

## AVON RIVER PRECINCT: SHARED ZONES FOR CHRISTCHURCH

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### ABSTRACT

The Avon River Precinct project is one of the most influential of the Christchurch Anchor projects on the transportation design on the new central city. The project includes the meandering Avon River, Oxford Terrace on the true right river bank, which intersects with several of the central city streets, the North Frame and the East Frame.

The project involved stronger, smarter and safer aspects. A major design challenge of the project was the introduction of multiple shared zones which will transform the way pedestrians, cyclists, private vehicles, emergency services, goods vehicles and the heritage tram interact producing a communal public realm space with safe universal access for all. To enable this to function safely it required the alteration of bylaws, a complex traffic signage strategy and a focus on urban design.

This paper is written by the lead Transportation Engineer on the project, giving a unique insight into the design challenges and solutions of integrating the project into the wider transportation network. This paper documents the innovation that has gone into producing a safe multi modal environment and a design that will provide a positive legacy for future generations of Cantabrians.

# 1 INTRODUCTION

The vision for a prosperous, lively and successful city begins with an appealing public realm and a vibrant inner city community. The Avon River Precinct and the North and East Frames are one of the Anchor Projects of the Christchurch rebuild, commissioned by the Christchurch Earthquake Recovery Authority (CERA) and will begin to establish the framework for this vision. The project aims to re-establish a healthy river and encourage a more accessible, distinctive and economically prosperous place which will engender a sense of pride and belonging. Integration of the design into the wider transportation network was considered integral to a delivering a project with a positive legacy for future generations of Cantabrians.

The project requirements are high levels of service for pedestrians, cyclists and public transport, whilst creating spaces which enable different modes of transport to interact in a safe and efficient manner. The transportation objectives have been coordinated with other design needs and aspirations for the project such as commercial viability, geotechnical, ecology, cultural heritage, hydrology, landscape, recreation, urban design, and a wide range of other areas of influence.

The project follows 2km of the Avon River through Christchurch Central City from the Hospital to Fitzgerald Avenue comprising of the following specific areas surrounded in red below:

- Antigua Street to Durham Street;
- The Terraces;
- Convention Centre;
- Victoria Square;
- North Frame;
- Family Park;
- East Frame; and
- Avon Loop (not shown in red below as no transportation component).

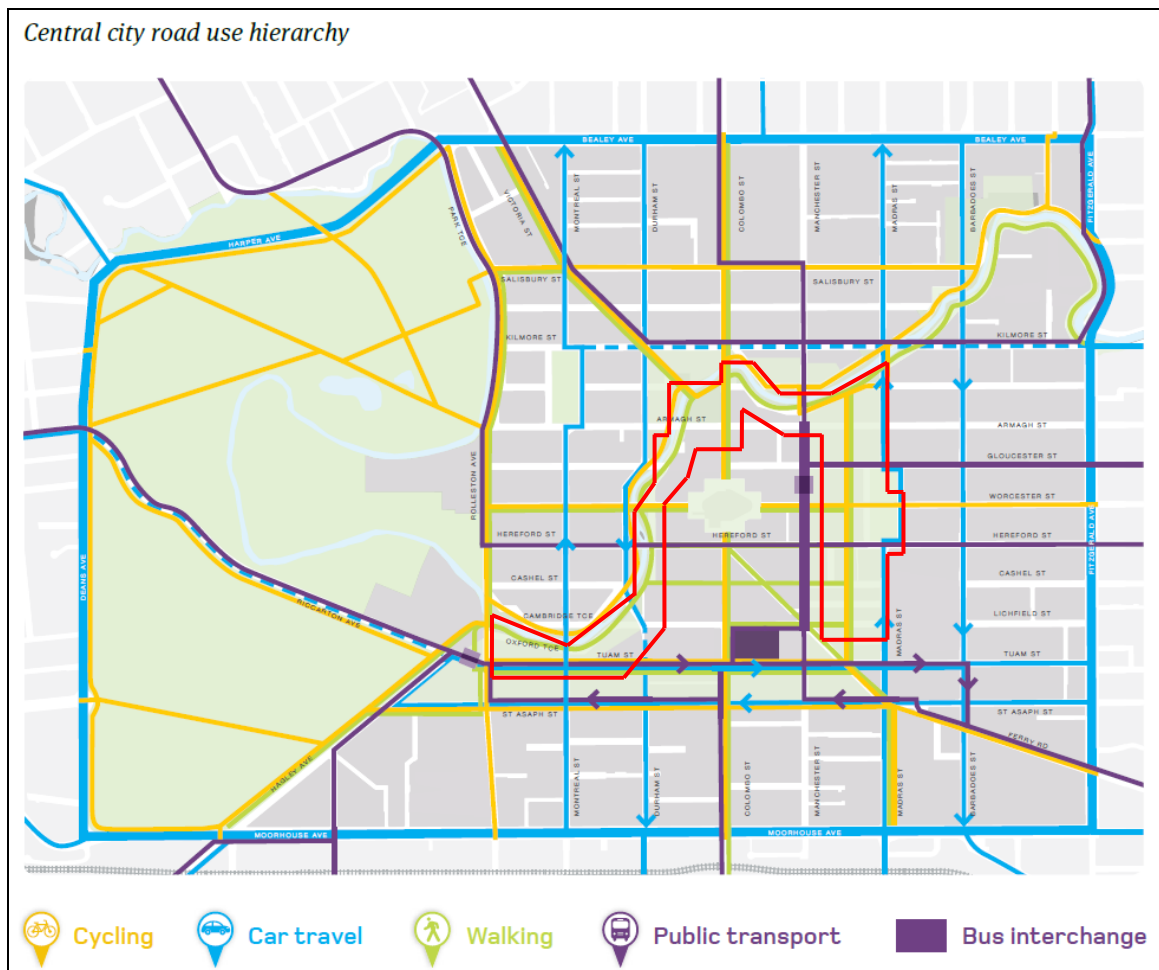


Figure 1: An Accessible City

The project was developed in consultation with the Joint Technical Liaison Group (JTLG) which comprises extensive transportation knowledge and experience from representatives of CERA and Christchurch City Council (CCC). Land use and transport patterns have changed significantly and will continue to change as the city is rebuilt. The Recovery Plan and in particular An Accessible City (AAC) provides the transport context and plan for the future. The project crosses several roads which are classified under the AAC road hierarchy as main distributor one-way; main distributor two-way; and local distributors as demonstrated in Figure 1.

A share zone treatment is proposed to streets along the true right of the Avon River for seven blocks and along the Access Laneway within the East Frame as shown schematically in Figure 2 below. At the time of writing the project construction has recently commenced.

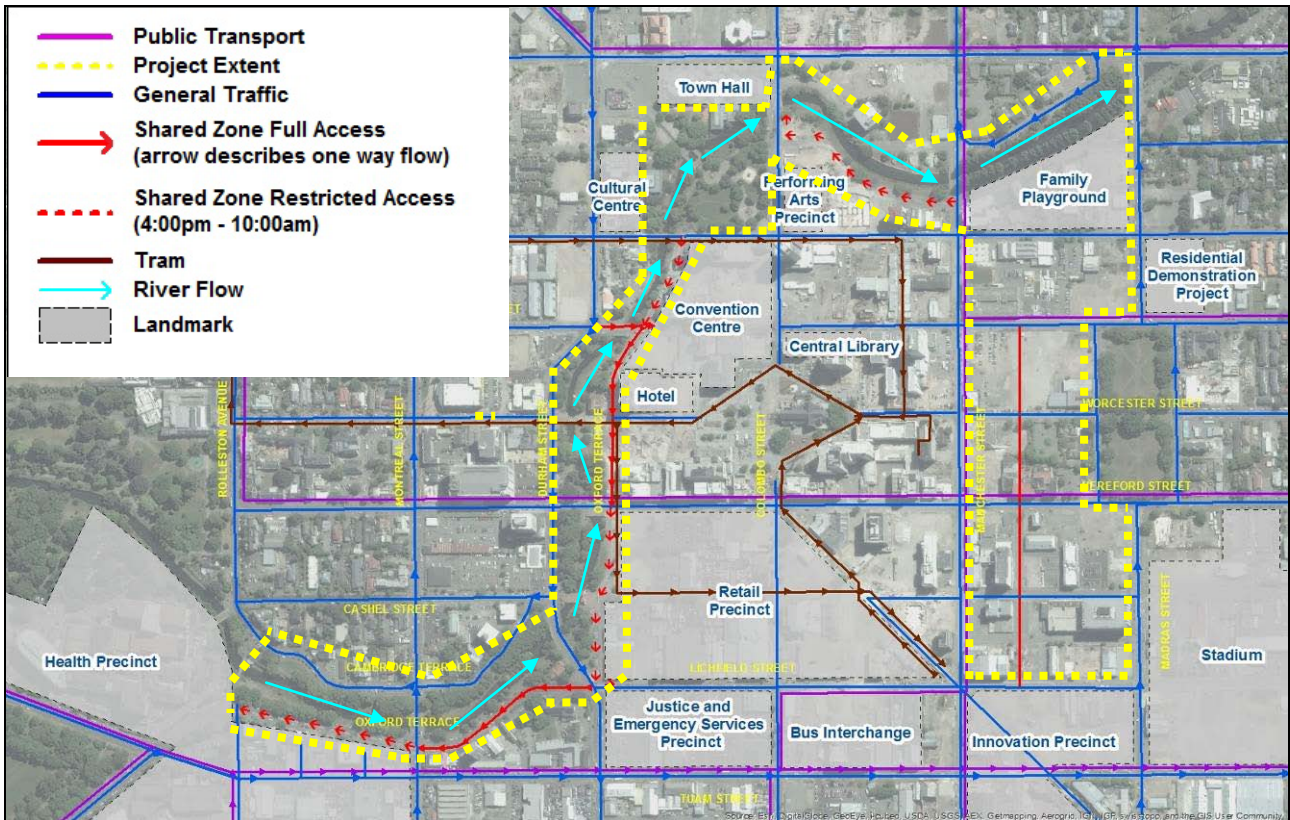


Figure 2: Shared Zone Locations

A typical cross section of the Avon River Precinct Corridor is shown in Figures 3 and 4 below. There is a shared zone on the true right of the river. A 3m wide dedicated cycle path is provided on the true left of the river. The cycle route is separated from walking routes and general traffic to ensure the safety of both pedestrians and cyclists. In commercial centres major cycleways are ideally separated cycle paths which offer an attractive and more comfortable environment for cycling. For major cycleways in parks, reserves and waterways where there are high volumes ideally there needs to be separation of pedestrians and cyclists (Christchurch Cycle Design Guidelines, 2013). The provision of a dedicated cycle facility is intended to increase patronage and reduce the volume of cyclists using the shared zone.

EOS Ecology as part of the design team were responsible for ensuring that the health of the river was improved and as such the transportation aspects of the project did not have a negative impact.

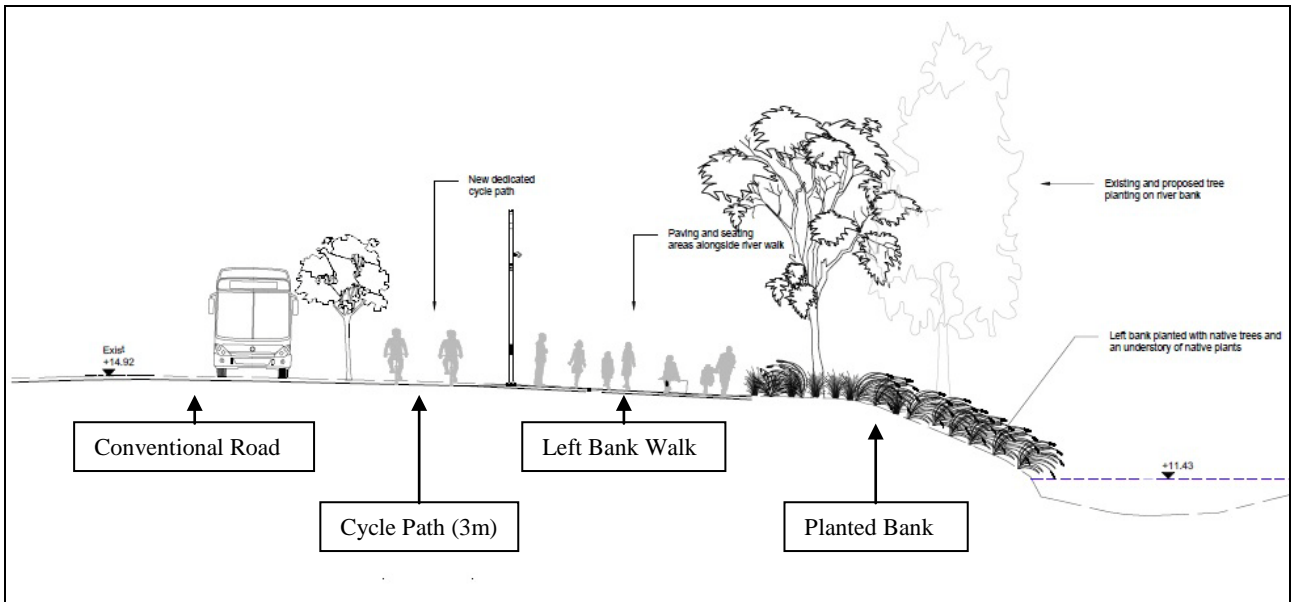


Figure 3: Typical Cross Section - True Left River Bank

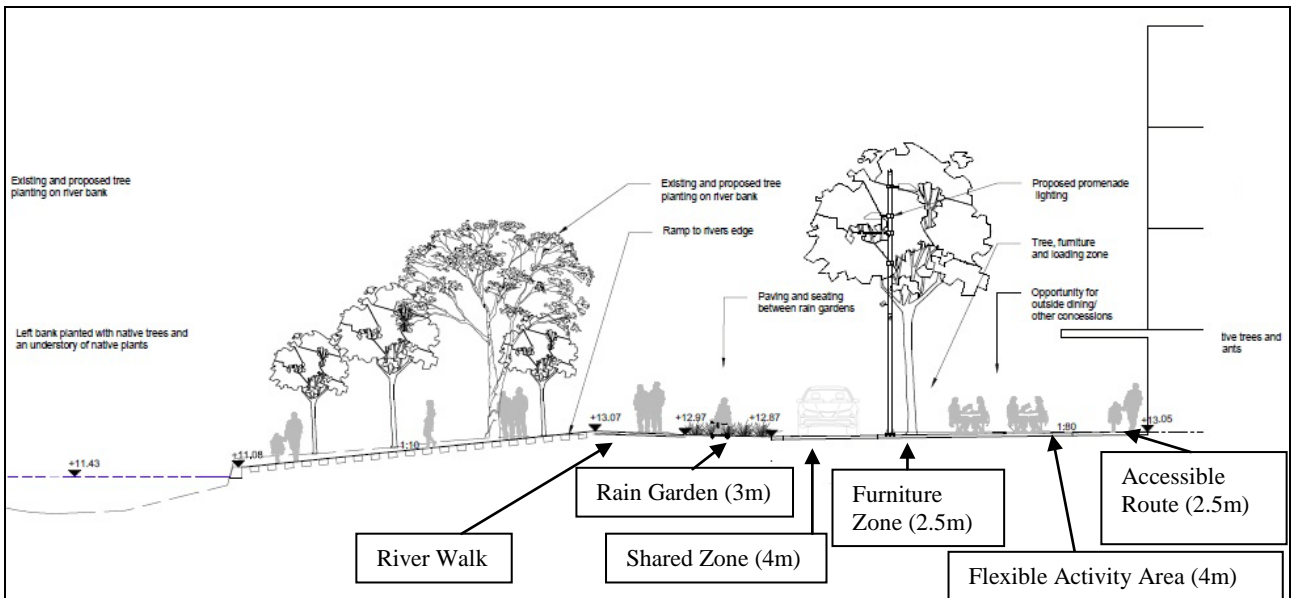


Figure 4: Typical Cross Section - True Right River Bank

## 2 WHAT IS A SHARED ZONE

Shared zones are given specific legal recognition by the Land Transport (Road User) Rule 2004, which has the definition:

*“A length of roadway intended to be used by pedestrians and vehicles”.*

The interaction between different road users in a shared zone is controlled by the Land Transport (Road User) Rule 2004 Clause 10.2 as follows:

1. A driver of a vehicle entering or proceeding along or through a shared zone must give way to a pedestrian who is in the shared zone; and
2. A pedestrian in a shared zone must not unduly impede the passage of any vehicle in the shared zone.



### 3 SHARED ZONE OBJECTIVES

The shared zone design aims to achieve the following key objectives:

1. Encourage place making through stimulating cultural, social, economic, historical and environmental amenity;
2. Create a destination regarded as a place for street and social activities;
3. Encourage pedestrian priority and reduced vehicle dominance;
4. Minimise traffic volumes and traffic speeds; and
5. Retain access and mobility for traffic where necessary.

Karndacharuk, Wilson and Dunn (2013) identified that besides enhancing pedestrian priority and level of service, one of the key objectives of creating a shared zone is to use the road space as a destination or a place for street and social activities. Consequently, a shared zone as a public urban area exclusively situated within the road reserve performs the three functions of Place, Mobility and Access.

Figure 5 demonstrates this and also recognises supplementary functions of a street towards surrounding areas and land use activities outside the road reserve such as economic, social, cultural, historical and environmental amenity that contribute to the formation of a greater sense of place within the road space.

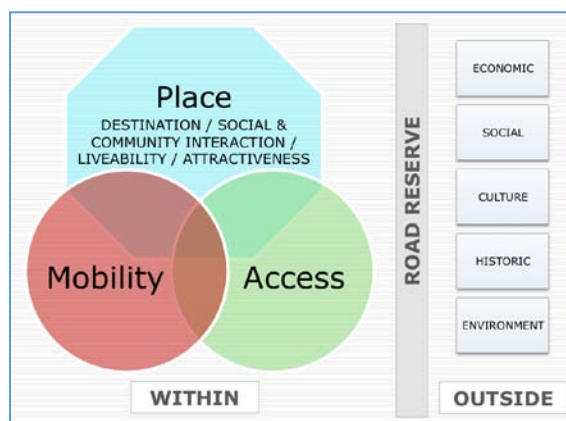


Figure 5: Place, Mobility and Access

It is essential in order to achieve a successful outcome to understand what the measure of success of a shared zone should be. The following are the identified measures of success that have been adapted from a combination of literature (Karndacharuk, Wilson and Dunn (2013) and Department of Transport UK (2011), and previous project experience:

- Volume of pedestrians occupying the carriageway;
- Increased levels of social interaction and leisure activity;
- Longer pedestrian dwell times in the street (evidence of an enhanced sense of place);
- Pedestrians crossing the street at locations, angles and times of their choosing;
- Drivers and cyclists giving way to pedestrians; and
- Drivers and cyclists giving way to one another.

The design principles of a shared space were separated into the three following categories:

- Physical and operational;
- Behavioural; and
- Materials, implementation and maintenance.

### 4 PHYSICAL AND OPERATIONAL

#### 4.1 One-way streets

In order to reduce the volume of traffic that uses the shared zones non-essential traffic was discouraged by designing all shared zones alongside the river as one-way streets in an upstream direction. The option of having shared zones with alternating directions of one-way flow either side of intersecting roads was considered, as it would restrict the possibility to make extended journeys

along the river; however it was determined that it was more important that a legible system was designed that could be negotiated by unfamiliar drivers. The Access Laneway in the East Frame is a two way shared zone as it was considered important to retain flexibility of traffic movements in this area in order to not restrict any potential land uses, which are yet to be determined.

## **4.2 Restricted Access**

For some of the shared zones it was considered unnecessary to provide vehicular access for the general public however; deliveries to businesses was considered essential. These areas were designed as restricted access limited to goods vehicles only before 10am and after 4pm. The CCC: Register of One Way Streets defines New Regent Street as one way in a southerly direction from Armagh Street to Gloucester Street for Goods Vehicles only before 10am and after 4pm. Given that this was an accepted existing time restriction for goods vehicles it was considered to be a suitable duration for the Avon River Precinct shared zones. Any other vehicles that need to enter a restricted access shared zone for a specific purpose will need to apply for an exemption permit from CCC.

## **4.3 Cycling Access**

The Land Transport Rule: Traffic Control Devices 2004 defines a bicycle as a vehicle having at least two wheels designed primarily to be propelled by the muscular energy of the rider. Because a bicycle is defined as a vehicle, it is controlled by the same rules as any other vehicle using a shared zone.

Based on this definition a cyclist would not be able to enter a shared zone defined as no entry except for access for goods vehicles. This would create an inconsistent approach for cyclists who would be able to enter some shared zones and not others. It was considered that the shared zones are areas that cyclists should be allowed to enter. The Avon River Precinct project provides a dedicated cycle path on the opposite side of the river to the shared zones; however the shared zones are designed in a manner that it will be safe and legal for cyclists to use them.

## **4.4 Pedestrian Priority**

The typical priority of vehicles over pedestrians in a trafficable area was removed by reducing delineation between the two modes of travel. A flush cross section (no kerbs) level surface was designed to remove the physical and psychological barrier to pedestrian movement. It also indicates to drivers that pedestrians are not confined to the footway and that they can expect to encounter them in the whole of the street.

## **4.5 Vehicle Speed**

As part of AAC, CERA is reducing the speed limit within the inner zone to 30km/hr (extent shown below in Figure 6). The inner zone covers all shared zones within the Avon River Precinct project and therefore the regulatory speed will be 30 km/hr.

Central Christchurch speed zones

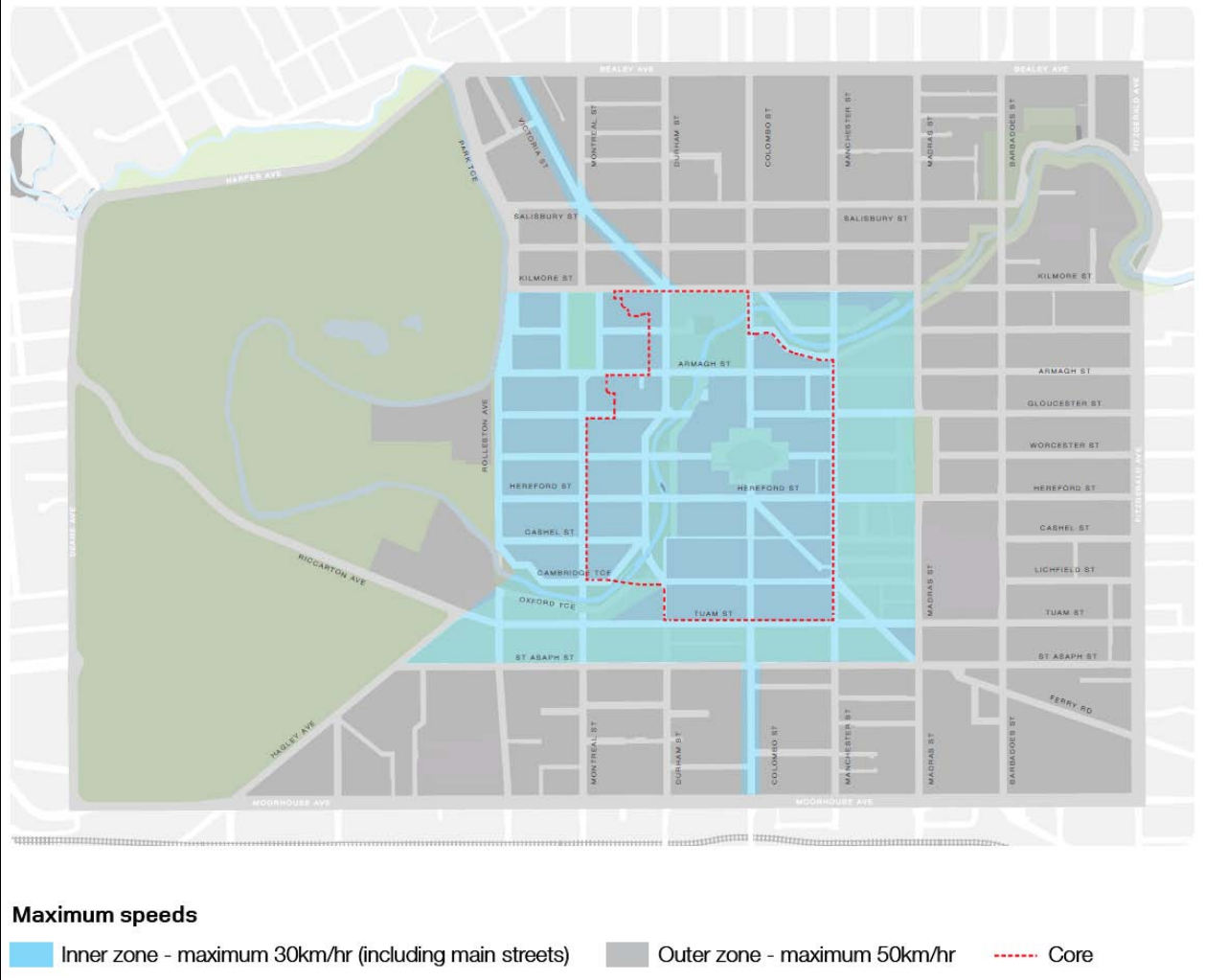


Figure 6: 30km/hr Inner Zone

Actual vehicle speeds of 10km/hr would be more desirable in order to produce a more pedestrian friendly environment. The inclusion of regulatory or advisory 10km/hr speed signs was considered; however it was decided that they would add additional street clutter and were unlikely to have a significant impact on observed speeds. This theory was tested on the Elliott Street shared zone scheme in Auckland which was opened in 2011, without a posted speed limit. After the project had been in operation for six months a posted speed limit of 10km/hr was introduced as trial to understand if speed behaviours would change with the introduction of signs. Monitoring showed that there was no change on observed speeds before and after the signs were introduced.

Low vehicle speeds will be encouraged in the Avon River Precinct by making the street look and feel different to traditional road design. The following gateway features were provided to encourage drivers to slow down before entering the shared zone:

- Shared zone traffic signage;
- A reduction in the trafficable area width to 4m;
- 1:12 ramps onto the shared zone level surface; and
- A change in surface material from asphalt to high quality herringbone natural granite paving.

The street geometry of the shared zones will have very few of the conventional delineators to guide motorists. In the absence of these formal guidance indicators motorists entering the street should drive more cautiously and negotiate the street observing the different cues such as paving

patterns, vertical street furniture elements, concentration of pedestrian activities and the availability of clear path ahead. Vehicle speed is one of the key factors that will influence the behaviour exhibited by pedestrians (and other motorists). The street design will positively influence motorists' behaviour, specifically encouraging them to slow down and yield to pedestrians as a behavioural response.

In order to ensure that drivers enter the shared zones at a slow speed the geometry of corner radii at intersections were reduced to the minimum possible without impacting upon access for large emergency and goods vehicles. Consultation was carried out with the emergency services to clarify access requirements. A Type 6 Fire Appliance is the largest fire service vehicle in operation in Christchurch, which is a 10.5m long rigid vehicle. An 11.5m large rigid truck was used to represent the largest fire appliance; however it was recognised that most fire appliances would be closer to an 8m medium rigid truck, which *RTS 18: New Zealand on-road tracking curves for heavy motor vehicles*, states is representative of a typical fire appliance. Therefore in some constrained locations the 8m medium rigid truck swept path was considered acceptable.

Once within the shared zone several landscape features were designed in order to make the street look and feel different and to encourage motorists to drive more slowly and to be more prepared to yield to pedestrians including:

- Continuation of the distinctive paving pattern of herringbone natural granite paving that speaks of 'space' rather than carriageway;
- The presence of street trees, rain gardens, street art, cycle parking, or other items of street furniture making it an environment that will encourage pedestrian use;
- Minimal use of conventional traffic management infrastructure (kerbs, road markings, signage, and bollards) in order to encourage pedestrians to move more freely along and across the street;
- The use of a level surface across the street;
- The provision of opportunities for activation of the Flexible Activity Space and Fixed Activity Space by pedestrians (e.g. outdoor dining, permanent seating areas, and gathering/performance areas). Such pedestrian activity will create 'side friction' and add to the behavioural uncertainty of pedestrians as perceived by the motorist;
- Activation of the street edge by hospitality business activities which are likely to increase the number of pedestrians using the street; and
- Removal of vehicle parking.

It was considered important to minimise visual clutter in order to develop a sense of a shared environment. All cycle stands, planters, seating and litter bins locations were located with consideration of how it would influence pedestrian and vehicle movements. Where practical multi-function poles were used to support traffic signals, traffic signs, lighting, tram cables and any other street furniture that was possible.

The shared zones are separated by intersecting existing roads where vehicles can leave the shared zone slow speed environment. The lengths of the shared zones is between 100m and 250m. Long shared zones would have the potential to incur higher speeds due to driver frustration caused by taking too long to reach the surrounding road network. It was considered that the distances within the project are unlikely to stimulate this scenario.

## **4.6 Parking**

A limited amount of parking (including mobility impaired parking) was provided in the shared zone between Montreal Street and Durham Street to accommodate a specific demand for existing business, religious, educational and medical facilities in close proximity. For mobility impaired people, being able to park near important destinations is one of the advantages that shared zones have over pedestrianised areas. In all other locations there will be no parking allowed; however loading will be allowed and controlled zonally.



No specific areas will be demarcated within the streets for loading and servicing purposes; however suitable areas will be clear of any permanent street furniture to allow delivery vehicles to park clear of the trafficable shared zone area intended for vehicle circulation. The design provides clear areas for delivery vehicles as well as some opportunities in other places within the street for vehicles to stop without overly hindering pedestrian or vehicle circulation.

#### 4.7 Shared Zone Traffic Signs

The shared zone sign in Figure 7 below was approved in the Land Transport Rule: Traffic Control Devices Amendment 2012. It was adopted as a suitable sign for the Avon River Precinct. Creation of a non-standard sign was considered, however representatives of NZTA advised that the existing sign should be used to maintain a nationwide uniform approach. Some of the options considered were the inclusion of a tram on the sign, inclusion of a regulatory speed limit or combination with access restriction messaging. The access restriction messaging was required; however it was considered that combining the information on one sign would be too high to be readable for some drivers close to the sign and would present too much information at one time that might not be fully processed.



Therefore the restricted access messaging will be shown on a sign immediately at the access to the street with the shared zone sign located approximately 5m further down the street.

It was clarified by the JTLG and NZTA representatives that termination signage 'Shared Zone Ends' would not be required based on the assumption drivers will aware of the change in behaviour required, through a change in surface materials.

Figure 7: A40-7 - Shared Zone Sign

#### 4.8 Tram

The historic tram is one of Christchurch's leading attractions and its interaction with other modes of transport within the project extent is of major importance. Based upon a design maximum tram width of 2.5m and a design safety clearance between tram vehicle and obstacles of 0.75m, a 4m wide tram corridor was provided within the shared zone. The tram route will run southbound along Oxford Terrace between Worcester Street and Cashel Street. The tram will run every 15 minutes at peak times.

An assessment of the options for the provision of tram and vehicle lanes concluded that the optimal design was for vehicles to share the tram lane. It was considered that a tram is unlikely to be delayed by general traffic as the tram speed is relatively low. On this basis there is not provision for a tram to pass a vehicle unless a driver pulls into a loading area. If traffic is delayed by a tram this is a positive speed reduction measure. In all locations there is sufficient space for pedestrians/cyclists to safely move out of the path of travel of the tram.

## 5 BEHAVIOUR

### 5.1 Modal Separation

The typical cross section of the shared zone is shown in Figure 8 below. Working from the left of the image across to the building frontage there are the following modal zones:

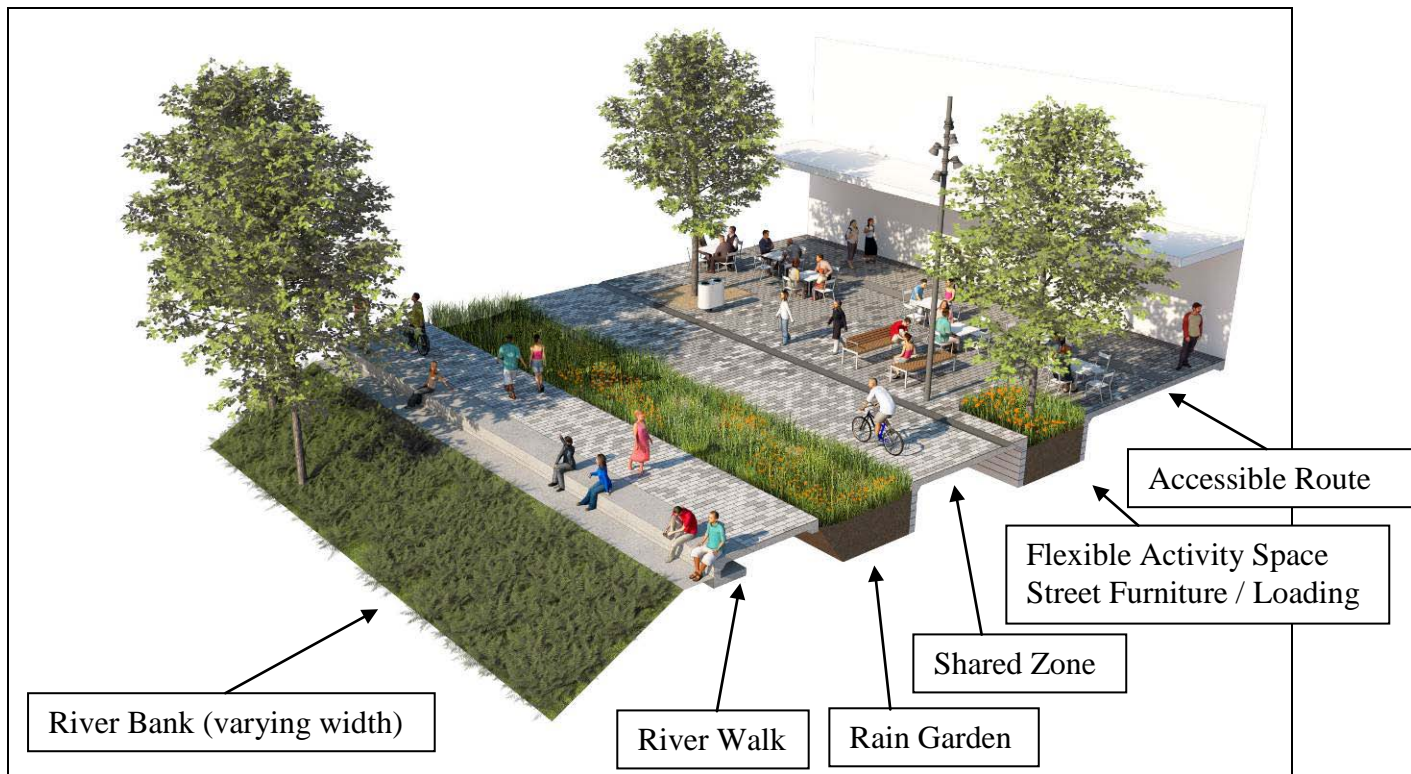


Figure 8: Typical Modal Arrangement

The river bank is not shown to scale as it varies in width along the project as the Avon River meanders along an approximately 60m wide corridor between hard surfaces on either side. Above the river bank is an area referred to as the river walk, which is accessible by pedestrians and cyclists. It is separated by a rain garden or street furniture from the shared zone. Vehicles are physically restricted from this area by a lack of width.

Beyond the rain garden is the trafficable shared zone which is typically 4m wide. Sharing between vehicles, cyclists and pedestrians will only be necessary in the trafficable area. It is generally delineated by rain gardens, planting or street furniture (with regular breaks in the obstruction provided) to ensure vehicles are guided to his space without the use of conventional traffic management measures.

Beyond the trafficable area is a loading/furniture/flexible activity space that pedestrians will able to easily permeate cross.

Along the building frontage a comfort space referred to as the 'Accessible Route' will be provided. This is a protected area for vulnerable pedestrians such as the visually impaired, elderly or disabled where there is no interaction with vehicles. The accessible route is 2.5m wide and is separated from the rest of the shared zone by a tactile delineator band. This informs pedestrians that if they stay to the building frontage side of the band they will not encounter a vehicle. For vehicles this is an additional visual restriction. The width was determined to be appropriate through consultation with the Blind Foundation. The shared zone has been designed so that the tactile delineator band is generally located beyond other physical obstructions such as rain garden, planting and street furniture to reduce vehicle proximity to the accessible route. Given the shared zone is a level surface this kind of separation is important in order to replace the conventional design of a raised kerb used to protect pedestrians.

The most important navigation feature for blind and partially sighted people is the building line, and by placing the accessible route next to the building line it should remain uncluttered by temporary obstructions. Temporary obstructions present a particular problem, as their locations cannot be

'learned'. The optimal universal design solution was consulted on with the Blind Foundation, CCS Disability Action and the Barrier Free New Zealand Trust.

Cyclists are encouraged to use the dedicated cycle path on the true left river bank however they will be able to legally use all areas of the corridor in any direction.

## **5.2 Shared Zone Pedestrian Activity**

Pedestrian movement across a shared zone will stimulate the interaction of different modes of transport which reinforces the slow speed requirements. The geography of the project will produce two entirely different edges to the corridor. On one side of the corridor the building frontage will generate activity through retail, hospitality and other services whilst on the other river side there will be recreational activities and contemplative areas to attract pedestrians.

In order to ensure pedestrians are encouraged to move in any direction within the corridor and are not channelled along the corridor in non-vehicular areas (as in a traditional street), the project has been designed to be permeable. Obstructive features such as rain gardens will be partitioned with pathways every 15m. It would be desirable to have more partitions; however the challenge of providing sufficient stormwater treatment for a large paved area determined the design.

The flexible activity space will be segregated with planting to reduce the potential for continuous sections of the same functionality. The usage is likely to be dependent upon the adjacent building, which may change over time; however outdoor dining or loading areas will not be able to be continuous. Therefore there will be varying degrees of ease for pedestrians to cross the space.

At the concept design stage it was proposed to introduce ten additional pedestrian river crossings, which would produce more desire lines crossing the shared zones; however the financial limitations of the project meant that this had to be reduced to one bridge.

## **5.3 Safety**

A safety audit was carried out during the Concept Design, half way through the Detailed Design and at the end of the Detailed Design. A post construct safety audit will be carried out. By carrying out safety audits throughout the design process it ensured that providing a safe environment was an underlying factor in all design decisions.

## **5.4 Traffic Signal Control**

The one way shared zones terminate at traffic signals in the following intersections:

- Oxford Terrace / Montreal Street;
- Oxford Terrace / Lichfield Street;
- Oxford Terrace / Hereford Street; and
- Oxford Terrace / Colombo Street.

In these locations a signalised crossing will be provided along the travel of direction of the conventional street, perpendicular to the shared zone direction of vehicular travel.

This scenario could cause drivers to behave in ways not entirely compatible with the shared zone objectives. It could lead to driving a little faster because of the greater certainty regarding prediction of pedestrian behaviour or with driving with more urgency to reach a green light. It was decided to trust in driver's ability to behave sensibly based on their environment as is the case for the rest of the shared zone. As the project crosses multiple relatively high traffic volume roads the traffic signals are necessary. This aspect of the design was approved through the safety audit process.

## 6 MATERIALS, IMPLEMENTATION AND MAINTENANCE

The pavement surface materials were selected to create a distinctive sense of place by offering vitality texture and interest. The surface of the pavement will be a granite herringbone paving. All street furniture was designed to be attractive in order to attract additional pedestrians. Generous amounts of formal and informal seating, public art and planting has been designed to encourage pedestrians to use the space and remain there. The seating is of good quality, will have a nice view, sufficient sun/shade and shelter, and is located close to the pedestrian routes and destinations.

The condition of the street surface is key to a successful shared zone. Therefore a resilient rigid pavement with a 50 year design life was designed and plans to minimise future disruption by utility companies were developed.

The streets have been designed to be easy to clean so that as much of the space as practicable can be accessed by cleaning vehicles or manually operated machines, which will minimise cleaning costs. For the shared zones that the general public will not be allowed to drive is was designed so that maintenance vehicles will have access in order to retained a clean and attractive environment.

In order for the shared zones to operate as intended it will be beneficial to provide education to the general public regarding the laws and modal behaviour. Development of an educational strategy has not begun at the time of writing.

## 7 TRAFFIC CONTROL STRATEGY

Shared zones will be a new concept for many users and therefore it is important that there is a clear traffic control strategy to generate the appropriate transportation behaviour.

The following tools are currently used to control traffic behaviour in Christchurch:

- National legislation – Land Transport (Road User) Rule 2004;
- Local legislation – CCC Bylaws; and
- Traffic control infrastructure – Based on the above legislation.

A combination of these tools has been used to produce a legible, safe traffic control system that clarifies appropriate user behaviour. One of the biggest challenges of the project was providing a design that minimised the traffic infrastructure that is required to convey the message, in accordance with shared zone best practise. Therefore changes to the CCC Bylaws will be implemented in order to achieve the traffic control objectives minimising the need for traffic signs and road markings.

A resolution will be added to the CCC Traffic and Parking Bylaw 2008 designating the following streets as either a:

- Shared zone; or a
- Shared zone with access for goods vehicles only before 10am and after 4pm.

No.	Street Name	Location	Description
1	Oxford Terrace	Montreal Street to Antigua Street	Shared zone with access for goods vehicles only before 10am and after 4pm
2	Oxford Terrace	Durham Street to Montreal Street	Shared zone
3	Oxford Terrace	Hereford Street to Lichfield Street	Shared zone with access for goods vehicles only before 10am and after 4pm



No.	Street Name	Location	Description
4	Oxford Terrace	Worcester Street to Hereford Street	Shared zone
5	Oxford Terrace	Gloucester Street to Worcester street	Shared zone
6	Oxford Terrace	Armagh Street to Gloucester Street	Shared zone with access for goods vehicles only before 10am and after 4pm
7	Oxford Terrace	Manchester Street to Colombo Street	Shared zone with access for goods vehicles only before 10am and after 4pm
8	Access Laneway through the East Frame	Lichfield Street to Gloucester Street	Shared zone

Table 1: Shared Zone Schedule

A resolution (ratified through CCC operational procedures) will be added to the CCC Traffic and Parking Bylaw 2008 regarding shared zones with access for goods vehicles only before 10am and after 4pm stating that cyclists are exempt from the no entry restriction for the reasons explained earlier. This will avoid the need to add text to signs stating cyclists are allowed to enter (which would give the impression of actively encouraging them to enter) whilst removing the legal restriction on cyclists. The shared zone standard sign, which includes the cycle symbol will be erected approximately 5m behind the no entry sign and will be visible on the approach to the shared zone.

In order to manage parking within the shared zones on a consistent basis with minimal traffic infrastructure the following alteration to the CCC Traffic and Parking Bylaw 2008 will be made:

1. *Except where Christchurch City Council has by resolution specified otherwise, no person may stand or park a vehicle in a road specified as a shared zone.*
2. *A person must not use a shared zone in a manner contrary to any restriction made by Christchurch City Council.*

The Land Transport Rule: Traffic Control Devices 2004 defines parking as:

- a) *In relation to any portion of a road where parking is for the time being governed by the location of parking machines placed under the authority of a bylaw of a local authority, the stopping or standing of a vehicle on that portion of the road for any period exceeding five minutes;*
- b) *In relation to any other portion of a road, the stopping or standing of a vehicle (other than a vehicle picking up or setting down passengers in a loading zone or reserved parking area, and entitled to do so) on that portion of the road.*

Typically a loading zone is governed by the Land Transport (Road User) Rule 2004 which states the following:

12.4(2) *A road controlling authority may restrict the parking of vehicles by designating an area of road as a loading zone to which a time restriction may also apply.*

12.4(3) *A road controlling authority must provide, in accordance with 12.5, signs that comply with Schedule 1, and that specify the class of vehicle, class of road user or designated activity to which the loading zone is restricted.*

12.4(4) *Except as provided in 12.4(5), a road controlling authority must, unless this is impracticable, indicate a loading zone by marking:*

*(a) Where the parking area is intended for parking parallel to the edge of the roadway:*

*(i) a continuous yellow line at right angles to the kerb or roadway edge at each end of the area of the roadway; and*

- (ii) a broken or continuous yellow line parallel to the kerb or roadway edge, not less than 2 m and not more than 3 m from the kerb or roadway edge; or
- (b) Where the parking area is intended for parking at an angle, a continuous yellow line on the left and right side of each parking space within the loading zone.

Examples of the applicable traffic signs referred to are shown in Figures 9, 10 and 11 below:



Figure 9: R6-50 - Class restricted loading zone standard



Figure 10: R6-50.1 - Class restricted loading zone class supplementary



Figure 11: R6-50.2 - Class restricted loading zone class supplementary

The CERA/CCC JTLG advised that the existing loading control approach used at Cashel Mall should be used on the Avon River Precinct. Various other traffic sign approaches have been trialled in Christchurch and this approach has achieved the highest level of compliance. The loading control sign to be used for restricted access shared zones is shown in Figure 12. This zonal approach to restricting access for specific vehicles minimises the amount of traffic signs required.

In the other shared zones that allow entry for all vehicles it was necessary to define whether parking or loading will be allowed. The sign in Figure 13 was designed, incorporating the standard NZTA approved no parking symbol from Traffic Control Devices 2004 and the text to control loading taken from the Cashel Mall example.

The definition of “deliveries” was not clear or time bound. Therefore the CCC Traffic and Parking Bylaw 2008 was altered to clarify that “Deliveries” is defined as being controlled the same as “parking in a loading zone” as defined in the Land Transport (Road User) Rule 2004, which states the following:

*Parking on loading zone*

(1) A driver or person in charge of a vehicle must not stop, stand, or park the vehicle on any part of a roadway reserved by a road controlling authority as a loading zone

- a) if the vehicle does not belong to the class (if any) specified on the sign; or
- b) if the driver leaves the vehicle unattended for more than 5 minutes or any period longer than that specified on the sign; or
- c) if goods or passengers are not actually being loaded or unloaded from the vehicle

This definition means that as long as the driver of a goods vehicle returns to the vehicle every 5 minutes to unload more goods they may remain in the loading zone.



Figure 12: No entry except for goods vehicles (for deliveries) before 10am and after 4pm



Figure 13: No parking except for goods vehicles (for deliveries)

It was considered undesirable to indicate a loading zone by road markings in the shared zones as this would depreciate the amenity of the shared zone and be inconsistent with the removal of locational guidance for drivers and signal that it was a road and not a shared zone. Therefore unmarked loading bays will be available between planting boxes in the flexible activity space. It will be the responsibility of the businesses requiring loading facilities to ensure there is sufficient space available that loading will not obstruct through traffic on the shared zone.

Failure to comply with any of the bylaws will result in penalties in line with the CCC Traffic and Parking Bylaw 2008 under either:

- Section 11 - Penalties for Parking Offences; or
- Section 16 - Penalties for Traffic Movement Offences.

## **8 CONSULTATION**

Prior to commissioning of the project consultation was undertaken. The purpose of the consultation was to provide the community and stakeholders with opportunities to be fully informed about the project and to contribute to design solutions before key project decisions were made. A "Share an Idea" process was carried out with a wide range of public engagement activities undertaken including a community expo with nearly 10,000 attendees, public workshops, the Share an Idea website and online survey and social media. CCC received over 2,000 comments about the Avon River Precinct. Following adoption of the draft Recovery Plan in August 2011 by CCC, a month of consultation, known as 'Tell Us What You Think', took place. During the Concept Design multiple stakeholders were consulted which was repeated at the Developed Design stage.

## **9 CONCLUSION**

The Avon River Precinct is one of the most influential of the Christchurch Anchor Projects on the new transportation network for the central city. Although shared zones have been introduced elsewhere in New Zealand this will be the largest scheme of this type. The Christchurch earthquake has been used as a catalyst for change of the central city transportation network. The reopening of areas that have been restricted to vehicles is an ideal opportunity to instigate behaviour change.

The project is integral to the AAC objective of encouraging modal shift to non-motorised travel and creating a central city that is accessible to all. The shared zones represent a paradigm change for modal interaction and safer utilisation of high amenity public realm space with access provided for all users, maximising the number of people that can enjoy the area regardless of their mode of travel. Higher traffic volume routes adjacent to the project will be upgraded accordingly, prioritising access to wider network origin and destinations. The design replicates lessons learnt from national and international experience whilst incorporating innovative design approaches to integrate into the Avon River transportation environment.

Ultimately the success of the introduction of shared zones to multiple sections of roads within central Christchurch can only be measured once they are opened, through the operational functionality, the safety record and the following:

- Volume of pedestrians occupying the carriageway;
- Increased levels of social interaction and leisure activity;
- Longer pedestrian dwell times in the street (evidence of an enhanced sense of place);
- Pedestrians crossing the street at locations, angles and times of their choosing;
- Drivers and cyclists giving way to pedestrians; and
- Drivers and cyclists giving way to one another.

There is currently no monitoring strategy developed; however once the construction is complete and becomes a CCC asset it is recommended that the measures above are surveyed. If the results are positive they could be used to justify the introduction of other shared zones nationwide.

## 10 REFERENCES

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## 11 ACKNOWLEDGEMENTS

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