

FINAL DRAFT

Arden Macaulay Structure Plan

2011

PLANNING FOR FUTURE GROWTH

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4 EXECUTIVE SUMMARY Melbourne today is an attractive and liveable place to live and work. It is an international hub for business, retail, education, medicine, arts and industry. Our city has emerged as a popular destination for local, interstate and international visitors, boasting world class events and attractions. Planning is essential to ensure our city maintains its high standards of liveability and that it remains welcoming and accessible for people of all walks of life as it continues to expand.

There is strong evidence that Melbourne will continue to experience sustained growth over the next 20 years, building upon a strong economy and an increasing population. The City of Melbourne's *Municipal Strategic Statement* identified Arden-Macaulay as an urban renewal area that would accommodate a significant part of this growth (see figure 0.1). Urban renewal is the transition of an existing underutilised area into a sustainable living and working environment.

Since the 1800s Arden-Macaulay has been a primarily industrial area supporting the city's economy through manufacturing and production. More recently, the profile of businesses in the area has changed. This has created an area which is generally underutilised, particularly considering its proximity to the Central City.

Urban renewal will rejuvenate Arden-Macaulay, turning it into a thriving and liveable place that supports a new community.

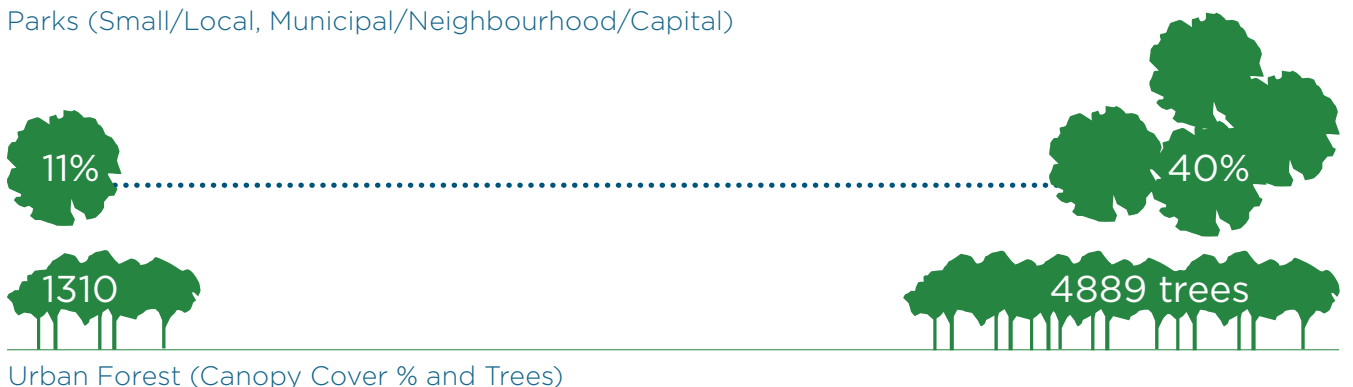
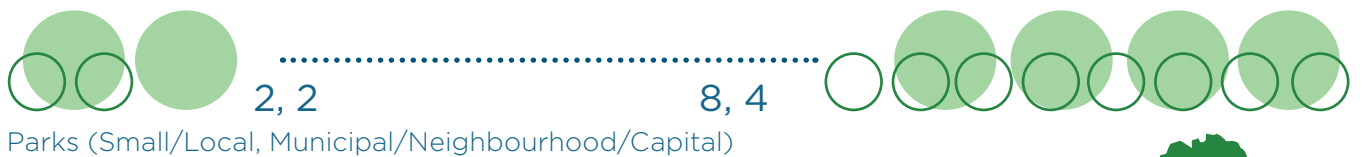
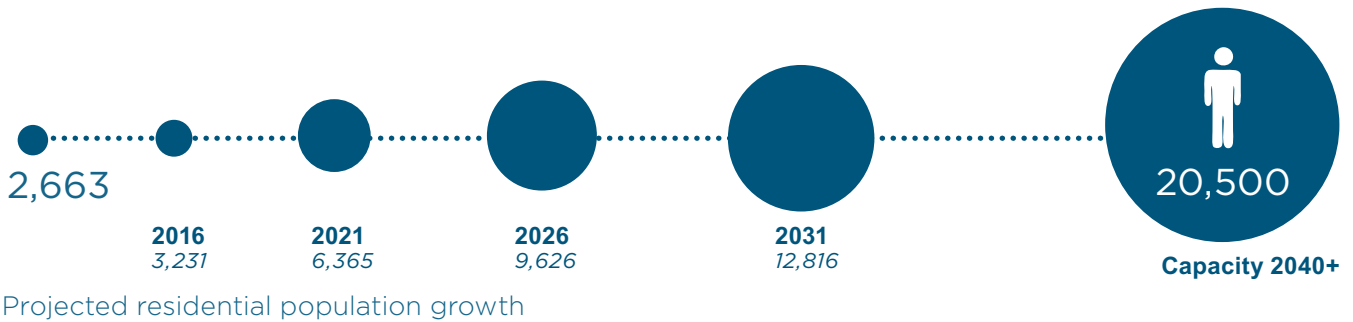
This strategy considers how this transition can occur in a staged and coordinated manner, ensuring that any new changes are focused on creating places for people.



Figure 0.1: Structure Plan study area.

Urban Renewal of Arden-Macaulay: A Snapshot

2011 2040



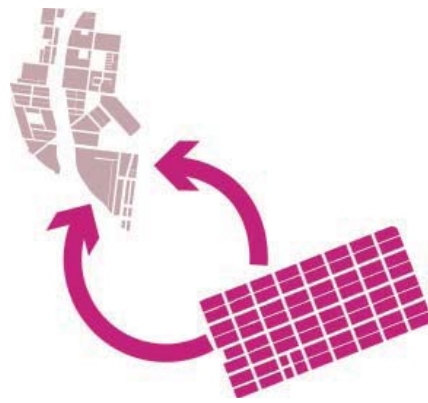
Principles of urban renewal

6 Ten principles have been established to guide the urban renewal of Arden-Macaulay.

These principles have been prepared through consultation with the community, with key stakeholders and through the application of good urban design and planning practice.

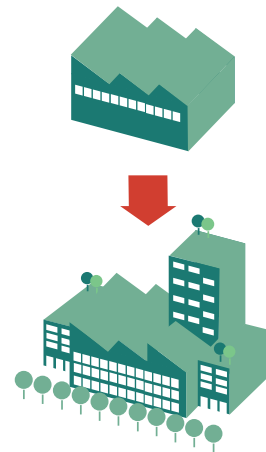
1 Grow a prosperous place and viable economy

Urban renewal attracts metropolitan scale infrastructure investment that will support the expansion of Central City activity.



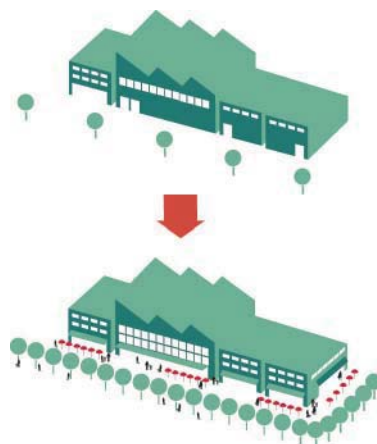
2 Ensure a harmonious transition of change

Existing businesses and communities continue to prosper as change occurs.



6 Regenerate the area's public realm

The streets and open spaces are welcoming and attractive and provide places for people to meet each other and connect with nature.



7 Develop liveable dwellings that house a diverse and inclusive community

New development adequately accommodates all members of the community in high quality and affordable housing.



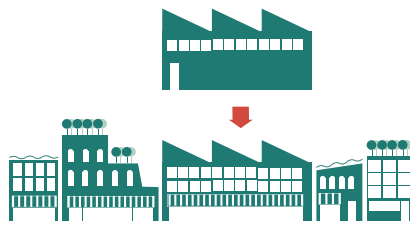
3 Create liveable local neighbourhoods

Arden-Macaulay demonstrates the capacity for Melbourne Central City to accommodate population growth in liveable and sustainable environments.



4 Integrate new development with the surrounding character and identity

Arden-Macaulay will bring a new character to the area that integrates with the existing context.



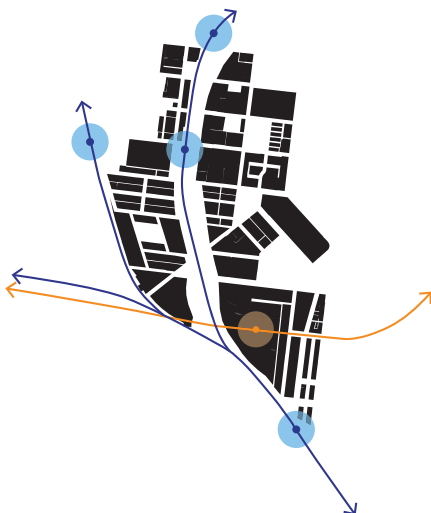
5 Integrate the area's heritage into urban renewal

The stories of Arden-Macaulay's past are protected for future generations.



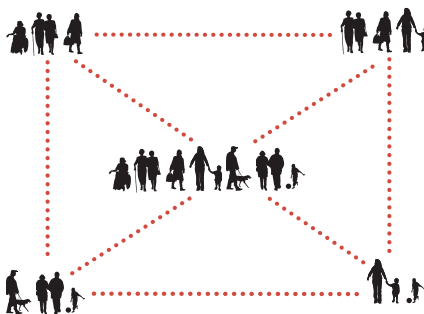
8 Create a connected and accessible place

A compact walking environment that is well serviced by public transport ensures Arden-Macaulay is accessible to all.



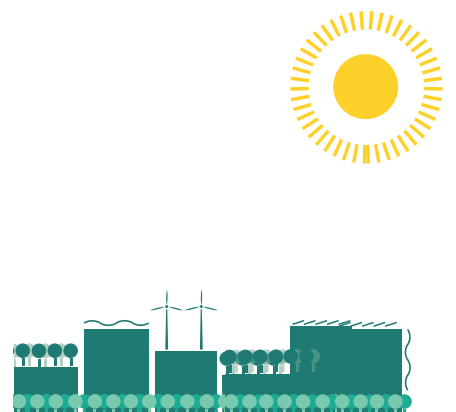
9 Support a culturally and socially engaged community

People are connected to each other and supported by the services and facilities they need to live a healthy and full life.



10 Grow a city that prospers within the earth's ecological limit

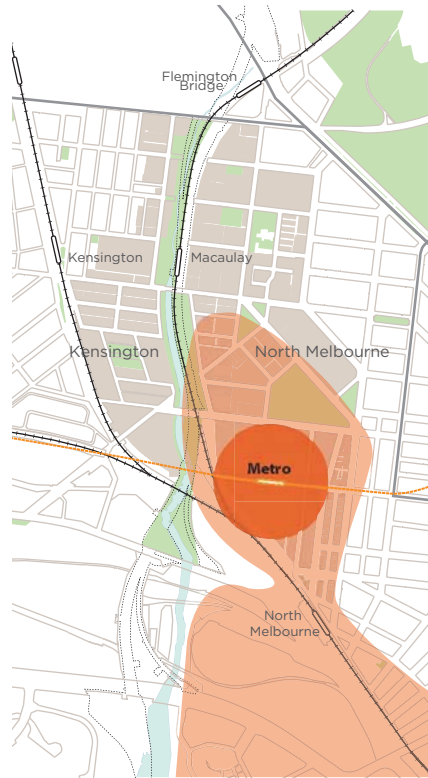
Urban renewal brings opportunities to mitigate climate change, reduce the urban heat island effect and reduce the impact on the environment.



Key directions

- 8 Five key directions have been identified for the urban renewal of Arden-Macaulay. These provide the overarching future direction for development and set out how the evolution is envisaged.

EXECUTIVE SUMMARY

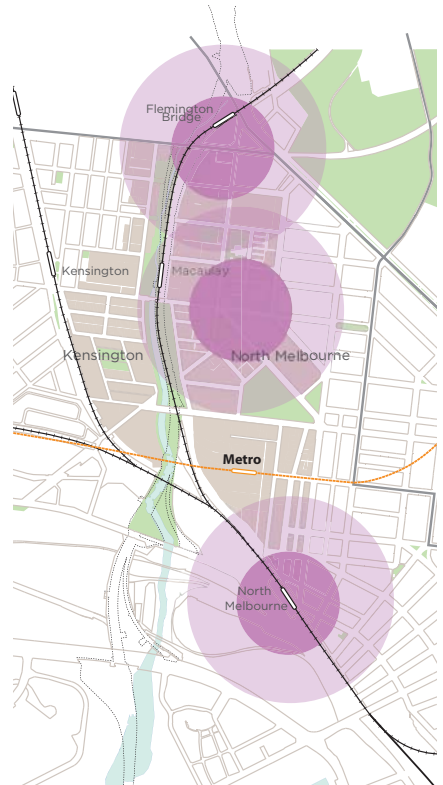


1

Develop Arden Central as a new extension of Melbourne's Central City

A new extension to Melbourne's capital city is proposed in the south eastern end of Arden-Macaulay. This will bring significant investment and employment opportunities to the area. Arden Central will accommodate 14,000 jobs, 4,000 residents and 12,000 students within an active, mixed use precinct. The viability of this centre is dependent upon the extension of a high quality rail service connecting Arden Central directly to Melbourne.

See chapters 2, Activities and land use; 3, Urban structure and built form; 4, Transport and access; 5, Public realm and open space; 6, Community infrastructure, and 7, Sustainable infrastructure.



2

Develop three new local centres within a mixed use neighbourhood

To meet the local and everyday needs of the new community, three new local centres containing retail, commercial, community services and other facilities will be located at Macaulay, Flemington Bridge and North Melbourne stations. This will create a local hub of activity, jobs and community gathering spaces.

See chapters 2, Activities and land use; 3 Urban structure and built form; 4, Transport and access, and 6, Community infrastructure.



3

Expand transport connectivity to and within Arden-Macaulay
A new metro railway station and transport interchange will be located in Arden Central, within a new active, mixed use precinct. This will be connected to a high frequency bus service on an extended Boundary Road.

Macaulay and Flemington Bridge railway stations and connections to them will be upgraded. Pedestrian and bicycle networks will be enhanced to create accessible neighbourhoods.

See chapters 4, Mobility and access, and 5, Public realm and open space.



4

Upgrade the Moonee Ponds Creek parkland corridor and establish five new parks

New parkland will be established along an upgraded Moonee Ponds Creek. The creek banks will be redesigned to create recreation areas, habitat protection and improved walking and cycling links. This redesign will contribute to flood mitigation.

Five new parks will be established to ensure that all dwellings are within a 300m walking distance of green open space.

See chapter 5, Public realm and open space.

5

Make Arden-Macaulay energy, water and waste efficient

New sustainable infrastructure will be incorporated into the overall renewal of Arden-Macaulay to establish local energy generation, to harvest and reuse stormwater and to create smart, networked distribution systems.

See chapter 7, Sustainable infrastructure.

01 Introduction

10 INTRODUCTION

The need for a structure plan

Melbourne's growth surge, which began in the late 1980s, will see the number of residents and workers in the city double by 2030. As cities grow, they use resources more efficiently; their wealth, creativity and innovation increases, and, for businesses and residents alike, there are greater opportunities and improvements in the quality and range of services available. This growth must be carefully planned, designed and managed to ensure the future city will continue to be safe and enjoyable.

The City of Melbourne has been responding to this increased demand by preparing neighbourhood plans for specific areas where infill and redevelopment opportunities exist.

Urban renewal will bring an increased number of residents, local businesses, community facilities and services, public realm improvements (new parks and upgraded streets) and public transport investment into the area. Arden-Macaulay offers a key opportunity to provide for sustainable growth that can achieve positive community outcomes. The *Structure Plan* is a framework to guide this change. It outlines the preferred land use, building design, and open space, transport and infrastructure outcomes for Arden-Macaulay, to deliver a place where existing communities can prosper and new communities can be established.

The area referred to as Arden-Macaulay is shown in figure 1.1. It includes the industrial segments of North Melbourne and Kensington.



Figure 1.1: Structure Plan study area.

Planning for future growth

Thirty years ago, Melbourne was a city of manufacturing. Today, Melbourne is a leading city in the knowledge economy. The dense and diverse Central City, where knowledge is created, exchanged and traded across Australia, and indeed the globe, is the base for this new economy. The continued growth and expansion of the Central City is important for the future prosperity of Melbourne.

Until the 1980s, Melbourne's traditional Central Business District (CBD) expanded and developed within the Hoddle Grid area and along St Kilda Road. After the 1980s, the old CBD was transformed by the introduction of a greater variety of uses including housing. It also expanded into Southbank, making the Yarra River now a focus of city life.

This expanded area, which became known as the Central City, began to grow west into Docklands in the 1990s. Currently the Central City is consolidating in Southbank and Docklands and expanding north of the Hoddle Grid. Over the next 20 years, Central City growth and expansion will continue, with extensions into the old rail yard areas in North Melbourne.

Keeping connected to stay prosperous

People in a dense, vibrant and prosperous city need convenient, effective and reliable ways of moving around, with good connections to surrounding metropolitan regions. Some 800,000 workers, students and visitors come into the city of Melbourne each day. This number will grow to 1.1 million by 2030. Since the 1960s, the private car has been the primary means of

transport, but this is changing. City growth and intensification since the 1980s require greater capacity and efficiency that only good public transport, walking and cycling can provide. In 1990, 65 per cent of all trips into the city were by car. By 2007 the figure was 35 per cent. In 2030 perhaps only 10 per cent of trips will be by car, with 90 per cent by train, tram, bus, walking, cycling and taxi.

Urban renewal

The transition from manufacturing to a knowledge-based economy has left inner Melbourne with expanses of underutilised industrial land. This land, located adjacent to, and within the Central City, accounts for 13 per cent (476 hectares) of the municipal area and is available for Melbourne's future growth. Through urban renewal, there is the opportunity to accommodate an expanding Central City and to turn this into well-planned, well-serviced, high density residential and business neighbourhoods.

Resource efficient and climate change adapted

Experts predict that Melbourne's future climate will be hotter and drier. The inner city is particularly vulnerable, with concentrations of buildings, roads, and other infrastructure, resulting in higher surface temperatures, known as the urban heat island effect. Experts also predict more rainfall and a rise in the sea level. Urban renewal areas need to be future-proofed against these climatic changes.

Urban renewal offers significant opportunity for the upgrading or wholesale replacement of existing energy, water and waste utilities. New, integrated, local systems

can provide significantly more efficient services to homes and businesses, reducing the city's carbon footprint.

01 Introduction

Project Timeline

The *Arden-Macaulay Structure Plan 2011* has been prepared in three stages.

Stage 01

A background report was prepared that provided an overview of the Arden-Macaulay area from a policy and physical perspective. This review has informed the formation of the draft plan and provided an understanding of the key issues that informed the early consultation exercises.

During September and October 2010, the City of Melbourne held discussions with businesses and major institutions in and around the area. A community forum was also held. These sessions focused on understanding the values and opportunities that should underpin the planning of the area. These values have informed the development of the ten key principles that lead the outcomes of the *Structure Plan*.

Stage 02

A draft version of the plan was prepared to articulate a vision and preferred framework for future growth. This draft was available for comment to the wider community in May-June 2011. The submissions received have informed the finalisation of the plan.

Stage 03

A final version of the plan has been prepared. This responds to the wider community feedback received during the consultation period and includes strategies and actions to deliver the plan.

This process is illustrated in Figure 1.2.



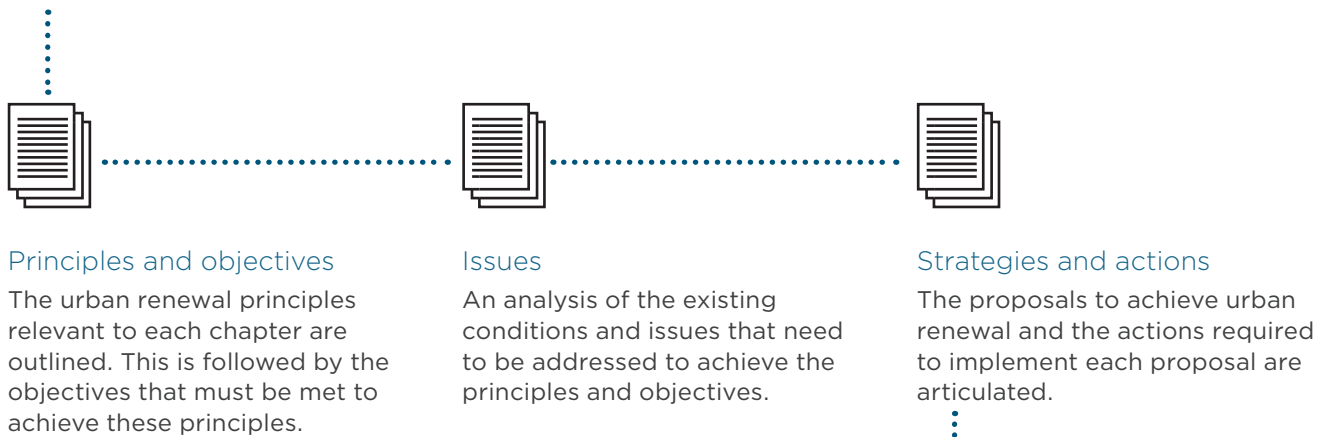
Figure 1.2: Arden Macaulay Structure Plan preparation timeline.

Document structure

Each chapter is structured as follows.

30-year vision

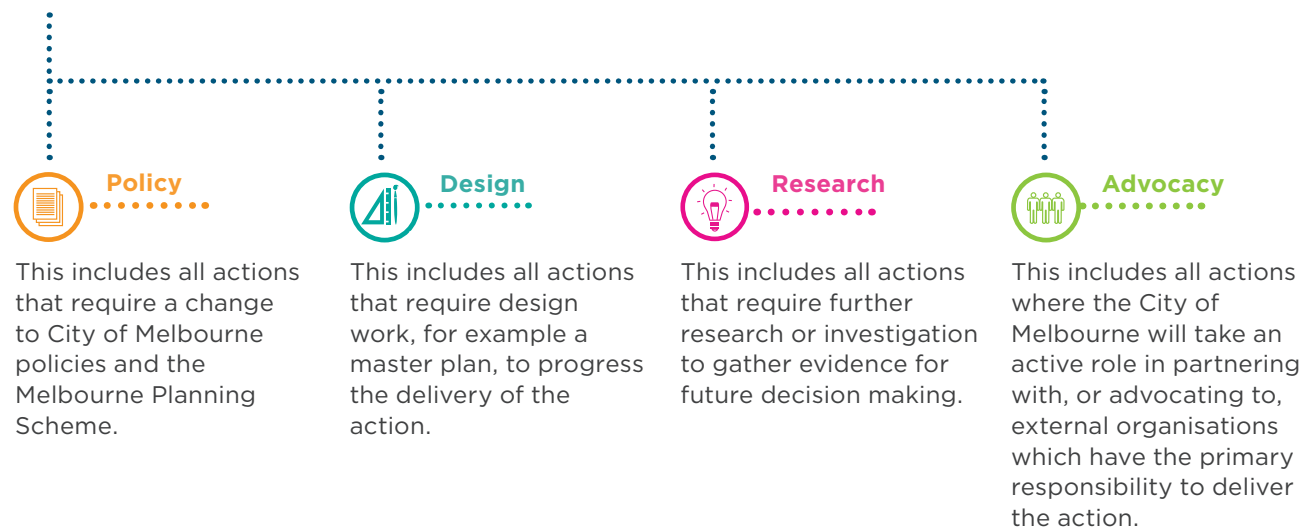
An overview of the long-term outcome for the area, supported by:



Implementation of the plan

The *Structure Plan* will be implemented through a range of actions. These are outlined at the end of each strategy. Each action is also nominated as high priority (1 year timeframe), medium priority (1-5 year timeframe) or as a low priority or longer term initiative (5+ years).

These have been identified within the following categories.



Scale and timing of new development

The significant size of the area creates challenges for managing growth over three decades. Not all of it will change at the same pace. It is important that as yet undeveloped areas do not prejudice more immediate viable land uses, or become degraded.

Another challenge of a larger area is equalising facilities and access across the precinct, to reduce significant variations in land values. For this reason, the plan proposes that parks, transport services and community facilities be located with easy access to all renewal areas.

To address these issues, the strategy considers:

- Development over a 30-year period, dependent on the delivery of Melbourne Metro.
- Staging of proposed rezonings and policy changes to integrate with the delivery of new services.
- Coordination of new development with major infrastructure proposals (transport, flood mitigation and power).
- Coordination with other government authorities to deliver integrated responses on government owned land.
- Coordination with the E-Gate site, particularly in the provision of sustainable infrastructure and community infrastructure services.

Policy context

Future Melbourne Community Plan (City of Melbourne, 2008)

Future Melbourne is a community plan for the City of Melbourne. It is a plan to grow Melbourne as a global city and as one of the top ten most liveable and sustainable cities in the world.

Its six goals are to make Melbourne:

- A city for people
- A creative city
- A prosperous city
- A city of knowledge
- An eco-city
- A connected city.

The Municipal Strategic Statement (City of Melbourne, 2010)

The City of Melbourne's draft *Municipal Strategy Statement* (MSS) defines how and where the long term growth and development of the city will occur. New development will be particularly focused in areas of the city that are currently degraded and underutilised, and this will repair and rejuvenate those areas. Other parts of the city, such as heritage protected residential areas, will remain relatively stable and maintain their existing character.

The draft MSS defines the three types of areas in the city, in terms of their capacity for growth and intensity of change, as 'stable areas', 'ongoing change areas' and 'urban renewal areas'.

The growth framework plan in the draft MSS describes Arden-Macaulay as predominantly an urban renewal area. These are described in the MSS as areas which are currently underutilised and where there are large sites and whole precincts which will

undergo urban renewal. The MSS states that these areas will be planned and designed to provide optimal living and working environments. Together, these urban renewal areas will accommodate 110,000 jobs and 80,000 residents by 2030. Change will take place within the context of a well-developed structure plan that will be adopted by the City of Melbourne.

In urban renewal areas, there is the opportunity to develop whole new precincts as integrated zero carbon and climate adapted. There will generally be a new mix of uses, higher density of development, and excellent provision for walking, cycling and public transport services. In these precincts, the design of the buildings, streets and public open spaces should be integrated with the provision of utilities and services to minimise the precinct's greenhouse gas emissions, optimise water management, mitigate the effects of extreme storm events, reduce the urban heat island effect and take precautions against sea level rise.

The draft MSS affirms the importance of good building design and coordinating this with a well-designed public realm – waterfronts, parks, plazas, streets and lanes. It provides a framework for the future growth and development of the city to be energy efficient, low carbon and adapted to tackle the impacts of climate change, which are predicted to include water shortages, heatwaves, sea level rise and more frequent extreme storm events.

The draft MSS is a strategy for maintaining and enhancing the city's valued urban heritage, at the same time as accommodating growth and development.

Local planning policies

Local policies provide content specific to the local area. The City of Melbourne has a number of local policies relevant to future planning of Arden-Macaulay.

These include:

- *Sunlight to public spaces*
This policy applies to public spaces such as parks and gardens, squares, streets and lanes, and includes privately owned spaces accessible to the public, such as building forecourts, atria and plazas within the municipality.
- *Discretionary uses in a Residential Zone 1*
This policy protects residential areas from the encroachment of incompatible non-residential uses and maintain attractive residential neighborhoods.
- *Environmentally sustainable office buildings*
This policy sets out objectives for the efficient use of energy and minimisation of greenhouse gas emissions through efficient building design.
- *Heritage places outside the Capital City Zone*
This policy applies to all places within the heritage overlay, excluding the Capital City Zone and the Docklands Zone.
- *Urban design outside the Capital City Zone*
This policy applies to all land in the municipality excluding the Capital City Zone and the Docklands Zone, and aims to prevent the loss of the city's character through redevelopment.

02 Activities and Land Uses

30-year vision



Arden-Macaulay will transition into a dense, mixed use inner city suburb while protecting key industrial sites. Intensified commercial activity at Arden Central linked to the Melbourne Metro will bring significant job growth and extend Melbourne's Central City to the north-west.

Introduction

Overview

Historically Arden-Macaulay would have provided both a water and food source for Aboriginal people of the Woiwurong language group of the Wurundjeri tribe, as well as acting as an important movement corridor between the mountains and Port Phillip Bay.

From the early twentieth century, the area developed as an industrial and warehousing hub around Melbourne's port and railway facilities, processing products from the rural hinterland (such as wool and wheat), and providing industrial and manufacturing services to the growing Central City.

Over the next 20 years, the economy and population of Melbourne will undergo significant expansion. There will also be a continued transition from an industrial to a knowledge intensive economy. This transition will require changes in land uses. The size of Arden-Macaulay and the extent of relatively under-utilised land render it ideally suited to new commercial developments. Redeveloping the area will make it more productive and will create more jobs.

The industrial heritage is represented by the surviving examples of large scale industrial processing facilities, that were once common in the west of Melbourne. Industrial landmarks such as the iconic Weston Milling and Allied Mills silos all feature prominently in the locals' collective consciousness about the area.

Objectives

Principle 1

Grow a prosperous place and viable economy

1. Intensified activity creates vibrant activity and employment centres around existing and proposed public transport infrastructure, providing commercial, residential, retail, entertainment, educational and cultural facilities.
2. Support the continued operation of industrial uses, whilst their operation remains viable.
3. Ensure long term economic viability and a strong local economy.
4. Integrate employment growth with the establishment of new public transport infrastructure.

Principle 7

Develop liveable dwellings that house a diverse and inclusive community

1. Accommodate population growth in a diverse mix of well-designed housing that is integrated into mixed use areas and supported by public transport and community services.
2. Encourage the development of a diverse mix of well-designed accessible housing, including 20 per cent affordable housing options.

Principle 2

Ensure a harmonious transition of change

1. Facilitate land use change in a timely and strategic manner.
2. Transition to a greater mix of uses to create active walkable communities and reduce car dependency.
3. Minimise the impact on existing amenity through low car dependency.
4. Deliver the right mix of civil and community infrastructure through a managed sequence of development in line with the growing resident, worker and visitor demands.
5. Respect the surrounding land use character, ensuring an appropriate transition to neighbouring precincts.
6. Support the continued operation of industrial uses whilst their operation remains viable.
7. Ensure that new land uses are compatible with the key industrial sites.

Principle 3

Create liveable local neighbourhoods

1. Create neighbourhoods that are mixed use, vibrant and walkable.
2. Accommodate population growth in high density developments that are supported by public transport and community services.
3. Create opportunities to live and work locally.
4. Ensure population and employment growth enhances the amenity of the area.
5. Create public spaces and streets that are active, safe and well-designed.
6. Provide local activity centres and community hubs that can be a focus for the community life of a diverse and growing resident, visitor and employee population.
7. Establish a great diversity of land uses, including a vertical mix.
8. Support cultural and social diversity.

Issues

High value location underused

The land uses within Arden-Macaulay represent an underutilisation of the area considering its proximity to the CBD and to existing and future transport infrastructure. This is outlined below:

- Arden-Macaulay is located 1.5km north west of Melbourne CBD, which is the premier retail and services centre for Melbourne and the state of Victoria. The CBD draws national and international visitors, and is one of the nation's principal commercial centres.
- The proposed Metro underground rail will pass through Arden-Macaulay and a station is planned at Arden Central providing direct connections to the CBD. E-Gate is located to the immediate south of the precinct and is planned as an integrated urban redevelopment with residential and commercial components.
- Arden-Macaulay enjoys excellent connections to the arterial road network (specifically CityLink), and a high level of public transport provisions including three train stations, a tram and bus routes. The area is serviced by small activity centres and is close to other centres such as Flemington and Errol Street.
- The area has a relatively small resident population of 2,663 persons. This is largely due to primary use of the area as an industrial precinct and the land use zoning which prohibits residential uses.
- Large amounts of land within Arden-Macaulay are occupied for industrial land uses, which, over time, will become

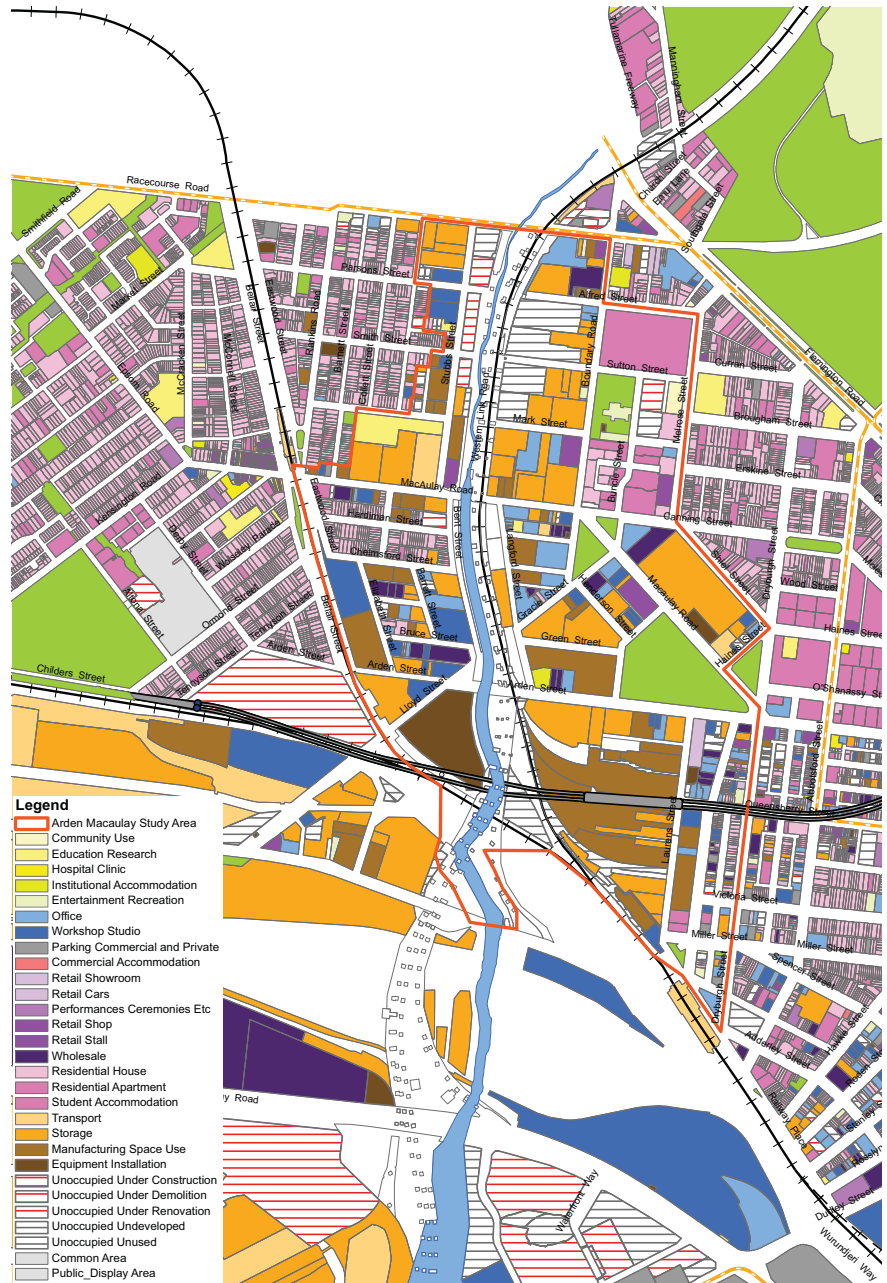


Figure 1.1: Land Use CLUE 2008



Figure 2.2 Existing industrial sites that require an industrial zoning to enable future expansion of operations (CLUE, 2008).

redundant and in some cases already involve vacant or underutilised land (See figure 2.1). These uses will phase out of Arden-Macaulay and key industrial sites will remain. Given the excellent proximity to the CBD, additional commercial space is sought after in this location.

In this context, and given these excellent amenities, it is evident that the Arden-Macaulay precinct is generally underutilised and has the potential to realise a significant redevelopment.

Historic drift to obsolete and low value uses

There is generally an inconsistency of land uses across Arden-Macaulay. Analysis of recent land use trends highlight that employment in office and recreation categories have increased strongly between 2004 and 2008. Non-office jobs have also increased but at a slower rate.

The increase in non-office jobs in North Melbourne and Kensington has come at a time when employment in this category in other parts of the city has been in decline. Employment in non-office related positions increased in Arden-Macaulay since 2004, however floor space has decreased. This has been driven by a significant drop in manufacturing floor space. Floor space ratios have declined significantly between 2004 (218m²) and 2008 (79m²) reflecting the changing land use profile of the study area. The amount of vacant floor space has also fallen between 2004 and 2008.

The area north of Macaulay Road is undergoing the most change. It is occupied predominantly by offices, warehouses, small



Figure 2.3 Existing Land Subject to Inundation Overlay.

scale manufacturing, and includes vacant land. There are no key industrial sites north of Macaulay Road. Most of the primary industrial sites fall within the southern portion of Arden-Macaulay. The southern portion is occupied by a key industrial site, Allied Mills and other industrial uses on large lots. Figure 2.2 indicates the existing sites within Arden-Macaulay that require an industrial zoning to enable future expansion of their operations (CLUE data, 2008).

Transitioning from a predominantly industrial use needs to be carefully considered to ensure the viability of existing uses and the amenity of future residents and workers.

Some of the primary industrial uses may cause off-site amenity impacts upon other land uses. The off-site amenity impacts of some industries are unknown, given they have not previously had residential neighbours.

Flood prone land

Large areas of the site are subject to inundation as determined by the relevant flood plain management authority (See figure 2.3). This particularly affect land south of Macaulay Road. The flood mitigation works associated with redevelopment may impact upon some land uses. Mitigation of flooding impacts must be considered through the urban renewal strategies.

Lack of public open space

Only some parts of the area have convenient access to good public open space. The land west of the Moonee Ponds Creek is least well served with parks (see chapter 5, *Public realm and open space, Issues*).

Misalignment of land use planning controls with highest and best land use

The current planning controls do not support the objectives of urban renewal.

Most of the land north of Macaulay Road within the study area is zoned Industrial 1 or 3 (with the creek area zoned Public Use). These zones enable industrial uses and prohibit residential and other activity (figure 2.6 shows current zoning areas).

The zoning south of Macaulay Road varies and included Mixed Use, Residential 1, Industrial 1, Public Use 1 and 4, Public Park and Recreation and Industrial 3 zones.

The existing Public Park and Recreation Zones are mostly surrounded by industrial zoned land. This is a missed opportunity to provide active land uses such as residential, office and commercial that would enhance the frequency of use and passive surveillance of these areas.

High costs of site contamination

Some industrial sites may contain on-site contamination. The remediation of this contamination is a significant cost for redevelopment for sensitive uses such as residential.

Additional development yields may be needed to compensate for the remediation costs.

Poor quality of streetscapes

As a consequence of the predominantly industrial uses, there are poor levels of pedestrian amenity and safety.

The very good public transport infrastructure is underused

The area has very good access to rail infrastructure. This includes the Macaulay and Flemington Bridge stations on the Upfield line and Flemington and Kensington stations on the Craigieburn line has

Whilst improvements are needed to service, frequency, capacity and the station environments, this level of provision of rail services can support much higher densities of land use activities (see chapter 4, *Transport, Issues*).

North Melbourne station is also accessible to the southern half of the site and provides an excellent level of access to the northern, western and Central city lines. Access to freight rail has diminished significantly but is still utilised by Allied Mills on the Craigieburn line.

Strategies

Strategy 1

Transition to a mixed use area in two stages to ensure a harmonious transition that links growth to the delivery of key infrastructure and that protects existing key industrial uses.

Areas that have a mix of uses provide a diversity of activities such as residential, commercial, retail, educational, entertainment and cultural activities.

Transforming the area into a mixed use precinct will involve a shift from traditionally segregated land uses into a vertical land use mix. The advantages of areas that have a mix of uses are numerous and include:

- The promotion of public transport, walking and cycling trips. A diversity of uses provided within a compact walkable area allows residents, workers and visitors to undertake a number of activities in short, linked trips.
- The provision of safer streets, as the diversity of uses keeps the area active with more people on the streets (and therefore occupied and naturally surveyed) through the day and night.
- More vibrant streets that are interesting places to be, with a liveliness that comes from a diversity of people that those activities attract.

The review of the land use zones in this area has identified opportunities for higher and better use of the land in the wider context of growth and associated demand in the municipality.

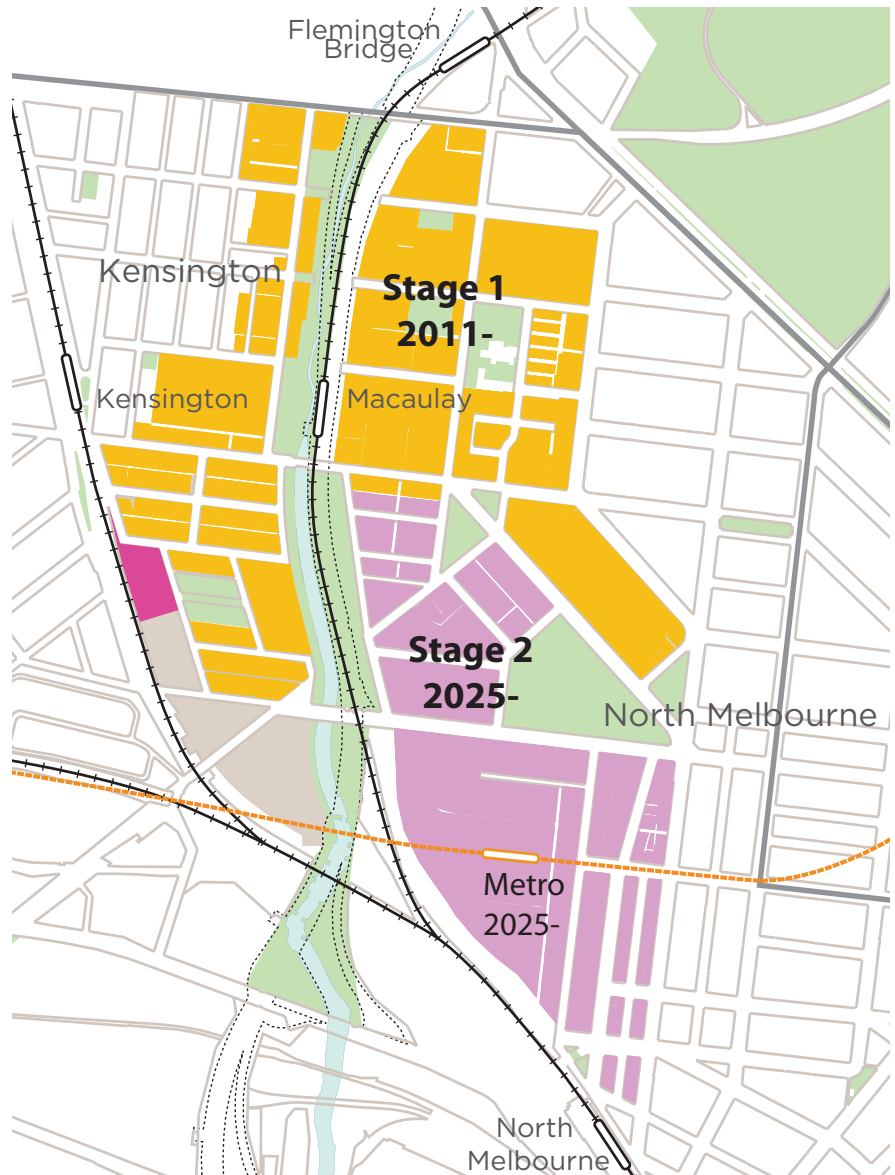


Figure 2.4 Staging of Land Use Transition in Arden Macaulay

- Subject to separate planning process
- Stage 1 2011 -
- Stage 2 2025 - Integrated with the delivery of the Melbourne Metro at Arden Central

The transition of Arden-Macaulay into an area that attracts a range of uses and activities should also occur with respect to the existing viable uses, including industrial operations and the delivery of infrastructure to support this growth.

The sequence of development will therefore occur in two stages with the area north of Macaulay Road and parts of the south-west considered for renewal in Stage 1 (See figure 2.4). The area south of Macaulay Road and east of the creek will be considered for renewal in conjunction with the planning of the Melbourne Metro.

Stage 1

North of Macaulay Road

As outlined in the identified issues, the land north of Macaulay Road, has already transitioned away from its historic industrial uses and is ready for urban renewal. The land in this area is recommended to shift to a mixed use zone to facilitate this change towards positive urban renewal outcomes.

Southwest quadrant

The southeast quadrant of Arden-Macaulay is the area south of Macaulay Road and west of Moonee Ponds Creek. The land uses profile and trends are already a mix of uses as follows:

- The area is a mix of industrial and non-industrial uses.
- Analysis of the industrially zoned area (south of Chelmsford) shows 35 per cent as unoccupied and of the occupied area 59 per cent as non-industrial uses (including offices, studios and dwellings). The 41 per cent balance is in industry related activities including storage, manufacturing and wholesale activities.
- 64 per cent of the jobs in the precinct are in non-industry uses.
- Land uses in the area are generally in transition away from industrial uses to a mix of uses.
- There are opportunities for increased office, warehousing and retail accommodation.
- The central part of this area has the low level of amenity associated with industrial uses - narrow streets, poor access, lack of car parking, minimal landscaping
- This area has good access to public transport, being close to two rail stations on two

lines.

- The industrially zoned land is immediately adjoined by residential neighbourhoods in residential zones to the north.

While much of this area is a mix of uses it does include a key industrial site - the Allied Mills flour mill. This is an important primary industry in Victoria that should be protected from encroaching sensitive uses.

Retention of an industrial zone across the Allied Mills site will support the ongoing operation of the existing use, subject to the existing management plan that manages potential conflicts with adjoining sensitive uses. It is recommended that this site will therefore remain Industrial 1 Zone. If in future the site becomes vacant, a strategic review can determine the appropriate use, planning and development outcomes for this facility.

To achieve job growth, a higher intensification of uses and to accommodate some increased residential capacity the following zones are proposed for the remainder of the southwest quadrant.

Business 3 Zone - B3Z

A Business 3 zone is proposed in the area west of Elizabeth Street and East of Barret Street (See figure 2.6 for extent of area). This zone is more consistent with the current profile and trend of land uses. The Business 3 Zone will prohibit residential use and will encourage some new development. This zone provides a distance buffer from new residential uses to the industrial use on the Allied Mills site.

Mixed Use Zone - MUZ

The Mixed Use Zone is proposed west of Barrett Street and north of Bruce Street (See figure 2.6 for extent of area) to provide the

24 opportunity to front development to the creek to improve the activation and safety within the creek corridor. It will be buffered from the industrial zone by the proposed Business 3 Zone described above.

Public Purposes Recreation Zone - PPRZ

A new public open space is proposed around Fink Street. This will address an existing gap in the open space network and provide for the increased residential and worker population west of the creek. Locating this park centrally will provide more equitable walking and cycling access to this area.

This zone is also proposed for the creek corridor. This will prioritise the creation of the proposed linear park along the Creek and help redress the deficit in public open space on the west side of the creek.

Stage 1 zoning propositions are illustrated in figures 2.5 - 2.7.

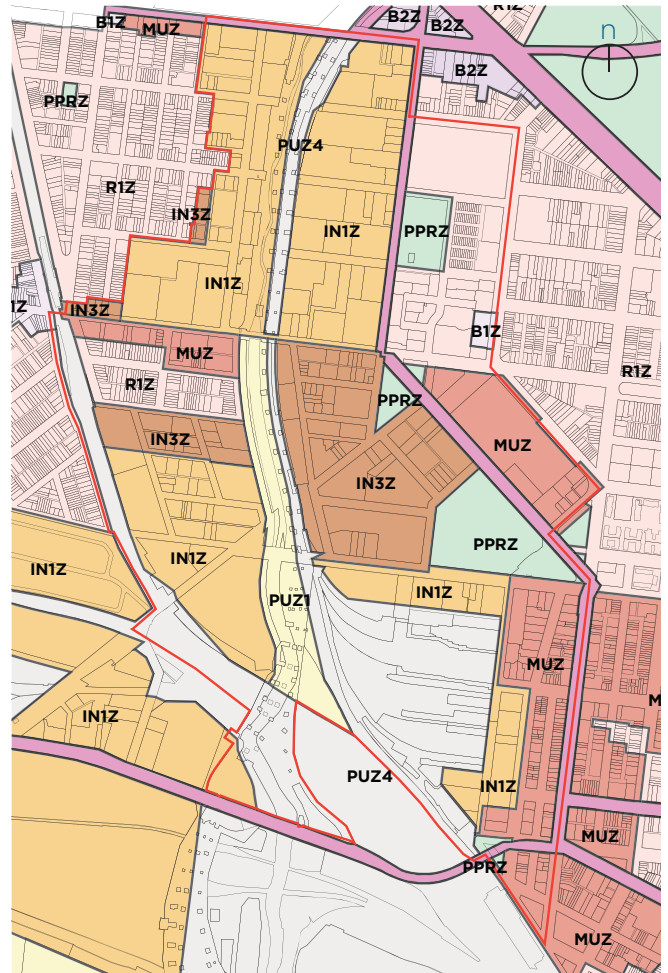


Figure 2.5 Existing land use zoning (Melbourne Planning Scheme).



Policy

Prepare an amendment to the City of Melbourne Planning Scheme that will enable the objectives of the Structure Plan to be realised when considering applications for land use and development within the Arden-Macaulay area. A proposed rezoning plan for this first action is indicated in figure 2.6.



Design

Publish design guidelines on the integration of industrial and residential uses on sites and the reuse of industrial premises.

1 year

1 - 5 years

5 + years



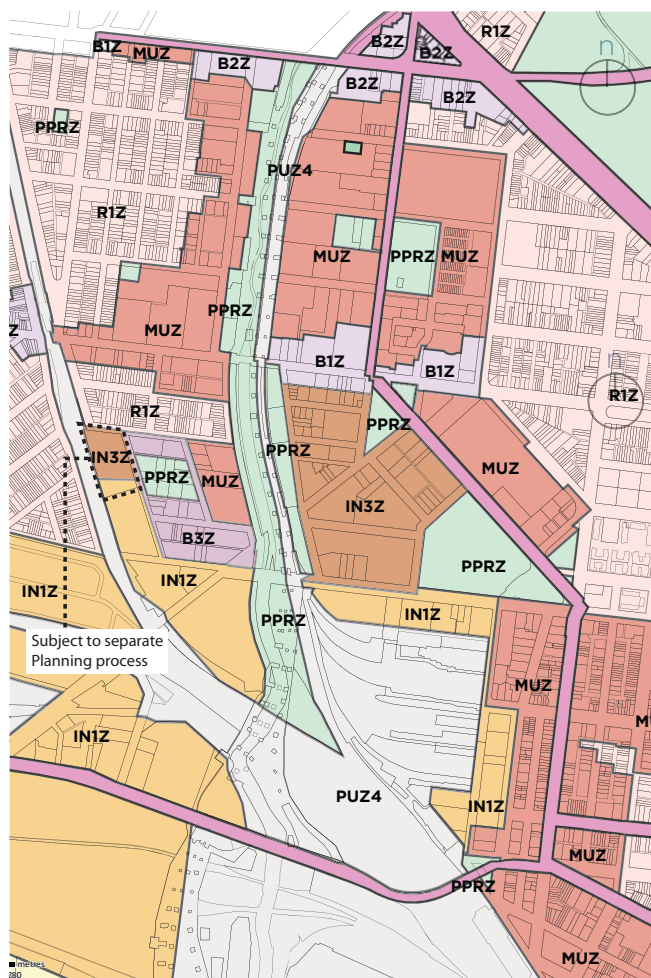
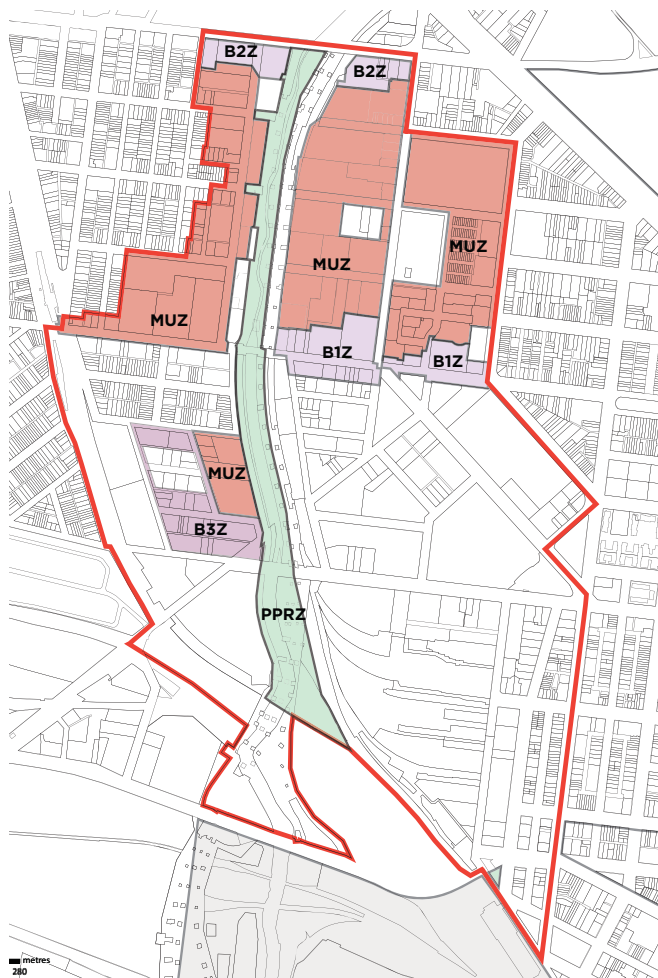


Figure 2.6 Summary of early Stage 1 land use zoning changes. Figure 2.7 Stage 1 proposed land use zoning.

Business	Public Land	Residential
Business 2 Zone (B2Z)	Public Use Zone 1 - Service & Utility (PUZ1)	Mixed Use (MUZ)
Business 3 Zone (B3Z)	Public Use Zone 2 - Education (PUZ2)	Residential 1 Zone (R1Z)
Industrial	Public Use Zone 3 - Health & Community (PUZ3)	Special Purpose Zone
Industrial 1 Zone (IN1Z)	Public Use Zone 4 - Transport (PUZ4)	Capital City Zone 1 (CCZ1)
Industrial 3 Zone (IN3Z)	Public Use Zone 6 - Local Government (PUZ6)	Comprehensive Development Zone (CDZ1)
Road Zone	Public Use Zone 7 - Other Public Use (PUZ7)	Special Use Zone 1 (SUZ1)
Road Zone Category 1 (RDZ1)	Public Park & Recreation Zone (PPRZ)	Port of Melbourne Planning
Road Zone - Category 2 (RDZ2)		Port of Melbourne Planning Scheme

Strategy 2

Support the establishment of the Melbourne Metro by extending Central City activities to Arden Central

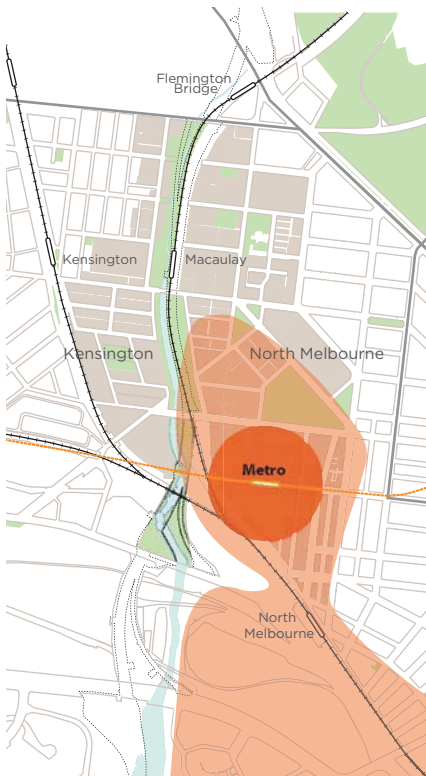


Figure 2.8 Expansion of the Central City at Arden Central.

The commencement of the Metro station will act as a catalyst for the development of Arden Central as a vibrant extension of the Central City. Melbourne's Central City is Victoria's main economic, cultural and social hub and its continued growth and development is central to the prosperity and vitality of Victoria.

The long term development of Melbourne's Central City will require new future areas of expansion. Over the last 20 years this has been provided by the expansion into Southbank and Docklands, which will continue for the next decade. Beyond that the areas for the next generation of expansion will be E-Gate and

Arden Central (See figure 2.8 and 2.9).

Arden Central will provide for a growing high density residential community, complemented by commercial activities. This area is identified as Stage 2 of the Structure Plan (see figure 2.4).

The proposed Melbourne Metro train line will link west to Footscray and Sunshine, and east to the Melbourne University bio-medical hub, the Hoddle Grid (the traditional CBD) and down the southeast metropolitan employment corridor to Caulfield. The high speed, frequency and capacity of this service will connect Arden Central with a large and dense metropolitan employment corridor.

The provision of the Metro station will enable Arden Central to serve a wider metropolitan function as a location for high intensity office and research jobs, tertiary education facilities and high density residential development.

The Metro will provide for intensive employment in this immediate area of up to 14,000 jobs, 4,000 residents and 12,000 students. To ensure this growth creates a successful activity centre Arden Central will include:

- A new major street-based activity centre as the 'heart' of a new neighbourhood.
- A mix of high density developments.
- A tertiary education facility (or facilities), with potentially 12,000 students, staff and researchers.
- Shared facilities for business, research and residents,

co-located with the new station including, for example a conference centre, library, theatre and cinemas.

- High density residential developments to provide a vibrant place that has sufficient residents to support a mix of uses outside business hours.
- A civic square providing recreational meeting and social space, which will be a focal gathering space for the community.

To improve connectivity to Arden Central, Boundary Road will be extended south and accommodate a high frequency north-south bus service creating a new intermodal hub. The Boundary Road extension could provide the opportunity to connect directly to the Central City via Dynon Road, Victoria or Spencer Streets. This will further enhance the area's connectivity and economic growth potential to the Central City.

In order to ensure a coordinated planning approach with this State Government initiative, the land that is within the influence of the Metro station will not be rezoned until the Metro proceeds. This includes all land south of Ink Lane and east of Langford Street.

This area is currently subject to inundation (refer figure 2.3). The master planning for Arden Central will need to identify and consider



Figure 2.9 Historic and future expansion of the Central City.

Actions

This strategy will be implemented through the following actions.



Strategy 3

Establish three new local activity centres

The significant growth in the local residential and worker population will dramatically increase the demand for local services, shopping, entertainment and social venues. The areas around the existing train stations are the logical location for providing these facilities, as they are convenient and promote sustainable movement patterns.

They are:

- Macaulay - Macaulay Road/ Canning Street (and station)
- North Melbourne station
- Flemington Bridge.

These local activity centres provide an integrated destination for local shopping, dining, community facilities and commercial premises.

To achieve this, each of the activity centres will incorporate:

- Active 'main street' frontages to primary streets, with retail premises, commercial units or workshops at ground level.
- Fine grain development with enhanced pedestrian connectivity.
- A mix of uses that includes residential, commercial, retail, entertainment and community

facilities.

In addition, the unique role of each centre includes:

Macaulay

- Consolidation of a district level community hub that complements the existing community facilities to the south and that is co-located with potential school site and open space improvements.

North Melbourne station

- North Melbourne station and Laurens Street develop as gateways into the Arden Central precinct and to the North Melbourne Recreation Centre.
- Excellent pedestrian connections to the E-Gate development to the south.
- Increased presence of retail, professional offices, services and residential, including at the interchange between new tram and bus services and North Melbourne station.

Flemington station

- Provision for business expansion to the north of the Arden-Macaulay area. It is well located at the tram-train node, but lacks good connections between nodes. The City of

Melbourne will work with the City of Moonee Valley to further define the role of this emerging centre and its needs.

- The Business 2 Zone will allow existing business related land uses to remain and will allow further retail development along main roads, which will support an increased population.

Actions

This strategy will be implemented through the following actions.



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Strategy 4

Increase the provision of affordable housing

Future Melbourne established a goal for the provision of 20 per cent affordable housing in all new developments. Arden-Macaulay should be contributing to this aspiration to improve opportunities for lower income earners to live within the Central City, through the provision of social cooperative housing that is owned and managed by registered housing associations.

City of Melbourne does not have a housing policy to assist in the delivery of housing diversity. The policy can assist in delivering affordability by ensuring diversity in size, number of bedrooms and accessibility,

Actions

This strategy will be implemented through the following action.



Research

Investigate appropriate mechanisms to deliver 20 per cent affordable housing including the opportunity for the City of Melbourne to act as a broker between developers and registered housing associations in order to facilitate this outcome.

1 year

1 - 5 years

5 + years

Strategy 5

Increase the provision of open space

See chapter 5, Public realm and open space.

Strategy 6

Increase the provision of community infrastructure

See chapter 6, Community infrastructure.

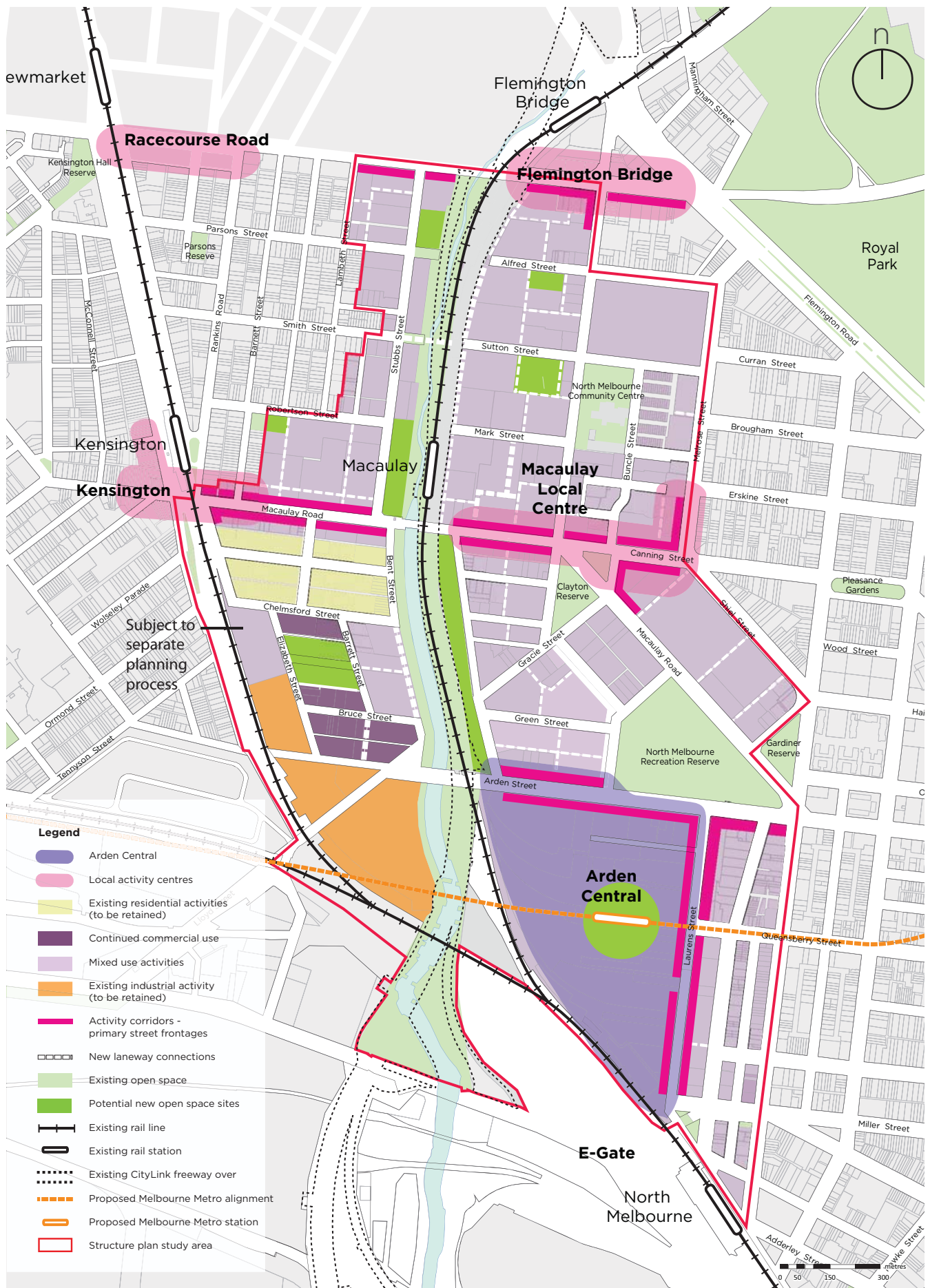
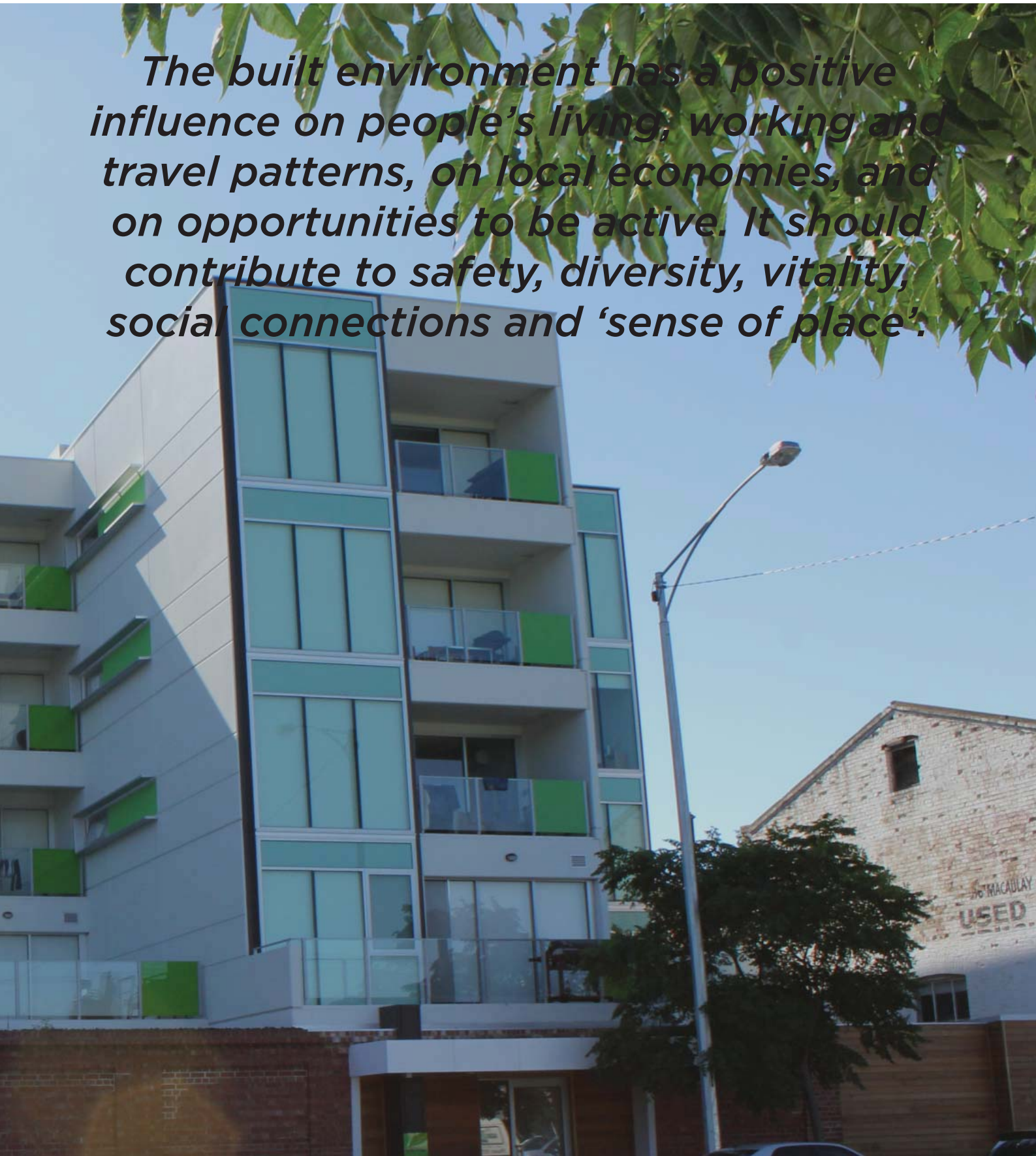


Figure 2.10 Long term land use strategy.

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30-year vision

The built environment has a positive influence on people's living, working and travel patterns, on local economies, and on opportunities to be active. It should contribute to safety, diversity, vitality, social connections and 'sense of place'.



Introduction

Overview

The urban structure and built form of Arden-Macaulay is determined by its industrial past.

The area is predominantly low-scale (one to three storeys), with the occasional tall structures of the silos and the public housing towers within the North Melbourne estate. Across the industrial areas no existing built form controls exist, however the industrial zoning has kept building heights low (See figures 3.1 and 3.2).

The public realm is of poor quality as the legacy of industrial uses has created large blocks that discourage walking and streets that are fronted by the blank walls of warehouses and sheds have created a poor walking environment.

A small pocket of mostly single storey cottages are located in the southwest of the study area. To the southeast, a number of built form controls exist that establish height limits and place building performance requirements on new developments (see figure 3.3).

The areas adjacent to Arden-Macaulay are low-scale residential areas of North Melbourne, Flemington and Kensington with predominantly one - three storey buildings built in the early 1900s. Much of this area retains a valued heritage character.

A number of existing controls exist to guide development in the area. They are outlined in the following pages.

Snapshot



Figure 3.1: Existing built form north of Macaulay Road.

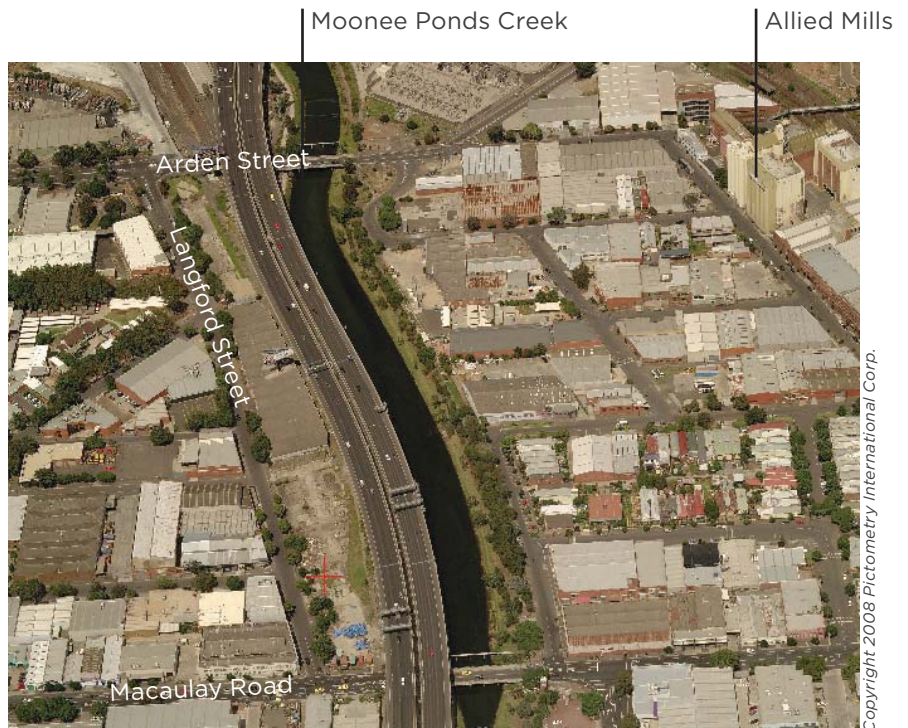


Figure 3.2: Existing built form south of Macaulay Road.

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Melbourne Planning Scheme overlays

The following overlays apply to areas within Arden-Macaulay. Figure 3.3 gives the extent of each overlay.

Existing built form controls

The existing design and development overlays (DDOs) cover relatively small areas of Kensington and North Melbourne relevant to the precinct study. The main purpose of the DDOs is to protect the reasonable amenity expectations of new residential development and to control or guide building height.

The five relevant DDOs for the area are:

DDO26 – North and West Melbourne Noise Attenuation Area

The purpose of the overlay is:

- To ensure that new, refurbished or converted developments for new residential and other noise-sensitive uses constructed in the vicinity of the Laurens Street, North Melbourne industrial area, include appropriate acoustical measures to attenuate noise levels within the building.
- To ensure that land use and development in the vicinity of the Laurens Street, North Melbourne industrial area, do not adversely affect the viability of industry within the area.

Any new development requires review of the overlay to ensure appropriate noise attenuation measures are applied.

DDO28 – North Melbourne train station

The purpose of the overlay is to provide a transitional building height from the traditional lower scale residential properties in North and West Melbourne to the periphery of the North Melbourne station. The overlay imposes a discretionary height control of five storeys for new development.

Note: A storey is defined as 3.5 metre floor to floor height for residential uses and four metres for non-residential uses.

DDO31 – North Melbourne Central

The purpose of this overlay is to ensure the low scale character of the area is maintained by imposing a 10.5 metre mandatory height control for new development.

DDO32 – North Melbourne Peripheral

The purpose of this overlay is to maintain the predominant low scale nature of the area, to ensure that development retains views to significant landmarks and to ensure development supports high levels of pedestrian amenity related to access to sunlight and sky views and a pedestrian friendly scale.

Land Subject to Inundation Overlay

The purpose of this overlay is to identify land in a flood storage or flood fringe area affected by the one in 100 year flood, or any other area determined by the floodplain management authority.

A planning permit is required for most buildings and works.

Any applications for planning permits must be referred to the

relevant floodplain management authority under Section 55 of the Planning and Environment Act 1987. In this instance, Melbourne Water is the statutory referral authority.

Other existing overlays

In addition to the above DDOs, the following overlays apply within the area (see Figure 3.3 for extent of each overlay)

Environmental Audit Overlay

The purpose of this overlay is to ensure that potentially contaminated land is suitable for a use which could be significantly adversely affected by any contamination.

CityLink Project Overlay

This overlay ensures that the display of a business identification sign does not compete with the display of signs on the CityLink road. It follows the route of CityLink along the western border of the study area, from Racecourse Road in the north, to Footscray Road, and continues north and south of the study area.

Public Acquisition Overlay 2 – VicRoads Corporation

Public Acquisition Overlays (PAOs) generally identify land proposed to be acquired by an authority, whilst ensuring that changes to the use or development of the land do not prejudice the purpose for which the land is to be acquired.

In the study area, PAO2 (VicRoads Corporation) identifies land for road purposes, and affects the corner lot of Industrial Zone 1 on Racecourse Road and Boundary Road, in North Melbourne.

Special Building Overlay

The Special Building Overlay (SBO) identifies land in urban areas liable to inundation by urban drainage system, as determined by, or in consultation with, the floodplain management authority. Applications must be referred to Melbourne Water, which is the relevant authority on this matter.

Incorporated Plan Overlay 5 - Moonee Ponds Creek Concept Plan

This overlay aims to coordinate development along the Moonee Ponds Creek, its banks and surrounding environment, whilst preserving the natural features and remnant vegetation, and preventing further deterioration of the creek and its environs. It imposes a discretionary height control of five storeys for new development.

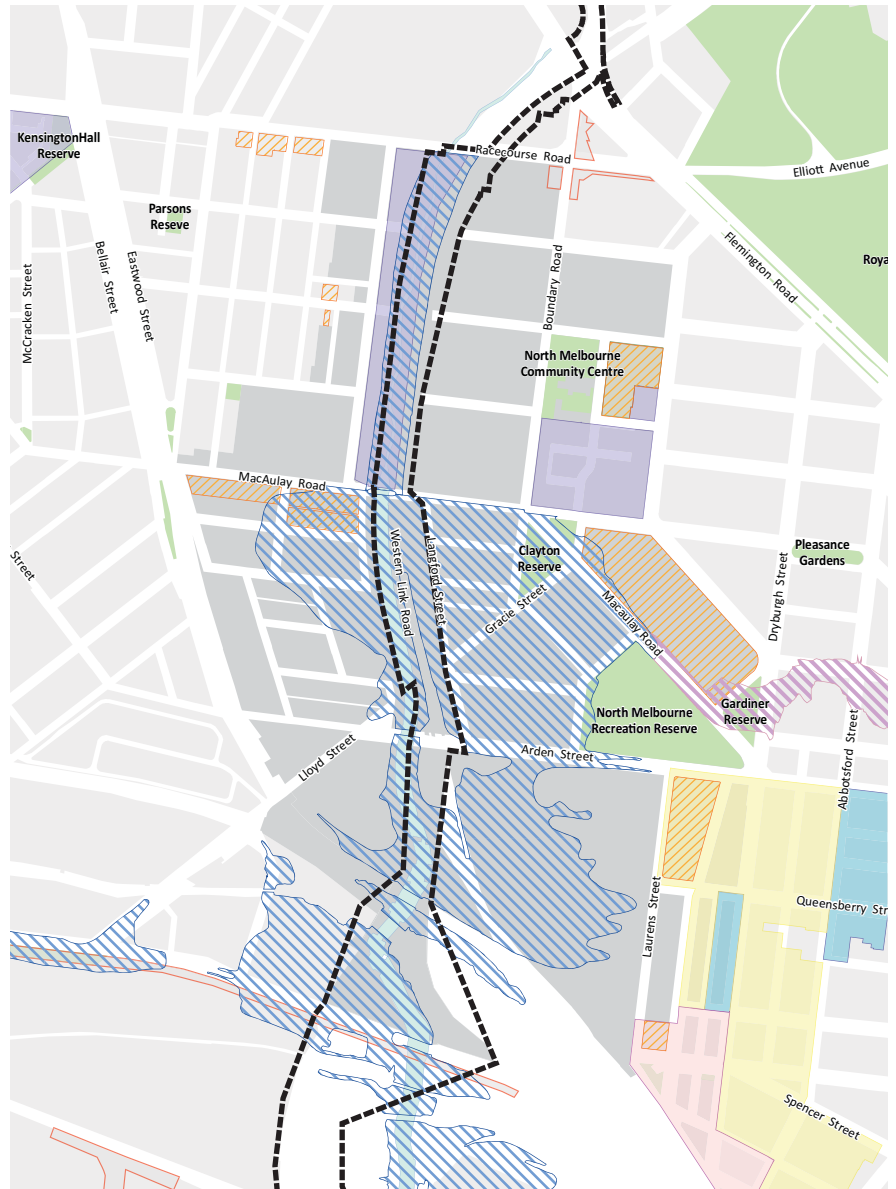






Figure 3.3 Existing Melbourne Planning Scheme overlays.

-  City Link Plan Overlay (CLPO)
-  PS Development Plan Overlay
-  PS Environmental Audit Overlay
-  PS Incorporated Plan Overlay
-  Land Subject to Inundation (LSIO)
-  Special Building Overlay (SBO)
-  PS Public Acquisition Overlay
-  Design and Development Overlay (DDO)28
-  Design and Development Overlay (DDO)31
-  Design and Development Overlay (DDO)32

03 Urban Structure and Built Form

Objectives

Principle 1

Grow a prosperous place and viable economy

1. Accommodate the growth of the Central City.
2. Develop a high density mixed commercial, retail and residential centre that facilitates economic activity.
3. Support the growth of the knowledge economy through the establishment of a tertiary institution.
4. Promote the growth of the economy by establishing excellent new and proposed public transport connections to create well-connected areas.

Principle 3

Create liveable local neighbourhoods

1. Facilitate the establishment of diverse communities and social interaction by creating compact, mixed use neighbourhoods.
2. The scale, height and setbacks of new buildings creates a liveable compact medium density residential and working environment.
3. Enable a local residential and working population that will use the expanded public transport network and community services and facilities.
4. Provide sufficient high quality public open space to meet the projected population growth.
5. Ensure the increased worker and resident population enriches the amenity of the area.
6. Introduce a finer grain network of laneways and through links to better integrate with the scale of adjacent areas and maximise permeability for pedestrian movement.

Principle 4

Integrate new development with the surrounding character and identity

1. Integrate the urban renewal of Arden-Macaulay with existing and adjacent areas to protect the amenity, character and legibility of Kensington and North Melbourne.
2. Introduce suitable building scale, heights and setbacks at interface areas, taking into account the existing character, context and immediate amenity.
3. New buildings that adjoin heritage buildings have regard to the height, scale, rhythm of and proportions of the heritage buildings.
4. Establish a new character and identity that is complementary to the existing context.
5. Align buildings with the street pattern.
6. Retain and protect viewlines from public vantage points.

Principle 5

Integrate the area's heritage into urban renewal

1. Retain, protect and reuse the area's heritage buildings and places through urban renewal.
2. Incorporate heritage buildings and places into new development.
3. Protect valued heritage places and streetscapes.
4. Incorporate the interpretation of the area's heritage into development patterns and architectural expression.
5. Reuse existing building stock where feasible, including existing industrial buildings.

Principle 6

Regenerate the area's public realm

1. Improve and develop Arden-Macaulay's streets, parks and places to foster a vibrant, inclusive public life and community-wellbeing.
2. Create 'Great streets' for people by:
 - Designing streets to be places, not thoroughfares, that encourage walking and stationary activities.
 - Establishing built form controls that provide sunlight to the street in winter, shade in summer, and do not create windy conditions.
 - Establishing built form that creates a strong sense of definition and place by applying a maximum height limit at street edge determined by a 1:1 (height to width) ratio, with a minimum of 1:2 to create street definition (See figure 3.12).
 - Defining architectural outcomes to the street edge that respond to human scale.
 - Incorporating multiple doors and entranceways to buildings off the street to improve activation of the street and to improve the sociability of the housing development, encouraging neighbourliness and creating opportunities to meet.
 - Delivering a fine grain urban form by encouraging buildings with wide street frontages to be broken into smaller vertical sections.
 - Establishing small-scale multiple tenancies at ground floor of 4-10m in width.
3. Create walkable neighbourhoods through urban

intensification by establishing a compact urban form.

4. Establish safe streets through urban intensification and the design of buildings to provide passive surveillance and activation of ground floors addressing the street.
5. Ensure that public open spaces are sunny in winter, shaded in summer, sheltered, safe and welcoming.
6. Integrate built development with adjacent public open space by:
 - Orient the outlook of upper levels of buildings to provide passive surveillance to adjacent public open space.
 - Ensure new building developments have active frontages along their common boundary with a public open space.
 - Provide for walking, cycling and limited vehicular access along all edges of open spaces.

Principle 7

Develop liveable dwellings that house a diverse and inclusive community

1. Provide a mix of housing sizes, types and tenures at appropriate scales.
2. Provide dwellings that are accessible, easily adaptable and appropriate for all age groups.
3. Encourage development that increases the local density without compromising space standards and access to natural daylight and ventilation.
4. Provide good levels of private and communal amenity for building occupants in Arden-Macaulay's new homes.
5. Provide high quality private open space for all dwellings.
6. Include pervious ground area, which is as large as possible but no less than 30 per cent of the available ground area on site.
7. Protect existing trees and plant new trees to provide a large canopy cover.
8. Provide a microclimate where green roofs and green walls can flourish.
9. Protect private internal amenity from off-site impact of noise and light spill.

Principle 10

Grow a city that prospers within the earth's ecological limit.

1. Provide high levels of energy, water and waste efficiency in new buildings.
2. Implement built form controls are developed that:
 - Promote natural ventilation (cross ventilation) for all buildings, to reduce energy demands for cooling.
 - Allow daylight and sunlight to penetrate into lower building levels (particularly for residential development).
 - Allow the establishment of cool roofs to minimise the urban heat island effect.
 - Encourage flexible building types that are adaptable to the changing needs of future residents and workers.
3. Encourage developers to design the ground floor of buildings so that they can be converted to alternative uses in the future.
4. Reduce the car parking provision to levels conducive to inner city urban living that is well-supported by alternative transport networks (walking, cycling and public transport).
5. Maximise the provision of vegetation and water permeable surfaces in private and body corporate open space.

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Issues

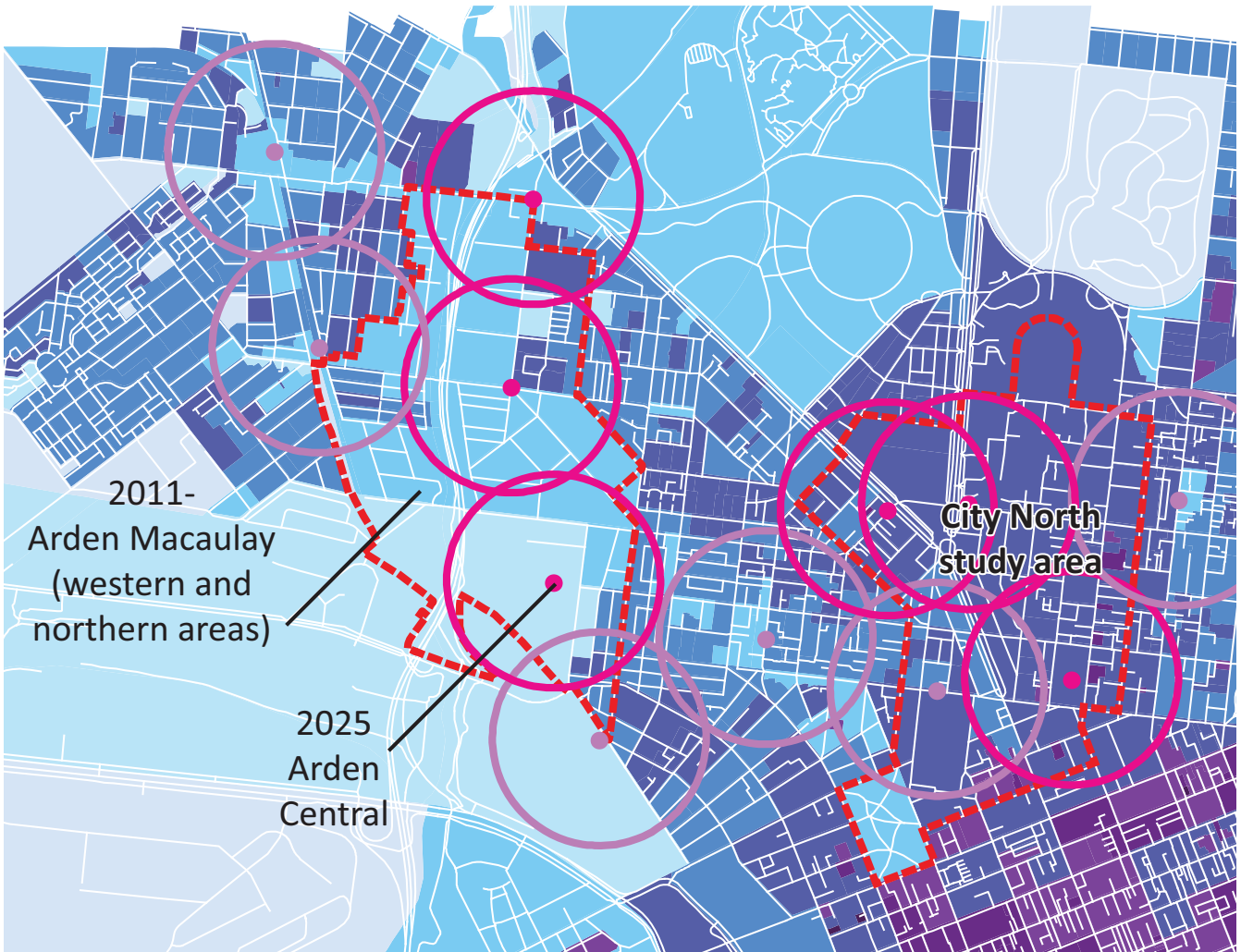


Figure 3.4 Existing activity density (jobs and people living in the area).

The need for higher density

The City of Melbourne’s draft *Municipal Strategic Statement* seeks to accommodate new long term worker and resident population growth in urban renewal areas such as Arden-Macaulay, rather than in the established areas surrounding them.

Existing densities in the area are too low to meet this objective.

The quality of this new development will be measured against how it meets the principles and objectives of this strategy,

rather than how it conforms to the existing character.

Figure 3.4 illustrates the existing low density activity within the area. This represents a combined density of jobs and people living in the Arden-Macaulay. The average activity density is less than 20 to 50 people per hectare (living or working).

Existing activity nodes

400 metre radius
(5 minute walk)



Proposed activity nodes

400 metre radius
(5 minute walk)



Existing Activity Density

(jobs and people per ha)

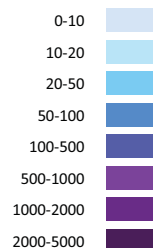




Figure 3.5: Poor pedestrian environments.



Figure 3.6: Existing low-scale heritage context of adjacent suburbs.

The costs of remediating site contamination

The past and present legacy of industrial land use implies that many major sites within the Arden-Macaulay precinct may have contamination issues. The costs of remediating contaminated sites needs to be factored into development capacity of sites in the area. The extent of contamination will vary and is unknown.

Increasing the walkability of the neighbourhoods

Most of the streets in the area have been used, and to some extent designed to suit, trucks and vans for industrial and warehouse transport needs. The urban renewal will bring much more residential and commercial activity into the area. As a result the street network needs to be optimised for pedestrian and bicycle movements. Pedestrians in particular need a finer grain walking network to reduce the length of walking trips. This will require creating new road, lane and path links particularly through the large street blocks.

Existing streetscapes are not places for people

With high numbers of residents moving into the area, the streets themselves need to be attractive recreational spaces with trees, sunlight, shelter from the wind and good passive surveillance.

The existing industrial built form which characterises the area does not currently contribute to a safe or inviting public environment, particularly for pedestrians.

In particular, the blank and often extensive façades of industrial buildings do not provide continuous surveillance of the street, thus creating large areas of the precinct which lack activation, particularly out of business hours.

Motorway and industrial noise

The CityLink motorway is the most intensive source of noise in the area. Noise levels of up to 70 decibels have been measured 300 metres from the motorway. This noise degrades the amenity of indoor and outdoor private spaces and the public realm in the areas. Using the built form of development to screen motorway and industrial noise from the local

streets, public open spaces and private open spaces such as body corporate courtyards and private balconies will partially address this problem.

The reliance on sound proofing indoor spaces, however, negates the option for the use of passive cross ventilation for cooling of dwellings on summer nights. Reducing the extent of the noise at the source may mitigate this issue.

New buildings must be well designed

It is critical that new development incorporates well-designed buildings that can provide high quality, liveable environments and that are energy and water efficient.

Respect the existing low-scale, heritage context

The existing residential context at the edges of the Arden-Macaulay area is low-scale residential.

Urban renewal needs to bring a new positive character to the area, while respecting the character and identity of existing adjacent suburbs.

03 Urban Structure and Built Form

Strategies

Strategy 1

Create a vibrant Central City district around Arden Central

To support the establishment of a Metro, a significant density of jobs (in the order of 30,000 jobs within 10 minute walk) and dwellings are required.

This area is subject to master planning in conjunction with the State Government to ensure that it becomes a vibrant and distinct place, a great place to work and be.

Actions

This strategy will be implemented through the following actions.



Advocacy

Advocate for the Melbourne Metro and partner with the state government to prepare an integrated master plan.

1 year

Strategy 2

Develop built form controls that create compact walkable environments

Walkable environments are those that have:

- A compact urban structure with intersections at least every 50-100m.
- Residential density levels of a minimum 100 dwellings per gross hectare (including street network and open spaces).
- A variety of uses and activities, shops and services clustered to gain benefits from association and multi-purpose trips.
- All dwellings within a five - ten minute walk of a high level public transport service and a local activity centre.
- All dwellings within 300m of a local green open space.

To achieve this, the following initiatives are required:

1. Improve permeability of the public realm by introducing a finer grain network of streets and laneways (see figures 3.7 and 3.8 for existing and proposed permeability).
2. Increase densities in Arden-Macaulay to create the level of activity that makes neighbourhoods walkable with higher levels of synergies between people and uses.

Expanding the pedestrian Network

The design and role of the new laneway network:

- Laneways are to be designed to prioritise pedestrian and cycling access.
- Laneways are to be a minimum width of 8m to accommodate vehicular movements

(including turning into private properties), garbage removal and landscaping opportunities.

- Laneways are to be accessible by the public 24 hours a day.
- Laneways are to be open to the sky (see figure 3.13).

The location of new laneways has been determined by these considerations:

- The location of existing private through block links that can more readily be converted to public accessways.
- The opportunity to continue existing public or private links through the full block width (where they currently are discontinued).
- Ensuring a maximum distance between intersections of 100m.
- Maximising ease of access to proposed open spaces and public transport (to meet minimum walking distance requirements).
- Providing rear services access for deliveries in local activity centres.
- Providing services access, garbage removal and access to private car parking in mixed use areas.
- Protecting the integrity of the existing streets from many vehicular crossovers into private development which compromises the pedestrian experience.

2. Increasing densities

To increase densities to a level that creates liveable, compact and walkable environments, urban intensification is required. The appropriate levels of intensity are determined by height controls. Any new controls need to respect the existing character of adjacent suburbs (see strategies 3 and 4).



Figure 3.7 Existing pedestrian permeability as indicated by extent of the public realm (black).

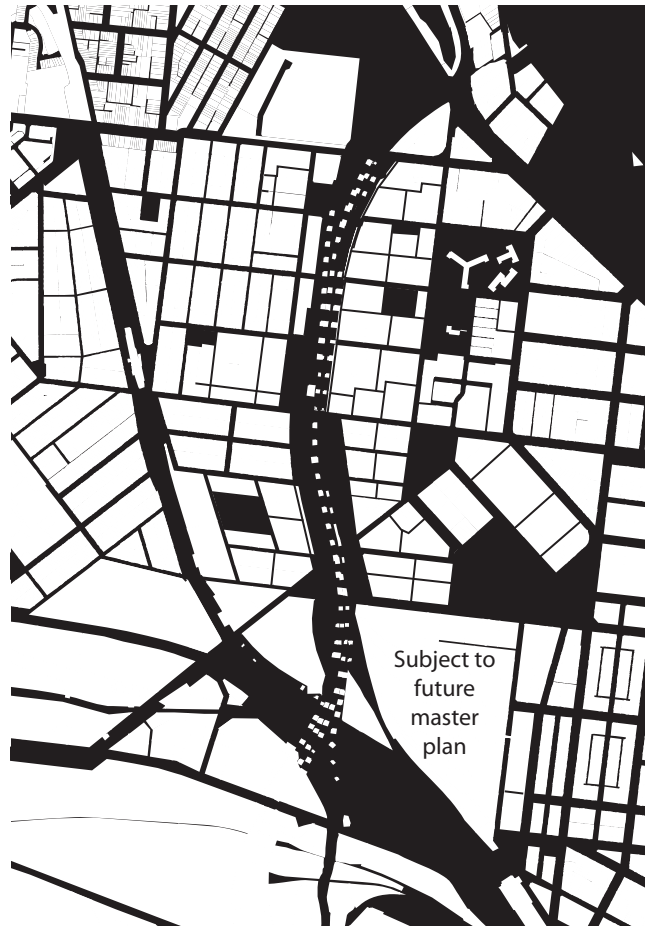


Figure 3.8 Proposed pedestrian permeability as indicated by extent of the public realm (black) - with new parks, streets and laneways shown.

Actions

This strategy will be implemented through the following actions.



Policy

Prepare a planning scheme amendment to implement the new laneway network and establish built form controls that increase densities.

1 year

1 - 5 years

5 + years

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Figure 3.9 Melbourne examples of high density, mid-rise and mixed use development

Higher densities should also:

- Achieve higher densities through a mix of housing sizes, types and tenures.
- Allow for a diverse mix of uses vertically through buildings eg retail on ground floor with commercial and/or residential above.
- High densities do not necessarily mean high rise. Densities to support a compact walkable environment can be achieved in heights of approximately four to six storeys. Indicative examples of high density, mid-rise buildings are illustrated in figure 3.9. These are Melbourne examples and illustrate the number of dwellings per hectare (gross, that is, including roads and open space within this calculation) achieved within each development.

120
Dwellings/ha



MACAULAY ROAD NTH MELB

139
Dwellings/ha



RATHDOWNE STREET CARLTON

194
Dwellings/ha



FRANKLIN STREET MELBOURNE



Figure 3.10 Indicative illustration of proposed built form controls for Arden Macaulay

03 Urban Structure and Built Form

Strategy 3

Create streets for people

Great streets are those where the buildings have a positive relationship with people.

People in Arden-Macaulay will be happy to wander around the streets, shopping, playing, and participating in an active neighbourhood.

The fronts of buildings will be pleasing and will provide interesting rooflines. The backs of buildings can provide parking and service areas, while allowing private spaces for residents. Corners are landmarks and need to be interesting and memorable.

Development should interact with, and contribute positively to, the surroundings at street level.

To create 'great streets' the following design performance criteria have been established:

1. A minimum of five hours of sunlight is provided to ground floors within streets that have residential uses at ground floor.
2. A comfortable wind speed is created at ground floor.
3. A minimum building height at the street edge, that is half the street width and a maximum height equal to the street width, is established on all streets.
4. Zero metre setbacks at ground floor level to provide a clearly delineated and fronted public realm.
5. All visible sides of a building should be fully designed.
6. Blank building walls that are visible from streets and public spaces should be avoided.
7. Buildings should address both street frontages on corner sites.

8. Visible service areas (and other utility requirements) should be treated as an integral part of the overall design and fully screened from public areas.
9. Façades should make provision for the location of external lighting for public safety purposes and to give interest to streetscapes at night.
10. The façade of buildings with wide street frontages should be broken into smaller vertical sections of 4m to 10m in width.
11. Active ground floors are designated within local activity centres and within Arden Central. Multiple tenancies 4-10m in width are established to create a human scale.
12. At least five lower floors to have habitable uses (commercial or residential) to street frontages (including laneways).
13. No car parking at the street edge.
14. Balconies and private open spaces above ground floor should face the street.
15. Street façades to be highly articulated and visually interesting.
16. A complementary height limit is applied on both sides of the street.
17. Pedestrian weather protection is provided within local activity centres.

To achieve these criteria the following development patterns are proposed:

- Generally, a maximum height limit of 20m for all areas (six storeys with a ground level of 4m and upper levels of 3.2m).
- Setbacks on all streets are applied where the street width is less than 20m, to ensure a

maximum 1:1 building height at street edge.

- In areas where a further intensification of activity is supported, for example in local activity centres that are directly connected to train stations, a 30m height limit is proposed.
- South of Gracie Street and Shiel Street through to Arden Central a 30m height limit is proposed, to create higher densities that are integrated with the Metro and be therefore located in areas with high quality and frequency public transport services.
- Building heights east of Laurens Street are generally as per current DDOs with the exception of the block immediately south of Arden and east of Laurens where an increase from 14m to 20m is proposed due to its proximity to the metro site and limited heritage constraints.

All street edge controls should be mandatory to ensure these outcomes. Upper height limits are proposed as discretionary height limits.

See figure 3.17 Proposed building height controls. See also figure 3.12, Principles of great streets.

Illustrative examples of the elements within a great street are also shown in figures 5.10-5.12 Chapter 5, Public Realm.

The proposed densities for Arden-Macaulay are indicated in Figure 3.10 and 3.11.

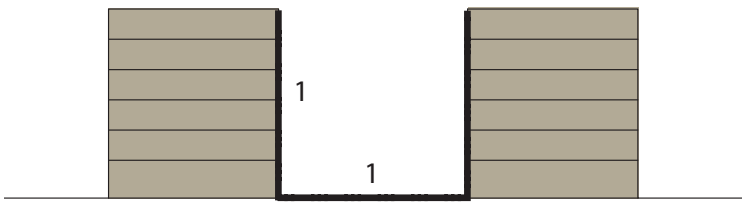


Figure 3.11. Artist illustration of proposed development in new Macaulay local centre

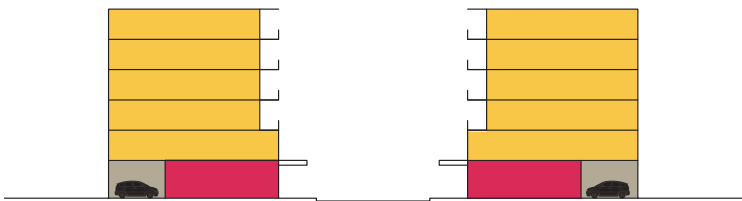
03 Urban Structure and Built Form

URBAN STRUCTURE AND BUILT FORM

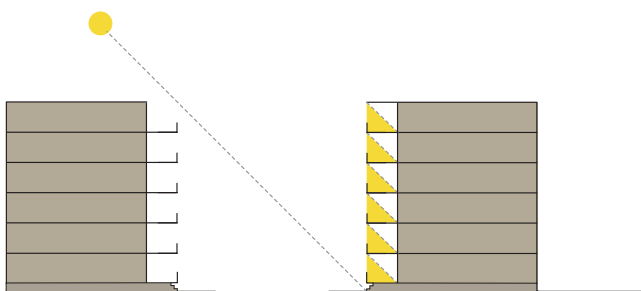
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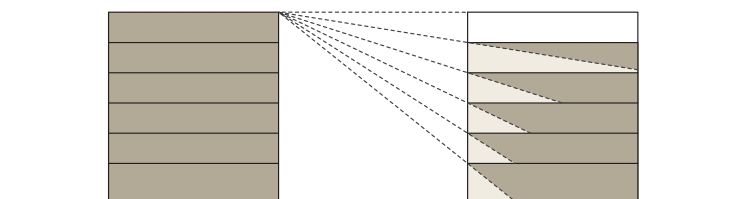
Street Enclosure and definition achieved through a building height to street edge ratio between 1:2 (top) and 1:1 (above)



Activated Streets with services/car parking from rear



Solar access provided to ground levels on non-primary active streets
Minimum of 2 hours between 10am and 2pm at the equinox.



Natural light penetrating to ground floor levels

Figure 3.12 Principles of good street design

Strategy 4

Integrate new development with character and scale of adjacent suburbs

To ensure that new development does not adversely overshadow, dominate (through excessive building bulk), or compromise the amenity of adjacent dwellings and the character of existing residential areas, the following controls are recommended.

Interface Streets

The following controls provide complementary height controls on both sides of the street for all interface streets.

- Shiel Street, a two stepped setback (see figure 3.15):
 - › 10.5m height control to street edge with a setback of 10m (see map).
 - › Above this a 14m height control with a setback of 30m.
 - › 30m height is determined by Macaulay Road frontage.
- Melrose Street (south of Sutton Street):
 - › 14m height control with any part of buildings above 10.5m must be setback 6m

- › from Melrose Street.
- Chelmsford Street
 - › 10.5m height limit at street edge.
- North Melbourne Public Housing Estate, (Melrose Street and Alfred Streets frontages):
- 10.5m height control.Laneways
 - › 10.5m height limit, with a setback of 16m.
- Canning Street local activity centre:
 - › Any part of buildings above 20m must be setback 10m from Macaulay Street, Boundary Road and Canning Street.

Laneways

Where the study boundary interfaces with existing rear or side laneways, a complementary height control is applied, typically 10.5m. Upper levels should then not be visible from within the private open space of existing low-scale dwellings (private open space assumed to be at rear and include 25 per cent of the existing site area (see figure 3.16). This results in the following controls:

- › Any part of buildings above

- 10.5m must be setback 16m from Lambeth Street.
- › Any part of buildings above 10.5m must be setback 15m from laneway CL145.
- › Any part of buildings above 10.5m must be setback 11m from Scarborough Place.
- › Any part of buildings above 10.5m must be setback 10m from Thompson Street.
- › Any part of buildings above 10.5m must be setback 11m from CL167.
- › Any part of buildings above 10.5m must be setback 4m from all new and existing laneway connections (except CL145 and CL167).

Little Hardiman Street is an east-west laneway with higher development proposed on the north side of the laneway. To avoid overshadowing of the existing private open space setback controls are proposed (see figure 3.16).

Actions

This strategy will be implemented through the following actions.



Policy

Prepare a planning scheme amendment to implement the proposed built form controls outlined in strategies 3 and 4.

1 year

1 - 5 years

5 + years



03 Urban Structure and Built Form

URBAN STRUCTURE AND BUILT FORM

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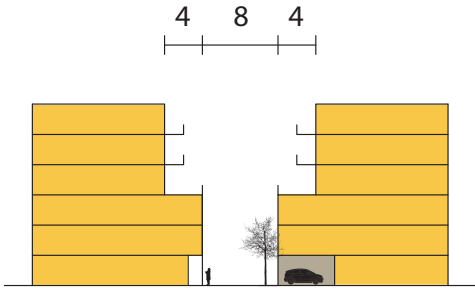


Figure 3.13 New laneway design with setbacks above the third floor.

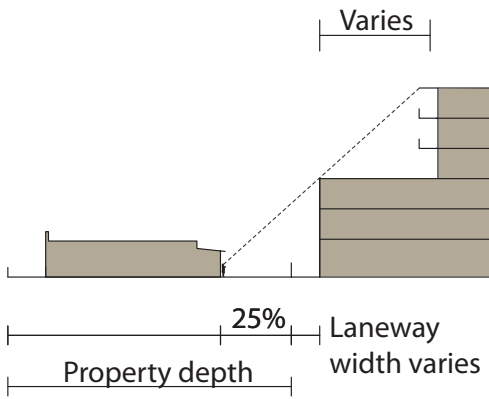


Figure 3.14 Setback condition for new development adjacent to existing low-scale suburbs. Viewline taken from a height of 1.5m at a distance of 25% of the property depth from the rear boundary.

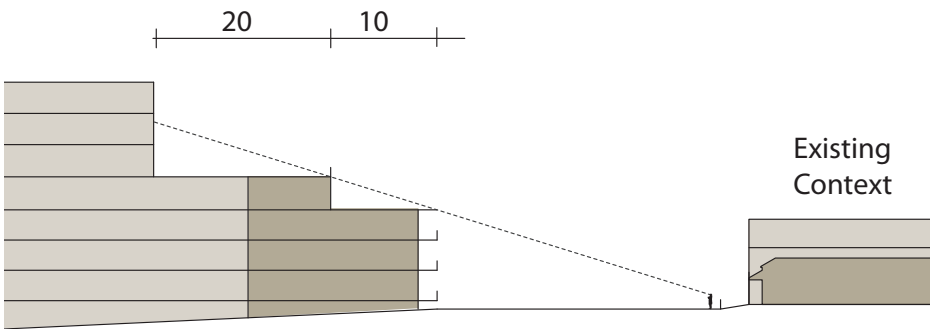


Figure 3.15 Shiel Street setbacks.

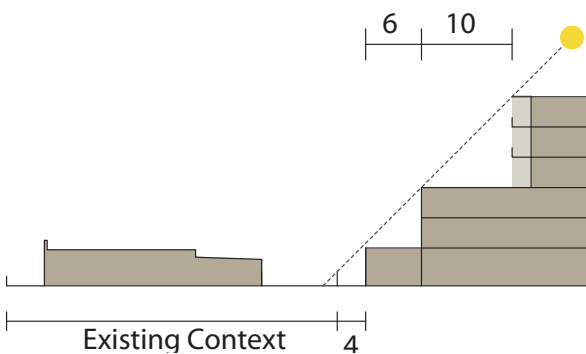


Figure 3.16 Little Hardiman Street setbacks to retain solar access to private open space of properties fronting Hardiman Street.

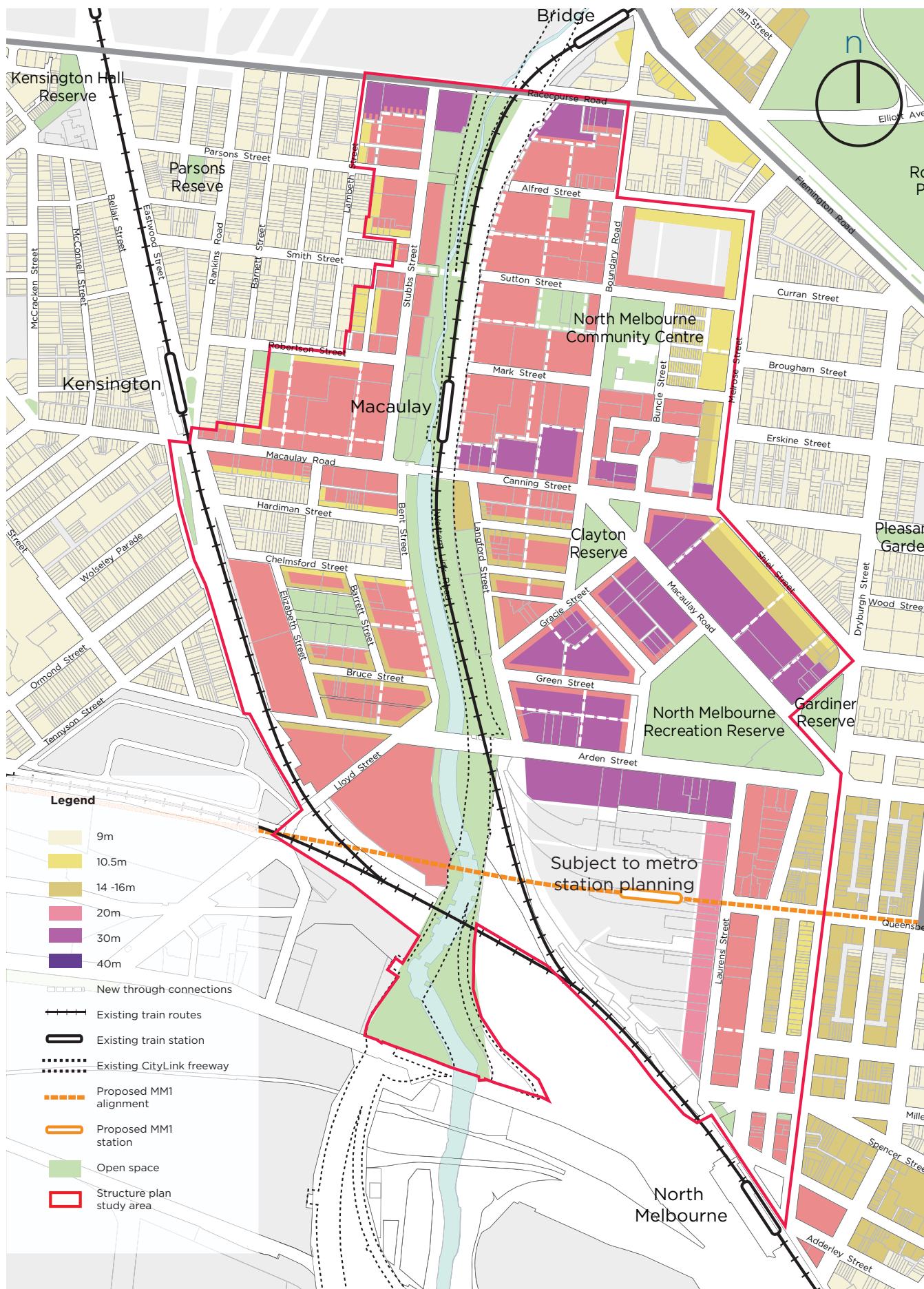


Figure 3.17 Proposed building heights and setback controls.

03 Urban Structure and Built Form

URBAN STRUCTURE AND BUILT FORM

50 **Strategy 5** Investigate additional buildings for inclusion in heritage overlay to protect Arden-Macaulay’s industrial heritage

A number of sites in Arden-Macaulay are an important part of the cultural fabric of the area. Many of these sites have previously been overlooked for inclusion in a heritage grading or overlay that would ensure the protection of these potentially important buildings.

A preliminary investigation has identified additional sites that could be considered for inclusion in a heritage overlay. Further detailed investigation is required to confirm the status of these sites and to review existing heritage controls.

Existing overlays and gradings are indicated in figure 3.18.

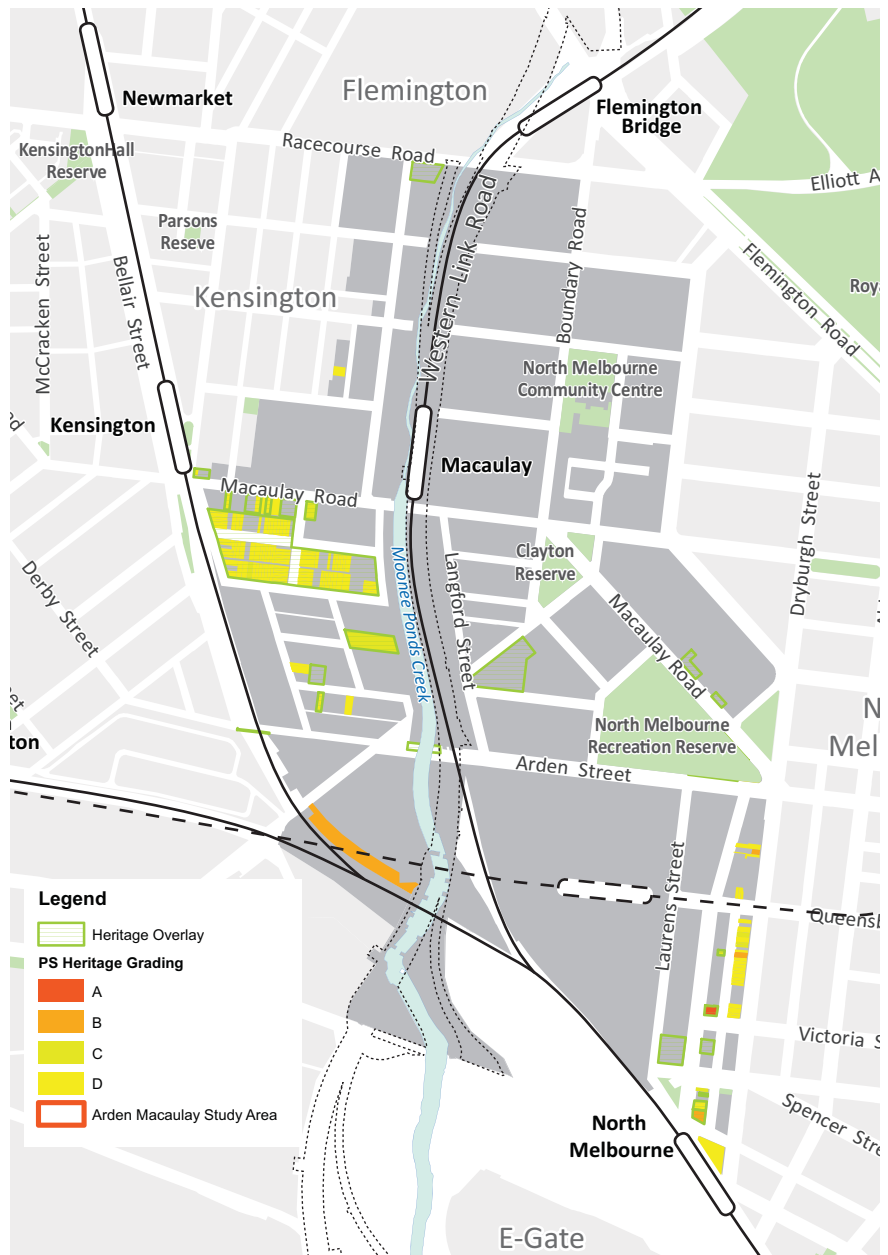


Figure 3.18 Existing heritage controls

Actions

This strategy will be implemented through the following actions.



Policy

Undertake a review of the existing heritage overlay and gradings.

1 year

1 - 5 years

5 + years



Strategy 6

Establish built form controls to ensure new development is adaptable over the long term

Buildings that are designed to be flexible in use are more sustainable as they can be adapted over time. Residential buildings that can convert to commercial buildings (and vice versa) create a flexibility of living and workspaces of different types, sizes and costs that can meet the needs of

different sectors and respond to social and economic change.

Ensure adaptability of buildings for a change of use by implementing a:

- Minimum ground floor height of 4m.
- Minimum floor to floor height of 3.2m for all upper floors (including car parks).
- No sloping car parks.



Policy

Incorporate controls for flexible building design into the Planning Scheme Amendment.

1 year

1 - 5 years

5 + years

03 Urban Structure and Built Form

Strategy 6

Create high quality, liveable dwellings that include housing choice

Housing development should enhance the existing character of the area whilst contributing positively to streets and public spaces. Buildings should achieve higher densities through a mix of housing sizes, types and tenures at appropriate scales, without compromising space standards and access to natural daylight and ventilation.

The quality of housing provision across all tenures will ensure lower energy consumption, adequate private open space and communal areas and will ensure that all households are accessible, easily adaptable and age friendly.

The internal amenity of new development should be of a high standard. The design of buildings should mitigate the impact of

external factors, such a noise, on the level of this amenity.

Private open space should be provided for all dwellings. This should be green permeable open space. This can be on structure or on ground but should include a minimum of 30 per cent of the site. Encourage green roofs and infrastructure to achieve this aim.

Actions

This strategy will be implemented through the following actions.



Policy

Develop a process for development applications to be referred to an open space or environmental planner.

Encourage the provision of communal open spaces in new developments.

Implement the Urban Heat Island Policy, which includes the requirement for 30 per cent permeable green open space in all new development. This will encourage the implementation of green walls and roofs to provide green private open spaces.

Include the requirement for new development to protect themselves from external impacts on amenity in the Planning Scheme Amendment.



Policy

Work with the state government to include good housing policy objectives and outcomes into the metropolitan strategy.

Protect exceptional trees on public and private land on the exceptional tree register and in the Melbourne Planning Scheme.



Design

Develop landscaping guidelines to improve the quality and quantity of private open spaces, including the implementation of green roofs, walls and façades in new developments. Integrate these guidelines into the planning scheme to ensure development applications meet these guidelines.

Develop housing design guidelines for high quality, high density housing that meets the needs of a diverse community.

1 year

1 - 5 years

5 + years



Strategy 7

Activate public open space through building design

To ensure the creation of safe and inviting public open spaces it will be essential to integrate new development with adjacent public open space. This can be achieved through the following design response.

- Orient the outlook of upper levels of buildings to provide passive surveillance to adjacent public open space.
- Locate balconies and private open spaces at upper levels along frontages to public open space.
- Ensure new building developments have active frontages at ground floor along their common boundary with a public open space.
- Provide for walking, cycling and limited vehicular access along all edges of open space to maximise the activation of these edges.



Policy

Incorporate controls for the activation of public open space into the Planning Scheme Amendment.

1 year

1 - 5 years

5 + years



04 Transport and Access

30-year vision

Workers and students will access Arden Central by the new Arden Metro station which will provide a high speed Central City connection. Improvements to existing rail stations and services and a new bus route will provide Arden-Macaulay with excellent public transport services.



Overview

Arden-Macaulay's proximity to the Port of Melbourne, the CBD and CityLink, has seen it continue to grow as an accessible inner city location. Walking, cycling and vehicular access to and through the area is currently limited by the Moonee Ponds Creek, the Craigieburn and Upfield railway lines and CityLink, which bisect the area. Through and local traffic movements are also limited by aspects of the existing street network, including level crossings at Macaulay Road and Arden Street. Key vehicular routes include Racecourse, Boundary and Macaulay Roads, and Dryburgh, Victoria and Spencer Streets, providing north-south access to and from the Central City, and Macaulay Road and Dynon Road, Lloyd Street and Arden Street providing east-west access. Local traffic management measures currently limit through traffic in the residential pockets of Arden-Macaulay including around Elizabeth and Chelmsford Streets, to the west of Stubbs Street, and the North Melbourne housing estate. Many of these areas are also bounded by primary streets with heavy traffic, such as Boundary and Racecourse Roads.

A new street priority for high-mobility pedestrian and public transport streets is needed. This will require a long-term program of upgrading the municipality's streets to create high-mobility streets. These streets will provide excellent conditions for higher numbers of pedestrians (of all ages and abilities), faster and more frequent trams and buses, safe and attractive cycling, and easy use of taxis and car share. Access for service and delivery vehicles and private cars will be maintained in ways which are compatible with

the priority modes.

As Arden-Macaulay develops, the existence of a comprehensive, sustainable and integrated transport network will be paramount. Connections to the North Melbourne station, E-Gate, Docklands and the CBD, and to the Footscray central activities district and the west, will be significantly enhanced with investment in new rail and road infrastructure. Public transport will play a vital role in enhancing the accessibility of the area.

The viability of Arden Central functioning as a major activity centre and an extension of the Central City is entirely dependent on a high quality rail service to and through the existing Central City and a direct high-mobility road connection, with a high quality bus service to the CBD.

This plan prioritises the attractiveness and effectiveness of the public transport system to ensure residents, workers and visitors can move easily within and to the precinct. It also encourages walking and cycling as key travel modes, through a range of measures including the introduction of a new street hierarchy outlined in chapter 5, Public realm and open space.

04 Transport and Access

Objectives

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TRANSPORT AND ACCESS

Principle 1

Grow a prosperous place and viable economy

1. Ensure Arden-Macaulay is well connected to the Central City and environs.
2. Develop Arden Central as a major transport interchange that offers efficient and effective inter-modal and inter-regional connectivity.
3. Ensure regional access and exposure to the Arden Central precinct is high.
4. Develop Arden Central with the density, scale, land use mix and vibrancy of a central city activities district, as an extension to the Central City.

Principle 6

Regenerate the area's public realm

1. Create a permeable street network that reflects the historic subdivision pattern of the area and is attractive, well-designed and legible with a high level of amenity.
2. Establish a local street network that provides safe, direct and attractive pedestrian, cycle and local vehicular links to key activity centres, public transport nodes and open spaces.
3. Upgrade the Moonee Ponds Creek corridor to provide improved pedestrian and cycle connections between the northern suburbs, E-Gate, Docklands and the CBD.

Principle 8

Create a connected and accessible place

1. Establish an integrated transport network prioritises walking, cycling and public transport use.
2. Develop a safe and highly accessible transport network that has high quality new and improved infrastructure, commensurate with projected growth.
3. Prioritise the growth of sustainable transport modes and contain vehicular access and parking provision within that context.
4. Support population growth and job locations with an increased number and frequency of public transport services.
5. Locate intensified activity around existing and planned public transport infrastructure.
6. Prioritise public transport, walking and cycling in existing and new road infrastructure through design treatments, links and facilities.
7. Move traffic and freight efficiently through and to the area.

Issues

Underutilised public transport infrastructure

The area is served by four railway stations, with access to three lines, one tram route and five bus routes. Arden-Macaulay has a good existing public transport service with room for improvement, especially regarding the frequency and capacity of rail services.

The 800 metre walking catchments demonstrate good walking access to the existing public transport network from the majority of the precinct (see figures 4.1 and 4.2). This shows that Arden-Macaulay has the framework of an excellent public transport service, however the capacity and frequency of services is not adequate considering current demands for city bound travel, and forecast growth in commuter trips to and from Arden-Macaulay. Current frequency through Macaulay and Flemington Bridge stations (to Flinders Street station) is, at best, 20 minutes between services. This is not a standard consistent with enabling and encouraging everyday public transport use during peak.

The ability to increase service frequency on the Upfield and Craigieburn lines is currently limited by restricted capacity at North Melbourne station. The planned Melbourne Metro tunnel will free up capacity at North Melbourne station enabling more frequent train services on these lines. It will greatly improve public transport access in Arden Macaulay. Apart from the frequent 401 bus service, which meets the train at North Melbourne station, services on the different modes are poorly connected in terms of physical links, coordinated timetables and

information about how to make a multi-modal journey efficiently through or into the precinct.

Safety and accessibility of station precincts

The rail stations in Arden-Macaulay are poorly connected to their surroundings, which increases real and perceived distances to and between them and lessens the attractiveness of rail services. Flemington Bridge station is concealed and isolated from its potential local catchment of users. Macaulay station is small with limited facilities. Both Flemington Bridge and Macaulay stations are perceived to be unsafe. Improving the safety and accessibility of train station precincts will be fundamental to strengthening the use of public transport in Arden-Macaulay.

Limited local east west connections

East-west travel by car, bike and foot is limited by the few crossings over the Moonee Ponds Creek corridor and the level crossings at the Upfield and Craigieburn railway lines. Congestion results at peak times as high volumes of low occupancy vehicles quickly fill up the limited space on the road network. More space efficient modes of transport and higher occupancy vehicles will become increasingly important considering the constraints on the local road network. To avoid or reduce congestion, even at relatively low levels of car usage, urban renewal areas need to offer a viable alternative to car access both within the precinct and for access to other areas.

As a developed inner urban area, the precinct will attract businesses that need contact with other organisations and access to a skilled labour force, and new residents who will seek a choice of

transport modes for daily travel.

Freight traffic moving to and through the area to and from the Port of Melbourne and the Central City needs to be well managed to reduce its impact on the road network and general urban amenity. CityLink is a major connector for this freight traffic and will continue to provide a high quality through route which respects the role and amenity of the local street network.

Poor pedestrian experience and safety

Though there are some very attractive tree-lined streets, many walking routes are relatively unpleasant environments because of the large industrial blocks and uses, poor visibility, lack of shade and vegetation and poor connectivity across streets. Streets with high volumes of traffic, such as Racecourse, Macaulay and Boundary Roads, the railway lines and Moonee Ponds Creek present significant barriers to easy movement around the area.

Patchy cycle connections

Part of the Capital City Trail bicycle path runs along the Moonee Ponds Creek and is one of the major off-road commuter cycle routes to the CBD. However, the remainder of the area has low provision of on- or off-road cycle lanes, poor east-west cycle connections, and a lack of facilities for cyclists. An increased residential and commuter population would put great pressure on both on- and off-road trails. The area's close proximity to the Central City presents a great opportunity for cycling to become a primary mode of travel to and within Arden-Macaulay.

Overcrowding of peak rail services

As a result of the poor service frequency outlined above, overcrowding on peak services frequently occurs. Many trains running through Macaulay and Flemington Bridge stations are at capacity when they arrive, and therefore do not cater for people starting their journey in Arden-Macaulay.

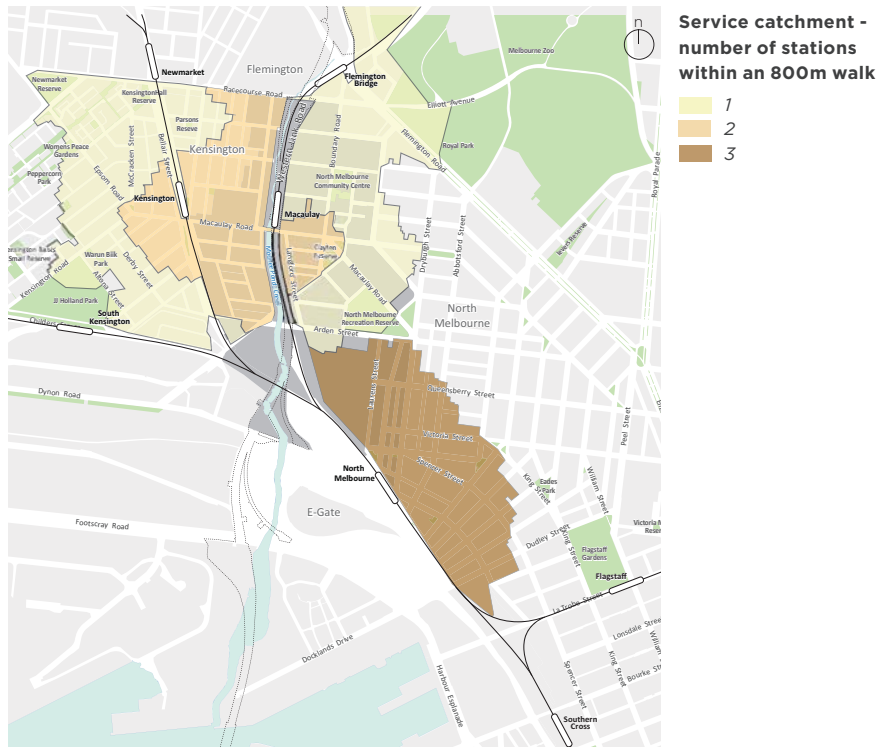


Figure 4.1 - 800 metre walking catchment to train stations.

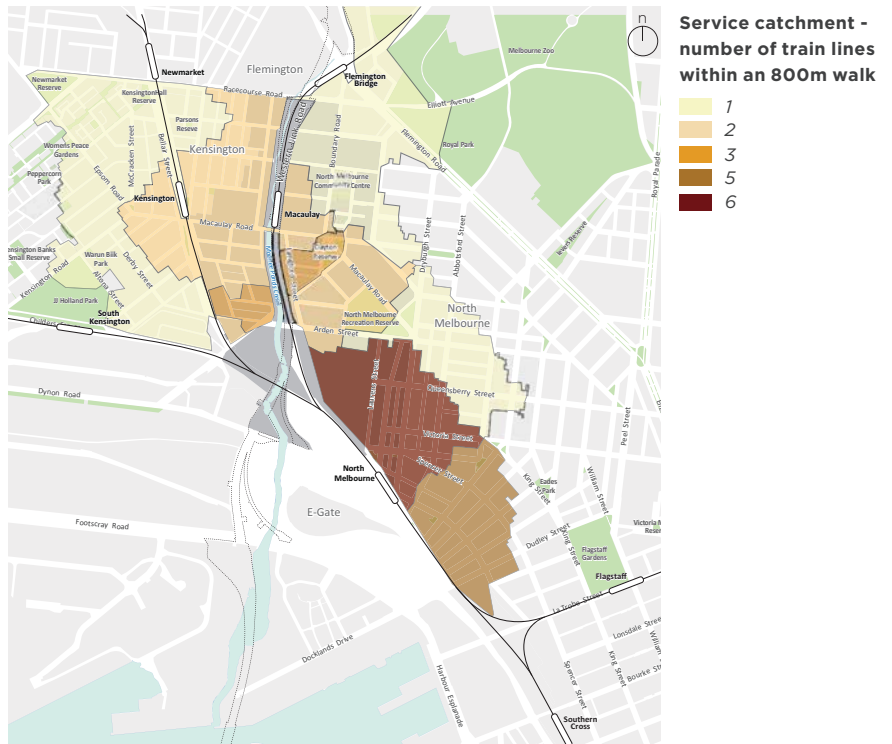


Figure 4.2 - 800 metre walking catchment with Melbourne Metro station and east-west connection across Moonee Ponds Creek and railway at Sutton/Smith Streets

Strategies

Strategy 1

Deliver high quality public transport integrated with urban renewal

The attractiveness and effectiveness of the public transport system will be a high priority to ensure residents, workers and visitors can move easily within and to the precinct. Train, tram and bus services and infrastructure will be augmented and integrated to deliver excellent public transport access to the area.

Rail

The existing public transport infrastructure in the precinct will play a central role in achieving this. Arden-Macaulay has a strong network of rail stations which provide high accessibility. Train frequencies on the Upfield and Craigieburn lines will need to improve to a standard that is complementary to the urban renewal area, eg a maximum of 10 minutes between services at peak times and 20 minutes in the inter-peak.

Macaulay and Flemington Bridge stations will be improved to ensure safety is optimised, and that these hubs are well-integrated with existing and proposed activity centres. These station precincts will also enable easy and convenient walking connections to supporting tram and bus services.

New rail infrastructure in the form of the Melbourne Metro rail line will introduce significant opportunities for urban renewal, and enhance the local connections to Footscray and Parkville, and further to the Swanston Street St Kilda Road corridor. One of the five stations on this line will be Arden, located adjacent to the western end of Queensberry Street. It will cater for some 6000

visitors a day into the precinct. This plan supports the Melbourne Metro rail project and the Arden station proposal and integrates the opportunities presented by a new rail station into a land use and built form strategy for the Arden-Macaulay precinct.

As well as making public transport a viable mode for most trips to the area, the Melbourne Metro will increase accessibility to and from the area and the Central City, ease congestion on existing more circuitous routes and stimulate significant investment in the area, attracting a mix of uses and activities of a Central City nature and scale.

Tram

A new east-west tram route is proposed, in the longer term, along Dynon Road from the Footscray central activities district and station in the west, via E-Gate and Footscray Road to Docklands and the CBD. In addition, tram links from Dynon Road to Spencer and Victoria Streets will also be considered. This would provide good access from the North Melbourne station and the south of Arden-Macaulay to the CBD and Footscray. It would also assist in achieving an even spread of land value and quality development through the Dynon precinct to the west, as the area undergoes urban renewal.

Bus

A new bus route is also proposed to run north-south along Boundary Road and its proposed extension, through the heart of the Arden Central precinct, connecting the CBD with the new Arden station, North Melbourne station, the Macaulay Road local centre, and the new mixed use and residential areas north of Macaulay Road.

These routes will complement

the proposed development in Arden-Macaulay. They will promote more sustainable travel, shape development and add prestige and value to business and residential areas along the routes. They will also significantly strengthen links to the CBD and the overall network and public transport offer.

Figure 4.3 shows the new network. It offers scope to intensify activity in new and recycled buildings along the public transport routes and at transport and activity nodes.

Actions

This strategy will be implemented through the following actions:



Advocacy

Continue to advocate for the development of the Melbourne Metro rail line linking Footscray to the Domain at St Kilda Road and a new station at Arden Central.

Work with the Department of Transport, Yarra Trams and VicRoads to ensure all tram stops along Racecourse Road comply with the Disability Discrimination Act (DDA), display real time information, and provide a high level of amenity (including shelter) for users.

Work with the Department of Transport to upgrade Macaulay and Flemington Bridge stations and environs, to improve access, safety and comfort.

Advocate for increased service frequency on the Upfield and Craigieburn lines.



Research

Investigate the re-routing of the Macaulay Road bus (402) at Boundary Road/Macaulay Road east along Macaulay Road at Canning Street to Queensberry, Chetwynd and Wreckyn Streets.



Advocacy

Advocate for a new tram service and link/s from the CBD to Footscray via Dynon Road, E-Gate and Docklands, in conjunction with the urban renewal of the E-Gate and Dynon precincts.

Work with the State Government to introduce a new bus route from Racecourse Road, along Boundary Road and its proposed extension, through Arden Central, to the CBD.



Design

Develop bus priority in the precinct as it evolves.

1 year

1 - 5 years

5 + years



Strategy 2

Expand and upgrade cycling and walking networks

Arden-Macaulay is currently poorly served in terms of safe and attractive routes for walking and cycling. Both modes will be important for transport and recreation in the precinct, and will become increasingly important as the area grows. Well-designed street networks and paths are vital, to ensure all parts of the precinct are easily accessible and attractive for walking, running and cycling.

Key opportunities to improve cycling include:

- Creation of a north-south off-road cycle link on the west side of the Moonee Ponds Creek.
- A new underpass connecting Sutton Street and Smith Street.
- New shared zones on quieter local streets.

Actions

This strategy will be implemented through the following actions (continued on next page):

The development of a comprehensive, fine grained and good quality pedestrian network and environment will encourage walking as an easy and attractive, space and cost efficient way to travel, and a primary way for all to get around the local area (see chapter 2 Built form, strategy 2). Walking to and from public transport stops and stations will be an emphasis of the City of Melbourne's work in this area.

A municipal pedestrian plan will be developed to detail the City of Melbourne's work in improving the pedestrian network. This will function in a similar way to the Bike Plan, in allocating a time frame and funding for major works.

A new pedestrian and cycle crossing over the Moonee Ponds Creek and underneath the rail line will connect the eastern and western sides of Arden-Macaulay at Sutton and Smith Streets. Existing pedestrian and cycling bridges and underpasses will also be upgraded to enhance access.

Figure 4.3 shows how both on- and off-road cycle paths will be upgraded to form a safe and comprehensive network for travelling to shops, public transport and other key destinations, and for recreational walking and riding.

The enhanced pedestrian network is also illustrated in chapter 5 Public realm and discussed in strategy 7 and 8.

Indicative upgrades to all streets in Arden-Macaulay are illustrated in appendix A.



Research

Investigate a new cycle link on the west side of Moonee Ponds Creek

Investigate opportunities for a new pedestrian and cycle crossing over the Moonee Ponds Creek and under the rail line, connecting Sutton and Smith Streets.

Create shared zones, greening and streetscape upgrades to enhance local street network amenity.

Upgrade the pedestrian environment in Arden-Macaulay to provide safe direct access to all public transport services including the North Melbourne, Flemington Bridge and Macaulay stations and the Racecourse Road tram, and to facilitate efficient transfer between transport modes.

1 year

1 - 5 years

5 + years



Design

As part of a municipal pedestrian plan, develop a comprehensive, well-connected and safe pedestrian network throughout Arden-Macaulay, that links open space, urban plazas, activity centres, and public transport with residential areas and work places.

Provide a safe and attractive walking, running and cycle circuit around the precinct, taking in parks and traffic-calmed streets.

Create a safe, well-designed pedestrian and cycle loop for exercise and relaxation for workers, visitors and residents around the Arden Central precinct.

Maximise the pleasure and comfort of walking, with extended footpaths, extensive tree planting, quality street furniture and lighting, and active and varied street frontages across the precinct.

Provide new pedestrian crossing points along the key (existing and proposed) pedestrian spines, including mid-block crossings.

As part of the municipal Bike Plan upgrade and extend the existing on- and off-road cycle paths to form a comprehensive and safe, well-signed network, linking shops, public transport and activity nodes.

Upgrade cycle facilities along Dynon Road between Footscray, the Capital City Trail (at Moonee Ponds Creek), and the CBD.

Upgrade the Capital City Trail bicycle path, as part of the renewal of the Moonee Ponds Creek corridor, to connect directly down to E-Gate, Docklands, the Yarra River, and potentially down to Sandridge beach on the bay.



Design

Continue to work with the State Government to develop options to improve walking and cycling connections to the North Melbourne station, E-Gate and Dynon Road.



Design

Provide pedestrian and cycle priority treatments to link the new Arden Central precinct to the North Melbourne station.

1 year

1 - 5 years

5 + years



Strategy 3

Efficiently manage traffic and freight movements through and to the area

Significant vehicular and freight movements occur through and within the Arden-Macaulay precinct, serving local and regional industry, business, residential and service activities. The future efficient management of this traffic to limit non-local through traffic and to limit congestion and negative impacts on the changing environment, will be vital to the successful transition of the area from its current industrial character to a vibrant mixed use area.

Promoting a shift in transport priorities on the road network and defining high-mobility streets will encourage and facilitate a long term modal shift from private vehicles, by providing excellent conditions for pedestrians, trams, buses, cycling, taxis and car share as priority modes.

A new street network in Arden Central will provide a high level of connectivity with existing streets in the area, especially the main routes, and will attract activity and investment and create a sense of place.

The extension of Boundary Road through Arden Central, will complement the new Arden station on the proposed Melbourne Metro line, and connect directly to the existing Central City. This street will provide a key address for businesses locating in the area and will contain a high quality bus service, comfortable pedestrian paths, safe cycle lanes, and vehicle lanes.

Strong connections to North Melbourne station, E-Gate and Dynon Road in the south of the precinct, will support the

development of Arden Central, ensure integrated development and maximise returns on future investment in the area.

Private cars are low occupancy vehicles that quickly fill up the limited space on the road network. More space efficient modes of transport and higher occupancy vehicles will be needed to effectively manage growth and provide high levels of accessibility.

Commensurate with the development of a sustainable living and working environment, and excellent public transport access, the use of private motor vehicles will be moderated by the need to give priority to more efficient modes. Car sharing will be encouraged and car parking provision in new developments will be limited where justified.

Several intersections will be improved to ensure safety for all modes.

Figure 4.3 summarises the main proposals for improving transport and access into and around the precinct, as land use and built form change and intensify.

Actions

This strategy will be implemented through the following actions:



Research

Develop a dynamic traffic management plan that caters for the changing nature of land use activity across the precinct and minimises the impact of non-local vehicular and freight traffic traversing the area.



Advocacy

Work with State Government to introduce traffic calming measures on main routes through the precinct, including 20, 30 or 40 km per hour speed limits, depending on the level of pedestrian activity and attractions.



Design

Retain, upgrade and extend the existing grid street network into redeveloped areas, for example in Arden Central, the Boundary Road West precinct.



Policy

Work with the State Government and agencies, including VicRoads, the Port of Melbourne Authority, and VicTrack/the Met, to develop an efficient freight network that takes account of the changing needs of the area.

Review parking requirements across the area and prepare a precinct parking plan, which limits residential parking where possible, encourages car sharing and provides for bicycle parking.



Design

Work with the State Government in the planning and design of the extension of Boundary Road through Arden Central to connect directly to the existing Central City.



Policy

Encourage the provision of a minimum of one bicycle parking space per dwelling for all new residential development in Arden-Macaulay.

1 year

1 - 5 years

5 + years



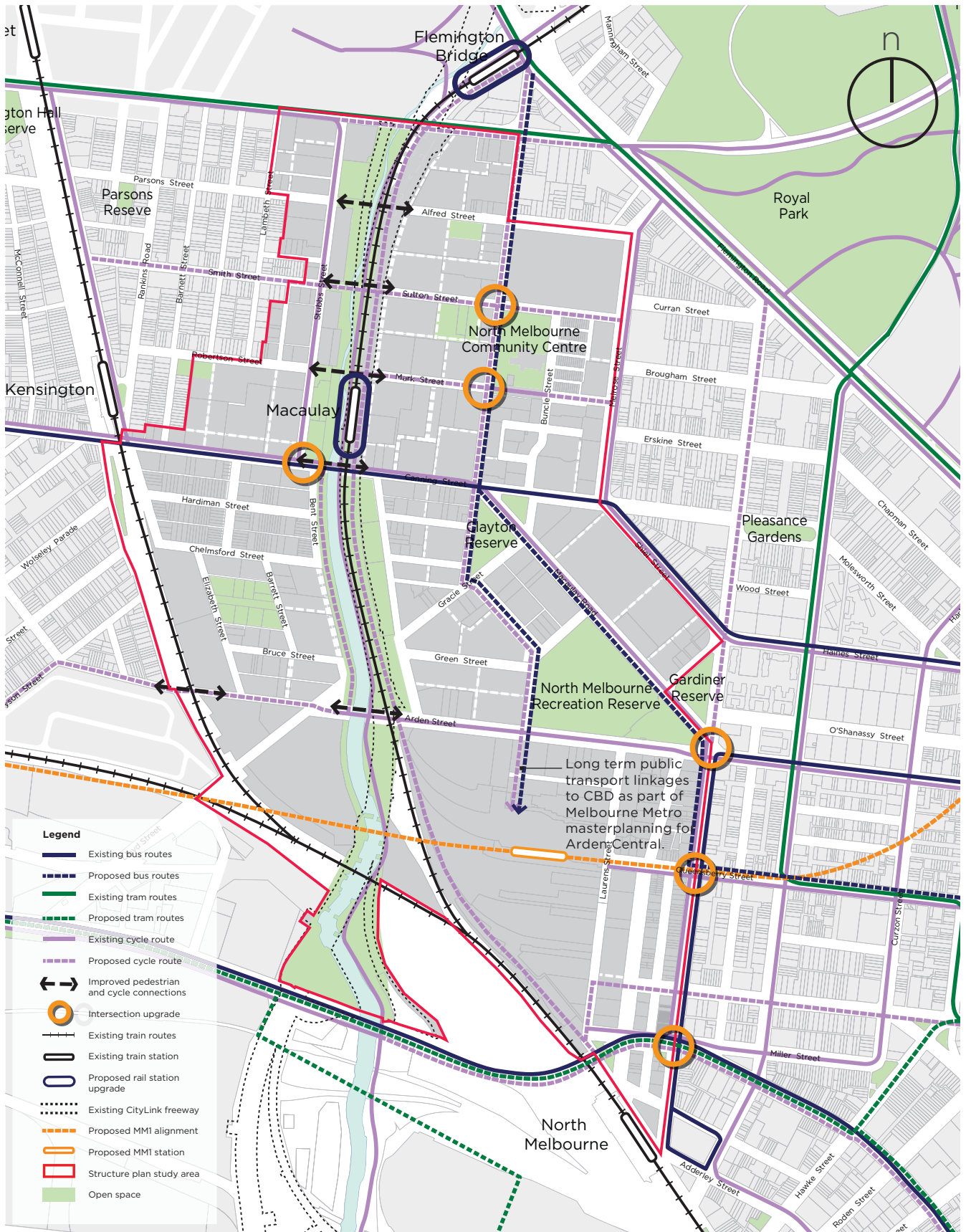


Figure 4.3 - Long-term transport strategy for Arden-Macaulay

05 Public Realm

30-year vision



Leafy streets connect people to each other, to new open spaces and to the enhanced Moonee Ponds Creek parkland where they can walk and cycle to the Docklands waterfront, the Yarra River.

Overview

The public realm within Arden-Macaulay includes all the public space between buildings – the open spaces (public parks, squares) and the streets and laneways. This accounts for 35 per cent of all the land area in Arden-Macaulay. Of this, approximately one third is public open space and two thirds are streets and laneways.

Most of this public open space is located within the Moonee Ponds Creek corridor with the remainder distributed across four parks or reserves. Within Arden-Macaulay, the creek has been substantially modified into an urbanised waterway and is compromised as a natural landscape by the CityLink freeway overpass and the Upfield trail line. The ecological condition of the creek is classified as poor to very poor by the Melbourne Water Index of River Condition. The creek is an important walking and cycling route that forms part of the Capital City Trail. There is a significant opportunity to expand and upgrade the Moonee Ponds Creek corridor to improve habitat values and provide new opportunities for recreation.

All four parks and reserves are located east of the creek which results in a shortage of open space west of the creek to meet the needs of the existing community. The City of Melbourne’s *Open Space Strategy (draft 2011)* indicates that the growing community in Arden-Macaulay will require additional open space and a more diverse range of open spaces than is currently available.

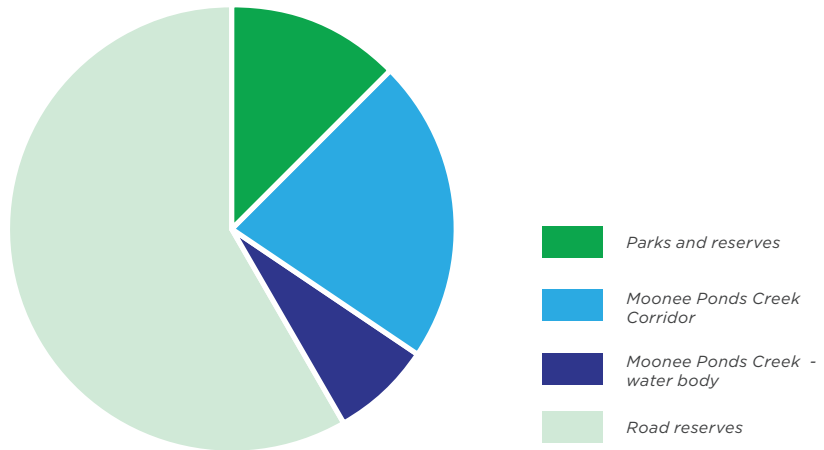


Figure 5.1: Existing open space summary

Urban renewal has potential to offer new experiences of the public realm in Arden-Macaulay. New, attractive public open spaces will encourage outdoor activity and opportunities to meet and socialise. People will move through and within the area via safe, attractive and uncluttered streets, with enhanced pedestrian priority.

Objectives

Principle 3

Create liveable local neighbourhoods

1. Provide sufficient and equitably distributed public open space for the community to enjoy.
2. Provide a diversity of public open spaces, where people can rest, play and meet others, and participate in community sport and recreation.
3. Ensure all dwellings and workplaces are located within a 300 metre walk of public open space.

Principle 5

Integrate the area's heritage into urban renewal

1. Retain structures, artifacts and landscaping that reflect the local natural and cultural heritage into public open space.
2. Design public open space appropriately highlights and interprets the heritage significance and character of the area.
3. Design inviting trails, streets and open spaces to enhance access to historically, socially and culturally significant landscape elements, infrastructure and architecture.

Principle 6

Regenerate the area's public realm

1. Provide high quality, inviting, connected and safe streets and open spaces that encourage walking and cycling.
2. Design high quality public open spaces that are beautiful, replenishing, and provide opportunities to connect with nature.
3. Locate and design public open space to be sunny in winter and shaded in summer to maximise comfort and enjoyment all year round.
4. Design open spaces, streetscapes and laneways to provide summer cooling and shading.
5. Protect and provide healthy, large canopy trees to provide canopy cover to 40% of the total public realm area.
6. Integrate built development with adjacent public open by:
 - Orient the outlook of upper levels of buildings to provide passive surveillance to adjacent public open space
 - Ensure new building developments have active frontages along their common boundary with a public open space
 - Provide for walking, cycling and limited vehicular access along all edges of open spaces.

Principle 10

Grow a city that prospers within the earth's ecological limit

1. Locate and design public open space to help mitigate flooding.
2. Harvest and reuse storm water to irrigate landscapes.
3. Maximise the extent of permeable surfaces in open spaces and streetscapes
4. Maintain soil moisture levels to provide healthy growth of vegetation.
5. Minimise stormwater runoff and improve the quality of water entering waterways.
6. Ensure public open spaces and streets enhance and protect biodiversity value.
7. Enhance the ecological health of waterways.

Issues



Figure 5.2: Moonee Ponds Creek - currently a poor quality environment

Quantity and quality of open space

There are 19 hectares of open space in Arden-Macaulay which includes 12 hectares along the Moonee Ponds Creek corridor and 7 hectares of parks and reserves. The *Open Space Strategy (draft 2011)* has identified a shortfall of open space for the community west of the Moonee Ponds Creek and the need for additional for the existing and future residents, workers and visitors in the area (see figure 5.3).

Moonee Ponds Creek

The Moonee Ponds Creek extends from Bulla near Melbourne Airport to the Yarra River at Docklands. It is a significant natural waterway and important north-south pedestrian and cycling connection. It is primarily managed as a drainage asset by Melbourne Water.

The creek is a neglected environmental and open space corridor. Since Melbourne's urban settlement, it has been considerably modified for flood

protection and realignment for dock, road and rail development. Biodiversity has been diminished through the removal of vegetation, the installation of concrete lining of much of the lower reaches of the creek and direct connection to Melbourne's stormwater drainage system. The CityLink freeway dominates and overshadows the creek landscape and little or no effort was made to minimise the noise impact of the freeway or to design and construct a strongly defined positive landscape that integrates the motorway and rail infrastructure with the creek environs. Noise generated from the freeway, adjacent railway lines, and the West Melbourne power terminal to the south degrades the enjoyment of this significant waterway and the Moonee Ponds Creek Trail.

There is a significant opportunity to expand and upgrade the Moonee Ponds Creek corridor to improve habitat values, provide new opportunities for recreation and link to improved open spaces in the E-Gate and Docklands

sections of the creek corridor.

Parks and reserves

There is a gap in the provision of parks on the western side of the Moonee Ponds Creek. The only park, Robertson Street Park, is located on the western periphery of Arden-Macaulay and is primarily used for informal recreation and has a small playground and picnic tables. Robertson Street Park's size limits opportunity for diverse activities such as active recreation and community events. The expansion of this park would enable a greater diversity of activities.

The North Melbourne Community Centre, on the eastern side of the creek, needs to be upgraded for better community sport and recreation. More open spaces will be required to support the health and wellbeing of the people who will live, work and visit Arden-Macaulay.

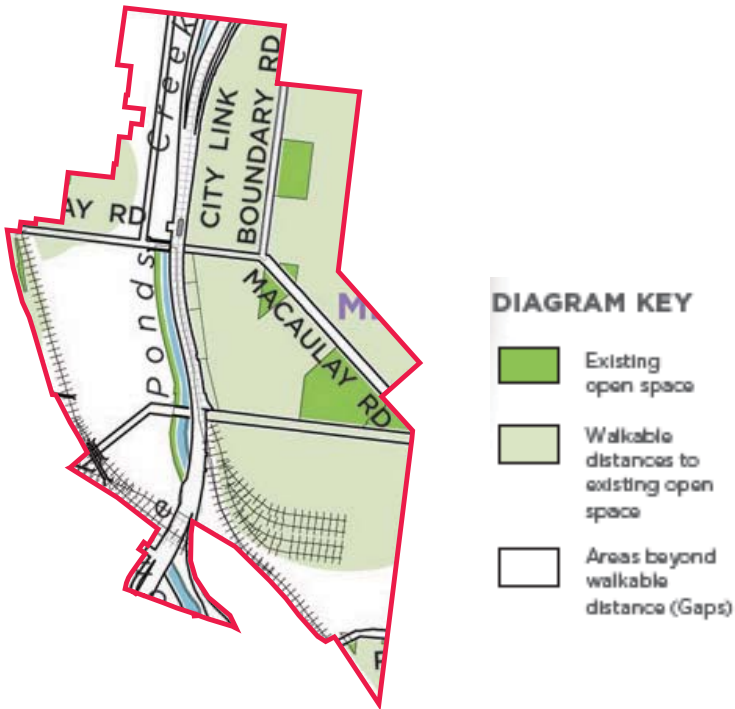


Figure 5.3: City of Melbourne Open Space Strategy (draft 2011) gap analysis.

Accessibility of open space

General community access to existing public open space within Arden-Macaulay is limited by major road and infrastructure barriers and the needs of organised sports.

The Moonee Ponds Creek, railway lines and the CityLink motorway create a barrier to east-west movement. There are only three crossing points at Racecourse Road, Macaulay Road and Arden Street.

All four parks on the eastern side of the creek are located on streets with busy traffic with a limited number of safe pedestrian crossing points. Pedestrian access to Royal Park, a regional parkland north of Arden-Macaulay, is limited by the lack of direct and safe crossings on Flemington Road.

The largest park, the North Melbourne Recreation Reserve, is frequently used by the Australian Football League's

North Melbourne Football Club (NMFC), which has used the facility since 1882. Although recent upgrades have enhanced access for the broader community, this remains limited while the NMFC is training at the reserve. Perceived community access to the North Melbourne Community Centre is reduced by perimeter fence enclosure.

Clayton Reserve is designated as a dog off-leash area. Although this is an important and valued use, this can compromise the enjoyment of other users in the park.

Active recreation

A significant increase in community participation in sporting activities has generated unprecedented demand for spaces for active recreation across the City of Melbourne's 40 sporting fields. These sporting fields are at 95 per cent capacity.

Few public open spaces in Arden-Macaulay support community sport and recreation. The North Melbourne Recreation Reserve has undergone a recent upgrade, but is at capacity.

To continue to encourage a high level of participation in community sport and recreation and respond to future population growth, access to additional spaces for ovals, fields and courts will be needed in Arden-Macaulay.

Flooding and lack of integrated water management

Prior to urban settlement, the Moonee Ponds Creek was a series of marshy ponds connected by a stream that flowed to the Yarra River. During the second half of the twentieth century the Creek was redesigned to maximise storm water discharge. This included the removal of vegetation along the bank and the construction of concrete lining in some sections. The creek was also realigned for road, dock and rail development.

The creek is still subject to flooding which is expected to worsen with the effects of sea level rises and increased frequency of storm events. The redesign of the creek is needed to manage this flooding and to improve the water quality in the creek. (See figure 2.3 in chapter 2, Activities and land use).

Character and treatment of streets

Streets and laneways account for approximately 20 per cent of the Arden-Macaulay area. The quality of these streets is inconsistent. Due to the industrial uses of Arden-Macaulay some streets have few or no street trees, large areas of asphalt and poor quality pedestrian paths. Other streets in Arden-Macaulay have rows of mature trees that create attractive places (see figure 5.4), but with age they are more vulnerable to changing environmental conditions. This ageing stock requires increased resources to manage and sustain it, and at some stage, these trees may need to be replaced (see figure 5.5).

Arden-Macaulay’s urban forest - the sum of all trees, vegetation, soil and water that supports the ecosystem, will play a critical role in enhancing the area’s liveability.



Figure 5.4: Existing tree canopy cover in Arden-Macaulay.

This urban forest can mitigate hot summer temperatures by providing shade and cooling. Increased tree canopy cover will minimise the discomfort of hot summer nights (the urban heat island effect) and improve day time thermal comfort at street level for pedestrians (see figure 5.6).

Water sensitive urban design will assist with managing frequent inundation and providing soil moisture for healthy vegetation growth.



Figure 5.5: Tree vulnerability within Arden-Macaulay.

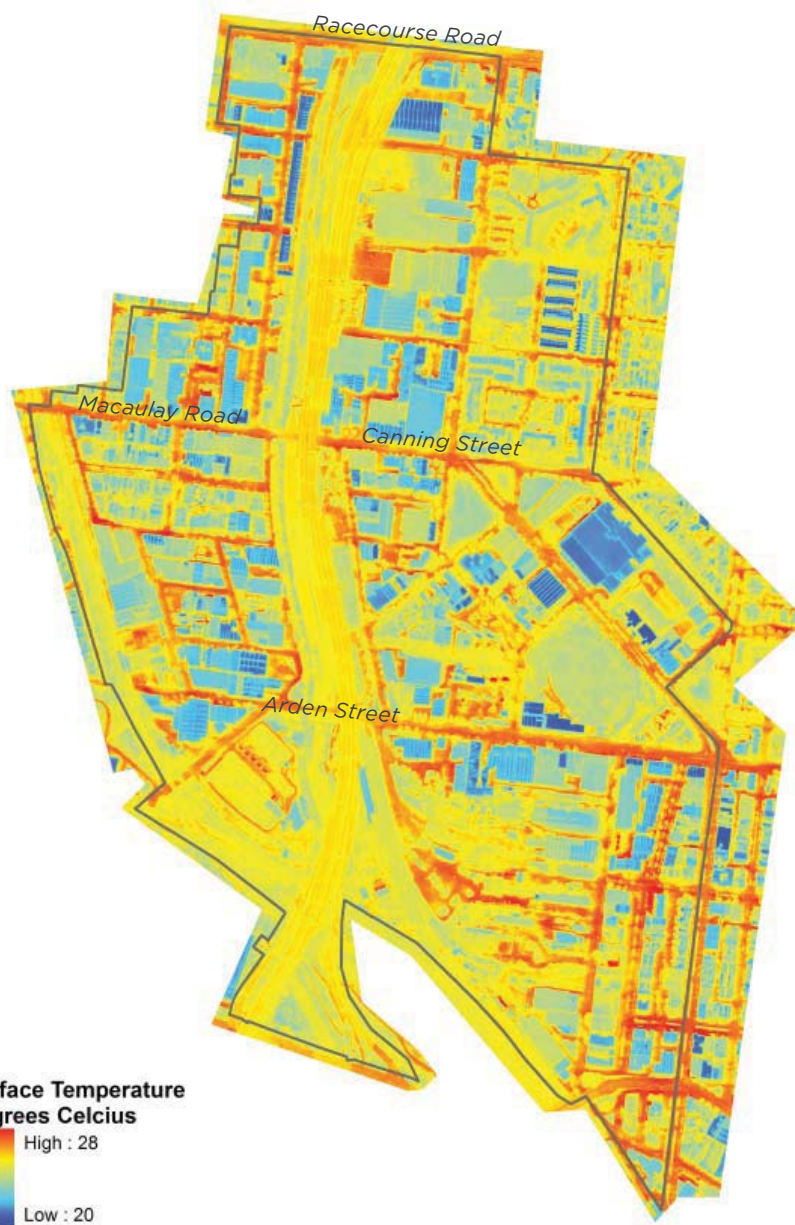


Figure 5.6: UHI thermal imaging taken in January 2011

Cultural Heritage

The marshy ponds which formed what is today the Moonee Ponds Creek provided a water and food source for the Aboriginal people of the Woiwurong language group of the Wurundjeri tribe and a travel route between the mountains to the north and Port Phillip Bay. Several Aboriginal archaeological sites have been recorded along the Moonee Ponds Creek, however, none to date have been identified in Arden-Macaulay.

The Moonee Ponds Creek and surrounding land is potentially within an area of cultural heritage sensitivity under the Aboriginal Heritage Act 2006. Cultural Heritage Management Plans are required for high impact activities and developments to land in areas of cultural heritage sensitivity. However, parts of Moonee Ponds Creek have been subject to significant ground disturbance since urban settlement and would therefore not be considered areas of cultural heritage sensitivity. As such, it is unlikely that Cultural Heritage Management Plans would be required for developments in the Arden-Macaulay area. However, all applicants must consider the obligations of the Aboriginal Heritage Act 2006 and should consult with Aboriginal Affairs Victoria, which is the relevant authority on this matter.

Strategies

Strategy 1

Revitalise the Moonee Ponds Creek environs as a recreational and environmental corridor

There is a significant opportunity to transform the Moonee Ponds Creek into a high quality social and environmental asset. Additional parkland along the creek will provide more open space for the community. Revegetation and better storm water management practices in the drainage catchment will improve the

ecological quality of the creek.

New open spaces along the western side of the creek, north of Macaulay Road, will be consolidated with the creek environs to create a thriving parkland and green spine through the centre of Arden-Macaulay. This side of the creek is less impacted by the motorway and train line and has good access to sunlight. Improving the quantity and quality of open space abutting the creek

will reconnect people with what is now a mostly hidden waterway. The character and amenity of the creek will be improved by vegetation which complements its natural ecology.

Along the east bank, the existing shared path will be enhanced and will include pedestrian and cycling bridge connections, the better to connect people to each other, to these new open spaces and into the surrounding street network.

The cultural, environmental, architectural and industrial heritage of the area will be enlivened by the creation of a heritage trail. This should highlight the past role of the creek in supporting former industrial uses, and connect to and provide interpretative signage regarding significant flour mills and wool factories, rail infrastructure, Indigenous travel routes and significant vegetation.

The expansion of the creek corridor has the potential to improve the creek ecology and restore its historic ephemeral qualities. Biodiversity will be supported by improving the habitat for animals and plant life. The creek corridor will be carefully designed to respond to inundation issues and include opportunities to harvest and reuse storm water.

In the short-term, upgrades to the pump stations are required (see figure 5.7). Long-term measures to mitigate flooding of the creek should be considered in the master plan.



Advocacy

Work with VicTrack to include the selected sites on Stubbs Street and Langford Street into the Moonee Ponds Creek corridor.



Research

Conduct modelling of hydrology to inform the design of the Moonee Ponds Creek to ensure it mitigates flooding and delivers integrated storm water management.



Design

Prepare a Public Realm Master Plan and Civil Infrastructure Plan for Arden-Macaulay that includes a master plan for Moonee Ponds Creek. The plan should be prepared in partnership with Melbourne Water, VicTrack, CityLink, Moonee Valley City Council, Aboriginal Affairs Victoria and private landholders.



Policy

Implement the Public Park and Recreation Zone over the creek and sites to be consolidated into the creek to re-designate this area from a services use to public open space.

Prepare and implement a Development Contributions Plan to contribute funds to the delivery of the new parks.



Advocacy

Work with VicTrack, CityLink, Melbourne Water, Moonee Valley City Council and private landholders to enhance the Moonee Ponds Creek corridor for recreational and environmental functions.



Policy

Update the Integrated Plan Overlay to implement any master plan prepared for the Moonee Ponds Creek. Ensure this integrates relevant recommendations of the Melbourne Open Space Strategy. Extend the new Integrated Plan Overlay over the entirety of the Moonee Ponds Creek.

1 year

1 - 5 years

5 + years



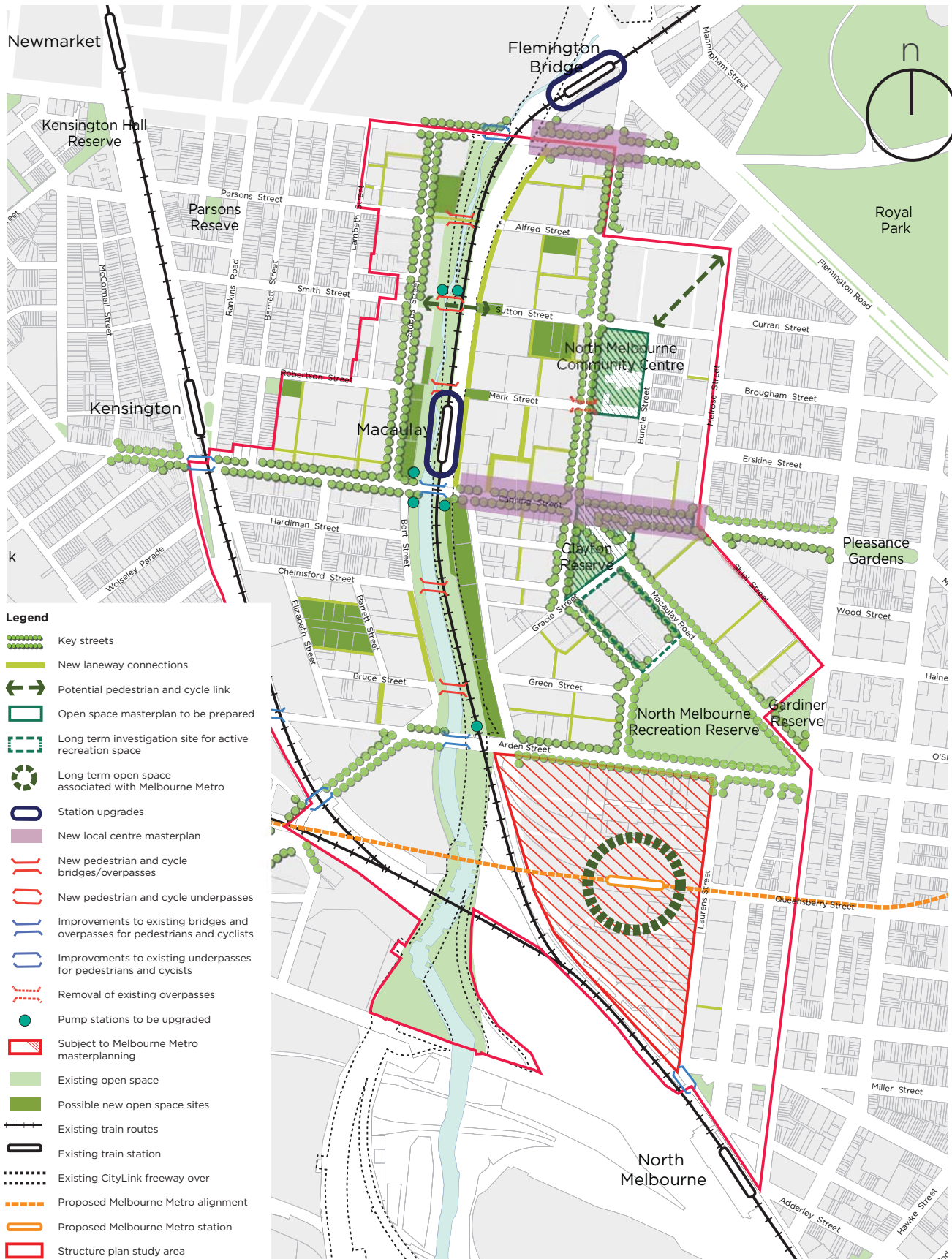


Figure 5.7 Open Space Proposal for Arden-Macaulay

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PUBLIC REALM

Strategy 2

Create a new Capital City open space at Arden Central

Arden Central will include a new public square to mark the entrance to the Arden Metro station. This space will encourage social interaction and provide a place of respite in this new activity hub. It will serve a wider metropolitan function to complement the intensity of activity located with the proposed Metro station. See also chapter 2, Activities and land use.

See figure 5.7.

Actions

This strategy will be implemented through the following actions:



Advocacy

Advocate for the provision of a Capital City open space in the master plan of Arden Central.

1 year

1 - 5 years

5 + years



Strategy 3

Create five new local parks to address the needs of the existing and future local community

There is a significant opportunity to enhance the provision and range of open spaces in Arden-Macaulay. Open spaces are important for social contact, as meeting places, for community events, as opportunities to participate in outdoor activities, as spaces to relax and contemplate, and as spaces for children to play. Open spaces provide contact with nature and provide cool spaces that mitigate the urban heat island effect. Ample and evenly distributed open space with good pedestrian access will be provided by:

- Identifying potential sites for new parks on sites currently in private ownership.
- Negotiating with landholders and developers for land contributions.

To address existing gaps in the provision of open space and meet future needs, potential sites for new open space have been identified at the following locations, as shown in figure 5.8:

Northeast

Two new parks will be created north of Macaulay Road between the creek and Boundary Road. Both of these parks will be directly connected to the proposed expansion of the laneway network (see chapter 3, *Urban structure and built form*, S2).

1. Alfred Street

A new park, 2,500m² in size, will be located within the privately owned site at 59-101 Alfred Street. This park provides the following benefits:

- A central location within the identified walking catchment area bounded by Macaulay Road, the creek, Racecourse Road and Boundary Road.
- Northerly aspect, ensuring good access to sunlight in winter.
- A park that is the maximum distance from the freeway while still providing a noise buffer from Boundary Road.

2. Sutton Street

A new park of 5,500m² will be located on Sutton Street. This site provides the following benefits:

- A central location within the identified walking catchment area bounded by Macaulay Road, the creek, Racecourse Road and Boundary Road.
- A larger park with space to ensure maximum flexibility of use.
- Co-location with the North Melbourne Community Centre, which would allow for programming of community activities within the new park to be coordinated through the centre.
- Direct future access to Kensington via the proposed Sutton Street underpass.
- The existing subdivision pattern includes a laneway link to Boundary Road, maximising pedestrian connectivity and providing a direct connection to the community centre.
- Northerly aspect, ensuring good access to sunlight in winter.
- A park that is the maximum distance from the freeway while still providing a noise buffer from Boundary Road.

The park should be designed to include public laneways to all its edges, with building addresses

fronting the park.

Southeast

3. Langford Street

South of Macaulay Road facing Langford Street, a new mixed use community space will be created. This will include a community hub (see chapter 6, *Community infrastructure, strategy 2*) and innovative spaces for community sport and recreation. The design of these spaces will capitalise on the urban character created by the transport infrastructure adjacent to the creek and will provide a noise buffer to the rail line. This could include flexible spaces for indoor and outdoor sports courts to meet the active recreation needs of the community.

Southwest

4. Fink Street

A new park of approximately 11,000m² will be located on Fink Street. This site provides the following benefits:

- A centrally located site between the Craigieburn and Upfield railway lines, where there is an identified gap of open space network.
- A park that is located some distance from the CityLink freeway, railway lines and transmission station, to provide a quiet environment for leisure.
- Northerly aspect, ensuring good access to sunlight in winter.

Northwest

5. Robertson Street Park

Robertson Street Park will be expanded to provide a more substantial park to cater for more diverse recreational activities and greater capacity. This park provides the following benefits:

- A central location between the

rail line and the creek to minimise the walking distance from within this catchment to the park.

- Northerly aspect, ensuring good access to sunlight in winter.
- Good pedestrian access via quiet, residential streets.
- Combines an existing City of Melbourne park with the contributions of a private development to create one larger, better park.

Actions

This strategy will be implemented through the following actions:



Advocacy

Negotiate with landowners at Robertson Street and Alfred Street to provide new open spaces in identified areas as part of an open space contribution.



Design

Prepare a Public Realm Master Plan that will include concept designs for the potential new parks. Include opportunities to create embedded art work which celebrate the heritage and development of Arden Macaulay.



Policy

Implement a Developer Contributions Plan to fund the delivery of new local open spaces.

Implement a rate in Clause 52.01 which specifies open space required in Arden-Macaulay, including a policy to require a land contribution in lieu of a cash contribution.

Prepare and implement a Development Contributions Plan to contribute funds to the delivery of the new parks.



Policy

Rezone new park sites to a Public Park and Recreation Zone to signal their longer-term use as open space.

1 year

1 - 5 years

5 + years



Strategy 4

Upgrade North Melbourne Community Centre

The North Melbourne Community Centre (NMCC) will be reconfigured to improve the quality of this expansive park for community enjoyment, sport and recreation.

This space will be designed and upgraded to complement the adjacent community hub and strengthen use for community sport and recreation, in addition to supporting a flourishing community garden.

The reconfiguration of the NMCC could consider the appropriateness of:

- Upgrading and expanding recreation facilities within the NMCC
- Relocating and consolidating existing recreation facilities within the Moonee Ponds Creek open space corridor along Langford Street to provide additional space for other activities
- Upgrading lighting and changing room facilities at the NMCC
- Co-locating community sport and recreation facilities with the upgraded community hub at the NMCC.

Community access to the NMCC will be improved by removing fencing and providing safe and

direct pedestrian crossings over Boundary Road.

For more information about community facilities, see chapter 6, Community infrastructure.

Actions

This strategy will be implemented through the following actions:



Strategy 5

Transform Clayton Reserve and the Canning Street and Macaulay Road Reserve, a space that is the focus of community activity within the new Canning Street local activity centre

The quality of open space in the vicinity of the Canning Street local activity centre will be improved to enhance opportunities for recreation, making it a place where people can relax, meet and play. Canning and Macaulay Road Reserve will be expanded into Canning Street to provide more open space for recreation. Canning and Macaulay Road Reserve will also be redesigned to prioritise pedestrian, cycling and bus access to new shops and businesses in the Canning Street activity centre.

Clayton Reserve will be enhanced to provide a higher level of amenity and wider range of recreational opportunities in immediate proximity to the proposed activity area. The dog off-leash function of this park has potential to be located into the new open space on Langford Street. This will improve the amenity for a greater range of people within Clayton Reserve.

Actions

This strategy will be implemented through the following actions:



Design

Prepare a public realm master plan that will include concept designs for the expansion and redesign of the Canning and Macaulay Road Reserve and the redesign of Clayton Reserve.



Policy

Implement the Public Park and Recreation Zone over Canning Street.

1 year

1 - 5 years

5 + years



Strategy 6

Creation of a larger open space for a growing population

The creation of an expansive parkland between the North Melbourne Recreation Reserve and Clayton Reserve will be investigated to provide for community sport and recreational needs in the longer term. This will provide a major regional open space for the broader community, which will be located within proximity to the Canning Street local activity centre and public transport services.

Due to the potential size of this space, there is a significant opportunity for this space to accommodate recreation facilities, such as an oval or field.

This active recreation space will respond to the growing community participation in a range of sport and recreational activities.

The design, function, size and feasibility of this open space will be further investigated as the population of Arden-Macaulay grows and stage 2, Arden Central commences.

Actions

This strategy will be implemented through the following actions:



Research

Prepare a business case for the need for an expansion of a park between Clayton Park and the North Melbourne Recreation Reserve to form one larger open space for community sport and recreation. This should be investigated in conjunction with the City of Melbourne's involvement in the preparation of a master plan for the Arden Central area.



Strategy 7

Improve accessibility at key connections to open space

The connectivity to and from open spaces will be physically improved to ensure safe and direct access. Streets will be designed to encourage walking and cycling, by providing generous pedestrian paths and dedicated bicycle paths. Pedestrian comfort will be enhanced by providing large canopy trees that shade and cool the pedestrian environment. The implementation of traffic calming treatments and enhanced street lighting will further enhance the pedestrian experience. Key locations for improvement include:

Sutton Street Underpass

A new pedestrian and cycling connection under the Moonee Ponds Creek, linking Sutton Street and Smith Street, will provide a safe and direct connection to open spaces located on either side of the creek. Existing creek crossings at Racecourse Road, Macaulay Road and Arden Street will be improved for cyclists and pedestrians.

Boundary Road

Improved pedestrian access to the North Melbourne Community Centre will be provided by removal of the existing pedestrian overpass and the provision of a new at grade pedestrian crossing on Boundary Road.

North Melbourne Public Housing Estate and Flemington Road

Pedestrian access from Arden-Macaulay to Royal Park will be improved by changing priorities of the traffic signals at the intersection of Flemington Road and Melrose Street. Opportunities to provide direct public access from Sutton Street to Melrose Street through any redesign of the North Melbourne Public Housing Estate should be considered. This street would reinstate the historic alignment of Buncle Street.

Parsons Street and Robertson Street bridges

Bridges will be provided over the Moonee Ponds Creek to optimise access to the shared trail.

Actions

This strategy will be implemented through the following actions:



Strategy 8

Enhance the role of Arden-Macaulay's streets in the open space network

Arden-Macaulay's streets will be upgraded to create an attractive and accessible network of connections that link people to each other and to new and proposed open spaces. The existing street space dedicated to car use (asphalt traffic lanes and parking) will be reduced so that the streets can perform two other critical roles that are currently lacking – streets as places for people and streets as ecosystems.

Streets as social places

Streets should be designed as places, not just as thoroughfares, to encourage social interactions and to create distinct and inviting spaces that people choose to experience. They should be places to walk, shop, play, relax, sit and talk.

Streets as ecosystems – expanding the urban forest

The urban forest is the sum of all trees, vegetation, soil and water that provides ecosystem services for the city. The creation of a healthy, resilient and robust urban forest will provide numerous environmental benefits, including:

- Enhanced canopy cover to shade the hard surfaces of the city (streets and buildings) and improve thermal comfort at street level for pedestrians.
- Improved air quality.
- Enhanced biodiversity and wildlife habitats.
- Mitigation of the urban heat island effect.
- Improved stormwater quality entering waterways (through increased vegetation and water sensitive urban design

treatments).

- Enhanced character and visual amenity.
- Enhanced surface permeability and reduction of asphalt.

To achieve this, new large canopy street trees will be planted (watered by locally captured stormwater to increase soil moisture content). Footpaths will be widened to allow for a more active and diverse use of streets, including on-street dining, seating and informal recreational or play spaces, as well as local public art. Where appropriate, bike paths and facilities will be installed.

An indicative street hierarchy to deliver this strategy is indicated in Figure 5.8.

Indicative street sections that illustrate the components of streets that fulfil these multiple roles are illustrated in Figure 5.9-5.11.

Potential street redesigns are included in Appendix A.

Actions

This strategy will be implemented through the following actions:



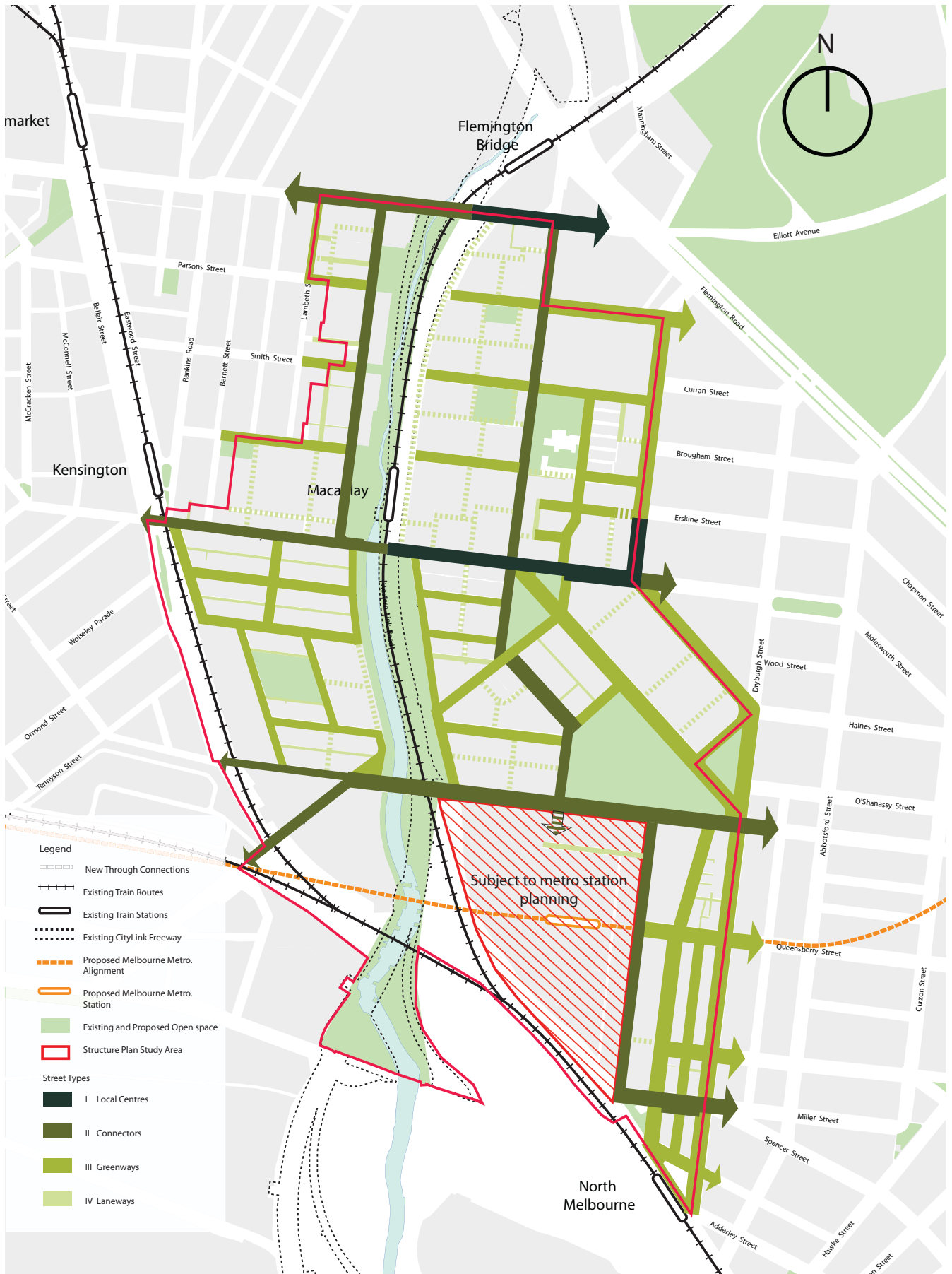


Figure 5.8 Proposed Street Hierarchy



① FOOTPATHS

- Pedestrian paths designed to provide a high level of accessibility and to support onstreet activities such as outdoor cafes.
- Street furniture to optimise accessibility for all pedestrians and cyclists, including seats, bicycle hoops and high quality pedestrian lighting.

② BIKE LANES

- Where possible, bicycle lanes separated from vehicular traffic.

③ CARS

- Car lanes set at minimum widths according to a 40km/h speed limit.
- Onstreet car parking provided on at least one side of the street.

④ TREES

- Large canopy street trees to provide shade and cooling, mitigate wind exposure and offer habitat.
- Trees planted in pits designed for optimal growing conditions and WSUD.

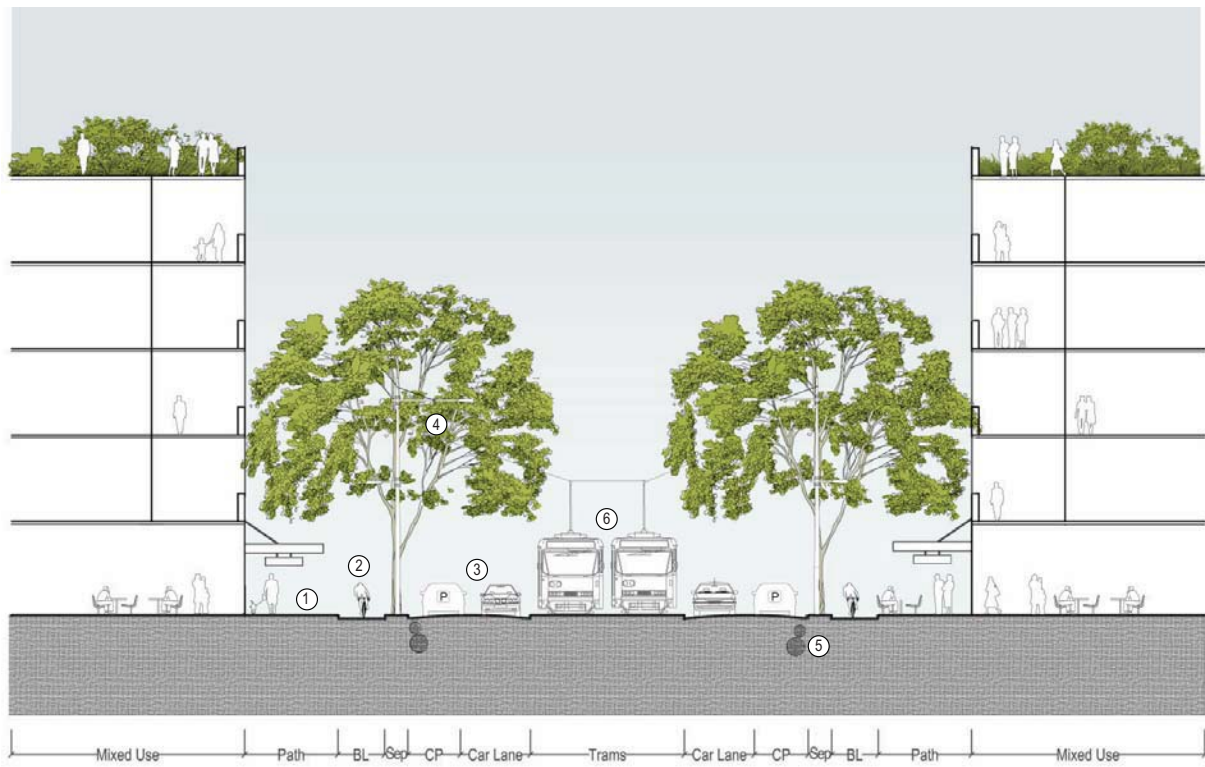
⑤ LOCAL OPEN SPACE

- Landscaping to create attractive neighbourhood spaces, located for optimum solar access and designed in response to local interests and needs (e.g. productive gardens, social and play spaces etc).
- Landscaping designed for diverse environmental functions including stormwater absorption and habitat.

⑥ CIVIL INFRASTRUCTURE

- Upgraded drainage systems (e.g. pipe network, pits, gross pollutant traps and pumps).
- Street furniture (e.g. street lights and parking meters) converted to alternative power sources such as locally-generated solar power.
- Where appropriate, install facade-mounted pedestrian lighting.
- Existing overhead powerlines to be relocated underground.

Figure 5.9 Indicative street sections - greenways



① FOOTPATHS

- Pedestrian paths designed to provide a high level of accessibility and to support onstreet activities such as outdoor cafes.
- Weather protection over footpaths in local centres.
- Street furniture to optimise accessibility for all pedestrians and cyclists, including seats, bicycle hoops and high quality pedestrian lighting.

② BIKE LANES

- Where possible, bicycle lanes separated from vehicular traffic.

③ CARS

- Car lanes set at minimum widths according to a 40km/h speed limit.
- Onstreet car parking provided on at least one side of the street in local streets and both sides of the street in local centres.

④ TREES

- Large canopy street trees to provide shade and cooling, mitigate wind exposure and offer habitat.
- Trees planted in pits designed for optimal growing conditions and WSUD.

⑤ CIVIL INFRASTRUCTURE

- Upgraded drainage systems (e.g. pipe network, pits, gross pollutant traps and pumps).
- Street furniture (e.g. street lights and parking meters) converted to alternative power sources such as locally-generated solar power.
- Existing overhead powerlines to be relocated underground.

⑥ PUBLIC TRANSPORT

- Public transport routes designed for optimum service provision, including dedicated tram / bus lanes and fully accessible tram / bus stops.

Figure 5.10 Indicative street sections - local centres and connectors streets



① **LANEWAY**

- Shared 10km/h lane for pedestrians, cyclists and motor vehicles (where access allowed).
- High quality wall-mounted lighting.

② **CIVIL INFRASTRUCTURE**

- Street lights powered by alternative power sources such as locally-generated solar power.
- Upgrade existing drainage systems.

① **LANEWAY**

- Shared 10km/h lane for pedestrians, cyclists and motor vehicles.
- High quality wall-mounted lighting.

② **CIVIL INFRASTRUCTURE**

- Street lights powered by alternative power sources such as locally-generated solar power.
- Upgrade existing drainage systems.

③ **TREES**


- Small trees to provide shade, cooling and mitigate wind exposure.
- Trees planted in pits designed for optimal growing conditions and WSUD.

Figure 5.11 Laneways

06 Community Infrastructure

30-year vision

The community of Arden-Macaulay will be a sustainable one that offers a good quality of life to all generations. The new neighbourhood will be accessible, inclusive, aesthetically pleasing and safe, fostering a strong social and civic fabric and a strong local identity and sense of place.



Introduction

Overview

Social infrastructure and community facilities in Arden-Macaulay must meet the diverse needs of the community, including primary healthcare facilities, family services, children's play and recreation facilities, services for young people, older people and people with disabilities, as well as libraries, sports and recreation facilities, open space, schools and arts related activities.

At present, there are limited community and cultural facilities in Arden-Macaulay. The majority of these are located on the eastern side of the Moonee Ponds Creek, which is not accessible to the whole community. There is also a lack of local services co-located with these facilities to provide a high level of convenience to the community.

New and upgraded community and cultural facilities and services will need to be provided in Arden-Macaulay to support the health and wellbeing of the growing community.

Objectives

Principle 3

Create liveable local neighbourhoods

1. Provide community and cultural facilities and services to support the health and wellbeing of the community.
2. Provide diverse local services and conveniences to meet people's everyday needs.
3. Design adaptable community and cultural facilities provide for a range of functions.
4. Retain and create local services and jobs.
5. Integrate community and cultural facilities and services at the earliest possible stage of development.

Principle 8

Create a connected and accessible place

1. Integrate community facilities with local centres and cluster with complementary services that the community uses regularly, to provide convenience.
2. Locate community facilities within walking distance of homes.
3. Connect community and cultural facilities by safe streets designed for universal access.
4. Design community facilities to be visually prominent and clearly signposted.
5. Locate community and cultural facilities and services in proximity to good public transport, day and night.

Principle 7

Develop liveable dwellings that house a diverse and inclusive community

1. Support the delivery of a variety of accommodation types and sizes that are adaptable for different lifestyles, life-stages and households.
2. Support the delivery of well-integrated and designed short and long term public and private housing.

Principle 9

Support a culturally and socially engaged community

1. Provide a high level of access to educational, arts and cultural activities for all.
2. Community and cultural facilities include diverse spaces for use by all of the community.
3. Support people of diverse backgrounds and experiences through programs and services.
4. Design a high quality public realm that supports incidental meetings and provides spaces to connect.
5. Design public spaces and activities to support community life and interaction.
6. Foster a community to care for young and old, support families and individuals and assist people to achieve their optimal health and wellbeing.

Issues

Existing provision of community infrastructure

There is currently a limited supply of community facilities and services in Arden-Macaulay, reflecting the industrial character of the area.

The majority of community facilities within Arden-Macaulay are located on the eastern side of the Moonee Ponds Creek, clustered around Melrose Street and Bunclie Street. This location creates a physical barrier for some residents. At present, these facilities are not located in proximity to other services and conveniences such as public transport, shops and businesses. Several of these facilities are experiencing challenges. The North Melbourne Community Centre and Jean McKendry Neighbourhood Centre are at capacity and unable to meet current demand.

The surrounding areas of Kensington and North Melbourne are better serviced, with four community centres, two libraries, eight neighbourhood houses, two planned activity groups and a community garden. There are also several family services in the vicinity which provide family support and counselling, parenting support and family health (maternal and child health) services. There are approximately 11 childcare centres, ten kindergartens and three maternal and child health centres located in proximity to Arden-Macaulay in Kensington, Flemington and North Melbourne. However, many of these services and facilities are not located in the City of Melbourne. Community health services are provided in Kensington, North Melbourne and West Melbourne from the Doutta Galla Community Health Centre and the Asylum

Seekers' Resource Centre. There are several community art programs and community galleries servicing the broader area. The Kensington Town Hall, located to the west, is inadequate for service provision, in poor condition and structurally unsound. Aged and disability services, including senior citizens' centres are at capacity. There are no services to support young people within Arden-Macaulay, with the School Focused Youth Services located to the west, in Kensington.

Responding to increasing demand

As Arden-Macaulay's community grows and the demographic profile changes, there will be a need for more community and cultural facilities and services. The proposed Arden Metro is likely to impact on the demand for services within Arden-Macaulay. In addition, there is potential for workers to generate additional demand for services such as childcare and healthcare. The response to increasing demand will need to take into account legislative and regulatory changes which may require new models of service delivery and new or additional community infrastructure. Existing community facilities may need to be upgraded, or more appropriately located to respond to community demand.

At present, the provision of a range of community services from dispersed facilities has an impact on the convenience and accessibility for the people who live in Arden-Macaulay. To meet the needs of the community, new community facilities in Arden Macaulay will be integrated into a community hub. This hub may be a single building or it may incorporate several buildings within close proximity, to form

an accessible service. Some existing facilities, such as the Dousta Galla Community Health Service operate from several sites, and have indicated that they would operate more effectively from a consolidated site. The Hotham Hub, North Melbourne Community Centre and Jean McKendry facilities presently have a co-location advantage for a community hub model which could be strengthened. The integration of new community and cultural facilities in proposed activity centres will provide optimal community access and convenience.

Education and lifelong learning

The Victorian Government Department of Education and Early Childhood Development is responsible for the management, design and development of schools. There are currently no schools provided in Arden-Macaulay. The closest primary school is Kensington Primary School, with other primary schools in the broader area including North Melbourne, Debney Meadows and Flemington. University High and Debney Park Secondary College are the closest secondary schools. According to the Department of Education, the North Melbourne Primary School is currently at capacity. The Department of Education has identified the need for new schools in inner Melbourne. The City of Melbourne will advocate for the Department to identify and deliver new schools to service the Arden-Macaulay community.

From 2013, the Federal Government is committed to providing 15 hours of kindergarten per week for children in the year before they commence primary education. The City of Melbourne will advocate for the provision of

kindergartens within any proposed school sites.

Diverse community

Arden-Macaulay comprises a mix of public and private housing. To support a diverse community, there is need for a range of housing options in terms of style, size, tenure and affordability. Housing must be accessible for people of all ages and abilities.

Provision of arts and cultural facilities

Arts and cultural facilities play a significant role in engaging and connecting the community. Arden-Macaulay also supports many spaces for artists and designers, which contributes to the creative life of the local area. Retaining live music and performance venues will provide vibrancy and activation during the evenings and strengthen the cultural life of Arden-Macaulay. The arts and cultural spaces in Arden-Macaulay have potential to further activate the area and contribute to the area's identity.

Strategies

Strategy 1

Macaulay Community Centre

Community facilities will be accommodated in an integrated community centre within a new local centre along Macaulay Road and Canning Street. Macaulay Road and Canning Street will provide an integrated destination for community services, a range of local shops including a full line supermarket, and other complementary activities such as education and recreation, delivered as an active 'main street'. A variety of activities, shops and services will be clustered to gain benefits from association and multi-purpose trips.

A designated community hub will be developed on Langford Street, fronting Macaulay Road. The facilities provided will be complemented by community sport and recreation facilities in Langford Street and services within the local centre.

This site provides the following benefits:

- A central location within a walkable catchment.
- Located in proximity to open space at Clayton Reserve, Canning Street and Macaulay Road Reserve, which will be upgraded, and proposed open space within the Moonee Ponds Creek corridor.
- Ability to co-locate with integrated community sport and recreation facilities proposed south of Macaulay Road, facing Langford Street.
- A high level of access provided by public transport due to proximity to Macaulay station and existing bus services. Upgrades to Macaulay station will improve the safety and convenience for people accessing community facilities in the vicinity.

The community hub will house community driven organisations with a focus on strengthening social and cultural inclusion, recreation and local learning. This will provide the opportunity for the expansion of many facilities, including:

- Multipurpose activity and meeting spaces
- A community hall
- Visual art and performance spaces
- Recreation spaces.

These spaces should be designed to accommodate a variety of uses to provide for the potential provision of:

- Aged services
- Planned activity group
- Neighbourhood house programs
- Youth programs
- Arts programs
- Community sport and recreation
- Community and mental health services.

Strategy 2

Upgrade and consolidate existing community facilities

Existing community facilities in Arden-Macaulay will be consolidated into well located, integrated and purpose built facilities.

The existing rich cluster of community facilities and services in Buncle Street and Melrose Street in North Melbourne will be strengthened by consolidating them as an integrated community hub and refurbishing them to meet regulatory requirements.

The renewal of this hub will support a family, children's and health services focus.

A feasibility study will be conducted to determine the best approach for upgrading and consolidating the following facilities within an integrated hub:

- North Melbourne Community Centre
 - › Community and mental health service
 - › Community hall
 - › Games room
 - › Stadium
 - › Meeting rooms
 - › Playrooms
 - › Community gymnasium
 - › Family and community services
 - › Playgroups.

- Hotham Hub Children's Centre
 - › Childcare
 - › Kindergarten.
- Jean McKendry Neighbourhood Centre
 - › Aged services
 - › Planned activity group.

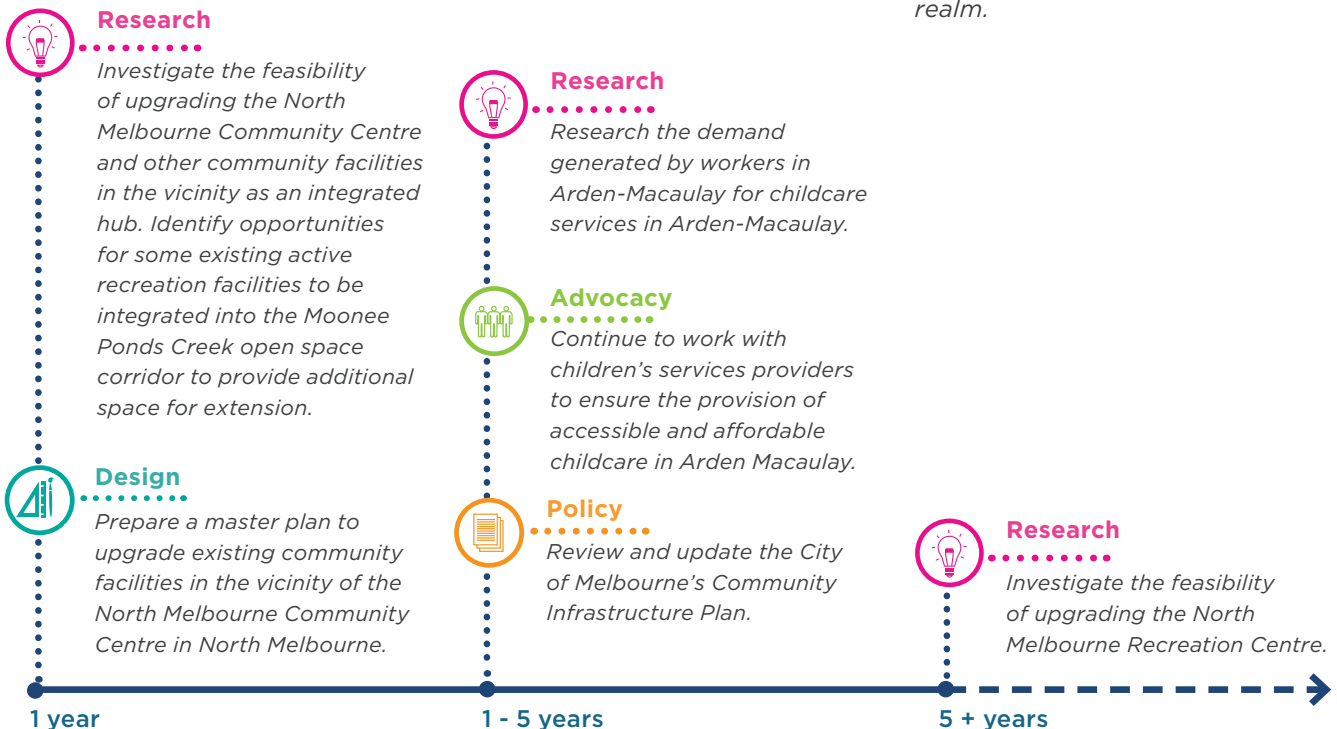
This feasibility study may also consider the appropriateness of consolidating some community and recreation facilities and services in either the proposed Macaulay Community Centre site, the Moonee Ponds Creek open space along Langford Street, or the proposed school site.

In the longer term, there is also potential for the North Melbourne Recreation Centre to be upgraded to provide for community recreation and social needs.

For more information about community sport and recreation facilities, see chapter 5, Public realm.

Actions

This strategy will be implemented through the following actions.



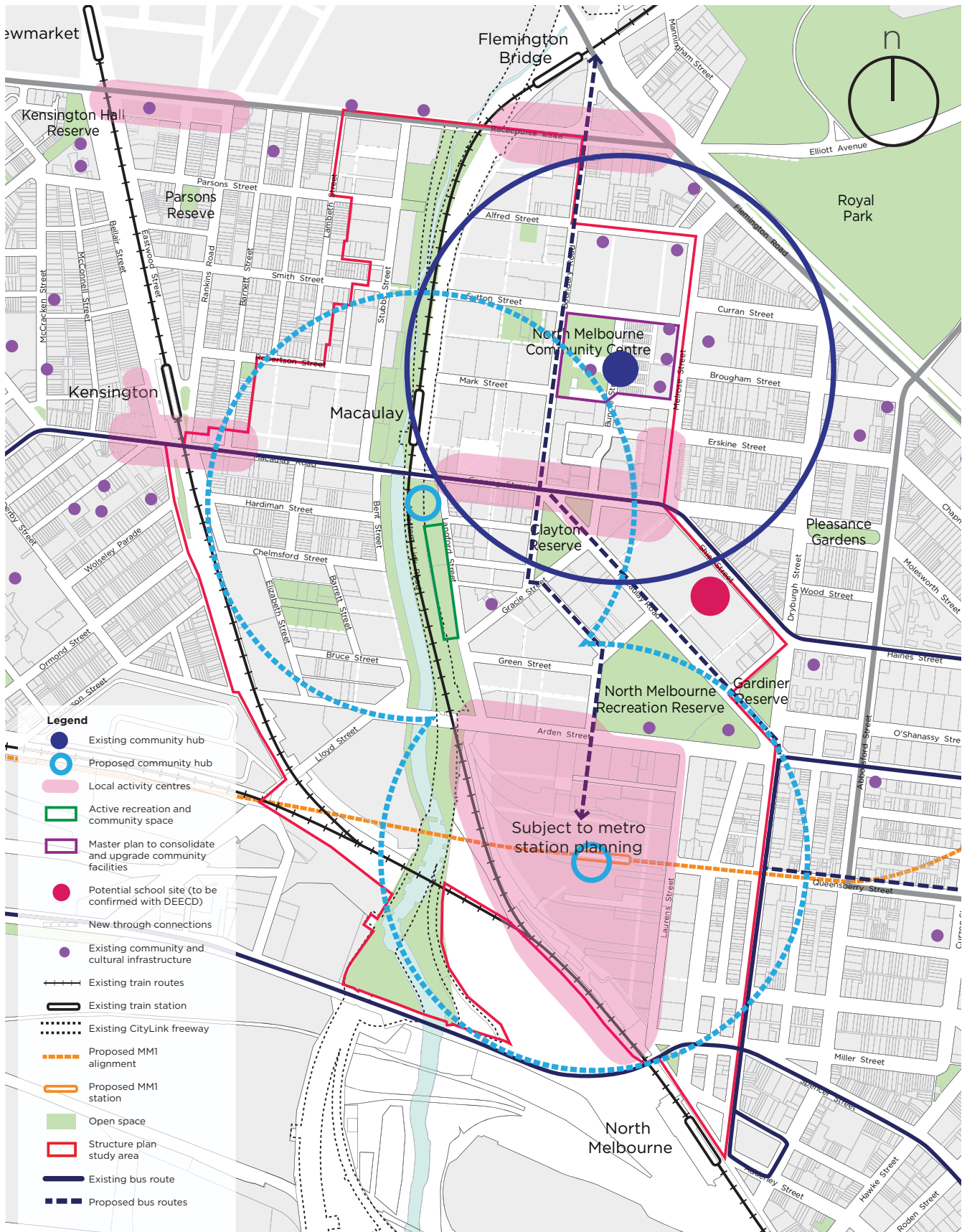


Figure 6.1 Proposed Community Infrastructure strategy

Strategy 3

Encourage development of community hub in Arden Central

The delivery of the Metro station in Arden Central will attract new residents, workers and visitors to the area. A major street based activity centre will function as the 'heart' of the new neighbourhood to support the intense mix of jobs, housing and education facilities in Arden Central. Community facilities to support the new community will be integrated in the master planning of Arden Central. There will be an opportunity for businesses, education facilities and residents to share facilities such as meeting spaces and conference centres, childcare, and library services.

Actions

This strategy will be implemented through the following actions.



Design

Prepare a master plan for Arden Central with State Government which includes provision for community facilities.

1 year

1 - 5 years



Advocacy

Advocate for shared facilities for businesses, education services and residents.

5 + years



Strategy 4

Identify a new school site

It is imperative that new schools are provided in Arden-Macaulay to support a diverse and growing community. The State Government's Department of Education and Early Childhood Development (DEECD) is responsible for building and funding schools. The DEECD has identified the need for new primary schools in inner Melbourne. The City of Melbourne will continue to support the DEECD to identify an appropriate site for a new primary school.

The DEECD will ultimately determine where a new primary school will be delivered to service inner Melbourne, however, the City of Melbourne will advocate for a new primary school in Arden-Macaulay.

The City of Melbourne considers that the Victorian Archives site in Shiel Street in North Melbourne, which is owned by the State Government, offers a suitable site for a potential school, as it is:

- Located centrally to local catchment in growing community
- Located in proximity to public transport including train and bus to provide access to a larger catchment
- A large site which is underutilised as an expansive open air car park. This site has potential to be developed over in a manner which supports the Government's Blueprint for Education and Early Childhood Development (2008) which promotes schools as community hubs through the co-location and integration of services
- Located in proximity to several existing recreational areas.
- Located in proximity to the proposed activity centre and community hub along Macaulay Road and Canning Street, to provide a high level of convenience to families.

The City of Melbourne will continue to advocate to the DEECD for the development of a new school at this site and advocate for the co-location of early years services, integrated arts programming, open space and indoor recreation facilities to support and connect the broader community.

Actions

This strategy will be implemented through the following actions.



Advocacy

Continue to advocate to the DEECD for the development of a new school to be integrated into the Victorian Archives site.

Continue to work with the DEECD to identify other sites which are appropriate for schools.

Advocate for the integration of family and children's services within proposed schools in Arden-Macaulay.

Advocate for the integration of childcare, preschools and after hours care within any new school in Arden-Macaulay.

Advocate for the inclusion of arts and cultural facilities in any new school in Arden-Macaulay.

1 year

1 - 5 years

5 + years

Strategy 5

Provision of affordable, accessible and diverse housing

The transition of Arden-Macaulay from a predominantly industrial area to a vibrant mixed use area will enable the opportunity for new housing, supported by amenities such as public transport, local services and local employment opportunities.

Future Melbourne established a goal for the provision of 20 per cent affordable housing in all new developments.

The City of Melbourne will develop a housing policy and work with the State and Federal Government, developers, institutions and community housing providers to support the delivery of affordable, accessible, adaptable and diverse housing options to ensure an inclusive community.

The policy can assist in delivering affordability by ensuring diversity in size, storeys, number of bedrooms, density, accessibility, style, and so on.

The built form controls in Arden-Macaulay will support the delivery of a range of housing options and enable buildings to be adapted in the future. A high quality of life will be supported by well designed public transport, walkways and cycle routes, streets and open spaces that enhance opportunities for physical activity and local social connection. Housing will be designed to engage with the street and have a positive interface with the public realm. To support an inclusive and diverse community it is important that these are designed to be accessible for people of all ages and abilities.

Actions

This strategy will be implemented through the following actions.



Research

Investigate appropriate mechanisms to deliver 20 per cent affordable housing.

Identify the opportunity for the City of Melbourne to act as a broker between developers and registered housing associations in order to facilitate this.



Policy

Develop a housing policy and work with the State and Federal Government, developers, institutions and community housing providers to support the delivery of affordable, accessible, adaptable and diverse housing.

1 year

1 - 5 years

5 + years



Strategy 6

Provision of creative and cultural spaces

Spaces for the development, production and presentation of arts based creative work will contribute to the transition of Arden-Macaulay. Some buildings, previously used for industrial purposes, may offer the opportunity for the integration of creative spaces to support local artists and designers. These studios and workspaces will be designed to support local enterprise and productivity.

Strengthening the role of creative spaces in Arden Macaulay will have several benefits including:

- Activating vacant or underutilised buildings as the area transitions
- Supporting local employment
- Contributing to the reputation and identity of the area.

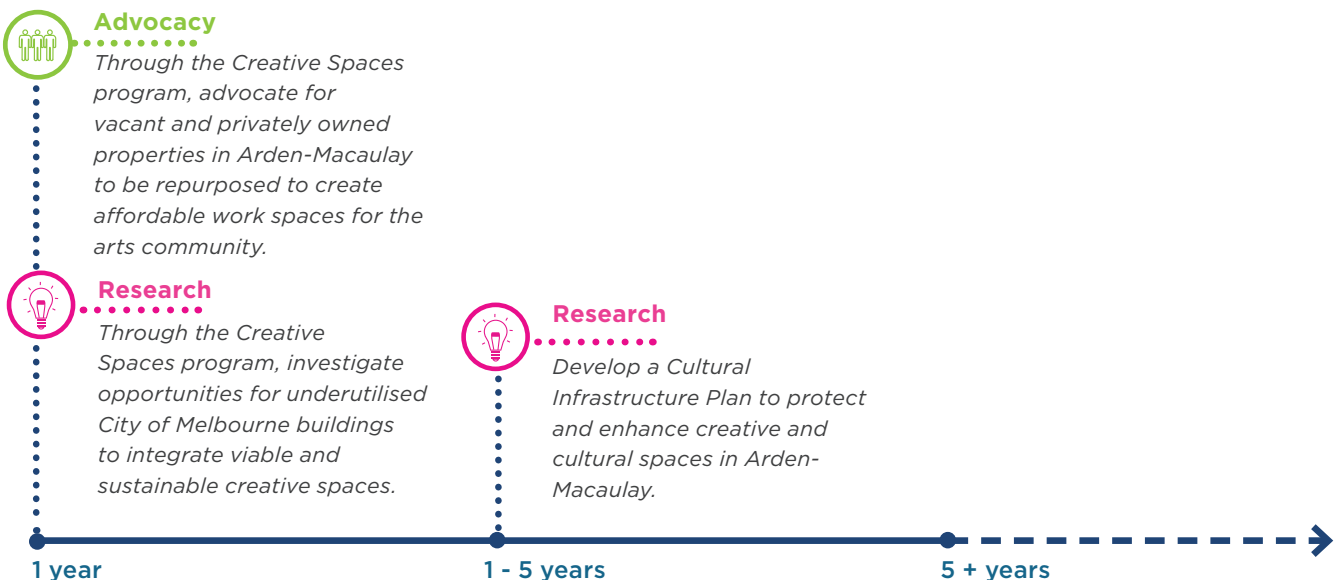
To support the emerging community in Arden-Macaulay there is opportunity for the provision of art spaces to be integrated within the Macaulay Community Hub, in addition to the provision of temporary or outreach arts and cultural facilities.

The development of a Cultural Infrastructure Plan has potential to investigate the opportunities in Arden-Macaulay to protect and enhance:

- Live/work artist studios
- Theatres
- Independent cinemas
- Rehearsal spaces
- Creative workshops
- Live music venues.

Actions

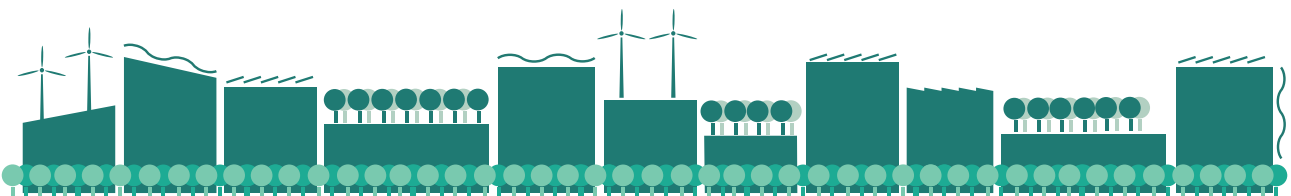
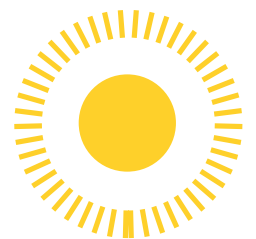
This strategy will be implemented through the following actions.



07 Sustainable Infrastructure

30-year vision

Arden-Macaulay will be an eco-city district with integrated and efficient private and district energy, water and waste systems that will also proof the area against the predicted drought, heatwave and extreme weather events.



Overview

Cities consume significant quantities of resources and have a major impact on the environment that extends well beyond what can be managed within their borders (Melbourne Principles for Sustainable Cities, DSE, 2002). This trend is unsustainable. It needs to be halted and then reversed. Future cities must reduce demand on the finite resources available, be smarter about how they reuse resources and, ultimately, become self-sustaining.

Australia has approximately 0.3 per cent of the world's population, but contributes approximately 1.5 per cent of total greenhouse gas emissions. This puts Australians among the highest per capita emitters (Garnaut, 2008). Reducing greenhouse gas emissions is necessary to mitigate human-induced climate change.

Over 90 per cent of Australia's electricity is generated by burning fossil fuels, with coal contributing 76 per cent (ABARE, 2008). Given that 37 per cent of Australia's greenhouse gas emissions (GHG) result from the generation of electricity (DCCEE, 2011), if energy generation and supply is to meet the challenges of reducing greenhouse gas emissions, cities must reduce their reliance on fossil fuels. A shift away from solutions involving large, centralised generation systems to smaller decentralised systems is likely to be an important part of the response.

Australia has one of the highest per capita water consumption rates in the world (Melbourne Water, 2009). While two thirds of all the people on Earth use less than 60 litres of water a day, the average Australian uses more

than twice that amount during a single shower (Melbourne Water, 2011). In an average year, metropolitan Melbourne consumes approximately 500GL of water (Melbourne Water, 2009).

While water storage supplies in Melbourne have steadily declined over the last decade, water consumption has been steadily increasing. Over the past 100 years Melbourne's total water consumption has increased from 50,000MI per year to over 550,000MI per year. While largely attributable to Melbourne's growth in population, the available water supply in Melbourne is finite – it is not a growing resource. As the Arden-Macaulay precinct grows, it is important to find ways to ensure that water consumption does not grow with it.

With climate change and global warming expecting to reduce future rainfall and hence Melbourne's water supply (DSE, 2008), reduced water storage coupled with future population growth will lead to water scarcity. Through initiatives such as the re-use, recycling, and conservation of water, water sensitive urban design (WSUD), sewer mining and stormwater harvesting, new and better ways of managing water resources can be implemented.

The *Arden-Macaulay Structure Plan* will facilitate significant change in land use activity and intensity, increasing the current population and employment levels markedly through urban renewal. In order to assess the capacity of Arden-Macaulay to accommodate this growth, a comprehensive analysis of the current infrastructure provision will need to be undertaken.

The current provision of energy and water services adequately meets existing levels of demand, however the way the Arden-Macaulay precinct is developed now and into the future presents a significant opportunity to plan for and identify mechanisms for the delivery of these services in a more sustainable form, to reduce the environmental impacts generated in urban environments, and to embed and deliver City of Melbourne Future Melbourne Eco-City goals through Zero Net Emissions by 2020, Climate Change Adaptation and Total WaterMark strategies. It is an opportunity to demonstrate that a more sustainable future for the City North precinct is achievable.

Objectives

Principle 10

A sustainable precinct that prospers within the earth's ecological limit.

1. Arden-Macaulay is established as a vibrant, attractive and self-sustaining precinct, which better services the community through an urban and built form that is energy efficient and adapted to climate change.
2. Energy and water services are constructed and supplied sustainably.
3. An integrated concept supports and informs the development and delivery of services in Arden-Macaulay.
4. The City of Melbourne looks beyond the boundaries of Arden-Macaulay for opportunities involving neighbouring precincts.

Issues

1. Utility infrastructure

Unsustainable infrastructure

Existing infrastructure in Arden Macaulay is unsustainable and ageing. Infrastructure will need to be updated to accommodate increased residential, worker and visitor population numbers.

Existing services for electricity, water supply, gas, sewerage and drainage have major trunk pipelines traversing the precinct. An overview of the current method for the delivery and management of each of these services is outlined below.

Electricity

CitiPower is the responsible authority for maintaining and operating the electricity distribution and subtransmission network within Arden-Macaulay.

These systems transfer power from the high voltage transmission network (operated by SP AusNet) to the major load centres, via terminal stations and zone substations. The distribution system then accepts power from the zone substations and distributes it to consumers.

The existing electricity supply infrastructure uses ageing technology and has insufficient capacity to meet the potential increase in demand. The West Melbourne Terminal Station is due for reconstruction in approximately ten years.

The major constraint with the current electricity infrastructure is that it is not designed for distributed energy generation.

Gas

Gas is distributed to most consumers from a high pressured transmission pipe through a reticulated network which operates at lower pressures. The

responsible authority is APA Group, as the owner of the high pressured network. There is sufficient capacity in the existing gas network to meet future projected demand.

Water supply

City West Water manages an extensive potable water main network, comprising several kilometres of pipes of varying diameters that service Arden-Macaulay. (There is no recycled water network).

There is sufficient capacity in the existing water network infrastructure to meet future projected demand.

Sewerage

City West Water manages and maintains an extensive sewerage network servicing the Arden-Macaulay precinct. The sewerage system consists of an extensive pipe network along most roads, with occasional pumping stations, which discharges to a sewage treatment plant. Melbourne Water is the responsible authority for the sewer mains in the precinct.

There is sufficient capacity in the existing sewerage system network to meet future projected demand.

Drainage (stormwater)

The existing drainage trunk infrastructure relies on overland flow paths to accommodate part of the flows resulting from rainfall events with a 100-year annual recurrence interval frequency.

Melbourne Water is responsible for managing the larger stormwater drains in Arden-Macaulay, which are part of an extensive network covering the catchment north of the Yarra River. The City of Melbourne is responsible for the local stormwater drains (street drainage) that feed into the larger stormwater system.

Climate change is expected to adversely impact on drainage outfall arrangements through both sea level rise and increases to peak flows.

Upgrades to the existing main stormwater drains and new drainage will be required to service changes in land use activity and more intensive development. The majority of such infrastructure would be funded by developers.

A large portion of the study area is subject to flooding in major storm events (*see chapter 1, Introduction*).

2. Natural resources

Unpredictable rainfall

Climate change is expected to increase the severity of flooding, while reducing the long term average annual rainfall. Reduced water supplies, coupled with future population growth, are likely to lead to greater water scarcity so there will be a benefit in having a range of water supply options. A water balance for Arden-Macaulay has not been developed and catchment flows have not been modelled to date. Seasons are a critical factor, as periods of peak demand (summer) and peak supply (winter) are not synchronised. Consideration needs to be given to how alternative water supplies will be collected, treated, stored and distributed. Other considerations include likely energy demand when evaluating the benefits of wastewater treatment.

3. Access to solar

Solar radiation can be converted into energy, using photovoltaics to generate electricity, and solar hot water units to generate hot water. The generation of energy is affected by the availability of

sunlight. The height of existing and future building structures in Arden-Macaulay will need to give consideration to access to sunlight.

4. Protecting the urban forest

The City of Melbourne has an existing 'urban forest' which insulates the city against heatwaves, winds and heavy rain events. The City of Melbourne tree cover currently stands at 22 per cent. Increasing this cover to 50 per cent can reduce peak summer temperatures by 7 degrees Celsius, which will significantly reduce the energy load of air conditioners.

5. Land supply

Distributed energy and water supply systems will require a significant amount of space to house plant and equipment. Land ownership is also a significant obstacle in reducing the environmental impact of the precinct. In general, sustainability initiatives will not provide a high commercial return for existing private land owners, so it is likely that the location of the initiatives that require a significant parcel of land, such as distributed energy generation, may be limited to government-owned or low value land. The significant amount of government owned land within the Arden-Macaulay therefore provides a good opportunity to investigate distributed energy solutions.

6. Regulatory barriers

At present, the regulatory barriers governing the supply and distribution of utility services do not support the implementation of the proposed distributed servicing study. The City of Melbourne needs to take on a stewardship

role to drive the realisation of the sustainable infrastructure servicing concept.

Strategies

Strategy 1

Establish central services hubs

Arden-Macaulay is well-positioned to realise new ways of providing energy and water that are less resource intensive. Several interconnected central services hubs (CSHs) could be located within the area to meet Arden-Macaulay’s energy and water needs. The CSHs would house tri- or co-generation plants and treat and store recycled water.

CSHs provide an efficient method of generating and managing resources, as they take advantage of the cross-benefits between the different systems. For example, the generation of electricity

creates heat as a by-product that can be used to treat captured stormwater. Excess heat can be circulated through the area and used to heat or cool buildings, or for other applications such as heating swimming pools, or industrial applications. The CSHs would incorporate:

- Tri- or co-generation plants
- Water treatment plants
- Water storage.

The CSHs would supply to the area:

- Locally generated electricity (see strategy 3)
- Class A recycled stormwater

(see strategy 4)

- Hot water (for heating) and chilled water (for cooling) (see strategy 5)

Indicative locations for CSHs are shown on figure 7.1. Further detail on the selection of these sites is provided in strategies 2 and 3.

District scale combined heat and power systems are proven technologies which have been in operation in other parts of the world for many decades. District cooling systems have also been developed and proven overseas. Combining these energy systems with water treatment plants is an innovative concept however the technologies proposed are proven and operate in various developments in Australia and internationally.

Actions

This strategy will be implemented through the following actions.



Advocacy

Continue consulting with key stakeholders about involvement with a district energy and recycled water network and the potential to house a CSH. Stakeholders should include Citywide, the State Archives Centre, the State Government and service providers.



Research

Undertake a feasibility assessment to explore further the potential of CSHs. This should also consider emissions, noise, vibrations, access issues and the capacity of the existing services infrastructure.



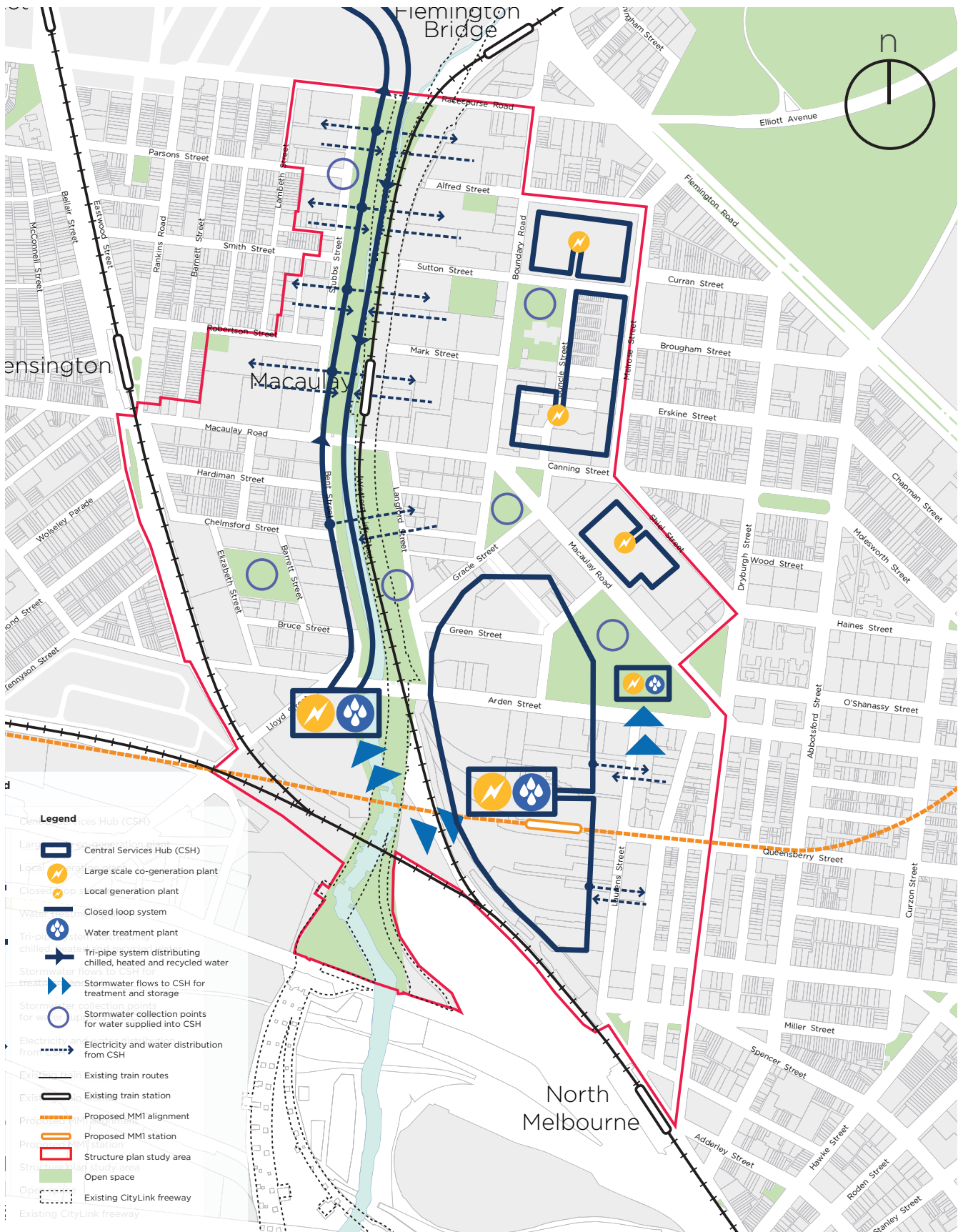


Figure 7.1 Sustainable Infrastructure Strategy

Strategy 2

Integrate ecologically sustainable development solutions with E-Gate

The E-Gate development to the south of the study area is expected to deliver a best practice sustainable development for a new community of 12,000 people. Opportunities to deliver shared systems that would benefit both development areas may include shared energy generation systems, and shared stormwater capture and treatment and storage systems. Together, the two precincts could provide a greater critical mass of population growth and economies of scale to support alternative services delivery system.

E-Gate will be developed approximately ten years prior to the development of Arden Central.

Actions

This strategy will be implemented through the following actions.



Strategy 3

Generating energy (distributed energy systems)

Distributed energy systems draw on local resources, for example natural gas, to generate electricity and, as a by-product, heat.

Co-generation is the generation of both electricity and heat at or near the point of use, most commonly using natural gas as fuel. Electricity generators fuelled by natural gas are less greenhouse gas (GHG) intensive than those which are fuelled by coal, which is the feedstock used for the majority of Victoria's centralised grid electricity.

A tri-generation system is created by adding an absorption chiller to a co-generation system to provide cooling. Absorption chillers provide a way of using thermal energy to deliver cooling to buildings, as an alternative to conventional electrically driven refrigeration. By using the heat stream from a co-generation system as the thermal energy source, absorption cooling offers the potential to expand the range of co-generation's applications. Alternatively, absorption chillers located at individual buildings can convert the distributed heat into a cooling system at a building scale.

The key benefits of tri-generation for the Arden-Macaulay precinct include:

- Reduced electricity and heating costs for energy customers.
- A 30 to 40 per cent overall improvement in energy generation efficiency through the avoidance of transmission losses (typically 7 to 11 per cent) and by using waste heat.
- A significant and cost effective reduction in GHG emissions, as

tri-generation is widely acknowledged as one of the most cost effective carbon abatement technologies available.

- In-built redundancy through the establishment of multiple plants - if one system is down (due to failure or routine maintenance) other adjacent local systems can provide the shortfall supply.

As a technology, co-generation is considered to be reliable and mature. Tri-generation technology, while not as mature, is becoming increasingly utilised globally.

Whilst this technology is less greenhouse gas intensive the increased energy demands within this precinct will lead to increased emissions for the municipality. Investment in co-generation and tri-generation plant sites will need to be considered alongside lower and zero emission technologies in the next ten years.

Suitable locations for tri- or co-generation plants are determined by:

- Access to existing or future high heat or energy demands. This could include, for example, the existing asphalt batching plant within the Citywide Services site, the Victoria Archives Centre or the North Melbourne Recreation Centre, as well as public housing estates. These 'anchor tenants' can provide certainty as to future energy demands.
- Land ownership - sites that are in government ownership have been selected.

Indicative locations are shown in figure 7.1.

Opportunities to make these plants visible to the street to

increase public awareness of sustainable infrastructure systems should be considered. These would need to be carefully designed to ensure good urban design outcomes.

A rebuild of the West Melbourne Terminal station would provide opportunities to improve the amenity of this area. This rebuild should be considered, including internalising the existing infrastructure. This is currently being undertaken at the Richmond Terminal station where approximately 60 per cent of the terminal has been rebuilt as an indoor facility. This would also result in a decrease in the footprint of the terminal station by approximately 50 per cent. This is a substantial investment in the city's infrastructure. Options to provide more sustainable solutions rather than continuing with a coal-powered solution should be considered.

There are a number of options to achieve this aim.

Option 1

Locate a large scale tri-generation plant within the existing West Melbourne Terminal station and/or within the Arden Central site. The electricity generated could be fed straight into the high voltage grid and then distributed through the site via existing networks.

Option 2

Locate a series of tri- or co-generation plants within a number of government-owned sites that include a closed loop distribution system. Incentives for private developers to deliver these systems (and to overcapitalise them in order to provide a back-up to the large centralised system) could include:

- Government grants
- Low interest or no interest loans for investment in the capital infrastructure.

Option 3

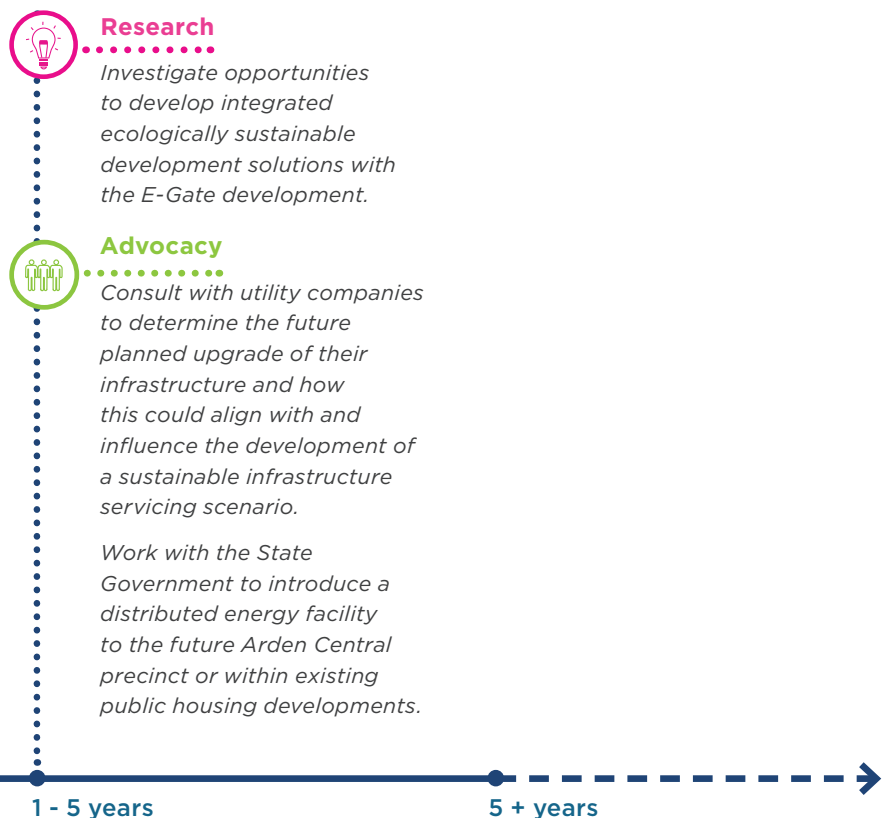
In the short term, consider the delivery of ground source heat pumps until a critical mass of development occurs to support the establishment of a tri- or co-generation plant. This system could also then provide a ‘back-up’ system if repairs or routine maintenance were required to the tri- or co-generation systems.

A combination of options 1, 2 and 3 would provide a system with the greatest resilience and dependency.

The excess heat from power generation could also be used for water disinfection (see strategy 4).

Actions

This strategy will be implemented through the following actions.



Strategy 4

Generate non-potable water

Existing water supplies on site include mains water (a potable supply), rain water, stormwater and waste water. Reducing the demand on the potable supply would require an increase in the use of one of these alternate sources.

Treating stormwater or waste water to drinking quality would be difficult to justify economically with an existing potable supply system in place. Providing Class A water to the area, however, would provide an alternate and more affordable water supply that could be used for:

- Toilet flushing and laundry use.

- Heat rejection (in cooling towers, which can be up to 50 per cent of on-site water demand).
- Irrigation for public and private open space, green roofs or green walls. This would significantly reduce the urban heat island effect.
- Redistribution through the area as hot and chilled water (heated within the tri-generation plant, see *strategy 3*).

There are two proposed options for this water supply.

The first option is recycled waste water sourced from a large scale sewage treatment plant. CityWest Water is currently investigating a sewage treatment plant to be located within Royal Park, which could supply to the site.

The second option is stormwater sourced from either:

- Moonee Ponds Creek. Consideration of a shared treatment plant with the E-gate development to the south should be considered to reduce costs and increase viability. Utilising the creek as the stormwater source removes the need to create a separate storage area, which can be a considerable hurdle in the reuse of stormwater
- Existing drainage infrastructure network, in particular the stormwater drainage main on Arden Street. Storage opportunities may be provided in the widened creek areas (see *chapter 5, Public realm and open space*).

Actions

This strategy will be implemented through the following actions.



Research

Investigate the potential for a distributed catchment, treatment and storage system for stormwater across Arden-Macaulay.



Advocacy

Liaise with City West Water to confirm the outcomes of their investigation into a sewage treatment plant.

Liaise with the water authority (City West Water) to ensure that a dual water supply reticulation network is built, owned and operated (by the water authority).

1 year

1 - 5 years

5 + years



Strategy 5

Distribution of resources via a combined services tunnel

The construction of a combined services tunnel is proposed for the Arden-Macaulay precinct. It would be approximately 3m in width and breadth to distribute (via pipes) the energy and water resources created within the CSH. Three separate water pipes, containing chilled, hot and non-potable water would be housed in the tunnel.

An initial capital investment will be required to construct the tunnel and install the pipes so that the resources created within the CSH can be distributed. Installation of the pipes should be aligned with any future upgrade of services

to reduce installation costs, such as the electricity infrastructure. Financial returns will only commence once customers (or buildings) connect into and draw from the distributed resources contained in the pipes. Existing utility services such as gas, electricity, communications and potable water could be co-located in the tunnel.

The advantages of a combined services tunnel include:

- Ensuring that pipes are easily accessed for maintenance and upgrades.
- Providing easy accessibility for future network infrastructure roll-outs.

- Minimising precinct disruption in future.

Locations for the tunnel could include the Moonee Ponds Creek corridor, a parallel tunnel to the Melbourne Metro line (which may also provide emergency access) or below the existing street network. Suspending services from the CityLink structure could also be considered.

Combined services tunnels exist across Australia and internationally. The technologies involved are mature and reliable and this is considered appropriate for the context of the Arden-Macaulay area.

Actions

This strategy will be implemented through the following actions.



Research

Investigate opportunities to develop integrated ecologically sustainable development solutions with the E-Gate development.



Advocacy

Consult with the utility companies to ascertain the future planned services infrastructure and how these could align with installing the combined service tunnel and distribution pipes to reduce costs and create synergies. In particular it is recommended that this includes CitiPower, City West Water and the APA Group.

The City of Melbourne takes on a stewardship role to drive the realisation of this concept.



Strategy 6

Construct efficient buildings

A significant proportion of a building's performance is determined in the early stage of the design process, with residential and commercial buildings being responsible for 23 per cent of Australia's total greenhouse gas emissions (Australian Sustainable Build Environment Council, 2010). There is an opportunity for the City of Melbourne to mandate the delivery of higher environmental performance in buildings in the Arden-Macaulay precinct.

This involves mandating building efficiency standards above the Building Code of Australia standards for new and existing buildings, and the potential adoption of energy generation technologies, such as photo voltaic cells and solar hot water units.

Efficient buildings consume fewer resources, minimise adverse impacts on the built and natural environment, save money, increase worker productivity and create healthier environments for people

to live and work in. By mandating that all new buildings meet minimum levels of performance the resources consumed by buildings will decrease.

There are barriers within the property industry that prevent efficient building measures being adopted, despite a strong business case for their implementation often existing. These barriers relate to the owner/tenant and developer/contractor/owner divisions, or 'split incentives', that result in the benefits of energy efficiency measures not accruing to the party that funded their costs.

The City of Melbourne has developed a policy for inclusion in the *Melbourne Planning Scheme* that will ensure all new buildings have higher environmental credentials. This will drive improvements in line with current best practice, in the energy, water and waste efficiency of new urban development.

Melbourne Planning Scheme Amendment C187 seeks to incorporate the new energy waste

and water efficiency policy into the *Melbourne Planning Scheme*. It will apply to buildings used for office, retail, education, research and accommodation purposes.

The new policy will ensure that future development across the city will:

- Achieve a high level of environmental design, construction and operation.
- Minimise the city's contribution to climate change impacts by reducing greenhouse gas emissions.
- Improve water efficiency of buildings and encourage the reuse of mains water.

Melbourne Planning Scheme Amendment C187 proposes specific standards for energy, water and waste efficiency depending on use and the size of the proposed building. The measures/rating tools are industry accepted and recognised.

On top of the efficiencies of individual buildings, *Melbourne Planning Scheme Amendment C187* also recognises additional efficiency contributions that could come from district based energy, water and waste systems within urban renewal areas defined in the new *Municipal Strategic Statement*. The policy encourages new buildings in urban renewal areas to be capable of connecting to planned or established alternative district water supply, energy supply, waste collection and waste treatment systems. The introduction into the *Melbourne Planning Scheme* of new built form controls that target overall environmental performance would provide a mechanism to influence sustainability outcomes within Arden-Macaulay.

Actions

This strategy will be implemented through the following actions.



Research

Investigate the potential for a distributed catchment, treatment and storage system for stormwater across Arden-Macaulay.



Advocacy

Liaise with City West Water to confirm the outcomes of their investigation into a sewage treatment plant.

Liaise with the water authority (City West Water) to ensure that a dual water supply reticulation network is built, owned and operated (by the water authority).

1 year

1 - 5 years

5 + years



Strategy 7

Implement water sensitive urban design to improve the quality of run-off in the Moonee Ponds Creek

The application of water sensitive urban design (WSUD) principles within the streetscape and landscape of open spaces provides the opportunity to harvest run-off for irrigation that would otherwise be lost to the stormwater drainage system. The implementation of WSUD measures would also improve the quality of collected stormwater through the filtration of pollutants.

As the precinct develops, it is proposed that WSUD is delivered by taking land from roads and redesigning active recreation areas. WSUD within the Arden-Macaulay precinct can be used to

replace between 2 and 3 per cent of the impervious surface area of the precinct with porous and permeable pavers.

When implementing WSUD features, there needs to be a balance between WSUD and the provision of active and useable community open space. Seasons are a critical factor that will require some consideration in the operation of WSUD. Periods of peak demand in summer and peak supply in winter are not synchronised. As a result, some proportion of irrigation is likely to be required during summer when rainfall is low and temperatures are high. This need can be met through the supply of recycled water generated within the CSHs.

This approach supports the delivery of the integrated water management requirements of Clause 56 of the *Victoria Planning Provisions* (VPPs). Clause 56

is the residential subdivisions component of the VPP and the basis for all local council planning schemes in Victoria.

The benefits of WSUD are that it:

- Reduces pollutant loadings in stormwater and downstream receiving waters.
- Helps mitigate against flash flooding by reducing flow rates.
- Provides vegetated public spaces with the interrelated benefit of shade, air quality, habitat and visual amenity.

For further information on designing WSUD landscapes, refer to City of Melbourne's WSUD guidelines.

Actions

This strategy will be implemented through the following actions.



Research

Develop a WSUD concept for the Arden-Macaulay area that considers the yearly water balance requirements of the system, the location and size of the distributed stormwater collection points and avoids reducing public open space.



Strategy 8

Reduce impact of flooding

The existing Land Subject to Inundation Overlay areas (see chapter 1, Introduction) indicate the compromised development capacity of these areas. Opportunities to mitigate the impact of storm events on these sites should be considered through the extension of the levy banks south of Macaulay Road or through isolated filling where possible, for example the Arden Central site. Any mitigation should ensure that conveyance of stormwater to the creek is maintained or improved.

Flood retardation measures upstream or within the street drainage network would also assist in reduce flooding impacts.

Actions

This strategy will be implemented through the following actions.



Research

Undertake detailed investigations of potential flooding and implications of climate change to inform the development of mitigation strategies.

1 year

1 - 5 years

5 + years



Strategy 9

Implement waste management improvements

Future Melbourne sets waste management goals under the broader goal of becoming more resource efficient. The goals are to reduce household and commercial waste in the city and to make recycling and waste collection more economic. In addition to these goals it is important to consider the amenity impacts of waste management such as noise, odour and traffic congestion. Future waste management initiatives must therefore consider the environmental, economic and social impacts or benefits.

Opportunities for improved waste management include:

- Convenient and easy-to-use recycling systems within residential and commercial developments.
- Alternative collection systems on a city, precinct or sub-precinct scale.
- Advanced resource recovery technologies to extract the maximum value from material that would previously have been sent to landfill.

Strategy 10

Incorporate opportunities for sustainable infrastructure into any street upgrades.

Refer Strategy 8 Chapter 5 Public Realm.

Actions

This strategy will be implemented through the following actions.



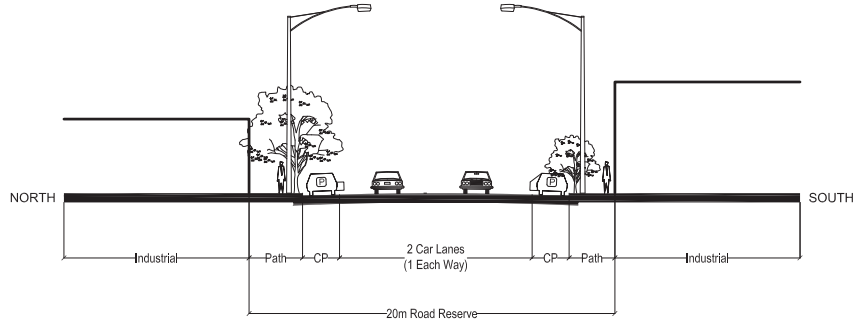
Research

Consider the waste management opportunities and issues for the precinct as part of the City of Melbourne's broader integrated waste management program.

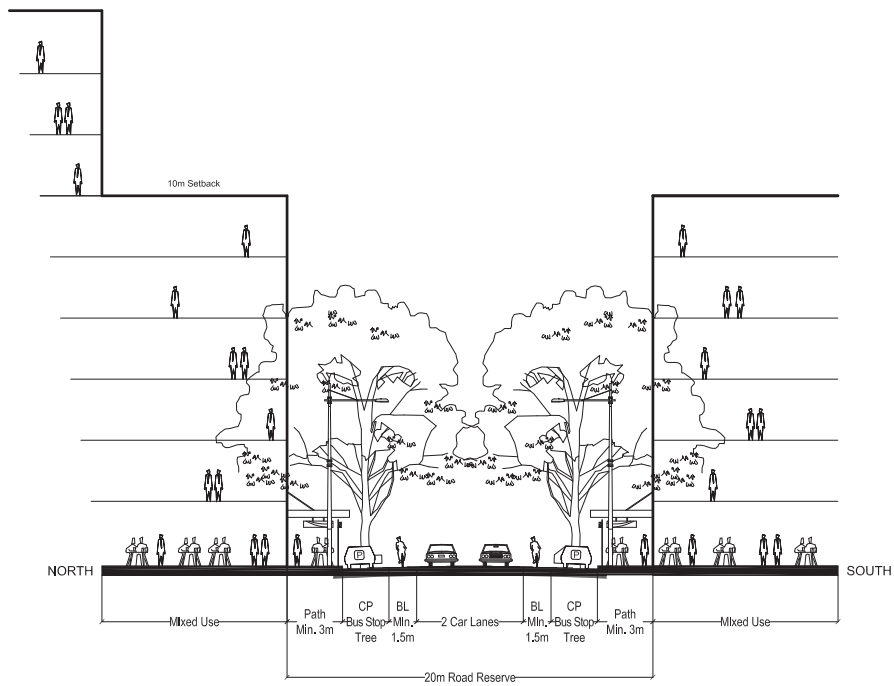
Ensure that all new developments in the precinct follow the waste management plan guidelines that are provided by the City of Melbourne.



Appendix A



EXISTING

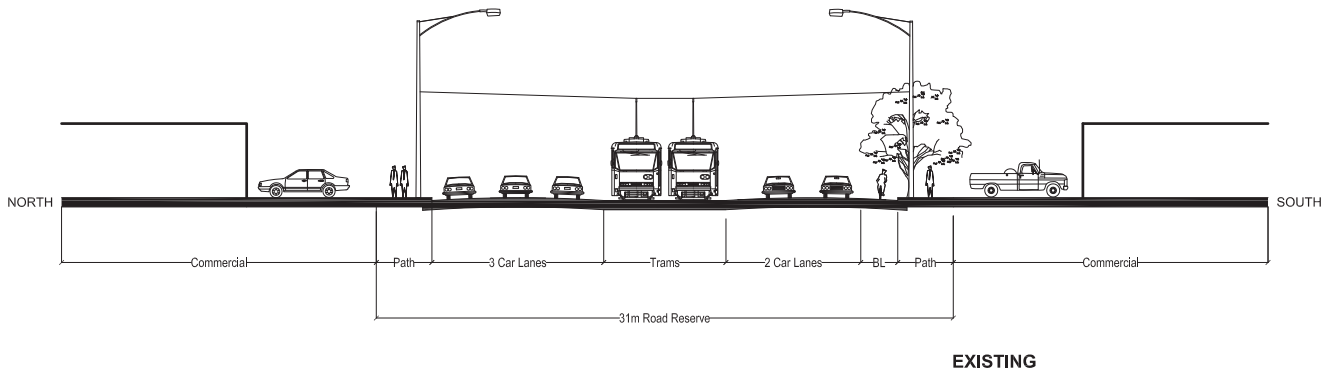


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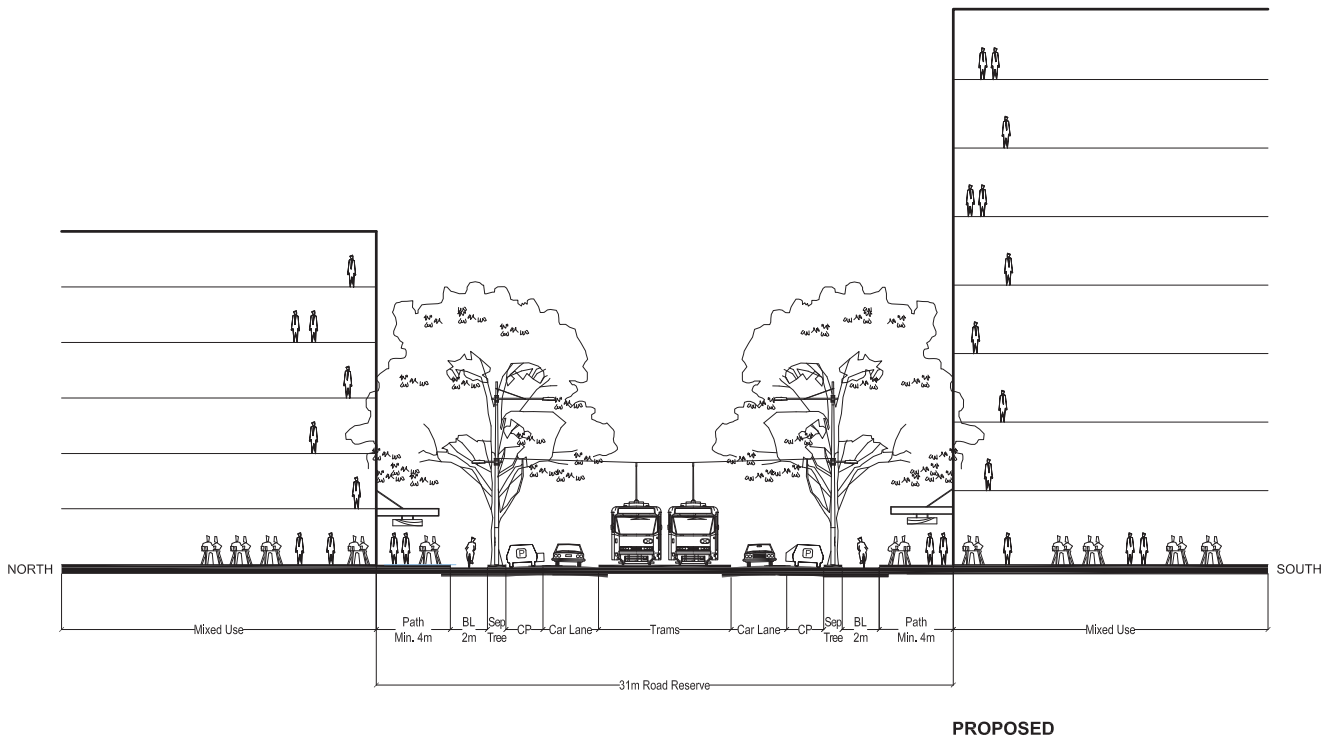
**LOCAL CENTRE: NO TRAM ROUTE
STREET TYPE Ia**

(E.g. Macaulay Road)

(Note: Heights and setbacks may vary from those shown. Refer Chapter 3, Built Form)



EXISTING

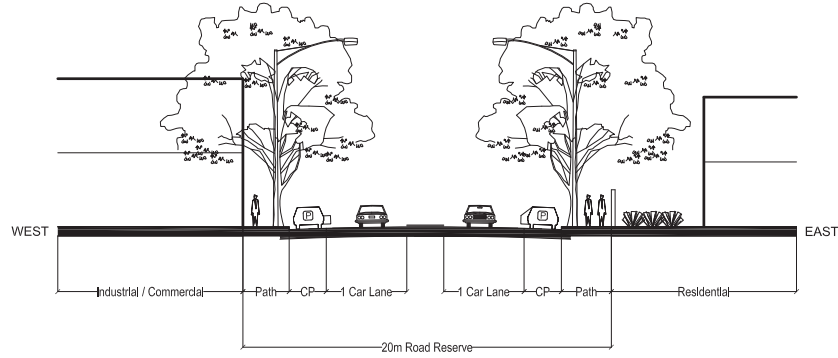


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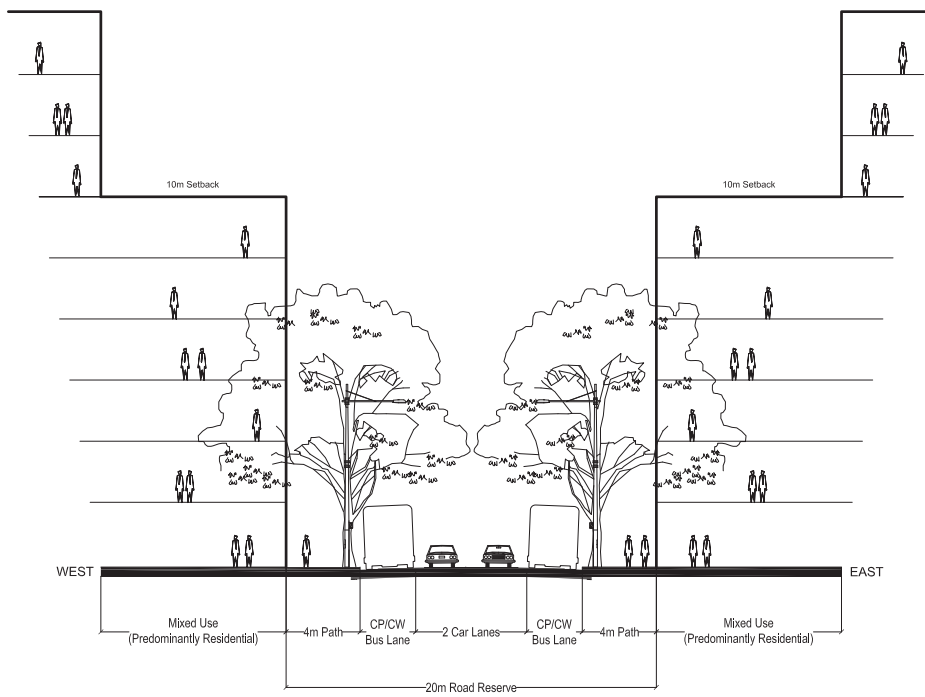
LOCAL CENTRE: TRAM ROUTE STREET TYPE Ib

(Racecourse Road Only)

(Note: Heights and setbacks may vary from those shown. Refer Chapter 3, Built Form)



EXISTING

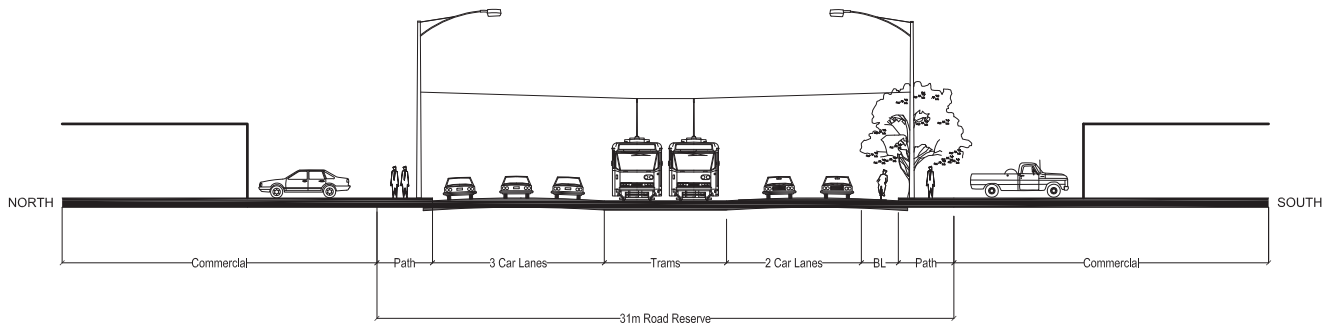


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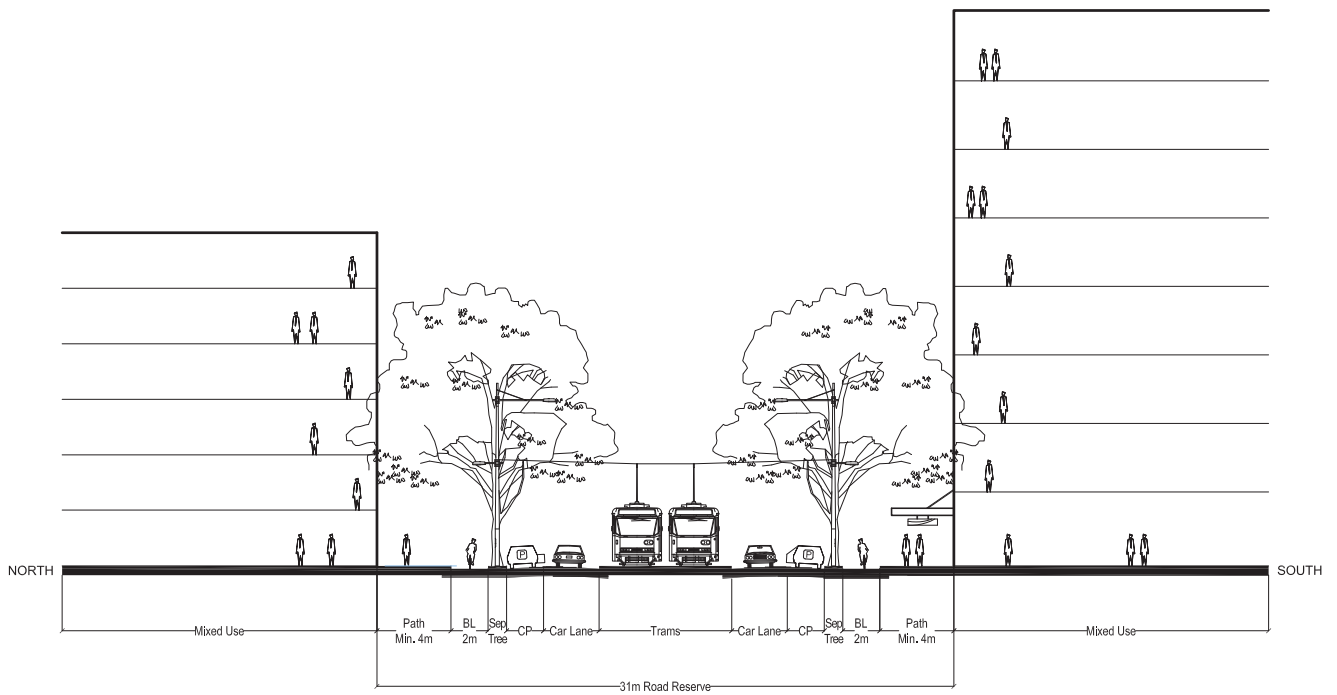
**CONNECTOR: PRIORITY BUS ROUTE
STREET TYPE IIa**

(e.g. Boundary Road)

(Note: Heights and setbacks may vary from those shown. Refer Chapter 3, Built Form)



EXISTING

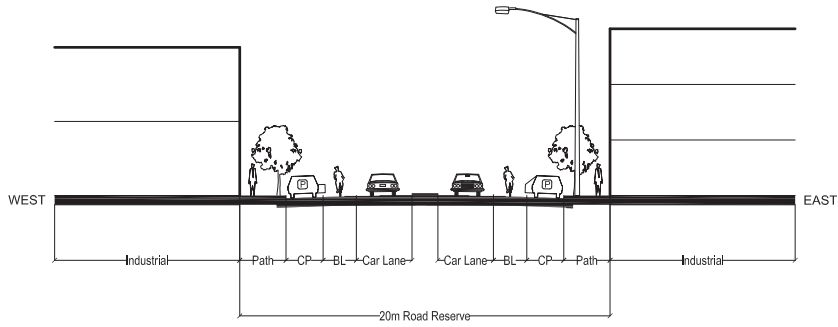


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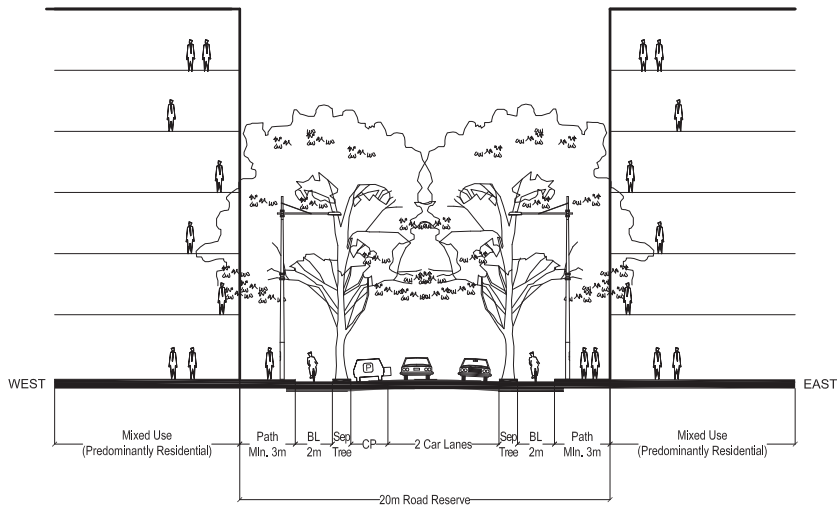
**CONNECTOR: TRAM ROUTE
STREET TYPE IIb**

(e.g. Racecourse Road)

(Note: Heights and setbacks may vary from those shown. Refer Chapter 3, Built Form)



EXISTING

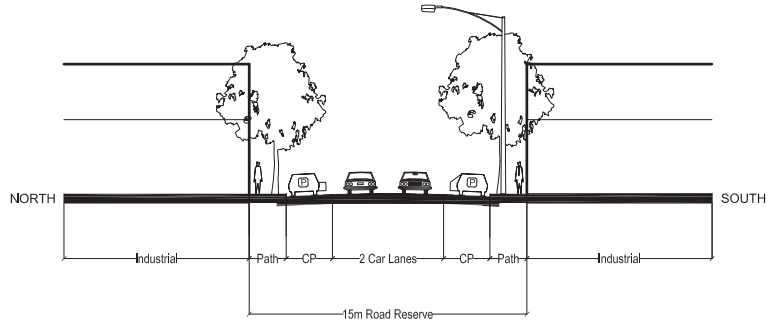


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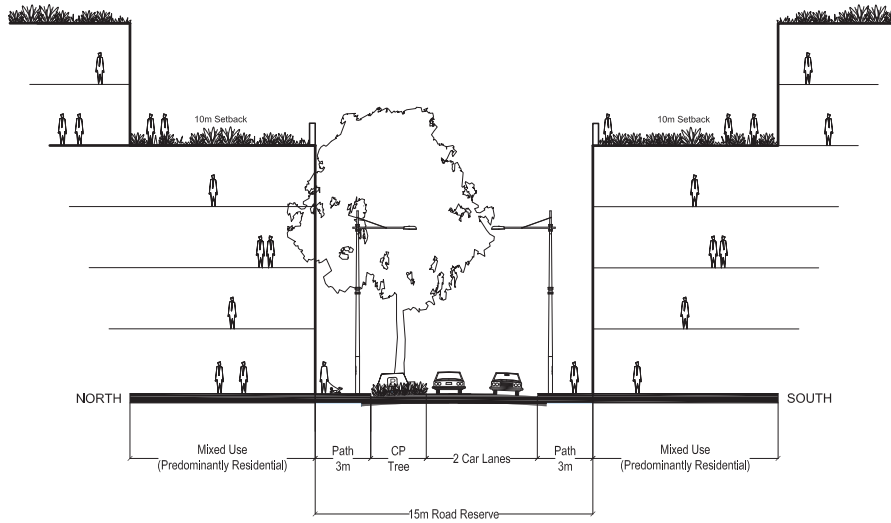
**CONNECTOR: NO PUBLIC TRANSPORT
STREET TYPE IIc**

(e.g. Stubbs Street)

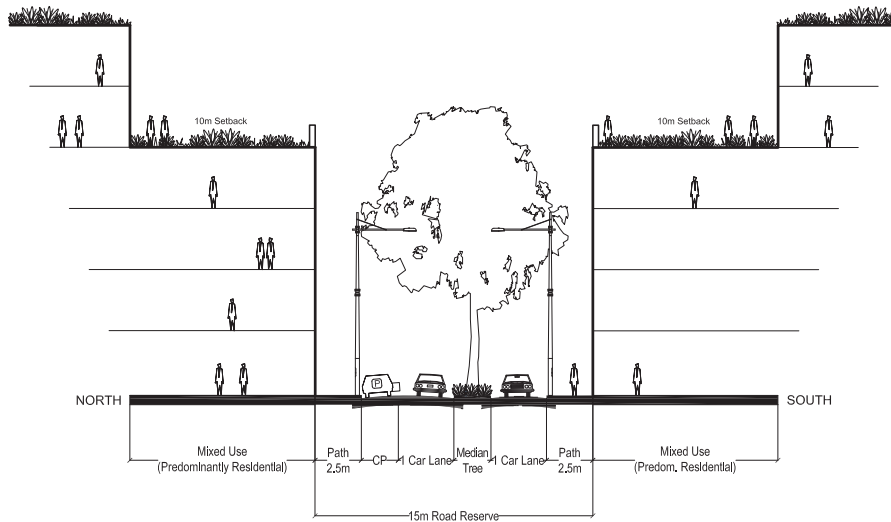
(Note: Heights and setbacks may vary from those shown. Refer Chapter 3, Built Form)



EXISTING



PROPOSED
Option 3

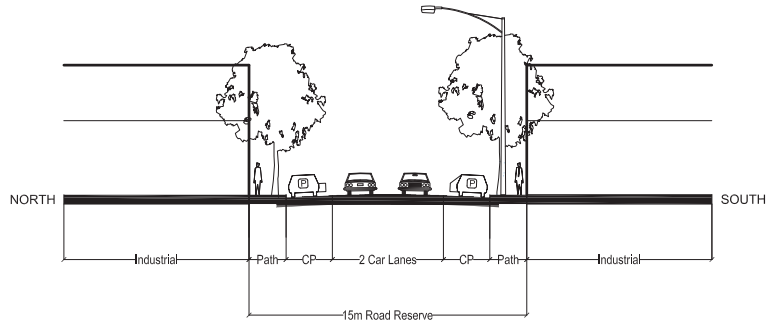


PROPOSED
Option 4

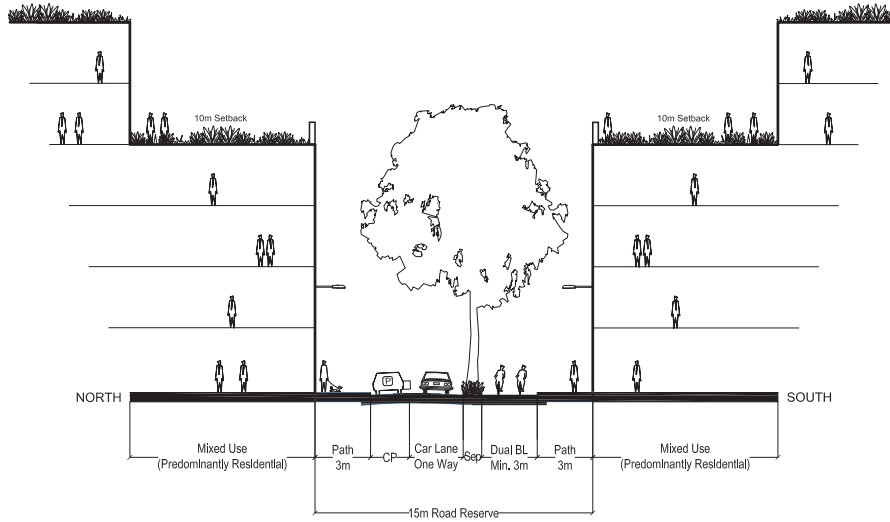
**GREENWAY: 15m ROAD RESERVE
STREET TYPE IIIa
OPTIONS 3-4**

(e.g. Bruce Street)

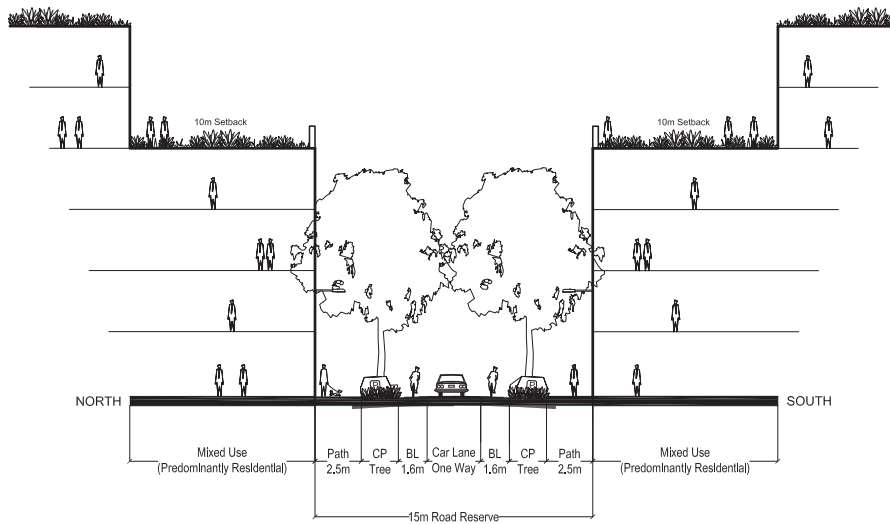
(Note: Heights and setbacks may vary from those shown. Refer Chapter 3, Bullt Form)



EXISTING



PROPOSED
Option 1

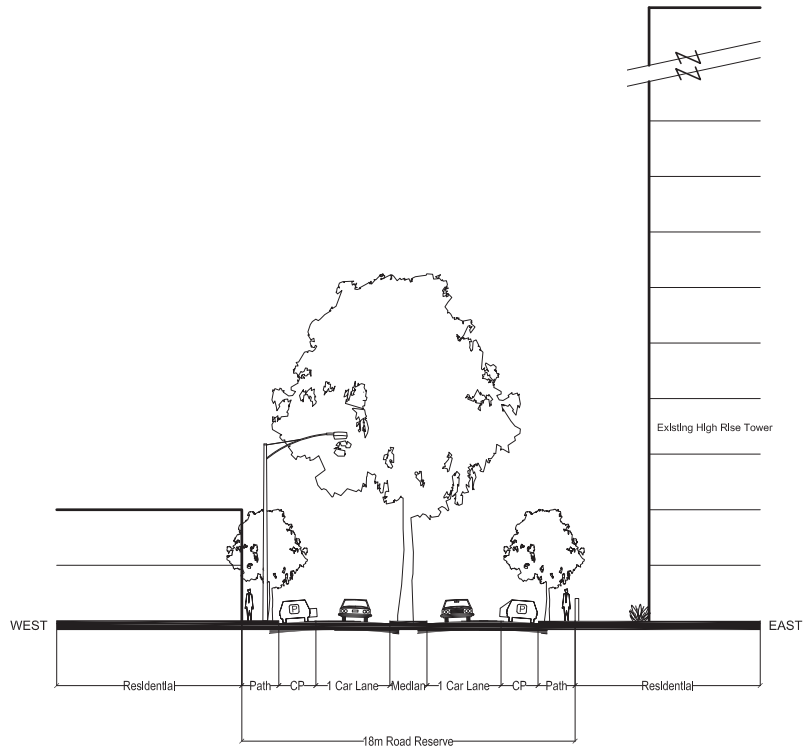


PROPOSED
Option 2

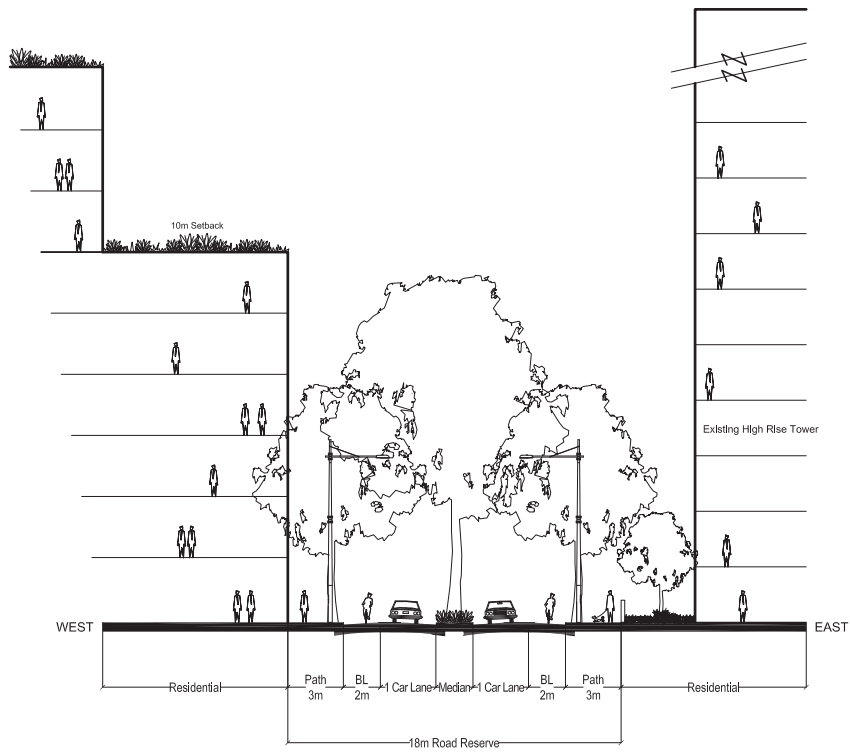
**GREENWAY: 15m ROAD RESERVE
STREET TYPE IIIa
OPTIONS 1-2**

(e.g. Bruce Street)

(Note: Heights and setbacks may vary from those shown. Refer Chapter 3, Built Form)



EXISTING

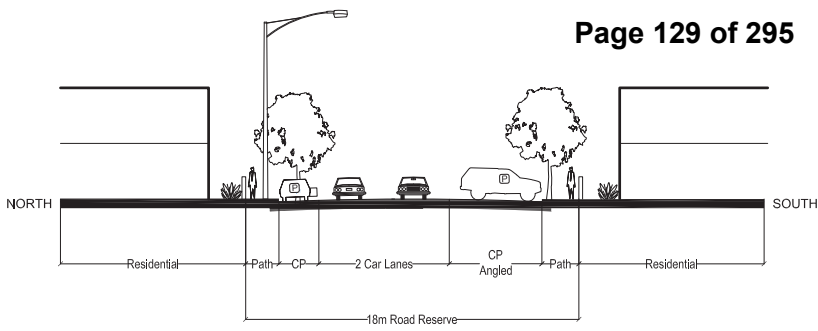


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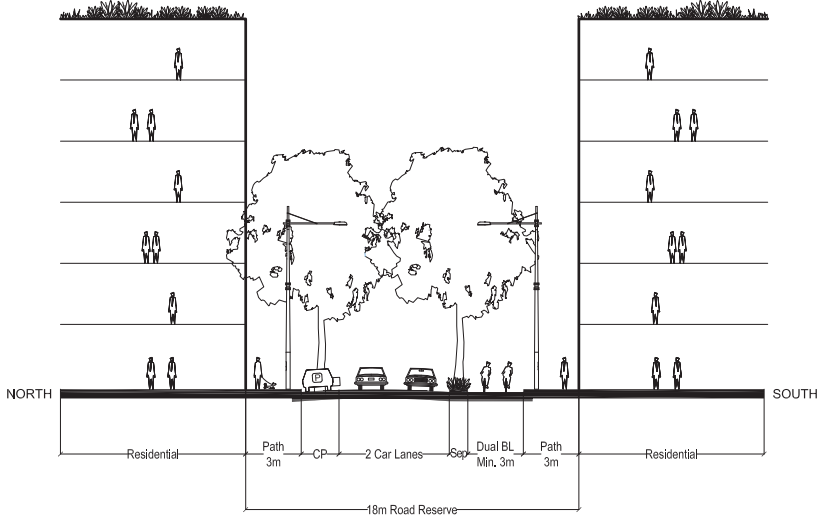
GREENWAY: 18m ROAD RESERVE STREET TYPE IIIb

(e.g. Buncle Street south)

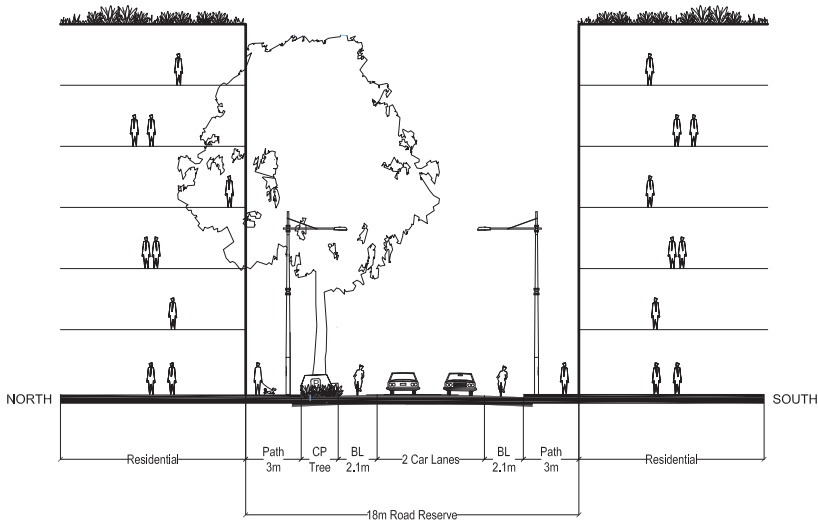
(Note: Heights and setbacks may vary from those shown. Refer Chapter 3, Built Form)



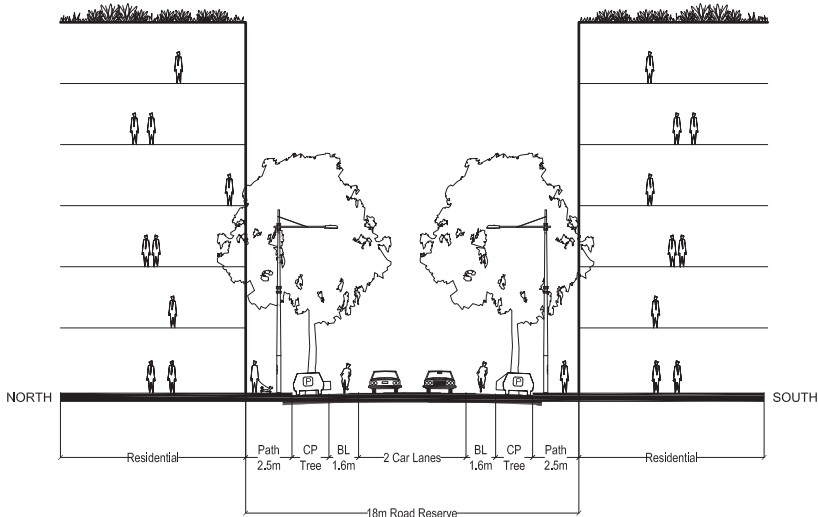
EXISTING



PROPOSED
Option 1



PROPOSED
Option 2

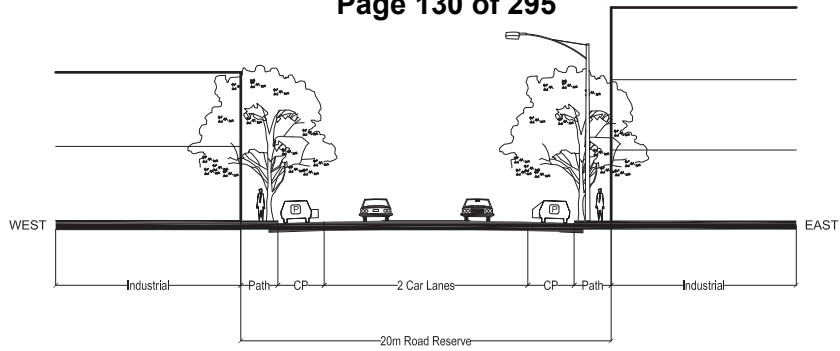


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Option 3

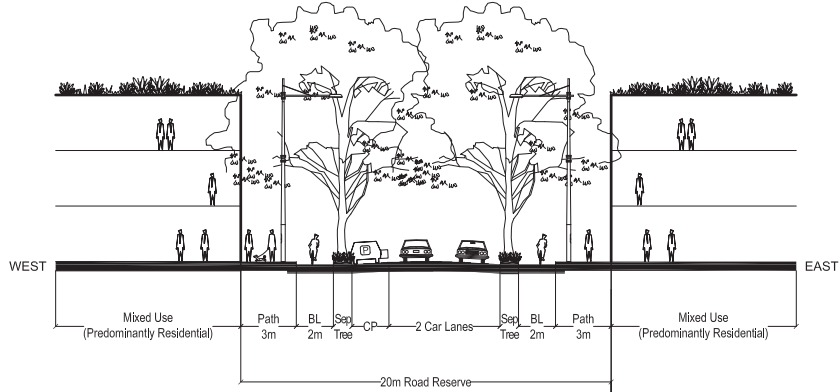
GREENWAY: 18m ROAD RESERVE
STREET TYPE IIIc
OPTIONS 1-3

(e.g. Pampas Street)

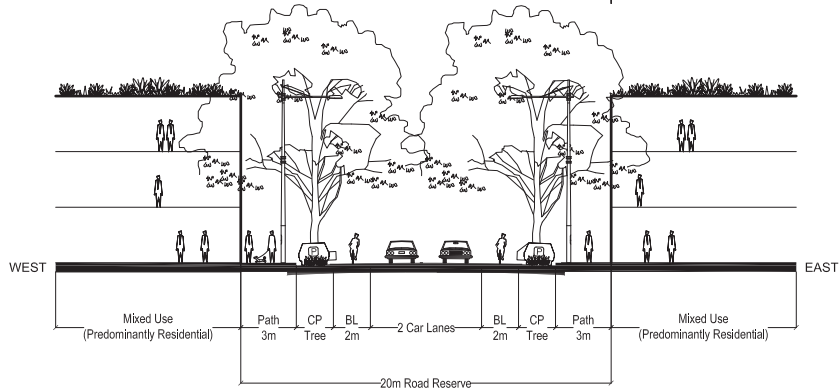
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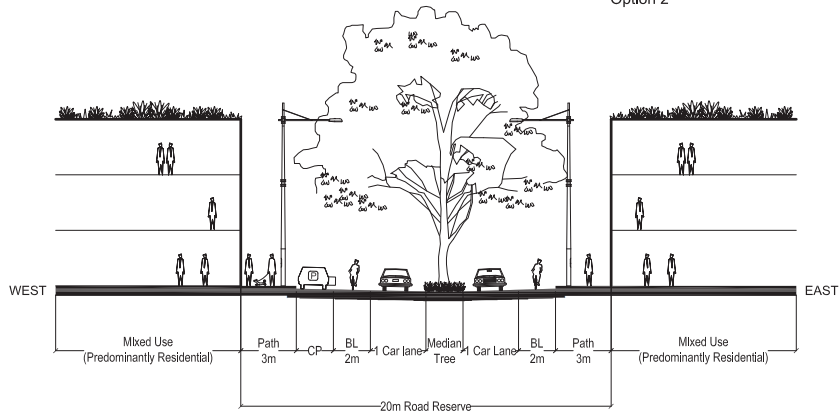
EXISTING



PROPOSED
Option 1



PROPOSED
Option 2

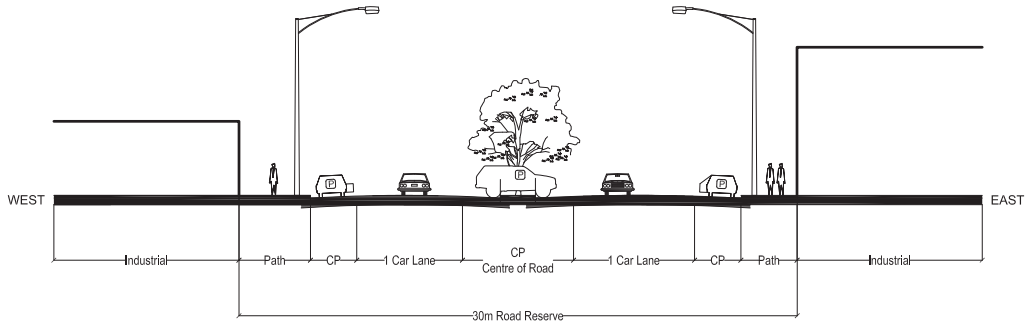


PROPOSED
Option 3

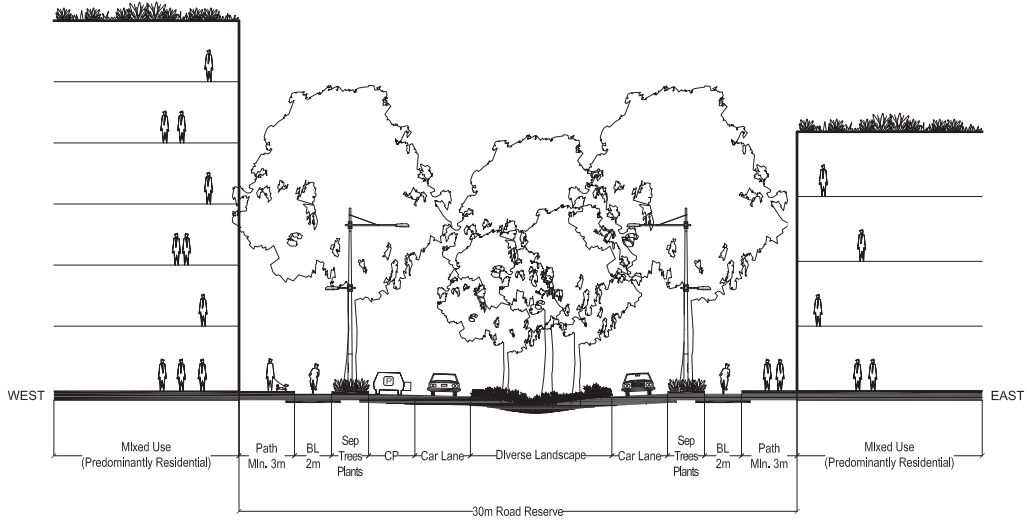
**GREENWAY: 20m ROAD RESERVE
STREET TYPE III_d
OPTIONS 1-3**

(e.g. Albermarle Street)

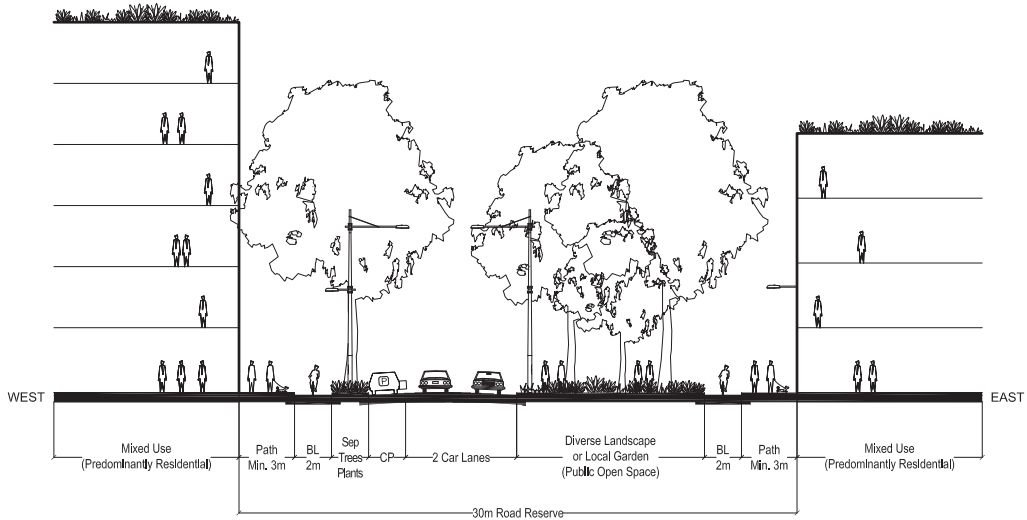
(Note: Heights and setbacks may vary from those shown. Refer Chapter 3, Built Form)



EXISTING



PROPOSED
Option 1

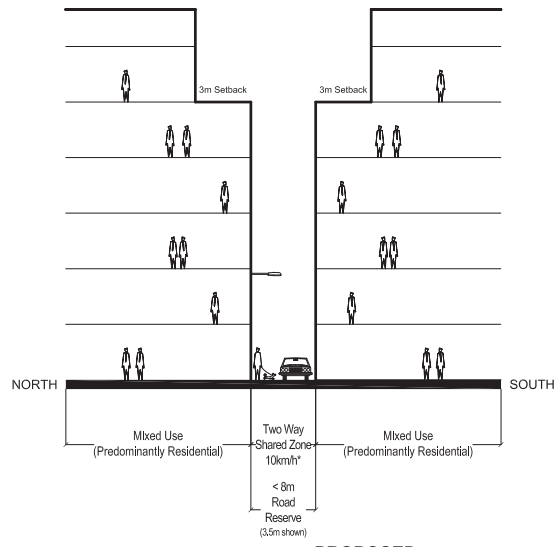
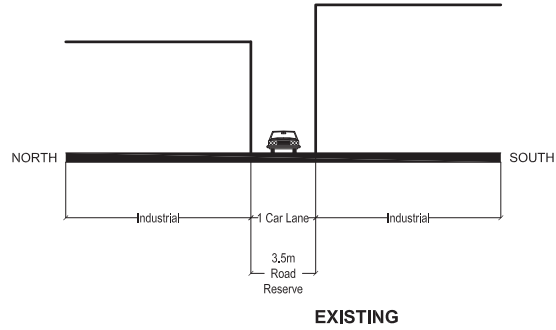


PROPOSED
Option 2

**GREENWAY: 30m ROAD RESERVE
STREET TYPE IIIe
OPTIONS 1-2**

(e.g. Munster Terrace)

(Note: Heights and setbacks may vary from those shown. Refer Chapter 3, Built Form)

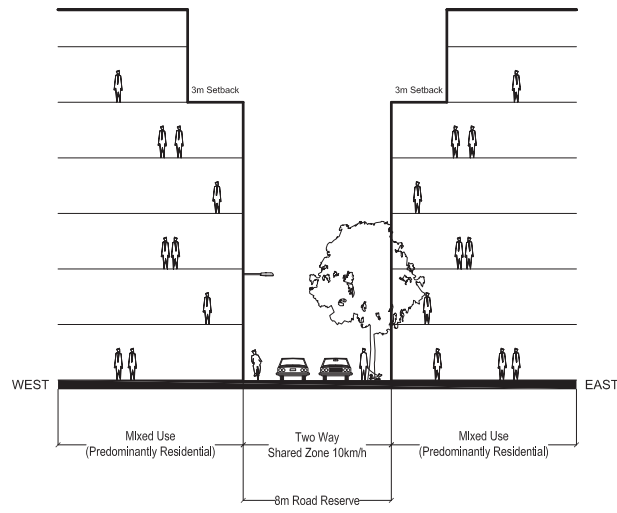


* Laneways less than 3m may not allow vehicle access

LANEWAYS: LESS THAN 8m WIDE STREET TYPE IVa

(E.g. between Arden and Bruce Streets)

(Note: Heights and setbacks may vary from those shown. Refer Chapter 3, Built Form)

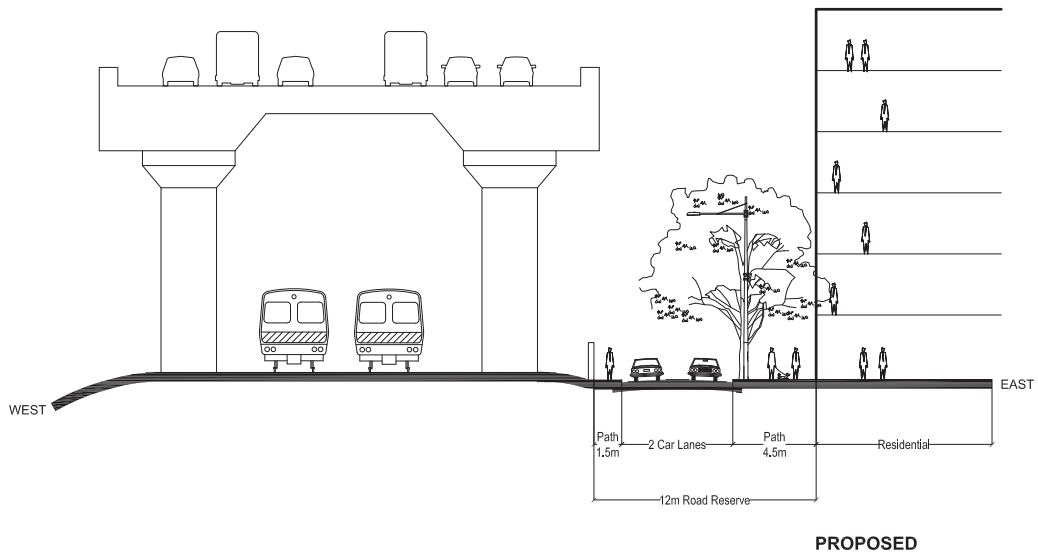


PROPOSED

LANEWAYS: 8m WIDE STREET TYPE IVb

(Proposed)

(Note: Heights and setbacks may vary from those shown. Refer Chapter 3, Built Form)



Laneway: Specific STREET TYPE IVc

(Proposed)

(Note: Heights and setbacks may vary from those shown. Refer Chapter 3, Built Form)

