IPENZ Transportation Conference 18-21 March 2012

Delivering a new 'main street'

Author and Presenter:

Jeanette Ward, Senior Engineer, ViaStrada Ltd,

(Seconded to Waimakariri District Council – Infrastructure Recovery Unit)

NZCE, BE, CPEng, MIPENZ

jeanette@viastrada.co,nz

Co-author:

Jon Ashford, Senior Engineer, ViaStrada Ltd

Co-author:

Ken Stevenson, Roading Manager, Waimakariri District Council,

BE, MIPENZ

Abstract

How do you go about redesigning a main street to meet the vision of a Town Centre Plan when the street is the heart of the town centre and also a high volume arterial road?

As a traffic engineer, do you come up with something that you think is best for that community in terms of the vision and then ask for feedback? No – this approach will probably fail.

For the Kaiapoi Town Centre project, a Reference Group of community representatives was established to work alongside the design team and council staff. The group was made up of about a dozen people representing business, mobility impaired users, schools, emergency services and residents.

We worked hard at four workshops held over three months to deliver the desired street plan and associated transport changes. This paper outlines how the group was formed and interacted, the key issues that arose and the process of selecting the final plan that found support from the group. There are lessons learned from the process that will be useful for others who take this path.

.

1. INTRODUCTION AND BACKGROUND

The Kaiapoi Town Centre Plan (KTC Plan) was approved by Waimakariri District Council (WDC) on 7 June 2011. The vision of the KTC Plan is to create an attractive and functional town centre.

The KTC Plan was under development prior to the September 2010 earthquake. The impact of earthquake on the built form will influence the opportunities in the town centre however the anticipated outcomes with respect to transport were generally not impacted by the earthquake. These transport outcomes are referred to as the objectives throughout this paper:

- *Making it easier to cross the roads and more pleasant to walk around*
- *Providing better access to the river*
- *Providing more and easier parking*
- *Improve traffic management*

The Kaiapoi Town Centre Integrated Transport Plan (ITP) was a 'key action' of the KTC Plan implementation schedule. It brought together all the KTC Plan transport related projects (including streetscape design and parking management) into an overall package for implementation. ViaStrada Ltd was commissioned to help WDC develop the ITP.

During consultation on the draft KTC Plan it became clear that there was a diverse range of views on how the main street should look and function. On that basis the author suggested that a stakeholder group work with WDC staff and ViaStrada in developing the ITP. This approach was supported by the WDC Hearings Panel for the KTC Plan.

The team of WDC staff and ViaStrada engineers are referred to as the Technical Team throughout this paper. This team included the WDC Roading Manager (a co-author of this paper), a ViaStrada traffic engineer seconded to the WDC for the earthquake recovery (the lead author of this paper) and two WDC planning staff and two ViaStrada traffic engineers (one being a co-author of this paper). Input from the urban designer involved in the development of the KTC Plan was sought as the design process progressed.

The stakeholder group (known as the Reference Group) worked with the Technical Team via a series of workshops, to identify the preferred option. While the Reference Group provided valuable input, the Technical Team balanced that input with known planning constraints, industry best practice and safety requirements to develop the options and final plan.

This paper outlines the existing street environment, establishment of the Reference Group and workshops, the main street design that emerged and the lessons learnt.

Figure 1: The main street of Kaiapoi Town Centre

2. EXISTING MAIN STREET ENVIRONMENT

The town centre of Kaiapoi is generally defined as incorporating all of the Waimakariri District Plan Business 1 Zone (shown as red in Figure 2 below). The town centre area covers approximately 16 hectares and includes retail premises, commercial services and community facilities. It also includes some residential properties.

Figure 2: Extent of Kaiapoi Town Centre (Source: KTC Plan)

The main street through the town centre is Williams Street. Hilton Street, Raven Quay and Charles Street intersect with Williams Street. The intersections with Hilton Street and Charles Street are roundabout controlled and the Raven Quay intersection is stop controlled.

Williams Street is an arterial road with an average daily traffic volume of approximately 14,000. The street is contained within a 20 m wide road reserve and is generally made up of two approximately 3 m wide footpaths, 2.5 m wide car parking lanes on each side and two 4.5 m wide traffic lanes. The activities alongside the road include retail, banks, travel agents and cafes. The WDC Library and Service Centre are also on Williams Street.

Figure 3 below was developed based on the United Kingdom's Manual for Streets' (DfT 2007) concept of place and movement hierarchy. This creates challenges in terms of operation and design. The movement and place functions are often in conflict and the road now carries far more traffic than originally envisaged. This concept is also used in the NZ subdivision standard, NZS 4404:2010 with a link and place street design matrix. Applying any of the design templates from this standard was not possible as there is no guidance directly applicable to roads of this nature.

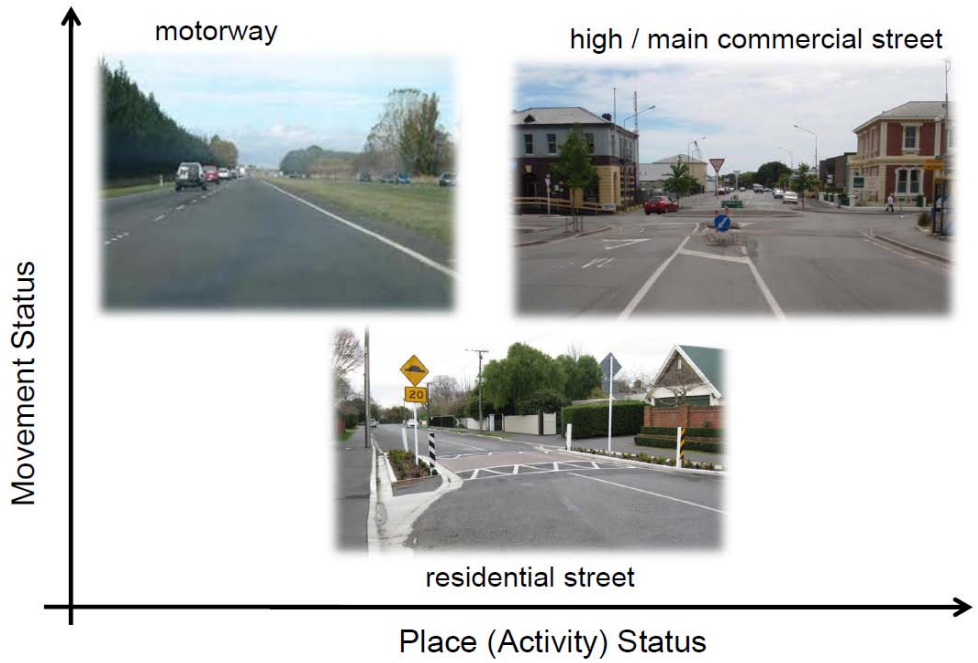

Figure 3: Williams Street movement and place status

Many towns around the New Zealand and the world have to deal with the same issues on their main streets. For example in the early 1990s the Roads and Traffic Authority of New South Wales developed guidelines for local authorities considering changes to their main streets. The resulting document was 'Sharing the Main Street' (1993). This guideline recommends the formation of a stakeholder committee to help develop the scheme as the plan is more likely to be accepted as the community's solution. The NZTA Pedestrian Planning and Design Guide (NZTA 2007) also discusses key concepts of sharing the main street and references the New South Wales document.

3. THE REFERENCE GROUP

The reference group was established by approaching community groups, organisations and individuals (where no group existed to represent a particular viewpoint). A common reaction from those approached was *"I am happy to be involved but I don't know what I can contribute, I don't know anything about transport"*. They were reassured that the group did not need transportation expertise and the fact they drive, walk or cycle in the town centre were credentials enough. One man had earlier told the author of his mistrust of traffic engineers and when asked to join the group stated *"I won't be able to complain then, will I?"*. This member attended all four workshops and was supportive when a test of the proposed roundabouts layout was suggested to the group. The test was inspired by his concern with a past design at that particular intersection failing to effectively cater for large trucks.

The 14 Reference Group members represented local businesses, emergency services, mobility impaired and schools and most were Kaiapoi residents. Representatives from the Kaiapoi Residents Association were not available due to turmoil created by the earthquakes and the impending decision on the future of their land for rebuilding.

The Reference Group met at four workshops over three months under an agreed terms of reference and code of conduct. The workshop proceedings and key outcomes are discussed below.

4. THE WORKSHOPS

The workshops brought together the Technical Team and the Reference Group to identify a new streetscape design that would form the basis of the Kaiapoi Town Centre ITP and best meet the four transport objectives defined in the KTC Plan. A non-technical facilitator was engaged to support the Technical Team at the workshops and be the main point of contact for the Reference Group between workshops.

It was initially anticipated that a design would be identified via a series of three workshops. However, the use of scoring and selection of the various design options presented at the second workshop took longer than initially hoped, and a fourth workshop was required to successfully complete the process.

The aims, proceedings and key outcomes of each workshop are summarised below. Each workshop was held at the Kaiapoi Club in the town centre at 5.30 pm with a light supper provided. The sessions were anticipated to last 2 – 3 hours, however they were generally longer. At the second workshop, the members were so keen to continue their discussions that people were still there after four hours.

Workshop 1 - 11 June 2011

The first workshop was attended by seven Reference Group members and six members of the Technical Team.

The aim of this workshop was to convey the terms of reference and code of conduct to the Reference Group, and task the group to consider the needs of the different visitors to Kaiapoi Town Centre.

The facilitator ran through the usual housekeeping items, including a Christchurch specific item of what to do in the event of an earthquake, and then outlined the terms of reference (TOR) and the expected code of Conduct. The key aspects of the TOR were that the group's role was to represent the views of the wider community and that if agreement could not be met the option with majority support would be taken forward. The Code of Conduct established that all members had equal standing and speaking rights at the workshops; only one person was to speak at a time; and that members were to be polite and respect the views of other group members.

The WDC staff explained to the Reference Group the background of the KTC Plan the associated transport issues identified in the plan, the scope of the ITP and how the workshops were an important part of developing the ITP. It was found at this point that related issues such as motorway on and off-ramps and the mooted second bridge over the Kaiapoi River were distracting the group to some extent and it was made clear these were not part of the ITP.

The Reference Group was asked to consider who visits Kaiapoi; why they visit; how they make their visit and what they need when they get to Kaiapoi. Input from members representing different sectors of the community helped the group realise and appreciate that different users may have conflicting needs. It was concluded that to best meet the needs of all visitors to Kaiapoi, compromises would have to be made in the design of the streetscape.

The 'needs' of the visitors were simplified under two headings, 'People Things' (i.e. footpaths, amenity, pedestrian crossings) and 'Vehicle Things' (i.e. parking, traffic lanes and heavy vehicles) and this theme was carried through the design process. The group discussion highlighted a number of misconceptions held by some members regarding the street environment, for example several people thought that tactile pavers were there to provide non-slip surfaces prior to stepping on to the road.

The first workshop ended with a presentation from the ViaStrada engineers which examined the existing town centre traffic, pedestrian and streetscape environment from a technical

perspective. The group was also shown several street design examples that have been used in other town centres in New Zealand, including Hamilton, Wanaka and Nelson. Background material such as recent pedestrian counts and a comparison of roundabouts with traffic signals was presented to the group.

The presentation also explained how the main streets of many New Zealand rural towns not only act as an arterial road but also provide access to the shops and businesses. These roads now carry far more traffic than was originally expected, which results in parking, shopping and business activity being impacted by traffic, noise, pollution and reduced safety and the traffic flow being impeded by shopping and business activity. The challenge to the Reference Group and the Technical Team was to prepare a design that achieved a balance between the objectives that help address these typical main street issues.

Group members were asked to discuss the issues raised in the workshop with their various communities and provide feedback that the Technical Team could use to develop a range of design options for the Reference Group to consider at the next workshop.

The outcome of this workshop was an understanding by the Reference Group of their role with regards to the Terms of Reference and Code of Conduct and an appreciation of the conflicting needs of the different users of the town centre and the challenge ahead.

Workshop 2 - 27 July 2011

The second workshop was attended by 12 Reference Group members and four Technical Team members.

The aim of this workshop was to present several options for sections of the main street (and side streets) and introduce a multi-criteria assessment concept.

Reference Group members present at the first workshop offered feedback from the community groups they represent about problems and challenges faced by different users of the town centre. This included discussion about roundabouts compared to traffic signals, a variety of types of pedestrian crossing, footpath widths, kerbside parking and other matters.

The Technical Team then presented several options for three sections of the main street (south of the river, north of the river and the bridge) and the riverside street Raven Quay. The options had been prepared based on the issues identified in Workshop 1. As a way of assessing the options a simplified multi-criteria analysis (MCA) was applied within a larger options development and decision making context. The concept of MCA was introduced to the group as a method for evaluating the various options. The MCA would be based on how each option met the conflicting 'needs' of the visitors and users of Kaiapoi Town Centre under the 'People Things' and 'Vehicle Things' headings introduced in Workshop 1. Option sheets were used to score each option as shown in Figure 4 below.

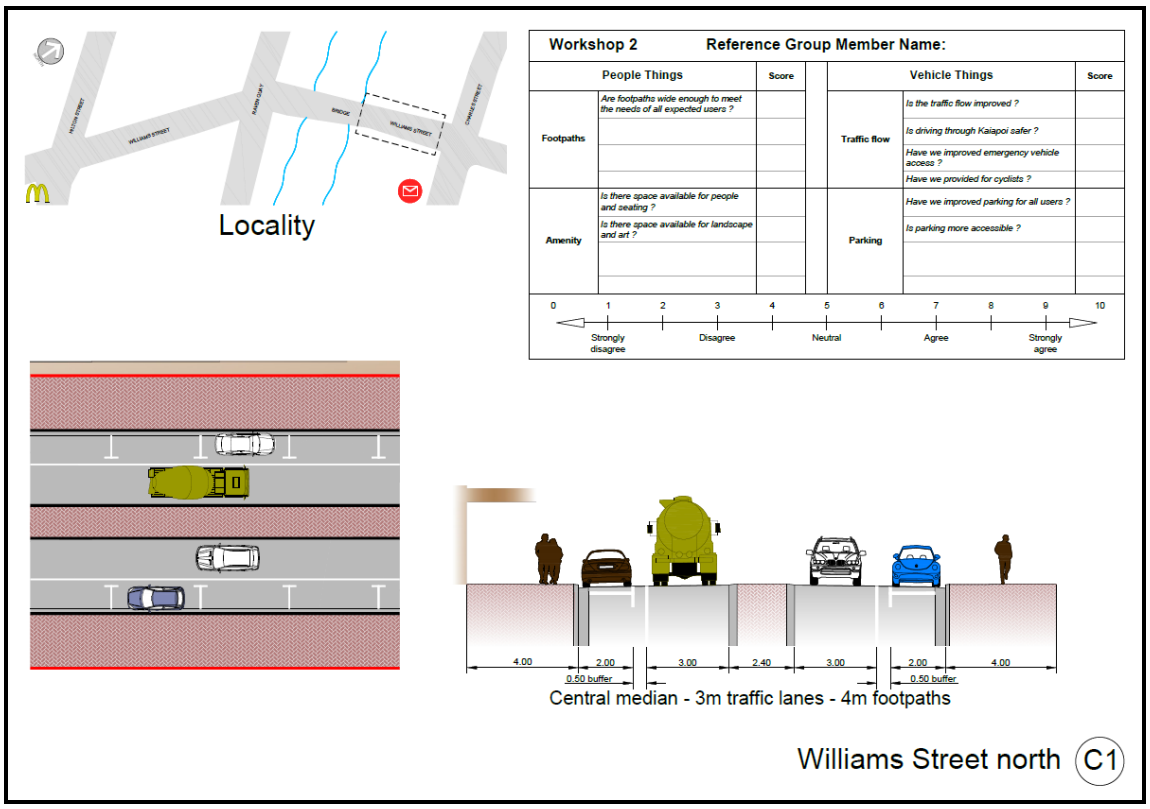

Figure 4: Scoring sheet example

The discussions held at this workshop were enhanced by the presence of three Kaiapoi High School students. The thoughts and ideas from youth challenged the views of the older members of the group. For example, one student asked "*why do we need parking on this street; there's enough parking out the back?*".

A total of 16 scoring sheets were presented in all, including options for traffic signals and roundabout controlled intersections. Each sheet included an MCA scoring table to be completed by the Reference Group members after consultation with their respective community groups. To allow the members to appreciate the scoring process the Reference Group was split into smaller groups to look at and discuss the plan options provided, familiarise themselves with the MCA method and consider how they might score some of the options. Attendees were enthusiastic about their involvement in the evaluation process and there was respectful dialogue amongst group members over varying points of view.

Providing for cyclists in the town centre was a fundamental issue for the Reference Group to consider. The first aspect made clear to the group was the accepted best practice that if a traffic lane is between 3 and 4.2 m wide then cyclists cannot safely share that lane. It is also not best practice for cyclists to share a path with pedestrians in a town centre environment. That left two viable methods of catering for cyclists:

- A 1.8 m wide space (preferably marked as a cycle lane) is provided next to each 3 m wide traffic lane (this means that the footpaths essentially stay the same width and on-street parking is not impacted).
- Cyclists and motor vehicles share a 3 m wide traffic lane that is directly adjacent to the parking lane (that meant the footpaths could be significantly widened without impacting parking). Traffic must operate at slow speeds (30 km/h or less) for this to be satisfactory for cyclists. This sharing arrangement would need to be clearly communicated to drivers and cyclists though good design and establishing gateway treatments that mark the start and end of the sharing zone. This option was also

considered less likely to attract new cyclists, as many people are known to feel uncomfortable "sharing the lane" with motor vehicles.

These two methods were considered to align with best practice and the group could see the benefit of each method and expressed no clear preference as a group at this workshop. The options developed for the final workshop included both methods.

At the end of the second workshop, each group member was given an A3 set of the options to discuss and evaluate with their respective community groups. Group members were asked to return completed evaluations by a set date to enable the Technical Team to compile the MCA scores and prepare a set of options for consideration based on the group preferences.

Group members were also given a plan of Williams Street (the main street) and asked to mark where they considered the best locations for pedestrian crossing points and what type of crossing they should be.

The outcome of this workshop was that the Reference Group attendees were enthusiastically engaged in the assessment process and there was respectful dialogue amongst attendees over varying points of view.

Workshop 3 –24 August 2011

The attendance was low at this workshop (five Reference Group members) because of a recent announcement that the land under 850 Kaiapoi houses would not be able to be built on. This included the homes of some of the Reference Group members, these members were contacted to ensure they were still in a position to participate and they were. .

The aim for this workshop was to reinforce the importance of the Reference Group's evaluation of the options and need for their MCA scores to be returned to the Technical Team.

As part of Workshop 2, the group was asked to indicate its preferred pedestrian crossing type and locations. Very few marked up plans had been returned, so to gain a better understanding of the current pedestrian environment in the town centre, the group undertook a walking tour of the main street. The group used all the existing pedestrian crossings and shared their views on each facility.

Although the Technical Team had thought that the scoring process had been clearly demonstrated during the second workshop only a few scored sets of options were received. Most of these had not been scored correctly, meaning the scores could not be entered into the MCA spreadsheet. To the Technical Team's surprise returned option sheets included; post-it notes and comments stuck on the plans but no scores entered in the table, only favoured options scored and dimensions altered on plans and then scored. This demonstrated that people not used to MCA type assessments may not understand the way that the scores provided valuable input to the assessment process.

The technical team briefly recapped the key differences between the options and the scoring process. Few scored options had been received following Workshop 2 and it was emphasised that for the MCA to be a robust and meaningful process, it was important that scores for all options were received from as many group members as possible. A member of the Technical Team was made available to assist any group members in scoring the options over the coming week if required. It was emphasised the outcome of the MCA would be used to guide the designers in the overall option development, but that the design options would also be subject to best engineering and safety practice.

The workshop ended with a discussion among the group on some of the fundamental design decisions that would inform the development of the options to be presented at the final workshop. The following decisions were made:

- Roundabouts should be used, not traffic signals
- Courtesy crossings could be used if designed to be distinctly different from zebra crossings so that priority is clear to pedestrians and drivers
- Retain as much car parking on the main street as possible
- Parking management should include lower time limits on the main street (currently P120)

The outcome of this workshop was that the Reference Group understood the importance of returning correctly scored sets of plans to enable the Technical Team to prepare final options based on the Reference Group preferences.

Workshop 4 – Held 21 September, 2011

The fourth and final workshop was attended by seven Reference Group members and five Technical Team members.

The aim of this workshop was for the Reference Group to select a preferred town centre design that could be presented to the decision makers.

The Technical Team presented a summary of the MCA scoring which showed that the scoring had identified a series of preferred road section options that were not compatible as a whole. It was clear that maximum scores for the footpath component of any option that featured the widest footpath had skewed results to some extent. A tape measure was used to demonstrate the various footpath widths used in the initial option plans and people generally agreed that the widest option (4.5 m) was excessively wide for Kaiapoi town centre and would not support a vibrant main street. When the footpath scores were excluded from the MCA, a set of coherent, compatible options then resulted; these gave the Technical Team guidance to prepare four overall options for the town centre.

A1 size prints of the four options were fixed to the wall, and each option included a list of pros and cons under each of the transport related objectives of the KTC Plan.

The four design options:

- Option 1 – Generally 3.2 m wide footpaths but with wider footpath areas created near intersections to allow space for pedestrians, landscaping and seating; two 3 m wide traffic lanes with a 1.8 m wide space for cyclists located next to each traffic lane (this could be marked as a cycle lane), and two stage (median divided) pedestrian crossings.
- Option 2 – Same as Option 1 but with full width pedestrian crossings (a one stage crossing movement).
- Option 3 – Generally 4.5 m wide footpaths with wider footpath areas created near intersections to allow space for pedestrians, landscaping and seating; two 3 m wide traffic lanes with cyclists sharing the traffic lane and two stage (median divided) crossings.
- Option 4 – Option 3 but with full width pedestrian crossings (a one stage crossing movement).

The group was then given time to study the options and query the Technical Team on any aspect of the designs. The options were then discussed in depth by the group and Option 1 selected unanimously by those present.

The reason for not supporting Option 2 was that the reference group agreed that two stage pedestrian crossings were better for pedestrians and the general traffic flow. The reason for not supporting Options 3 and 4 was that they considered the road width in Williams Street south became too narrow and the footpaths too wide, and that this would be detrimental to overall traffic flow and cyclists. The workshop also felt that wider footpaths would look empty of pedestrians most of the time and that this would undermine the intention of creating a vibrant main street.

The absent reference group members were consulted after the final workshop and most supported Option 1, helping reinforce the group decision.

Figure 5: The Reference Group study the option plans at the final workshop

Following the selection of the preferred streetscape option, the group's views were then sought on the town centre "gateways" (structures or signs defining the town centre); where they should be located and what form they should take. After lengthy and occasionally passionate discussion, the group concluded that there was no need for gateways, but co-ordination and theming of street lighting, street furniture, trees and planting though the town centre was desired.

Although there has only been limited discussion on parking management options, the group agreed that a parking management plan should consider revised time limits, new time controls (where there are currently none), parking search routes, signage and better car park layouts.

The group's involvement had been a very effective way of gaining community input in the design process and ultimately informing the decision-making. The group was invited to attend a testing of a new roundabout layout and some members were keen to participate in this level of detail. Email updates were sent to the group advising them of the outcomes of discussions with absent group members, project progress and an invitation to attend the Community Board meeting when the project report was presented for approval.

The outcome of this final workshop was the identification of a preferred streetscape option for Kaiapoi Town Centre.

5. THE MAIN STREET PLAN

Option 1 included new pedestrian crossing locations and types and also revised roundabout designs, as described below.

Pedestrian crossings

It was determined from a previous Accessibility Survey and Community Street Review (WDC, 2009), a recent pedestrian survey, and the Reference Group workshops that Williams Street required seven fixed pedestrian crossing points (there are currently five). Two of the proposed crossings will be zebra crossings between Hilton Street and Raven Quay and the remainder will be courtesy crossings.

Existing flush courtesy crossing

Proposed raised courtesy crossing

Figure 6: Comparison of courtesy crossing designs on the main street

The consideration of best practice was important when working with the Reference Group. For example, when the idea of a signalised pedestrian crossing on Williams Street was raised the design team needed to explain the implications of this in terms of delay to all road users.

Revised roundabouts

It was agreed by the Reference Group and supported by an intersection options assessment that the existing roundabouts on Williams Street at Hilton and Charles streets be replaced with new roundabouts. As the Hilton Street intersection is critical in terms of heavy vehicle movements, the revised layout was successfully tested at Wigram Airfield using semi-trailers and a coach tour bus (driven by a member of the Reference Group). Four members of the reference group (including the bus driver) and all members of the Technical Team were present at the testing.

Figure 7: The Reference Group and Technical Team at the roundabout testing

Option 1 as preferred by the Reference Group was supported by the Technical Team for the key reasons below:

- Supports the provision of roundabouts over traffic signals at Hilton Street and Charles Street as the required road space is less, traffic speeds are controlled and overall delay (to all modes) is less. The revised roundabout layout at Hilton Street will address key concerns at this intersection, however there are some compromises required, such as the right turn out of Hilton Street west will be less direct than currently exists.
- Although all options included 3 m wide traffic lanes, with sufficient capacity to carry the existing and projected traffic volumes on Williams Street, the Technical Team supported the provision of a 1.8 m space between the parking and each traffic lane. This space allows for cyclists (and could be marked as cycle lanes) and also for people to exit and enter their parked cars without conflicting with moving traffic. This supports the objective of improving traffic management. Discussions with emergency services (Police and Fire Brigade) supported this approach.

Feedback from the urban designer involved in the KTC Plan development was supportive of Option 1, and opposed wide (4.5 m) continuous footpaths as they can look too sparse and open, even when there are lots of people about. The wide footpaths at street intersections provide a setting for the corner buildings; the footpaths then channel down into the town centre from both ends. Also, the use of the roundabouts as the 'gateways' to the town centre was supported.

Existing Main Street **Proposed Main Street**

Figure 8: Main Street transformation

The ITP was designed to be flexible to accommodate a number of unresolved matters related to the geotechnical zoning of land in Kaiapoi, potential commercial development and the redevelopment of community facilities. Overall the design for the main street is considered a spine that is unlikely to require major alteration in the foreseeable future given its function to provide for through traffic, pedestrian movements and on-street parking. Pedestrian crossing locations and intersections, however, are more likely to be influenced by the unresolved matters and can be altered accordingly when these matters become clearer. It was therefore concluded that the work be staged. The first stage would mainly address parking management aspects and subsequent stages would implement the streetscape design.

The Kaiapoi Town Centre Integrated Transport Plan is yet to be approved by the Kaiapoi Community Board.

6. LESSONS LEARNT

There are several lessons that the Technical Team has learnt from this process. It is worth outlining these for others who may embark on this form of community engagement.

- Working with a Reference Group that represented varying sectors of the community was a useful way of gaining community input in the design process and ultimately informing the decision-making.
- The Reference Group workshops allowed the Technical Team to gain a better understanding of, and dispel, misconceptions that exist in the community regarding transport. The group members were then able to communicate this back to their representative groups, ultimately reaching a wider audience. We recommend the extensive use of graphics to help illustrate concepts and details we often take for granted.
- The role of the Kaiapoi Community Board was considered at the outset of the process and the Technical Team agreed that its involvement should remain at a governance / decision making level rather than at the detailed level. It was felt Board members' direct involvement on the group may have negatively influenced the way that the Reference Group interacted and actively discussed issues, considering the Board members' role was to approve the final plan. However a briefing with the Board following the final workshop made it clear that the complexity of the design issues and depth of understanding that the Reference Group had gained would have been of benefit to the Board's appreciation of the outcomes. Including some board members in the group would have been useful. More regular briefings and updates to the Board throughout the three months would have also helped to engage with the Board.
- The use of a facilitator was considered wise at the outset given the fierce local debate on transport issues, particularly in the local media. However the workshops showed that Reference Group members, even if outspoken characters in a public forum, were respectful and appreciative of being involved and facilitation was not critical to the success of the workshops. In hindsight a facilitator was not considered necessary.
- The consideration of best practice was important when working with the Reference Group. If a stakeholder group is given total design influence it may result in outcomes that are not feasible, practicable or safe. As long as the group is given the information it needs to consider various options it will generally see the logic behind best practice.
- Multi-criteria analysis can be complex for people to understand, even if the Technical Team had considered the process clear and coherent (and toned down from what a purely engineering team would have developed). If using MCA it is recommended that the scoring be done on the night, so to speak, rather than having members work independently on this.

7. CONCLUSIONS

Establishing a design for the main street of the Kaiapoi Town Centre required careful balancing of the KTC Plan transport objectives due to the arterial function and retail, commercial and community function of the main street, Williams Street.

Working with a Reference Group that represented varying sectors of the community was a useful way of gaining community input in the design process and ultimately informing the decision-making. The majority of the group were enthusiastic about their involvement and left the process feeling they had contributed despite having no design or planning expertise.

The working relationship with the group enabled us as engineers to communicate sound methods and stand tall with the community to deliver the final design. This design was not what we, the authors had initially envisaged for the main street. On that basis, we wholly endorse engaging with representative users of the main street to develop design plans rather than presenting the community with a design for comment.

REFERENCES

DEPARTMENT FOR TRANSPORT UK (2007) Manual for Streets

NZTA (2007). Pedestrian Planning and Design Guide

ROADS AND TRAFFIC AUTHORITY OF NEW SOUTH WALES AND FEDRAL OFFICE OF ROAD SAFETY (1993). Sharing the Main Street

WAIMAKARIRI DISTRICT COUNCIL (2011). Kaiapoi Town Centre Plan,

WAIMAKARIRI DISTRICT COUNCIL (2009). Kaiapoi Town Centre Community Street Review and Kaiapoi Town Centre Accessibility Survey