



Murdoch

Specialised Activity Centre

Structure Plan

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5. Urban form

5.1 Existing urban form

One of the immediate challenges at Murdoch is the layout of the physical environment, which is one of spatial disconnection. Large institutions sit in separate campus sites connected predominantly by roads, with buildings ringed by a landscape of surface car parks. There is no natural centre to this place and few attempts have been made to unify disparate elements via high-quality public realm.

The built-up area of low-density campus and suburban buildings offers little inspiration but gives way to a natural hinterland of large tracts of open low-lying land, bush reserves or lake systems. The scale of this landscape is dominant. Built form is subordinate. The emerging Fiona Stanley Hospital is, for the first time, introducing a prominent scale of building onto the local skyline. However, the extent and character of this built environment, designed to a car based layout, is not conducive to creating an attractive and well-connected people place. Across other parts of the activity centre, highways and local roads are often designed to the maximum dimensions. Where they intersect or have to be crossed, there should be more consideration for pedestrian scale, movement and convenience. The public realm is exposed and underused.

Significant levels of investment have been committed at Murdoch and these need to be recognised in any analysis of its poor quality townscape. Highways, railways and public services have all benefitted from substantial renewal in the area and should not be disregarded lightly. Urban design must be responsive to the existing conditions and work with the inherited urban form. This is particularly the case where the core components of a major new centre are already in place — public and private hospitals, a university, technical college and strategic transport routes (Figures 5.01 and 5.02).

A range of concept plans and configurations for key sites, focal points and major routes have been generated during the analysis stage, based on input from stakeholders and the local community. Ultimately, the design team has sought a coherent structure for the area which could bind the activity centre and all its disparate parts. It has looked to differing physical elements for the potential solution — the landscape setting, patterns of development, the influence of transport networks and the character of the townscape.



Figure 5.01: Fiona Stanley Hospital built form
(image source: Fiona Stanley Hospital Project)



Figure 5.02: Murdoch University built form

5.2 Proposed urban form

To rationalise an appropriate urban form response to the spatial disconnection of Murdoch is a challenge. There are some distinctive areas where the response should be driven by the legacy of initial conception of the place, such as the University campus, but others where there should be a change to the planned isolation of buildings in a sprawling landscape. To facilitate this response, the varied urban environments across the activity centre have been categorised by type and/or precinct, and placed into the proposed spatial structure of urban core, corridor and frame. Figures 5.03 – 5.05 show the spatial structure overlaid.

Within this framework, there should be a concerted approach to increasing the intensity of the urban core of Murdoch to create both scale and urban amenity. This will be achieved through guidelines for building density, minimum site coverage, height controls and robust requirements for activating edges, for example, mandatory nil setbacks. There is provision for landmark built form to signify the location of the centre across a broader horizon. It is expected that the area abutting the activity centre's core (urban border) will become more attractive for development once the core has established a certain level of intensity. Spillover development from the core within this area will be subject to intensity guidelines that are less prescriptive, allowing a lower site coverage and reduced minimum height. Activation controls will be focused on key routes and small setbacks from the street permitted in certain locations.

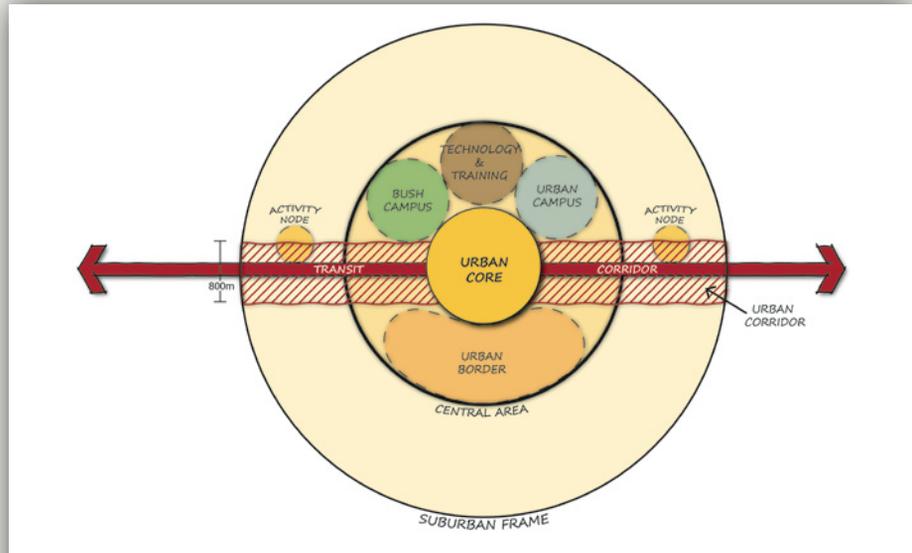


Figure 5.03: Urban form concept diagram

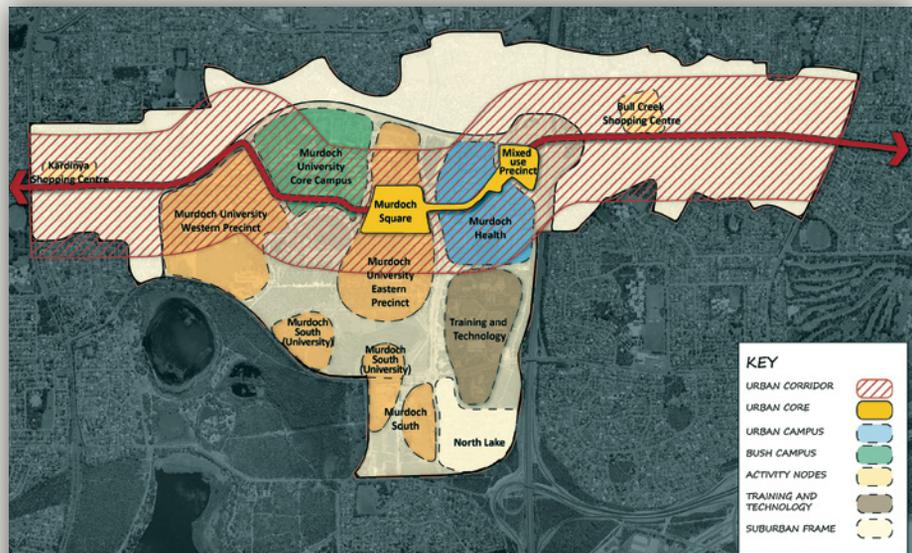
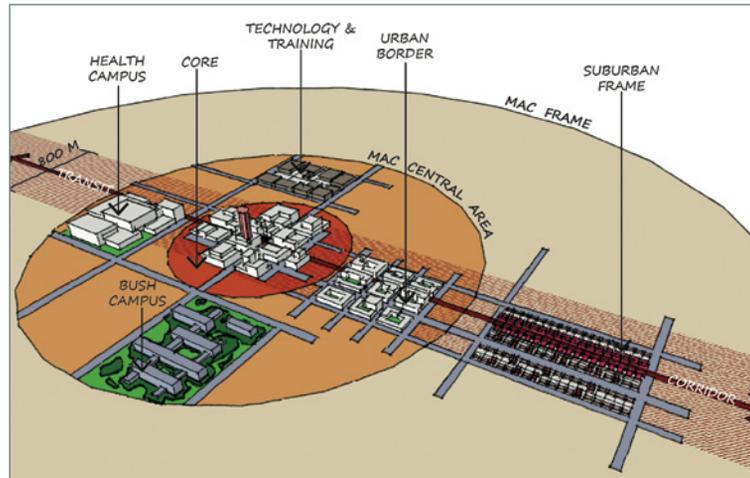
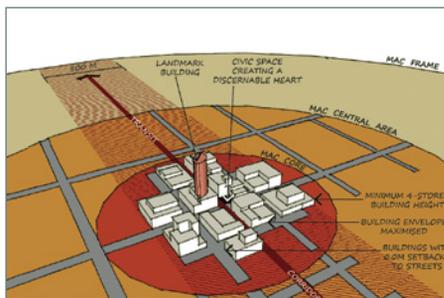


Figure 5.04: Urban form spatial diagram

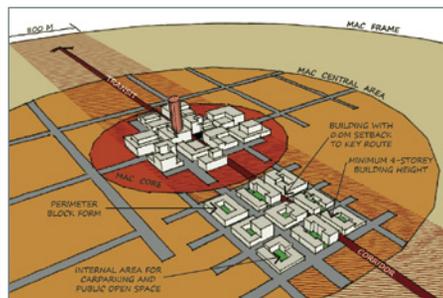
5. Urban form



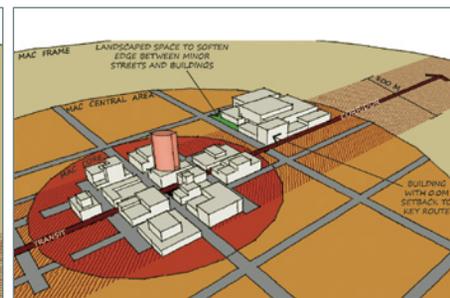
Urban core and precincts



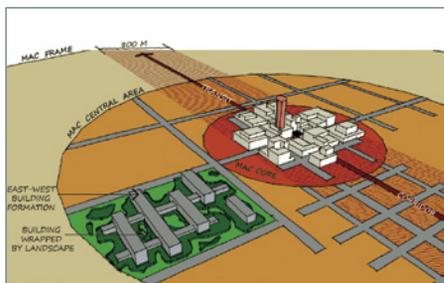
Core



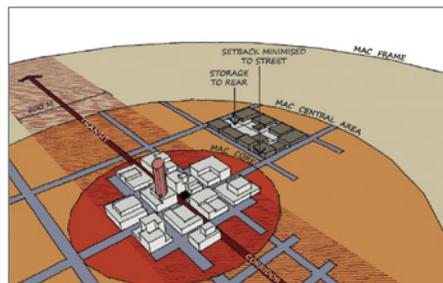
Urban border



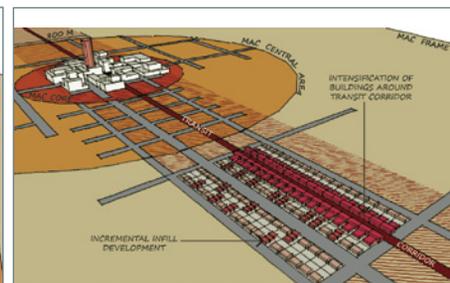
Health campus



Bush campus

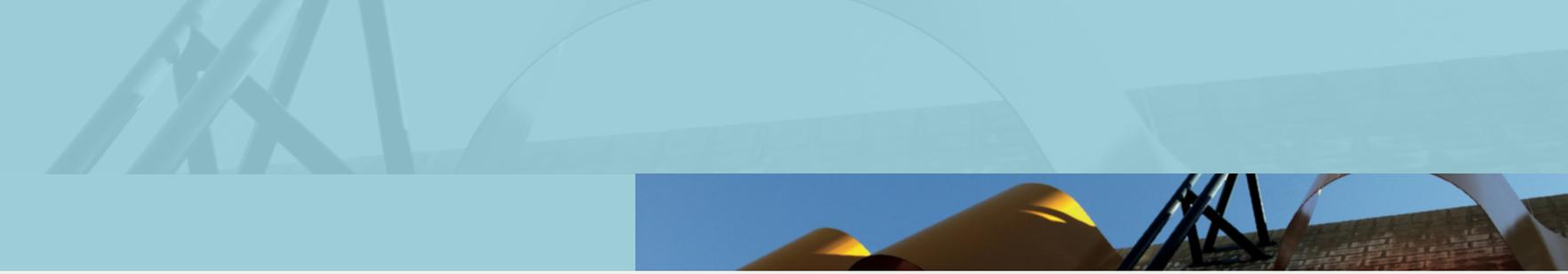


Technology and training



Suburban frame

Figure 5.05: Murdoch Activity Centre – urban form model



The existing urban campuses will remain with large format institutional buildings dominating the surrounding environment. However, new development should be oriented to address the key frontages such as Barry Marshall Parade to provide activation and a more human scale to the street. The natural bush campus of the University provides significant value to the learning capabilities of students and should therefore, be retained in its current form. Future design of the campus should consider the natural setting which wraps the built form and new development should carefully respond to it. The training and technology precinct comprises built forms which are campus or light industrial in nature, including training institutions and a detention centre. Energy directed at trying to overcome this aesthetic may be better focused in other areas. Instead, a green edge which borders the precinct will be an important tool for reducing the visual impact of some of the more incongruous building forms.

The suburban frame will remain in its current format until the economic cycle permits a regeneration of the built form. This should be encouraged through the consolidation of allotments to form larger parcels which can achieve substantial density increases in a form which still provides a high level of amenity. Battleaxe strata developments should be minimised where possible. The activity nodes which relate to the two existing shopping centres in the study area are required to institute a shift in urban form in concert with retail expansion within appropriate limits. This is aimed at creating a frontage which better interfaces with its surroundings, while providing a more interesting scale, mix of land uses, and density of development.

The urban corridor overlays all precincts and adds a multiplier effect to the framework specified above to maximise the intensity of urban form surrounding the transit route. This will include allowance for higher built form and smaller setbacks in an attempt to enhance the value of the transport infrastructure. Throughout the corridor, there will be changes in townscape form in response to context. The general intention is to promote a linear transition of the built environment from low to high density on approaches to the core.

5.3 Townscape typology and character

Perth has two stereotypical modern townscape types which are important to reference. Apart from extensive suburbia and residential towers that ring the Swan River, for example South Perth, there are the following typologies.

- The **CBD** which, in higher-density areas along St George's Terrace, is dominated by podium and tower style development. Although the high-rise towers are a significant vertical element, at ground level the base of these buildings tend to present a horizontal emphasis to the street. In addition, arcades and atrium lobbies are often cut out of the front façade and raised as an entrance feature. The capacity of some office tower complexes can dictate the need for these generous arrival spaces but they create voids with less definition and activation at street level. Generally the bulk of these buildings have minimal human scale.
- **East Perth** or **Subiaco Centro** where a more traditional townscape model of perimeter blocks with a finer grain of buildings enclosing streets or squares has been developed. In Subiaco's case, the station was formed as a focal point with block surrounds developed to a mid-scale built form (3–5 storeys) with ground floor uses activating the street or edges of the square and a vertical articulation to façades using a mix of pitch and gable end roof profiles.

A mid-scale townscape on a perimeter block grain is considered to be an enduring urban model for active town and city centres. It can be easily adapted as the economic forces of places bring pressure for change. Importantly, it is a dense form of development that can yield high levels of accommodation without resorting to more prominent and problematic high-rise building forms and their associated drawbacks at street level.

Across the activity centre, there are clear opportunities to introduce a city, or more urban, built form. However, a range or mix of townscape types is appropriate to promote through this structure plan as opposed to any one uniform scale or

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character. This enables a response to the variations in the existing surrounding townscape from low-rise suburban and campus typologies to the large massing of hospital buildings. In the latter case, the backdrop of Fiona Stanley Hospital, which has ward buildings up to 10 storeys, will provide the context for some tall buildings in adjacent areas, particularly within the mixed use precinct. Within the urban core, a hybrid form of dense mid-scale townscape with some higher-rise forms is envisaged (Figures 5.06–5.09).

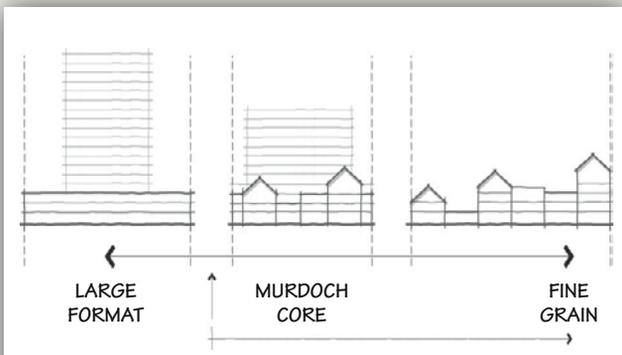


Figure 5.06: Townscape typologies – elevational section



Figure 5.08: Vertical elevation form – Botany Downs town centre, New Zealand



Figure 5.07: Horizontal elevational form – Subiaco, WA



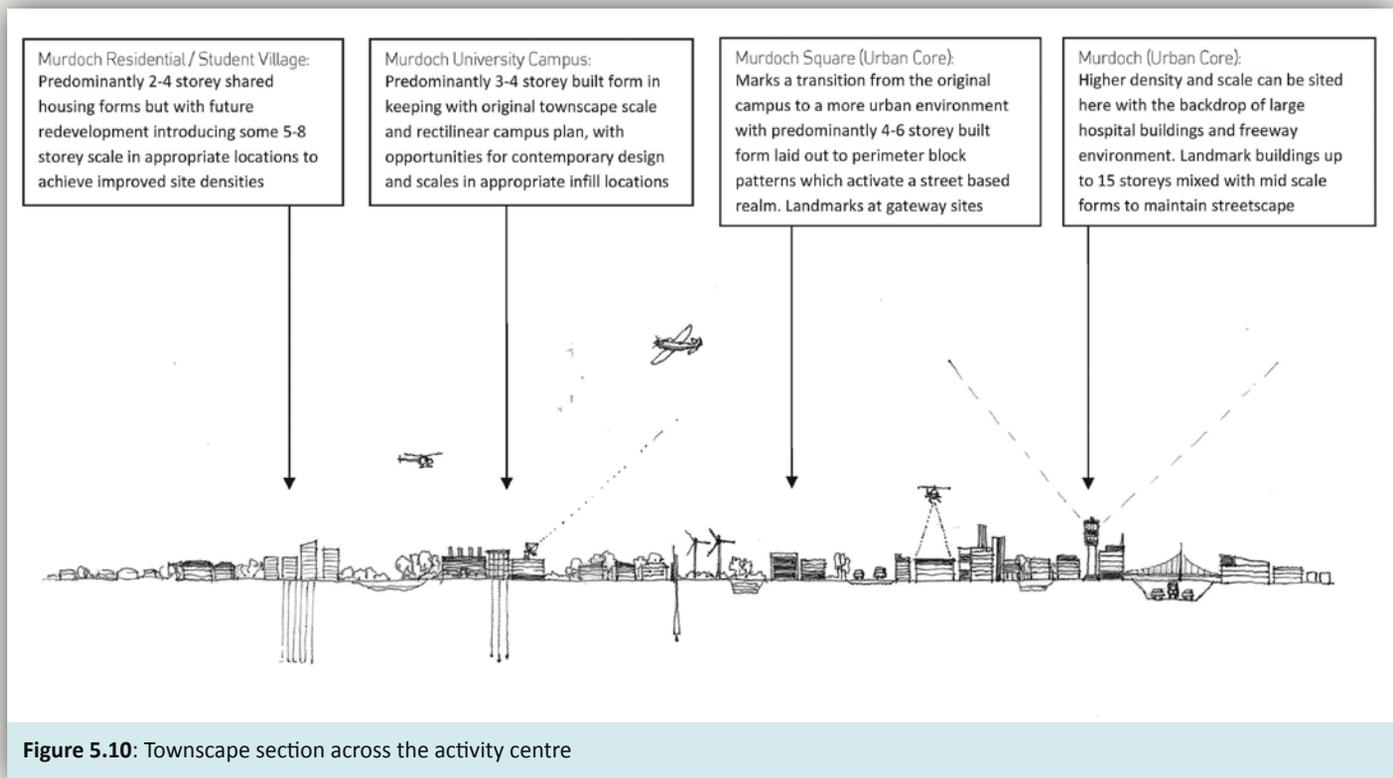
Figure 5.09: Vertical forms with active ground floors – Perth CBD, WA

Across the eastern precinct of the University, it is recommended that building scales are kept predominantly within a mid-scale range which steps up in density within the core of Murdoch Square with occasional landmark buildings. This would be an appropriate transition from the three to four storey scale of the original University campus over to the larger building forms in the hospital and mixed use precinct. As such, what is advocated is a gradient townscape for the activity centre that escalates within the urban corridor from west to east towards Murdoch Station (Figure 5.10).

Within this general structure, a number of logical gateways and arrival points exist around the activity centre, typically at key road intersections. Additional height will be permitted for feature buildings at these locations or associated with civic spaces. However, the emphasis should be on overall architectural and urban quality to respond to the strategic setting by achieving a finer grain rather than simply increasing the scale of building form (Figure 5.11).

On the west side of the activity centre, only sites within the high-accessibility transit corridor should be permitted to have general storey heights exceeding four storeys. A key example is the University student village where there may be redevelopment opportunities in time, and mass housing types that provide for a significant expansion of the village.

Within the urban transit corridor, sites should be developed to denser and more compact forms but with building heights largely in keeping with their context or maintaining a human scale of up to three or four storeys. In exceptional cases where design quality or urban performance measures are applied, larger scales of development may be allowed outside the accessible transit corridor. The activity nodes at Bull Creek and Kardinya shopping centres present opportunities to intensify the built form and generate a more personable interface by providing buildings which overlook streets and areas with poor surveillance.



5.4 Built form guidelines

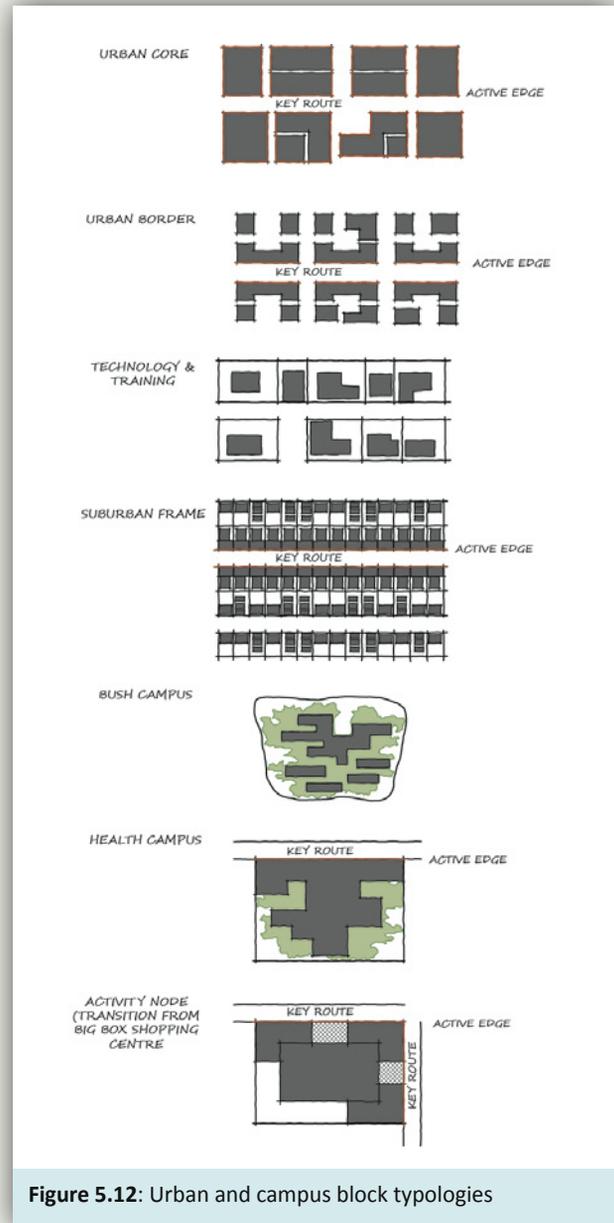
Due to the extent of the activity centre and the strategic nature of this structure plan, it is not appropriate to stipulate built form codes that are too resolved or impose on detailed stages of the design process. However, it is important for the structure plan to put in place broad urban design guidelines that will act as a reference for subsequent precinct level and detailed design, which can remain robust over time. What the built form guidelines seek to generate, identify or respond to, are overall character areas where there are common elements to the built form which should be recognised and respected in planning new development (Figure 5.12).

The approach adopted for the overall Murdoch Activity Centre is to set out broad criteria to guide block, building and thoroughfare design. The structure plan provides design principles for the urban form in terms of layout, scale, density and street interface. These guidelines are critical to creating the right conditions to promote and support intensity, particularly in the urban core where a denser, street-based pattern of activity and environment is being planned. The design guidelines should also ensure that new development is appropriate to the context of some existing areas within Murdoch where the character of the townscape (or landscape) is well established and where infill rather than transformational development is expected.

The following framework of built form guidelines is proposed for the activity centre:

- block layout principles (setbacks and plot coverage);
- building typology and scale (height, massing, density); and
- facades and frontages (articulation and ground floor activation).

These guidelines should be used to inform subsequent local structure planning and design. It is recognised that masterplanning is already advancing in the case of some campuses and strategic sites within the activity centre. For example, built form guidelines for the mixed use precinct and main street (Barry Marshall Parade) were approved by the



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Table: 5-1: Built form guidelines

	Built Form Guidelines		
	Urban core	Urban corridor	Urban frame
Urban grain (e.g. building pattern)	Largely perimeter blocks to provide activation to all streets.	Semi-formal block pattern with partial activation to streets except within some campuses.	Largely semi-formal suburban layouts with built form setback from street.
Townscape character (e.g. coherence)	High density and scale of built form with contemporary architecture but embracing traditional street townscape.	Mid-scale density and built forms with infill development blending with more traditional or well-established campus architecture.	Low-density neighbourhood character with few infill opportunities of scale.
Building typology and scale (e.g. heights)	Minimum 4 storeys up to 8 storeys (and 15 storeys in landmark locations).	Generally 3–6 storeys (with up to 10 storeys in landmark locations).	Largely in keeping with 1–3 storey townscape but with up to 6 storeys on key sites).
Block layout principles (e.g. setbacks)	Site coverage 80–100% nil setbacks. Upper storeys up to 5 m setback.	Site coverage 80-100% up to 2 m setbacks. Upper storeys up to 5 m setback.	Site coverage minimum 60% generally up to 6m setbacks. Upper storey setback discouraged.
Building façades and frontages (e.g. articulation and activation)	Vertical articulation preferred. 80–100% active frontages (100% along transit frontage). Atriums not permitted on frontages or side streets. 90% of façades to have entry or window openings. Unbroken awnings for all streets.	Vertical articulation preferred. 50–70% active frontages (80% along transit frontage). Atriums not permitted on building frontages. 75% of facades to have entry or window openings. Unbroken awnings where 0.0 m setback employed or else 75% coverage.	Vertical articulation preferred. Maximise active frontages along transit frontage. Atriums not suitable. Awnings appropriate on mixed use or transit frontages except where setback applies.
Vehicular access (e.g. servicing and parking)	From lane entries off side or rear streets. Lanes may have secondary access and service areas. Temporary lease car parking permitted. Permanent car parking in basement or integrated into building above ground.	From lane entries off side or rear streets. Lanes may have secondary access and service areas. Temporary lease car parking permitted. Permanent car parking in basement or integrated into built form.	From side or frontage streets. Rear service lanes may offer secondary shared access. Permanent car parking off street. Within lots or on streets where parking cannot be fully integrated into built form.
Green building credentials (e.g. energy and water efficiencies)	To be stipulated during subsequent masterplanning or precinct design stages (also refer to relevant content in Section 6 Resource Conservation).		

WAPC in 2011. In these instances, the structure plan built form guidelines should be consulted and applied accordingly whenever masterplans are being developed or urban designs are revisited in the future.

Table 5-1 indicates how built form principles should be applied in each of the zones in the spatial hierarchy – urban core, urban corridor and urban frame.

It is expected that these design guidelines would be applied and interpreted to the local context. Additional design criteria would be developed within each location through local structure plans and/or detailed area plans to inform the design of blocks or buildings. At that level, it would also be appropriate to introduce minimum green building ratings into the design criteria, and other building performance measures, in accordance with well-established industry codes. Whilst there are recognised tests, such as the Australian Green Star rating or R-Codes, these are normally applied at the development application and detailed design stages. However, other tools are emerging at national and state levels which, when finalised, can be used to assess the sustainability of design at urban or neighbourhood level. Section 6.3 elaborates further.



Figure 5.13: Perspective view (west) of Murdoch Square

5.5 Architectural style

The concept of developing a leading 21st century knowledge based urban centre at Murdoch comes with the expectation that the architecture should be contemporary in nature and embrace the latest in technology, design and sustainability. However, this does not imply an uninhibited architectural regime where varied forms of new buildings and styles can be explored. It points more to encouraging high-quality design placed on a sound urban plan, incorporating best practice and innovative examples from around Australia and other parts of the world where there are comparable economic, cultural and climatic conditions.

Beyond this broad overall brief, a strategic document such as a structure plan is generally not the vehicle to stipulate particular architectural styles or details which would be best resolved at subsequent stages of the planning or design process. However, in order to inform precinct, detailed area or site masterplanning, it is relevant to set out some overall character guidelines for the various precincts or campuses across the activity centre.

Figure 5.15 indicates building typology and scale to be considered where the existing townscape displays coherence, or where the urban form has been developed to a particular set of guidelines. A range of storey heights is stipulated for each area but with a bonus ceiling applied. This is the + figure indicated in the legend opposite each townscape type (for example: + up to 10 storeys for a dense urban campus).

The urban core, comprising Murdoch Square and the mixed use precinct, presents the best opportunities for increased densities and heights (Figure 5.13). The tallest built form envisaged for the centre is 15 storeys within the mixed use precinct which, as previously outlined, has the surrounding urban context for this scale (Figure 5.14). It is also a major strategic transport gateway to the activity centre, where a significant landmark element to the townscape would be possible and appropriate. Tall buildings proposed in this area are subject to notification to the aviation authority due to proximity to Jandakot Airport and possible intrusion into

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Figure 5.14: New buildings at Fiona Stanley Hospital fronting Barry Marshall Parade

flightpath contours. Reference should be made to the main street and mixed use precinct design guidelines which were endorsed by the WAPC in 2011.

The structure plan precinct character guidelines should be used in conjunction with the urban form principles set out across Chapter 5, in particular the key townscape elements in Figure 5.11 in Section 5.3 and built form guidelines in Table 5-1. In addition, design guidelines for urban street typologies are contained in Table 5-2 (page 86).

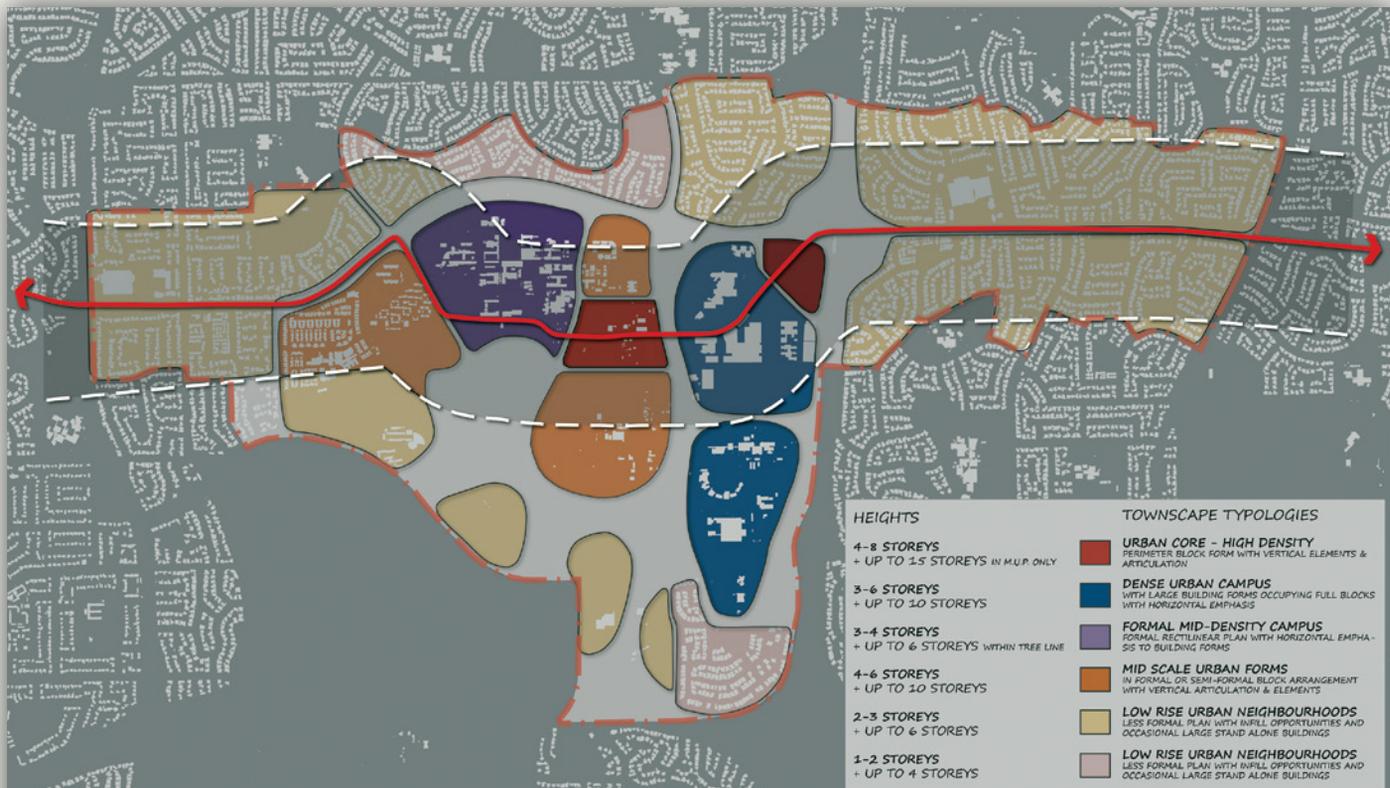


Figure 5.15: Precinct character guidelines

5.6 Street interface

The interface between buildings and the street is key to generating vibrancy and enhancing the activity of the centre. New buildings within the activity centre must address the street with appropriate frontages and provide sufficient activation at ground floor level to create the intense conditions sought, particularly in the urban core and along the transit corridor.

The built form guidelines in this structure plan seek to ensure that block lengths are not characterised or dominated by horizontal building façades. A vertical articulation to façades is desired to break up any horizontal plain and provide for more variety in the elevation aesthetic. This lends to a finer grain of design and appearance. The next point of reference is in relation to block layout principles which vary the extent of setbacks for buildings in relation to the public footpath or street. For example there will be nil setbacks within the urban core but up to two metres permitted within the urban corridor (Figures 5.16 and 5.17).

Other than façade and setback design, the guidelines in this structure plan (see Tables 5-2 and 5-3) contain some direction about the proportion of the street frontage that should be activated through attention to:

- commercial uses at ground floor;
- principal façades unbroken by atriums, arcades, lanes and other access types;
- continuous awnings for pedestrian shade/shelter; and
- doorways and fenestration.

Figure 5.18 illustrates the spatial intention of the guidelines in relation to the major routes through the activity centre. The urban core will have the highest concentration of active edges and degree of enclosure to the streets. Outside the core, activation and urban form should respond to the transit corridor. On other major roads such as South Street and Murdoch Drive, the built form should be pushed out and development encouraged along key frontages and at major intersections to increase the active urban edge conditions across the activity centre.



Figure 5.16: Shade frontage treatment



Figure 5.17: Fine grain built form (Rokeby Road, Subiaco, WA)

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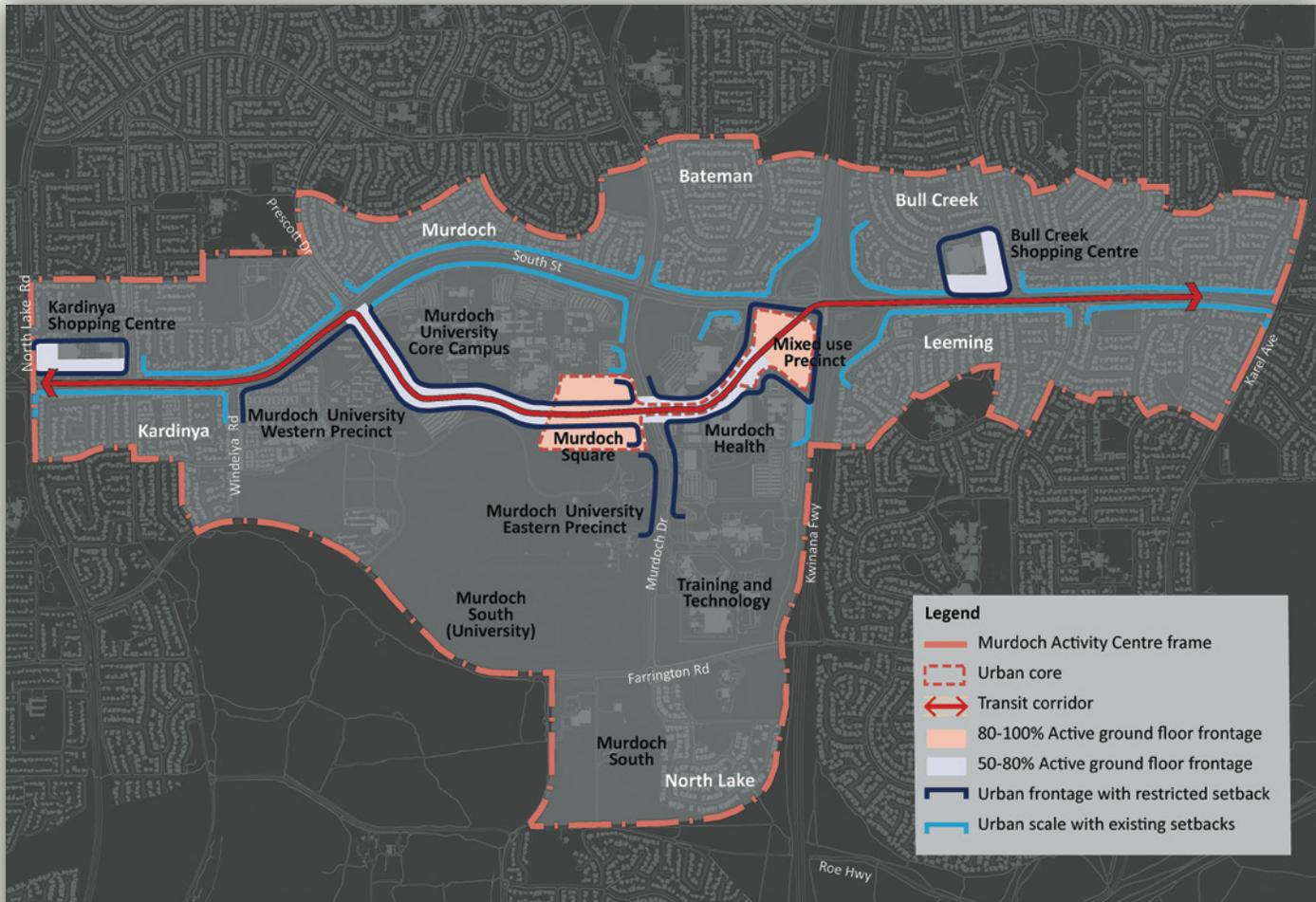


Figure 5.18: Active urban edges

There are some concerns about the gateway point at the western end of Barry Marshall Parade at Murdoch Drive where the built form is set back and road layout is generous and visually dominant. Future rapid transit systems will lead to a reconfiguration of key intersections but, until the concept of the active transit spine is adopted across the centre, interventions may be limited. In the short term, once the new hospital opens, improvements to the streetscape and landscape design should be made to soften the appearance and experience of this vehicular space, for pedestrians and drivers alike.

5.7 Street typologies

A set of street types has been developed for the activity centre to guide areas where the greatest development potential exists: the mixed use precinct; the University campus; and sites in Murdoch South along Farrington Road. Little change to the street pattern is expected within the suburban frame. Most other areas of the activity centre have a well-established road network, including the hospital sites, and only minor additions or alterations are predicted. This excludes proposed upgrades to the regional road network, Kwinana Freeway and related intersections.

Both Murdoch University's eastern precinct and the mixed use precinct are undergoing masterplanning exercises to inform the development mix and urban design. Without prejudicing the outcomes of those studies, this structure plan has a role in setting out design guidance for new thoroughfares across the strategic area. The following hierarchy of local streets is proposed for the centre and design guidelines are in Table 5-2 (page 86).

- a. Urban greenway.
- b. Urban street (core and corridor).
- c. Urban frame/suburban street.
- d. Urban boulevard.

The urban greenway will be the active transit spine through the University campus on the broad alignment of Discovery Way. This will have priority for public and active (pedestrians, cycles and other personal mobility vehicles) transport. General traffic will have restricted access to the greenway, with only limited areas of this thoroughfare featuring mixed traffic. For example, the entrance to the campus from Murdoch Drive will be designed as a transitional area between Barry Marshall Parade and the greenway, allowing general traffic to orientate itself and separate off before entering the main priority zone (through Murdoch Square) (Figures 5.19–5.21).

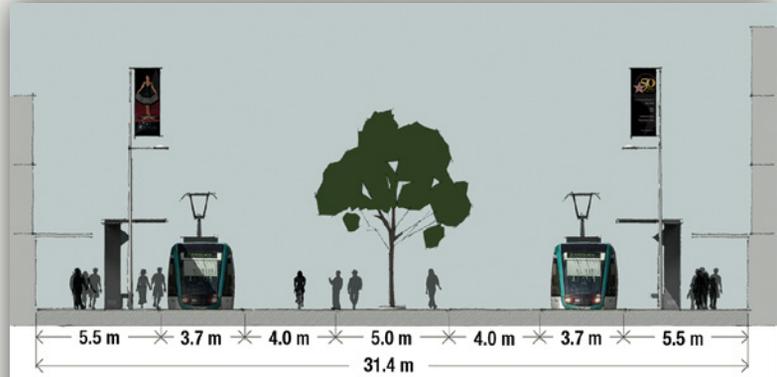


Figure 5.19: Indicative section for urban greenway (restricted traffic zone)



Figure 5.20: Alternative section through urban greenway (mixed traffic zone)

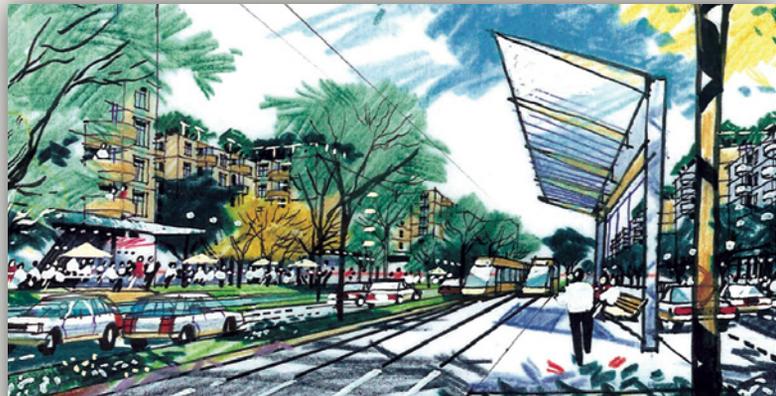
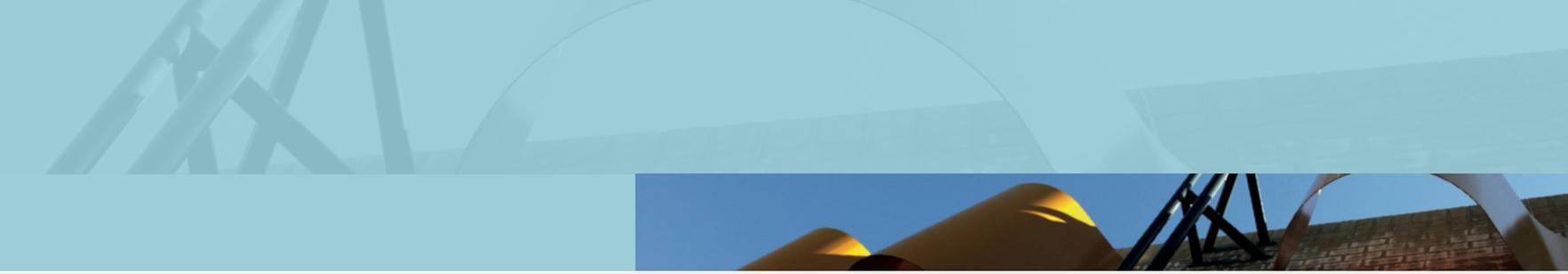


Figure 5.21: Illustration of urban greenway or active transit spine

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Table 5-2: Urban street typologies

Type	Standard	Section
Urban core	<p>Footpaths both sides of the road (where applicable) to provide high quality access.</p> <p>Dedicated pedestrian path (2.0 m minimum).</p> <p>3.0 m alfresco dining area.</p> <p>100 per cent covered awnings.</p> <p>25 m centre trees to provide amenity.</p> <p>No fences or boundary walls to street frontages or side streets.</p>	
Urban corridor	<p>Footpaths both sides of the road (where applicable) to provide high quality access.</p> <p>Dedicated pedestrian path (2.0 m minimum).</p> <p>Covered awnings where a building abuts the road boundary.</p> <p>25 m centre trees to provide amenity.</p> <p>Fencing and boundary walls discouraged but opaque permissible up to 1.2 m on frontages and side streets.</p>	
Urban frame	<p>Footpaths both sides of the road (where applicable) to provide high quality access.</p> <p>Dedicated pedestrian path (2.0 m minimum).</p> <p>Consistent tree coverage to prevent sun exposure and reduce temperatures.</p> <p>Front fences up to 1.2 m.</p> <p>Side boundary fences up to 2.0 m (maximum).</p>	
Urban boulevard	<p>Paths at least on one side of the road (where applicable).</p> <p>Shared path for both pedestrians and cyclists (2.5 m minimum).</p> <p>Boulevard planting on side verges and/or central medians.</p> <p>Consistent tree coverage to prevent sun exposure and reduce temperatures.</p>	



Barry Marshall Parade will have some transit priority between Murdoch Drive and the train/bus station although it has been designed with various access points to the two hospitals. It is likely to carry heavy volumes of mixed traffic during peak periods. There is scope to develop the greenway concept through the University campus, either via a staged enhancement of Discovery Way or as a complete redevelopment of the route. The latter is likely to be led by future transit development such as rapid transit.

One option for the greenway includes a generous and attractive avenue for active travel between the hospital and academic campuses. This is envisaged as a well-planted (for shade/shelter) section of the thoroughfare dedicated to pedestrians, cyclists and other personal mobility vehicles. This avenue could be centrally located or placed to the side of the greenway. It would have a canopy of planting along key sections to provide relief from the climate. Rapid transit services could run along either a central spine in the greenway or to a split lane arrangement bordering the pedestrian avenue. The latter has some advantages where transit stops can be placed close to active building frontages, especially through Murdoch Square.

Urban boulevards are important traffic distributors through the activity centre such as Murdoch Drive and Farrington Road. These will carry some public transport services but the priority for these major four lane thoroughfares is to provide access to destinations and connections to the perimeter regional road network. The changes promoted for these roads through the structure plan strategy focus on providing a much improved environment for non-vehicular travel, particularly cycling, with more substantial planting of medians and verges to extend shade canopies, create visual relief and generally enhance the amenity of the road space.

Urban streets in the core and corridor adopt a familiar traditional design, with two-way traffic on single lanes and street tree planting in side medians shading footpaths, parking and buildings. This is a very important type of street for Murdoch as there are very few urban streets within the activity centre with built form up to the street edge and on-street parking. It is a robust and active street type which

should form the basis of most new public streets developed in the activity centre, particularly within the urban core. Setbacks can be adjusted within the core and corridor to achieve different levels of building enclosure. Footpath widths may also be increased in alfresco and other high activity areas. Typical vehicle speed limits on urban streets should be 40 kph.

Shared street design should also be encouraged in lower trafficked areas of the centre. Shared streets form part of a traffic calmed regime with speeds preferably below 40 kph. Pedestrians and cyclists share the circulation space with cars, i.e. there is no priority. The vehicular carriageway is flush with other areas of the street and can be deflected or narrowed at intervals to slow traffic movement and accommodate on-street parking and landscaping (Figure 5.21). Typical dimensions are 12 metres building to building line, but this can be extended with setbacks. Subtle planting or paving changes can help distinguish movement channels and access areas at the building edges.

Mid-block or rear lanes are a common location for shared street design and therefore may be appropriate in new block configurations. Laneways provide permeable breaks in the built form as well as opportunities to conceal vehicular access and service points away from street frontages. The structure plan does not set out design criteria for these smaller types of thoroughfare as more guidance is expected to emerge on shared streets and spaces as the 'Smart Roads' philosophy is adopted into State and local highway standards. However, a basic design principle for access ways is that lanes, pens, large gates and basement car park entries should not be located on principal building frontages or corners. These are best contained to the side or rear of blocks (Figure 5.22).

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Figure 5.22: Perspective of traffic calmed or shared street space

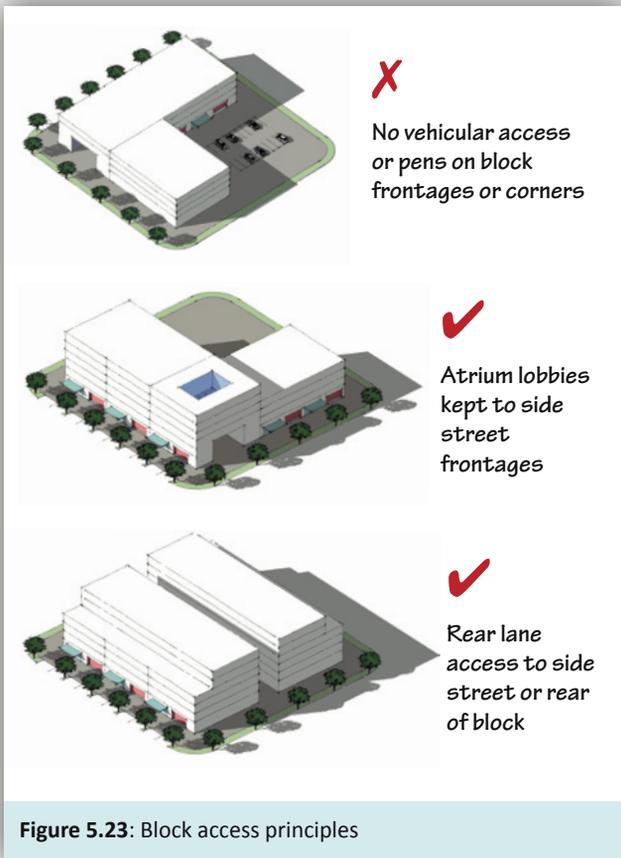


Figure 5.23: Block access principles

5.8 Public space

The structure plan proposes a public realm network of interconnected streets, paths, squares and smaller nodal spaces. The design of natural landscape areas and recreational open spaces is considered in the Section 6.8 (Resource conservation) as part of a strategic open space structure for the activity centre.

This section identifies the broad elements that should be incorporated into the design of new urban spaces within the activity centre. Key spaces will be developed in the urban core within the mixed use precinct and Murdoch Square. These spaces have to be carefully conceived and designed for each part of the urban core and should relate to the mix of uses. Designing successful outdoor space can be challenging in Western Australia where the climate can be extreme and where urban life competes with popular suburban and coastal lifestyles and their associated leisure attractions. Key urban spaces in the centre should therefore have a clear function and purpose, which can be threefold:

- as transit and activity nodes, ensuring the spaces have maximum vibrancy;
- as civic focal points in the urban centre, providing venues for community interaction and events; and
- as the iconic place which people identify with the location.

The following elements will also have to be skilfully judged, and kept under review, to ensure that the make-up of these urban spaces is appropriate.

- Levels of activation around the space throughout the day and night.
- Circulation and access regime to ensure adequate through movement of people and traffic.
- Scale and dimensions to ensure activity is not diluted by excessive space between buildings.
- Height and nature of building enclosure to create a good balance of shade, shelter and sunlighting.

- Degree of tree planting, canopy and other shading structures to achieve the balance of openness and protection described above.
- Design of principal building façades to provide an attractive backdrop and suitable human scale engagement at street level.

The concept for a civic space at Murdoch Square is of a small to mid-sized space acting as the primary urban space in the activity centre. It will provide the interface between major institutions and the setting for greater interaction within the University and the wider Murdoch community. The proposed square is envisaged as an offset space to the south of the transit priority greenway. This southern offset is proposed to ensure good orientation to winter sun conditions. In summer, shading should be provided by a combination of maturing tree canopies along the greenway

as well as other planting and shading structures (some seasonal) surrounding the square. A retail component will anchor the activity around the space but a mix of commercial, community, educational and accommodation uses is proposed for the Murdoch Square centre to promote 24 hour activity which is relevant to this pivotal location on the University campus (Figure 5.24).

There is potential to design an urban space within the mixed use precinct with similar characteristics to Murdoch Square. However, this space would be smaller in size and subordinate in function. The built form guidelines promote greater building heights in the mixed use precinct so that this space could have a city rather than town scale of enclosure. The capacity of buildings could ensure high levels of activation and spill-out, and proximity to the station and transit spine would place the space at an important link point between hospitals, mixed use nodes and transport services.



Figure 5.24: Murdoch Square perspective (looking west along Discovery Way)

