Land Transport NZ *Non-Motorised User Review Procedures Guideline*. The Design Team comprised of:

NMU Review Leader - Dennis Irwin
NMU Review Team – Andy Ritchie
Design Team Leader - Joe Royle

The NMU Audit consisted of:

- An examination of the 'Context' Report prepared at the project conception. It is considered that the report is still valid and no material changes have taken place since the completion of the report.
- A continuous assessment of design needs against the needs of NMUs.
- Consultation feedback from Northtown Cycle Group.
- A site visit on foot and on bicycle by Dennis Irwin and Andy Ritchie in fine weather on Tuesday 28 March 2006.

3. Objectives and Design Features

Four objectives for NMUs were identified as part of the original Context Report. These objectives, along with approaches taken to address these issues are noted below.

Objectives	***Design Features***
Review signing and clarify the signed cycle routes for eastbound and westbound cyclists either along the shared facility on SH13 or Carpenter Street, with provision of additional cycling facilities at the intersection as required. Provide a safe crossing facility on the eastern arm of the roundabout to allow westbound cyclists to access the shared facility.	Eastbound facilities maintained and westbound options improved.
Provide pedestrian facilities where current provision is insufficient.	Footpaths to be provided to ensure full accessibility and clear delineation.

Ensure safe pedestrian crossing measures that are currently provided continue to be provided at the intersection.	Suitable splitter island designs incorporated to ensure current provisions as a minimum are maintained.
Ensure proposed intersection improvements are designed with the needs of pedestrians, cyclists in mind – e.g. roundabout to ensure slower speeds although with two lane approaches on the SH with single lane approaches on the side roads to address the capacity issues; or pedestrian crossing facilities at a signalised intersection if such an option is appropriate. Conditions for horse riders should not be made worse than those provided by the current approach to crossing SH1 and where possible, enhanced	Roundabout to have appropriate deflection to reduce vehicle speeds with set back splitter islands and shared pedestrian/cycle facilities on east and westbound approaches to allow off-road crossing opportunities for cyclists as appropriate.

4. Audit Findings

Figure A shows the scheme layout with references to the locations of the audit findings.

Connectedness

4.1 Shared off-road facilities for westbound cyclists/pedestrians at the approach and exit to the intersection with crossing of the roundabout via the splitter island on Taylor Road could be provided.

Action Provide shared facilities at 2.5m width on the southern side of SH1 to cater for westbound cyclists on the SH.

4.2 Facilities for eastbound cyclists on the western leg of the roundabout could be enhanced by providing a shared pedestrian/cycle off-road facility to act as a bypass to the roundabout and provide access to eastbound shared facility east of the roundabout using an improved splitter island on Davey Street.

Action Provide a shared facility on the north-western corner as part of the design.

4.3 Consider using cycle repeater signs on Carpenter Street as currently signed/used as alternative westbound route – but unlit and 'out of the way'. Additional signage and direction signage at Taylor Road intersection would assist longer distance tourist cyclists rather than local cyclists.

Action Consider as part of the larger cycle plan for the area in conjunction with Northtown District Council.

4.4 Consider catering for pedestrians and cyclists through the use of a cut-out on the eastern approach splitter island.

Action Provide a dropped crossing on the eastern approach to allow pedestrians and cyclists to pass over the northern approach to the roundabout.

4.5 Lane widths on the westbound approaches have a 3.5m left hand lane and 4m right hand lane.

Action Amend lane widths on design to ensure wider left hand lane.

Attractiveness

4.6 Cut back trees on north-eastern corner of roundabout – currently overhanging footpath and reducing attractiveness of route.

Action Cut back trees as part of construction process.

Safety

4.7 Protection for pedestrians and cyclists at the Davey Street approach splitter island could be enhanced.

Action Provide additional splitter island to north to provide greater protection and clarify crossing location. To be included as part of the detailed design stage. Cycle access (through dropped kerbs) from Davey Street to SH13 for eastbound traffic to be provided at the detailed design stage as well.

4.8 Seek to reduce the number of access points to the petrol station and their width to reduce potential conflicts with pedestrians and cyclists.

Action Negotiate with service station during detailed design stage.

Accessibility

4.9 Ensure signage as part of the detailed design stage directs westbound cyclists (west of the roundabout) back on to the road rather than share with pedestrians on the footpath.

Action To be considered/incorporated at detailed design stage – along with tactile paving and location of dropped crossings to ensure crossings and splitter islands are in line with one another.

5. NMU Audit Team Statement

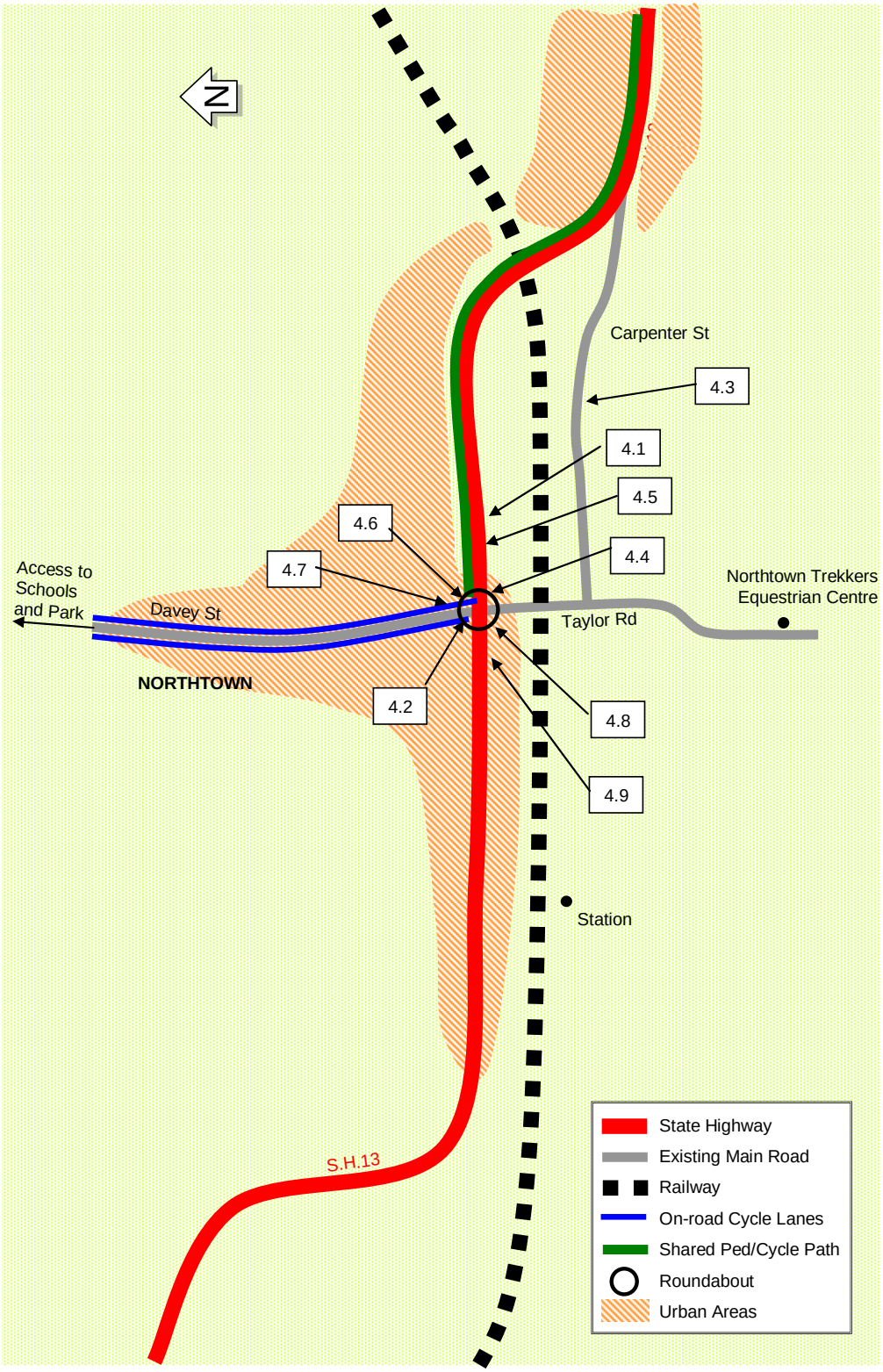
We certify that we have examined the scheme details throughout the preliminary design process and have carried out a site inspection. We have endeavoured to identify and set out the issues impacting on NMUs that were raised throughout the design process along with the actions taken to address the problem.

Audit Team Leader: Dennis Irwin
Signed Date:

Audit Team Reviewer: Andy Ritchie
Signed Date:

Design Team Leader: Joe Royle
Signed Date:

Figure A Layout Plan with references to Issues/Actions



NMU AUDIT REPORT – EXAMPLE 2

DETAILED DESIGN STAGE – CENTRAL CITY BYPASS

1. Introduction

This report has been prepared as part of a Detailed Design Stage NMU Audit of the Central City Bypass. An NMU Context Report was previously prepared by the Design Team in June 2004.

2. Audit Team

This audit was conducted by the Design Team throughout the detailed design process between April 2005 and May 2006 in accordance with the draft Land Transport NZ *Non-Motorised User Review Procedures Guideline*. The Design Team comprised of:

NMU Review Leader - Gus Logie
NMU Review Team – John Parrot
Design Team Leader – Ray French

The NMU Audit consisted of:

- An examination of the Context Report prepared at the project conception along with its updated version following the Preliminary Design Stage with respect to NMU flows.
- A review of the Preliminary Design Stage Audit Report and the documented issues and actions taken.
- A continuous assessment of the detailed design approach against the needs of the NMU involving interactive discussions with designers and engineers involved in the scheme along with reviews of designs and plans as the design progressed.
- Site visits were undertaken by Gus Logie and Tony Peacock on 2 August 2005, 24 November 2005 and 7 March 2006 as the design progressed.

3. Objectives and Design Features

Three main objectives for NMUs were identified as part of the updated Context Report. These objectives, along with approach taken to address these issues are noted below.

Objectives	***Design Features***
Enhanced north-south cycle connections as well as along the route.	During the Preliminary Design Audit, it was noted that no specific features for north-south links across the Bypass for cyclists would be provided until a formal cycle strategy incorporating strategic cycle routes had been developed by Central City Council. It was recommended that Central City Council consider appropriate options in due course.
Enhanced connectivity for pedestrians across and along the route	All cross links on the bypass are to have full pedestrian crossing phases provided at traffic signal controlled intersections – see Audit findings.
Ensure connections to the shared pedestrian and cycle path at either end of the route and over its length from side roads.	Enhanced connectivity provided through projects not directly linked to the funding of the Bypass – see Audit Findings.

Neither cyclists nor pedestrians unduly disadvantaged	Full consideration of the needs of both users made along length of route. However, further consideration is needed with regards to the Victoria Street intersection and cross linkages for cyclists – see Audit findings.

4. Audit Findings

Figure A shows a scheme layout plan with references to the locations of the audit findings.

Connectedness

4.1 Traffic Signs - General

4.1.1 Intersection Layout Plans (Sheets 52 - 57) show cycle path or shared cycle path facilities signed with an RG26 type cycle sign. Existing sections of shared and/or segregated off road cycle paths already constructed at the eastern end of the Bypass are also signed using the above sign type.

The NZ Supplement to the Austroads Guide to Traffic Engineering Practice Part 14: Bicycles (draft October 2004) states that the RG26 sign has been withdrawn. In it's place, a number of other signs to denote cycle lanes, exclusive cycle paths, shared pedestrian and cycle paths and separated cycle and pedestrian paths exist. These are referenced in Section 9 of the NZ Supplement guideline as well as in the Land Transport Rule Traffic Control Devices 2004 (Rule 54002) Section 11.4. This will have an impact on the RG25 Pedestrian signs as well.

Action Replace old signs with correct cycle/shared/separated path control signs.

4.1.2 A number of road signs are shown as being located within the cycle path of the shared/separated off-road route. Mounting heights are not provided however, it is important that the signs do not block movements and are mounted high enough to ensure sufficient headroom is maintained.

Action Ensure signs are mounted at appropriate heights and poles/posts don't block free and easy access and movement.

4.2 Traffic Signs– Bypass/Hughes Street

The proximity of traffic signs at the north-western corner of the Bypass/Hughes Street intersection to adjacent shelters needs consideration to ensure that the two structures together don't block pedestrian movement.

Action Signs and shelter to be relocated to allow full pedestrian movement.

4.3 Traffic Signs – Bypass/George Street

At the Bypass/George Street intersection for east bound cyclist, no 'cyclist dismount' sign is shown as being provided in the central island prior to the pedestrian 'zebra' crossing. The merits/issues associated with cyclists having to dismount are raised in the Cycle Route Connectivity section

Action Install cyclist dismount sign.

4.4 *Traffic Signs – Bypass/George Street and Bypass/Empire Street*
At the pedestrian 'zebra' crossing locations at the slip lanes for the above intersections, ensure that belisha beacon discs are installed on both sides of the crossing.

Action Install additional pedestrian crossing pole with belisha beacon disc where required.

4.5 Road Markings - General.

4.5.1 Cycle markings shown on the Layout Plans (Sheet 52-57) show the old style of cycle symbol (MOTSAM Fig 2.12).

Action Replace old style marking with the updated version of the cycle symbol marking.

4.5.2 Where the cycle path crosses the roadway and traffic signals are provided to control their movement, the Land Transport Rule Traffic Control Devices 2004 (Rule 54002) requires that the form of the traffic signals at the intersection match the requirements for other types of vehicles. This can be interpreted to mean that limit lines are required at the cycle crossing points.

Action Install cycle limit lines at the locations where the cycle path crosses over the roadway and the cycle path is controlled by traffic signals.

4.5.3 A number of the road markings show 'give way' written and two limit lines rather than the new triangle symbol and single limit line: Bypass/George Street and Bypass/Empire Street. Likewise, pedestrian 'zebra' crossings need a limit line installed prior to the crossing: Bypass/George Street.

Action Install appropriate road markings that meet the requirements of the Land Transport Rule Traffic Control Devices 2004 (Rule 54002).

4.6 Cycle Route Connectivity – Bypass/George Street
The provision of a pedestrian 'zebra' crossing over the left turn slip road from the Bypass into George Street severs the cycle route along the Bypass as cyclists should legally dismount - cyclists cannot use pedestrian crossings. It is acknowledged that this issue has been raised previously as part of the preliminary design audit and the road safety audit and responded to separately. However, this Audit reaffirms the concerns raised previously and notes that it is highly unlikely that cyclists will dismount at this location. Indeed, it is likely that westbound cyclists will ignore the barrier and dismount signage and cross the slip road not at right angles to the road over the 'zebra' markings, but will take a straight line approach from the shared path to the central triangular refuge island, thereby crossing the slip road at a sharp angle requiring the cyclist to look back over their shoulder whilst riding down the kerb thereby presenting a safety concern.

Action It is noted in the response to the previous NMU Audit and the road safety audit that the impact of signalising the intersection would be considered in greater detail and that ducting would be added to allow for the possibility of signalisation. It is recommended that this intersection be signalised to cater for cyclists at this location without them having to dismount.

4.7 Cross Route Cycle Connectivity - General

With the exception of the Bypass/Kingston Road intersection, no facilities have been provided to enhance north-south movements over the bypass for cyclists. This includes a lack of facilities for cyclists using part of the shared path and wishing to head north or south from the bypass route.

Action It is recommended that detailed consideration be given to providing cross link facilities in conjunction with the strategic routes identified as part of the Central City Cycle Strategy.

4.8 Cycle Route Connectivity – Eastern End

The route has limited tie-in to other routes and connections, particularly at the eastern end. It is acknowledged that this issue has been raised previously and as part of the preliminary design road safety audit.

Action It is recommended that facilities be provided that permit a connection to other routes, particularly at the eastern end of the bypass once a strategic network of routes is formed up by the Central City Council.

4.9 Traffic Signal Phasing – Bypass/Star Street and Bypass/Bridge Street

It is noted that a specialist traffic signal audit will be undertaken as part of the final design stage. That audit should include an auditor with specific experience in walking and cycling to ensure that the phase times meet pedestrian and cycle needs. In particular however, attention is drawn to the issue of turning vehicles at the signalised intersections (on a green light) conflicting with cyclists crossing over 'side road' as part of the green pedestrian and cycle crossing phase. The Land Transport Rule Traffic Control Devices 2004 (Rule 54002) notes that whilst turning vehicular traffic may be permitted at the same time as a pedestrian signal, even though conflicting movements may occur, no exemption exists for the conflict that occurs for cycle traffic.

An initial review of the intersection designs and proposed phasings indicate that the above issue occurs at the two identified intersections:

Action Review traffic signal phasings to allow cyclists to cross roads unimpeded by turning traffic in line with current legislation.

Safety

4.10 Street Lighting – between George Street and Empire Street

The shared foot/cycle path isn't directly lit by lighting columns on the same side of the road as the shared path, whilst to the east of George Street along the Bypass, lighting columns are provided on both sides of the road. This approach may limit reduce the level of lighting provided for pedestrians on the footpath beyond the cycle path raising personal security fears and provides an inconsistent level of service to such users.

Action Consider providing lighting columns on the southern side of the road.

4.11 Traffic Signal Provision – Bridge Street/Madras Street

The above crossroad traffic signal controlled intersection is only shown on the layout plans as having three arms of the intersection controlled by traffic lights. Section 6.2 (1) of the Land Transport Rule Traffic Control Devices 2004 (Rule 54002) requires each approach of a traffic signal controlled intersection to be controlled by traffic signals.

Action Install signal head to control traffic on the Madras Street west approach and provide a pedestrian crossing phase over the Madras Street west approach.

Accessibility

4.12 Placement of Pedestrian/Cycle Push button 'callers' – Various

The placement and location of the following push-button callers need to be reviewed:

- No. 9 at the Bypass/Kingston Road intersection.
- No's. 6 and 9 at the Bypass/Bridge Street intersection.
- No. 5 at the Bypass/Hughes Street intersection – shown as being located very close to the edge of the road for cyclists. Call buttons for cyclists need to take account of cyclists positions and the position of their front wheel relative to their cycling position and ability to reach out and press the call button.

Action Review/relocate/provide appropriate call button locations taking cyclists needs fully into account.

4.13 Shared Path cross section – Bypass/George Street

The width of the shared path in the vicinity of the push button caller No. 5 at the Bypass/George Street intersection is somewhat narrow which may lead to conflicts between waiting pedestrians and cyclists.

Action Provide a wider path in this vicinity or move the crossing location closer to the mouth of the intersection.

4.14 Cycle Holding Rails - Various

The provision of cycle holding rails at traffic signal controlled intersections.would be beneficial so that cyclists can remain mounted whilst waiting. At present, such a facility has only been provided at one location – Bypass/Empire Street.

Action Provide holding rails at the intersections

4.15 Access Ramp – Warwick Street

The access ramp at Warwick Street has an 8% gradient over an 18m length without a resting point. The draft Pedestrian Network Planning and Facilities Design Guideline prepared by Land Transport NZ suggests that an 8% gradient should be a maximum, and should be used over distances of no more than 9m.

Action Flat resting platform to be provided half-way along the ramp.

5. Audit Team Statement

We certify that we have examined the drawings and documents listed in Appendix A and have carried out site inspections. We have endeavoured to identify any issues and actions that could improve conditions for NMUs.

Audit Team Leader: Gus Logie
Signed Date:

Audit Team Reviewer: John Parrot
Signed Date

Design Team Leader: Ray French
Signed Date:

Figure A Layout Plan with references to Audit Findings