Overview

The following road types are present within Molonglo 3 East. It is important to recognize that these road types serve a range of user groups and not all roads will necessarily facilitate private vehicle movement. Each road type will have its own characteristic and function which will be discussed in this Options Report:

Sub-Arterial Roads

Sub-arterial roads are generally Movement Corridors and Vibrant Streets in Group and Local Centres. The Northern Access Road (Bindubi Street Extension) will form a major transport spine east-west through Molonglo 3. The options presented include a varying level of vehicle movement along this corridor, recognising its function as a priority public transport and active transport corridor.

Collector Roads

Collector Roads are generally Movement Corridors with opportunities to also be Vibrant Streets.

There are two collector roads designated within Molonglo 3, the Northern (John Gorton Drive to Bindubi Street Extension) and Southern (Bindubi Street Extension to East West Arterial).

These collector roads will facilitate coverage bus routes and active transport links as well as providing primary access to the local centres, group centre and local roads for residential access.

Local Roads

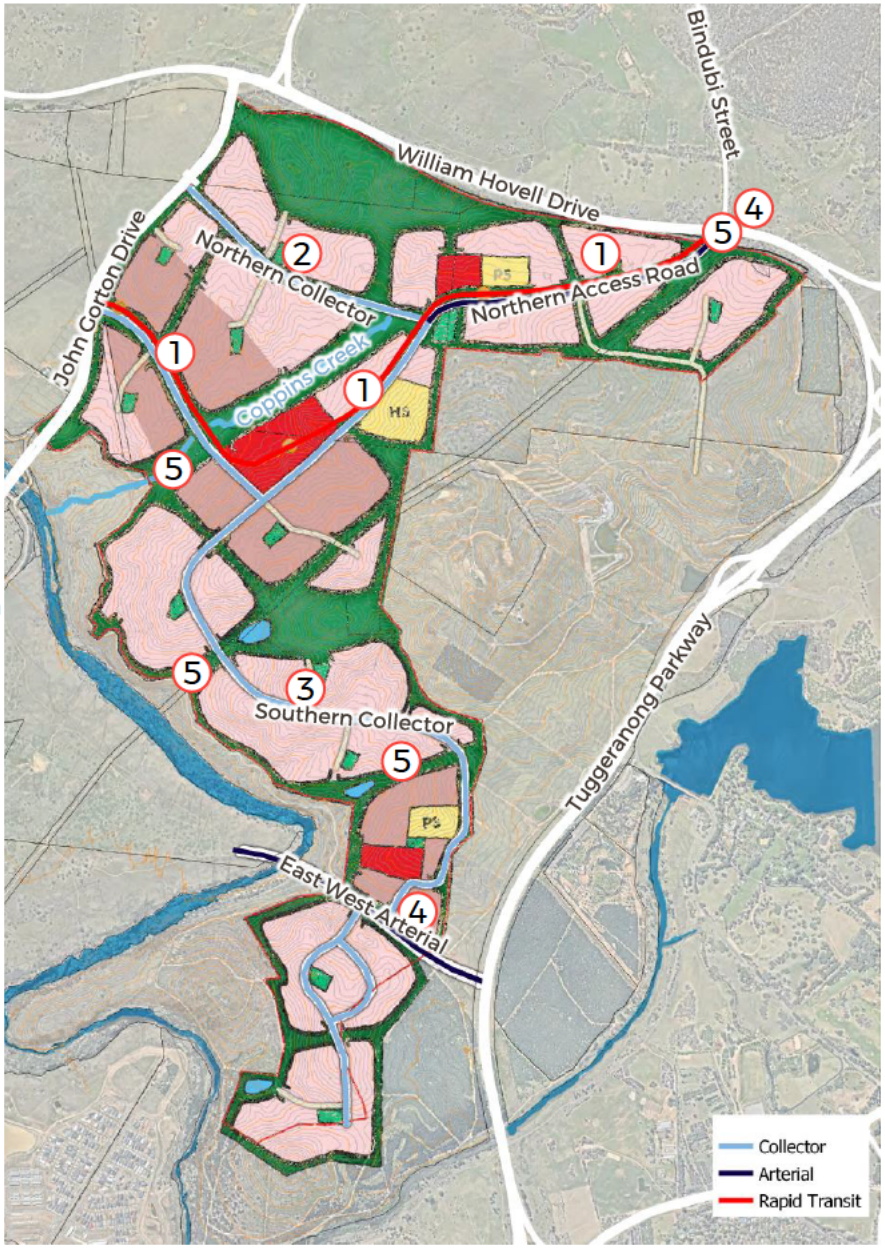
As per their Movement and Place classification, Local Roads will be slow speed environments with various road treatments to promote safer transport and encourage active and public transport modes.

Public transport network

This network provides efficient movement through, and accessing, Vibrant Streets. The public transport network will facilitate both coverage bus routes and a rapid mass transit option. The rapid mass transit will likely be provided by a rapid bus service with the potential for it to be converted to part of the Canberra Light Rail Network in the future.

Active transport network

The active travel network will consist of both commuting and recreational routes consisting of On road cycle lanes, commuter routes, cycle paths, footpaths, pedestrian boulevards and shared zones.



Basemap source: SixMaps

Figure 2: Overview

1. Major active transport and public transport spine
2. Northern collector
3. Southern collector
1. Rapid public transit routes
2. 3 Coverage bus routes
4. Connections to commuter cycle routes
5. Connections to recreational active transport opportunities

Option One

Business as usual

(with private vehicle restrictions)

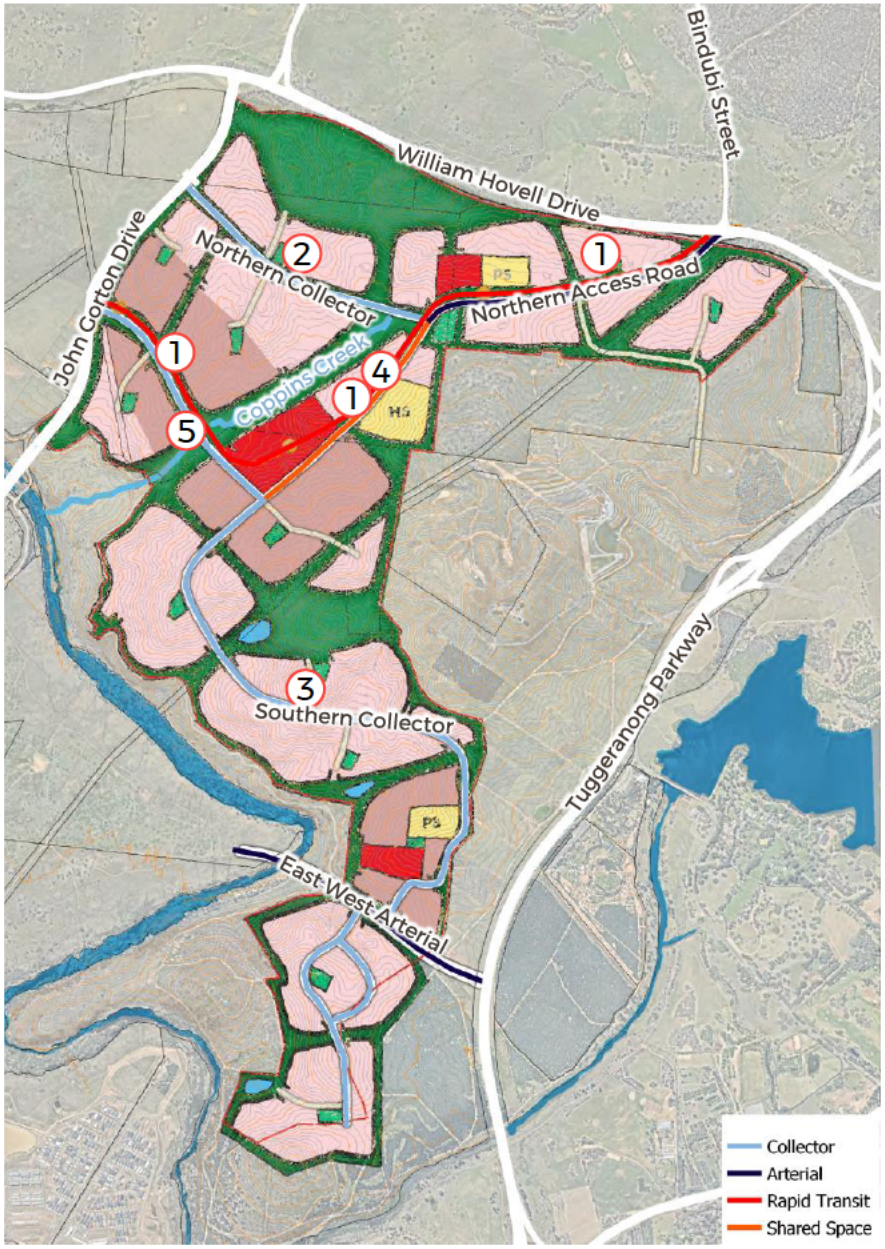
In the proof of concept, the northern sub arterial road is planned to connect to William Hovell Drive in the east and John Gorton Drive in the west. It is expected to facilitate a mass public transit service and active travel routes. There is a secondary northern collector to John Gorton Drive and another collector road travelling north-south through the precinct.

Risks associated with this option include:

- The road may become a rat-run connecting the wider Molonglo precinct to the city.
- A wide, high movement road will create a barrier or more local movement through the precinct.
- It has the potential to impact on place-making in the neighbourhoods.

Opportunities to increase place making in this option include:

- Create a barrier for through traffic around the group centre. The creation of a shared zone allows north-south movement from public transport and active transport modes, however it reduces the risk of this major road becoming a rat run. The shared space allows for restricted vehicle traffic for loading and servicing, or for accessibility to be retained.
- Create an active and public transport only bridge across Coppins Creek. This will assist reducing through vehicle traffic.



Basemap source: SixMaps

Figure 3: Option One

1. Major active transport and public transport spine
2. Northern collector
3. Southern collector
4. Shared zone only with active and public transport links
5. Active and public transport only bridge

Option Two

Restricted Northern Access Road

(Active and public transit only bridge over Coppins Creek)

This option allows a public transit and active travel boulevard to run parallel to Coppins Creek. A shared zone would run parallel on the other side of the group centre to encourage parking on the periphery. The shared zone would also discourage north-south movement thus enhancing place making around the core.

In this option the rapid transit corridor is decoupled from the road corridor, this provides the following benefits:

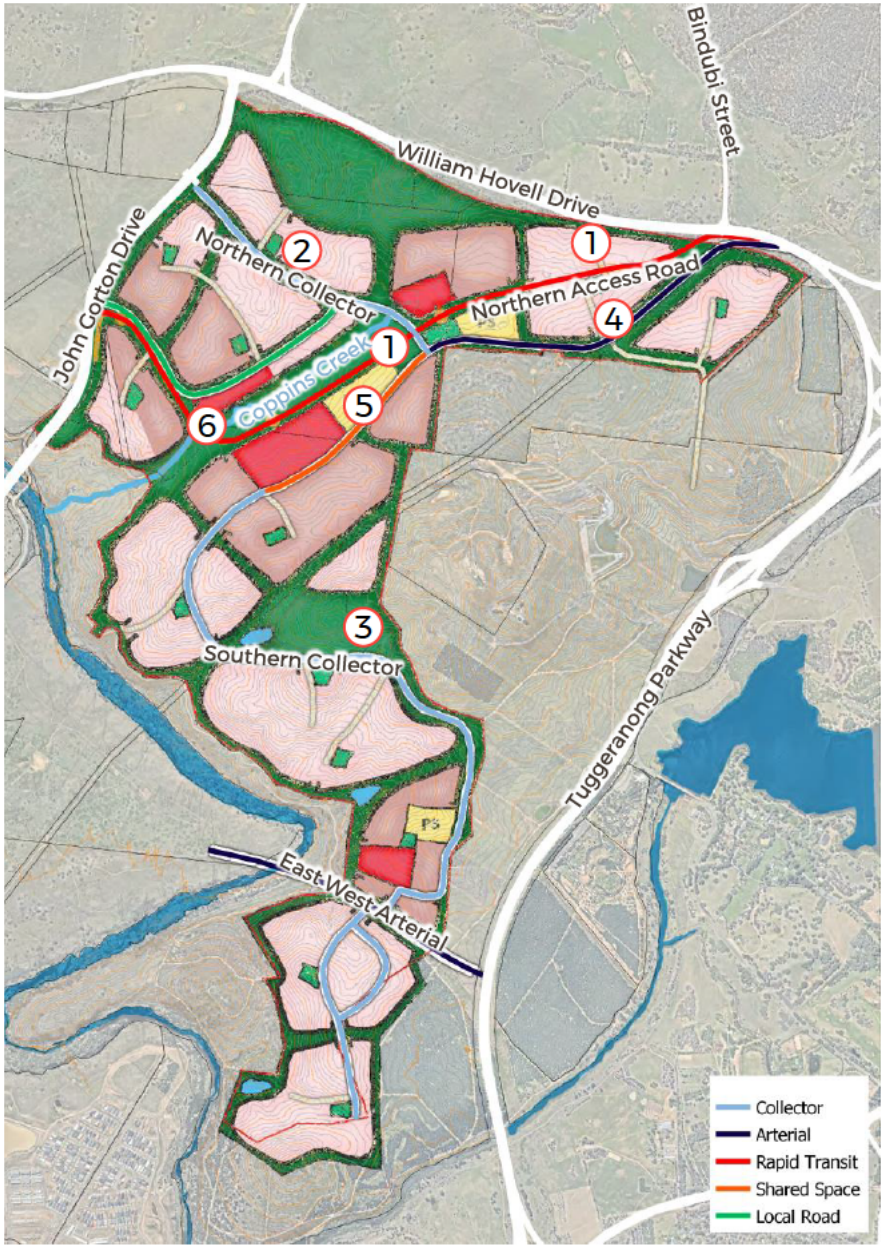
- Enhanced catchment to the north.
- Opportunities for a high quality public transport and active transport promenade running along Coppins Creek.

Risks associated with this option include:

- Restricted north-south movement through the precinct. For example, residents accessing the schools to the north have no direct link. Similarly residents in the south wanting to access Belconnen or Gunghalin may be impeded.

Opportunities associated with this option include:

- Improved group centre with vehicle traffic and car parking on the periphery. Active transport and pedestrian links through the group centre and higher density residential.
- Access through the group centre neighbourhood can still be provided through slow speed shared zones, restricted to certain vehicle types only (eg; servicing, loading, emergency vehicles, accessibility requirements)



Basemap source: SixMaps

Figure 4: Option Two

1. Mass transit corridor decoupled from the road corridor
2. Northern collector
3. Southern collector
4. Sub arterial road
5. Shared zone and high quality pedestrian spaces
6. Active travel and public transit only bridge

Option Three

Restricted north – south movement

(Active and public transit only through the group centre)

This option allows for a high quality, car free group centre with no through vehicle links. Instead these two movement roads can be linked with an active travel only boulevard or shared zone with restricted vehicle movement. A mass transit option will also pass through this zone with stops servicing the group centre.

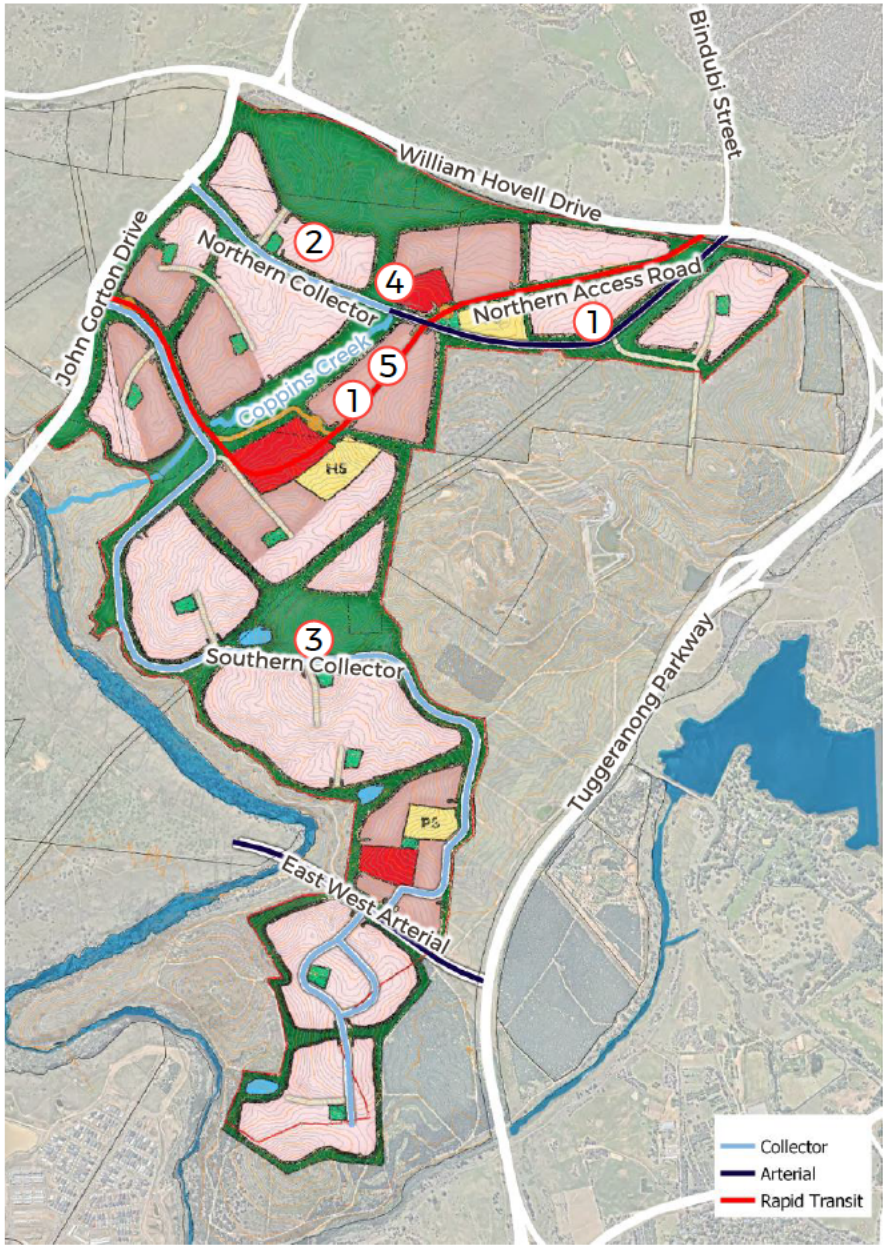
The mass transit will remain as part of the road corridor on either side of the shared pedestrian space.

Risks associated with this option include:

- Restricted north-south movement through the precinct. For example, residents accessing the schools to the north have no direct link. Similarly residents in the south wanting to access Belconnen or Gunghalin may be impeded.

Opportunities associated with this option include:

- Implementing mechanisms to reduce rat running potential on the northern link such as a priority controlled bridge.
- Improved group centre with vehicle traffic and car parking on the periphery. Active transport and pedestrian links through the group centre and higher density residential.
- Access through the group centre neighbourhood can still be provided through slow speed shared zones, restricted to certain vehicle types only (eg; servicing, loading, emergency vehicles, accessibility requirements)



Basemap source: SixMaps

Figure 5: Option Three

1. Major active transport and public transport spine
2. Northern collector
3. Southern collector
4. Priority bridge to reduce rat running
5. Shared zone opportunity

Optional Southern Access Configuration

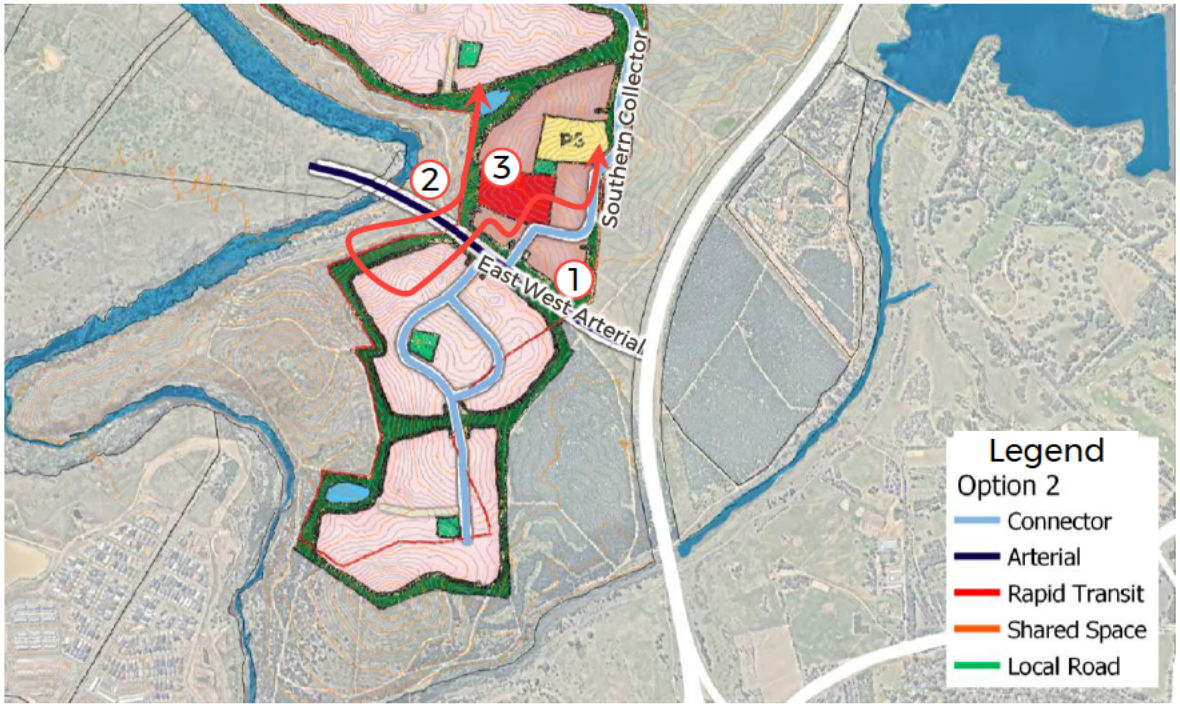
There is an option for a link under the East West Arterial on the western edge of the development. This is currently being explored and will not be an at-grade link. Options for this link include active transport only with a potential slow-speed vehicle link being investigated. This access will provide the following benefits:

Opportunities associated with this option include:

- Access primarily to connect residents to the south of EWA to the local centre/school
- Avoid the need for pedestrians to cross the EWA at grade, would improve safety and pedestrian amenity.
- Opportunities for it to also be designed to allow emergency vehicle access or as a secondary access/egress route for certain situations
- Option for a shared zone with the primary movement still pedestrians/cyclist but with design features to allow some vehicle movement (although vehicle movement not encouraged)
    - One lane with a yield under EWA
    - Slow speed shared zone (an example could be under Commonwealth Bridge past the park/exercise area)
- Dependant on available widths, could provide separate vehicle and active transport lanes to facilitate more vehicle movement. Investigate active transport into the Molonglo River Corridor to keep it separate from vehicles.

Considerations when designing this access include:

- It should be designed to ensure it isn't a rat run to avoid EWA and its intersection.
- consider the environmental and safety impact of the route so close to the Molonglo River. This includes light pollution, passive surveillance, and access to the waterfront.



1 East West Arterial

2 Underpass option

3 Local centre

Basemap source: SixMaps

Figure 6: Underpass Option

Northern Access Road Cross Sections

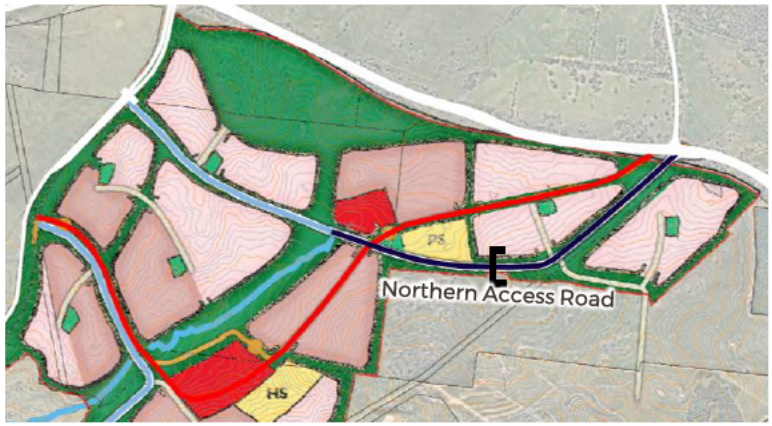
The extension of Bindubi Street will act as the key Arterial route from the north of the site from William Hovell Drive.

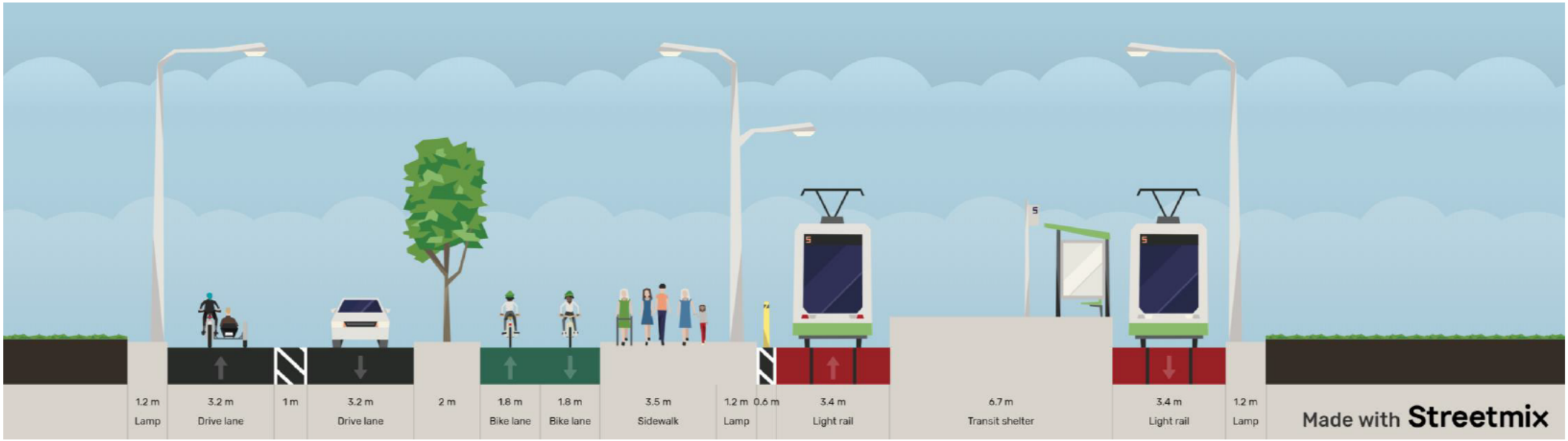
Whilst this will act as a the main vehicular access to the north parts of the Molonglo 3 site, space should also be provided for active transport modes and footpaths. Where some of the options propose Light rail services running parallel to this route, adequate corridor width should be preserved. This should also consider active transport links into residential sites to the north.

The route should also consider gateway treatment so users appreciate that they are entering a lower speed environment in contrast to the higher speeds of the approaching William Hovell Drive and Tuggeranong Parkway. This treatment will also allow for public art or markers to identify the new site.

Figure 7 outlines the likely width requirements to accommodate all prospective modes including Light rail. Where side running Light rail consideration should be given to how venerable users can traverse the light rail and access any centre running platform. Side running platforms could also be provide in conjunction with access points.

It is appreciated that where Bindubi Street passess through the local Village and group Creekside centres (check if it does), that the wide cross sections will be a challenge for placemaking syergies between activities on both sides of the street. The central active travel corridor should have placemaking features and plenty of crossing opportunities are required to ensure the corridor does not segregate street activity.





Source: Streetmix

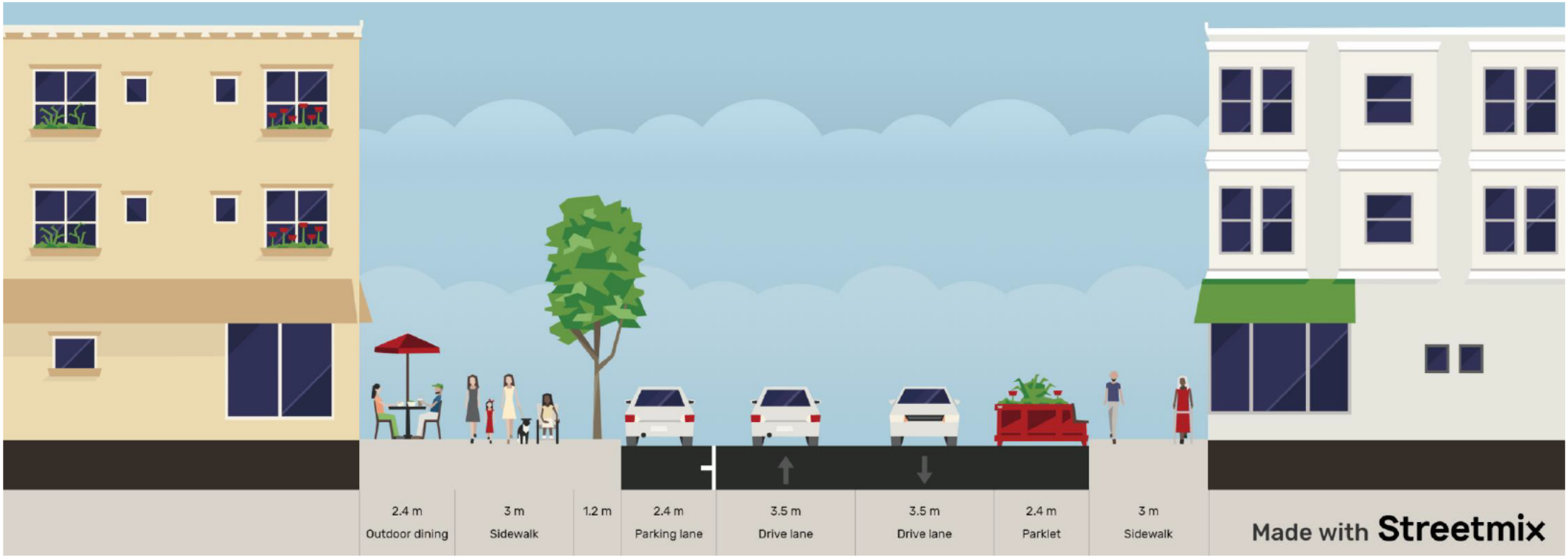
Figure 7: Cross section example – all modes

Collector Routes Cross Sections

Collector Routes will provide for most journeys though and from the precinct. These roads will form the spine of the development and provide a mixture of high density living and ground floor street activation. These routes will also provide most direct access through the site and will provide provision for bus services.

The example in Figure 8 shows an example cross section within the retail area. These sections will feature widened footpaths to encourage outdoor dining and for people to gather. A small number of kerb side time-limited parking opportunities will be provided close to retail outlets. These will be dispersed with parklets or other kerbside uses such as loading, bus or taxi zones.

The Collector network will have different cross sections depending on adjacent land uses and transport movements. Features include selected on-street parking provision, adequate provision for shared cycle/footpaths as part of an integrated network and bus infrastructure include shelters and priority.



Source: Streetmix

Figure 8: Cross section example – vehicle and pedestrian traffic only

Transport

Public transport

Public Transport

Public Transport is the most efficient way to move people on longer and regional trips in/out and through the network.

The mode of the public transport corridor will evolve ahead of the land use development it services and in conjunction to wider network expansions and future modes becoming available.

Rapid Transit routes

Rapid public transport through Molonglo has the potential to take the form of a rapid bus, light rail or other emerging transport modes.

Transit Stops

The stop design should service the movement and place needs of the corridor i.e. indented stops on Movement Corridors, kerbside in Local Streets and Places for People, and consideration of bus boarders/build outs on Vibrant Streets.

Transport Canberra specifies that bus stops on the frequent network should be within every 800-1,200 metres dependent on traffic conditions and place making opportunities. The adjacent figure shows the proposed public transit route stops with an 800 metre radial catchment for the rapid route and 500 metres for the coverage route.

Group Centre

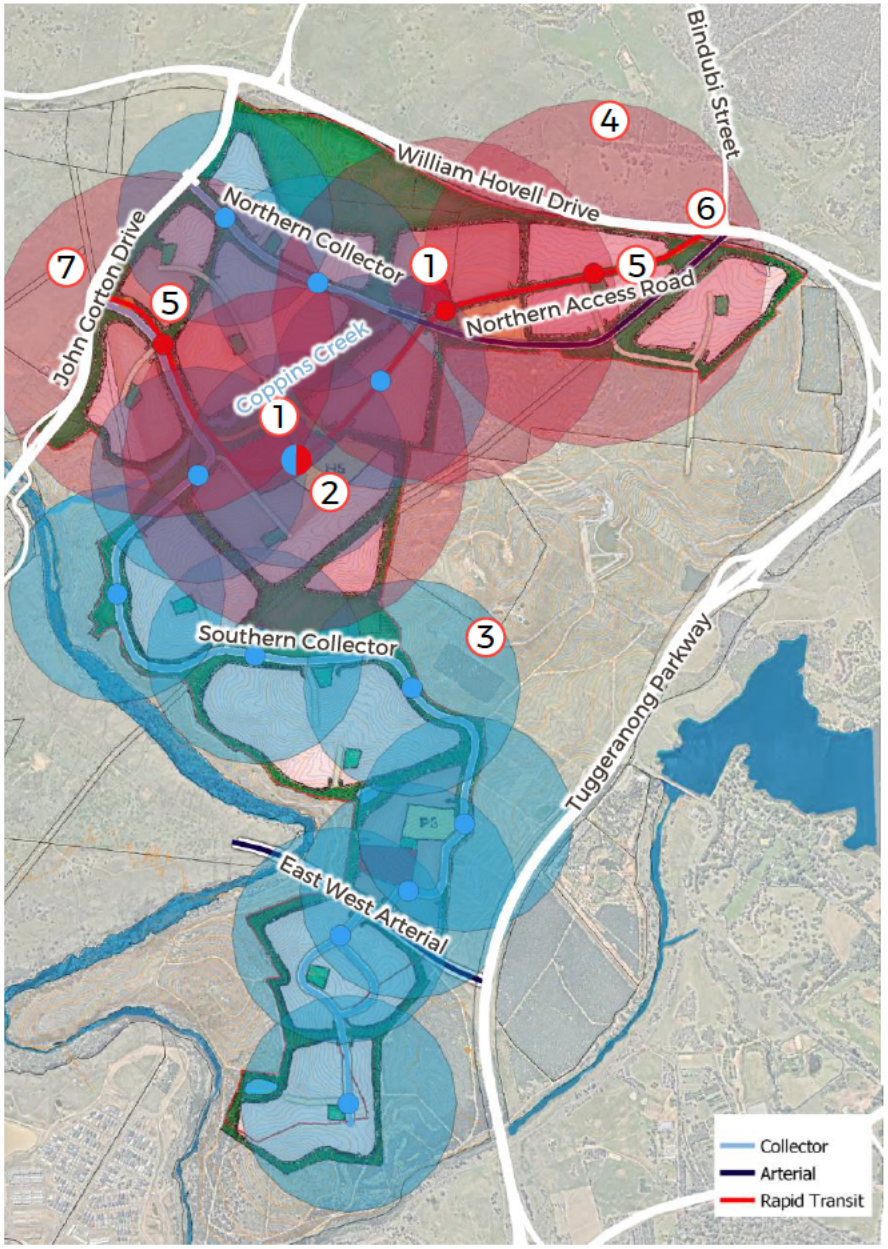
Fully integrated public transit systems can provide vibrancy to group centres and increase the desirability of public transport as a transit option dependent on the Movement and Place classification and road network.

Through the group centre, the public transit route may take different forms dependent on the road network configuration. Public transit should compliment the surrounding uses and ensure a safe environment for all users.

Where high pedestrian numbers are likely such as within retail centres, consideration should be given to provide public transport only streets, with complementary walking and cycling provision.

Coverage routes

The coverage route will integrate with the rapid route to provide public transport opportunities to 90% of dwellings. The adjacent figure shows the radial 500 metre catchments of the bus stops.



Basemap source: SixMaps

Figure 9: Public transport routes (Option 3)

1. Increases place making opportunities around the local centre and group centre
2. Interchange opportunity with rapid route
3. 500m catchments
4. 800m catchments
5. Rapid stops in residential zones
6. Priority provided at Bindubi/William Hovell intersection
7. Interchange with John Gorton Drive designed for Rapid Transit

Rapid Routes

Light Rail

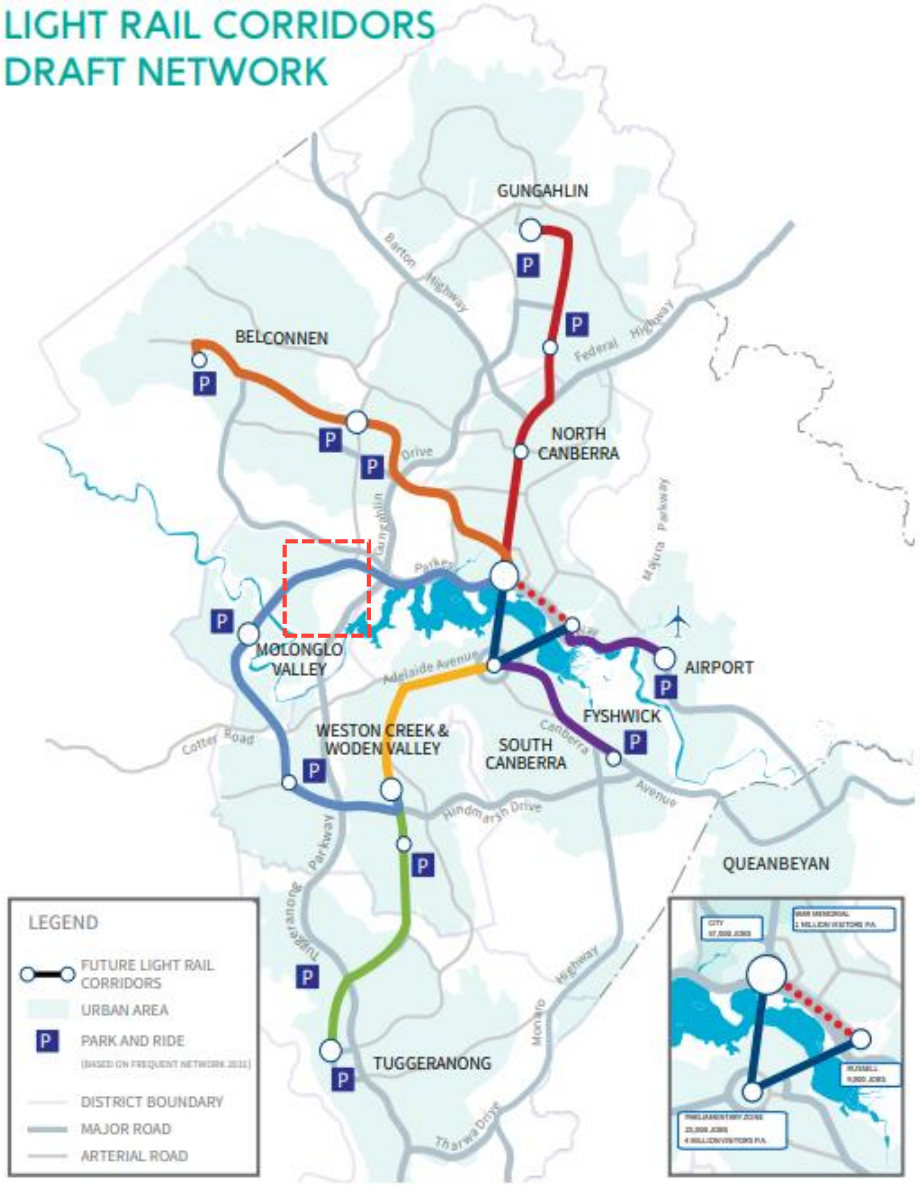
A future light rail corridor is planned through Molonglo 3 East as shown in Figure 19. There is no formal commitment to this corridor, instead a future mass transit option is discussed in this study which could take the form of light rail. Alternatively it could be serviced by a bus rapid transit system or another emerging public transport service.

Initially it would likely be serviced by a rapid bus as part of the Transport Canberra Rapid Network.

The corridor will be designed to be future proofed for light rail. Corridor preservation principles include:

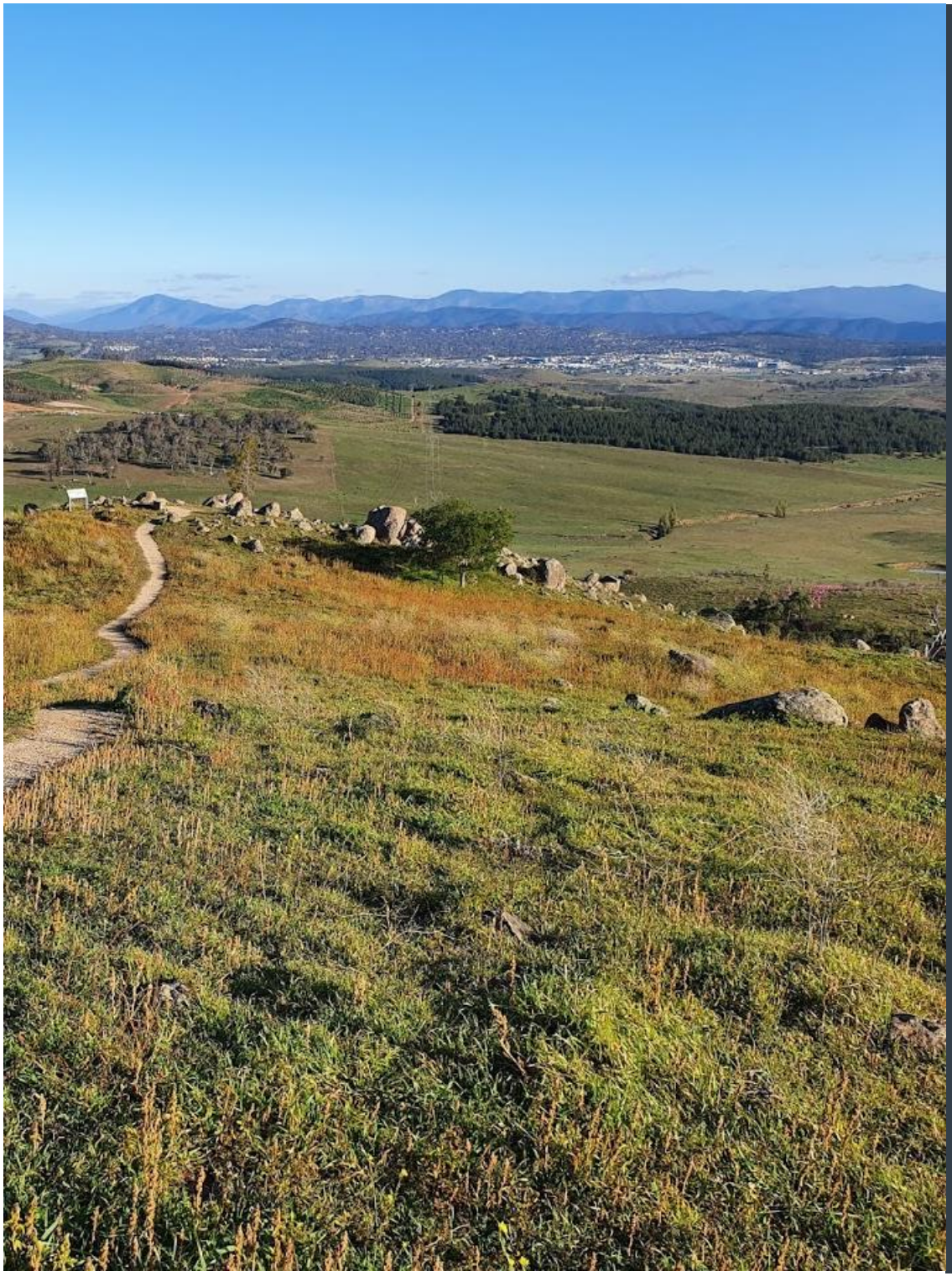
02 Corridor Preservation Principles

Light Rail Corridor	
Light rail corridor width is governed by factors such as the Dynamic Kinematic Envelope of the Light Rail Vehicle, design location of OHLE poles, location and width of Combined Services trench adjacent to the track slab or platform and clearances to adjacent road carriageway.	
Width of side platforms, track slab & CSR	16000mm
Width of island platform, track slab & CSR	13500mm
Platform length (allow for)	45000mm
Light rail corridor width (between stops)	8000mm
Light rail corridor should not be shared with road vehicles, except at intersections	
Depth from top of slab to bottom of light rail utility services conduits Note: Depth of combined services route (CSR) trench can vary greatly and can only be determined during Light Rail detailed design phases.	2200mm
Other Light Rail features may preclude with installation of subterranean features, such as Pole Foundations/Track Slab anchors and Earthing Rods. These can be expected to extend below the CSR.	
Offsets	
Height of OHLE poles	8300mm
Rail alignment	
Desirable rail alignment is straight and level at stop locations	
Rail gradient must not exceed 7%, desirable maximum 5%	
Rail alignment should taper gradually from non-stop to stop locations to enhance journey ride and speed and minimise rail wear and noise. Track slab design should accommodate this requirement.	
Minimum turning radius	25m
Road traffic – Light rail offsets	
Detailed traffic modelling is required to confirm recommended traffic and road adjustments to accommodate a Light rail corridor. Consideration would be given to safe clearances between light rail infrastructure, landscaping and road traffic.	
Stop locations	
Spacing between light rail stops is usually around 800-1200m but is subject to patronage and place-making opportunities as well as traffic and safety risks.	
Stops are ideally located at nodes and road junctions that maximise patronage, typically in areas of high attractor/generator value such employment centres and residential accommodation.	
The urban design of surrounding areas should maximise permeability to allow the movement of users via safe and attractive footpaths, shared paths and cycle paths that align to desire lines and active travel corridors.	



Basemap source: SixMaps

Figure 10: Light rail corridors



Transport

Active transport

Pedestrian network

Active Travel provides the most sustainable and healthy mode of transport for local trips within the precinct, longer distance commuter routes and as a recreational activity.

The pedestrian network within Molonglo 3 will be a mixture of footpaths which runs parallel to roads, dedicated paths linking key centres with residential areas and green links and riverside walks linking the Molonglo River with the National Arboretum.

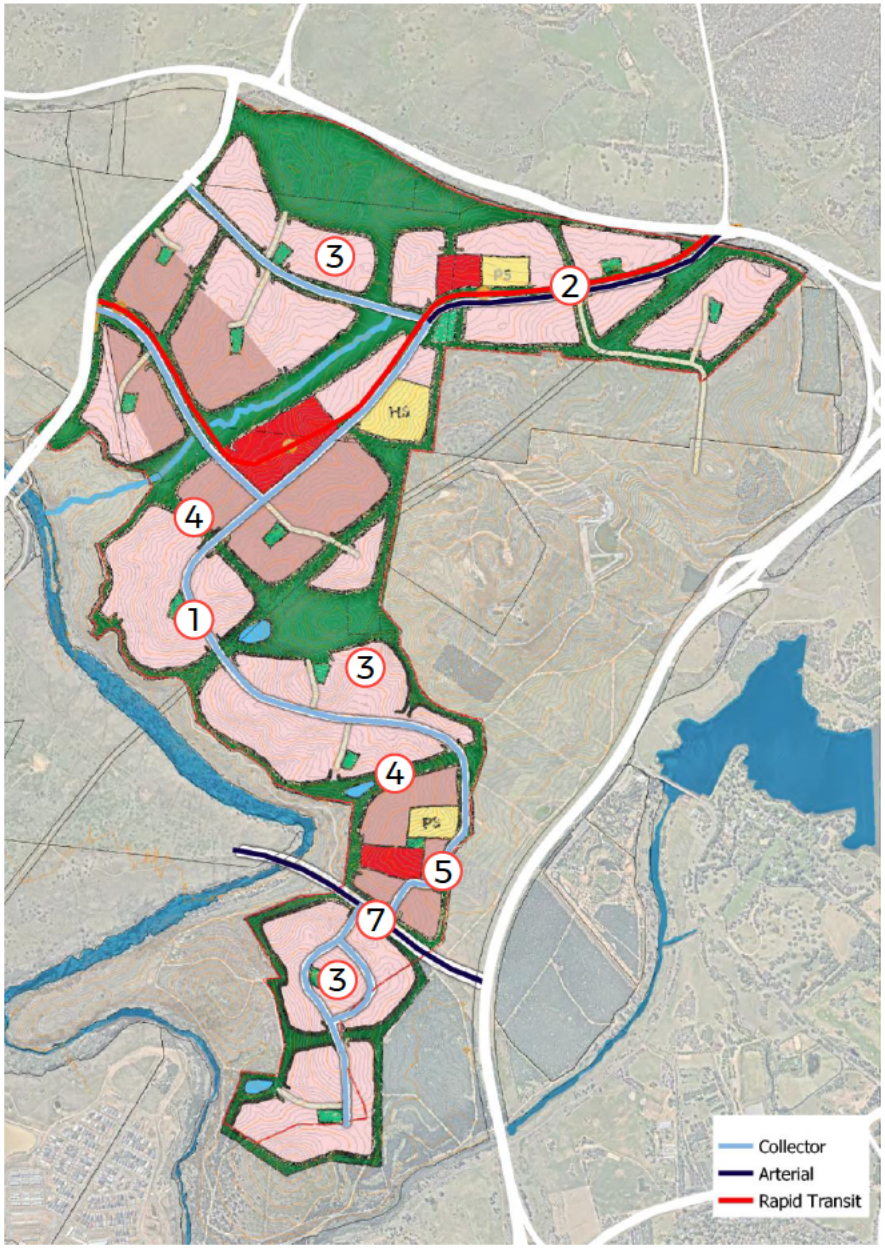
The type and dimensions of footpaths will be determined by its Movement and Place classification and will be responsive to neighbouring land uses. Special consideration should be given to crossing of Collector and Arterial routes and around sensitive land uses such as schools and aged care housing.

Where private motorised are not permitted or its priority reduced high quality pedestrian environments with permeable streetscapes should be favoured. These should be integrated closely with public transport modes and complementary land uses.

Links to public transport stops should be considered as part of a 'whole of journey approach'. This is of particular important for rapid transit stops which can service catchments of up to 800m.

Consideration should be given to ensuring that routes are secure, providing surveillance and lighting.

Source: National Arboretum website



Basemap source: SixMaps

Figure 11: Pedestrian network

1. Direct parallel routes on Movement Corridors
2. Wide pedestrian footpaths with multiple crossing opportunities
3. Prioritised pedestrian facilities in local streets
4. Recreational paths integrated with green links
5. Optional multi-user underpass
6. High quality and permeable streetscapes
7. Safe crossing points provided across East West arterial

Cycling network

Cycling provision within the Molonglo 3 site should seek to accommodate local, commuter and recreational cyclists. Whilst the Molonglo 3 site will have land uses compatible with short journeys a number of barriers to cycling are likely to exist including gradients, interaction with other roads users and crossing of major arterials and highways.

Local streets and Places for People should be low speed environments where cyclists can comfortable share the road space, but separate facilities and off-road paths may be required within Vibrant Streets and Movement Corridors respectively.

Cycling provision within the site will comprise of both separated on-road, shared paths and off-road provision and will seek to provide quick, reliable and safe alternative to the use of private vehicles. Consideration should be given in design to the proposed users with particular attention given to access to schools and key centres. In additional, adequate and secure cycle parking should be provided at a strategic sites throughout.

1 Northern connections to existing cycle network

Connections to the existing cycle network on William Hovell Drive will require crossing the highway to the north. This is likely to be best achieved through the existing signalised intersection at John Gorton Drive and Bindubi Street. This should be considered in future design.

2 Recreational cycleway on Molonglo Riverfront

A recreational cycle route should be considered for the waterfront areas of the Molonglo River. These would complement the proposed horse trail and could be integrated with place making particularly around the Group Centre.

Consideration should be given to ensuring the cycleway is environmentally sensitive of its location particularly in terms of lighting and rain runoff.

3 Southern connections to existing cycle network

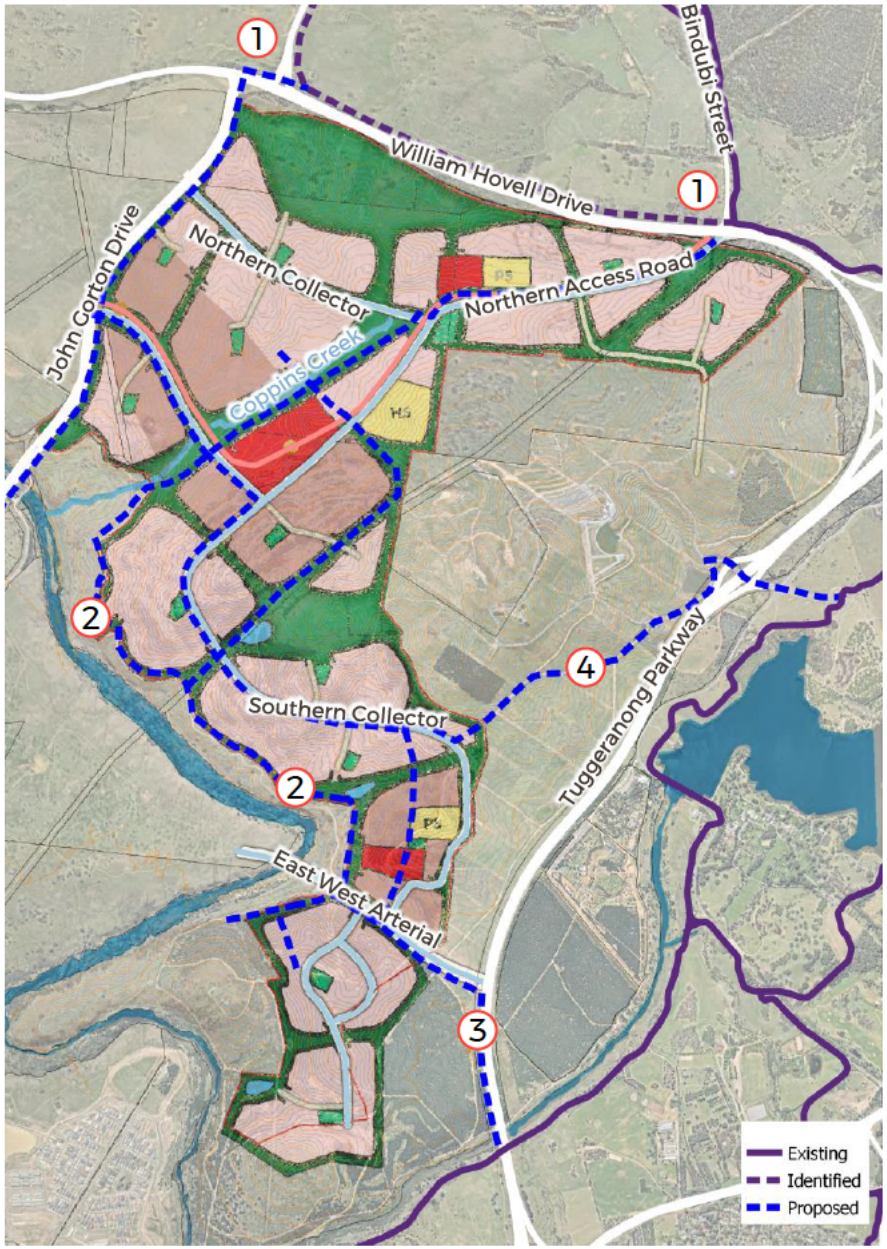
A number of physical constraints exist at the southern point of the Molonglo 3 site. The site is bordered by the topologically challenging Barrer Hill and thick forest.

It is proposed that the cycleway should run parallel to the proposed East West Arterial route and the Tuggeranong Parkway. Whilst avoiding both features, this route will also provide integrated street lighting and ongoing surveillance during night-time hours.

4 Connection via the National Arboretum

A cycling link connection to the National Arboretum would increase opportunities for recreational cycling for residents. A possible route is identified as an extension of the proposed Green Link running parallel to the proposed horse trail. This route runs south and east of the Arboretum's Village Centre and benefits from gentler gradients. In addition, the route would connect into the existing cycleway at Barrenjoey Drive.

Currently the National Arboretum is closed during night time hours so alternatives via points 1 and 4 as outlined above would be required during these times.



Basemap source: SixMaps Data adapted from ACT Government Active Travel Infrastructure website

Figure 11: Cycling network