

Design for safe and healthy communities: the Matrix of Like Design Considerations

Planners are asked to consider a range of guidelines that impact on health, safety and access, often in isolation from each other. The following 'Matrix of Like Design Considerations' is a practical tool that can be used to demonstrate the synergies between the different guidelines that influence built environment design. While the Matrix can be used to aid design, it is also important to consider every situation in context.

The Matrix supports an integrated approach to planning healthy and safe communities and provides practical guidance to planners, helping them to synthesise a range of design considerations. This tool provides value-added design outcomes. For example, if physical activity is the main design consideration applied, the Matrix helps to achieve benefits in several other areas, at no additional cost.

	Physical activity	Shade	Safer design	Access design	Road user safety
Sightlines and surveillance	Provide clear sightlines for safety and visibility for pedestrians and cyclists	Ensure shade structures and trees allow clear sightlines	People should be able to see, to be seen and to interpret their surroundings	Ensure Continuous Accessible Paths of Travel are clearly defined	Ensure approach speeds and road conditions are consistent with sightlines, for all road users
Lighting	Ensure lighting meets the visibility needs of pedestrians and cyclists Highlight crossing points	Light shade structures if required (for example, bus shelters)	Use lighting to designate safe paths and places Lighting can encourage or discourage use (for example, effective lighting at crossovers, public transport shelters/stops) Light safe connections from shops to public transport	Provide a safe, comfortable visual environment for pedestrian and wheeled transport movement at night Refer Australia Standard (AS)1158.3.1	All road users should be considered when providing overhead lighting Provide higher levels of lighting at crossing points and intersections
Signage	Provide clear orientation to places of interest for pedestrians and cyclists Signage should be clear, concise and consistent Signage should complement the overall landscape/streetscape design	Identify communal shaded areas on maps and community information boards Divide signs into groups: prohibitory; way finding; interpretive; informative Use of symbols/pictograms should follow Australian Standards	Provide clear signage for paths, connections and destinations Design sign hierarchies to show information from most to least important Use vandal and graffiti resistant material Enter asset on maintenance system schedule	All signage to be large, clear and adjacent to Continuous Accessible Paths of Travel Refer AS 1428. 1 and 2 Signage should include information in tactile and Braille forms Refer Building Code of Australia D3.6	Signage must be clearly visible and understandable to all road users The location of signage structures should not be a hazard to road users
Maintenance	Ensure pedestrian and cycle paths are free from obstructions, for example, overgrown vegetation or fallen branches	Don't plant trees that require frequent watering and pruning Ensure regular maintenance of built shade structures	Ensure adequate and timely asset management and maintenance – a rundown or vandalised appearance suggests an area is unsafe Use vandal and graffiti resistant material and design features Develop maintenance-system schedule for public and commercial areas	Ensure adequate maintenance for Continuous Accessible Paths of Travel Rough surfaces and puddles are not accessible to wheeled transport users	Provide safe access for maintenance vehicles Provide call out phone numbers for hazard removal

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Landscaping and open space	<p>Ensure equitable distribution of open space across walkable neighbourhoods</p> <p>Promote local active recreation using landscaping to delineate routes and destinations</p>	<p>Provide shade through planting broad leaf, broad canopy trees and installing shade structures</p>	<p>Ensure clear sightlines</p> <p>Use landscaping to designate public and private space boundaries</p> <p>Use robust and vandal-proof finishes and fixtures for fencing, seating and signage</p>	<p>Provide Continuous Accessible Paths of Travel to and within all parks, playgrounds and gardens</p> <p>Refer AS 1428 standards</p> <p>Provide accessible furniture and equipment, and manoeuvring space for mobility aid users</p>	<p>Avoid creating roadside hazards in landscape design</p> <p>Maintain clear sightlines at intersections, roundabouts and pedestrian crossings</p>
Concealment and entrapment	<p>Locate paths away from potential hiding places and entrapment spots</p>	<p>Ensure vegetation does not create hiding places or entrapment spots</p>	<p>Design out potential hiding places and entrapment spots</p> <p>Avoid blank walls, unsecured loading docks off walkways and recessed entrances</p>	<p>Design space to ensure that users, particularly women, children, older people and people with disabilities can see a safe route, day and night</p>	<p>Locate car parking away from potential entrapment spots</p>
Trees and vegetation	<p>Provide trees for shade and aesthetics along access routes and places where people gather</p>	<p>Provide tall trunk, broad canopy, broad leaf trees to ensure useful shade during times of peak UV radiation</p> <p>Plant vegetation to minimise reflected UV rays (for example, climbing plants on walls)</p>	<p>Low vegetation up to 700mm and broad canopy trees with sightlines clear to 2,400mm above ground level</p> <p>Use vandal-resistant treatments for example, tree guards</p>	<p>Remove tree debris from paths</p> <p>Trim tree foliage up to a height of 2,400 mm and at the sides of paths</p>	<p>Ensure that tree plantings do not obstruct driver visibility of any other road users particularly at conflict points such as intersections and access points</p> <p>Ensure that tree species and vegetation, particularly within 'clear zones' on roads with speed limits over 50 km/h, are forgiving for errant drivers (for example, tree trunks with a maximum diameter of 100 mm at maturity)</p>
Fencing and walls	<p>Use low walls or transparent fencing along street frontages and open space</p>	<p>Ensure shade structures cannot be accessed by climbing adjacent fences, walls, buildings or trees</p> <p>Avoid surfaces that reflect UV radiation</p>	<p>Keep fences low or transparent for clear sightlines</p> <p>Provide front fences and walls no more than 1.2 metres high if solid or up to 1.8 metres if at least 50 per cent transparent</p> <p>Avoid high fences backing onto public space, roads or parks</p> <p>Plant thorny creepers to discourage climbing or graffiti on walls</p>	<p>Don't use turnstiles</p> <p>Bollards, gates and chicanes must provide access for wheeled transport</p>	<p>Avoid 'back fence' lot orientations on collector and arterial roads by providing service roads or boulevards</p> <p>Fences should not obstruct sightlines for road users, particularly at intersections and accesses</p> <p>If within the clear zone, ensure materials do not constitute a hazard to errant drivers</p>
Seating	<p>Ensure frequent and accessible seating for pedestrians and cyclists</p> <p>Arrange seating to facilitate social interaction</p>	<p>Provide shade to seating and picnic areas</p>	<p>Place seating to allow clear sightlines of paths, play areas and toilets</p> <p>Use vandal and graffiti resistant materials</p>	<p>Provide seats with back and arm rests, at close intervals, along Continuous Accessible Paths of Travel (CAPT)</p> <p>Drinking fountains should be wheelchair accessible and adjacent to CAPT</p> <p>Refer AS 1428.2</p>	<p>Seats made of solid materials that could damage errant vehicles and occupants should be located outside the clear zone</p>

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Shelter	Provide shelter for protection from weather extremes	Avoid locating shelter on or near surfaces that reflect UV radiation	Shelter interiors should be visible from paths, placed near areas of high activity and well lit Use vandal and graffiti resistant materials	All constructed shelter should comply with the Building Code of Australia and AS 1428 standards Approaches must be Continuous Accessible Paths of Travel	Shelter should not be built of materials that could constitute a hazard to road users Shelters (for example, at bus/tram stops) should not block the sight requirements for road users at intersections and access points
Street design	Provide safe and accessible pedestrian and cycle paths to homes, shops, public transport, businesses and community facilities	Plan shade provision to maximise sun protection without compromising sightlines or access to people with motor impairment Provide broad canopy trees to provide shade for all road users	Design for a network of walkable neighbourhoods Design streets that encourage walking to put more 'eyes on the streets' Design streets to balance the needs of all users Ensure active frontages and use buildings to frame public places Maximise on-street parking	Property and fence lines must be clear and barrier free to enable Continuous Accessible Paths of Travel (CAPT) Facilities such as car parks and public toilets must be linked by CAPT, including circulation spaces for people using mobility aids Refer VicRoads and (AS) 1428 standards	Design local and high-use pedestrian streets to reduce traffic speeds and provide pedestrian and cyclist-friendly environments Design roundabouts to slow vehicles and provide for pedestrian visibility and safe movement On the pedestrian desire line (for example, path to path), as a minimum, kerb cut-outs and splitter island breaks should be provided
Building design	Design buildings to facilitate a variety of uses within a neighbourhood (for example, schools used after hours as community facilities, public libraries for educational and training sessions)	Be aware of daily and seasonal shade patterns created by surrounding structures to maximise effectiveness of supplementary shade Build and use materials to minimise both direct and reflected UV radiation	Design windows and activities to overlook streets, pedestrian routes, open spaces and car parks to support natural surveillance Ensure entrances are clearly defined, face the street and provide clear sightlines	Buildings must conform to the access requirements of the Disability Discrimination Act 1992, and the Building Code of Australia	Loading bays should be separated from pedestrian routes Design to facilitate forward vehicular movements between buildings and arterial roads Give priority access to pedestrians/cyclists and public transport modes Locate car parks to the rear of buildings
Active frontages	Promote more active and lively streets that encourage people to meet and interact	Provide tree plantings and encourage the use of verandahs to provide shade and amenity for shoppers	Use active frontages to add interest and vitality to public places Provide frequent doors and windows, with few blank walls Encourage lively internal uses visible from the outside, or spilling on to the street Articulate facades with projections such as porticos or verandahs	Property and fence lines must be clear and barrier free to enable Continuous Accessible Paths of Travel Refer to AS 1428 standards	Encourage active frontages along shopping strips Slow traffic speeds to less than 50km/h along active frontages Road design should be more permeable and provide greater connectivity Traffic-calming measures will promote 'liveable' residential streets Design streets to encourage lower speeds

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Mixed use	<p>Provide local focal points to support walkable neighbourhoods</p> <p>Increase mixed use development through the provision of housing, shops, services, parks and commercial spaces that facilitate active transport</p>	<p>Do a shade audit</p> <p>Consider tree height, growth, seasonal effects, root systems and maintenance</p> <p>Highlight when a built structure may be more appropriate</p>	<p>Provide a mix of uses in neighbourhood centres to encourage activity</p> <p>Plan for 'eyes on the street' day and night</p> <p>Encourage uses compatible with residential areas</p>	<p>Avoid evergreen trees that may obstruct solar access in winter</p> <p>All development should meet the requirements of the Disability Discrimination Act 1992</p>	<p>Design safe access for all road users</p> <p>Slow traffic speeds to less than 50km/h along active frontages</p>
Connections	<p>Plan for permeable street networks to provide both direct and leisurely paths to neighbourhood destinations</p>	<p>Provide shade along pedestrian and cyclist routes, with consideration for road user safety</p>	<p>Provide clear sightlines to enable natural navigation to destinations</p> <p>Avoid movement predictor routes and allow for multiple alternative routes, if possible</p>	<p>Provide safe and convenient transitions from street to destination</p>	<p>On local streets, avoid straight uninterrupted sections longer than 400 metres to discourage excessive driver speed</p> <p>Use traffic management measures to slow motor vehicles where local route straight sections exceed 400 metres</p>
Walking and cycling routes	<p>Design safe and attractive routes</p> <p>Design wide footpaths, adequate lighting, calmed traffic and crossing points adjacent to neighbourhood destinations</p>	<p>Maximise shade over paths, cycle routes and at rest stops</p> <p>Ensure shade structures don't obstruct access</p>	<p>Achieve clear and safe connections through signage, landscaping, lighting and edge treatments</p> <p>Integrate cycle lanes into road and open space networks</p> <p>Provide appropriate lighting for pedestrians and cyclists, in addition to street lighting</p> <p>Don't separate walking and cycling paths from street networks unless there are clear sightlines, opportunities for natural surveillance and no entrapment spots</p>	<p>Make paths and trails Continuous Accessible Paths of Travel to enable safe sharing by cyclist and pedestrians. Refer to AS 1428 standards</p> <p>Kerb ramps should comply with VicRoads specifications</p> <p>Paths, ramps and walkways should comply with AS1428.1, 1428.4 and 4586</p>	<p>Provide paths and safe crossing points along predictable pedestrian and cyclist desire lines, including approaches to schools, parks and shopping precincts</p> <p>Align kerb cut-outs and ramps with pedestrian and cyclist access requirements and desired lines of travel</p> <p>Minimise and/or control conflict points with vehicular traffic</p> <p>Provide low gradients on vehicular driveways at crossing points with walkways and cycle paths</p>
Public transport	<p>Provide accessible public transport stops to encourage dual-mode journeys</p>	<p>Provide useful and appropriate shade at transport stops (for example, bus shelters)</p>	<p>Locate bus/tram/taxi stops in active locations</p> <p>Ensure stops are clearly visible from surrounding development and houses, do not locate them in isolated places</p> <p>Ensure well-used movement routes between transport stops are designated and designed for safe movement with clear, well lit and visible signage and emergency call points</p>	<p>Bus stops should comply with VicRoads specifications</p> <p>Public transport infrastructure should comply with National Accessible Public Transport Standards</p>	<p>Connection points must be clear to and from both sides of the road and should take into consideration 'desire lines' for convenient crossing</p> <p>Reduce vehicle speed around connection points on all roads</p>