11 CONCLUSION

11.1 CONCEPT PLAN

Key elements of the Molonglo 3 East Design Concept Plan are:

- Bindubi Street Extension connects to the northern end of John Gorton Drive serving local traffic in the north
- The secondary Collector Road connects from the southern end of John Gorton Drive past the group centre to the proposed East-West Arterial serving the majority of neighbourhood units
  - Collector Roads are in the centre of neighbourhoods to provide maximum access to public transport located along this road
- A slow speed collector road joins these Collector Roads past the schools and group centre
  - This road will only service local traffic and buses within this central zone as all other neighbourhoods can exit Molonglo 3 via the main Collector Roads
- The Intertown Public Transport corridor de-couples from the road reserve past the primary school and group centre with a stop terminating at a linear open space between the group centre and primary school
- Density is in areas of high amenity and access to public transport.

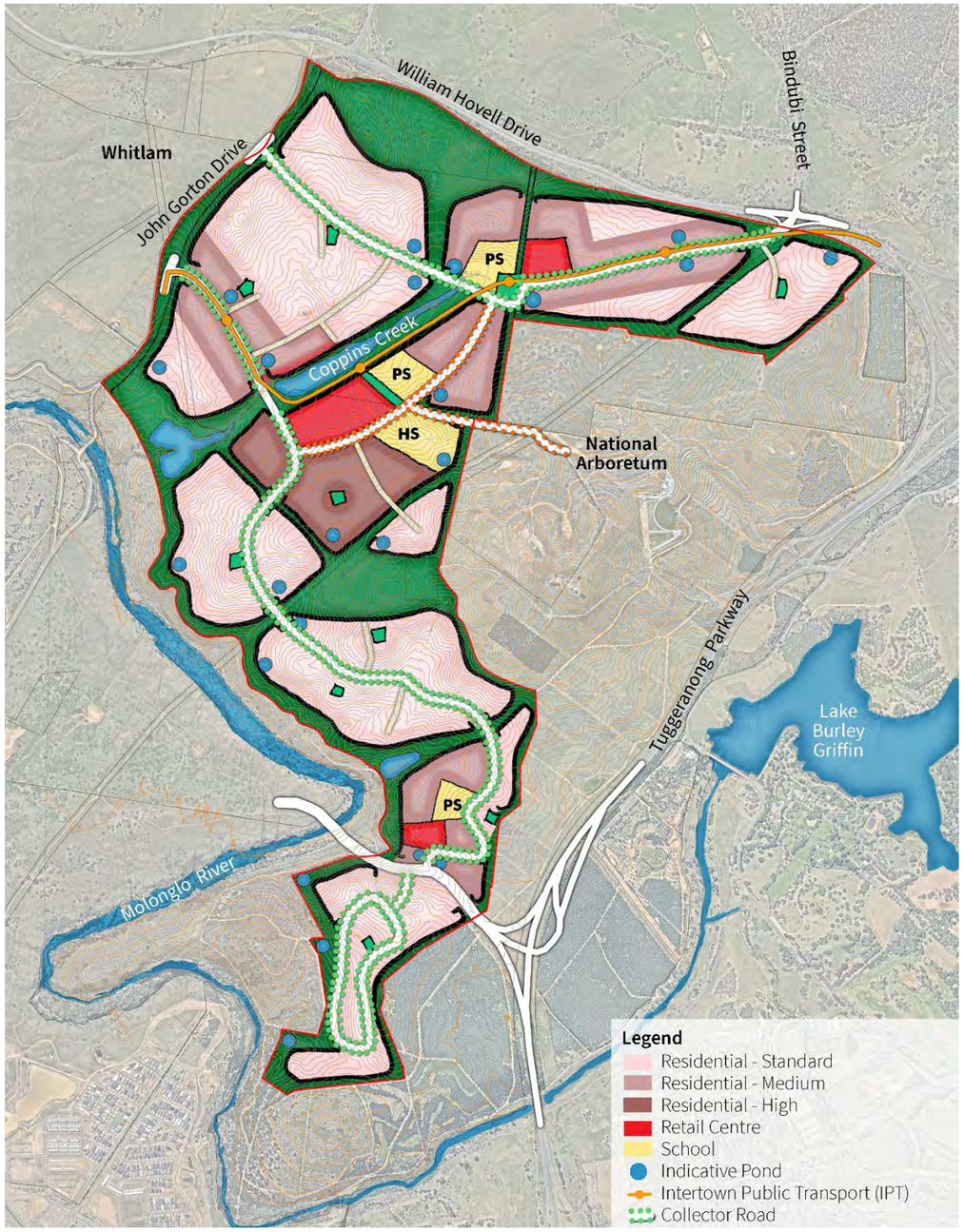

Figure 11.1 Molonglo 3 East design concept plan

11.2 GROUP CENTRE

Key elements of the Molonglo 3 East group centre are:

- Encourages a range of uses around Coppins Creek which is an area of high amenity created by the water course.
- The IPT runs in its own corridor parallel to Coppins Creek, stops are proposed next to both the group centre and local centre.
- The road corridor is located on the periphery of the group centre, allowing for an active and public transport focussed group centre.
- The local centre and group centre are in close proximity and can facilitate different and complimentary tenants across both the centres.

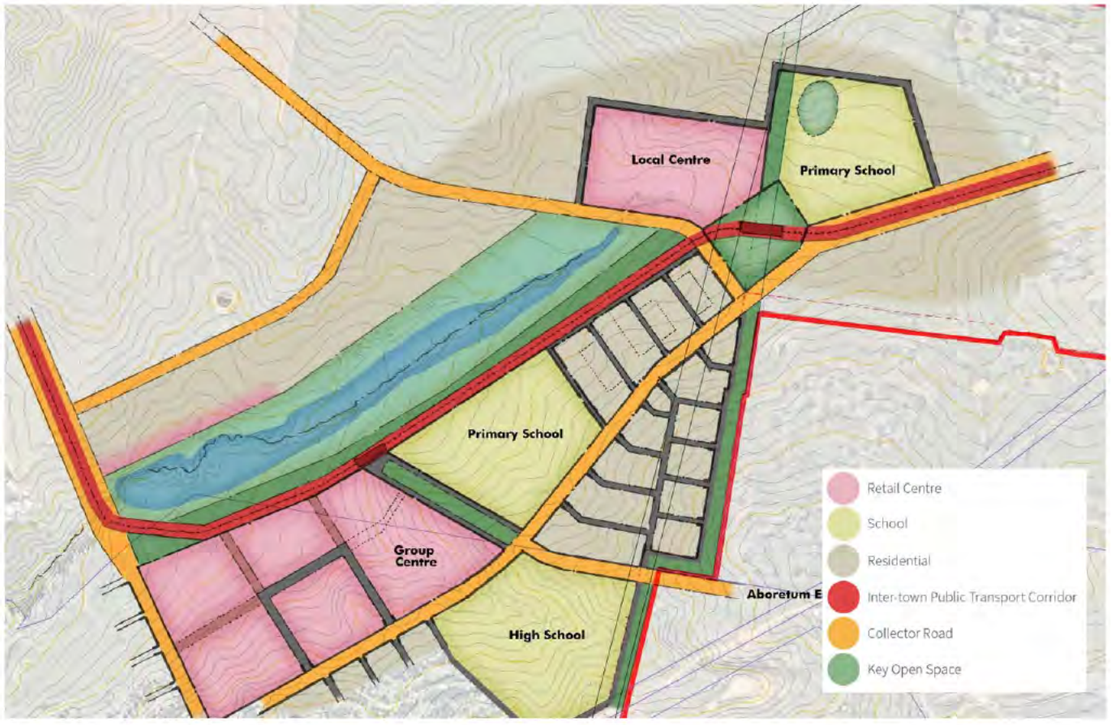

Figure 11.2 Molonglo 3 East Group Centre (preferred option)

11.3 TRANSPORT

Key elements of the Molonglo 3 East Design Concept Plan from a transport perspective are:

- Bindubi Street Extension connects to the northern end of John Gorton Drive serving local traffic in the north.
- A Collector Road connects from the southern end of John Gorton Drive to the proposed East-West Arterial serving the majority of neighbourhood units in the southern section.
- A slow speed Collector Road connects the north and south roads. This Collector Road provides access to the group centre, schools and Arboretum access. This road is designed as a place for people, limiting rat running through the precinct and encouraging active transport modes.
- The Intertown Public Transport operates in its own corridor parallel to Coppins Creek, past the primary school and group centre with a transit stop at a linear open space between the group centre and primary school.

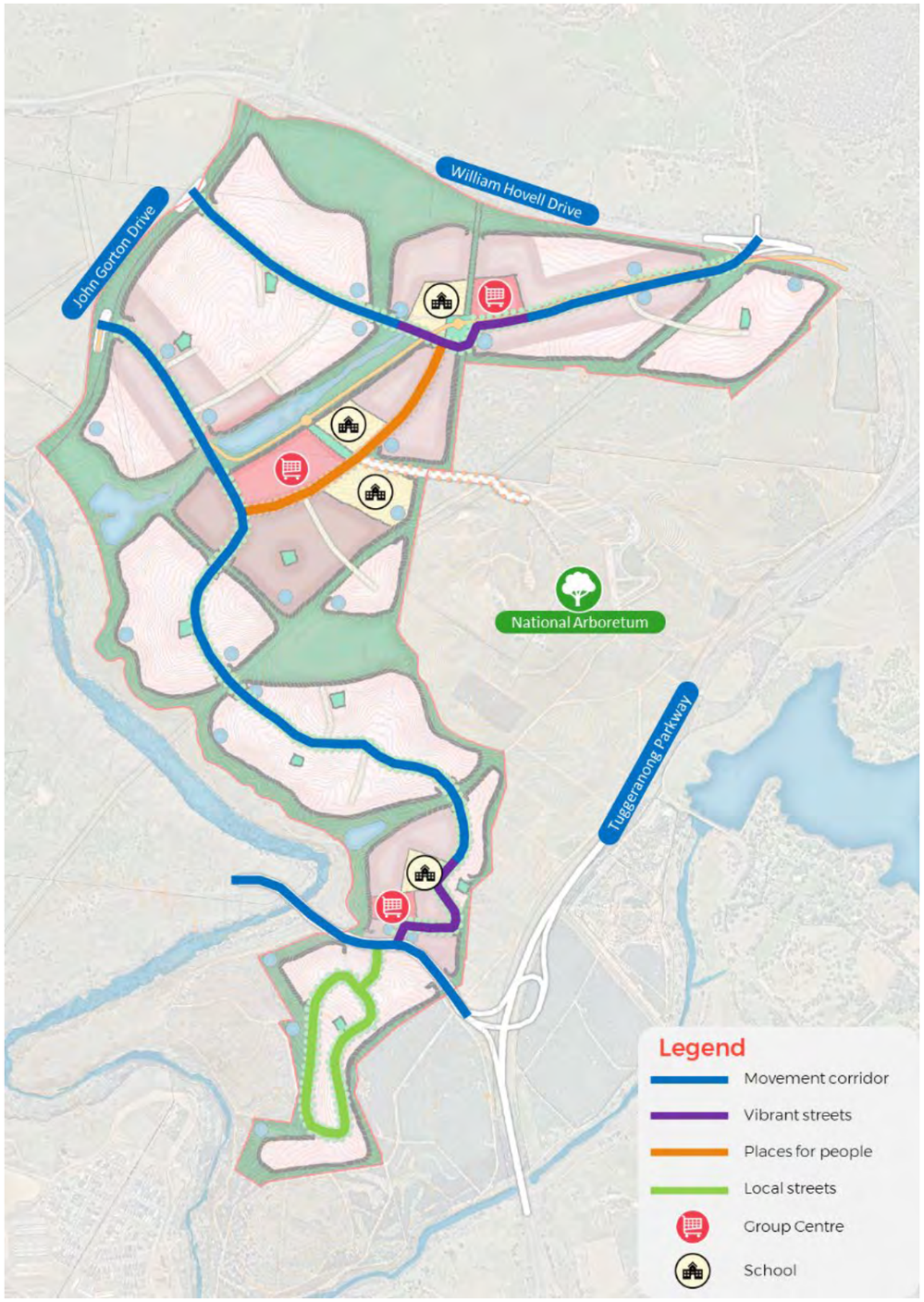

Figure 11.3 Movement and Place classification

11.4 INFRASTRUCTURE

Key elements of the Molonglo 3 East Design Concept Plan from an infrastructure perspective are:

- The proposed trunk water supply will be fed from the Weetangera Reservoirs north-west of the proposed Molonglo 3 development, with water supply infrastructure heading south, crossing William Hovell Drive, and into the recently constructed development of Whitlam.
- The proposed concept plan layout will alter the proposed sewer alignments from this previously conducted study, but the proposed population densities within the study area are not dissimilar.
- Provision of new municipal roads with piped stormwater infrastructure supported by engineered waterways and swales where possible.
- It is proposed that Water Sensitive Urban Design (WSUD) devices are to be utilised as dual purpose basins that are to manage stormwater runoff volumes as well as stormwater quality, and will detain additional runoff where required.
- The proposed Coppins Creek wetland area is to be utilised as a significant landscape feature, running from north to south alongside the proposed IPT corridor, and adjacent the proposed main group centre in Molonglo 3.
- A proposed realignment of 132 kV power infrastructure is expected to bisect the north-east corner of the development area, and proceed to run down the eastern boundary of the site.

12 PHASE 2 SCOPING

12.1 PLANNING

TERRITORY PLAN

We recommend early discussions with EPSDD's Planning Reform team to better understand their timeframes and any transitional arrangements they have considered where developments timeframes overlap with statutory reform. It will be necessary to understand their key milestones in reform delivery, relative to the Concept Plan/Precinct Plan/Estate Development Plan approval pathway, and seek their early guidance in framing development controls to ensure ease of applicability under both current and possible future regimes.

In conjunction with this, a thorough comparable assessment of the existing Commercial Zones, Residential Zones (and associated Single Dwelling and Multi Unit Dwelling) Development Codes against the design principles is required, to understand what level of detail must be integrated into the Concept/Precinct Code. Further investigations into the proposed zone structures are also required.

WESTERN EDGE INVESTIGATION

The ACT Planning Strategy set the direction for a sustainable future Canberra. To establish a compact and efficient city, the Planning Strategy included the key target of providing up to 70 per cent of new housing within the existing urban footprint, with the remaining 30 per cent to be delivered as greenfield development. To provide for continuing greenfield development once Gungahlin and Molonglo Valley are developed, the Planning Strategy identified the need to investigate land to the west of Canberra's metropolitan area – the Western Edge.

Specifically, the Planning Strategy's Action 1.2.1 states:

- Undertake environmental, infrastructure and planning studies for the western edge of the city to identify suitable areas for:
  - Potential urban areas (excluding Central Molonglo)
  - Nature reserves
  - Environmental offset and potential environmental offset areas
  - The consideration of cultural and heritage values
  - Other uses, for example rural, broadacre, major infrastructure, transport and services.

The Western Edge investigation area is approximately 9,800 hectares in extent. It is bordered by the Murrumbidgee River, and the existing urban areas of Weston Creek, Molonglo Valley and Belconnen.

FUTURE PROOFING AND DEVELOPMENT STAGING

It is recommended that further investigations into the staging or future proofing of this development are undertaken. This is to ensure a viable community from the first day of residents moving in, not only once the whole development has been realised. Considerations include:

- Short term community/retail planning in key locations (group/ local centres) to establish community from day 1 whilst awaiting market readiness for ultimate mixed use need.
- Detailed cross sections/building frontage types to accommodate staged changes to transit corridors, i.e. Transit corridor preservation where cars/buses in early stages become light rail or other at a later stage.

HERITAGE ASSESSMENTS

It is recommended that revised and detailed heritage assessments are undertaken to ensure heritage values align with the proposed Concept Plan.

NEIGHBOURHOOD MASTER PLAN

Neighbourhood master planning should occur based on the suggested neighbourhoods and phasing of the overall development. This should include detailed density bands to ensure yield is achieved in each neighbourhood, and in the right locations. It should also be considered in a staged approach so that yields are realised at each phase of the project and are not back-loaded.

PLANNING REPORT AND CONCEPT PLAN

EPSDD to continue stakeholder consultation during future stages of the project. EPSDD to develop a Planning Report and Concept Plan which can support the SLA during the Estate Development Plan phase.

INTERFACES

Continue the planning of the interface with patch GG and the Molonglo River Corridor with close consultation with PCS. This includes the development of the key active transport links along the river corridor.

Continue consultation with the Arboretum to manage and develop the interface. This includes the investigating the placement of boundary roads for asset protection and specific landscaping provisions. This work should also ensure a clear and welcoming gateway to the Arboretum. The Arboretum has requested a blending of the two land uses, for example through the use of Arboretum trees as part of landscaping on the approach to the Arboretum.

CONSULTATION

It is recommended that EPSDD continue stakeholder engagement with the following groups as the planning for Molonglo 3 East progresses:

- PCS
- Arboretum
- Local community
- Aboriginal groups
- TCCS
- SLA.

12.2 TRANSPORT

LOCAL ROAD NETWORK

The local road network will need to be progressed in the next phase of works. This includes intersections with the Collector Road network. The road hierarchy and appropriate road classification should also be investigated in consultation with TCCS. This should include consideration for the Movement and Place framework.

MAIN STREET SLOW SPEED ENVIRONMENT INVESTIGATIONS

The configuration of the Main Street past the Group Centre should be investigated in further detail. This would include treatments to ensure a slow speed environment as well as pedestrian crossings and intersections/access to the Arboretum, schools and Group Centre.

PUBLIC TRANSPORT STAGING

A strategic plan for public transport across the site with consideration of phasing should be developed. This should consider the appropriate coverage of stops and services to ensure that the highest number of residents will be well serviced as the transit services are introduced.

This should also consider the options for progressing to a BRT and other future transport modes.

ACTIVE TRAVEL INTEGRATION

Close consultation with numerous agencies will be required to continue the active transport planning in the precinct. It is understood many agencies have been developing networks for the region, these should be integrated to provide one, consolidated network. Similarly, the following groups should also be consulted to ensure the active travel network meets their needs and expectations.

- SLA
- TCCS
- Arboretum
- EPSDD
- Equestrian groups
- Cyclist groups, e.g. Pedal Power
- Walking groups.

Investigations and further planning should also consider how to best provide for equestrian, cyclists and walking uses in the same corridor. In many instances, a separate equestrian trail may need to be developed, especially as the volume of cyclists and walkers increases.

TRAFFIC AND TRANSPORT MODELLING

The following tasks are recommended to undertake a detailed assessment of the overall road capacity requirements:

- Review and update the CSTM land use, road network and public transport inputs with latest development option to determine strategic volumes.
- Review the traffic movements per dwelling and discuss the implications of this assumption across Canberra planning projects, not only in the Molonglo Valley area.
- Undertake mesoscopic modelling of study area and surrounding arterial road network to determine forecast intersection turning volumes and identify any network capacity constraints.
- Undertake intersection assessment using SIDRA to inform internal intersection design and possible intersection upgrades to surrounding arterial network to mitigate increased demand.
- Review and understand the implications for modelling with uncertainty over the Western Edge Investigation Area. Review and update modelling as this planning becomes more established.

TEMPORARY AND FUTURE ARBORETUM ACCESS ROAD

Continue the development of the secondary access road to the Arboretum to meet their needs. This includes the progression of a temporary road in the short term, and a long term solution that is integrated with the Concept Plan.

It is understood that a discussion paper has been prepared to continue this inter-agency discussion. The options assessment for a temporary road should be progressed. Similarly, a plan for staging the road to realise the final Concept Plan should also be established.

EAST WEST ARTERIAL INTEGRATION

The planning for East West Arterial has been completed in parallel with this study. The intersections and underpasses within the Molonglo 3 East study area have been developed in consultation with this project. The outcomes of the East West Arterial project should be integrated into this precinct with further planning.

BINDUBI STREET AND WILLIAM HOVELL DRIVE INTERSECTION

Further work required including consultation between agencies to refine the proposed Bindubi Street and William Hovell Drive grade separated intersection. This includes consideration for the IPT travelling east to Canberra City and not north to Belconnen which the previous design accommodates.

Further transport modelling of this intersection should be included as the design progresses.

12.3 INFRASTRUCTURE

WATER SUPPLY MODELLING

The next phase of works will need to incorporate modelling of the water supply network, incorporating the provided urban design layouts. The modelling will inform on constraints such as available pressures and appropriate pipe sizing for the trunk network. Pressure zoning is to be further considered as an output of the future water supply modelling at the next level of design, to incorporate more details such as PRVs. Utilising this additional information, the proposed preliminary alignments provided as part of this study can be further developed to improve efficiencies. The modelling can be utilised to take the design to the concept level, and as a base that can be utilised for the detailed development and residential estate designs, while providing valuable inputs to project staging.

SEWER MODELLING

Phase 2 of the study should take the preliminary sewer EP calculations that were part of this study and develop the proposed catchments into a concept model. The modelling process can take the preliminary alignments and pipe sizing to the next level of detail, incorporating the terrain and producing long sections to confirm the viability of the alignments. This process can be more easily conducted with an iterative methodology that can improve efficiencies and refine the provided calculations. Having taken the sewer designs into a model, further detailed information can be built upon the results and the localised networks developed for the detailed designs. Further discussion regarding the southern development catchment viability will need to be taken forward with ESPDD with options on pumping to be considered and also connection points back into the network.

EARTHWORKS MANAGEMENT PLAN REVIEW

The previously conducted Earthworks Management Plan, dated August 2015, should be reviewed while incorporating the new urban design layouts. The new layouts have altered road alignments and revised development area boundaries which will change some of the findings from the previous report. As mentioned within this study, many findings will remain the same, in terms of ground conditions and the subsequent resolutions to these. However, in terms of earthworks volumes and the impacts of some of the geotechnical findings, the new layouts will cause discrepancies. As part of the future phase, a new cut and fill balance should be generated, incorporating some basic proposed grading for the development areas. The proposed roads, stormwater channels and infrastructure trenching will also impact the cut and fill volumes, and should be considered. The steep grades across the site will be a key constraint for construction and costs. Large areas of unsuitable materials, rock outcrops, extensive retaining walls and/or unbalanced cut or fill volumes can also greatly impact the construction costs and programme. Providing a strategy to deal with these issues early, as well as accurately determining the extent of these risks to the project should be resolved as part of the next phase.

WATER QUANTITY AND QUALITY STRATEGY DEVELOPMENT

The next phase of works should incorporate water quantity and quality modelling. The water quantity and the subsequent need for detention and retention for much of the site should be taken to the next level of detail, incorporating modelling of key design storm events. The detention and retention needs to meet the requirements outlined as part of this study, and build upon and refine the proposed storage areas.

The water quality modelling process should be undertaken in conjunction with the quantity modelling works, utilising the detention and retention areas where possible as detailed by the proposed strategy within this study. Localised solutions outlined by this study, such as raingardens and biopods can be detailed further and ideal locations determined by utilising MUSIC modelling. The water quality strategy can then be further expanded on as part of the next phase, and will also benefit from more consultation with key stakeholders. Inputs from EPSDD, TCCS, planning teams and landscape consultants will assist in taking the existing strategy to the next level of design that can then provide inputs to the detailed design of the development.

APPENDIX A

BACKGROUND REVIEW

ENVIRONMENT, PLANNING AND SUSTAINABLE DEVELOPMENT DIRECTORATE

MOLONGLO 3 EAST PLANNING AND INFRASTRUCTURE STUDY

BACKGROUND REVIEW

MAY 2020

CONFIDENTIAL

Question today
Imagine tomorrow
Create for the future

Molonglo 3 East Planning and Infrastructure Study
Background review

Environment, Planning and Sustainable Development Directorate

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REV	DATE	DETAILS
A	09/05/2020	Draft for internal review
B	04/06/2020	Issued to client

	NAME	DATE	SIGNATURE
Prepared by:		04/06/2020	
Reviewed by:		04/06/2020	
Approved by:		04/06/2020	

TABLE OF CONTENTS

1 INTRODUCTION

1.1 PURPOSE

WSP was engaged by the ACT Government - Environment, Planning and Sustainable Development Directorate (EPSDD) to undertake the Molonglo 3 East Planning and Infrastructure Study (the Project).

This report summarises the review of background information for the Project, as related to infrastructure, transport planning and transport modelling for the study area.

A supplementary background review was also prepared by Roberts Day for the Urban Planning context. This report is included as Appendix A.

1.2 MOLONGLO 3 EAST

1.2.1 STUDY AREA

A series of investigations and assessments were undertaken in 2003 and 2004 to determine the potential for future urban development in the Molonglo Valley District. Molonglo Stages 1 and 2 (located south/east of the Molonglo River) are currently being developed. Molonglo Valley Stage 3, located north of the Molonglo River, is the next area of development in the Molonglo district.

The first stage and suburb of development in Molonglo 3 is Whitlam, which is the land area to the west of Coppins Crossing Road (and the new John Gorton Drive). After Whitlam, the next suburbs of Molonglo 3 development are located east of Coppins Crossing Road (future John Gorton Drive extension), collectively referred to as Molonglo 3 East (the Project Study Area).

The Project Study Area is illustrated in Figure 1.1, being the area located east of John Gorton Drive, west of the National Arboretum and Tuggeranong Parkway, north of the Molonglo River and south of William Hovell Drive. The site is approximately 6.5 kilometres from the Canberra city centre.

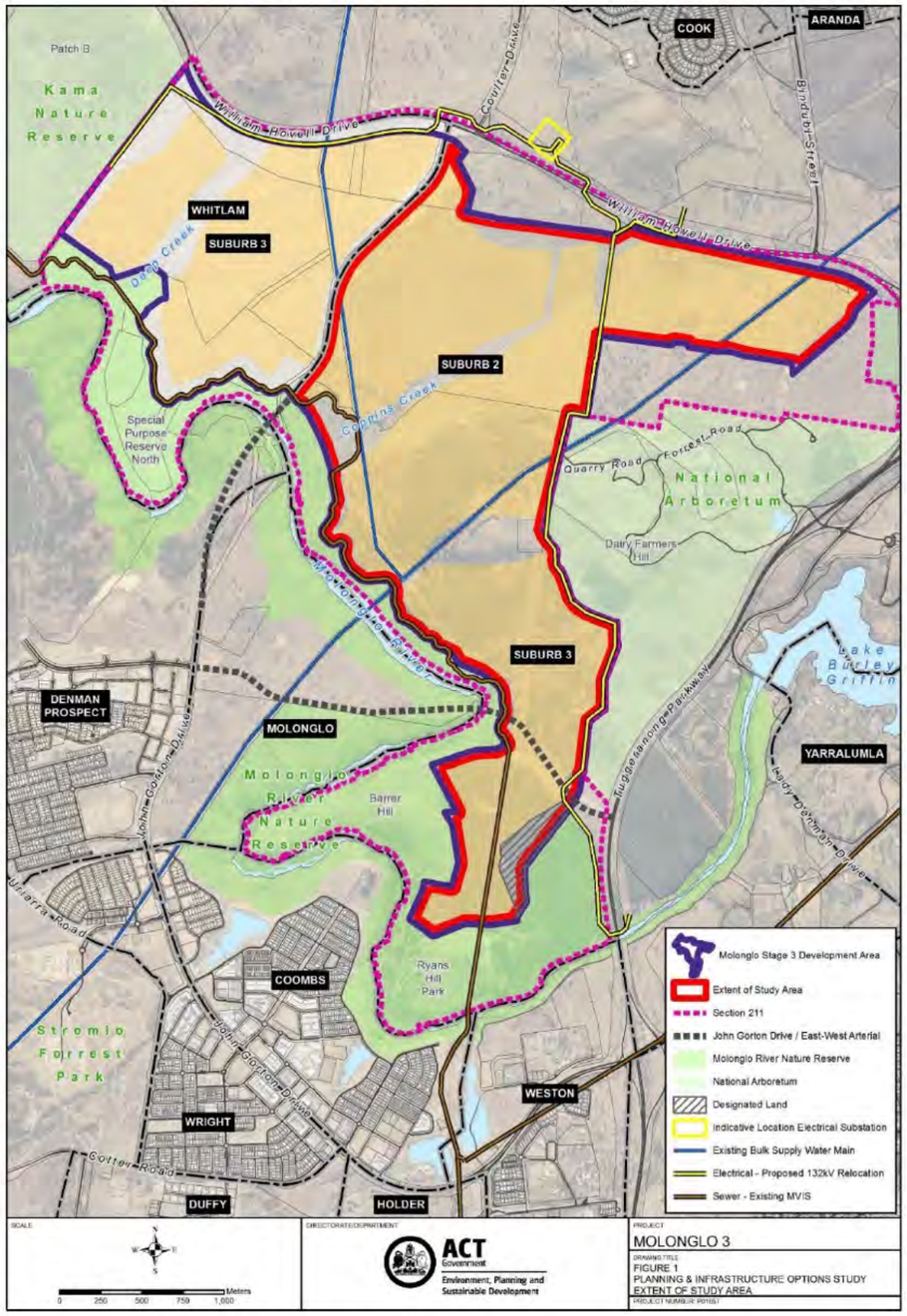
The developable area of Molonglo 3 East is approximately 480 hectares. Preliminary land use and future development conceptual planning has been undertaken for the study area to achieve a target of up to 9,900 dwellings based on the contours, topographic features, and known infrastructure constraints.

1.2.2 PLANNING AND INFRASTRUCTURE STUDY

The Project comprises the identification and analysis of planning and infrastructure options for the Study Area, integrating engineering infrastructure with planning and urban design objectives that will be incorporated into a statutory Concept Plan for the Study Area.

The key objectives of the Project are to:

1. Explore options to achieve an integrated planning, urban design and infrastructure outcome for Molonglo 3 East and to recommend a preferred outcome.
2. Identify the elements of the preferred outcome and based on planning principles and policies that set the planning, urban design and engineering infrastructure directions, describe how these will deliver an integrated design outcome for the area.
3. Clearly describe and illustrate the integrated planning and engineering requirements in sufficient detail to incorporate into a Territory Plan Statutory Concept Plan.



Source: Project Brief for the Molonglo 3 East Planning and Infrastructure Study (EPSDD, 2019)

Figure 1.1 Study location

1.3 BACKGROUND INFORMATION

The following background information has been reviewed and summarised in this report:

Policy and planning context	ACT Planning Strategy 2018 (ACT Government, 2018)
	ACT Climate Change Strategy 2019-25 (ACT Government, 2019)
	Canberra's Living Infrastructure Plan: Cooling the City (ACT Government, 2019)
	Moving Canberra 2019-2045 – Integrated Transport Strategy (draft) (Transport Canberra and City Services (TCCS), 2019)
	ACT Movement and Place Framework (WSP for TCCS, 2018)
Molonglo Valley and Molonglo 3 East	Structure Plan – Molonglo and North Weston (ACT Parliamentary Council, 2010)
	Molonglo Valley Stage 3 – Planning and Design Framework (ACT Government, 2019)
	Molonglo 3 Stage 2 Proof of Concept (Roberts Day, 2019)
	Whitlam Estate Map (Suburban Land Agency, no date)
Infrastructure studies	Molonglo River Reserve – Reserve Management Plan 2019
	Molonglo 3 Water Supply Strategy Draft Concept Design Report (GHD, 2016)
	Molonglo 3 Sewer Master Plan (GHD 2014)
	Molonglo 3 Neighbourhoods 1 & 2 Trunk Sewerage Concept Design Report (GHD 2016)
	Preliminary Geotechnical Investigation and Earthworks Management Strategy Final Report (Indesco 2016)
Standards and guidelines	Guidelines for Light Rail Planning: 01 Corridor Preservation (TCCS, 2019)

The following background documents were noted as being minor in nature or focussed on a different discipline (e.g. urban development standards, stormwater management):

- Molonglo Valley Staging (Environment and Sustainable Development, 2012)
- Variation to the Territory Plan No 306 (Environment and Sustainable Development, no date)
- Housing Choices Discussion Paper (EPSDD, 2017)
- Molonglo Stage 3 Community, Sport and Recreation Facility Needs assessment (GHD, 2014)
- Molonglo Commercial Centre, ACT – Market Potential Assessment (Location IQ, 2018)

2 POLICY AND PLANNING CONTEXT

2.1 ACT PLANNING STRATEGY 2018

The ACT Government's *ACT Planning Strategy 2018* is the key strategic document for managing growth and change in the ACT and coordinating the development of infrastructure, transport, and community facilities. Figure 2.1 illustrates the planned growth of the ACT.

The Strategy sets out a vision for development of the city: *To be a sustainable, competitive and equitable city that respects Canberra's unique legacy as a city in the landscape and the National Capital, while being responsive to the future and resilient to change.*

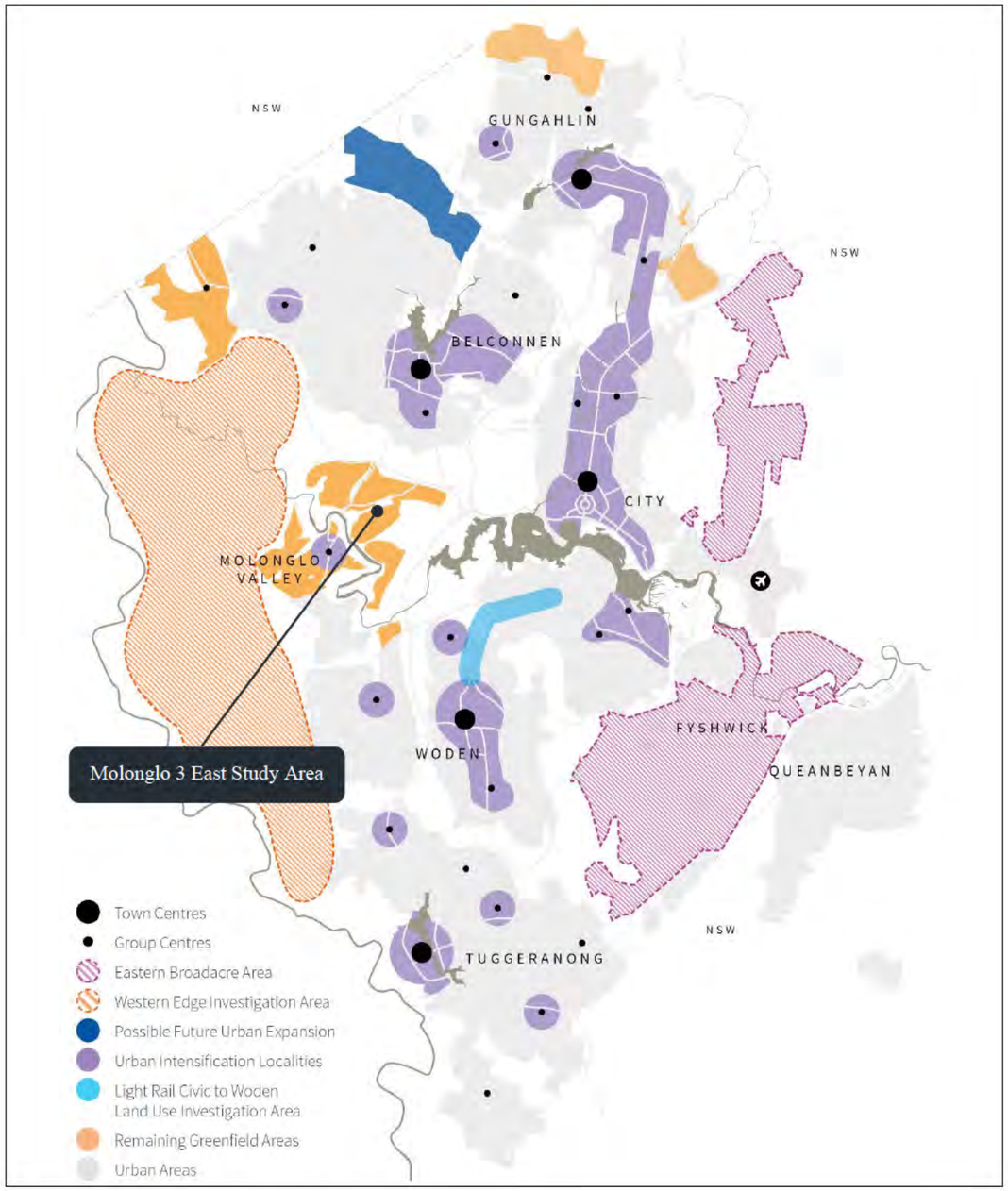
Five key themes, supported by strategic directions and action items, are established for delivery of the vision. Of those, the theme of "Accessible Canberra" highlights the need to pursue:

1 Enhanced accessibility by better integrating land use and transport.

2 Delivering well designed, safe, and sustainable streets and public spaces to create walkable neighbourhoods that are inclusive and fair.

3 Create a better experience for walking and cycling into and within the city centre and our town centres.

These directions can be applied at Molonglo 3 East.



Source: ACT Planning Strategy 2018 (ACT Government, 2018)

Figure 2.1 ACT growth map

2.2 ACT CLIMATE CHANGE STRATEGY 2019-25

The strategies and actions the ACT Government has proposed to reduce emissions and prepare for climate change are documented in the *ACT Climate Change Strategy 2019-25*. The strategy contains seven goals supported by 23 actions for the transport sector. The goals are:

1 Support sustainable travel choices.

2 Plan for a compact and efficient city.

3 Increase use of public transport.

4 Encourage active travel.

5 Reduce car use.

6 Smarter use of roads.

7 Encourage zero emissions vehicles.

Whilst the actions are assigned to Directorates within the ACT, a number could be adapted at the local level and considered within the planning of Molonglo 3 East.

RE-THINKING TRANSPORT

Transport is expected to account for more than 60% of emissions from 2020. Reducing emissions from transport is therefore a high priority and presents one of the biggest challenges in meeting our 2025 target and achieving net zero emissions in the longer term. Responding to this challenge will require fundamental changes in how we plan and deliver transport networks and how we choose to travel.

- (ACT Government, 2019)

2.3 CANBERRA'S LIVING INFRASTRUCTURE PLAN: COOLING THE CITY

The ACT Government has set a development target of 70 percent within the existing urban footprint. This urban density needs to be balanced with a natural environment, green spaces, and trees.

The actions in *Canberra's Living Infrastructure Plan: Cooling the City* (ACT Government, 2019) will ensure the city is planned, designed, constructed, and managed in a way that values, incorporates, and protects natural assets. The Plan also recognises the need to be proactive in sustaining Canberra's existing natural assets.

A key goal of the Plan is to adopt and progress towards targets by 2045 that provide Canberra's urban footprint with:

— The equivalent benefits of a 30% tree canopy cover

— 30% permeable surfaces

In implementing the targets, the Government will prioritise canopy cover from trees, and permeable surfaces from grass and ground cover beds, as the best 'value for money'. Alternative treatments to meet the equivalence of the tree canopy cover and permeable surfaces targets may include green roofs and walls, wetlands and rain gardens, water features and fountains, watered grass, shrub beds, and climbers on structures.

The ACT's 30 percent permeable surfaces target highlights the importance of reducing urban run-off, and that stormwater is a valuable resource, to be used wherever possible to hydrate the ground, sustain vegetation, and reduce waterway pollution.

As part of the corridor planning for the Bindubi Street extension through Molonglo 3 East, the tree canopy cover and permeable surface requirements will need to be identified.

2.4 MOVING CANBERRA 2019-2045 – INTEGRATED TRANSPORT STRATEGY (DRAFT)

2.4.1 OVERVIEW

Moving Canberra 2019-2045 (Transport Canberra and City Services, draft 2019) presents the long-term integrated transport strategy for Canberra. The Vision for transport is for an experience that is "modern, sustainable, integrated and provides real alternatives to driving" and is supported by six key principles:

1 An integrated network.

2 Transport that is part of our city.

3 Meeting our customers' needs.

4 Becoming Australia's cycling capital and most walkable city.

5 Achieving Net Zero emissions transport.

6 Ensuring Canberra is future ready.

This Vision leads to seven investment principles that guide the proposed activities of Transport Canberra and City Services (TCCS) in relation to the transport network: Customer focused; Competitive; Inclusive; Safe; Sustainable; Integrated; and Healthy.

The vision principles and investment principles provide high level guidance on the outcomes expected to be achieved for the transport network of Molonglo 3 East.

2.4.2 STRATEGIC TRANSPORT CORRIDORS

TCCS has identified 14 strategic transport corridors within Canberra (Figure 2.2). Molonglo 3 East is bounded by:

— Corridor 3: Western Connector

A north-south strategic road corridor, linking Gungahlin-Weston Creek-Tuggeranong and incorporating Tuggeranong Parkway.

— Corridor 4: Western Transit Corridor

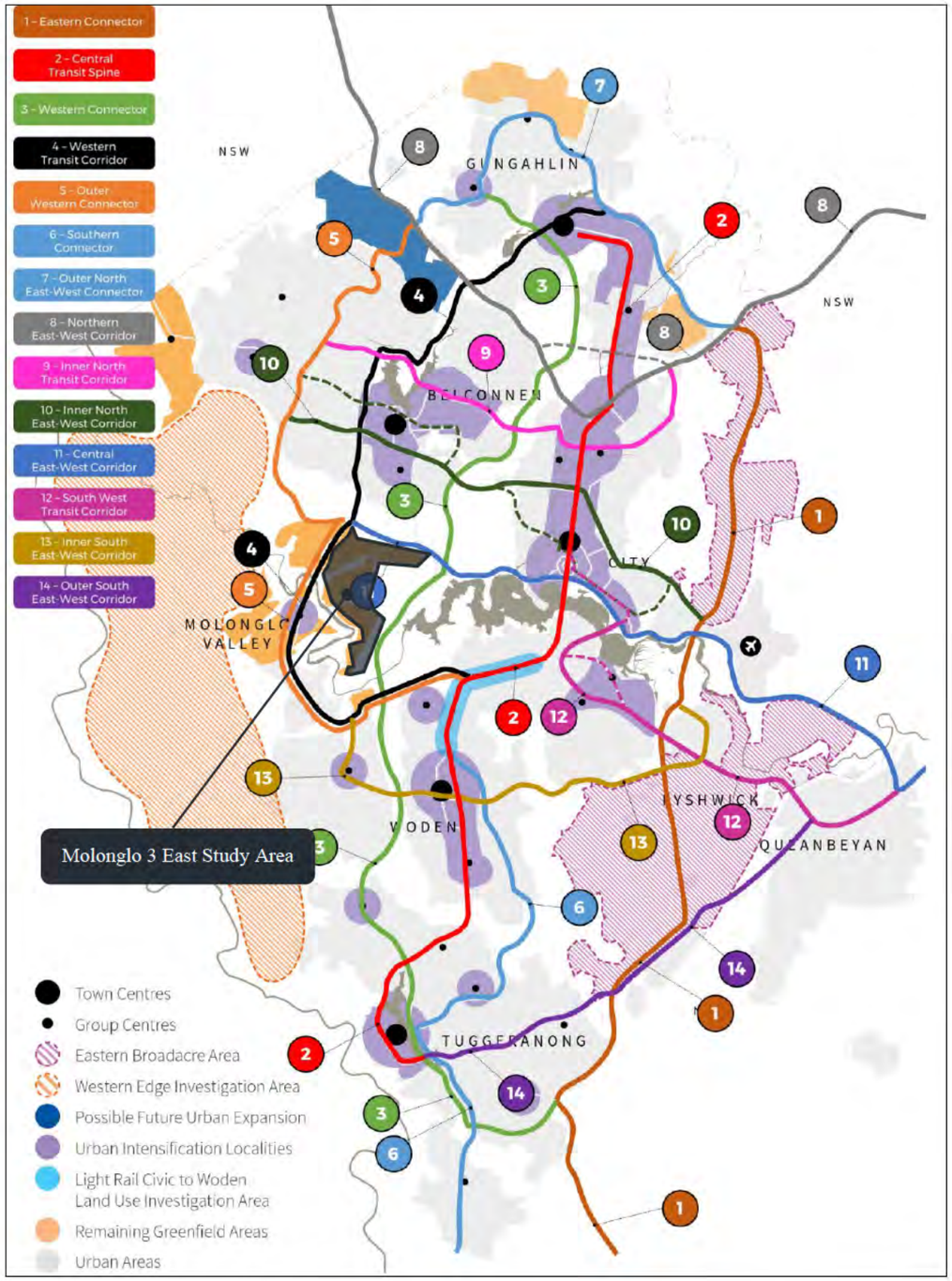
A north-south strategic transit corridor, linking Gungahlin-Belconnen-Molonglo Valley-Curtin and incorporating John Gorton Drive.

— Corridor 5: Outer Western Connector

A north-south strategic road corridor, linking Belconnen-Molonglo Valley-Curtin and incorporating William Hovell Drive and John Gorton Drive.

— Corridor 11: Central East-West Corridor

An east-west strategic road corridor, linking Molonglo Valley-Civic-Airport-Queanbeyan and incorporating William Hovell Drive.



Source: Transport Canberra and City Services (2019)

Figure 2.2 Canberra's 14 strategic transport corridors

2.4.3 INFRASTRUCTURE AND ROUTE PLANNING

The light rail network is proposed to be expanded to include the future stages of:

- Woden to Molonglo Valley (construction commence in 15+ years)
- City to Molonglo Valley (construction commence in 15+ years)

The future rapid bus network is proposed to include R10 Molonglo-City and a future link between Molonglo and Belconnen (Figure 2.3)

Principal cycling routes within the Molonglo Valley area include C5 Belconnen-Tuggeranong via Weston Creek, and the future C10 City-Molonglo route (Figure 2.4).

The ACT freight network is planned to include Tuggeranong Parkway as part of the Future Orbital Freight Network, with William Hovell Drive and John Gorton Drive being approved B-Double routes (Figure 2.5).

An indicative infrastructure investment plan is presented within the Strategy. Short term (0-5 year) actions include:

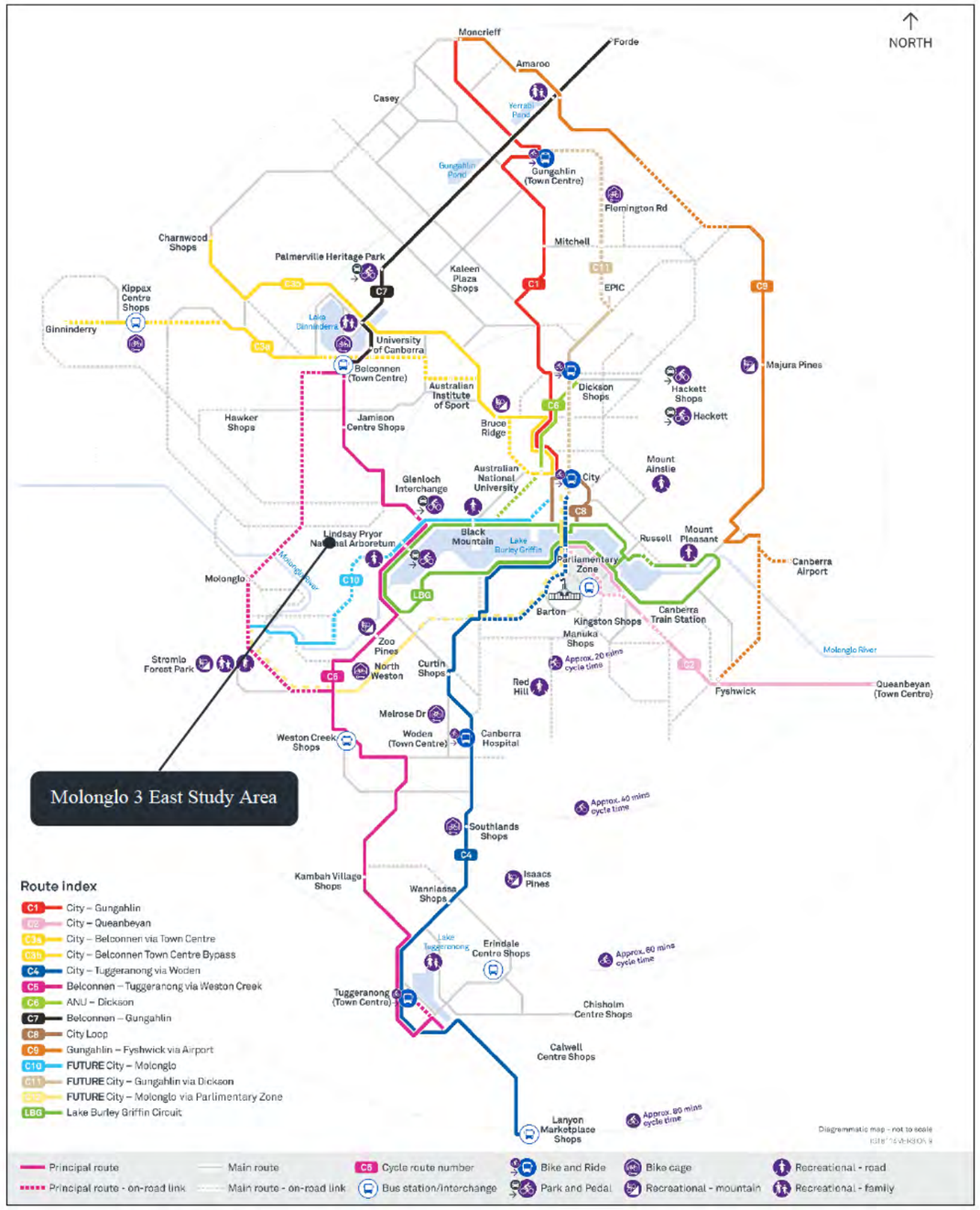
- IS-11: William Hovell Drive duplication (John Gorton Drive to Drake Brockman Drive)
- IS-12: John Gorton Drive Stage 3 (including new bridge over Molonglo River)

Medium term (5-10 year) actions include:

- IM-09: Bindubi Street extension (John Gorton Drive to Bindubi Street)
- Intersection improvements at Tuggeranong Parkway / Lady Denman Drive

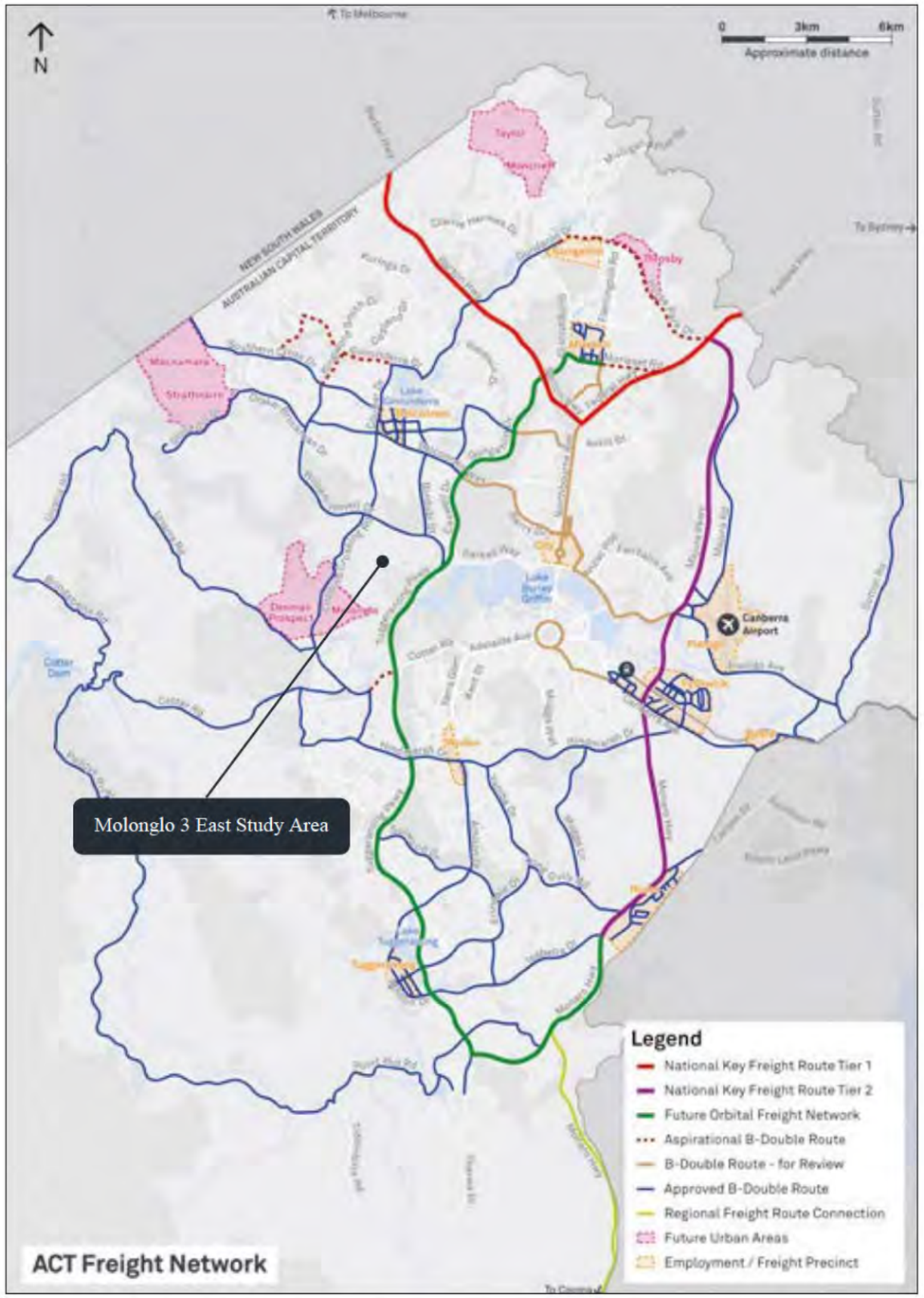
Source: Moving Canberra 2019-2045 (TCCS, draft 2019)

Figure 2.3 Future RAPID bus network *(note: network currently under revision)*



Source: Moving Canberra 2019-2045 (TCCS, draft 2019)

Figure 2.4 Canberra cycle routes – future principal and main off-road routes



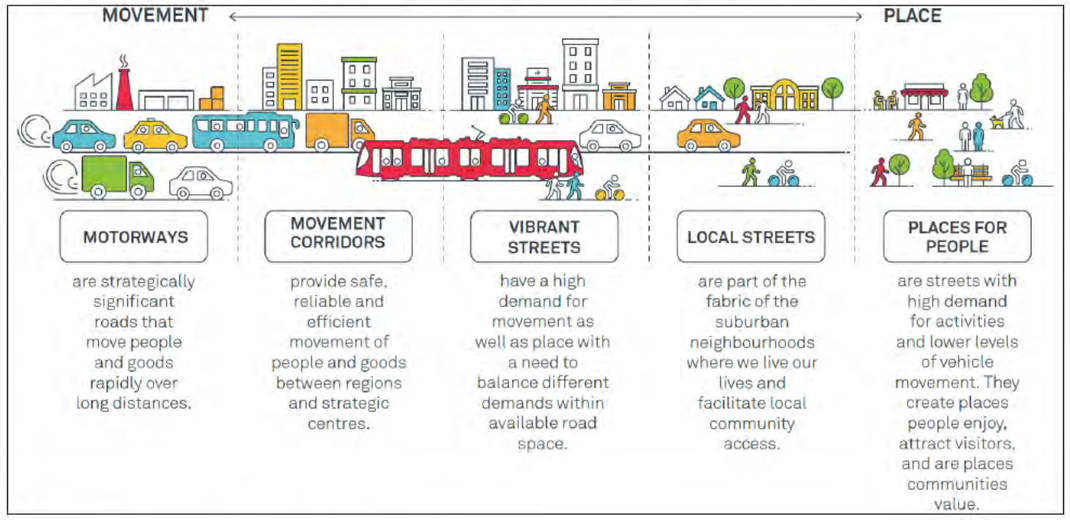
Source: Moving Canberra 2019-2045 (TCCS, draft 2019)

Figure 2.5 ACT freight network

2.5 ACT MOVEMENT AND PLACE FRAMEWORK

The strategic thinking within *Moving Canberra 2019-2045* (TCCS, draft 2019) is underpinned by the *ACT Movement and Place Framework* (WSP for TCCS, 2018), which provides a basis for balancing the dual function of streets: moving people and goods, and enhancing the places they connect (Figure 2.6).

There is opportunity to apply the Framework to the transport network of Molonglo 3 East.



Source: Moving Canberra 2019-2045 (TCCS, draft 2019)

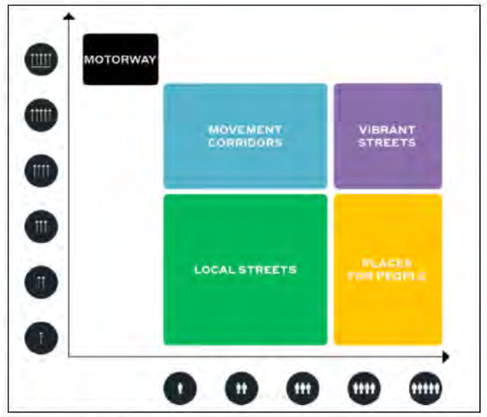
Figure 2.6 The ACT Movement and Place Framework

The Framework shown in Figure 2.7 defines the Canberra road types in a matrix based on the balance of the strategic movement and place functions.

The position of a road on the movement axis in the Movement and Place Framework is determined by the functional role of the road segment within the network. Typically, higher movement road segments will support longer journeys for a greater number of travellers. The journeys for all customers are considered i.e. motorists, freight drivers, public transport passengers, cyclists, and walkers. Guidance to this definition for all modes is provided in Figure 2.8.

The road types described in the Movement and Place Framework do not replace the current ACT functional road classifications. It strategically broadens these movement definitions to also acknowledge the activity centres these roads support and the placemaking function they provide.

Pedestrian activity within the road corridor is a key indicator of the strategic significance of "place". This pedestrian activity is a function of the attraction of the adjoining land uses, design interface between the land use and the road corridor, and the journey mode share. Figure 2.9 provides guidance on the strategic levels of placemaking within the Framework.



Source: ACT Movement and Place Framework (WSP for TCCS, 2018)

Figure 2.7 Road planning framework for Canberra

MOVEMENT SIGNIFICANCE	↑	↑↑	↑↑↑	↑↑↑↑	↑↑↑↑↑
Typical journey catchment	<1km	1-3km	3-5km	5-10km	>10km
Traffic functional classification	Rear Lane	Access Street	Minor Collector	Major Collector	Arterial / Trunk
Public transport route	Feeder	Local	Frequent local	Rapid transit	Light rail
Cycling route	Local access	Local route	Community route	Primary route	
Walking route	Local route	Local route	Principal route	Recreational trail	
Freight route	No access	Local access	Tier 2 freight routes		National freight routes

Source: ACT Movement and Place Framework (WSP for TCCS, 2018)

Figure 2.8 Movement significance guide

PLACE SIGNIFICANCE					
Importance of centres	Neighbourhood	Local Centre	Group Centre	Town centre	City Centre
Magnetism	Local access	Local destination	Group destination	City wide destination	National significance destination
Pedestrians	Low activity	Moderate activity	High activity	Significant activity	City significant activity
Other site specific	Homogenous land uses	Local retail, school/childcare, local markets	Larger school / hospital / place of worship	University / large hospital / civic space	Special events

Source: ACT Movement and Place Framework (WSP for TCCS, 2018)

Figure 2.9 Place significance guide

2.6 EXISTING INFRASTRUCTURE CONSTRAINTS

Management of stormwater, specifically the quality due to the environmental receptor area of the Molonglo River and preservation of the river corridor is key to the success and sustainability of the future development of Molonglo 3. The preservation also lends itself to the activation of the river corridor and linking previous stages of development along the corridor to the public such as the Namarag Reserve (Molonglo Special Purpose Reserve).

There are 5 significant drivers in the infrastructure considerations that have previously been investigated and these will be further tested through this next phase in collaboration of the development and connectivity to the wider communities. An appreciation of sensitive ecological and heritage features across the site such as mature woodlands, Yellow Box Red Gun Grassy Woodlands, Rocky areas habitat areas Black Gun Trees etc will need to be carefully considered in the infrastructure layouts. It is vital that the infrastructure is planned and developed in collaboration of the urban design and transportation corridors as all three elements go hand in hand.. These include:

Topography (earthworks) across the site – maintaining and utilising as much natural contouring as possible to fit within the precinct development as can be seen by the contour plan noted on Figure 2.12.

Water Supply – this will be a constraint that would have a significant cost to relocate the existing DN600 and DN900 MSCL main and the option to relocate or leave insitu will be explored and therefore incorporated into the overall design. It is understood that there is sufficient supply capacity for the development demands. Water supply is proposed to be taken from the Weetangera Reservoir to the north of the development and is likely to include new mains supply in addition to the existing mains within the current site boundary.

Sewerage supply – It is understood that there is sufficient capacity within the existing trunk infrastructure of the Molonglo Valley Interceptor Sewer (MVIS) for the development with connection points located in the south-west boundary of Molonglo 3 development. as noted on Figure 2.10. The adjacent Whitlam development as has made provision for future connections along its eastern boundary for the Molonglo 3 Development.

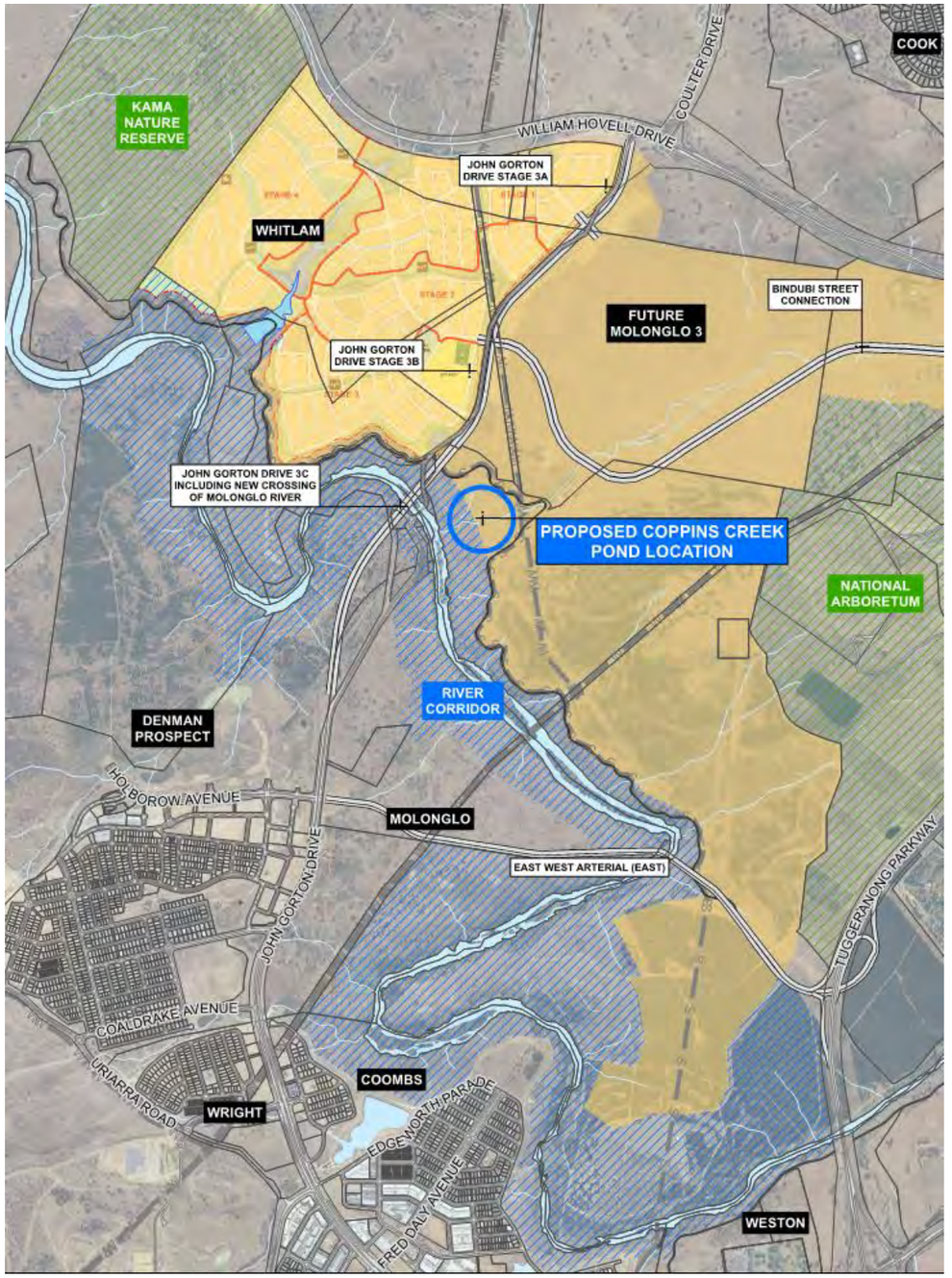
We will build on the current Concept Design works undertaken to date which will form the basis considerations for the development of Molonglo 3. The project will adopt PVC sewer pipes up to 375mm dia and Vitrified Clay (VC) Pipes for larger sizes. Pump stations will be adopted to accommodate rising mains or pressurised supply where gradients do not allow gravity fed supply. Ideally gravity systems will be preferred as this will reduce construction and ongoing maintenance costs associated with pump stations etc.

Electricity – Existing 132kV overhead supply is due to be undergrounded and realigned by Evoenergy which should significantly reduce the existing easement corridors and as such enable additional area to be activated as noted on Figure 2.10.

Stormwater – careful masterplanning and co-ordination of stormwater infrastructure with road corridors and precinct planning will need to be considered to ensure environmentally sensitive areas are preserved – ponds / reservoirs will be strategically located to work with the above mentioned considerations of topography and existing onsite infrastructure and be located outside the identified “River Corridor” boundary as noted on Figure 2.10.

A single end-of-line treatment system such as lakes and reservoirs may be a better solution to multiple ponds and rain gardens throughout the development due to ongoing maintenance aspects. However all options will be considered including constructability and cost impacts associated with large dam structures such say the Whitlam Dam structure. Options to integrate WSUD elements / measures as shown in Figures 2.13 and 2.14 will be considered where urban design meets infrastructure and all features need to consider the topography which may suit several smaller lakes which can be used as community hubs / features within the urban landscape footprint.

All existing and proposed infrastructure will have maintenance easements associated with each individual element and as such careful planning and urban design co-ordination will be essential to minimise on “dead space” to maximise on effective land use.



Source: ACT Government - Project 02011

Figure 2.10 Coppins Creek Pond Location

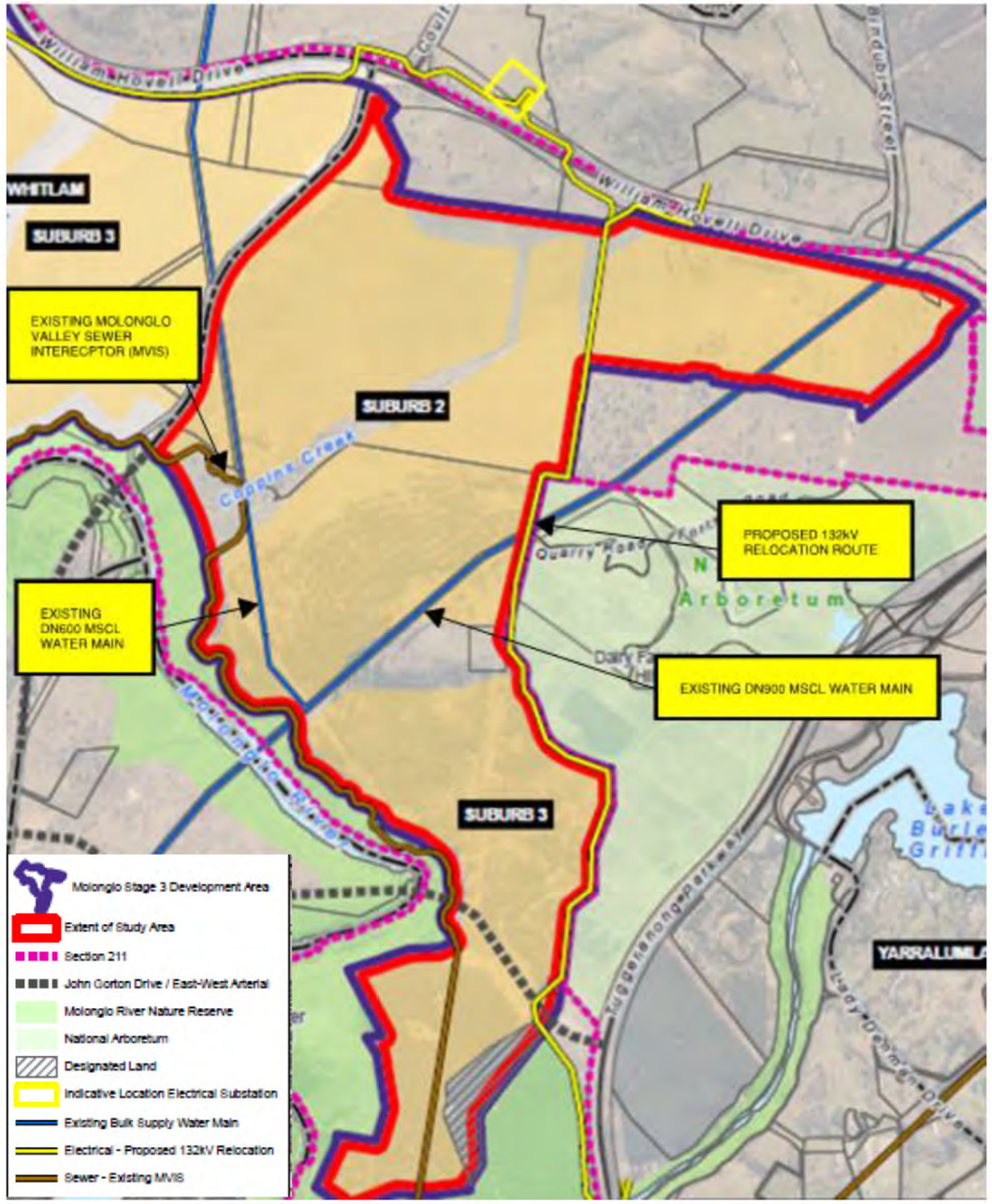
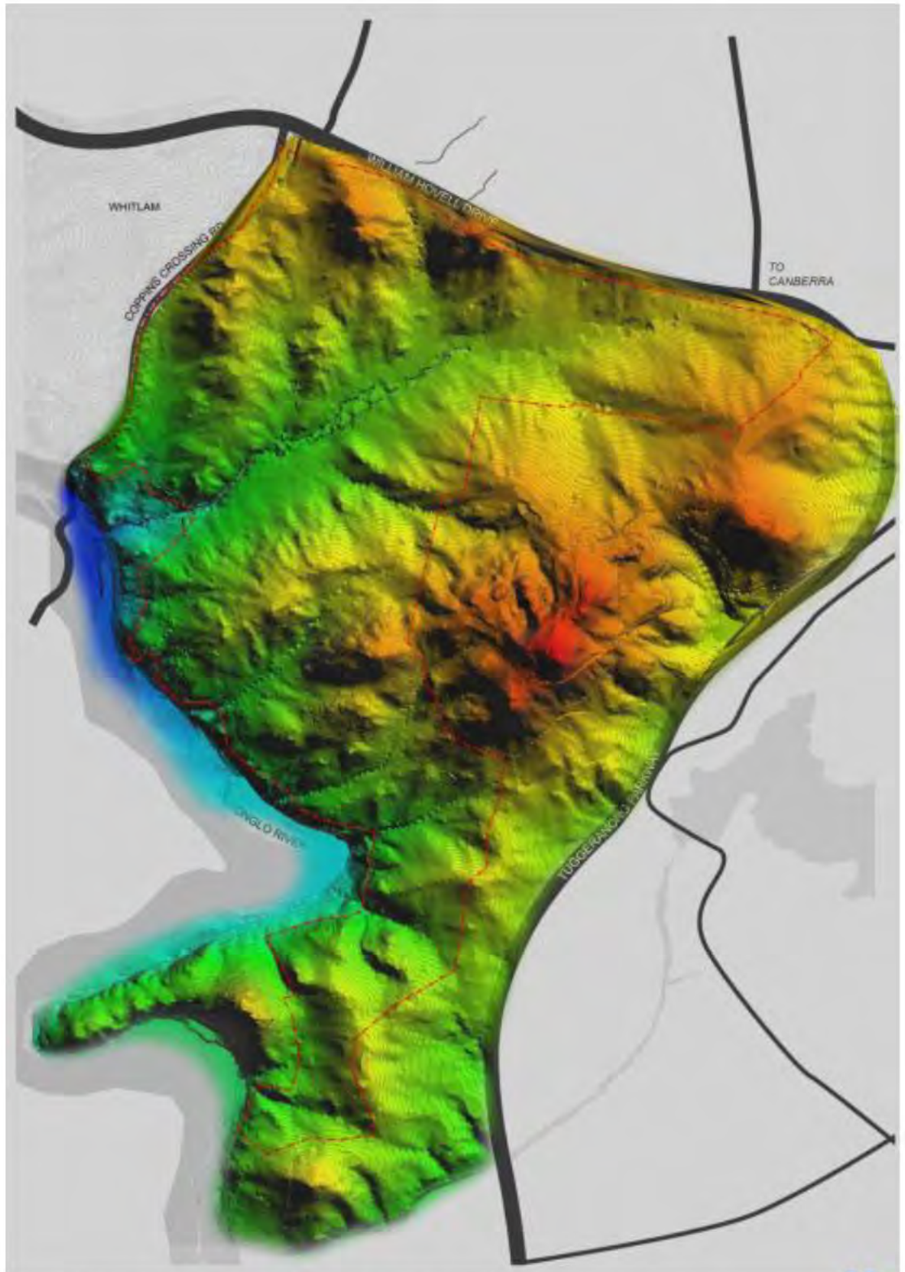


Figure 2.11 Existing Trunk Infrastructure



Source: Molonglo 3 Stage 2 Proof of Concept (Roberts Day 2019)

Figure 2.12 Existing Topography

Section drawing of a rain garden

http://lmgtfl.com/whats-a-bioswale

Figure 2.13 Typical Rain Gardens / WSUD Features

Figure 2.14 Typical Inner Urban Lake / Wetlands

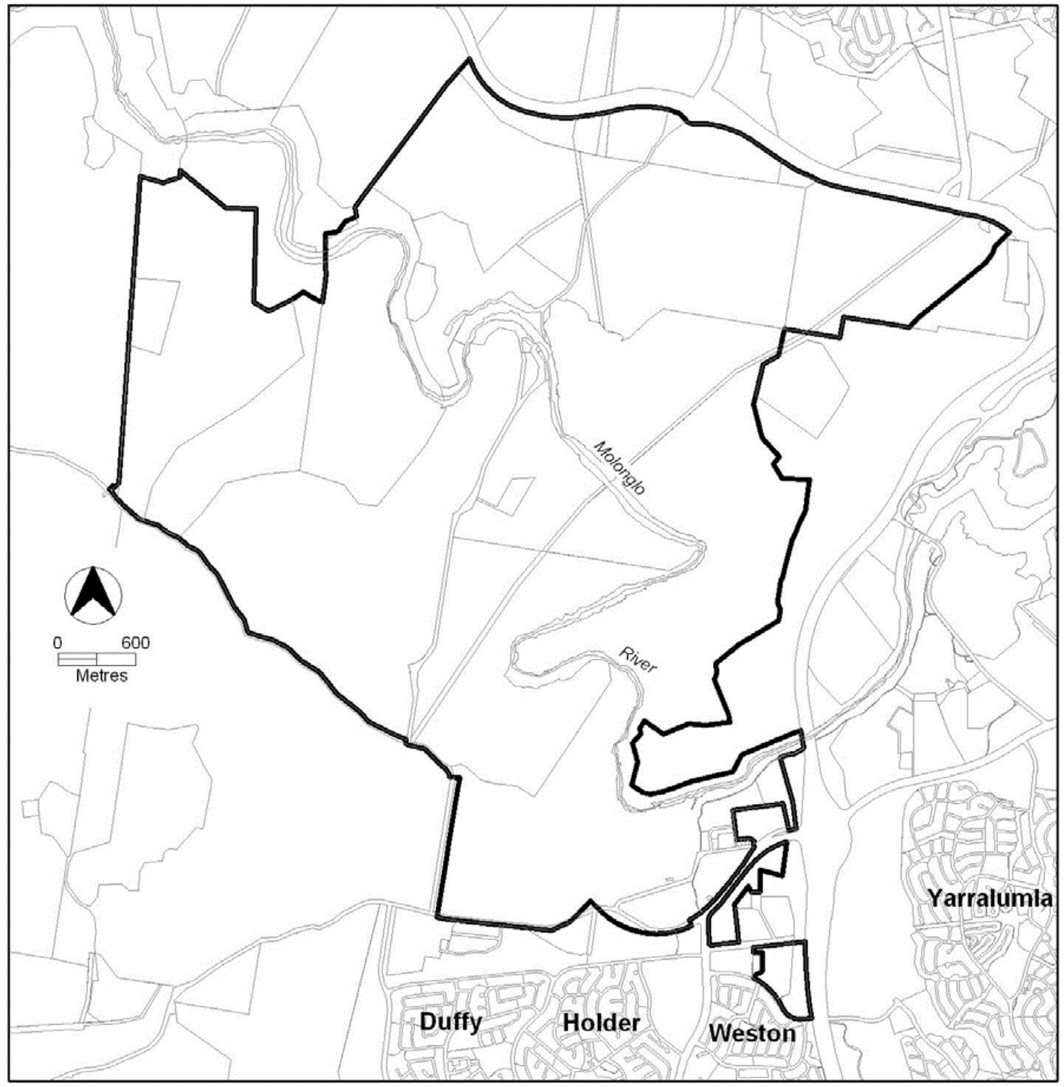
3 MOLONGLO VALLEY AND MOLONGLO 3 EAST

3.1 STRUCTURE PLAN – MOLONGLO AND NORTH WESTON

The *Molonglo and North Weston Structure Plan*, as authorised by the ACT Parliamentary Council, 2010, sets out the principles and policies that apply to the Molonglo and North Weston future urban area in accordance with section 91 of the *Planning and Development Act 2007*. The Structure Plan applies to future urban areas within the area shown in Figure 3.1.

Principles and policies for development of the future urban areas include:

- Neighbourhoods will be planned to encourage walking and reduce vehicle dependence, with a legible and permeable hierarchy of roads, conveniently located commercial and community facilities, a network of open spaces, an on and off-road system for pedestrians and cyclists where appropriate, and provision for accessible public transport
- Road and other transport links will provide for high levels of accessibility to areas within Molonglo and North Weston and to surrounding areas. This will be achieved partly through links to the existing arterial road network through, and surrounding, the development
- Current and projected traffic flows in adjacent arterial roads will be considered in the design of the road network for Molonglo and North Weston
- Major roads will be located on less steep land. Where appropriate, the width of the road reservation is to allow for the retention or establishment of large trees to visually reinforce the major route as seen from distant vantage points.
- The north-south Molonglo arterial is to connect Coulter Drive and/or Bindubi Street in the north and to Cotter Road in the south. The road will also form part of a major public transport route for the city.
- An east-west arterial road is to connect the Molonglo arterial road at the proposed group centre to the Tuggeranong Parkway
- The north-south and east-west arterials are to be generally designed as urban boulevards, with service streets and address frontages. Regular cross-streets are to be provided, consistent with traffic safety and efficiency, to minimise the effect of the arterials as a barriers between neighbourhoods.
- At least two road crossings of the Molonglo River are to be provided, one for the north-south arterial road and the other for the east-west arterial road
- An interconnected (generally grid-based) street system is to be provided which facilitates a choice of routes and legible way-finding
- The road network is to be appropriately landscaped, consistent with its function and character
- The road layout is to be designed to expand the inter-town bus network by creating an orbital system which uses the north-south arterial to link to surrounding districts (e.g. Belconnen, Weston Creek, Woden Valley, the City)
- The Intertown Public Transport (IPT) route will be investigated further to possibly connect to Bindubi Street to the north, and to Adelaide Avenue via Cotter Road to the south

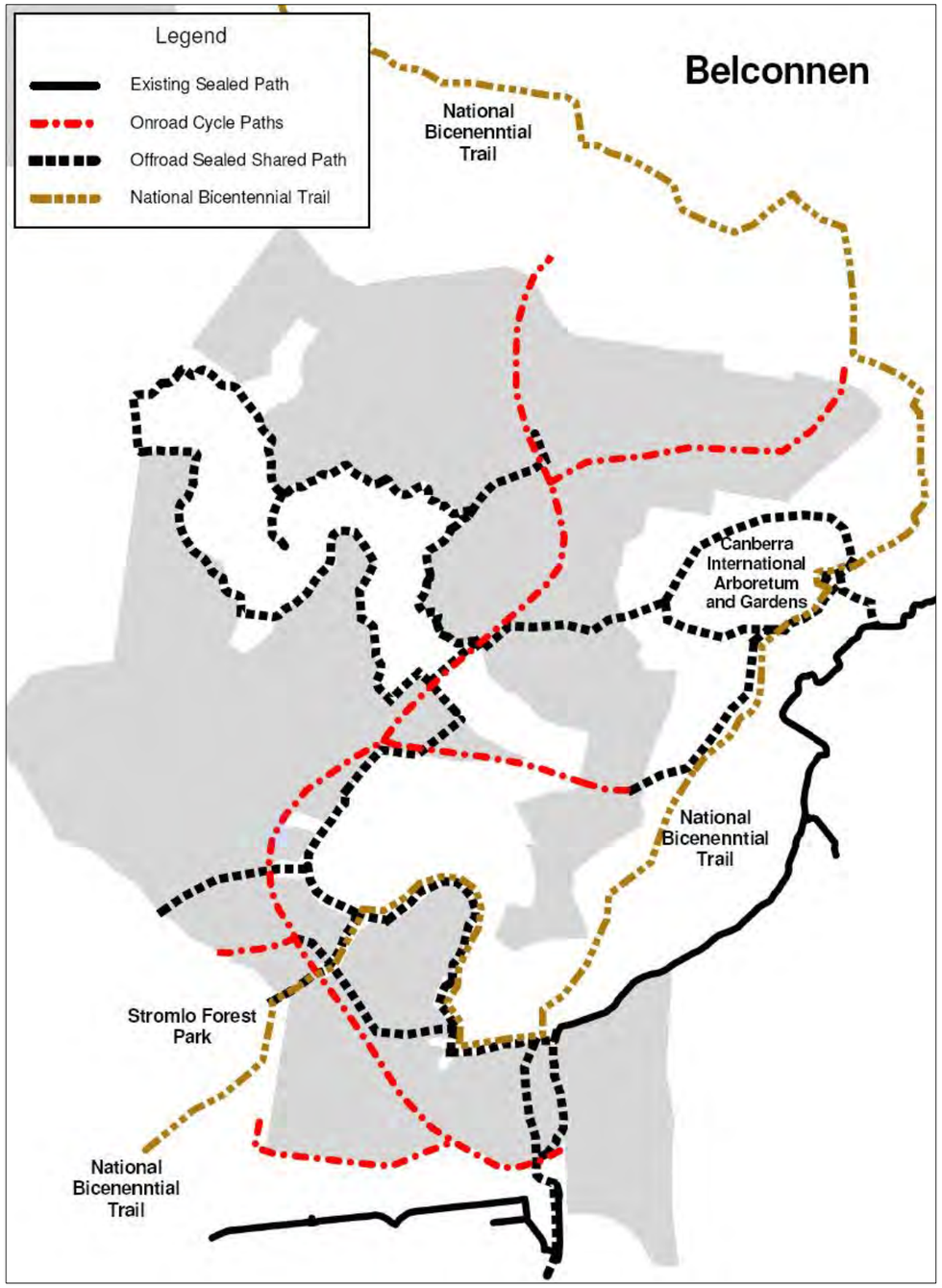


Source: Structure Plan – Molonglo and North Weston (ACT Parliamentary Council, 2010)

Figure 3.1 Structure Plan area for Molonglo and North Weston

In relation to shared paths and cycling routes, principles and policies include:

- Shared paths (bicycle/pedestrian) will provide access to key features within Molonglo and North Weston including the river corridor, group centre and small group centre, local centres, Stromlo Forest Park and the Canberra International Arboretum and Gardens, generally in accordance with Figure 3.2. The paths will also connect to existing shared paths that link Molonglo with the City and the districts of Belconnen, Weston Creek and Woden Valley.
- Provision will be made for open space links between Stromlo Forest Park, Molonglo River corridor, and the Canberra International Arboretum and Gardens suitable for equestrian, cycling and pedestrian use
- That part of the National Bicentennial Trail between Uriarra Road in the west to the concrete causeway over the Molonglo River in the east will be replaced by a suitably located mixed use off-road trail, linking Stromlo Forest Park and the Canberra International Arboretum and Gardens.
- Bridle trails are to be incorporated into the development where required. Where provided, mixed use trails will link to existing equestrian facilities including the National Bicentennial Trail, the Pegasus Disabled Riding School, Forest Park Riding School, the public Equestrian Park in Yarralumla, pony clubs and agistment facilities. The trails will also connect to recreation trails in Canberra International Arboretum and Gardens and Stromlo Forest Park.



Source: Structure Plan – Molonglo and North Weston (ACT Parliamentary Council, 2010)

Figure 3.2 Indicative trunk shared paths (including National Bicentennial Trail) and on-road cycling routes

3.2 MOLONGLO VALLEY STAGE 3 – PLANNING AND DESIGN FRAMEWORK

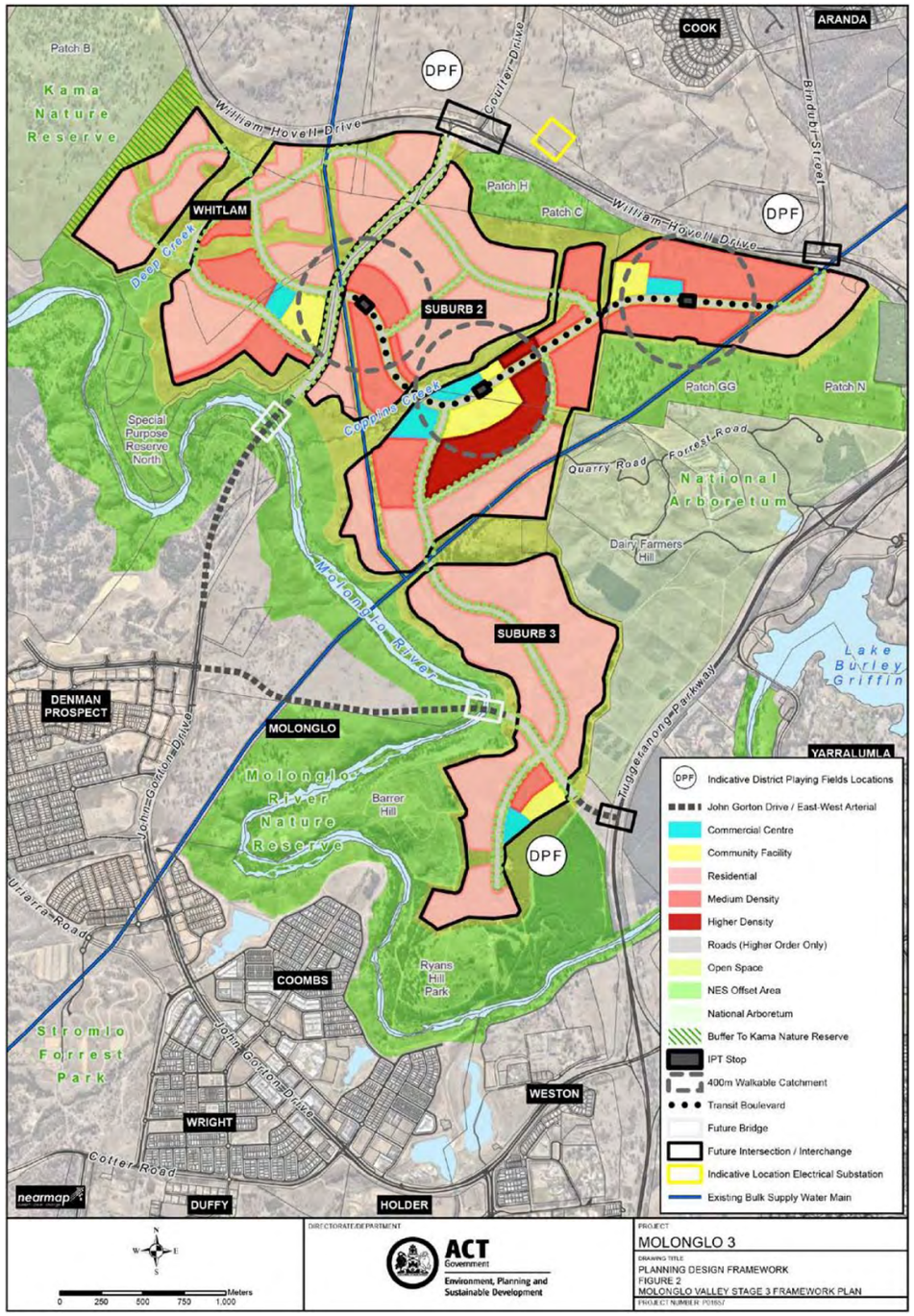
3.2.1 OVERVIEW

The ACT Government's 2019 *Molonglo Valley Stage 3 – Planning and Design Framework* is a long-term high-level plan to guide future detailed planning and development within Molonglo Stage 3. Figure 3.3 illustrates the Framework Plan, and transport is specifically discussed in the elements of:

- Road network
- Public transport network
- Intertown public transport corridor
- Active travel network
- Equestrian network

Planning principles are also presented for the following elements, which incorporate more minor transport planning considerations:

- Dwellings
- Commercial centres
- Schools
- Community facilities
- District playing fields
- Other recreation facilities
- Public spaces and parks
- Landscape, setting, topography, and trees
- Requirements of the National Capital Plan
- Bushfire
- Heritage
- Buffer to Kama Nature Reserve
- Molonglo River reserve interface
- NES Patch GG and Patch N interface
- National Arboretum Canberra interface
- Deep Creek corridor
- Coppins Creek corridor
- Molonglo River reserve to Dairy Farmer's Hill corridor
- Trunk infrastructure and other requirements



Source: Molonglo Valley Stage 3 – Planning and Design Framework (ACT Government, 2019)

Figure 3.3 Molonglo Valley Stage 3 Framework Plan

3.2.2 ROAD NETWORK

The higher order road network is to generally align with that indicated in the Framework Plan (Figure 3.3). Planning principles for the road network include:

- A 60m wide reservation should be provided for the East-West Arterial, suitable for a dual carriageway arterial road
- John Gorton Drive will function as a multi-nodal arterial road (serving public transport, active travel, and general traffic) and be a designated B-double freight route
- Ensure that a functional road hierarchy is incorporated into the development of all neighbourhood areas
- Design streets so that roads and verges performs their designated functions in the street network
- Maintain access to the Molonglo Valley Interceptor Sewer track for fire access, Parks and Conservation Service management and for ICON Water service vehicles
- Subdivision planning and the road network must take into consideration the expected traffic from a proposed new road from the National Arboretum that will be used for events

3.2.3 PUBLIC TRANSPORT NETWORK

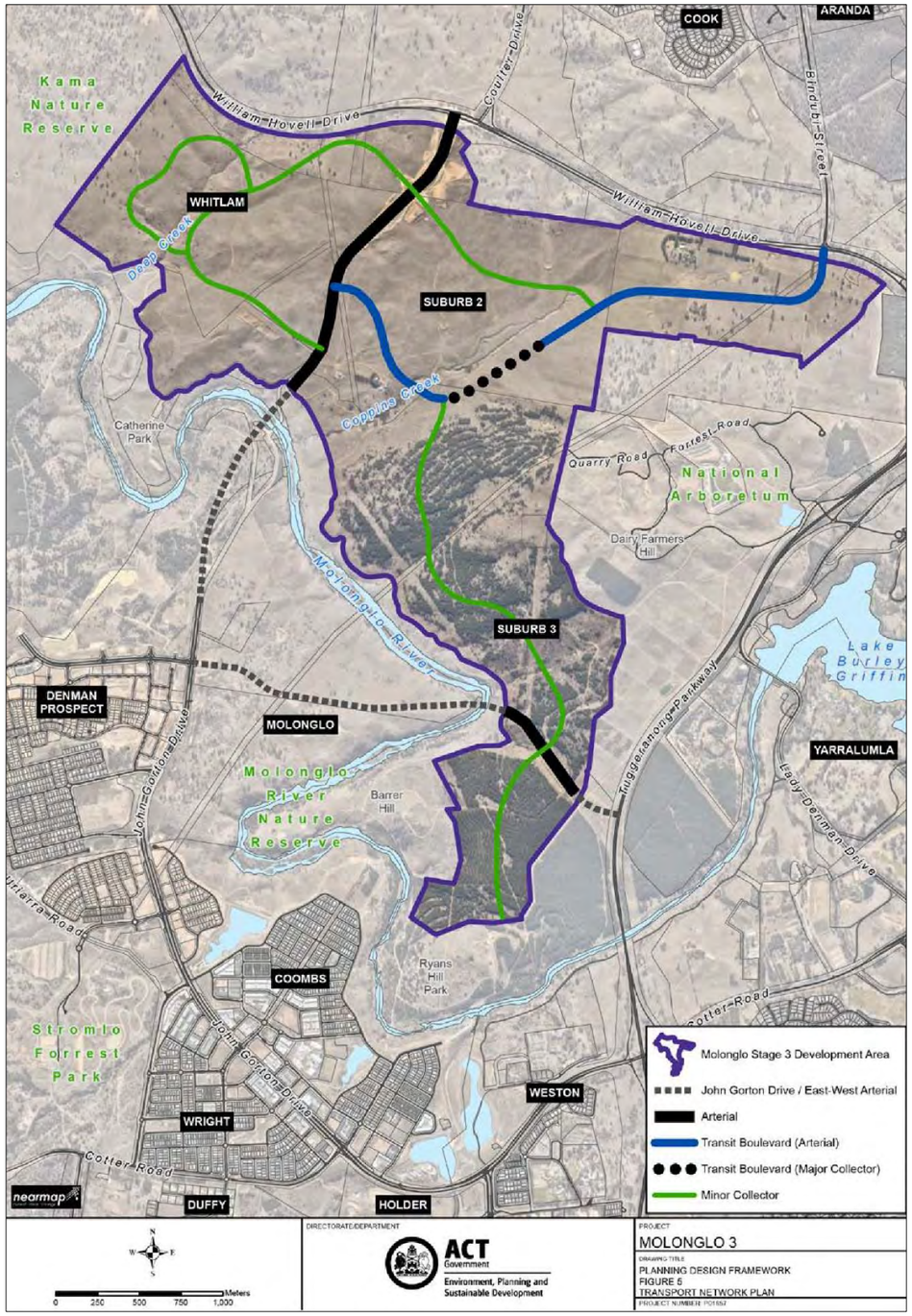
The public transport network is to generally align with that indicated in Figure 3.4. Planning principles for the public transport network include:

- Maximise land use and transport integration by providing higher residential densities within 800 metres of a rapid public transport service
- Bus routes and stop locations are designed to facilitate pedestrian access to stops
- Minimise the number of local bus routes required to serve the development area through efficient subdivision planning
- Include provision for operational transport facilities (e.g. layover and driver facilities)
- Tailor public transport services to the demand and development of the area, such as providing demand responsive transport to connect to bus services during early development, and introducing bus services when demand grows

3.2.4 INTERTOWN PUBLIC TRANSPORT CORRIDOR

An Intertown Public Transport Corridor (IPT) is required, with the following to be considered:

- Generally align with the route indicated in Figure 3.4
- The IPT corridor between John Gorton Drive and Bindubi Street/William Hovell Drive will be designed with a transit boulevard road typology that:
  - Provides a conducive environment for community activity and integrates adjacent land uses
  - Facilitates and maximises public transport, initially bus operation and future rapid public transport operation
  - Promotes active travel
  - Reserves land for future IPT stops
  - Ensures that public transport has priority (e.g. bus priority intersections, dedicated transit carriageway) (bus and rapid public transport)
  - Makes provision for Park and Ride facilities in strategic locations which consider the context of the surrounding Molonglo areas, including balancing demand at individual sites with the entire corridor
  - Promotes a reduced speed environment near commercial centres through landscape and urban design



Source: Molonglo Valley Stage 3 – Planning and Design Framework (ACT Government, 2019)

Figure 3.4 Molonglo Valley Stage 3 Framework Plan – Transport network plan

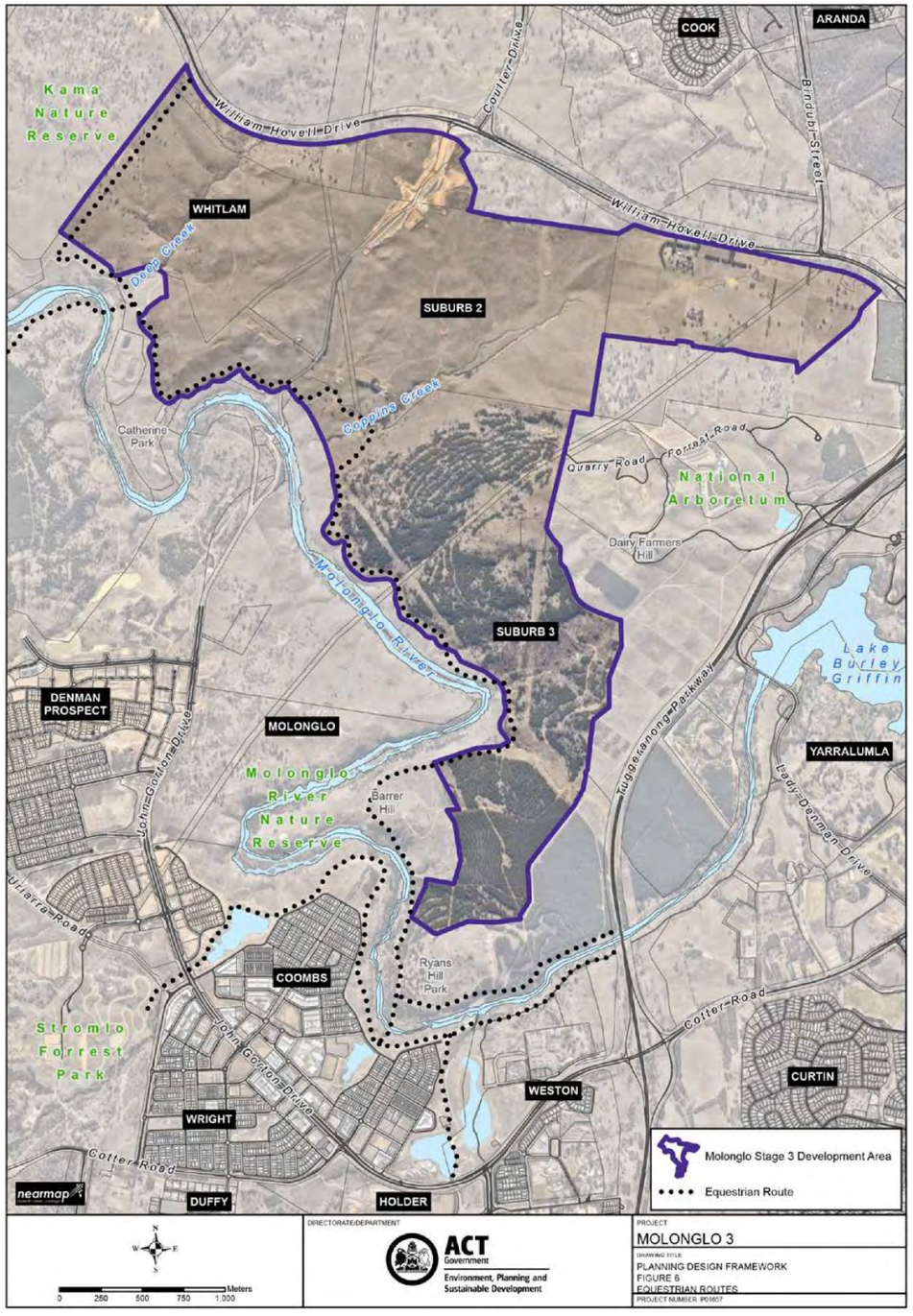
3.2.5 ACTIVE TRAVEL NETWORK

Active travel network requirements for Molonglo Valley Stage 3 include:

- Provide an integrated active travel network including proposed and desired principal, main, and local routes
- Explore opportunities for a further pedestrian bridge or crossing of the Molonglo River between Molonglo Stage 3 and the suburb of Molonglo
- Explore opportunities to bring the Centenary Trail from the National Arboretum through Suburb 3 from its current short-term alignment to the south of the Molonglo River, to Stromlo Forest Park. This would provide for a further crossing of the Molonglo River. Explore opportunities to upgrade the Trail through Suburb 3.
- Active travel routes, except those for management (multi-use) trails, are generally not permitted within the Molonglo River Reserve
- The existing low-level bridge at Coppins Crossing and its approaches will be retained and incorporated into the active travel network
- Explore opportunities for active travel networks through and around Suburb 2 and Suburb 3 that link the National Arboretum Canberra with the Molonglo River
- Designated pathways and access points to the Molonglo River are to be provided

3.2.6 EQUESTRIAN NETWORK

Equestrian routes are generally to align with those existing and proposed, as indicated in Figure 3.5.



Source: Molonglo Valley Stage 3 – Planning and Design Framework (ACT Government, 2019)

Figure 3.5 Molonglo Valley Stage 3 Framework Plan – Equestrian routes

3.3 MOLONGLO 3 STAGE 2 PROOF OF CONCEPT

3.3.1 OVERVIEW

RobertsDay (2019) were commissioned by EPSDD to provide a review of the previous Molonglo 3 Stage 2 Concept Design, and provide planning/design advice on key components of the subject precinct, including:

— Alignment and interface of the Bindubi Street extension including a potential Intertown Public Transport (IPT) route

— Group Centre interface with IPT and Coppins Creek

The review of the master plan and yield scenarios identified limitations in the current Estate Development Code (EDC) with difficult terrain such as Molonglo, and potential opportunities to update codes for both planning and infrastructure.

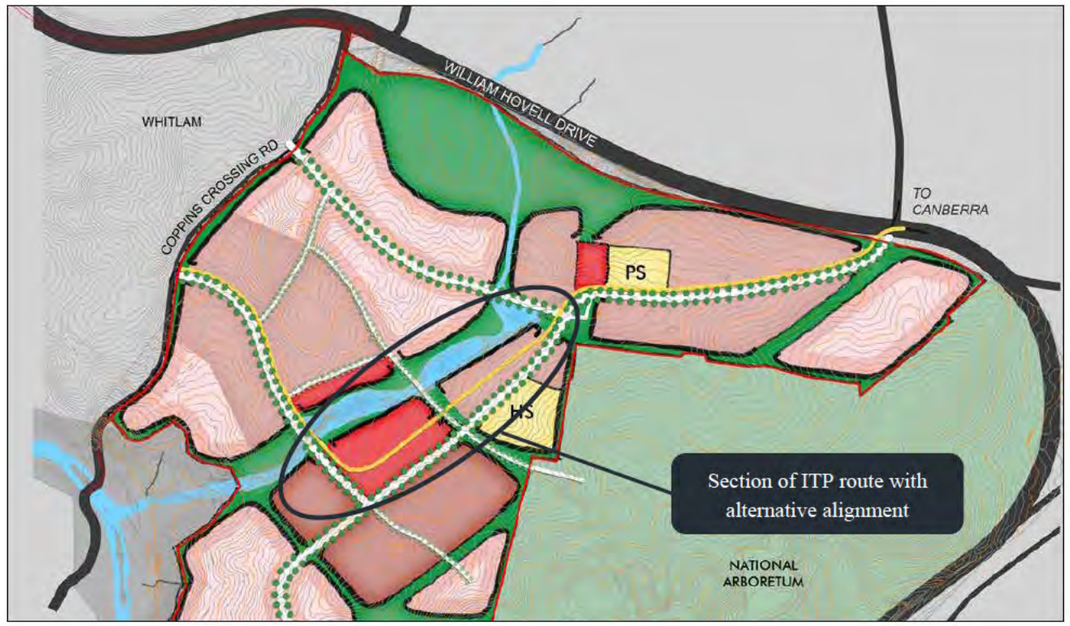
3.3.2 CONCEPT PLAN

A concept layout (Figure 3.7) was developed by RobertsDay with notable transport characteristics including:

— IPT alignment travels between retail group centre and Coppins Creek decoupled from roads

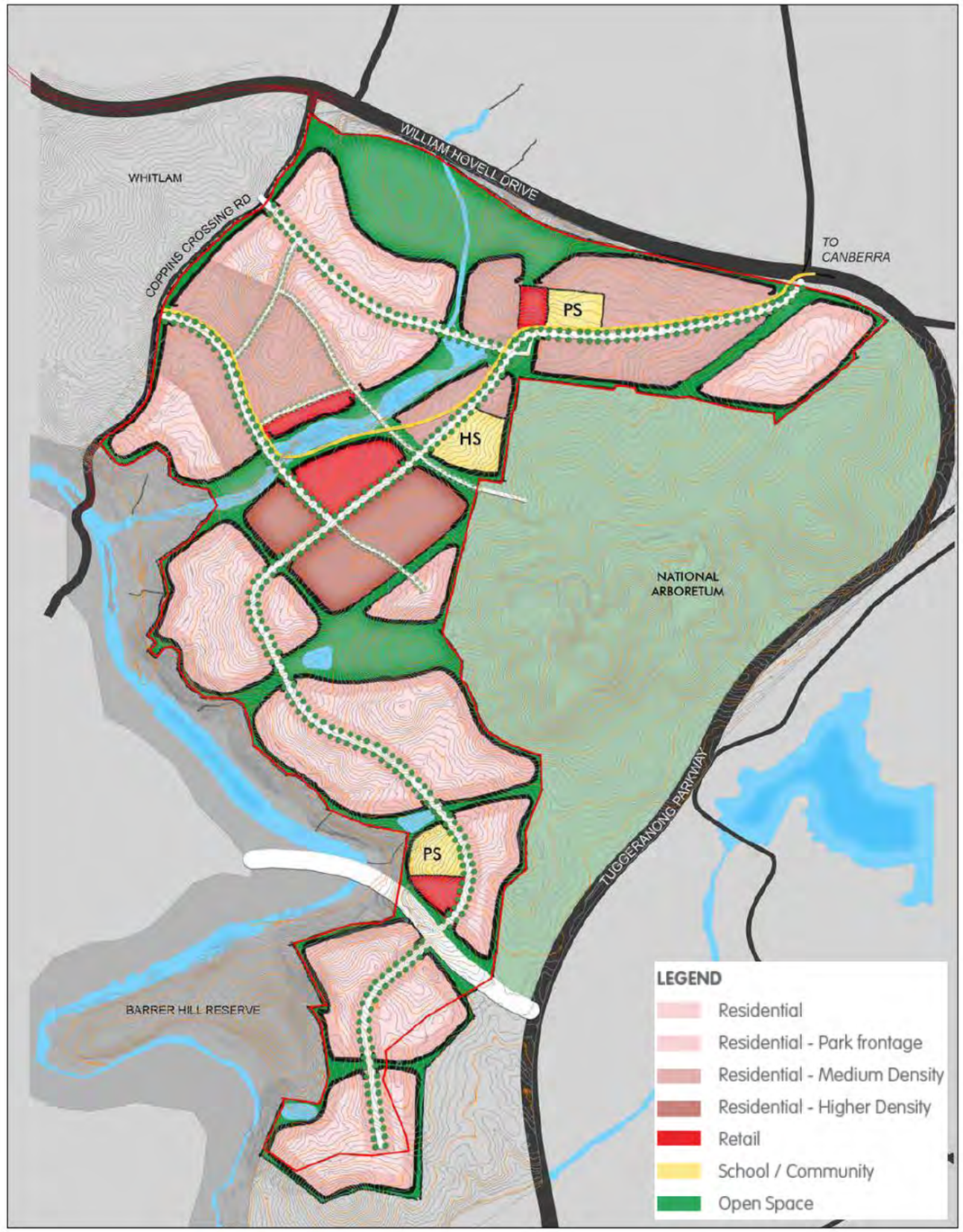
— Where properties face arterial roads, acoustic treatments will need to be considered

An alternative alignment for the IPT was also presented, with the IPT travelling in the centre of the retail group centre (Figure 3.6).



Source: Molonglo 3 Stage 2 Proof of Concept (RobertsDay, 2019)

Figure 3.6 Molonglo 3 Stage 2 Proof of Concept – Alternative alignment for IPT



Source: Molonglo 3 Stage 2 Proof of Concept (RobertsDay, 2019)

Figure 3.7 Molonglo 3 Stage 2 Proof of Concept – Concept Layout

3.3.3 DESIGN PRINCIPLES

Design principles relevant to transport included:

- Centres / schools are located near water or light rail stops
- Active travel network links local centres

3.3.4 BINDUBI STREET ALIGNMENT

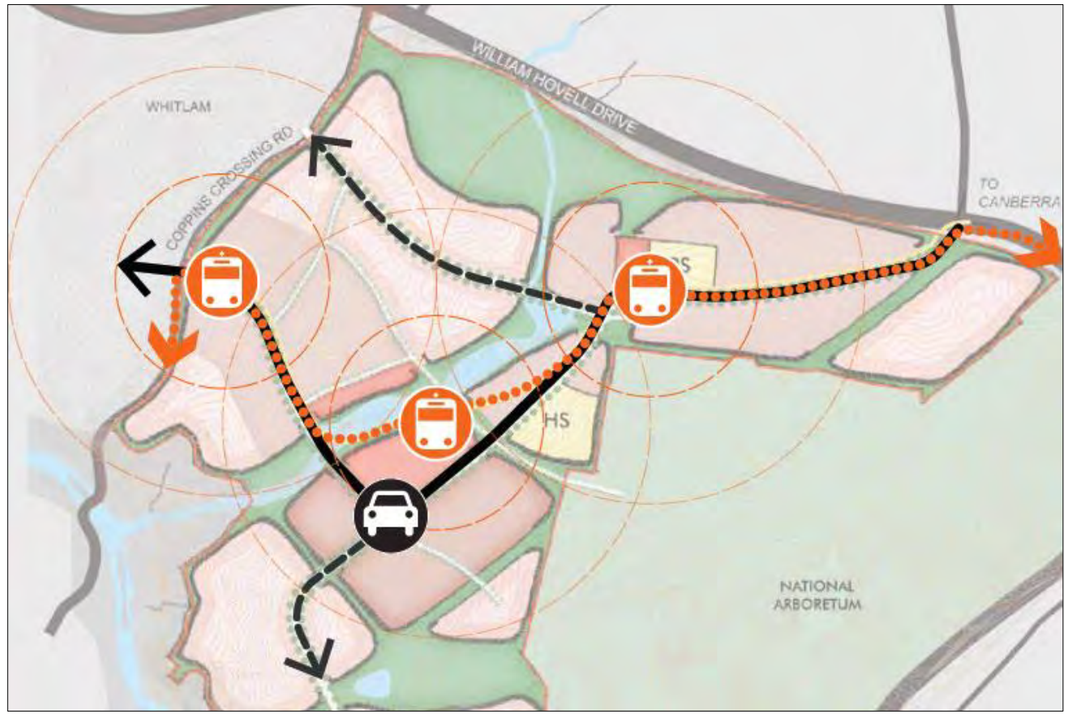
Compared to the *Planning and Design Framework*, Bindubi Street is proposed to now (Figure 3.8):

- Be decoupled from the light rail through the centre of the development
- Have a T-intersection at the local centre

3.3.5 PUBLIC TRANSPORT

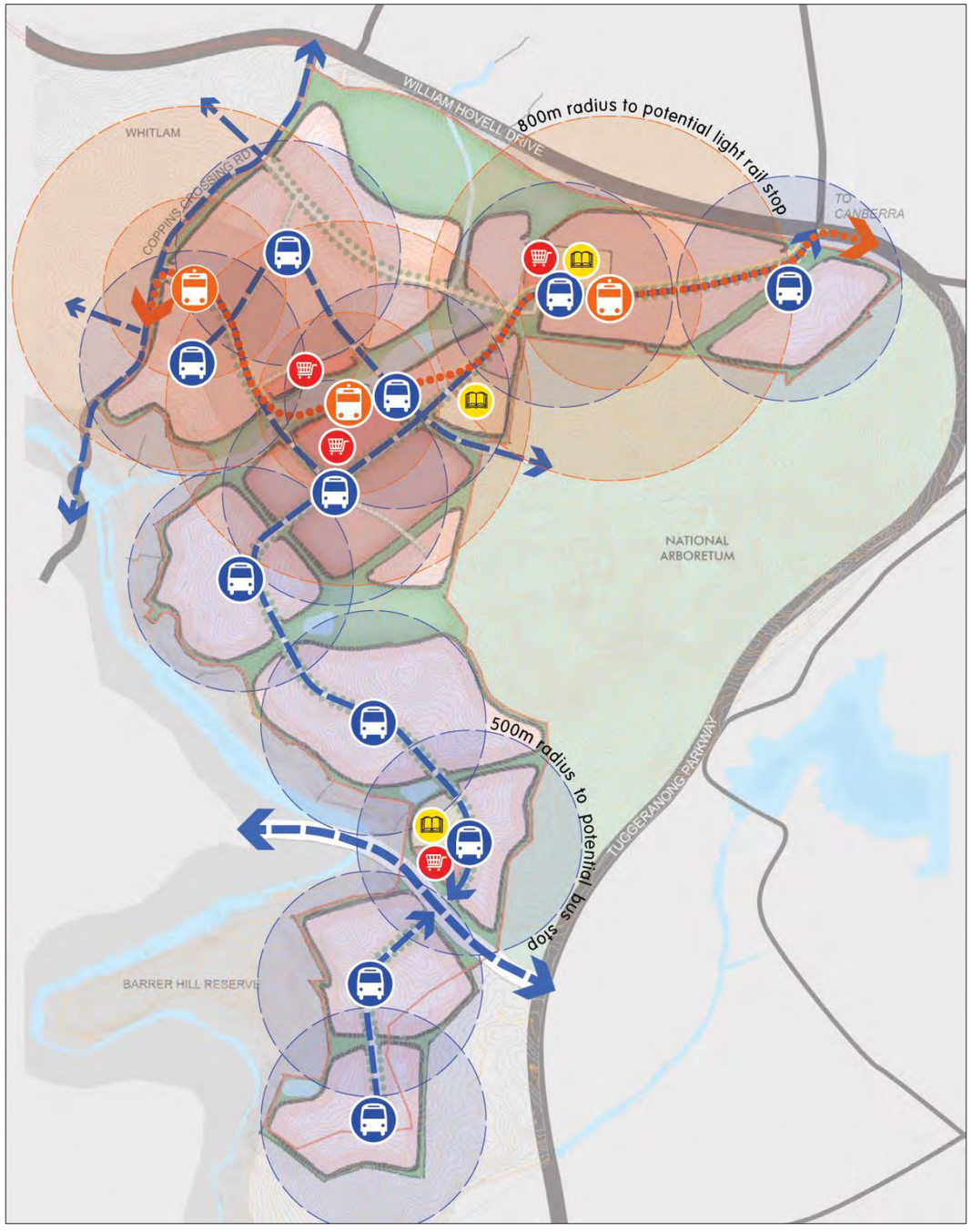
An intertown public transport (IPT) route is proposed through the site, connecting key community infrastructure and covering a wide section of the site (Figure 3.9).

The proposed bus route alignment provides a single bus stop that serves each neighbourhood and is located adjacent central neighbourhood parks or local centre (Figure 3.9).



Source: Molonglo 3 Stage 2 Proof of Concept (RobertsDay, 2019)

Figure 3.8 Molonglo 3 Stage 2 Proof of Concept – Updated Bindubi Street alignment



Source: Molonglo 3 Stage 2 Proof of Concept (RobertsDay, 2019)

Figure 3.9 Molonglo 3 Stage 2 Proof of Concept – Public transport alignment

3.3.6 CENTRE ACTIVATION AND IPT FUTURE-PROOFING

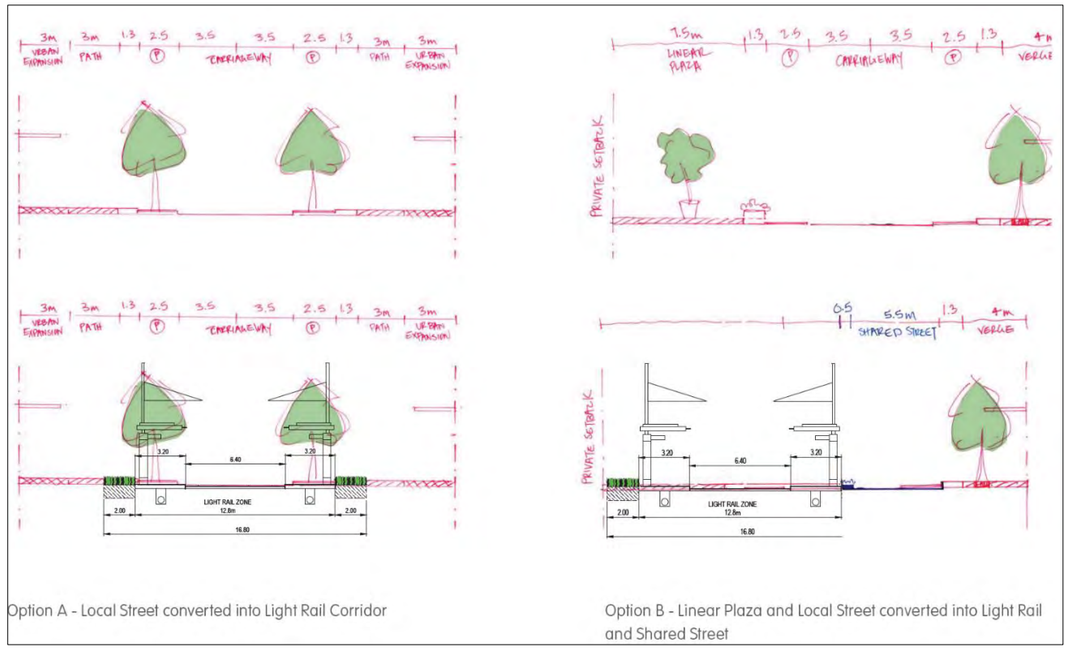
Noting that the light rail would be retrofitted after development of the group centre, adaptability of the road reserve corridor was discussed. Two options were presented (Figure 3.10):

- A: Convert local street to light rail
- B: Replace a linear plaza and local street, with light rail and a shared street

Two options for the IPT route through the group centre were explored.

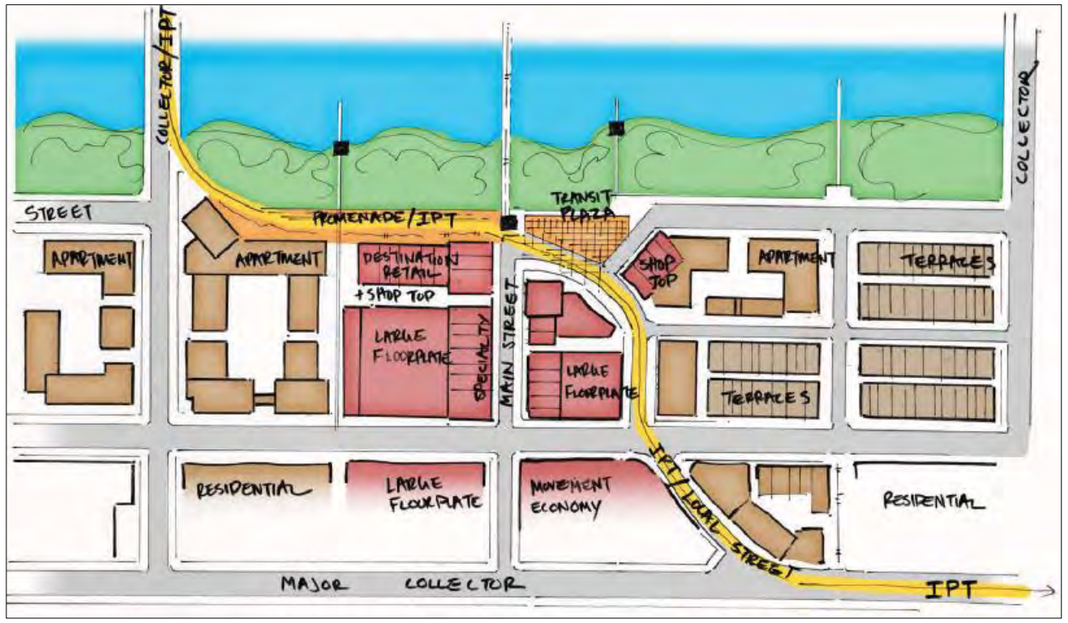
Option 1 (Figure 3.11): Decouple IPT from road network for a short distance

Option 2 (Figure 3.12): IPT is included within the road reserve. Parking and travel lanes can be removed to include the light rail within the central core to create a pedestrian friendly area.



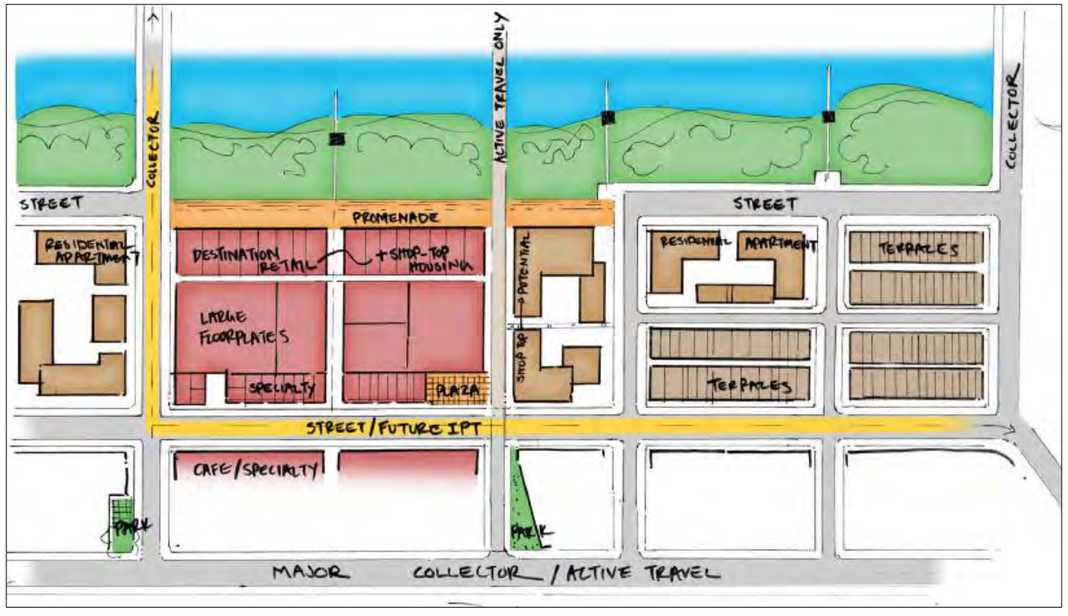
Source: Molonglo 3 Stage 2 Proof of Concept (RobertsDay, 2019)

Figure 3.10 Molonglo 3 Stage 2 Proof of Concept – Options for introducing IPT at a latter date



Source: Molonglo 3 Stage 2 Proof of Concept (RobertsDay, 2019)

Figure 3.11 Molonglo 3 Stage 2 Proof of Concept – IPT alignment at group centre: Option 1



Source: Molonglo 3 Stage 2 Proof of Concept (RobertsDay, 2019)

Figure 3.12 Molonglo 3 Stage 2 Proof of Concept – IPT alignment at group centre: Option 2

3.3.7 ROAD HIERARCHY AND TRIP GENERATION

Road hierarchies were developed based on compliant, mid, and ultimate yield scenarios. These hierarchies focussed on the arterial, major collector, and minor collector road network.

The potential to discount traffic generation rates was explored, which would result in a reduced need for the higher-order roads.

3.3.8 CODE REFORM

A code reform matrix is presented that outlines a series of proposed changes to the current EPSDD and TCCS codes for development and provides an indicative uplift in yield.

A reform noted as having a large impact to the development is regarding vehicle movements per day:

- The vehicle movements per dwelling/ per day dictates the quantity of vehicles on any given road and ultimately dictates the road type
- The current vehicle numbers are out-dated and don't consider transport modal shifts or active travel. By reducing the vehicle movement numbers per dwelling it can reduce the categories of many of the streets, which will increase yield, but also change the character of the areas.
- The reduction in vehicle movements reduces many of the Arterial Roads throughout Molonglo 3 to Major Collector Roads. This has significant positive impacts to the neighbourhoods in terms of walkable communities as pedestrians / cyclists are required to cross Arterial Roads.

Other desired principles to be achieved within the proposed code reforms included:

- Streets run perpendicular to contours when less than 12% slope to optimise streetscape experience and earthworks
- Controls should be varied where layout / infrastructure promotes modal shift
- Bus routes should provide access to the greatest number of residents
- IPT should be accommodated in association with a road corridor and without. The IPT should not include service roads adjacent like John Gorton Drive at Coombs, or Flemington Road
- Where greater than 12%, streets run parallel to contours and have a narrow pavement width to reduce cut and fill.
- Lower the category of roads to reduce the speed of traffic and land take. With the introduction of transport initiatives to promote modal shifts in people's travel patterns to work/school/leisure, we should also push for the reduction of trip generation stipulated in the current version of the Estate Development Code.
- Where streets are parallel to contours, footpaths to be adjacent the kerb to allow grading verges sooner.
- Narrower verges on streets parallel to contours to limit earthworks
- Slower streets to provide a safer environment

3.4 WHITLAM ESTATE MAP

The suburb of Whitlam is located to the west of the Project Study Area and bounded by John Gorton Drive. The Estate Map (Suburban Land Agency, no date) (Figure 3.13) illustrates the suburb layout and the main connecting roads with intersections along John Gorton Drive. These will need to be considered when assessing alignment options for the key roads within Molonglo 3 East.

Source: Whitlam Estate Map (Suburban Land Agency, no date)

Figure 3.13 Whitlam Estate Plan

4 STANDARDS AND GUIDELINES

4.1 GUIDELINES FOR LIGHT RAIL PLANNING: 01 CORRIDOR PRESERVATION

TCCS (2019) prepared *Guidelines for Light Rail Planning: 01 Corridor Preservation* to assist Government, developers, and institutions to prepare for the future implementation of light rail. Design principles are provided to inform conceptual planning and to ensure that light rail can appropriately integrate into the urban environment.

Indicative minimum provisions from the Guidelines are contained in Table 4.1.

Table 4.1 Light rail corridor preservation principles

Source: Guidelines for Light Rail Planning: 01 Corridor Preservation (TCCS, 2019)

ITEM	PRINCIPLE / GUIDANCE
Corridor	
Width: side platforms, track slab, and combined services route	16,000mm
Width: island platform, track slab, and combined services route	13,500mm
Width: between stops	8,000mm
Platform length	45,000mm
Depth: top of slab to bottom of light rail utility services conduits	2,200mm
Depth: combined services route trench	Varies
Height of OHLE poles	8,300mm
Right-of-way	Exclusive, except at intersections
Alignment	
Desirable alignment	Straight
Desirable grade at stop locations	Level
Rail gradient: absolute maximum	7%
Rail gradient: desirable maximum	5%
Minimum turning radius	25m
Stops	
Spacing (typical, note subject to patronage, place-making, traffic, and safety risks	800-1200m
Ideal locations	Nodes and road junctions
Surrounding land uses	High trip attractors/generators
Permeability of surrounding areas for pedestrians and cyclists	High
Stop type (side or island)	Stop dependent

5 OTHER

The following background documents were noted as being minor in nature or focussed on a different discipline (e.g. urban development standards, stormwater management):

Molonglo Valley Staging (Environment and Sustainable Development, 2012)

A map indicating the three stages of development of Molonglo Valley. The transport network shown on the map is outdated.

Variation to the Territory Plan No 306 (Environment and Sustainable Development, no date)

A variation to the ACT's Territory Plan focussing on residential development, estate development, and leasing codes. The Variation included replacement of residential zones objectives, development tables, and housing development codes; introduction of Residential Zones Development Code and Lease Variation General Code; and replacement of Residential Subdivision Development Code with Estate Development Code.

Housing Choices Discussion Paper (EPSDD, 2017)

A discussion paper focussing on the current and future trends affecting housing choice in the ACT and options to improve housing choice.

Molonglo Stage 3 Community, Sport and Recreation Facility Needs assessment (GHD, 2014)

A set of principles and a series of recommendations are presented for the provision of community, sport, and recreation facilities in Molonglo Stage 3, the broader Belconnen Catchment Area, and West Belconnen.

Molonglo Commercial Centre, ACT – Market Potential Assessment (Location IQ, 2018)

A market assessment of the potential for retail and supporting non-retail floorspace to be provided at the designated Molonglo Commercial Centre site in the Molonglo Valley.

APPENDIX A

URBAN PLANNING BACKGROUND REPORT (PREPARED BY ROBERTS DAY)

Molonglo 3 East

Background Report Review

RobertsDay

CONTENTS

CLIENT	EPSDD
DATE	01/05/2020
REVISION	A
STATUS	DRAFT
PREPARED	DJ/EW/CC
APPROVED	AK

PURPOSE OF THE REPORT

REVIEW EXISTING BACKGROUND DOCUMENTS TO SUPPORT FUTURE WORK

This updated Technical Report will provide an overview of relevant policies, strategies and best-practice guidelines that will inform outcomes for Molonglo 3 East. The analysis of key findings within this report is intended to be built on for future investigation into Molonglo.

The documents reviewed in this report include:

1. Molonglo 3 Stage 2 Proof of Concept
2. Stromlo-Weetangera Bulk Supply Watermain Urban Planning Options
3. Molonglo Stage 3 Community, Sport & Recreation Facility Needs Assessment
4. Molonglo Commercial Centre
5. Molonglo & North Weston Structure Plan

POLICY CONTEXT

ACT TERRITORY PLAN

- Urban development will be planned in a manner that promotes community vitality and safety, applying principles of crime prevention through environmental design.
- Planning policies for community facilities and open space will encourage multiple use and flexible design to allow for changing needs.
- Hierarchy of roads; conveniently located commercial and community facilities; a network of open spaces; an off-road system for pedestrians and cyclists; and provision for accessible public transport.

THE CANBERRA PLAN 2008

- Strengthen the capacity of the community by improving access to suitable accommodation and supporting, where possible, the use of shared resources to achieve greater administrative efficiency.
- Former school sites and other facilities will be made available to established community sector organisations and to local community groups seeking meeting venues or other facilities. Where appropriate, facilities will be refurbished to meet users' requirements, and in some locations new facilities will be constructed. Concurrently, landscaping and surrounding areas will be upgraded.
- The main Group Centre in Molonglo will be a focus for services and community activities for residents of the town.
- Walkable neighbourhoods will be a feature of Molonglo. Every house will be within about 400 metres of a neighbourhood focal point, which may be a bus stop, a corner shop or a retail and commercial activity centre. Neighbourhood design will encourage walking, cycling and the use of public transport.

CANBERRA SOCIAL PLAN 2011

- Active and sustainable transport by linking cycling, walking and public transport with supportive land use around public transport corridors. Flexible transport options that address transport disadvantage and more frequent public transport in suburban areas will form part of building a comprehensive and sustainable transport system.
- Community infrastructure that promotes connection and allows for diverse activities. For example, new Regional Community Centres
- More flexible use of schools, libraries and civic places through co-location and provision of common facilities for art, sport, recreation, gardening, bringing together communities of interest and everyday social interaction.
- Investing in modern libraries that give people access to information from all over the world and provide meeting places for the local community. As community hubs, libraries play an essential role in reaching out to people who may be isolated as well as communities of interest such as book groups.

ACT GOVERNMENT INFRASTRUCTURE PLAN 2010

- Healthy and Smart
- Liveability and Opportunity
- Growing the economy
- Urban Renewal
- Early planning of John Gorton Drive Extension to Molonglo 3 and Bridge over the Molonglo River

TRANSPORT FOR CANBERRA 2012-2031

- Transport for Canberra highlights that Molonglo Valley has been designed with a public transport perspective from the outset. Molonglo Valley will have a single arterial road (John Gorton Drive) on which the Group Centres and major centre will be located, and a simple and easy to navigate set of roads designed to provide an effective Frequent Network and limited coverage service.
- accessible and integrated transport system
  - promote individuals' independence and autonomy
  - decrease isolation and increase social inclusion

- enable access to services such as health care and shopping facilities
- enable participation in employment and education opportunities provide opportunities for enjoyment of entertainment and recreation
- enhance community spirit and diversity
- contribute to the local economy.

ACT PLANNING STRATEGY 2012

- Continue investment in cycle and pedestrian routes for new developments at Gungahlin, Molonglo Valley and East Lake
- Continue to invest in strategic road infrastructure for parkways, arterials and new suburban access, including the east–west corridor (between Molonglo Valley in the west and Queanbeyan in the east), the two north– south arterials of Gungahlin Drive and Majura Parkway/Monaro Highway
- Provide for community facilities: child care centres, schools and neighbourhood halls to support the new suburbs in Molonglo Valley and Gungahlin.
- Construct schools
- Develop new sports fields

ACT INDICATIVE LAND RELEASE PROGRAMS

- Child care centres
  - The demand for child care centres remains strong, particularly for sites in close proximity to employment centres
- Indicative Land release for Community and Non-Urban Land
  - Molonglo – 3,500m2 to be released between 2013 and 2017

MOLONGLO 3 STAGE 2 PROOF OF CONCEPT

AUTHOR ROBERTS DAY
DATE 2019

The Proof of Concept report reviewed the existing ACT controls in relation to the Molonglo 3 Stage 2 site and provided recommendations for code reform to provide improved amenity, increased yield, and better design outcomes.

Three key items outcomes were identified:

1. INTERTOWN PUBLIC TRANSPORT (IPT) CORRIDOR

The proposed IPT corridor has been envisioned to provide a variety of experiences from the passengers' point of view, and will be included in three main different corridor types:

- Sub-Arterial median – similar to Flemington Rd
- Local Street – flush with local traffic
- De-coupled from streets – located in a promenade

2. GROUP CENTRE INTERFACE

The two options for the Group Centre provide public interaction with Captains Creek in different ways, with either the IPT located:

- in a public plaza and a 'Main Street' style retail hub, or
- one block back in a street that can be adapted to include rail in the future to allow the public promenade to be free of public transport

These options are designed to provide the most street activation to create a vibrant hub in the centre of Molonglo.

3. CODE REFORM

A variety of code reforms were investigated to understand what limitations they place on development in a challenging environment.

The two biggest code reforms that gain the most increase in yield and impact to development are:

- Block Compliance:
  - By removing or revising how block compliance is achieved, significant increases in yield can be achieved on blocks with steep slope, or perceived poor orientation.
- Road Hierarchy:
  - The current Vehicle Movements per Day (vpd) calculations are higher than actual use, and much higher than predicted future uses which results in larger streets.
  - By reducing the calculation to a more reasonable number (from 8vpd to 4vpd) road types can be lowered (e.g from sub-arterial to major collector) which increases available land for development.

KEY INNOVATIONS

The key to delivering Molonglo 3 East will rely on the Code Reforms and innovations proposed in the Proof of Concept.

Block Compliance will need to be reviewed to achieve the yields required, particularly on south facing sloping land.

Reviewing Vehicle Movements Per Day and the current Road Hierarchy will be critical to achieving the character within Molonglo 3 East.

STROMLO-WEETANGERA BULK SUPPLY WATERMAIN URBAN PLANNING OPTIONS

AUTHOR ROBERTS DAY
DATE 2020

Building on the previous work undertaken for Molonglo 3 East the Urban Planning Options for the Stromlo-Weetangera Bulk Supply Watermain Relocation quantifies the impact on the urban design of the precinct by retaining or removing the watermain.

The watermain is a 900mm pipe (in a 30m wide easement) from the Stromlo Water Treatment Plant that supplies water to two tanks at Weetangera to be distributed to the Belconnen area.

The 2019 Proof of Concept Master Plan and Neighbourhood 1 Concept assumed the watermain would be relocated.

The Bulk Supply Watermain bisects the neighbourhood with a 30m wide easement creating two separate developable areas.

Limited work can occur within the easement, including footpaths and road crossings. No bulk earthworks can be undertaken.

The report provided a series of urban planning options of:

- Retaining the pipeline
- Removing the pipeline

For both options:

- A set of design principles were established centred on:
  - Active Travel
  - Density
  - Direct and Indirect benefits provided
  - Yield analysis was undertaken

MOLONGLO STAGE 3 COMMUNITY, SPORT & RECREATION FACILITY NEEDS ASSESSMENT

AUTHOR GHD
DATE 2014

This report presents a summary of a community, sport and recreation (CSR) study for Molonglo Stage 3, with the following detailed reports supporting this document:

- Consultation Outcomes Report.
- Socio-economic Scenarios Report.
- Facilities Audit Report.
- Case Study Report.
- Demand Scenarios Report

The CSR Study for Molonglo Stage 3 considers the impact that Molonglo Stage 3 residents will have on existing CSR facilities located in the Belconnen Catchment Area. It also considers the impact of the proposed West Belconnen development on the Belconnen Catchment Area.

RECOMMENDATIONS

1. Prioritise early provision of childcare facilities and services
2. Create a connected and walkable community with clear linkages between destinations
3. Prioritise provision of education facilities
4. Explore innovative approaches to shared use of sports fields and other school facilities
5. Provide a new community centre and facilitate provision of community spaces through a staged approach
6. Research provision of a vertical retirement village which provides high care and low care aged care places
7. Consult with medical service providers to ensure services are provided locally
8. Investigate provision of community gardens on school sites
9. Consult with providers of religious facilities and clubs
10. Undertake ongoing consultation and communication with service providers
11. Provide opportunities for informal sports and recreation

PRINCIPLES

Based on the outcomes of the study, the following set of principles have been developed to guide the future planning, provision and operation of community, sport and recreation facilities for Molonglo Stage 3. Community, sport and recreation facilities will be:

- Socially beneficial
- Accessible and affordable
- Flexible and multi-purpose
- Well-located and visible
- Co-located and clustered
- Adaptable
- Sustainable

RECOMMENDATIONS – MOLONGLO STAGE 3

A series of recommendations for the provision of community, sport and recreation facilities were also developed to guide the detailed planning for Molonglo Stage 3. They were been developed in accordance with the principles listed above. The recommendations are as follows:

Short term (0-5 years)

1. Prioritise early provision of childcare facilities and services
2. Create a connected and walkable community with clear linkages between destinations
3. Research provision of a vertical retirement village which provides high care and low care aged care places
4. Investigate provision of community gardens on school sites
5. Consult with providers of religious facilities and clubs

Short-medium term (0-10 years)

1. Prioritise the provision of educational facilities
2. Provide opportunities for informal sports

Medium-long term (5-15 years)

1. Explore innovative approaches to shared use of sports fields and other school facilities
2. Provide a new community centre and facilitate provision of community spaces through a staged approach

Ongoing

1. Consult with medical service providers to ensure services are provided locally
2. Undertake ongoing consultation and communication with service providers

COMMUNITY, SPORT AND RECREATION FACILITY PLAN FOR MOLONGLO STAGE 3

Table 9 of this report sets out the recommended community, sport and recreation facilities for Molonglo Stage 3 and timing for delivery according to the four population thresholds.

A high-level summary is below:

5,000 people

- Long day care
- Before and after school care
- Preschool
- Non-government primary school
- Community meeting/activity room at sales centre
- Sports courts
- Community health sessional space

10,000 people:

- Long day care
- Before and after school care
- Preschool
- Government primary school
- Non-government high school
- Sports courts
- Community garden
- Medical centre

15,000 people:

- Long day care
- Before and after school care
- Preschool
- Non-government combined school
- Sports courts
- Potential provision of special needs schools
- Community centre
- Medical centre
- Retirement village

27,000 people:

- Long day care
- Before and after school care
- Preschool
- Government high school
- Sports courts
- Community garden
- Medical centre

Other (timing to be confirmed – subject to demand and interest from providers)

- Clubs
- Religious facilities
- Regional tennis facility
- Equestrian

POPULATION	FACILITY	GFA M2	SITE AREA M2
15,000	Long day care	770m²	3,000m²
	School care	195m²	720m²
	Preschool	375m²	1,475m²
	Community in sales centre		2.5ha
	Sports		31m x 18m to allow for netball, volleyball, & basketball
	Community centre	1,000m²	3,000m²
	Medical centre	250-750m²	
27,000	Long day care	770m²	3,000m²
	School care	195m²	720m²
	Preschool	375m²	1,475m²
	Government high school		6ha with access to playing field 7ha without access to playing field
	Sports		31m x 18m to allow for netball, volleyball, & basketball
	Medical centre	250-750m²	

Table 1 - Demand Scenarios

PRELIMINARY GEOTECHNICAL & CONTAMINATION CONSTRAINTS STUDY

AUTHOR COFFEY
DATE 2005

TOPOGRAPHY

Southwest of the Molonglo River the site is characterised by mainly undulating land with isolated moderately inclined rolling hills. To the northeast of the river the topography is mainly gently undulating and also has areas of isolated moderately inclined rolling hills. In the north western portion of the site, the Molonglo River is sinuous and deeply incised with the lowest elevation in the study area of 470m. The steepest slopes in the study area are found along the northern reaches of the river with large rocky bluffs up to 60m high and slopes of about 40°.

Geotechnical constraints to development have been separated into two broad classes, those that preclude development, and those that can be overcome through planning and design. In this study area slopes in Terrain Unit 7 are considered too steep for urban development, with the majority of these areas lying within the Molonglo River Corridor.

CONTAMINATED LAND ISSUES

Include sheep dip sites, areas of uncontrolled fill, the Coppins Crossing sewage sludge ponds and the former Weston Creek sewage treatment plant.

- Landfill Areas
  - Based on the preliminary plan supplied by Environment ACT it is assessed that the landfill sites are mainly concentrated in the southern portion of the Molonglo area.

MOLONGLO COMMERCIAL CENTRE

AUTHOR **LOCATIQN**
DATE **2018**

This report presents a market assessment of the potential for retail and supporting non-retail floorspace to be provided at the designated Molonglo Commercial Centre site in the Molonglo Valley area to the west of the Canberra Urban Area.

The key points to note:

- The Molonglo Commercial Centre will be the major retail and commercial centre serving residents of the Molonglo Valley. The release area is planned to include around 55,000 residents over a 30-year timeframe and is currently being developed across three stages
- The Commercial Centre will form part of the Stage 2 development of the Molonglo Valley. The Centre will be the major retail and commercial destination for residents of the Molonglo Valley. A smaller secondary centre (i.e. likely to be anchored by a major full line supermarket) is planned as part of Stage 3 of the release area, with a number of smaller local centres planned throughout all 3 stages
- The Molonglo main trade area encompasses the entire Molonglo Valley area. The population within the main trade area is currently around 7,030 with the vast majority of residents residing in the developing Coombs and Wright suburbs
- Around 55,000 persons will ultimately be provided across the Molonglo Commercial Centre main trade area
- Once developed, the Molonglo Valley is likely to have a similar socio-economic profile to the existing Coombs and Wright area where an affluent, young, more ethnically diverse traditional family population resides
- There are currently no supermarket-based centres provided within the main trade area. The nearest retail facilities of the growing Coombs and Wright area are provided at Cooleman Court, where Woolworths and Aldi supermarkets are provided.
- Two Local Centres are currently under construction within the main trade area, including Coombs Shopping Centre and Denman Village Shops. Both are planned be anchored by relatively small supermarkets of around 1,000 sqm. Additionally, a third Local Centre is currently planned within the suburb of Wright, namely Koko Molonglo. The planned supermarket at the centre is likely to be 1,500 sq.m or less in size.
- A range of major retail non-food shopping facilities are well placed to serve the growing Molonglo Valley population, including Westfield Belconnen, Canberra Centre and Westfield Woden. These centres are likely to continue to serve the non-food shopping needs of the Molonglo Valley population to some degree

The recommended floorspace provision within the Molonglo Commercial Centre over the forecast period is shown in Table 1 (Refer to page 7 of Report).

- Based on current population projections, Stage 1 of the Molonglo Commercial Centre is likely to be supportable in 2020/2021. This should include:
  - A major full-line supermarket (3,200sqm or greater)
  - A mini-major tenant of 500sqm
  - Around 2,000sqm of retail specialty shops and 400sqm of non-retail speciality shops
  - Some 850 sqm of large format retail space
  - A medical centre, childcare centre, gym, service station and tavern
- In total, around 8,000-10,000 sqm of floorspace would be supportable in a first stage of development. This includes a retail component of 6,000 sqm, and a non-retail and other uses component of some 3,000 sqm.
  - Assuming the development scheme outlined above, projected retail sales for the centre are $46.7 million.
  - Total gross rent for Stage 1 of the Molonglo Commercial Centre is $2.9 million, including $777 per sqm in retail specialty rent.
- A further 15,000 sqm of floorspace would be supportable in a second stage of development, where a major full-line supermarket and smaller discount supermarket is added.
  - A total of 22,000 sqm of floorspace would be supportable by Stage 2.
  - Stage 2 projected retail sales for the centre are $150 million
- Ultimately, a single discount department store based centre totalling around 25,300 sqm, including 23,800 sqm of retail floorspace, would be supportable. Some 18,700 sqm of other uses would also be supportable throughout the precinct.

MOLONGLO & NORTH WESTON STRUCTURE PLAN

AUTHOR EPSDD
DATE 2008

Principles for the development of Molonglo and North Weston Future Urban Area:

Sustainable development principles (as contained in the Statement of Strategic Directions)

Social principles:

- Range of housing types, densities and affordability
- Higher density encouraged within and near major centres and in other suitable locations well served by public transport
- Opportunities provided for aged persons housing and adaptable and special needs housing adjacent or close to public transport
- Community facilities close to public transport
- Neighbourhoods planned to encourage walking and reduce vehicle dependence
- Design and planning will promote safety and equality of access
- Landscaped features incorporated in urban design layout
- Meet the requirements of relevant government affordable housing policies or strategies

Economic principles:

- Infrastructure and services managed cost effectively
- Higher density located closer to public transport and centres
- Commercial and retail activities concentrated in centres and other planned nodes well serviced by public transport
- Group and local centres located on major roads and will have good pedestrian and vehicular access
- Centres are designed as mixed-use places and supported by residential development

Environmental principles:

- Landscaped setting and values of Molonglo and North Weston will be recognised and incorporated into urban design of the area
- Exceptional trees, significant trees and tree stands will be retained and integrated into urban fabric where possible
- Water-sensitive urban design principles adopted
- Subdivision design will facilitate energy efficient housing
- Aboriginal and European heritage places will be recognised, and significant sites conserved in public open space
- Bushfire risk assessments and management plans will be prepared consistent with appropriate guidelines
- Critical natural habitats and connectivity will be protected
- Upward light spill will be minimised in East Molonglo

Landscape and open space principles

- Development responds to topography of the area by minimising cut and fill, responding to key features and minimising the visual impacts of development
- Appropriate buffer areas provided next to existing major roads and development
- River corridor is recognised as an important natural asset to ACT region
- Provision of open space along the Molonglo River, with a balanced range of recreational activities provided appropriate to character of the area
- Playing fields provided in central locations, typically co-located with schools to optimise access and usage
- Provision will be made for open space links between Stromlo Forest Park, Molonglo River corridor and the Canberra International Arboretum and Gardens suitable for equestrian, cycling and pedestrian use.

Urban Design Principles:

- Subdivision design and road layout will maximise access to 'special places' to enhance the character of Molonglo and North Weston and contribute to a 'sense of place'.
- Subdivision and detailed planning will provide for quality design outcomes within residential areas, centres and activity nodes, along principal approach routes and in the interface between public and private spaces (including shared spaces and spaces around buildings).
- Subdivision and detailed planning will maximise solar access, while responding to topographic and planning constraints.
- Road and other transport links will provide for high levels of accessibility to areas within Molonglo and North Weston and to surrounding areas. This will be achieved partly through links to the existing arterial road network through, and surrounding, the development.

Transport principles:

- Current and projected traffic flows in adjacent arterial roads will be considered in the design of the road network for Molonglo and North Weston.

Principles for the development of Molonglo and North Weston Future Urban Area:

1. Concept Plans
2. Environment Protection
3. Residential
4. Broadacre
5. Commercial
6. Open Space and Recreation
7. Community facilities
8. Stormwater management
9. Traffic management
10. Transport

RobertsDay

APPENDIX B

DESIGN PRINCIPLES

Molonglo 3 East

Design Principles

February 2021

HATCH | RobertsDay WSP eltonconsulting

CLIENT	EPSDD
DATE	25/02/2021
REVISION	C
STATUS	FINAL
PREPARED	DJ
APPROVED	AK

CONTENTS

INTRODUCTION

1. Challenges
2. Design Principles
   + Estate Development Code Departures
   + Key Interface Principles
   + Walkable Neighbourhoods
   + Designing for Women & Children
   + Land-Use Policies
3. Group Centre Design
   + Co-located Schools and Local Centres
4. Housing Typologies
5. Community Needs

Molonglo 3 East

4

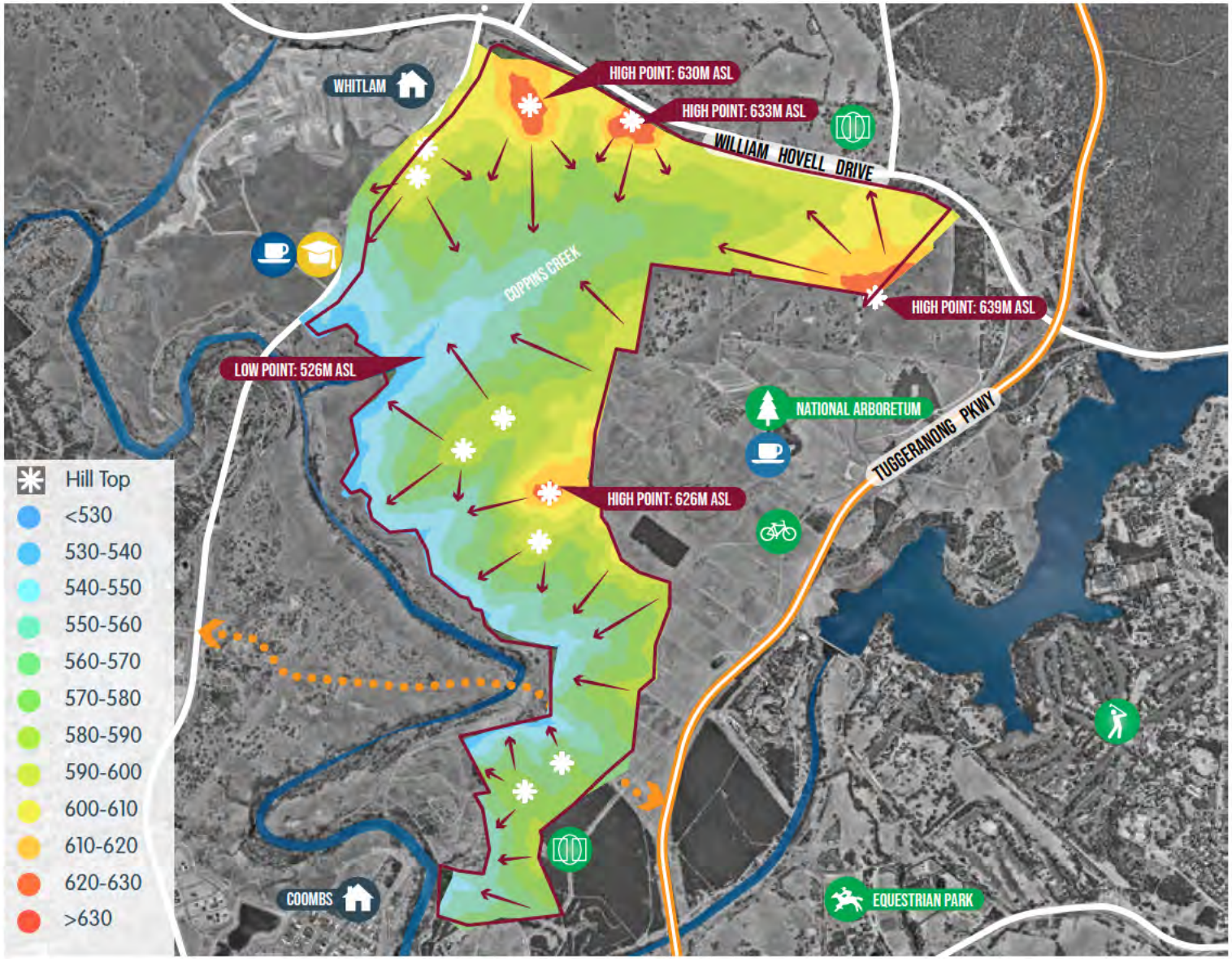
CHALLENGES

TOPOGRAPHICAL

The site is characterised by significant topography, with an elevation difference of over 100m between the lowest point in Coppins Creek to the highest hilltop on the eastern side of the site.

There are distinct hilltops throughout the site that provide opportunities for broad views to the Molonglo River and the mountains. These hilltops present challenges in the large quantity of south facing slope, which cover around 40% of developable area. Within the Estate Development Code, south facing slope puts a limitation on the minimum size of blocks permissible with the existing block compliance tables.

Due to the significant quantity of south facing slope there will be an impact on the available yield allowable under the Estate Development Code.

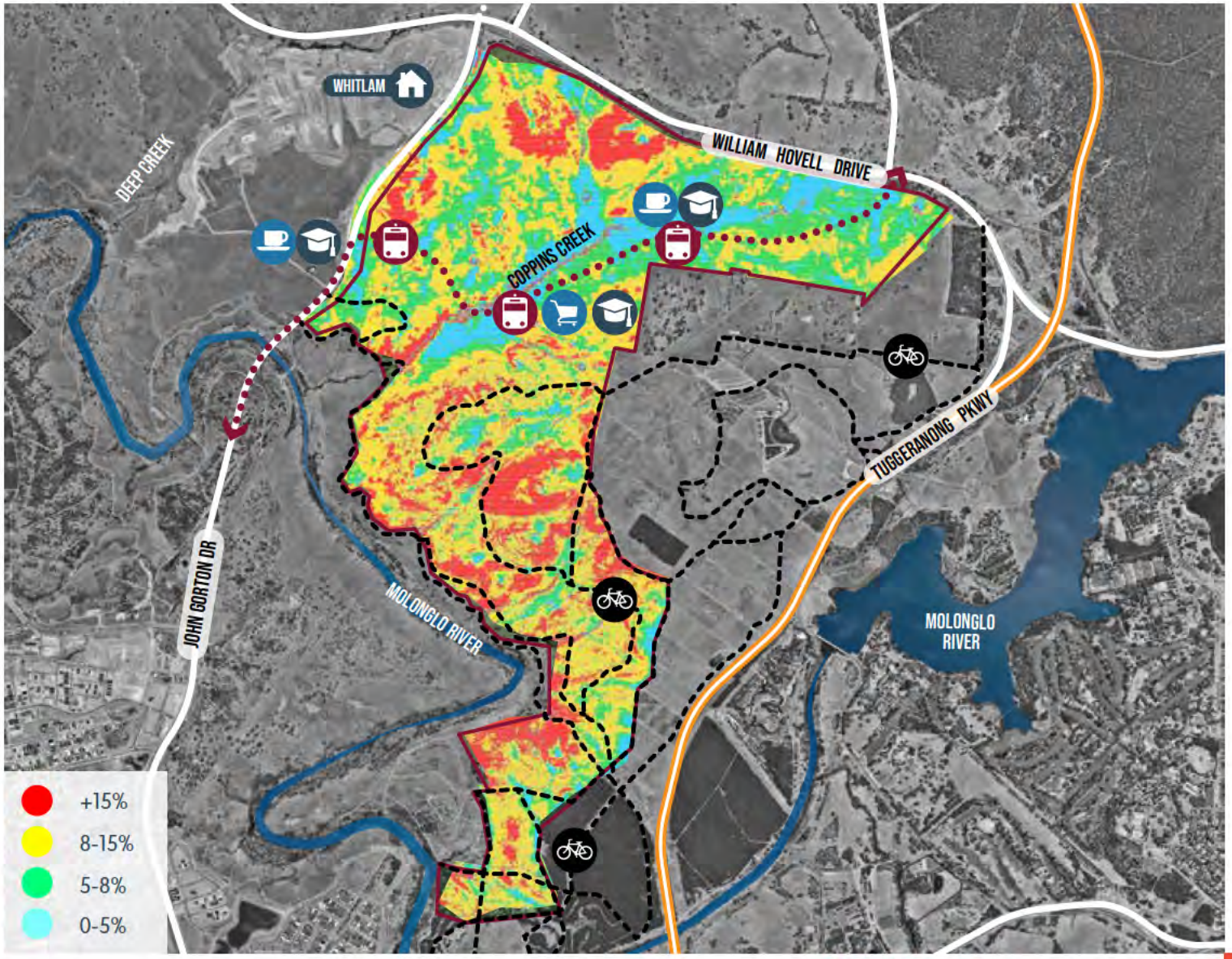


SLOPE ANALYSIS

The majority of the site has falls greater than 8%, with large central portions in excess of 15%.

The steepness of the land will require innovative solutions to the road layout and road types as currently the maximum gradient for a bus route is 8% and maximum on a local street is 12.5%.

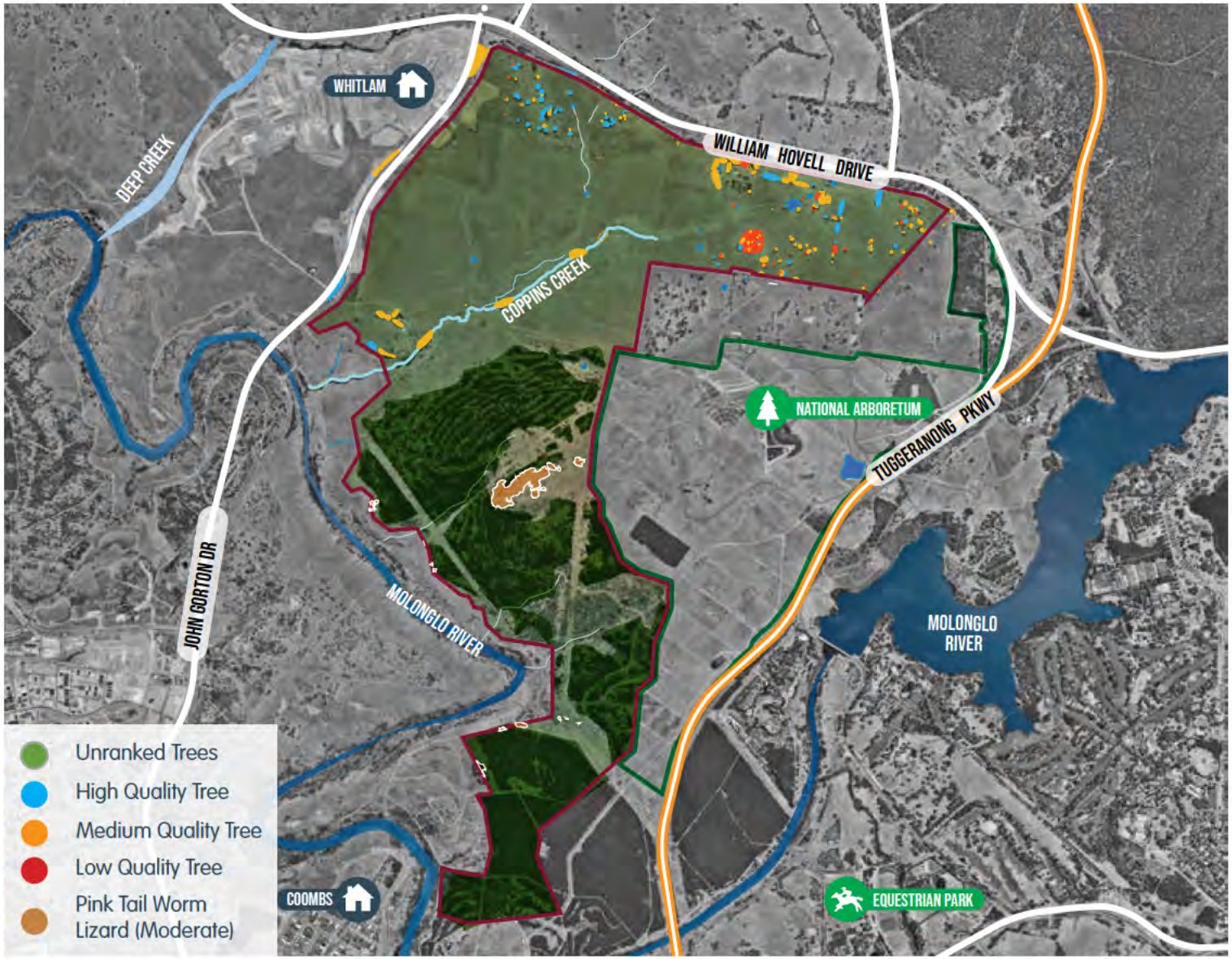
The significant slope will require innovation housing typologies to reduce cut and fill on block.



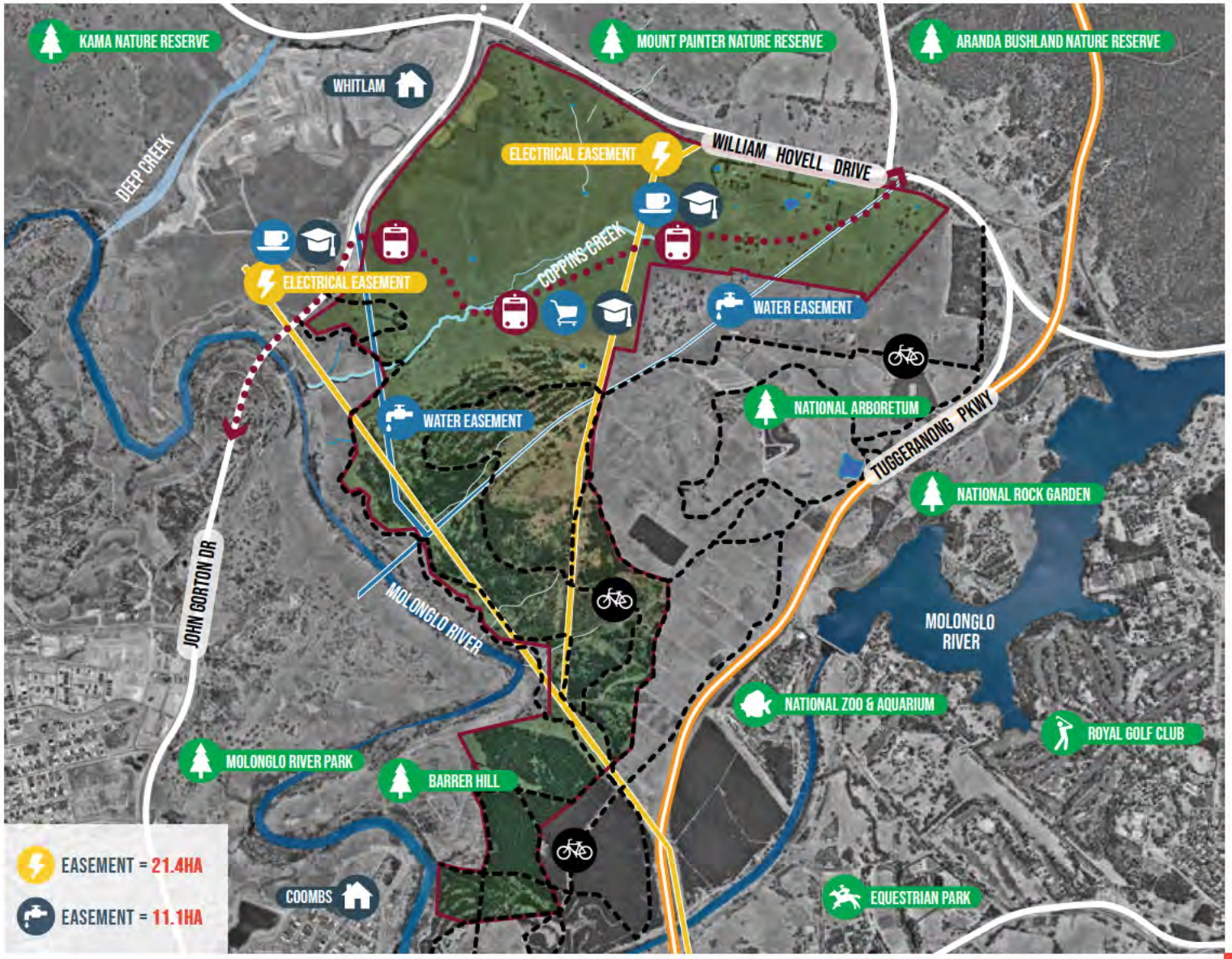
ENVIRONMENTAL

The Urban Amenity Tree Assessment identifies a number of medium to high quality trees in the northern portion of the site with some clusters following Coppins Creek south. All these trees are to be retained, which may impact on earthworks strategies as are on some of the steepest parts of the site.

The southern two thirds of the site is heavily vegetated with non-native pine trees, these can be removed, however clusters could be retained to create established landscaped zones.



INFRASTRUCTURE



Molonglo 3 East

1

DESIGN PRINCIPLES

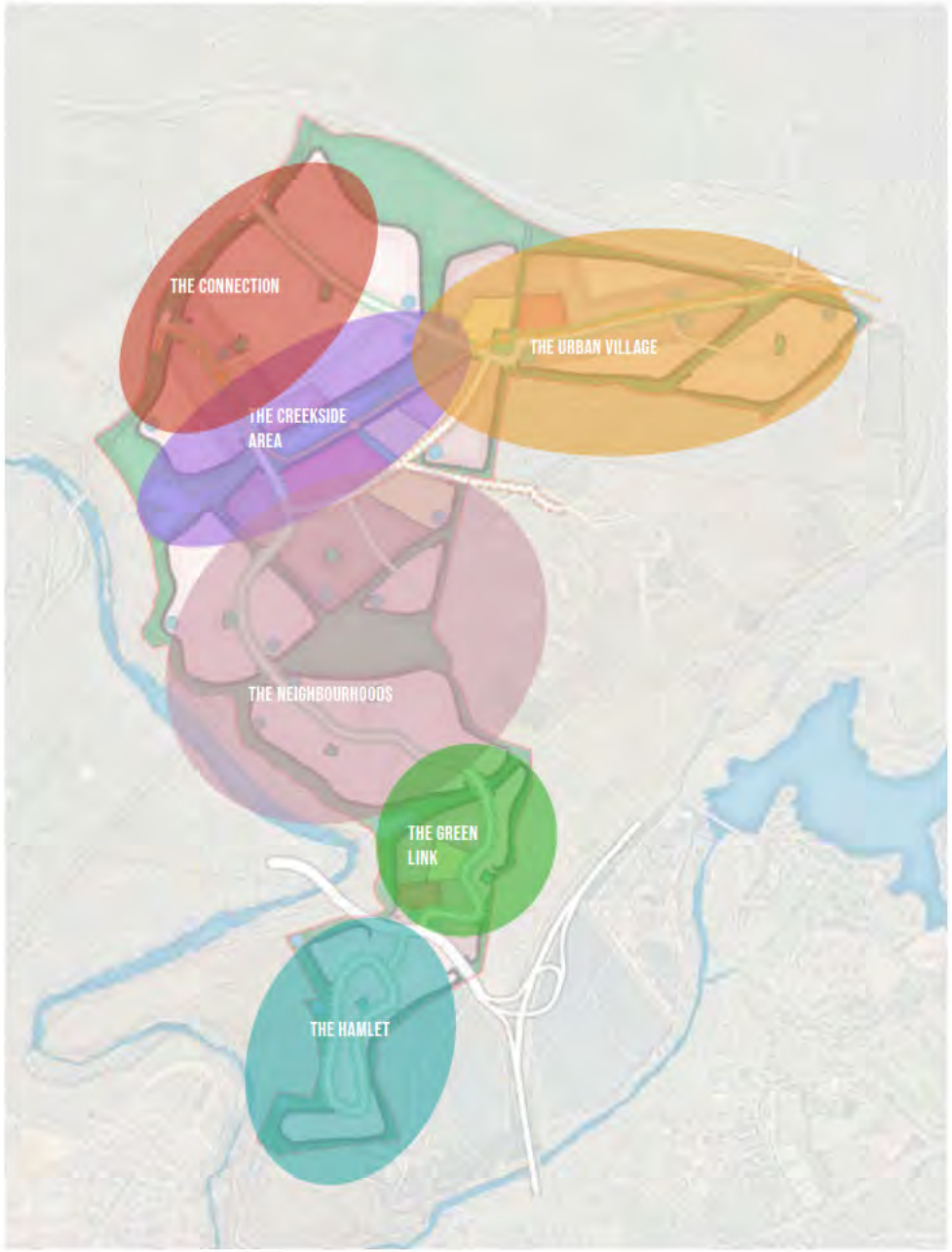
CHARACTER AREAS

We have provided a draft Character Areas plan for discussion. The establishment of Character Areas is critical to driving holistic design outcomes and avoiding the dilution of intent through a series of small technical compromises.

The Character Areas are based on existing and future features, characteristics, values and synergies. The Character Areas work together to achieve diversity, sensitive responses to environment and a sliding scale of urbanity.

We will work closely with the team to establish unique principles and public and private domain guidelines for each Character Area. The unique Principles and Guidelines may include:

+ Context Sensitive Street Types (working within the Movement and Place Framework)
+ Acceptable Building Typologies and siting that related to the Pattern Book (ideally, these typologies would become pre- approved/ repeatable as integrated development solutions)
+ Acceptable interface solutions- for instance, the River Corridor may have a suite of acceptable interface solutions that can be applied depending on the Character Area. Similarly, the Arboretum interface.
+ Parks and landscape character



CHARACTER AREAS

CHARACTER AREAS VISION

THE HAMLET

+ The Hamlet provides an opportunity to connect on a closer, more intimate scale.
+ It's a place to pause, reflect and enjoy the best that life has to offer.
+ Ample planting and 'old pine' forests will help give the community an established and secluded feel.
+ The Hamlet is the gateway to the protected Molonglo River corridor, with focus given to the environmental qualities.
+ This quiet community will enjoy large blocks, views in each direction of surrounding hills and River, as well as close access to the city and transport.

THE NEIGHBOURHOODS

+ The Neighbourhoods is the spot for families who want cricket in the yard, and kids playing in the street.
+ Sat between the National Arboretum and a large open park, families can ride their bikes, take a walk or picnic under a tree.
+ It's a slower pace of life here, away from the hustle and bustle of the city and with lots of space to explore.
+ It features traditional 'garden city' open front yards, wide footpaths, shaded and active travel

THE CONNECTION

+ Adjoining key arterial roads, the Connection is the spot to be to access all of Canberra
+ With undulating views, and still close to the amenity of the Urban Village, the Connection will link residents to the broader Molonglo region

THE GREENLINK

+ The Green Link is the place to learn and play.
+ Located on a small green perch between the Molonglo River corridor and a primary school, it gives opportunity to explore outdoors and understand the lessons provided by nature.
+ The Green Link touches lightly, with smaller footprints that maintain a strong connection to the environment.
+ It provides a place to get lost in the landscape, with priority given to the pedestrian over petrol.

THE URBAN VILLAGE

+ The Urban Village is a place to live and play
+ It's a fringe-dweller, it's offbeat, but don't let that put you off
+ With direct links to the city, it will attract younger crowds. It throws away rigidity, and provides a place for free expression and creative endeavours
+ It comes alive at night, providing a bright, bubbling beacon within Molonglo
+ There's a volume of adaptable spaces, allowing the village to grow, change and develop over time and with shifting needs

THE CREEKSIDE AREA

+ The village is diverse, multicultural and inviting— it's the heart of Molonglo
+ It provides a place to meet, get together, connect and share a meal
+ It's active all day, and into the night with local businesses providing a place to shop, eat, drink, wind down, have fun and get to know your community
+ It's protected from the elements, with urban connection to the foreshore
+ It's a good neighbour – providing amenity for residents, while being sensitive to its surrounds
+ It's the quieter, family-friendly sister to the urban village. It's easy to get to, accessible, and you don't need a car

INSPIRATION

	THE HAMLET	THE NEIGHBOURHOODS	THE CONNECTION	THE GREENLINK	THE URBAN VILLAGE	THE CREEKSIDE AREA
HOUSING						
ACTIVATION						
LANDSCAPE / STREETSCAPE						

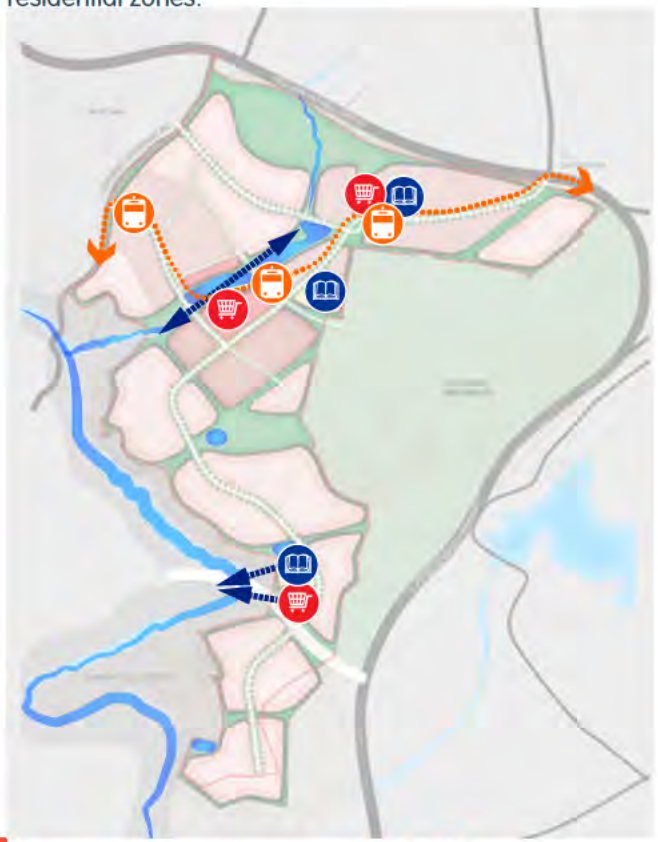
PROOF OF CONCEPT PRINCIPLES (2019)

CENTRES / SCHOOLS ARE LOCATED NEAR WATER OR LIGHT RAIL STOPS

Centres and Schools are located adjacent proposed light rail stops to create a community hub.

Where there isn't a light rail hub, they are located near water for a unique local centre experience.

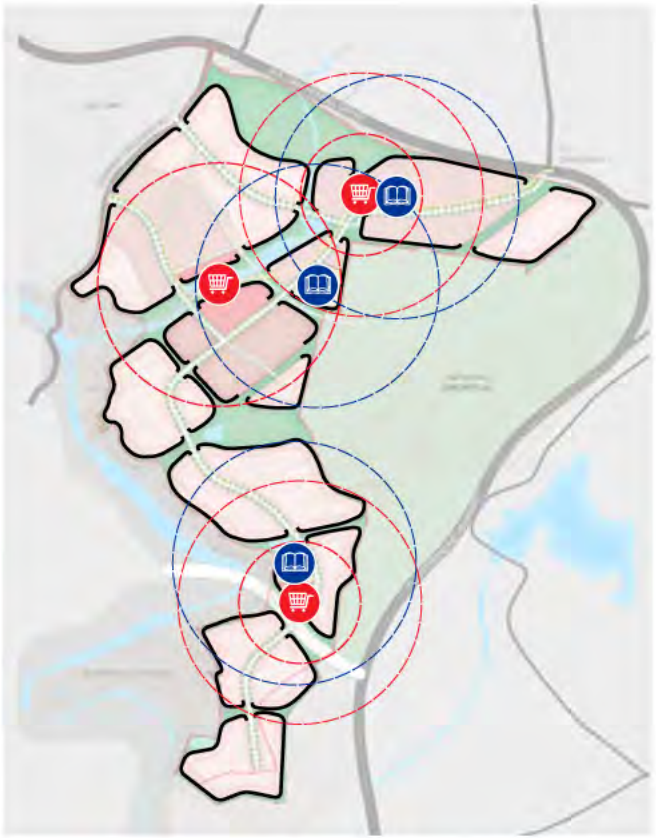
Schools are to be located on collector roads near light rail stops, and provided with vehicle access away from residential zones.



CENTRES / SCHOOLS ARE SHARED BY MULTIPLE NEIGHBOURHOODS

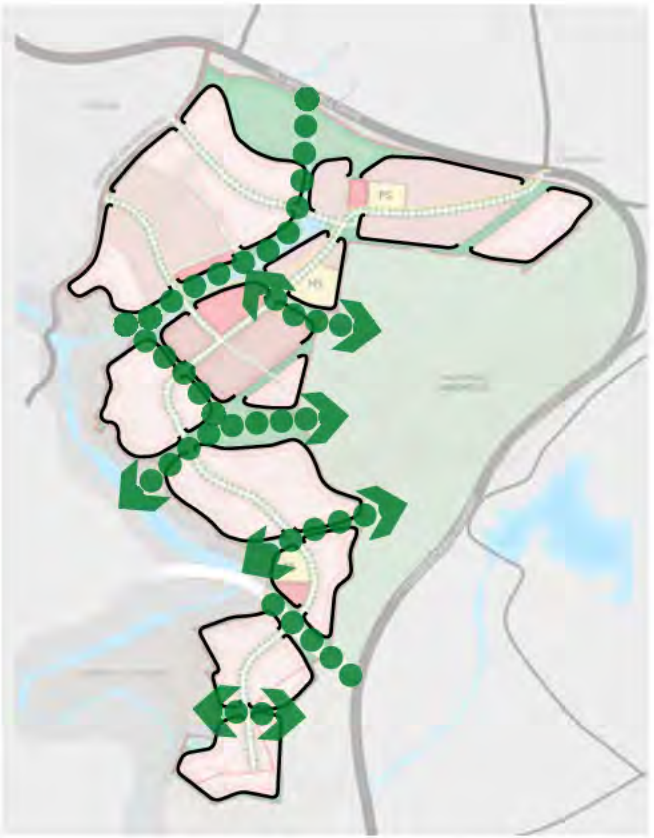
Retail Centres and Schools are located between neighbourhoods to be shared by the widest group.

The southern school has been moved north due to the constraints on accessing the southern neighbourhoods via a single road.



GREEN SPINES DEFINE NEIGHBOURHOOD EDGES

Neighbourhoods are defined by green buffers that align with existing natural features, including Coppins Creek. Some of the buffers will function as narrow linear open space connections.



ACTIVE TRAVEL NETWORK LINKS LOCAL CENTRES

Neighbourhoods and Retail Centres are linked via an Active Travel network.

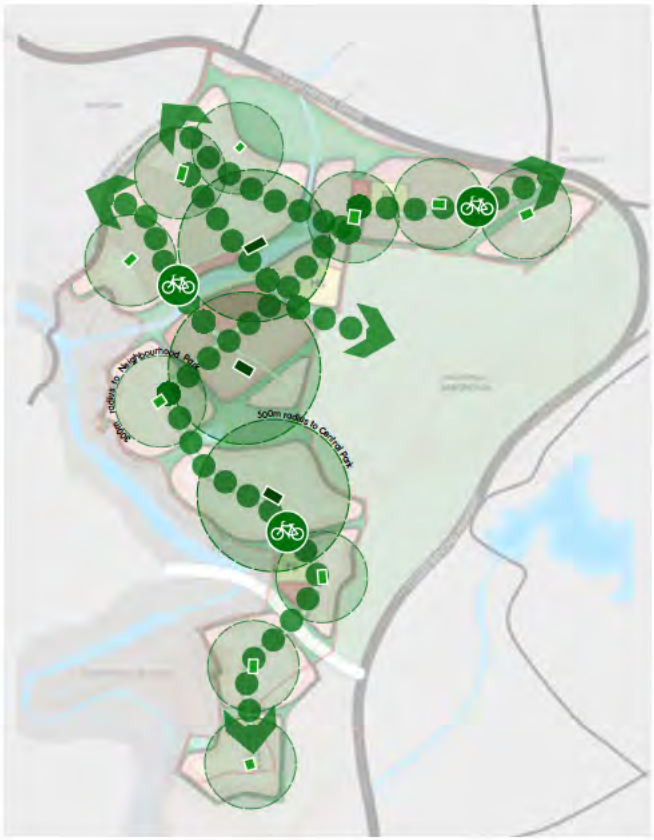
Each neighbourhood will have either a Central Neighbourhood Park or a Local Park at it's centre connected via the Active Travel network.

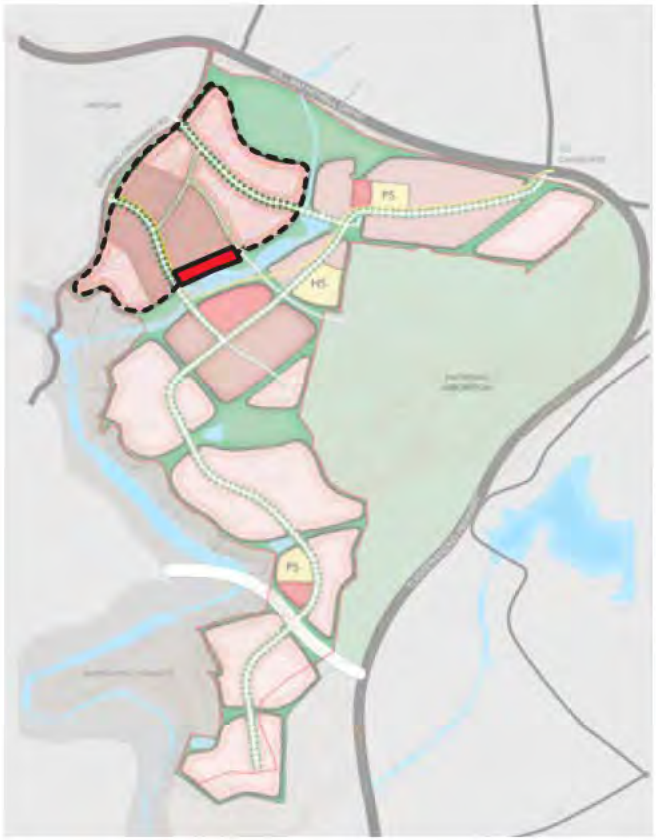
FIRST STAGE INCLUDES DAILY CONVENIENCE

A small portion of retail is located within the first stage to provide convenience to the first residents.

CREEK CORRIDOR WIDTH TO BE DECREASED TO CREATE AN INTIMATE RETAIL EXPERIENCE

Decrease the width of the creek between the two retail areas to create a retail experience that crosses both sides of the creek.





ESTATE DEVELOPMENT DEPARTURES

As identified in the Molonglo 3 East Proof of Concept (2019) there are key areas within the Estate Development Code that require departures to achieve the vision for Molonglo East.

These include:

1. Block Compliance
2. Movement
   - + Road Hierarchy
   - + Traffic Generation
   - + Slope Responsive Streets

BLOCK COMPLIANCE

The Molonglo 3 East Proof of Concept (2019) identified the Estate Development Code Block Compliance as a limitation to the yield due to the orientation of the block to the street and the slope of the land. The Site Analysis highlighted that **40%** of the land had south facing slope and **66%** of the blocks would have an orientation outside the ideals within the Block Compliance tables.

When combined, this accounts for **80%** of all developable land within Molonglo East.

The limitations set by the Block Compliance tables means that the vast majority of blocks must be greater than 18m wide at their narrowest point, which can greatly increase block sizes due to the 'fan' shaped blocks on curved streets (roads which work with the contours).

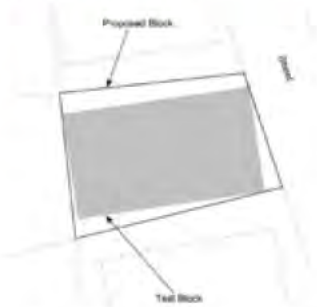
The Block Compliance tables don't allow for the variety in dwelling typologies required for the compact walkable neighbourhoods envisioned for Molonglo.

The alternative to the Estate Development Code Block Compliance tables are a Form Based Approach, which would include site specific controls, rather than relying on the planning controls of the Single Dwelling Housing Development Code and Multi-Unit Housing Development Code to deliver outcomes when blocks do not comply. A Form Based Approach removes ambiguity at the estate development planning stage and should encourage innovate approaches for delivering integrated housing development parcels. It can also incorporate performance-based planning, whereby EPSDD can agree upon acceptable development outcomes, but provide flexibility on how those outcomes are reached.

Slope responsive standard designs should be investigated to determine likely yield outcomes and block design, orientation and size. For medium and high density residential development, non-conventional styles should be investigated for steeper sites that minimise interventions to the natural grade e.g. split level townhouses with under croft garaging, interlocking apartments/townhouses (i.e. designed as one building, accessed independently from the low or high side of adjacent streets as separate dwellings). For low density dwellings, it may be necessary to increase building height controls/number of storeys in order to deliver smaller lots and achieve efficient land use and dwelling yields.

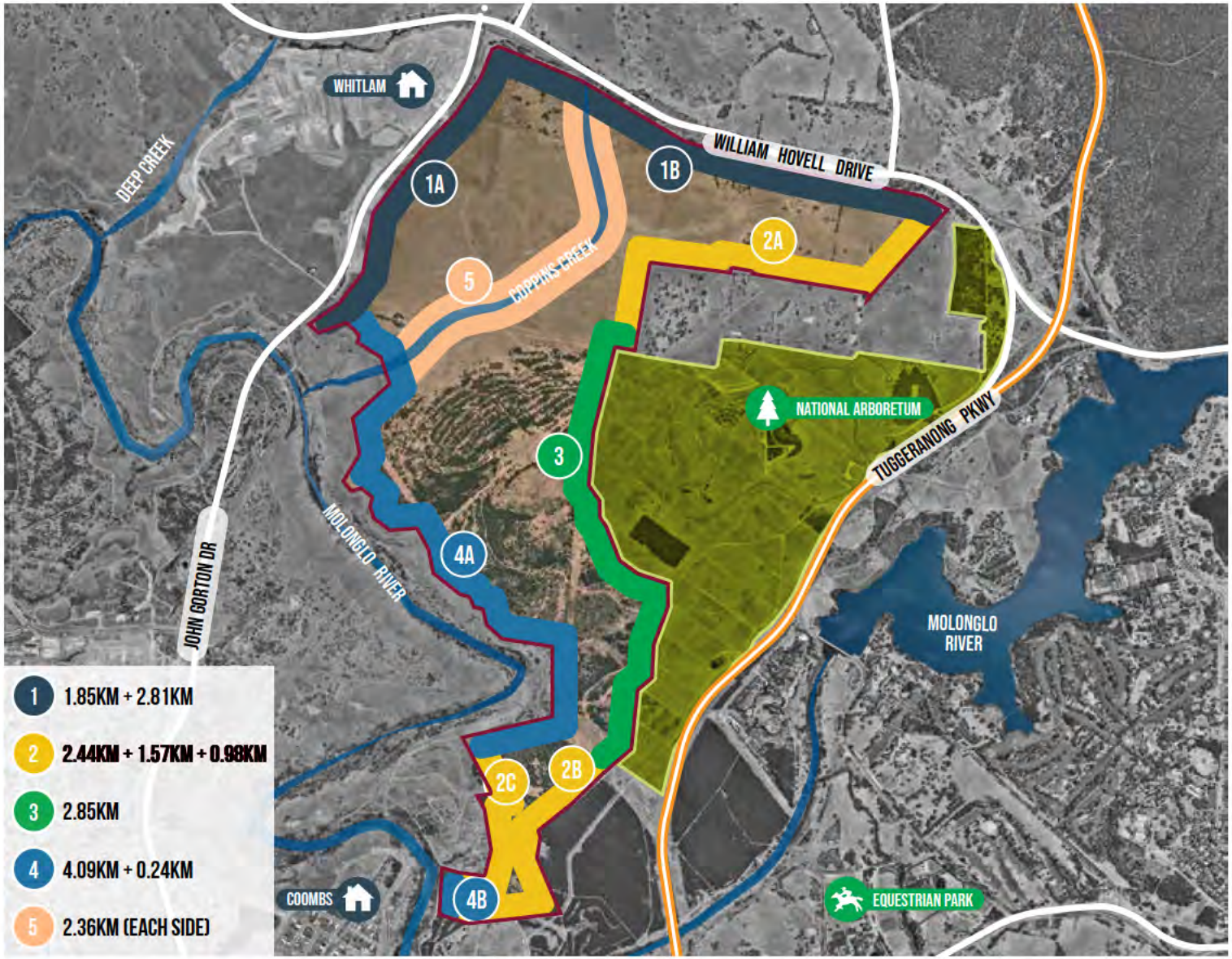
A Form Based Approach should also consider orientation, noting two thirds of the potential blocks are likely to have orientation outside the Block Compliance ideals. Opportunities for northern orientation and/or ground level principal private open space will likely be diminished as a result, and a Form Based Approach to land use planning could help identify acceptable alternatives for Molonglo 3 East. Solar access should be prioritised over ground floor access where the gradient prevents efficient use of the private open space.

BLOCK COMPLIANCE CODE REFORM

DESIRED PRINCIPLE	CODE REFORM	BEST PRACTICE CODE REFERENCE	RESULTANT DEVELOPMENT UPLIFT
Built form should drive block size. To comply with the EDC block compliance requirements on south facing land, and land within the NE/SW & SE/NW orientations requires blocks greater than 540m² (min 18m width) Block compliance on non-rectangular blocks (eg. fan shaped on curved sections) typically results in very large blocks (greater than 800m²) in order to fit a compliant shape, increasing the overall average lot size.	Block compliance tables should be reviewed as they dictate the type and location of block sizes. Block compliance limits the location of compact and mid-size blocks. Block sizes should be determined by site specific built form and not a general block compliance table.  BLOCK COMPLIANCE TEST BLOCK (SOURCE: ESTATE DEVELOPMENT CODE FIGURE A2)	General Principle and Methodology Applied to all Smart Codes and Form Based Codes (http://codesproject.asu.edu/)	By allowing a greater variety of built form dependant on the orientation, solar access, views, amenity, garage access etc, block sizes can be decreased in size from larger than 540m² to below 300m². Reducing the average lot size from 650m² to one of the following averages would increase the yields by: + 550m² - increase by 15% + 450m² - increase by 31% + 350m² - increase by 46% + 250m² - increase by 62% Built form specific block sizes will provide a greater diversity of housing choice than the block compliance tables. Each neighbourhood should have a mixture of different block sizes/types, from compact to large.

KEY INTERFACE PRINCIPLES

Molonglo 3 is surrounded by key interfaces with natural areas, including the National Arboretum, the Molonglo River Corridor, Coppins Creek, and Arterial Roads; William Hovell Drive, John Gorton Drive, and the Bindubi Street Extension.



MOVEMENT CORRIDOR INTERFACE

DESIGN PRINCIPLE

The Bindubi Street Extension will include the Inter-Town Public Transport Corridor that may include light-rail, rapid bus, or alternative public transport.

The proposed road reserve including the public transport corridor is approximately 3.6kms long and should be designed to promote modal shifts and connectivity within Molonglo 3 East.

In areas of steep topography where the light-rail won't be able to travel, the public transport corridor should be de-coupled from the road reserve corridor. This will allow it to be built on viaducts or within tunnels if required, without impacting on the road design.

Key issues:

+ Road Reserve width
+ Topography
+ Built form interfaces
+ Vehicle access
+ Pedestrian / Cycle access
+ Intersection design

NORTHERN ACCESS ROAD

SOUTHERN COLLECTOR

ARBORETUM INTERFACE

DESIGN PRINCIPLE

The National Arboretum is an enormous asset on the door step of Molonglo 3 East.

It was identified within the Innovations Workshop (11th May 2020) as the *'Back Yard'* for the local residents.

Permeability between the two areas is a key principle for pedestrians and cyclists, to enjoy the amenity provided by the Arboretum.

A secondary vehicle access from the Arboretum into Molonglo 3 is required to increase the capacity of the events that are held there.

Key Principles include;

+ Managed Access
+ Secondary Entry Road
+ East-West Arterial Interface
+ Urban Interface
+ Bushfire resistance

MANAGED ACCESS

+ Arboretum is full fenced and locked at night
+ Access to network of paths within Arboretum to be around 400m apart into Molonglo 3 East with lockable gates

SECOND ENTRY

+ The 10,000 person amphitheatre currently takes 3.5 hours to clear
+ A Second Entry is required to travel north to William Hovel Drive at the Bindubi Street intersection
+ Potential for southern third entry in longer term for Hotel
+ Co-ordination between Molonglo 3 East project and Arboretum required for second entry as timing for Arboretum in imminent.

EAST-WEST ARTERIAL

+ Current design impacts on the Boer War Forest.
+ Provide under pass for horse trail / commuter cycle path
+ 3.5m high clearance under arterial road for service vehicles

ARBORETUM INTERFACE

URBAN INTERFACE

- No back or side fences to face the Arboretum
- Use soft landscape as a transition to forests
- Fence along edge of Arboretum will include lockable gates to provide daytime access to network of paths and trails.
- The access gates should be aligned to the following urban structuring elements to provide a legible regional amenity circuit (Arboretum, urban greenspace, waterfont and associated parks and corridors):
  - Active travel links;
  - Connecting to internal neighbourhood centres, parks, civic facilities and/ or destinations and extending onward
  - Linking to River, Creek
- A range of interface cross sections should be approved and applied depending on and relating to the Character Area. These cross sections are outlined here in draft form and consider a range of housing types/ densities along the interface.
- Proposed hotel below Dairy Farmers Hill Lookout has views west through Molonglo that should be respected

BUSHFIRE

- Inner Asset Protection Zone (IAPZ) of around 30m within the Site Boundary

MOLONGLO RIVER CORRIDOR INTERFACE

DESIGN PRINCIPLE

As identified within the Molonglo 3 East Innovation Workshop (11th May 2020) PACS saw the opportunity for the Molonglo River Corridor to be utilised as the *'Front Yard'* for the local residents. This will encourage a sense of ownership and stewardship in the river corridor for residents who will in turn look after the area.

Key Principles include;

+ Managed Access
+ Path Network
+ Storm Water Treatment
+ Weed Management
+ Landscape Buffer and Objectives
+ Community and Culture

MANAGED ACCESS

+ Fenced along length of River Reserve with pedestrian acces s points to facilitate low impact recreation
+ Gated vehicle access for service vehicles

PATH NETWORK

+ A bridge crossing of the Molonglo River at the Coombs peninsular
+ Connections to the two special purpose reserves (Barrer Hill and Misery Point)
+ Connections into existing / proposed path network
+ Provide wayfinding and interpretive signage
+ Path access to Mount Painter under William Hovel Drive

STORM WATER TREATMENT

+ Included formal / informal WSUD
+ Naturalised wetland at the lower end of Coppins Creek with other smaller wetland/ponds at the other six or so minor watercourses that flow to the Molonglo River.
+ Undertake more treatment higher up in the urban catchments.
+ Multiple smaller ponds preferred by PCS for water treatment / detention including naturalised Coppins Creek Corridor.
+ On-dwelling catchment to be increased to 30% impervious surfaces to reduce size of ponds

WEED MANAGEMENT

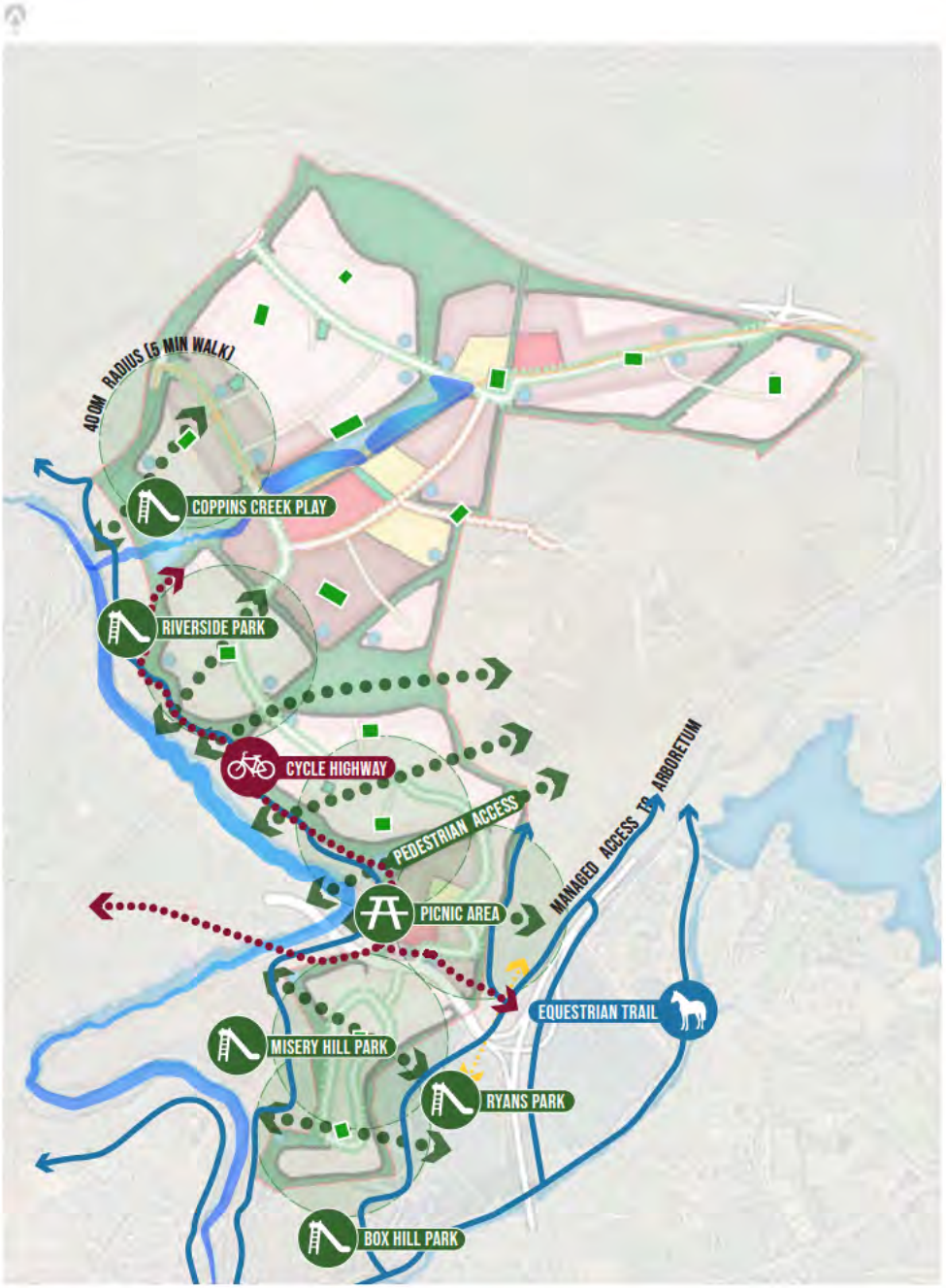
+ Only authorised vehicles will be permitted to access the buffer or Molonglo River Reserve
+ A dedicated Weed Monitoring and Management Plan will be developed for the buffer
+ Wash down facilities to be located along the urban edge road for vehicles used within the buffer to prevent weeds impacting the River Reserve

LANDSCAPE BUFFER

+ To include Inner Asset Protection Zone (IAPZ) of around 60m within Molonglo 3 East FUA
+ Fire Trail to be included closer to River Interface
+ Urban edge road to be included closer to development
+ Shared paths to be away from reserve to prevent impacts on native vegetation/animals
+ No parking to be included within buffer
+ The actual boundary between what is nature reserve and what is urban open space is not necessarily fixed and a new line of management responsibility (PCS vs TCCS) could be defined depending on the environmental values found and the management regime to be adopted for its 60m wide zone. Managed access points to the reserve needed.

LANDSCAPE OBJECTIVES

+ Avoid light pollution from cars / bicycles
+ Minimise disturbance of ground (maintain existing ground cover where possible)
+ Kama Nature Reserve Interface Strategy a good example of landscape objectives
+ Network of native species where possible throughout Molonglo 3 East
+ Interface treatments with Patches H, C, GG, N to be developed and discussed further with PCS
+ Identification of natural values inside the FUA should occur early and integrated/connected with those adjacent.



MOLONGLO RIVER RESERVE INTERFACE

MOLONGLO RIVER CORRIDOR INTERFACE OPPORTUNITY

COMMUNITY EVENTS

ARTS TRAIL

INTERPRETATION

TOUCH THE EARTH LIGHTLY

RECREATION

COPPINS CREEK / WATER INTERFACE

DESIGN PRINCIPLE

Engineering needs to be sympathetic to the natural state of the creek and ensure the natural features are maintained:

+ Preservation of the river corridor is key to the success and sustainability of the future development of Molonglo 3. The preservation also lends itself to the activation of the river corridor and linking previous stages of development along the corridor to the public such as the Namarag Reserve (Molonglo Special Purpose Reserve).
+ Activation and access for walking trails / horse trails / bike paths
+ Adequate crossing points for both walkers / riders and vehicles
+ Maintaining quality of water within the Creek and provide betterment (WSUD principles) where possible
+ Linkage to Whitlam development

Potential flooding from Coppins Creek to the proposed surrounding development areas to be considered

+ Encroachment within the Coppins Creek flood plain
+ Can not impact existing development areas such as Whitlam Development

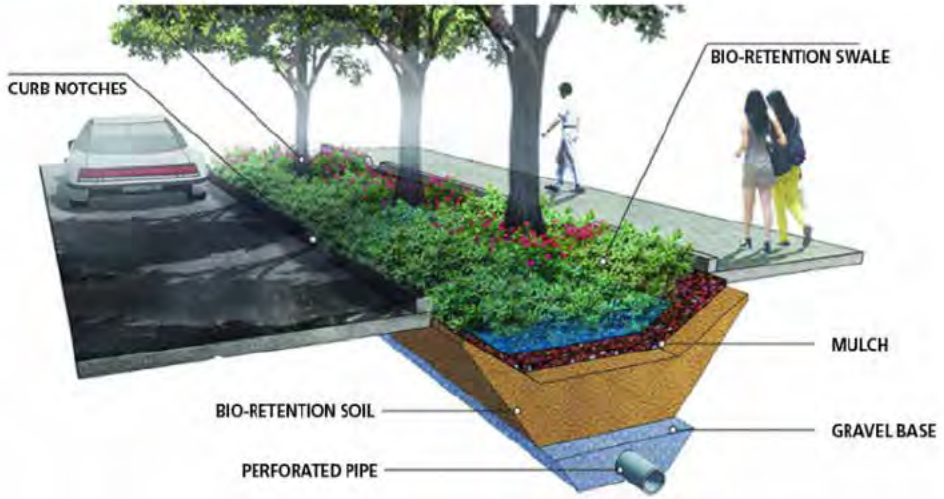
WSUD

DESIGN PRINCIPLE

- Appreciation of maintenance of both types as well as construction costs / urban design impacts and practicality
- Staging of development is a key consideration which may lean toward multiple treatment measures
- Topography will play an important role in the location and positioning of WSUD measures
- Gravity systems where possible rather than pumping stations / pressurised mains
- Overland flow and open swales to interface with the urban landscape
- Ensuring adequate space allocation is provided in the streetscape layout and road cross sections

AVOID END OF LINE TREATMENT

MULTIPLE FACILITIES / TREATMENT TRAINS



Section drawing of a rain garden

http://imgfl.com/whats-a-bioswale

ACOUSTIC PRINCIPLES

DESIGN PRINCIPLE

Provide a variety of mitigation strategies for dealing with acoustic issues caused by the surrounding arterial roads.

LAND PLANNING:

- Set back distances.
- Lot design so that outdoor areas and sensitive spaces do not directly face the road.
- Land use design so that less noise sensitive developments shield residential lots.

MITIGATION AT SOURCE

- Noise walls along the edge arterial road carriageways, within their road reserve and not the project boundary. By including the noise wall or earth mound next to the source its size and visual impact can be reduced.
  - This has been adopted in various parts of ACT however was ruled out to be feasible for other projects in Molonglo Valley due to project constraints (e.g. Whitlam).
  - This is unlikely to be suitable for Molonglo 3 as there is 4.66kms worth of interface along William Hovell Drive and John Gorton Drive that would require a noise wall on the edge of the carriageway. This would have significant visual impact to the region.
  - Selection of a low noise road surface for arterial roads. This however has been rejected by TCCS as not feasible from an ongoing maintenance perspective, however it may be suitable for project collector roads due to their lower speeds (less than 60km/hr)

MITIGATION ALONG TRANSFER PATH.

- Noise walls at property boundaries. This however have been viewed as unfavourable in some projects in the past due to the size of the walls required (Whitlam required greater than 4m high walls due to topography)

MITIGATION AT RECEIVER

- At property treatment such as improved glazing, mechanical fresh air ventilation etc. noting that best acoustic outcome is to reduce external noise level as much as possible and property mitigation is typically last resort. However, accepting higher external road noise levels and requiring an appropriate internal noise levels through building design have become more common outcome for some new residential subdivision in the ACT.

TRADITIONAL ACOUSTIC TREATMENT

SCULPTURAL ACOUSTIC TREATMENT - SOLID AND CLEAR COMPONENTS

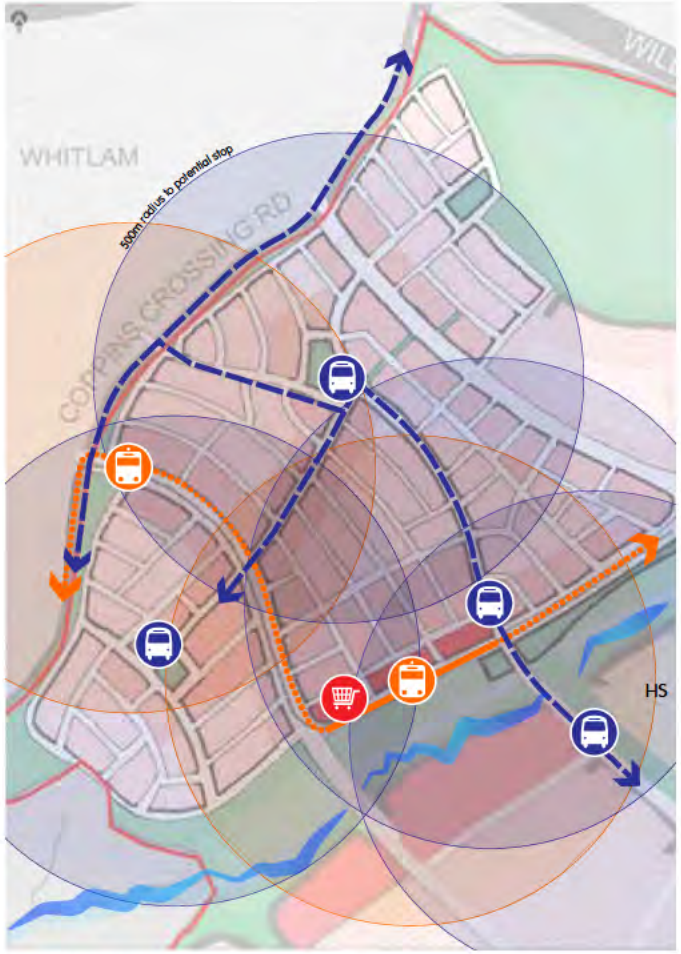
WALKABLE NEIGHBOURHOODS

DESIGN PRINCIPLE

Create neighbourhood structures with elements that prome a walkable community.

This will include:

+ Active travel connections that tie into a broad open space network
+ Access to Public Transport



TRANSPORT

- Bus alignment
- Light Rail
- Opportunity for Light Rail to be decoupled from road corridor

ACTIVE TRAVEL

INDICATIVE DEMONSTRATION OF PRINCIPLES (PROOF OF CONCEPT 2019)

The illustrative plan opposite shows one way that this neighbourhood within Molonglo 3 Stage 2 could be structured. The objective of the illustrative plan is to demonstrate the realisation of the overarching proposed design principles at a legible scale. These principles are repeatable and beneficial in terms of amenity, liveability, value and increased development and diversity capability. Whilst this level of detail will not be included in the Concept Plan, these principles are inherent in the structure.

The table below outlines code reforms associated with the realisation of the proposed principles compared to conventional and/ or compliant practice.

	INNOVATIVE/ REFORM	CONVENTIONAL/ COMPLIANT
1	Bus avenues connecting neighbourhood centres (increased catchment and destination patronage contributing to modal shift)	Bus avenues on flat land and peripheral to neighbourhoods (reduced catchment)
2	Streets running perpendicular to topography	Street orientation driven by compliant block orientation requirements
3	Slope responsive cross sections in excess of 12%	Standard cross sections parallel to contours increase cut and fill
4	Streets connecting to high amenity areas (creek)	Streets running parallel to high amenity areas creating a privatised edge
5	Narrower rear lanes	Wide rear lanes
6	Removal of splays wherever possible	Default application of splays to all streets and lanes
7	Varied block depths suited to slope, orientation and desired product	Standard 30m deep blocks
8	Reduced land take for streets/ lanes	Significant land take for streets/ lanes and infrastructure.
9	Density/ dwelling types based around locational amenity, access and services	Density limited to flat land with optimum Code compliance orientation

DEMONSTRATION OF NEIGHBOURHOOD PRINCIPLES (MOLONGLO 3 PROOF OF CONCEPT (2019)

VIEW CORRIDORS / KEY AXIS

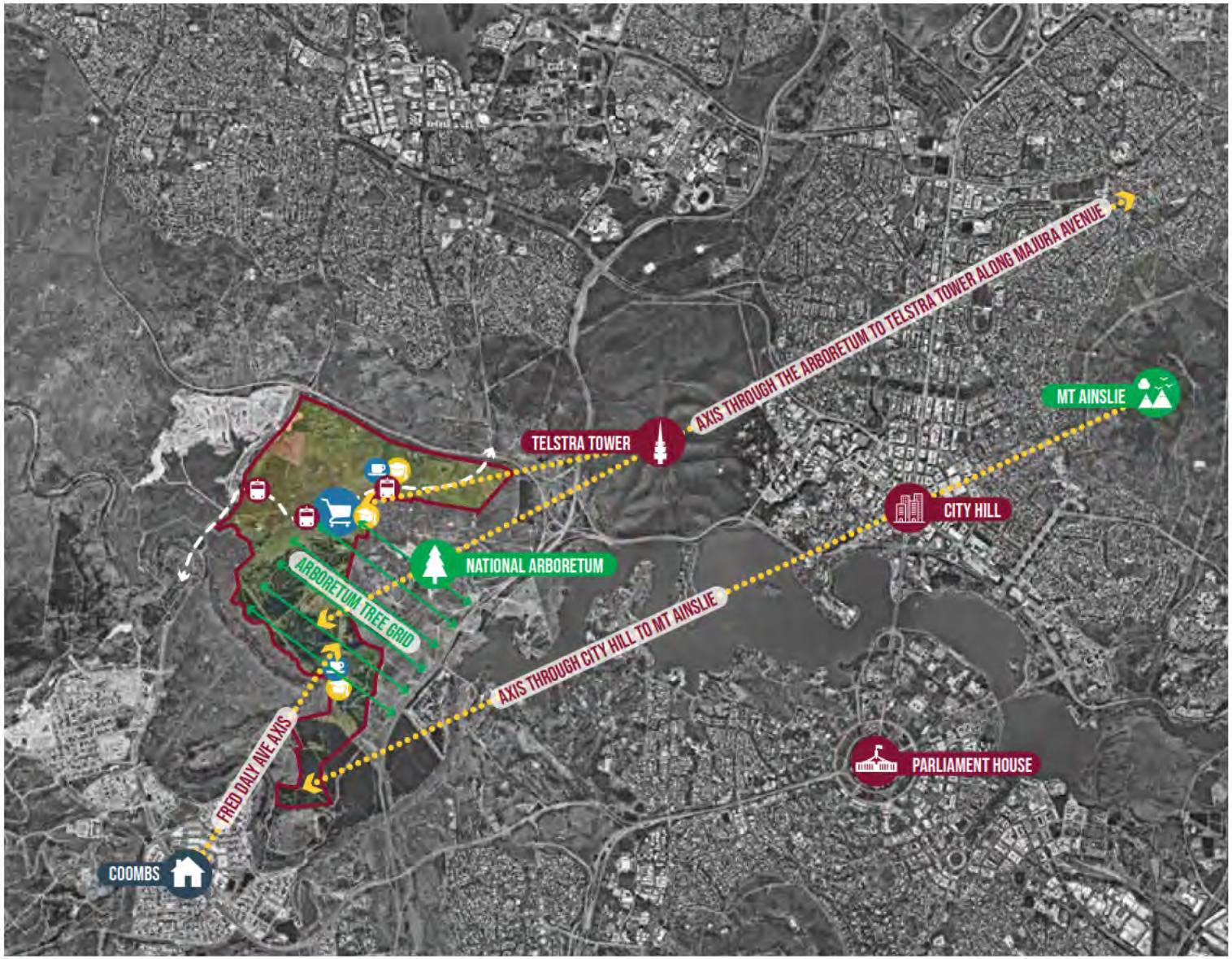
DESIGN PRINCIPLE

RESPONDING TO THE ESTABLISHED AXIS

Molonglo 3 East is on the edge of a series of established axis within Canberra, including:

- the alignment of the Arboretum Tree Grid,
- the axis along Majura Avenue to Telstra Tower to the National Arboretum,
- from Mt Ainslie through Ainslie Avenue to City Hill.

There is a view corridor from Telstra Tower along the future IPT Corridor towards the Central Group Centre. Providing key views to the major landmark.



LAND-USE POLICIES

DESIGN PRINCIPLES

- Generally, neighbourhoods should include large shady deciduous trees to reduce the urban 'heat island' effect and promote a comfortable walkable neighbourhood
- Residential neighbourhoods that interface with the Molonglo River Corridor should be defined by native landscape where appropriate (open space, buffer zones, etc) whilst including exotic deciduous street trees.
  - Existing shared use paths within Molonglo district should connect into interfacing neighbourhoods.
- General neighbourhood design should promote health lifestyles and active transport by incorporating street alignment, gradients, connectivity, and wayfinding that assists with non car-based movement.
- Community, recreation, and commercial facilities should be co-located and designed as activity nodes and 'third spaces' for public interaction and wellbeing of surrounding neighbourhoods.
  - The 'Third Space' is the social spaces that separate the First Space (Home) from the Second Space (Work). These could include public libraries, cafes, community halls, parks, etc.
- Communities, recreation, and commercial facilities should be centrally located within neighbourhoods and on public transport routes to encourage their role as activity nodes.
- Where located adjacent to green corridors or watercourses, built form should be oriented to natural elements and incorporate them into adjoining public space.
- Commercial, mixed use and higher density residential zoned land should be designed to encourage non car-based trips.
- Where possible, commercial and community zoned land is located on land with minimal gradient (less than 5%). Where not possible the built form should relate to the topography and sleeve parking behind active facades
- Site specific planning controls should be considered to enable slope responsive dwelling design to enable innovative and sustainable built form outcomes.
- Residential subdivision layout should be informed by slope responsive dwelling design of future dwellings and demonstrates ability to accommodate dwellings that achieve reasonable solar access, privacy and size of principal private open space.
- Dwelling design should prioritise area and orientation of principal private open space over ground floor access where slope of blocks exceeds 5% grade.
- South facing blocks, and blocks with a northeast/southwest and southeast/northwest orientation, that are unlikely to achieve a northern orientation for principal private open space, should be located with proximity to public open space suitable for general amenity.
- Street verges should incorporate sufficient area to accommodate street trees to grow to maturity and contribute an urban canopy that is appropriate for the orientation of streets and solar access to associated blocks.
- Road design and verges including pedestrian paths should be of sufficient width and grade to promote active travel and accessible movement for people with reduced mobility.

TABLE 1 RESIDENTIAL ZONES LAND USE POLICIES

PRINCIPLE	RATIONALE
Dwelling typology and density should respond to slope characteristics.	Dwelling types and density should be distributed in a way that enables building design to respond to and incorporate steeper gradients into the building design. Where possible, medium and high density building should be prioritised in steeper sites where building design is able to be more slope responsive.
Solar access to dwellings and principal private open space should be prioritised over ground floor principal private open space.	Incorporating innovate solutions to the building design requires consideration of amenity factors for residents. The current planning controls prioritise principal private open space to be located at the ground floor for single detached dwellings, as well as achieving 3 hours of sunlight between 9am and 3pm during the winter solstice. The Proof on Concept has demonstrated opportunities for planning code reform that enable residential amenity in way that will also enable slope responsive dwelling typologies that result in more efficient land use. Demonstrated ability to achieve equitable access to public open space within reasonable walking distance form dwellings should also be considered when developing innovative or alternative housing typologies.
Encourage the uptake of climate-wise design for dwellings, particularly on blocks located with a southern orientation.	The ACT Living Infrastructure Plan promotes the introduction of demonstration projects to encourage education and awareness about innovative solutions to climate-sensitive built form. Where blocks cannot achieve ideal orientation, dwellings should incorporate materials and features that prioritise to maximise residential amenity, such as insulation, glazing size and thickness, and landscape design to prevent overshadowing.
Promote walkability of neighbourhoods through use of landscape areas as well as traditional streetscapes.	Streetscape walkability and inclusion of footpaths should by extensively incorporated throughout the development to promote active travel. It is understood that Molongo 3 East will incorporate several 'green spines' between neighbourhoods. These corridors should provide logical wayfinding opportunities to link people between natural areas, such as the Molonglo River Corridor, and urban spaces such as a future local or group centre. Conversely, green spines can be used to encourage recreation and link residential areas to the River Corridor and associated pedestrian and cycle trails and the broader active travel network of Molonglo Valley.

DESIGN PRINCIPLE

Community, recreation and commercial facilities should be collocated and designed as activity nodes and third spaces for public interaction and well-being of surrounding neighbourhoods.

Communities, recreation and commercial facilities should be centrally located within neighbourhoods and on public transport routes to encourage their role as activity nodes.

Where located adjacent to green corridors or watercourses, built form should be oriented to natural elements and incorporate them into adjoining public space.

Commercial, mixed use and higher density residential zoned land should be designed to encourage non car-based trips.

Where possible, commercial and community zoned land is located on land with minimal gradient (less than 5%).

TABLE 2 COMMERCIAL ZONES LAND USE POLICIES

PRINCIPLE	RATIONALE
Commercial and community facilities should be collocated to maximise exposure, patronage and opportunities for walkability.	Commercial zoned land should be located adjacent to activity centres such as schools or playing fields. Collocation provides opportunities for multi-purpose trips and encourages walkability by providing several services within proximity of one another. Where specific community facilities are proposed, e.g. a health facility or childcare centre, they do not necessarily require allocation of CFZ zoned land. Mixed-use developments with restrictions and on use may be a more effective way of delivery commercially oriented community facilities.
Local shopping centres incorporate the surrounding public realm and landscape areas	Commercial land should incorporate landscaping that contributes to the overall amenity of public spaces. Buildings should be designed with awnings for shade and weather protection, which should extend to the surrounding landscape areas. Landscape treatments should consider the role of the commercial hierarchy. Local centres are predominantly for convenience retailing and may not require extensive urban design treatments. However, group centre, or local centres with mixed use elements, may benefit from a unified urban design approach that provides third spaces for public interaction. Neighbourhood centres should be designed to encourage universal accessibility and safety. Buildings should incorporate clear wayfinding between activity centres such as s shop, school or community centre
Distribution of commercial centres should consider practical accessibility from dwellings.	The design of the Molonglo 3 East includes narrow areas of developable land that may require linear movement rather than circulation through a neighbourhood. While walkability of neighbourhoods is encouraged, it may not be possible for all dwellings to be located within walkable catchments from a local centre.

Land use policies for community and recreation zoned land are considered against the Community Needs Assessment.

DESIGNING FOR INCLUSION

DESIGN PRINCIPLE

Welcoming environments include:

+ Adequate lighting
+ A variety of people
+ Passive surveillance (people overlooking areas)
+ Avoid hiding / entrapment spots

LIGHTING

+ Public spaces including urban parks, River and Creek Corridor, Arboretum interface and active travel routes should provide up-lighting and human scale lighting (bollards or other).
+ Lighting that creates glare or "blinds" a pedestrian should be avoided.

PASSIVE SURVEILLANCE

+ Dwelling should not back onto public spaces.
+ Fencing and/ or courtyard walls onto public spaces, including streets must not exceed a height of 1.5m and should be semi transparent.
+ All dwellings with front, side or rear address to public spaces, including roads, should have at least 1 habitable room/ window fronting the space.
+ Urban open spaces should be supported by a mix of uses and relatively higher density to increase eyes on the space through the day/ night.
+ Where possible, dwellings fronting open space corridors and promenades should be raised above ground level (up to 0.6m to enable privacy and passive surveillance (discourage closed blinds etc).
+ Car free zones should demonstrate a mix of non- residential off/ on peak uses to maintain levels of safety through activation.

VISIBILITY

+ Where possible, public connections should be provided at grade and in open, highly visible areas.
+ Where at grade connections are not possible and an underpass is provided, they should be designed as:
  + A maximum length of 25metres, or
  + A maximum length of 100m with exits and openings into populated areas every 25metres,
  + Well lit areas,
  + Having no obstructions where people could hide,
  + Having at grade entry/ exits in populated, active areas.

CHILD FRIENDLY SPACES

DESIGN PRINCIPLE

Spaces that are Child-Friendly require:

+ Safety
+ Security
+ Availability / Access to spaces
+ Beauty
+ Adaptability
+ Ability to play
+ Ability to education
+ Ability to participate

ENRICHMENT

+ A park, linear green or open space should be provided within 200m of every dwelling to promote healthy living opportunities for children, particularly in areas with a density greater than 22dw/ ha.
+ Every space or circuit contains the opportunity for stimulation and education, awareness and stewardship. Consider layering art, interpretation and signage in all open spaces.
+ Stimulation and activation should be promoted by:
  + Establishing point of interest every 200m along key public spaces,
  + Medium to high density residential areas should have 10-15 doors per 100m,
  + Mixed use areas should have 15-20 doors per 100m.
+ Community uses (schools, childcare, hospitals) should have visual and physical access to greenery.

AVAILABILITY / ACCESS

+ Pedestrian/ cycle only zones must not exceed 200m in length and should avoid entrapment opportunities.
+ Shared zones must not exceed 400m in length without full movement intersection breaks.
+ Intersection design and kerb radius should be designed to allow pram ramps to be perpendicular to the kerb and aligned with zebra crossings and/ or the shortest crossing distance of a street.
+ Wayfinding should be simple, graphical, colourful and no higher than 1.5m above ground.
+ Community uses (schools, childcare, hospitals) should not be located on arterial streets.
+ Community and mixed use streets should be designed with intentional friction, prioritising the pedestrian and designed to withstand a certain level of traffic flow disruption.

DIVERSITY

+ All dwellings should have access to a frequency and variety of open spaces including smaller pocket parks where young children and their parents feel comfortable.
+ Children's play should include nature play, adventure play and free play opportunities.
+ All community facilities and open spaces should be multi functional encouraging shared use, on- off peak uses and multi- generational interaction.
+ Productive landscapes should be encourages.

Molonglo 3 East

2

MOVEMENT & PLACE

PRINCIPLES FOR MOVEMENT

DESIGN PRINCIPLES

ACKNOWLEDGE CANBERRA TRANSPORT VISION

1. An Integrated Network
2. Transport that is Part of Our City
3. Meeting Our Customer's Needs
4. Becoming Australia's Cycling Capital and Most Walkable City
5. Achieving Net Zero Emission Transport
6. Ensuring Canberra is Future Ready

ACT MOVEMENT AND PLACE MATRIX

Different corridors serve different purposes. Balancing the demands of "movement" and "place" for all modes is key for Molonglo

+ Pedestrians
+ Cyclists
+ Public transport – buses, light rail or other modes
+ Cars
+ Taxis and other shared vehicles
+ Freight

Movement doesn't equal traffic. High movement corridors could facilitate active transport or public transport and have a low private vehicle function.

LOCAL STREETS

Slow speed environments, allowing active transport.

MOVEMENT CORRIDORS

Include rapid mass transit options along the movement corridors.

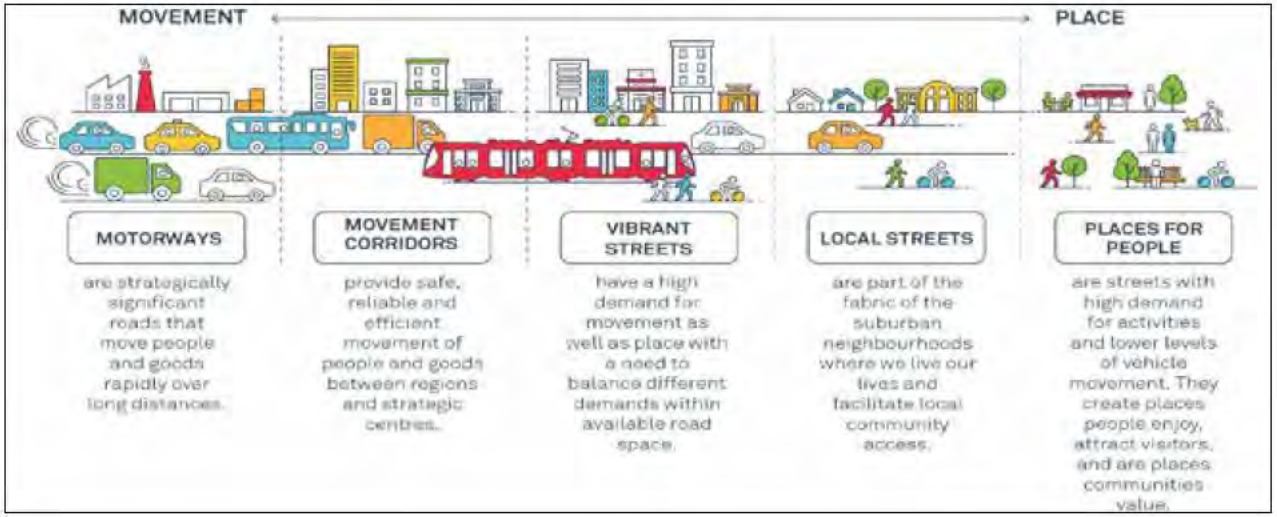
Separate modes along the movement corridors to facilitate safe movement for all users.

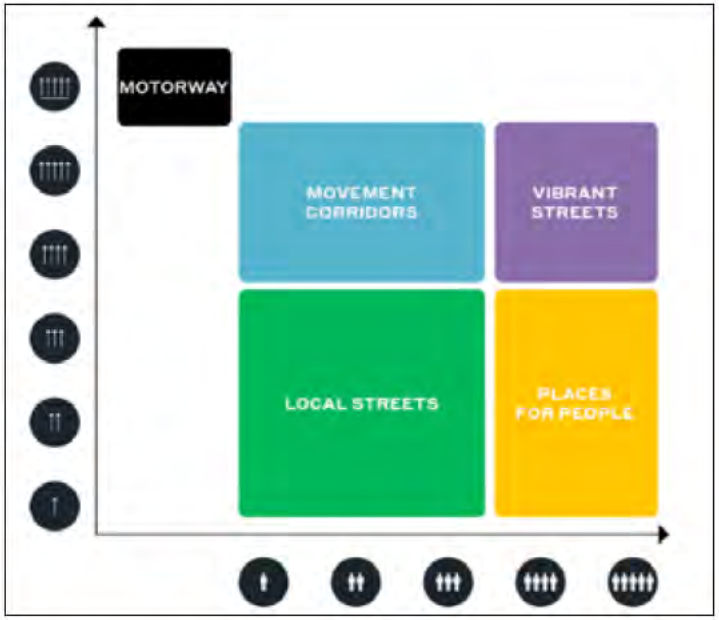
PLACES FOR PEOPLE

Facilitate slow vehicle movement and high pedestrian activity, particularly around local and group centres and schools.

VIBRANT STREETS

Investigate areas for a vibrant street around the group centre, and local centres. This could be either a pedestrianised and public transport corridor or a private vehicle, public transport and pedestrian corridor.





MOVEMENT SIGNIFICANCE	↑	↑ ↑	↑ ↑ ↑	↑ ↑ ↑ ↑	↑ ↑ ↑ ↑ ↑
Typical journey catchment	<1km	1-3km	3-5km	5-10km	>10km
Traffic functional classification	Rear Lane	Access Street	Minor Collector	Major Collector	Arterial / Trunk
Public transport route	Feeder	Local	Frequent Local	Rapid Transit	Light Rail
Cycling route	Local Access	Local Route	Community Route	Primary Route	
Walking route	Local Route	Local Route	Principal Route	Recreational Trail	
Freight route	No Access	Local Access	Tier 2 Freight Routes		National Freight Routes

PLACE SIGNIFICANCE					
Importance of centres	Neighbourhood	Local Centre	Group Centre	Town Centre	City Centre
Magnetism	Local Access	Local Desitnation	Group Destination	City Wide Destination	National Significance Destination
Pedestrians	Low Activity	Moderate Activity	High Activity	Significant Activity	City Significant Activity
Other site specific	Homogenous Land Uses	Local retail, school / childcare, local markets	Larger School / Hospital / Place of Worship	University / Large Hospital / Civic Space	Special Events

SOURCE: ACT MOVEMENT AND PLACE FRAMEWORK (WSP, 2018) MOVEMENT SIGNIFICANCE GUIDE

MOBILITY PRINCIPLES

Prioritise more sustainable mode choices to contribute to:

+ Reducing road infrastructure requirements,
+ Placemaking of public spaces,
+ Minimising environmental impacts, and
+ Improving residential health outcomes.

Acknowledge that there are different journeys, at different times, for different users and these should be facilitated by mode choice:

+ Local trips via active transport as well as active transport for commuting. The need for recreational paths as well as commuter paths should be considered.
+ Public transport trips within the wider Molonglo Valley as well as rapid trips to Town Centres across Canberra.
+ In considering mode share, acknowledge user mindsets or different personas within the region. Where do people want to go and how do they want to get there?
+ Ensure accessible options for all customers.

DESIGN FEATURES

GENERAL PRINCIPLES

+ Active transport and public transport are prioritised over private motorised vehicles.
+ Road and footpath widths should be as outlined by road type below.
+ For corridors identified for future light rail, corridor preservation (as outlined in public transport interface) should be adhered to.
+ Ideal gradients are less than 12%, however due to the topographical constraints of the study area steeper gradients may be considered.
+ Ensuring appropriate tree canopy and plantings within and around the road corridor and active travel network. The Canberra target is for the equivalent benefits of a 30% tree canopy cover and 30% permeable surfaces.
+ The road types listed below are not exhaustive and other road types may be considered.
+ Similarly, streets may be a mixture of different road types principles listed below.

BICYCLE BOULEVARDS

+ Prioritise cyclists first, may still accommodate private vehicles as a secondary mode.
+ Direct routes for cyclists to encourage cycling over other modes.
+ Some sections could be cyclists only to discourage private vehicles.
+ Clear wayfinding and signage for cyclists to key destinations, both local and regional destinations.
+ Ideally 3 metre widths per lane if the bicycle boulevard is shared with vehicles. An additional 2.5 metres should be allowed for footpaths for pedestrians.

PUBLIC TRANSPORT CORRIDORS

+ Ensure appropriate widths, eg; allowing buses to pass each other
+ Enable good pedestrian and cyclist links to public transport stops.
+ Give priority to public transport at signals with dedicated bus jumps.
+ Ensure public transport stops and conveniently located to key destinations such as group centres, local centres and schools as well as responding to land use density.
+ Buses and light rail vehicles should have approximately 3.5 metre lanes.
+ To encourage shared use 3.5 metres footpath and cycleway could run adjacent.

LOCAL STREETS

+ Slow traffic environment to enhance safety for all users. Introduce traffic calming that is integrated with urban design principles.
+ Allow safe movement for all modes through local streets, supporting footpaths and other transport infrastructure.
+ Balance off street parking with land use intensity.
+ For local streets a 3.2 metres lane width is appropriate with an adjacent 2.5 metre footpath.

SUB ARTERIALS

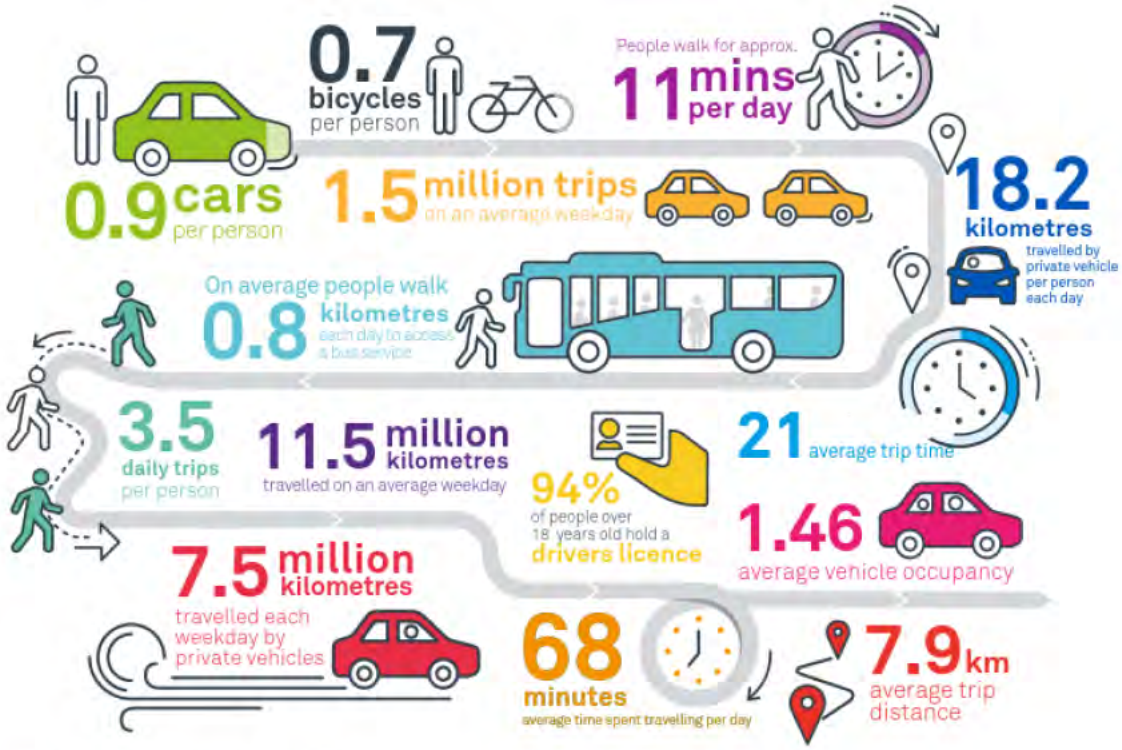
+ Function as a multi-modal corridor
+ Limited intersections to facilitate a higher movement function.
+ Have adequate crossing opportunities based on pedestrian desire lines across the corridor
+ Tie into surrounding intersections on John Gorton Drive, William Hovell Drive and the future East West Arterial as appropriate.
+ Lane widths of 3.2-3.5 metres and could have multiple lanes.
+ To encourage shared use 3.5 metres footpath and cycleway could run adjacent.

ACTIVE TRANSPORT CORRIDORS

+ Connect to existing (or proposed) external paths such as along the Molonglo River Corridor, through the Arboretum of existing underpasses under William Hovell Drive.
+ Minimum of 3.5m for shared use path. Up to 5m for bidirectional cycle path and footway. Could be any width in between these points

GENERATION OF MOVEMENT

- Use the ACT Household travel survey to estimate trip generation within Molonglo 3 (household and subdivision).
- Use modal share objectives to break the trip rate down by estimate trips per day (per individual mode. Note that the target covers all trips, not just commuting trips so will reflect trips to local centres, school etc.)
- Have visionary mode share targets supporting active travel and public transport to reflect Canberra's vision. This will also be considered with high, medium and low targets.
- Acknowledge that the study area is optimally designed and located to accommodate these targets.
- Acknowledge the presence of local schools, local centres and a group centre all to be connected by a strong active travel network.
- Acknowledge the presence of public transport, in particular a future rapid mass transit route through Molonglo 3.



ACT HOUSEHOLD TRAVEL SURVEY (SOURCE: INTEGRATED TRANSPORT STRATEGY)

FUTURE TRANSPORT CONSIDERATIONS

TRAVEL DEMAND MANAGEMENT OPTIONS:

+ Changing workforce needs.
+ Longer peaks, and different travel patterns.
+ Work from home options.
+ Work from community shared spaces.

FUTURE PROOFING FOR CHANGING MOBILITY TRENDS:

+ Shared vehicles, rise in uber, car share etc. Allow for shared vehicle spaces in areas of higher density. Pick/up drop off zones particularly around group and local centres.
+ Accommodating future mass transit. Be flexible in the mass transit options, be it light rail, rapid bus services or other emerging technologies.
+ Changing car parking trends.
+ Accommodate bike share schemes and further cycle infrastructure to accommodate an uptake in cycling through the regions.

CLIMATE CHANGE IMPLICATIONS:

+ Ensuring appropriate tree canopy and plantings to provide shade for active transport.
+ Facilitate public transport infrastructure and areas of high place function for extreme weather with covered walkways, etc.

ADAPTABLE TRANSPORT INFRASTRUCTURE:

+ Acknowledging that infrastructure such as car parking could become redundant and options should exist for adaptable land uses
+ Similarly adaptable land uses for a future separate light rail corridor to ensure benefits prior to the adoption of infrastructure.

MOLONGLO NORTHERN ACCESS ROUTE INTERFACE

DESIGN PRINCIPLE

- A multi modal link from William Hovell Drive, potentially accommodating vehicles, public transport and active transport.
- Separation of modes where reasonably practical, acknowledging the hierarchy of modes.
- Utilise traffic calming measures to minimalise its attractiveness for rat running.
- Function as a gateway to Molonglo 3 East with clear wayfinding and a prominent access.
- Acknowledge its function of a sub arterial road and/or public transport corridor and utilize similar principles.
- It will serve as the main connection to/from the subdivision and will provide access to the majority of the site.

PUBLIC TRANSPORT INTERFACE

- Corridor reservation with alternative land uses to accommodate staging of public transport infrastructure
- Stops located at key attractors, eg local centres/group centre and schools.
- Stops are positioned to capture households with good active transport links. Different distances are appropriate for rapid and commuter services.
- Public transport to be given priority at intersections to facilitate faster journeys and make the services more desirable.

ITEM	PRINCIPLE / GUIDANCE
CORRIDOR	
Width: side platforms, track slab, and combined services route	16,000mm
Width: island platform, track slab, and combined services route	13,500mm
Width: between stops	8,000mm
Platform length	45,000mm
Depth: top of slab to bottom of light rail utility services conduits	2,200mm
Depth: combined services route trench	Varies
Height of OHLE poles	8,300mm
Right-of-way	Exclusive, except at intersections
ALIGNMENT	
Desirable alignment	Straight
Desirable grade at stop locations	Level
Rail gradient: absolute maximum	7%
Rail gradient: desirable maximum	5%
Minimum turning radius	25m
STOPS	
Spacing (typical, note subject to patronage, place-making, traffic, and safety risks	800-1200m
Ideal locations	Nodes and road junctions
Surrounding land uses	High trip attractors/generators
Permeability of surrounding areas for pedestrians and cyclists	High
Stop type (side or island)	Stop dependent

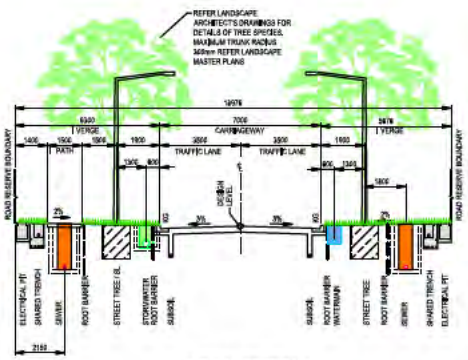
SLOPE RESPONSIVE STREETS

DESIGN PRINCIPLE

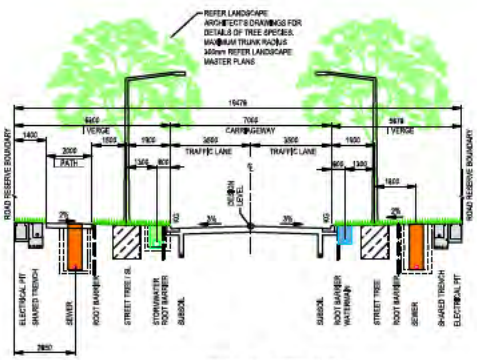
Where greater than 12%, streets are to run parallel to contours and have a narrow pavement width to reduce cut and fill.

Narrow street carriageways should be a minimum of 5m to reduce the cut/ fill of the site. This will mean that there is minimal opportunity for on-street parking unless it is indented.

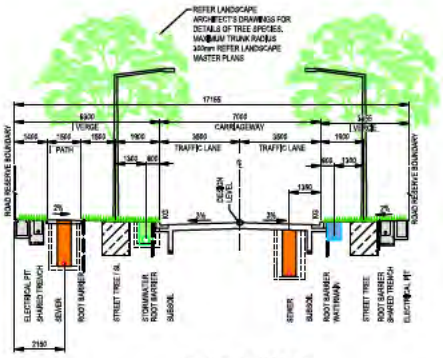
Ensure the length of narrow streets is limited to lower the impact of limited on-street parking.



TYPICAL SECTION 1
(Access Street Type-A



TYPICAL SECTION 2
(Access Street Type-B



TYPICAL SECTION 3
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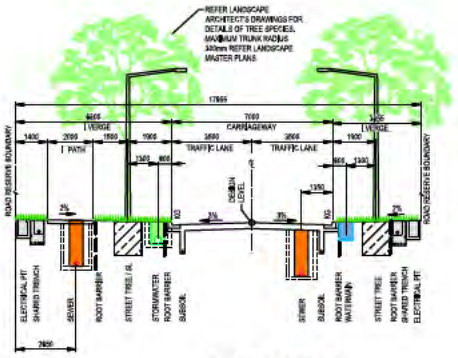


TYPICAL SECTION 4
(Access Street Type-B

MOVING SERVICES TO REDUCE VERGES (Source: Cardno - Molonglo 3 Stage 2 Proof of Concept 2019)

+ Garages that are forward of the building line and against the footpath reduce the steepness of the driveway required.
+ Garage is to be wholly within the block and ensures there is sufficient sightlines to footpaths.

+ Split level streets provide opportunities for houses on both the high and low side to have a relationship to the street level and avoid having houses below street level.

GARAGE FORWARD OF THE BUILDING LINE - REDUCED STEEPNESS OF DRIVEWAY

SPLIT LEVEL ROAD FOR BUILDINGS TO HAVE RELATIONSHIP TO STREET

Molonglo 3 East

2

GROUP CENTRE DESIGN PRINCIPLES

GROUP CENTRES AND LOCAL CENTRES

The ACT has a hierarchy of commercial centres with Civic as the pre-eminent commercial district, followed by the town centres, group centres, and local centres. Civic and the Town Centres form major areas of employment. **Group centres service groups of suburbs (generally 3-4)** and provide a variety of commercial, retail and business services. **Local centres provide convenience retailing** for the immediately surrounding neighbourhood. Certain provisions and objectives for each commercial centre are identified in the Commercial Zones Development Code.

For Molonglo, there are currently only two local centres (Coombs and Denman Prospect). The closest Group centre is Weston, and there is no current town centre for the Weston Creek of Molongo Valley districts. A Molonglo Valley Town Centre is planned to be located on John Gorton Drive, west of Denman Prospect.

Molonglo 3 East is expected to have a group centre and two local centres, based on the Future Urban Overlay. Whitlam will also have a local centre.

From the Commercial Zones Development Code, group centres have the following intent:

+ To provide for and consolidate the major retail and service facilities of the centre within a convenient, safe and attractive pedestrian area
+ To encourage shop fronts and similar active frontages at street level and create a lively, vibrant character based around main pedestrian systems
+ To reinforce employment location strategies by limiting the size of offices in group centres
+ To ensure that commercial development in CZ3 does not undermine the function of CZ1 and CZ2
+ To ensure that community and recreation facilities remain available to the community
+ To ensure there is sufficient off-road parking to serve commercial centres
+ To provide opportunities for higher density residential development, while protecting existing commercial uses and the amenity of residents living in commercial zones.

In terms of service provision, groups centres are typically focussed on a single full line supermarket with supporting specialty retail including food (e.g. butcher, baker, health food shop), clothing and accessories, and other businesses (e.g. florist, personal services).

Group centres typically have banks, community facilities (community centres, libraries, churches), professional services, and restaurants and cafés. They are also more likely to include some sort of commercial club or pub that promotes night time activity and may include commercial accommodation.

From the Commercial Zones Development Code, local centres have the following intent:

+ To encourage shop fronts and similar active frontages at street level and create a lively, vibrant character based around main pedestrian systems
+ To ensure that convenience retailing and other services are readily available to the local community and compatible with nearby residential areas
+ To provide opportunities for higher density residential development, while protecting existing commercial uses and the amenity of residents living in commercial zones
+ To ensure impacts on other commercially viable local centres are considered.

Local centres provide convenience retailing and are generally focussed on a single smaller supermarket (up to 1,500m2) and may include a café and some speciality retail. Local centres do not typically have late trading hours (beyond 5pm) except for the supermarket. Established group centres may have a restaurant that is also open in the evenings.

Both group and local centres should support active public spaces and support the highest residential density within a suburb. This is because group and local centres function as hubs for commercial, community and recreational facilities. Group centres and local centres should function as activity nodes and be located on public transport and active travel routes to maximise accessibility and reduce car dependency. To support their role as activity nodes, group and local centres should include collocated commercial and community services, including shops, health facilities, community activities centres, childcare centres, aged care, sports courts, playgrounds and schools.

In the past, some local centres have struggled to maintain commercial viability. Providing opportunities for collocation, accessibility from public transport/main road location, and incorporating higher density residential uses around the local centres helps supports patronage. However, the distribution of local centres in proximity to group centres should be carefully considered to ensure that commercial cannibalisation does not occur, and clear hierarchies of services are maintained.

For example, the northern portion of Molonglo 3 has three commercial centres in close proximity. EPSDD should consider the drivers for this provision, and whether a walkable catchment and collocation with a school is enough to support commercial viability of a local centre in Neighbourhood 6. Further, Suburb 3/Neighbourhood 5 is outside the catchment for intertown public transport route, but is proposed to have a local centre, community facility and district playing field. EPSDD should consider whether the collocation of these facilities is appropriate in an area of lower public transportation accessibility.

WILL THE GROUP CENTRE BE SUCCESSFUL?

ECONOMIC & PLACE PERSPECTIVES

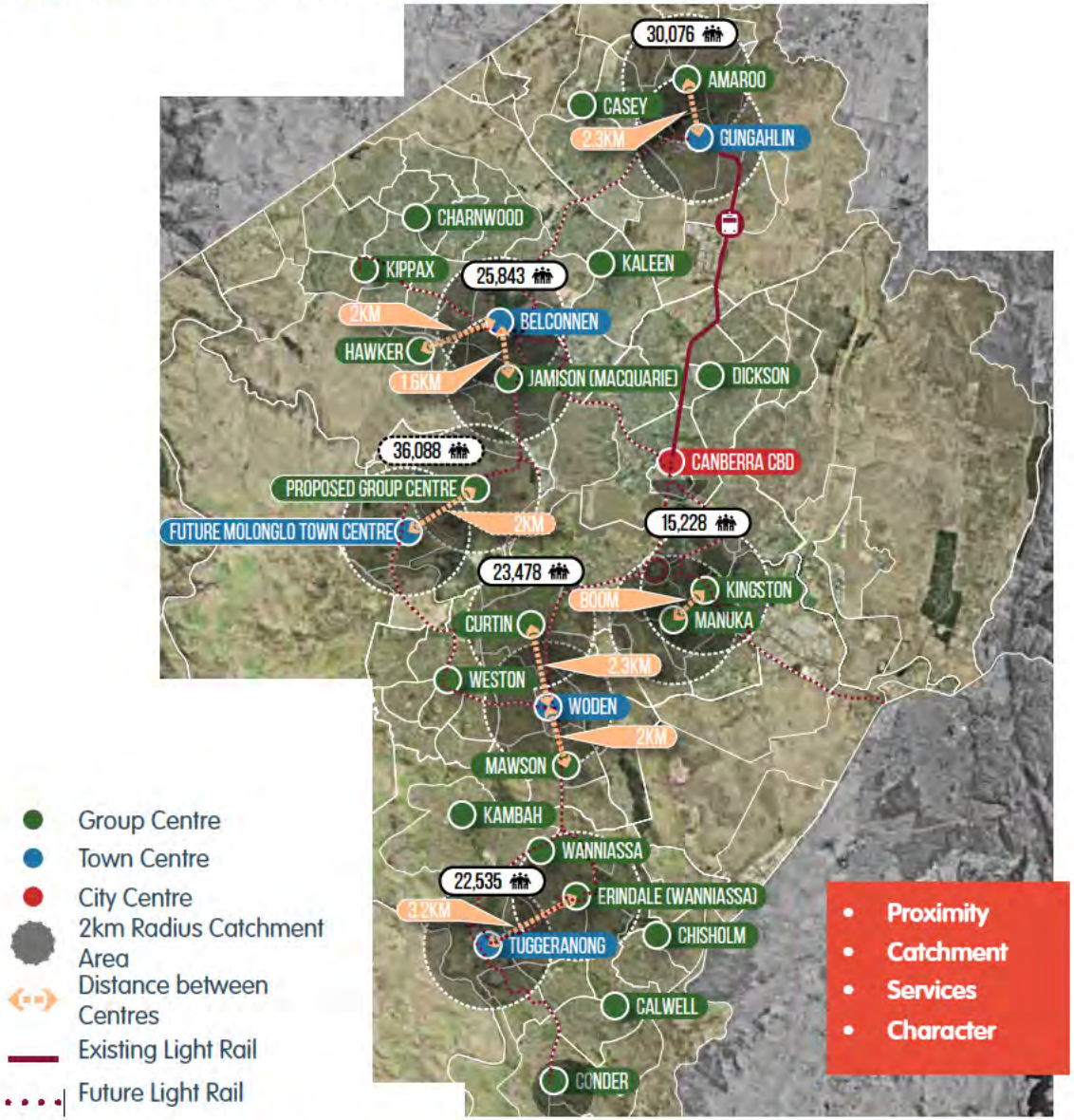
DESIGN PRINCIPLE

We understand that studies undertaken to date have identified a need for 2 x local centres and 1 x group centre at Molonglo 3 East.

Our team will use the RD Urbanity Index Benchmarking Tool to understand mixed use need (particularly acknowledging the proximity of the Molonglo Town Centre) in relation to the realistic population projections.

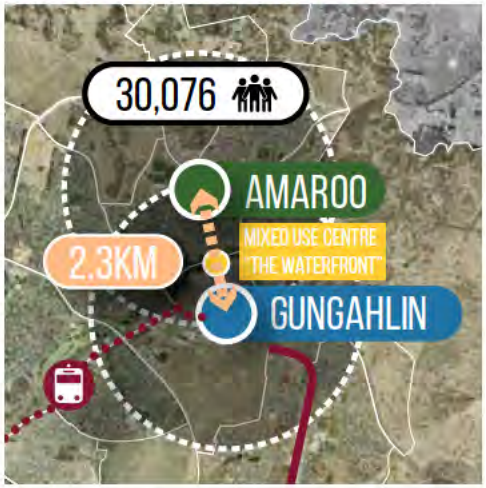
Our Urbanity Index provides a place-based overlay to conventional retail needs assessment, considering the following:

+ Criteria for success and failure of comparable suburbs/ centres,
+ Evolving requirements of mixed use centres in areas benefiting from an integrated and people-focused movement system,
+ Housing diversity that supports mixed use centres,
+ Siting beyond that of movement economy principles with a focus on amenity, destination, identity and entertainment principles.



GROUP CENTRE CASE STUDIES

AMAROO - GUNGAHLIN

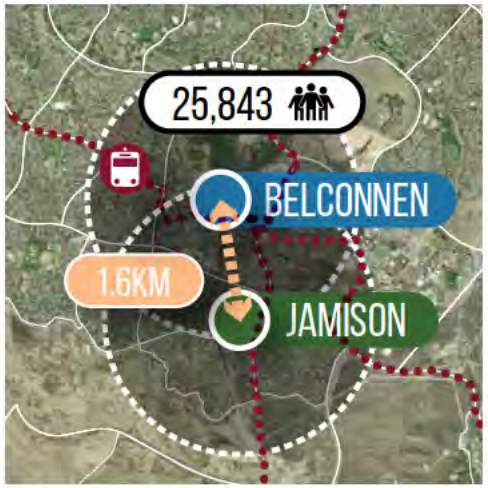


- [x] Sufficient resident catchment/distance from neighbouring retail centres
- [x] Light Rail-Connected
- [ ] Leverages off natural amenity or destination identity
- [x] Mixed use shop-top housing
- [x] Co-located social infrastructure
- [x] Low Shop Vacancies*
- [ ] Walkscore* >80

KEY TAKEAWAYS

- Although neighbouring retail centres, Gungahlin and Amaroo, exist within close proximity, the mixed use centre, "The Waterfront", thrives due to its destinational location by the river.
- Retail centres can leverage off surrounding natural amenity to increase their attraction and customer pull.

JAMISON - BELCONNEN

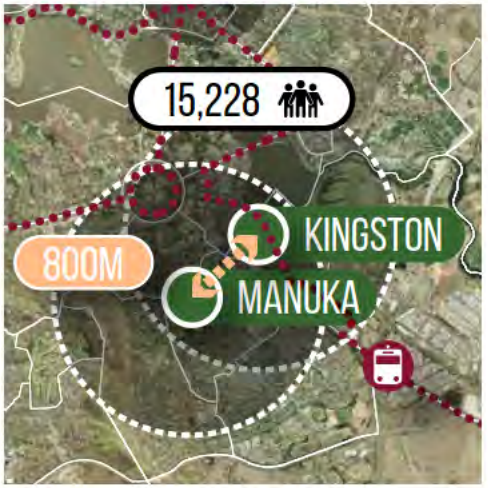


- [x] Sufficient resident catchment/distance from neighbouring retail centres
- [x] Light rail-connected (now or future)
- [ ] Leverages off natural amenity or destination identity
- [x] Mixed use shop-top housing
- [x] Co-located social infrastructure
- [x] Low shop vacancies*
- [ ] Walkscore* >80

KEY TAKEAWAYS

- Although Jamison does not leverage off a unique destination identity, this group centre thrives within close proximity of its neighbouring town centre of Belconnen due to its full range of offering, both in terms of retail provision and its co-located social infrastructure such as the local school and sports fields. The planned light rail route bordering the centre will contribute to its continued success in the future.
- Retail centres benefit from the provision of a holistic range of retail offering, co-located social infrastructure and light rail connections.

MANUKA - KINGSTON

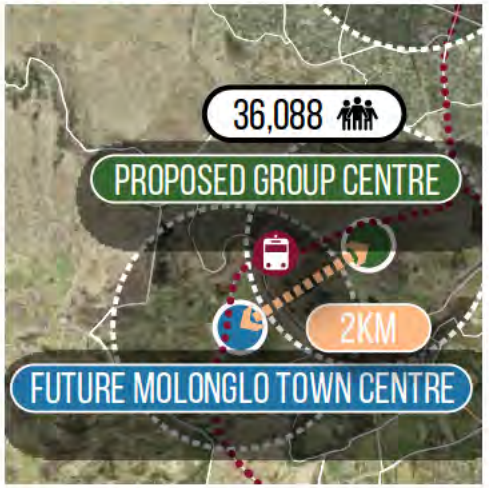


- [x] Sufficient resident catchment/distance from neighbouring retail centres
- [x] Light Rail-Connected
- [x] Leverages off natural amenity or destination identity
- [x] Mixed use shop-top housing
- [x] Co-located social infrastructure
- [x] Low Shop Vacancies*
- [x] Walkscore* >80

KEY TAKEAWAYS

- While the Kingston commercial core has been experiencing vacancies, the Kingston foreshore area continues to thrive due to the lake's scenic and attractional qualities.
- With its unique identity characterised by intimate laneways, different price ranges, and a diverse retail offering from chain stores to boutique shops, the Manuka group centre continues to prosper just 800m away from the Kingston group centre.
- Retail centre success is enhanced when neighbouring centres provide a unique offering and/or experience, rather than attempting to compete with one another.

MOLONGLO



- [x] Sufficient resident catchment/distance from neighbouring retail centres
- [x] Light Rail-Connected
- [x] Leverages off natural amenity or destination identity
- [x] Mixed use shop-top housing
- [x] Co-located social infrastructure
- [x] Low Shop Vacancies*
- [x] Walkscore* >80

CONCLUSION

- With sufficient resident catchment and distance from the future Molonglo town centre, there is a need for a group centre on the eastern side of the Molonglo area.
- The future success of the proposed group centre lies in its ability to become a unique destinational identity.
- This can be achieved by leveraging off the surrounding natural amenity of the creek and providing a mix of complementary uses, activities and retail offerings that is easily accessible via active transport links.

GROUP CENTRE - KEY FINDINGS

✗ WHAT SHOULD BE DISCOURAGED

- Vast expanse of tree-less, surface car park area
- Internally focussed big box shopping centre that has its back to natural amenity
- Isolated retail core that is mainly accessible with a car
- Car-dominant and unpleasant public realm
- Vehicular road creating a barrier between local centre and social infrastructure
- Retail offering in competition with neighbouring centre
- Mono-functional and insular zones

✓ WHAT SHOULD BE ENCOURAGED

- Main Street or Promenade configuration
- Leveraging off natural amenity or a unique destination identity
- Unique retail offering to neighbouring centre
- Housing diversity including mixed use shop-top housing
- Range of uses and activities
- Co-located social infrastructure
- Walkability and active transport accessibility, especially easy access to light rail stops
- Car parking sleeved by active uses or slopes in topography
- Internal shared street stitching together retail centre and social infrastructure
- Comfortable micro-climate in public realm

CO-LOCATED SCHOOL / LOCAL CENTRE

LESSONS LEARNT

- Provide safe pedestrian crossings at every intersection (including roundabouts) to prevent mid block crossing.
- Provide roads surrounding the school and limit vehicle access to only service roads (not collector or local streets)
  - Ensure parking access is far enough away from intersections that all potential queuing is within service road, and not onto surrounding streets.
- Provide slip lanes to school roads to allow traffic to flow freely on collector roads.
  - Will prevent congestion on collector roads.
- Provide greater separation between intersections of arterial/collector roads and school access road.
- Ensure TCCS enforces design principles during the school design Development Application stage.

PRECEDENT - SANTA SOPHIA CATHOLIC SCHOOL - BOX HILL TOWN CENTRE

SANTA SOPHIA CATHOLIC SCHOOL - BOX HILL TOWN CENTRE

1860-student kinder to Year 12 school

The development features a six-storey high-rise school, made up of a series of learning spaces, creative and performing hubs and outdoor sporting facilities on the rooftop, integrated into the new Box Hill Town Centre.

The school would provide "*an activated and vibrant hub for the community and meeting demand for educational facilities in the growth area*".

RELEVANCE

The Molonglo group centre includes an adjacent high school that could be greater integrated into the centre, with community facilities shared between the school and the community at different hours or days. A potential transit plaza for the light rail could be a transitional space between the educational facilities and the group centre.

The Baringa District Centre incorporates High School, Primary School, Child Care, Community Facilities, Town Square, Commercial and Mixed-Uses.

RELEVANCE

There are two local centres adjacent primary schools within Molonglo East. There are opportunities to incorpate Child Care or Community facilities into the school site that be used by both the community and the school.

PRECEDENT - BARINGA STATE SCHOOL / BARINGA SHOPPING CENTRE

BARINGA PRIMARY SCHOOL (SOURCE: RPS)

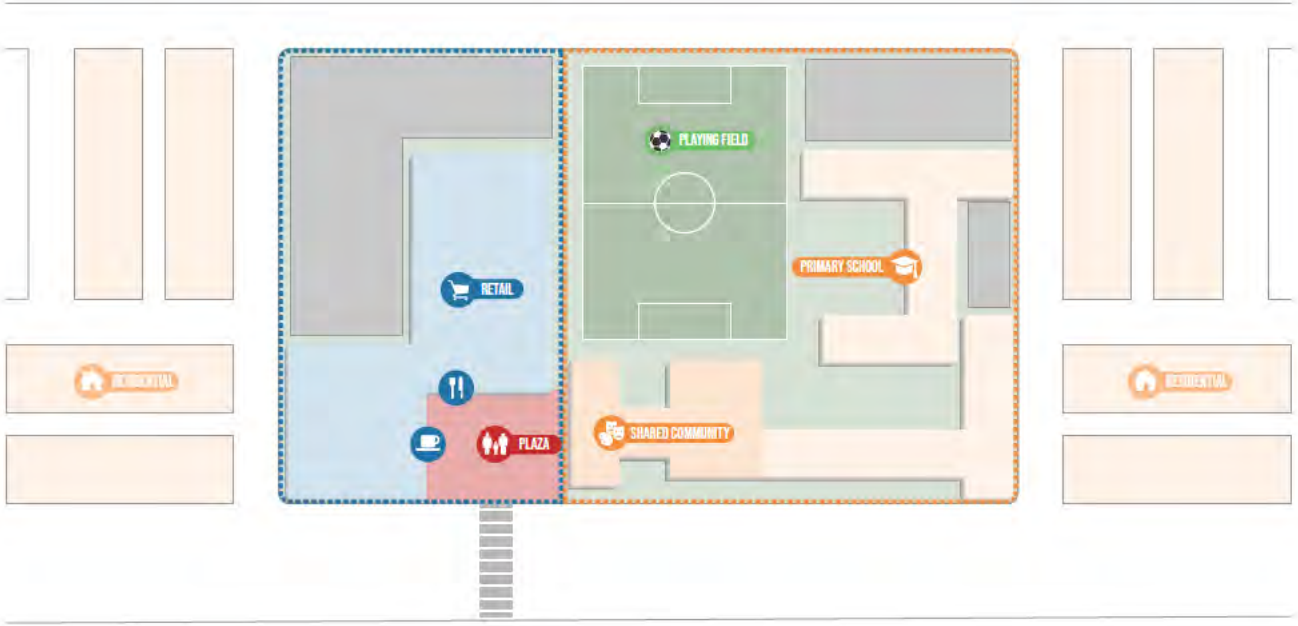
BARINGA COMMUNITY FACILITIES & RETAIL (SOURCE: RPS)

SCHOOL / RETAIL DESIGN PRINCIPLES

LAND-USE INTERFACES

DESIGN PRINCIPLE

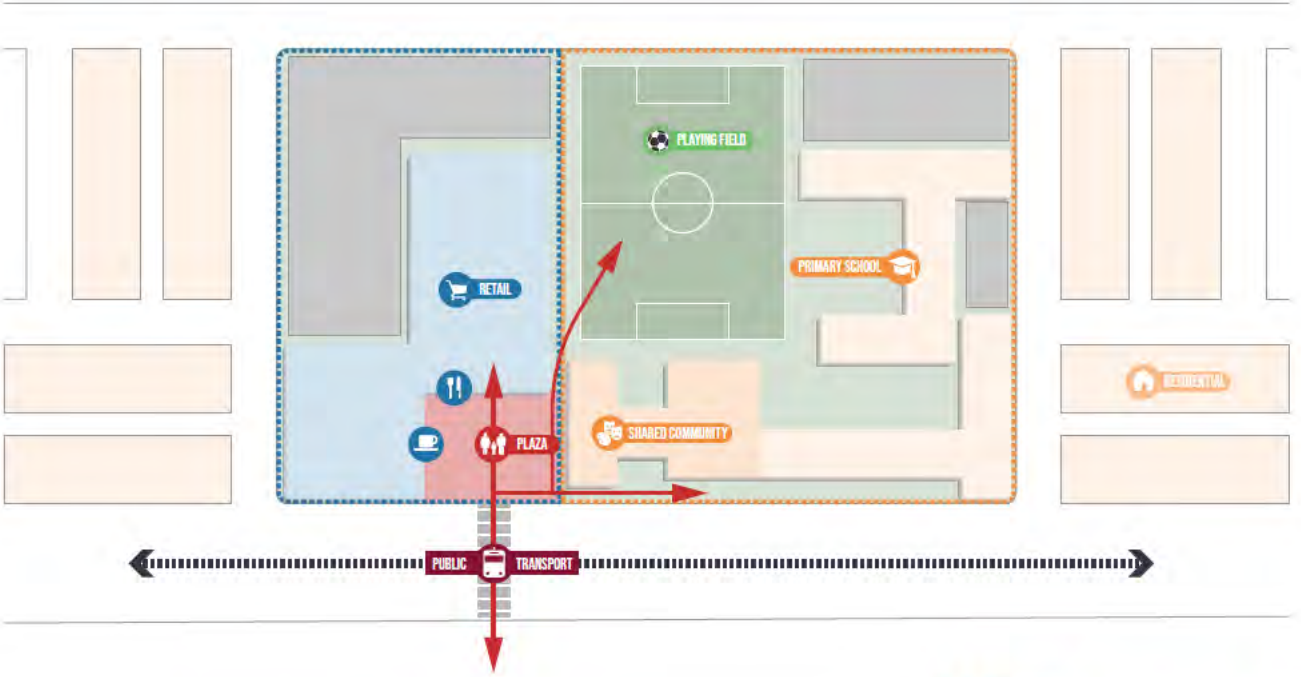
- Co-locate school with complimentary land uses:
  - Retail
  - Community Facilities
  - Recreation
- Limit separation of spaces by locating the school and retail on the same section surrounded by roads
- Encourage shared use of community facilities by locating them adjacent a public plaza, allowing building spaces to be used a different hours by different groups



PUBLIC TRANSPORT ACCESS

DESIGN PRINCIPLE

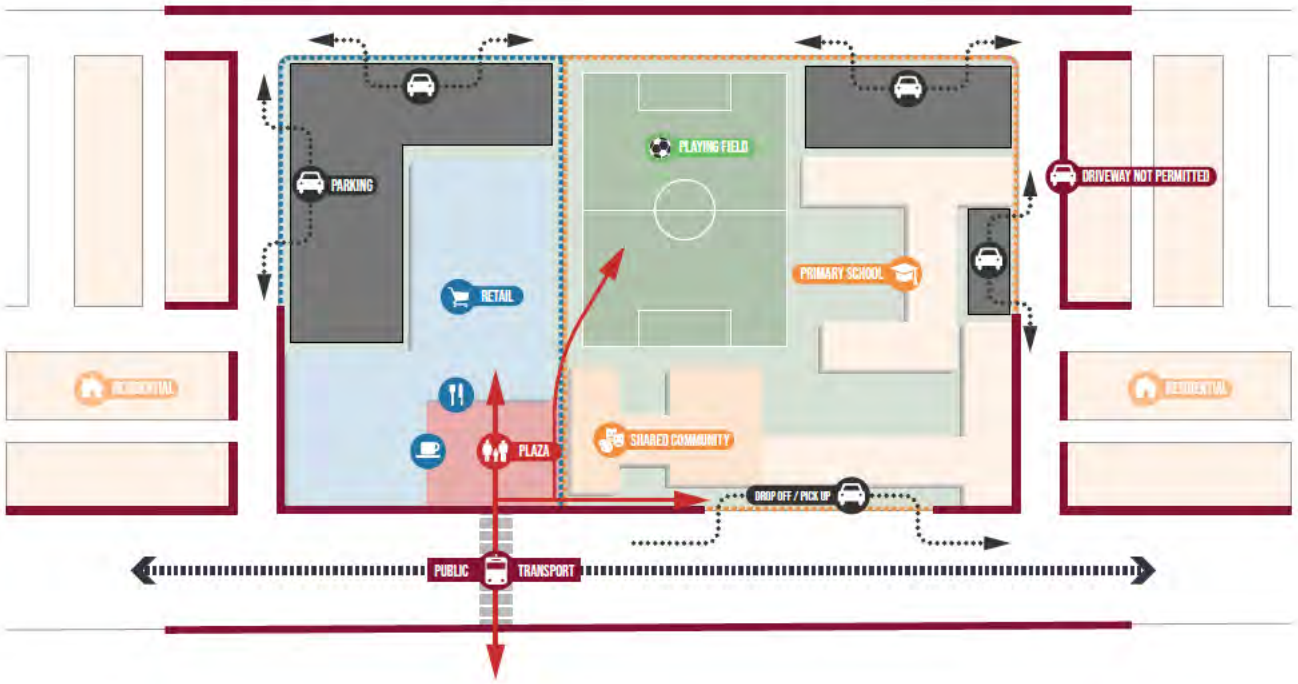
- Provide public transport connections to link into a communal public plaza
- Provide connections for the public to playing fields between the retail and school from the public transport stops



SITE ACCESS

DESIGN PRINCIPLE

- Drop off / pick up zone to front of school within school boundary to limit through traffic impacts
- Car Parking to secondary streets
  - Provide access points to parking away from intersection with primary street frontage
- Prohibit driveway access to surrounding land uses to prevent conflicts with school site access
  - Rear loaded terraces or multi-unit sites will limit on street driveways
- Limit on-street parking on primary street to drop off / pick up



Molonglo 3 East_Design Principles

SANTA SOPHIA CATHOLIC SCHOOL - BOX HILL TOWN CENTRE PLAZA

Molonglo 3 East

3

HOUSING TYPOLOGIES

DESIGNING FOR DIVERSITY

INTRODUCTION

21st century best practice design and planning of new communities promotes diversity and a range of lifestyle options. It is critical to provide equitable access to desirable community environments irrespective of an individual's dwelling priorities. Resident's should not be forced to compromise on the liveability factors that they value based on conventional practice or volume build solutions. Choice and balance will facilitate appropriate levels of density, affordability and amenity across new towns and neighbourhoods in Canberra and accommodate the changing development landscape and lifestyle demand.

The below Lifestyle Package outlines a strategy for how diversity and balance can be achieved, accommodating differing liveable values without compromising overall quality of life. A scoring system also endeavours to protect residents from development and/ or building solutions that might have otherwise used alternative solutions to deliver the lowest common denominator.

This process encourages and relies on relationships with, and the education of, local builders to tailor their standard product in a way that is commercially viable for them and meets the government's objectives.

THE LIFESTYLE PACKAGE

Both options are prepared based on the premise that our optimum lifestyle is a combination of the house and community in which we choose to live. Affordable housing should not exist without amenity and access to amenity should not be limited to those that choose a conventional household.

The first option demonstrates a 'trade scheme' whereby a block/ dwelling can select a tailored collection of values to be realised as compliant and the balance of the values can be provided in a less onerous manner.

The second option promotes diversity at the scale of the neighbourhood by requiring compliance as an average.

DIVERSITY AT THE SCALE OF THE NEIGHBOURHOOD

A neighbourhood unit, with a defined centre and edges and generally contained with a 400m radius or 5 minute walk, must deliver a reasonable mix of housing. This mix should go beyond density bands and provide a variety of lifestyle choice beyond that of a conventional house and block. This means that only a certain percentage of dwellings/ blocks will be code compliant in the conventional sense. However, it will also mean that a certain percentage of dwellings/ blocks are guaranteed to deliver affordability and amenity, as defined by various individuals.

The below table proposes a mix of dwellings/ blocks based on specific block characteristics contributing to the delivery of genuine diversity.

A different mix is proposed for urban and suburban new communities based on the assumption of urban areas having greater access to public transport, services, daily convenience and distribution of parks. The Design Excellence Criteria outlined in the Liveable Value Trade Scheme could be used to assess and categorise.

The table could be expanded to include additional community typologies such as renewal areas and slope-affected communities, both urban and suburban.

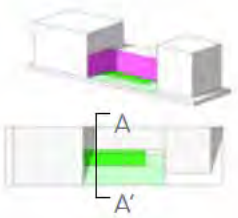
LIVEABLE VALUE TRADE SCHEME

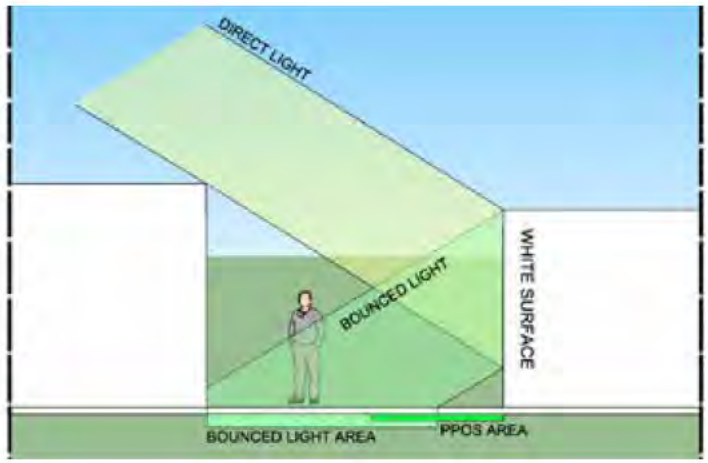
In high amenity areas that fulfil the following design excellence criteria, ie, go beyond basic code compliance, a block may be approved by achieving 3 of 5 *'Liveable Values'* AND an acceptable alternative for the 2 of 5 not achieved.

Design Excellence Criteria:

+ Within 50m of a public park / plaza that receives 3 hours of direct sunlight between 10- 3pm.
+ Within 400m of Light Rail or 100m of bus
+ Within 200m of a dedicated cycleway
+ Within 400m of retail
+ Within 800m of employment?

LIVEABLE VALUES	COMPLIANCE	ACCEPTABLE ALTERNATIVES
Private Open Space	At grade Private Open Space	Balcony, upper level terrace, rood garden with a cumulative area equivalent to the Code requirements or shares a block boundary with a public park.
Solar Amenity	3 hours of direct sunlight between 10-3.	Demonstrate 2 hours direct sunlight from sunrise to sunset or 5 hours of reflected light or 4 hours cumulative.
On- Site Parking	1 x on- site carspace for 1 bed	Within 200m of a shared carcourt and/ or carshare space
	2 x on- site carspace for 2+ bed	1 x on site carspace plus 6m long driveway inside block boundary or at grade POS with dual function of carspace
Affordable	Demonstrates affordability threshold	Must comply with 4 of 5.
Views	3rd storey with reduced site coverage. Floorspace redistribution allowance	





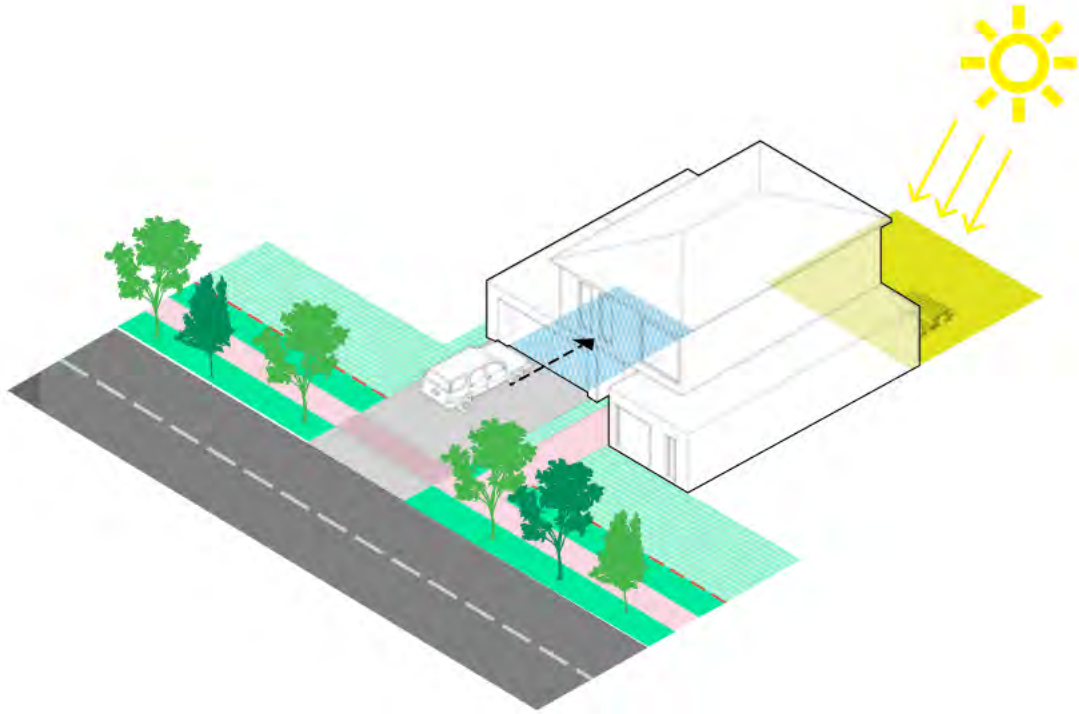
DEMONSTRATION OF USE OF REFLECTIVE LIGHT (SECTION A- A').

PATTERN BOOK

DETACHED DWELLINGS

The four defining elements for park frontage housing are:

+ **Front block boundary treatment** - no mandatory fencing and open landscaped front gardens are encouraged to contribute to the traditional Canberra 'garden suburb' character
+ **Front setback**- the most generous front setback of 4m
+ **Private open space** -private open space at ground level, typically at the rear and connected to the living area of the home
+ **On-site parking**- typically a two car garage at the front or side



DETACHED DWELLING TYPOLOGY

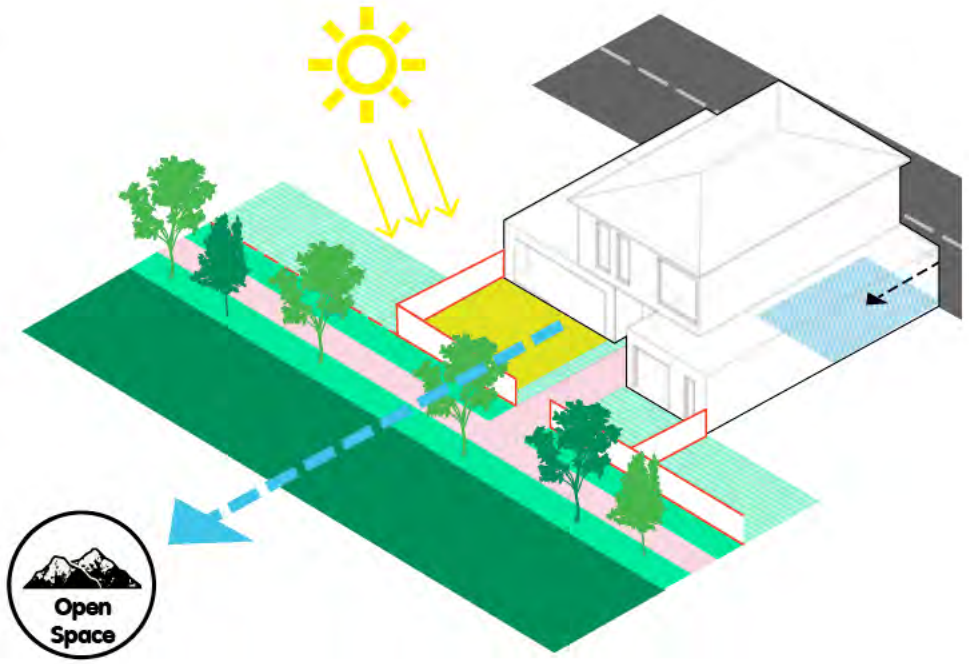
DIRECTLY INTERFACING WITH OPEN SPACE

To promote community ownership and stewardship of open space, houses can be provided directly fronting the open space.

Either rear or side loaded, these properties will have their primary habitable spaces face the park to provide passive surveillance. Additionally, they will include low courtyard walls (with 50% tranparency using timber/metal slats) to their front boundary to enclose their private open space, with mail-boxes incorporated into these fences where appropriate. This will give an additional sense of activation to these areas as residents will frequently interact with the edges of the park.

The four defining elements for park frontage housing are:

+ **Front block boundary treatment** - mandatory fencing with gate access encouraged to contribute to the traditional Canberra 'garden suburb' character. Include daytime habitable rooms to park frontage for passive surveillance.
+ **Front setback**- the most generous front setback of 4m
+ **Private open space** - private open space at ground level, fronting the open space.
+ **On-site parking**- typically a two car garage at the rear or side



PARK FRONTING TYPOLOGY

OVER-UNDER TERRACES

ALTERNATIVE METHOD OF DELIVERING DWELLINGS ON STEEP TOPOGRAPHY

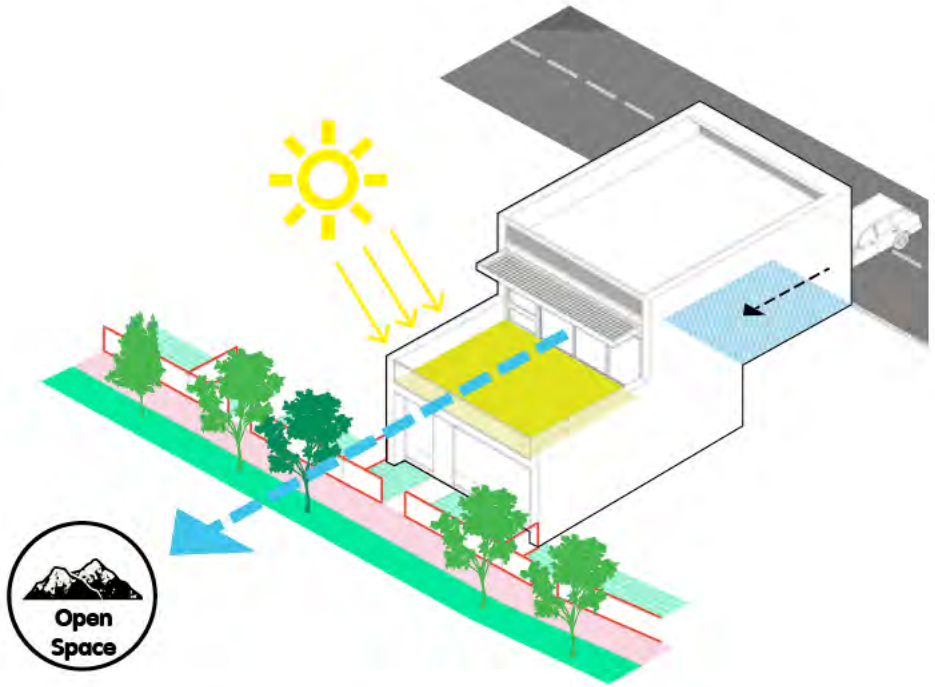
Challenging topography in the northern area of the site requires an alternative housing types. Typical frontages of 10m and block sizes of around 300m².

To allow for equitable access to views and solar access, built form that steps down the hillside is encouraged. The blocks have rear lane access which will require the garage on the upper level of the lower terraces.

Private open space is recommended to be at the upper levels facing north and taking advantage of the views to open space.

Over-under terraces is defined by the following elements:

+ **Front block boundary treatment** - courtyard wall/ fencing reflective of the urban intent and the collectively height of a retaining wall and privacy wall/ fence must never exceed the maximum height allowance
+ **Front fence/ wall setback** - 0-1.5m depending on frontage to a street, park or path
+ **Private open space** - principle private open space recommended at upper levels and oriented north
+ **On-site parking** - tandem or double garage access from a rear laneway and where 'stepping' requires the garage is located at an upper level



OVER-UNDER TERRACES TYPOLOGY

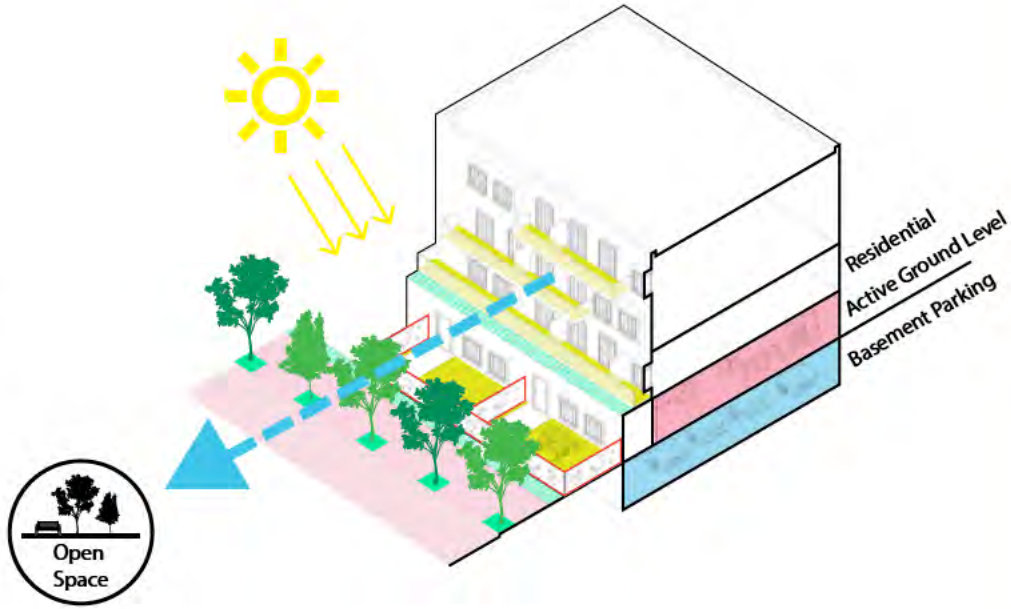
MIXED-USE MULTI-UNIT APARTMENT

Multi-unit apartment sites are to be generally four to eight stories.

The bulk and massing of these sites is controlled through the subdivision and mandatory at-grade side setbacks. The smaller footprints enable the buildings to step down the topography to provide equitable views.

The four defining elements for park frontage housing are:

+ **Front block boundary treatment** - mandatory semi-permeable 1.5m maximum fence/courtyard wall to delineate the urban edge of open space. Each ground floor unit must have independent access from the verge through a gate in the fence/ wall.
+ **Front setback**- 0.7m setback between the wall and footpath consistently applied along the entire perimeter of open space
+ **Private open space** - private open space at ground level, fronting the open space.
+ **On-site parking**- basement car-parking is anticipated to ensure an active ground level address and to encourage commercial uses to support the local/group centres



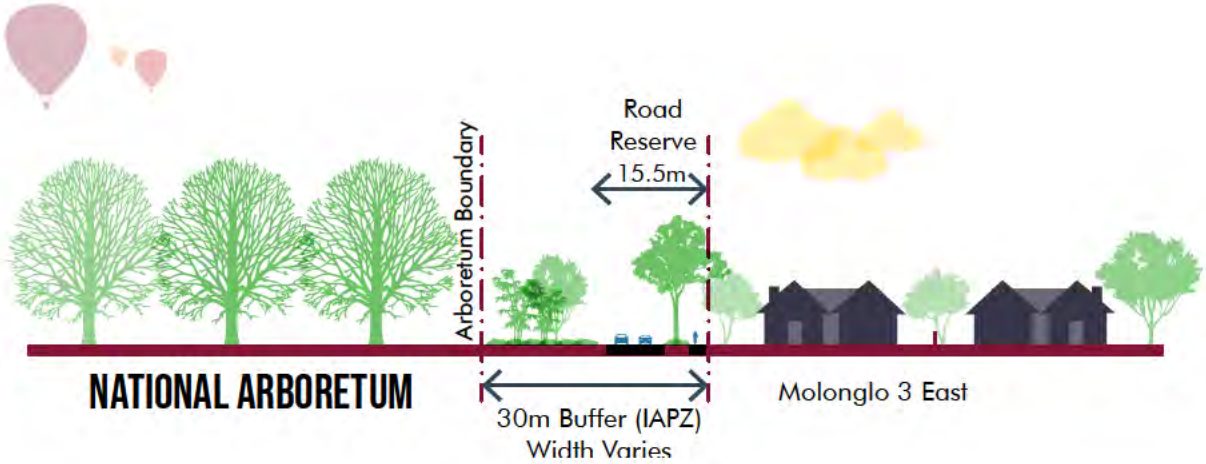
MIXED-USE MULTI-UNIT RESIDENTIAL TYPOLOGY

ARBORETUM INTERFACE

DESIGN PRINCIPLE

- Provide a buffer along the length of the Arboretum to act as the Inner Asset Protection Zone (IAPZ).
  - Typically around 30m width
  - Edge Road permitted within IAPZ
  - Use soft landscaping within buffer as a transition into the Arboretum
- The boundary to the Arboretum is fenced with lockable gates to be provided generally 300 to 400m apart to provide pedestrian / cycle access into the Arboretum.
  - These gates are to connect into the Active Travel network within Molonglo 3 with direct access to the centre of neighbourhood units
- Dwellings to front Arboretum Boundary
  - No side or rear fences permitted facing Arboretum

SOFT TRANSITION TO THE ARBORETUM

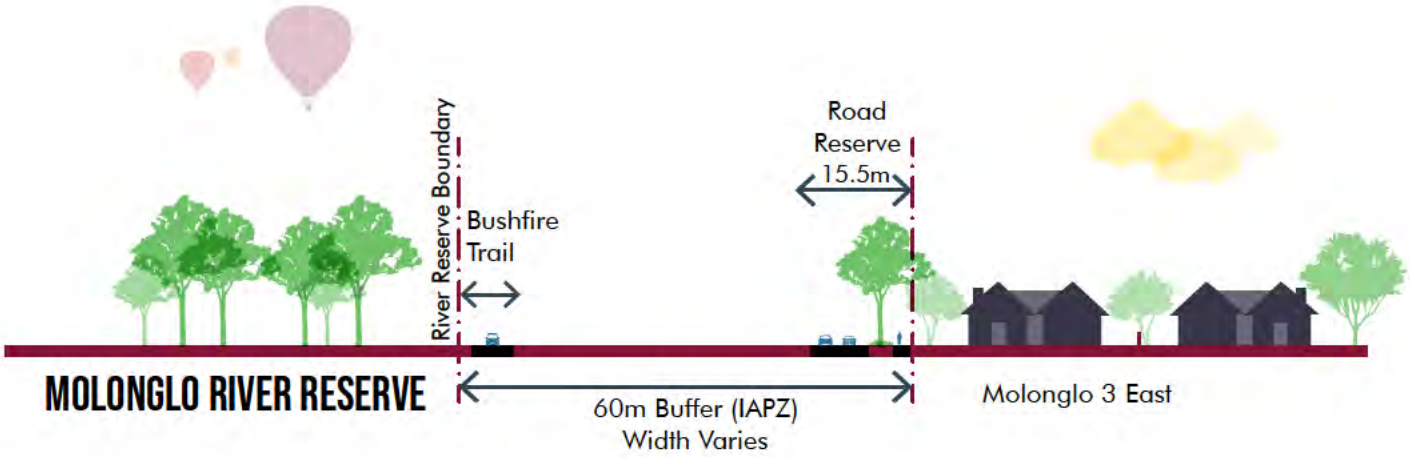


MOLONGLO RIVER INTERFACE

DESIGN PRINCIPLE

- Provide a buffer along the length of the Molonglo River Reserve to act as the Inner Asset Protection Zone (IAPZ).
  - Typically around 60m width
  - Edge Road permitted within IAPZ adjacent residential dwellings
  - Provide a bushfire trail adjacent River Reserve
  - Primary Active Travel paths to be closer to development to limit impacts to the River Reserve
  - Use native species in landscape of buffer
- The boundary to the River Reserve is fenced to provide managed access into the river corridor, with gaps to allow pedestrians in
  - Pedestrian/ cycle access to link into the wider network
  - Gated vehicular access to be provided for services vehicles

MANAGED ACCESS INTO THE RIVER RESERVE



NO DRIVEWAY ACCESS TO COLLECTOR ROADS

DESIGN PRINCIPLE

To provide a diverse range of housing typologies along the future Bindubi Street extension or other key collector roads that do not include direct driveway access to the street frontage.

A few potential options include:

+ 4-Pack
+ Rear Loaded Terraces
+ Multi-Unit sites
+ Battle-axe blocks

TERRACES

REAR LOADED TERRACES

4 Pack
Perth

4 Pack
Melbourne

4 Pack - Single Storey
Perth

4 PACK DESIGN

Molonglo 3 East

5

INTEGRATED INFRASTRUCTURE

TOPOGRAPHIC CONSTRAINTS

DESIGN PRINCIPLE

- Maintaining where possible natural gradients for roads and development
  - DDA compliance will be required and needs to be considered
- Minimising large excavations of cut but where required achieving cut to fill balance
- Gradients vary across with majority greater than 8% and in areas in excess of 15%.
  - Max. gradient for buses 8%
  - Max. gradient local streets 12.5%.
- Vegetation such as woodlands and environmentally sensitive areas and heritage areas to be a major consideration with regards to earthworks and development of lots / roads and infrastructure
- By encouraging trails for walkers, bikes and horses, safety with regards to alignment will need to be considered with adequate gradients and steep falls close to features such as Coppins Creek and the Molonglo River / River Corridor