

Canberra Light Rail Stage 2B

Urban Infill Capability Assessment

Final Report prepared for ACT Government
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Images: Google Earth

Project Director



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* This document is for discussion purposes only unless signed and dated by the persons identified. This document has been reviewed by the Project Director.

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Abbreviations and Terms

ABS	Australian Bureau of Statistics
CLR	Canberra Light Rail
CSTM	Canberra Strategic Transport Model
DA	Development Application
EPSDD	Environment, Planning & Sustainable Development Directorate
ERP	Estimated Resident Population
FSR	Floor Space Ratio
NCA	National Capital Authority
NCP	National Capital Plan
SA2	ABS Statical Geography Level 2
SA3	ABS Statical Geography Level 3

Theoretical Capacity is development that can ‘theoretically’ be developed under the planning framework.

Market Capacity is development that is likely to be developed given the viability and feasibility of development.

Unconstrained Growth is growth (in dwellings or employment) that could occur in an unconstrained environment, i.e. not constrained by capacity in the planning framework. Unconstrained development is provided for context to illustrate how the market could conceivably respond *but for* constraints on capacity in the planning framework.

Constrained Growth is growth (in dwellings or employment) that occurs subject to constraints in the planning framework

Executive Summary

The ACT Government is progressively developing the Canberra Light Rail (CLR) network with an aim to provide more convenient, reliable and high-quality public transport services that better connect Canberrans, while supporting opportunities for urban renewal across the Territory.

Whilst providing for transport and wider economic benefits, investment in light rail can also have city shaping effects if the population (residential and workforce) in areas adjacent to the corridor increases. This makes the city more compact and connected than it would have been otherwise, and can change the way in which residents experience and move around the city.

The purpose of this urban infill capability assessment is to understand the potential for residential and employment intensification in the corridor adjacent to stage 2B of the CLR project, provide guidance on the appropriate built urban forms, dwelling diversity and density for future urban development for land adjacent to the stage 2B corridor, predominately at a precinct level. The purpose was also to provide dwelling and employment forecasts under various scenarios to 2046, to inform the ACT Government's future planning.

The Study Area for the analysis is shown in Figure 1, and contains five precincts:

1. West Deakin
2. Curtin Horse paddocks (ACT land component only, noting that the remaining area of the horse paddocks is proposed to become a diplomatic estate and is not part of this Project)
3. Phillip/ Woden Town Centre
4. Mawson
5. Remainder of the corridor.

The methodology to undertake the assessment is shown in Figure 2. It involved the development of a detailed GIS-based model to quantify planning capacity and the potential for growth under three scenarios, and was developed in conjunction with government stakeholder support and feedback. The six steps of the methodology are:

1. Data gathering and review to understand current statutory framework, available data sources and data gaps.
2. Using the data gathered, undertake a constraints and opportunities analysis.
3. Refine underlying planning assumptions such dwelling size and workspace ratios.
4. Establish three scenarios, being a base, medium and high land use scenarios.
5. Model the theoretical planning capacity of each scenario.
6. Estimate the market take-up of the planning capacities over time.

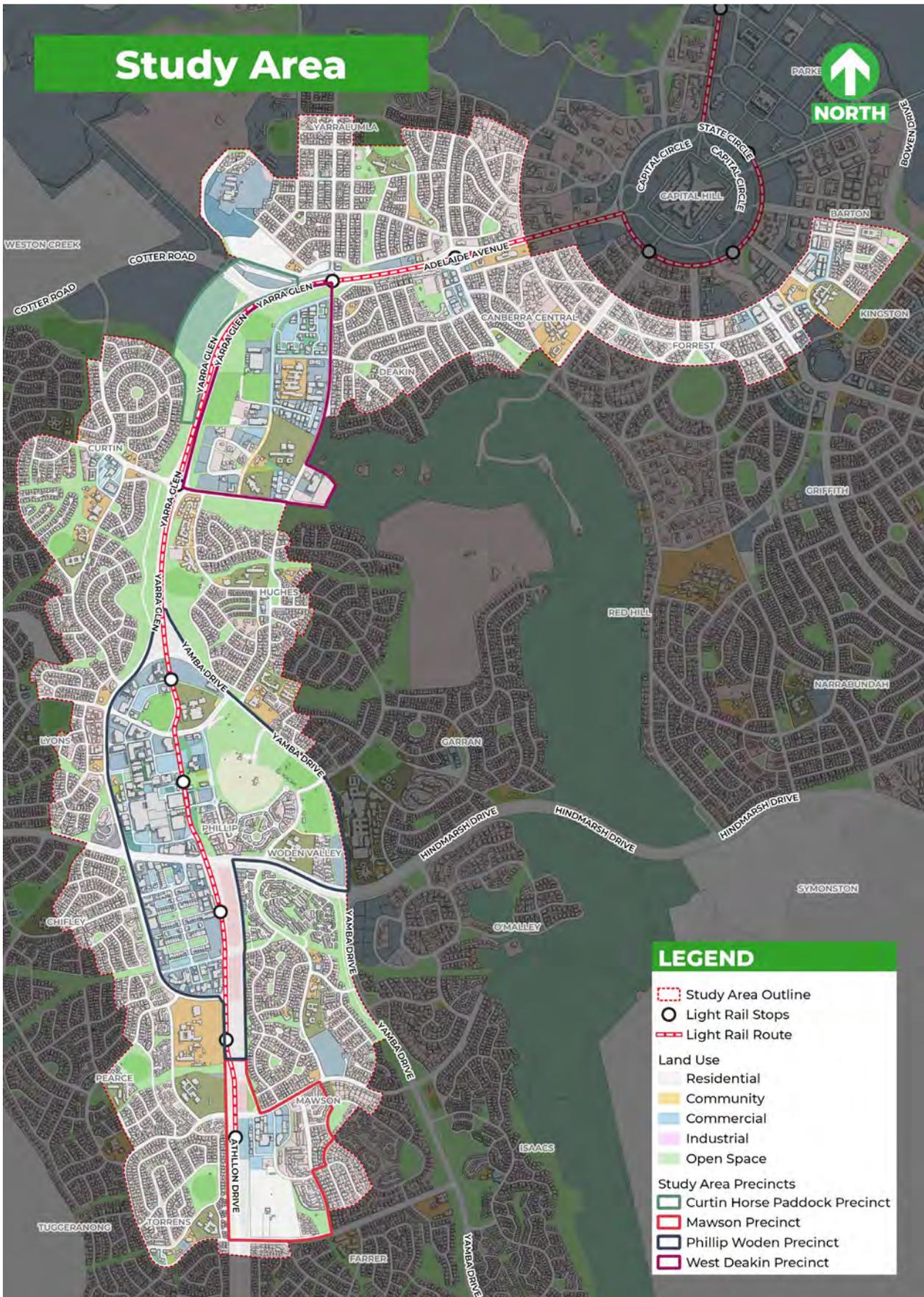


Figure 1: Urban Infill Capability Assessment – Study Area
 Source: Mecone

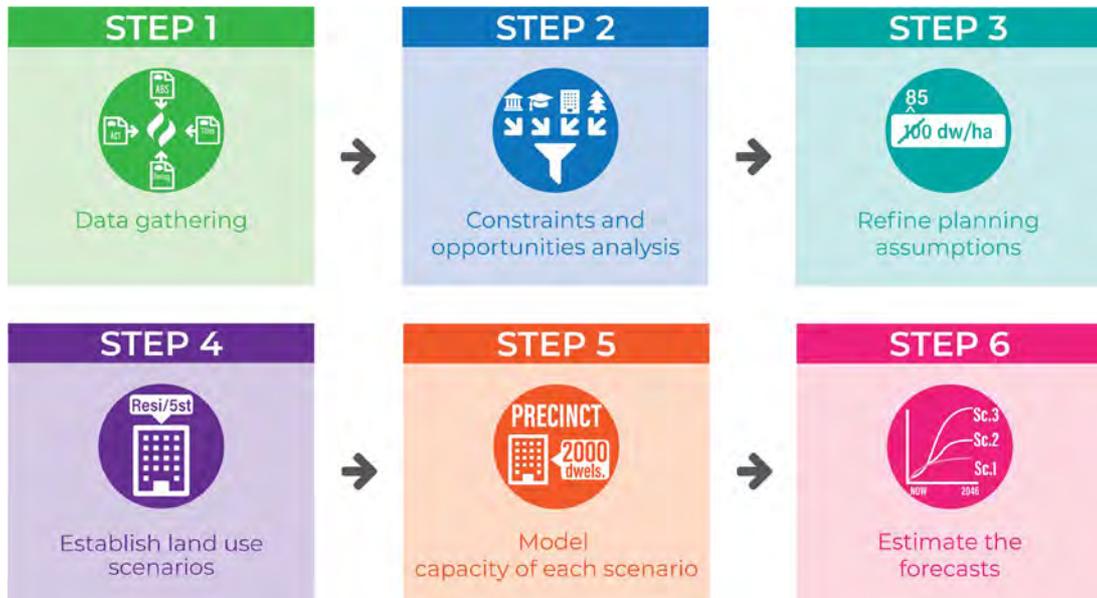


Figure 2: General modelling methodology

Source: Mecone 2021

Findings

The analysis identified that the existing planning framework, assessed under a 'base case' scenario, has significant capacity for growth. There is a total around 13,100 dwellings and 31,300 jobs on the ground today (2021), though capacity modelling indicates the planning controls could already support an increase to 23,800 dwellings and 78,900 jobs (assuming a rezoning at the Curtin Horse Paddocks for low density residential purposes). The Phillip-Woden Precinct has the potential to provide the most significant quantum of that growth, with capacity in the existing master plan / planning controls for a total of 9,200 dwellings and 52,200 jobs. This is 38% and 66% of the entire Study Area's residential and employment capacity respectively.

Accordingly, whilst increasing densities around transit nodes such as the future CLR Stage 2b stops is a sound planning principle in general, the need for catalytic changes to the planning controls in the Study Area is not considered critical when purely considering the capacity for growth that already exists in the controls. Nevertheless, theoretical planning capacity is only one consideration. Commercial viability must also be considered, as it is not always feasible to develop a site to its permitted densities. Accordingly, the analysis has suggested relatively minor increases to the maximum height limits on some key sites within each precinct under two uplift scenarios, which would improve development viability and lead to a more significant market response.

The market take-up assessment indicated the opportunity for CLR Stage 2b to contribute towards the momentum of development in many of the precincts. In particular, Phillip-Woden is seen as the key opportunity for sustainable and accessible growth – the precinct already has development activity and light rail would contribute towards the viability of higher densities and increase desirability for business floorspace in the precinct.

The outcomes of the market take-up analysis are shown in Figure 3 and Figure 4. It shows that in an unconstrained base case, the study area could grow from around 13,100 dwellings today to just short of 20,000 by 2046, and from around 31,300 jobs today to just below 60,000 jobs by 2046. In the medium and high scenarios, where the combined effect of additional amenity provided by new light rail connections and more viable land use planning controls has been modelled, these forecasts increase to around 25,000 dwellings and just short of 70,000 jobs in the same time period.

Alongside increased residential and employment development to 2046, the analysis has also shown the potential for the project to contribute towards a greater proportion of medium- to higher-density housing in the precincts, providing more housing choice in the region overall. The study also identifies the need for urban realm improvements, such as pedestrian bridges, or pedestrian priority or signalised road crossings, to help improve pedestrian amenity and encourage mode shift and patronage.

Finally, the need for additional enabling infrastructure to achieve the forecasts and support changes to land use planning controls is acknowledged. It was not within the scope of this assessment to undertake a baseline assessment of the capacity of 'hard' (transport, water, electricity etc.) or 'soft' (schools, open space, health etc.) infrastructure in the study area. Prioritisation of areas for growth should consider the potential need for infrastructure supply to ensure that growth can be orderly and equitable.

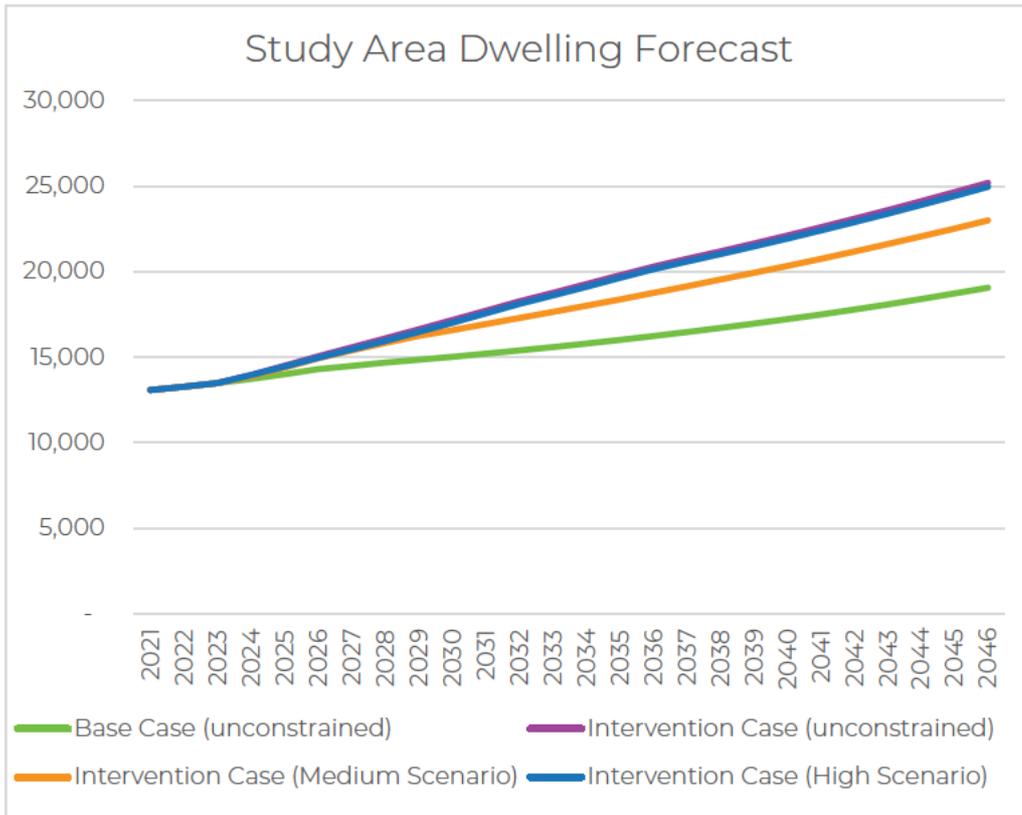


Figure 3: Study Area Dwelling Forecast

Source: Atlas Urban Economics

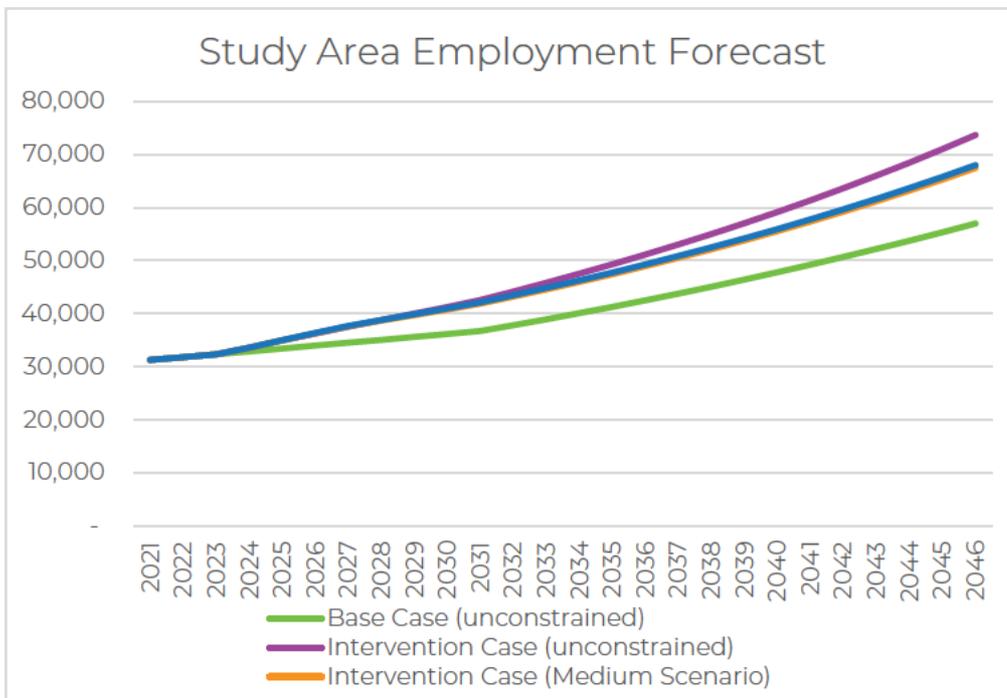


Figure 4: Study Area Employment Forecast

Source: Atlas Urban Economics

1 Introduction

Mecone, supported by Atlas Urban Economics (Atlas), have been engaged by the Australian Capital Territory (ACT) Government to undertake an urban infill capability assessment for land adjacent to part of the Canberra Light Rail (CLR) Stage 2B corridor (the Study Area). This report presents the outcomes of the team's assessment, which included:

- an existing situation analysis, providing an overview of the Study Area's existing social, economic and environmental conditions, its statutory and strategic planning context, and observations regarding land use opportunities and constraints
- an urban infill capability assessment, including the development of three scenarios which demonstrate the potential for residential uplift and employment growth in the Study Area to 2046
- a market forecasting assessment, estimating the rate at which the modelled planning capacity would be taken up by the market.

The assessment aims to identify opportunities for orderly urban intensification and provide guidance on the appropriate built urban forms, dwelling diversity and density for future urban development for land adjacent to the CLR corridor.

1.1 Canberra Light Rail

Canberra's transport network currently includes roads, the CLR Stage 1, and bus and active travel networks. As Canberra grows and jobs centralise, commuting areas are increasing and there is consequently an increasing demand from the community to live in a '30 minute' city. Therefore, the diversification of the transport network is acting as a catalyst for change within Canberra. Extending the CLR network will improve transport options and employment opportunities, whilst also altering settlement patterns and employment opportunities within the ACT.

The ACT Government is progressively developing the CLR network to improve transport accessibility providing more convenient, reliable and high-quality public transport. With the completion of the CLR's initial stage between Gungahlin and the city in 2019, the ACT Government has committed to constructing Stage 2, to extend from the city to Woden, and potentially Mawson, creating a north-south public transport spine. It is intended for this spine to later be complemented by an east-west corridor to service the large demand for travel across the city between Belconnen and Majura Park and the Canberra Airport.

According to the *City to Gungahlin Light Rail Benefits Realisation — Snapshot* (Major Projects Canberra 2020), population growth in suburbs along the Stage 1 corridor has exceeded what was expected in the business case, by nearly 2,500 people. Similarly, since operations commenced in April 2019 the average light rail patronage exceeded the Light Rail Business Case patronage projections forecast (excluding school holiday periods and the impact of Covid-19).

1.1.1 Stage 2

to Commonwealth Park, expected to include three new stops with early works underway. Stage 2B will continue the line all the way to Woden, and potentially Mawson as the Parliamentary Governing Agreement for the 10th Legislative Assembly for the ACT contained an agreement to 'assess the viability and benefits of extending the CLR to Mawson as part of the Stage 2B business case.' As construction begins on Stage 2a, preparation for the Commonwealth Environmental Impact Statement for Stage 2b will commence.

The CLR Stage 2 corridor traverses a number of areas with distinct characteristics, land uses and strategic and statutory planning responsibilities. Planning and development interests and responsibilities are shared between the Commonwealth Government through National Capital Authority (NCA) who administer The National Capital Plan (NCP), and the ACT Government who administer The Territory Plan. Areas of National Significance are Designated Land under the NCP. The precincts, and overarching planning framework, are discussed further in this report.

Continued investment in the CLR can have city shaping effects by increasing the population in areas adjacent to the corridor, making the city more compact and connected than it otherwise would have been, and improving housing diversity and the equity of access for residents to jobs, education, and services. As with Northbourne Avenue, CLR Stage 2 can be a catalyst for the transformation and revitalisation of the surrounding area, based on sound planning considerations building upon the principles of transit-oriented development.

CLR Stage 2 may have the greatest catalytic influence on centres such as Mawson and Phillip-Woden, encouraging private investment and lifting the profile and appeal for business and new residents to live and work in these centres. Additionally, precincts such as the Curtin Horse Paddocks may be able to support higher densities with the improved public transport accessibility, though development and environmental constraints may limit the potential of the site.

1.2 Study Area

The identified Study Area for this project comprises the suburbs of Forrest, Deakin, Yarralumla, Curtin, Hughes, Lyons, Phillip, Chifley, Pearce, Mawson, Torrens and Farrer. The Study Area is shown in Figure 5 and contains five precincts with the greatest potential for urban intensification and employment growth:

1. West Deakin
2. Curtin Horse Paddocks Precinct
3. Phillip/Woden Town Centre
4. Mawson
5. The remainder of the corridor.

The study area boundary was identified in the scope of requirements and is defined by Territory Land within approximately 800 metres of the Light Rail Stage 2b corridor.

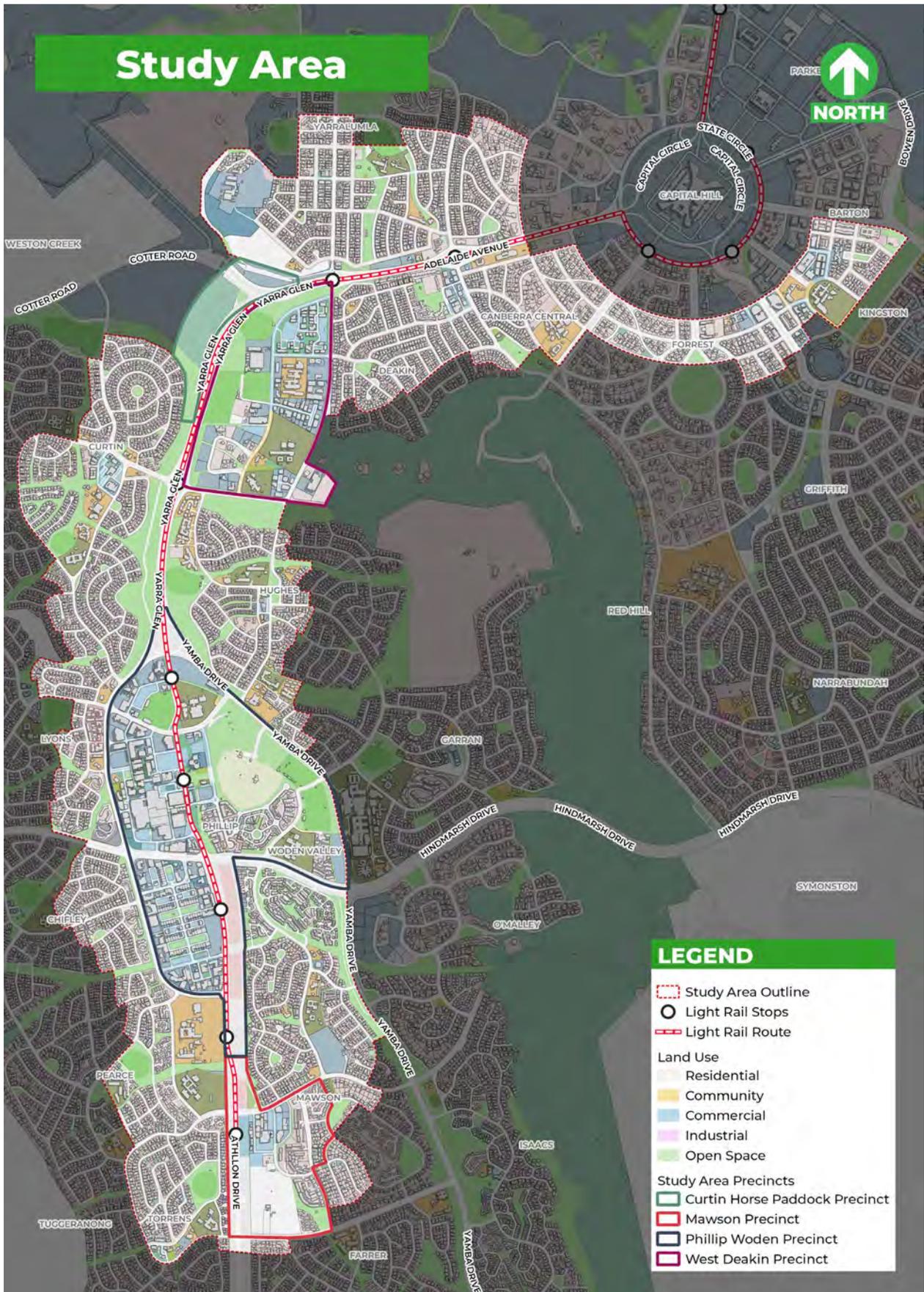


Figure 5: Urban Infill Capability Assessment – Study Area

Source: Mecone

2 Planning context

This section provides an overview of relevant statutory and strategic planning documentation which guide the urban infill capability assessment.

2.1 Statutory planning context

Two organisations are responsible for planning in the ACT: the Environment, Planning and Sustainable Development Directorate (EPSDD), an ACT Government authority, and the National Capital Authority (NCA), a Commonwealth Government agency.

The key piece of planning legislation in the ACT is the Planning and Development Act 2007 (the Act), which is administered by the EPSDD. The core function is planning for Canberra's growth in partnership with the community. The EPSDD has statutory roles performed under various pieces of legislation, a critical one of which is development assessment under the Act.

The key statutory planning document used by the EPSDD is the Territory Plan 2008, which provides the policy framework for the administration of planning in the ACT. The Territory Plan manages land use change and development in a manner consistent with strategic directions set by the ACT Government, Legislative Assembly and the community. Under the Territory Plan, Canberra is divided into divisions, suburbs, sections and blocks, with blocks usually leased to one entity. The Territory Plan specifies what can and cannot happen on each block of land. A precinct code sits within the Territory Plan and provides place specific planning controls.

The legislation administered by the NCA is the Australian Capital Territory Planning and Land Management Act 1988. The NCA has administrative responsibility for control of development on designated land which is identified in the NCP as being 'areas of land that have the special characteristics of the National Capital'. These areas are:

- Lake Burley Griffin and its foreshores
- the National Triangle and adjacent sites
- the balance of the Central National Area adjoining the Lake and the Triangle, and extending from the foot of Black Mountain to the airport sites set aside solely for Diplomatic use
- the Inner Hills which form the setting of the Central National Area
- the Main Avenues and Approach Routes between the ACT border and the Central National Area.

Designated Areas are divided into a series of precincts. Precinct Codes and General Codes identify planning and design controls for different precincts and development types within Designated Areas. The precincts are shown in Figure 6.

Detailed planning controls for the CLR Stage 2B corridor are outlined in **Chapter 4** of this report.

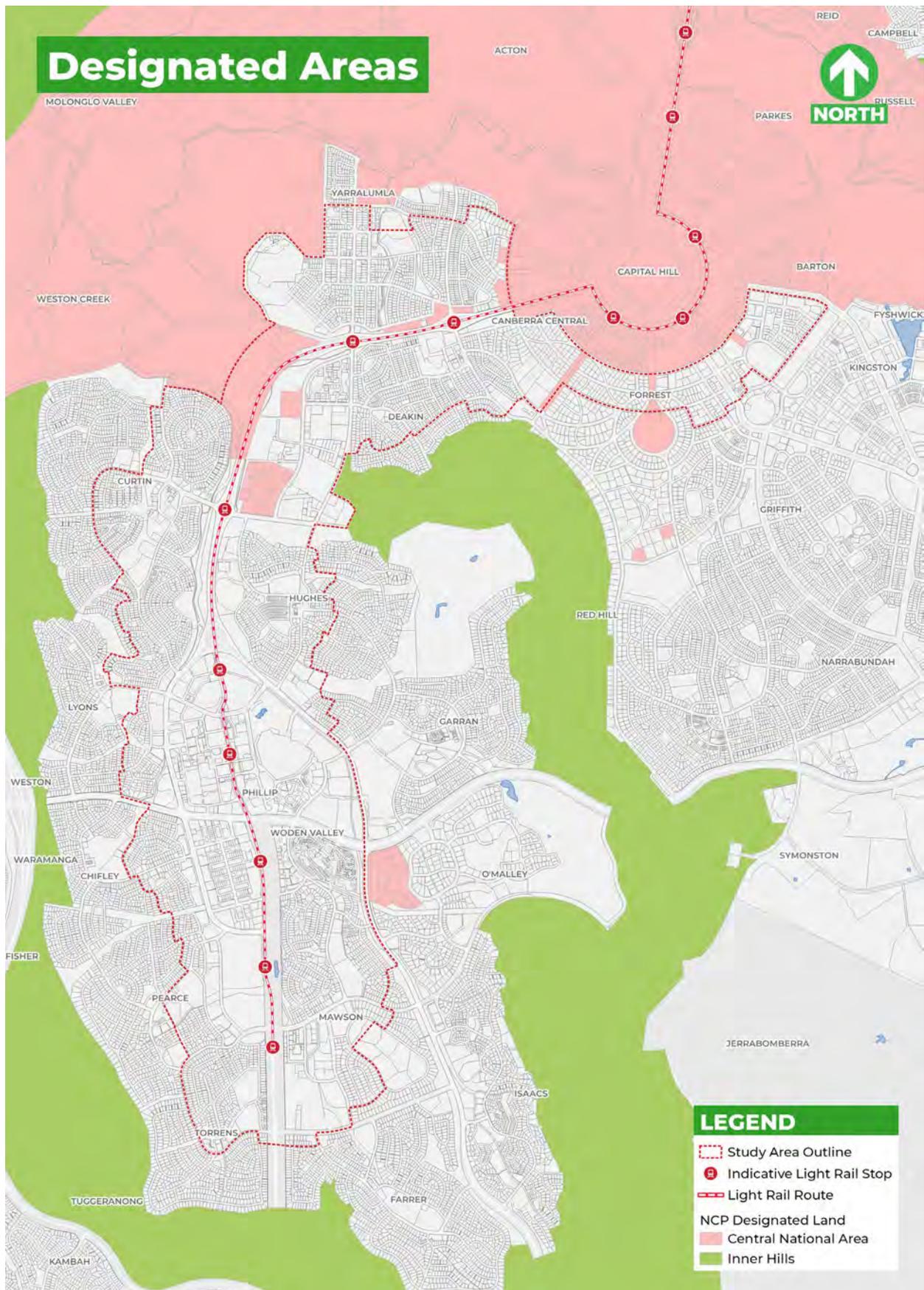


Figure 6: Designated Area Precincts in Study Area
Source: Mecone using NCA Data

The Central National Area includes the following Precincts:

1. Parliamentary Zone
2. Barton
3. Deakin/Forrest Residential Area
4. City Hill
5. West Basin
6. Constitution Avenue and Anzac Parade
7. Australian Defence Force Academy, Royal Military College Duntroon, and Campbell Park Precinct
8. Australian National Botanic Gardens
9. Jerrabomberra Wetlands
10. Lake Burley Griffin and Foreshores
11. Acton Peninsula
12. Diplomatic Precinct (Yarralumla, Deakin, O'Malley and Curtin)
13. Australian Institute of Sport
14. Australian National University
15. CSIRO Black Mountain
16. Canberra Airport (within the Central National Area however not within Designated Areas).

Main Avenues and Approach Routes are subject to a Development Control Plan as they are within Designated Areas, but are not part of the Central National Area.

The Study Area overlaps part of the Barton, Deakin/Forrest Residential Area, Diplomatic Precinct (Yarralumla, Deakin), and Lake Burley Griffin and Foreshores precincts.

2.2 Strategic planning context

2.2.1 Commonwealth National Capital Plan

The NCP is the strategic plan for Canberra and the ACT to ensure that Canberra and the Territory are planned and developed in accordance with their national significance. The NCP is a planning document to recognise national significance and the responsibility of the NCA / Commonwealth Government.

The NCP includes principles for transport and movement, in that an accessible movement system should be achieved by:

- maintaining the national and arterial road systems
- supporting efficient and sustainable pedestrian, bicycle and public transport systems that reduce car dependency
- maintaining movement around the city for a diversity of pedestrian, cycle, public transport and private transport modes
- providing streets that foster a connected and pedestrian-friendly environment

- reducing the barriers created by major roads to make it easier for people to access the public spaces of the city, particularly in the Central National Area.

Accessible movement systems for a diversity of pedestrian, cycle, public transport and private transport modes should be provided, with good connections between different modes of transport.

2.2.2 ACT Planning Strategy 2018

The ACT Planning Strategy 2018 sets a vision for broader Canberra as a “sustainable, competitive and equitable city that respects Canberra as a city in the landscape” and one which is responsive to future change. It contains five themes to guide the city’s growth, each with its own actions:

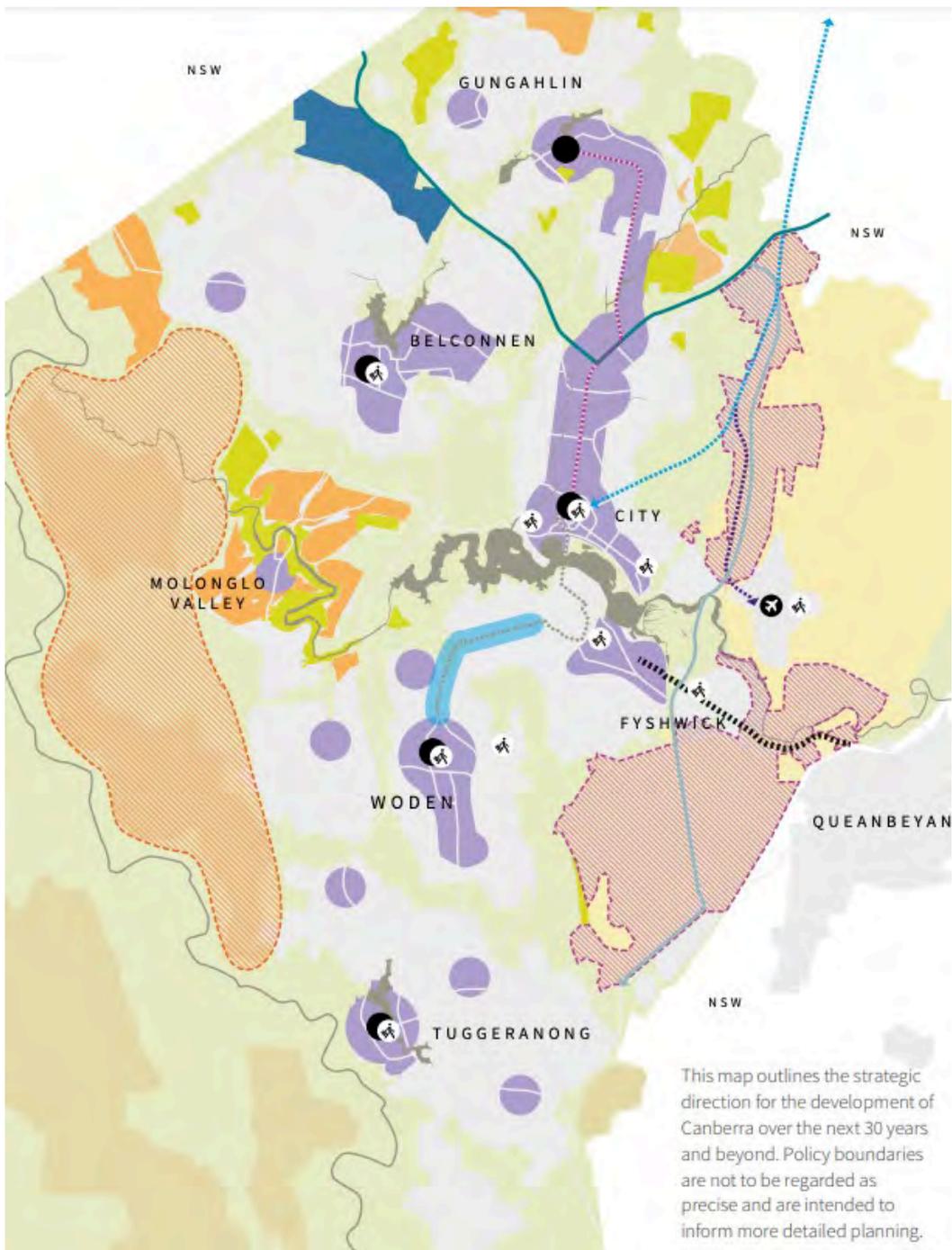
- compact and efficient
- diverse
- sustainable and resilient
- liveable
- accessible.

The strategy identifies that 60% of new housing is currently accommodated in existing urban areas. It is anticipated that in the future, up to 70% of new housing will be built within the existing urban footprint. New infill housing development will be concentrated in areas located close to the city centre, town and group centres and along transit corridors. Urban intensification opportunities will be investigated having regard to locational criteria, with key areas shown in Figure 7.

These include the city, town centres, group centres and the ‘Light Rail Civic to Woden Land Use Investigation Area’ (the subject of this report).

The Strategy contains the following actions, which relate to the urban intensification along the light rail corridor:

- Strategic Direction 1.1 - support sustainable urban growth by working towards delivering 70% of new housing within our existing urban footprint, and by concentrating development in areas located close to the city centre, town and group centres and along key transit corridors
- Action 1.1.2 - investigate the opportunities for higher density development within future urban intensification locations in order to inform prioritisation and staging of future development, land release and infrastructure (social and physical) investment option
- Action 1.3.1 - continue to align land use planning and infrastructure planning to support the growth of the city.



- National Freight Route Tier 1
- National Freight Route Tier 2
- High Speed Rail Phase 2 (2013) alignment
- High Speed Rail alternative alignment
- Canberra to Sydney Railway line
- 🚶 Key Employment Clusters (by number of jobs)
- Town Centres
- ▨ Eastern Broadacre Area
- Environmental Offsets
- ▨ Western Edge Investigation Area
- Possible Future Urban Expansion
- Nature Reserves and Hills, Ridges and Buffer areas
- Urban Intensification Localities
- Light Rail (Civic to Woden) Land Use Investigation Area
- Remaining Greenfield Areas
- Rural Areas
- Urban Areas
- Broadacre Areas

Figure 7: Urban intensification areas
 Source: ACT Planning Strategy 2018

2.2.3 ACT Transport Strategy 2020

The *ACT Transport Strategy 2020* provides the Government's approach to achieving a vision for flexible, reliable and sustainable options for Canberrans to make their journeys. It provides the framework for planning and investment in transport for the next 20 years.

The strategy notes that Canberra has experienced significant and transformational change in the past decade, growing from a population of 356,000 in 2011 to over 420,000 in 2019, and forecast to reach 580,000 by 2040. However, Canberra's transport network is predicted to become more congested and crowded by the 2030s due to population growth, particularly given that in 2016, Canberrans drove the most car kilometres per person of any Australian city.

Whilst COVID-19 will impact growth in the short-term, and has brought forward trends such as a greater demand for travel outside of peak periods and growth in flexible work arrangements, the long-term growth in transport is expected to continue. The strategy identifies attractive, convenient and connected public transport as critical to achieving a more compact, efficient and liveable city.

The strategy notes that the positive response to CLR Stage 1 demonstrates that Canberrans are keen to embrace new transport options when they are attractive and convenient.

2.2.4 ACT Climate Change Strategy 2019-2025

The ACT Climate Strategy builds on successful initiatives including the transition to 100% renewable electricity, the Actsmart program and Energy Efficiency Improvement Scheme, the construction of the CLR, the growing cycle path network, and improving knowledge of potential vulnerabilities to climate change impacts.

Key priorities of the strategy are to support increased uptake of public transport by continuing to improve services to meet community travel needs and to plan for a compact and efficient city to improve access to public transport and active travel options, reduce travel distances and reliance on private car use.

The introduction of light rail in April 2019 as part of an integrated public transport network resulted in more people using public transport in Canberra. The number of journeys made using Transport Canberra services over the first two months of the new network was 10% higher than the number of journeys made over the same period in 2018. In June 2019, there were more than 80,000 light rail boardings per week and almost 15,000 each weekday.

The ACT Climate Change Strategy includes a number of relevant actions to 2025 such as:

- 3.3 - plan for a compact and efficient city with improved access to sustainable transport options by delivering up to 70% of new housing within our existing town and group centres and along key transit corridors
- 3.4 - prioritise improving public transport services and supporting infrastructure, including buses, light rail stage two and connecting services
- 3.5 - maximise accessibility to the rapid bus and light rail networks through feeder services and expanding the Park and Ride network.

2.2.5 Canberra: A Statement of Ambition 2016

The Statement of Ambition states that building a light rail network is a key urban renewal task and that public transport is critical to developing the compact urban centres Canberra needs to attract people, while connecting suburbs. The intention of light rail was to support the densification of urban centres and student, affordable and social housing offerings.

The document identifies that Canberra is experiencing a demographic shift towards smaller families and households, combined with an increasing desire for the amenities of city living. There is an increased demand for the workforce and community to live within a '30-minute city', reducing the economic, health and social costs of commuting, with homes that are close to jobs and services. This has led to a government focus on providing high quality, well designed, higher intensity, and mixed-use development, such as terraces and townhouse, within the city centre and group centres.

2.2.6 ACT Indicative Land Release Program

The ACT Indicative Land Release Program is published annually and identifies the land supply of residential, mixed-use, commercial, industrial and community sectors. The program is reviewed annually and is subject to change by the Minister for Planning and Land Management to deliver the Government's strategic priorities or as market conditions change.

Sites identified in the study area between 2018-2024 are shown following in Figure 8.

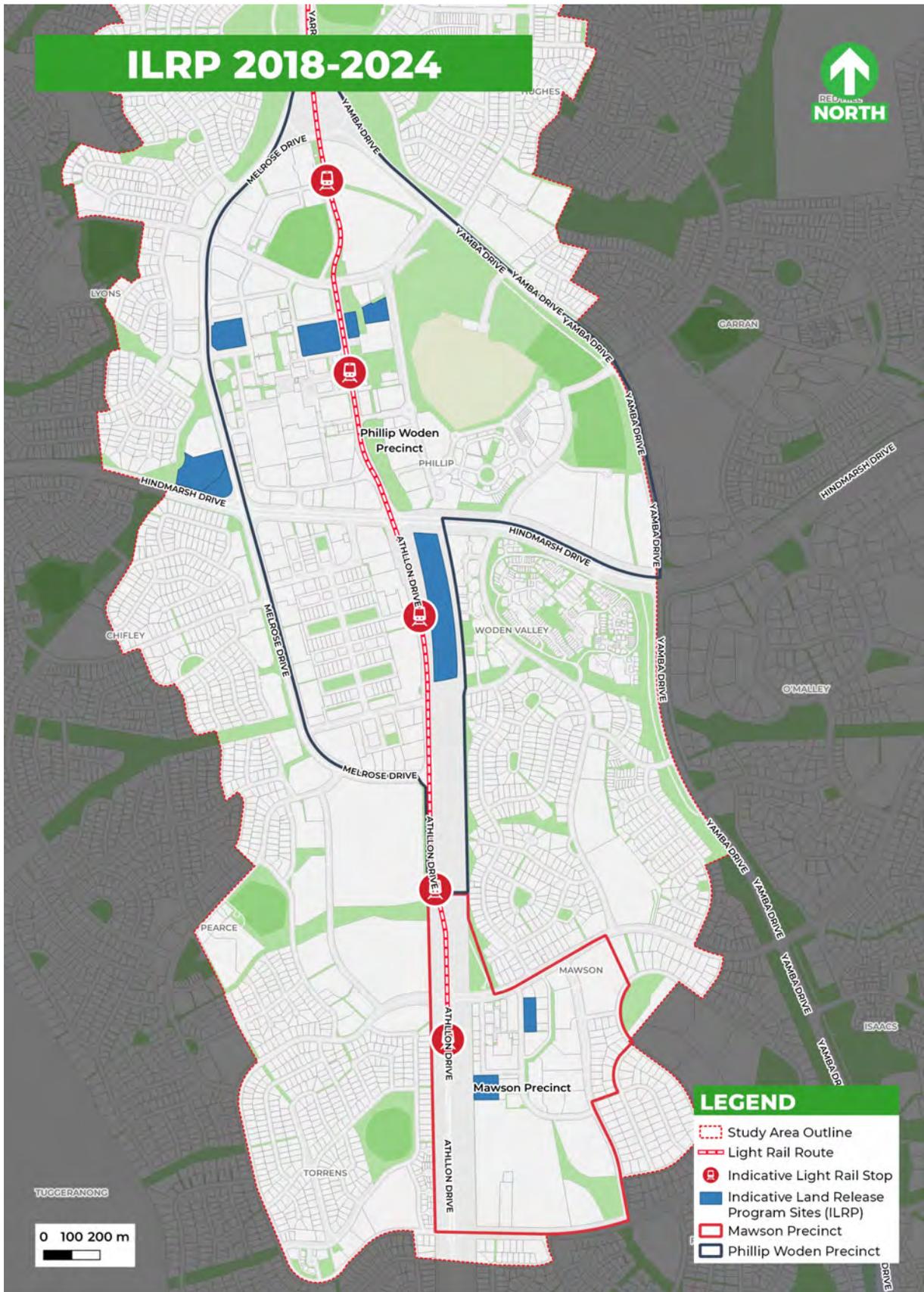


Figure 8: Indicative Land Release Program sites
 Source: Mecone using ACT Government data

2.3 Precinct planning

2.3.1 Curtin Group Centre Master Plan 2018

The Curtin Group Centre displays a diverse mix of commercial uses in the retail core precinct including small specialty shops, a supermarket and a hotel. This mix of commercial and retail activity contributes to the centre's 'urban village' feel and style of development. The central courtyard and pedestrian-only spaces play an important role for the community, allowing people to relax and enjoy the centre, and providing meeting and market spaces.

The key findings of plan are described below.

- The centre benefits from a good mix of shops and services and a useable public domain. However, since the time the shops on the western edge of the central courtyard closed, community perceptions of the centre, and especially the level of activity, had changed.
- There are limited opportunities for new residential development in the centre; however potential nearby developments such as the Yarralumla Brickworks and the expanding Molonglo Valley could contribute to an increase in visitors to the centre.
- The central courtyard, including the associated walkways and public spaces, are highly valued by the community. The existing green spaces and the large canopy trees in Curtin are also highly valued by the community.
- The design of existing parking areas is inefficient, with poor pedestrian amenity. Parking is close to capacity during a typical weekday at peak periods.
- Connections into the centre are not formalised in some places and are challenging for cyclists, however there is a good network of established open spaces.
- Very few uses in the retail core operate after 6pm on a typical weekday.

The future vision for the Curtin Group Centre is to be an active and inclusive meeting place for the local community. As a successful urban village, the centre will be easily accessible and will provide a convenient variety of businesses and services.

The retail core precinct will allow for a range of building heights. Some opportunity for increased building height in key locations will provide more diversity in the built form and allow for a more diverse range of uses to support the economic viability of the centre. This precinct will balance the centre's predominantly low-scale character, which is highly valued by the community, with the ability for the centre to grow, adapt to changing community needs and secure the future economic prosperity for businesses.

The Carruthers Street community and living precinct will be an important gateway to the centre. It provides residential development that will be supported by rapid transit (light rail) on Yarra Glen. Residential development in this area could include medium to high density housing and supportive housing.

The community and open space precinct will retain its formal outdoor sporting facilities, such as the existing oval. The western open space will provide school students and the local community with safe and efficient access to the centre and public

transport stops. Improvements to the public domain will strengthen these linkages and make the open spaces more functional and attractive for the community.

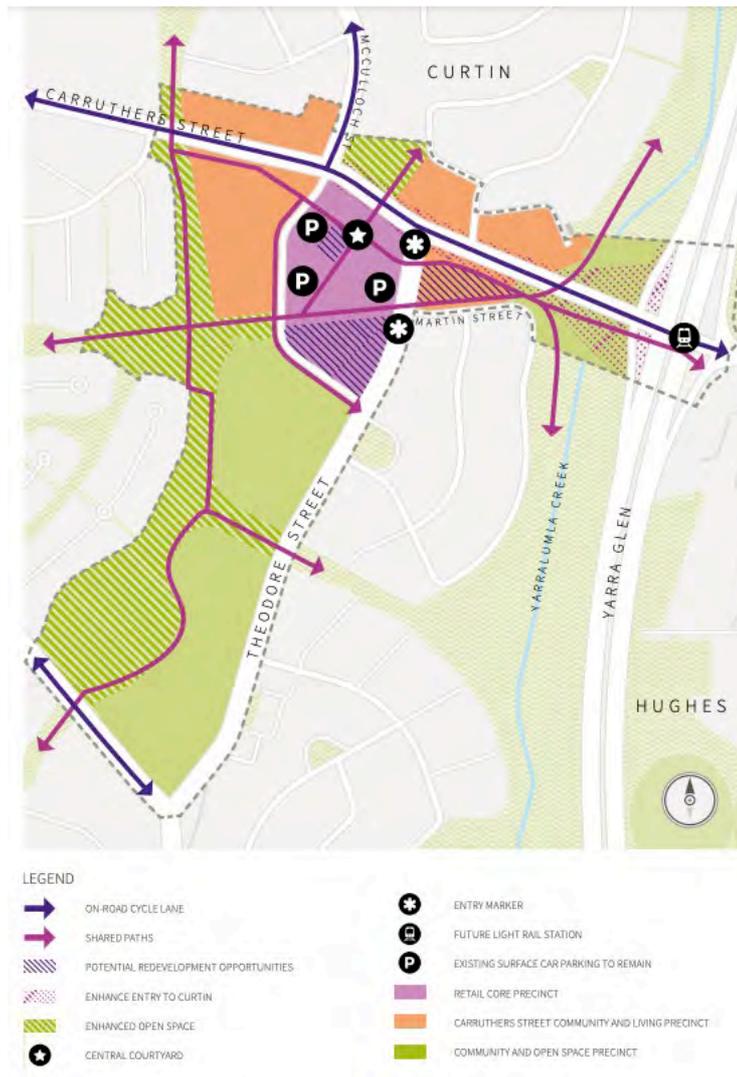


Figure 9: Spatial framework

Source: Curtin Group Centre Master Plan 2018

The planning principles for the Curtin Group Centre are to:

- promote the centre as a convenient and accessible place for people of all abilities
- support varied lifestyle options for a diverse community
- celebrate the retail core area as an attractive human scale urban village
- strengthen the sense of community and pride of place
- ensure the group centre is resilient to a changing climate.

2.3.2 Woden Town Centre Master Plan 2015

The Woden Town Centre is a significant employment base within the ACT, with Australian Government departments and retail being the largest employers. The

centre has a number of community, education and recreation uses including Woden Community Services, child care facilities, health-related facilities, Woden Library, Canberra College, CIT, Eddison Park, pocket parks and ovals.

Lovett Tower at 24 storeys is the tallest building in the centre and can be seen from several vantage points in Canberra, including Red Hill Lookout and the National Arboretum.

The vision for the Woden Town Centre is a major community and commercial hub for the Woden Valley and wider Canberra region. It will be a place that attracts people to live, work, socialise and enjoy through the day and evenings. The town square is the central focal point for social and community activity that will connect people to a network of safe and active streets and public parks.

The master plan includes Woden town centre, Phillip service trades area, Athllon Drive corridor and the recreation precinct north of Launceston Street. It encompasses the eastern edge of the centre containing Eddison Park, Woden Cemetery, Phillip ovals, residential development and Canberra Institute of Technology (CIT).

The proposed spatial framework for Woden Town Centre is shown in Figure 10 below. Under the proposed Master Plan the centre is made up of several precincts as described below.

- The retail core precinct will retain its primary function to provide major retail uses for the district. A mix of uses will be further encouraged with active uses fronting onto the streets, the bus station and town square.
- The mixed-use, office and accommodation precinct will primarily provide for government and commercial offices. A mix of residential development, community facilities, educational facilities and other employment opportunities will be provided. This precinct will provide a transition in the scale of development from the retail core to surrounding areas.
- The recreation and living precinct will offer a mixed-use residential environment. Several recreational uses will be retained and new uses encouraged in this precinct. Phillip Oval is integral to the precinct's function and character.
- The community, recreation and parkland precinct will continue to provide important open space, recreation and community uses that will be better connected to areas in the town centre and surrounding suburbs. The open spaces and recreation facilities will encourage an increasing town centre population to live an active and healthy lifestyle. The heritage significance and function of the Woden Cemetery is an important facility in this precinct and contributes to the precinct's landscape character.
- The town centre living precinct will predominantly provide medium and high-density residential development. This precinct will include some smaller-scale commercial uses to encourage daytime activity through the week.
- The Phillip service trades precinct will continue to provide important services in the town centre. Medium-density residential development will be encouraged along Townshend Street and fronting the pocket parks in Colbee Court and Dundas Court to bring more activity to the precinct outside of the typical working week.

- The Athllon Drive precinct will combine residential and recreation uses that support future public transport and provide an attractive place for people to live. This precinct will provide medium and high-density residential development that is supported by areas of open space and recreational uses. Yarralumla Creek provides opportunities to enhance the corridor through improvements to the creek and inclusion of a range of recreation activities for local residents. Opportunities to mitigate against flooding should also be provided along the Athllon Drive corridor.

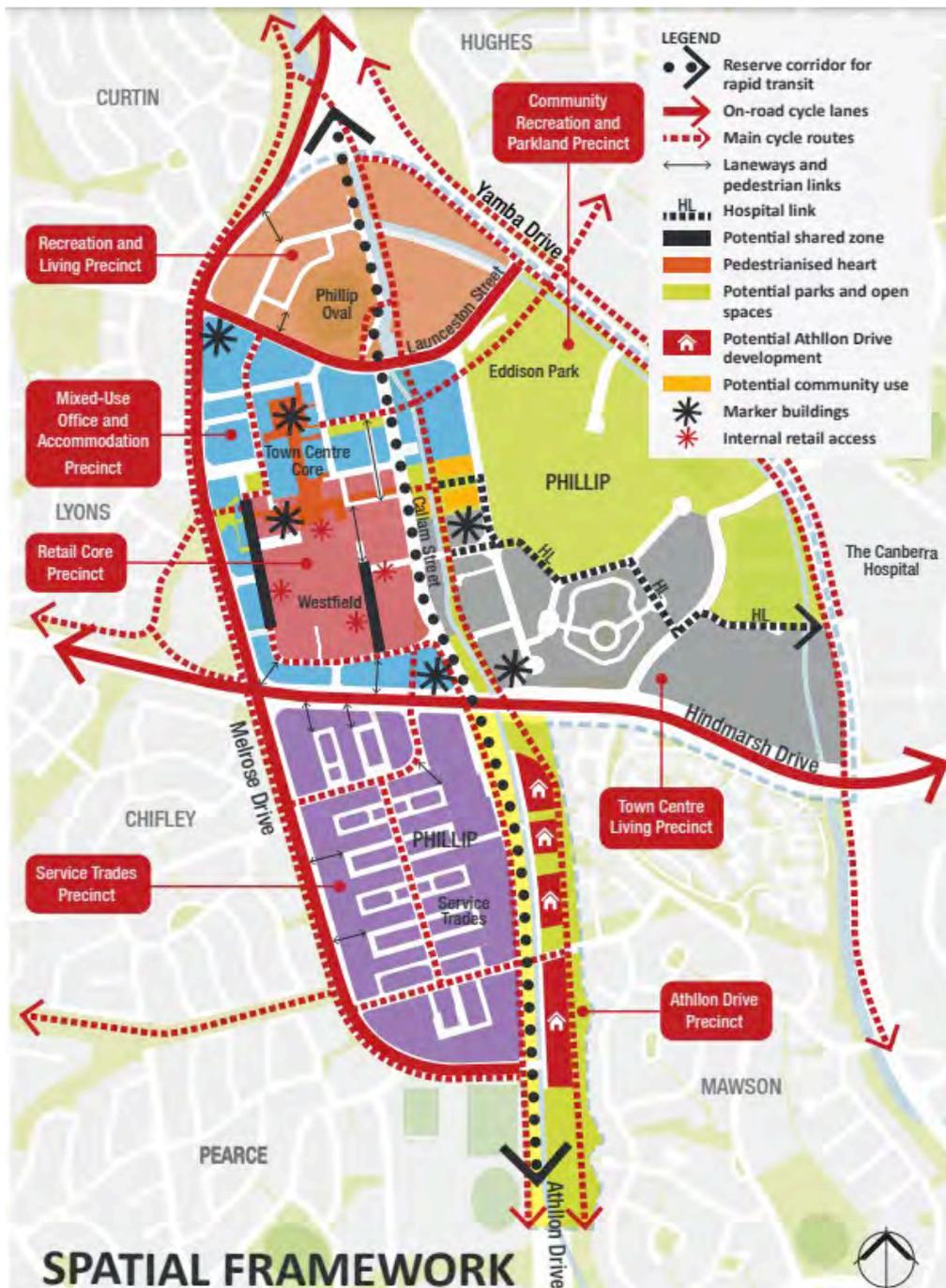


Figure 10: Woden Study Area
 Source: Woden Town Centre Master Plan 2015

2.3.3 Mawson Group Centre Master Plan 2015

The aim for the Mawson Group Centre is to be an attractive, accessible, convenient centre offering a diverse range of goods, services and transport and housing options. It will be a centre that is able to evolve in the future as the community's needs and demands change.

The master plan recommends how to build on the important qualities of the centre. It sets out an integrated plan for how the centre could develop as a vibrant, sustainable centre that continues to serve the Woden Valley and wider Canberra community.

The main principles of this plan are to:

- establish five distinct precincts to help the centre evolve as needs and demands change
- establish a new public transport precinct to cater for the centre's growing role as a public transport hub
- allow residential, commercial, retail, entertainment and service uses to support the centre's economy
- encourage day and night activity in the centre
- ensure the centre is easy to get to by foot, bicycle, public transport and car
- create a people-friendly environment for everyone, no matter their age or ability.

The Master Plan for Mawson Town Centre is shown in Figure 11 below. The aim for the Centre is to permit development to cater for up to 1,200 new dwellings to meet demand, particularly for the aging population. Centre living will also attract people seeking to live near shops, services and rapid public transport.

More people living in the centre encourages more businesses, services and entertainment venues and therefore more employment.



Figure 11: Mawson Spatial Framework
 Source: Mawson Town Centre Master Plan 2015

3 Urban infill capability assessment methodology

The methodology for modelling the urban infill capability is shown below and comprises six key steps.

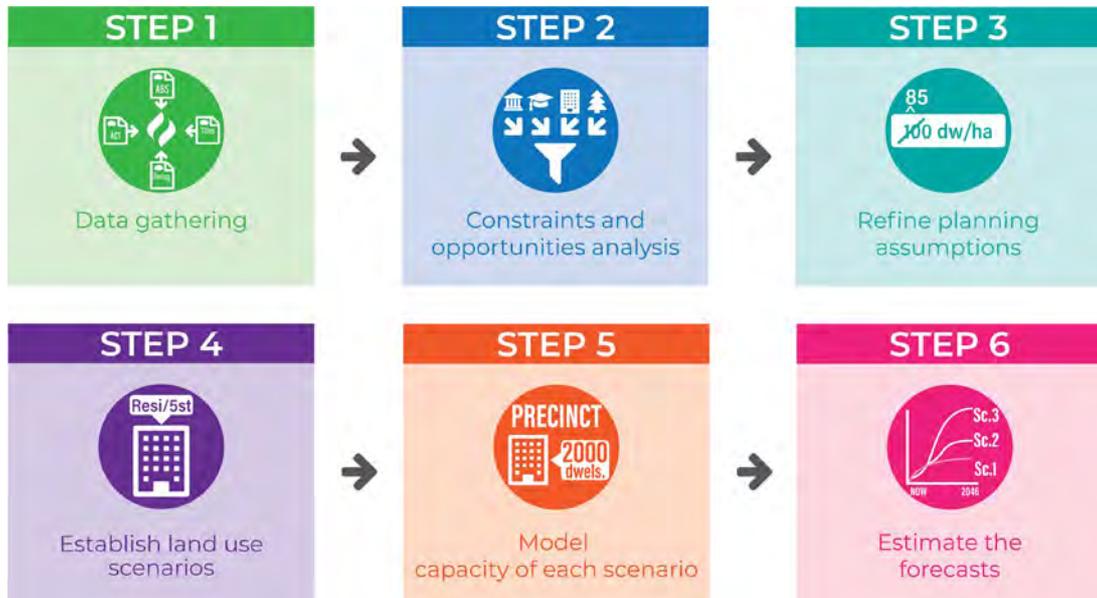


Figure 12: General modelling methodology

Source: Mecone 2021

The six key steps are:

1. Data gathering and review to understand current statutory framework, available data sources and data gaps.
2. Using the data gathered, undertake a constraints and opportunities analysis.
3. Refine underlying planning assumptions such as dwelling size and workspace ratios.
4. Establish the base, medium and high land use scenarios.
5. Model the theoretical planning capacity of each scenario.
6. Estimate the market take-up of the planning capacities over time.

These steps are outlined in more detail in the following sections.

3.1 Step 1 – Data gathering

The first step is to create a GIS model base file in which analysis can be constructed from. The model base file contains detail about the existing number of jobs and dwellings, as well as the existing land use controls.

Cadastral boundaries were obtained from the ACT Government open data portal with the following data overlaid to enable the subsequent modelling steps:

- land use zoning (from the Territory Plan)
- custodianship (from ACT Open Data)
- heritage (from ACT Open Data)
- lot size (calculated from cadastral data)

- unit title properties and number of unit titles on each property (supplied by ACT Government)
- ecological data including protected and rare plants, threatened fauna habitat, and grasslands data (from ACT Open Data)
- Canberra Strategic Travel Model (CSTM) geographies (supplied by ACT Government)
- schools, Embassies other relevant points of interest (from ACT Open Data).
- building footprint data (supplied by ACT Government)
- building height, storey and density information (extracted from relevant group centre masterplan and Territory Plan codes)
- recent development activity including approved DAs (supplied by ACT Government)

In addition to the above, 'existing' dwelling and job counts were estimated at a precinct level, using a range of data provided by the ACT Government. Existing 2018 SA2 and SA3 level population projections for the ACT were rebased to match updated Territory level projections. 2020 was used as the base year, with all SA3s in the ACT reduced by 1.2% to match the updated starting point for population.

For each subsequent year, the percentage of the Territory's total growth allocated to each SA3 in the previous SA2/SA3 level projections was calculated, alongside the annual growth expected for the territory as a whole under the new projections. The proportion of growth allocated under the old projections to each SA3 were then applied to the updated annual territory-level projections, allowing for SA3s to receive a corresponding proportion of growth with the numbers in the new projections.

To provide a more granular level of detail, CSTM population projections were also rebased to match updated SA2 totals. Upon detailed inspection the underlying CSTM population forecasts were found to contain anomalies, particularly around Phillip – Woden. As no underlying detailed methodology was available for these projections they were used as a reference case for population, with existing figures disaggregated from SA2 level for improved accuracy.

CSTM employment projections were used as the reference case for jobs. No rebasing of these figures was required as there are no new territory totals to refer to.

CSTM 2016 population and employment values were based on the 2016 ABS Census demographic and journey to work data. The future population values are based on the ACT Population Projections (2018 to 2058) and indicative land releases and estate development plans. A minor land use update was undertaken to the CSTM forecasts in February 2020 to reflect refinements based on Gungahlin Town Centre refresh, proposed development at CSIRO and Eastern Broadacre employment.

3.2 Step 2 – Constraints and opportunities analysis

Utilising the data compiled in the previous task, a constraints and opportunities analysis was undertaken for each precinct to identify areas unconstrained and suitable for infill development. Through consultation with stakeholders, the following were considered constraints to redevelopment:

- Bushfire Risk and Asset Protections Zones

- Threatened Fauna Habitat – dependent on species
- Threatened, Protected and Rare Plants
- Sites with unit title/strata counts greater than 10
- Heritage
- Land in the following Custodianship:
 - Commonwealth Agency
 - EPSDD - Parks and Conservation
 - Education
 - TCCS - Canberra Cemeteries
 - TCCS – NOWaste
 - TCCS - Roads ACT – noting indicative land release sites
 - National Land

An overview of the constraints and opportunities is provided in the following precinct chapters.

3.3 Step 3 – Refine planning assumptions

Through research and analysis, common planning assumptions were refined to the study area context. These assumptions include:

- dwelling size and density
- workspace ratios
- mixed-use splits between commercial, retail and residential
- average site coverage by land use zone
- conversion of building height to storeys.

These detailed assumptions inform the how theoretical planning capacity (gross floor area) is converted to jobs, dwellings and population and are shown in Table 1. More detailed assumptions and workings are provided in the data appendix.

Site coverage controls were developed using a territory wide building footprint dataset, comparing the average site coverage by land use zone across the ACT.

As a starting point, NSW Treasury Common Planning Assumptions were refined to the ACT context based on available market research and best practice. Workspace ratios were deemed appropriate, noting that these ratios generally represent a reasonable maximum capacity.

Dwelling sizes were refined to reflect the ACT context. Market research undertaken by Commsec (*Home Size Trends Report November 2020*) indicates that the ACT has some of largest new dwelling sizes in Australia for both houses and apartments. As such, average apartment sizes were increased to an approximate 10-year new dwelling size average of 100sqm per dwelling.

Table 1. Refined Planning Assumptions

Zone	Description	Site Coverage	GFA Mix			Workspace Ratio (m2/job)		Dwellings	
			Residential	Retail	Commercial	Retail	Commercial	Size (m2)	Dw/Ha
RZ1	SUBURBAN	-	100%	0%	0%	-	-	-	8.5
RZ2	SUBURBAN CORE	-	100%	0%	0%	-	-	-	13
RZ3	URBAN RESIDENTIAL	-	100%	0%	0%	-	-	-	n/a
RZ4	MEDIUM DENSITY RESIDENTIAL	-	100%	0%	0%	-	-	-	40
RZ5	HIGH DENSITY RESIDENTIAL	50%	100%	0%	0%	35	-	100	-
CF	COMMUNITY FACILITIES	30%	0%	0%	100%	-	100	-	-
CZ1	CORE ZONE	75%	*0%	*50%	*50%	35	20	-	-
CZ2	BUSINESS ZONE	50%	0%	20%	80%	35	20	-	-
CZ3	SERVICES ZONE	50%	*0%	*10%	*90%	35	100	-	-
CZ4	LOCAL CENTRE	75%	30%	35%	35%	35	20	100	-
CZ5	MIXED USE	50%	90%	5%	5%	35	20	100	-
CZ6	LEISURE AND ACCOMMODATION	50%	0%	20%	80%	35	100	-	-
DES	DESIGNATED	Existing	10%	0%	90%	-	80	100	
PRZ1	URBAN OPEN SPACE	5%	-	-	-	-	-	-	-
PRZ2	RESTRICTED ACCESS RECREATION ZONE	5%	-	-	-	-	-	-	-
TSZ1	TRANSPORT	0%	-	-	-	-	-	-	-
TSZ2	SERVICES	15%	-	-	-	-	-	-	-
Precinct	Manually Entered Controls	By Zone	By Zone	By Zone	By Zone	By Zone	By Zone	By Zone	By Zone

*Detailed lot-by-lot assumptions for GFA mix were manually determined in Phillip-Woden, noting where residential is likely to occur.

3.4 Step 4 – Establish land use scenarios

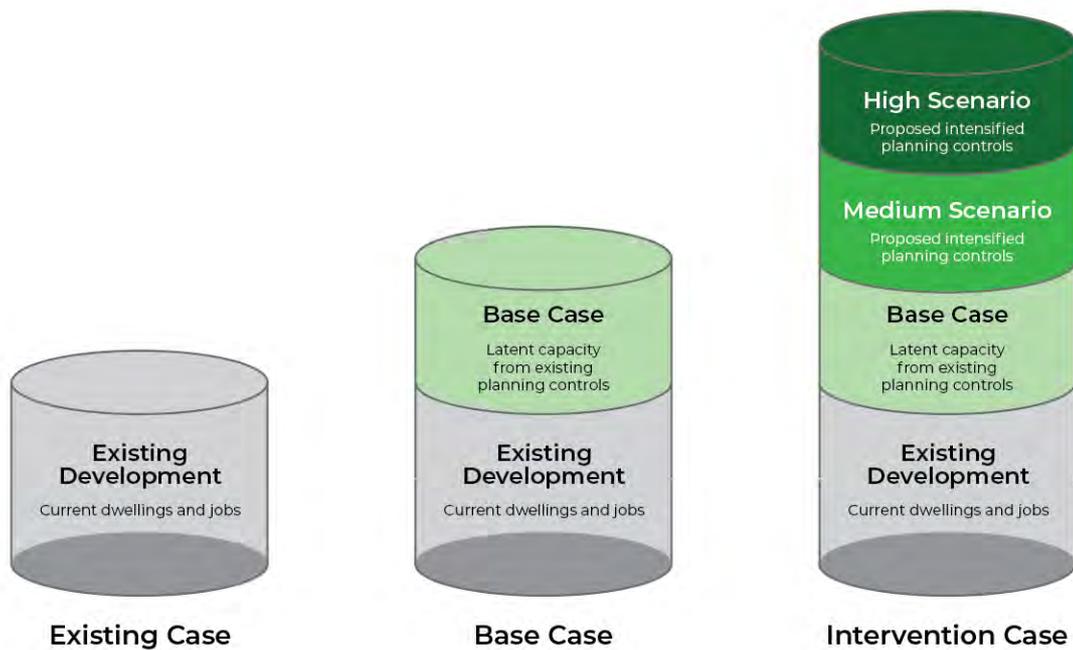


Figure 13: Existing, Base and Intervention Case

Source: Mecone 2021

Three land use scenarios have been developed, all pivoting off an 'existing case' which represents what is on the ground today. These are:

- The Base Case Scenario: growth that could be facilitated under existing planning controls. Base Case capacity that is latent in existing planning controls can also be referred to as being 'constrained' by the planning framework.
- The Medium Scenario: appropriate land use change based on relevant benchmarks and sound transit-oriented design principles (TOD).
- The High Scenario: longer-term opportunities to incorporate higher densities.

3.5 Step 5 – Model capacity of each scenario

Once the spatial land use scenarios were finalised and agreed for the Base Case and the Intervention Cases, total planning capacity for residential and non-residential GFA was modelled. Whilst the calculation is subject to many complex and interrelated rules, capacity can simply be stated as the physical and legal ability of land to be developed to a certain yield.



Figure 14: Residential and commercial modelling approaches

Source: Mecone 2021

Two approaches were undertaken for capacity modelling, shown in Figure 14:

- Low density residential: A dwellings-per-hectare rate applied to all low density residential areas. Almost all low-density properties can legally be intensified to differing degrees and it is difficult to accurately estimate block-by-block outcomes. A dwellings per hectare approach instead approximates the feel or character expected in terms of overall character, by zone.
- Commercial and high density residential (RZ5): Modelled using detailed assumptions regarding:
 - site coverage
 - permitted storeys
 - efficiencies for building envelope and parking
 - GFA splits (between commercial, retail and residential)
 - average unit size and jobs/sqm rates.

3.6 Step 6 – Estimate forecasts

Based on an assessment of land use capacity (theoretical capacity*) by Mecone (Step 5) in three land use scenarios (Base Case, Medium and High scenario), the following steps were undertaken by Atlas to estimate a Dwellings and Employment forecast in the Study Area.

Table 2. Approach to Forecasts	
Base Case	Intervention Case
Review baseline and historical development activity	Consider if the CLR Stage 2 could alter/change baseline market demand
Identify shortcomings/ strengths of precincts and locality (e.g. limited capacity, limited market demand)	Consider if light rail stops could address shortcomings or leverage strengths of the precincts
Review planning framework including any major pipeline development projects	Review assessed development capacity against viability considerations
Assess at a high-level, the overall viability of existing planning controls to anticipate future development activity and take-up	Identify non-forecast implications that could result following a CLR Stage 2 intervention
Develop a Base Case forecast of land use and development activity	Develop an Intervention Case forecast of land use and development activity

The Intervention Case assumes the CLR Stage 2 is operational in 2024.

*It is a commercial reality that not all sites will be developed to their theoretical capacity even though permissible under the planning framework. This could be due to various reasons - ownership and lot fragmentation, high property values are the most common factors in existing urban areas with established property patterns that prevent sites from being developed to their full theoretical capacity. Where there are sites that are not feasible to develop to their theoretical capacity, the take-up in that precinct or frame area is forecast at a more moderate pace and/or much of theoretical capacity is not taken up.

3.7 Assumptions and limitations

- The basis of this work is a theoretical analysis of potential land use scenarios. It does not represent a policy position by the ACT or Federal Governments.
- The scenarios and figures are shown for testing purposes. We note that small changes to underlying assumptions such as dwelling size or workspace ratios can have significant impact to the modelled capacity.
- The ultimate yield at Curtin Horse Paddocks is subject to a number of potential environmental factors and development constraints related to the diplomatic

estate and its access requirements. The capacity figures from this study may not reflect the final outcome for the precinct.

- As scoped, a baseline (Base Case) forecast was developed based on underlying government projections. To do this, small area CSTM projections data was re-based to existing 2018 Treasury population projections. The detailed assumptions that underpin the CSTM data are unknown and have not been validated. It is noted:
 - The CSTM data is available for population (not dwellings), necessitating a set of assumptions to 'convert' population to equivalent dwellings.
 - Population projections are available to 2031. For the purposes of the study they have been extended ('straight-lined') to 2046
 - Employment projections appear to be based on fixed growth rates per each 5-year period (2.8% pa in 2016-21, 1.6% pa in 2021-31 and 3.0% pa in 2031-41).
 - CSTM population and employment values were based on the 2016 ABS Census demographic and journey to work data.
 - CSTM future population values were based on the ACT Population Projections (2018 to 2058) and indicative land releases and estate development plans

The foregoing indicates data limitations which have implications for accuracy of the developed forecasts.

- The Medium and High Scenarios pivot-off the Base Case forecasts (which are based on CSTM projections data). We highlight in particular the high-level nature of employment projections in the CSTM dataset and accordingly the employment forecasts in the Intervention Case are indicative only and should be treated with caution.
- The Dwellings and Employment Forecast is informed by research and historical observations, taking a reasoned view of the land use response likely to result in the Intervention Case. It is **not** intended to represent demand projections.

4 Existing situation analysis

4.1 Study Area observations

The Study Area comprises the precincts of:

- West Deakin
- Curtin Horse Paddocks
- Phillip/Woden Town Centre
- Mawson
- the remainder of the corridor.

Broad Study Area considerations are provided within this chapter, whilst more detailed precinct considerations are provided in Chapter 5.

4.1.1 Land use zones

Under the Territory Plan 2008, there are several land use zones relating to residential, commercial, industrial, community facilities, parks and recreation areas, transport and services and non-urban areas. The zones that apply within the Study Area are shown below and mapped in Figure 15. The land surrounding the corridor contains a mix of almost all land use zones available under the Territory Plan, with the exception of Industrial Zones and Non-Urban Zones.

Residential Zones

- RZ1 Suburban
- RZ2 Suburban Core
- RZ3 Urban Residential
(Not in study area)
- RZ4 Medium Density Residential
- RZ5 High Density Residential

Commercial Zones:

- CZ1 Core
- CZ2 Business
- CZ3 Services
- CZ4 Local Centre
- CZ5 Mixed Use
- CZ6 Leisure and Accommodation

Community Facilities

- CFZ Community Facility

Parks and Recreation Zones

- PRZ1 Urban Open Space
- PRZ2 Restricted Access Recreation

Transport and Services Zones

- TSZ1 Transport
- TSZ2 Services

There are also some areas of designated land, identified under the NCP and included in Figure 6.

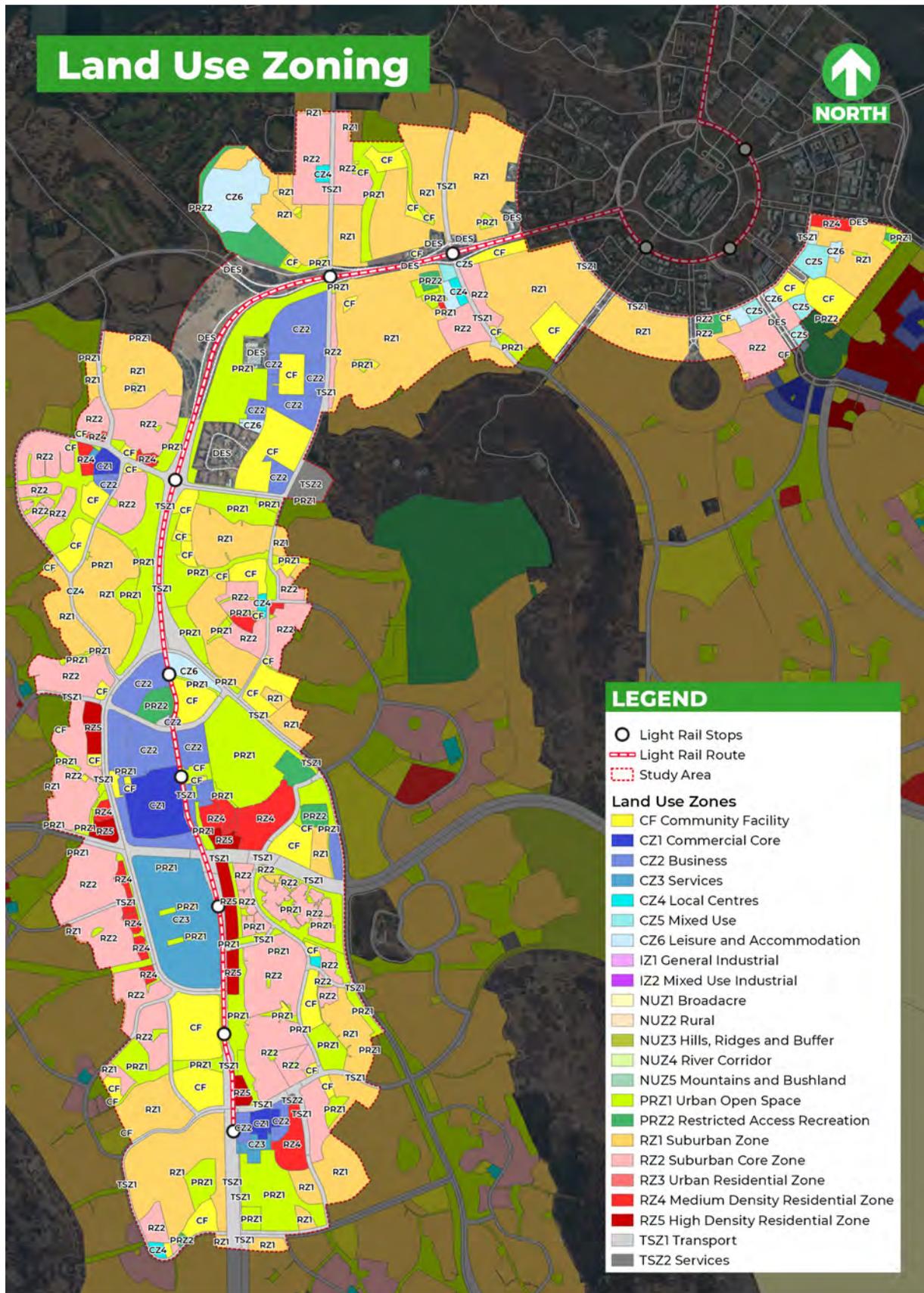


Figure 15: Corridor land use zoning
 Source: Mecone

4.1.2 Population and residential density

The Study Area had an unevenly dispersed population of 21,421 in 2016 (ABS Census). As shown in the dwelling density map in Figure 16, there is a clear divide between employment and residential areas, with the highest residential densities located near to Phillip and Mawson centres, reflecting the medium and higher density building types these areas contain. Higher dwelling densities also exist to the east of Parliament House, in the northeast

Residential suburbs in the north, such as Yarralumla have the lowest densities, reflecting the built form character which is more typically detached housing in nature.

NB: Mapping has been undertaken based upon 2016 Census data, which does not include more recent known developments such as that within Woden Town Centre.

4.1.3 Employment density

The existing employment densities are shown in Figure 17. There are clear employment precincts in West Deakin, Phillip-Woden and in the northeast around Barton and Capital Hill. The highest employment density is in Woden Town Centre, reflective of its role as an important employment base for the ACT more broadly. Canberra Hospital is also evident as an employment hub to the east of Phillip.

4.1.4 Custodianship patterns

The land ownership/custodianship of the Study Area is shown in Figure 18. The majority of the Study Area is under private lease, with areas adjacent to the Stage 2 corridor consisting of TCCS Sports and Recreation Facilities and City Presentation land, along with executive lease land, private lease land and some National Land.

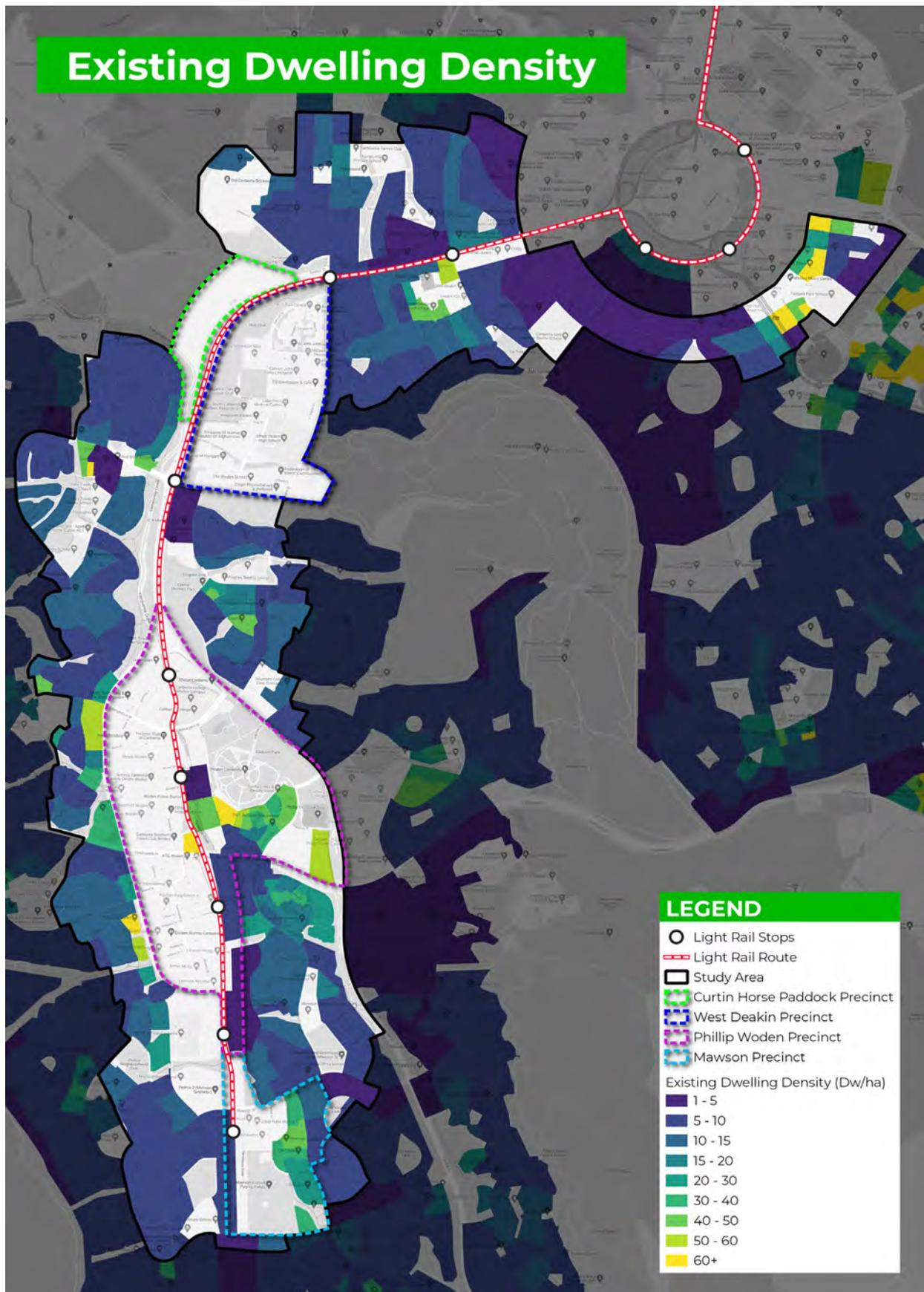


Figure 16: Dwelling density (2016)
 Source: Mecone, using ABS Census data

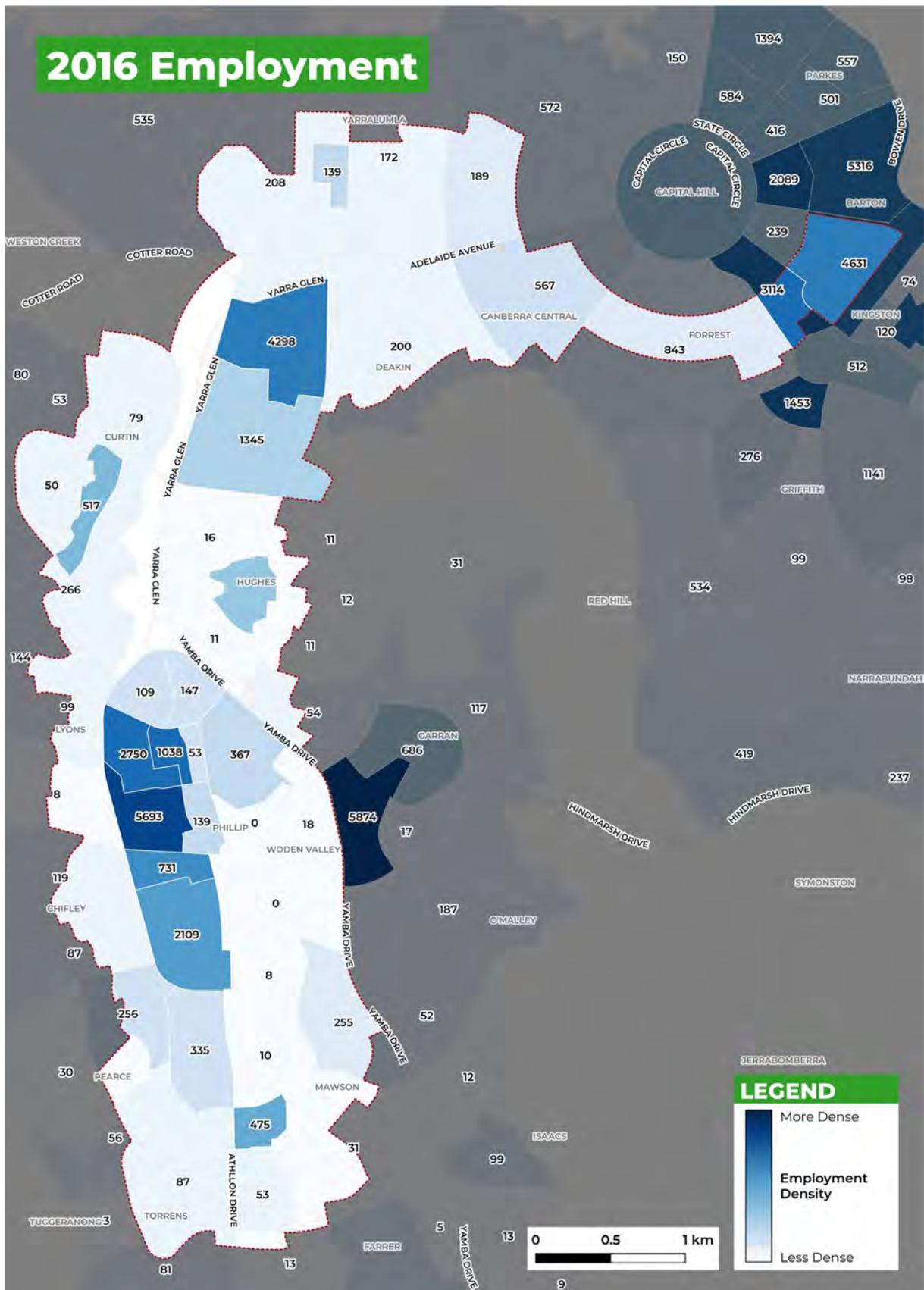


Figure 17: Employment density (2016)
 Source: Mecone, using CSTM data from ACT Government

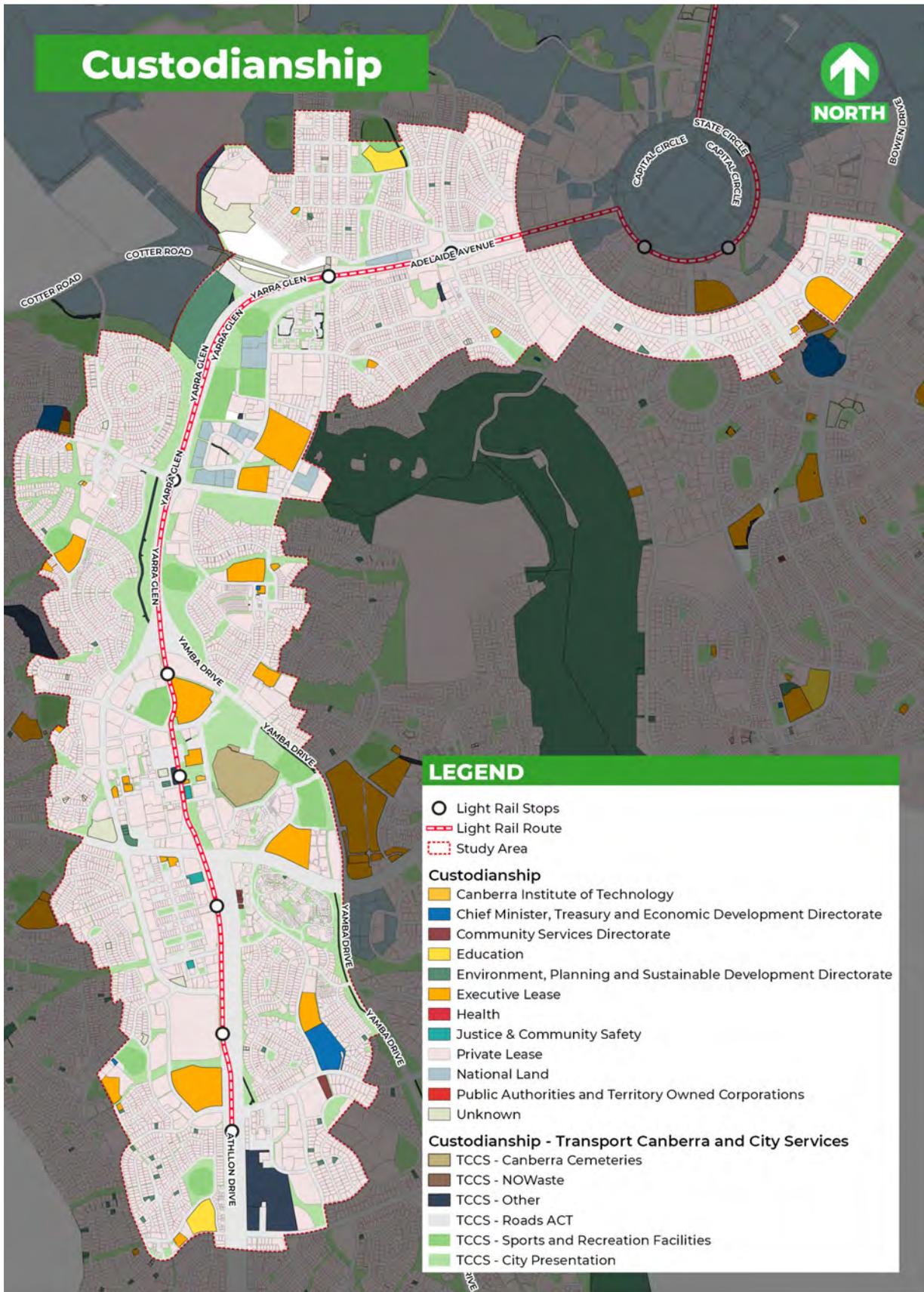


Figure 18: Land custodianship

Source: Mecone, using data from ACT Government

4.1.5 Corridor level constraints

Constraints which may impact capacity for urban infill have been mapped at a corridor level and are shown in Figure 19. The main constraints within the Study Area include threatened fauna habitat to the east of Phillip and to the north of Deakin and bushfire prone areas and bushfire abatement zones. More detailed constraints discussion is included in the precinct analyses in the following chapter.

Development activity

Contained within constraints mapping are development applications (DAs) provided to Mecone. The implication of development activity as a constraint is varied. On the one hand, high levels of development activity in an area is a sign of investment and desirability, indicative of a growing population or employment base. On the other hand, ongoing development can effectively 'lock' sites from ever achieving higher densities which would have better leveraged the investment in light rail.

The number of approvals and dwellings in the suburbs of Curtin, Deakin, Mawson and Phillip are included in the table below. A detailed table of all DAs is included at **Appendix A**.

Table 3. DA Approvals		
Suburb	Approvals	Dwelling balance
Curtin	23	+46
Deakin	41	+111 (incl. 102 beds in aged care)
Mawson	31	+36
Phillip (including Woden town centre)	59	+1912

Source: Cordell Connect (as of September 2021)

A number of variations to the Territory Plan have also been proposed. Some of those of particular relevance are outlined below by precinct.

- **Curtin Horse Paddocks, Diplomatic Estate and Urban Area:** Resulting from a recent land swap between the ACT and Commonwealth Governments, with NCA to develop a diplomatic estate and the ACT Government to retain 30% of the site for future residential development.
- **Brickworks development:** Doma Group proposes to redevelop the former Canberra Brickworks site in Yarralumla, including parkland, residential, commercial and retail uses, incorporating Canberra Brickworks heritage elements. The development spans approximately 16 hectares, up to 380 residential dwellings in a mix of houses, terraces and apartments.
- **Phillip "Pitch and Putt":** A proposal to change the current zone from CZ6 to CZ2 to allow for six buildings up to 12 storeys in height, providing approximately 800 dwellings and 2,500sqm of commercial floorspace.

A full table of current variations to the Territory Plan is included at **Appendix 1**.

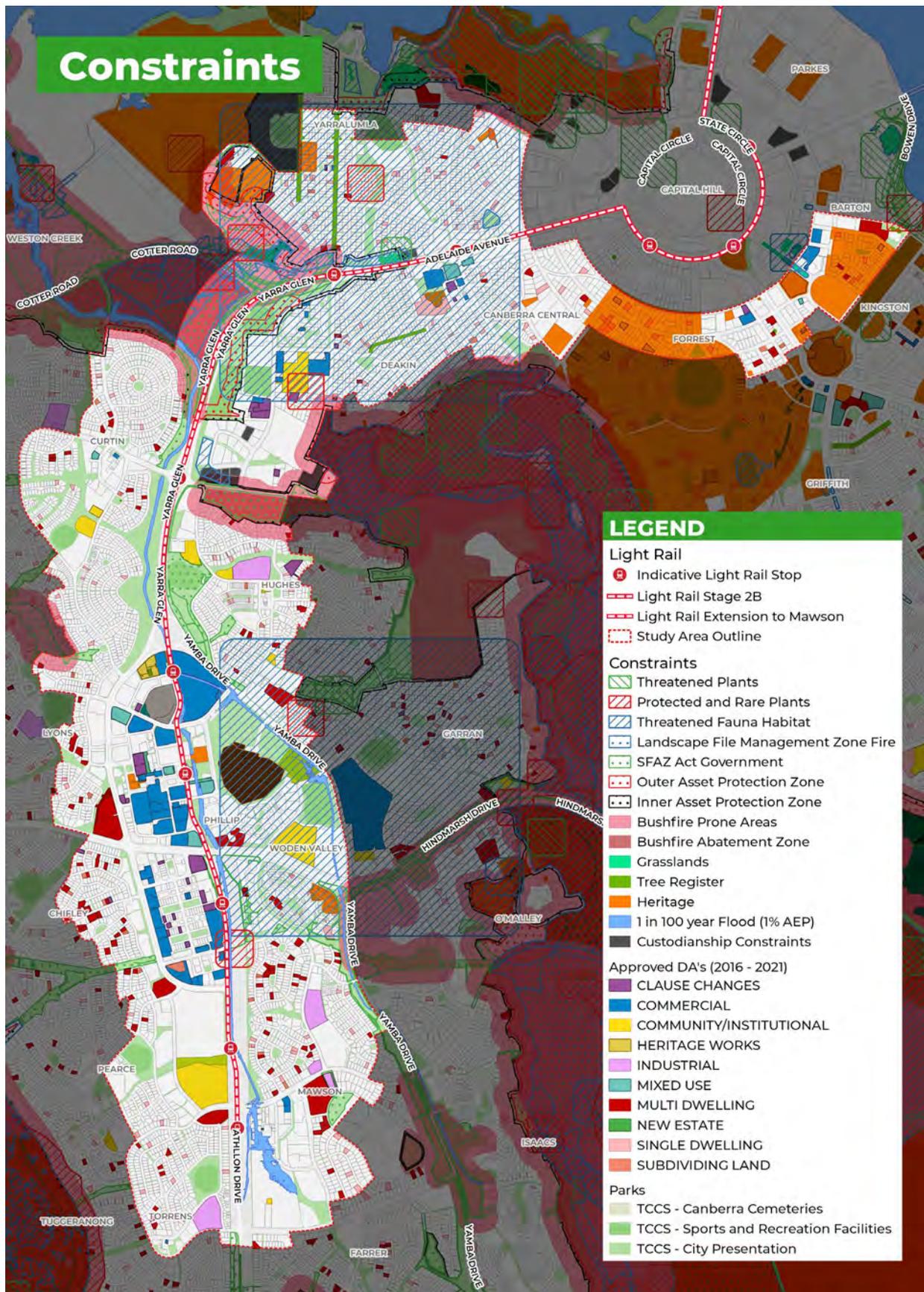


Figure 19: Study Area combined constraints
 Source: Mecone using ACT Government data

5 Urban infill capability assessment

5.1 Curtin Horse Paddocks (ACT Government Land)

The Curtin Horse Paddocks is a greenfield development precinct located to the north of the Curtin Group Centre. The site forms part of the North Curtin Horse Paddocks which includes paddocks, holding yards, a wash bay, and a designated riding area.

Land to the west of the precinct is to be developed as a new Diplomatic Estate, facilitated by NCP Amendment 95 (October 2020) which:

- changed the land use policy of Block 4 Section 106 and part Block 5 Section 121 Curtin to facilitate the development of a new diplomatic estate
- created a new urban area adjacent to this estate for future residential use
- includes the whole area (both Commonwealth and ACT Government land) within Designated Areas.

The remainder of the site is identified as a new urban area which will remain under Territory control, and directly adjoining the CLR Stage 2B corridor.

The NCA will undertake detailed site investigations and planning for the Diplomatic Estate. This is still in planning, and consultation by the project team will be required to better understand its likely outcomes and impacts on the remainder of the precinct. The NCA-controlled component of the precinct has not been investigated as a part of this analysis.

Surrounding land

Although the Curtin Horse Paddocks precinct is undeveloped, it is surrounded by established neighbourhoods. Southwest of the Horse Paddocks precinct is the Curtin Group Centre and surrounding suburb, which is primarily low density residential. Curtin suburb was estimated to have a population of around 5,300 people in 2017, which declined slightly across the prior decade, and an older median age (41.2 years) compared to the Woden Valley (40 years) and the ACT (34.9 years). A large proportion of the working age population is in the workforce (96%) which is similar to the rate of employment across the ACT more broadly.

Curtin contains a significantly higher proportion of detached dwellings (84%) compared to the whole of the ACT (72%), and a significantly lower proportion of semi-detached houses or townhouses (4% in Curtin compared to 15% for the ACT). Nevertheless, there are several three-storey residential apartment buildings close to the retail core within the RZ4: Medium Density Residential Zone.

A masterplan exists for the nearby Curtin Group Centre, endorsed by the ACT Government in November 2018, which provides a range of strategies to guide its growth and development. It has a range of recommendations including protection of the central courtyard to maintain the centre's village character, and improvements to public spaces and to neighbourhood walking and cycling routes.



Figure 20: Curtin Horse Paddocks
 Source: Mecone

5.1.1 Constraints

As the precinct is currently undeveloped, the primary development constraints are environmental, including protected flora and fauna, rare plants. There are also the aforementioned considerations from the future adjacent diplomatic estate.

The ACT Government is currently undertaking detailed ecological assessments to determine the extent of threatened species and ecological communities on the site. It is understood from preliminary investigations in the diplomatic estate that there the potential existence of natural temperate grassland, a very rare habitat in the ACT. Any future development on the site will need to adhere to the relevant protections for these habitats as the site is within the ACT portion.

The entirety of the precinct is identified as bushfire prone, however as it is undeveloped it is expected that appropriate abatement zones and mitigation measures can be implemented in the design phase.

The precinct generally slopes downhill from the north towards Yarralumla Creek in the south which is flood prone.

The site has some accessibility constraints. For vehicles, Cotter Road is the primary access route to the precinct. At present, no light rail stop is proposed to directly service the precinct with the two closest stops around 600-800m walk away along Yarra Glen. It is understood that roads serving the diplomatic precinct would be public and could provide access to the future urban area.

From an active transport perspective, the precinct would strongly benefit from improved connections to West Deakin and the Curtin Group Centre. A cycle lane currently travels alongside the precinct in the road shoulder of Yarra Glen. A dedicated cycle and pedestrian path, particularly with safe and accessible connections to future light rail stops, would help support future development amenity.

Should a light rail stop which directly serves the precinct be considered in further options, this would have potential to support additional density on the site. If higher densities are not deemed appropriate on the site due to the ecological constraints and NCA restrictions, this could lessen the case for a light rail stop directly serving the precinct.

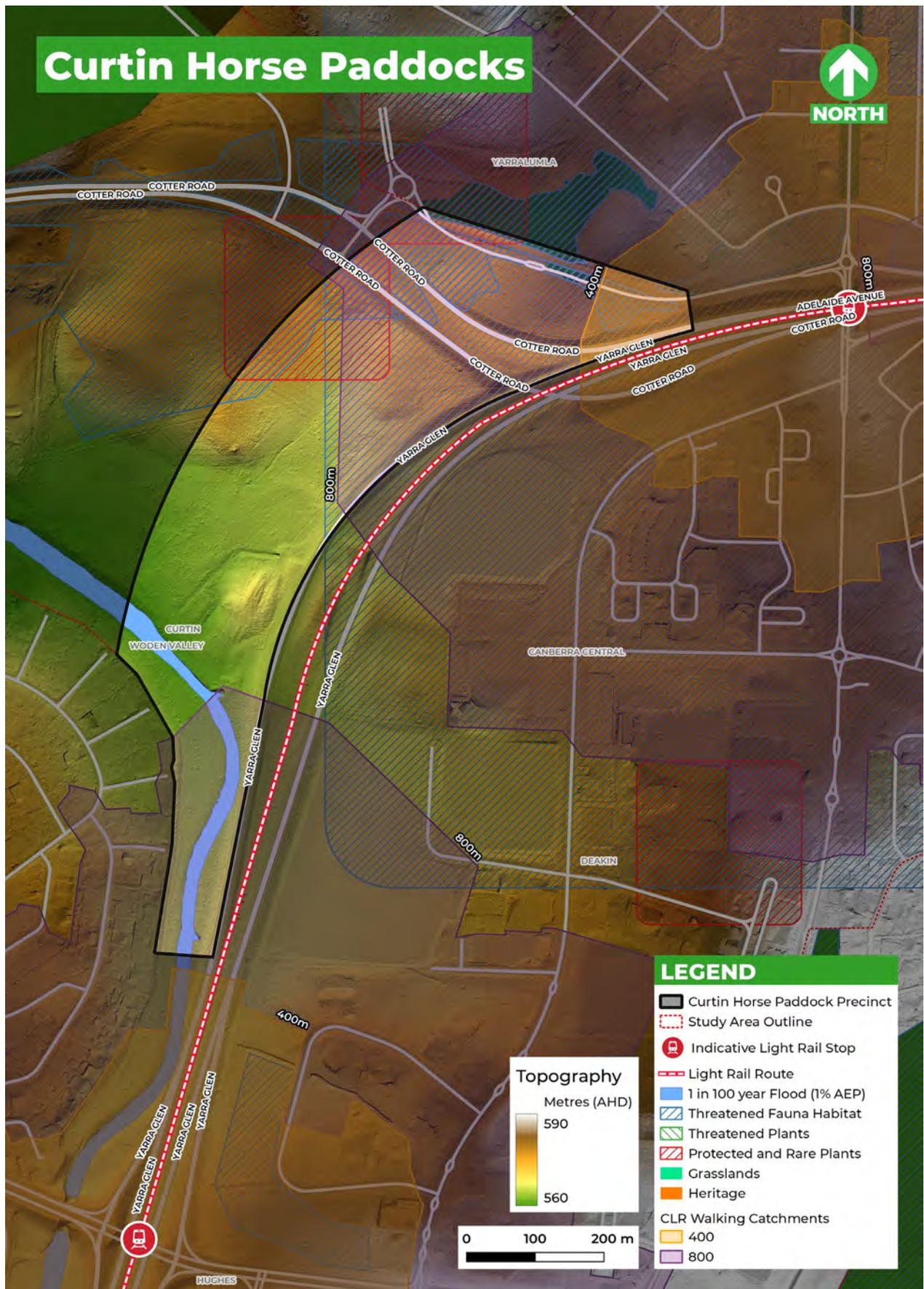


Figure 21: Curtin Horse Paddocks Constraints
Source: Mecone using ACT Government Data

5.1.2 Land Use Scenarios

Existing and Base Case

As the site is currently undeveloped farmland there is no existing dwellings or commercial GFA to report.

The base case assumes low density residential development on the primary land parcel south of Cotter Road and adjacent to Yarra Glen, similar to an RZ2 zoning across the site. This base case scenario represents the minimum expected development on the site. No mapping has been provided for this scenario.

Medium Scenario

The medium scenario assumes a similar development pattern to the base case however at a low-medium density across the development parcel. The built form outcome is assumed residential development ranging from 3-4 storeys, similar to an RZ4 zoning across the site. This medium scenario represents the moderate expected development on the site.

High Scenario

As shown in Figure 25, the high scenario assumes a similar built form outcome on the western portion of site to the medium scenario. On the land parcels adjacent to Yarra Glen, a residential mixed-use outcome ranging from 4-8 storeys is assumed. This scenario represents the high expected development on the site and is based on a 2019 advisory valuation report for the site.

5.1.3 Precinct Forecasts

The Curtin Horse Paddocks are a greenfield opportunity in consolidated holding. The primary constraint to development are ecological and restrictions imposed by the NCA. These constraints have not been factored into the market take-up assessment.

In the Base Case, the take-up of low-density dwellings is expected to occur 'as of course' with minimal difficulty.

The CLR project would help unlock the opportunity for higher density formats and induce swifter take-up of higher density product. This would be further supported with a light rail stop directly serving the precinct. Should high density formats not be appropriate, this would lessen the case for a light rail stop directly serving the precinct.

Small scale, local-based employment is expected to be delivered concurrent with new dwellings in the precinct.

The adjacency of the Horse Paddocks to the West Deakin precinct is expected to have synergies for local business services. While there may be capacity for more employment in the precinct, unless there is a strategic intention to establish a new commercial centre in the precinct (and attracting major occupiers), employment in the precinct is likely to play a supporting residential role.

Table 4. Curtin Horse Paddocks Scenario Capacities and Take-Up (Dwellings)				
Item	Existing	2031	2041	Capacity
Base Case	0	170	170	170
Medium Scenario		530	530	530
High Scenario		1,100	1,900	1,900

Table 5. Curtin Horse Paddocks Scenario Capacities and Take-Up (Jobs)				
Item	Existing	2031	2041	Capacity
Base Case	0	10	10	10
Medium Scenario		40	40	40
High Scenario		200	300	700

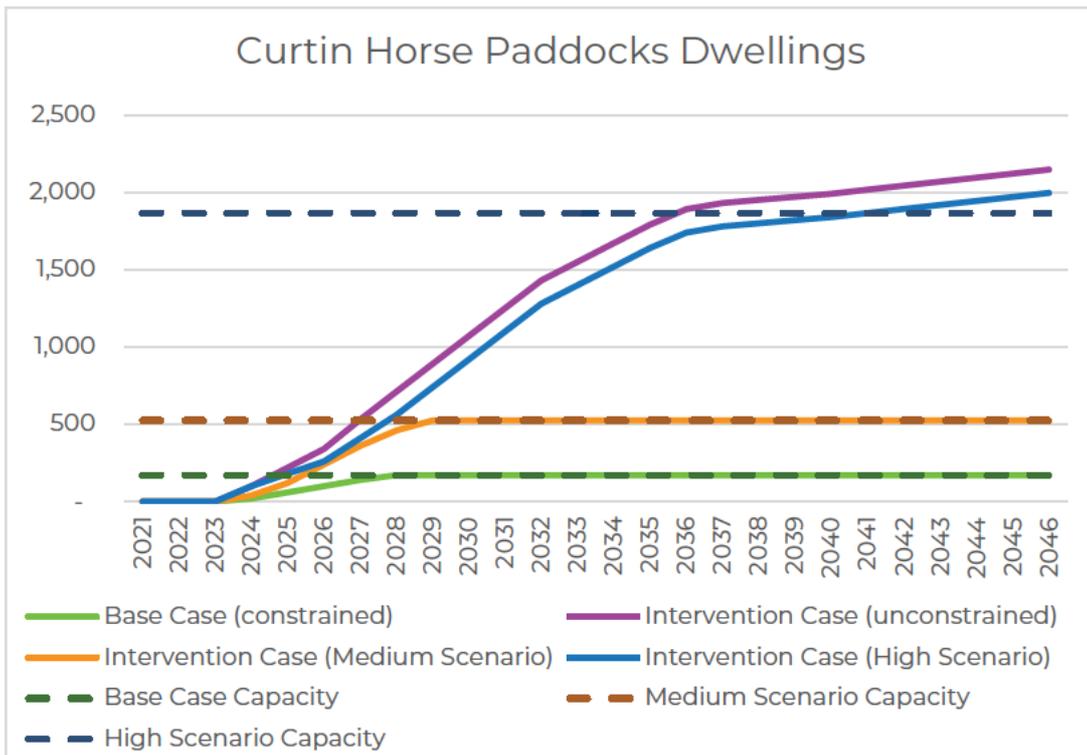


Figure 22: Curtin Horse Paddocks Dwelling Take-Up
 Source: Atlas Urban Economics

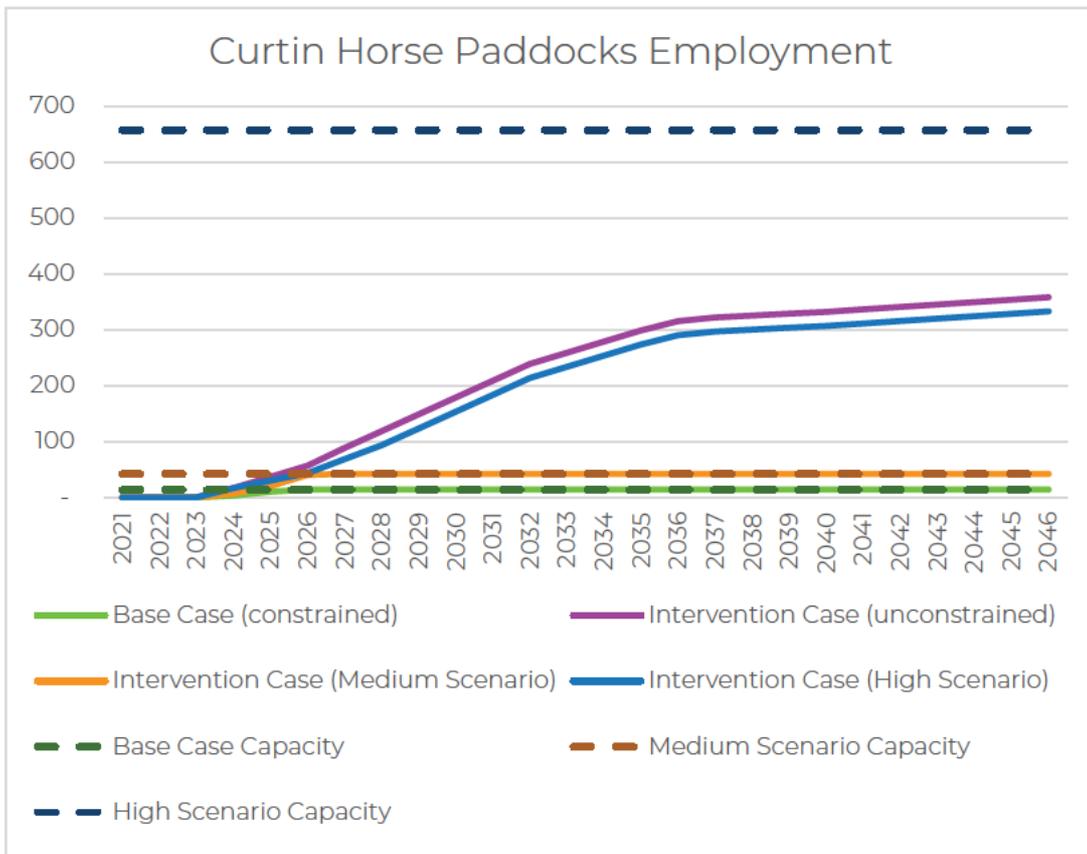


Figure 23: Curtin Horse Paddocks Employment Take-Up
 Source: Atlas Urban Economics

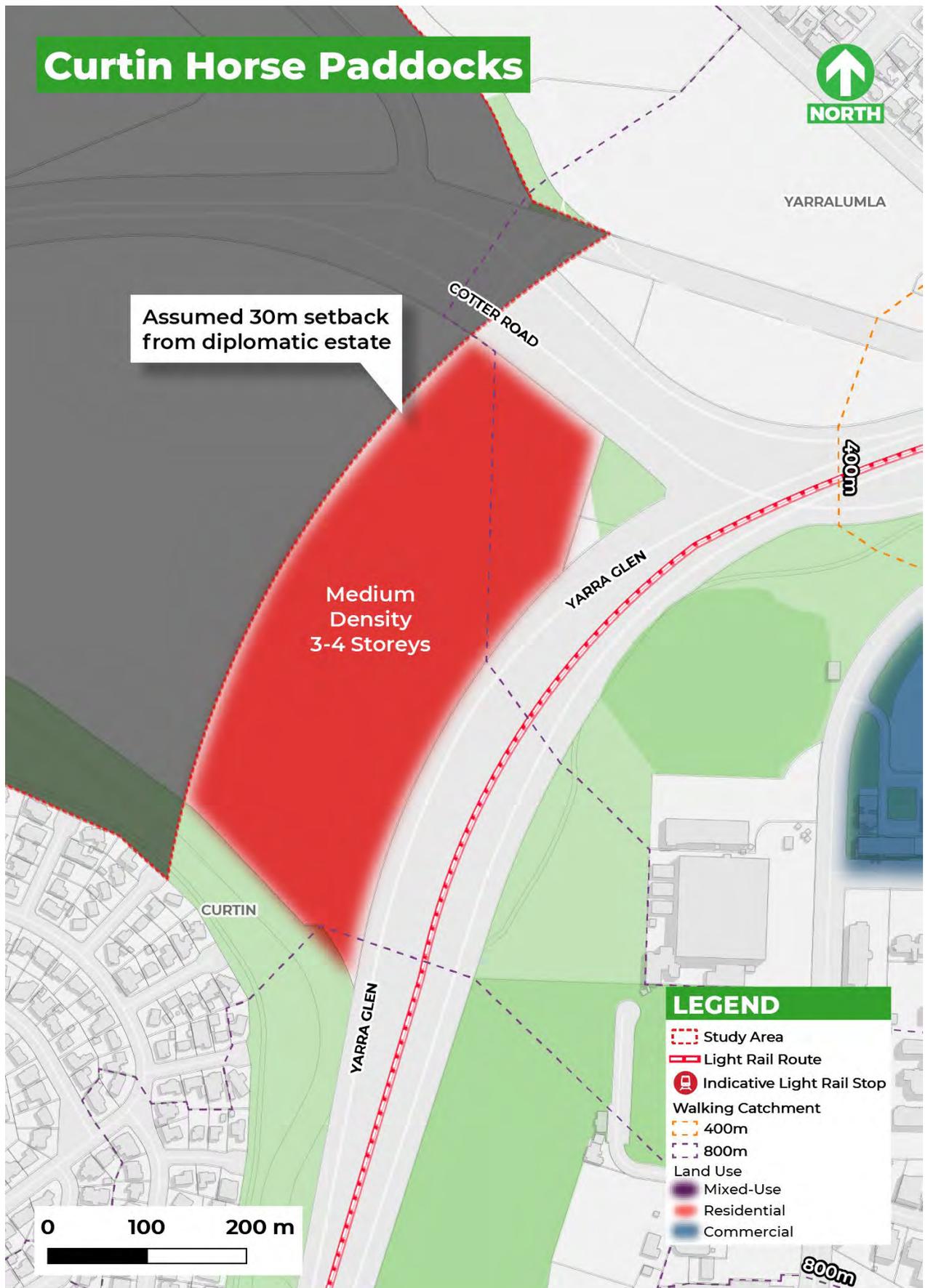


Figure 24: Curtin Horse Paddocks Medium Scenario

Source: Mecone using ACT Government Data

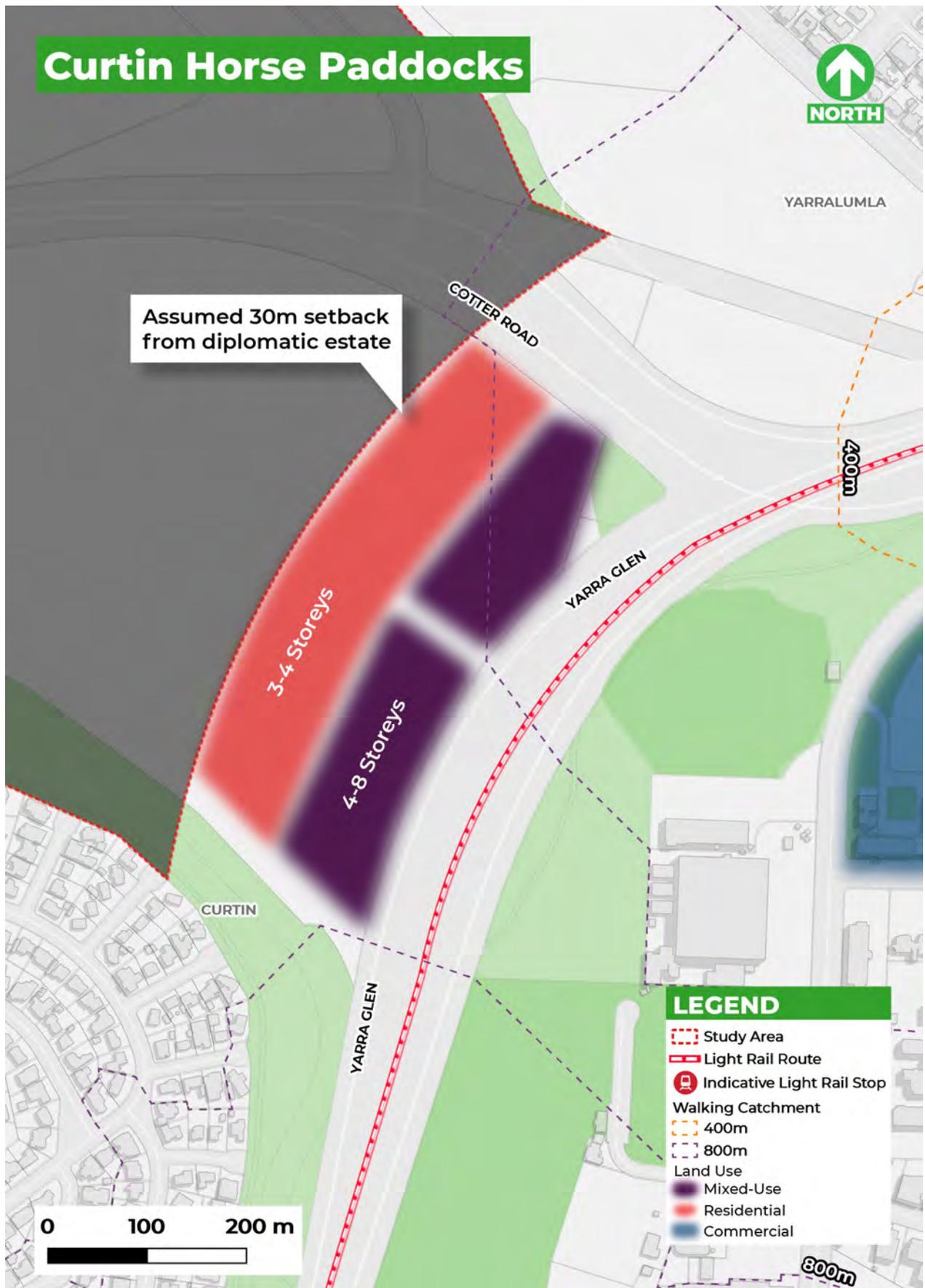


Figure 25: Curtin Horse Paddocks High Scenario

Source: Mecone using ACT Government Data

5.2 West Deakin

The West Deakin Precinct is an established health, education, government and professional services precinct. The precinct is home to several major institutions including:

- Calvary John James, and Canberra Private Hospitals
- Alfred Deakin High School, and Woden Special School
- a diplomatic precinct in the southwest home to around 10 diplomatic residences
- The Royal Australian Mint
- Defence Deakin Offices.

The precinct is bordered by the suburb of Deakin to the east, which is primarily residential. Yarra Glen forms the western edge of the precinct, buffered by several playing fields and public open spaces. To the south is the suburb of Hughes, which is also primarily residential.

The precinct will potentially be served by two light rail stops. The first stop in the north of the precinct, at the intersection of Kent Street and Yarra Glen. The second proposed stop is at the southeast corner of the precinct, at the intersection of Carruthers Street and Yarra Glen.

The lot structure in the north tends towards finer grain, smaller lots, containing a range of professional services intermingled with at-grade car parking. In the south, lots are larger, containing schools and government agencies, with lots in the diplomatic precinct averaging around a hectare in size.

Current building stock and public domain in the precinct are becoming dated. New development is occurring, but opportunities new renew existing buildings, improve the public domain and general amenity may stimulate further economic and development activity.

At present, there are no residential dwellings in the precinct as they are not permitted under the Territory Plan.

5.2.1 Constraints

The primary constraints in the West Deakin Precinct are diplomatic sites, open space, custodianship, and the presence of Golden Sun Moth and Spotted-tailed Quoll habitat. The outer edge of the precinct also has some minor bushfire affectations.

As outlined earlier, there is development activity in West Deakin, focused around the hospital precinct and is primarily commercial or health related.

The location of the indicative light rail stops does not fully serve the precinct within an 800m walking catchment. Shifting the northern stop location further south along Yarra Glen and improving active transport networks would provide better public transport accessibility for the precinct.

Many of diplomatic sites closest to the indicative light rail stop in the south are currently undeveloped, however it is understood that these are unlikely to present an immediate development opportunity for light rail.

A constraint to redeveloping some surface carparks is replacement public parking requirements in the Territory Plan, particularly where there are low building height restrictions.

5.2.2 Viability of land use intensification

Deakin West is functioning well as a commercial market, with high occupancy levels and a number of proposed developments such as:

- the redevelopment of the existing commercial building at the corner of Denison Street and Strickland Crescent into a 3-storey, 52-bed mental health facility (Deakin Health Hub)
- the redevelopment of 90 Denison Street, a former carpark site, proposed as a 3-storey commercial building comprising 8,000sqm of net lettable area
- the redevelopment of 50 Kent Street, the carpark site adjoining the existing Equinox Business Park proposed for development as 'Equinox 2' - a 4-storey, ~9,000sqm office building with a mix of offices, medical suites, co-working offices and retail. However we note that Equinox 2 is not proceeding at this stage.

Commercial development activity in the Deakin West Precinct could be amplified through delivery of the CLR Stage 2, and higher-density residential development would likely be well taken up by the market if permitted.

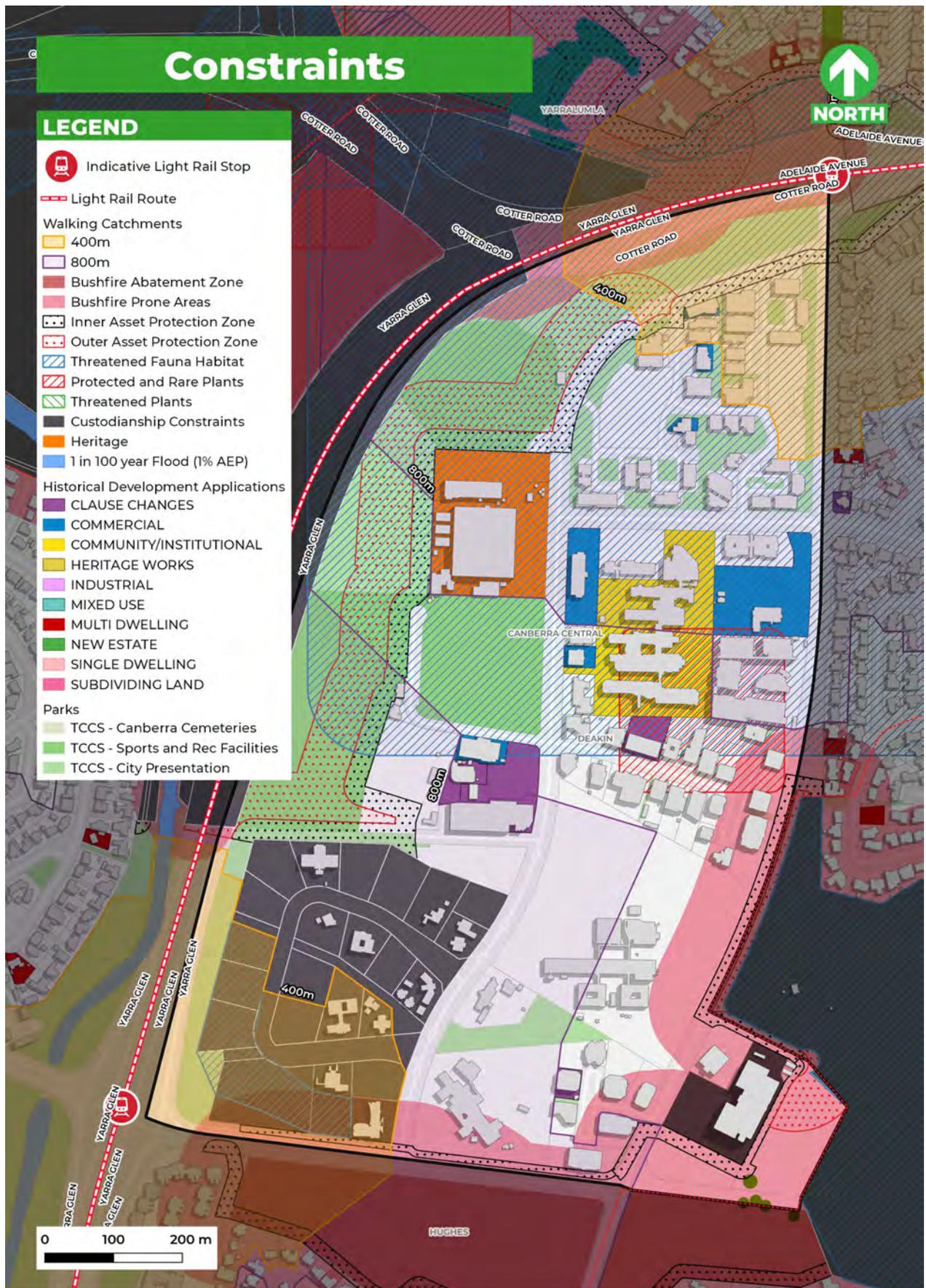


Figure 27: West Deakin Constraints and Walking Catchments

Source: Mecone using ACT Government Data

5.2.3 Land Use Scenarios

Existing and Base Case

The base case assumes no changes from existing planning controls, incorporating recent development, particularly around the hospital. Surrounding residential (which is not captured in these precinct figures) is also expected to continue growing under existing controls.

Although there is considerable capacity under current controls there are potential feasibility issues in realising the full potential. For example, a single storey building is unlikely to redevelop to a double storey building, which is the maximum permitted height in much of the precinct.

A similar situation exists in the surrounding residential, where low density detached dwellings are unlikely to redevelop without a proportionate and economically viable increase in planning controls.

Medium Scenario

The medium scenario assumes uplift in the north of the precinct in Section 37 ranging from 4-6 storeys. This includes redevelopment of at-grade car parking and may include commercial accommodation uses. It is assumed the overall current provision of car parking would be maintained.

No residential development is assumed in the existing commercial lands, however at the north of the precinct an existing at-grade car park and surrounding lands is assumed to redevelop to medium density townhouses/apartments ranging from 2-4 storeys. This is to capitalise on the improved accessibility from the proposed light rail stop.

Introduction of residential uses into the wider precinct may not be appropriate due the lack of supporting amenity and the residential opportunities with greater potential elsewhere in the Study Area.

While there are many locations for new residential along the corridor, there are significantly fewer areas dedicated solely to employment, which are important to preserve and build upon. There are potential agglomeration benefits from retaining commercial centres as employment/medical/NGO clusters. The introduction of residential development into a precinct like West Deakin may reduce the competitiveness of commercial floorspace and introduce development pressures to permit further apartments.

Sites towards the centre and south of the precinct that fall outside the 800m walking catchment are not deemed appropriate for uplift as they do not direct benefit from the improved transport accessibility afforded by the introduction of light rail.

High Scenario

The high scenario builds on the medium scenario, increasing heights up to eight storeys on key sites in Section 37. One other site in the centre of the precinct that is technically unconstrained and underdeveloped is assumed to redevelop up to 6 storeys.

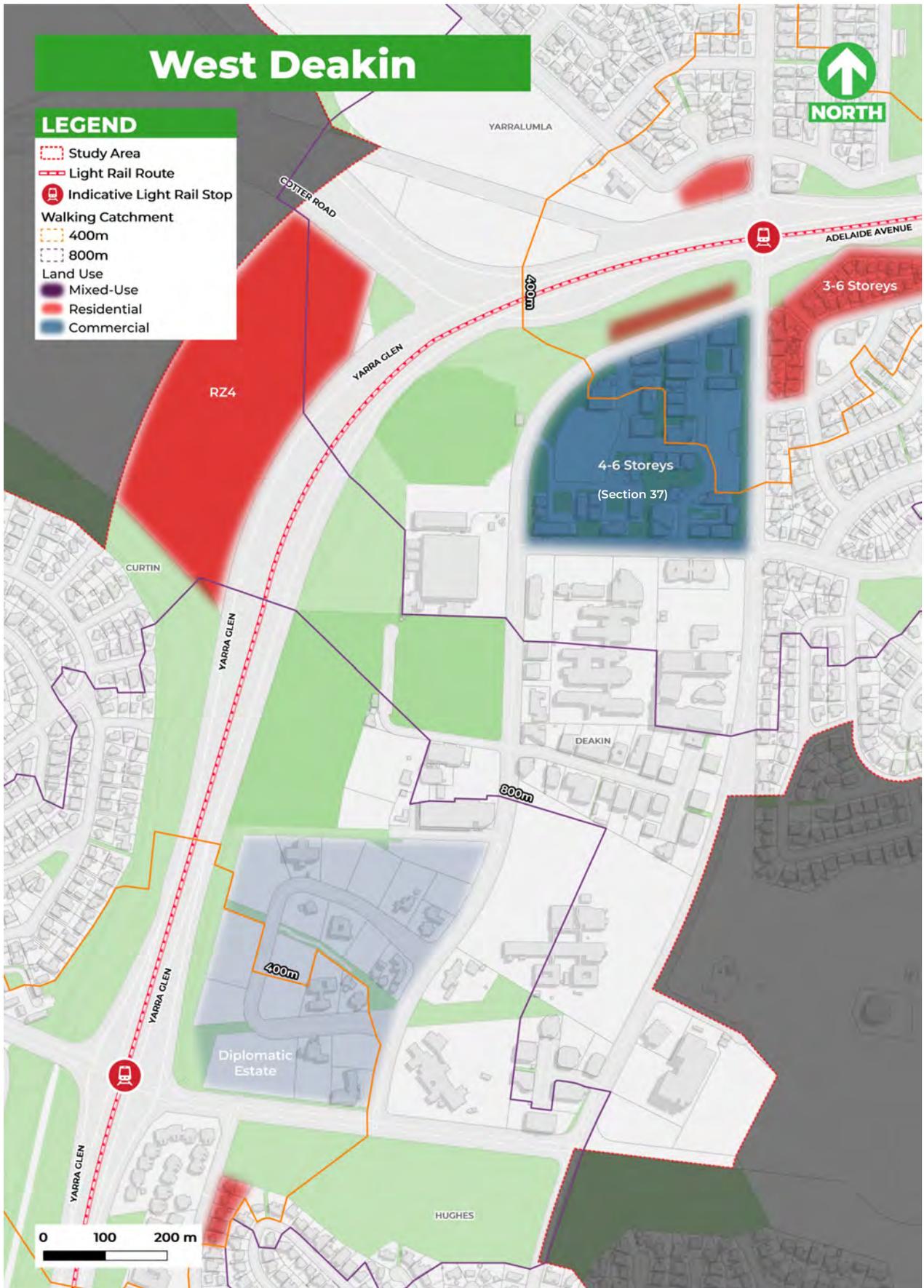


Figure 28: West Deakin Medium Scenario
 Source: Mecone using ACT Government Data

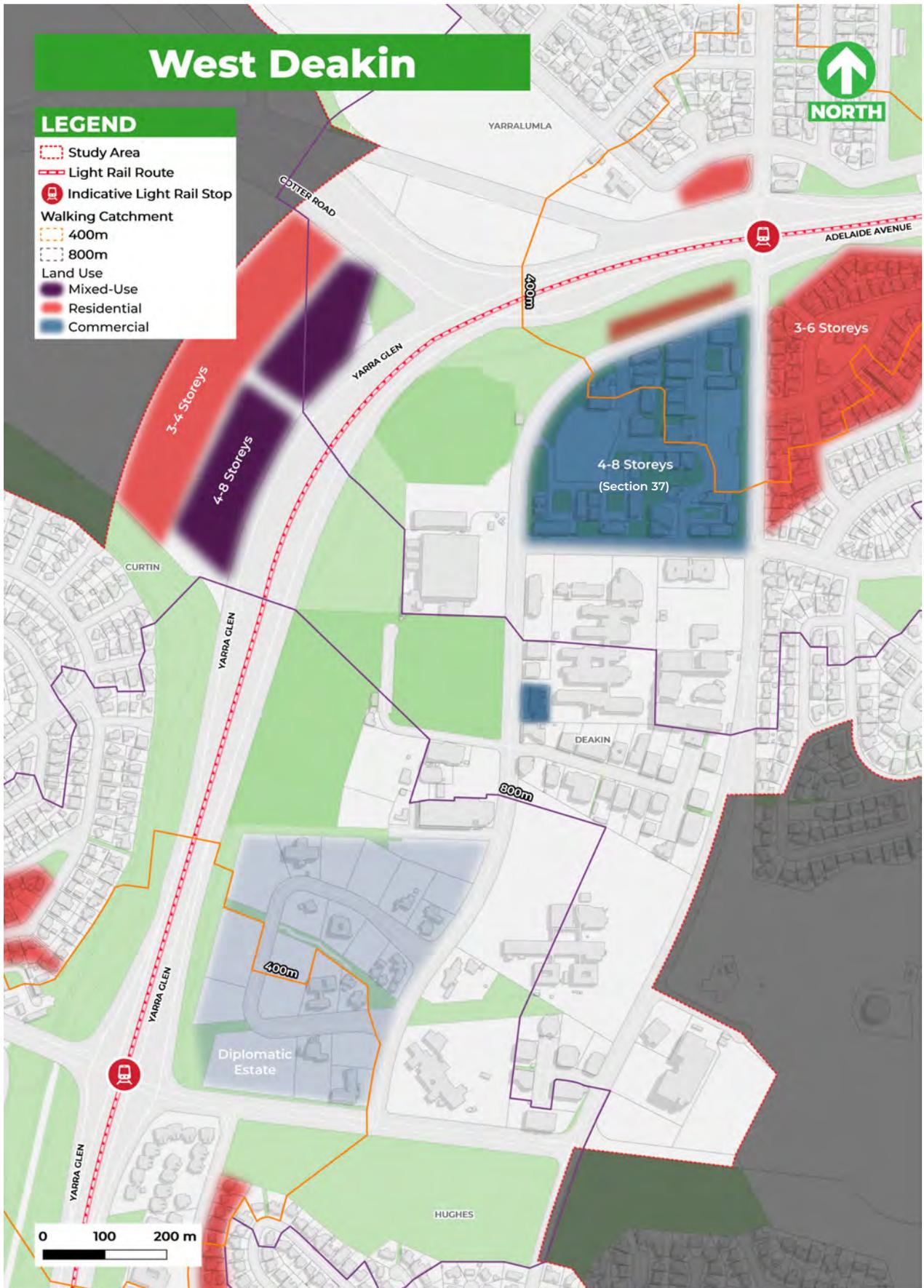


Figure 29: West Deakin High Scenario

Source: Mecone using ACT Government Data

5.2.4 Precinct Forecasts

The centre has historically experienced robust growth, with average annual growth in dwelling and employment in excess of 3% over the 2011-2016 period.

Under the existing planning framework buildings up to 2 storeys are permitted. While market demand is fairly robust, existing use values can be challenging for redevelopment to be feasible. A lift in building heights in appropriate locations would assist to lift market interest in development opportunities

The CLR Stage 2B project has the opportunity to strengthen connection with the City, its improving accessibility further deepening market demand for accommodation opportunities within.

Residential growth in the Curtin Horse Paddocks precinct is expected to contribute to viability of the centre.

The take-up of jobs to 2041 in the Medium and High scenarios is identical even though jobs capacity in the latter scenario is greater. This is due to the quantum of surplus capacity available. As remaining capacity diminishes and opportunities become more competitive, the unlocking of additional capacity is expected to be contested and taken up.

Table 6. West Deakin Scenario Capacities and Take-Up (Dwellings)				
Item	Existing	2031	2041	Capacity
Base Case	30	-	-	30
Medium Scenario		-	-	80
High Scenario		-	-	80

Note: No dwelling forecast was undertaken in West Deakin due to the negligible opportunity for growth.

Table 7. West Deakin Scenario Capacities and Take-Up (Jobs)				
Item	Existing	2031	2041	Capacity
Base Case	6,500	7,600	10,200	11,600
Medium Scenario		8,400	12,500	15,600
High Scenario		8,400	12,500	16,300

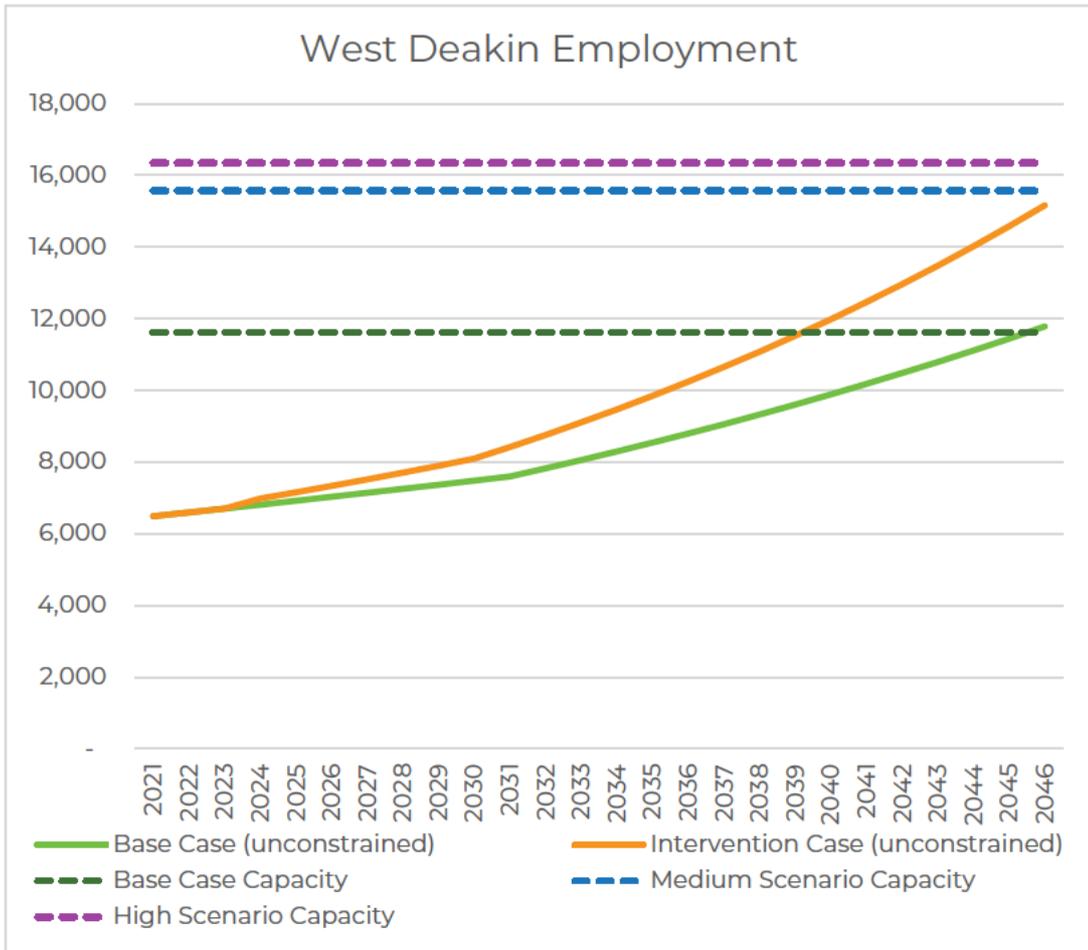


Figure 30: West Deakin Employment Take-Up

Source: Atlas Urban Economics

5.3 Phillip-Woden Town Centre

One of Canberra's largest town centres and suburban office markets, Phillip is anchored by the Westfield Shopping Centre, multiple low and medium rise office buildings and a mix of low and high-rise apartment buildings. It is separated into two main sub-precincts; the Woden Town Centre north of Hindmarsh Drive and the Phillip Service/Trade Area south of Hindmarsh Drive.

The Woden Town Centre includes the Westfield Shopping Centre and comprises a large cluster of investment grade office buildings. It contains a mix of government departments such as the Department of Health, Services Australia, and CASA, which contribute to its commercial profile. The Phillip Service/Trade Area to the south is characterised by a mix of retail showrooms, light industrial uses and secondary grade office buildings. It plays an important ancillary role to the Woden Town Centre, with office rents some 25% lower.

Within Woden Town Centre, population increased 8.9% from 2019-2020¹, the third fastest growing area in the ACT for the period. This is a pattern that is likely to continue due to the recent completion of several apartment towers. The Woden Town Centre Master Plan anticipates a doubling in Woden's population from 2015 to 2031, with over 5,500 people expected in 2031.

The Woden and Phillip centres are mostly zoned for commercial purposes, with Woden comprising CZ1 Commercial Core and CZ2 Business Zones, and Phillip comprising the CZ3 Services Zone. The outskirts of the centres are more varied, including residential zones of varying densities and land set aside for community uses.

The Woden Town Centre Master Plan indicates a diverse range of office building stock in the centre, some of which is approaching the end of its useful life and no longer likely to meet the required standards to attract an Australian Government tenant. The tallest buildings reach 20 to 24 storeys. The master plan identified the opportunity to provide a range of different housing typologies in the centre, including within the Phillip service trades area to the south and along Athllon Drive.

The spatial framework extracted from the master plan is shown earlier in this report in Figure 10.

Within the precinct there are four light rail stops currently identified, serving the recreation and living precinct, Woden Town Centre, Phillips Service Trades and Athllon Drive Precinct, and the high schools in the south. Initial engineering and urban design feasibility designs suggest that there will be a need for the reconfiguration of several roads and intersections with the introduction of light rail.

¹ ABS Regional Population 2019-2020
< <https://www.abs.gov.au/statistics/people/population/regional-population/latest-release>>



Figure 31: Phillip Woden Precinct Context
 Source: Mecone using ACT Government Data

5.3.1 Constraints

The primary constraints to development in the precinct are development activity, custodianship and environmental issues. Poor pedestrian and active transport connections across major roads and creek lines will also limit the influence of future light rail. Block and urban layouts may be a constraint impacting connectivity and developability, as existing layouts may constrain the ability to ameliorate access issues. Measures to improve pedestrian connectivity will greatly support urban intensification.

Through consultation with stakeholders, potential development constraints affecting the Athllon Drive precinct sites were identified, mainly the existing utilities, flooding from the creek and the potential existence of threatened habitats. Further investigation into these matters is ongoing and may have an impact on their final uplift potential.

Current building heights in the town centre, which are up to 24 storeys, are considered the maximum appropriate height for future development. There are a number of heritage items in the precinct, including the Cemetery in the east, Callum Offices, and Woden Library in the town centre.

Development in the Woden Town Centre is already responding to light rail, with the integrated CIT campus, student accommodation and transport interchange receiving business case approval.

A constraint for redeveloping some surface carparks are requirements in the Territory Plan to provide replacement public parking, particularly where there are low building height restrictions. The cost of supplying on-site basement parking along with the reduction over time of surface carparks may constrain market capacity of developments, particularly for commercial buildings, even when light rail is operational and can act as a transport option for some workers.

Analysis of current car parking provision and utilisation provided by ACT Government in Phillip-Woden shows car parking is highly utilised during peak periods. Noting the community sensitivities with respect to car parking provision, best practice transport planning should seek to encourage modal shift away from private car usage to more sustainable transport methods such as public and active transport. The introduction of light rail to the precinct provides the opportunity to rethink car parking provision in the centre.

5.3.2 Viability of land use intensification

A significant amount of mixed-use development activity is underway in the Woden Town Centre with developers acquiring large underutilised/vacant sites and ageing commercial buildings. Importantly, developers are not acquiring investment grade office buildings within the precinct and therefore the activity has little impact on the stock of viable commercial buildings.

Development activity in the Phillip Service/Trades precinct has been more tempered compared to the Woden Town Centre, though there are several ongoing projects included the redevelopment of the Woden Bus Depot as a new municipal bus depot. It should be noted that although gentrification opportunities may exist for the Phillip Trades Area, part of this CZ3 zoned land should be protected from higher order uses. This area serves as an important light industrial and lower rent commercial area,

servicing Woden as well as neighbouring districts. Business in this area provide diverse employment opportunities and vital services which may not be compatible with other forms of development (car yards, light manufacturing, recycling depot, bus depot). As discussed, potential for intensification should focus on uses which are compatible in this area.

There is a significant land banking underway with the first signs of mixed-use development being progressed since completion of the Woden Town Centre Masterplan. For instance, Geocon recently purchased 7-11 Botany Street and have lodged DA for a five storey mixed-use building with eight ground floor commercial suites and 38 apartments. This represents the first mixed-use development proposed for the Phillip Service/Trades area.

The prospects of further development in Phillip are good as evidenced by ongoing activity in both the Woden Town Centre and Phillip Service/Trade Area. The CLR Stage 2 would likely further drive development take-up in both precincts.

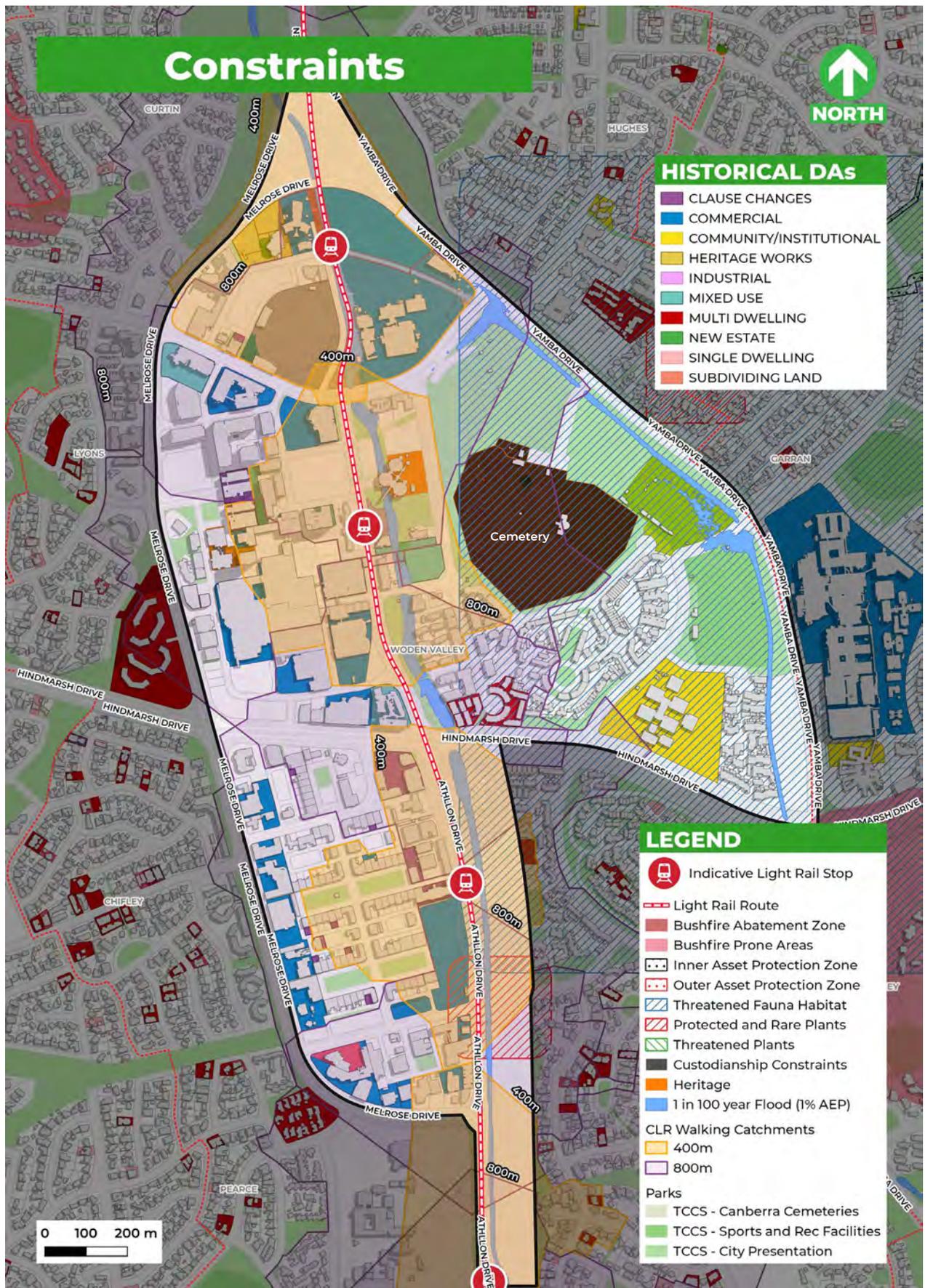


Figure 32: Phillip Woden Constraints
 Source: Mecone using ACT Government Data

5.3.3 Land Use Scenarios

Existing and Base Case

The base case assumes the full realisation of the Woden Town Centre Masterplan, incorporating recent development applications. The one exception to the masterplan being realised is that no redevelopment of the Westfield site is assumed in the base case. This is due to the high existing value of the site (estimated at \$600 million) and is unlikely to redevelop until other sites in the town centre have been developed.

The base case also assumes the development of the Athllon Drive precinct land release sites at a reduced capacity. Mecone understands there are potential feasibility constraints on these sites that may limit the ultimate capacity.

There is significant unrealised capacity in base case due to:

- a large number of at-grade car parking sites with the capacity for 12-16 storeys of development
- existing sites not developed to their full planning capacity
- existing floor space that is underutilised (for example: commercial floorspace with capacity to accommodate more employees in the same floorspace ie. intensify workspace ratios).

It is noted that anomalies were found in the CSTM population figures within the Phillip-Woden town centre, mainly areas with apartments showing zero population. Current at-grade car parking provision has been maintained in the modelling of planning capacity and applied as a reduction of total GFA.

Medium Scenario

Due to the significant latent capacity in the base case, no widespread changes to the current planning controls were deemed necessary in the Phillip-Woden Precinct in the Medium Scenario.

However, two key changes assumed in the medium scenario include partial redevelopment of the Westfield Site to the controls proposed in the Town Centre Masterplan, and redevelopment of Yarra Glen roundabout to a mixed-use development. Though not counted in these precinct figures, residential intensification is noted in appropriate areas, extending to the further bounds of the light rail stop walking catchments.

High Scenario

The high scenario sees a modest increase in dwelling capacity above the medium scenario. This is representative of the introduction of mixed-use development ranging from 4-8 storeys in the north of the Phillip Service Trades precinct. This land use change is assumed following the build out of capacity in the Town Centre, and assuming there is market demand to warrant this change. Employment floorspace in service trades area should be protected as it cannot be easily replaced nearby.

Again, though not counted in these precinct figures, residential intensification is assumed in appropriate surrounding areas, extending to the further bounds of the light rail stop walking catchments and supporting higher densities than the medium scenario.

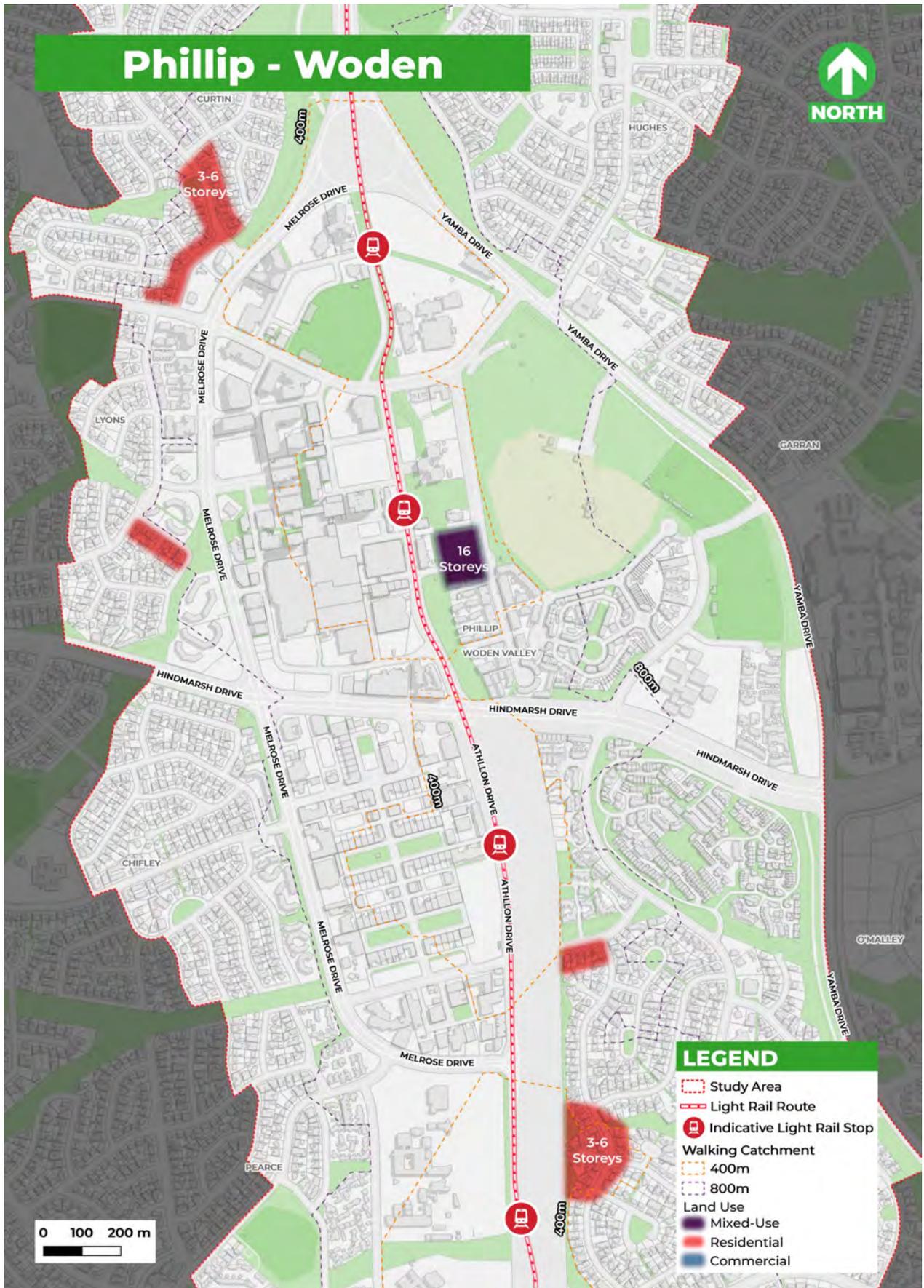


Figure 33: Phillip Woden Medium Scenario
 Source: Mecone using ACT Government Data

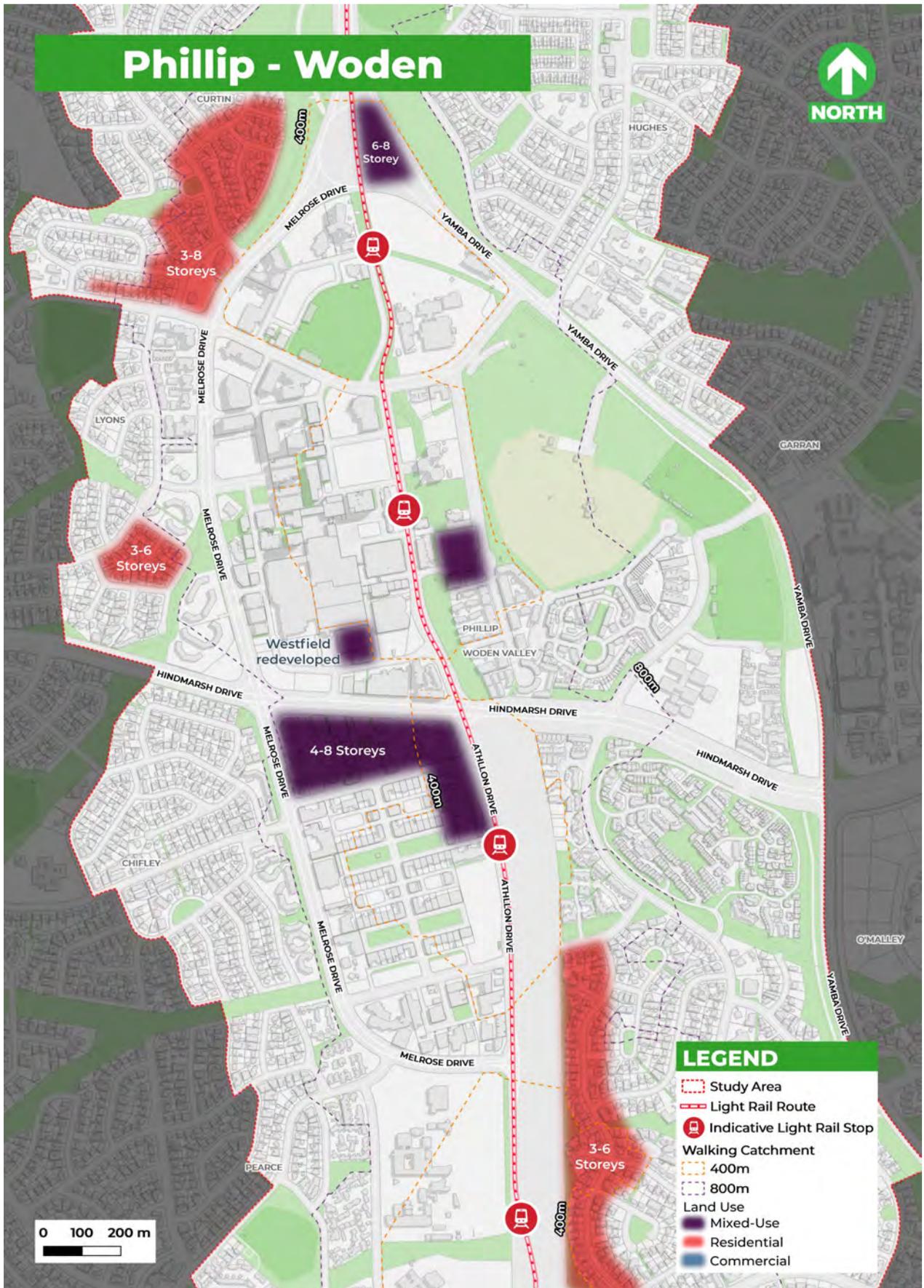


Figure 34: West Deakin High Scenario
 Source: Mecone using ACT Government Data

5.3.4 Precinct Forecasts

The Phillip-Woden precinct represents the Study Area's key opportunity for sustainable and accessible growth. Development momentum is building, with significant quantum of activity at various stages of planning and delivery.

Market attitudes towards higher density formats are still emerging and establishing. While improved accessibility brought about by the CLR will be a boon for the desirability of higher density living, place-making, retail and urban amenity are equally important contributing factors to the viability of higher densities. In this sense, the precinct has some of the greatest opportunities in the study area for amenity improvement, including active links across creek lines and embellishment of open spaces.

CLR Stage 2B is expected to result in increased desirability for business floorspace in the precinct. The take-up of floorspace opportunities will however depend on precinct-specific considerations and if they meet business site selection criteria. While transport accessibility is important to businesses, so too are factors such as image/prestige, place and urban amenity as well as the co-location and clustering opportunity for certain industries.

The take-up of dwellings and jobs to 2041 in the Medium and High scenarios is forecast to be identical even though capacity in the latter scenario is greater. This is due to the quantum of surplus capacity available and market attitudes towards higher densities.

As remaining capacity diminishes and opportunities for high densities become more competitive, the unlocking of additional capacity is expected to be contested and taken up post 2041. Where there are sites that are not feasible to develop to their theoretical capacity, the take-up in that area is forecast at a more moderate pace and/or much of theoretical capacity is not taken up.

Table 8. Phillip-Woden Scenario Capacities and Take-Up (Dwellings)				
Item	Existing	2031	2041	Capacity
Base Case	2,100	3,700	5,800	9,200
Medium Scenario		4,600	7,900	9,200
High Scenario		4,600	7,900	10,900

Table 9. Phillip-Woden Scenario Capacities and Take-Up (Jobs)				
Item	Existing	2031	2041	Capacity
Base Case	14,800	17,300	23,200	52,200
Medium Scenario		21,600	32,000	52,300
High Scenario		21,600	32,000	53,200

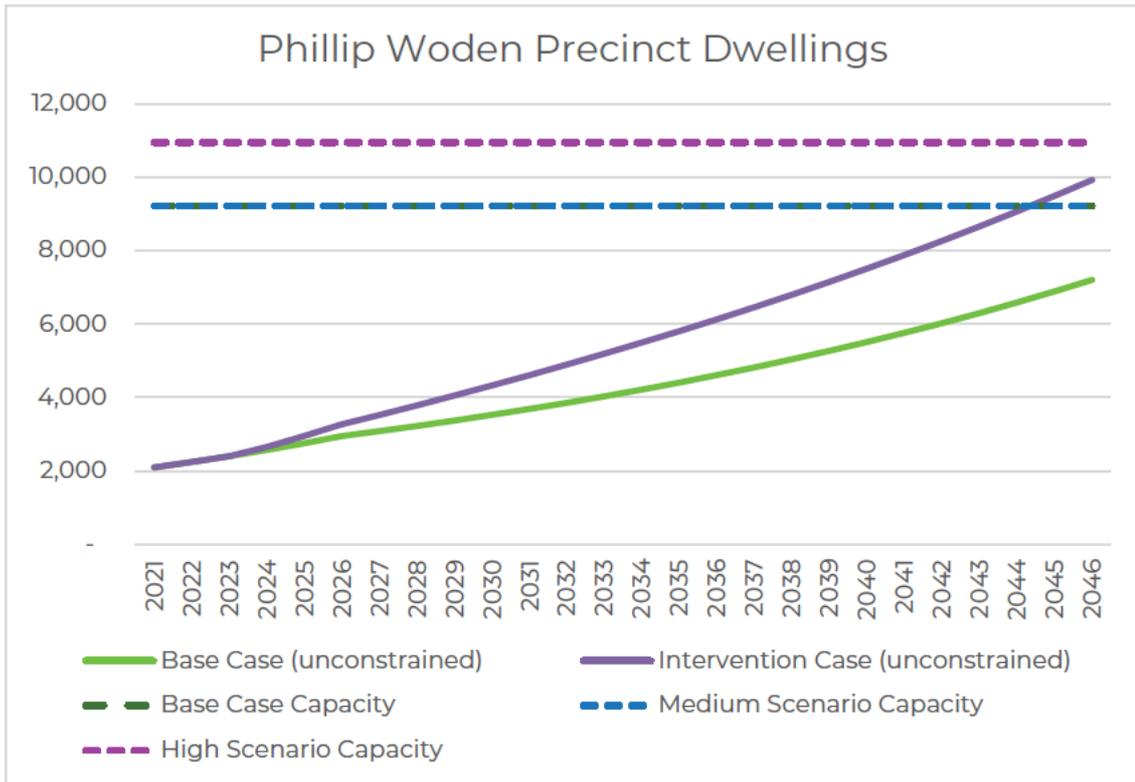


Figure 35: Phillip Woden Dwelling Take-Up
 Source: Atlas Urban Economics

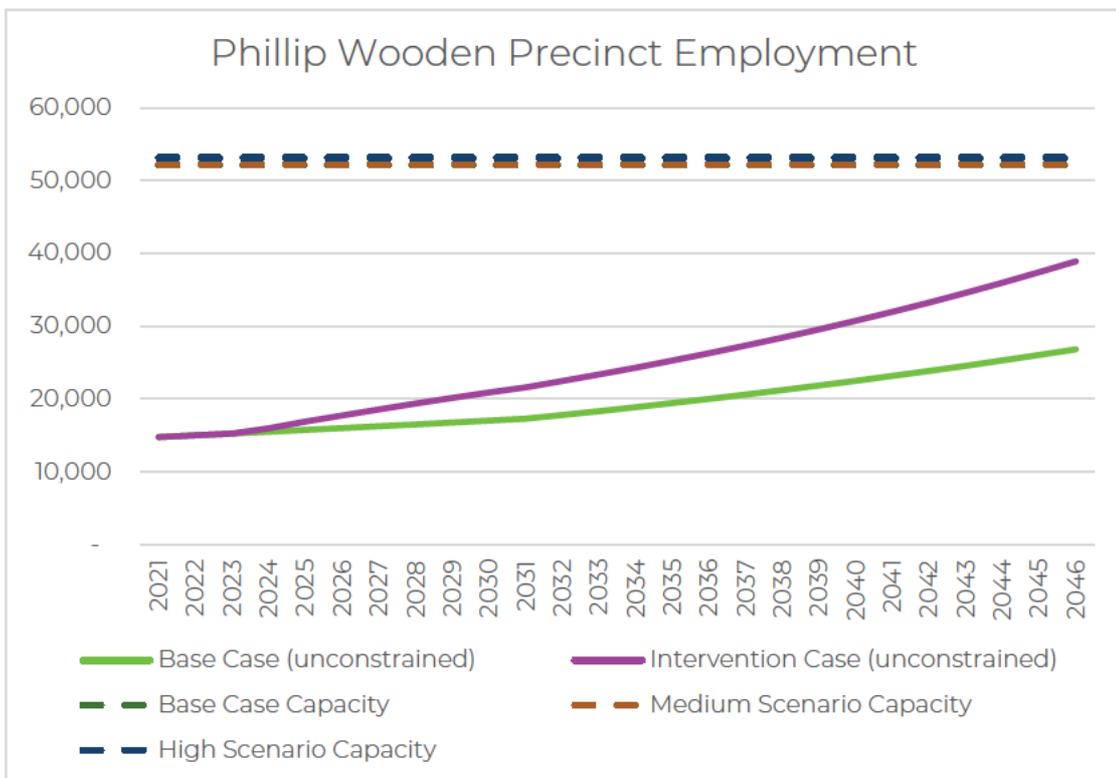


Figure 36: Phillip Woden Employment Take-Up
 Source: Atlas Urban Economics

5.4 Mawson

5.4.1 Context

The Mawson Precinct, centred around the Mawson Group Centre, is a low-density group centre at the end of the Stage 2B light rail line, noting that the light rail line may possibly continue to Tuggeranong in the future.

The population of Mawson has been slowly growing and is expected to continue to do so, anticipated to reach 4,075 people by 2031 from around 3,200 in 2014 (Mawson Group Centre Master Plan 2015). Its population is older than the rest of the ACT (39.9 compared to 35.9 respectively in 2020), and it is expected that the population will continue to age into the future.

In 2020 there were 2,932 jobs in the Mawson SA2, with an estimated resident population of 3,384 (ABS).

In 2016 17.5% of employees were in health care and social assistance, 10.1% in professional, scientific and technical services and 8.2% in retail trade. Of those working in Mawson, 40% lived in the Woden Valley, approximately 7km north to south and 4km east to west.

The centre of Mawson currently has three different commercial zones; CZ1 Core Zone, CZ2 Business Zone and CZ3 Services Zone. There is currently no residential development in the centre and no land specifically zoned for the sole purposes of residential development. However, CZ1, CZ2 and CZ3 zones do allow for residential outcomes, and the Master Plan identified Mawson as an 'ideal' location for new residential development in the future.



Figure 37: Mawson Precinct Context
 Source: Mecone using ACT Government Data

5.4.2 Constraints

Flooding from the Yarralumla creek is a major constraint in Mawson, particularly on land east of the proposed light rail stop. The centre itself is otherwise relatively unconstrained, with some older building stock providing renewal opportunities. Development feasibility has been identified as a potential development constraint however, though with the introduction of light rail the desirability of the centre may improve.

Renewal of established residential areas on the precinct's periphery may prove difficult due to their defined village character and building typologies.

The identified land release parcel on Athllon Drive north of the proposed light rail stop is understood to have some significant constraints due to existing utilities and flooding. The costs associated with the relocation of utilities and flood mitigation may impact the future viability of development on this site.

A constraint for redeveloping some surface carparks are the public parking replacement requirements in the Territory Plan, particularly where there are low building height restrictions.

5.4.3 Viability of land use intensification

Mawson is anchored by the Mawson Southlands Shopping Centre, a neighbourhood, convenience-based shopping village comprising a full-line Woolworths supermarket and variety of other specialty retailers. The precinct features a series of separate commercial and shopfront retail buildings, many approaching the end of their economic useful life. The precinct is also tightly held with few transactions observed in recent years.

A substantial amount of infill development is observed through the residential zones, predominantly small-scale medium-density projects (less than five dwellings). Limited development activity has been proposed in the Mawson Group Centre in general and little activity has occurred for several years. The former Serbian Club, which is understood to have been vacant for several years due to rising operational costs and poor patronage, has been proposed for a mixed-use development of around four storeys, though a formal DA yet to be lodged.

The prospects of development intensification in Mawson, particularly the Mawson Group Centre, are considered strong. Light rail could prove an important catalyst for mixed-use development and bring forward development take-up.

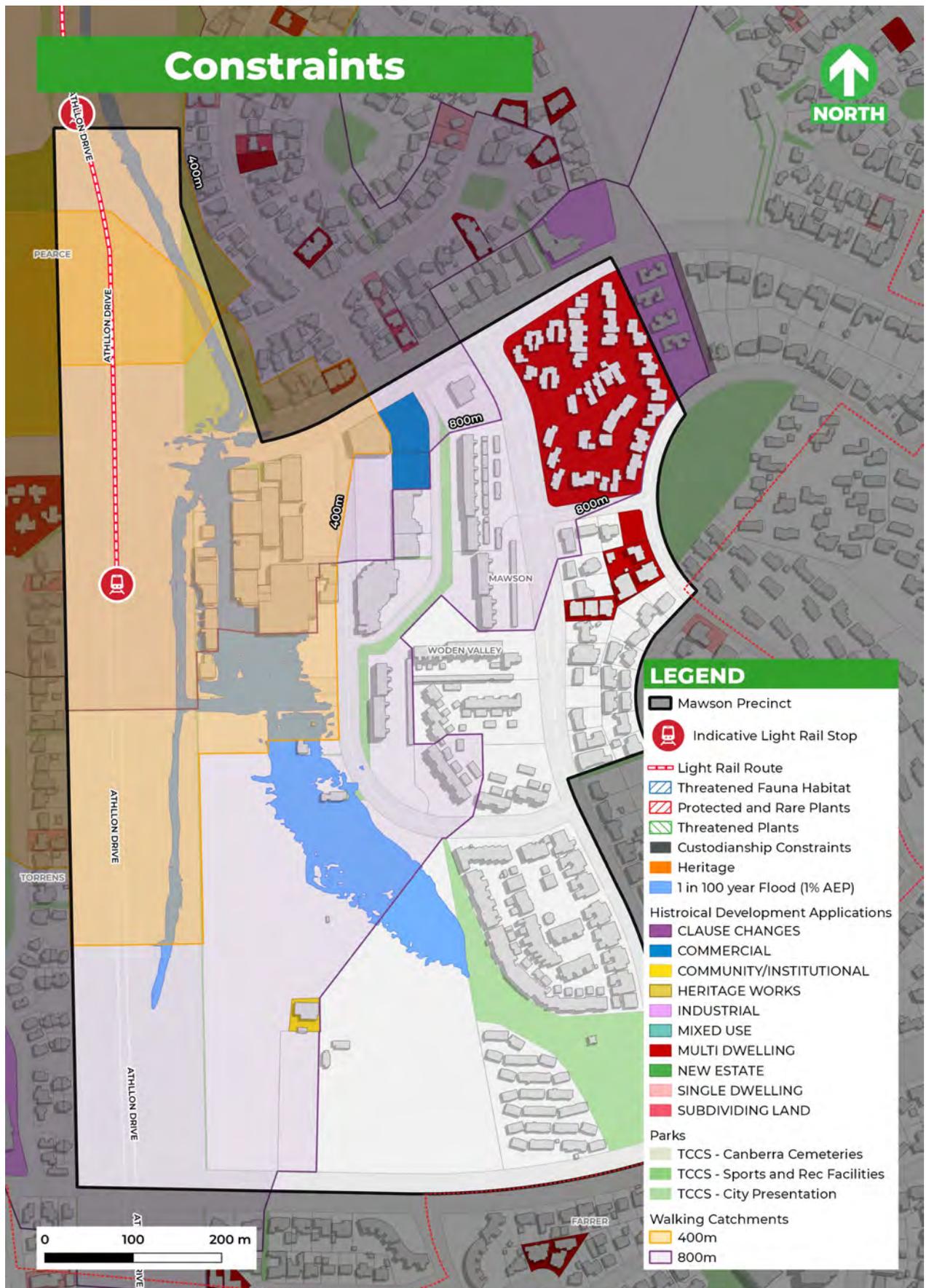


Figure 38: Mawson Constraints
 Source: Mecone using ACT Government Data

5.4.4 Land Use Scenarios

Existing and Base Case

The base case assumes full realisation of the Mawson group centre masterplan. Mecone note that preliminary economic advice suggests that the increase in storeys control proposed in the masterplan above existing on some sites may not be feasible, with an increase from one to two storeys on some sites unlikely to trigger redevelopment.

There were limited nearby development applications to include in the base case, with growth assume to continue within the existing controls, both inside and outside the precinct.

The significant employment capacity above existing in the base case is representative of the modest increase in building storeys above existing, noting that realisation of this capacity has potential constraints. Opportunities to intensity workspace ratios would also contribute to increased employment in the centre.

No development of the Athllon Drive land release site at the north of the precinct is assumed in the base case due to potential environmental constraints, and the engineering impact of light rail on the site.

The car park site towards the south of the precinct fronting the sporting fields is assumed to develop to 2 storey residential in the base case.

Medium Scenario

The medium scenario builds on the base case, assuming full realisation of the Mawson group centre masterplan with additional uplift to a minimum of four storeys across the precinct. This increase in height may improve the desirability of the precinct and trigger redevelopment.

Medium Density and Missing Middle Townhouses are proposed in appropriate adjacent residential areas, particularly those that benefit from existing open space amenity, have appropriately sized lots and are within the walking catchment of the proposed light rail stop.

High Scenario

The high scenario builds on the medium scenario, increasing building heights up to ten storeys on two key northern sites adjacent to the light rail stop and allowing for development of the Athllon Drive land release site at the north of the precinct. The high scenario assumes the constraints affecting the site are overcome.

Further Missing Middle/Medium Density residential uplift is assumed in appropriate areas near open space and with appropriate lot structures. This uplift is more extensive than the medium scenario but is still considered appropriate due to relatively low density in the surrounding suburbs and the increased desirability of these areas following the introduction of light rail.

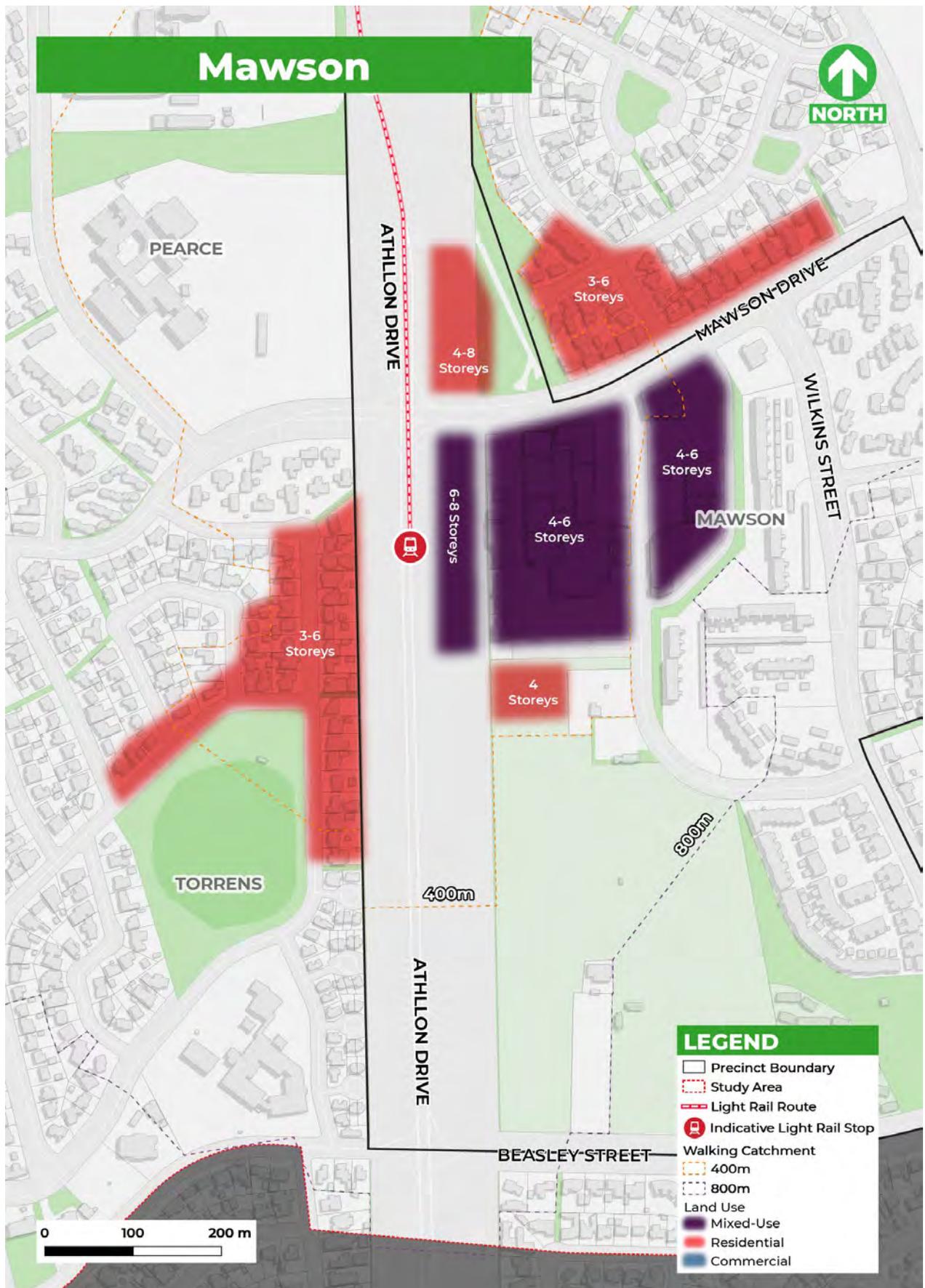


Figure 39: Mawson Medium Scenario
 Source: Mecone using ACT Government Data

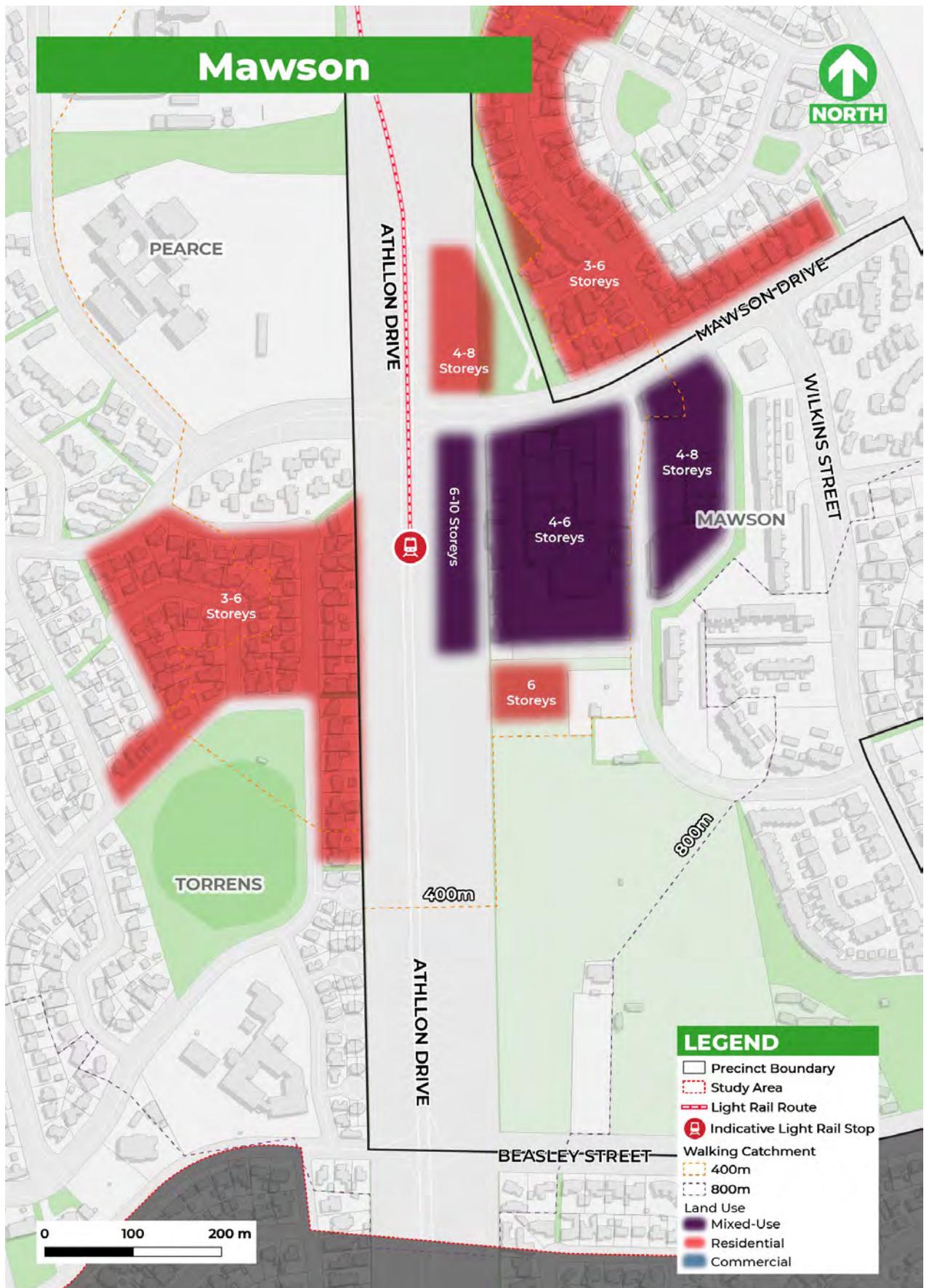


Figure 40: Mawson High Scenario
 Source: Mecone using ACT Government Data

5.4.5 Precinct Forecasts

The Mawson Precinct has historically been an area of relatively low growth, both from a dwellings and employment perspective.

There is limited remaining capacity in the existing planning framework, with capacity expected to be reached some time before 2031.

The CLR project is expected to raise Mawson's attractiveness with the increased accessibility likely to induce market demand for dwelling and associated employment opportunities.

New employment is expected to support residential growth and 'track' the pace of residential growth. Consequently, despite there being latent capacity for employment floorspace, the take-up of employment floorspace only occurs to the extent that it 'tracks' / supports residential growth.

Additional capacity in the planning framework is required to be unlocked should the CLR project proceed.

Where there are sites that are not feasible to develop to their theoretical capacity, the take-up in that area is forecast at a more moderate pace and/or much of theoretical capacity is not taken up.

Table 10. Mawson Scenario Capacities and Take-Up (Dwellings)				
Item	Existing	2031	2041	Capacity
Base Case	500	700	800	800
Medium Scenario		800	800	900
High Scenario		800	1,100	1,300

Table 11. Mawson Scenario Capacities and Take-Up (Jobs)				
Item	Existing	2031	2041	Capacity
Base Case	600	700	1,000	2,600
Medium Scenario		800	1,000	3,300
High Scenario		800	1,000	3,600

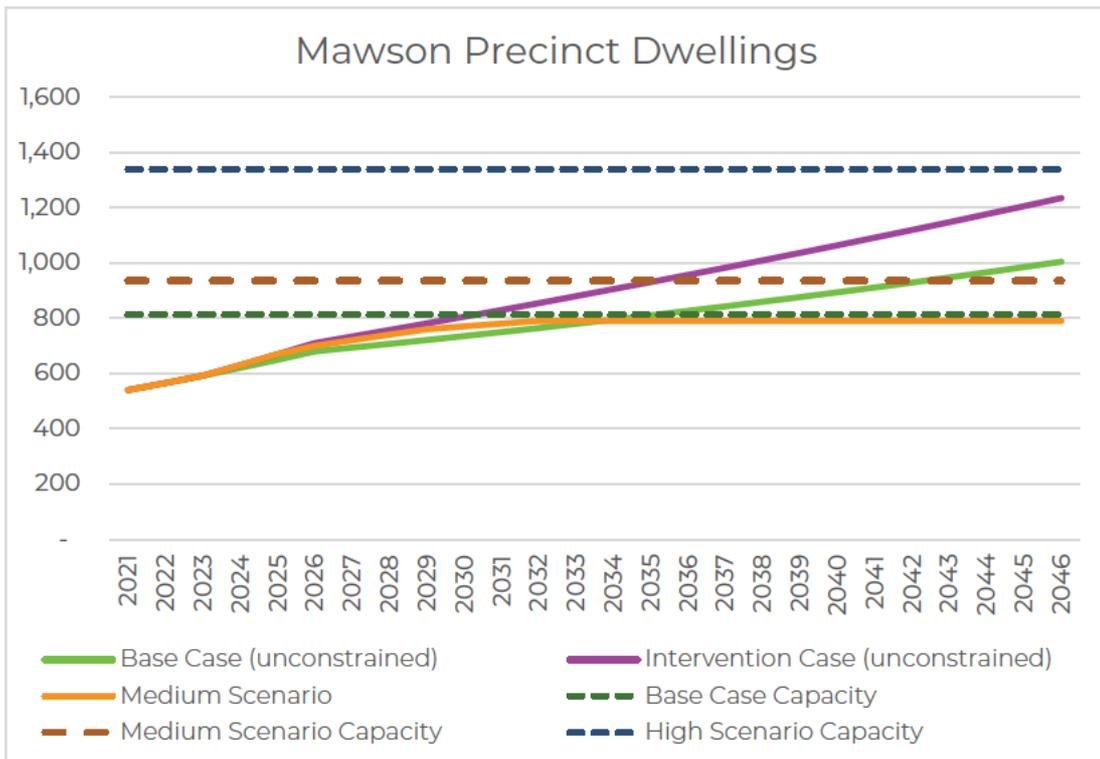


Figure 41: Mawson Dwelling Take-Up
 Source: Atlas Urban Economics

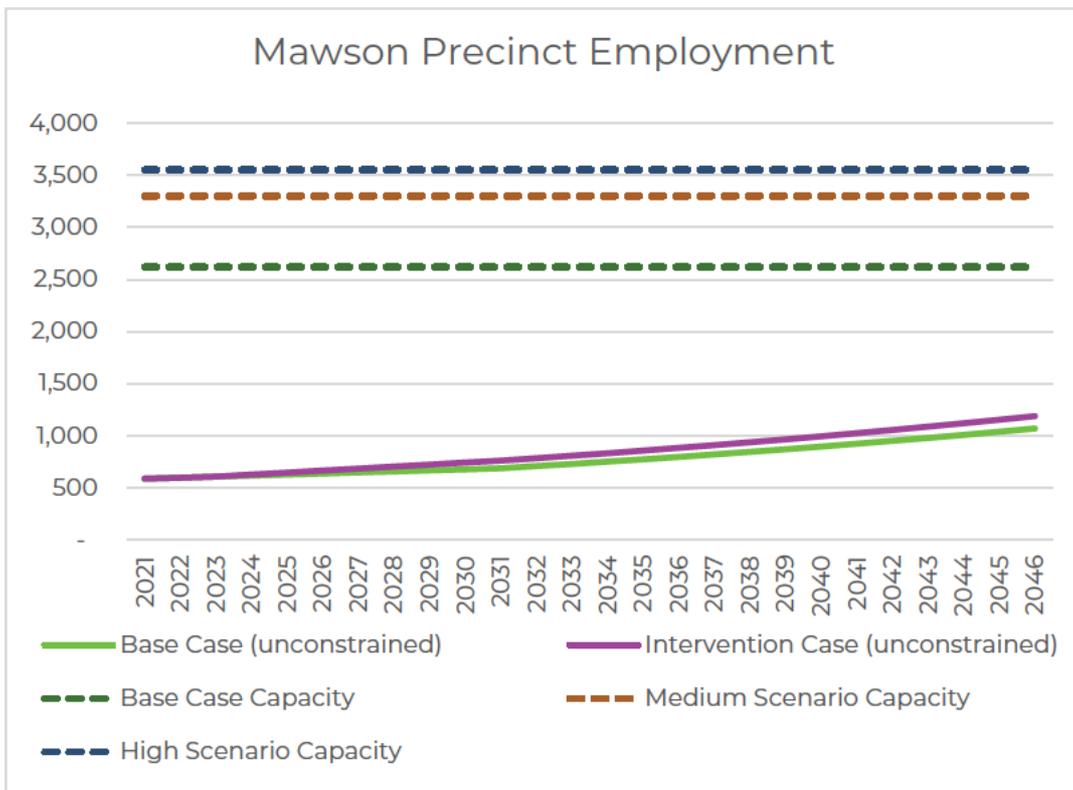


Figure 42: Mawson Employment Take-Up
 Source: Atlas Urban Economics

5.5 Remainder of the corridor

5.5.1 Context

Due to the scale of the remaining Study Area and the differing market contexts, the remainder of the corridor has been broken into three 'frame areas' as shown in Figure 43.

The North Frame Area traverses the suburbs of Barton, Forrest, Yarralumla and Deakin. The Phillip Frame Area includes the suburbs of Curtin, Hughes, Lyons, Chifley and Phillip. The Mawson Frame Area contains areas of Pearce, Torrens and Mawson. The frame areas do not represent full suburbs.

The suburbs of Barton and Forrest are characterised by a mix of low-density detached housing, educational uses, hotels, embassy buildings, commercial and government offices and modern apartment buildings. Yarralumla is characterised by low-density residential housing, recreational uses and open space. Deakin is a primarily residential neighbourhood, which comprises a mix of detached housing, older style apartment buildings and more recently, completed duplexes, townhouses and low-rise apartment buildings.

Amongst Canberra's most established suburbs, Curtin and Hughes are popular residential neighbourhoods characterised by a mix of low-density housing (both aged and recently constructed) and older style, 'walk up' unit blocks. Curtin also comprises a large cluster of social housing which was developed in 1960s and 1970s.

Lyons is a predominantly residential suburb adjoining the western boundary of Woden Town Centre. Housing is predominantly older style, single storey dwellings interspersed with more recently constructed brick houses and attached duplexes. More dense forms of development are located on the easternmost edge of the suburb (directly adjoining Woden Town Centre), including a seniors living village and mix of older and more modern (c. 2013-14) low and medium rise apartment buildings.

Similar to Lyons, Chifley is typified by older style, single storey detached housing interspersed with more recently constructed duplexes and low-rise apartment buildings. A smaller proportion of social housing is observed throughout Chifley.

The suburbs of Pearce and Torrens are predominantly residential neighbourhoods, featuring a mix older style brick veneered housing and more recently constructed houses. There are a limited number of unit blocks in both localities.

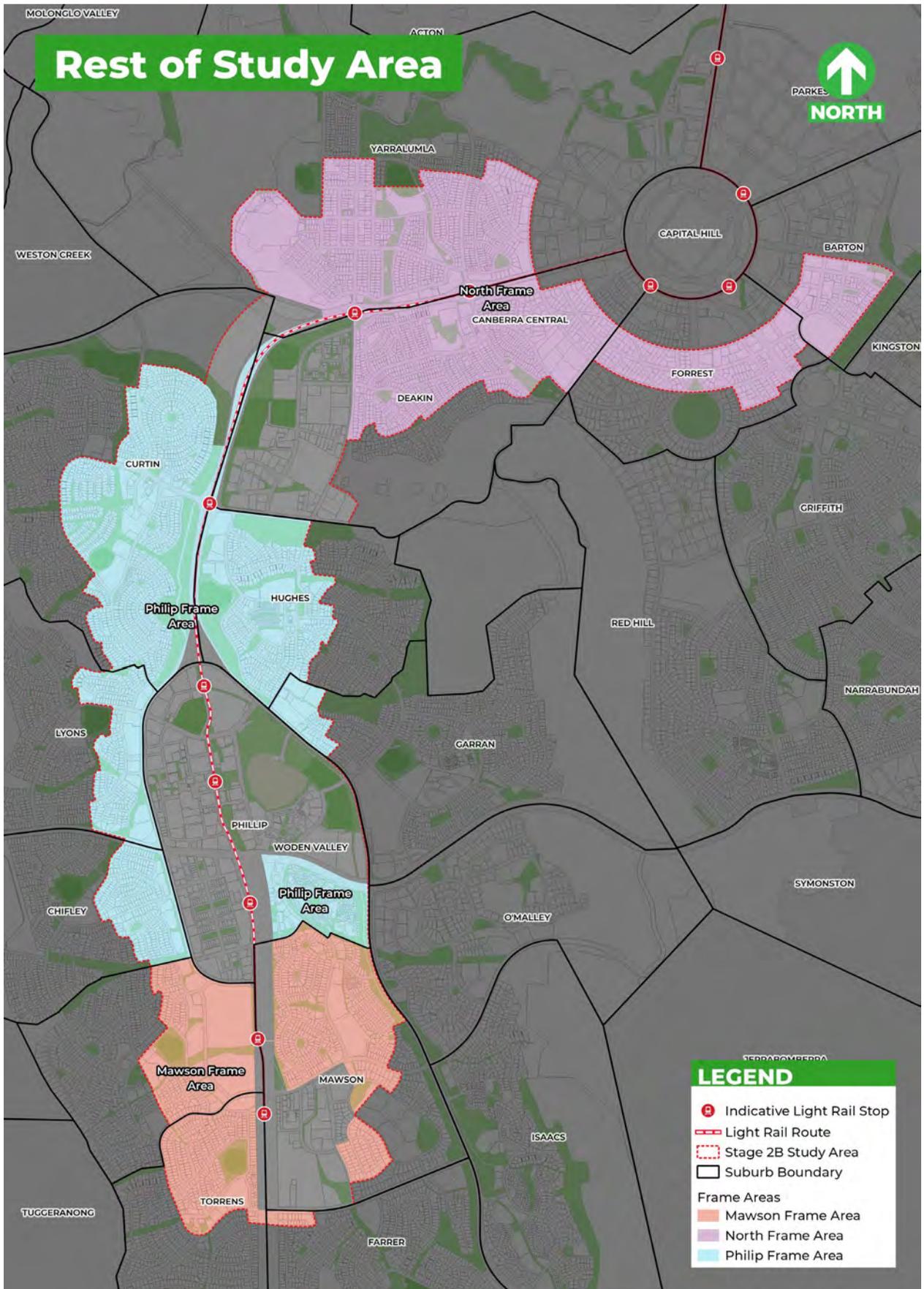


Figure 43: Rest of Study Area
Source: Mecone

5.5.2 Viability of land use intensification

The viability of land use intensification within the remainder of the corridor has been split by suburbs, given the differing land use markets.

We note that some redevelopment in the frame areas has been brought forward by the Mr Fluffy Loose Fill Asbestos Insulation Eradication Scheme introduced in 2014. Under the scheme, the ACT Government is acquiring, demolishing, and safely disposing of affected homes, remediating the blocks and then reselling them to assist with the overall costs of the scheme.

North Frame Area

Barton and Forrest

The suburbs of Barton and Forrest are characterised by a mix of low-density detached housing (some heritage listed), educational uses (Charles Sturt University), hotels, embassy buildings, commercial and government offices and modern apartment buildings.

These markets command some of the highest house prices in the ACT, with Forrest being Canberra's most expensive housing market, with a median house price of \$2.8m. New apartment development is also well-received, with several projects currently marketing off-the-plan and attracting strong interest and sale prices.

Barton and Forrest also comprise one of Canberra's largest office markets, the Parliamentary office market. Anchored by a mix of government departments and professional services firms, its strong demand fundamentals make it one of the ACT's most well-occupied and valuable office markets. A flurry of investor activity has been observed in recent years, with a range of institutional investor and developer interest.

Development activity has been relatively steady in recent years, with developers acquiring a mix of underutilised sites (e.g. vacant Commonwealth-owned sites, carparks) and ageing commercial buildings. Several key developments include:

- 2 Darling Street, Barton: existing car park acquired for development of a 6-storey office building comprising 10,900sqm of net lettable area (NLA).
- 19 National Circuit, Barton: existing 4-storey office building (7,100sqm NLA) being redeveloped by long-term owner as a 6-storey office building (18,000sqm NLA).
- 23 National Circuit, Barton: large vacant site acquired by local developers from Commonwealth Government. Whilst sold with indicative plans for >400 units, it is understood the purchasers are looking to pursue a mix of commercial/ hotel uses.

In summary, demand for new development is strong in this area, though high existing property values and a lack of undeveloped sites could make further development take-up challenging.

Yarralumla

Fronting the Molonglo River and immediately adjoining Capital Hill, Yarralumla is characterised by low-density residential housing, recreational uses and open space.

Yarralumla is one of Canberra's most expensive residential markets, commanding the sixth highest median house price in the ACT and second highest median unit price.

Owing to a mix of high existing property values and low density planning controls, very little development activity has been observed in recent times. Small scale infill development has focused on larger blocks with ageing detached houses.

Similar to Barton and Forrest, the potential for intensifying land uses across Yarralumla could be challenging given high existing property values.

Deakin

Primarily a residential suburb, Deakin comprises a mix of detached housing, older style apartment blocks and more recently completed duplexes, townhouses and low-rise apartment buildings.

One of Canberra's most desirable residential markets, there has been substantial infill development activity across Deakin in recent years with developers targeting older houses on large blocks for small-scale duplex and townhouse projects. New townhouses are being well-met by the market, particularly downsizers.

The prospects for further development activity in Deakin are considered strong, with infill development in the residential zones likely to continue.

Phillip Frame Area

Curtin and Hughes

Amongst Canberra's most established suburbs, Curtin and Hughes are popular residential neighbourhoods characterised by a mix of low-density housing (both aged and recently constructed) and older style, 'walk up' unit blocks. Curtin also comprises a large cluster of social housing which were developed in 1960s and 1970s in accordance with the Radburn model of residential subdivision.

Curtin is anchored by the Curtin shopping village, a small neighbourhood shopping centre comprising a Coles supermarket and other speciality retailers. Part of the village is proposed for redevelopment, with the vacant Curtin Shops building being demolished for a 5-storey mixed-use building comprising 36 apartments.

Hughes is characterised by older style brick dwellings with some larger more modern dwellings, duplexes and aged apartment blocks.

Both suburbs have recorded moderate levels of infill development activity in recent years, mostly small-scale duplex and townhouse projects.

The viability of further land use intensification in these precincts is moderate – ongoing infill development will likely occur irrespective of the CLR Stage 2.

Lyons and Chifley

Lyons is a predominantly residential suburb adjoining the western boundary of Woden Town Centre. Housing is predominantly older style, single storey dwellings interspersed with more recently constructed brick houses and attached duplexes. More dense forms of development are located on the easternmost edge of the suburb (directly adjoining Woden Town Centre), including a seniors living village and mix of older and more modern (c. 2013-14) low and medium rise apartment buildings. These more modern apartment buildings are developed on previously government-owned vacant land. Some development activity has been observed in recent years, predominantly duplexes and small scale apartment buildings.

Similar to Lyons, Chifley is typified by older style, single storey detached housing interspersed with more recently constructed duplexes and low-rise apartment buildings. A smaller proportion of social housing is observed throughout Chifley.

Both Lyons and Chifley are experiencing moderate levels of infill development activity with developers acquiring older-style detached houses on larger blocks for small-scale duplex and townhouse projects.

Looking forward, the prospects for further intensification in Lyons and Chifley are considered moderate - infill development will likely occur irrespective of the CLR.

Mawson Frame Area

Pearce and Torrens

The suburbs of Pearce and Torrens are predominantly residential neighbourhoods, featuring a mix older style brick veneered housing and more recently constructed houses. Limited examples of apartment typologies with only a handful of older style, 'walk-up' unit blocks in both localities.

Both precincts have experienced good levels of infill development in recent years, with developers targeting older dwellings on large blocks to progress small scale duplex and townhouse projects.

The prospects for further intensification in both Pearce and Torrens are considered moderate - infill development will likely occur irrespective of the CLR. That said, an uptick in development activity in neighbouring Mawson would likely quicken take-up of infill development opportunities in both precincts.

5.5.3 Land Use Scenarios

Existing and Base Case

The base case assumes no changes from existing planning controls, incorporating recent development and constraining a range of development applications approved in the past five years that are unlikely to redevelop.

Although there is latent capacity under current controls there are potential feasibility issues in realising the full potential as many areas not developed to their full capacity. Much of the frame areas are low density residential and expected to continue to grow under the current controls.

Medium Scenario

Within the remainder of the corridor, appropriate opportunities for residential intensification have been identified in areas benefiting from the improved accessibility brought by light rail.

Because transport projects improve the desirability of a location and therefore increase its market demand, the overall housing demand for an area will increase. This could be from drawing demand that could otherwise be satisfied in other areas in the region. By creating additional housing capacity in the form of different dwelling types (such as missing middle, townhouses and apartments), housing prices will remain in line with base demand reducing the possibility decreased affordability.

Although the step changes in dwelling capacity in the medium and high scenarios are not significant uplifts above current controls, existing residential low-density capacity is being increased to allow higher densities which may be more appealing to the market and such more likely to redevelop.

A breakdown of the proposed change in land use is shown in Figure 44. Although overall capacity does not significantly increase, the share of medium to high density residential increases comparatively to low density.

The areas deemed most appropriate for residential intensification are shown in Figure 44. These are proposed in existing residential zones those that benefit from existing open space amenity, have appropriately sized lots and are within the walking catchment of a proposed light rail stop.

High Scenario

The high scenario builds on the medium scenario, proposing more extensive uplift in appropriate residential areas benefiting from improved accessibility. Uplift extends to the outer bounds of station walking catchments, and in appropriate areas closer to stops proposes apartment living compared to missing middle and town house development.

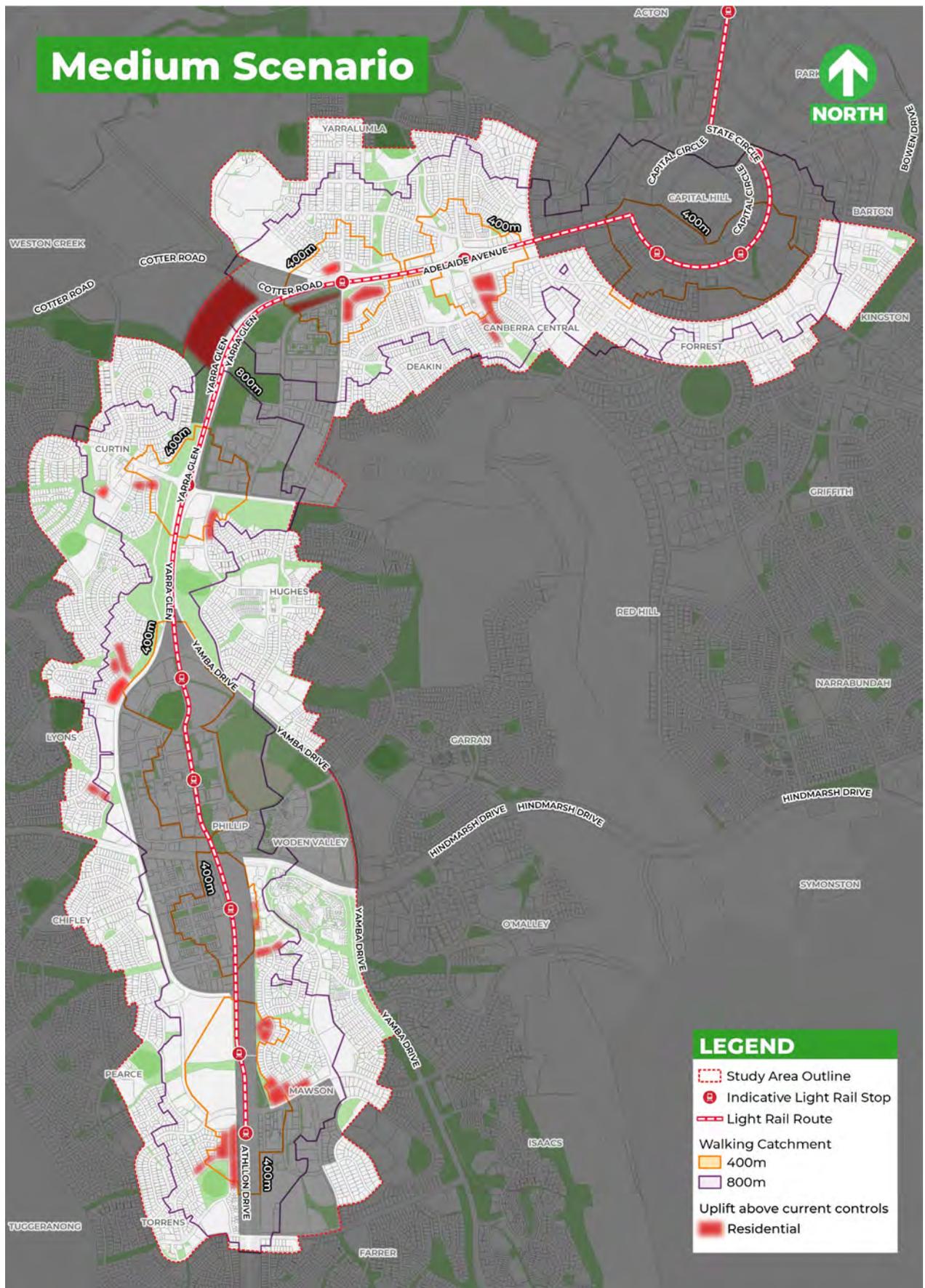


Figure 44: Frame Areas Medium Scenario
 Source: Mecone using ACT Government Data

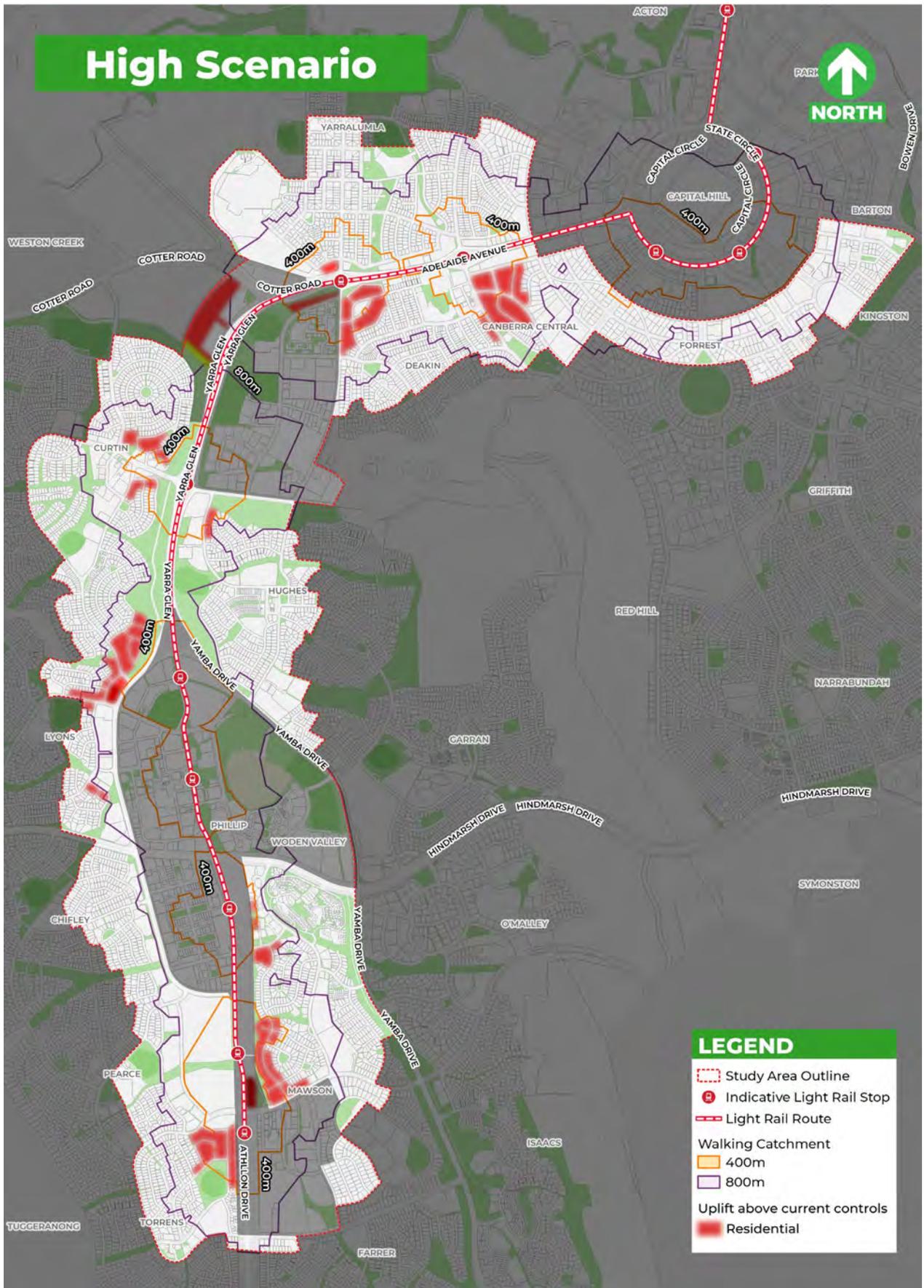


Figure 45: Frame Areas High Scenario
 Source: Mecone using ACT Government Data

5.5.4 Frame Area Forecasts

In the frame areas historical dwellings growth has generally been low. In the North Frame Area, there is market demand for dwellings (in the markets of Yarralumla, Deakin, Forrest-Barton) however the high cost of site consolidation has meant that much of the theoretical capacity is not taken up. Dwellings growth in the frame areas is likely to be 'background growth' rather than large scale redevelopment.

The take-up of employment floorspace opportunities in the frame areas is expected to 'follow' residential growth. Businesses that respond to residential growth will seek locations that enable them to be accessible to their resident catchments. This could be in existing local/ neighbourhood centres or along main arterial roads. Depending on the business, they could equally seek locations that are dispersed in residential areas (e.g. schools, places of worship).

As a general proposition, businesses and employment that support residential growth will seek accessible locations proximate to their customer base.

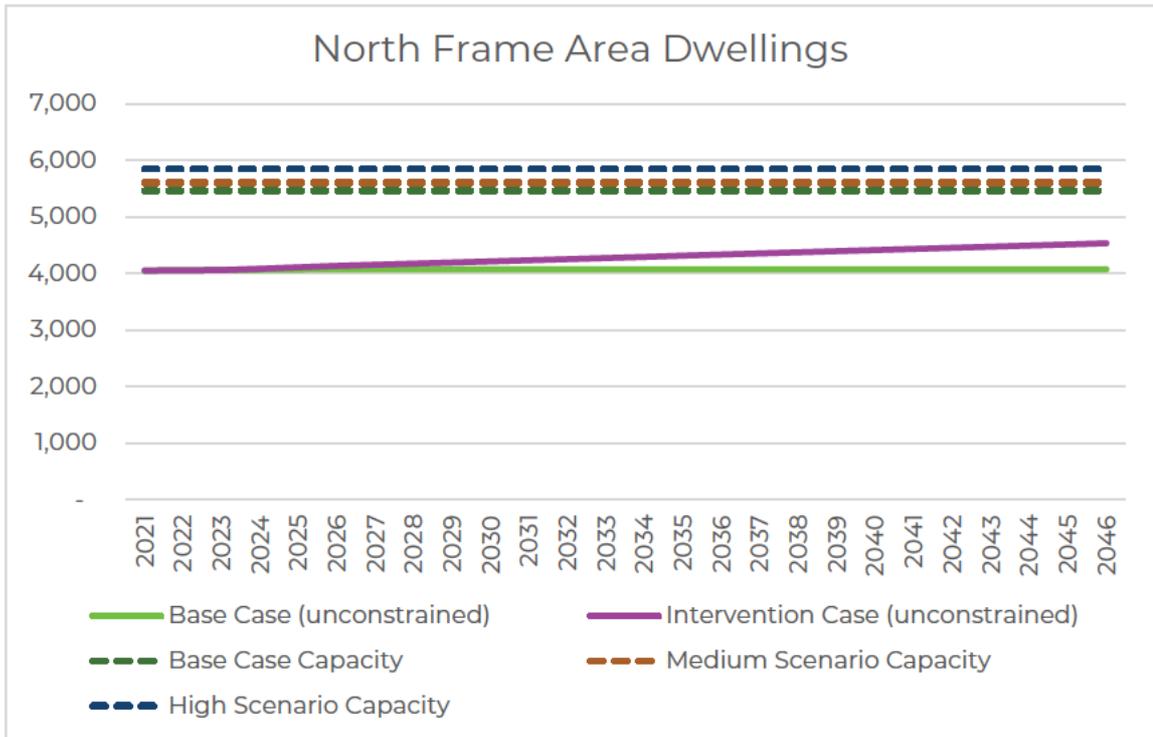


Figure 46: North Frame Area Dwelling Take-Up
 Source: Atlas Urban Economics

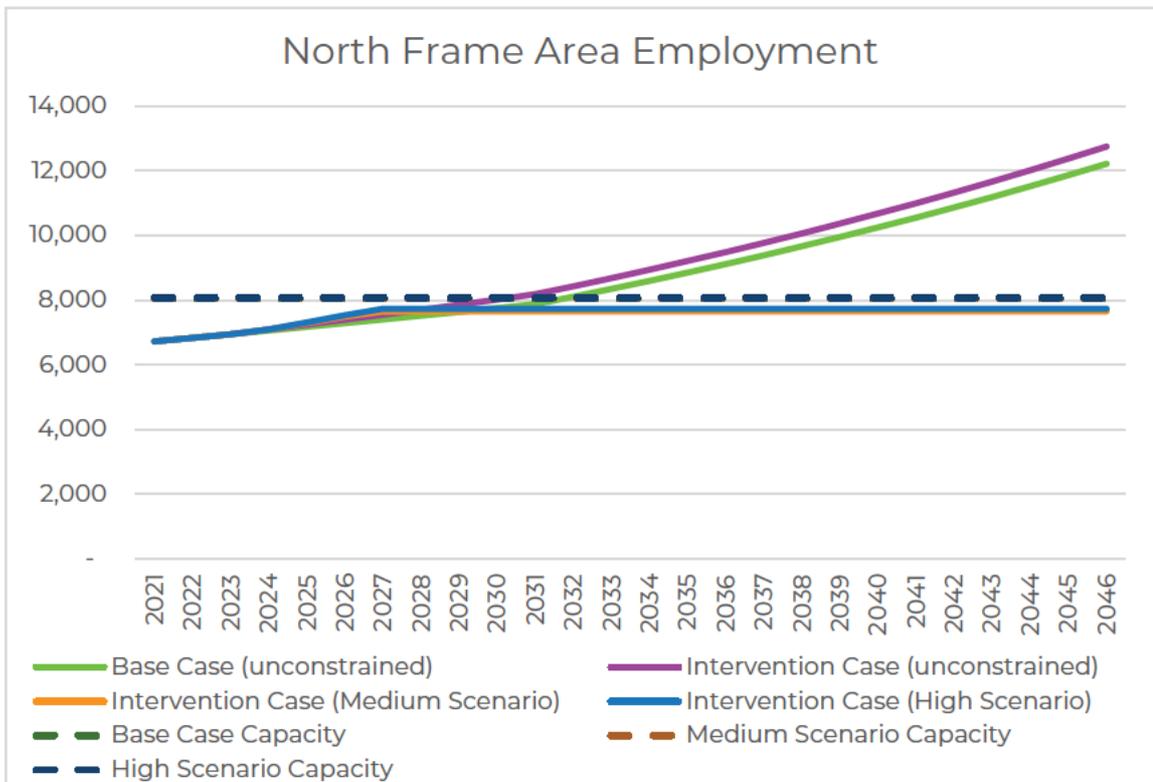


Figure 47: North Frame Area Employment Take-Up
 Source: Atlas Urban Economics

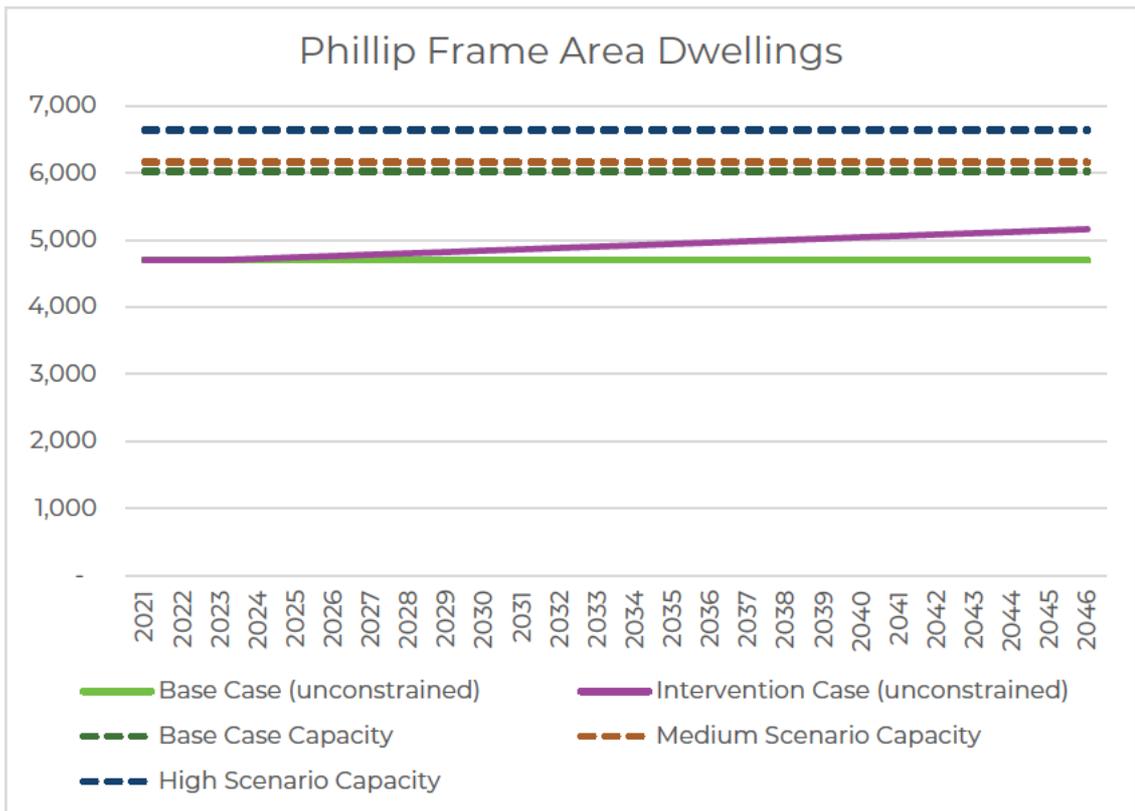


Figure 48: Phillip Frame Area Dwelling Take-Up

Source: Atlas Urban Economics

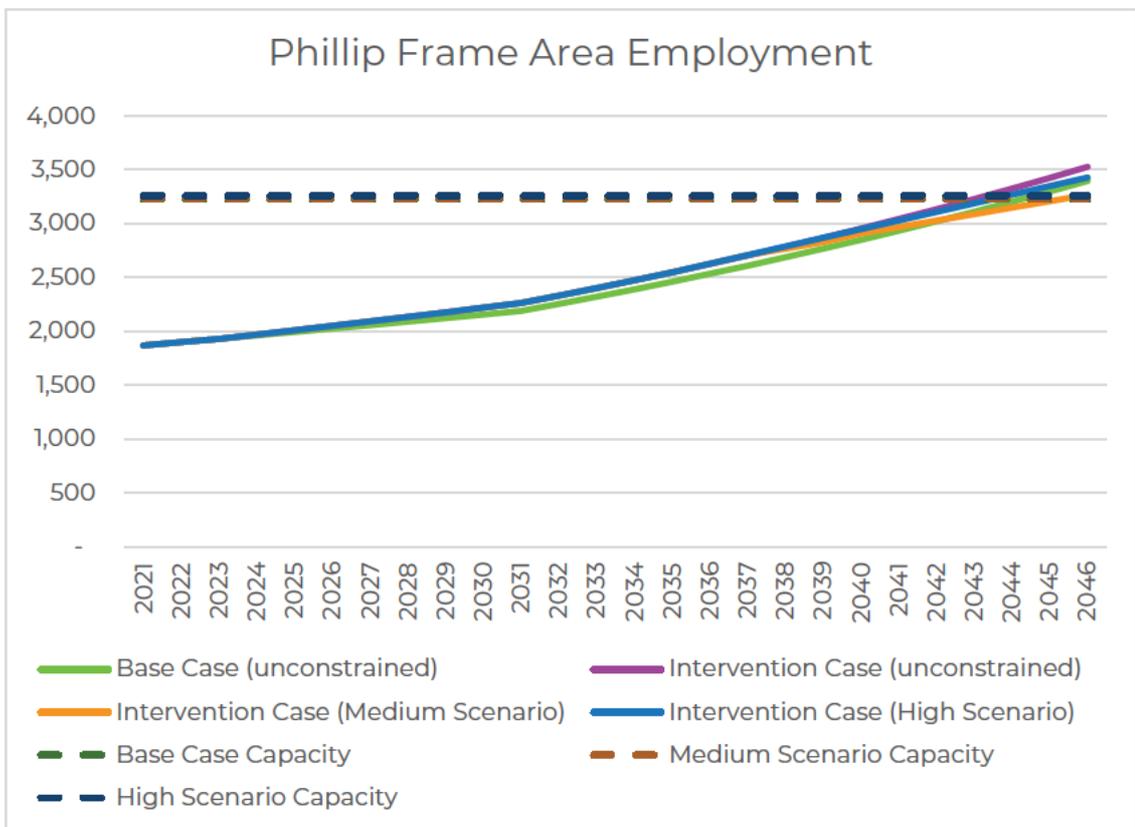


Figure 49: Phillip Frame Area Employment Take-Up

Source: Atlas Urban Economics

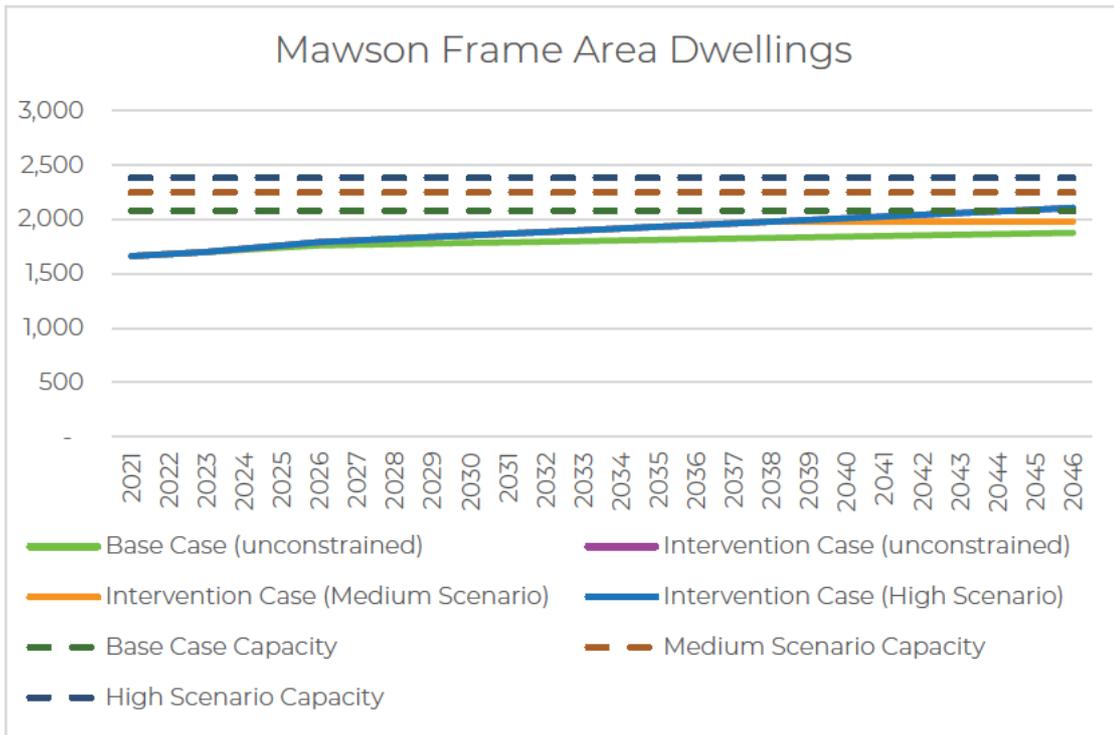


Figure 50: Mawson Frame Area Employment Take-Up

Source: Atlas Urban Economics

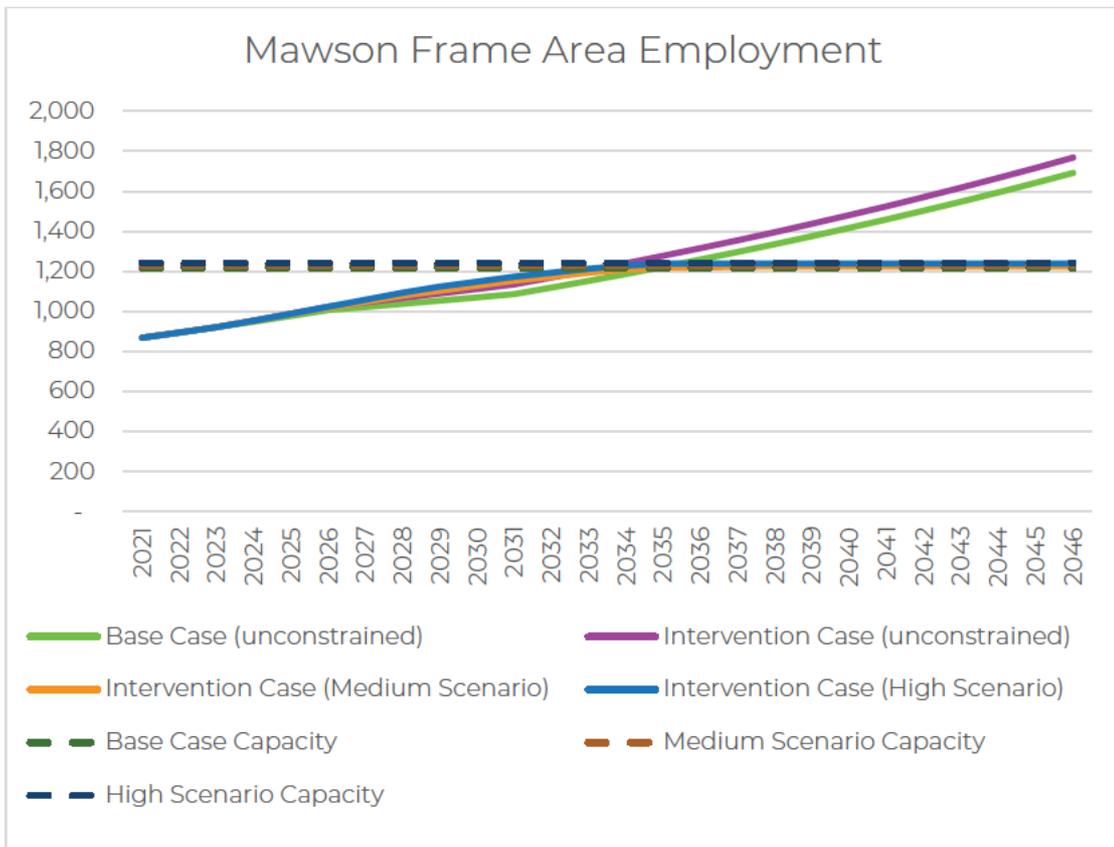


Figure 51: Mawson Frame Area Employment Take-Up

Source: Atlas Urban Economic

5.6 Capacity and Forecast Summary

Table 12. Capacity and Forecast Summary - Precincts

Precinct	Scenario	Dwellings						Employment					
		2021	2026	2031	2036	2041	Capacity	2021	2026	2031	2036	2041	Capacity
Curtin Horse Paddocks	Base Case (constrained)	-	100	170	170	170	170	-	10	10	10	10	10
	Intervention Case (Medium Scenario)	-	240	530	530	530	530	-	40	40	40	40	40
	Intervention Case (High Scenario)	-	260	1,100	1,700	1,900	1,900	-	40	200	300	300	700
	Intervention Case (unconstrained)	-	340	1,300	1,900	2,000	-	-	60	200	300	300	-
West Deakin Precinct	Base Case (unconstrained*)	-	-	-	-	-	30	6,500	7,000	7,600	8,800	10,200	11,600
	Medium Scenario Capacity	-	-	-	-	-	80	6,500	7,300	8,400	10,200	12,500	15,600
	High Scenario Capacity	-	-	-	-	-	80	6,500	7,300	8,400	10,200	12,500	16,300
	Intervention Case (unconstrained)	-	-	-	-	-	-	6,500	7,300	8,400	10,200	12,500	-
Phillip Woden Precinct	Base Case (unconstrained*)	2,100	2,900	3,700	4,600	5,800	9,200	14,800	16,000	17,300	20,000	23,200	52,200
	Medium Scenario Capacity	2,100	3,300	4,600	6,100	7,900	9,200	14,800	17,700	21,600	26,300	32,000	52,300
	High Scenario Capacity	2,100	3,300	4,600	6,100	7,900	10,900	14,800	17,700	21,600	26,300	32,000	53,200
	Intervention Case (unconstrained)	2,100	3,300	4,600	6,100	7,900	-	14,800	17,700	21,600	26,300	32,000	-

Table 13. Capacity and Forecast Summary - Precincts

Precinct	Scenario	Dwellings						Employment					
		2021	2026	2031	2036	2041	Capacity	2021	2026	2031	2036	2041	Capacity
Mawson Precinct	Base Case (unconstrained*)	500	700	700	800	900	800	600	600	700	800	900	2,600
	Intervention Case (Medium Scenario)	500	700	800	800	800	900	600	700	800	900	1,000	3,300
	Intervention Case (High Scenario)	500	700	800	1,000	1,100	1,300	600	700	800	900	1,000	3,600
	Intervention Case (unconstrained)	500	700	800	1,000	1,100	-	600	700	800	900	1,000	-
North Frame Area	Base Case (unconstrained*)	4,100	4,100	4,100	4,100	4,100	5,500	6,700	7,300	7,900	9,100	10,500	8,000
	Intervention Case (Medium Scenario)	4,100	4,100	4,200	4,300	4,400	5,600	6,700	7,500	7,600	7,600	7,600	8,100
	Intervention Case (High Scenario)	4,100	4,100	4,200	4,300	4,400	5,800	6,700	7,500	7,700	7,700	7,700	8,100
	Intervention Case (unconstrained)	4,100	4,100	4,200	4,300	4,400	-	6,700	7,400	8,200	9,500	11,000	-
Phillip Frame Area	Base Case (unconstrained*)	4,700	4,700	4,700	4,700	4,700	6,000	1,900	2,000	2,200	2,500	2,900	3,200
	Intervention Case (Medium Scenario)	4,700	4,800	4,900	5,000	5,100	6,200	1,900	2,100	2,300	2,600	3,000	3,200
	Intervention Case (High Scenario)	4,700	4,800	4,900	5,000	5,100	6,600	1,900	2,100	2,300	2,600	3,000	3,300
	Intervention Case (unconstrained)	4,700	4,800	4,900	5,000	5,100	-	1,900	2,100	2,300	2,600	3,000	-
Mawson Frame Area	Base Case (unconstrained*)	1,700	1,800	1,800	1,800	1,800	2,100	900	1,000	1,100	1,300	1,500	1,200
	Intervention Case (Medium Scenario)	1,700	1,800	1,900	1,900	2,000	2,300	900	1,000	1,200	1,200	1,200	1,200
	Intervention Case (High Scenario)	1,700	1,800	1,900	1,900	2,000	2,400	900	1,000	1,200	1,200	1,200	1,200
	Intervention Case (unconstrained)	1,700	1,800	1,900	1,900	2,000	-	900	1,000	1,100	1,300	1,500	-

Table 14. Capacity and Forecast Summary – Study Area

Precinct	Scenario	Dwellings						Employment					
		2021	2026	2031	2036	2041	Capacity	2021	2026	2031	2036	2041	Capacity
Study Area Total	Base Case (unconstrained*)	13,100	14,300	15,200	16,200	17,500	23,800	31,300	34,000	36,700	42,500	49,200	78,900
	Intervention Case (Medium Scenario)	13,100	14,900	16,900	18,700	20,700	24,600	31,300	36,300	41,900	48,900	57,300	83,700
	Intervention Case (High Scenario)	13,100	15,000	17,500	20,100	22,400	28,900	31,300	36,400	42,100	49,300	57,800	86,300
	Intervention Case (unconstrained)	13,100	15,000	17,700	20,300	22,600	-	31,300	36,300	42,600	51,100	61,400	-

*Note: The purpose of providing an unconstrained Base Case is to indicate potential land use response were capacity not constrained under the planning framework

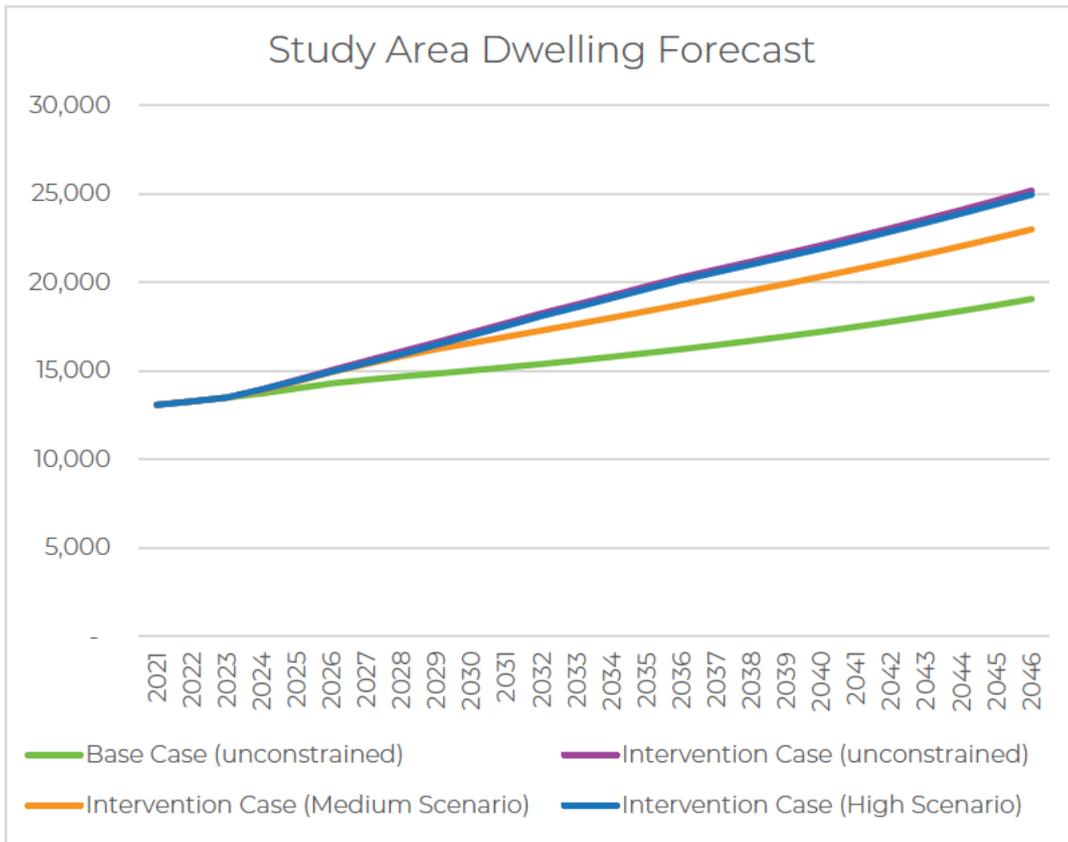


Figure 52: Study Area Dwelling Forecast

Source: Atlas Urban Economics

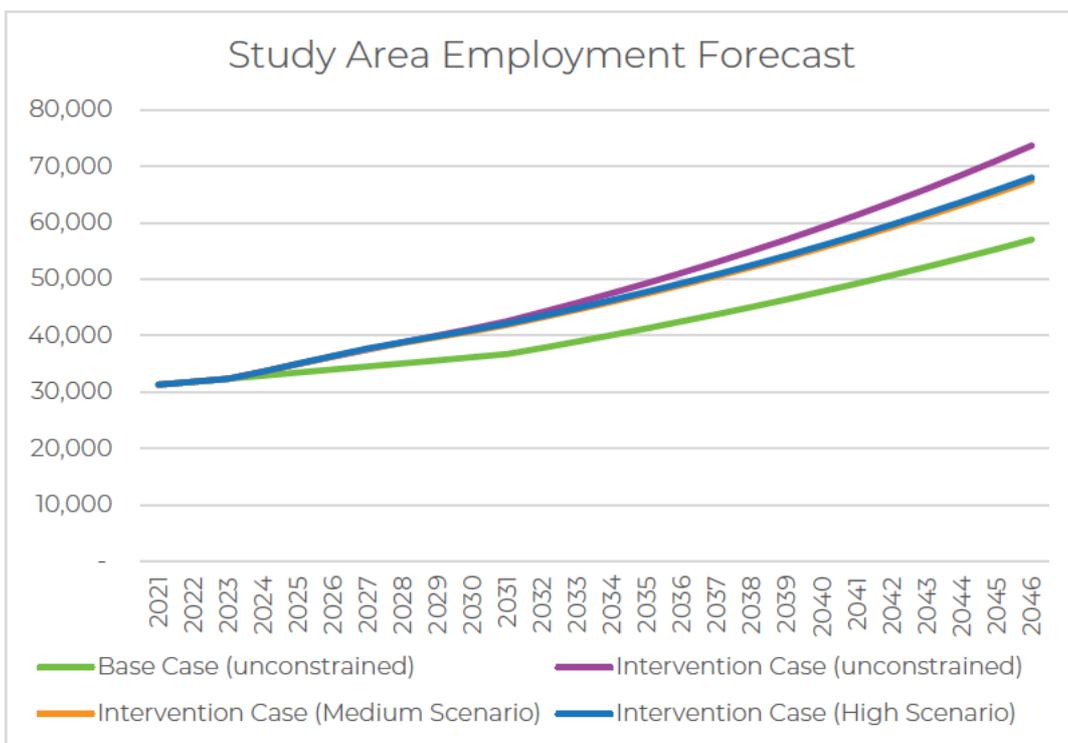


Figure 53: Study Area Employment Forecast

Source: Atlas Urban Economics

6 Observations

There are several key observations to be made as outcomes of the urban infill capability assessment as outlined following.

Market Take-up

There is an opportunity for the CLR Stage 2 Project to contribute to momentum in Woden Town Centre and unlock opportunity for higher density residential formats at the Curtin Horse Paddocks.

Areas in the Frame Areas will likely continue with baseline growth given the nature of low density planning controls.

While capacity is reached and exceeded in some precincts (especially the frames) suggesting intervention is required, we highlight that the consideration of capacity in the study is within the context of the parameters of defined small area precincts. A review of broader capacity (beyond the defined Study Area boundaries) would be required in ascertaining the requirement for greater capacity.

Residential growth in the precincts will drive population-based employment as of course with minimal intervention required.

Attracting a broader employment base to key employment precincts in precincts such as Phillip-Woden, Mawson and to an extent West Deakin will require not only planning interventions but amenity curation, place-making and economic development initiatives.

Housing Types

Although the increase in dwelling capacity in the frame areas is only moderate, the overall figure does not fully reflect the shift in the type of dwellings and the improved feasibility of this capacity to develop.

In the medium and high scenarios, proportional capacity shifts from lower density zones such as RZ1 and RZ2 to higher density zones such as RZ4. This would facilitate more 'missing middle' housing outcomes including medium density housing, townhouses, terraces, dual occupancies and low to mid rise apartments.

This type of development directly contributes to a more compact and connected city by concentrating development close to infrastructure, services and amenity. This type of development is also often more attractive to the market, being both developers, and residents looking for a new housing type or size to suit their needs.

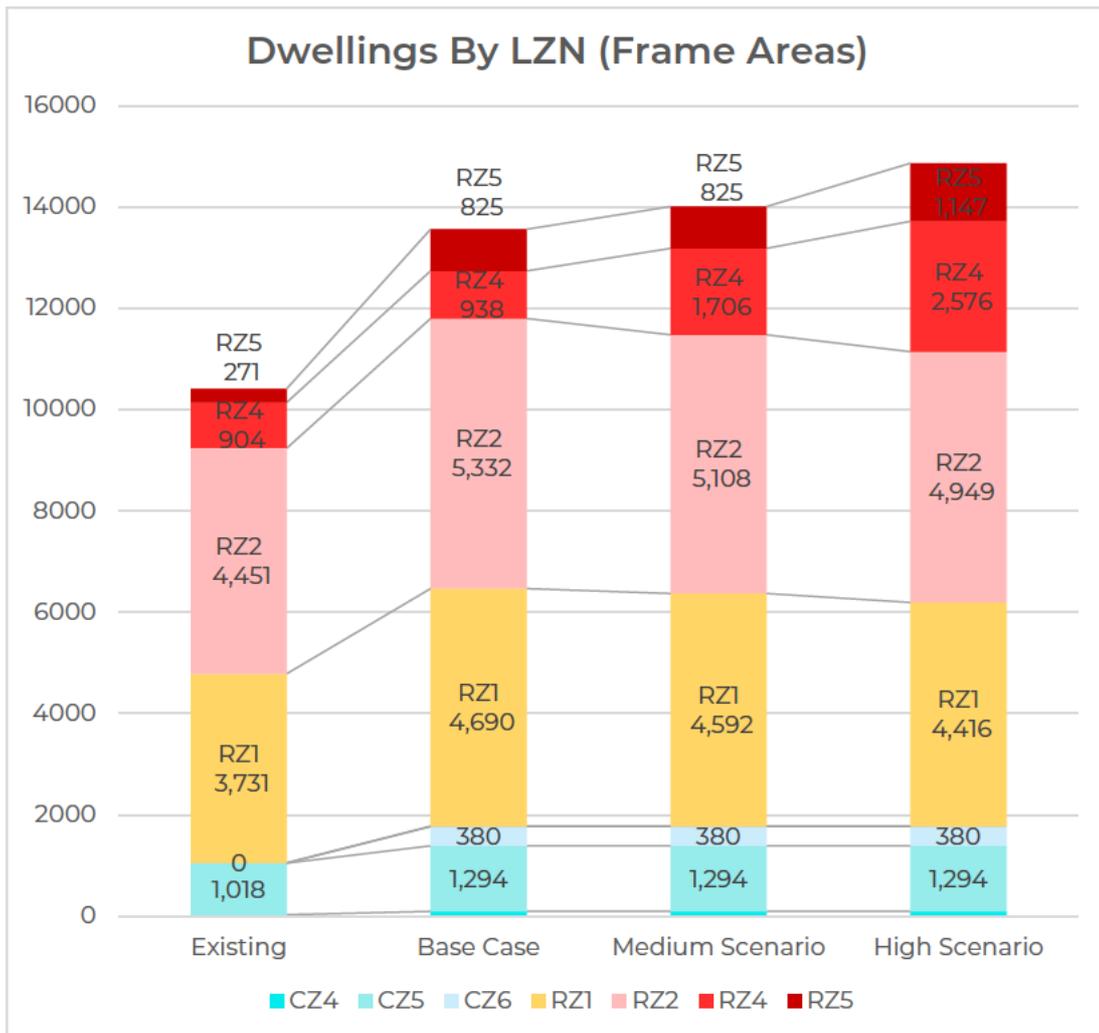


Figure 54: Frame Areas Dwelling Capacity by Land Zone
 Source: Mecone (Note: There is no RZ3 zoned land in the study area)

Pedestrian Accessibility

The proposed location of some light rail stops currently lacks supporting pedestrian and active transport infrastructure, limiting the accessibility and influence of light rail. As such, the walking catchment modelling undertaken for this work made assumptions with regards pedestrian network upgrades connecting to and from the proposed light rail stops.

To support mode shift away from private vehicles and towards public transport, and to maximise the benefits of light rail to existing population, urban realm improvements such as pedestrian bridges, pedestrian priority or signalised road crossings should be considered around light rail stops.

Improved pedestrian amenity around light rail stops will support patronage on the light rail through expanding the walking catchment. An example is shown in Figure 55, where the hatched area represents the expansion in the 400m and 800m walking catchment as result of a new pedestrian bridge across Yarralumla Creek.

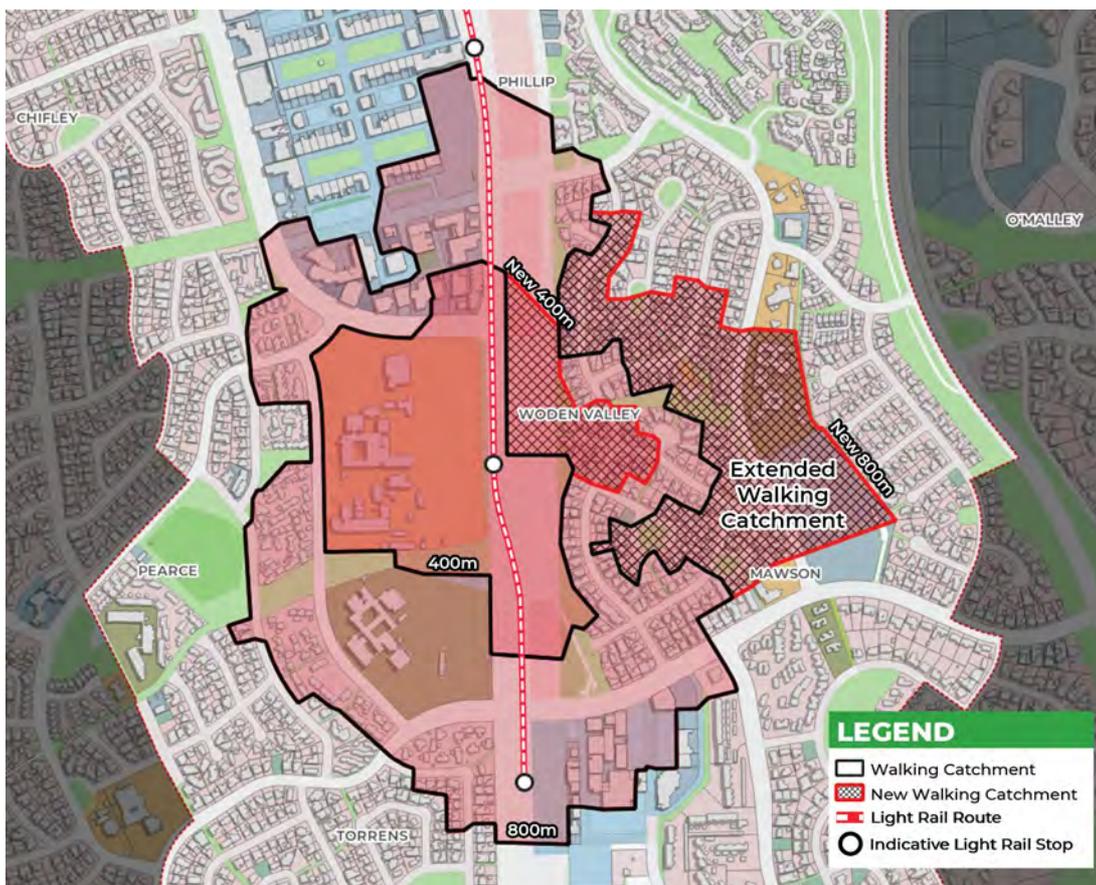


Figure 55: Walking catchments with and without new pedestrian bridge

Source: Mecone using ACT Government Data

The key areas for urban realm accessibility improvement include:

- between Mawson Town Centre and the proposed light rail stop including pedestrian connections across Athllon Drive and Mawson Drive
- connections across Yarralumla Creek to the residential neighborhoods in the east
- pedestrian and active connections across Melrose Drive to the Woden Town Centre and Phillip Service Trades Precinct
- pedestrian and active transport connections at the Yarra Glenn roundabout
- key road pedestrian crossings and overpass connections for stops located at intersections along Yarra Glen and Adelaide Avenue.

Additionally, should higher density development be feasible and supported at the Curtin Horse Paddocks, further consideration should be given to a dedicated light rail stop serving the precinct. The current proposed light rail stops near the precinct are not within 400m walking distance and as such may have limited benefit to residents in encouraging the use of public transport, decreasing the desirability of the precinct.

Infrastructure Requirements

With any change in planning controls resulting in increased density, the impacts on enabling and supporting infrastructure must be understood and planned for. Though out of the remit of this analysis, increased resident population in an area will result in increased demand for local services such as schools and hospitals. Similarly, the impacts of additional development on the capacity of water, sewer and electricity networks needs to be understood.

As a planning principle, prioritising urban intensification in areas where infrastructure networks have latent capacity to accommodate growth allows for orderly and equitable development. This is equally important for social infrastructure such as open spaces, health, education and community facilities.

Where shortfalls in provision may arise from additional development and intensification, adequate planning should seek to meet this shortfall through expansion of existing facilities and infrastructure, or where required, new infrastructure.

7 Next steps

This report presents our team's assessment of urban infill capability in the Study Area associated with the Canberra Light Rail Stage 2B extension to Mawson.

With the introduction CLR Stage 2B comes the opportunity to support urban intensification in mixed use centres along the corridor. Creating walkable, highly accessible neighbourhoods, connected by public transport will help improve vibrancy and desirability of these centres. Challenging urban form and accessibility constraints along the line may prove to be the most significant challenge to realising the full benefits from light rail. Ensuring that people can quickly, safely and easily access the stops and the centres they are connecting is paramount to realising any uplift from the project.

However, outside of some localised environmental constraints, such as recent development activity, threatened environmental communities or species, and ownership patterns, the precincts identified in this report largely present good opportunity for urban infill. There is a large quantum of surface car parking, ageing building stock, or under-developed sites, all of which could better leverage upon the investment in light rail.

Although this study identifies significant existing latent capacity in many of the precincts, there are several areas where changes to planning controls in response to the introduction of light rail is considered appropriate. These changes should encourage new housing types, investment by business, and enhance the existing character of many areas.

To futureproof the findings in this study, we recommend that when revised Treasury-endorsed population projections become available, that the underlying forecasts guiding this study be reviewed against these to ascertain if there is a significant departure from the reference case. In such event we would recommend a review of the forecasts contained in this study.