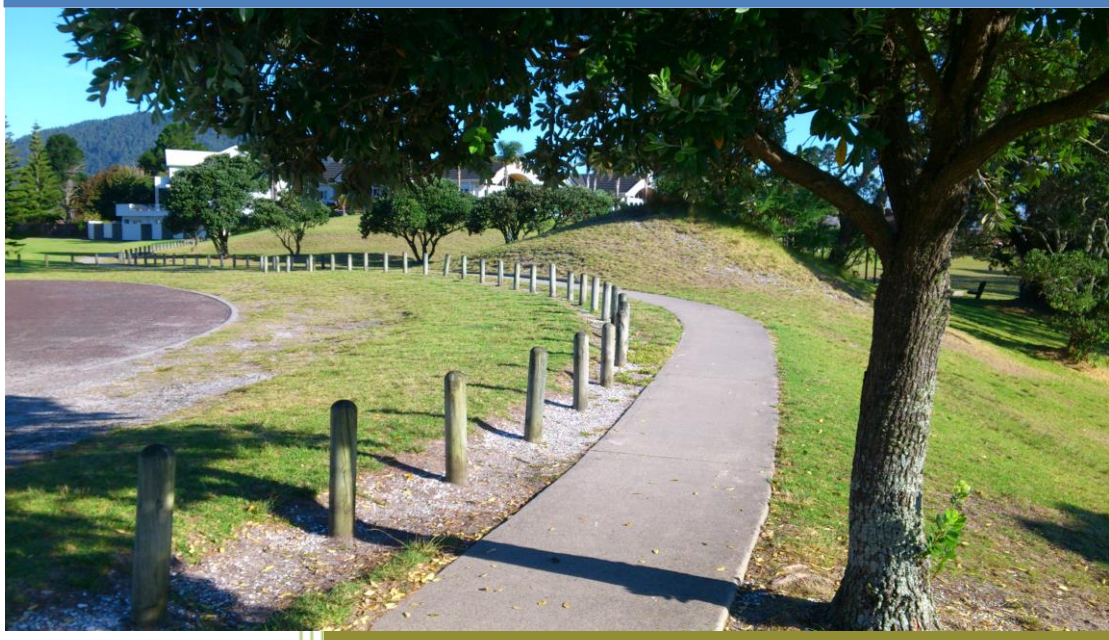
PAUANUI
ACCESSIBILITY AUDIT REPORT



CCS DISABILITY ACTION

TAYLORED ACCESSIBILITY SOLUTIONS LTD

MAY 2014

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Revision History

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1.	Steve Taylor	Draft issued for CCS review	30/5/2014
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Action	Name	Signed	Date
Prepared By			
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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 Pauanui, with particular emphasis for disabled and elderly residents. The audit covers:

- Mobility Parking spaces;
- Kerb ramps;
- Tactiles;
- Footpaths;
- Road crossings;
- Street Furniture;
- Temporary Traffic Management; and
- Access to the Beach.

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.

Pauanui is situated on the eastern side of the Coromandel Peninsula on Hikuai Settlement Road, 12.7km from SH.25. The Pauanui Ocean Beach Resort Limited was formed in the late 1960's and purchased the first block of 256 acres of land which provided the ideal opportunity to 'master-plan' a new township.

Many of the design components of the original development were the first of their kind in New Zealand and Pauanui has often been positioned as a benchmark for quality residential development.

Pauanui pioneered a number of residential design features in New Zealand, which included off road walkways, dual carriageway roads with central islands, large generous areas of public space and reserve areas and all roads were paved in red seal that allowed pedestrians to be more visible and therefore safer. By their nature, these features made for a more accessible environment for all.

Pauanui had a permanent population 753 at the 2013 Census. During the busy Christmas and New Year period the population grows to around 12,000.

28 residents in Pauanui (3.7% of the population) have a Mobility Parking Permit. An estimated 42 people in Pauanui use a mobility aid due to permanent disability. Some of these will have a Mobility Parking Permit and some will not.

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.

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

In Pauanui, at the 2013 Census:

- 53.6% of people were aged 60 years and over. This is an increase from 48.1% in 2006, and compares to 19.3% for New Zealand as a whole.
- 13.3% of people were aged less than 17 years. This is an increase from 12.6% 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.

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

- Vista Paku – Hikuai Settlement Road to End; and
- Pauanui Boulevard.

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 4th March 2014 at the Pauanui Sports & Recreation Centre on Sheppard Avenue.

Following this meeting, site visits were completed. Feedback from the initial Community Consultation Meeting and subsequent site visits identified access issues for Pauanui 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; and
- Street clutter (signage, wares for sale and alfresco dining furniture).

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 15 according to assessed 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 $1,000.

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 Pauanui 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 PAUANUI TOWNSHIP[3]

Pauanui is situated on the eastern side of the Coromandel Peninsula on Hikuai Settlement Road, 12.7km from SH.25. Around the turn of the 20th century there were only a few people living and farming in Pauanui. At that time the only access to the area was by boat.

The area saw little development because of limited access until the late 1960's when construction of State Highway 25A brought Pauanui and the wider Coromandel to within reasonable driving distance of the Waikato and Auckland.

The Pauanui Ocean Beach Resort Limited was formed in the late 1960's and purchased the first block of 256 acres of land which provided the ideal opportunity to 'master-plan' a new township.

Many of the design components of the original development were the first of their kind in New Zealand and Pauanui has often been positioned as a benchmark for quality residential development.

Pauanui pioneered a number of residential design features in New Zealand, which included off road walkways, dual carriageway roads with central islands, large generous areas of public space and reserve areas and all roads were paved in red seal that allowed pedestrians to be more visible and therefore safer. By their nature, these features made for a more accessible environment for all.

[1] Statistics New Zealand – 2013 census URPC Tables
[2] Waikato Regional Council – Community: Thames Coromandel
[3] Pauanui Online: History

Today, Pauanui comprises a mixed population of permanent residents and holidaymakers. The number of dwellings is approximately 2050 and the permanent population 753 at the 2013 census. During the busy Christmas and New Year period the population grows to around 12,000.

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[4]

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[5]

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 28 residents in Pauanui (3.7% 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.

[4] Statistics New Zealand – 2006 Disability Survey: Disability and Travel and Transport in New Zealand 2006
[5] 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[6]. There were 36 people over the age of 85 living in Coromandel in 2013, with largest age group being 60 to 64 year olds[7].

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 PAUANUI

In Pauanui, at the 2013 Census:

- 53.6% of people were aged 60 years and over[8]. This is an increase from 48.1% in 2006, and compares to 19.3% for New Zealand as a whole[9].
- 13.3% of people were aged less than 17 years[10]. This is an increase from 12.6% in 2006, and compares with 24% for all of New Zealand[11].

Based on analysis of age and gender-specific rates of disability, an estimated 42 people in Pauanui use a mobility aid due to permanent disability[12].

[6] Profile.id Community Profile – Thames-Coromandel District
[7] Profile.id Community Profile – Pauanui Service Age Group
[8] Profile.id Community Profile – Pauanui Service Age Group
[9] Statistics New Zealand – Interactive Population Pyramid
[10] Profile.id Community Profile – Pauanui Service Age Group
[11] Statistics New Zealand – Interactive Population Pyramid
[12] 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, Pauanui had a higher percentage of persons aged 60+ (53.6%, compared to 36.1% for the district), and a lower percentage of persons aged below 17 (13.3%, compared to 19.5% for the district). Overall, 44% of the population for Pauanui was aged 65 years and over, compared with 26.9% for the Thames-Coromandel District[13].

[13] Profile.id Community Profile – Pauanui Service Age Group

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 Tairua-Pauanui Community is working with the Coromandel Independent Living Trust to provide pensioner housing in Pauanui[14]. Currently there are 58 units provided for by the Trust in Thames, Coromandel and Whitianga.

Pauanui Pines Cottage Resort is an independent living resort made up of 19 cottages. This is situated at 23 Kennedy Park Drive.

Figure 1: Pauanui Pines - Kennedy Park Drive

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[15]:

- 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] Draft Tairua-Pauanui Community Board Plan – December 2013
[15] 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, 12.8% of the population of Pauanui was aged between 0 and 14, compared with 16.3% for the Thames-Coromandel District[16].

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

Pauanui Pre-school is the local pre-school, located at 34 Sheppard Avenue.

The nearest primary schools are situated at Hikuai and at Tairua.

The nearest high schools are situated in Whitianga, Whangamata, and Thames.

A report commissioned by OECD in 2004[17] 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.

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

OECD recommends for the built environment:

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

- Vista Paku – Hikuai Settlement Road to End; and
- Pauanui Boulevard.

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

The audit boundary includes access to the beach at Pauanui Beach Road, the Surf Club, and the Boat Ramp and Ferry Service.

5 AUDIT

5.1 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 4th March 2014 at the Pauanui Sports & Recreation Centre on Sheppard Avenue.

A small group of older persons attended the meeting to discuss accessibility in Pauanui. A representative from TCDC attended as well.

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; and
- Street clutter (signage, wares for sale and alfresco dining furniture).

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

5.2 CO-OPERATION WITH NZTA

As part of Government representation for roads in New Zealand, NZTA provide substantial funding (usually 55% of costs for approved works) for all roading projects, including maintenance.

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

5.3 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.

5.4 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 Pauanui 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 Thames-Coromandel District to collect data about the way people travel around Pauanui. 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[18]. As stated, the estimated number of people using a mobility aid for permanent disability in Pauanui is 42, or 4.7% of the town population. By counting people on the

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

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

Recommendation 2 Select count sites in Pauanui 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[19]

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[20]

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.

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

7.3 MOBILITY PARKING IN PAUANUI

TCDC has provided 3 public Mobility Spaces in the Pauanui Shopping Centre. The spaces service visitors to the town as well as the 28 Mobility Parking Permit holders that reside in Pauanui.

7.4 PARKING REQUIREMENTS[21]

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[22]

There are approximately 52 formal carparks at the shopping centre, including the three Mobility Spaces. Using Table 1 above, this meets the requirements in NZS 4121:2001.

There are approximately 32 formal spaces on the outer edges of the Pauanui Shopping Centre. There is a direct link from 15 of these parking spaces to the existing site of the Library. To meet NZS 4121:2001 requirements, two Mobility Spaces are required. The ideal location for these would be at outside Shop 19 (Fragola) and the Library.

Discussions at the Community Consultation Meeting discussed the construction of a new Community Centre which will incorporate the Public Library. This is due to be completed in the 2013/14 financial year[23]. Provision should be made for Mobility Spaces in the parking plan.

Recommendation 3 Install two Mobility Spaces on the outer edge of the Pauanui Shopping Centre, outside Shop 19 (Fragola) and the Public Library.

[21] NZS 4121:2001 Section 5: Car parks
[22] NZS 4121:2001 Section 5: Table 1
[23] Draft Tairua-Pauanui Community Board Plan – December 2013

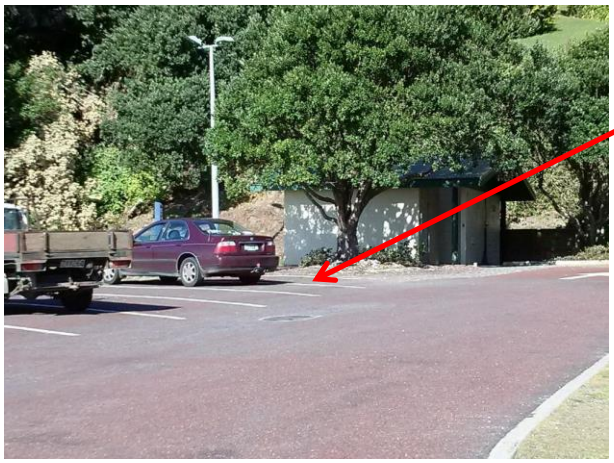
Formal parking for beach access is provided at Royal Billy Point (17 carparks) and South End Reserve (15 carparks). To meet the requirements of NZS 4121:2001, a mobility space is required at each reserve.

The ideal location for a Mobility Space at Royal Billy Point is shown in figure 2. See Section 16: Beach Access for more details on providing access to the beach.

Change carpark to Mobility Space and provide path to Barbeque Area and top of grassed area (See Section 16 for more details).

Figure 2: Proposed Mobility Space at Royal Billy Point

At South End Reserve, the ideal location is shown in figure 2. See Section 16: Beach Access for more details on providing access to the beach.



Change two carparks to one Mobility Space and provide path to beach and pedestrian bridge (See Section 16: Access to Beach for more details).

Figure 3: Proposed location of Mobility Space at South End Reserve

Further formal parking is available at the Pauanui Sport and Recreation Centre and Gallagher Park. Accessibility Audits at these locations will identify and complete Mobility Space requirements for Pauanui.

Recommendation 4 Install Mobility Spaces at Royal Billy Point and South End Reserve to meet NZS 4121:2001 requirements.

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.

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

7.5 LOCATION OF MOBILITY SPACES

As mentioned previously, there are three Mobility Spaces situated for users accessing the Pauanui Shopping Centre. They are located outside:

- Shop 3 (Archey's);

Figure 4: Mobility Space outside Shop 3

- Public Library; and

Figure 5: Mobility Space at Public Library

- Pauanui Bakery.

Figure 6: Mobility Space at Pauanui Bakery

The locations of the three Mobility Spaces provide good access to all the shops in the Pauanui Shopping Centre.

Recommendation 7 Retain the existing position of the three Mobility Spaces in the Pauanui Shopping Centre.

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 7: Mobility Space with full length access to footpath

The three Mobility Spaces at the Pauanui Shopping Centre have asphaltic concrete ramps to access the footpath. By extending these ramps to full length, provision will be provided for all users.

Recommendation 8 Install full length kerb ramps at all Mobility Spaces to provide quick, easy access to the footpath.

Vegetation was an issue at the Mobility Space outside Shop 3 and the Public Library. Trimming the low level planting will assist in the quick navigation to the footpath.

Recommendation 9 Trim the vegetation beside the Mobility Spaces at Shop 3 and the Public Library to provide quick navigation 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[24] and a length of 5m[25]. 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.

[24] NZS 4121:2001 – Section 5.5.1.2: Angle Parking
[25] NZS 4121:2001 – Section 5.5.2: Length

The TCD Manual allows a 3.0m wide angle space, which does not allow for transferring to the wheelchair, and 5.4m length[26].

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[27].

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 10 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.

Recommendation 11 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 outside Shop 3 measured at 3.1m wide. Widening to 3.5m will improve the Mobility Space usage for most access customers (see figure 4).

Recommendation 12 Widen the Mobility Space at Shop 3, Pauanui Shopping Centre to 3.5m to meet the requirements of NZS 4121:2001.

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[28].

[26] TCD Manual Part 13: Parking Control – Section 5.3.2 – Table 5.3
[27] TCD Manual Part 13: Parking Control – Section 5.3.1 – Table 5.2

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[29]. 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 8.

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.

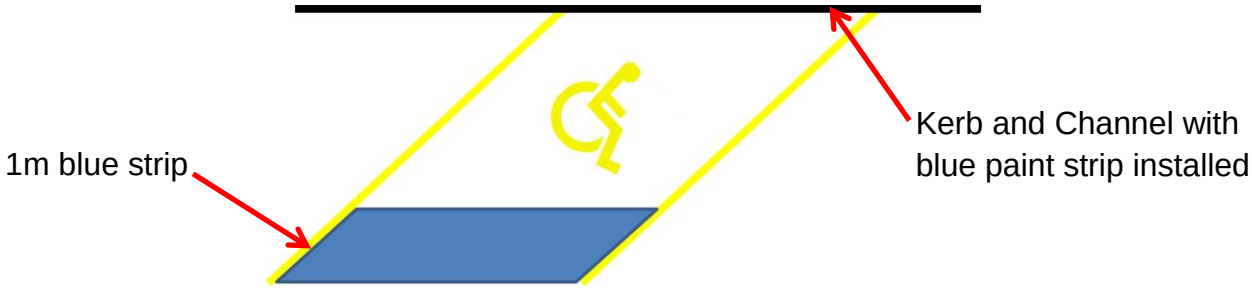


Figure 8: Mobility Space with blue surfacing design

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

Recommendation 13 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.

The regular maintaining of yellow markings and symbol compliments the blue markings. The three Mobility Spaces at the Pauanui Shopping Centre require re-marking to meet the requirements of the Land Transport Rule.

Recommendation 14 Re-mark the three Mobility Spaces at the Pauanui Shopping Centre to comply with Land Transport Rule: Traffic Control Devices 2004.

[28] TCD Amendment 2010 Rule 54002/4 – Sections 2.6 and 2.19
[29] 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%)[30]. 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 Pauanui is excellent with the crossfall well within the absolute maximum grade.

7.10 SIGNAGE

Signage is a key ingredient for accessibility. By installing signs, the Mobility Space is visible from the entrance of the carpark, and helps all carpark users identify the spaces.

A sign incorporating the international symbol of access shall identify car park spaces. The sign shall be readily visible from a vehicle at the entrance to the carpark, or guide signs shall be provided to indicate the direction of the Mobility Space[31].

The three Mobility Spaces at the Pauanui Shopping Centre do not have signage.

Recommendation 15 Install signage that complies with NZS 4121:2001 at the three Mobility Spaces at Pauanui Shopping Centre to improve visibility at the entrance to the carpark.

[30] NZS 4121:2001 Section – 5.6 – Surface
[31] NZS 4121:2001 Section – 5.3.1 – Signs

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 16 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.

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

The intersections in the geographic area of interest are:

- Vista Paku – Intersections with Courtney Place, Dunlop Drive, Pauanui Boulevard, Coutts Road, El Dorado Leader, Pleasant Place, Given Grove, Pitkethley Circle, Kennedy Park Drive, Sheppard Avenue, Victoria Court, Triumph Dell, Ajax Head, Centreway, Jubilee Drive, The Dividend, Conqueror Rise, and Blucher Reef;
- Pauanui Boulevard – Intersections with Parsons Dell, Beaumont Green, Gallagher Park Lane, Mountain Vista Place, Bonanza Place, Champion Place, Jubilee Drive, Jacksons Claim, Oxley Close, Braddock Grove, Easdale Place, Oceanair Drive, Wilton Smith Avenue, Kennedy Park Drive, McCormick Place, Prescott Place, The Dunes, Justintime, Bagnall Place, Claxton Avenue, McCall Avenue, Lowe Park Lane, and Bell Road; and
- Jubilee Drive – Intersections with Chelmsford Court, Winderton Way, Glen Venus, Glen Neaves, Coronation Row, Opal Place, and Centreway.

As Pauanui is quite flat and fairly modern in design, most kerb ramps were of an acceptable grade. Only one kerb ramp was greater than 1 in 12 (8.33%):

- Pauanui Boulevard/Kennedy Park Drive – north side measured at 1 in 5.7 (17.6%).

Recommendation 17 Replace the kerb ramp on the north side of Pauanui Boulevard/Kennedy Park Drive to a maximum grade of 1 in 14 (7.1%).

However, all kerb ramps measured less than 1.8m in width.

Recommendation 18 Replace all kerb ramps as required during the maintenance programme to a minimum width of 1.8m.

8.2 MISSING KERB RAMPS

A number of intersections in Pauanui are missing kerb ramps. As mentioned earlier, a missing kerb ramp may require an access user to use the live traffic lane before accessing the footpath at a driveway or another intersection.

The intersections missing kerb ramps for crossing the side roads off Vista Paku are:

- Centreway – south side crossing Centreway;

Figure 9: Vista Paku/Centreway intersection

- Jubilee Drive – both sides crossing Jubilee Drive; and
- Conqueror Rise – west side crossing Conqueror Rise.

Figure 10: Crossing Conqueror Rise

The intersections missing kerb ramps for crossing the side roads off Pauanui Boulevard are:

- Parsons Dell – both sides crossing Parsons Dell;
- Gallagher Park Lane – both sides crossing Gallagher Park Lane;
- Oxley Close – both sides crossing Oxley Close;
- Braddock Grove – both sides crossing Braddock Grove;
- Wilton Smith Avenue – both sides crossing Wilton Smith Avenue;

- Kennedy Park Drive – south side crossing Kennedy Park Drive;

Figure 11: Pauanui Boulevard/Kennedy Park Drive intersection

- McCormick Place – north side crossing McCormick Place;

Figure 12: Crossing McCormick Place

- Lowe Park Lane – north side crossing Lowe Park Lane; and

Figure 13: Lowe Park Lane - NW corner

- Bell Road – both sides crossing Bell Road.

The intersections missing kerb ramps for crossing the side roads off Jubilee Drive are:

- Jubilee Drive/Glen Venus – both sides crossing Glen Venus; and
- Jubilee Drive/Glen Neaves – both sides crossing Glen Neaves.

Recommendation 19 Install kerb ramps at the following intersections:

- Vista Paku/Jubilee Drive – both sides crossing Jubilee Drive;
- Vista Paku/Conqueror Rise – west side crossing Conqueror Rise;
- Pauanui Boulevard/Parsons Dell – both sides crossing Parsons Dell;
- Pauanui Boulevard/Gallagher Park Lane – both sides crossing Gallagher Park Lane;
- Pauanui Boulevard/Oxley Close – both sides crossing Oxley Close;
- Pauanui Boulevard/Braddock Grove – both sides crossing Braddock Grove;
- Pauanui Boulevard/Wilton Smith Avenue – both sides crossing Wilton Smith Avenue;
- Pauanui Boulevard/Kennedy Park Drive – south side crossing Kennedy Park Drive;
- Pauanui Boulevard/McCormick Place – north side crossing McCormick Place;
- Pauanui Boulevard/Lowe Park Lane – north side crossing Lowe Park Lane;
- Pauanui Boulevard/Bell Road – both sides crossing Bell Road;
- Jubilee Drive/Glen Venus – both sides; and
- Jubilee Drive/Glen Neaves – both sides.

There are a number of locations where the inclusion of the kerb ramp will complete the connectivity of pedestrian facilities across the main roads of Vista Paku, Pauanui Boulevard and Jubilee Drive from the side roads, including those that have a footpath on one side only. These locations are discussed in more detail in Section 10: Crossing Opportunities.

8.3 ALIGNMENT

Correct alignment of kerb ramps aid visually impaired users to navigate a crossing point at an intersection. If kerb ramps are not directly opposite each other, accessing the footpath can pose a safety risk by visually impaired users using the alignment of the kerb until they find the kerb ramp. Given the lack of kerb ramps and the ‘mountable’ kerb used, confusion is also a concern as to whether a kerb ramp is there or not.

The correct installation of a kerb ramp can ensure a visually impaired user is moving in the right direction. The installation of Tactiles completes the accessibility package and is discussed in Section 9: Tactiles.

The intersections that require re-alignment of kerb ramps are:

- Vista Paku/Dunlop Drive – This would require relocating 5m of the footpath on each side of the intersection to align with the concrete refuge in the splitter island. It is extremely difficult to move the alignment of the concrete refuge due to the tree roots and potential damage to the tree. A good example of this is at Vista Paku/Given Grove intersection;

Figure 14: Alignment of crossing at the intersection of Vista Paku and Dunlop Drive

- Vista Paku/Pauanui Boulevard – Remove old kerb ramp to minimise the risk of visually impaired users crossing at the wrong location;

Figure 15: Old kerb ramp at Vista Paku/Pauanui Boulevard intersection

- Vista Paku/Sheppard Avenue – Install kerb ramps north of the roundabout crossing Vista Paku, remove the kerb ramp crossing Vista Paku at the Petrol Station, and relocate the crossing point on Sheppard Avenue north of the roundabout to minimise the risk of pedestrians crossing in the roundabout lane;

Figure 16: Existing crossing opportunity of Vista Paku at Sheppard Avenue

Figure 17: New crossing alignments at Vista Paku/Sheppard Avenue intersection

- Pauanui Boulevard/Britannia Dell – re-locate kerb ramp on east side;

Figure 18: Kerb ramps at Britannia Dell

- Pauanui Boulevard/Jubilee Drive – Re-locate kerb ramp on north side of Jubilee Drive; and

Figure 19: Pauanui Boulevard/Jubilee Drive intersection

- Jubilee Drive/Coronation Row – Re-locate the kerb ramp on the west side of Coronation Row and install concrete refuge.

Figure 20: Crossing opportunity at Coronation Row

Recommendation 20 Re-locate the following kerb ramps to improve alignment:

- Vista Paku/Dunlop Drive – re-align 5m of footpath either side of Dunlop Drive;
- Vista Paku/Pauanui Boulevard – Remove old kerb ramp;
- Vista Paku/Sheppard Avenue – Install kerb ramps north of the roundabout crossing Vista Paku, remove the kerb ramp crossing Vista Paku at the Petrol Station, and relocate the crossing point on Sheppard Avenue north of the roundabout;
- Pauanui Boulevard/Britannia Dell – re-locate kerb ramp on east side;
- Pauanui Boulevard/Jubilee Drive – Re-locate kerb ramp on north side of Jubilee Drive; and
- Jubilee Drive/Coronation Row – Re-locate the kerb ramp on the west side of Coronation Row and install concrete refuge.

8.4 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.

Figure 21: Seal edge join after re-sealing

Recommendation 21 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.

Figure 22: Tactiles at the Vista Paku/Coutts Road 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

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

Recommendation 22 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.

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

Warning Indicators shall be installed[38]:

- 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.

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

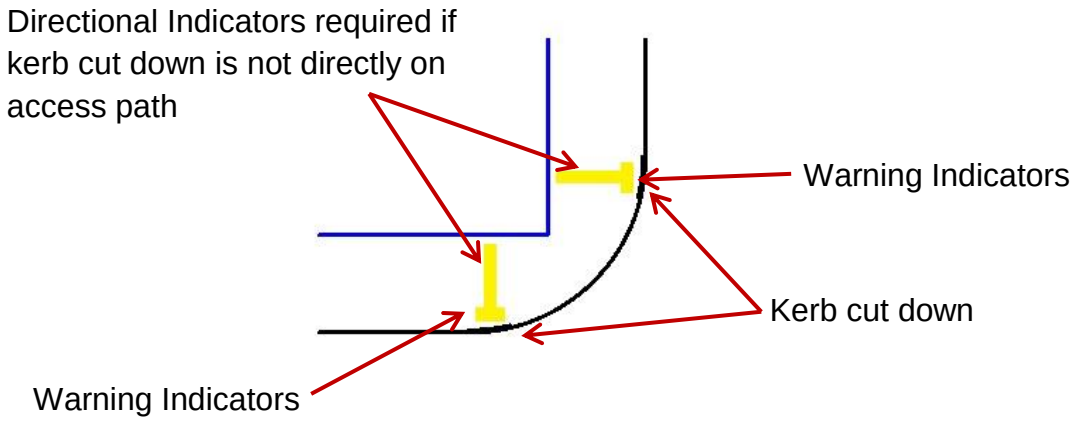


Figure 23: Preferred Layout of crossing points with Tactile Paving

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

Recommendation 24 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.

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

9.6 INTERSECTIONS IN PAUANUI

The following intersections require the installation of Warning Indicators:

- Vista Paku – Intersections with Dunlop Drive, Pauanui Boulevard, Pleasant Place, Given Grove, Kennedy Park Drive, Sheppard Avenue, Centreway, Jubilee Drive, The Dividend, and Pauanui Boulevard/Hikuai Settlement Road;

Figure 24: Crossing Vista Paku at Pauanui Boulevard

- Pauanui Boulevard – Intersections with Parsons Dell, Gallagher Park Lane, Britannia Dell, Monarch Grove, Jubilee Drive, Oxley Close, Braddock Grove, Easdale Place, Oceanair Drive, Wilton Smith Avenue, Kennedy Park Drive, McCormick Place, Prescott Place, The Dunes, Bagnall Place, McCall Avenue, Lowe Park Lane, and Bell Road;

Figure 25: Crossing Pauanui Boulevard at Prescott Place

- Kennedy Park Drive – Intersections with Pauanui Pines;

Figure 26: Kennedy Park Drive/Pauanui Pines entrance

- Jubilee Drive – Intersections with Chelmsford Court, Glen Venus, Glen Neaves, Coronation Row, Opal Place; and

Figure 27: Jubilee Drive/Chelmsford Court

- Centreway – Intersection with Harvard Court.

Figure 28: Centreway/Harvard Court intersection

Recommendation 25 Install Warning Indicators at the following intersections:

- Vista Paku – Intersections with Dunlop Drive, Pauanui Boulevard, Pleasant Place, Given Grove, Kennedy Park Drive, Sheppard Avenue, Centreway, Jubilee Drive, The Dividend, and Pauanui Boulevard/Hikuai Settlement Road;
- Pauanui Boulevard – Intersections with Parsons Dell, Gallagher Park Lane, Britannia Dell, Monarch Grove, Jubilee Drive, Oxley Close, Braddock Grove, Easdale Place, Oceanair Drive, Wilton Smith Avenue, Kennedy Park Drive, McCormick Place, Prescott Place, The Dunes, Bagnall Place, McCall Avenue, Lowe Park Lane, and Bell Road;
- Kennedy Park Drive – Intersections with Pauanui Pines;
- Jubilee Drive – Intersections with Chelmsford Court, Glen Venus, Glen Neaves, Coronation Row, Opal Place; and
- Centreway – Intersection with Harvard Court.

The following intersections require the installation of Directional Indicators:

- Vista Paku – Intersections with Pauanui Boulevard, Kennedy Park Drive, Sheppard Avenue, Pauanui Boulevard/Hikuai Settlement Road (all crossing Vista Paku), Centreway, and Conqueror Rise (west side);

Figure 29: Vista Paku/Kennedy Park Drive

- Pauanui Boulevard – Intersections with Beaumont Green, Mountain Vista Place, Jubilee Drive (in line with walkway to beach), Prescott Place, Justintime (all crossing Pauanui Boulevard); and

Figure 30: Crossing Pauanui Boulevard at Beaumont Green

- Centreway – crossing Harvard Court (east side only).

Recommendation 26 Install Directional Indicators at the following intersections:

- Vista Paku – Intersections with Pauanui Boulevard, Kennedy Park Drive, Sheppard Avenue, Pauanui Boulevard/Hikuai Settlement Road (all crossing Vista Paku), Centreway, and Conqueror Rise (west side);
- Pauanui Boulevard – Intersections with Beaumont Green, Mountain Vista Place, Jubilee Drive (in line with walkway to beach), Prescott Place, Justintime (all crossing Pauanui Boulevard); and
- Centreway – crossing Harvard Court (east side only).

9.7 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 16 is carried out, Warning Indicators should be installed to the full width of the kerb ramp.

Recommendation 27 Ensure all Warning Indicators are installed to the full width of the kerb ramp as required in Recommendation 17.

9.8 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 Vista Paku/Sheppard Avenue intersection (crossing Sheppard Avenue east) lead the visually impaired user into the splitter island. They are also a grey colour that blends in with the footpath. Replace and re-align these Tactiles to safety yellow standard.

Figure 31: Tactiles at Vista Paku/Sheppard Avenue intersection

Recommendation 28 Replace and re-align the Tactiles to standard yellow standard at the Vista Paku/Sheppard Avenue intersection.

9.9 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 G.A.S Service Station at the Vista Paku/Sheppard Avenue intersection will provide delineation of the footpath for visually impaired users.

Figure 32: Vehicle entrance to the G.A.S Service Station at the intersection of Vista Paku and Sheppard Avenue

Recommendation 29 Install yellow lines at the G.A.S Service Station at the Vista Paku/Sheppard Avenue intersection 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 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="3">Both Sides</td><td colspan="2" rowspan="2">Both Sides</td></tr>
<tr><td>Residential (on Arterials)</td></tr>
<tr><td>Residential (on Collector roads)</td><td colspan="2" rowspan="2">Both Sides</td><td>One Side</td></tr>
<tr><td>Residential (on Local Streets</td></tr>
</table>

Table 2: When to Provide Footpaths[41]

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

[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

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
Vista Paku	West side – Royal Billy Point to opposite Jubilee Drive; The Dividend to Pauanui Boulevard/Hikuai Settlement Road. East side – opposite Dunlop Drive to opposite The Dividend; Blucher Reef to Pauanui Boulevard/Hikuai Settlement Road.
Pauanui Boulevard	North/West side – Full length South/East side – Beaumont Green (east intersection) to Mountain Vista Place; Bonanza Place to underpass; Claxton Avenue to Vista Paku.
Kennedy Park Drive	North side – Vista Paku to Kennedy Park entrance; 18 Kennedy Park Drive to Pauanui Boulevard. South side – Full length.
Jubilee Drive	North side – Centreway to Pauanui Boulevard. South side – Full length.
Centreway	North side – Full length. South side – No footpath.

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

10.2 VISTA PAKU

As shown in Table 3, Vista Paku is missing footpath on the west side between Jubilee Drive and The Dividend and on the east side between Royal Billy Point and Dunlop Drive, and opposite The Dividend to Blucher Reef.

Figure 33: Vista Paku - missing footpath south of Royal Billy Point

To meet PPDG requirements, installation of footpath (approx. 580m) to 'fill the gaps' will complete the pedestrian network on Vista Paku.

Recommendation 30 Install approx. 580m of footpath to complete the pedestrian network on Vista Paku and meet the requirements of PPDG.

10.3 PAUANUI BOULEVARD

As shown in Table 3, Pauanui Boulevard is missing footpath on the south/east side between Vista Paku/Hikuai Settlement Road and Beaumont Green (east intersection); Mountain Vista Place to Bonanza Place; and the Underpass to Claxton Avenue.

Figure 34: Missing footpath on Pauanui Boulevard

A number of side roads connecting to Pauanui Boulevard only have a footpath on one side:

- Beaumont Green;
- Mountain Vista Place;
- Bonanza Place;
- Champion Place;
- Jacksons Claim;
- Justintime; and
- Claxton Avenue.

To meet PPDG requirements and complete the pedestrian network for Pauanui Boulevard, the installation of a footpath (approx. 1800m) on the east side is required.

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 31 Create a long term programme to install approx. 1800m of footpath to complete the pedestrian network on Pauanui Boulevard and 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.

In the short term, the installation of regular crossing points along Pauanui Boulevard will reduce the risk of access users using the carriageway. This is discussed in further detail in Section 11: Street Crossings.

10.4 KENNEDY PARK DRIVE

As shown in Table 3, Kennedy Park Drive is missing footpath between the entrance to Kennedy Park to 18 Kennedy Park Drive.

Figure 35: Missing footpath on Kennedy Park Drive

Installing approx. 130m of footpath on Kennedy Park Drive will complete the pedestrian network on Kennedy Park Drive and aid in the connectivity with Kennedy Park. This will also meet the requirements of PPDG.

Recommendation 32 Install approx. 130m of footpath on Kennedy Park Drive to complete the pedestrian network on Kennedy Park Drive and meet PPDG requirements.

10.5 JUBILEE DRIVE

Jubilee Drive is missing footpath on the north side from Vista Paku to Centreway. As Jubilee Drive provides a connection for access users from the south of the Pauanui Shopping Centre, the installation of approx. 160m of footpath will complete the pedestrian network on Jubilee Drive.

Install 160m of footpath to complete network

Figure 36: Jubilee Drive - Vista Paku to Centreway

Recommendation 33 Install approx. 160m of footpath on Jubilee Drive to complete pedestrian network requirements.

10.6 CENTREWAY

Centreway connects Vista Paku to the Pauanui Shopping Centre from the northern suburb. A footpath is missing on the south side of Centreway.

Installing a footpath (approx. 120m) will complete the pedestrian network on Centreway as well as provide a connection to the pedestrian crossing that is behind the Library.

Figure 37: Pedestrian crossing on Centreway

Recommendation 34 Install approx. 120m of footpath on Centreway from Vista Paku to the pedestrian crossing to complete the requirements of PPDG.

10.7 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 geographic area of interest are equal to or below the absolute minimum of 1.5m. A narrow footpath creates difficulty for mobility scooters

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

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.

Table 5 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
Vista Paku	Collector	≤1.5m	1.8m
Pauanui Boulevard	Collector	≤1.5m	1.8m
Kennedy Park Drive	Collector	≤1.5m	1.8m
Jubilee Drive	Collector	≤1.5m	1.8m
Centreway	Local	≤1.5m	1.5m

Table 5: Required Footpath Widths

Recommendation 35 Replace footpaths to the widths as stated by the Pedestrian Planning Design Guide when footpaths are upgraded as part of the maintenance programme.

10.8 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.

Vegetation was not considered a concern for narrowing footpaths in Pauanui.

10.9 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.

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 Pauanui Shopping Centre. 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 with some uneven settlement.

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.

Figure 38: Cobblestone path at the Pauanui Shopping Centre

Recommendation 36 Replace cobblestones 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 only major defect noted during the audit was the footpath lifting on Pauanui Boulevard, east of Vista Paku/Hikuai Settlement Road intersection.

Figure 39: Lifting footpath on Pauanui Boulevard – east of Vista Paku/Hikuai Settlement Road

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 40: Footpath repair marks on Vista Paku

Recommendation 37 Maintain the good maintenance programme to ensure a high standard of footpath is provided in Pauanui.

Recommendation 38 Repair the footpath on Pauanui Boulevard (east of Vista/Hikuai Settlement Road intersection.

10.10 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 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 39 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 Pauanui, this is only a concern at the underpass on Vista Paku and the underpass on Pauanui Boulevard.

The underpass on Vista Paku has the following grades from the footpath on Vista Paku:

- NE grade – 1 in 4.8 (21%);
- SE grade – 1 in 5.8 (17.2%);
- NW grade – 1 in 4.3 (23.4%); and
- SW grade – 1 in 3.9 (25.6%).

Figure 41: Vista Paku Underpass

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

The underpass on Pauanui Boulevard has the following grades from the footpath on Pauanui Boulevard:

- SW grade – 1 in 6.8 (14.7%);
- NW grade – 1 in 6.5 (15.4%);
- Path into Underpass (west) – 1 in 5.3 (18.7%);
- Path into Underpass (east) – 1 in 8.9 (11.2%); and
- SE grade – 1 in 5.7 (17.4%).

As the Annual Daily Traffic (ADT) volume is relatively low, a short term solution will be to install signage advising accessibility users of a grade greater than 1 in 12 (8.33%). See Section 11.9: Volume of Traffic in Pauanui for more details on ADT's.

Figure 42: Underpass on Pauanui Boulevard

Recommendation 40 Install signage to warn accessibility users of a grade greater than 1 in 12 at the underpasses on Vista Paku and Pauanui Boulevard.

Recommendation 41 Re-grade the connections to the Underpasses on Vista Paku and Pauanui Boulevard to a max. grade of 1 in 14 (7.1%).

10.11 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 42 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

11 STREET CROSSINGS

11.1 PROVISION OF CROSSINGS[45]

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.

[45] 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 43 Adopt the Pedestrian Crossing Facilities Calculation Spreadsheet for use when determining pedestrian crossing facilities.

11.3 KERB EXTENSIONS[46]

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;

[46] 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[47]

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.

[47] 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[48]

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;

[48] 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[49]. 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 43: Ideal pedestrian refuge island crossing facility

[49] 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[50].

11.6 PEDESTRIAN ZEBRA CROSSINGS[51]

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[52]

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.

[50] International Road Assessment Programme – Road Safety Toolkit
[51] Pedestrian Planning Design Guide: Section 6.7.5 – Pedestrian zebra crossings
[52] 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 44: 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[53]:

- 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 PAUANUI

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.

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. Volume of traffic was not raised at the Community Consultation Meeting as a concern but consideration should be taken as to the best

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

time of the year to record traffic volumes and speed data to gain a true reflection of traffic behaviour in the area.

Recommendation 44 Measure traffic volumes and speed data in the summer months to determine peak traffic volumes when calculating new crossing opportunities.

11.10 NEW CROSSING OPPORTUNITIES

Pauanui has a number of side roads that connect to Vista Paku and Pauanui Boulevard. With the main shopping centre situated on Centreway and Jubilee Drive, pedestrian access is required to use either Vista Paku or Pauanui Boulevard at some stage to access the shops.

Providing safe and effective pedestrian crossing facilities in regular locations along these two collector roads will minimise the barrier that they potential can create.

With Pauanui Boulevard having a footpath on the north/west side only, connection from the side roads on the east side is more important.

The following side roads require connection to the footpath on the opposing side of the intersection:

- Vista Paku – connection from Courtney Place to the footpath on the west side of Vista Paku; and
- Pauanui Boulevard – Beaumont Green (east intersection), Bonanza Place, Champion Place, Jacksons Claim, Easdale Place, Justintime, Claxton Avenue, McCall Avenue, Lowe Park Lane.

Figure 45: Connection from Beaumont Green to Pauanui Boulevard

The volume of the traffic on Vista Paku between Hikuai Settlement Road/Pauanui Boulevard and Given Grove is approx. 700 veh./day. From Given Grove to Royal Billy Point, the volume of traffic is approx. 100-150 veh./day.

The volume of the traffic on Pauanui Boulevard varies from 200 to 900 veh/day.

Given the low volume of traffic, and the separated northbound/southbound lanes for the majority of Vista Paku and Pauanui Boulevard, the provision of kerb ramps and concrete paths will be sufficient to complete access for the side roads above.

Recommendation 45 Install kerb ramps and concrete paths to connect the footpath from Courtney Place to the footpath on Vista Paku.

Recommendation 46 Install kerb ramps and concrete paths to connect the footpath from Beaumont Green (east intersection), Bonanza Place, Champion Place, Jacksons Claim, Easdale Place, Justintime, Claxton Avenue, McCall Avenue, Lowe Park Lane to the footpath on Pauanui Boulevard.

Jubilee Drive and Centreway are the main pedestrian accessways to the shopping centre. Connections across Vista Paku will complete the pedestrian network.

Recommendation 47 Install kerb ramps and 1.5m concrete paths at Jubilee Drive and Centreway to improve access to the Pauanui Shopping Centre

11.11 EXISTING CROSSING OPPORTUNITIES

TCDC currently provide crossing opportunities along Vista Paku (excluding the underpass) at:

- Dunlop Drive – requires kerb ramps on each side of Vista Paku and a 1.5m concrete path in the centre refuge;
- Pauanui Boulevard (see figure 24);
- El Dorado Leader – Requires a 1.5m concrete path in centre refuge;
- Kennedy Park Drive (see figure 29) – requires relocating approx. 5m north of current location;
- Triumph Dell – requires kerb ramp on east side and a 1.5m flush concrete path in centre refuge;
- The Dividend – requires re-locating approx. 5m south of current location; and
- Pauanui Boulevard/Hikuai Settlement Road – requires kerb ramp on east side and a 1.5m concrete path in centre refuge.

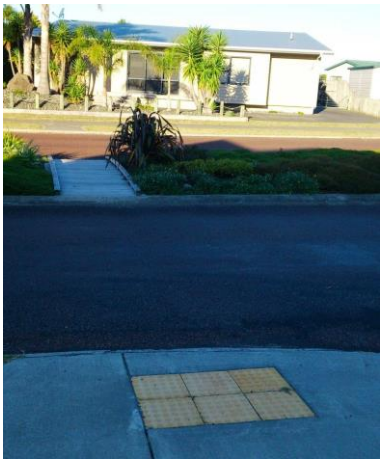


Figure 46: Crossing Vista Paku at Triumph Dell

Figure 47: Crossing Vista Paku at Pauanui Boulevard/Hikuai Settlement Road

Recommendation 48 Install kerb ramps at the crossing facilities of Vista Paku with Dunlop Drive (both sides), Triumph Dell (east side), and Pauanui Boulevard/Hikuai Settlement Road.

Recommendation 49 Install 1.5m concrete paths in the centre refuge at the crossing facilities of Vista Paku with Dunlop Drive, El Dorado Leader, Triumph Dell, Pauanui Boulevard/Hikuai Settlement Road.

Recommendation 50 Re-locate the crossing facilities of Vista Paku at Kennedy Park Drive and The Dividend.

Crossing opportunities of Pauanui Boulevard (excluding the underpass) are at:

- Vista Paku/Hikuai Settlement Road – requires a 1.5m concrete path in the centre refuge;

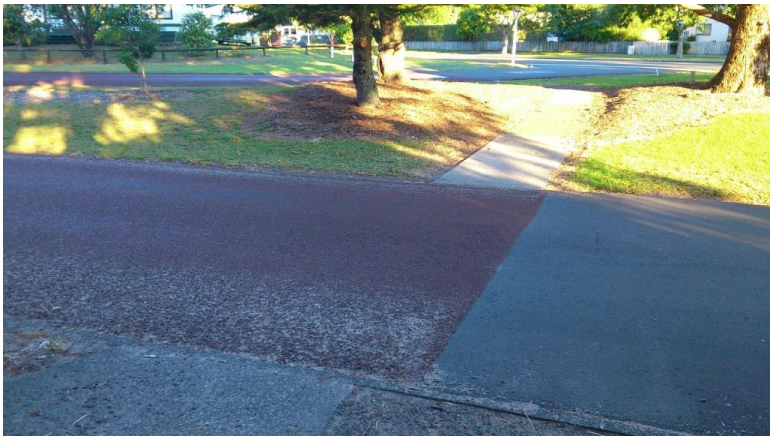


Figure 48: Crossing Pauanui Boulevard at the Vista Paku/Hikuai Settlement Road intersection

- Beaumont Green (west intersection) – requires kerb ramps on both sides and a 1.5m concrete path in the centre refuge (see figure 30);

- Mountain Vista Place – requires a kerb ramp on the north/west side of Pauanui Boulevard;

Figure 49: Crossing Pauanui Boulevard at Mountain Vista Place

- Monarch Grove – Relocate approx. 5m north of current location;

Figure 50: Crossing Pauanui Boulevard at Monarch Grove

- Jubilee Drive – Install kerb ramps on each side of Pauanui Boulevard and a 1.5m concrete path in the centre refuge; and
- Prescott Place – Install kerb ramps on both sides of Pauanui Boulevard and a 1.5m concrete path in the centre refuge (see figure 25).

Recommendation 51 Install kerb ramps at the crossing facilities of Pauanui Boulevard with Beaumont Green (west intersection - both sides), Mountain Vista Place (north/west side), Jubilee Drive (both sides), and Prescott Place (both sides).

Recommendation 52 Install 1.5m concrete paths in the centre refuge at the crossing facilities of Pauanui Boulevard with Beaumont Green (west intersection), Jubilee Drive, and Prescott Place.

Recommendation 53 Re-locate the crossing facility of Pauanui Boulevard at Monarch Grove.

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[54].

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[55]

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.

[54] North Shore City Council – Design of Streets: How should street furnishings be incorporated into street design?
[55] 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 54 Adopt a Pedestrian Signage Policy to inform users of their choices in accessing destination points.

12.2 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.

Some businesses in the Pauanui Shopping Centre regularly install al-fresco dining 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 as they won't necessarily see stock, they become a trip hazard.

Figure 51: Stock outside a shop at the Pauanui Shopping Centre

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 52: Street Furniture at the Pauanui Shopping Centre

Al-fresco dining causes an access issue at the Pauanui Bakery. The location of the picnic tables makes it awkward for accessibility users to access the footpath from the Mobility Space.

Figure 53: Picnic tables blocking access from the Mobility Space at Pauanui Bakery

Recommendation 55 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 at the Shopping Centre in Pauanui. Most are very well located near the kerb edge and are easily accessible to use. The only concern is the rubbish bins located at the Mobility Space outside Shop 3 (Archey's). They are currently situated at the front drivers' side of the Mobility Space. Moving

these to the east of the current location will improve accessibility to the footpath for access drivers.

Figure 54: Rubbish Bin located at the front of the Mobility Space outside Archey's

Recommendation 56 Re-locate the rubbish bins outside Archey's to improve access to the footpath.

12.4 SEATING

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[56].

The Inclusive Design for Getting Outdoors suggests the following requirements are beneficial for older persons[57]:

- 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

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

surveillance because it can sometimes attract anti-social behaviour, and that consideration should be given to pedestrian desire lines.

Public seating in Pauanui is generally confined to providing picnic areas or views of the beach, with limited seating at the Shopping Centre.

Figure 55: Seating available near the beach at South End Reserve.

Recommendation 57 Adopt the Inclusive Design for Getting Outdoors as part of its design for future installation of public seating.

13 TEMPORARY TRAFFIC MANAGEMENT

Where work activities in the road corridor affect pedestrians or cyclists, the Temporary Traffic Management (TTM) must ensure that[58]:

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

Recommendation 59 Conduct regular 'random' audits of Temporary Traffic Management as part of the supervision process of Traffic Management Plans.

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

14 BEACH ACCESS

14.1 OVERVIEW

Pauanui is located between Tairua Harbour and the Pacific Ocean on the east side of the Coromandel Peninsula. Three main locations were identified for access to the beach:

- South End Reserve (access from Pauanui Beach Road);
- The Surf Club (access from Pauanui Boulevard); and
- Royal Billy Point (access from Vista Paku).

14.2 COMMUNITY REQUEST

The Community Consultation Meeting discussed access to the beach. Access onto the beach creates its own problems for wheelchair and mobility scooters due to the soft sand. The attendees recognised this problem, and requested the opportunity to at least see the waves. Grass walkways, and sand dunes prevent the ability to see the harbour from the carparks at the three reserves.

14.3 RECOMMENDATIONS

A long term solution to providing access is to provide a walkway similar to the walkway from Pepe Stream to Tui Terrace in Tairua. A 3m shared concrete path can be installed from South End Reserve to Royal Billy Point on the top of the bund beside the trees. Care will need to be required to protect the path from tree root damage.

Figure 56: Grass reserve at ocean edge

Recommendation 60 Install a 3m wide shared concrete path from South End Reserve to Royal Billy Point on the bund beside the tree line. Care will need to be required to protect the path from tree root damage.

Concrete paths, with associated seating facilities from the roads by the reserves will complete access to the beach.

At South End Reserve, connecting the footpath from Pauanui Beach Road to the footbridge will start a path that will eventually connect the reserves, while a 3m concrete path to the seating will improve access for the accessibility user (see figure 55).

Figure 57: Proposed 3m path at South End Reserve

Recommendation 61 Install a 3m path from Pauanui Beach Road to connect to the carpark, footbridge and seating at South End Reserve.

The Surf Club is situated opposite The Dunes on Pauanui Boulevard. Connecting a 3m path from Pauanui Boulevard to the carpark and the top of the grass reserve will provide good access in this location.

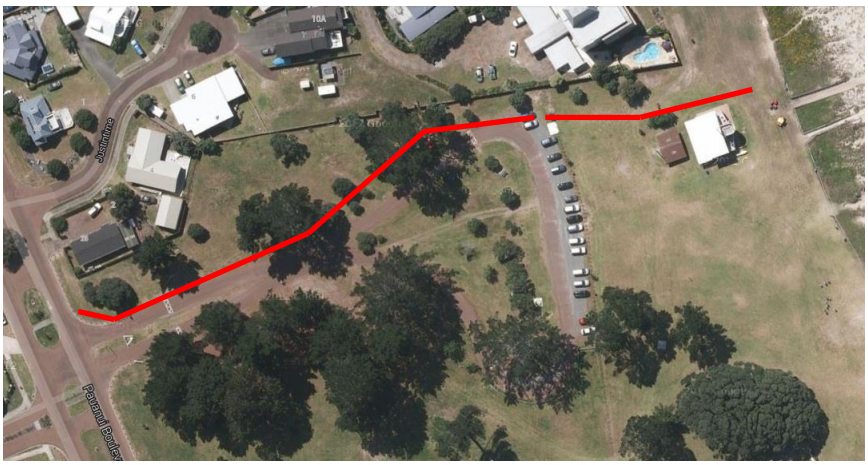


Figure 58: Access to the Surf Club from Pauanui Boulevard

Recommendation 62 Install a 3m concrete path from Pauanui Boulevard to the Surf Club to improve access for the accessibility user to the beach.

Royal Billy Point is situated at the mouth of Tairua Harbour and is where the Tairua-Pauanui Ferry is located. Widening the path that is already there to 3m and installing a path from the ferry service to the BBQ area and on to the top carpark will provide a good level of service for the access user.

Figure 59: Royal Billy Point

Recommendation 63 Widen the existing footpath at Royal Billy Point to 3m to create a safe shared access path.

Recommendation 64 Install a 3m path from the Ferry service to the BBQ area and on to the top carpark at Royal Billy Point to improve access for the accessibility user.

As good practise, TCDC should consult with residents on any works associated with providing access to the beach. This can be done by either having specific workshops, similar to the one for this project, or by utilising the Disability Stakeholder Forums that are regularly held, or both formats.

15 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 $1,000
- Significant Concerns $95,000
- Minor Concerns $810,000

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[59].They do not include Traffic Management Costs, consultation with affected parties, or design costs. All project costs will need to be investigated further as each particular project is advanced. TCDC rates may vary due to specified contract rates in place under existing contracts or to current economic climate for contractors in Thames-Coromandel. Further savings may occur if recommendations are lumped together, creating a more economical contract for contractors.

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

15.1 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.
4.	18	Consider Mobility Space placement during the consenting process.
5.	18	Provide a variety of Mobility Spaces, both parallel and angle parking.
6.	19	Retain the existing position of the three Mobility Spaces in the Pauanui Shopping Centre.
9.	21	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.
10.	21	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.
12.	22	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.
15.	25	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.
17.	26	Replace all kerb ramps as required during the maintenance programme to a minimum width of 1.8m.
20.	33	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.
21.	35	When installing Tactiles, ensure the Tactiles are safety yellow as recommended by the RTS 14 Guidelines for Facilities for Blind and Vision Impaired Pedestrians.
22.	37	Install Warning Indicators at all pedestrian crossings points and refuge islands. This includes at intersections and mid-block pedestrian crossings.

No.	Pg.	Description
23.	37	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.
26.	41	Ensure all Warning Indicators are installed to the full width of the kerb ramp as required in Recommendation 17.
34.	49	Replace footpaths to the widths as stated by the Pedestrian Planning Design Guide when footpaths are upgraded as part of the maintenance programme.6
36.	51	Maintain the good maintenance programme to ensure a high standard of footpath is provided in Pauanui.
38.	52	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.
40.	53	Adopt 1% as the crossfall standard, and upgrade existing footpaths to this grade when replaced.
41.	55	Adopt the Pedestrian Crossing Facilities Calculation Spreadsheet for use when determining pedestrian crossing facilities.
42.	62	Measure traffic volumes and speed data in the summer months to determine peak traffic volumes when calculating new crossing opportunities.
52.	67	Adopt a Pedestrian Signage Policy to inform users of their choices in accessing destination points.
53.	68	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.
55.	70	Adopt the Inclusive Design for Getting Outdoors as part of its design for future installation of public seating.
56.	71	Enforce Code of Practice for Temporary Traffic Management standards for pedestrian control as part of the TMP approval process and supervision.
57.	71	Conduct regular ‘random’ audits of Temporary Traffic Management as part of the supervision process of Traffic Management Plans.

15.2 SPECIFIC RECOMMENDATIONS

Table 7: Specific Recommendations – Serious Safety Risks

It is recommended TCDC:

No.	Pg.	Description	Indicative Cost
28.	42	Install yellow lines at the G.A.S Service Station at the Vista Paku/Sheppard Avenue intersection to delineate the footpath.	$500
39.	53	Install signage to warn accessibility users of a grade greater than 1 in 12 at the underpasses on Vista Paku and Pauanui Boulevard.	$500

Total: $1,000

Table 8: Specific Recommendations – Significant Concerns

It is recommended TCDC:

No.	Pg.	Description	Indicative Cost
3.	17	Install Mobility Spaces at Royal Billy Point and South End Reserve to meet NZS 4121:2001 requirements.	$3,000
7.	20	Install full length kerb ramps at all Mobility Spaces to provide quick, easy access to the footpath.	$2,000
8.	20	Trim the vegetation beside the Mobility Spaces at Shop 3 and the Public Library to provide quick navigation to the footpath.	$500
11.	21	Widen the Mobility Space at Shop 3, Pauanui Shopping Centre to 3.5m to meet the requirements of NZS 4121:2001.	$1,000
13.	22	Re-mark the three Mobility Spaces at the Pauanui Shopping Centre to comply with Land Transport Rule: Traffic Control Devices 2004.	$1,000
16.	26	Replace the kerb ramp on the north side of Pauanui Boulevard/Kennedy Park Drive to a maximum grade of 1 in 14 (7.1%).	$1,000

No.	Pg.	Description	Indicative Cost
18.	29	Install kerb ramps at the following intersections: • Vista Paku/Jubilee Drive – both sides crossing Jubilee Drive; • Vista Paku/Conqueror Rise – west side crossing Conqueror Rise; • Pauanui Boulevard/Parsons Dell – both sides crossing Parsons Dell; • Pauanui Boulevard/Gallagher Park Lane – both sides crossing Gallagher Park Lane; • Pauanui Boulevard/Oxley Close – both sides crossing Oxley Close; • Pauanui Boulevard/Braddock Grove – both sides crossing Braddock Grove; • Pauanui Boulevard/Wilton Smith Avenue – both sides crossing Wilton Smith Avenue; • Pauanui Boulevard/Kennedy Park Drive – south side crossing Kennedy Park Drive; • Pauanui Boulevard/McCormick Place – north side crossing McCormick Place; • Pauanui Boulevard/Lowe Park Lane – north side crossing Lowe Park Lane; • Pauanui Boulevard/Bell Road – both sides crossing Bell Road; • Jubilee Drive/Glen Venus – both sides; and • Jubilee Drive/Glen Neaves – both sides.	$20,000

No.	Pg.	Description	Indicative Cost
19.	33	Re-locate the following kerb ramps to improve alignment: • Vista Paku/Dunlop Drive – re-align 5m of footpath either side of Dunlop Drive; • Vista Paku/Pauanui Boulevard – Remove old kerb ramp; • Vista Paku/Sheppard Avenue – Install kerb ramps north of the roundabout crossing Vista Paku, remove the kerb ramp crossing Vista Paku at the Petrol Station, and relocate the crossing point on Sheppard Avenue north of the roundabout; • Pauanui Boulevard/Britannia Dell – re-locate kerb ramp on east side; • Pauanui Boulevard/Jubilee Drive – Re-locate kerb ramp on north side of Jubilee Drive; and • Jubilee Drive/Coronation Row – Re-locate the kerb ramp on the west side of Coronation Row and install concrete refuge.	$8,000
24.	40	Install Warning Indicators at the following intersections: • Vista Paku – Intersections with Dunlop Drive, Pauanui Boulevard, Pleasant Place, Given Grove, Kennedy Park Drive, Sheppard Avenue, Centreway, Jubilee Drive, The Dividend, and Pauanui Boulevard/Hikuai Settlement Road; • Pauanui Boulevard – Intersections with Parsons Dell, Gallagher Park Lane, Britannia Dell, Monarch Grove, Jubilee Drive, Oxley Close, Braddock Grove, Easdale Place, Oceanair Drive, Wilton Smith Avenue, Kennedy Park Drive, McCormick Place, Prescott Place, The Dunes, Bagnall Place, McCall Avenue, Lowe Park Lane, and Bell Road; • Kennedy Park Drive – Intersections with Pauanui Pines; • Jubilee Drive – Intersections with Chelmsford Court, Glen Venus, Glen Neaves, Coronation Row, Opal Place; and • Centreway – Intersection with Harvard Court.	$2,500
27.	42	Replace and re-align the Tactiles to standard yellow standard at the Vista Paku/Sheppard Avenue intersection.	$1,000
31.	47	Install approx. 130m of footpath on Kennedy Park Drive	$15,000

		to complete the pedestrian network on Kennedy Park Drive and meet PPDG requirements.	
No.	**Pg.**	**Description**	**Indicative Cost**
33.	48	Install approx. 120m of footpath on Centreway from Vista Paku to the pedestrian crossing to complete the requirements of PPDG.	$10,000
37.	51	Repair the footpath on Pauanui Boulevard (east of Vista/Hikuai Settlement Road intersection.	$1,000
44.	63	Install kerb ramps and concrete paths to connect the footpath from Courtney Place to the footpath on Vista Paku.	$2,000
45.	63	Install kerb ramps and concrete paths to connect the footpath from Beaumont Green (east intersection), Bonanza Place, Champion Place, Jacksons Claim, Easdale Place, Justintime, Claxton Avenue, McCall Avenue, Lowe Park Lane to the footpath on Pauanui Boulevard.	$15,000
46.	63	Install kerb ramps and 1.5m concrete paths at Jubilee Drive and Centreway to improve access to the Pauanui Shopping Centre	$3,000
47.	64	Install kerb ramps at the crossing facilities of Vista Paku with Dunlop Drive (both sides), Triumph Dell (east side), and Pauanui Boulevard/Hikuai Settlement Road.	$2,000
49.	64	Re-locate the crossing facilities of Vista Paku at Kennedy Park Drive and The Dividend.	$2,000
50.	65	Install kerb ramps at the crossing facilities of Pauanui Boulevard with Beaumont Green (west intersection - both sides), Mountain Vista Place (north/west side), Jubilee Drive (both sides), and Prescott Place (both sides).	$2,500
52.	65	Re-locate the crossing facility of Pauanui Boulevard at Monarch Grove.	$2,000
55.	69	Re-locate the rubbish bins outside Archey's to improve access to the footpath.	$500

Total: $95,000

Table 9: Specific Recommendations – Minor Concerns

It is recommended TCDC:

No.	Pg.	Description	Indicative Cost
2.	16	Install two Mobility Spaces on the outer edge of the Pauanui Shopping Centre, outside Shop 19 (Fragola) and the Public Library.	$1,500
14.	23	Install signage that complies with NZS 4121:2001 at the three Mobility Spaces at Pauanui Shopping Centre to improve visibility at the entrance to the carpark.	$500
25.	41	Install Directional Indicators at the following intersections: • Vista Paku – Intersections with Pauanui Boulevard, Kennedy Park Drive, Sheppard Avenue, Pauanui Boulevard/Hikuai Settlement Road (all crossing Vista Paku), Centreway, and Conqueror Rise (west side); • Pauanui Boulevard – Intersections with Beaumont Green, Mountain Vista Place, Jubilee Drive (in line with walkway to beach), Prescott Place, Justintime (all crossing Pauanui Boulevard); and • Centreway – crossing Harvard Court (east side only).	$7,500
29.	45	Install approx. 580m of footpath to complete the pedestrian network on Vista Paku and meet the requirements of PPDG.	$60,000
30.	46	Create a long term programme to install approx. 1800m of footpath to complete the pedestrian network on Pauanui Boulevard and 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.	$180,000
32.	47	Install approx. 160m of footpath on Jubilee Drive to complete pedestrian network requirements.	$15,000
40.	53	Re-grade the connections to the Underpasses on Vista Paku and Pauanui Boulevard to a max. grade of 1 in 14 (7.1%).	$20,000

No.	Pg.	Description	Indicative Cost
48.	64	Install 1.5m concrete paths in the centre refuge at the crossing facilities of Vista Paku with Dunlop Drive, El Dorado Leader, Triumph Dell, Pauanui Boulevard/Hikuai Settlement Road.	$3,000
51.	65	Install 1.5m concrete paths in the centre refuge at the crossing facilities of Pauanui Boulevard with Beaumont Green (west intersection), Jubilee Drive, and Prescott Place.	$2,500
59.	73	Install a 3m wide shared concrete path from South End Reserve to Royal Billy Point on the bund beside the tree line. Care will need to be required to protect the path from tree root damage.	$400,000
60.	73	Install a 3m path from Pauanui Beach Road to connect to the carpark, footbridge and seating at South End Reserve.	$40,000
61.	74	Install a 3m concrete path from Pauanui Boulevard to the Surf Club to improve access for the accessibility user to the beach.	$40,000
62.	74	Widen the existing footpath at Royal Billy Point to 3m to create a safe shared access path.	$20,000
63.	74	Install a 3m path from the Ferry service to the BBQ area and on to the top carpark at Royal Billy Point to improve access for the accessibility user.	$20,000

Total: $810,000

APPENDIX A: LOCATION MAP

PAUANUI GEOGRAPHIC AREA OF INTEREST

Date: April 2014

Scale: Not to Scale

APPENDIX B: COMMUNITY CONSULTATION MEETING MINUTES

Minutes of Public Consultation Meeting at Pauanui Sports & Recreation Centre

Date: 4th March 2014

Time: 3pm.

A small number of local residents attended the public meeting today to discuss accessibility in the settlement of Pauanui.

The issues raised for consideration in the access report include:

1. Access to the beach was discussed. There are three main access points to Pauanui Beach – the BBQ area at the end of Pauanui Beach Road, McIvor St, and the Surf Clubrooms at the north end of the beach.
2. McIvor St has a footpath to the beach.
3. The view of the beach is limited from the road due to sand dunes. A suggestion is to install a walkway on the top of the dunes with seating.
4. A new amenities building is to be constructed at the corner of Centreway and Jubilee Drive. The public library is opposite. There is a lot of traffic on Centreway, between Harvard Pl and Jubilee Dr. A request is to close the road between the new building and the shopping centre.
5. A suggestion was raised to conduct annual surveys of the footpaths for tree roots pushing up the footpath.
6. The airport runway at Pauanui is next to the shopping centre. Private planes park near the control tower as this is nearest to the shops. The occupants of the plane then go to the shops for a coffee. The planes are parking where the Rescue Helicopter needs to land to pick up emergency patients.
7. The Library doors are too heavy to open.

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:

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

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: _____

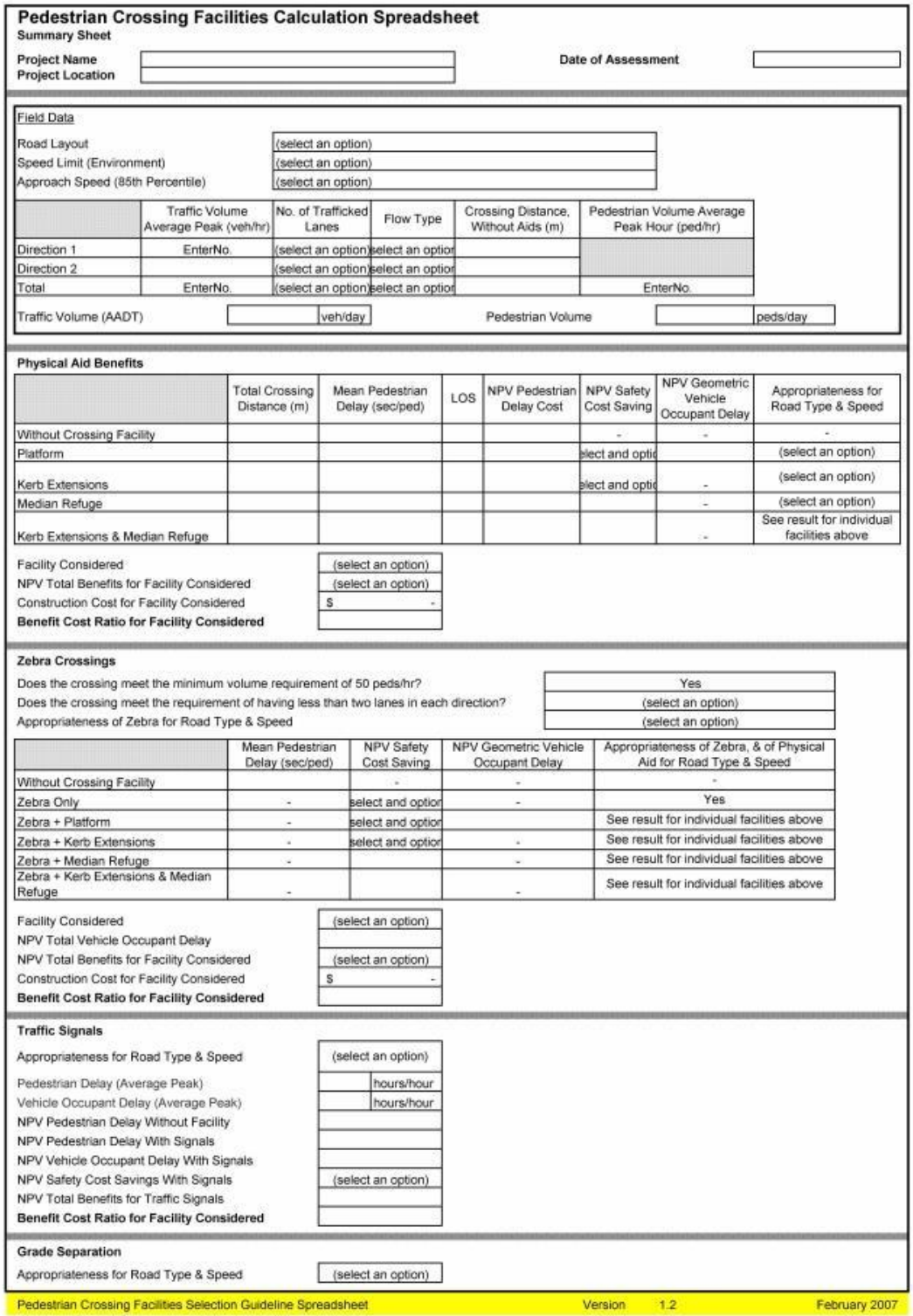
Drawing (include cross section, lanes, median, parking, etc)

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	

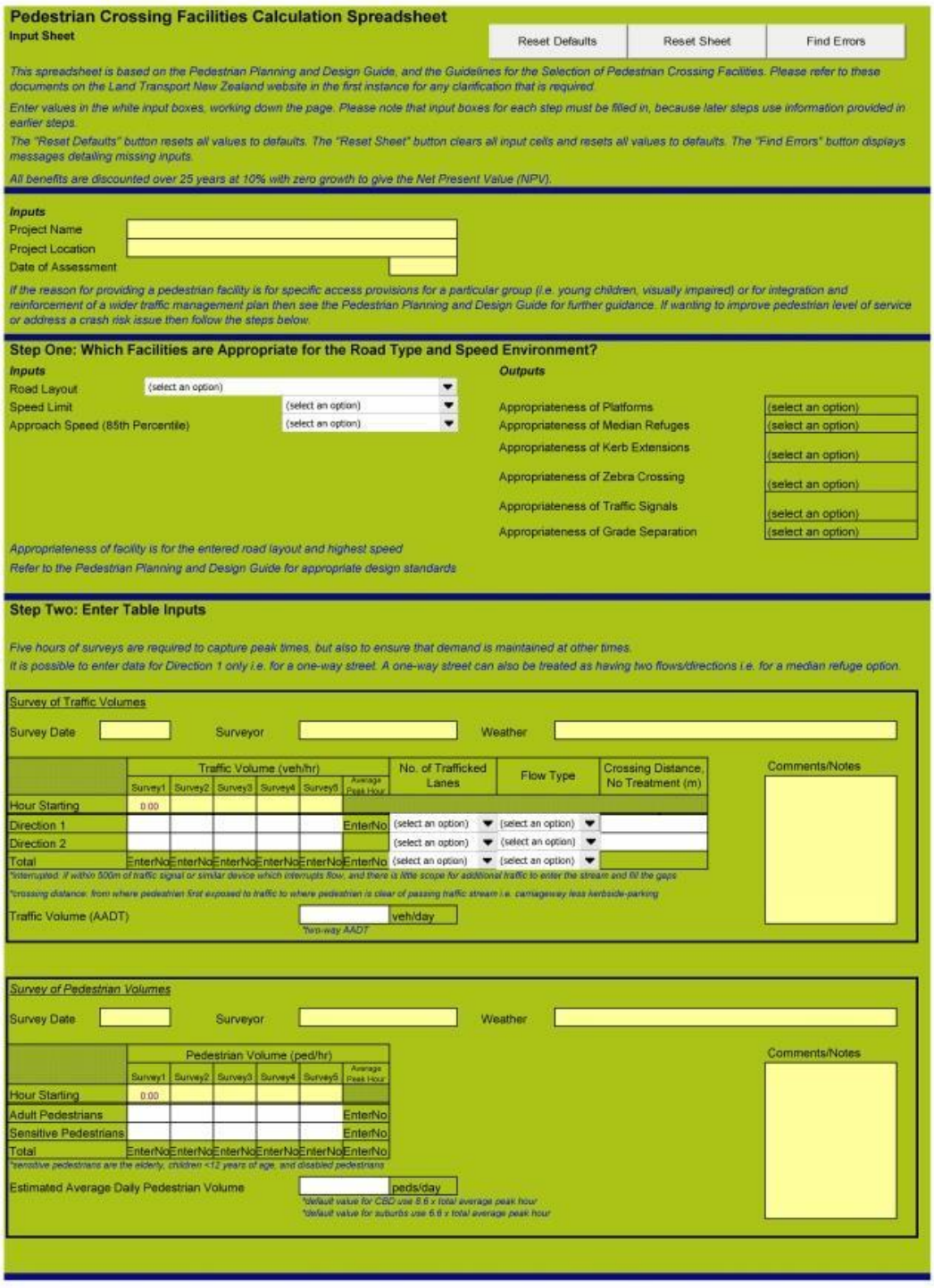
Traffic Signals

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

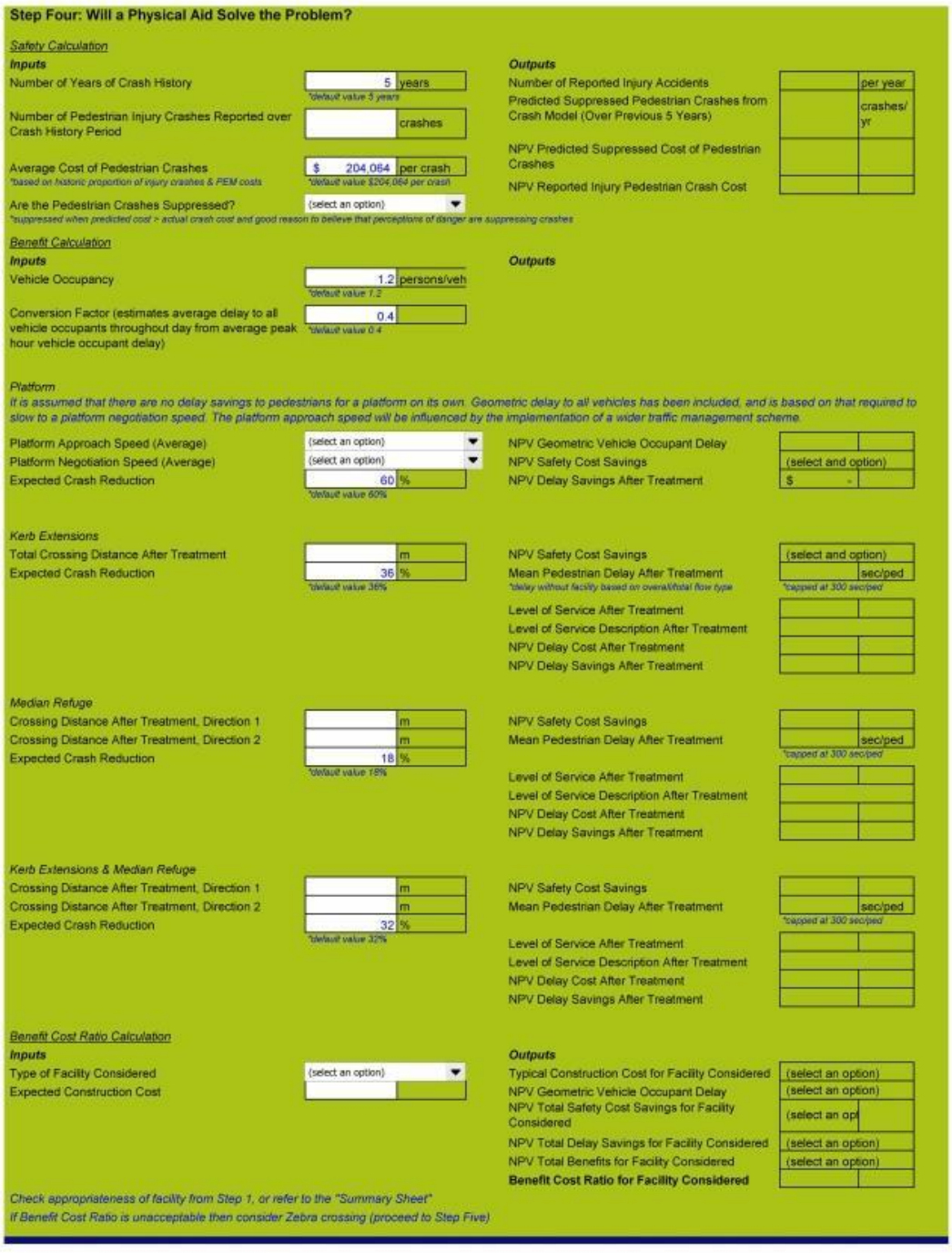
Adjust walk speeds when pedestrian density is high or crossing width limited (see Pedestrian Planning and Design Guide for details)

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 88%
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

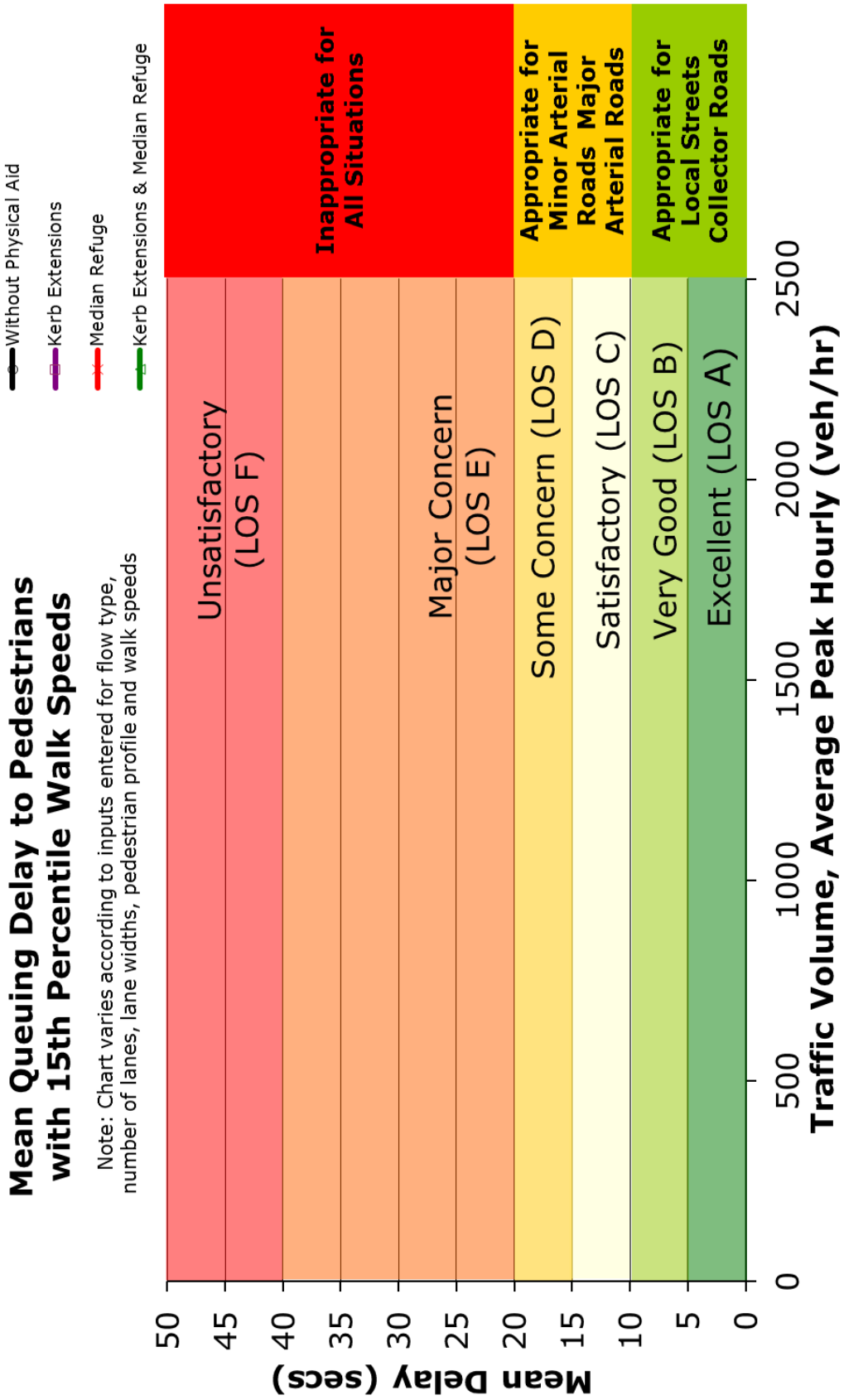
Inputs			***Outputs***		
Pedestrian Delay (Average Peak)		hours/hour	NPV Pedestrian Delay Without Facility		
Vehicle Occupant Delay (Average Peak)		hours/hour	NPV Pedestrian Delay With Signals		
Conversion Factor (estimates average delay to all users throughout day from average peak hour delay to all 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		

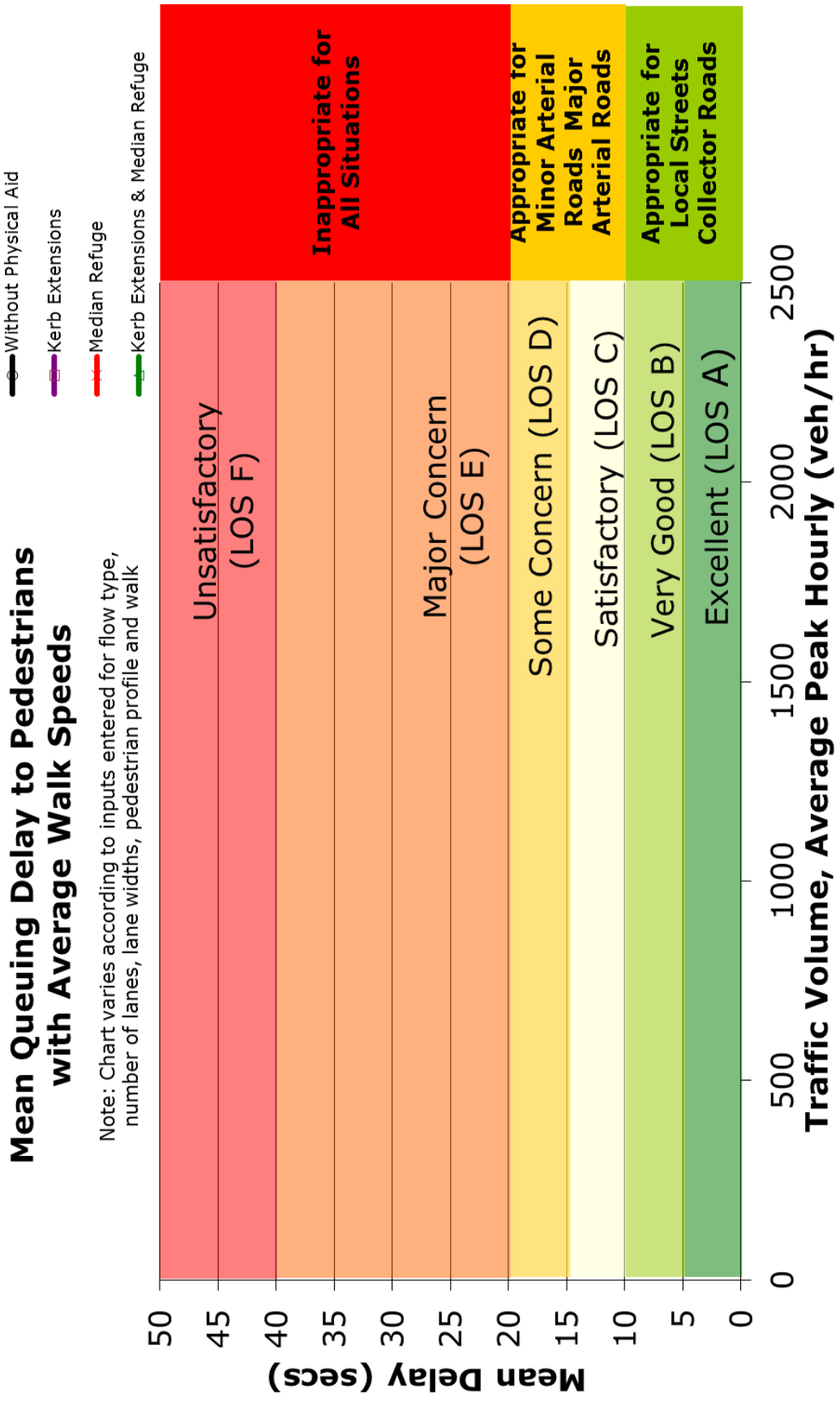
If Benefit Cost Ratio is unacceptable then consider grade separation (proceed to Step Seven)

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