SHARED ZONE DESIGN GUIDELINES

DECEMBER 2017

CURTIN UNIVERSITY

Curtin University

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Document Control
The Shared Zone Design Guidelines have been prepared by Curtin University in association with Arup and Place Laboratory.

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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.

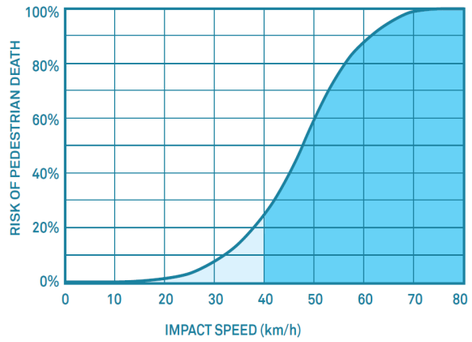


Figure 1: There is a clear relationship between the severity of pedestrian injury and vehicular speed. Reinforcing that the risk of pedestrian death in a collision increases dramatically when imposed with speeds over 20km/h (source: Global Street Design Guide, 2016).

Although the behaviour of people is also influenced by aspects such as education and enforcement, the expression of the streetscape has an important role to play. The narrative of almost all streets is 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

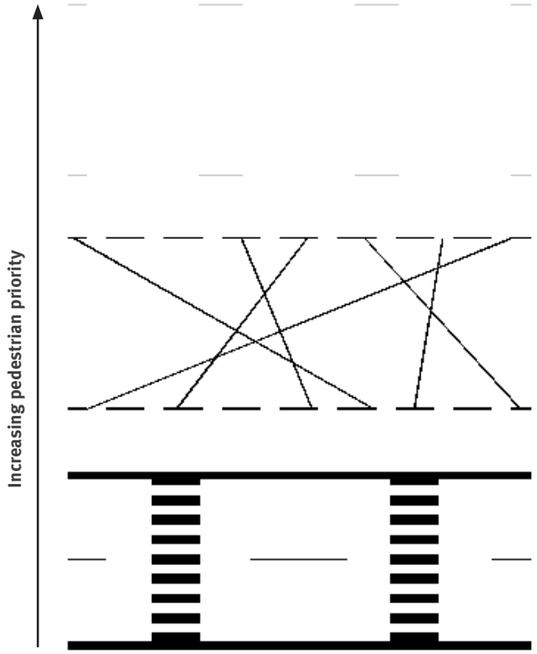
2.1.1 LOCATIONS SUITABLE FOR SHARED ZONES

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.



Pedestrian Zone
Inner-campus areas
Pedestrian priority
Restricted vehicle access to emergency vehicles, service vehicles and food trucks
Access controlled by dynamic bollards, gates and security staff

Shared Zone
10km/h signposted limit and perceived limit
‹1000 vehicles per day
‹100 vehicles per peak hour
High activity frontages
High pedestrian activity at all hours
Pedestrian priority
Pedestrian behaviour unplanned and unpredictable
All vehicle types behave as guests

Standard Street within campus
40km/h
›1000 vehicles per day
›100 vehicles per peak hour
Vehicle priority
Pedestrian movement at designated pedestrian crossings

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 minimising 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.

The design of shared zones should strive to create a road geometry and facilitate particular ground floor activities that encourage speeds below 10km/h.

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, 2004; 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.

Figure 4: Exhibition Road, London. All road markings have been removed to reduce visual clutter and create a shared surface (before photo on the left, after introduction of shared zone on the right)

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&D 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.

Figure 5:Road traffic code regulation for shared zone signage.

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 under bridge 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.

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.

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.

2.2.14 CYCLING FACILITIES

The provision of cycling facilities in shared zones can create a more dynamic zone while also promoting the health benefits involved in the use of alternative forms of transport. Short-stay cycle parking such as bike racks should be located as close as possible to classes or high activity frontages (within 10m) to maximise use and avoid informal bike parking. Where possible, bike racks are recommended to be of a novel, multi-function design to further encourage the use of active transport and the formal use of bike parking. Consideration for the location, supply and design of all cycling infrastructure within shared zones should be done at concept design phase in consultation with the Curtin Integrated Transport Planning Manager.

2.2.10 TACTILE GROUND SURFACE INDICATORS (TGSIs)

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.

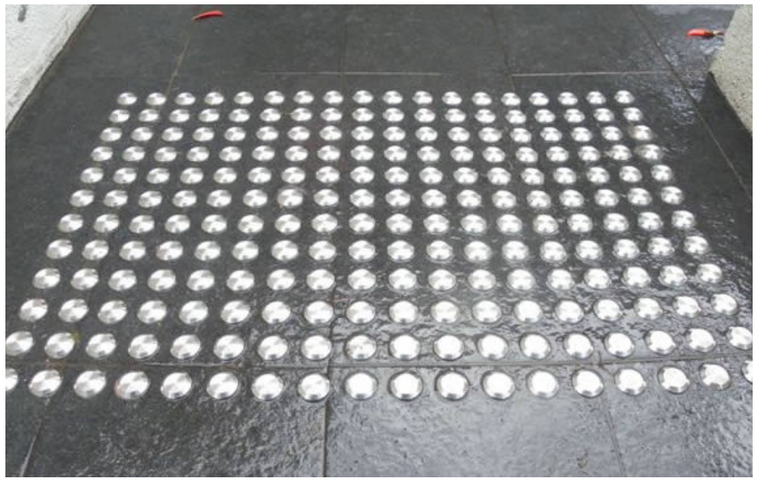
The preferred approach is to use paved blister tactiles along a continuous accessible path of travel that meets a vehicular way at the same grade, and screw-in stainless steel stubs or black TGSI's at pedestrian crossings, stairs and ramps.

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 studs 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 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.



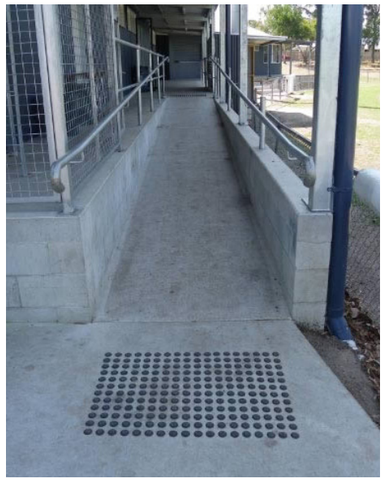


Figure 11: Stainless Steel Tactiles (left) – Tactile Indicators provides stainless steel tactiles to be used at pedestrian crossings in shared zones. Tactiles are drilled and glued with a 12mm stem (5-year warranty). Black PVC dot Tactiles (right) – where stainless tactiles do not meet the 30% luminance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

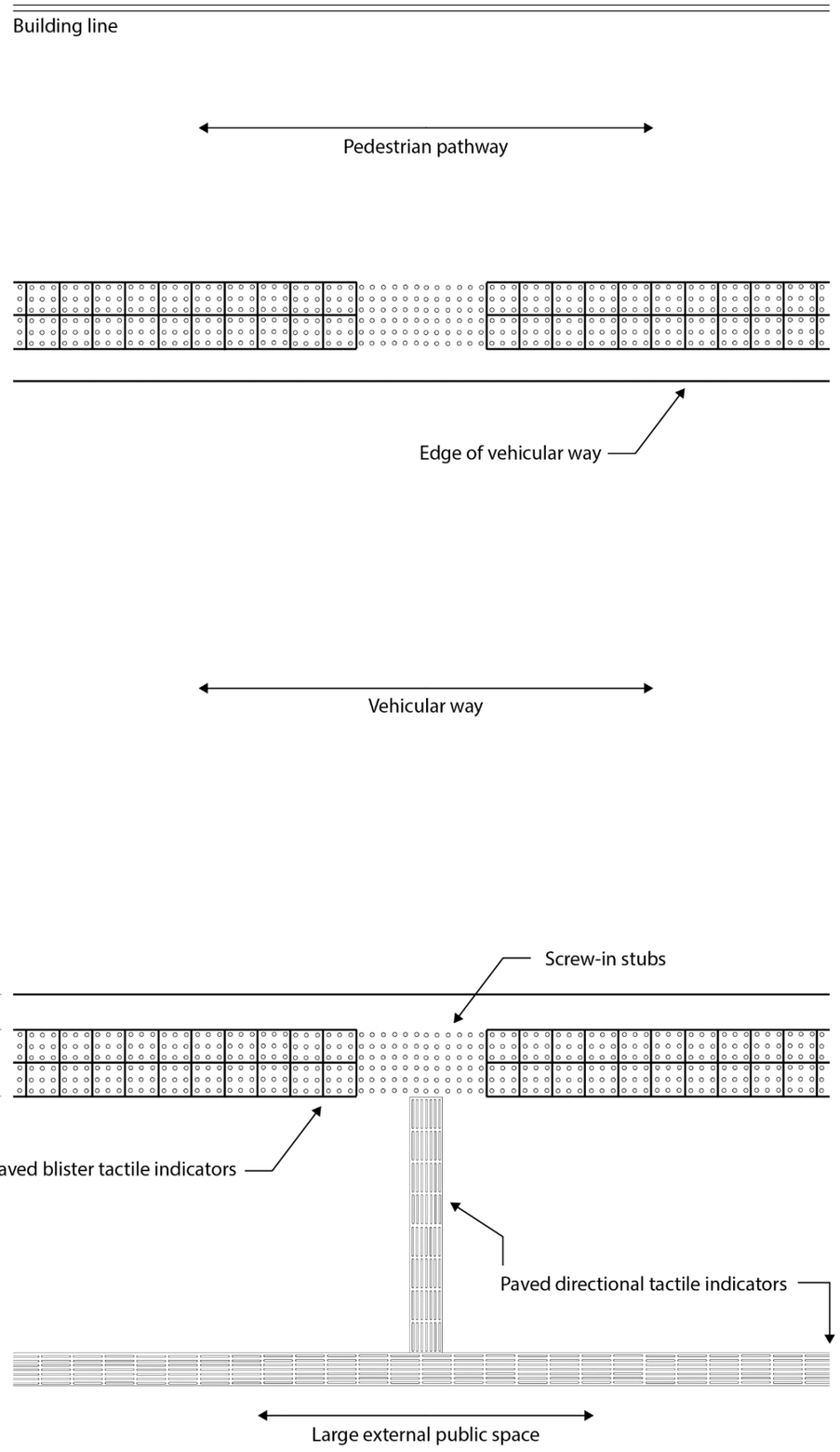


Figure 12: Correct application of tactile indicators within a shared zone.

2.2.11 TRANSITION ZONES

In line with the *Greater Curtin Masterplan*, the intent is for the campus to develop a well-defined street hierarchy with generally only two speed limits applying. 40 km/h speed limits apply to most internal campus roads, whilst 10km/h applies within carparks and shared zones. However, to allow drivers to slow down from 40km/h in time to be travelling at 10km/h within the shared zone, there should be the inclusion of transition zones at the entrance to shared zones at Curtin University. If the shared zone is open to vehicles at both ends, transition zones should be implemented at both ends and be consistent to assist in creating a familiar environment for approaching drivers.

Figure 13: An example of a textured pavement rumble strip is an effective traffic control technique within the transition zone of a shared zone.

Figure 14: B410 artistic mural within the a transition zone the Curtin University Campus

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 behaviour, 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.

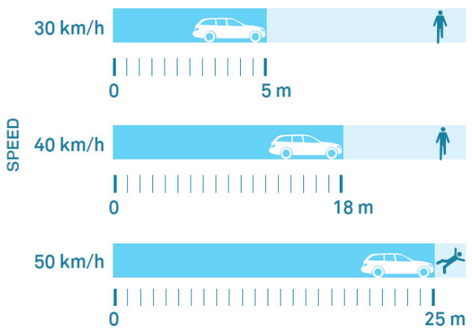


Figure 15: Minimum stopping distances including perception, reaction and braking times. Reinforcing the appropriate length of transition zones to avoid the danger of collisions (source: Global Street Design Guide, 2016).

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.

Figure 16: Parking bays can be indicated by subtle line marking techniques that do not clutter the street.

3.0 REFERENCES

Australian Standard AS 1924.2 Head entrapment – Design Standards for Urban Infrastructure, Street and Park Furniture and Barbeques, ACT

http://www.tccs.act.gov.au/__data/assets/pdf_file/0007/396880/ds19_bbq.pdf

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

http://www.tccs.act.gov.au/__data/assets/pdf_file/0007/396880/ds19_bbq.pdf

Road Traffic Code 2000 – Regulation 11(4)) Shared Space Speed Limit and Signage, State Law Publisher, 2016

https://www.slp.wa.gov.au/pco/prod/filestore.nsf/FileURL/mrdoc_28561.pdf/$FILE/Road%20Traffic%20Code%202000%20-%20%5B04-j0-01%5D.pdf?OpenElement

Australian Standards (AS) 4282:1997 Control of the Obtrusive Effects of Outdoor Lighting, Standards Australia, 1997

https://www.saiglobal.com/PDFTemp/Previews/OSH/As/as4000/4200/4282.pdf

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

Location	B304	B410	Road 2
Speed limit	**5 km/hr**	**5 km/hr**	**5 km/hr**
Linemarking	Not present	"Pedestrian priority" at entrance and exit. 5kph at entrance and exit. High contrast yellow line throughout space seperating road from footpath and indicating no stopping zones. Blue line indicating parking bay. 'drop off only' at drop off bays. 'short term 30 min max' at short term parking bays	Extensive linemarking indicating stop signs and travel direction. Blue lines indicating parking bays.
Signage	Signs signifying entrance and exit of shared space. Atequate bus information (timetables and route map) including audio information.	5kph shared zone at entrance and throughout, END shared zone at exit. Parking zone indicators. Campus map present including directions to specific building numbers.	END shared zone at exits and 5kph shared zone at entrances. Stop signs throughout for motorists. Campus map and parking zone directions present at northern entrance. Parking information sign at northern entrance.
Paving treatment	Separate paving from footpath to road. Footpath two tone agregate. Road one tone aggregate with sections of honed aggregate for reflection. Footpath and road seperated by contrasted band. Entrance and exit coloured mural	Separate paving from footpath to road. Footpath two tone agregate. Road one tone aggregate with sections of honed aggregate for reflection. Footpath and road seperated by contrasted band. Entrance and exit coloured mural	Separate paving from footpath to road. Footpath two tone agregate. Road one tone aggregate with sections of honed aggregate for reflection. Footpath and road seperated by contrasted band. External footpaths feature brick sections.
Lighting	Minimal lighting on university side of shared space.	Atequate lighting throughout space including feature lighting onto footpath.	Atequate lighting throughout space including feature lighting onto footpath and activity centre.
Obstructions	Slight meandering of road, otherwise no physical obstructions or cues to indicate shared zone or pedestrian priority to motorists	Slight meandering of road, otherwise no physical obstructions or cues to indicate shared zone or pedestrian priority to motorists	Not present
Tactiles	Tactiles are present along full course of bus stop. Tactiles not present along course of shared space or at pedestrian crossing points	Atequate tactiles at pedestrian crossings, furniture and stairs.	Atequate tactiles at pedestrian crossings and stairs.
Transition Zones	Artwork in southern and northern transition zone - painted in early 2017.	Artwork in transition zone (to east and west) painted in early 2017. pedestrian priority painted at mural end. Otherwise no distinct or physical transition zone.	No clear transition zone despite removal of kerb and transition in pavement treatment
Street furniture	Furniture present at bus stop. Furniture (picnic table style) present but set back from shared space	Furniture scattered throughout space. Only protected furniture at waiting area and main entrance	Benches present along road. Too close to road with no protection.
Parking	Not present	Parralel parking before entrance to shared space. Short term and drop off only bays within shared space	Parralel parking throughout space
Cycling facilities	2 Cora bike racks present	Bike repair facility at main entrance to campus along with 6 cora bike racks. Bike store in western area of space.	Cora bike racks present at northern entrance
Data collection	Not present	Not present	Not present
Campus assistance points	Not present	Not present	Not present
Surveillance	1 CCTV camera above shared space	Not present	Not present
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 tactiles to guide 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. Given there is no activation on the northern side of the area, it does not seem to be function as a shared zone but more of a large pedestrian crossing from the carpark.	There is a significant amount of road signage and line marking 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 (yet), 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

Document	Speed limit	Linemarking	Signage	Paving treatment	Lighting	Obstructions	Tactiles	Transition Zones	Street furniture	Parking	Cycling facilities	Data collection	Campus assistance points	Surveillance	Terminology	Location
Cycle Access Management Plan (Curtin University)	N/A	Principal Shared Paths guidelines: red ashphalt with a broken white median line	Provide directional signage to bicycle facilities. Outside of minimum path and verticle envelope	N/A	Should be in accordance with AS/NZS 1158.3.1:2005 (see below).	N/A	N/A	N/A	N/A	N/A	Never in locations with poor security (lack of lighting, low footfall and little overlook from buildings. Locate in areas of high demand. Should be located as close as possible to classes. Provide additional short-stay cycle parking in areas where demand exceeds capacity to reduce events of informal bike parking. Provide 1 shower per 20 cycle parking spaces and one locker per secure cycle parking space. (GUIDELINES refer to p86)	Useful at cycling facilities to determine use (daily arrivals and departures, determine peak cycle parking demand	N/A	Security guard and video surveillance can be used to monitor rails, enclosures and lockers. Increase passive surveillance for cycle facilities	N/A	N/A
Vehicle Access Management Plan (Curtin University)	Restricted to 5kph in core areas and 10kph in frame areas	N/A	N/A	Paving texture and colour may be used as a landscape barrier to manage vehicle movement and demarcate non trafficable areas	Light poles may be used as a landscape barrier to manage vehicle movement and demarcate non trafficable areas	N/A	N/A	N/A	Flexible street furniture such as benches and bike racks may be used as a landscape barrier to manage vehicle movement and demarcate non trafficable areas	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Greater Curtin Master Plan (Curtin University)	N/A	N/A	Opportunities to display Nyoongar and bilingual signage. Arrival avenues to have directional signage. Educational signage at open water sources and swales. Interpretive signage to provide perspective on relevant socio-cultural, technical or historic information.	Flush kerbs promote a pedestrian and cycle friendly environment	Adequate lighting to all public realm areas and in particular the major pedestrian and footpath network	N/A	N/A	N/A	N/A	Provide centralised car parking provision integrated within precincts to enhance walkability and ensuring priority is maintained for PT, cyclists and pedestrians. Designate kerb side parking for short term use only. Discourage car parking from main streets. Widely distributed on-street parking to assist in maintaining a slow moving traffic environment and contribute to effective levels of passive surveillance on street.	Standard cycle racks should be locatied within ten metres of building entrances to discourage use of trees or street furniture for cycle parking. Secure, sheltered, short and long term parking options should be provided.	N?A	N/A	High use areas adjacent shared space to increase passive surveillance	N/A	N/A
Greater Curtin Stage One Development Guidelines (Curtin University)	N/A	N/A	Should take into account the clarity and legibility to pedestrian and vehicular traffic. Minimising impact on visual landscape.	N/A	Outdoor lighting should comply with AS 4282:1997 (see below). 95% of all external public lighting shall have an upward light output ratio less than 5%, except security lighting	N/A	N/A	N/A	High value on moveable furniture and skateable furniture	Provision of electric car charging stations. 1 motorcycle bay per 10 car parking bays.	Facilities shall be designed, located and constructed ina ccordance with AS-2890.3 (see below). Located in a well-lit area which is capable of easy passive surveillance.	N/A	N/A	N/A	N/A	N/A
Disability Access and Inclusion Plan (Curtin University)	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
Universal Design Guidelines (Curtin University)	N/A	Ensure product is slip resistant when wet. Where required have hazard markings	Have clear directional signage from perimeter council footpaths into campus. Be in luminance contrast to the surrounding surfaces. Easy to read, clear and concise. Provide directional signage at each wayfinding decision point. Take into account reach ranges for raised tactile and Braille signage. locate signage consistantly along accessible path of travel. should not obstruct any building shoreline. provide hearing and augmentation systems with signage at key, high usage reception counters and those furnished with security screens	N/A	Excessive lighting should be avoided, over glazing an entrance can dazzle a pedestrian and lead to confusion	N/A	A raised pedestrian crossing must be furnished with warning tactile ground surface indicators.	N/A	N/A	Provide parking and drop off points consistent with the user's expectations and intuition	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Main Street Design 'Palette' (Placelab)	N/A	N/A	N/A	agreggate paving types for shared spaces.	N/A	N/A	Blue tactile ground surface indicators	N/A	N/A	N/A	Cora bike racks	N/A	N/A	N/A	N/A	N/A
Curtin Integrated Transport Plan (Curtin University)	N/A	N/A	Digital signage and directional signage should be tailored to individual passers-by or according to the time of day, special events and to provide news updates.	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
Relevant Australian Standards	N/A	N/A	N/A	N/A	Should be in accordance with AS/NZS 1158.3.1:2005 (see below). Outdoor lighting should comply with AS 4282:1997 (see below). 95% of all external public lighting shall have an upward light output ratio less than 5%, except security lighting	N/A	N/A	N/A	N/A	N/A	Facilities shall be designed, located and constructed ina ccordance with AS-2890.3 (see below). Located in a well-lit area which is capable of easy passive surveillance.	N/A	N/A	N/A	N/A	N/A	N/A

Document	Speed limit	Linemarking	Signage	Paving treatment	Lighting	Obstructions	Tactiles	Transition Zones	Street furniture	Parking	Cycling facilities	Data collection	Campus assistance points	Surveillance	Terminology	Location
Liveable Neighbourhoods (WAPC, Department of Planning)	Between 15-50 depending on the maximum traffic volume, street width and sidewalk width pp 40.	N/A	N/A	Flush concrete kerbs, brik-paving or coloured asphalt is required… pavers can be used to form rumble strips and raised plateaus'	Appropriate lighting to illuminate the entire street	N/A	Consideration should be given to provide footpaths with durable, non-skid tactile ground surfaces and ground indicators, especially at bus stops, traffic signals and crossing points.	An entry statement to signify the change in status (signs, construction, colour, texture, architectural or landscape features to differentiate and highlight the strt/end of the shared space).	Minimum verge width of 5m to accommodate street furniture p61	Off-site car parking at the rear or side of lots not front. Important buffer between moving vehicles and pedestrians. Angle parking on streets where traffic volumes are less than 7,000 vehicles per day or where service streets are used	Footpaths on both sides of all streets. On street cycling acceptable when projected traffic volume less than 3,000 per day.	N/A	N/A	Facilitate passive surveillance into, along and through laneways (relatively continuous building frontage, front shared spaces with business open at night: gyms, delis, rec centres with major openings, two-storey dwellings or studio units above garages, direct sightlines,	N/A	Special' streets. In areas of high pedestrian activity such as town and neighbourhood activity centres, where pedestrian amenity and safety is a priority and to create a safe low traffic speed environment.
Curtin University Visibility Report (Guide Dogs WA)	N/A	High contrast marking is not a sufficient indicator of a crossing	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 review (NS Project)	A speed of 5kph - changed to 10kph	Road marking to identify a new space to motorists. No road markings to be present in a shared space	Signage speed limit warnings at entrance to space and throughout.	Change from asphalt to paving giving visual and textural cues to motorists. Murals at each end of shared space	Artistic lighting technology e.g. gobo lights	staggering street parking to opposite sides of the road to create weaving action, slowing down traffc approaching a shared space	N/A	Warning signage of new speed limit and new area. Clear distinction between asphalt and paving.	Moveale furniture on grassed areas.	Stagger parallel parking along shared space to weave traffic	N/A	N/A	N/A	N/A	N/A	N/A
Planning and Designing for Pedestrians: Guidelines (Department of Transport, Main Roads WA et al.)	Speed limit of 10km/h (regulation 11(4)) in shared zones. Built form should encourage motorists to drive below this limit however	N/A	At entrances and exits	Coloured or textured pavement surfaces should be used to calm traffic and enforce a low speed environment. Raised kerbs shall be removed to provide visual cues to motorists	N/A	Roads should have significant physical interruption to vehicular traffic by the use of bollards, parallel parking bays, plants and landscaped areas. Should create a weaving alignment, spaced at 40m.	Required at the top and bottom of ramps. Audio tactile required at signal crossings which adjoin a footpath or shared path on more than one side.	Entrance and exit zones should be narrowed so there is a physical entrance and exit.	Colour of furnitre should contrast with the background. Should be placed outside the pedestrian through-route zone (desirable minimum width of 1.5m). Luminance factor of not less than 0.3.	Minimal need for reversing of motorised traffic entering and departing parking bays (angle and 90 degrees parking are not desirable). Parking spaces and loading zones shall be located adjacent to the trafficable path and clearly signed and marked.	N/A	N/A	N/A	Buildings front onto streets, avoid car parking or low activity areas immediately adjacent to footpaths. Passive surveillance outside PT stops such as housing and uses open at night.	N/A	N/A
London Cycling Design Standards (Mayor of London, Transport for London)	Restricting vehicular speed to 20mph or less offers benefits for vulnerable road users. 15mph strongly discourages motorised vehicles from overtaking cyclists	Soemtimes well-intentioned makings for cycling are not only difficult to use, but also unattractive additions to the streetscape. Regulatory surface markings for cycling should be avoided on the footway as it gives the impression that rules of the carriageway apply to pedestrians on the footpath. Linemarking accompanied by high objects on fast moving carriageways make cyclists feel more comfortable	Soemtimes well-intentioned signs for cycling are not only difficult to use, but also unattractive additions to the streetscape. To minimise street clutter, signs should only be used where interpretation of road markings is unclear	Riding surfaces and transitions from one area to another should be smooth and well maintained. Speed bumps should be minimised as cycles with long wheelbases are particularly sensitive to sudden changes in surface level	N/A	Traffic calming obstructions need to be introduced on streets where 85% of vehicles travel above 24mph. Where bollards are used, they should be aligned with existing street furniture to provide a pedestrian channel	Where a kerb is flush corduroy tactile paving is recommended to not hold mobility or visually impaired road users at a disadvantage. Include blister tactile-paving to indicate crossings. Should not be used on dedicated cycle paths. Where plans feature a high amount of tactile paving, it is likely the design is not coherent of legible and should be revised	Gateway features, raised tables or continuing the footway across the entrance can indicate drivers to slow down. Other waysinclude a reduction in road width, visual narrowing, a change in surface material or signage. Cyclists should not need to look behind themselves at difficult angles in order to enter the carriageway	Use agreed street furniture options and palette of materials to ensure that all elements are keeping with their surroundings. Ensure furniture is located in the furniture zone adjacent to the carriageway, leaving at least 2m clear width for walking. At loading and delivery bays, furniture must not obstruct the path	Where fully inset bays are at footway level, they should be within the street furniture zone and accessed over a kerb upstand of at least 25mm. Kerbside activity can be rationalised by creating dedicated bays rather than general bays. Moving bays out partially onto the carriageway can be used a technique for narrowing, making a protected space for cyclists. Echelon parking is also effective in slowing traffic. Recommended that parking bays for cars, taxis and motorcycles should be a minimum of 2m wide and loading bays 2.4m	Where lifts are provided to cycle facilities, they must have minimum dimenstion of 1.2m by 2.3m with a door opening of 900mm	N/A	N/A	N/A	N/A	N/A
Manual for Streets (Department of Transport)	20mph	Edge markings that visually narrow the road can lead to speed reduction. Road markings at parking bays help encourage good parking behaviour	N/A	N/A	Lighting equipment may also be mounted on walls and buildings to reduce clutter. Must be placed in locations where they are resistant to vandalism and vehicular damage. Sources should be placed to avoid creating shadows where pedestrians may become vulnerable	Where traffic calming is used, there should be a consideration on their potential impacts on buses and passengers.	Tactile paving at all pedestrian crossings, aligned with those on the other side of the carriageway	N/A	Furniture can sometimes attract anti-social behaviour therefore should always be located in a well lit area with passive surveillance	Shared spaces are likely to work well where parking is controlled or it takes place in designated bays. Parking in echelon can encourage drivers to slow down	N/A	N/A	N/A	N/A	N/A	N/A
Streetscape Guidance (Mayor of London, Transport for London)	20mph	Line markings create visual clutter and should be avoided. Zigzag markings are required at each side of a pedestrian crossing.	Signage should be used sparingly to minimise clutter. Should be combined with existing street furniture such as lamp columns and only used at decision points and sparingly along a route. Minimum height of 2400mm	Should use minimal changes in paving types to avoid clutter. Should compliment the architecture and surrounding materials	Relocating lighting columns to the median strip can help to reduce clutter. Artistic lighting is encouraged in all underpasses to enhance pedestrian environment, improve lighting and increase the sense of safety	N/A	Tactile paving is not needed where a raised kerb is provided. Blister paving should be used at all pedestrian crossing points. Corduroy paving should be used to identify hazardous situations for pedestrians (top and bottom of steps, foot of a ramp, on approach to level crossings in shared spaces.	N/A	Seating should not be placed directly opposite one another.	N/A	Long-stay cycle hubs should be provided at transport interchanges	N/A	N/A	N/A	N/A	N/A
Public Places Design and Technical Guidelines (Curtin University)	N/A	Signage on bins for each side of enclosure	N/A	N/A	Lighting in trees should be easily removable for maintanence purposes and should not have an impact on the future health of the tree or its ecosystem	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Document	Speed limit	Linemarking	Signage	Paving treatment	Lighting	Obstructions	Tactiles	Transition Zones	Street furniture	Parking	Cycling facilities	Data collection	Campus assistance points	Surveillance	Terminology	Location
Street Design Guide (Global Designing Cities Initiative)	10km/h recommended (15km/h maximum) with activity and roa geometry reducing speeds below limit	Pedestrian crossing markings should be of a high visibility design (preferable to parallel or dashed markings). Increasing visibility to approaching vehicles and improve yielding behaviour by drivers. Line markings should be used to designate an exclusivee space for cyclists. Use different colour markings to distinguish cycle lanes from travel lanes. Remove road makings to develop a shared space and encourage active transport users to use the entire space.	Provide consistent pedestriand and cycling signage in a clear visual language, including transit times and distances. Introduce signage in early stages of conversion to educate all road users on how to use the shared space. Signs usually depict children playing to make motorists aware of the risks of high speeds.	Use durable and slip-resistant materials. Textures and paving must align with the curb to reinforce the pedestrian-priority street. Use permeable paving wherever possible.	Façade lighting, pedestrian-scaled light poles, and shorter light fixtures can be used to evenly light the space. Focus lighting from poles directly onto the street to minimize glare and light pollution.	Curb extensions and traffic obstructions must be applied to slow vehicles	Provide tactile paving or detectable warning strips at curb ramps and other transitions between pedestrian, vehicular or shared areas. Provide tactile warning strips at the entrance to all shared spaces. These strips should span the entire intersection crossing. Where there are boarding platforms, use physical and audible tactile features.	Add traffic controls or traffic calming devices (signagem entry portals, speed tables, raised crossings or curb extensions) on the intersection approaching the shared space. Gateways should be clear, with narrowed vehicle path entries to slow vehicles.	Incorporate street furniture to improve the quality of the public realm. Unique street furniture can create or enhance the identity of the street. Use furniture to clearly demarcate the strip and make it more detectable for visually impaired users. Permanent furniture may be placed along buildings edges, or located at the center of the lane, making sure they keep a clear path for pedestrians. Moveable furniture can be placed in the emergency access path so long as they do not impede necessary but infrequent movements.	Prevent parking within 6m of pedestrian crossings to increase visibility. Parking can be a valuable buffer between the pedestrian and vehicle realms. On-street parking bays should be no wider than 2.5m. Parking zones must be clearly marked to avoid unregulated parking.	N/A	N/A	N/A	N/A	N/A	N/A
A Review of the Evolution of Shared (street) Space Concepts in Urban Environments (Auttapone Karndacharuk)	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	Woonerf, Winkelerf & Stadserf, Rest and Play, Begegnungszone Home Zone Shared Street Shared Zone Shared Space Stillereje Verkehrsberuhigung Traffic Calming Local Area Traffic Management (LATM) Living Street Civilised Street Complete Street Road Diet	N/A
Standards Australia/Standards New Zealand - Design for access and mobility (Standards Australia Committee ME-064)	N/A	N/A	N/A	N/A	N/A	N/A	Directional tactiles shall be installed parallel with and along the centre-line of the required direction of travel. Where directional tactiles indicate the continuous accessible path of travel, they should be arranged over a distance of 300mm to 400mm in width. Where directional tactiles need to be detected by a person approaching at an angle to the continuous accessible path of travel, they should be arranged over a minimum distance of 600-800mm in depth from the direction of approach. Blister tactiles are to be provided on a continuous	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	A variety of seating should be provided (seat heights, armrests, etc.). Every 50m in high activity areas. Multiples of seating should be placed to encourage conversation and sense of place and should not obstruct views, activity or desire lines. Ample spacing between slats to help water run-off. AS 1924.2 (entrapment hazards)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Curtin Universal Design Guideline: For the Built Environment (Curtin University)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Drop-off points should be well-lit and furnished with a sheltered pause point and campus assistance point. Installed on a level surface with sufficient wheelchair approach and turning space. Have intercoms and controls that are easy to reach, simple and intuitive to use. Be lit for night use. Luminance contrast to the surrounding surfaces and feature clear identification signage. easy to read, clear concise informational signage.			
Shared Space in an Australian context (Thesis project UNSW)	30 km/h or less	For a behavioural change initiative, no line is best suited within this shared space practice	It is necessary to have signage within the shared space area however, for drivers there should be limited signage in order for absolute concentration between drivers and pedestrians and cyclists.	N/A	N/A	By having some obstructions within the area this would lead for increased awareness between pedestrians, drivers and cyclists.	Needed within shared space	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Document	Speed limit	Linemarking	Signage	Paving treatment	Lighting	Obstructions	Tactiles	Transition Zones	Street furniture	Parking	Cycling facilities	Data collection	Campus assistance points	Surveillance	Terminology	Location
A Review of Simplified Streetscape Schemes (Transport for London Project Report)	N/A	Removal of linemarking leads to improved public amenity. Also increases driver uncertainty, forcing drivers to become more aware of perceived risks, drive more cautiously and communicate to other road users with human interactions such as eye contact, hand gestures and verbal instructions.	Remove all 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 when needed.	N/A	N/A	N/A	In Britain, tactile surfaces are mainly used to indicate a potential danger. Directional tactiles on a large scale may be confising and inappropriate	N/A	N/A	Marked bays for parking, raised bays for loading and disabled drivers	N/A	N/A	N/A	N/A	N/A	N/A

APPENDIX C

SHARED ZONE BENCHMARKING

Location	Kensington High St, London UK	Oosterwolde and Makkinga	De Kaden Laweplein Square, Drachten	Hay Street Perth	New Road, Brighton UK	Poynton, Stockport UK	Albion Road, Blexleyheath UK	Subiaco Station, Perth Australia	Mariahilfer Straße, Vienna	Slovenska Boulevard, Ljubljana, Slovenia	Bay View Terrace, Claremont
Introduction year	2011	1992-1998	2003	1972	2007	2011	2013	1995	2015	2012	2013
Awards	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2017 EDRA place design award	2017 nomination for Mies Award	N/A
Speed limit	20km/h	30kmh	20mph	N/A	20mph (most cars restricted to 10mph)	10,500	20mph	No indication of speed limit	20km/h vehicles and cyclists	30km/h	10km/h
VPD	Unavailable	5,600	Areas reach 22,000	N/A	Under 1,000	Unavailable	Unavailable	Unavailable	Originally 12,000	1,600 buses per day	Under 1,000
Linemarking	Black iron drainage channel only line marking distinguising road	Not present	Linemarking only present when indicating a parking bay	Not present	Not present	Not present	Not present	Median broken line and directional cues	Not present	Not present	Directional markings and give-way markings at intersection of Bay View and St Quentin Ave. Line markings for car bay corners.
Signage	Only speed limit signs, all other vehicular signage removed	None apart from entrance speed limit sign	All traffic signs and lights removed from entire town centre	Wayfinding, information, no entry	Limited signage present throughout site, only at entrances and exits	None, despite entrance and exit speed limit signs	Signage at entrance warning pedestrians to look for traffic	High number of parking information and loading zone signs. Limited wayfinding or informative signs	No stopping signs and speed limit warnings periodically throughout site. Most signage is left for wayfinding and development informatiom	Signage at entrance to space indicating no through traffic for personal vehicles	Entrance and exit sign to Australian Standard. Parking and one way sign at entrance leads to a cluttered streetscape. Wayfinding and information signage found scattered throughout site
Paving treatment	Continuous granite no kerbs	Red paving, contrasted light paving to distinguish stairs and contrasted dark paving to signify end of shared space. Different paving to signify bike lanes and roundabouts	Red brick with contrasting paving strip to indicate carriageway.	Seemless paving across entire space	Changes in tone, module and finish of paving	Changes in paving type and colour between sidewalk and roundabout. Contrasting paving to highlight pedestrian crossings and parallel parking bays	Changes in type and colour between footpath, road, crosswalk and spiral design present distinguishing roundabout. Slightly raised kerbs	Dark paving with contrasted flush kerbs	Light granite extends across entire space made from water permeable material	Geometric paving pattern contrasted with a light paving indicating bus carriageway	Light coloured paving discontinuous in colour and pattern along site
Lighting	Flag pole style lighting down the median to complement built form's time period	Minimal lighting, street lamps	Single use street lamps	Multi use poles with decorations, signage and CCTV	Street illuminated by storefronts and projected lighting onto open facades.	Street lamps either side of carriageway	Street lamps bounding roundabout and external streets	Sreet lamps on either side of carriageway	Light sources built into paving complimented by street lamps on either side of space	Lighting suspended from wires extending from opposite facades	Overhanging lighting provided minimally throughout the site - most lighting provided by active frontages

Location	Kensington High St, London UK	Oosterwolde and Makkinga	De Kaden Laweplein Square, Drachten	Hay Street Perth	New Road, Brighton UK	Poynton, Stockport UK	Albion Road, Blexleyheath UK	Subiaco Station, Perth Australia	Mariahilfer Straße, Vienna	Slovenska Boulevard, Ljubljana, Slovenia	Bay View Terrace, Claremont
Obstructions	Cafes open onto the street, bike racks, on-street parking and rubbish disposal areas scattered, creating a barrier for vehicles but not for pedestrians	Bollards bounding staired recess	Raised kerb of roundabout. Without line marking streets are not clearly defined, street strees and café seating define carriageway.	Café seating spilled onto street along with bins, street trees, public telephones and street furniture	Meandering passageway obstructed by café seating, street furniture, planters, parallel parking	Median and parallel parking obstructions present on external streets	Bollards with directional signage on flush median strip	Bollards restricting access to pedestrian only through-route through Subi Centro	Majority of café seating spilling onto space, median strip seating and irregular street trees eliminate any continuous uniform period of carriageway	Not present along carriageway to allow seamless travel by buses	Street planters, bollards, bins, 45-degree parking and street furniture defining right-of-way
Tactiles	Corduroy tactiles running along each side of road	Not present	Tactile ground indicator strip on entry and exit from Torenstraat	Tactile ground surface indicators bounding entrance and exit of space	Tactile guidance strip along one side and a contrasting strip along the other	Tactile strip bounding vehicle carriageway	Tactile ground surface indicators present at pedestrian crossings on external streets	Light tactile ground surface indicators along boundary	Tactile ground surface indicators present at pedestrian crossings on external streets	Tactile ground surface indicator strip along median of pedestrian through-route	Tactiles not present between footpath and right-of-way despite being of same grade. Tactile blister paving only present at pedestrian crossings - yet not well defined
Transition Zones	Immediate change in paving type and pattern	Change in paving	Change in paving with a slight raise on entry to inidicate new space	Change in paving	Motorists are transitioned across a textured rumble strip	Thinner opening to roads including change in paving type	Paving changes	Paving changes	Asphalt to light granite and slightly thinner opening	Clear contrast in paving	Clear narrowing of road geometry. Appropriate entrance and exit signs to shared space. Raised pedestrian crossing acting as a traffic bump. No clear or distinct change in paving treatment.
Street furniture	Scattered along the median and also on either side of vehicle passageway	Limited throughout site, only present under one light source in centre	Café seating spilling onto sidewalk and benches scattered throughout site	Back to back wooden seating protected in shade and well lit	Along each side acting as physical cues to slow traffic. Finely crafted long bench in the centre	Benches on sidewalk, café seating spilling onto sidewalk, benches wrapped around street trees	Benches on external streets	Present within station boundary	Café seating spilling onto sidewalk and benches scattered throughout site	Wooden benches along eastern side. Café seating spilling onto pathway	Found periodically along pedestrian through-route. Yet, positioned without sufficient light and under trees.
Parking	On street parking areas breaking up traffic	90 degrees parking present on boundaries of junctions	Parralel present on external street of Noordkade with angle parking present on median	N/A	Designated short-stay parallel parking	Parallel parking restricted from site. Present on London Road South, Chester Road & London Road North	Not present	90 degree parking along majority of space	Left to external streets	N/A	Echelon parking creating a meandering road geometry
Cycling facilities	Facilitation of bike racks along space	Not present	Atequate bike racks present at frontages of buildings. Designated fenced off bike parking available on Torenstraat	Minimal bike racks throughout site	Scattered bike racks, not positioned close to active frontages - leading to informal bike parking	Bike racks present outside higher use businesses within core of area	Kept to external streets outside high use frontages	Simple bike racks located at station and entry to Subi Centro	Racks provided at regular distances	Bike racks present as hubs at each entrance, limiting freedom for cyclists	Artistic forms of bike racks along pedestrian through-route
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
Data source	http://www.dailymail.co.uk/news/article-2094939/Britains-longest-clutter-free-street-unveiled-make-things-SAFER.html. Site Visit	https://www.be.unsw.edu.au/sites/default/files/upload/pdf/schools_and_engagement/resources/_notes/5A2_44.pdf. http://content.tfl.gov.uk/review-of-simplified-streetscape-schemes.pdf Google Earth	Google Earth	Site Visit	http://www.landezine.com/index.php/2011/04/new-road-by-landscape-projects-and-gehl-architects/ Google Earth	Google Earth	Google Earth	Site Visit	https://www.wien.gv.at/english/transportation-urbanplanning/mariahilfer-strasse-new.html Google Earth	Google Earth	Site Visit Main Roads