

Park Terrace Design Assessment



Contents

1. Introduction	1
2. Review considerations	1
2.1 Safe System alignment	1
2.2 Alignment with Strategic transport direction	2
2.3 User comfort and perception of safety	4
2.4 Alignment with design best practice	4
2.5 Future proofing	4
3. Concept design options - key features	5
4. Options assessment	6
5. Review conclusion	10

Tables

Table 1 – Option descriptions	5
Table 2 – Option assessment outcomes	6

Figures

Figure 2.1 Safe system pillars	1
Figure 2.2 AAC priority routes by mode	3

Park Terrace Design Assessment

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1. Introduction

Christchurch City Council has recently introduced a Temporary Traffic Management Plan on Rolleston Avenue and Park Terrace from Cambridge Terrace to Salisbury Street, which includes a two-way cycleway. The community has been asked for their feedback and two technical reviews are being undertaken.

This review focuses on assessing the current layout and six alternative designs, one being a modification to the existing layout and the others being designs that incorporate the shared path on the riverbank. The options are either combination of a two-way cycleway and the shared path or using the entire length of shared path, and some with widening of the path. More detailed descriptions are provided in this note.

The assessment includes consideration of a range of matters but with a key focus on alignment with the following criteria:

- Alignment with the Safe System approach
- Best practice design standards and guidelines
- Strategic plan alignment
- Road user comfort and amenity
- Alignment with future environment

2. Review considerations

2.1 Safe System alignment

Safe System

The Safe System approach underpins Vision Zero. It was pioneered in Sweden and acknowledges the physiological and psychological limitations of humans and puts ultimate responsibility on the designers and operators of the system to accommodate these human limitations. This approach is derived from an understanding that people make mistakes, and from an ethical standpoint no-one should be killed or seriously injured on roads.

The Safe System approach demands a holistic approach to the safety of the road system and the interactions among roads and roadsides, travel speeds, vehicles and road users. It is an inclusive approach that caters for all groups using the road system, including drivers, motorcyclists, passengers, pedestrians, cyclists, and commercial and heavy vehicle drivers. The Safe System approach operates on the following guiding principles:

- **People make mistakes:** Humans will continue to make mistakes, and the transport system must accommodate these. The transport system should not result in death or serious injury because of errors on the roads.
- **People are vulnerable and the system should be managed within human biomechanical injury limit:** Our bodies have a limited ability to withstand crash forces without being killed or seriously injured. A Safe System ensures that the forces in collisions do not exceed the limits of human tolerance. Speeds must be managed so that humans are not exposed to impact forces beyond their physical tolerance. System designers and operators need to consider the limits of the human body in designing and maintaining roads, vehicles and speeds.
- **Shared responsibility:** The burden of road safety responsibility no longer rests solely with the individual road user. System managers have a primary

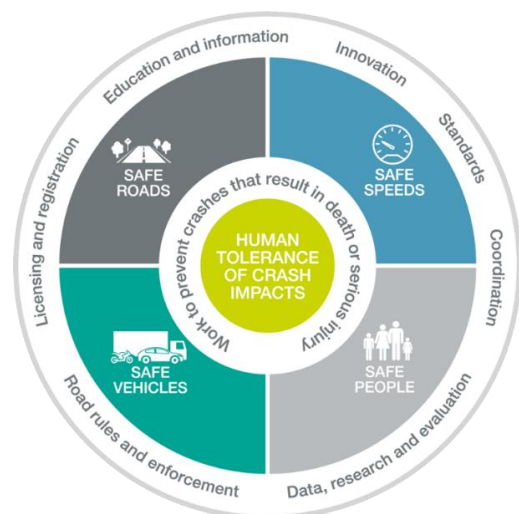


Figure 2.1 Safe system pillars

responsibility to provide a safe operating environment for road users and ensuring that the system is forgiving when people make mistakes.

- **Strengthening all parts of the system:** All pillars of the road system need to be strengthened so that if one part fails, other parts will protect the people involved from serious harm.

Central to the Safe System approach is human tolerance to crash impacts and the management of kinetic energy transfer so these are within survivable limits. The Safe System approach is based on the following four Safe System pillars:

- **Safe Roads** - Roads and roadsides are designed and maintained to reduce the risk of crashes occurring, and to lessen the severity of injury if a crash does occur.
- **Safe Speeds** – speeds are managed to complement the road environment and ensure crash impact forces are within human tolerances.
- **Safe Vehicles** – vehicles lessen the likelihood of a crash and protect occupants and other road users.
- **Safe People** – road users are skilled, competent, alert and unimpaired.

New Zealand's road safety strategy 2020-2030 *Road to Zero* has a target to reduce deaths and serious injuries on our roads by 40% from 2018 levels. In order for this target to be achieved, significant advances will need to be made across all Safe System pillars. A key focus is on improving safety outcomes for vulnerable road users, who are more likely to be killed or seriously injured in a collision with a motor vehicle.

A proactive approach to addressing crash risk is needed, as many crashes are random in nature and there can be considerable under-reporting especially for crashes involving vulnerable road users. For example, In the last 5 years (2018-2022), there were two vulnerable road user crashes along Park Terrace. Both crashes were intersection crashes (one at Dorset Street and one at Peterborough Street) where a cyclist collided with a vehicle whilst turning. In one crash, the cyclist endured minor injuries. Traditionally this would be considered a safe corridor. However, with more and more people walking and cycling, assuming the same would be unwise.

For pedestrians and cyclists, a Safe System can only be achieved by fully separating them from vehicles or where it cannot be achieved, lowering vehicle speeds to be less than 30km/h. The fundamental objective is to address exposure, likelihood and severity of outcome through design. Full separation eliminates the likelihood of a crash and lower speeds (<30km/h) significantly reduce the likelihood of pedestrians/ cyclists of being killed or seriously injured.

2.2 Alignment with Strategic transport direction

Christchurch Central Recovery Plan 2012

The Christchurch Central Recovery Plan defines the new form of the central city, identifies key anchor projects and block plans for how the city may look in the future. The plan was developed based on expert advice, international experience, engagement with key stakeholders and community engagement, and resulted in 106,000 ideas being submitted.

The Recovery Plan contains a chapter called An Accessible City which focuses on transport, stating:

The recovery is an opportunity to improve access for people of all ages and abilities to central Christchurch and the buildings and spaces within it. Increased participation in the central city by all residents will be crucial to the success of the Recovery Plan.

Christchurch Central Recovery Plan An Accessible City 2013

The key element of the An Accessible City (AAC) is the central city road use hierarchy (RUH). The RUH shows the priority routes for each mode of transport and the direction of travel along the street. The plan then goes on to describe each mode of transport and the streets where modes are prioritised.

Park Terrace is identified as:

1. A priority pedestrian route from Armagh Street to Salisbury Street
2. A key cycle route on the eastern boundary of Hagley Park connecting with the key cycleway route along Salisbury

3. A priority public transport route between Bealey Avenue and Hereford Street.
4. A two-way Local Distributor vehicle route (as opposed to a Main Distributor that has a focus on car travel)



Figure 2.2 AAC priority routes by mode

The AAC outlines key changes required to the Christchurch central city transport system to achieve the goals of the Recovery Plan, and ultimately these align with best practice transport planning and road safety outcomes:

- The plan introduces an inner zone (between Kilmore Street, Madras Street, St Asaph Street and Hagley Park with legs along Victoria Street and Colombo Street) where the speed limit will be 30km/h, which is more forgiving for vulnerable road users if they were to be involved in a collision with vehicles. This has been implemented.
- An important distinction is designing streets to be self-explaining for its speed. This means designing streets with high numbers of active road users with better protection and lower speeds so motorists become more aware of the presence of vulnerable road users. The plan notes that east-west streets between the Core and Hagley Park will be improved over time to provide attractive and safe pedestrian routes between these destinations.
- Central city motor vehicle access is to be via the four avenues (Bealey, Moorhouse, Fitzgerald and Hagley Aves) which act as arterials around the city, with the one-way system providing access through the centre as main distributors. The only exception to this is that Kilmore Street is shown as a two-way main distributor. Park Terrace is shown as a local street, where the primary use is for access to property and businesses.
- The plan also recognises cycling as a key opportunity to improving accessibility across the city and aims to provide separated cycle facilities where possible. The plan encourages cycling in the city core and is made more comfortable by the 30km/h speed limit. It is intended to provide for recreational and commuter cyclists particularly along the Avon River and along the frame. Cyclists are to be separated from traffic as much as possible, and additional consideration given at intersections with turning vehicles. Diagrams in AAC show cycle lanes between the kerb and parking separated either with a kerb or rumble strip.
- The plan says that bus routes will generally run on two-way streets to enable inbound and outbound stops to be close to each other for better user legibility (particularly relevant to Park Terrace). It is expected that services run every 10 mins during the peak for core services.

2.3 User comfort and perception of safety

Managing the conflict between pedestrians and cyclists or e-scooters and when to separate these user groups has always been challenging. Where volumes of pedestrians and cyclists (and e-scooters) are relatively low, shared paths could be considered as appropriate. However, when either of the volumes increase, separation is desired to avoid conflict and increase the comfort for all users. Pedestrians, especially older persons and parents with young children, find mixing with cyclists and e-scooters troublesome due to the speed differential and quietness. Similarly, cyclists could also experience frustration with too many pedestrians are using a shared facility. Conflict can be managed by best practice path design, such as appropriate widths and marking, however separation of users is desired.

Pedestrians' perception of safety and accessibility plays a big part when deciding whether to walk or not. If it feels uncomfortable, unsafe or inaccessible, many vulnerable pedestrians will revert to another mode such as private car or forgo the trip altogether. This is contrary to An Accessible City where an inclusive transport system is the desired outcome.

For cyclists, maintaining a high Level of Service (LOS) is important to encourage consistent usage. However, this should not be at the compromise of safety and comfort of cyclists or other road users especially vulnerable road users.

2.4 Alignment with design best practice

Alignment with current design guidance is another criterion that has been used to compare options. Options have been assessed against the following design guidelines that are considered best practice guidance:

- **Waka Kotahi Cycling Network Guidance (CNG)**
 - A consistent best practice guide for cycling network and route planning in Aotearoa/ New Zealand. It sets out a process for deciding what cycling provision is desirable and provides best-practice guidance for the design of cycleways. Cycleway width, separation from vehicles, treatment at intersections and at bus stops are some design elements that have been considered.
- **Waka Kotahi Pedestrian Network Guidance (PNG)**
 - Similar to the CNG, the PNG provides guidance on choosing the best pedestrian infrastructure based on demand and road characteristics. Issues with pedestrians sharing space with cyclists/ e-scooters and how to design for mobility impaired pedestrians are some key elements that have been considered.
- **Waka Kotahi Public Transport Design Guidance (PTDG)**
 - The PTDG, a one-stop-shop for designing for public transport in Aotearoa/ New Zealand, has been referenced to check best practice for designing bus stops on cycleways. The safety of comfort of cyclists and bus users must be considered, especially the mobility impaired bus users.
- **CCC Major Cycleway Design Guide Design Principles Best Practice Guide Rev B**
 - Consistent with the CNG, the guide is a starting point for all cycling projects in Christchurch to achieve the cycle network outlined in the Strategic Transport Plan.

2.5 Future proofing

The extent to which the proposed designs integrate with potential future development/ infrastructure in the vicinity of Park Terrace has also been considered. The assessment has considered if design features complement the anticipated changes when designing for the future.

The following future projects or land use developments have been considered:

- An elderly residents housing village on Park Terrace either side of Salisbury Street
- One-way to two-way conversion of Salisbury Street and Kilmore Street as per AAC
- Potential transport changes in the area that would reinforce the AAC outcomes but may not be in the Long-Term Plan (e.g. taking a lane out of Park Terrace to extend the cycleway or create a better streetscape).

3. Concept design options - key features

The seven options that are assessed in this review are described in Table 1 in terms of features proposed in each section of the design.

Table 1 – Option descriptions

Design section	Option 1 (currently implemented)	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	
Between Armagh Street & Kilmore Street	Two-way cycle way. Pedestrian refuge crossing north of Armagh Street between two-way cycleway and traffic lanes. Speed cushions on southbound lane on approach to the crossing. Removes one northbound traffic lane. Existing shared path reverts to footpath.	Two-way cycle way. Pedestrian refuge crossing north of Armagh Street between cycleway and traffic lanes. Speed cushions on southbound lane on approach to the crossing. Removes one northbound traffic lane. Existing shared path reverts to footpath.	Two-way cycle way. Pedestrian refuge crossing north of Armagh Street between cycleway and traffic lanes. Speed cushions on southbound lane on approach to the crossing. Removes one northbound traffic lane. Existing shared path reverts to footpath.	Two-way cycle way. Pedestrian refuge crossing north of Armagh Street between cycleway and traffic lanes. Speed cushions on southbound lane on approach to the crossing. Removes one northbound traffic lane. Existing shared path reverts to footpath.	Two-way cycle way. Pedestrian refuge crossing north of Armagh Street between cycleway and traffic lanes. Speed cushions on southbound lane on approach to the crossing. Removes one northbound traffic lane. Existing shared path reverts to footpath.	Two-way cycle way. Pedestrian refuge crossing north of Armagh Street between cycleway and traffic lanes. Speed cushions on southbound lane on approach to the crossing. Maintains two northbound traffic lanes. Existing shared path reverts to footpath.	Existing shared path. Pedestrian refuge crossing between traffic lanes north of Armagh Street. Speed cushions on southbound lane on approach to the crossing. Speed cushions on southbound lane on approach to the crossing. Maintains two northbound traffic lanes.	Widened shared path. Pedestrian refuge crossing between traffic lanes north of Armagh Street. Speed cushions on southbound lane on approach to the crossing. Maintains two northbound traffic lanes.
Between Kilmore Street & Salisbury Street	Two-way cycle way. Existing shared path reverted to footpath.	Two-way cycle way. Existing shared path reverted to footpath.	Two-way cycle way to Peterborough Street and reverts to the existing shared path. Existing shared path reverted to footpath between Armagh Street and Peterborough Street. Maintains two northbound traffic lanes by removing flush median.	Existing shared path. Maintains two northbound traffic lanes.	Widened shared path. Maintains two northbound traffic lanes.	Existing shared path. Maintains two northbound traffic lanes.	Widened shared path. Maintains two northbound traffic lanes.	
Park Terrace Northbound Bus Stop	Bus boarder with wide bus stop island with passenger waiting area and pedestrian priority crossing over the cycleway.	Indented bus stop with narrow bus island with no passenger waiting area within island and raised pedestrian courtesy crossing over the cycleway.	As per option 1.	No change from existing indented bus stop.	No change from existing indented bus stop.	No change from existing indented bus stop.	No change from existing indented bus stop.	
Salisbury Street Pedestrian Crossing	One traffic lane in either direction. Reconfigured cycle / pedestrian crossing with realigned pedestrian refuge between traffic lanes Safety improvements on the east side.	One traffic lane in either direction. Reconfigured cycle / pedestrian crossing with realigned pedestrian refuge between traffic lanes. Safety improvements on the east side.	One traffic lane in either direction. Realigned pedestrian refuge between traffic lanes. Safety improvements on the east side.	Reconfigured pedestrian refuge crossing across three lanes (two northbound & one southbound). Safety improvements on the east side.	A signalised pedestrian crossing on a raised platform across three lanes (two northbound & one southbound). Safety improvements on the east side.	Reconfigured pedestrian refuge crossing (two northbound & one southbound). Safety improvements on the east side.	A signalised pedestrian crossing on a raised platform across three lanes (two northbound & one southbound). Safety improvements on the east side.	

4. Options assessment

Table 2 presents the assessment of the seven options are against the criteria outlined in Section 2. The assessment is qualitative (not scored numerically), and each cell of the table is colour shaded to represent a scale of concern. Green shading represents a good outcome or very little concern, orange represents some concern over outcomes, red/pink represents a high level of concern. N.B. safety issues carry across where an option is noted as being the same as another option, aside from where changes are detailed.

Table 2 – Option assessment outcomes

Criteria	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7
	Two-way separated cycleway on-road from Armagh Street to Salisbury Street with a bus boarder opposite Peterborough Street.	Option 2 is the same as Option 1 aside from indenting of the bus stop opposite Peterborough Street to remove the bus border arrangement.	Terminates the two-way separated cycling facility at the Peterborough Street bus stop and reintroduces two traffic lanes north of Kilmore Street by converting the flush median to a northbound traffic lane.	Terminates the two-way separated cycling facility at the 30/50 km/h speed limit boundary just south of Kilmore Street and reverts to the original shared path from Kilmore Street north.	Is the same as Option 4 south of Kilmore Street. North of Kilmore Street, the existing shared path is widened and a raised signalised crossing is introduced at the Salisbury Street intersection.	Is the same as Option 4 except that the two-way cycleway terminates just north of Armagh Street and reverts to the original configuration north of that point.	Is largely the same as Option 5 except that the two-way cycleway terminates just north of Armagh Street and the shared path is widened through to Armagh Street. A raised signalised crossing is introduced at the Salisbury Street intersection.
Safe System alignment	<p>This option has a good degree of safe system alignment.</p> <p>Key features of this option that align with safe system principles include:</p> <ol style="list-style-type: none"> 1. Provision of physically separated cycleway from adjacent motorised traffic. 2. Separation of pedestrians and cyclists from a previously substandard width shared path. 3. 30 km/h speed limit south of Kilmore Street which, if observed, provides a safe system aligned environment for all road users. 4. 50km/h speed limit is safe system aligned for any crashes involving motorised traffic only. <p>Aspects of the design that are not aligned with safe system principles, include:</p> <ol style="list-style-type: none"> 1. 50 km/h section includes pedestrian crossing points on Park Terrace that are not raised and therefore do not align with safe system principles. These are at the Kilmore Street signals, to/from the bus stop opposite Peterborough Street and at Salisbury Street. 	<p>There are no fundamental differences from a safe system alignment perspective with Option 1.</p>	<p>Option 3 results in a reduction in safe system alignment compared to Option 1 and 2, as follows:</p> <ol style="list-style-type: none"> 1. Two northbound lanes north on Kilmore Street are likely to create an increase in travel speeds. 2. Removal of the flush median removes the ability for pedestrians to cross Park Terrace in two stages to/from bus stop. 3. Removal of the flush median removes a safe right turning facility into Peterborough Street and properties on the eastern side of Park Terrace. 4. Cyclists and pedestrians are required to share the substandard width shared path for a longer distance. 5. Pedestrians must cross two northbound lanes at the Salisbury Street crossing thus increasing their exposure to traffic. 	<p>This option reduces or changes safe system alignment as follows:</p> <ol style="list-style-type: none"> 1. Improves safety by reinstating the flush median (refer Option 3). 2. Reduces safe system alignment for cyclists by forcing cyclists to share a substandard width path with pedestrians for a longer distance or sharing the lane with traffic in a 50 km/h zone. 	<p>Option 5 could address the safe system alignment issue noted for Option 4; if the shared path is widened to at least 4m, which could change this option to a good outcome design (green).</p> <p>Furthermore, it introduces a signalised pedestrian crossing with a raised platform on a 50km/h road with more than two lanes in one direction. This is a safe system aligned treatment.</p>	<p>Option 6 reduces the safe system alignment by forcing cyclists to share a substandard width path with electric - scooters and pedestrians.</p> <p>There is a further reduction in safe system alignment for cyclists that elect to stay on the road as this will increase exposure to conflict with traffic even though the speed limit is considered within safe system boundary conditions south of Kilmore Street.</p> <p>No major improvements to the Salisbury Street crossing are proposed (except for removal of the stagger cut through) The pedestrian refuge is located where the operating speeds are greater than 30km/h making it a supporting safe system treatment only. It also requires crossing two northbound traffic lanes.</p>	<p>By not providing a dedicated cycle lane, some cyclists will continue to share the lane with motorists which is not safe system aligned.</p> <p>Pedestrians will share a wider shared path with faster moving cyclists and electric scooters which will compromise their comfort and safety. Unless the shared path is at least 4m wide.</p> <p>The signalised pedestrian crossing with a raised platform on a 50km/h road with more than two lanes in one direction is a safe system aligned treatment.</p>

Criteria	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7
	Two-way separated cycleway on-road from Armagh Street to Salisbury Street with a bus boarder opposite Peterborough Street.	Option 2 is the same as Option 1 aside from indenting of the bus stop opposite Peterborough Street to remove the bus border arrangement.	Terminates the two-way separated cycling facility at the Peterborough Street bus stop and reintroduces two traffic lanes north of Kilmore Street by converting the flush median to a northbound traffic lane.	Terminates the two-way separated cycling facility at the 30/50 km/h speed limit boundary just south of Kilmore Street and reverts to the original shared path from Kilmore Street north.	Is the same as Option 4 south of Kilmore Street. North of Kilmore Street, the existing shared path is widened and a raised signalised crossing is introduced at the Salisbury Street intersection.	Is the same as Option 4 except that the two-way cycleway terminates just north of Armagh Street and reverts to the original configuration north of that point.	Is largely the same as Option 5 except that the two-way cycleway terminates just north of Armagh Street and the shared path is widened through to Armagh Street. A raised signalised crossing is introduced at the Salisbury Street intersection.
Strategic alignment	The design supports the vision of An Accessible City (AAC) of providing a range of transport options that supports the growth in travel by public transport, walking and cycling. It aligns with the AAC road network hierarchy, which shows that Park Terrace should be prioritised for active modes and public transport not vehicle travel. The use of a bus boarder aligns well with the public transport priority as per AAC.	The design supports the vision of AAC of providing a range of transport options that supports the growth in travel by public transport walking and cycling. It aligns with the AAC road network hierarchy.	The design supports the vision of AAC of providing a range of transport options that supports the growth in travel by public transport walking and cycling. It aligns with the AAC road network hierarchy. However, having two lanes of faster northbound traffic at Salisbury Street would result in a poor connection for people travelling on to the Salisbury Street key cycleway.	The design does not align with the AAC road network hierarchy as for most of the Park Terrace section, it prioritises car travel over active travel (by combining pedestrians and cyclists in one facility). However, by providing a cycleway for at least a section of the corridor, it is paving the way of providing better infrastructure to support growth in active modes.	The design does not align with the AAC road network hierarchy as for most of the Park Terrace section it prioritises car travel over active travel (by combining pedestrians and cyclists in one facility, albeit a slightly wider path). By providing a cycleway for at least a section of the corridor, it is paving the way of providing better infrastructure to support growth in active modes.	The design does not align with the AAC road network hierarchy as for all of the Park Terrace section it prioritises car travel over active travel (by combining pedestrians and cyclists in one facility).	The design does not align with the AAC road network hierarchy as for all of the Park Terrace section it prioritises car travel over active travel (by combining pedestrians and cyclists in one facility, albeit a slightly wider path).
Active user comfort and catering for mobility impaired pedestrians	Pedestrians can walk with confidence that fast-moving cyclists or e-scooters will not compromise their safety, this is often a deterrent to walking especially for mobility impaired pedestrians and older persons. Similarly, cyclists will feel relieved that they also do not need to navigate pedestrians on their ride. At the bus stop, pedestrians can cross the cycleway and wait for the bus on the bus island and board the bus in two steps making the boarding process faster and efficient.	Pedestrians can walk with confidence that fast-moving cyclists or e-scooters will not compromise their safety, this is often a deterrent to walking especially for mobility impaired pedestrians and older persons. At the bus stop, mobility impaired users would need to negotiate the cycleway crossing and boarding/ alighting the bus in the same step which could be overwhelming. The raised crossing will provide some comfort.	Pedestrians can walk with confidence that fast-moving cyclists or e-scooters will not compromise their safety, this is often a deterrent to walking especially for mobility impaired pedestrians (only applicable to part of the corridor). At the bus stop, they can cross the cycleway and wait for the bus on the island and board the bus in two steps making the boarding process faster and more efficient.	Pedestrians can walk with confidence that fast-moving cyclists or e-scooters will not compromise their safety, this is often a deterrent to walking especially for mobility impaired pedestrians. (only applicable to half the corridor) In the northbound direction, crossing two traffic lanes can be challenging for elderly or mobility impaired pedestrians. The crossing does not benefit from obvious breaks/ gaps in the traffic stream in the peak periods due to being located too far away from adjacent signalised intersections.	A signalised pedestrian crossing on a raised platform is provided at Salisbury Street. On the shared path, pedestrians will feel unsafe or to walk with confidence knowing that fast-moving cyclists or e-scooters present.	Pedestrians will feel unsafe or to walk with confidence knowing that fast-moving cyclists or e-scooters are present. Mobility impaired pedestrians will continue to use the shared path with hesitation or would not use it at all due to the fear of perceived conflict. For this option, note that an alternative footpath exists on the west bank of the river parallel to Park Terrace.	With a wider shared path with segregation by mode or direction, pedestrians can walk with some confidence even though fast-moving cyclists or e-scooters are present. For this option, note that an alternative footpath exists on the west bank of the river parallel to Park Terrace.

Criteria	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7
	Two-way separated cycleway on-road from Armagh Street to Salisbury Street with a bus boarder opposite Peterborough Street.	Option 2 is the same as Option 1 aside from indenting of the bus stop opposite Peterborough Street to remove the bus border arrangement.	Terminates the two-way separated cycling facility at the Peterborough Street bus stop and reintroduces two traffic lanes north of Kilmore Street by converting the flush median to a northbound traffic lane.	Terminates the two-way separated cycling facility at the 30/50 km/h speed limit boundary just south of Kilmore Street and reverts to the original shared path from Kilmore Street north.	Is the same as Option 4 south of Kilmore Street. North of Kilmore Street, the existing shared path is widened and a raised signalised crossing is introduced at the Salisbury Street intersection.	Is the same as Option 4 except that the two-way cycleway terminates just north of Armagh Street and reverts to the original configuration north of that point.	Is largely the same as Option 5 except that the two-way cycleway terminates just north of Armagh Street and the shared path is widened through to Armagh Street. A raised signalised crossing is introduced at the Salisbury Street intersection.
Alignment with best practice design guidance	<p><u>Cycleway</u></p> <p>The width ranges from 3m to 3.4m and the clearance from moving traffic (0.6m) is consistent with the CCC Major Cycleway guidelines.</p> <p><u>Shared path</u></p> <p>Reverted to footpath by removing shared path marking.</p> <p><u>Bus stop</u></p> <p>Bypass path around the bus stop is provided however the crossing across the cycle lane is not raised. An inline bus boarder stop option is consistent with the existing bus service.</p> <p><u>Pedestrian crossings</u></p> <p>The zebra crossing south of Armagh Street and the cycleway crossings are not raised but the speed limit is low. Pedestrians will have to cross both traffic lanes.</p> <p><u>Carriageway</u></p> <p>One lane in each direction. Lane width ranges from 3.2m – 3.4m and consistent with a 30km/h speed environment.</p>	<p><u>Cycleway</u></p> <p>The width ranging from 3m to 3.4m, clearance from moving traffic (0.6m) of the two-way cycle lane is consistent with the Major cycleway guidelines.</p> <p><u>Shared path</u></p> <p>Reverted to footpath by removing shared path marking</p> <p><u>Bus stop</u></p> <p>Bypass path around bus stop with raised treatment to slow cyclists. Consider in-line bus boarder stop option if an infrequent route (bus in traffic lane).</p> <p><u>Pedestrian crossings</u></p> <p>Same as option 1</p> <p><u>Carriageway</u></p> <p>One lane in each direction. Lane width ranges from 3.2m – 3.4m and consistent with a 30km/h speed environment.</p>	<p><u>Cycleway</u></p> <p>The width ranging from 3m to 3.4m, clearance from moving traffic (0.6m) of the two-way cycle lane is consistent with the Major cycleway guidelines.</p> <p><u>Shared path</u></p> <p>Reverted to footpath by removing shared path marking. Best practice guidance is to avoid shared paths unless the cycle volumes are extremely low.</p> <p><u>Bus stop</u></p> <p>The full-width island bus stop layout (see the figure below) provides bus passengers with a separate place to wait and means they do not have to cross the cycleway when transitioning between the waiting area and the bus.</p> <p><u>Pedestrian crossings</u></p> <p>Same as option 1</p> <p><u>Carriageway</u></p> <p>Even though some improvements to the crossing facility is proposed, crossing two lanes of traffic will be troublesome for mobility impaired pedestrians or elderly pedestrians in a 50km/h speed zone.</p>	<p><u>Cycleway</u></p> <p>The width ranging from 3m to 3.4m, clearance from moving traffic (0.6m) of the two-way cycle lane is consistent with the Major cycleway guidelines.</p> <p><u>Shared path</u></p> <p>If the cycle demand increases as a result of the connecting cycleway, the shared path width may not be appropriate to safely manage demand. Ideally the shared path is at least 4m in width. Best practice guidance is to avoid shared paths unless the cycle volumes are extremely low.</p> <p><u>Pedestrian crossings</u></p> <p>The pedestrian refuge crossing is a minimum treatment at this location.</p> <p><u>Carriageway</u></p> <p>Even though some improvements to the crossing facility is proposed, crossing two lanes of traffic will be troublesome for mobility impaired pedestrians.</p>	<p><u>Cycleway</u></p> <p>The width ranging from 3m to 3.4m, clearance from moving traffic (0.6m) of the two-way cycle lane is consistent with the Major cycleway guidelines.</p> <p><u>Shared path</u></p> <p>If the cycle demand increases as a result of the connecting cycleway, the shared path width may not be appropriate to safely manage demand. Best practice guidance is to avoid shared paths unless the cycle volumes are extremely low. Ideally the shared path is at least 4m in width.</p> <p><u>Pedestrian crossings</u></p> <p>The signalised pedestrian crossing with a raised platform on a 50km/h road with more than two lanes in one direction is a safe system aligned treatment.</p>	<p><u>Cycleway</u></p> <p>No cycleway between Armagh Street and Salisbury Street.</p> <p><u>Shared path</u></p> <p>Shared path should be designed to at least 4m width to allow for comfortable two-way movement.</p> <p>However, best practice guidance is to avoid shared paths unless the cycle volumes are extremely low.</p> <p>No changes to the bus stop or crossing facilities (albeit a removal of the chicane crossing at Salisbury Street).</p> <p><u>Pedestrian crossings</u></p> <p>The pedestrian refuge crossing is a minimum treatment at this location. However, crossing two lanes of traffic will be challenging for mobility impaired pedestrians and elderly pedestrians.</p>	<p><u>Cycleway</u></p> <p>No cycleway between Armagh Street and Salisbury Street.</p> <p><u>Shared path</u></p> <p>Shared path should be designed to at least 4m width to allow for two-way movement.</p> <p>However, best practice guidance is to avoid shared paths unless the cycle volumes are extremely low.</p> <p>No changes to the bus stop or crossing facilities (albeit a removal of the chicane crossing at Salisbury Street).</p> <p><u>Pedestrian crossings</u></p> <p>The signalised pedestrian crossing with a raised platform on a 50km/h road with more than two lanes in one direction is a safe system aligned treatment.</p>

Criteria	Option 1 Two-way separated cycleway on-road from Armagh Street to Salisbury Street with a bus boarder opposite Peterborough Street.	Option 2 Option 2 is the same as Option 1 aside from indenting of the bus stop opposite Peterborough Street to remove the bus border arrangement.	Option 3 Terminates the two-way separated cycling facility at the Peterborough Street bus stop and reintroduces two traffic lanes north of Kilmore Street by converting the flush median to a northbound traffic lane.	Option 4 Terminates the two-way separated cycling facility at the 30/50 km/h speed limit boundary just south of Kilmore Street and reverts to the original shared path from Kilmore Street north.	Option 5 Is the same as Option 4 south of Kilmore Street. North of Kilmore Street, the existing shared path is widened and a raised signalised crossing is introduced at the Salisbury Street intersection.	Option 6 Is the same as Option 4 except that the two-way cycleway terminates just north of Armagh Street and reverts to the original configuration north of that point.	Option 7 Is largely the same as Option 5 except that the two-way cycleway terminates just north of Armagh Street and the shared path is widened through to Armagh Street. A raised signalised crossing is introduced at the Salisbury Street intersection.
Future proofing	<p>Provides opportunity to widen the footpath or the cycle lanes by using available space between the two if required to meet future demand.</p> <p>The design does not compromise the proposal to convert Kilmore and Salisbury streets to two-way as no changes to the east side of Park Terrace is proposed.</p> <p>Removal of one northbound traffic lane at Salisbury Street is complementary to the future elderly home development earmarked for Salisbury Street.</p>	<p>Provides opportunity to widen the footpath or the cycle lanes by using available space between the two if required to meet future demand.</p> <p>The design does not compromise the proposal to convert Kilmore and Salisbury streets to two-way as no changes to the east side of Park Terrace is proposed.</p> <p>Removal of one northbound traffic lane at Salisbury Street is complementary to the future elderly home development earmarked for Salisbury Street.</p>	<p>Provides opportunity to widen the footpath or the cycle lanes by using available space between the two if required to meet future demand.</p> <p>The design does not compromise the proposal to convert Kilmore and Salisbury streets to two-way changes to the east side of Park Terrace is proposed.</p>	<p>If the pedestrian/ cycle volumes continue to increase to a level where separation is required, there is opportunity provide a two-way cycleway by removing one of the north bound traffic lanes.</p> <p>No futureproofing for crossing improvements for elderly home development.</p>	<p>If the pedestrian/ cycle volumes continue to increase to a level where separation is required, there is opportunity provide a two-way cycleway by removing one of the north bound traffic lanes.</p> <p>The signalised pedestrian crossing with a raised platform will be complimentary to the elderly home development.</p>	<p>If the pedestrian/ cycle volumes continue to increase to a level where separation is required, there is opportunity provide a two-way cycleway by removing one of the north bound traffic lanes.</p> <p>No futureproofing for crossing improvements for elderly home development.</p>	<p>If the pedestrian/ cycle volumes continue to increase to a level where separation is required, there is opportunity provide a two-way cycleway by removing one of the north bound traffic lanes.</p> <p>The signalised pedestrian crossing with a raised platform will be complimentary to the elderly home development.</p>

5. Review conclusion

The option assessment undertaken in this review has considered a range of matters. The options that include use of the shared path for all or part of Park Terrace, even if widened slightly, raise safety, user comfort and best practice design concerns. They also do not align well with the intent of An Accessible City as they retain road space for car travel when the route is intended to prioritise public transport, walking and cycling. If the shared path options included a 4m shared path this would go some way to alleviate the concerns raised around the shared path option. However, a 4m width may be unachievable at this location due to the riverbank and existing lamp posts.

The options that retain two northbound traffic lanes without pedestrian/cycle crossing priority at Salisbury Street also raise safety and accessibility concerns.

Option 1 and 2 provide the best alignment with the matters considered. Option 2 changes the bus stop opposite The George to be indented rather than functioning as an in-line stop (bus boarder) as it does in Option 1. This will help alleviate current delay concerns from some road users but does not align with the intent of An Accessible City that this street provides public transport priority.

Overall, Options 1 and 2 provide the best alignment with safety, accessibility outcomes and design guidance. They also deliver on the intent of An Accessible City.

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