WHITIANGA ACCESSIBILITY AUDIT REPORT

CCS DISABILITY ACTION

TAYLORED ACCESSIBILITY SOLUTIONS LTD

MAY 2014

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Revision History

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On behalf of	CCS Disability Action		

EXECUTIVE SUMMARY

Thames-Coromandel District Council (TCDC) has requested an accessibility audit for the Central Business District (CBD) area of Whitianga, with particular emphasis for disabled and elderly residents. The audit covers:

- Mobility Spaces;
- Kerb ramps;
- Tactiles;
- Footpaths;
- Street crossings;
- Street furniture; and
- Temporary Traffic Management.

While CCS Disability Action recognise that standards such as NZS 4121:2001 and the Department for Building and Housing Building Code Compliance Documents contribute to improving disabled access, there are often relatively small and inexpensive solutions that can remove significant barriers to access that are overlooked.

CCS Disability Action is an organisation that supports people with disabilities to live independent lives. One of the many services CCS Disability Action provides is to work with communities to ensure that they are welcoming and inclusive of all people.

CCS Disability Action was chosen to conduct the audit as they make a significant contribution to mobility improvements in communities around New Zealand, and is an active partner in the Thames-Coromandel District Disability Strategy work.

Whitianga is situated on the eastern side of the Coromandel Peninsula on SH.25, approximately 90kms from Thames. The population is a mix of permanent residents and holidaymakers. The permanent population is 4368 at the 2013 census that swells to approx. 44,000 in the peak season.

187 residents in Whitianga (4.3% of the population) have a Mobility Parking Permit. An estimated 150 people in Whitianga use a mobility aid due to permanent disability. Some of these will have a Mobility Parking Permit and some will not.

An estimated 660,300 New Zealanders live with a disability, representing 17% of the total population.

In Whitianga, at the 2013 Census:

- 32.3% of people were aged 60 years and over. This is an increase from 26% in 2006, and compares to 19.3% for New Zealand as a whole; and

- 21.4% of people were aged less than 17 years. This is a slight increase from 20.1% in 2006, and compares with 24% for all of New Zealand.

The projected 2031 population of Thames-Coromandel District is 27,360, which is less than the current (2014) population. The proportion of people aged over 65 living in Thames-Coromandel District is predicted to increase to approximately 35% by 2013.

Thames-Coromandel District Council (TCDC) has requested an audit of the Central Business District (CBD) area of Whitianga, and immediate outlying residential areas with particular emphasis for disabled and older residents. CCS Disability Action was chosen to conduct the audit as they make a significant contribution to mobility improvements in communities around New Zealand, and is an active partner in the Thames-Coromandel District Disability Strategy work.

The boundaries for the Geographic area of interest are, and include:

- Buffalo Beach Road – Racecourse Road (SH.25) to Esplanade/Albert Street;
- Esplanade – Buffalo Beach Road/Albert Street to Blacksmith Lane;
- Blacksmith Lane – Esplanade to Victoria Street;
- Victoria Street – Blacksmith Lane to Owen Street;
- Owen Street – Victoria Street to Albert Street;
- Albert Street – Owen Street to Campbell Street;
- Campbell Street – Albert Street to Joan Gaskell Drive/Cook Drive; and
- Cook Drive – Joan Gaskell Drive/Campbell Street to Racecourse Road.

The audit boundary includes access to the beach along Buffalo Beach Road.

Council consultation with the disability community is continuously conducted with regular Disability Stakeholder Forums in Thames. A specific community meeting for this project was held on the 10th March 2014 at the Whitianga Town Hall on Monk Street.

Following this meeting, site visits were completed. Feedback from the initial Community Consultation Meeting and subsequent site visits identified access issues for Whitianga, such as:

- Location of Mobility Parking Spaces;
- Access from Mobility Parking Spaces;
- Lips on kerb ramps;
- Lack of safe road crossing opportunities;
- Lack of footpaths;
- Crossings at intersections and pedestrian crossings;
- Steep kerb crossings;
- Street clutter (signage, wares for sale and alfresco dining furniture); and

- Access to the beach.

This report is intended to remain a 'living' document. In order to ensure the on-going success of investment in access improvements it is suggested that TCDC regularly review the recommendations included within this report.

CCS Disability Action recognises that while all recommendations are important to providing a usable accessible network, cost implications may require the recommendations to be considered in council's long-term planning processes.

Identified issues and recommendations are discussed throughout this report. For ease of reference and to assist in prioritisation of recommendations, all recommendations are listed in Section 14 according to considered priority for general and specific sites, and with indicative costs.

The specific recommendations are split into three categories:

- Serious Safety Risk – Where it is considered serious injury may occur if the issue is not addressed
- Significant Concern – Major inconveniences
- Minor Concern – Minor inconveniences

It is recommended that the Serious Safety Risk recommendations are implemented first, and that Significant and Minor concerns are addressed as part of longer term planning. The total estimated cost for the Serious Safety Risk items is $15,000.

Costs shown are indicative construction costs only and should only be used as a guide. They do not include Traffic Management Costs, consultation with affected parties, costs of design or any other professional service fees.

In addition to immediate recommendations to do with infrastructure, a series of 'general recommendations' are presented. These have no capital cost but are likely to result in improved accessibility outcomes for the people of Whitianga through improved processes and practices more aligned with best-practice universal design and construction.

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1 INTRODUCTION

1.1 THAMES-COROMANDEL DISTRICT

Thames-Coromandel District is located in the region east of the Firth of Thames on the Coromandel Peninsula, SE of Auckland. The population of the Territorial Authority rose by 0.9% between the 2006 census and 2013 census, to 26,181 residents[1]. This equates to approximately 0.6% of New Zealand's population. Main urban areas in the district include Coromandel, Pauanui, Tairua, Thames, Whangamata, and Whitianga[2].

1.2 WHITIANGA TOWNSHIP[3]

Whitianga is situated on the eastern side of the Coromandel Peninsula on SH.25, approximately 90kms from Thames. For many years, it was a leading timber port, with sailing ships from Norway, Sweden, France, Italy and Great Britain coming to load timber.

Kupe's tribe settled in the Whitianga area following his visit in about 950 AD, so Whitianga can lay claim to over 1,000 years of continuous occupation. The original European settlement was situated on the opposite side of the river from approximately 1836 to 1881. The past industries included boat building, kauri milling, flax milling, gold mining and gum digging.

Today Whitianga serves as a small regional centre for the eastern side of the Coromandel Peninsula / Mercury Bay area and is a focal point for local fishing, farming and tourism industry.

The population is a mix of permanent residents and holidaymakers. The permanent population is 4368 at the 2013 census that swells to approx. 44,000 in the peak season[4].

[1] Statistics New Zealand – 2013 census URPC Tables
[2] Waikato Regional Council – Community: Thames Coromandel
[3] Discover Whitianga: History and Heritage
[4] Mercury Bay Community Board Plan 2014/2015 - December 2013

1.3 CCS DISABILITY ACTION

CCS Disability Action is an organisation committed to supporting communities that include all people and ensure that they are welcoming and inclusive of everyone. This is achieved by using universal design principles in the built environment and including everyone in activities and events.

CCS Disability Action's role is to support people with disabilities to be 'in the driver's seat' of their life; to achieve their own dreams and aspirations. With sixteen offices around New Zealand, CCS Disability Action provides frontline support and services, and creates local awareness of and education around issues encountered by disabled people in their everyday lives.

CCS Disability Action works with government departments, local councils, building developers and owners on a range of issues that impact on the lives of disabled people. CCS Disability Action has expertise in ensuring public buildings, homes, amenities, walkways, streets and public transport more accessible for everybody.

2 STATISTICS

2.1 DISABILITY IN NEW ZEALAND[5]

The first results of the Disability Survey as part of the 2013 National Census is expected to be released in June 2014. As such, results from the 2006 census have been used.

An estimated 660,300 New Zealanders live with a disability, representing 17% of the total population (2006).

In the 2006 census, 82% of people with disability were adults living in households, 5% were adults living in residential facilities and 14% were children (under 15 years) living in households.

The percentage of people with disability increased with age, from 10% for children aged less than 15 years to 45% for adults aged 65 years and over.

The most common disability types for adults are physical and sensory disabilities. 27% of all adults aged 15 years and over have a physical, sensory, or intellectual disability.

2.2 MOBILITY PARKING IN NEW ZEALAND[6]

Because of their disability, an estimated 129,100 adults and 8,700 children needed to park close to their destination in 2006. Among adults, the need to park close increased with age.

There are 187 residents in Whitianga (4.3% of the population) that have a Mobility Parking Permit.

In the six months before the 2006 Disability Survey, an estimated 61,100 adults and 5,900 children had problems finding a carpark. The most common problems were:

- Finding a park close to their destination;
- Carparks meant for disabled people being used by non-disabled people; and
- The available carparks being too awkward to use.

31% of disabled adults and 15% of disabled children used taxis for short trips at least once in the 12 months prior to the 2006 Disability Survey. An estimated 1% of all disabled adults used taxis every day or almost every day.

[5] Statistics New Zealand – 2006 Disability Survey: Disability and Travel and Transport in New Zealand 2006
[6] Statistics New Zealand – 2006 Disability Survey: Disability and Travel and Transport in New Zealand 2006

The Total Mobility Scheme provides disabled people with vouchers for discounted taxi fares. At the time of the 2006 Disability Survey, parents/caregivers of 22% of disabled children and 34% of disabled adults had heard of the Total Mobility Scheme. An estimated 4% of disabled adults had used Total Mobility Scheme vouchers in the 12 months prior to the survey.

An estimated 8% of disabled children aged 5–14 needed special transport or help to get to school.

2.3 AGE IN THAMES-COROMANDEL DISTRICT

While mobility impairments are considered to primarily affect people with disabilities, older persons progressively experience a reduction in sensory and physical ability and children progressively develop decision making ability.

The median age (half are younger, and half older, than this age) for people in the Thames-Coromandel District is 46 years[7]. There were 36 people over the age of 85 living in Coromandel in 2013, with largest age group being 60 to 64 year olds[8].

The projected 2031 population of Thames-Coromandel District is 27,360, which is less than the 2013 Census Night population of 29,394. The proportion of people aged over 65 in Thames-Coromandel is predicted to increase from 27% in 2013 to 35% in 2031.

2.4 AGE IN WHITIANGA

In Whitianga, at the 2013 Census:

- 32.3% of people were aged 60 years and over[9]. This is an increase from 26% in 2006, and compares to 19.3% for New Zealand as a whole[10].
- 21.4% of people were aged less than 17 years[11]. This is a slight increase from 20.1% in 2006, and compares with 24% for all of New Zealand[12].

Based on analysis of age and gender-specific rates of disability, an estimated 150 people in Whitianga use a mobility aid due to permanent disability[13].

[7] Profile.id Community Profile – Thames-Coromandel District
[8] Profile.id Community Profile – Whitianga Service Age Group
[9] Profile.id Community Profile – Whitianga Service Age Group
[10] Statistics New Zealand – Interactive Population Pyramid
[11] Profile.id Community Profile – Whitianga Service Age Group
[12] Statistics New Zealand – Interactive Population Pyramid
[13] Estimation methods based on Burdett (2014) Measuring Accessible Journeys: A tool to enable participation *Municipal Engineer*, In Press

2.5 OLDER PERSONS

When comparing to the Thames-Coromandel District, Whitianga had a lower percentage of persons aged 60+ (32.3%, compared to 36.1% for the district), and a higher percentage of persons aged below 17 (21.4%, compared to 19.5% for the district). Overall, 22.7% of the population for Whitianga was aged 65 years and over, compared with 26.9% for the Thames-Coromandel District[14].

Many of these people are unable to access the community without some form of support, whether using mobility aids such as wheelchairs, mobility scooters etc., or simply requiring smooth, level surfaces to avoid tripping and falls. Some do not drive and therefore depend on safe and level footpaths to reach services essential to meet their everyday needs.

The Whitianga Community is working with the Coromandel Independent Living Trust to provide pensioner housing in Whitianga[15]. Currently there are 58 units provided for by the Trust in Thames, Coromandel and Whitianga.

Whitianga Continuing Care is located at 6 Halligan Road. There is also access onto Buffalo Beach Road. Services provided include:

- Rest Home;
- Hospital Care;
- Palliative Care; and
- Respite Care.

The Organisation for Economic Co-operation and Development (OECD) published a report in 2001 focusing on the effects of Older Persons and traffic.

Mobility is the key issue for an ageing society. OECD concluded[16]:

- Infrastructure design focused on technical efficiency and low costs is no longer sufficient;
- Standards based on fit young males are inappropriate in an ageing society;
- Involvement of older persons is encouraged in policy development;
- In Western Europe, 45% of pedestrian fatalities are aged 65 or more;
- Have educational campaigns to promote maximum mobility and safety for older people;
- Provision is required for suitable transport alternatives to the private vehicle (accessible buses, taxis, Dial a Ride etc.);

[14] Profile.id Community Profile – Whitianga Five-Year Age Group
[15] Draft Tairua-Pauanui Community Board Plan – December 2013
[16] Organisation for Economic Co-operation and Development – Ageing and Transport: Mobility Needs and Safety Issues.

- Provide safer roads to accommodate pedestrians and users of scooters and wheelchairs; and
- More forgiving and predictable road design should be used to reduce the need to make complex decisions and performed time related tasks.

OECD stated that improvements in infrastructure that benefit older persons will benefit everyone.

2.6 YOUNGER PERSONS

Overall, 18% of the population of Whitianga was aged between 0 and 14, compared with 16.3% for the Thames-Coromandel District[17].

For this age group, early childcare and schooling facilities are the main destination points for travel.

Two early education centres are located in Whitianga:

- Central Kids Mercury Bay – 8 Eyre St; and
- Whitianga Play Centre – 1d White St.

Mercury Bay Area School is situated on South Highway and caters for years 1-13[18].

A report commissioned by OECD in 2004[19] focused on keeping children safe in traffic. The areas the report focused on were:

- The scale and nature of the vulnerability of children in traffic environments;
- Children's behaviour, abilities, education, training, and publicity approaches;
- The role of the road environment in relation to child safety; and
- The role of legislation and standards in road safety equipment and vehicles.

OECD concluded that the best performing countries in keeping children safe have adopted a holistic approach using a wide variety of measures:

- Road Safety Policies include specific strategies and targets for improving child safety;
- Using education, practical training and publicity to encourage safe behaviour and providing young people with skills and strategies to manage risk; and
- Shifting the focus of responsibility away from children to parents, schools, drivers, policy makers, planners, and traffic engineers.

OECD recommends for the built environment:

- Young children need space for congregation, playing and physical activity;

[17] Profile.id Community Profile – Pauanui Five Year Age Group
[18] www.school.nz
[19] Organisation for Economic Co-operation and Development – Keeping Children Safe in Traffic: 2004

- Older children require safe and secure routes to access school, playgrounds and other recreational destinations, both as pedestrians and cyclists;
- Traffic Engineers and Planners should take children's needs and abilities into account and incorporate them into road plans and traffic designs; and
- Cyclists and pedestrians need more priority through the use of traffic calming and facilities for walking and cycling.

3 AUDIT PURPOSE

Thames-Coromandel District Council (TCDC) has requested an audit of Whitianga with particular emphasis for disabled and older residents. CCS Disability Action was chosen to conduct the audit as they make a significant contribution to mobility improvements in communities around New Zealand, and is an active partner in the Thames-Coromandel District Disability Strategy work.

This Audit comes from requests made by the community at the initial Thames Audit. During consultation for this audit, issues were raised about accessibility in other settlements on the Coromandel Peninsula, especially Coromandel and Tairua.

While CCS Disability Action recognise that standards such as NZS 4121:2001 and the Department for Building and Housing Building Code Compliance Documents contribute to improving disabled access, there are often relatively small and inexpensive solutions that can remove significant barriers to access that are overlooked.

It is envisaged that this audit will primarily be a tool for use by the Council. However, if accepted we suggest that it be made available to all interested parties.

4 GEOGRAPHIC AREA OF INTEREST

The geographic area of interest defined by TCDC covers the main Central Business District (CBD) of Whitianga. Trip origins from adjacent residential areas, with particular emphasis on facilities for the very young and the elderly, as well as for people with disabilities were also considered in the review.

The boundaries for the Geographic area of interest are, and include:

- Buffalo Beach Road – Racecourse Road (SH.25) to Esplanade/Albert Street;
- Esplanade – Buffalo Beach Road/Albert Street to Blacksmith Lane;
- Blacksmith Lane – Esplanade to Victoria Street;
- Victoria Street – Blacksmith Lane to Owen Street;
- Owen Street – Victoria Street to Albert Street;
- Albert Street – Owen Street to Campbell Street;
- Campbell Street – Albert Street to Joan Gaskell Drive/Cook Drive; and
- Cook Drive – Joan Gaskell Drive/Campbell Street to Racecourse Road.

A map of the geographic area for the audit is included as Appendix A.

The audit boundary includes access to the beach along Buffalo Beach Road.

5 AUDIT

5.1 COMMUNITY RELATIONSHIPS

It is evident that the Council have good working relationship with the residents of the town. The community clearly appreciates the efforts being made by Council to tackle social issues, and have pride in their community.

Shop owners take pride in the town by minimising footpath clutter and maintaining access routes. Council has contributed by installing a cobblestone footpath surface on Albert Street, and a bypass diverting traffic from the town centre has created a more pleasant shopping environment.

Figure 1: Cobblestones on Albert Street

5.2 CONSULTATION MEETINGS

Consultation with the community is vital for Council to gain an understanding of how the community use the facilities provided.

Council consultation with the disability community is continuously conducted with regular Disability Stakeholder Forums in Thames. A specific community meeting for this project was held on the 10th March 2014 at the Whitianga Town Hall on Monk Street.

The group of people that attended included a wide range of impairments. People with visual and intellectual impairments, as well as age and mobility issues were present. People using wheelchairs and mobility scooters also contributed to discussion on the day. A representative from TCDC also attended.

Following this meeting, site visits were completed. Feedback from the initial Community Consultation Meeting and subsequent site visits identified access issues such as:

- Location of Mobility Parking Spaces;
- Access from Mobility Parking Spaces;
- Lips on kerb ramps;
- Lack of safe road crossing opportunities;
- Lack of footpaths;
- Crossings at intersections and pedestrian crossings;
- Steep kerb crossings;
- Street clutter (signage, wares for sale and alfresco dining furniture); and
- Access to the beach.

A list of issues identified at the Community Consultation Meeting is included as Appendix B.

5.3 CO-OPERATION WITH NZTA

Even though the CBD of Whangamata is not on the State Highway Network due to the introduction of the bypass, TCDC should still liaise with NZTA for future funding opportunities in relation to any works in this area.

5.4 SITE INSPECTIONS

Following the consultation, site inspections were carried out in April 2014 by CCS Disability Actions' consultant, Taylored Accessibility Solutions Limited.

The audit inspected:

- Mobility spaces;
- Kerb ramps;
- Footpaths;
- Pedestrian crossing opportunities;
- Street furniture; and
- Access to the beach.

5.5 CONTINUATION OF PROCESS

This report is intended to remain a 'living' document. In order to ensure the on-going success of investment in access improvements it is suggested that TCDC regularly review the recommendations included within this report.

CCS Disability Action recognises that while all recommendations are important to providing a usable accessible network, cost implications may require the recommendations to be considered in council's long-term planning processes.

6 FURTHER INVESTIGATION

This report covers access in the geographic area of interest as stated in Section 4: Geographic Area of Interest.

Further investigation will be required outside of this area to improve accessibility in wider Whitianga and surrounding settlements.

Many issues raised during consultation were regarding footpaths and kerbs. It is suggested that consideration be given to a more formal method of setting priorities for the provision of kerb ramps and maintenance of footpaths. By identifying a risk and condition rating, a profile target can be developed that allows limited resources to address the most critical barriers first. Poor condition can be tolerated where there is little or no likelihood of use by the disabled and older persons.

Risk Modified Condition Assessment methodology prioritises upgrades to footpaths and kerb ramps so that those on routes used by the disabled on a regular basis are upgraded first. Refer to Appendix C for the calculation assessment.

This assessment designates footpaths and all potential kerb ramp locations within accessible routes a risk profile of Low, Medium or High as a high priority. A relatively simple set of KPI's can be formulated with condition ratings used to determine the profile.

Recommendation 1 Adopt the Risk Modified Condition Assessment methodology as a tool for future maintenance prioritisation.

6.1 MEASURING ACCESSIBLE JOURNEYS

In order to prioritise access improvements, it would be helpful for TCDC to collect data about the way people travel around Waihi. Although many Road Controlling Authorities collect traffic data, information about other modes of travel (particularly pedestrian trips) is rarely collected to the same level.

One method of data collection that can help to inform, justify and prioritise investment in accessible infrastructure is to count all people on a footpath or at a road crossing, and to include the proportion of those people who use mobility aids[20]. As stated, the estimated number of people using a mobility aid for permanent disability in Whitianga is 150, or 3.1% of the town population. By counting people on

[20] Estimation methods based on Burdett (2014) Measuring Accessible Journeys: A tool to enable participation *Municipal Engineer*, In Press

the streets of Whitianga, TCDC can determine whether or not this proportion is reflected in pedestrian trips.

Recommendation 2 Select count sites in Whitianga urban area to conduct regular pedestrian counts, including the proportion of people who use mobility aids.

7 MOBILITY PARKING

7.1 THE NEED FOR ACCESSIBLE CAR PARKING[21]

Most people with impaired mobility depend on the use of a privately owned motor vehicle for their transport needs. This form of transport is essential to enable them to participate fully in the everyday working, recreational, educational and social life of the community.

Many wheelchair users are able to drive a car either while still in their wheelchair or by transferring to the driver's seat. When transferring out of the wheelchair and into the driver's seat, the manual wheelchair is either carried inside the car or mounted on a roof hoist. However, a wider than normal car parking space is needed so that space is available to reassemble the wheelchair, if necessary, and place it alongside the car door so that the driver can then transfer to it from the driver's seat.

People who drive their vehicle while seated in their wheelchair generally access their vehicle either by using a side ramp which deploys to the adjacent footpath or by a rear hoist. A side ramp requires an area beside the car which is free from street furniture or other vehicles while a rear hoist requires the length of the hoist and manoeuvring space of the wheelchair behind the parked vehicle.

A pedestrian route that a wheelchair user can travel along without assistance (defined as an 'accessible route') is also needed from the parking space to the associated destination.

7.2 MOBILITY PARKING PERMIT ELIGIBILITY[22]

Having a medical condition or disability does not automatically entitle a person to a mobility parking permit.

The following criteria are used by medical professionals in determining the need for a mobility parking permit:

- The applicant is unable to walk and always require the use of a wheelchair; or
- The ability to walk distances is severely restricted by a medical condition or disability. For example, the applicant requires the use of mobility aids, experiences severe pain or breathlessness; or
- The applicant has a medical condition or disability that requires physical contact or close supervision to safely get around and cannot be left unattended.

[21] Department of Housing and Building with Barrier Free Trust: Accessible car parking spaces
[22] mobilityparking.org.nz/about-mobility-parking-permits/eligible-for-a-permit

7.3 MOBILITY PARKING IN WHITIANGA

TCDC has provided 18 public Mobility Spaces in Whitianga, including three at the TCDC Service Centre. The spaces service visitors to the town as well as the 187 Mobility Parking Permit holders that reside in Whitianga.

7.4 PARKING REQUIREMENTS[23]

Section 47A of the Building Act covers the need to provide car parks, parking buildings and parking facilities. Parking facilities or premises, whether private or public, shall provide the required number of accessible car park spaces.

Where parking is provided, spaces for people with a mobility permit should be provided to meet requirements defined in NZS 4121:2001. The standard recommends the following parking space ratio is to be provided to meet compliance with the Building Code:

Total number of car parks	Number of mobility spaces
1 - 20	Not less than 1
21 - 50	Not less than 2
For every additional 50 car parking spaces	Not less than 1

Table 1: Mobility parking ratio requirements[24]

With the total of on-street carparks on Albert Street, the main carpark on Lee Street and surrounding side streets of the CBD, the 18 Mobility Spaces meet the requirements in NZS 4121:2001.

Figure 2: Mobility Space on Albert Street

[23] NZS 4121:2001 Section 5: Car parks
[24] NZS 4121:2001 Section 5: Table 1

One type of mobility space does not fit all users. Access to the vehicle for an access user can be via the drivers' seat, front passenger seat, rear passenger seat, or rear entry to the vehicle. As such, a combination of parallel and angle parking is advised to cater for as many users as possible.

Recommendation 3 Provide a variety of Mobility Spaces, both parallel and angle parking.

7.5 LOCATION OF MOBILITY SPACES

As mentioned previously, there are 18 Mobility Spaces situated for users accessing the shops in the Whitianga CBD:

- 25a Albert Street – The Glass House Emporium;
- 33 Albert Street – The House of Chang Thai Restaurant;
- 36 Albert Street – Mainly Casual;
- 65 Albert Street – Taste Café;
- 70 Albert Street – BNZ;
- 2 Mill Road – Motu Kitchen;
- Esplanade – Wharf
- Blacksmith Lane – outside public toilets;
- Blacksmith Lane – Public Library;
- Lee Street carpark – Five; and
- TCDC Service Centre – Three.

The only concern for the location of the existing Mobility Spaces is the one at 65 Albert Street. Moving this north to outside 59 Albert Street will provide quick access to shelter by utilising the verandah in this location.

Figure 3: Mobility Space at 65 Albert Street

Recommendation 4 Re-locate the Mobility Space at 65 Albert Street north to 59 Albert Street to utilise shelter from the verandah in this location.

As TCDC cannot control the turnover of businesses in a specific site, as part of the consent process, TCDC can explore the options of developers providing Mobility Spaces if the business is considered to have the potential for access customers. Types of businesses that may attract access customers (but not limited to):

- Supermarkets and Fruit and Vegetable Shops;
- Specialist Health Care Centres, Medical Centres, and Chemists;
- Banks;
- Cafes; and
- NZ Post Offices.

Recommendation 5 Consider Mobility Space placement during the consenting process.

A request at the Community Consultation meeting is to install a Mobility Space at 64 Albert Street (outside Stephenson's Pharmacy and Dr Adams Medical Practise). This is good practise as people with mobility issues require access to healthcare facilities.

Recommendation 6 Install a Mobility Space outside 64 Albert Street (Stephenson's Pharmacy)

7.6 CONNECTION TO FOOTPATH

A common concern with mobility spaces is the lack of access to the footpath. Easy access is important as the user can quickly move to the safety of the footpath.

By installing full length kerb ramps, all types of access users will be able to access the footpath quickly and safely, limiting the time needed to use the live traffic lane. Full length kerb ramps also allow vehicle passengers to safely transfer to their wheelchair without risk of 'tip-over' as all wheelchair wheels are able to be placed on a level surface. Drainage channels often prevent wheelchairs from having all four wheels safely on a level surface as wheelchairs frequently move during transfer, even when brakes have been applied.

Figure 4: Mobility Space with full length access to footpath

Recommendation 7 Install full length kerb ramps at all 18 Mobility Spaces in Whitianga to provide quick, easy access to the footpath.

7.7 DIMENSIONS

There is a conflict of standards between NZS 4121:2001 and the Traffic Control Devices (TCD) Manual when determining the dimensions of a mobility parking space.

NZS 4121:2001 requires an angle parking width of 3.5m[25] and a length of 5m[26]. For vehicles that operate a rear-mounted hoist, a further 1000 – 1300mm is required. The width allows the car and the wheelchair to be on the same level when a person is transferring from one to the other.

The TCD Manual allows a 3.0m wide angle space, which does not allow for transferring to the wheelchair, and 5.4m length[27].

For parallel parking, the TCD Manual has adopted the NZS 4121:2001 minimum allowance of 5m in length, and recommends 6m in length as good practice[28].

There are four commonly used methods of transporting people who use wheelchairs:

- Wheelchair user transfers from wheelchair to driver position (independently drives);
- Wheelchair user transfers from wheelchair to front passenger position;
- Wheelchair user remains in wheelchair and uses passenger side entrance to enter vehicle (ramp or hoist); and
- Wheelchair user remains in wheelchair and uses rear of vehicle to enter vehicle (most commonly by hoist).

By planning and designing a range of mobility spaces which allow for these four methods, barriers and hazards can be minimised for the wheelchair user. Allowance for these methods can be achieved by lengthening parallel parks, widening parking spaces, and, for angle parking, allowing space between the rear of the vehicle and the live traffic lane.

Recommendation 8 Adopt the recommended minimum length in the TCD Manual Part 13: Parking Control of 6m for parallel parking with a further 1.5m allowance for the hoist.

[25] NZS 4121:2001 – Section 5.5.1.2: Angle Parking
[26] NZS 4121:2001 – Section 5.5.2: Length
[27] TCD Manual Part 13: Parking Control – Section 5.3.2 – Table 5.3
[28] TCD Manual Part 13: Parking Control – Section 5.3.1 – Table 5.2

Recommendation 9 Adopt the recommended minimum width in NZS 4121:2001 of 3.5m and the minimum recommended length in the TCD Manual Part 13: Parking Control of 5.4m for angle parking. Allowance of at least 1.5m should be considered between the parking space and the live traffic lane to provide safety for wheelchair users who use rear loading vehicles.

The Mobility Space at 2 Mill Road is placed between two kerb cut downs, making the length of the Mobility Space as 3.7m long. Extending the Space north will give enough space at the rear of the Mobility Space to avoid conflict with the driveway.

Figure 5: Mobility Space at 2 Mill Road

Recommendation 10 Lengthen the Mobility Space at 2 Mill Road to meet the requirements of NZS 4121:2001.

There is a Mobility Space located at the pedestrian entrance to the wharf on the Esplanade. This measured at 3m wide, and is squeezed between two carparks. Switching the carpark with the reserved space beside it, will create the extra room needed by access users.

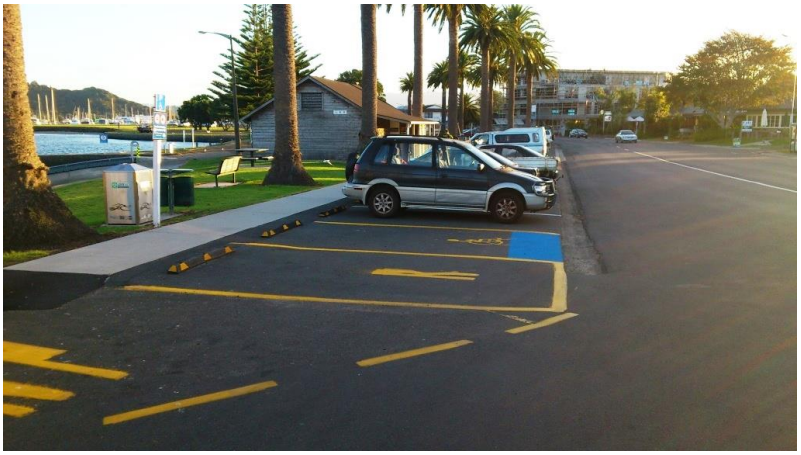

Figure 6: Mobility Space servicing the Wharf

Recommendation 11 Switch the Mobility Space at the Wharf with the reserved space to create more usable space for access users.

7.8 MARKINGS

The Land Transport Rule: TCD Amendment 2010 allows a road controlling authority to mark, on an area of roadway that is reserved for parking by the holders of approved disabled persons' parking permits, a blue surface texture or colour[29].

A report in The Gisborne Herald concluded an approximate 50% reduction was achieved in mobility parking infringements once the blue colouring was installed and infringement fee increased[30]. A similar result was achieved in Hamilton and other district councils have reported similar trends.

While full blue coverage is preferred for marking mobility parking spaces, in the interest of maintenance and costs, consideration could be given to only partially colouring the mobility space as shown in Figure 9.

A 1m strip for the length of the road edge of the carpark will provide visual notice to road users, reduce installation costs, and reduce the need for repair when replacing kerb and channel etc.

During the consultation process where this was suggested, concern was raised about visibility of the mobility parking space from the footpath. Installing a blue coloured metal plate or a blue strip on the top of the kerb will aid pedestrians to 'police' the spaces.

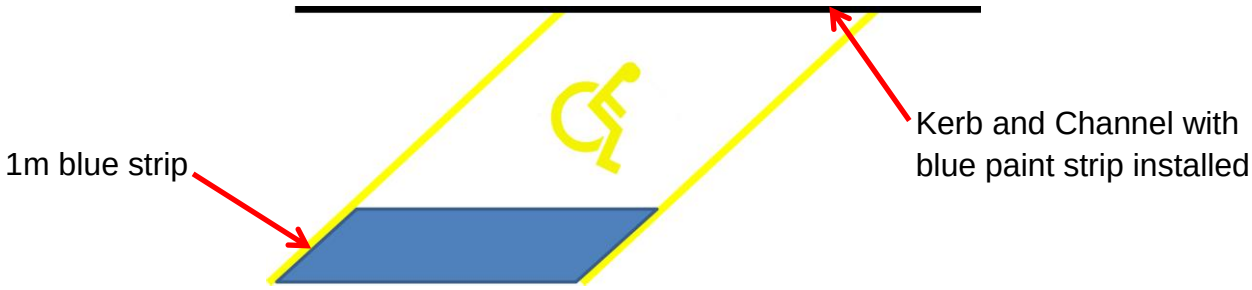

Figure 7: Mobility Space with blue surfacing design

Recommendation 12 Continue the programme to mark Mobility Spaces with blue surfacing. Installing blue marking as per figure 8 will aid with maintaining a non-slip surface with the colour of both the surface and the marking to comply with Land Transport Rule: Traffic Control Devices 2004.

Note: This recommendation is already being implemented based on recommendations in the Thames Central Business District Accessibility Report.

[29] TCD Amendment 2010 Rule 54002/4 – Sections 2.6 and 2.19
[30] Gisborne Herald – 18th June 2012

7.9 SURFACE

NZS 4121:2001 states the surface for a Mobility Space shall provide a stable, firm, slip resistant flat surface with a slope not exceeding 1 in 50 (2%)[31]. This slope on on-street spaces is difficult to achieve, so an absolute maximum grade of 1 in 12 (8.3%) should be adhered to.

Overall, the condition of the Mobility Spaces provided in Whitianga is good with only the Mobility Space at 70 Albert Street needing to be re-surfaced.

Figure 8: Mobility Space at 70 Albert Street

Recommendation 13 Re-surface the Mobility Space at 70 Albert Street.

[31] NZS 4121:2001 Section – 5.6 – Surface

8 KERB RAMPS

Footpaths for mobility impaired users are just like roads are for vehicles. If one road does not connect to another road, the purpose of the footpath is decreased. Kerb ramps are used just as intersections are used for roads.

Kerb ramps are a vital component for mobility access. As they provide access to the safety of the footpath, a relatively small fault can become a serious hazard. Without them, mobility scooters, pushchairs, and wheelchair users are often forced into live traffic lanes to the nearest driveway before accessing the footpath.

When designing kerb ramps, it is important to ensure that[32]:

- If there is a kerb ramp on one side of the roadway, there is also one on the other to prevent pedestrians being 'stranded' on the roadway itself; and
- There are no low points in the gutter where water and silt can collect.

The Pedestrian Planning and Design Guide (PPDG) states the following guidelines when designing kerb ramps[33]:

- Ramp – Normal maximum gradient 1 in 12 (8.33%), Maximum gradient 1 in 8 (12.5%). A gradient of 12.5% should only be considered for constrained situations where the vertical rise is less than 75mm;
- Maximum crossfall of 2%; and
- Minimum width of 1m, 1.5m is recommended. Maximum width to equal the width of the approaching footpath.

While these guidelines provide a good starting point, some are still not accessible by disabled people with impaired mobility.

While 1 in 12 is recommended by the PPDG, manual wheelchair users still struggle to manage this grade. A desirable maximum grade of 1 in 14 is more usable. A grade of 1 in 8 is not usable by most people using mobility devices so an absolute maximum of 1 in 12 should be adopted instead of 1 in 8.

For the kerb and channel itself:

- Maximum gradient is 5%. Anything greater can cause wheelchair users to lose their balance at the transition; and
- Transition between kerb and channel and ramp or carriageway should be smooth with no vertical face. Milling of the carriageway at the channel may need to be performed so this does not inadvertently happen when the roadway has been resurfaced.

[32] Pedestrian Planning and Design Guide – Section 15.6.1: Kerb ramps
[33] Pedestrian Planning and Design Guide – Table 15.2

Kerb flares (transition from full kerb face to cut-down kerb) is to have a maximum gradient of 1 in 6 (16%).

The PPDG recommends kerb crossings should be installed wherever a footpath crosses an intersection and at every pedestrian crossing point[34]. Kerb ramps should be installed at every kerb crossing where the grade changes as pedestrians step onto the roadway. They should guide pedestrians to the safest place to cross.

Tactile paving should be used at kerb crossings so that visually impaired pedestrians are aware of the change from footpath to roadway.

The width of 1.8m for the cut down allows the user to access the footpath without the need for slowing down in the carriageway to negotiate footpath access, particularly if the crossing direction is at an angle to the kerb.

Recommendation 14 Adopt the Pedestrian Planning and Design Guide for Kerb Ramps with the following changes:

- Ramp – Normal maximum gradient to be 1 in 14 (7.14%), with the absolute maximum gradient to be 1 in 12 (8.33%); and
- Minimum cut down width of 1.8m.

Note: Tactiles form an integral part of kerb ramp quality and effectiveness. Tactiles will be discussed in Section 9: Tactiles.

8.1 INTERSECTIONS

People with impaired mobility rely on kerb ramps to safely cross the road. They provide the vital link from one footpath to the other. Without them, the link between footpaths is broken.

A steeply graded kerb ramp or a lip in the channel is often as bad as not having one at all. As stated above, if the grade is to steep, then people in wheelchairs and mobility scooters are not able to safely and quickly negotiate the obstacle. A lip in the channel is when a small vertical face is situated at the invert of the channel and prevents users from being able to use the kerb ramp.

This is particularly important at intersections where drivers have to be aware of multiple actions.

A list of intersections for the geographic area of interest is attached as Appendix D.

Recommendation 15 Replace all kerb ramps as required during the maintenance programme to a minimum width of 1.8m.

[34] Pedestrian Planning and Design Guide – Section 6.4.5: Kerb crossings

Figure 9 below shows the typical layout for kerb ramps at an intersection. Kerb ramps should be separated for each crossing point, with the installation of Tactiles as required. The location of Tactiles is discussed in Section 9: Tactiles.

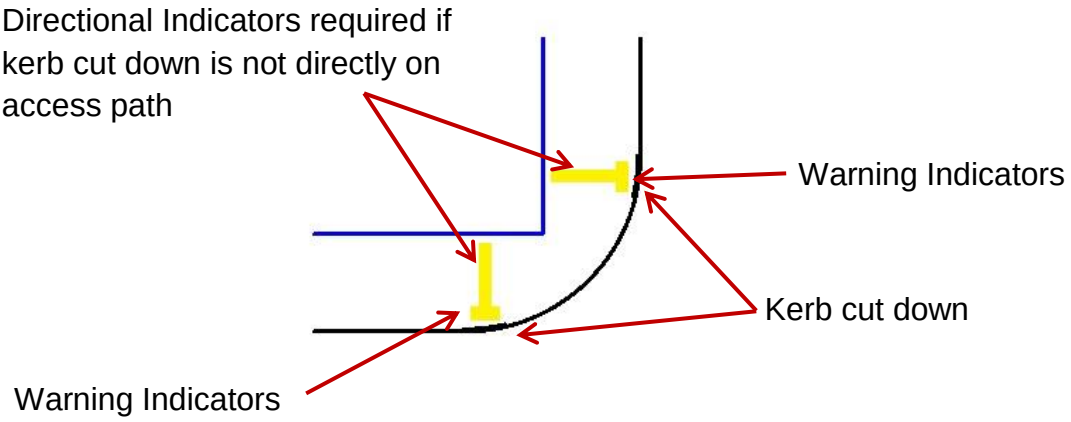

Figure 9: Typical intersection layout

8.2 ALBERT STREET

Albert Street is the main street of Whitianga, and was formally the State Highway before the bypass was constructed. There are seven intersections along Albert Street in the geographic area of interest.

The **Albert Street/Owen Street intersection** has kerb ramps crossing Owen Street only. Both the SW and SE corners have a lip kerb which impedes access for mobility scooter and wheelchair users.

Recommendation 16 Replace the lip kerbs on the SW and SW corner of Albert Street/Owen Street intersection. Install separate kerb ramps for crossing Albert Street at Owen Street as per the diagram shown in figure 9.

Figure 10: Crossing Owen Street - west side

The **intersection of Albert Street and Campbell Street** has kerb ramps crossing Campbell Street only. The kerb ramps crossing the east side of Campbell Street are out of alignment. This has implications for visually impaired users in navigating the crossing point. This is further discussed in Section 9: Tactiles.

Figure 11: Albert Street/Campbell Street intersection

The kerb ramp on the NE corner (Post Office) has a grade of 1 in 9. Replacing the kerb ramp with a grade of 1 in 14 (7.1%) will improve access for mobility scooter and wheelchair users.

Recommendation 17 Re-locate and replace the kerb ramp on the NE corner of Albert Street/Campbell Street to a maximum grade of 1 in 14 (7.1%) to improve access for mobility scooter, wheelchair and visually impaired users. Install kerb ramps for crossing Albert Street at Campbell Street as per the layout shown in figure 9.

The NW kerb ramp at the Albert Street/Coghill Street intersection has a lip kerb. Replacing this kerb with a flush kerb will improve access for mobility scooter and wheelchair users.

Figure 12: Crossing Coghill Street at Albert Street

Recommendation 18 Replace the lip kerb ramp on the NW corner of Albert Street/Coghill Street with a flush kerb.

At the **Albert Street/Blacksmith Lane intersection**, the kerb ramp grade on the south corner (Information Centre) was measured at 1 in 9.4 (10.6%). Reinstating this kerb ramp grade to a maximum of 1 in 14 (7.1%) will improve access for mobility scooter and wheelchair users. There are no kerb ramps for crossing Albert Street.

Recommendation 19 Replace the kerb ramp grade on the south corner of Albert Street/Blacksmith Lane to a maximum grade of 1 in 14 (7.1%).

The **Albert Street/Lee Street intersection** has kerb ramps crossing Lee Street only. Both kerb ramps have lib kerbs.

Figure 13: Kerb ramp at Albert Street/Lee Street intersection

Recommendation 20 Replace the lip kerb ramps crossing Lee Street at Albert Street to flush kerbs. Install kerb ramps on the north corner of Albert Street and the south corner of Lee Street to improve crossing opportunities of Albert Street.

The **Albert Street/Monk Street intersection** would be considered as the centre of Whitianga. At this intersection, the kerb ramps do not line up and both have lip kerbs.

Figure 14: Albert Street/Monk Street intersection

Recommendation 21 Re-align and replace the kerb ramps at the Albert Street/Monk Street intersection to have a flush kerb.

The **Albert Street/Hannan Road intersection** is the northern end of the main shopping precinct of Whitianga. The south kerb crossing Hannan Road has a grade of 1 in 7.9 (12.6%) and a carriageway grade of 1 in 9.7 (10.3%). Improving the grades to a maximum of 1 in 14 (7.1%) will improve access for mobility scooter and wheelchair users.

There are no kerb ramps crossing Albert Street at this intersection.

Recommendation 22 Replace the kerb ramp on the south side of Albert Street/Hannan Road to have a maximum grade on the footpath and the carriageway of 1 in 14 (7.1%). Install kerb ramps on the south side of Albert Street/Hannan Road intersection for crossing Albert Street.

A roundabout has been installed at the intersection of Albert Street/Buffalo Beach Road. A kerb ramp for crossing Buffalo Beach Road is approx. 30m NW of Albert Street and links with the new walkway along the beachfront. The kerb ramp grade on the south side of this crossing point is 1 in 7.9; the kerb ramp crossing Albert Street on the east side has a grade of 1 in 9.1 (11%); and the grade of the carriageway on the west side crossing Albert Street is 1 in 3.8 (26%).

There are no kerb ramps crossing the Esplanade at this intersection.

Figure 15: Crossing Albert Street at Buffalo Road.

Recommendation 23 Replace the kerb ramps at the Albert Street/Buffalo Beach Road intersection (south crossing Buffalo Beach Road, west and east crossing Albert Street) to have a maximum grade of 1 in 14 (7.1%)

8.3 BUFFALO BEACH ROAD

Like Albert Street, Buffalo Beach Road is a former State Highway as provides a link from Albert Street north. The road also has stunning views of Whitianga Beach.

Whitianga Continuing Care has pedestrian access to Buffalo Beach Road, with vehicle access from Halligan Road, which connects with Buffalo Beach Road. As such, an in-depth discussion was held at the Community Consultation Meeting about access for the residents of Whitianga Continuing Care.

Buffalo Beach Road/Eyre Street intersection is approx. 85 m NW of the roundabout at Buffalo Beach Road/Albert Street intersection.

The SE kerb ramp crossing Eyre Street is uneven and broken (creating a tripping hazard), while the NW kerb ramp crossing Eyre Street utilises the driveway at 2a Eyre Street (Waterfront Apartments Whitianga). This extremely dangerous practise as a mobility scooter or wheelchair user is lower to the ground and is harder to see for vehicles reversing.

Figure 16: Kerb ramp on the east side crossing Eyre Street at Buffalo Beach Road

There are no kerb ramps for crossing Buffalo Beach Road at Eyre Street.

Recommendation 24 Replace the kerb ramp on the SE side of Buffalo Beach Road/Eyre Street intersection (crossing Eyre Street) to minimise a tripping hazard. Install a kerb ramp on the NW side crossing Eyre Street.

The **Buffalo Beach Road/Halligan Road intersection** is the main intersection servicing Whitianga Continuing Care. This intersection has a lip kerb on the SE side of the intersection (crossing Halligan Road). The kerb ramp on the NW side of the intersection has a grade of 1 in 7.4 (13.5%) and a carriageway grade of 1 in 4.8 (21%).

There are no kerb ramps for crossing Buffalo Beach Road at this intersection.

Figure 17: Buffalo Beach Road/Halligan Road intersection

Recommendation 25 Replace the lip kerb ramp on the SE side of the Buffalo Beach Road/Halligan Road intersection with a flush kerb. Replace the kerb ramp on the NW side of the same intersection so the maximum grade of 1 in 14 (7.1%) is achieved. Install kerb ramps on the south side of Halligan Road for crossing Buffalo Beach Road.

There is a lip kerb on the NW side crossing **Bruce Street, at the intersection with Buffalo Beach Road.** There are no kerb ramps crossing Buffalo Beach Road at this intersection.

Recommendation 26 Replace the lip kerb with a flush kerb on the NW side of Buffalo Beach Road/Bruce Street, crossing Bruce Street.

Approx. 130m north of Bruce Street is the **intersection of Buffalo Beach Road and Jackman Avenue**. The north kerb grade is out of alignment for crossing Jackman Avenue.

There are no kerb ramps crossing Buffalo Beach Road at Jackman Avenue.

Recommendation 27 Re-align kerb ramp on the north side of Buffalo Beach Road/Jackman Avenue, crossing Jackman Avenue.

Figure 18: NW kerb ramp at Buffalo Beach Road/Jackman Avenue

Buffalo Beach Road joins with Racecourse Road (SH.25) at the north end of Buffalo Beach Road. There is a splitter island on the State Highway to aid pedestrians crossing SH.25 at this intersection. There are no kerb ramps for crossing Buffalo Beach Road.

The kerb ramp on the north side of SH.25 has a grade of 1 in 8.3 (12.1%), while the kerb on the south side of SH.25 has a grade of 1 in 9.1 (11%).

Figure 19: Kerb ramps at Buffalo Beach Road/SH.25 intersection

Recommendation 28 Liaise with NZTA to replace the kerb ramp grade on both sides of SH.25 at Buffalo Beach Road to a maximum grade of 1 in 14 (7.1%).

8.4 COOK DRIVE

Cook Drive runs parallel to Buffalo Beach Road and Albert Street. The New World supermarket is at the intersection with Joan Gaskill Drive/Campbell Street and Natal Estate is located on Springbok Avenue which is connects onto Cook Drive. The Community Consultation meeting identified a large number of older persons living in the Natal Estate.

Figure 20: Cook Drive/Surf Street intersection

Cook Drive/Surf Street intersection is located at the northern end of Cook Drive. The following kerb ramps have steep grades:

- NW kerb ramp crossing Cook Drive – 1 in 9.4 (10.6%);
- NE kerb ramp crossing Surf Street – 1 in 5.9 (16.9%);
- SE kerb ramp crossing Surf Street – 1 in 5.7 (17.4%); and
- SE kerb ramp crossing Cook Drive – 1 in 5.7 (17.4%).

There is no kerb ramp crossing Surf Street on the west side of Cook Drive.

Recommendation 29 Replace the NW and SE kerb ramps crossing Cook Drive and the NE and SE kerb ramps crossing Surf Street to a maximum grade of 1 in 14 (7.1%).

The NE kerb ramp crossing Jackman Avenue at the **Cook Drive/Jackman Avenue intersection** is at a grade of 1 in 8.8 (11.3%) while the NW kerb ramp crossing Cook Drive was measured at a grade of 1 in 9.4 (10.6%). The SE kerb ramp crossing Jackman Avenue has a lip kerb and there is no kerb ramp at the NE side crossing Cook Drive.

Figure 21: Cook Drive/Jackman Avenue intersection

Recommendation 30 At the Cook Drive/Jackman Avenue, replace the NE kerb ramp crossing Jackman Avenue and the NW kerb ramp crossing Cook Drive to a maximum grade of 1 in 14 (7.1%). Replace the lip kerb on the SE corner crossing Jackman Avenue with a flush kerb and install a kerb ramp on the NE corner crossing Cook Drive.

At **Cook Drive/Halligan Road intersection**, the NE kerb ramp crossing Halligan Road was measured at 1 in 8.9 (11.2%).

Recommendation 31 Replace the NE kerb ramp at the Cook Drive/Halligan Road intersection to a maximum grade of 1 in 14 (7.1%).

A new connection has been installed at the **intersection of Cook Drive and Park Lane** which now connects the footpath on Park Lane. The kerb ramp on the east side crossing Cook Drive is at a grade of 1 in 4.7 (21.5%) and the kerb ramp on the west side crossing Cook Drive has a lip kerb.

Figure 22: Cook Drive/Park lane intersection

Recommendation 32 Replace the kerb ramp on the east side crossing Cook Drive at Cook Drive/Park Lane intersection to a maximum grade of 1 in 14 (7.1%). Replace the lip kerb crossing Cook Drive with a flush kerb.

Approx. 300m south of Park Lane along **Cook Drive is a small side road with a formed intersection**. Kerb ramps are missing for crossing this road.

Figure 23: Side Road approx. 300m south of Park Lane along Cook Drive

Recommendation 33 Install kerb ramps at the side road, 300m south of Park Lane, on Cook Drive.

The southern end of Cook Drive at the geographic area of interest is the intersection of Cook Drive/Joan Gaskill Drive/Campbell Street. This intersection has the New World supermarket on the NW corner.

The kerb ramp on the SW corner crossing Joan Gaskill Drive has a grade of 1 in 10.4 (9.6%) while the NW kerb ramp crossing Joan Gaskill Drive has a grade of 1 in 8.9 (11.2%). There is a kerb ramp missing on the SE and SW corners crossing Cook Drive.

Figure 24: Crossing Cook Drive south of Joan Gaskill Drive

Recommendation 34 Replace the SW and NW kerb ramps crossing Joan Gaskill Drive at the intersection of Cook Drive/Joan Gaskill Drive/Campbell Street to a maximum grade of 1 in 14 (7.1%). Install kerb ramps crossing Cook Drive, south of Joan Gaskill Drive.

8.5 CAMPBELL STREET

Campbell Street connects Albert Drive with the main access from the State Highway bypass (Joan Gaskill Drive). A new footpath has been constructed on the south side of Campbell St – from Cook Drive to Albert Street.

The kerb ramps on the north side of Campbell Street at the **intersection of Campbell Street and Mary Street** are not correctly aligned. This creates difficulties for visually impaired users to negotiate the intersection.

Figure 25: Campbell Street/Mary Street intersection

Recommendation 35 Align the kerb ramps on the north side of Campbell Street at the Campbell Street/Mary Street intersection.

The **intersection of Campbell Street and Isabella Street** has new kerb ramps on the south side of Campbell Street. The SW kerb ramp crossing Isabella Street was measured at a grade of 1 in 9.9 (10.1%) and the SE kerb ramp crossing Isabella Street has a grade of 1 in 7.8 (12.9%).

The north side of Campbell Street (crossing Isabella Street) has very narrow kerb ramps on both sides while there are no kerb ramps for crossing Campbell Street at this intersection.

Figure 26: Campbell Street/Isabella Street intersection

Recommendation 36 Replace the SW and SE kerb ramp crossing Isabella Street at Campbell Street to a maximum grade of 1 in 14 (7.1%). Widen the NW and NE kerb ramps crossing Isabella Street to a minimum of 1.8m. Install kerb ramps on each corner for crossing Campbell Street.

At the **intersection of Campbell Street and Victoria Street**, the kerb ramp on the north side of Campbell Street, the kerb ramp is very narrow. This is the same for both kerb ramps at the **Owen Street/Victoria Street intersection**.

Figure 27: Campbell Street/Victoria Street intersection

Recommendation 37 Widen the kerb ramp on the north side of Campbell Street/Victoria Street to a minimum of 1.8m

8.6 MONK STREET

Monk Street provides a pedestrian link from the centre of town to the Wharf. New kerb ramps have been installed at the carpark opposite Mill Road that, although are flush, the face of the kerb is very steep and acts like a lip kerb.

Figure 28: Steep kerb face on Monk Street

At the **Monk Street/Mill Road intersection**, the Kerb ramp on the east side is currently being used for both crossing Monk Street and Mill Road. It also has a lip kerb.

The kerb ramp for the west side of the intersection utilises the vehicle entrance to the Gull Service Station. This practise is extremely dangerous for accessibility users who are unable to move quickly out of the way from a distracted driver.

Figure 29: Using the vehicle entrance at the Gull Service Station on Monk Street as a kerb ramp

Recommendation 38 Replace the kerb ramps at the entrance to the carpark on Monk Street with flush kerbs. Install kerb ramps as shown in figure 9 on the NW and NE corners of Monk Street and Mill Road, and separate the vehicle entrance to the Gull Service Station from the kerb ramp.

8.7 ESPLANADE

The Esplanade continues to provide a link from Albert Street to the Wharf, similar to Monk Street.

The **Esplanade/Monk Street intersection** has a kerb ramp on the south side crossing Monk Street with a grade of 1 in 8.7 (11.5%), while the north side crossing Monk Street is missing a kerb ramp.

Figure 30: Missing kerb ramp at the Esplanade/Monk Street intersection

Recommendation 39 Replace the kerb ramp on the south side of the Esplanade/Monk Street intersection to a maximum grade of 1 in 14 (7.1%) and install a kerb ramp on the north side of the same intersection.

The kerb ramp on the west side of Esplanade/ Mill Road intersection has a grade of 1 in 10.2 (9.8%).

Recommendation 40 Replace the kerb ramp on the west side of Esplanade/Mill Road intersection to have a maximum grade of 1 in 14 (7.1%).

8.8 HANNAN ROAD, EYRE STREET AND SCHOOL ROAD

Hannan Road links between Albert Street and Cook Drive at the northern end of the shopping area on Albert Street.

A kerb ramp is missing on the east side of the **intersection of Hannan Road and Eyre Street**, while a lip kerb is present on the west side of the same intersection.

The kerb ramps at the intersection of Eyre Street/School Road intersection do not align crossing Eyre Street, making it difficult for visually impaired users to navigate the intersection.

Recommendation 41 Install a kerb ramp on the east side of Hannan Road/Eyre Street intersection and replace the lip kerb with a flush kerb on the west side. Align the kerb ramps at the intersection of Eyre Street and School Road.

8.9 VICTORIA STREET

The footpath on Victoria Street at the **Victoria Street/Coghill Street intersection** finishes south of Coghill Street and starts again north of the intersection. Installing kerb ramps will complete the connection across this intersection.

Recommendation 42 Install kerb ramps at the intersection of Victoria Street and Coghill Street, on both sides crossing Coghill Street.

8.10 RE-SEALING

Re-sealing the carriageway can create a small lip where joining the kerb channel. This can require a wheelchair user to stop in the channel before negotiating the barrier. Milling the seal edge before re-sealing can eliminate this problem.

A small lip between the kerb channel and the carriageway was noted at two intersections:

- Albert Street/Buffalo Beach Road – kerb ramp 30m west of Albert Street crossing Buffalo Beach Road; and
- Buffalo Beach Road/SH.25 – both kerb ramps crossing SH.25.

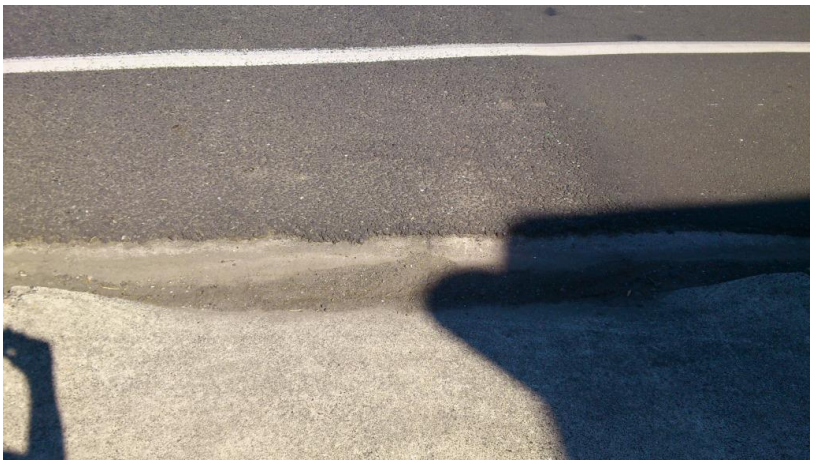

Figure 31: Seal edge join after re-sealing at Buffalo Beach Road/SH.25 intersection

Recommendation 43 Adopt the practise of milling seal edges at the join of the seal and the kerb channel, especially at areas where a flush kerb cut down is present, in maintenance contracts.

9 TACTILES

9.1 USE OF TACTILES[35]

Tactile ground surface indicators (Tactiles) provide pedestrians with visual and sensory information. The two types of Tactiles are Warning Indicators and Directional Indicators.

Warning Indicators alert pedestrians to hazards in the continuous accessible path of travel. They are used to indicate that pedestrians should stop to determine the nature of the hazard before proceeding further. They do not indicate what the hazard will be.

Directional Indicators give directional orientation to blind and vision-impaired people and designate the continuous accessible path of travel when other tactile or environmental cues are insufficient.

When combined with other environmental information, Tactiles assist blind and vision-impaired people with their orientation and awareness of impending obstacles, hazards and changes in the direction of the continuous accessible path of travel.

9.2 VISUAL CONTRAST[36]

Research by Bentzen et al (Accessible design for the blind, May 2000) indicated that the colour 'safety yellow' is so salient, even to persons having very low vision, that it is highly visible even when used in association with adjoining surfaces having a light reflectance value differing by as little as 40%. Their research found that safety yellow Tactiles having a 40% contrast from new concrete was subjectively judged to be more detectable than darker Tactiles having an 86% contrast with new concrete.

Safety yellow is the recommended standard colour for Tactiles and should be the only colour used.

Figure 32: Tactiles at the Campbell Street/Cook Drive intersection

[35] RTS 14 Guidelines for Facilities for Blind and Vision-Impaired Pedestrians
[36] RTS 14 Guidelines for Facilities for Blind and Vision-Impaired Pedestrians – Section 4.3: Visual Contrast

Recommendation 44 When installing Tactiles, ensure the Tactiles are safety yellow as recommended by the RTS 14 Guidelines for Facilities for Blind and Vision Impaired Pedestrians.

9.3 INSTALLATION OF WARNING INDICATORS[37]

Warning Indicators alert people who are blind or vision-impaired to pending obstacles or hazards on the continuous accessible path that could not reasonably be expected or anticipated using other tactile and environmental cues.

Warning Indicators shall be installed to inform blind and vision-impaired people of:

- Life threatening hazards where serious falls may occur;
- All pedestrian kerb crossing points (both formal and informal), paths cut through medians, and other places where the footpath is not separated from the roadway by an abrupt change of grade of at least 12.5% (or 1:8) or with a vertical kerb more than 70mm high;
- The presence of level railway crossings; and
- Overhead impediments or hazards other than doorways (e.g., wall mounted objects and archway structures), with a clearance of less than 2m from ground level, in an accessible open public space with no clearly defined continuous accessible path of travel.

Warning Indicators may also be installed to inform blind and vision-impaired people of:

- Vehicle hazards at busy vehicle crossing points such as: Shopping Centres, Bus Stations and large public car parks; and
- Street furniture inappropriately located in the continuous accessible path of travel and not detectable by a vision-impaired person using the aid of a white cane.

Warning Indicators shall be installed across the full width of all pedestrian kerb crossings (excluding cut down transitions) and paths cut through medians to ensure that all blind and vision-impaired people using these facilities encounter the Warning Indicators. They must also be installed with the front and back edges perpendicular to the crossing direction so that the domes are aligned with the direct line of travel across the road. This will enable blind and vision-impaired people to align themselves correctly with the crossing.

Warning Indicators shall be installed[38]:

[37] RTS 14 Guidelines for Facilities for Blind and Vision-Impaired Pedestrians – Section 4.4: Where are Tactiles installed

- Across the full width of all pedestrian kerb crossings (excluding kerb flares);
- Through medians to ensure that all blind and vision-impaired people using these facilities encounter the warning indicators;
- With the front and back edges perpendicular to the crossing direction to enable blind and vision-impaired people to align themselves correctly;
- So that the domes are aligned with the direct line of travel across the road;
- So that the front edge of the Warning Indicator is no closer than 300mm from the back of kerb;
- So that the front edge of the Warning Indicator is no further than 1000mm from the back of kerb, or to a point where a pedestrian could inadvertently bypass the Warning Indicator and enter the hazard (whichever is closer); and
- To a recommended depth of 600mm (This depth is required to prevent a pedestrian from inadvertently stepping over the Tactiles.)

9.4 INSTALLATION OF DIRECTIONAL INDICATORS

Directional Indicators shall be used to provide directional guidance where a person must deviate from the continuous accessible path of travel to gain access to:

- A road crossing point;
- Public transport access point; and
- Significant public facility e.g. public toilets or information centre.

Where other environmental cues are insufficient, Directional Indicators may also be used to provide directional guidance:

- Across open space from one point to another; or
- Around obstacles in the continuous accessible path of travel (where warning tiles are not sufficient).

Where required, Directional Indicators shall be installed in conjunction with warning indicators where a road crossing point is not located in the continuous accessible path of travel and directional guidance is required (see figure 9 as an example).

[38] RTS 14 Guidelines for Facilities for Blind and Vision-Impaired Pedestrians – Section 4.5.1: Warning Indicators.

Where required, Directional Indicators shall be installed[39]:

- In conjunction with Warning Indicators where a road crossing point is not located in the continuous accessible path of travel and directional guidance is required; and
- Across the full width of the path, with a minimum depth of 600mm to indicate a change in direction of the continuous accessible path of travel.

9.5 MID-BLOCK CROSSING POINTS

Warning Indicators shall be provided at all mid-block crossing points. Directional Indicators are almost certainly required at all mid-block crossing points, unless the crossing point is on the continuous accessible path of travel. In most cases, the footpath will run parallel to the roadway and thus the crossing point will not be on the continuous accessible path of travel.

Where Warning Indicators are installed in medians, they shall cover the full width of the median cut through or kerb ramp. The layout of the Tactiles in the median will vary depending on the depth of the median and shape of the island cut through.

Recommendation 45 Install Warning Indicators at all pedestrian crossings points and refuge islands. This includes at intersections and mid-block pedestrian crossings.

Recommendation 46 Install Directional Indicators as per RTS 14 Guidelines at all pedestrian crossings points where a road crossing point is not located in the continuous accessible path of travel and directional guidance is required.

9.6 BUFFALO BEACH ROAD

The following locations on Buffalo Beach Road require the installation of Warning Indicators only:

- Intersections with Surf Street, Jackman Avenue (see figure 18), Bruce Street, and Eyre Street – both sides crossing side streets;
- Halligan Road (see figure 17) – north side crossing Halligan; and
- Albert Street – NE side crossing Buffalo Beach Road.

[39] RTS 14 Guidelines for Facilities for Blind and Vision-Impaired Pedestrians – Section 4.5.2: Directional Indicators.

Figure 33: Crossing Buffalo Beach Road at Albert Street

The following locations require the installation of both Warning Indicators and Directional Indicators:

- SH.25 – both sides;
- Halligan Road (see figure 17) – south side only; and
- Albert Street – both sides crossing Albert Street.

Recommendation 47 Install Warning Indicators on Buffalo Beach Road at the following locations:

- Intersections with Surf Street, Jackman Avenue, Bruce Street, and Eyre Street – both sides crossing side streets;
- Halligan Road – north side crossing Halligan; and
- Albert Street – NE side crossing Buffalo Beach Road.

Recommendation 48 Install both Warning and Directional Indicators on Buffalo Beach Road at the following locations:

- SH.25 – both sides;
- Halligan Road – south side only; and
- Albert Street – both sides crossing Albert Street.

9.7 ALBERT STREET

The following locations on Albert Street require the installation of Warning Indicators only:

- Hannan Road – south side crossing Hannan Road;
- Lee Street and Blacksmith Lane – both sides crossing side street;
- Coghill Street – NW corner crossing Coghill Street;
- Campbell Street – NW, SW, and SE corners crossing Campbell Street; and
- Owen Street – all corners crossing Owen Street.

The installation of Directional Indicators only is required at the pedestrian crossing on Albert Street south of Coghill Street (both sides).

The following locations require the installation of both Warning Indicators and Directional Indicators:

- Albert Street – Hannan Road – north side crossing Hannan Road;
- Albert Street – Monk Street – both sides crossing Monk Street; and
- Albert Street – mid block pedestrian crossing between Monk Street and Lee Street – both sides.

Recommendation 49 Install Warning Indicators on Albert Street at the following locations:

- Hannan Road – south side crossing Hannan Road;
- Lee Street and Blacksmith Lane – both sides crossing side street;
- Coghill Street – NW corner crossing Coghill Street;
- Campbell Street – NW, SW, and SE corners crossing Campbell Street; and
- Owen Street – all corners crossing Owen Street.

Recommendation 50 Install Directional Indicators at the pedestrian crossing on Albert Street south of Coghill Street (both sides).

Recommendation 51 Install both Warning and Directional Indicators on Albert Street the following locations:

- Albert Street – Hannan Road – north side crossing Hannan Road;
- Albert Street – Monk Street – both sides crossing Monk Street; and
- Albert Street – mid block pedestrian crossing between Monk Street and Lee Street – both sides.

9.8 COOK DRIVE

The following locations on Cook Drive require the installation of Warning Indicators only:

- Jackman Avenue – NE corner crossing Jackman Avenue;
- Hannan Road – both sides crossing Hannan Road;
- Whitby Avenue – both sides crossing Whitby Avenue;
- Lee Street – central refuge island;
- Two mid-block refuge islands between Lee Street and Campbell Street;
- Campbell Street – central refuge island; and
- Joan Gaskill Drive – SE corner crossing Joan Gaskill Drive.

The installation of Directional Indicators only is required at the following locations:

- Surf Street – SE corner crossing Surf Street and Cook Drive;
- Halligan Road – SE corner crossing Halligan Road; and
- Park Lane – east side crossing Cook Drive.

The following locations require the installation of both Warning Indicators and Directional Indicators:

- Jackman Avenue – SE corner crossing Jackman Avenue;
- Lee Street – both sides crossing Lee Street;
- Two mid-block refuge islands between Lee Street and Campbell Street – both sides;

Figure 34: Refuge Island on Cook Drive - between Lee Street and Campbell Street

- Campbell Street – SE corner crossing Campbell Street; and
- Joan Gaskill Drive – NE corner crossing Joan Gaskill Drive.

Recommendation 52 Install Warning Indicators on Cook Drive at the following locations:

- Jackman Avenue – NE corner crossing Jackman Avenue;
- Hannan Road – both sides crossing Hannan Road;
- Whitby Avenue – both sides crossing Whitby Avenue;
- Lee Street – central refuge island;
- Two mid-block refuge islands between Lee Street and Campbell Street;
- Campbell Street – central refuge island; and
- Joan Gaskill Drive – SE corner crossing Joan Gaskill Drive.

Recommendation 53 Install Directional Indicators on Cook Drive at the following locations:

- Surf Street – SE corner crossing Surf Street and Cook Drive;
- Halligan Road – SE corner crossing Halligan Road; and
- Park Lane – east side crossing Cook Drive.

Recommendation 54 Install both Warning Indicators and Directional Indicators on Cook Drive at the following locations:

- Jackman Avenue – SE corner crossing Jackman Avenue;
- Lee Street – both sides crossing Lee Street;
- Two mid-block refuge islands between Lee Street and Campbell Street – both sides;
- Campbell Street – SE corner crossing Campbell Street; and
- Joan Gaskill Drive – NE corner crossing Joan Gaskill Drive.

9.9 HALLIGAN ROAD

The installation of both Warning and Directional Indicators are required at the intersection with Mercury Street – crossing Halligan Road.

Recommendation 55 Install both Warning and Directional Indicators at the intersection of Halligan Road/Mercury Street – crossing Halligan Road.

9.10 EYRE STREET

The installation of Warning Indicators is required at the intersection with School Road – crossing School Road.

Recommendation 56 Install Warning Indicators at the intersection of Eyre Street/School Road – crossing School Road.

9.11 ESPLANADE

The installation of Warning Indicators is required at the intersections of Mill Road and Monk Street – both sides crossing the side streets.

Recommendation 57 Install Warning Indicators on the Esplanade at the intersections of Mill Road and Monk Street – both sides crossing the side streets.

9.12 MONK STREET

The installation of Warning Indicators is required at the intersection with Mill Road – crossing Mill Road.

Recommendation 58 Install Warning Indicators at the intersection of Monk Street/Mill Road – crossing Mill Road.

9.13 VICTORIA STREET

The following locations on Victoria Street require the installation of Warning Indicators only:

- Coghill Street – both sides crossing Coghill Street;
- Campbell Street – north side crossing Campbell Street; and
- Owen Street – south side crossing Owen Street.

The following locations require the installation of both Warning Indicators and Directional Indicators:

- Blacksmith Lane – both sides crossing Victoria Street;
- Campbell Street – south side crossing Campbell Street; and
- Owen Street – north side crossing Owen Street.

Recommendation 59 Install Warning Indicators on Victoria Street at the following locations:

- Coghill Street – both sides crossing Coghill Street;
- Campbell Street – north side crossing Campbell Street; and
- Owen Street – south side crossing Owen Street.

Recommendation 60 Install both Warning and Directional Indicators on Victoria Street at the following locations:

- Blacksmith Lane – both sides crossing Victoria Street;
- Campbell Street – south side crossing Campbell Street; and
- Owen Street – north side crossing Owen Street.

9.14 CAMPBELL STREET

The installation of Warning Indicators is required at the intersection with Isabella Street – crossing Isabella Street.

Recommendation 61 Install Warning Indicators at the intersection of Campbell Street/Isabella Street – crossing Isabella Street.

9.15 LEE STREET

The installation of Warning Indicators is required at the centre refuge island between the carpark and the Cinema.

The installation of Warning and Directional Indicators is required at the mid-block refuge island between the carpark and the Cinema.

Recommendation 62 Install Warning Indicators on Lee Street at the centre refuge island between the carpark and the Cinema.

Recommendation 63 Install Warning and Directional Indicators on Lee Street at the mid-block refuge island between the carpark and the Cinema.

9.16 WIDTH OF WARNING INDICATORS

It is important that the Warning Indicators are across the full width of the crossing point. Any gaps and the Warning Indicators could be missed, along with the vital information they provide.

As all kerb ramps at the intersections are under the recommended width, as recommendation 10 is carried out, Warning Indicators should be installed to the full width of the kerb ramp.

Recommendation 64 Ensure all Warning Indicators are installed to the full width of the kerb ramp as required in Recommendation 13.

9.17 ALIGNMENT OF TACTILES

As mentioned above, correct alignment of Tactiles enables blind and vision-impaired people to align themselves correctly with the crossing.

The Tactiles at the intersection of Cook Drive/Springbok Avenue need re-alignment.

Figure 35: Tactiles directing visually impaired users into the intersection of Cook Drive/Springbok Avenue

Recommendation 65 Ensure all Tactiles installed in future works align the user to the crossing alignment.

9.18 OTHER VISUAL CUES

Sometimes it is necessary to provide contrasting visual guidance without the need for installing Warning or Directional Indicators. A yellow guideline at the boundary of the Z Service Station at the Albert Street/Campbell Street intersection and at the Gull Service Station at the Monk Street/Mill Road intersection will provide delineation of the footpath for visually impaired users.

Figure 36: Vehicle entrance to the Z Service Station at the intersection of Albert Street and Campbell Street

Recommendation 66 Install yellow lines at the Service Station at the intersections of Albert Street/Campbell Street and Monk Street/Mill Road to delineate the footpath.

10 FOOTPATHS

10.1 PROVISION OF FOOTPATHS

Footpaths enable pedestrians to get to and from their place of work or school and move around the community to meet in social, sporting, work or cultural events. A safe and effective footpath with continuous connectivity provides good access to the community for the mobility impaired.

A number of improvements have been made to the footpaths in the main shopping centre of Whitianga. As a result, cobblestones have been laid to create a softer, more appealing environment.

A very common practise in smaller urban settlements in New Zealand is to install footpaths on one side only. This is considered as the minimum provision and the road controlling authority should be able to demonstrate clearly why walking is not expected in that area. In the case of new developments, this responsibility passes onto the developer. Retro-fitting is costly to TCDC, so the preferred standard is to install them in any new developments.[40]

The PPDG provides guidance for providing footpaths:

<table>
<tr><th rowspan="3">Land Use</th><th colspan="4">Footpath Provision</th></tr>
<tr><th colspan="2">New Roads</th><th colspan="2">Existing Roads</th></tr>
<tr><th>Preferred</th><th>Minimum</th><th>Preferred</th><th>Minimum</th></tr>
<tr><td>Commercial & Industrial</td><td colspan="2" rowspan="4">Both Sides</td><td colspan="2" rowspan="3">Both Sides</td></tr>
<tr><td>Residential (on Arterials)</td></tr>
<tr><td>Residential (on Collector roads)</td></tr>
<tr><td>Residential (on Local Streets</td><td>Both Sides</td><td>One Side</td></tr>
</table>

Table 2: When to Provide Footpaths[41]

[40] Pedestrian Planning Design Guidelines Section 14.1: Where Footpaths Should Be Provided
[41] Pedestrian Planning Design Guidelines Table 14.1: When to Provide Footpaths

For the mobility impaired user, having a footpath on one side often means having to use the road for access. Ideally, footpaths should be provided on both sides of the road for full accessibility. In situations where a footpath is only on one side, regular connections should be made available for access to the footpath.

The roads assessed in the geographic area of interest have the following footpath provisions:

Road Name	**Provision of Footpath**
Buffalo Beach Road	West side East side – 820m south of SH.25 to Albert Street
Albert Street	Both sides
Cook Drive	West Side – 116 Cook Drive to Joan Gaskill Drive East Side
Esplanade	West side East side – Wharf entrance south for 40m
Surf Street	South side
Jackman Avenue	South side
Bruce Street	South side
Mercury Street	East side
Halligan Road	South side
Eyre Street	West side
School Road	South side
Hannan Road	North side – Cook Drive to #15; Eyre Street to Albert Street South side
Mill Road	East side
Monk Street	Both sides

Lee Street	Both sides
Blacksmith Lane	North side South side – Victoria Street to Esplanade
Coghill Street	North side – Mary Street to 5 Coghill Street South side – Isabella Street to 2 Coghill Street
Campbell Street	North side – Mary Street to 3 Campbell Street South side
Mary Street	West side
Isabella Street	Both sides
Owen Street	South side
Victoria Street	West side East side – Campbell Street to Blacksmith Lane

Table 3: Provision of Footpath in the Geographic Area of Interest of Whitianga

A study of vehicle and pedestrian volumes is required to prioritise the installation of footpaths at the locations listed above. An initiative that CCS Disability Action can provide is to measure the number of pedestrians with mobility aids that will contribute and enhance the study of pedestrians in this area.

Recommendation 67 Create a long term programme to install approx. 1500m of footpath on both sides of all roads to meet the requirements of PPDG. The priority for the installation of footpaths is dependent on traffic and pedestrian volumes as well as measuring the number of pedestrians with mobility aids on these side roads, with the highest volumes being top priority. For the geographic area of interest, install footpaths on:

- Esplanade – East side, 40m south of the Wharf to Blacksmith Lane (approx. 275m);
- Surf Street, Jackman Avenue, Bruce Street, Halligan Road, School Road, and Owen Street – north side (approx. 770m); and
- Mercury Street and Eyre Street – west side (approx. 460m).

Recommendation 68 Install footpaths on:

- Hannan Road – 15 Hannan Road to Eyre Street (approx.150m);
- Coghill Street – 5 Coghill Street to Victoria Street (approx. 30m);
- Coghill Street – 2 Coghill Street to Victoria Street (approx. 35m);
- Campbell Street – 3 Campbell Street to Victoria Street (approx. 35m); and
- Victoria Street – east side Owen Street to Campbell Street (approx. 100m).

10.2 BUFFALO BEACH ROAD

Buffalo Beach Road runs parallel to the Whitianga Beach. A walkway is currently under construction on the east side with views over the beach. Extending this walkway for a further 820m will complete this pedestrian network to SH.25.

Extending the walkway approx. 380m east to the Wharf along the Esplanade will complete the connection from SH.25 to the Wharf.

Figure 37: Track on east side of Buffalo Beach Road near SH.25

Recommendation 69 Extend the walkway under construction on the east side of Buffalo Beach Road for a further 820m to complete the pedestrian network to SH.25. Extend the walkway approx. 380m west along the Esplanade to connect SH.25 to the Wharf

10.3 COOK DRIVE

The section of Cook Drive that is included in the geographic area of interest is a Collector Road with an average Annual Daily Traffic (ADT) volume of approx. 2670 veh./day.

The footpath on the west side of Cook Drive starts at 116 Cook Drive, and heads south to Joan Gaskill Drive.

To suit the requirements of the PPDG, approx. 750m of footpath from 116 Cook Drive to Surf Street is required to complete the pedestrian network on Cook Drive.

Figure 38: Cook Drive - looking north

Recommendation 70 Extend the footpath on Cook Drive approx. 750m from 116 Cook Drive to Surf Street.

10.4 BLACKSMITH LANE

Blacksmith Lane connects Albert Street to the Library. A metal path is located at the front of the 90° carparking available on the south side from Albert Street to Victoria Street.

Figure 39: Blacksmith lane

Providing a footpath connection will improve access to the Library from the Public Toilets and Albert Street as well as safe access from the three Mobility Spaces.

Recommendation 71 Install approx. 70m of concrete footpath on the south side of Blacksmith Lane, from Albert Street to Victoria Street.

10.5 FOOTPATH WIDTH

Footpath width is often under-rated for accessibility. A wider footpath provides a safer passage of use for mobility scooters, wheelchairs, and pushchairs eliminating the requirement to use an uneven surface, such as a grass berm.

The PPDG provides the following guidelines for the through route of footpaths:

Location	Maximum pedestrian flow	Through route width
Arterial roads in pedestrian districts; CBD; alongside parks and schools; other major pedestrian generators	80 p/min	>2.4m
Local roads in pedestrian districts; Commercial/ industrial areas outside the CBD; Collector roads	60 p/min	1.8 m
Local roads in residential areas	50 p/min	1.5 m
Absolute minimum*	50 p/min	1.5 m

Table 4: Minimum Footpath Dimensions[42]

*Note: The absolute minimum width is only acceptable in existing constrained conditions and where it is not possible to reallocate road space.

Most of the footpaths in the outside of the shopping precinct are equal to or below the absolute minimum of 1.5m. A narrow footpath creates difficulty for mobility scooters and pushchairs to pass. With a steep crossfall, a narrow footpath can also limit recovery time if an access user loses control of their scooter or wheelchair.

[42] Pedestrian Planning and Design Guidelines – Table 14.3: Minimum footpath dimensions

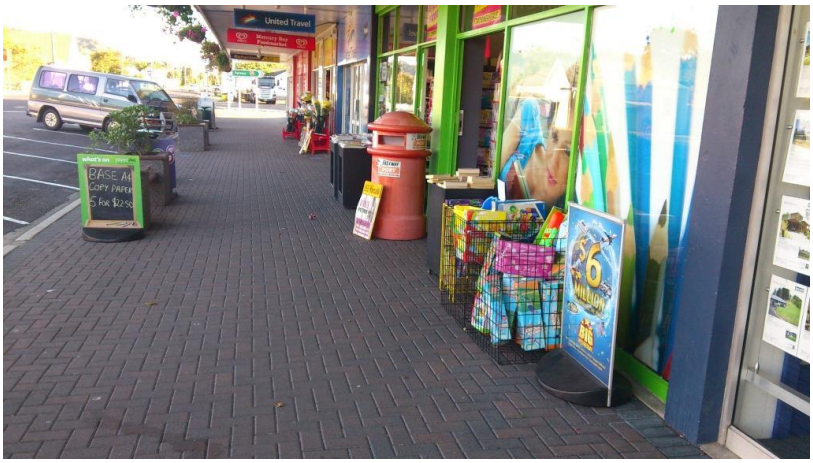

Figure 40: The wide footpath on Albert Street.

Below is a table showing the recommended width of footpath for each road inside the geographic area of interest:

Road Name	Road Hierarchy	Current Footpath Width	Footpath Width in Terms of PPDG
Albert Street – west side, north of Hannan Road and south of Campbell Street. Albert Street – east side, north of 24 Albert Street. Albert Street Shopping Precinct	Collector	≤1.5m >1.8m	1.8m
Buffalo Beach Road	Collector	≤1.5m	1.8m
Cook Drive	Collector	≤1.5m	1.8m
Bruce Street Campbell Street Coghill Street Eyre Street Halligan Road Hannan Road Isabella Street Jackman Avenue Mary Street	Local	≤1.5m	1.5m

Mercury Street Mill Road Owen Street School Road Surf Street Victoria Street			
Blacksmith Lane Lee Street Monk Street	Local	>1.5m	1.5m

Table 5: Required Footpath Widths

Recommendation 72 Replace footpaths to the widths as stated by the Pedestrian Planning Design Guide when footpaths are upgraded as part of the maintenance programme.

10.6 VEGETATION

When narrower than standard footpaths are provided, extra consideration is required to maintain width by managing vegetation. Also, low hanging branches can cause injury or restrict sight visibility.

The only area of concern for vegetation was at 20 Victoria Street.

Figure 41: Vegetation at 20 Victoria Street

Recommendation 73 Maintain the footpath widths by liaising with adjoining land owners to trim vegetation extending from the boundary over the footpath.

10.7 SURFACE

It has become common practise in New Zealand to install cobblestones in the main shopping centres. These are mainly installed to improve the aesthetics of the area, and highlight a pedestrian feel to the environment.

There are two concerns for the access user when it comes to using cobblestones.

Figure 42: Cobblestones on Albert Street

The main concern is the potential for introducing tripping hazards when the cobblestones settle, particularly when reinstated after underground service work. Unless the supporting aggregate is evenly compacted, the cobblestones will settle unevenly. The end result will then create small tripping hazards where the cobblestones join.

TCDC has used cobblestones to beautify the main shopping precinct. It was noted that during the time of the audit, these are currently in good condition. The cobblestones are just starting to show wear and tear.

The lesser concern is the vibration wheelchair users receive when travelling along cobblestone paths. Power wheelchair users are particularly affected as the vibration can cause tiredness in their hands when using their joysticks to drive. This can potentially cause loss of control.

Recommendation 74 Adopt a policy that ensures that cobblestones are no longer considered as a pavement option.

Recommendation 75 Regularly monitor and replace cobblestones as required during the maintenance programme with asphaltic concrete or concrete to minimise potential tripping hazards when the cobblestones become loose or uneven due to underground service work or settlement of the basecourse.

Concrete is the preferred option of surface for footpaths as an even surface can be obtained between expansion joints in the concrete. Care needs to be taken by contractors replacing underground services as they should sawcut the concrete or replace the concrete panel.

Asphaltic concrete is also acceptable with care again required by contractors during reinstatement to prevent uneven settlement.

Like cobblestones, an uneven surface of concrete and asphaltic concrete, due to tree roots, underground service work and basecourse failure can cause potential

tripping hazards. This can also create ponding issues which create a slippery surface.

The join of the footpath to the berm is important for mobility scooter and wheelchair users, as well as visually impaired users. Having a drop between the surfaces can cause injury if the pedestrian strays from the footpath.

Figure 43: Broken concrete at join 8-10 Albert Street

Throughout the site investigation, defects in the footpath were marked for repair. This was very pleasing to see as it shows TCDC has a good maintenance programme in place.

Figure 44: Footpath repair marking on Esplanade

Specific repairs of footpaths include:

- Design imprint frames on walkway along Buffalo Road (need to be flush);

Figure 45: Design imprints on the walkway along Buffalo Beach Road

- Service cover at 23 Albert Street;

Figure 46: Service cover at 23 Albert Street

- Service cover at the intersection of Cook Drive/Jackman Avenue;
- Footpath repair at 8-10 Albert Street;
- Concrete joins at 18-20 Lee Street;
- Berm repair required on south side of Campbell Street;

Figure 47: Berm repair required on Campbell Street

- Berm repair required on walkway along Buffalo Beach Road;

Figure 48: Berm repair required along walkway

- Footpath repair at 8-10 Albert Street;
- Convert the entrance at the Museum on Esplanade to a formal vehicle entrance; and

Figure 49: Entrance to Museum

- Metal spillage from private property on Mill Road (On Fire Café) and Cook Drive/Campbell Street intersection.

Figure 50: Loose metal on footpath at Cook Drive/Campbell Street intersection

Recommendation 76 Maintain the good maintenance programme to ensure a high standard of footpath is provided in Whitianga.

Recommendation 77 Repair the footpath at the following locations:

- Design imprint frames on walkway along Buffalo Road (need to be flush);
- Service cover at 23 Albert Street;
- Service cover at the intersection of Cook Drive/Jackman Avenue;
- Footpath repair at 8-10 Albert Street;
- Concrete joins at 18-20 Lee Street;
- Berm repair required on south side of Campbell Street;
- Berm repair required on walkway along Buffalo Beach Road;
- Footpath repair at 8-10 Albert Street;
- Convert the entrance at the Museum on Esplanade to a formal vehicle entrance; and
- Metal spillage from private property on Mill Road (On Fire Café) and Cook Drive/Campbell Street intersection.

10.8 LONGITUDINAL GRADIENT

Longitudinal gradient is a major concern for users with mobility devices.

As with kerb ramps, design standards regard longitudinal grades greater than 1 in 20 (5%) on footpaths as ramps[43]. CCS Disability Action considers '1 in 8 (12.5%) as an absolute maximum' too steep and unable to be independently and safely used by

[43] NZS 4121:2001 Section 6.2.3: Footpaths as ramps

mobility scooters and wheelchairs. An absolute maximum grade of 1 in 12 (8.5%) is permissible on existing key pedestrian routes as grades steeper than this are generally not able to be negotiated.

Recommendation 78 Adopt an absolute maximum longitudinal grade of 1 in 12 (8.3%) for existing grades with a desirable maximum grade of 1 in 14 (7.1%) for future proposed works.

For the geographic area of interest for Whitianga, this is only a concern in three locations:

- Lee Street entrance to carpark – Driveway closest to Albert Street – 1 in 8.1(12.4%); and
- Lee Street entrance to carpark – Driveway furthest from Albert Street – 1 in 3.7 (27.1%).

Figure 51: steep longitudinal gradient at the entrance to Lee Street Carpark

Recommendation 79 Replace the longitudinal grades at the entrance to the carpark on Lee Street to a longitudinal grade of 1 in 14 (7.1%).

10.9 CROSSFALL

As with longitudinal gradients, crossfall is a major concern for users with mobility devices. Design standards recommend a crossfall of between 1% and 2%[44]. A grade of greater than 1% requires people using wheelchairs and walking frames to use extra energy to resist the sideways forces. As the majority of footpaths drain to the road, this can lead to the user dropping over the kerb and into the live traffic lane.

The majority of footpaths in the geographic area of interest had a crossfall of greater than 2%.

Recommendation 80 Adopt 1% as the crossfall standard, and upgrade existing footpaths to this grade when replaced.

[44] Pedestrian Planning and Design Guidelines Section 14.5: Crossfall and NZS 4121:2001 Section 6: Footpaths, Ramps, and Landings

10.10 VEHICLES PARKING ON FOOTPATH

Cars parking on the footpath are always a concern for mobility users. Not only can they reduce the usable width of the footpath, but they also create sight line issues for people in wheelchairs and mobility users.

Pedestrians require differing spaces within which to manoeuvre. Newer wheelchairs are increasingly wider than their predecessors and this should be considered when designing for pedestrians. Mobility scooters are usually longer but the same width as manual wheelchairs.

A clear width of 1000 mm is adequate for people with ambulant disabilities. It just allows passage for 80 percent of people who use wheelchairs. People who use wheelchairs require a clear width of 1.2 metres[45] (see figure 35).

This was raised at the Community Consultation Meeting and is a concern for residents. Parking on the footpath was noted at:

- Lee Street – next to Liquorland;
- Cook Drive/Campbell Street intersection; and
- Isabella Street.

Recommendation 81 Regularly control car parking on the footpath to maintain a clear, usable footpath.

[45] Pedestrian Planning & Design Guide Section 3.3: Physical Space Required

11 STREET CROSSINGS

11.1 PROVISION OF CROSSINGS[46]

Pedestrians cross the road an average of two to three times on every walking trip. Perceptions of the walking experience are focused on difficulties crossing roads. Any problems with this can cause delays and create a sense of insecurity. By providing effective crossings, the walking experience is enhanced and becomes more user-friendly.

There are four main reasons for installing pedestrian crossing facilities:

- Level of service – The crossing opportunities available to pedestrians;
- Safety – Crash records show that specific pedestrian crashes may be reduced by providing crossing assistance, or that perceptions of poor safety are discouraging walking;
- Specific access provisions – A particular group (e.g. young children, vision and mobility impaired people) crossing; and
- Integration – Part of integrating and reinforcing a wider traffic management plan for the area.

11.2 LEVEL OF SERVICE

The level of service for pedestrians is calculated by the time taken to safely cross the road, the volume of traffic, and physical aids to improve crossings. The longer it takes, the more frustrated pedestrians become, and the more likely they are going to take risks.

NZTA has developed a Pedestrian Crossing Facilities Calculation Spreadsheet and is attached as Appendix D. The spreadsheet is also available on NZTA's website.

There are a number of pedestrian crossing facilities that are available to provide safe and effective opportunities for pedestrians to cross the road.

[46] Pedestrian Planning and Design Guidelines – Section 15: Crossings

The Pedestrian Crossing Facilities Calculation Spreadsheet considers the following methods of providing safety when crossing the road:

- Without Crossing Facility;
- Platform;
- Kerb extensions;
- Median Refuge;
- Combining Kerb extensions and median refuge;
- Zebra crossings;
- Traffic signals; and
- Grade separation.

Recommendation 82 Adopt the Pedestrian Crossing Facilities Calculation Spreadsheet for use when determining pedestrian crossing facilities.

11.3 KERB EXTENSIONS[47]

Kerb extensions are created by widening the footpath at intersections or mid-blocks, and extending it into and across parking lanes to the edge of the traffic lane. This improves visibility of pedestrians by traffic and reduces the distance to cross the road.

Advantages for kerb extensions are:

- Pedestrian safety is improved by kerb extensions – with an estimated pedestrian crash reduction of 36 percent (twice that of pedestrian islands alone). This is because pedestrians are more visible to oncoming drivers and pedestrians get a better view of approaching traffic;
- Pedestrian delay is reduced due to the shorter crossing distance and, therefore, crossing time which permits pedestrians to select a smaller gap (but to a much lesser extent than pedestrian islands);
- They can be retrofitted to existing roads;
- They create space for pedestrians to wait without blocking others walking past;
- They create space for installing kerb ramps;
- They physically prevent drivers from parking (and blocking) the crossing point;
- Road berms gain additional space which can be used for landscaping, cycle racks and street furniture (as long as visibility is maintained);
- The can help slow vehicle speeds;

[47] Pedestrian Planning Design Guide: Section 6.7.3 – Kerb Extensions

- They ensure that car parking does not obscure visibility for vehicles at intersections; and
- Signs and traffic signal displays can be located where they are easily seen by approaching traffic.

Disadvantages for kerb extensions are that they:

- Reduce on-street parking;
- Can force cyclists closer to motorised traffic on narrow roads;
- Can create drainage problems and rubbish can accumulate;
- Can create an obstruction that may be struck by cyclists and motorised vehicles.

Kerb extensions have particular safety benefits and also result in less delay for pedestrians. They will be most beneficial on roads with flows less than 500 vehicles per hour. They can be used on any class of road and can be retrofitted as necessary.

They are particularly useful when combined with pedestrian platforms, zebra crossings, traffic signals and, where there is sufficient room, pedestrian refuge islands.

11.4 PEDESTRIAN PLATFORMS[48]

Pedestrian platforms are raised and sometimes specially textured areas of roadway that act as a focus for crossings. However, they are part of the roadway and pedestrians have to give way to vehicles unless the platform is also marked as a zebra crossing.

Advantages of Pedestrian Platforms include:

- Emphasising pedestrian movements at the expense of vehicular traffic;
- Helping to focus traffic on pedestrians crossing;
- Being aesthetically pleasing;
- Reinforcing the slow speed message to drivers;
- Being highly effective at reducing vehicle speeds;
- Eliminating grade changes from the pedestrian route and, therefore, the need for kerb ramps; and
- More drivers yielding to pedestrians.

[48] Pedestrian Planning Design Guide: Section 6.7.4 – Pedestrian Platforms

Disadvantages for Pedestrian Platforms are that they:

- Only work effectively when vehicle speeds can be reduced to where drivers are able and prepared to slow or stop;
- Although still part of the roadway, may cause confusion as to who has the right of way;
- Can create discomfort for vehicle occupants, especially those in heavy vehicles (while platforms are less suited to bus routes, they can be designed to accommodate buses);
- Should preferably not be used in isolation; but form part of a larger (area-wide) scheme;
- May increase noise as vehicles brake, slow, pass over them and accelerate; and
- Vision impaired pedestrians and children may not be aware they are entering the roadway on a raised platform, so there needs to be clear discrimination between the road and footpath.

Platforms are generally installed on local roads and sometimes on collector roads. They are not installed on arterial roads except in major shopping areas where the need for traffic calming and pedestrian assistance exceeds the arterial function. They can be retrofitted at both intersections and mid-block and are particularly useful in traffic calmed areas (where they serve the same purpose as road humps). Where motorists need to stop and give way, the platforms should be marked as zebra crossings. In areas where heavy vehicles are part of the traffic, careful design and liaison will be necessary.

Do not use where traffic approach speeds exceed 50 km/h.

11.5 PEDESTRIAN REFUGE ISLANDS[49]

Pedestrian Refuge Islands are elongated, raised portions of pavement within the roadway that provide a place for pedestrians to wait before crossing the next part of the road. Crossing pedestrians only need to find a gap in one stream of traffic, meaning larger and more frequent gaps and significantly reduced crossing times.

Advantages for Refuge Islands are:

- Reduce the crossing area where pedestrians are in conflict with traffic;
- Can considerably reduce delays for pedestrians (by up to 90 percent);
- Can be retrofitted to existing roads;
- Are particularly helpful to pedestrians unable to judge distances accurately or who have slower walking speeds;

[49] Pedestrian Planning Design Guide: Section 6.7.1 – Pedestrian Islands

- Can improve safety with an estimated pedestrian crash reduction of 18% (or 32% when combined with kerb extensions);
- Pedestrians on the island are more visible to oncoming drivers, and pedestrians can see oncoming traffic better; and
- The localised roadway narrowing encourages lower vehicle speeds.

Disadvantages of Refuge Islands are that they:

- Restrict vehicle access to adjacent driveways;
- Can force cyclists closer to motorised traffic on narrower roads;
- Can disrupt drainage causing water to pond within the island or adjacent kerb ramps;
- Need a wide roadway to ensure adequate space after installation;
- Can be an obstacle which may be struck by motorised traffic if not particularly conspicuous.

Because the main effect of pedestrian islands is reduction in pedestrian delay, they are most useful where traffic flows exceed 500 vehicles per hour.

Pedestrian islands are nearly always highly cost effective in improving pedestrian safety and reducing delay. They can be incorporated whenever a raised island is created as part of a roading scheme, for example deflection and splitter islands.

Pedestrian islands can be combined with kerb extensions and platforms.

Flush medians should include regular pedestrian islands to reduce inappropriate motor vehicle use of the medians and to improve pedestrian feelings of security on them. Although they can be retrofitted, they should be considered as a matter of course in all new/improved roading schemes.

Pedestrian refuge islands should ideally be at least 1.8 metres wide (narrow refuge islands put pedestrians at risk of being hit by truck side mirrors) and can be part of an un-signalised pedestrian crossing[50]. This width also allows for a mobility scooter to fully park on the refuge island (most mobility scooters range from 1.3m to 1.5m in length).

Figure 52: Ideal pedestrian refuge island crossing facility

[50] International Road Assessment Programme – Road Safety Toolkit

Pedestrian refuge islands can be used where there is a demand for pedestrians to cross the road, but where the numbers of pedestrians are not high enough to warrant a signalised pedestrian crossing[51].

11.6 PEDESTRIAN ZEBRA CROSSINGS[52]

A pedestrian zebra crossing is a section of roadway running from kerb to kerb and marked with longitudinal markings. Drivers are required to give way to pedestrians on both sides of all zebra crossings unless the crossing is divided by a raised traffic island.

Advantages of a zebra crossing are that they:

- Provide the least delay for pedestrians;
- Can be retrofitted to existing roads;
- Create a clear focus for crossings; and
- If raised (as a platform), slow vehicle speeds and can improve safety.

Disadvantages are:

- On their own, do not improve pedestrian safety and may even decrease it;
- Can lead to an increase in 'nose-to-tail' vehicle accidents.
- Drivers may not stop when pedestrians expect them to.
- High pedestrian flows can dominate the crossing and cause severe traffic disruptions.
- Wide markings can be slippery when wet for cyclists and motorcyclists.
- Pedestrians may step out without checking properly whether approaching vehicles are too close to stop.

Zebra crossings need to be combined with other measures to enhance their safety. Do not use zebra crossings on roads with speed limits over 50 km/h unless approval is obtained from Land Transport NZ as required by the Traffic Control Devices Rule.

Do not use zebra crossings for locations with fewer than 50 pedestrians per hour.

11.7 MID BLOCK PEDESTRIAN SIGNALS[53]

Mid-block pedestrian signals are installations that stop traffic so pedestrians can cross unimpeded. The signals are activated by pedestrians, vehicles are stopped, pedestrians cross and then vehicles are allowed to proceed.

[51] International Road Assessment Programme – Road Safety Toolkit
[52] Pedestrian Planning Design Guide: Section 6.7.5 – Pedestrian zebra crossings
[53] Pedestrian Planning Design Guide: Section 6.7.6 Mid-block Pedestrian Signals

Mid-block pedestrian signals can include intelligent features, such as extending the pedestrian phase for slow pedestrians and detecting that pedestrians have already crossed prior to the pedestrian phase being displayed.

Advantages for Mid-block Pedestrian Signals:

- Clearly show when to cross;
- Balance the delays to pedestrians and traffic;
- Can reduce community severance;
- Are very safe for pedestrians when used properly. Signals take the decision on when it is safe to cross away from the pedestrian. Pedestrians group together, rather than crossing intermittently.

Disadvantages for Mid-Block Pedestrian Signals include:

- Delaying pedestrians more than zebra crossings;
- Being more costly to install, operate and maintain than other crossing types;
- Being more disruptive to traffic flows than other crossing types apart from zebra crossings;
- Being more dangerous when crossing near the signals or against the signals.
- Slower pedestrians may find it difficult to cross within the allotted time. Intelligent features can assist this.
- Signal timings are frequently based on minimising vehicle delays which results in a poor level of service to pedestrians. Pedestrians having to wait for what seems to them an excessive time will take risks and cross against the signals. If all pedestrians have crossed before receiving a green signal, vehicles are required to stop anyway. Intelligent features can reduce this.

Figure 53: Pedestrian crossing warning sign

Use a traffic signals analysis package to model the expected delays to pedestrians and other users under signal operation. Compare the delay and safety performance with other options calculated using the Pedestrian crossing facilities calculation spreadsheet.

While pedestrian traffic signals would greatly enhance safe crossing, the practicalities of installing signals would be a huge investment by TCDC.

An alternative solution would be the installation of an electronic pedestrian warning sign. Similar to cycle warning signs, the pedestrian warning signs can be activated by the pedestrian to warn on-coming motorists.

A number of options are available, and any sign installed would need to be approved by NZTA before installation.

11.8 DECISION PROCESS

There are four main reasons for choosing to improve facilities for pedestrians to cross roads[54]:

- Level of service: the crossing opportunities available to pedestrians are below the desired level of service.
- Safety: crash records show that specific pedestrian crashes may be reduced by providing crossing assistance, or that perceptions of poor safety are discouraging walking.
- Specific access provisions: a particular group (e.g. young children, vision and mobility impaired people) needs the improvements.
- Integration: it is part of integrating and reinforcing a wider traffic management plan for the area.

When considering how to best provide for pedestrians, consider the following questions (in this order):

- What is the road environment and the land use context, and who uses it?
- What are the appropriate physical aids to crossing?
- Is the control of the crossing point appropriate?
- How do we design the facility to fit into the environment?

This approach should be followed in all cases when providing crossing assistance for children.

11.9 VOLUME OF TRAFFIC IN WHITIANGA

The volume of traffic is a major contributor to the safety of pedestrians crossing the road. The higher the volume, the fewer gaps are available for pedestrians.

Average Daily Traffic (ADT) volume, as recorded by TCDC in RAMM and NZTA, are provided in Section 11.11: New Crossing Opportunities. These record either an estimate or actual measurement of vehicles over a period of 7 days, which is then calculated for the whole year.

As the Coromandel Peninsula is a holiday destination in the summer months, these figures can be distorted. Residents at the Community Consultation Meeting stated traffic is considerably higher over November to March, than during the rest of the year.

[54] Pedestrian Planning Design Guide: Section 6.5 – Selecting the appropriate crossing facility.

Consideration is therefore required when analysing traffic volume data to gain a true reflection of traffic behaviour in the area.

Recommendation 83 Measure traffic volumes in the summer months to determine peak traffic volumes when calculating new crossing opportunities.

11.10 EXISTING CROSSING OPPORTUNITIES

There are three different designated road crossing opportunities in the geographic area of interest:

- Kerb ramps at intersections (discussed in Section 8: Kerb Ramps and Section 9: Tactiles);
- Pedestrian refuge/splitter islands; and
- Pedestrian zebra crossings.

Most of the existing crossing facilities are of a good standard. Implementing the recommendations in Section 8: Kerb Ramps and Section 9: Tactiles will complete the existing pedestrian crossing network to a very high standard.

Figure 54: Crossing opportunity on Albert Street

The only adjustments to be made to the existing refuge island on Cook Drive, between Lee Street and Campbell Street (see figure 34).

The kerb ramp on the west side of the refuge island has a grade of 1 in 7.4 (13.5%) while the grade of the kerb ramp on the east side was measured at 1 in 9.9 (10.1%).

Recommendation 84 Replace the kerb ramps at the refuge island on Cook Drive (between Lee Street and Campbell Street) to a maximum grade of 1 in 14 (7.1%).

11.11 NEW CROSSING OPPORTUNITIES

Crossing opportunities provide linkage for pedestrians to each side of the road. In some cases, they complete links between footpaths, particularly if the street has a footpath on one side only. By providing kerb ramps, pedestrian refuge islands, and/or pedestrian crossings, safer connectivity can be provided for mobility impaired pedestrians.

The Community Consultation Meeting raised the need for a connection from Whitianga Continuing Care to the beach accesses on **Buffalo Beach Road**. An ideal access would be immediately south of Halligan Road.

Proposed location for crossing facility on Buffalo Beach Road

Figure 55: Proposed crossing location on Buffalo Beach Road – linking Whitianga Continuing Care to the Beach.

Similarly, a crossing facility on Buffalo Beach Road at the intersection with SH.25 will complete a loop for pedestrian users once the walkway is extended to this location.

The average ADT volume for Buffalo Beach Road is approx. 2765 veh./day.

By analysing Buffalo Beach Road using the Pedestrian Crossing Facilities Calculation Spreadsheet, the correct crossing facility can be installed.

Recommendation 85 Appropriate crossing facilities are recommended on Buffalo Beach Road at Halligan Road and SH.25. Details should be finalised after analysis using the Pedestrian Crossing Facilities Calculation Spreadsheet.

The Community Consultation Meeting raised concerns about the link from the Wharf to the centre of the shopping precinct at Albert Street/Monk Street intersection.

The inspection agreed with the comments made, with a disjointed pedestrian route identified.

A major improvement for this route is a pedestrian crossing facility between the Wharf and Monk Street. Extending the footpath on Esplanade as discussed in

Recommendation 66 and installing a crossing facility by the playground will complete a pedestrian route from the wharf to town.

Figure 56: Proposed crossing facility on Esplanade – between the Wharf and Monk Street

The ADT volume for Esplanade is 629 veh./day.

Recommendation 86 An appropriate crossing facility is recommended on Esplanade, between the Wharf and Monk Street. Details should be finalised after analysis using the Pedestrian Crossing Facilities Calculation Spreadsheet.

Improvement of the pedestrian network around the shopping precinct includes the installation of raised platforms on:

- Monk Street;
- Lee Street;
- Blacksmith Lane; and
- Coghill Street (both sides).

As discussed earlier, these will enhance the crossing facilities of these streets for pedestrians as well as maintaining traffic speeds in the locations.

Recommendation 87 Install raised platforms at the intersections of Albert Street with Monk Street, Lee Street, Blacksmith Lane, and Coghill Street (both sides).

12 STREET FURNITURE

Well-designed public spaces play a decisive role in the comfort and safety of users. Street furnishings support people walking, cycling and those taking rest on their journey[55].

Street furniture should avoid interrupting pedestrian desire lines and be carefully selected and positioned to avoid cluttering the street. It needs to be mounted at a height that is usable for all users.

Street furniture includes rubbish bins, light and power poles, signage, seats, bus shelters, fencing etc.

12.1 PERMANENT SIGNAGE[56]

Signage plays a key role in access in the community. It provides confidence to the user that they are heading in the right direction and informs them of access conditions.

All road users need helpful guidance and direction to inform and warn them of the environment ahead. As pedestrians have different characteristics and routes from other road users, the following four specific measures are required:

- Providing directional information to pedestrians;
- Channelling pedestrian flows;
- Informing other road users of the presence of pedestrians; and
- Indicating to pedestrians and other road users who has priority at crossing points.

A planned and cohesive strategy for pedestrian signage usually reduces the number of signs and locations and minimises maintenance costs, clutter/obstruction and visual blight. Signage strategies should be based on locating signs at the following specific ‘decision points’ on the pedestrian network:

- Likely trip origins, that is, places where people join the pedestrian network such as transport interchanges/stops, car parks and key approaches.
- Likely trip destinations, as when visits to these locations are over they become trip origins. Examples include tourist attractions, community facilities and retail areas.

[55] North Shore City Council – Design of Streets: How should street furnishings be incorporated into street design?
[56] Pedestrian Planning and Design Guide – Section 16:Measures to Guide Pedestrians

- Locations with possible route ambiguity, including major junctions and open areas.
- On long routes where pedestrians may be uncertain that they have chosen the correct direction and need confirmation.

It can be used to identify barriers and inform users of other ways of accessing their destination.

A walking and cycling signage strategy can provide direction for the implementation and installation of signage, including location, height and font type/size criteria. Consultation with interested parties will assist in the implementation of such a policy.

Recommendation 88 Adopt a Pedestrian Signage Policy to inform users of their choices in accessing destination points.

12.2 TEMPORARY SIGNAGE, STOCK and AL-FRESCO DINING

Visually impaired access users require a clear access path to successfully negotiate an area. They generally use building and boundary lines to guide their way.

Businesses along Albert Street regularly install street signage and stock outside of their premises. This has implications for people with significant visual impairment as they frequently use environmental cues such as buildings to navigate around a community and they won't necessarily see stock that are low to the ground, they become a trip hazard.

Figure 57: shop stock on Albert Street

By having obstacles on the shop boundary, visually impaired people are forced to use the kerb line as a navigation aid.

Al-fresco dining cause similar issues, this time loose tables and chairs become obstacles.

Figure 58: Al-fresco dining on Blacksmith Lane

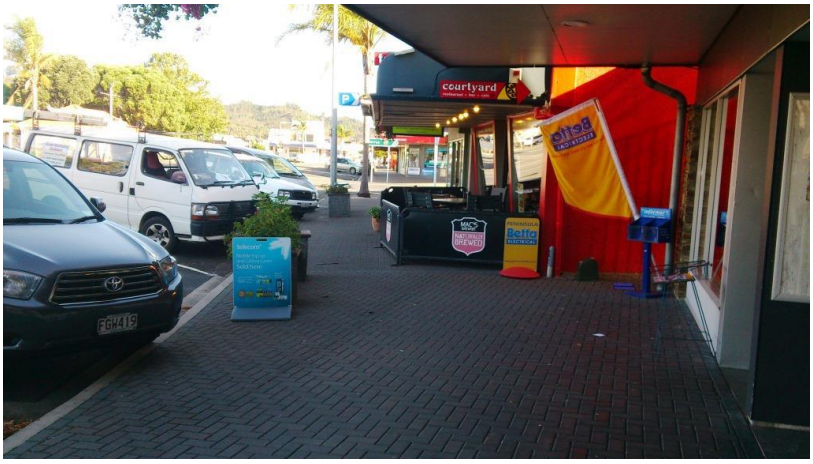

Figure 59: Al-fresco dining on Albert Street

<u>Recommendation 89</u> Liaise with business owners to retain clear access route widths and keeping the building line clear of al-fresco dining furniture, signage and stock for sale.

12.3 RUBBISH BINS AND PLANTING

There are a number of rubbish bins in Whitianga. These are very well located near the kerb edge and are easily accessible to use.

Figure 60: Rubbish Bin located near the kerb on Albert Street

12.4 SEATING

There is a good amount of seating in the geographic area of interest. Seating is helpful for access users who are unsteady on their feet.

The availability of seating areas is generally viewed as a necessary urban feature for older people. It is difficult for many older people to walk around their local area without somewhere to rest[57].

The Inclusive Design for Getting Outdoors suggests the following requirements are beneficial for older persons[58]:

- The seat itself – There is a range of guidance on the style of seat and the appropriateness of a seat in meeting user needs especially given that users in public spaces will be so varied. There is a general consensus about: the provision of a back rest; mixture of seating with and without arm rests; the height of the seat from the floor (450 to 475mm, plus other heights where multiple seating permits this); constructed from a material which does not retain heat / cold; colour and luminance to contrast with the background environment.
- Positioning of the seat – The seating should be set back from a footway such that it does not cause an obstruction; there should be space for a wheelchair user to pull up alongside a companion; end parking on a firm surface for a wheelchair or scooter. The Department for Transport (UK) (2007) suggests that seating should be located where there is good lighting and natural surveillance because it can sometimes attract anti-social behaviour, and that consideration should be given to pedestrian desire lines.

Figure 61: Public seating on Albert Street

[57] World Health Organisation – Global Age-Friendly Cities: A Guide
[58] Inclusive Design for Getting Outdoors: Design Guidelines

Figure 61 shows an excellent example of seating catering for wheelchair users. This seat is located on Albert Street and is used as an example to other Local Authorities and Community Boards on provisions for seating.

Recommendation 90 Adopt the Inclusive Design for Getting Outdoors as part of its design for public seating.

12.5 POWER/LIGHT POLES

The placement of power poles can be a nuisance for pedestrians, particularly visually impaired users. Given that power poles are mostly concrete, they blend in with the surroundings and can be difficult to see.

One light pole on School Road is near the centre of the footpath. Widening the footpath as recommended in Section 10: Footpaths will remove this barrier.

Figure 62: Light Pole opposite School House lane at School Road

Recommendation 91 Widen the footpath on School Road to provide width at the light pole opposite School House Lane.

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13 TEMPORARY TRAFFIC MANAGEMENT

Where work activities in the road corridor affect pedestrians or cyclists, the Temporary Traffic Management (TTM) must ensure that[59]:

- Pedestrians are not led into direct conflict with the work operation or traffic moving through or around the worksite.
- If pedestrians are directed into live lanes they should be adequately protected from traffic by delineation and/or barriers and suitable warning signs.
- Safe impediment free temporary paths are provided where footpaths are blocked by the activity.

Pedestrians, including those with impaired vision or wheelchair users must be considered as part of the design, preparation, approval and implementation of the Traffic Management Plan (TMP).

Pedestrian management of the Code of Practise for Temporary Traffic Management (CoPTTM) is a nationwide problem which NZTA focuses on when training users of this manual. It was pleasing to see at the time of the audit that there were no serious instances of non-compliance in the geographic area of interest. This, however, is just one moment in time, and continued enforcement is necessary to maintain best practise.

Recommendation 92 Enforce Code of Practice for Temporary Traffic Management standards for pedestrian control as part of the TMP approval process and supervision.

Recommendation 93 Conduct regular 'random' audits of Temporary Traffic Management as part of the supervision process of Traffic Management Plans.

[59] Code of practice for temporary traffic management (COPTTM): Part 8 of the Traffic Control Devices manual (TCD Manual)

14 RECOMMENDATIONS

The following tables list the recommendations in order as set out in the report. Table 6 shows the general recommendations while Tables 7, 8, and 9 showing the site specific recommendations.

The specific recommendations are split into three categories:

- Serious Safety Risk – Where it is considered serious injury may occur
- Significant Concern – Major inconveniences
- Minor Concern – Minor inconveniences

The total estimated costs for the three categories are:

- Serious Safety Risk $15,000
- Significant Concerns $230,000
- Minor Concerns $360,000

Consideration should be given to a more formal method of setting priorities for provision of kerb ramps and maintenance of footpaths over a wider area as members of the disability community will clearly have preferred routes into the areas covered by this report. By identifying a risk and condition rating, a profile target can be developed that allows limited resources to address the most critical barriers first. Poor condition can be tolerated where there is little or no likelihood of use by the disabled and elderly.

We suggest TCDC designate footpaths and all potential kerb ramp locations within a risk profile of minor, significant or serious with accessible routes as high priority. A relatively simple set of KPI's could then be formulated with condition ratings say 1 - 5 used to determine the profile.

Costs shown in Tables 7, 8, and 9 are indicative construction costs only and should only be used as a guide[60].They do not include Traffic Management Costs, consultation with affected parties, or design costs. All project costs will need to be finalised as design is completed for each.

[60] Costs are based on rates from Rawlinsons New Zealand Construction Handbook 2013/14 – 28th Edition

14.1 GENERAL RECOMMENDATIONS

Table 6: General Recommendations

It is recommended TCDC:

No.	Pg.	Description
1.	13	Adopt the Risk Modified Condition Assessment methodology as a tool for future maintenance prioritisation.
2.	17	Provide a variety of Mobility Spaces, both parallel and angle parking.
4.	18	Consider Mobility Space placement during the consenting process.
7.	19	Adopt the recommended minimum length in the TCD Manual Part 13: Parking Control of 6m for parallel parking with a further 1.5m allowance for the hoist.
8.	20	Adopt the recommended minimum width in NZS 4121:2001 of 3.5m and the minimum recommended length in the TCD Manual Part 13: Parking Control of 5.4m for angle parking. Allowance of at least 1.5m should be considered between the parking space and the live traffic lane to provide safety for wheelchair users who use rear loading vehicles.
11.	21	Continue the programme to mark Mobility Spaces with blue surfacing. Installing blue marking as per figure 8 will aid with maintaining a non-slip surface with the colour of both the surface and the marking to comply with Land Transport Rule: Traffic Control Devices 2004.
13.	24	Adopt the Pedestrian Planning and Design Guide for Kerb Ramps with the following changes: • Ramp – Normal maximum gradient to be 1 in 14 (7.14%), with the absolute maximum gradient to be 1 in 12 (8.33%); and • Minimum cut down width of 1.8m.
14.	24	Replace all kerb ramps as required during the maintenance programme to a minimum width of 1.8m.
42.	38	Adopt the practise of milling seal edges at the join of the seal and the kerb channel, especially at areas where a flush kerb cut down is present, in maintenance contracts.
43.	40	When installing Tactiles, ensure the Tactiles are safety yellow as recommended by the RTS 14 Guidelines for Facilities for Blind and Vision Impaired Pedestrians.
44.	42	Install Warning Indicators at all pedestrian crossings points and refuge islands. This includes at intersections and mid-block pedestrian crossings.

No.	Pg.	Description
45.	42	Install Directional Indicators as per RTS 14 Guidelines at all pedestrian crossings points where a road crossing point is not located in the continuous accessible path of travel and directional guidance is required.
63.	48	Ensure all Warning Indicators are installed to the full width of the kerb ramp as required in Recommendation 13.
64.	49	Ensure all Tactiles installed in future works align the user to the crossing alignment.
71.	57	Replace footpaths to the widths as stated by the Pedestrian Planning Design Guide when footpaths are upgraded as part of the maintenance programme.
73.	58	Adopt a policy that ensures that cobblestones are no longer considered as a pavement option.
75.	62	Maintain the good maintenance programme to ensure a high standard of footpath is provided in Whitianga.
77.	63	Adopt an absolute maximum longitudinal grade of 1 in 12 (8.3%) for existing grades with a desirable maximum grade of 1 in 14 (7.1%) for future proposed works.
79.	63	Adopt 1% as the crossfall standard, and upgrade existing footpaths to this grade when replaced.
81.	66	Adopt the Pedestrian Crossing Facilities Calculation Spreadsheet for use when determining pedestrian crossing facilities.
82.	73	Measure traffic volumes in the summer months to determine peak traffic volumes when calculating new crossing opportunities.
87.	77	Adopt a Pedestrian Signage Policy to inform users of their choices in accessing destination points.
89.	80	Adopt the Inclusive Design for Getting Outdoors as part of its design for public seating.

14.2 SPECIFIC RECOMMENDATIONS

Table 7: Specific Recommendations – Serious Safety Risks

It is recommended TCDC:

No.	Pg.	Description	Indicative Cost
6.	19	Install full length kerb ramps at all 18 Mobility Spaces in Whitianga to provide quick, easy access to the footpath.	$9,000
23.	29	Replace the kerb ramp on the SE side of Buffalo Beach Road/Eyre Street intersection (crossing Eyre Street) to minimise a tripping hazard. Install a kerb ramp on the NW side crossing Eyre Street.	$1,000
34.	34	Align the kerb ramps on the north side of Campbell Street at the Campbell Street/Mary Street intersection.	$1,000
37.	36	Replace the kerb ramps at the entrance to the carpark on Monk Street with flush kerbs. Install kerb ramps as shown in figure 9 on the NW and NE corners of Monk Street and Mill Road, and separate the vehicle entrance to the Gull Service Station from the kerb ramp.	$3,000
65.	49	Install yellow lines at the Service Station at the intersections of Albert Street/Campbell Street and Monk Street/Mill Road to delineate the footpath.	$1,000
72.	57	Maintain the footpath widths by liaising with adjoining land owners to trim vegetation extending from the boundary over the footpath.	$0
80.	64	Regularly control car parking on the footpath to maintain a clear, usable footpath.	$0
88.	78	Liaise with business owners to retain clear access route widths and keeping the building line clear of al-fresco dining furniture, signage and stock for sale.	$0
91.	81	Enforce Code of Practice for Temporary Traffic Management standards for pedestrian control as part of the TMP approval process and supervision.	$0
92.	81	Conduct regular ‘random’ audits of Temporary Traffic Management as part of the supervision process of Traffic Management Plans.	$0

Total: $15,000

Table 8: Specific Recommendations – Significant Concerns

It is recommended TCDC:

No.	Pg.	Description	Indicative Cost
5.	18	Install a Mobility Space outside 64 Albert Street (Stephenson's Pharmacy)	$2,000
12.	22	Re-surface the Mobility Space at 70 Albert Street.	$1,000
16.	26	Re-locate and replace the kerb ramp on the NE corner of Albert Street/Campbell Street to a maximum grade of 1 in 14 (7.1%) to improve access for mobility scooter, wheelchair and visually impaired users. Install kerb ramps for crossing Albert Street at Campbell Street as per the layout shown in figure 9.	$3,000
18.	27	Replace the kerb ramp grade on the south corner of Albert Street/Blacksmith Lane to a maximum grade of 1 in 14 (7.1%).	$500
20.	28	Re-align and replace the kerb ramps at the Albert Street/Monk Street intersection to have a flush kerb.	$1,000
21.	28	Replace the kerb ramp on the south side of Albert Street/Hannan Road to have a maximum grade on the footpath and the carriageway of 1 in 14 (7.1%). Install kerb ramps on the south side of Albert Street/Hannan Road intersection for crossing Albert Street.	$3,000
22.	28	Replace the kerb ramps at the Albert Street/Buffalo Beach Road intersection (south crossing Buffalo Beach Road, west and east crossing Albert Street) to have a maximum grade of 1 in 14 (7.1%)	$1,000
24.	30	Replace the lip kerb ramp on the SE side of the Buffalo Beach Road/Halligan Road intersection with a flush kerb. Replace the kerb ramp on the NW side of the same intersection so the maximum grade of 1 in 14 (7.1%) is achieved. Install kerb ramps on the south side of Halligan Road for crossing Buffalo Beach Road.	$3,500
26.	30	Re-align kerb ramp on the north side of Buffalo Beach Road/Jackman Avenue, crossing Jackman Avenue.	$500
27.	31	Liaise with NZTA to replace the kerb ramp grade on both sides of SH.25 at Buffalo Beach Road to a maximum grade of 1 in 14 (7.1%).	$0

No.	Pg.	Description	Indicative Cost
28.	32	Replace the NW and SE kerb ramps crossing Cook Drive and the NE and SE kerb ramps crossing Surf Street to a maximum grade of 1 in 14 (7.1%).	$500
29.	32	At the Cook Drive/Jackman Avenue, replace the NE kerb ramp crossing Jackman Avenue and the NW kerb ramp crossing Cook Drive to a maximum grade of 1 in 14 (7.1%). Replace the lip kerb on the SE corner crossing Jackman Avenue with a flush kerb and install a kerb ramp on the NE corner crossing Cook Drive.	$2,000
30.	32	Replace the NE kerb ramp at the Cook Drive/Halligan Road intersection to a maximum grade of 1 in 14 (7.1%).	$500
31.	33	Replace the kerb ramp on the east side crossing Cook Drive at Cook Drive/Park Lane intersection to a maximum grade of 1 in 14 (7.1%). Replace the lip kerb crossing Cook Drive with a flush kerb.	$1,000
33.	34	Replace the SW and NW kerb ramps crossing Joan Gaskill Drive at the intersection of Cook Drive/Joan Gaskill Drive/Campbell Street to a maximum grade of 1 in 14 (7.1%). Install kerb ramps crossing Cook Drive, south of Joan Gaskill Drive.	$2,000
35.	35	Replace the SW and SE kerb ramp crossing Isabella Street at Campbell Street to a maximum grade of 1 in 14 (7.1%). Widen the NW and NE kerb ramps crossing Isabella Street to a minimum of 1.8m. Install kerb ramps on each corner for crossing Campbell Street.	$3,000
38.	37	Replace the kerb ramp on the south side of the Esplanade/Monk Street intersection to a maximum grade of 1 in 14 (7.1%) and install a kerb ramp on the north side of the same intersection.	$1,000
39.	37	Replace the kerb ramp on the west side of Esplanade/Mill Road intersection to have a maximum grade of 1 in 14 (7.1%).	$500
40.	37	Install a kerb ramp on the east side of Hannan Road/Eyre Street intersection and replace the lip kerb with a flush kerb on the west side. Align the kerb ramps at the intersection of Eyre Street and School Road.	$2,000
41.	38	Install kerb ramps at the intersection of Victoria Street and Coghill Street, on both sides crossing Coghill Street.	$1,000

No.	Pg.	Description	Indicative Cost
46.	43	Install Warning Indicators on Buffalo Beach Road at the following locations: • Intersections with Surf Street, Jackman Avenue, Bruce Street, and Eyre Street – both sides crossing side streets; • Halligan Road – north side crossing Halligan; and • Albert Street – NE side crossing Buffalo Beach Road.	$5,000
47.	43	Install both Warning and Directional Indicators on Buffalo Beach Road at the following locations: • SH.25 – both sides; • Halligan Road – south side only; and • Albert Street – both sides crossing Albert Street.	$4,000
48.	44	Install Warning Indicators on Albert Street at the following locations: • Hannan Road – south side crossing Hannan Road; • Lee Street and Blacksmith Lane – both sides crossing side street; • Coghill Street – NW corner crossing Coghill Street; • Campbell Street – NW, SW, and SE corners crossing Campbell Street; and • Owen Street – all corners crossing Owen Street.	$6,500
50.	44	Install both Warning and Directional Indicators on Albert Street the following locations: • Albert Street – Hannan Road – north side crossing Hannan Road; • Albert Street – Monk Street – both sides crossing Monk Street; and • Albert Street – mid block pedestrian crossing between Monk Street and Lee Street – both sides.	$7,000

No.	Pg.	Description	Indicative Cost
51.	45	Install Warning Indicators on Cook Drive at the following locations: • Jackman Avenue – NE corner crossing Jackman Avenue; • Hannan Road – both sides crossing Hannan Road; • Whitby Avenue – both sides crossing Whitby Avenue; • Lee Street – central refuge island; • Two mid-block refuge islands between Lee Street and Campbell Street; • Campbell Street – central refuge island; and • Joan Gaskill Drive – SE corner crossing Joan Gaskill Drive.	$5,000
53.	46	Install both Warning Indicators and Directional Indicators on Cook Drive at the following locations: • Jackman Avenue – SE corner crossing Jackman Avenue; • Lee Street – both sides crossing Lee Street; • Two mid-block refuge islands between Lee Street and Campbell Street – both sides; • Campbell Street – SE corner crossing Campbell Street; and • Joan Gaskill Drive – NE corner crossing Joan Gaskill Drive.	$9,000
54.	46	Install both Warning and Directional Indicators at the intersection of Halligan Road/Mercury Street – crossing Halligan Road.	$1,000
55.	46	Install Warning Indicators at the intersection of Eyre Street/School Road – crossing School Road.	$500
56.	46	Install Warning Indicators on the Esplanade at the intersections of Mill Road and Monk Street – both sides crossing the side streets.	$2,000
57.	47	Install Warning Indicators at the intersection of Monk Street/Mill Road – crossing Mill Road.	$1,000
58.	47	Install Warning Indicators on Victoria Street at the following locations: • Coghill Street – both sides crossing Coghill Street; • Campbell Street – north side crossing Campbell Street; and • Owen Street – south side crossing Owen Street.	$2,000

No.	Pg.	Description	Indicative Cost
59.	47	Install both Warning and Directional Indicators on Victoria Street at the following locations: • Blacksmith Lane – both sides crossing Victoria Street; • Campbell Street – south side crossing Campbell Street; and • Owen Street – north side crossing Owen Street.	$4,000
60.	47	Install Warning Indicators at the intersection of Campbell Street/Isabella Street – crossing Isabella Street.	$1,000
61.	48	Install Warning Indicators on Lee Street at the centre refuge island between the carpark and the Cinema.	$500
62.	48	Install Warning and Directional Indicators on Lee Street at the mid-block refuge island between the carpark and the Cinema.	$2,000
67.	53	Install footpaths on: • Hannan Road – 15 Hannan Road to Eyre Street (approx.150m); • Coghill Street – 5 Coghill Street to Victoria Street (approx. 30m); • Coghill Street – 2 Coghill Street to Victoria Street (approx. 35m); • Campbell Street – 3 Campbell Street to Victoria Street (approx. 35m); and • Victoria Street – east side Owen Street to Campbell Street (approx. 100m).	$30,000
69.	54	Extend the footpath on Cook Drive approx. 750m from 116 Cook Drive to Surf Street.	$75,000
70.	55	Install approx. 70m of concrete footpath on the south side of Blacksmith Lane, from Albert Street to Victoria Street.	$6,000

No.	Pg.	Description	Indicative Cost
76.	62	Repair the footpath at the following locations: • Design imprint frames on walkway along Buffalo Road (need to be flush); • Service cover at 23 Albert Street; • Service cover at the intersection of Cook Drive/Jackman Avenue; • Footpath repair at 8-10 Albert Street; • Concrete joins at 18-20 Lee Street; • Berm repair required on south side of Campbell Street; • Berm repair required on walkway along Buffalo Beach Road; • Footpath repair at 8-10 Albert Street; • Convert the entrance at the Museum on Esplanade to a formal vehicle entrance; and • Metal spillage from private property on Mill Road (On Fire Café) and Cook Drive/Campbell Street intersection.	$7,000
78.	63	Replace the longitudinal grades at the entrance to the carpark on Lee Street to a longitudinal grade of 1 in 14 (7.1%).	$500
83.	73	Replace the kerb ramps at the refuge island on Cook Drive (between Lee Street and Campbell Street) to a maximum grade of 1 in 14 (7.1%).	$1,000
84.	74	Appropriate crossing facilities are recommended on Buffalo Beach Road at Halligan Road and SH.25. Details should be finalised after analysis using the Pedestrian Crossing Facilities Calculation Spreadsheet.	$20,000
85.	75	An appropriate crossing facility is recommended on Esplanade, between the Wharf and Monk Street. Details should be finalised after analysis using the Pedestrian Crossing Facilities Calculation Spreadsheet.	$10,000
90.	80	Widen the footpath on School Road to provide width at the light pole opposite School House Lane.	$1,000

Total: $230,000

Table 9: Specific Recommendations – Minor Concerns

It is recommended TCDC:

No.	Pg.	Description	Indicative Cost
3.	18	Re-locate the Mobility Space at 65 Albert Street north to 59 Albert Street to utilise shelter from the verandah in this location.	$2,000
9.	20	Lengthen the Mobility Space at 2 Mill Road to meet the requirements of NZS 4121:2001.	$500
10.	21	Switch the Mobility Space at the Wharf with the reserved space to create more usable space for access users.	$500
15.	25	Replace the lip kerbs on the SW and SW corner of Albert Street/Owen Street intersection. Install separate kerb ramps for crossing Albert Street at Owen Street as per the diagram shown in figure 9.	$3,500
17.	26	Replace the lip kerb ramp on the NW corner of Albert Street/Coghill Street with a flush kerb.	$500
19.	27	Replace the lip kerb ramps crossing Lee Street at Albert Street to flush kerbs. Install kerb ramps on the north corner of Albert Street and the south corner of Lee Street to improve crossing opportunities of Albert Street.	$3,500
25.	30	Replace the lip kerb with a flush kerb on the NW side of Buffalo Beach Road/Bruce Street, crossing Bruce Street.	$500
32.	33	Install kerb ramps at the side road, 300m south of Park Lane, on Cook Drive.	$1,000
36.	35	Widen the kerb ramp on the north side of Campbell Street/Victoria Street to a minimum of 1.8m	$500
49.	44	Install Directional Indicators at the pedestrian crossing on Albert Street south of Coghill Street (both sides).	$1,000
52.	46	Install Directional Indicators on Cook Drive at the following locations: • Surf Street – SE corner crossing Surf Street and Cook Drive; • Halligan Road – SE corner crossing Halligan Road; and • Park Lane – east side crossing Cook Drive.	$1,500

No.	Pg.	Description	Indicative Cost
66.	52	Create a long term programme to install approx. 1500m of footpath on both sides of all roads to meet the requirements of PPDG. The priority for the installation of footpaths is dependent on traffic and pedestrian volumes as well as measuring the number of pedestrians with mobility aids on these side roads, with the highest volumes being top priority. For the geographic area of interest, install footpaths on: • Esplanade – East side, 40m south of the Wharf to Blacksmith Lane (approx. 275m); • Surf Street, Jackman Avenue, Bruce Street, Halligan Road, School Road, and Owen Street – north side (approx. 770m); and • Mercury Street and Eyre Street – west side (approx. 460m).	$130,000
68.	53	Extend the walkway under construction on the east side of Buffalo Beach Road for a further 820m to complete the pedestrian network to SH.25. Extend the walkway approx. 380m west along the Esplanade to connect SH.25 to the Wharf	$165,000
74.	58	Regularly monitor and replace cobblestones as required during the maintenance programme with asphaltic concrete or concrete to minimise potential tripping hazards when the cobblestones become loose or uneven due to underground service work or settlement of the basecourse.	$0 – as required under maintenance
86.	75	Install raised platforms at the intersections of Albert Street with Monk Street, Lee Street, Blacksmith Lane, and Coghill Street (both sides).	$50,000

Total: $360,000

APPENDIX A: LOCATION MAP

WHITIANGA GEOGRAPHIC AREA OF INTEREST

Date: April 2014

Scale: Not to Scale

APPENDIX B: COMMUNITY CONSULTATION MEETING MINUTES

Minutes of Public Consultation Meeting at Whitianga Town Hall

Date: 10th March 2014

Time: 10am.

A large number of local residents attended the public meeting today to discuss accessibility in the settlement of Whitianga. This included a resident and staff member from Whitianga Continuing Care.

The issues raised for consideration in the access report include:

1. Missing kerb cut downs in various locations.
2. High kerbs and few cut downs – Natal estate
3. No access to the beach.
4. Missing footpaths in various locations
5. Cook drive north end has footpath only on one side.
6. Seating required on Cook Drive
7. Whitianga Continuing Care requests a pedestrian crossing to the new Beach walkway and toilet block.
8. Access to town from Whitianga Continuing Care is impossible to push a wheelchair or someone using a walking frame due to broken/cracked footpaths
9. Cars parking on the footpath along Buffalo Beach Road.
10. Remove the steel surround of the decorations on the walkway.
11. Complete the decorations on the walkway.
12. Access from the wharf to town is very confusing.
13. Vehicles parking on the footpath on Lee St. Check bylaw on parking on footpath.
14. Corner of Campbell St/Albert St and Lee/Albert St – limited sight distance
15. Loose metal from Hardware & Hire is encroaching on the footpath. Vehicles parking on footpath
16. Pedestrian connection crossing SH.25 (Racecourse Rd) and Buffalo Beach Rd Intersection.
17. Need parking space and access outside Doctors Surgery.
18. Walkway required between Schoolhouse Rd to Cook St.
19. Footpath only one side on Robinson Road.
20. Anyone from Robinson Road/Catherine Crescent end of town has to cross road several time to avoid broken footpaths.
21. Cnr Impala/Springbok – pavement lifted due to tree roots.
22. Whitby Ave – tree roots lifting pavements. Trees are nice.

23. Cook Drive – walking across to New World in summer is difficult.
24. Install another crossing between Snapper Jack and roundabout on Albert St
25. Mobility user feels unsafe to go past Z service station. Crosses from Owen St outside church
26. Crossing Lee St – Tides to 100% Electrical – steep gradient
27. Raised yellow pavers at pedestrian crossing outside BNZ
28. Mobility space required outside Dr Adams and Stephenson's Chemist
29. Albert/Lee/Blacksmith intersection – difficult to cross.
30. Lee St shops parking on footpath.
31. Connection from Wharf to CBD. In particular crossing safely from wharf to footpath.
32. Access onto the ferry is not wheelchair accessible.
33. No easy beach access at end of Albert St.

APPENDIX C: RISK MODIFIED CONDITION PROFILE

RISK MODIFIED CONDITION PROFILE

In order to provide a performance measure of the condition of footpaths and kerb ramps, it is necessary to combine the condition rating with a risk assessment to ensure the limited resources available achieve the maximum benefit for residents and other users.

The risk ratings are defined as follows:

Risk Level	Definitions	Risk Multiplier, R (%)
High	High level of foot traffic (commercial centre). Regular presence of people using walking aids, scooters or wheelchairs. Part of an accessible route for the disabled. Possible use by visually impaired	100
Medium	Regular presence of people using walking aids, scooters or wheelchairs. Presence of community facilities likely to be accessed by pedestrians. Part of an accessible route for the disabled.	60
Low	Very low pedestrian use. Absence of community destinations. No through traffic or low traffic count. Alternative routes available (e.g. opposite side of road)	30

Table 10: Risk Ratings

There are two measures to be analysed, being the footpaths and kerb ramps, with a minimum of 100 locations, selected in the same proportions as those within the defined risk categories, with the locations being chosen at random for assessment. Footpath sections should be at least 10m in length and kerb ramps should include the adjacent waiting area. Where a kerb ramp or footpath (for all or any part of a 10m section), is desirable but not built, a condition rating of 5 applies.

The profile score Pf for footpaths or Pk for kerb ramps for the defined area, with a total of “n” assessed sites is determined as follows:

$$Pf = \Sigma(1...n) / n \left| \frac{R_1}{C_1} ..... \frac{R_n}{C_n} \right| \times 100\%$$

The maximum score will depend on the proportions of sections within the various risk categories and a further normalisation can be undertaken if desired. For example with a 40/30/30 % allocation to the high medium and low risk categories, the maximum score would be 67% (0.4x100% + 0.3x60% +0.3x30%) and normalisation could be undertaken to set the maximum at 100%.

FOOTPATH CONDITION RATING

Table 11: Footpath Condition Rating

Rating	Conditions
1	• Surface in good condition; • Kerb well defined; • Surface in good condition; • No trip hazards; and • No attention required.
2	• Good surface; • Minor Wear and Tear; • Crossfall evident; and • No immediate concerns.
3	• Surface adequate; • Trip hazard removed; • Minor defects; and • No immediate attention required.
4	• Poor surface condition; • Limited width; • Cracks appearing; and • No major trip hazards.
5	• Concrete cracked and likely to lift; • Surface Poor; and • Potential for trip hazards.

KERB RAMP CONDITION RATING

Table 12: Kerb Ramp Condition Rating

Rating	Conditions
1	• Good surfaces; • No trip hazards; and • No defects.
2	• Generally Complies with DBH D-1 Fig 9 and NZS 4121; • Minor wear and tear on concrete; and • No immediate attention required.
3	• Good level crossing; • Minor repair required; and • No immediate concerns.
4	• Rough concrete surface; • Steep ramp; • Inadequate waiting space; and • No major trip hazards.
5	• Poor surface condition • No defined waiting area • Potential trip hazards • Excessive slopes

APPENDIX D: NZTA PEDESTRIAN CROSSING FACILITIES CALCULATION SPREADSHEET

Pedestrian Crossing Facilities Survey Sheet Page _____ of _____

Survey Location: _____
Surveyor(s): _____
Survey Date: _____
Uninterrupted/Interrupted Traffic Flow (Circle one)
85th % Vehicle Speed est/measured: _____
General Comments: _____

Drawing (include cross section, lanes, median, parking, etc)

Pedestrian Crossing Facilities Survey Sheet

Survey Location: _____
Survey Date: _____

Page _____ of _____

Time of Day (15min Intervals)	Vehicle Volume		Pedestrian Flow			Comments:
	Direction 1:	Direction 2:	Adults	Children (<12years)	Elderly/ Sensitive	

Pedestrian Crossing Facilities Calculation Spreadsheet

Summary Sheet

Project Name		**Date of Assessment**	
Project Location			

Field Data

Road Layout	(select an option)
Speed Limit (Environment)	(select an option)
Approach Speed (85th Percentile)	(select an option)

	Traffic Volume Average Peak (veh/hr)	No. of Trafficked Lanes	Flow Type	Crossing Distance, Without Aids (m)	Pedestrian Volume Average Peak Hour (ped/hr)
Direction 1	EnterNo.	(select an option)	select an optior		
Direction 2		(select an option)	select an optior		
Total	EnterNo.	(select an option)	select an optior		EnterNo.

Traffic Volume (AADT)		veh/day	Pedestrian Volume	peds/day

Physical Aid Benefits

	Total Crossing Distance (m)	Mean Pedestrian Delay (sec/ped)	LOS	NPV Pedestrian Delay Cost	NPV Safety Cost Saving	NPV Geometric Vehicle Occupant Delay	Appropriateness for Road Type & Speed
Without Crossing Facility					-	-	-
Platform					elect and optic		(select an option)
Kerb Extensions					elect and optic	-	(select an option)
Median Refuge						-	(select an option)
Kerb Extensions & Median Refuge						-	See result for individual facilities above

Facility Considered	(select an option)
NPV Total Benefits for Facility Considered	(select an option)
Construction Cost for Facility Considered	$ -
Benefit Cost Ratio for Facility Considered	

Zebra Crossings

Does the crossing meet the minimum volume requirement of 50 peds/hr?	Yes
Does the crossing meet the requirement of having less than two lanes in each direction?	(select an option)
Appropriateness of Zebra for Road Type & Speed	(select an option)

	Mean Pedestrian Delay (sec/ped)	NPV Safety Cost Saving	NPV Geometric Vehicle Occupant Delay	Appropriateness of Zebra, & of Physical Aid for Road Type & Speed
Without Crossing Facility		-	-	-
Zebra Only	-	select and optior	-	Yes
Zebra + Platform	-	select and optior		See result for individual facilities above
Zebra + Kerb Extensions	-	select and optior	-	See result for individual facilities above
Zebra + Median Refuge	-		-	See result for individual facilities above
Zebra + Kerb Extensions & Median Refuge	-		-	See result for individual facilities above

Facility Considered	(select an option)
NPV Total Vehicle Occupant Delay	
NPV Total Benefits for Facility Considered	(select an option)
Construction Cost for Facility Considered	$ -
Benefit Cost Ratio for Facility Considered	

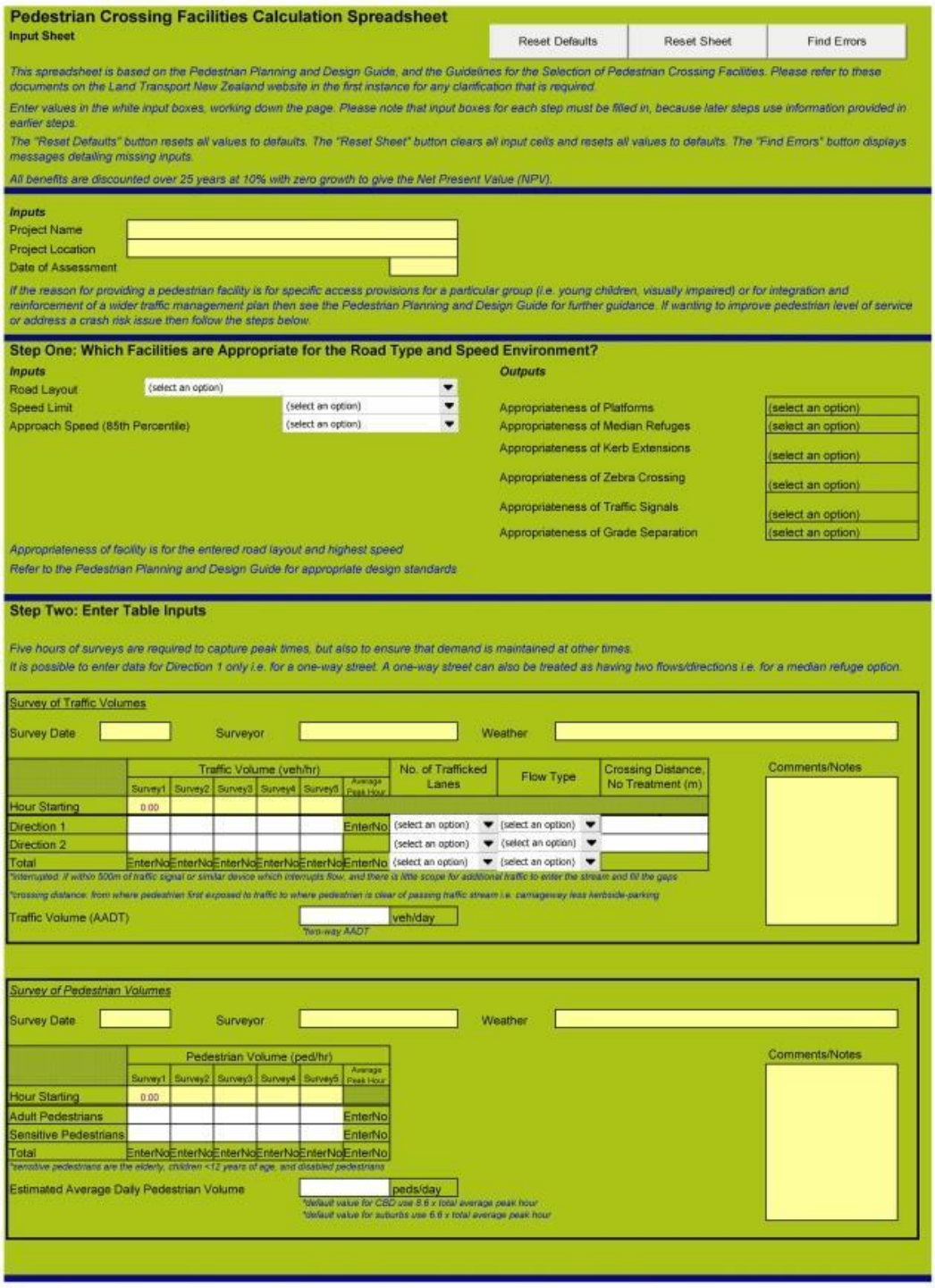
Traffic Signals

Appropriateness for Road Type & Speed	(select an option)	
Pedestrian Delay (Average Peak)		hours/hour
Vehicle Occupant Delay (Average Peak)		hours/hour
NPV Pedestrian Delay Without Facility		
NPV Pedestrian Delay With Signals		
NPV Vehicle Occupant Delay With Signals		
NPV Safety Cost Savings With Signals	(select an option)	
NPV Total Benefits for Traffic Signals		
Benefit Cost Ratio for Facility Considered		

Grade Separation

Appropriateness for Road Type & Speed	(select an option)

Pedestrian Crossing Facilities Selection Guideline Spreadsheet Version 1.2 February 2007



Pedestrian Crossing Facilities Calculation Spreadsheet

Input Sheet

Reset Defaults | Reset Sheet | Find Errors

This spreadsheet is based on the Pedestrian Planning and Design Guide, and the Guidelines for the Selection of Pedestrian Crossing Facilities. Please refer to these documents on the Land Transport New Zealand website in the first instance for any clarification that is required.

Enter values in the white input boxes, working down the page. Please note that input boxes for each step must be filled in, because later steps use information provided in earlier steps.

The "Reset Defaults" button resets all values to defaults. The "Reset Sheet" button clears all input cells and resets all values to defaults. The "Find Errors" button displays messages detailing missing inputs.

All benefits are discounted over 25 years at 10% with zero growth to give the Net Present Value (NPV).

Inputs

Project Name

Project Location

Date of Assessment

If the reason for providing a pedestrian facility is for specific access provisions for a particular group (i.e. young children, visually impaired) or for integration and reinforcement of a wider traffic management plan then see the Pedestrian Planning and Design Guide for further guidance. If wanting to improve pedestrian level of service or address a crash risk issue then follow the steps below.

Step One: Which Facilities are Appropriate for the Road Type and Speed Environment?

Inputs

Road Layout (select an option)

Speed Limit (select an option)

Approach Speed (85th Percentile) (select an option)

Outputs

Appropriateness of Platforms	(select an option)
Appropriateness of Median Refuges	(select an option)
Appropriateness of Kerb Extensions	(select an option)
Appropriateness of Zebra Crossing	(select an option)
Appropriateness of Traffic Signals	(select an option)
Appropriateness of Grade Separation	(select an option)

Appropriateness of facility is for the entered road layout and highest speed

Refer to the Pedestrian Planning and Design Guide for appropriate design standards

Step Two: Enter Table Inputs

Five hours of surveys are required to capture peak times, but also to ensure that demand is maintained at other times.

It is possible to enter data for Direction 1 only i.e. for a one-way street. A one-way street can also be treated as having two flows/directions i.e. for a median refuge option.

Survey of Traffic Volumes

Survey Date | Surveyor | Weather

	Traffic Volume (veh/hr) Survey1	Survey2	Survey3	Survey4	Survey5	Average Peak Hour	No. of Trafficked Lanes	Flow Type	Crossing Distance, No Treatment (m)
Hour Starting	0.00								
Direction 1						EnterNo	(select an option)	(select an option)	
Direction 2							(select an option)	(select an option)	
Total	EnterNo	EnterNo	EnterNo	EnterNo	EnterNo	EnterNo	(select an option)	(select an option)	

**Interrupted: if within 500m of traffic signal or similar device which interrupts flow, and there is little scope for additional traffic to enter the stream and fill the gaps*

**crossing distance: from where pedestrian first exposed to traffic to where pedestrian is clear of passing traffic stream i.e. carriageway less kerbside parking*

Comments/Notes

Traffic Volume (AADT) veh/day

**two-way AADT*

Survey of Pedestrian Volumes

Survey Date | Surveyor | Weather

	Pedestrian Volume (ped/hr) Survey1	Survey2	Survey3	Survey4	Survey5	Average Peak Hour
Hour Starting	0.00					
Adult Pedestrians						EnterNo
Sensitive Pedestrians						EnterNo
Total	EnterNo	EnterNo	EnterNo	EnterNo	EnterNo	EnterNo

**sensitive pedestrians are the elderly, children <12 years of age, and disabled pedestrians*

Comments/Notes

Estimated Average Daily Pedestrian Volume peds/day

**default value for CBD use 8.6 x total average peak hour*

**default value for suburbs use 6.6 x total average peak hour*

Step Three: Is a Pedestrian Facility Required?

Equivalent Crossing Distance and Time Calculation

Inputs			***Outputs***		
			Proportion of Sensitive Pedestrians		%
Walk Speed of 15th Percentile Adult Pedestrians	1.3 m/s *default value 1.3m/s		Mean Walk Speed of 15th Percentile Pedestrians		m/sec
			Equiv. Crossing Time Without Aids, Direction 1		sec
Walk Speed of 15th Percentile Sensitive Pedestrians	1.0 m/s *default value 1.0m/s		Equiv. Crossing Time Without Aids, Direction 2		sec
			Equivalent Crossing Time Without Aids, Total *Includes Factor of Safety of 1.1, and a confirmation time		sec
Walk Speed of Average Adult Pedestrians	1.5 m/s *default value 1.5m/s		Mean Walk Speed of Average Pedestrians		m/sec
			Equiv. Crossing Time Without Aids, Direction 1		sec
Walk Speed of Average Sensitive Pedestrians	1.2 m/s *default value 1.2m/s		Equiv. Crossing Time Without Aids, Direction 2		sec
			Equivalent Crossing Time Without Aids, Total *Includes Factor of Safety of 1.1, and a confirmation time		sec

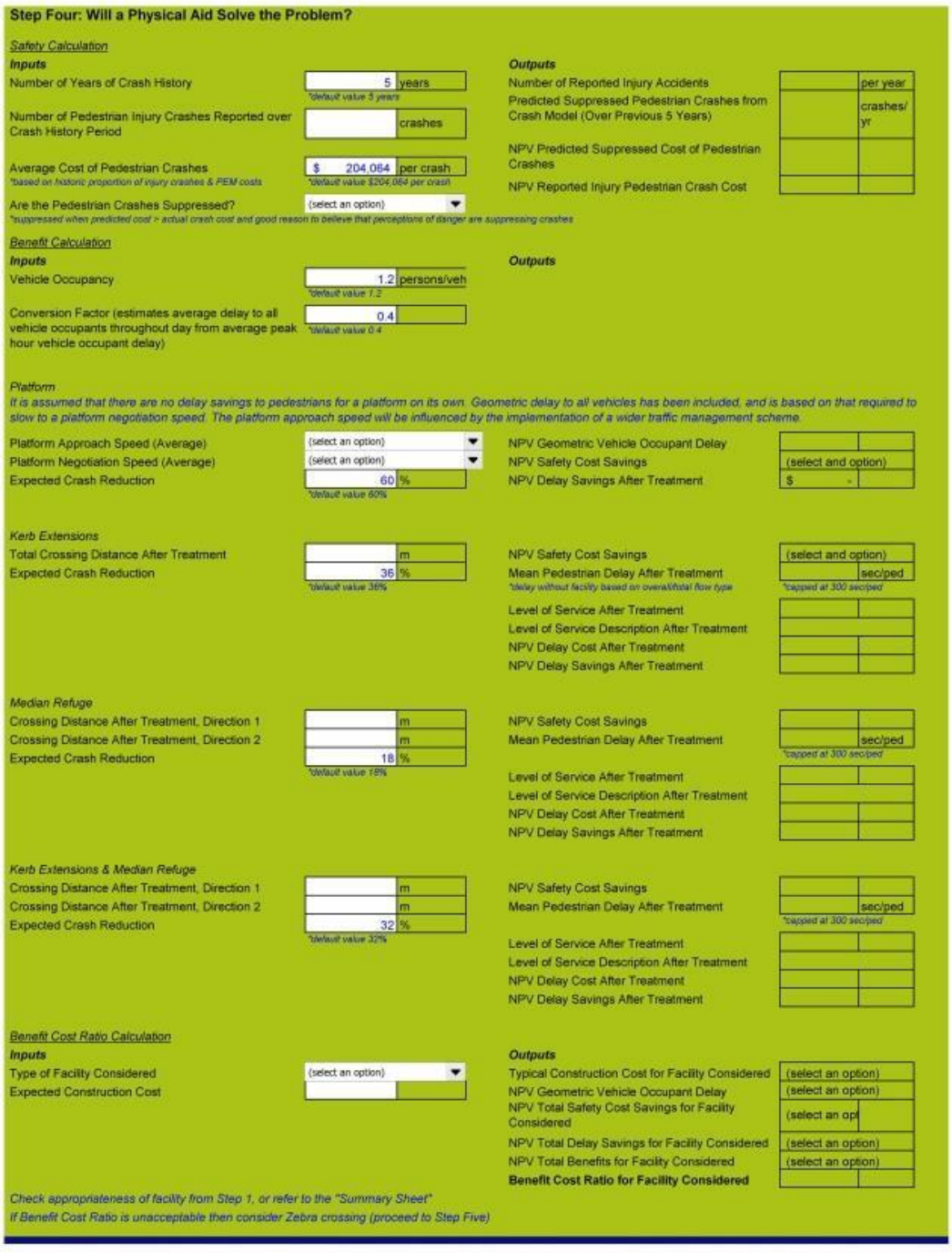
Adjust walk speeds when pedestrian density is high or crossing width limited (see Pedestrian Planning and Design Guide for details)

Delay Calculation

Mean pedestrian delay is calculated based on the time required to find a suitable gap in the traffic stream

Inputs			***Outputs***		
Economic Value of Delay	$ 16.27 per hr *default value $16.27/hr (PEM Table A4.3)		Mean Pedestrian Delay, Without Facility *delay without facility based on overall/total flow type		sec/ped *capped at 300 sec/ped
Conversion Factor (estimates average pedestrian delay throughout day from average peak hour pedestrian delay)	0.6 *default value 0.6		Level of Service (LOS), Without Facility		
			Level of Service Description		
			Appropriate Situation		
Time Over Which Economic Assessment Applies	250 days/yr *default value 250days/yr		NPV Delay Cost Without Facility		

A pedestrian facility is required if the level of service is unacceptable or if a safety problem has been identified at the site (proceed to Step Four)



Step Four: Will a Physical Aid Solve the Problem?

Safety Calculation

Inputs

Number of Years of Crash History: 5 years (*default value 5 years*)

Number of Pedestrian Injury Crashes Reported over Crash History Period: crashes

Average Cost of Pedestrian Crashes: $ 204,064 per crash (*based on historic proportion of injury crashes & FEM costs; default value $204,064 per crash*)

Are the Pedestrian Crashes Suppressed? (select an option) (*suppressed when predicted cost > actual crash cost and good reason to believe that perceptions of danger are suppressing crashes*)

Outputs

Number of Reported Injury Accidents	per year
Predicted Suppressed Pedestrian Crashes from Crash Model (Over Previous 5 Years)	crashes/yr
NPV Predicted Suppressed Cost of Pedestrian Crashes	
NPV Reported Injury Pedestrian Crash Cost	

Benefit Calculation

Inputs

Vehicle Occupancy: 1.2 persons/veh (*default value 1.2*)

Conversion Factor (estimates average delay to all vehicle occupants throughout day from average peak hour vehicle occupant delay): 0.4 (*default value 0.4*)

Outputs

Platform

It is assumed that there are no delay savings to pedestrians for a platform on its own. Geometric delay to all vehicles has been included, and is based on that required to slow to a platform negotiation speed. The platform approach speed will be influenced by the implementation of a wider traffic management scheme.

Platform Approach Speed (Average): (select an option)

Platform Negotiation Speed (Average): (select an option)

Expected Crash Reduction: 60 % (*default value 60%*)

NPV Geometric Vehicle Occupant Delay	
NPV Safety Cost Savings	(select and option)
NPV Delay Savings After Treatment	$ -

Kerb Extensions

Total Crossing Distance After Treatment: m

Expected Crash Reduction: 36 % (*default value 36%*)

NPV Safety Cost Savings	(select and option)
Mean Pedestrian Delay After Treatment (*delay without facility based on overall/total flow type*)	sec/ped (*capped at 300 sec/ped*)
Level of Service After Treatment	
Level of Service Description After Treatment	
NPV Delay Cost After Treatment	
NPV Delay Savings After Treatment	

Median Refuge

Crossing Distance After Treatment, Direction 1: m

Crossing Distance After Treatment, Direction 2: m

Expected Crash Reduction: 18 % (*default value 18%*)

NPV Safety Cost Savings	
Mean Pedestrian Delay After Treatment	sec/ped (*capped at 300 sec/ped*)
Level of Service After Treatment	
Level of Service Description After Treatment	
NPV Delay Cost After Treatment	
NPV Delay Savings After Treatment	

Kerb Extensions & Median Refuge

Crossing Distance After Treatment, Direction 1: m

Crossing Distance After Treatment, Direction 2: m

Expected Crash Reduction: 32 % (*default value 32%*)

NPV Safety Cost Savings	
Mean Pedestrian Delay After Treatment	sec/ped (*capped at 300 sec/ped*)
Level of Service After Treatment	
Level of Service Description After Treatment	
NPV Delay Cost After Treatment	
NPV Delay Savings After Treatment	

Benefit Cost Ratio Calculation

Inputs

Type of Facility Considered: (select an option)

Expected Construction Cost:

Outputs

Typical Construction Cost for Facility Considered	(select an option)
NPV Geometric Vehicle Occupant Delay	(select an option)
NPV Total Safety Cost Savings for Facility Considered	(select an op
NPV Total Delay Savings for Facility Considered	(select an option)
NPV Total Benefits for Facility Considered	(select an option)
Benefit Cost Ratio for Facility Considered	

Check appropriateness of facility from Step 1, or refer to the "Summary Sheet"

If Benefit Cost Ratio is unacceptable then consider Zebra crossing (proceed to Step Five)

Step Five: Will a Zebra Crossing Solve the Problem?

Inputs

Outputs

Is the crossing likely to be self enforcing (recommended numbers crossing >50ped/hr)? — Yes

Does the crossing meet the requirement of having less than two lanes in each direction? — (select an option)

Do not use zebra crossing if inappropriate (see Step 1), or if the above requirements are not met. Outputs are not provided if the above requirements are not met. Zebra crossings should not be used in isolation, and should only be used as part of an integrated traffic management plan. See Pedestrian Planning and Design Guide for details.

Benefit Calculation

Inputs

It has been assumed that there is no delay to pedestrians for a zebra crossing

Outputs

NPV Total Pedestrian Delay Savings

NPV Vehicle Occupant Delay

Zebra Only

Crash Reduction: -28 % (*default value -28%*)

NPV Safety Cost Savings — (select and option)

Vehicle Delay (Average Peak) — sec/veh

NPV Benefits After Treatment

Zebra + Platform

Crash Reduction: 88 % (*default value 80%*)

NPV Safety Cost Savings — (select and option)

NPV Geometric Vehicle Occupant Delay

Vehicle Delay (Average Peak) — sec/veh

NPV Benefits After Treatment

Zebra + Kerb Extensions

Crash Reduction: 44 % (*default value 29%*)

NPV Safety Cost Savings — (select and option)

Vehicle Delay (Average Peak) — sec/veh

NPV Benefits After Treatment

Zebra + Median Refuge

Crash Reduction: 18 % (*default value -6%*)

NPV Safety Cost Savings

Vehicle Delay (Average Peak) — sec/veh

NPV Benefits After Treatment

Zebra + Kerb Extensions & Median Refuge

Crash Reduction: 32 % (*default value 13%*)

NPV Safety Cost Savings

Vehicle Delay (Average Peak) — sec/veh

NPV Benefits After Treatment

Benefit Cost Ratio Calculation

Inputs

Type of Facility Considered: (select an option)

Expected Construction Cost

Outputs

Typical Construction Cost for Facility Considered — (select an option)

NPV Total Pedestrian Delay Savings

NPV Total Vehicle Occupant Delay

NPV Total Safety Cost Savings for Facility Considered — (select an option)

NPV Total Benefits for Facility Considered — (select an option)

Benefit Cost Ratio for Facility Considered

Check appropriateness of facility(ies) from Step 1, or refer to "Summary Sheet"

If Benefit Cost Ratio is unacceptable then consider traffic signals (proceed to Step Six)

Step Six: Will Mid-block Traffic Signals Solve the Problem?

If traffic signals are not appropriate (Step 1) then use physical aids or retain existing situation.
Traffic signals should not be used in isolation, and should only be used as part of an integrated traffic management plan. See Pedestrian Planning and Design Guide for details.
Where there is a need for special provision for the vision impaired and where a signalised mid-block crossing would get insufficient use, consider signalising a nearby intersection.
Consider mid-block signals (co-ordinated where appropriate) where the distance to an adjacent intersection exceeds 150m to 200m, otherwise consider signals at the intersection.

Traffic Signal Benefit Calculation

Analyse the peak performance using a model such as aaSIDRA, and weight the delay to reflect average levels of vehicle occupancy

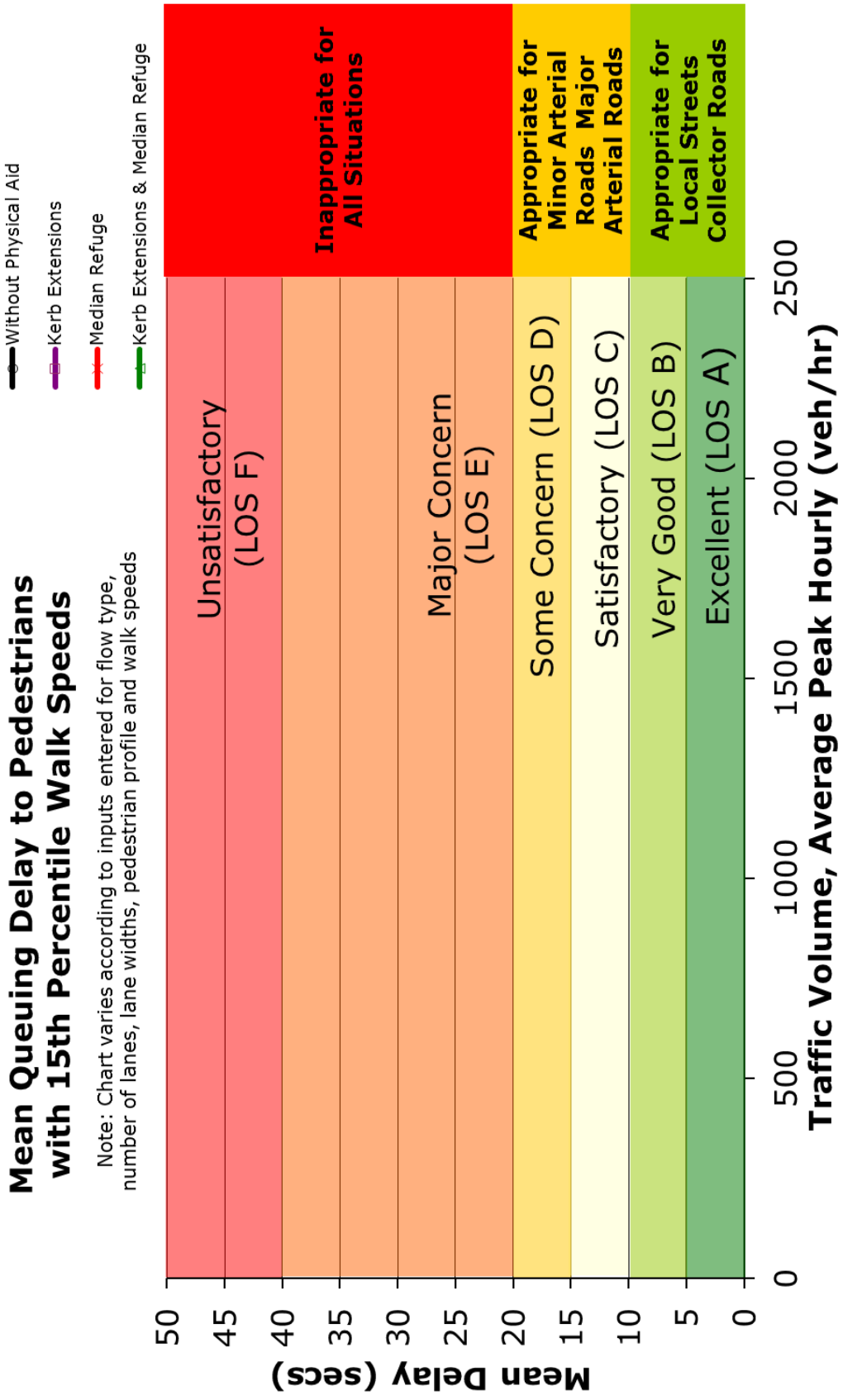
Inputs			***Outputs***		
Pedestrian Delay (Average Peak)		hours/hour	NPV Pedestrian Delay Without Facility		
Vehicle Occupant Delay (Average Peak)		hours/hour	NPV Pedestrian Delay With Signals		
Conversion Factor (estimates average delay to all users throughout day from average peak hour delay to all users)	2.5 *default value 2.5		NPV Vehicle Occupant Delay With Signals		
Expected Crash Reduction	64 % *default value 45%		NPV Safety Cost Savings With Signals	(select an option)	
Expected Construction Cost			NPV Total Benefits for Traffic Signals		
			Benefit Cost Ratio for Traffic Signals		

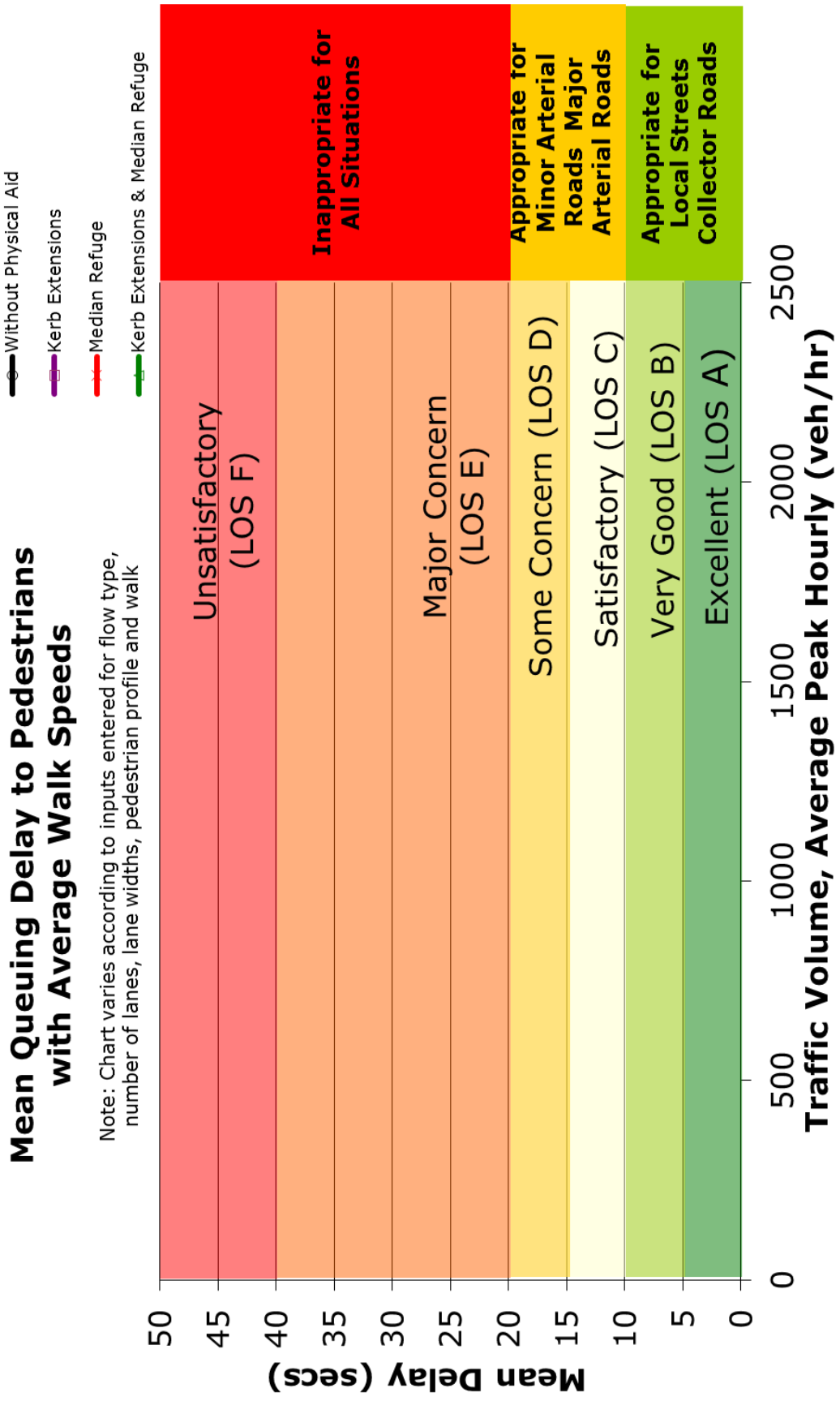
If Benefit Cost Ratio is unacceptable then consider grade separation (proceed to Step Seven)

Step Seven: Will Grade Separation Solve the Problem?

For grade separation (overbridges and underpasses) a full economic analysis is required
Expected crash reductions are 60%, and 70% with barrier fencing
To be more effective the path length at grade should be more than 2.5 to 3 times the path length using the facility
See the Pedestrian Planning and Design Guide for further guidance

Pedestrian Crossing Facilities Selection Guideline Spreadsheet Version 1.2 February 2007


Mean Queuing Delay to Pedestrians with 15th Percentile Walk Speeds
Note: Chart varies according to inputs entered for flow type, number of lanes, lane widths, pedestrian profile and walk speeds
Without Physical Aid
Kerb Extensions
Median Refuge
Kerb Extensions & Median Refuge
Inappropriate for All Situations
Appropriate for Minor Arterial Roads Major Arterial Roads
Appropriate for Local Streets Collector Roads
Unsatisfactory (LOS F)
Major Concern (LOS E)
Some Concern (LOS D)
Satisfactory (LOS C)
Very Good (LOS B)
Excellent (LOS A)
Mean Delay (secs)
0
5
10
15
20
25
30
35
40
45
50
0
500
1000
1500
2000
2500
Traffic Volume, Average Peak Hourly (veh/hr)


Mean Queuing Delay to Pedestrians with Average Walk Speeds
Note: Chart varies according to inputs entered for flow type, number of lanes, lane widths, pedestrian profile and walk
Without Physical Aid
Kerb Extensions
Median Refuge
Kerb Extensions & Median Refuge
Inappropriate for All Situations
Appropriate for Minor Arterial Roads Major Arterial Roads
Appropriate for Local Streets Collector Roads
Unsatisfactory (LOS F)
Major Concern (LOS E)
Some Concern (LOS D)
Satisfactory (LOS C)
Very Good (LOS B)
Excellent (LOS A)
Mean Delay (secs)
0
5
10
15
20
25
30
35
40
45
50
Traffic Volume, Average Peak Hourly (veh/hr)
0
500
1000
1500
2000
2500