SHARED ZONE DESIGN GUIDELINES
1.0 GENERAL

1.1 PURPOSE

This document is intended to provide a set of guidelines for the design of shared zones at Curtin University. It is intended to ensure that all shared zones meet the appropriate quality, safety, form and function standards required to achieve the vision of a thriving urban environment.

It is recommended that these guidelines are used by Curtin staff and Consultant teams when designing any new shared zones at Curtin University or making amendments to existing shared zones.
1.2 WHAT IS A SHARED ZONE?

Our roads are inherently unsafe. The danger of traffic arises from the fact that vehicles are generally fast moving with a large mass. In contrast, pedestrians are slow moving and of a light weight, making them the most physically vulnerable street users. On top of that, all traffic participants make mistakes and are prone to breaching the rules. When traffic speeds increase above 20km/h, the chance that pedestrians survive the collision reduce dramatically.

The safety of streets is a combination of the elements of ‘people’, ‘vehicle’ and ‘road’. In urban areas that aim to facilitate liveliness, the ‘people’ factor becomes most important. Aspects such as patience, predictability and forgiveness influence the safety of the road. In spaces designed for people to stay in for periods of time, people’s movements are not typically steered by premeditated programs, but rather by the feel of movement. Their movements are undirected, unpredictable and relatively slow. Traffic behaviour on the other hand, of people who want to go from A to B as quickly as possible, is characterised by purposeful, straight and largely predictable movements.

In an urban area where the introduction of a shared zone is proposed, it is important then to provide for both types of travel behaviour. In creating spaces that are safe for pedestrians to stay in and use, a separate, well-functioning fast network is required.

![Figure 1: There is a clear relationship between the severity of pedestrian injury and vehicular speed. Reinforcing that the risk of pedestrian death in a collision increases dramatically when imposed with speeds over 20km/h (source: Global Street Design Guide, 2016).](image)

Although the behaviour of people is also influenced by aspects such as education and enforcement, the expression of the streetscape plays an important role in the narrative of almost all streets. In streets that are currently governed by vehicles (traffic signs, asphalt surface, road geometry, etc.), these aspects direct the drivers, who in turn will pay less attention to the human aspects of the place. Shared zones therefore incorporate the use of passive elements to steer behaviour instead of using elements that are traditional of traffic language, such as zebra crossings, pinchpoints, speed humps and chicanes. Furthermore, these traffic elements tend to be perceived by drivers as pestering and can raise irritations and intolerance with the proposed behaviour of the street. The design of a shared zone, and the behaviour of the people using it, need to convince the driver to behave appropriately. When there are enough things happening along the path of movement, the driver will pay attention to his/her environment and naturally slow down. In this sense, shared zones are most effective in areas with high-pedestrian use.

Another principle that the Shared Zone concept works with, is the use of mixing transport modes. When people feel a high degree of uncertainty about their situation or the behaviour of those around them, they will pay attention, which increases the objective safety. For instance, if traffic modes are separated, they will feel safe to speed and have less tolerance to other modes who are not supposed to be in their lane. Separation can improve safety at higher speeds, but it narrows the perception and works counterproductively in shared zones, where all participants need to take each other into account.
2.0 GUIDELINES

2.1 PLANNING

2.1.1 LOCATIONS SUITABLE FOR SHARED ZONES

Shared zones should be considered for locations that would maximise their effectiveness in creating a sense of place and an area for safe congregation, mixing pedestrians with vehicles. Within the campus, shared zones should be located in areas of high pedestrian activity and ideally where pedestrian activity and movements would be considered as unpredictable. The unpredictability of pedestrian behaviour can create a sense of uncertainty for drivers which is intended to encourage slower speeds. This would include areas surrounding transport interchanges and high-use frontages. Shared zones should also be located in areas where pedestrian amenity and safety is in need of improvement. Therefore, it is of highest priority that a safe and low traffic speed environment is achieved.

Locations that should not be recommended for shared zones are those where pedestrian activity is low, vehicle traffic and speed is high, and there are no current active land-uses to encourage people to use the space.

Generally, any location with over 1000 vehicle movements per day or 100 vehicles in the peak hour would be deemed inappropriate for a shared zone. Locating shared zones in illogical places would result in a low speed environment with no apparent reason for one. This would form a skewed understanding of the purpose for and intended behaviour within shared zones for all road users, which may interfere with the effectiveness of all other shared zones within the area. Brand Drive between Townsing Drive and Wark Avenue for example would likely be an unsuitable location for a shared zone, as the current environment involves high vehicle traffic met with low pedestrian activity.

For locations that are planned for future shared zones but are currently undergoing development, the road environment (speed, enforcement, capacity, etc.) should remain the same before there are active land-uses to bring people in. During this interim however, educational measures should be used in order to inform and warn road-users of the future environment and the changes in behaviour required to maximise the zone’s effectiveness.

**Figure 3:** Curtin University Shared Zone Location Characteristic
2.2 STREET DESIGN

2.2.1 POSTED SPEED LIMIT
Shared zones at Curtin should be designed to provide a safer environment for vulnerable road users such as unprotected pedestrians and cyclists. The speed that vehicles travel must be within the interests of these road users. An acceptable, and lower, speed limit for vehicles is essential in creating a safer environment for vulnerable road users while also minimizing the effect of driver error and collisions.

Vehicular speed in shared zones should be limited to 10km/h (in line with Western Australian Current Regulations: Road Traffic Code 2000 – Regulation 11(4)) to ensure safe travel for all modes of transport. This limit will strongly discourage motorists from overtaking vulnerable users, while also limiting noise pollution.

2.2.2 LINEMARKING
‘De-cluttering’ the street – a major initiative in shared zone design – involves the complete removal of road markings, or at least a significant reduction of their visual impact. The removal of driver-specific road markings lowers vehicle dominance and increases driver uncertainty, creating a more user-friendly streetscape, inviting pedestrians to feel a higher degree of priority.

While these uncluttered and simplified streetscapes lead to improved public amenity, they also aim to create safer environments. The removal of line markings increases driver uncertainty, causing a slower overall speed. It has also been argued that removing markings and increasing driver uncertainty forces drivers to become more aware of perceived risks and communicate to other road users with more ‘human’ interactions (eye-contact, hand gestures and verbal instructions, Quimby & Castle, 2006; Adams, 1985; Hamilton-Baillie & Jones, 2005).

As standard in shared zones, road markings such as directional markings (arrows), median strips, zebra crossings and traffic control markings should all be removed in their entirety as they prioritise vehicular transport and define the road as an exclusive route.

Road markings should only be used when they either:
- Indicate designated parking bays
- Warn drivers entering and departing the shared zone transition area
- Assist people with disabilities.

2.2.3 SIGNAGE- GENERAL
As specified, onsite treatments and signage will be the most effective strategy in behaviour modification. However, in certain circumstances (for example the opening of a new shared zone) complementary print and digital communications tactics may be effective. Please discuss with the PF&O Communications and Community Engagement Manager.

2.2.4 SHARED ZONE SIGNAGE
The signage below should be present in a viewable location at all entrances and exits of the shared zone (Road Traffic Code 2000 – Regulation 11(4)). Motorist oriented signage of this form should be positioned at eye-level. To minimise street-clutter, this form of signage should be attached to existing poles and only be present at entrances and exits to the zone, and not periodically throughout the site.

This signage should be implemented on both sides of the road in line with the beginning (signage on the left) and end (signage on the right) of the shared zone respectively.

2.2.5 WAYFINDING SIGNAGE
Shared zones should also provide concise wayfinding signage to more efficiently move people through the site and increase a sense of familiarity and ownership. This should consist of directional signage to campus areas, specific buildings, cycling facilities and parking areas. Wayfinding signage should be implemented in all shared zones in line with the Curtin Signage Planning & Design Guidelines (available on the Properties website) and the soon to be released Wayfinding Guidelines.

The location of wayfinding signage should strategically be selected where it acts as a focus point and destination for users of the space. They should exist as anchors which encourage people to stay, read and orientate themselves.

Where possible and appropriate, this signage should be installed within soft landscaping areas such as garden beds to decrease clutter and make replacement at a later date easier (e.g. if/when campus moves to digital signage and if the campus maps and building numbers change). Wayfinding can also exist in forms other than signage. For instance, facades can act as primary wayfinding indicators, while strategic lighting, colours and objects can be designed to be used as wayfinding techniques.

In order to avoid street clutter, pedestrian oriented wayfinding signage should be the only form of wayfinding signage within the shared zone and should be attached to existing poles. Wayfinding signage oriented for vehicles should be located either before or after the shared zone.
2.2.6 CAMPUS ASSISTANCE POINTS
In line with the Curtin University Disability Access and Inclusion Program and Universal Design Guidelines, campus assistance points should be placed on a level surface close to all drop-off points, parking areas or principal building entrances susceptible to queuing within shared zones. Therefore, it is recommended that consideration is given to supplying a campus assistance point within each threshold. These facilities should provide sufficient way-finding information, easy to reach intercoms and controls that are simple and intuitive to use, with clear concise identification signage. For night-time use, assistance points should be in a well-lit area with adequate passive and non-passive surveillance.

For ease of access, assistance facilities should have sufficient wheelchair and mobility scooter approach and turning space in line with Australia Standards and Curtin University Universal Design Guidelines.

2.2.7 PAVING TREATMENT
The characteristics of paving can assist in establishing a shared zone as a different environment with different rules to those of surrounding areas. As a minimal requirement, shared zones should consist of a coloured or textured pavement different to that present outside of the zone, with flush kerbs to create an even surface between the road and the footpath. A textural and visual change from traditional asphalt to concrete or brick paving is used as an entrance cue to motorists to inform them of a changed environment. The removal of kerbs creates a flush surface, encouraging all road users to use the entire space while also decreasing vehicle priority. In order to maximise the benefits of shared zones, the chosen paving treatment should be present across the entire surface, with no delineation between the “sidewalk” (protected pedestrian area) and the areas where vehicles are allowed. For instance, there should be no indication of where the kerb line was or should be, as no delineation between the sidewalk and vehicular route encourages pedestrians to inhabit the entire zone. However, patterns in the paving that extend across the whole area may also be appropriate.

The design of all Curtin shared zones should also ensure (where possible/appropriate):

• Materials used are consistent with the Palette developed for Main Street (Placelab, 2016)
• All materials used are slip resistant
• Maximum height variation between pavers be less than 2mm to decrease vibration for cyclists and pedestrians with disabilities
• Cycle paths approaching the zone should be constructed with intermittent paving types to warn high-speed cyclists of approaching area.

2.2.8 LIGHTING
When designing lighting for urban spaces, the below information should be used as a guide to ensure that the decisions made are going to benefit the key inhabitants of spaces – people. Lighting design can help create a better community outcome for external spaces and should be designed to encourage pedestrian traffic as a priority. Consideration should be given to using lighting equipment that does not look like a street light or multifunctional pole, but more architectural to allow the visual aesthetic to suggest that the space is not a road, but a shared zone. LED lighting should be used exclusively within shared spaces for its energy savings, lifetime and other benefits. Lighting control should be used where possible to ensure that there is the right light, right space at the right time. Careful consideration should be made toward the colour temperature chosen for such lighting to emulate daylight conditions, which are typically around 6,400K. The control should integrate with a system wide strategy and could be part of a “digital campus” overlay.

Figure 6: Mariahilfer Straße, Vienna – A continuous and flat paving type solidifies the area as a shared zone, giving no priority to vehicular traffic, and encourages pedestrians to inhabit the entire space.

Figure 7: Paddington Central, London – Well considered urban lighting design allows the opportunity for digital light based artwork to create placemaking in a previously dark and unsafe underbridge abutment.
Architectural lighting design techniques should be used to focus the "lit effect" on specific areas of the shared spaces; at entries of intersections, which at night-time can aid safety and way-finding.

Lighting should continue to be looked at in a functional sense, yet it should also be integrated holistically into the urban design. In all instances, chosen lighting should assist pedestrians in orienting themselves with their surroundings; detecting potential hazards, and discouraging crime by creating passive surveillance, but these solutions must not just focus on meeting lux levels; they must enhance the space and create environments that people want to be in.

2.2.9 OBSTRUCTIONS & TRAFFIC CALMING
Introducing kerbside obstructions, which interrupt the linear flow of a street, is a strategy to reduce the continuous width and speed of traffic on a through street. Within a shared zone, it is employed as a strategy to 'reclaim' parts of the street for amenity purposes. The Planning and Designing for Pedestrians Guidelines (Western Australia Department of Transport et al.) suggests that roads within shared zones should have significant physical interruption to vehicular traffic by the use of bollards, parallel parking bays, vegetation and landscaped areas.

Obstruction techniques such as kerb bulbs, parklets and chicanes should be avoided as they communicate traffic language elements, giving priority to vehicles. It is recommended that shared zones utilise natural environment measures in order to obstruct or calm traffic.

In line with the Curtin Vehicle Access Management Plan (VAMP), the use of permanent bollards should be avoided where possible to minimise street clutter and as they create additional obstructions for pedestrians. Within Curtin shared zones, consideration should always be given to "softer" measures of creating obstacles to protect pedestrians. This includes the provision of trees, garden beds and furniture. Where bollards are deemed necessary (for purposes other than transport planning), they should be aligned with street furniture in order to create a pedestrian channel.

2.2.10 TACTILE GROUND SURFACE INDICATORS (TGSI)
For people with a disability (particularly people with a vision impairment), the removal of a clear delineation between the road and footpath can lead to safety concerns. Despite introducing contrasting coloured and textured paving to indicate a shared zone, visually impaired pedestrians may find this method too hard to ‘read’ or understand. Research has also shown that the accessibility for people with a vision impairment is lower in shared zones than it is in conventionally designed areas. More recognised tactile materials as physical cues throughout Curtin shared zones should be installed as described in the following section.

Directional, or corduroy tactiles must be provided in large external public spaces to give directional orientation, while designating the route to be taken to avoid a hazardous situation. Where directional tactiles are used to indicate the continuous safe accessible route, they must be arranged with a width of 300-400mm.

The preferred approach is to use paved blister tactiles along a continuous accessible path of travel that meets a vehicular way at the same grade, and screw-in stainless steel stubs or black TGSI’s at pedestrian crossings, stairs and ramps.

To enhance and maximise the effectiveness of the shared zone, the tactile surface material along a continuous accessible path of travel should blend seamlessly with surrounding materials with limiting contrast. At pedestrian crossings, stairs and ramps, blister tactiles should be of a 30% luminance contrast to the paving. Where screw-in stainless steel stubs do not meet this requirement, black tactiles should be used. Currently, tactile pavers should be supplied by Urbanstone (contact Ian Muir, WA State Sales Manager) to match existing materials. Stainless steel tactile stubs to be supplied by Tactile Indicators.

In addition to surface tactile indicators, it is recommended that Curtin Shared Zones incorporate as many natural guidelines as possible, such as building edges and kerbed garden beds in order to guide people with a visual impairment.

Figure 8: Broken Light, Atjehstraat, Rotterdam – Once pooled by dull standard street lights, this Rotterdam neighbourhood has been transformed by Gobo lighting to enhance the street environment.
Figure 9: Mariahilfer Straße, Vienna (left) – Directional tactiles designating the safe route along the pedestrian sidewalk.

Figure 10: Oxford Circus, London (right) – Blister paving provided full length along pedestrian crossing.

Figure 11: Stainless Steel Tactiles (left) – Tactile Indicators provides stainless steel tactiles to be used at pedestrian crossings in shared zones. Tactiles are drilled and glued with a 12mm stem (5-year warranty). Black PVC dot Tactiles (right) – where stainless tactiles do not meet the 30% luminance contrast, black tactiles should be used.

Figure 12: Correct application of tactile indicators within a shared zone.
2.2.11 TRANSITION ZONES

The transition between the surrounding streetscape and the shared zone should be well defined to provide a visual cue to motorists, and show a change in priority between transport modes. As a minimum requirement, transition zones at Curtin must have concise warning signage and employ traffic calming measures to encourage drivers to begin to slow down.

Textured pavement rumble strips at the beginning of transition zones should be considered as a minimum for future shared zones. For current shared zones, traditional rumble strips should be considered with tighter intervals on the approach.

Transition zones for shared zones at Curtin should also include:

- An entry statement such as an artistic mural (such as those employed at B304 and B410 shared zones) and/or,
- Narrowed entrance and exits and/or,
- Required signage as per Section 2.2.4,
- Architectural or landscape features such as planters or sculptures and/or,
- A raised streetscape to pedestrian level throughout the space which would reinforce the ‘pedestrian first’ psychology of the space.

Transition zones should be of a length that indicates to motorists that they are entering a different area with different driving behaviours, and to allow enough distance for vehicles to come to a halt in order to avoid a collision. Transition zones of Curtin Shared Zones should be between 15-20 metres in length.

2.2.12 STREET FURNITURE

The role of street furniture is to create furnishings for resting, a place to sit and eat, and a setting to socialise with others. Particularly for the elderly, pedestrians with impaired mobility and people with young children, street furnishings can also act as a refuge. Besides their functionality benefits, street furniture such as benches and tables also create a sense of comfort and appeal, a social significance that draws people together.

Curtin should endeavour to supply a surplus of seating in order to encourage conversation and generate a sense of place. Where possible, a variety of different seating options should be provided to increase access for a wider range of people (seat heights, seats with and without armrests, seats with and without backrests, etc.).

The placement of street furniture can influence the effectiveness of the shared zone. The continuous sequencing of benches along a vehicle carriageway can define the right-of-way, allowing motorists to filter out everything beyond the carriageway and travel at faster speeds. To calm traffic, furniture should be placed intermittently throughout the site within the pedestrian thoroughfare.

2.2.13 PARKING

The provision and placement of parking can both increase the functionality and safety of a shared zone, while also increasing passive surveillance.

Widely distributing parking on opposite sides of the carriageway can assist in maintaining a slow moving traffic environment, as vehicles are required to drive between bays. Designated short-term bays and drop-off points should also be provided close to the core of the space where appropriate to increase driver uncertainty and provide passive surveillance.

Short-term bays or drop off areas should only be provided where they are located a minimum of 20m from intersections (in line with Road Traffic Code, 2000 Division 3).

The provision of long-term bays within shared zones at Curtin should be avoided as the vehicles take up space that could otherwise be occupied by pedestrians. Parallel parking or angle parking have been deemed the most effective parking methods in shared zones.

Short-term bays should be clearly marked (no wider than 2.5m) with different paving textures to increase traffic calming. Where different paving textures are deemed unnecessary, bays can be marked in a more passive way. Trees or street furniture are both effective ways in defining a parking bay, while a small painted ‘P’ in the centre of each bay is also suitable.

Shared zones are seen as an ideal location for drop-off/pick-up points for the Curtin University driverless bus, Kip. Consideration for this should be discussed with the Responsible Officer in the concept design phase for all new-shared zones.
Australian Standard AS 1924.2 Head entrapment – Design Standards for Urban Infrastructure, Street and Park Furniture and Barbeques, ACT

Design Standard 15 Playgrounds and Playground Equipment Finger Entrapment – Design Standards for Urban Infrastructure, Street and Park Furniture and Barbeques, ACT


AS 1158.3.1:2005 Lighting for roads and public spaces Pedestrian area (Category P) lighting, Standards Australia, 2005

AS/NZS 1428.4.1 – Access for People with Disabilities, Standards Australia, 2004
Road Traffic Code, 2000 Division 3, State Law Publisher, 2016

Greater Curtin Masterplan and the Main Street project
Curtin Signage Planning & Design Guidelines

Materials used are consistent with the Palette developed for Main Street (Placelab, 2016)

Curtin University Electrical Services Guidelines

The Planning and Designing for Pedestrians Guidelines (Western Australia Department of Transport et.al)

The Curtin Vehicle Access Management Plan

Greater Curtin Masterplan

Universal Design Guidelines

Shared Spaces for blind and partially sighted people: a challenge for designers; Drs. E.M. Havik, Dr. B.J.M. Melis-Dankers, Royal Dutch Visio; Huizen (NL); 2012; translation & revision Prof. Dr. H. Petrie, University of York, York (UK)

Design and implementation of shared zones including provision for parking; Technical Direction TTD 2016/001; Department of Transport, Roads & Maritime Services, New South Wales; February 2016

Shared Space - Ruimte voor iedereen; Provincie Fryslan, Keuning Instituut & www.shared-space.org; Leeuwarden (NL); June 2005
APPENDIX A

REVIEW OF EXISTING CURTIN SHARED ZONES
<table>
<thead>
<tr>
<th>Location</th>
<th>B304</th>
<th>B410</th>
<th>Road 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed limit</td>
<td>5 km/hr</td>
<td>5 km/hr</td>
<td>5 km/hr</td>
</tr>
<tr>
<td>Linemarking</td>
<td>Not present</td>
<td>“Pedestrian priority” at entrance and exit. High contrast yellow line throughout space separating road from footpath and indicating no stopping zones. Blue line indicating parking bay. “drop off only” at drop-off bay. Short term 30 min max at short term parking bay. Extensive linemarking indicating stop signs and travel directions. Blue lines indicating parking bays.</td>
<td>Not present</td>
</tr>
<tr>
<td>Signage</td>
<td>Signs signifying entrance and exit of shared space. Adequate bus information (timetables and route map) including audio information.</td>
<td>High shared zone at entrance and throughout, END shared zone at exit. Parking zone indicators. Campus map present including directions to specific building numbers.</td>
<td>END shared zone at exit and High shared zone at entrance. Stop signs throughout for motorists. Campus map and parking zone directions present at northern entrance. Parking information sign at northern entrance.</td>
</tr>
<tr>
<td>Parking treatment</td>
<td>Separate paving from footpath to road. Footpath two tone aggregate. Read one tone aggregate with sections of honed aggregate for reflection. Footpath and road separated by contrasting band. Entrance and exit coloured mural.</td>
<td>Separate paving from footpath to road. Footpath two tone aggregate. Read one tone aggregate with sections of honed aggregate for reflection. Footpath and road separated by contrasting band. Entrance and exit coloured mural.</td>
<td>Separate paving from footpath to road. Footpath two tone aggregate. Read one tone aggregate with sections of honed aggregate for reflection. Footpath and road separated by contrasting band. Entrance and exit coloured mural.</td>
</tr>
<tr>
<td>Lighting</td>
<td>Minimal lighting on university side of shared space.</td>
<td>Adequate lighting throughout space including feature lighting onto footpath.</td>
<td>Adequate lighting throughout space including feature lighting onto footpath and activity zones.</td>
</tr>
<tr>
<td>Obstructions</td>
<td>Light meandering of road, otherwise no physical obstructions or cues to indicate shared zone or pedestrian priority to motorists.</td>
<td>Light meandering of road, otherwise no physical obstructions or cues to indicate shared zone or pedestrian priority to motorists.</td>
<td>Not present</td>
</tr>
<tr>
<td>Street furniture</td>
<td>Tactiles are present along full course of bus stop. Tactiles not present along course of shared space or at pedestrian crossing points. Furniture present at bus stop. Furniture (picnic table style) present but set back from shared space.</td>
<td>Tactile at pedestrian crossings, furniture and stairs. Furniture scattered throughout space. Only protected furniture at waiting area and main entrance.</td>
<td>Tactile at pedestrian crossings and stairs. Benches present along road. Too close to road with no protection.</td>
</tr>
<tr>
<td>Parking</td>
<td>Not present</td>
<td>Parallel parking before entrance to shared space. Short-term and drop-off only bays within shared space.</td>
<td>Parallel parking throughout space</td>
</tr>
<tr>
<td>Cycling facilities</td>
<td>2 Cora bike racks present</td>
<td>Bike repair facility at main entrance to campus along with 6 cora bike racks. Bike store in western area of space.</td>
<td>Cora bike racks present at northern entrance</td>
</tr>
<tr>
<td>Data collection</td>
<td>Not present</td>
<td>Not present</td>
<td>Not present</td>
</tr>
<tr>
<td>Campus assistance points</td>
<td>Not present</td>
<td>Not present</td>
<td>Not present</td>
</tr>
<tr>
<td>Surveillance</td>
<td>1 CCTV camera above shared space</td>
<td>Not present</td>
<td>Not present</td>
</tr>
</tbody>
</table>

Assessment of existing shared zone:

There are a significant amount of bollards and road signage which is creating a sense that this area is a typical road environment. Drivers do not appear to be travelling at the posted speed limit and several drivers are not slowing down at all through the area. However, there are no kerbs or tactile guides pedestrians with visual impairments. Given there is no activation or reasons to 'hang around' or interact with the space, it does not seem to be function as a shared zone but more of a large pedestrian crossing from the bus interchange. There is a significant amount of road signage which is creating a sense that this area is a typical road environment. Drivers do not appear to be travelling at the posted speed limit, although this behaviour has been improving over time (as pedestrian volumes through the area have increased). Given there is no activation on either side of the area, it does not seem to be function as a shared zone but more of a large pedestrian crossing between carpark A3 and the Academic Core.
APPENDIX B

SHARED ZONE LITERATURE REVIEW
<table>
<thead>
<tr>
<th>Element</th>
<th>Speed limit</th>
<th>Landmarking</th>
<th>Signage</th>
<th>Parking treatment</th>
<th>Lighting</th>
<th>Markings</th>
<th>Facilities</th>
<th>Transition Zones</th>
<th>Entrance Furniture</th>
<th>Road furniture</th>
<th>Parking</th>
<th>Cycling facilities</th>
<th>Data collection</th>
<th>Environmental impacts</th>
<th>Surveillance</th>
<th>Geologyology</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cycle Access Management Plan (Curtin University)</td>
<td>N/A</td>
<td>Principal 30 km/h (or lower) in external campus areas; 5 km/h in internal campus areas</td>
<td>N/A</td>
<td>Raised kerbs in external campus areas</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>Vehicle Access Management Plan (Curtin University)</td>
<td>N/A</td>
<td>Restricted to 5 km/h in core access areas and 10 km/h in frame</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>Access to Campus (Curtin University)</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>Multiple Access and Location Plan (Curtin University)</td>
<td>N/A</td>
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<tr>
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<tr>
<td>Document</td>
<td>Speed Limit</td>
<td>Marking Strategy</td>
<td>Street Furniture</td>
<td>Parking</td>
<td>Cycling Facilities</td>
<td>Note Collection</td>
<td>Campus Continence Points</td>
<td>Surveillance</td>
<td>Ecosystem</td>
<td>Audition</td>
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<tr>
<td>(Department of Transport, Planning and Designing Technical Guidelines Public Places Design and London Cycling Design (WAPC, Department of Transport))</td>
<td>N/A</td>
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</table>

- **Speed Limit**: The speed limit in shared spaces is generally between 20 and 30 mph to reduce vehicle speed and encourage pedestrian and cycling activities.
- **Marking Strategy**: Includes lane markings, edge markings, and road pavement markings to clearly demarcate shared spaces.
- **Street Furniture**: Includes benches, bins, and signs for wayfinding and messaging.
- **Parking**: Encourages mixed-use parking with dedicated bicycle and car spaces.
- **Cycling Facilities**: Provides dedicated bicycle lanes and parking areas near shared spaces.
- **Note Collection**: Collects data on user feedback and impact assessments.
- **Campus Continence Points**: Offers facilities for users to access water and facilities.
- **Surveillance**: Uses cameras to monitor shared spaces for safety and security.
- **Ecosystem**: Considers the integration of natural elements for improved aesthetics and user experience.
- **Audition**: Considers the need for auditory signals or notifications in shared spaces.
| Document | Speed limit | Landscaping & Vegetation | Drainage | Parking | Treatment | Lighting | Vegetation | Facilities | Driveway Zones | Road Furniture | snow collecting | Signage | Surfaces | Evaluation | Location |
|----------|-------------|--------------------------|----------|---------|-----------|---------|------------|------------|--------------|---------------|----------------|--------------|----------|----------|-----------|---------|
| Sharr, Design Guide: Urban Design (1994) | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| A Review of the Evolution of Built Space: Space Concepts in Urban Infrastructure (Australian Capital Territory) | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Australian Standards (AS 1924.2) | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Design Standards for Urban Infrastructure (Australian Capital Territory) | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Shared Space - National Design Guide (Thames Valley 2010) | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| SHARED ZONE DESIGN GUIDELINES | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
A Review of Simplified Streetscape Schemes (Transport for London Project Report)

- Removal of linemarking leads to improved public amenity. Also increases driver uncertainty, forcing drivers to become more aware of perceived risks.
- Removal of unneeded signage and signage that is only intended to be read at certain times of the day.
- Speed limit signage to be placed at the entrance of the area and periodically throughout the site.
- In Britain, tactile surfaces are mainly used to indicate a potential danger; large signs may not be necessary for parking or loading.

<table>
<thead>
<tr>
<th>Document</th>
<th>Speed limit</th>
<th>Lighting</th>
<th>Signage</th>
<th>Parking treatment</th>
<th>Tactiles</th>
<th>Tactile banding</th>
<th>Surveillance</th>
<th>Data collection</th>
<th>Road furniture</th>
<th>Pedestrian facilities</th>
<th>cyclist facilities</th>
</tr>
</thead>
</table>
APPENDIX C

SHARED ZONE BENCHMARKING
<table>
<thead>
<tr>
<th>Location</th>
<th>Kensington High St, London UK</th>
<th>Oosterwolde and Makkinga De Kaden Laweplein Square, Drachten</th>
<th>Hay Street Perth</th>
<th>New Road, Brighton UK</th>
<th>Perivola, Stockport UK</th>
<th>Alliance Road, Hendleyheath, UK</th>
<th>Balvanera Station, Perth</th>
<th>Australia</th>
<th>Maximiliane Straels, Vienna</th>
<th>Melbourne</th>
<th>Bay View Terrace, Clarendon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awards</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<td>N/A</td>
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<td>N/A</td>
<td>N/A</td>
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</tr>
<tr>
<td>Speed limit</td>
<td>20km/h</td>
<td>10-30km</td>
<td>20mph</td>
<td>N/A</td>
<td>20mph</td>
<td>10,500</td>
<td>20mph</td>
<td>N/A</td>
<td>20km/h</td>
<td>20km/h</td>
<td>10km/h</td>
</tr>
<tr>
<td>VTD</td>
<td>Unavailable</td>
<td>1.500</td>
<td>Unavailable</td>
<td>Unavailable</td>
<td>Unavailable</td>
<td>Unavailable</td>
<td>Unavailable</td>
<td>Unavailable</td>
<td>Unavailable</td>
<td>Unavailable</td>
<td>Unavailable</td>
</tr>
<tr>
<td>Lane marking</td>
<td>Black iron drainage channel only</td>
<td>Line marking present when indicating a parking bay</td>
<td>Not present</td>
<td>Not present</td>
<td>Not present</td>
<td>Not present</td>
<td>Not present</td>
<td>Not present</td>
<td>Not present</td>
<td>Not present</td>
<td>Not present</td>
</tr>
<tr>
<td>Signage</td>
<td>Only speed limit signs, all other vehicular signage removed</td>
<td>None apart from entrance speed limit signs</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<td>N/A</td>
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<tr>
<td>Paving treatment</td>
<td>Continuous granite no kerbs</td>
<td>Red paving, contrasted light granite to distinguish stairs and pedestrian path paving to signify end of shared space. Different paving to signify bike lanes and roundabouts</td>
<td>Red brick with contrasting paving edges to indicate pedestrian crossings</td>
<td>Seamless paving across entire space</td>
<td>Changes in tone, module and finish of paving</td>
<td>Changes in type and colour between footpath, cycle path, and pedestrian area</td>
<td>Changes in type and colour between footpath, cycle path, and pedestrian area</td>
<td>Changes in type and colour between footpath, cycle path, and pedestrian area</td>
<td>Changes in type and colour between footpath, cycle path, and pedestrian area</td>
<td>Light granite extends across entire space</td>
<td></td>
</tr>
<tr>
<td>Lighting</td>
<td>Flag pole style lighting down the median to complement built form</td>
<td>Light poles with decorative, signage and CCTV</td>
<td>Street lanterns, street lights, traffic lights</td>
<td>Street lights, other side of roundabout</td>
<td>Street lights, boundary, and external streets</td>
<td>Street lights on either side of roundabout</td>
<td>Street lights on either side of roundabout</td>
<td>Street lights on either side of roundabout</td>
<td>Street lights on either side of roundabout</td>
<td>Lighting suspended from trees, including street furniture</td>
<td></td>
</tr>
</tbody>
</table>
## SHARED ZONE DESIGN GUIDELINES

**Location** | Kensington High St, London UK | Dunstable and Hidcote | Dr John Lanchester Square, Brixton | Blue Street Perth East | New Road, Brighton UK | Preston, Stockport UK | Ashton Road, Healds Heath, UK | Balance Station, Perth Australia | Montebello Straits, Vienna | Spooner Boulevard, Melbourne, Australia | Ray View Terrace, Clementon
---|---|---|---|---|---|---|---|---|---|---|---|---
**Restrictions** | Calls made onto the street, bike lane, the on-street parking and the sidewalk are clearly defined, ensuring a better experience for pedestrians | Tactile ground indicators on the sidewalk and on flush median strip. | Raised tactile indicators on the sidewalk and on flush median strip. | Raised tactile indicators on the sidewalk and on flush median strip. | Raised tactile indicators on the sidewalk and on flush median strip. | Raised tactile indicators on the sidewalk and on flush median strip. | Raised tactile indicators on the sidewalk and on flush median strip. | Raised tactile indicators on the sidewalk and on flush median strip. | Raised tactile indicators on the sidewalk and on flush median strip. | Raised tactile indicators on the sidewalk and on flush median strip. | Raised tactile indicators on the sidewalk and on flush median strip. | Raised tactile indicators on the sidewalk and on flush median strip.
**Textiles** | Tactile ground indicators on the sidewalk and on flush median strip. | Tactile ground indicators on the sidewalk and on flush median strip. | Tactile ground indicators on the sidewalk and on flush median strip. | Tactile ground indicators on the sidewalk and on flush median strip. | Tactile ground indicators on the sidewalk and on flush median strip. | Tactile ground indicators on the sidewalk and on flush median strip. | Tactile ground indicators on the sidewalk and on flush median strip. | Tactile ground indicators on the sidewalk and on flush median strip. | Tactile ground indicators on the sidewalk and on flush median strip. | Tactile ground indicators on the sidewalk and on flush median strip. | Tactile ground indicators on the sidewalk and on flush median strip.
**Transition Zones** | Immediate changes in paving type and pattern. | Immediate changes in paving type and pattern. | Immediate changes in paving type and pattern. | Immediate changes in paving type and pattern. | Immediate changes in paving type and pattern. | Immediate changes in paving type and pattern. | Immediate changes in paving type and pattern. | Immediate changes in paving type and pattern. | Immediate changes in paving type and pattern. | Immediate changes in paving type and pattern. | Immediate changes in paving type and pattern. | Immediate changes in paving type and pattern.
**Street Furniture** | Barriers present under one light source in the centre. | Street planters, bollards, bins, parallel parking present on median. | Street planters, bollards, bins, parallel parking present on median. | Street planters, bollards, bins, parallel parking present on median. | Street planters, bollards, bins, parallel parking present on median. | Street planters, bollards, bins, parallel parking present on median. | Street planters, bollards, bins, parallel parking present on median. | Street planters, bollards, bins, parallel parking present on median. | Street planters, bollards, bins, parallel parking present on median. | Street planters, bollards, bins, parallel parking present on median. | Street planters, bollards, bins, parallel parking present on median. | Street planters, bollards, bins, parallel parking present on median.
**Parking** | 90 degree parking present on boundaries of junction. | Parallel parking present on external streets. | Parallel parking present on external streets. | Parallel parking present on external streets. | Parallel parking present on external streets. | Parallel parking present on external streets. | Parallel parking present on external streets. | Parallel parking present on external streets. | Parallel parking present on external streets. | Parallel parking present on external streets. | Parallel parking present on external streets. | Parallel parking present on external streets.
**Cycling Facilities** | Fixed form bike racks along space. | Fixed form bike racks along space. | Fixed form bike racks along space. | Fixed form bike racks along space. | Fixed form bike racks along space. | Fixed form bike racks along space. | Fixed form bike racks along space. | Fixed form bike racks along space. | Fixed form bike racks along space. | Fixed form bike racks along space. | Fixed form bike racks along space. | Fixed form bike racks along space.
**Behavioural Change Initiatives** | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A