# GREYMOUTH PEDESTRIAN LINKAGES STUDY

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## Abstract

*Like many smaller urban areas of New Zealand, preserving and enhancing walkability in the historic town centre of Greymouth is a challenge in today's car dominated society. The Town Development Strategy 2010 recognises that "providing good pedestrian linkages helps enhance access for residents who do not drive* (and for vehicle occupants, once parked)*, reduces transport system demand, encourages tourists to stay and explore Greymouth longer, amongst many other acknowledged economic, social and health benefits of walking".*

*The authors organised a "walkshop" with key stakeholders to identify issues and possible solutions, followed by a public meeting. The study used these inputs, previous submissions, data collection and mapping to develop a pedestrian network. The network is supported by a comprehensive action plan for council consideration in the annual plan process.*

*The study process focused on the establishment and strengthening of working relationships between council departments and stakeholders, with the aim of leveraging a wide range of means for funding and implementation.*

*Some of the key recommendations include the restoration of a historic link across the railway tracks, enhanced or additional pedestrian crossings of the state highway and a major truck route along the waterfront, and consideration of a 30 km/h pedestrian zone in the town centre.*

# Introduction

Greymouth is a town of about 10,000 inhabitants in the Grey District on the south island's West Coast. It is the western terminus of the Alpine Highway and railway (connecting to Christchurch via Arthur's Pass) and is therefore a natural staging point for visitors.

Since the mid 20th century, New Zealand transport and land use planning and decision making has been focused on the provision of on-site parking and easy motor vehicle access. This focus has had several negative impacts on walkability[1]:

- More parking means fewer activity generating buildings per hectare
- Lower density results in longer (less walkable) trip distances
- More traffic and vehicle crossings reduces pedestrian amenity and safety

Aside from the changes in transport and land use, socio-economic changes are impacting on the long term viability of the town centre. In response to these challenges, the Grey District Council has partnered with the Grey District Business and Promotion Association to produce the *Town Development Strategy* 2010 (TDS) . The Pedestrian Linkages study is the first of the ten priority actions in the TDS, which states:

> *Providing good pedestrian linkages helps enhance access for residents who cannot or choose not to drive* (and for those vehicle occupants once parked)*, reduces transport system demand, encourages tourists to stay and explore Greymouth longer, amongst many other acknowledged economic, social and health benefits...*

The study area included the town centre, key intersections along the town centre boundary, and linkages to wider area pedestrian attractions (e.g. the hill walks).

This technical note begins with a review of the methods employed for the two month long study. It then presents a few findings extracted from the full 38 page study report, available on the council website[2]. The extracts have been simplified and in some cases reworded in the interests of brevity and relevance to the conference audience.

# Study Method

The study method used is shown in Figure 1.


**Figure 1: Study method**

### *Inception meeting and site visit*

The project inception meeting between the client, other key stakeholders from within the client's organisation, and the consultant is a critically important step. The meeting helps refine the project scope, develop a working relationship, and ensure that all parties' expectations are known. For this project, the project inception meeting included key council personnel from several departments and a representative of Greymouth Community Public Health.

Cobden and Karoro are an easy 3 km cycle ride to town, and a third of all "active" (walking and cycling) travel to work trips (2006 census) are by bicycle.

[1] defined as "the extent to which the built environment is walking friendly" (Abley, et al 2011)
[2] http://www.greydc.govt.nz/council-services/planning/town-development-strategy/

Therefore, it was decided at this meeting to include cycling at a strategic level. The definition of "pedestrian linkages" was considered broad enough to include cycling routes, especially as general walkability improvements often benefit those who cycle as well. The meeting attendees then walked around the town centre and discussed the project context and key opportunities.

### *Document review*

The next task was a review of relevant sections of the Traffic Management Plan 1997, bylaws, policies and the Grey District Plan to identify rules and policies which impact on walkability. The findings of this review were provided in an appendix to the main report.

### *Pedshed analysis*

Similar in concept to a watershed, a pedshed is the area within a given walking distance radius circle from an urban centre. It is a measure of the potential number and/or proportion of the residents who may be able to use active modes to access the destinations in the centre.

A pedshed analysis (Figure 2) was undertaken using ESRI's ArcMap geographic information system (GIS) and Statistics NZ census data.

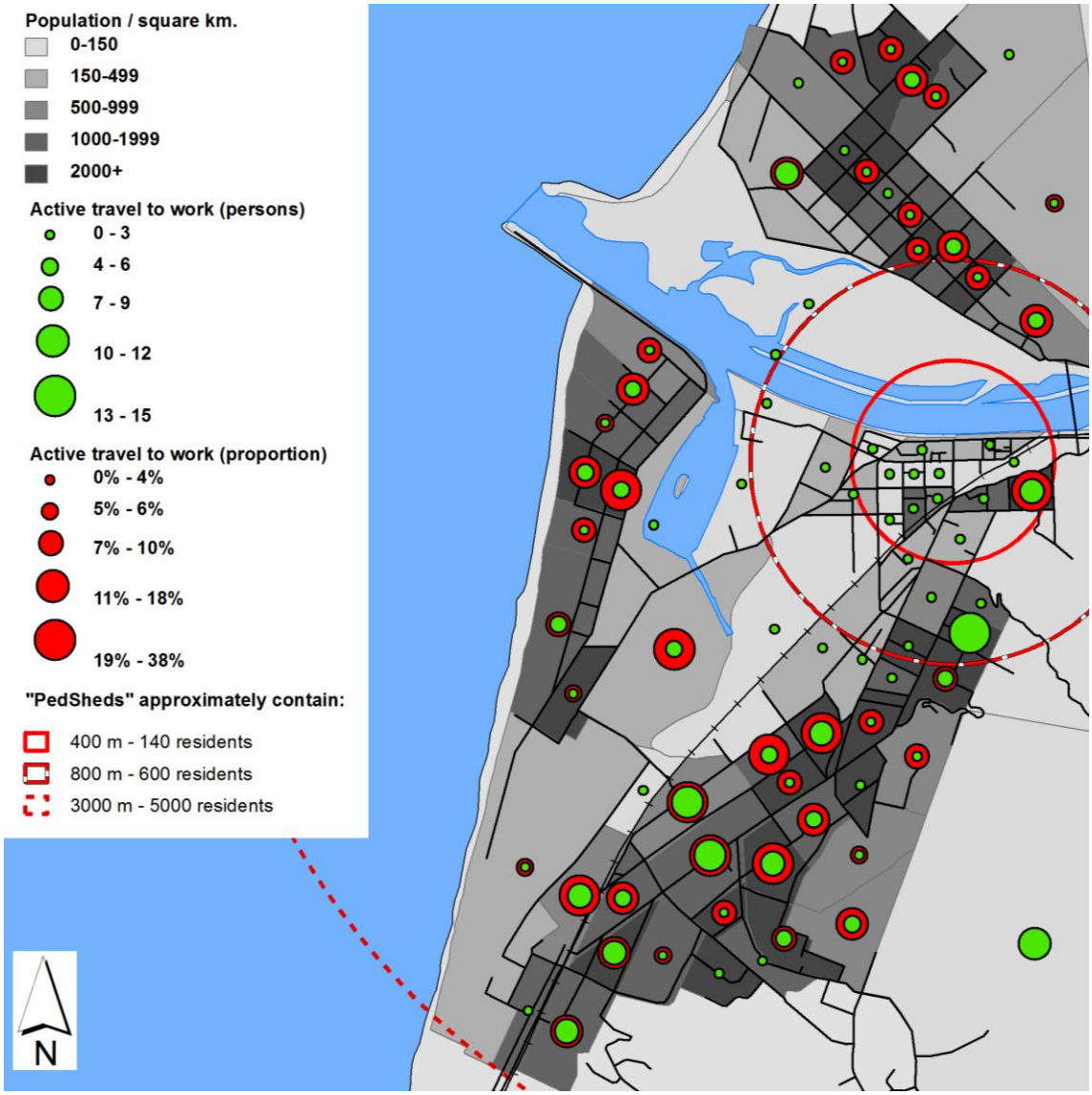


**Figure 2: Pedshed analysis showing population, population density, and active travel to work**

The population density analysis mirrors the land use distribution but also confirms the high density close to town on the south side of the railroad tracks and state highway.

The active travel analysis indicates that there does not seem to be a reduction in the number of persons walking and cycling to work with increasing distance from the town centre. This may be due to the general spatial distribution of employment locations along the railway and state highway corridor rather than concentrated in the town centre.

The pedshed analysis shows that there are about 140, 600, and 5000 residents living within the 400 m (six minute walk), 800 m (12 minute walk), and 3 km (12 minute cycle ride) rings respectively. This reiterates the strong active transport potential of the compact Greymouth urban area.

### *Walkshop*

The walkshop was two events in one day. In the morning, key stakeholders from business, tourism, health, and government sectors met for a roundtable and street audit. This began with an outline of the study context, scope, and desired outcomes.

The stakeholders were divided into three teams and given different routes to walk. Despite a winter rainstorm, participants were keen to embark (Figure 3).

**Figure 3: Walkshop audit held in atrocious weather**

Some confusion ensued in the scramble to don extra raingear. The lesson learned was to ensure that everyone could identify their team leaders both in and out-of-doors!

To enable participants to record their observations, a simplified form was developed from the more comprehensive checklists found in published guides (Abley et al. 2010; LTNZ 2006). The walking audit took about 40 minutes and was followed by tea and a debrief to identify common themes and potential opportunities for infrastructural improvements.

This was followed by an evening audio-visual presentation and discussion with about 20 members of the general public, who were advised of the walkshop by newspaper advertising in the week before the event. Attendees shared their concerns and discussed solutions ranging from the pragmatic to the visionary.

### *Consultation*

A one page consultation form with an attached map for marking up was provided via the council website, offices and library. Twelve written responses were received, some quite detailed. These responses included excellent photos, support for change, and several unique ideas not previously mooted by the stakeholder group. Appreciation was expressed for being invited to participate early in the study. Feedback was incorporated into the study proposals where appropriate and summarised in an appendix to the report.

### *Desktop study and reporting*

Each infrastructure improvement or proposal was assessed on merits and the potential constraints or risks. The proposals were grouped by infrastructure type and non-infrastructure actions. Proposals could be simple to implement through existing budgets or may need to be prioritised through the council Annual Plan process. While some of the recommendations may seem to be impractical, significant built environment change may be possible in parallel with the need to renew or strengthen earthquake prone building stock in the near future. The report was also intended to inform other planning actions such as the proposed open space and parking strategies.

## Walkability in Greymouth

The study report includes a Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis to identify factors influencing walkability. Some of these factors are discussed below.

On the plus side, Greymouth is geographically constrained by water and hills, resulting in a compact and well defined urban area. The proximity of most destinations, flat terrain and temperate climate (in comparison to northern hemisphere winters) all result in an environment suited to active travel.

A cool, wet climate is frequently cited as a reason Greymouth residents take the car and a constraint to the idea of improved walkability. However, it rarely snows and the minimum temperature even in winter is 4C or higher; this climate is temperate in comparison to many towns around the world with higher active (walking and cycling) mode share.

As indicated in Figure 4, the current allocation of public space is oriented towards auto-mobility (motor vehicle movement, red) rather than activity and pedestrian use (exchange space, green).

This is a historic street cross-section which permits through motorists to overtake double parked or waiting motorists, therefore minimising delay. However, it also minimises the opportunity to create a really vibrant public space in terms of available width for cafes, outdoor merchandise displays, and public interaction with these activities and each other.

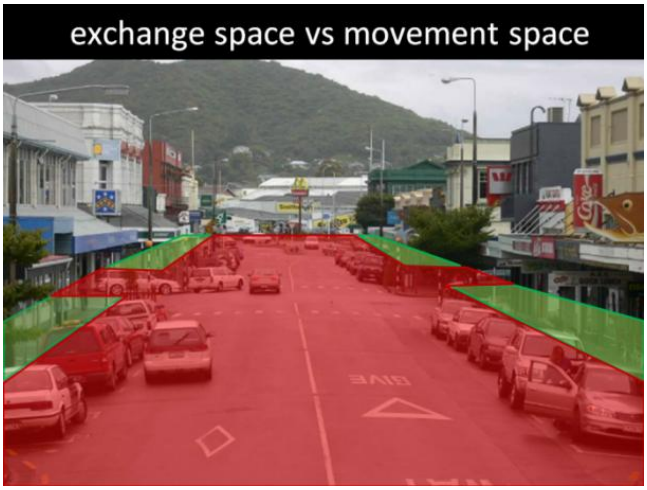


**Figure 4: Mackay Street public space**
(concept: J.A. Genter)

Intersections designed to minimise motorist delay conversely increase pedestrian delay and discourage walking. Zebra crossings are employed at Mackay / Tainui but some intersections (e.g., Tainui / Guiness) remain difficult for pedestrians. Shared space principles that rely on road user courtesy have been shown to operate well even with high traffic volumes and could be considered if wider town centre objectives are prioritised ahead of motorist delay.

Few formal cycle parks exist. Staff of local businesses and offices would not be encouraged to ride without a safe place to store their bikes all day, while shoppers or tourists must look for street furniture to use for cycle security.

Many properties formerly occupied by buildings are now car parking areas, which does not encourage pedestrians to continue along a street frontage. Isolated businesses “on the other side” of a car park may suffer a downturn in pass-by foot traffic as a result.

## Overall Proposed Concept

The Greymouth road hierarchy categorises roads by the intended traffic function in terms of traffic volumes and property access. However, Mackay Street is an example of a "main street" which should have an arterial status in terms of pedestrian traffic volumes but not necessarily through movement of motor vehicles.

The proposed pedestrian network concept (Figure 5) is a schematic suggesting major "arterial" corridors based on Mackay Street and the local (in-town) portion of Tainui Street, plus a more contiguous Albert Street forming the western boundary of the most intense retail activity. Should existing land between the port and town centre be more intensively developed, this could be a pedestrian oriented mixed-use neighbourhood with the "five-points" roundabout serving as a focal point. An outer ring is comprised of the existing pathway along the floodwall, Herbert Street, and a proposed "green corridor" on the town side of the railway.

To address the severance created by the railway and State Highway 6, a new linkage is proposed between Mackay Street and the neighbourhoods south of Whall Street. The alignment is indicative and would be subject to negotiations with landowners and KiwiRail.

A 30 km/h zone in the town centre supported by physical or perceptual traffic calming where required would create a more pedestrian friendly environment, especially at off-peak traffic hours. During the day, operating speeds are probably 30 km/h or less in the town centre so the impact for most motorists will be minimal. Further investigation should be included in a review of the Traffic Management Plan 1997.

The arrows represent how pedestrian and cyclist volumes diffuse from the major corridors to the rest of the network. This network concept could be the basis for inclusion of a road user hierarchy in the district plan and would enable prioritisation of network improvements.

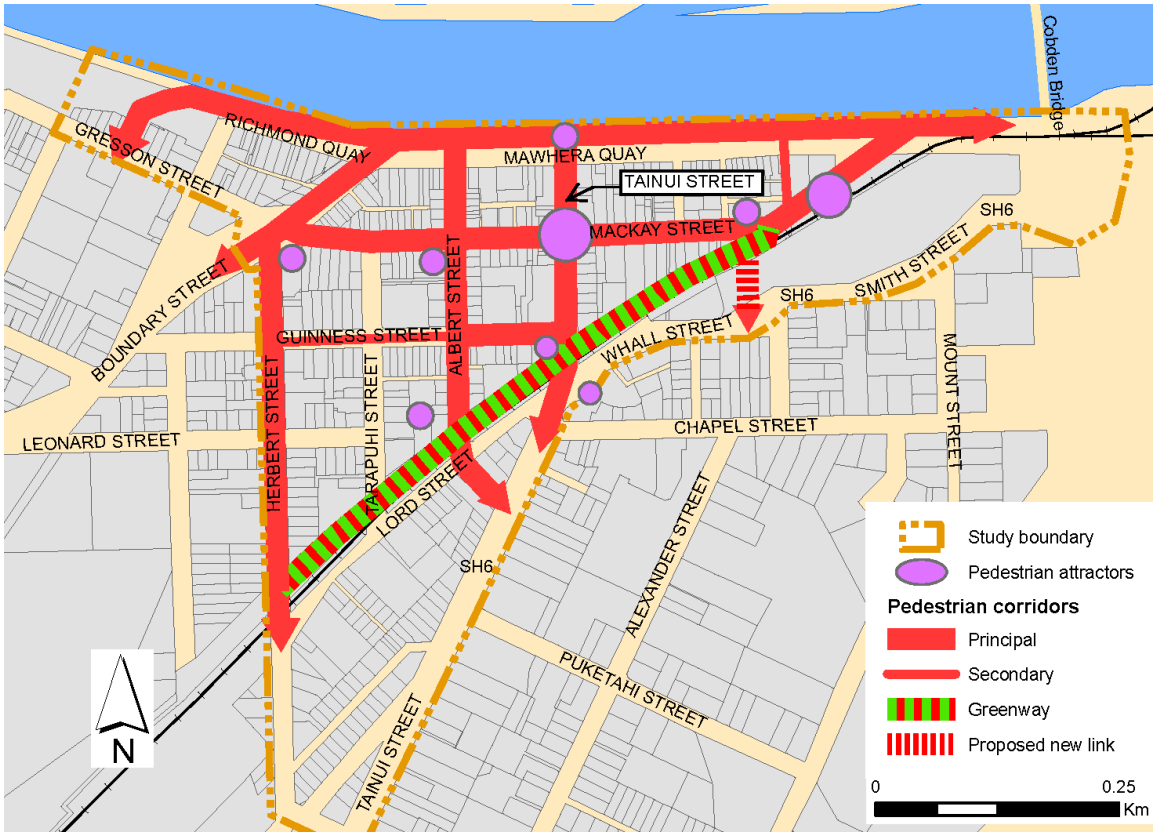


**Figure 5: Pedestrian access and circulation concept**

## Detailed Map

From this concept, a more detailed map keyed to the identified issues, proposals, and action plan summary table was developed. The details are not the focus of this technical note; however a cropped map excerpt (Figure 6) indicates how the study findings are presented for the more technical members of the study audience (such as council planners and asset managers).

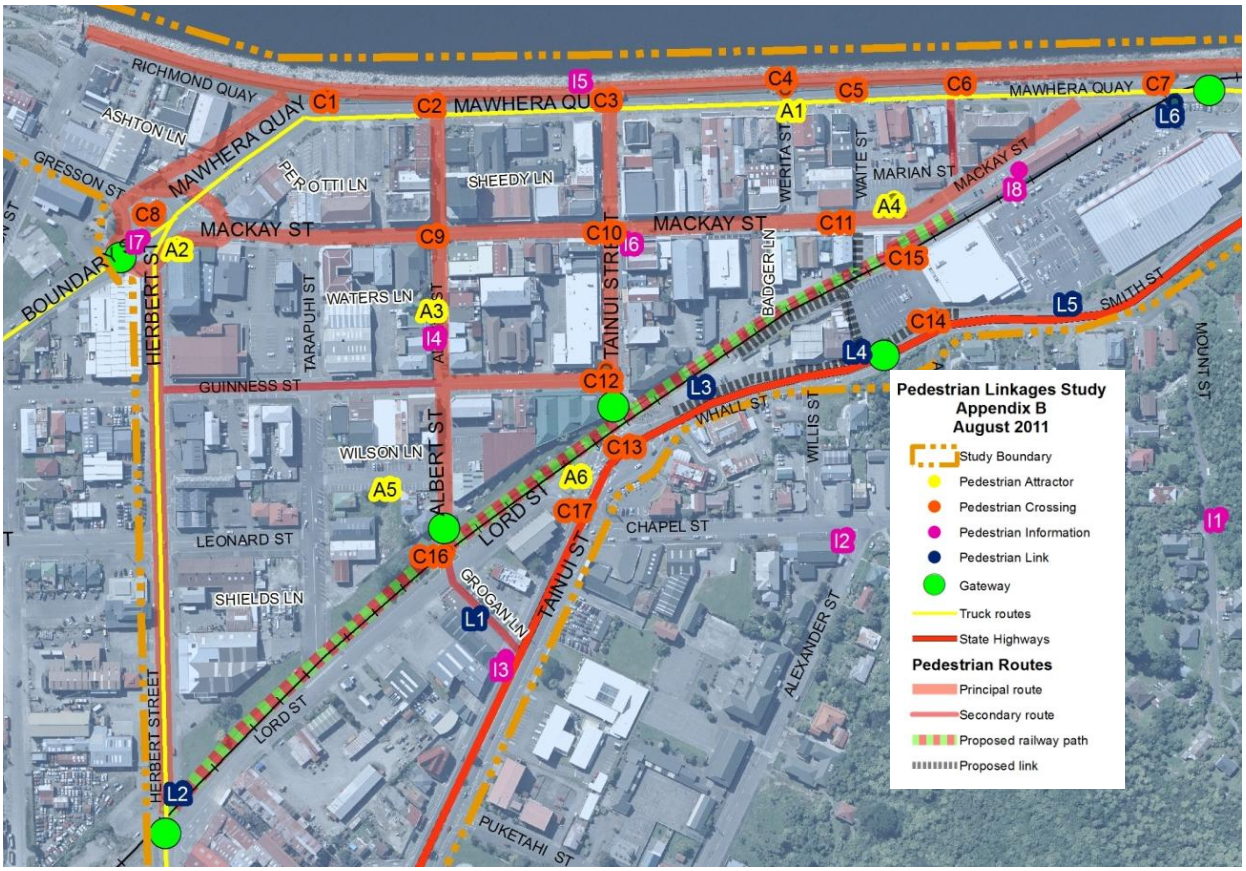


**Figure 6: Detailed map excerpt**

## Pedestrian Network Elements

The following sections provide a small selection of findings from the full report.

### *Routes*

**Mackay Street** is a key axis of the proposed pedestrian network concept. Motor vehicle accesses to on-site car parks should provide overhead weather protection over the footpath as in Figure 7. The footpath should be formed with continuous paving to emphasise the legal priority of footpath users and to create a flatter surface for the mobility impaired. Rationalising the number of accesses where possible, or restricting them to single lane, helps maintain a contiguous building facade.

**Figure 7: Badger Lane off Mackay Street**

The recently planted street trees, kerb extensions, and the "sails" on the east block of Mackay Street towards the railway station (Figure 8) provide a sense of enclosure and are welcoming for pedestrian movement as well as activity such as window shopping.

Mackay Street could be further enhanced by providing trees alternating with indented parking, and kerb extensions to shorten the pedestrian crossing distance. The kerb extensions also provide more activity and/or bicycle parking space. All of these measures create a traffic calming effect contributing to an improved pedestrian environment at off-peak times.

**Figure 8: Mackay Street "sails" maintain continuous veranda cover**

**Albert Street** features wide footpaths, providing much needed activity space, and is well anchored by the public library (Figure 9). Tenancies have been an issue and the reduction in on-street parking immediately in front of these shops may be seen as a contributing factor, however research cited in the study shows there are other factors affecting retail vitality and the economic situation in general could be more influential than the street design.

**Figure 9: Albert Street activity**

The use of consistent paving treatments and creating a legible link to Tainui Street would likely attract more pedestrians to stay for longer periods.

### Linking Albert Street to Tainui Street (SH6)

Currently, footpaths on south Albert Street are narrow, interrupted by wide driveways and end prior to the railway line. The study report recommends extending the pedestrian route to Tainui Street via new footpaths, narrowed and rationalised driveways, and transformation of a narrow asphalt lane with paving, lighting and signage.

### Railway corridor "Greenway"

A detailed and professional public submission to the study presents a vision of a meandering, tree-lined walking and cycling "Greenway" along the railway corridor. Bricked-over doors and windows on historic buildings facing the corridor could be re-opened and provide access to benches and picnic tables. The recently developed council car park does not need to be an obstacle, and may help by creating additional walking activity. When due for renewal, the surface of the carpark could be upgraded to a permeable block or paver material to fit more sympathetically with the greenway and provide a multi-purpose public space. The study report considers how the elements of the submission related to other linkages and proposes a staged implementation approach.

**Linking town to the hill neighourhoods across the railway and Whall Street (SH6)**

Large format retail and highway developments have severed the original route between the hill neighbourhoods and the town centre (Figure 10). The study report recommends re-establishing this link by working with:

- KiwiRail, to develop an at-grade automatic gate crossing into the supermarket site
- the supermarket site owner, to improve pedestrian access and screen an unsightly loading dock area
- the NZTA, to connect this new route by connecting an existing footpath on Whall Street and constructing kerb extensions to shorten the crossing distance (and doubling as a town entrance physical speed transition)

**Figure 10: Whall Street desire line, currently a steep rocky path and a cut fence**

## *Pedestrian lanes*

Some public and private lanes are currently used for service access or smoking space and could present a more attractive facade (Figure 11). They could be used more intensively by bars and restaurants (Figure 12). Lanes could be shared with vehicles or vehicle access limited to specific delivery hours.

**Figure 11: nondescript Tainui Street lane access**

**Figure 12: private lane off Tainui Street**

The study report recommends enhancements for specific lanes which are existing or potential convenient pedestrian links to the main pedestrian routes (Figure 5). If developed, pedestrian permeability through the street network would be enhanced with shorter walking distances and opportunities for new activity spaces.

## *Crossings*

### Mawhera Quay

Mawhera Quay is a designated truck route and one of two links between the port and the state highway. At some intersections, fences lengthen pedestrian crossing distances and are often ignored by walking in the carriageway (Figure 13). The principal pedestrian route is along the top of the floodwall, but access to it is difficult with poor visibility at the foot of the stairs and ramps (Figure 14). Crossing distances could be reduced with tighter kerb radii and/or kerb extensions, which provide a safe and visible place for pedestrians to wait.


**Figure 13: Wide radius corner and chain barrier lengthen crossing distance**

**Figure 14: Poor intervisibility at foot of steps**

The study report recommends narrower 3.2 m traffic lanes and a 30 km/h speed limit. Assuming no intersection or traffic delay, the travel time on Mawhera Quay between Richmond Street and SH6 at the Cobden Bridge at 50 km/h is 47 seconds and at 30 km/h it is 79 seconds (32 seconds difference). To improve walkability, liveability and street activity, transport practitioners could take into account the potential indivisibility of small travel time savings (Austroads 2011) and consider all the other benefits (e.g. fuel savings, noise reduction and safety) which may accrue if town centre speeds are lowered.

### Mackay / Herbert / Boundary / Mawhera Quay / Gresson ("Five Points")

This large diameter five-leg roundabout has pedestrian zebra crossings on four legs. All approaches are single lane except for Mawhera Quay. Splitter islands with pedestrian refuges are provided on all legs, but are of varying size and construction (in part owing to the annual motorcycle race which requires removal of the Mackay Street islands). More robust removable islands such as used in Hamilton's central city would be an improvement, or if the motorcycle race does not continue, the intersection should be reviewed in more detail for potential pedestrian upgrades.

**Figure 15: Five Points roundabout**

### Mackay Street / Tainui Street

The junction of the two town centre main streets has four way stop control and zebra crossings on all four legs.

Diagonal pedestrian routes take some time to complete in two crossings. Crossings are set one vehicle length behind the stop line, which can result in limited intervisibility between turning motorists and crossing pedestrians (Figure 16). Narrower approach lanes and/or crossings in front of stop lines could be considered.


**Figure 16: Pedestrian crossings at Tainui / Mackay**

A more comprehensive approach could be a "mini" roundabout or a shared space (Figure 17), where motorists traverse the pedestrian environment at very low but steady speed. Shared spaces have been found to improve motorist trip times while enabling pedestrians to travel along their most direct desire line. They are increasingly common, found in cities and towns as diverse as London and Montgomery, Alabama.

**Figure 17: Shared space intersection, Drachten (Hamilton-Baillie 2008)**

### Tainui Street / Guinness Street

This intersection came up frequently in consultation with the public. Elderly pedestrians especially find it difficult. This is the first intersection motorists come to after leaving the state highway environment, and they may still be travelling at higher speeds than appropriate.

A courtesy platform should be considered on the Guinness Street leg (Figure 18). The chains and bollards do not interrupt the pedestrian desire line and are therefore not an issue.


**Figure 18: Pedestrians do not have a priority or courtesy crossing over side road (Guiness Street)**

### Tainui Street (SH6)

A survey of pedestrian crossing locations and activity along Tainui Street between Whall Street and Puketahi Street was undertaken by Community Public Health staff, with results presented in the original report. With the limited sample size, the survey is a useful pilot to inform more rigorous investigation. The data does suggest that there is a demand for crossing at midblock locations and that more frequent median breaks (if provided) would be used.

The existing roundabout was installed after the Traffic Management Plan 1997 was developed. The crossing locations are not always on the pedestrian desire lines or convenient to use when vehicles are queuing (Figure 19). It was noted in the walkshop meeting that this intersection is subject to a separate investigation. Given the importance of this intersection for pedestrians, the NZTA Pedestrian Planning and Design Guide (LTNZ 2007) should be a key resource for the investigation.

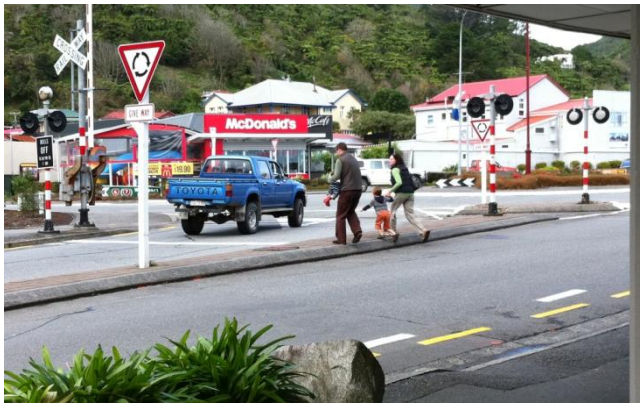


**Figure 19: A family crosses the raised median "splitter" island at the Tainui Street roundabout**

### *Gateways and information*

A gateway is a physical transition to provide sensory (visual, auditory or tactile) cues to motorists and other road users that they are entering the town centre slow zone. Features may include narrowed thresholds, landscaping or art, and information. Midblock gateways may also provide easy and safe pedestrian crossing opportunities.

Information provision may range from a simple route sign through to walking map boards These need to be individually designed so that the map image corresponds to the view ahead from the point of observation. Map boards are more user-friendly than paper maps and are an effective way to get visitors to spend more time exploring the town. Support may be found from businesses on the fringe of the town centre, who may find such route guidance useful for increasing pedestrian footfalls past their shops. The map provided in the original report identified potential gateway locations.

### *Pedestrian spaces*

Greymouth has no central square and most open space is used for car parking, such as at the railway precinct where rental cars occupy prime town centre space (Figure 20).

**Figure 20: Rental car parking as seen in view north from railway platform**

These limitations are proposed to be addressed in part through the actions included in the proposed open space strategy and revised transport strategy. The study report considers existing and potential open space in terms of pedestrian trip generation and the report recommends a number of locations where pocket parks and shared space concepts (Hamilton-Baillie 2008; O'Fallon & Sullivan 2011) could be considered

The principal study report recommendations include enhancing the prime shopping and dining street (Mackay Street) with a more pedestrian oriented Five Points roundabout at one end, Albert Street pedestrian mall along the way, and a new town square in the railway station precinct (Figure 21). The square could provide a space for events, markets, small scale vendors, and general leisure – providing reasons to stay in Greymouth rather than just considering it a transport gateway. Rental cars could be moved to another nearby site. The option of retaining short term car parking could be investigated.

**Figure 21: Proposed Greymouth railway precinct town square (concept: emDESIGN)**

## Conclusions

The two month long study method included site visits, a stakeholder group "walkshop" seminar, a public audio-visual presentation followed by roundtable discussion, formal consultation, and desktop analysis. Several key stakeholders expressed appreciation for the opportunity to participate at the outset rather than just being consulted on a draft report late in the process. This process ensured that the previous planning work and accumulated knowledge of council staff and residents was incorporated into the 21 proposals and recommendations in the study report.

Although common in larger studies undertaken for cities, the methods employed in this study were shown to be feasible and applicable to smaller towns as well. The cost of undertaking a study of this type will vary. For Greymouth, costs were minimised by taking a collaborative approach and dividing tasks between the consultants, council staff, and key stakeholders.

Some proposals can be delivered as part of other operating or capital renewal activities. For other larger projects, the next steps include obtaining approval for feasibility study (including economic benefit-cost appraisal where needed). Ultimately, the progress made will depend on external (e.g. economic) factors and council's setting of priorities. The authors hope that the study provides decision makers and the public with the investment rationale and a blueprint for improving walkability.

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