

ARCHITECTURE
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BEDFORD NORTH URBAN DESIGN STUDY



**Hames
Sharley**
ENABLING COMMUNITIES TO FLOURISH



June 2021

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Prepared by:

**Hames
Sharley**

www.hamessharley.com.au



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01



INTRODUCTION

1.1 INTRODUCTION

In 2020, the City of Bayswater commissioned Hames Sharley to prepare an Urban Design Study for the Bedford North Corridor, with the support of Shape Urban (community engagement) and Flyt (transport and movement). This team has worked with the City's strategic planners and local residents and business owners to understand the unique built and landscape qualities of Bedford North, testing ideas to improve urban infill, and provide recommendations on potential future amendments the City could make to its local planning framework.

The study area (**Figure 2**) is the northern portion of Bedford generally bounded by Walter Road West, Coode Street, Salisbury Street and Clement Road (with some additional properties that fringe R.A. Cooke Reserve and Birkett Reserve).

This work is a continuation of the City's wider project to respond to the changing nature of its suburban areas. Market forces, social changes and the State Government's strategy to promote sensitive urban infill encouraged the commencement of the Building Bayswater initiative. It was based on a proactive engagement process to give the local community opportunities to share their thoughts, ideas and expectations on how Council should respond to the challenges and opportunities of new development across the City of Bayswater (the City). Focus groups were organised at this time to explore future housing types, design innovation and the interface between public and private realm. The recommendations of Building Bayswater included exploration of new housing and development opportunities near service and shopping nodes, near open space and along movement corridors. The results of Building Bayswater have informed the City's Local Planning Strategy and the preparation of more detailed urban design studies like this document.



Figure 1: A typical house in Bedford North

Bedford North is an area in transition. The suburban qualities that have made it a great place to live have attracted more residents and businesses to the area:

- + Original high-quality brick detached houses with generous yards;
- + Easy access to the Morley Activity Centre and employment areas beyond (in Malaga and Bayswater);
- + Education facilities at ECU Mt Lawley, Mt Lawley High School and a range of primary and non-government schools;
- + Easy access to road, suburban rail (a quick trip to Meltham Station) or direct busses into the CBD or Morley; and
- + Relatively affordable price points for new homeowners or renters.

With increased interest, has come increased vehicle use on Walter Road West, backyard infill subdivision and development, and greater use of public open spaces in the area. Of most interest to the community and the City is finding better ways to encourage future growth while improving the amenity of the place – as tree canopy, building interfaces with the street, harsh conditions for pedestrians on Walter Road West and enhanced opportunities for Birkett Reserve and R.A. Cooke Reserve have all been cited as areas for improvement.

SCOPE

This urban design study has been prepared as one part of the City's scope for the wider scope for planning framework updates. It includes:

- + Urban design analysis of the current condition in the study area;
- + Community and stakeholder engagement through workshops, surveys and a walking tour (walk shop);
- + The preparation of a Traffic Impact Assessment to understand any issues arising on the movement network from future development in the study area;
- + Design testing of a selected number of lots (six typical lots with three potential building typologies, and one test of the precinct near the intersection of Grand Promenade and Walter Road West) to understand different building configurations that could work in Bedford North; and
- + Recommendations to inform future changes to the City's planning framework (recognising that policy drafting may be undertaken by the City in the future).

A diagram outlining the process for the Bedford North Urban Design Study is shown in **Figure 3**.

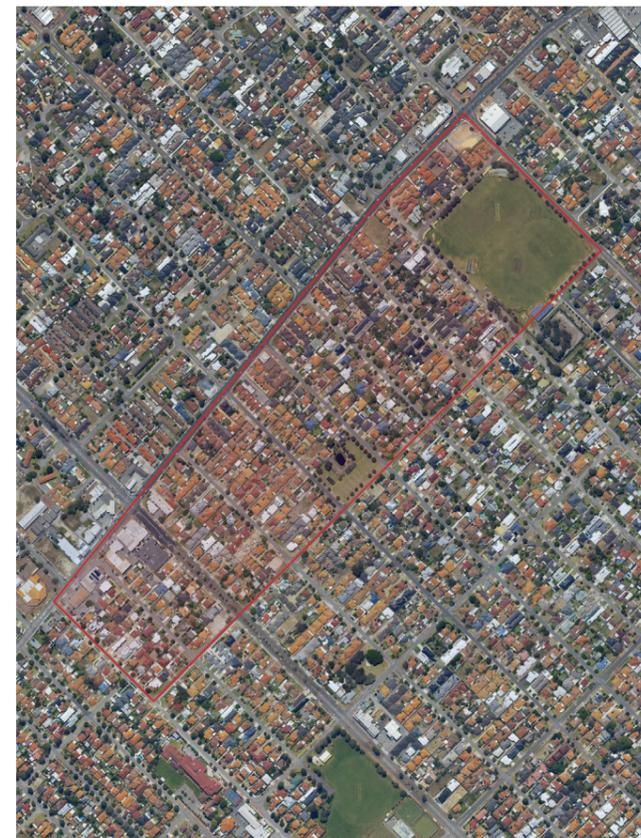
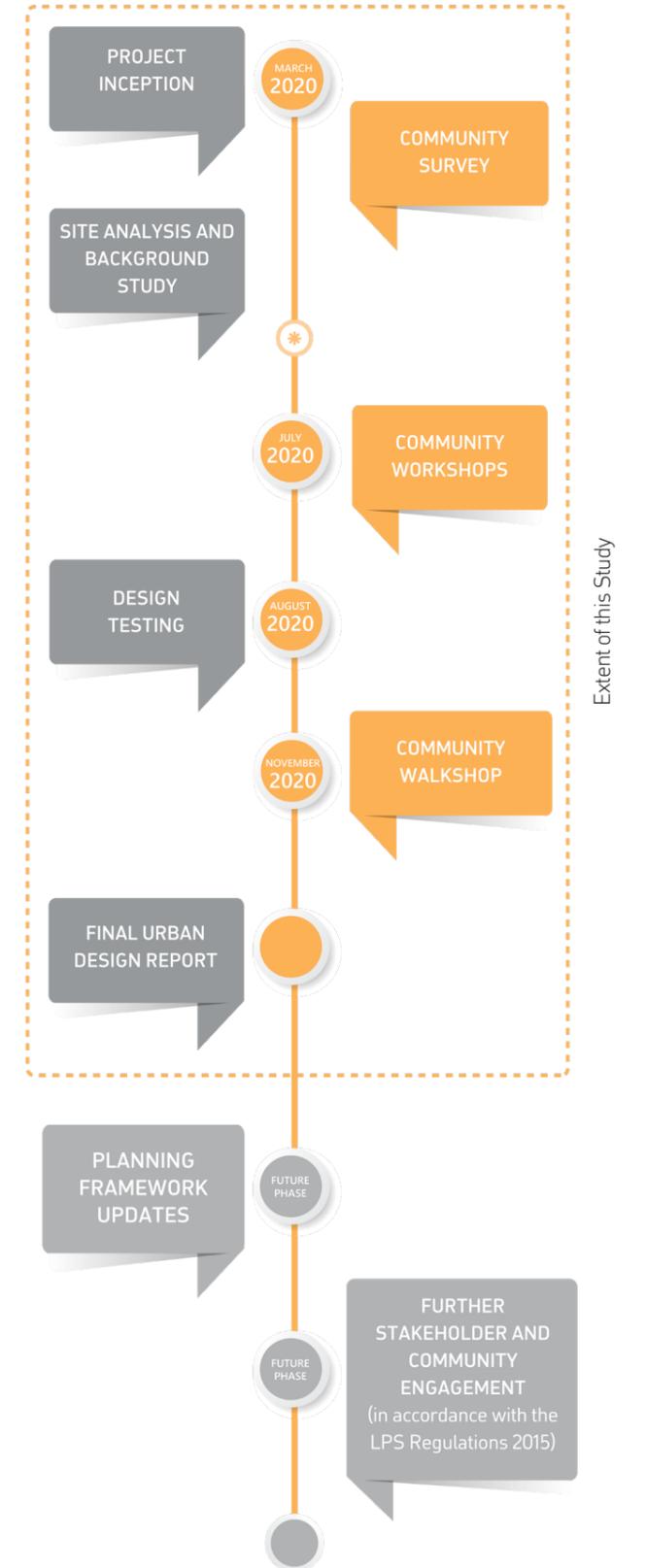


Figure 2: Study Area Boundary

Figure 3: Project Process



1.2 A VISION FOR BEDFORD NORTH

Once on the fringe of Perth City, Bedford North was a place where broad-acre subdivision and housing transitioned quickly from wetlands and agricultural pursuits. Over the last 70 years the place has been home to many residents who sought an affordable, well located place to settle. Large parklands at R.A. Cooke Reserve and Birkett Reserve have offered places for locals to recreate, and generous front and backyards hosted mature trees that helped to contribute to a green tree canopy in the area.

The future for Bedford North has been a focus for community discussions throughout the production of this Urban Design Study. With an updated planning framework that promotes modified development arrangements on each lot and possible upgrades to Walter Road West and local open spaces, Bedford North can become a greener, more diverse place to attract more residents and economic investment.

The three statements overleaf present a vision for Bedford North, based on community input into workshop and walk shop sessions.



Community life is built around places to meet, eat, drink, shop and play. Bedford North will become a place where corner stores, cafés and small workplaces pop up in new mixed-use developments along a pedestrian friendly Walter Road West.

New places to recreate in enhanced parks will encourage locals to get out and active in the neighbourhood.

CONSIDERATIONS FOR BEDFORD NORTH:

- + Promoting mixed use development on important roads.
- + Promoting slower speed pedestrian environments along important roads.
- + Exploring opportunities to upgrade and enhance existing open spaces.



Shade and shelter are critical to a quality suburban experience, and Bedford North's next generation of development will create space for mature trees to grow.

Regreening the neighbourhood will make it easier to use yard spaces, keep houses naturally cooler and make it easier to walk along Walter Road West.

CONSIDERATIONS FOR BEDFORD NORTH:

- + Design provisions that promote growth of mature trees canopy in yard spaces and setbacks.
- + Exploring opportunities to bring more street trees onto Walter Road West.
- + Exploring opportunities to plant more trees on existing reserves and verges throughout Bedford North.



Encouraging new homes in Bedford North to address the street will help residents stay connected. Courtyards, balconies, low fences and front gates will bring in more ways to strengthen neighbourhood relationships over the long term.

Walter Road West can transform from a fast-moving traffic route to a safe place for people to walk and proudly open their homes or businesses on to.

CONSIDERATIONS FOR BEDFORD NORTH:

- + Design provisions that promote active living towards the front of the street.
- + Exploring opportunities for Walter Road West to evolve into a more pedestrian friendly street, similar to many other regional roads through the inner-north.

02



PLANNING CONTEXT

2.1 PLANNING CONTEXT

2.1.1. PERTH AND PEEL@ 3.5 MILLION

The *Perth and Peel@3.5 Million* suite of strategic land use planning documents provide a framework for future growth in the Perth and Peel regions. The strategy recognises the benefits of a consolidated and connected city utilising the region's previous historic patterns of urban growth. This strategy promotes more efficient use of land and infrastructure and maintains a target of 47% of new development in the form of urban infill. The strategy includes four subregional frameworks, which provide more detailed guidance on future land use and development for a city of 3.5 million people. The frameworks provide for different lifestyle choices, vibrant nodes for economic and social activity and a more sustainable urban transport network.

The City is guided by the Central Sub-Regional Planning Framework. The framework identifies that the City has an estimated population target of 100,000 by 2050 representing an increase of 34,660 from 2011-2050. To facilitate this growth, the framework seeks to achieve a more consolidated urban form, underpinned by the ten key principles identified in **Table 1** which demonstrate how growth should be accommodated.

The Bedford North study area runs through the Walter Road West 'urban corridor', which promotes new opportunities for residential and commercial development within the existing urban footprint. The use of public and active transport along these corridors is encouraged over private vehicle movement. It's location south of the larger Morley Activity Centre is also considered.

Table 1: Principles for Urban Consolidation

PRINCIPLE	DESCRIPTION
HOUSING	Provide well-designed higher-density housing that considers local context, siting, form, amenity and the natural environment, with diverse dwelling types to meet the needs of the changing demographics.
CHARACTER AND HERITAGE	Ensure the attractive character and heritage values within suburbs are retained and minimise changes to the existing urban fabric, where appropriate.
ACTIVITY CENTRES	Support urban and economic development of the activity centres network as places that attract people to live and work by optimising land use and transport linkages between centres; protecting identified employment land from residential encroachment, where appropriate, and avoiding contiguous linear or ribbon development of commercial activities beyond activity centres.
URBAN CORRIDORS	The focus for higher-density residential development. Where appropriate, located along transit corridors and promoted as attractive places to live by optimising their proximity to public transport while ensuring minimal impact on the surrounding urban fabric and the operational efficiency of the regional transport network.
STATION PRECINCTS	Where appropriate, focus development in and around station precincts (train stations or major bus interchanges as set out under the METRONET initiative) and promote these precincts as attractive places to live and work by optimising their proximity to public transport while ensuring minimal impact on the operational efficiency of the regional transport network.
INDUSTRIAL CENTRES	Promote the current and proposed supply and/or development of industrial centres as key employment nodes and prevent incompatible residential encroachment on these areas.
PUBLIC TRANSPORT	Ensure that most transit corridors are supported by quality higher-density residential land uses and identify where new or improved public transport services will be needed to meet long-term growth, especially current and future train station precincts.
INFRASTRUCTURE	Ensure more efficient use of and add value to existing and planned infrastructure to achieve a more sustainable urban environment. Protect existing and proposed infrastructure from incompatible urban encroachment to promote a system where land use developments and infrastructure are mutually compatible.
GREEN NETWORK	Preserve, enhance and consolidate the green network of parks, rivers, sport/recreation areas, facilities for active open space, conservation and biodiversity areas, and areas with a high level of tree canopy coverage, considered important for the health and wellbeing of the community.
PROTECTION	Avoid, protect and mitigate environmental attributes and promote development that contributes to maintaining air quality and minimises risks of inundation from sea-level rise, flooding or storm surge events and bushfire damage.

Within the Central Sub-Region, growth is proposed to occur primarily via infill development due to lack of availability of land. **Figure 4** illustrates that the Walter Road West study area makes up part of the urban corridor network. The urban corridor network has the following description:

- + Urban corridors provide connections between activity centres and maximise the use of high-frequency and priority public transport. Urban corridors shown in the framework represent significant opportunities to accommodate increased medium-rise higher density residential development by good quality, high-frequency public transport.

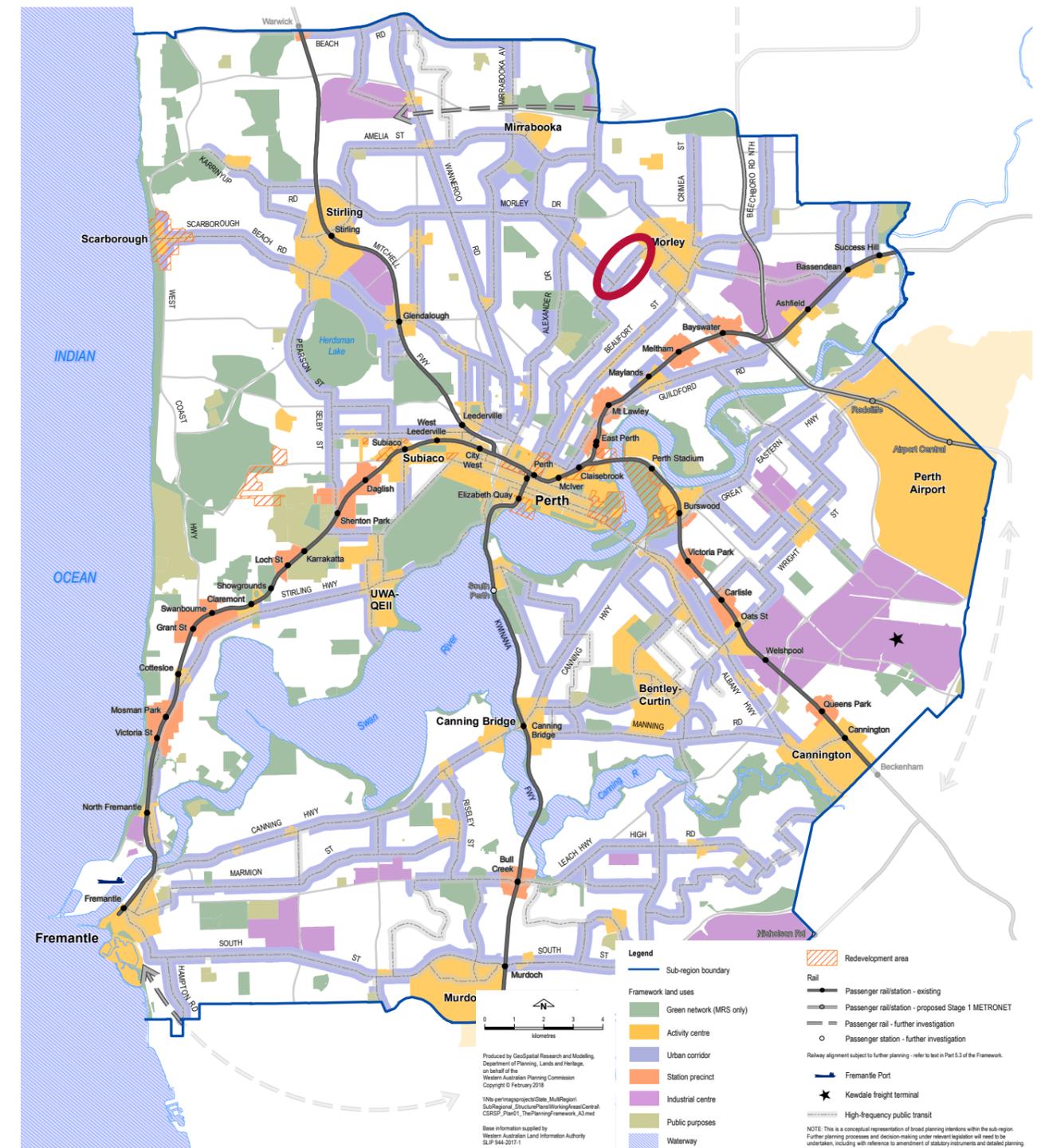


Figure 4: Central Sub-Region Planning Framework with the Walter Road West highlighted

2.1.2. STATE PLANNING POLICIES (SPP)

SPP 7.0: DESIGN OF THE BUILT ENVIRONMENT

This policy addresses the design quality of the built environment in Western Australia. It seeks to deliver the broad economic, environmental, social and cultural benefits that derive from good design outcomes and supports consistent and robust design review and assessment processes across the State. SPP 7.0 identifies ten principles of good design that are listed in **Section 6.1.1** on page 48.

The existing character of Bedford North is changing as redevelopment occurs throughout the study area with limited local development controls to encourage high quality design and landscape retention. This type of development can challenge the intent of the ten design principles. The Study will, therefore, have consideration for how the above principles can be applied to Bedford North to ensure that design quality is elevated as a core principle of future development.

SPP 7.2: PRECINCT DESIGN

This policy assists with the design of established or complex redevelopment areas in Western Australia. It outlines seven design elements that are used to inform this Study, in particular the way lots in the Bedford North Town Centre may be redeveloped. The design elements included in the policy are:

- Urban Ecology** – Precinct design should seek to protect and enhance urban ecology with a focus on integrated, place-responsive outcomes. Developing an understanding of the built and natural features, and systems of a precinct and their relationship to wider context is the basis for sustainable development. Natural features of the precinct including pre-European (remnant) vegetation, can support habitat enhancement and provide place benefits to the precinct, contributing to a better quality urban environment.
- Urban Structure** – The urban structure of the precinct should be robust, flexible and permeable to support intended function and built form. The urban structure should also be place-responsive with careful consideration of its physical, cultural and economic context, and integration with the surrounding urban fabric and landscape.
- Public Realm** – Public realm design should reflect precinct function. The public realm should comprise diverse, well-connected, functional and enriching places. A well-designed public realm is essential for the well-being of a community. It provides opportunities for active transport, relaxation, recreation, connection and contemplation, and will contribute to a precinct's character and sense of place.

- Movement** – The movement network should support the identified precinct function and provide for the safe, legible and efficient movement of people and goods to and through the precinct. Precincts should be accessible by a range of transport modes including walking, cycling, public transport, on-demand services, cars and delivery vehicles. The space used to support the movement network should be planned to integrate the provision of services and utilities, car parking and access to daylight and ventilation for adjacent buildings and public spaces.
- Land Use** – Land use planning should reflect the role of the precinct in its wider context. It should reflect community needs and consider current and intended future activities and functions, alongside broader trends. Diverse and adaptable land uses will support improved place outcomes, social interaction, civic engagement and access to goods, services and employment.
- Built Form** – Precinct built form should be designed in response to the urban ecology and urban structure of the precinct. Built form design should support the development of a range of typologies to provide choice and affordability. It should also support the development of a built environment that is place and functionally appropriate in development intensity, bulk and scale. A well-considered built form will support the critical mass of people necessary in appropriate locations to support thriving local business, employment and entertainment opportunities along with services including public transport.

SPP 7.3: RESIDENTIAL DESIGN CODES VOLUME 1 – DETACHED AND GROUPED DWELLINGS

The purpose of the Residential Design Codes Volume 1 (R-Codes) is to provide a comprehensive basis for the control of all single houses, grouped dwellings and multiples dwellings coded R40 or less. Development in Bedford North is mostly guided by the R-Codes Volume 1. Whilst this has provided a simple design and assessment framework for developers urban design analysis undertaken as part of this Study has determined that this can facilitate less than desirable design outcomes. Potential alternatives, including the formulation of additional policy provisions, is explored in this Study. It should be noted that Department of Planning, Lands and Heritage (DPLH) is currently reviewing Volume 1 of the R-Codes, with the intent to strengthen design provisions for medium density development.

SPP 7.3: RESIDENTIAL DESIGN CODES VOLUME 2 – APARTMENTS

Volume 2 of the R-Codes provides comprehensive guidance and controls for the development of multiple dwellings (apartments) in areas coded R40 and above, within mixed use development and activity centres. It provides a useful set of provisions to influence and model apartment developments. This generally impacts on lots coded R40 and above, although design testing for this Study contemplates how small apartments could be sited on lots beyond this area.

SPP 5.4: ROAD AND RAIL NOISE

This policy has been designed to minimise the adverse effects of road and rail on noise-sensitive areas within a specified trigger distance. Noise sensitive land-use and/or development has been defined as being: occupied or designed for occupation caravan park, camping ground, educational establishment, child care premises, hospital, nursing home, corrective institution; or place of worship.

Under the maps provided, Walter Road West is classified as "Other significant freight/traffic route". Such a land use has been given a trigger distance of 200 metres from the road carriageway edge. While this does not exclude the placement of sensitive land uses next to such roads, design solutions should be mindful of ways to provide amenity to future occupants. This can be assisted through building design or landscaping within front setback areas.

2.1.3. LOCAL PLANNING FRAMEWORK

LOCAL HOUSING STRATEGY

The City's Local Housing Strategy (LHS) was developed in 2012 to guide the future form and types of housing provided within the City. It identifies several principles including:

- + Accommodate a growing population;
- + Focus new development on selected areas including main roads (urban corridors);
- + Different development standards for different areas;
- + A mix of housing choices;
- + A mix of land use in appropriate areas;
- + Promote high-quality development;
- + Better align land use with transport network;
- + Add life and vibrancy to some areas;
- + Focus on pedestrians;
- + Local living;
- + Reducing environmental impact; and
- + Promoting safer communities.

The LHS identified Bedford North as a focus area for change based on the following reasons:

- + Elements of existing commercial activity;
- + Connects the Morley City Centre with central Perth and other activity centres;
- + Walter Road West serviced by two (2) bus routes.
- + Public open space within 400 metres;
- + Recreation facilities within 800 metres; and
- + Well located to service local catchments.

CITY OF BAYSWATER TOWN PLANNING SCHEME NO.24

The City of Bayswater Town Planning Scheme No.24 (TPS24) is a statutory document used to control how and where development will occur in the City. The majority of Bedford North is zoned 'Medium and High-Density Residential R40 and R25', there are also small pockets zoned 'Service Station', 'Public Purpose', 'Office', 'Public Open Space', 'Business' and 'Drainage'. In relation to multiple dwellings coded R40 outside the core areas, the Scheme stipulates that multiple dwellings are to be subject to the average site area requirements for grouped dwellings and are not subject to any maximum plot ratio requirements. The Scheme includes some development controls such as primary controls for setbacks, parking requirements and site coverage. These are mostly focussed on non-residential development or in designated 'Special Control Areas'. The Residential Design Codes (R-Codes) is empowered through the Scheme.

BUILDING BAYSWATER AND LOCAL PLANNING STRATEGY

As a local response to State strategies such as Perth and Peel @ 3.5 Million, Building Bayswater was a project commenced by the City in 2018 to gather thoughts, opinions and recommendations from the residents and stakeholders within the area on future development within the City of Bayswater. This helped to inform the discussion around redevelopment in established parts of the City, including Bedford North. Some high-level outcomes included:

- + Development opportunities surrounding existing public open space, including spaces in Bedford North like R.A Cooke Reserve, and Birkett Reserve.
- + Other high-density areas along Walter Road West to investigate higher density codes with consideration of mixed use, multi-storey development.
- + Wider consideration of the Bedford North area in the context of the Morley Activity Centre, institutions like Mt Lawley Senior High School and ECU, and a recognition

that the area is changing with interest from new households and businesses who'd like to settle here.

- + The importance of improving tree canopy in established suburbs, including on private land.

LANDSCAPING POLICY AND LANDSCAPING GUIDELINES

The purpose of the Landscaping Policy is to guide the minimum standards and expectations for landscaping associated with development applications. The objectives of the policy include:

1. Incorporate landscaping as a fundamental element of the design process to ensure integration with development in a meaningful and functional manner.
2. Protect and enhance the natural environment through the retention of vegetation with environmental, aesthetic, or cultural value, and promotion of local native plants endemic to the area.
3. Ensure a suitable provision of landscaping relative to development size to complement and soften the built environment, reduce the dominance of hard surfaces and articulate open space.
4. Improve resilience and biodiversity of the natural environment through the utilisation of various plants suitable to the local environment and climate, considering placement on-site and nature of adjoining sites and surrounding landscapes.
5. Develop local character and a sense of place for communities through the provision of streetscapes with a consistent, high standard of landscaping and natural amenity.

The Landscape Guidelines address the following matters concerning the Bedford North Study:

1. Landscaping utilised to improve site amenity, providing natural shading, wind barriers, privacy enhancement, visual relief from built form, screening of service areas, and buffers to adjoining sites.
2. Trees with a large canopy are preferred, spaced to maximise canopy cover at maturity, and located with consideration to minimise potential impediments to growth.
3. Some guidance on planting types. An example being "Plants with a height at maturity exceeding 0.75m not located within 1.5m of a vehicle access point, or within 6.0m of a street intersection with an angle less than 90° or verge width less than 5.0", or "Landscaping designed to avoid the undue obstruction of views between development and the primary street or resulting in areas of concealment or entrapment".

TREES ON PRIVATE LAND AND STREET VERGES

The purpose of this policy is to outline the requirements for providing, maintaining and protecting trees on private land and the street verge during the development of land or residential subdivision in the City. The objectives of the policy include:

1. Assist with achieving the City of Bayswater's objective to increase tree canopy coverage to 20% by the year 2025 by increasing the tree canopy coverage on private and public land
2. Mitigate the urban heat island effect, reduce air pollution, improve groundwater quality and contribute to wildlife habitats, biodiversity and ecological corridors
3. Assist with community comfort through shade and the reduction of glare, provide neighbourhood amenity, character and sense of place, and provide visual screening and privacy.
4. Provide a diverse range of tree sizes and species to enhance the visual interest and to assist with providing a more resilient urban forest
5. Prevent tree diseases and excessive shade through the adequate separation of trees, facilitate diversity in the age, size and species of trees throughout the City of Bayswater, and to encourage the retention of 'trees worthy of retention' and the planting of 'large trees'.

Requirements relevant to the Bedford North study include:

1. 'Standard trees' are to be provided at a rate of one tree for every 350m² of the site area (rounded to the nearest whole number). At least one 'standard tree' is to be provided on each site.
2. The total number of trees required in Clause 1 may be reduced by 1, for each 'large tree' that is provided.
3. A 'tree growth zone' is required around the entire base of all new trees or existing trees that are to be retained on the site, measured at:
 - a. a minimum radius of 2m for a 'standard tree'; and
 - b. a minimum radius of 3.5m for a 'large tree'.

The policy is a positive step for the City, indicating its intent to improve tree canopy on private land, which is known to be an issue in Bedford North. Further clarification of the relationship between this policy and other provisions in the planning framework (for example the R-Codes) would be beneficial.

CAR PARKING IN THE TOWN PLANNING SCHEME NO. 24 AREA POLICY

The purpose of this policy is to provide dispensation on the minimum on-site car parking standards for non-residential developments that are located in town (activity) centres or close to high-frequency public transport. The objectives of the policy include:

1. To recognise that different on-site car parking standards are appropriate for developments located in town (activity) centres or close to high-frequency public transport.
2. To encourage businesses, local services and employment generators to locate in town (activity) centre locations and close to high-frequency public transport.
3. To balance the provision of sufficient on-site car parking with the need to encourage pedestrians and promote alternative transport methods.

The Bedford North study includes some non-residential areas along Walter Road West which is a high-frequency public transport route. The Policy provides several statements, one which relates to this study states:

1. Car parking areas should be provided at the rear of development throughout the TPS 24 area wherever possible, to reduce the impact of vehicle parking areas on the amenity, character and vibrancy of the streetscape. The street setback and front landscaping requirements contained in TPS 24 may be varied or waived (where required) to provide for car parking at the rear of development.

The statement is used to inform this Study, in particular the way lots in the Bedford North Town Centre may be redeveloped.

RETAINING WALLS POLICY

The purpose of the policy is to provide direction and clarity to developers and the community on the application of State Planning Policy 3.1 - Residential Design Codes (R-Codes) with regard to the design principles of elements 5.3.8 and 6.3.7 relating to retaining walls.

The policy guides development within the City of Bayswater where steep topography may require a retaining wall exceeding the R-Codes provision of 0.5m high. Within Bedford North, this applies to sites where larger retaining walls are required due to steeper topography – around Drummond, Clement and Birkett Streets.

CITY OF STIRLING WALTER ROAD WEST NEIGHBOURHOOD CENTRE LOCAL DEVELOPMENT PLAN

The City of Stirling Walter Road West Neighbourhood Centre Local Development Plan guides new development in the formerly zoned Dianella Industrial Area, to the west of the current study site.

The plan has several objectives, of which some relate directly to Walter Road West. These are:

- + To establish Walter Road West as a local 'main street' activity centre with street-focused retail and other commercial uses.
- + To set buildings back from Walter Road West to enable public realm enhancements such as wider footpaths and street trees.
- + Provisions to ensure all mixed-use buildings fronting on to Walter Road West will have a continuous solid canopy for pedestrian shelter.
- + A public plaza is proposed on the corner of Walter Road West and Grand Promenade and another on the corner of Walter Road West and Cleveland Street.
- + The building types along Walter Road West include multi-storey residential limited to 5 storeys. The ground floor is to be used for non-residential, whilst the upper floors are to be a mix of residential and non-residential.

The production of this LDP has helped to inform the design responses in this Study, in particular the way lots in the Bedford North Town Centre may be redeveloped.

Collaboration between the Cities of Stirling and Bayswater will be critical to enhance the opportunities for Bedford North. Matters such as: Walter Road West streetscape upgrades, car parking management and place planning will all benefit from this approach.

03



DEMOGRAPHIC CONTEXT

3.1 DEMOGRAPHIC ANALYSIS

The purpose of this analysis is to determine the community's defining characteristics, and how they have influenced the Study. In undertaking this demographic analysis all information is sourced from the Australian Bureau of Statistics (ABS) Census (2006 and 2016). All information is analysed and benchmarked against the City of Bayswater and Greater Perth to provide a relative understanding of the trends and opportunities that the Bedford area demographics highlight.

Bedford North is situated within the suburb of Bedford, as such statistics have been obtained from the Bedford (SSC50091) statistical boundary. It is acknowledged that this data does not provide an entirely accurate depiction of Bedford North as the study area makes up only a portion of Bedford.



POPULATION GROWTH

In 2016, Bedford had an estimated population of 5,438 people. This increased from 4,575 persons in 2006 representing an 18.9% increase. Being an established residential area, the minimal population increase is expected as the availability of new land and opportunities for redevelopment are limited. Additionally, the surrounding suburbs have been growing at similar rates (Inglewood 12%, Maylands 20%, Bayswater 19%, Morley 16% and Dianella 9%)

3.1.1. HOW OLD ARE THEY?

The age of a community can help us determine the stages of life people are typically in. Age and life cycle have a direct correlation to a variety of factors associated with housing which will be discussed throughout the demographic analysis.

Table 2 provides an overview of the age profile of Bedford and the change that has occurred from 2006 to 2016. A summary of key findings is provided below:

- + In 2016 31% of people in Bedford were aged 24 years or younger, this was slightly higher than both the City (9%) though below Greater Perth (34%) averages suggesting a relatively strong representation of households with children and young adults present.
- + The proportion of adults in the home making and career phases (aged 25 - 54 years) is almost 45% in Bedford, slightly above the Greater Perth level (43%).
- + Retirees and Seniors (aged 55 years+) are more prevalent in the City of Bayswater and Bedford in contrast to Greater Perth. Options for housing to accommodate the needs of these households who may be no longer working and have children leaving home are important to consider. Smaller lots to maintain, secure and compact dwellings, well serviced by public transport that do not cost a lot to run or maintain are attractive to a lone person or older couple households.

Table 2: Age Profile

AGE GROUPS (YEARS)	BEDFORD %	2006		BEDFORD %	2016	
		CITY OF BAYSWATER %	GREATER PERTH %		CITY OF BAYSWATER %	GREATER PERTH %
Persons Aged 0 - 4	6.1	5.6	6.2	6.9 ▲	5.9 ▲	6.5 ▲
Persons Aged 5 - 14	11.8	10.2	13.3	11.7 ▼	9.8 ▼	12.5 ▼
Persons Aged 15 - 24	13.0	13.6	14.8	11.9 ▼	11.4 ▼	13.1 ▼
Persons Aged 25 -54	44.7	44.6	42.9	44.8 ▲	46.0 ▲	43.0 ▲
Persons Aged 55 - 64	10.4	11.4	10.7	11.0 ▲	11.2 ▼	10.9 ▲
Persons Aged 65 or above	14.1	14.6	12.0	13.6 ▼	15.5 ▲	13.9 ▲
Median Age	37	38	36	37	37 ▼	36

KEY IMPLICATIONS

The Bedford area includes families with children and students as well as young adults (up to 24 years) and often these age groups seek or require larger homes.

3.1.2. WHO DO THEY LIVE WITH?

HOUSEHOLD TYPE

Household type explores the typical composition of households across Bedford. **Table 3** demonstrates the following:

- + Bedford has a slightly higher percentage of family households (72%) compared to the City (67%), yet a slightly lower percentage compared to Greater Perth (73%), which aligns with the age profile.

Table 3: Household Type

HOUSEHOLDS BY TYPE	BEDFORD %	2006		BEDFORD %	2016	
		CITY OF BAYSWATER %	GREATER PERTH %		CITY OF BAYSWATER %	GREATER PERTH %
Family Household (Includes all in Table 4)	66.0	60.1	67.2	71.6 ▲	66.8 ▲	73.0 ▲
Lone person	24.8	29.8	23.6	22.3 ▼	27.3 ▼	23.0 ▼
Group household	4.2	4.5	3.6	6.0 ▲	5.9 ▲	4.0 ▲

KEY IMPLICATIONS

Due to its location in the middle ring of metropolitan suburbs, Bedford is aligned closely to the average household type across Greater Perth. This requires a diverse range of housing choices to cater not only for larger family households but also for those in phases where they are living alone or in groups.

FAMILY TYPE

As evidenced in **Table 3**, Bedford has an average percentage of family households. **Table 4** demonstrates that of those family households, the following can be determined:

- + Bedford has a higher percentage of one parent families (18%) compared to both City (15%) and Greater Perth (15%) averages.
- + Since 2006, there has been a 5% increase in the number of couples with children living in Bedford. Over the same period, there has been a decrease in couples without children (-3%) and single parent families (-2%).

Table 4: Family Type

FAMILY BY TYPE	BEDFORD %	2006		BEDFORD %	2016	
		CITY OF BAYSWATER %	GREATER PERTH %		CITY OF BAYSWATER %	GREATER PERTH %
Couples with children	39.7	40.7	45.8	44.9 ▲	41.5 ▲	46.3 ▲
Couples without children	38.3	40.4	37.1	35.0 ▼	41.7 ▲	37.5 ▲
One parent families	20.0	16.6	15.2	18.1 ▼	14.6 ▼	14.5 ▼
Other families	2.0	2.2	1.9	2.0	2.3 ▲	1.8 ▼

KEY IMPLICATIONS

The larger percentage of couples with children and single-parent families correlates closely with the age profile of Bedford. A greater proportion of children or young adults living at home as dependants often translates into larger homes/more bedrooms being required and potentially more outdoor space.

3.1.3. HOW DO THEY LIVE?

DWELLING TYPE

Assessing the types of dwellings located in an area can help determine the level of housing diversity or whether the type of housing available matches the needs and desires of the community. **Table 5** demonstrates that Bedford has a significantly higher percentage of separate houses (87%) compared to the City (70%) and Greater Perth (77%). Whilst this has reduced slightly from 91% in 2006 it still represents exceptionally low levels of housing diversity in the Bedford area. Not only are semi-detached dwellings well below the Greater Perth and City of Bayswater proportions the Unit / Apartment (high density) options are a fraction (less than 1%) of the surrounding City. Therefore the Walter Road West Corridor as a high-frequency transport route represents an opportune location to address this housing diversity gap, should the market and catchment desire these alternatives within the neighbourhood.

Table 5: Dwelling Type

DWELLING TYPE	2006			2016		
	BEDFORD %	CITY OF BAYSWATER %	GREATER PERTH %	BEDFORD %	CITY OF BAYSWATER %	GREATER PERTH %
Separate house	91.1	70.4	78.1	86.8 ▼	69.6 ▼	76.9 ▼
Semi-detached	8.3	13.8	11.9	12.7 ▲	20.7 ▲	16.0 ▲
Unit / Apartment	0.6	15.7	9.4	0.5 ▼	9.4 ▼	6.6 ▼

NUMBER OF BEDROOMS

The number of bedrooms a dwelling contains impacts total floor space and often influences how large a home is. **Table 6** illustrates how many bedrooms on average there are across all dwelling types in Bedford. It demonstrates that:

- + Bedford has a significantly higher percentage of 3 bedroom dwellings (53%) compared to the City (45%) and Greater Perth (37%).
- + Bedford has a significantly lower percentage of 4+ bedroom dwellings (28%) compared to Greater Perth (45%)

Table 6: Number of Bedrooms

NUMBER OF BEDROOMS	2016		
	BEDFORD %	CITY OF BAYSWATER %	GREATER PERTH %
1 Bedroom	1.3	4.3	3.4
2 Bedrooms	15.0	19.0	12.2
3 Bedrooms	53.3	44.5	37.0
4+ Bedrooms	28.2	29.8	45.2

KEY IMPLICATIONS

The high age of large (3 bedrooms or more) separate houses means there is little opportunity to live in anything other than a large family home, this typically means extensive and expensive home maintenance and gardening for homeowners.

Given the prevalence of families in Bedford, the high proportion of separate houses is understandable. However, **Table 3** showed that 22% of households were occupied by a single person. Further analysis shows seniors and young adults which are likely to have smaller household types (e.g. single person or couple without children) that the dwelling mix is potentially not matching well with at present. Opportunities to provide smaller dwellings with good transport access and amenity should be explored, particularly for older residents who may want to downsize and continue living in Bedford or young adults who want to leave home but remain in a familiar area.

NUMBER OF CARS

The number of cars per dwelling in an area is typically reflective of locational characteristics such as proximity to employment and public transport. **Table 7** summarises car ownership for Bedford. It demonstrates that:

- + Bedford has a lower percentage of 3+ car ownership per dwelling (17%) compared to Greater Perth (21%)
- + In line with the City and Greater Perth trends, between 2006 and 2016, the proportion of households with 0-1 car has decreased while those households with 2+ cars have grown.

Table 7: Number of Cars

NUMBER OF CARS	2006			2016		
	BEDFORD %	CITY OF BAYSWATER %	GREATER PERTH %	BEDFORD %	CITY OF BAYSWATER %	GREATER PERTH %
No cars	8.2	10.5	7.1	4.9 ▼	6.7 ▼	4.9 ▼
1 car	38.8	39.3	34.6	35.0 ▼	37.2 ▼	32.2 ▼
2 cars	37.3	32.9	37.8	40.1 ▲	36.7 ▲	39.4 ▲
3 or more cars	12.9	13.6	17.2	17.0 ▲	16.6 ▲	20.8 ▲

KEY IMPLICATIONS

Being a high-frequency public transport route, there is an opportunity to try to reduce the amount of car ownership in Bedford, which will provide health, financial and environmental benefits to households and the community. Further, the requirement for parking within redeveloped residential lots can be minimised and the spillover to streets and verges can be reduced - both creating a more attractive and efficient urban area.

3.1.4. OWN OR RENT?

Housing tenure can provide insights into an areas socio-economic status and the role housing plays in the area. A summary of home ownership or renting is provided in **Table 8** and key outcomes are identified below.

- + Bedford has experienced an increase in households in home ownership with a mortgage between 2006 and 2016 similar to the percentage increases seen in the City and Greater Perth.
- + The number of people renting in Bedford (29%) is slightly lower than the City (32%) and slightly higher than Greater Perth (27%) averages. The percentage of people renting in Bedford has increased slightly since 2006.

Table 8: Housing Tenure

TENURE TYPE	2006			2016		
	BEDFORD %	CITY OF BAYSWATER %	GREATER PERTH %	BEDFORD %	CITY OF BAYSWATER %	GREATER PERTH %
Owned Outright	30.3	31.1	29.6	28.0 ▼	29.2 ▼	28.1 ▼
Owned with a Mortgage	35.1	31.3	37.6	39.3 ▲	35.2 ▲	41.9 ▲
Renting	28.4	29.4	24.7	29.4 ▲	32.2 ▲	26.7 ▲

KEY IMPLICATIONS

Nearly 70% of homes in Bedford are either owned outright or with a mortgage. This means that people will care deeply and be invested in the outcomes of the Study as it could impact on the look and feel of the area that most intend to stay in for an extended period. Further, if renting is taken as a proxy for transient populations the Bedford area is considered relatively stable.

04



SITE CONTEXT ANALYSIS

4.1 HISTORY AND LOCATION

The Bedford North area (also known as the Walter Road West precinct) is located in Perth's inner north-eastern suburbs, sharing a border with the City of Stirling to the north-west. **Figure 8** illustrates the location of the site.

These lands were originally inhabited by the Noongar people, close to wetland areas that ran through the area with wider connections to the Derbal Yerrigan (Swan River) at the Maylands foreshore.

The wider region urbanised following colonial settlement at Tranby House (beside the river) from the 1830's and with the expansion of the train line from Fremantle. From the 1900's Maylands, Bayswater and then Meltham Stations saw the development of residential houses for railway and foundry workers.

From the 1950's suburban expansion would then follow the same grid, along main travel routes like Grand Promenade and Walter Road West. Both of these roads led to the 'edge of the city', with aerial photography from 1953 showing R.A. Cooke Reserve as a wetland area where suburban development ended. The suburban ideal of a large block with a generous house and garden would attract new residents to the area, some of who were original landowners that have been a part of community workshops and walk shops for this project.

Soon after this suburban expansion the area now known as Morley Activity Centre was formalised, through development of government facilities (like John Forrest High School) in the 1960's, and commercial development shortly after.

New retail, fast food and leisure developments would expand further down Walter Road West from the Morley Activity Centre to the Bedford North study area, creating convenient amenities for local residents. Some examples of these developments, like the Bedford Furniture Showroom (now City Farmers) are still visible today.

Industrial development created immediate employment opportunities for locals in the area known as the Dianella Industrial Precinct (bound by Elsegood and Boulton Streets, and Grand Promenade). As larger industrial precincts have opened with freeway connections further north these sites have progressively redeveloped. From the mid-1990's infill development has replaced many original houses in the precinct, as a result of changing planning frameworks that have permitted grouped dwellings that follow battleaxe configurations. While the suburban qualities of the area are still visible, this wave of development has impacted building/street interfaces and tree canopy.

There is an opportunity to address these impacts through an updated planning framework that promotes suitable development and landscape qualities. The City of Stirling has undertaken a similar planning process to this study in order to encourage further regeneration into a mixed-use and residential centre.

“Bedford North is connected to public open spaces, retail and educational facilities, although residents and businesses suggested it lacks a local heart – a place where you can bump into friends for a coffee, do a small shop or visit neighbourhood markets.”

A place that is easy to walk to, and offers something different to the larger Morley Activity Centre up the road”



Figure 6: Photos of Bedford North and surrounds over time



Figure 7: Bedford North's urban evolution from 1953 to 1983 and 2020

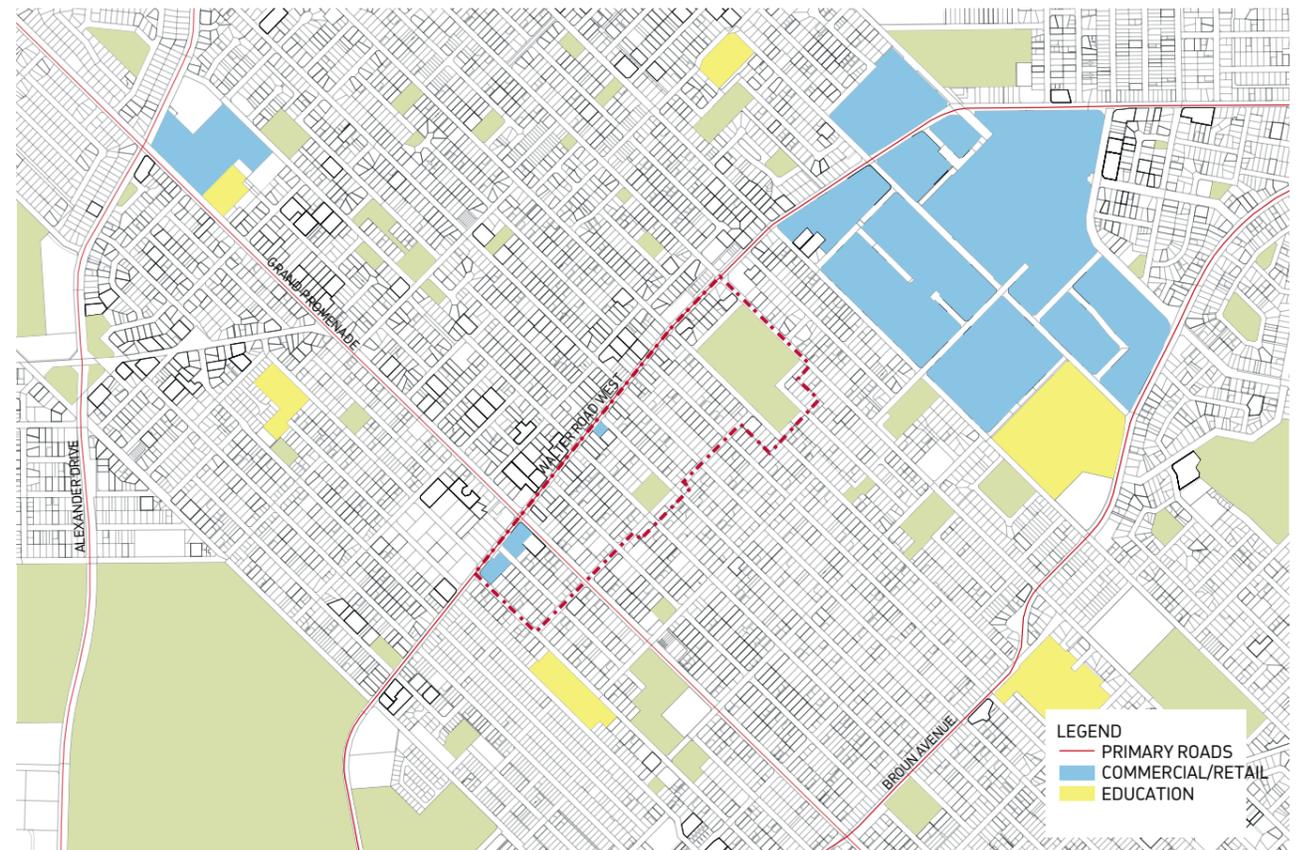


Figure 8: Land use context around Bedford North

4.2 CLIMATE AND LANDSCAPE

Urban development is arranged on a strict grid, on mostly flat topography with some opportunities for views to the south. Without a focus on deep soil, tree canopy has and continues to be threatened by redevelopment.

4.2.1. CLIMATE AND ORIENTATION

Block orientation follows a strict grid that is cranked on a 45 degree angle from north (set by the railway line further to the south). Most lots are of regular dimensions, presenting opportunities for planning framework updates to apply in a more consistent manner. An observation is that buildings with a southeast orientation along Clement Street are located on wide blocks, taking up more space than their thinner north-east and south-west counterparts.

North-east and north-west facing lots can be designed to take advantage of the sun by orientating towards the north.

Without adequate setbacks, taller development may have an impact on the south-east and south-west facing lots getting solar access.

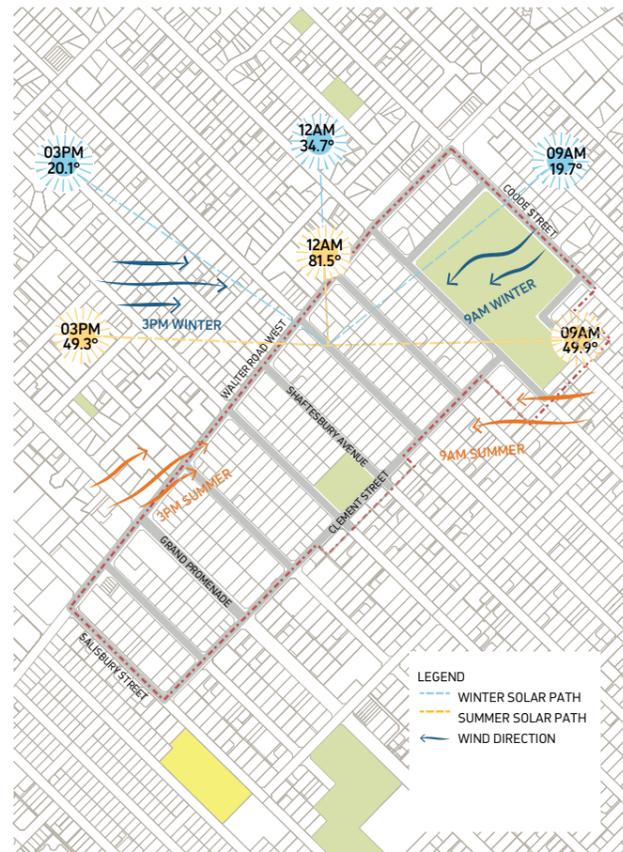


Figure 9: Climate

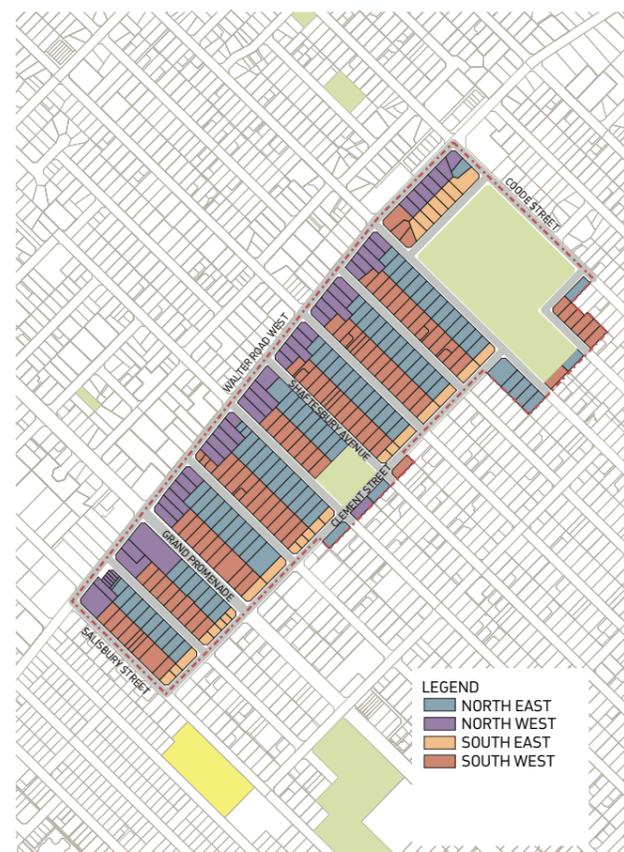


Figure 10: Orientation

4.2.2. SLOPE

The study area is relatively flat, presenting limited opportunities for views, but offers benefits that simplify house construction. There is an exception, with the small hill from Grand Promenade to Drummond Street. Standing atop this elevation offers views of the Perth City skyline, a unique characteristic of the site that could be capitalised on.

While the lots surrounding this high point have some minor slope issues, there could be an opportunity to promote higher densities to take full advantage of views to the Perth City skyline.



Figure 11: Slope

4.2.3. TREE CANOPY AND DEEP SOIL

As urban density has occurred, so too has a decrease in the tree canopy. This effect is very evident between Grand Promenade and Birkett Street, where grouped dwelling development has been most prevalent, removing trees within private lots. This loss of tree canopy cover severely impacts the walkability of the neighbourhood and enhances the urban heat island effect of the site.

If current grouped dwelling development patterns continue in the area, a further reduction to the tree canopy would occur. As a key focus of this study and its recommendations, the challenge to increase density and improve deep soil areas is being analysed and addressed.



Figure 12: Tree Canopy

4.3 MOVEMENT

Bedford North is well-connected, with regional roads and buses servicing Morley Activity Centre and the CBD. Rail connections to Maylands and a future Morley Station offer more active travel opportunities.

4.3.1. REGIONAL MOVEMENT

Walter Road West and Grand Promenade are the main arterial roads servicing the study area. They provide connectivity to Morley Activity Centre, inner northern suburbs like Inglewood and Mt Lawley, and the CBD beyond. The future Morley Station at Broun Avenue and Tonkin Highway will help with additional connections to Bedford North, as bus services will modify to connect to rail, opening up regional connections on the wider public transport network. Further information on bus routes is provided in Appendix 3.

Tonkin Highway is nearby, providing access to the Airport and surrounding employment precincts.

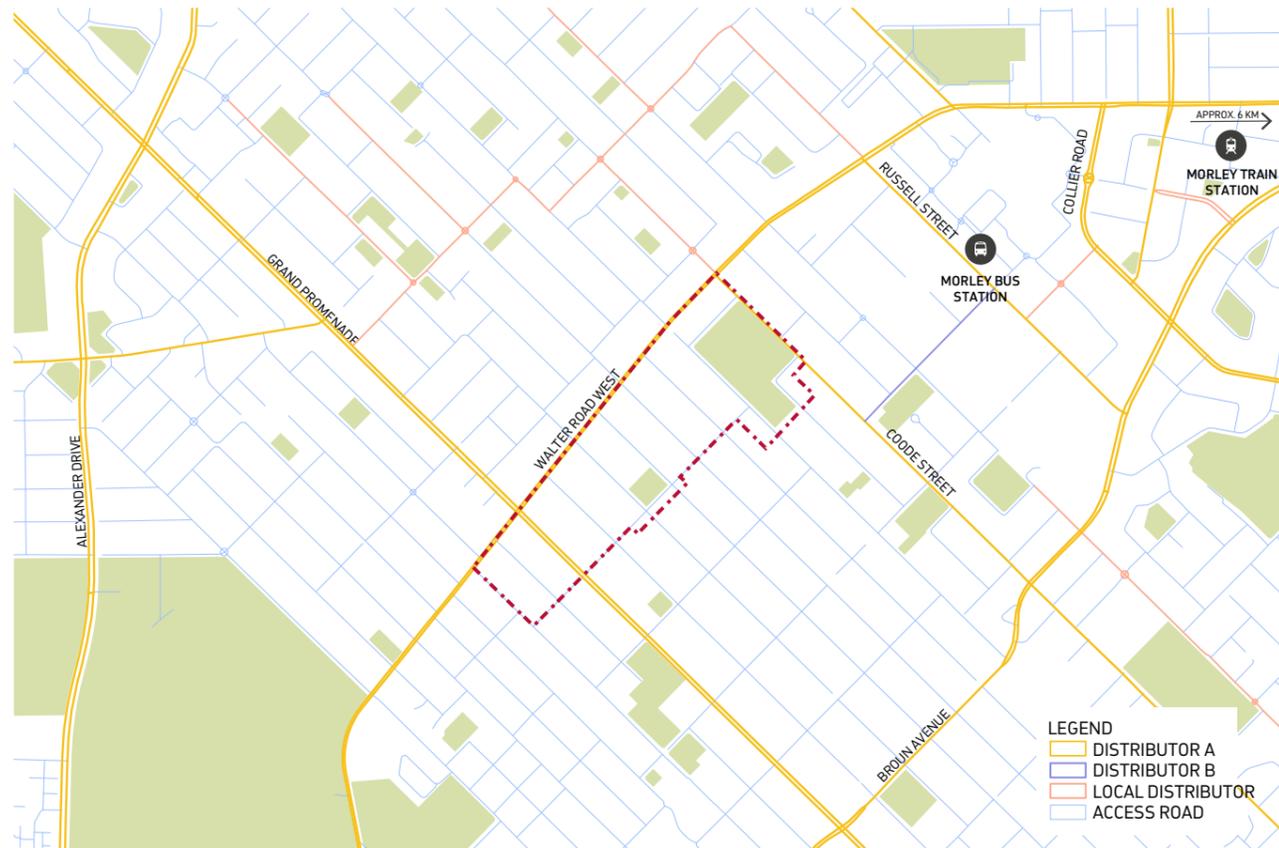


Figure 13: Regional movement network

4.3.3. PUBLIC TRANSPORT DISTANCES

As Bedford North evolves to a more urban condition, public transport services will become important for residents and visitors accessing home or commercial offerings on main street environments

Bus route 60 runs along Walter Road West, providing direct access to the CBD and Morley Activity Centre to the North-East.

Lots closer to public transport are more likely to use public transport. These lots should therefore, be encouraged to have a higher density of development.

Further information on bus routes is provided in Appendix 3.

4.3.2. CAR PARKING CONFIGURATIONS

Parking provision on development sites varies across the study area. Most grouped dwellings and newer residential developments include double enclosed garages, and older houses typically featured open carports or open parking at street level. This is a reflection of recent design preferences to place car parking convenience as a priority for house frontages.

Most lots with multiple parking options noted on corner lots or grouped dwellings where there can be a mix of garages with front at grade parking or carports.

Replacing more traditional carport / at grade parking spaces with double garages fronting onto the street has had a large impact on the relationship between buildings and the public realm. This impacts the street character, though can be improved through appropriate design provisions.

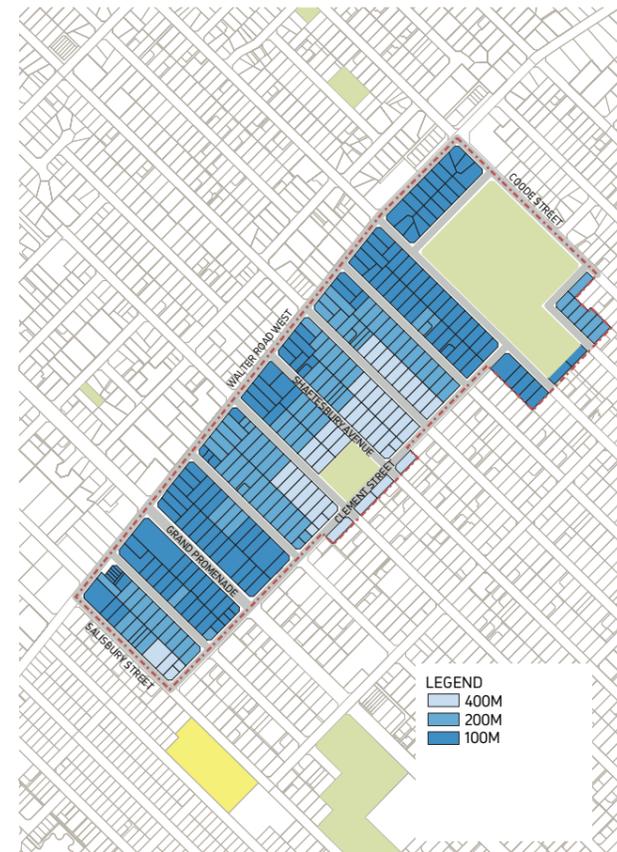


Figure 14: Lot distance to public transport

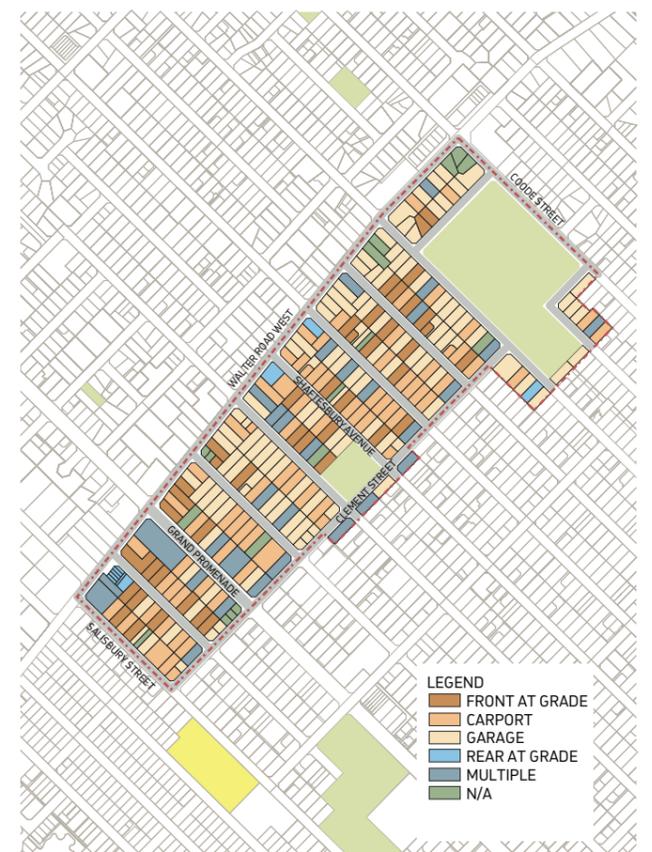


Figure 15: Parking configurations on development sites

4.4 BUILDING CHARACTERISTICS

Bedford North's residential buildings have changed over time, with houses in large gardens evolving to a 'tighter' grouped dwelling condition where there is less room for trees and spaces to interact with the street.

Commercial buildings on Walter Road West have typically addressed vehicle users first, with large car parking spaces and signs in front to attract attention. This condition can evolve to provide a more comfortable pedestrian environment with active edges and shade to the front, and car parking behind.

4.3.4. SETBACKS

Around half of the sites in the Bedford North study area have a generous setback (of around 3-8 metres), which contributes to the suburban character of the place. Landscaped front yards with space for a porch helped to define local streets from the 1950's. Newer developments (particularly grouped dwelling types) have introduced much shallower setbacks (of around 0-3 metres), particularly on Walter Road West. This has typically been driven by yield aspirations on site, but has (in many cases) negatively impacted on landscape and public domain interface qualities.

The study will analyse possibilities to re-encourage generous front setback areas to negate some of these impacts.



Figure 17: Different generations of housing in Bedford North

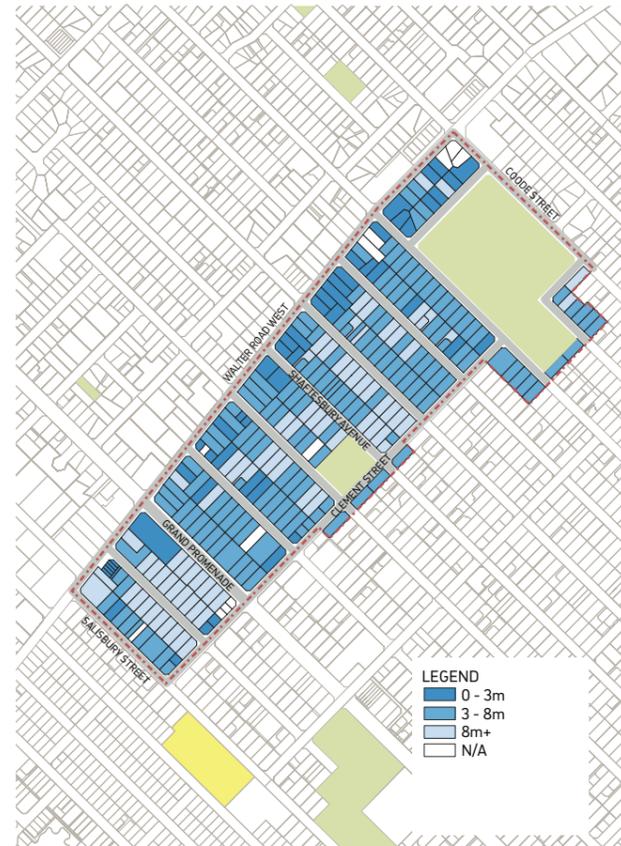


Figure 16: Front setbacks

4.4.1. BUILDING HEIGHTS

Most (almost 90%) of houses are single storey, with the remainder typically of two storey configuration. Single storey dwellings take up a significant amount of space on a lot, this leads to a reduction to the total amount of open space and landscaping, especially when more than one dwelling is sited on a single lot.

It is important to note that residential construction techniques are evolving, and two+ storey development is becoming more prevalent in surrounding areas (such as Maylands, Morley and Mt Lawley). This presents opportunities to explore the benefits of multi-level development in the study area.

4.4.2. BUILDING SEPARATION

More recent residential developments in Bedford North have prioritised larger building footprints, edging buildings closer to front and side setbacks. This is a result of current planning framework settings that have allowed for reductions.

In the current planning framework higher density developments generally allow for a reduced boundary setback and (as a result) a reduction in building separation. This can increase the amount of overlooking and overshadowing between neighbours.

The study will explore the multiple benefits that can be achieved through adequate building separation, such as privacy, landscape and solar access.

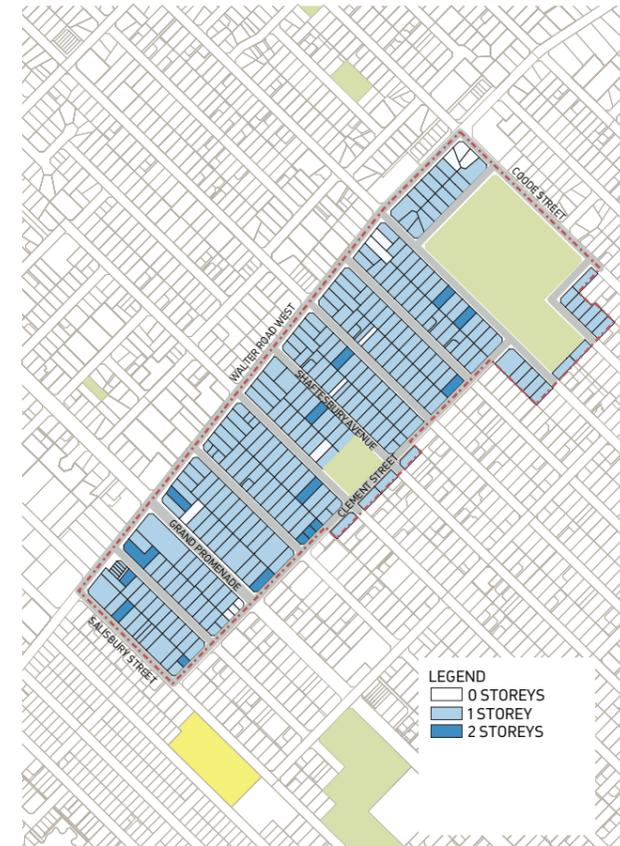


Figure 18: Current building heights



Figure 19: Examples of building separation across the study area

4.4.3. FRONT FENCES

Original houses in the Bedford North area were designed with generous setbacks and landscaped edges that encourage nil or low fences. This allows for improved relationships between the building and the public realm. As redevelopment has occurred (particularly along Walter Road West, as a response to fast-moving traffic) higher fences are now prevalent. This creates an uninviting and unsafe street environment.

Streets like Shaftesbury Avenue and The Strand have a good relationship between the public and private realms and are pleasant and open. This creates a feeling of safety and comfort to the pedestrian through natural surveillance.

The study will investigate opportunities to improve current conditions where high fences are creating poor street environments. The role of setbacks, landscape and the location of garages are all linked to this element.

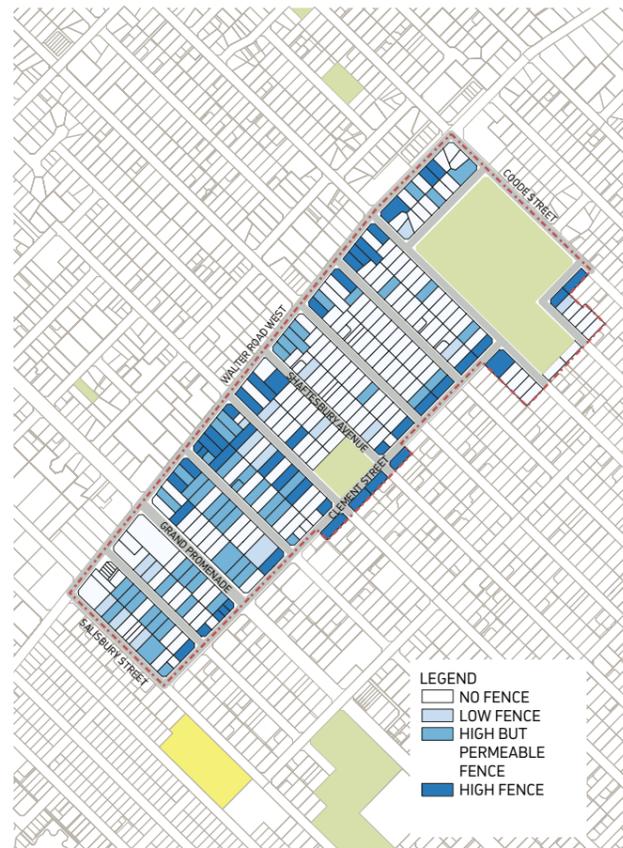


Figure 20: Front fence characteristics

4.4.4. PRIVATE OPEN SPACES

The study area includes a variety of different private open space types – front yards, backyards, porches, balconies and courtyards. While most original homes maintain a front and backyard, newer developments include more compact solutions. If designed well, all types of private open space can work for different households and importantly contribute to the street with activity and passive surveillance. A key consideration in the Study will be to determine ways to encourage buildings to ‘open out’ rather than ‘turn away’ from the street, to help enhance the suburban character of the streetscape.

Backyards have played an important social and environmental role in suburbs such as Bedford. However, the size, function and role of backyards in suburbia has transformed and is continuing to do so. This Study will analyse ways in which the valued qualities of backyards can be revisited in future redevelopment.



Figure 21: Contrast between original and new front yard designs



Figure 22: Walter Road West Elevation.

Growing number of solid and blank walls along Walter Road West has a negative impact on walkability and passive surveillance of the



Figure 23: Local Street Elevation.

Introduction of double garages and extensive driveways as part of new developments detracts from the street's character and amenity defined by the lack of front yards and vegetation and verge planting.



Figure 24: Local Street Elevation.

Mature trees and front gardens behind low, permeable fences characteristic of Bedford's older housing, positively contributes to streets' aesthetics, creates a comfortable walking environment and promote incidental community interaction.



Figure 25: Walter Road West Elevation.

The lack of tree canopy and extensive hardstand car parking area fronting commercial development creates an unwelcoming environment for pedestrians and discourages interest and pedestrian activity.

4.5 OTHER DEVELOPMENT CONSIDERATIONS

Bedford North has a high concentration of private land owners, and this is increasing further as redevelopment occurs. Current R-Codings and zonings offer some opportunities for redevelopment to occur, though this could be enhanced with updated design provisions.

4.4.5. OWNERSHIP

Ownership throughout the study area is largely mixed between single and multiple private, with a stronger government ownership presence to the south of Shaftesbury Avenue.

Only 0.5% (12 lots) are government-owned, compared to 58% single private and 36% multiple ownership (strata).

Government and single privately owned lots are generally the easiest to redevelop. Whereas the added complexity of multiple ownership can make redevelopment more challenging, particularly during the acquisition phase.

Edward Street can be seen to have the highest proportion of single private lots, making it prone to the pressures and opportunities of redevelopment in the immediate future.



Figure 27: Suburban lots in the early stages of redevelopment

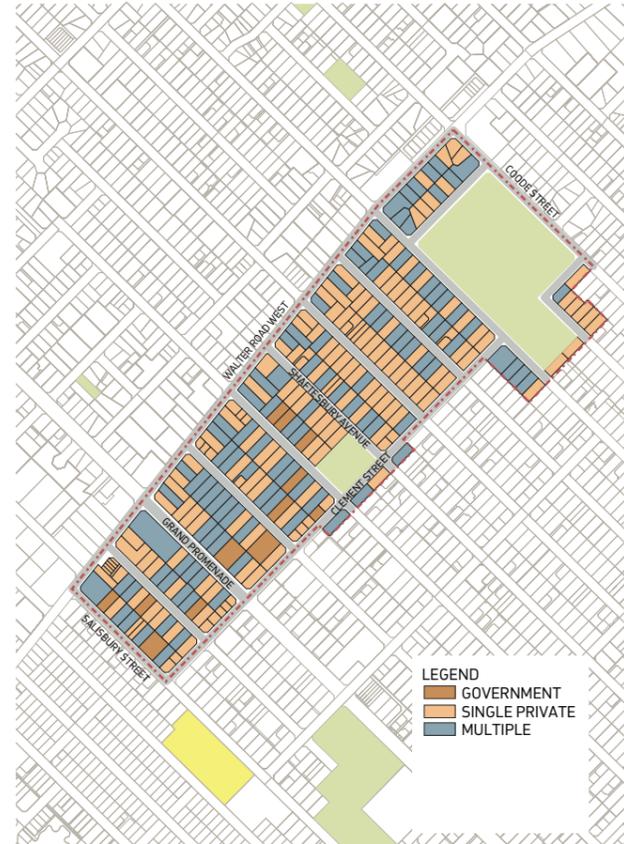


Figure 26: Ownership

4.5.1. R-CODINGS

About two-thirds of the study area consists of sites zoned R25. A narrow edge of R40 fronting Walter Road West, has promoted medium-density development along the main road.

As per the zoning of TPS24, opportunities for apartment development is possible only along Walter Road West where high coding exists, as this area forms part of a Core Area. Designated Core Areas allow for multiple dwellings on lots coded R40. R25 zoning on the remaining residential lots is limited to grouped dwelling development types, though it is noted the State Government is reviewing its R-Codes design provisions and this may allow for alternative design solutions on lower coded lots.

Selected lots along Walter Road West (showing as white in Figure 28 below) are zoned Business in the City's Scheme and do not carry an R-Coding. They currently allow for a mixture of uses including commercial and retail, but no residential

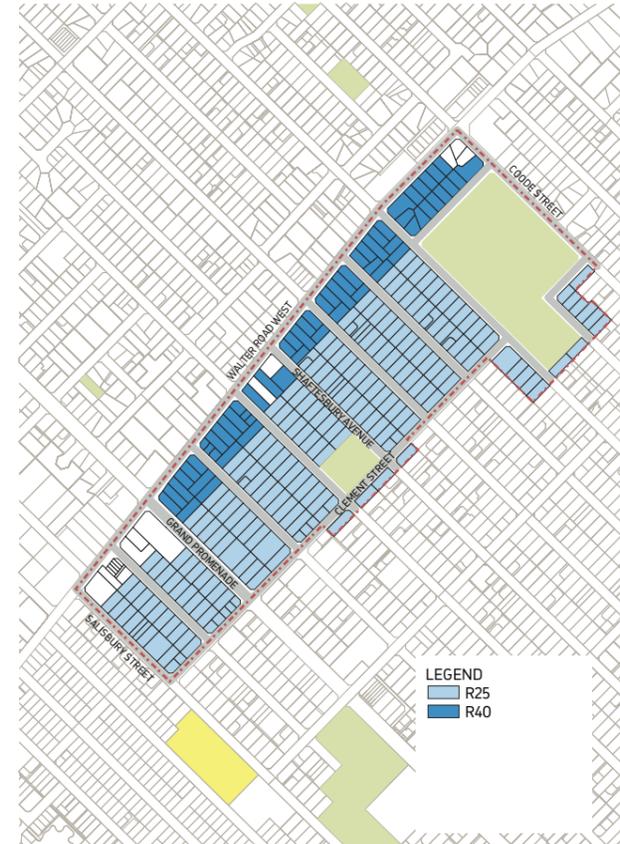


Figure 28: R-Codes

4.5.2. LOT SIZES

There are approximately 284 lots within the study area, with Figure 29 showing a visual representation of the various sizes that exist, broken down as follows:

- + 0-500 m²
- + 500-1000m²
- + 1000-1500m²
- + 1500m² +

64% of the study area is comprised of blocks which are between 500-1000m², with a portion between Grand Promenade and Birkett Street being slightly bigger at 1000-1500m². There are several lots above 1500m², all of which are either used for commercial use or are grouped dwellings. Larger lots between Grand Promenade and Birkett Street promotes an opportunity for more significant development to occur in this area.

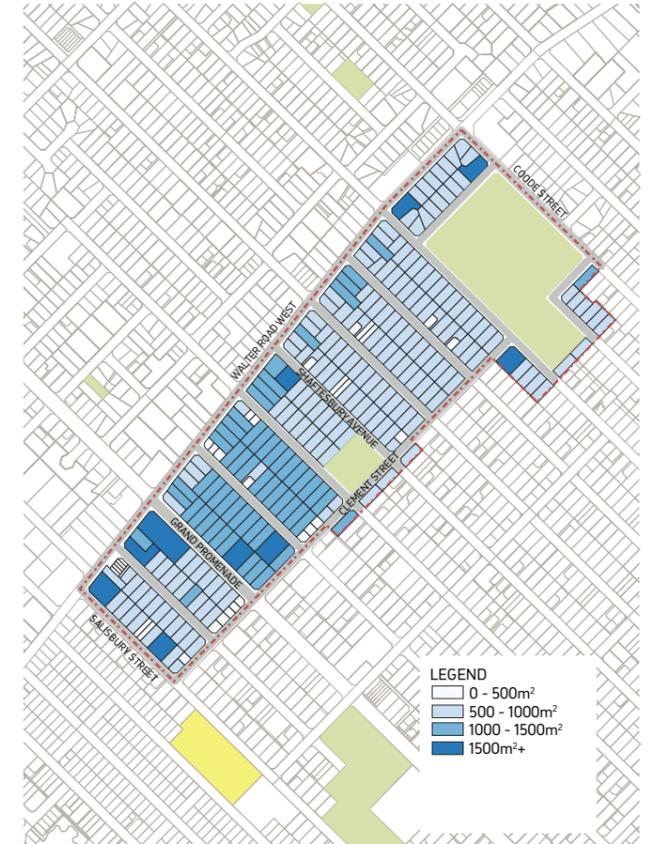


Figure 29: Lot sizes

4.6 MAIN STREET CONSIDERATIONS

The design of Walter Road West is critical to the success of Bedford North into the future. The road is classified as a District Distributor A Road by the City of Stirling, though there are many improvements that can be made to make the experience safer for pedestrians, and encourage more pedestrian and cycling activity on footpaths and within public realm areas.

Slower speed roads, with more shade will help businesses and residents open onto the space, rather than turn away. Slower traffic and traffic calming measures create a safer, more inviting environment for pedestrians and reduce friction between cars and pedestrians. It is very important that early steps are taken to seek these upgrades before future waves of redevelopment occur, which can create poor precedents that are likely to 'set the tone' for neighbouring sites.

Site analysis highlighted the harsh environment that currently exists along Walter Road West. A lack of shade, narrow footpaths, limited crossings and fast posted traffic speeds all contribute to this. An unfortunate result is new development that turns away with high walls and paved setbacks, compounding the problem (Figure 22 on page 37).

Comments from business owners and residents suggest that the area lacks a 'centre of gravity'. The section of road between Grand Promenade and Salsbury Street was noted as a first priority if upgrades were to occur. It has some of the ingredients required to create a new main street environment (such as small businesses – a chemist, grocer, bakery, hair dressers, and other essential services). The road environment makes it difficult to identify, navigate and linger.

This presents an opportunity to upgrade sections of Walter Road West into something that services the needs of the local community, and is sympathetic to pedestrians, cyclists and public transport rather than simply serving the needs of private vehicles. It is suggested that a collaborative approach by the Cities of Bayswater and Stirling would achieve the best results. Any future upgrades should be progressed together with local business owners and community members to match their aspirations with designs.

Examples of regional roads where upgrades have improved pedestrian and urban design conditions are included overleaf.

4.6.1. BALANCING TRAFFIC AND INFILL NEEDS

Additional analysis of traffic conditions along Walter Road West is included in Appendix 3 of this report. It notes that while there are pressures on vehicle traffic service levels currently (and this is likely to continue into the future as infill occurs under existing and future planning frameworks), that there are choices to be made about the form and function of the road to balance regional needs with local needs of the community.

It is very important to see the wider Bedford North revitalisation as an opportunity that considers more than simply traffic flow during peak hours. As Part 6.4 of Appendix 3 noted "A reliance on future planning based on transport modelling outputs alone, does not recognise the development that will have to occur overtime with Perth urban transport network to provide a wider range of opportunities for people to travel by non-car modes, but also does not recognise the societal changes that have occurred in the past and will continue to occur in the future, in relation to how communities travel behaviour is changed and influenced by the development of active transport networks (safe and convenient walking and cycling routes) and public transport networks (new routes, higher frequencies and possible new technologies)", with Main Roads documents also recognising that "in inner Perth areas with high traffic volumes it may not be possible to achieve a high LOS due to significant site constraints. In these circumstances, the interchange should be designed to achieve the highest LOS possible" (Supplement to Austroads Guide to Road Design – Part 4C September 2020).

As has been the case in many inner-city locations where infill has been delivered, it is not traffic considerations alone that determine the growth opportunities in those areas. Housing and economic opportunities (to develop the main street and offer additional living options) with peak hour traffic flow considerations must be balanced.

WALTER ROAD WEST BEDFORD



Road Category	District Distributor Road
2015/17 Avg Vehicles Mon-Fri:	17,645
Road carriageway width:	Typically 14m
Minimum number of lanes:	4 lanes
Typical posted speed:	60km/hr
Median street trees:	No
Activity:	Residential, Retail, Commercial

SCARBOROUGH BEACH ROAD MOUNT HAWTHORN



Road Category	Other Regional Road
2015/17 Avg Vehicles Mon-Fri:	22,865
Road carriageway width:	Typically 14m
Minimum number of lanes:	2 lanes
Typical posted speed:	40km/hr
Median street trees:	Yes
Activity:	Hospitality, Residential, Retail, Commercial

CAMBRIDGE STREET WEST LEEDERVILLE



Road Category	District Distributor A
2018/19 Avg Vehicles Mon-Fri:	19,078
Road carriageway width:	Typically 14m
Minimum number of lanes:	2 lanes
Typical posted speed:	60km/hr (traffic calmed)
Median street trees:	Yes
Activity:	Hospitality, Residential, Retail, Commercial

BEAUFORT STREET MOUNT LAWLEY



Road Category	Other Regional Road
2015/17 Avg Vehicles Mon-Fri:	24,798
Road carriageway width:	Typically 15m
Minimum number of lanes:	4 lanes including parking
Typical posted speed:	40 to 60km/hr
Median street trees:	Yes
Activity:	Hospitality, Residential, Retail, Commercial

WHATLEY CRESCENT MAYLANDS



Road Category	Local Distributor Road
2015/17 Avg Vehicles Mon-Fri:	12,624
Road carriageway width:	Typically 14m
Minimum number of lanes:	2 lanes + parking
Typical posted speed:	60km/hr
Median street trees:	No
Activity:	Hospitality, Residential, Retail, Commercial

05



ENGAGEMENT SUMMARY

5.1 ENGAGEMENT SUMMARY

As part of this project, community members and key stakeholders were engaged as part of the engagement strategy to assist in providing inputs into the study area. This section provides a summary of a wider report prepared by Shape Urban, which outlines in detail the engagement process and activities undertaken during consultation.

ENGAGEMENT ACTIVITIES

Both online and in-person modes of engagement were undertaken to address the project objectives.

COMMUNITY SURVEY

An online survey was designed to gauge community's perception of different aspects of future development. The survey questions explored topics including the Bedford North area's character, appropriate typology and location of future development.

BUSINESS AND COMMERCIAL SURVEY

Given the importance of the Bedford North commercial corridor within the study area, direct feedback was sought from business owners and commercial property owners by the project team. There were two surveys provided, one for business owners/operators, and one for commercial property landowners.

COMMUNITY WORKSHOPS

Two community workshop sessions were held with total of 36 participants. The workshops provided an informal opportunity for community members to ask questions, make observations and provide suggestions about their local experience and expectations for the Bedford North area. Feedback was provided by the community via annotated maps, post-it notes and an 'exit' survey, authored by the project team.

COMMUNITY WALKSHOP

The Bedford North Walkshop was the final engagement event which aimed to confirm community aspirations and feedback produced during the previous engagement sessions. In doing so, the event allowed the Project Team and the City to identify which design options would be most suited to the Bedford North precinct. The Walkshop included stops at various locations which allowed the Project Team to discuss key design elements being examined, allowing the community to share ideas.

A complete summary of the community engagement can be found in the *Bedford North Engagement Report* available in **Appendix 2**.



Community Workshop - Mapping Exercise



Community Workshop - 'Exit' Survey



Community Walk Shop



Community Walk Shop

TREE CANOPY AND PUBLIC REALM INTERFACE

- + With a diminishing number of trees within the precinct, there was interest in the retention of existing mature trees in future redevelopment, and planting of new trees to contribute to urban tree canopy.
 - Front setbacks were considered important to preserve the existing trees and provide space for new planting.
 - Too many crossovers and car parking spaces occupying verge space that could be dedicated to landscaped verges and deep soil.
- + Active living spaces, including balconies, front- and courtyards are important and should be open to the primary and or secondary street, where there is possibility for social interaction and passive surveillance opportunities.
- + The visual amenity of multi-storey developments on Grand Promenade and Walter Road West needs to be well integrated and interfaced with the surrounding context.

ACTIVE AND SAFE WALTER ROAD WEST

- + Walter Road West pedestrian crossings need significant improvements to become more safe. It was suggested to consider narrowing lanes and allowing more room for pedestrians and street activities.
- + Public realm improvements, including street trees, seating and art installations, are necessary to increase visual interest of Walter Road West for businesses, residents and pedestrians.
- + The allowable traffic speed along Walter Road West is disproportionate to pedestrian movement and should be reduced to encourage more active travel. Traffic speeds like those on Scarborough Beach Road in Mount Hawthorn and Cambridge Street in West Leederville were cited as examples (40km/h).
- + Walter Road West should encourage more cycling through provision of bike parking and cycle lanes.

BUILDING TYPES, HEIGHTS AND LOCATION

- + Building height along typical local streets within the precinct should not exceed 2-3 storeys.
- + 3-storey mixed use development with cafes and small stores at ground floor should be encouraged around main streets and possibly public open spaces. Terrace housing is also viewed suitable in these locations.
- + Higher density development is supported along Walter Road West and Grand Promenade with heights ranging from 3-5 storeys. The height of 5 storeys is considered viable for corner lots where there is minimal impact on surrounding residents.
- + Observations that the current grouped dwelling development model in this area has limited potential to interact with the street, and contribution to tree canopy.

06



URBAN DESIGN PRINCIPLES

6.1 URBAN DESIGN PRINCIPLES

6.1.1. SPP 7.0 DESIGN PRINCIPLES

State Planning Policy 7.0 - Design of the Built Environment (SPP 7.0) addresses design quality and built form outcomes in Western Australia. SPP 7.0 seeks to deliver the broad economic, environmental, social and cultural benefits that are derived from good design outcomes. It includes ten design principles that have been used as a structure to inform this Urban Design Study, and help to cross-reference recommendations.

The ten design principles that have been considered are listed below:

-  **Context and character** - Good design responds to and enhances the distinctive characteristics of a local area, contributing to a sense of place.
-  **Landscape quality** - Good design recognises that together landscape and buildings operate as an integrated and sustainable system, within a broader ecological context.
-  **Built form and scale** - Good design ensures that the massing and height of development is appropriate to its setting and successfully negotiates between existing built form and the intended future character of the local area.
-  **Functionality and build quality** - Good design meets the needs of users efficiently and effectively, balancing functional requirements to perform well and deliver optimum benefit over the full life-cycle.
-  **Sustainability** - Good design optimises the sustainability of the built environment, delivering positive environmental, social and economic outcomes.
-  **Amenity** - Good design provides successful places that offer a variety of uses and activities while optimising internal and external amenity for occupants, visitors and neighbours, providing environments that are comfortable, productive and healthy.
-  **Legibility** - Good design results in buildings and places that are legible, with clear connections and easily identifiable elements to help people find their way around.
-  **Safety** - Good design optimises safety and security, minimising the risk of personal harm and supporting safe behaviour and use.
-  **Community** - Good design responds to local community needs as well as the wider social context, providing environments that support a diverse range of people and facilitate social interaction.
-  **Aesthetics** - Good design is the product of a skilled, judicious design process that results in attractive and inviting buildings and places that engage the senses.

6.1.2. PROJECT URBAN DESIGN PRINCIPLES

Through site analysis, community engagement exercises and an understanding of State Government Planning Strategies/ Policies, a set of project urban design principles has been established to guide design testing and recommendations for the Study. The urban design principles will assist the City in future policy making, particularly where it is necessary to detail the justification and objectives relative to policy modifications. These principles are listed overleaf.



PROJECT PRINCIPLE 1

Preserving and enhancing space for yards, trees and landscaping

Urban design analysis and community feedback have revealed the continual development over many private open spaces and gardens that once hosted mature trees and landscaping. The canopy these trees provide is an important component of a quality lifestyle for residents, and the wider ecosystem.

The design testing for Bedford North has focussed on ways to deliver these outcomes while still offering suitable opportunities for redevelopment on lots. To achieve this project principle, space for backyards, front yards and courtyards of varying size and function should be maintained. This is particularly relevant where there is suitable space for deep soil and for tree canopy to mature and landscaping.

This project principle relates to SPP 7.0 Design Principles: Character and Context; Landscape Quality; Sustainability; Amenity; Community and Aesthetics.



PROJECT PRINCIPLE 2

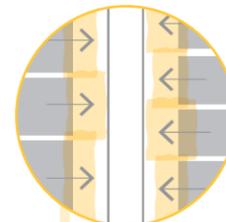
Built form design which enhances streetscape character

Urban design analysis and community feedback has shown Bedford North's streets have differing qualities, and built form should respond to enhance them. Street setbacks play an important role to establish this character - across local streets, major streets and streets adjacent to public open spaces.

Design testing for Bedford North considered how setbacks can be enhanced or relaxed, depending on their location. Spaces created from setbacks should be well calibrated and designed so that they become an extension of living spaces.

To achieve this project principle, space for backyards, front yards and courtyards of varying size and function should be maintained. This is particularly relevant where there is suitable space for deep soil and for tree canopy to mature and landscaping.

This project principle relates to SPP 7.0 Design Principles: Character and Context; Landscape Quality; Built Form and Scale; Amenity; Legibility; Community and Aesthetics.



PROJECT PRINCIPLE 3

Promote active living spaces that address the street

Urban design analysis and community feedback suggests that the redevelopment of detached dwellings impacts the relationship between buildings and the street edge along most streets. These impacts are more prominent along Walter Road.

The introduction of shallow front yards (setbacks) reduces the amount of trees and gardens that can be grown in these spaces, fences become higher to manage road noise and perceived security concerns, and building designs have turned internal living spaces or porches away from the street.

A combination of these factors, and their cumulative impact on streets is being addressed through the design testing. The tests have focussed on practical ways to locate garages away from the street edge (giving more opportunities for living spaces to be orientated towards the street), and encouraging courtyards, porches and low fences.

This project principle relates to SPP 7.0 Design Principles: Character and Context; Landscape Quality; Built Form and Scale; Sustainability; Amenity; Legibility; Community and Aesthetics.



PROJECT PRINCIPLE 4

Concentrating mixed use along a pedestrian friendly Walter Road West

Community feedback suggests that places along Walter Road West should host a mix of uses at the ground floor of new developments to help 'create a local heart' in Bedford. Small retail and commercial development can be complementary to increased densities that are likely to follow planning framework updates.

Encouraging a mix of uses at ground floor fits 'hand in glove' with an upgraded RA Cook Reserve, that has improved tree canopy, safer pedestrian paths and crossings, and slower road speeds. The land use and transport aspirations are dependent on one another, as quality shopfronts are much more likely to open onto a more pleasant streetscape.

This project principle relates to SPP 7.0 Design Principles: Character and Context; Landscape Quality; Built Form and Scale; Amenity; Legibility; Safety; Community and Aesthetics.

07



DESIGN TESTING

7.1 DESIGN TESTING

7.1.1. DESIGN TESTING SCOPE

The study has included a schematic testing exercise on a limited number of sites to understand the possibilities for the project's urban design principles to be accommodated, while still achieving increased density and dwelling diversity as redevelopment occurs in Bedford North.

The exercise has tested two different scenarios on five typical residential sites, and one test of the Bedford North Centre. It broadly followed these steps:

1. Confirm testing aspirations with the City, based on community workshop inputs on height, density, tree canopy, access and building/street interface.

This involved:

- Selecting test sites
- Setting a land use and development aspiration for each lot – confirmed by the City to demonstrate a variety of scenarios.

2. Preparation of schematic tests – this includes the consideration of: Building siting, car parking layouts, building entrances and vehicle access locations, building massings and floor plate considerations and landscaping/tree provisions.

3. Developing yields and diagrams.

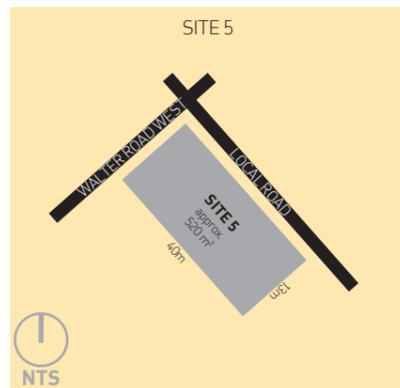
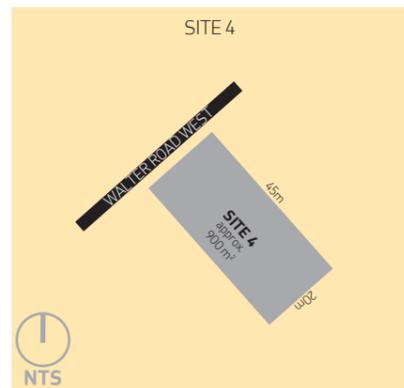
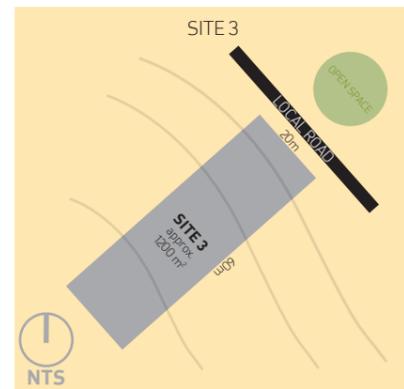
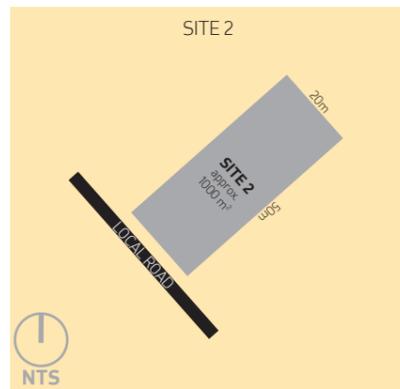
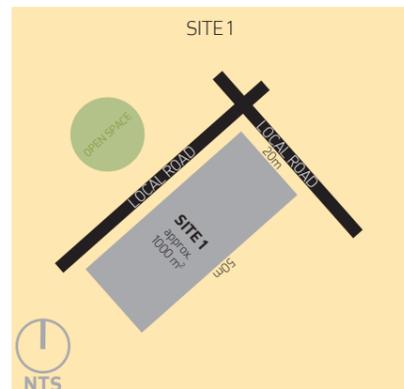
It is important to note that design testing has limitations. It cannot test for every eventuality, but helps to highlight any 'red flags' that could exist when the City forms policy provisions as part of future planning framework updates.

This exercise is based on typical residential grouped, terrace and apartment models and generally follows design provisions of the R-Codes Volume 2.

To be most effective the design testing suspends adherence to parts of the existing local planning framework (including R-coding densities in the area). For example:

- Some of the grouped dwelling tests propose four dwellings on one lot. Under existing R-codings the type of development may not be possible without an amendments to the local planning framework to increase R-Codings.
- Some of the apartment tests may not be possible without an amendments to the local planning framework that increase R-Codings to allow multiple dwellings (apartments).
- Mixed use testing in the Town Centre area may not support some of the land uses and building forms proposed in this testing without updates to the local planning framework.

Part 9 of this study offers recommendations for the City to consider in future updates to its planning framework.



7.1.2. SITE 1 - OFF CORRIDOR, CORNER LOT

NOTES FOR BOTH TESTS

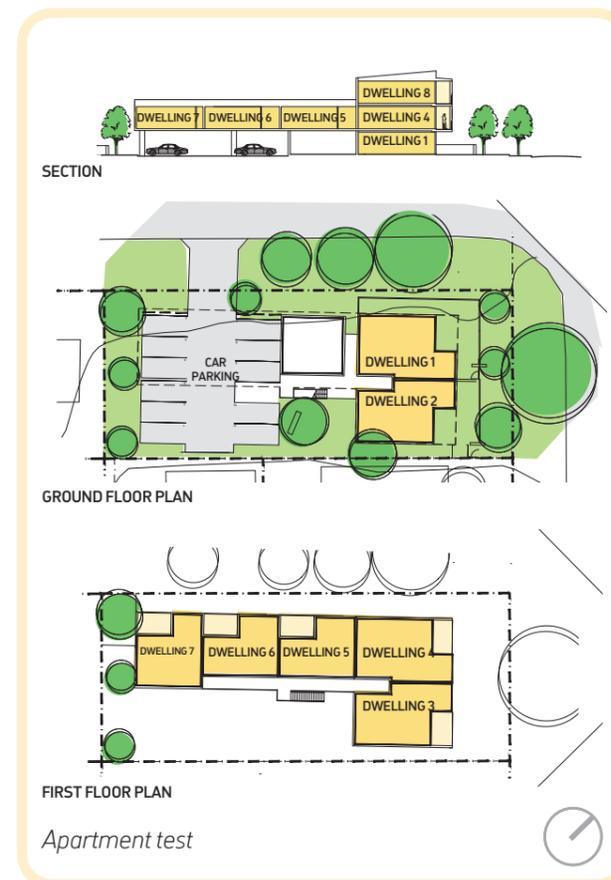
- + This site is off-corridor (on a local road), located on the corner of two streets.
- + A key consideration of both tests has been to minimise overshadowing onto the neighbouring lot south.
- + A generous landscaped setback is promoted on both street edges, to improve resident outlook, street interface and deep soil areas to improve tree canopy. Courtyards and balconies open out onto both streets at multiple levels.
- + Access to the site is limited to one crossover, while still allowing for generous landscaped spaces on both sides to minimise impacts.
- + The impact of car parking and garages towards the street is minimised through both tests. These functions are largely concealed, and where visible in the apartment configuration they are contained to the rear of the lot and could be screened.
- + Rear setbacks consider neighbours to the south and west by limiting development to two storeys. The western edge provides space for trees to grow as a landscaped buffer.
- + Assumes visitor parking can be accommodated on or close to the street in parallel bays.

ADDITIONAL NOTES FOR GROUPED TEST

- + The test demonstrates the ability for 'ancillary dwellings' to be accommodated on Dwelling 1 and Dwelling 2 on this plan, with separate entrances from the driveway.

ADDITIONAL NOTES FOR APARTMENT TEST

- + The test demonstrates the possibility for the north-eastern corner of the lot to be elevated to a third storey. This can occur with minimal impact on neighbours.
- + The test demonstrates that all apartments could meet current R-Codes solar access requirements.



7.1.3. SITE 2 – OFF CORRIDOR LOT

NOTES FOR BOTH TESTS

- + This site is off-corridor (on a local road), and of typical dimensions.
- + A key consideration for both tests has been to limit the visibility of driveways, and garages. This has been minimised in both tests through one narrow driveway to the middle or back of the lot. Garages are screened from the view of the street.
- + A generous landscaped setback is provided on the street edge to improve resident outlook, street interface and deep soil areas to improve tree canopy. It maintains the suburban character noted in off-corridor areas. Courtyards and balconies open out onto both streets at multiple levels with the room that risk being dominated by driveways.
- + Access to the site is limited to one crossover.
- + Rear setbacks consider rear neighbours. The northern edge of the site provides space for trees to grow and act as a landscaped buffer.
- + Assumes visitor parking can be accommodated on or close to the street in parallel bays.
- + The tests demonstrate space for courtyards that is generous, allowing for tree planting and for light to penetrate into living areas. This is achieved within both scenarios as a result of lot depth.

ADDITIONAL NOTES FOR GROUPED TEST

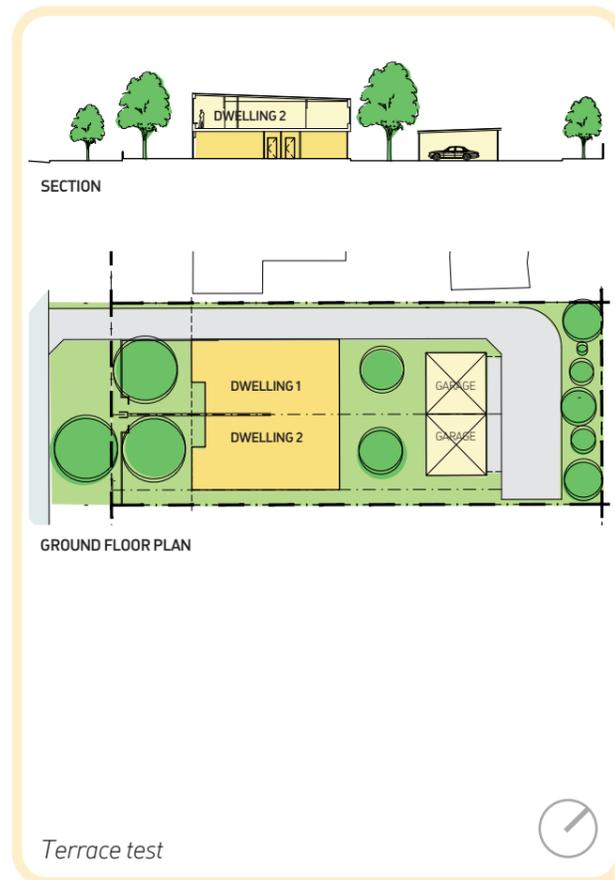
- + Dwelling 3 is positioned so the front door can be visible from the street, improving legibility and creating an identifiable street address.
- + This test shows upper floors overhanging the garage to minimise the negative impact of the garage, which typically dominates the front elevation.

ADDITIONAL NOTES FOR TERRACE TEST

- + None



Grouped test



Terrace test

7.1.4. SITE 3 – OFF CORRIDOR, SLOPED LOT

NOTES FOR BOTH TESTS

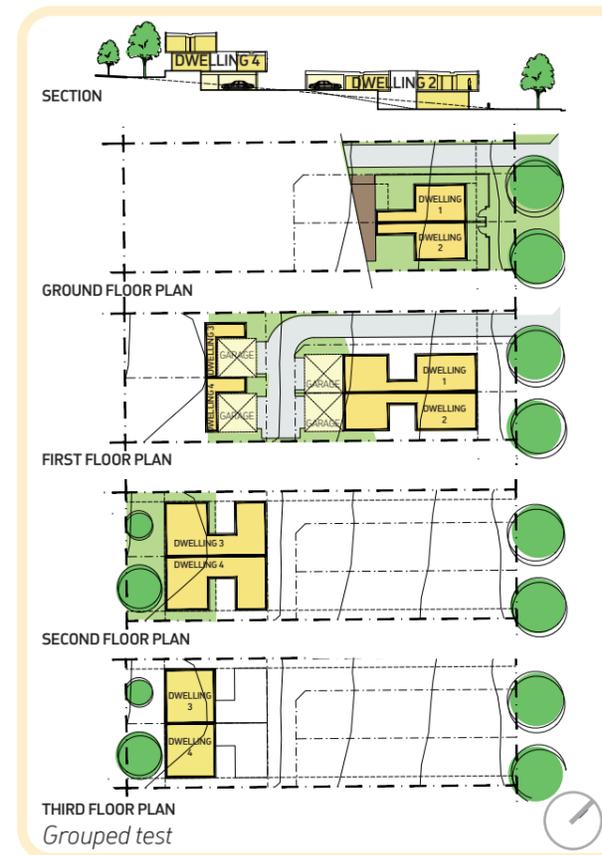
- + Sloped sites are more challenging to redevelop, though there are opportunities to encourage resident outlook onto natural amenities and views. In Bedford North some sloped sites may have potential views to the Perth CBD skyline.
- + A key consideration for both tests has been to reduce the impact of building bulk towards the street, whilst allowing opportunities for height to follow the sloping ground level as it rises to the south-west of the lot. The building massing to the street front is 2 storeys, while the rear of the lot is at 3 storeys to capitalise on views.
- + Rear setbacks consider rear neighbours. The south-western edge of the site provides space for trees to grow and act as a landscaped buffer.
- + A key consideration for both tests has been to limit the visibility of driveways, garages. This has been minimised in both tests through one narrow driveway to the middle or back of the lot. Garages are screened from the view of the street.
- + Access to the site is limited to one crossover.
- + A generous landscaped setback is provided on the street edge to improve resident outlook, street interface and deep soil areas to improve tree canopy. It maintains the suburban character noted in off-corridor areas. Courtyards and balconies open out onto both streets at multiple levels with the room that risk being dominated by driveways.
- + Visitor parking can be accommodated behind the building envelope to allow for planting in the front setback.
- + These tests demonstrate that the impact of retaining walls can be limited on site by managing levels within buildings.

ADDITIONAL NOTES FOR GROUPED TEST

- + This test shows upper floors overhanging the garage to minimise the negative impact of the garage, which typically dominates the front elevation.

ADDITIONAL NOTES FOR APARTMENT TEST

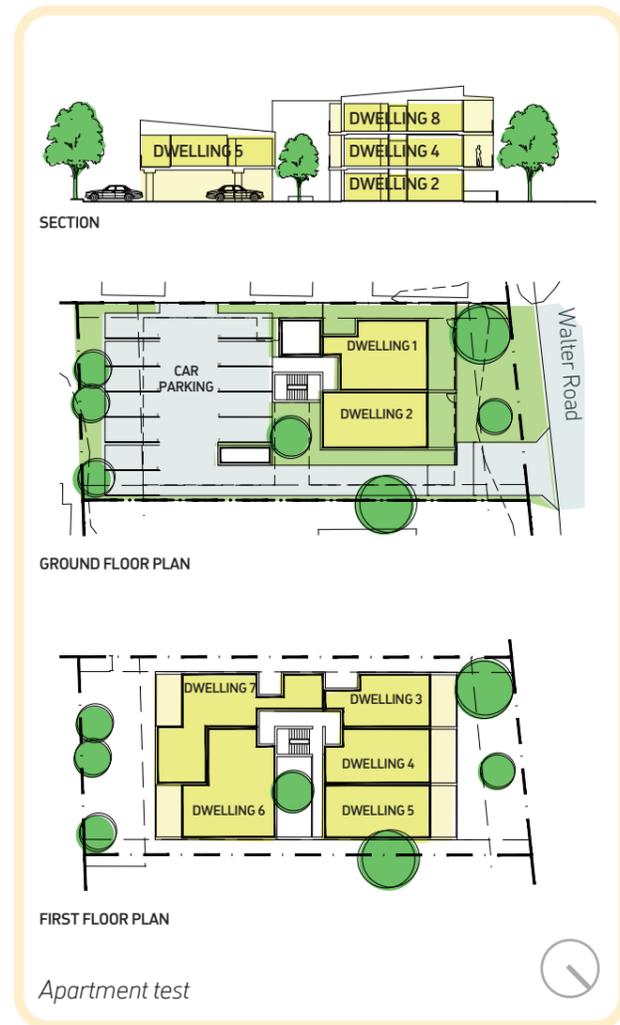
- + This test demonstrates that basement car parking can be avoided, with moderate retaining.



Grouped test



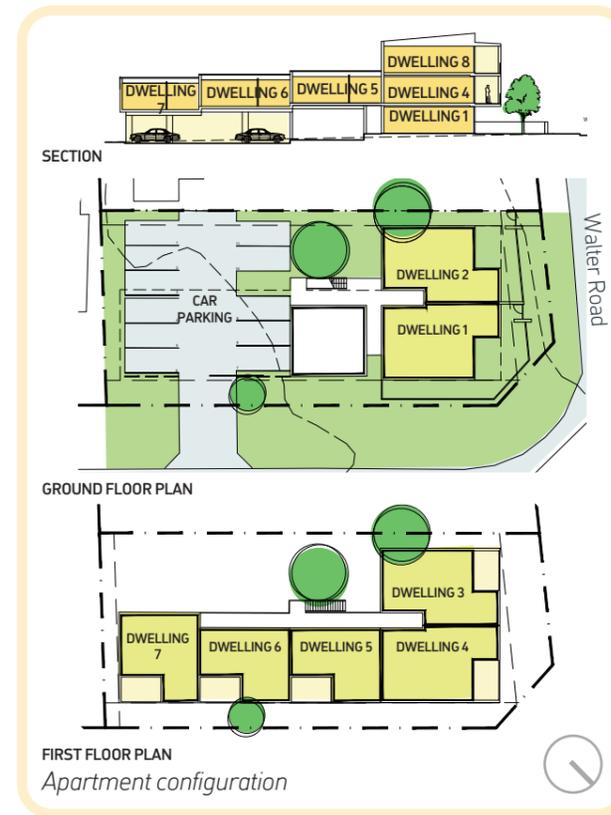
Apartment test



7.1.5. SITE 4 - ON CORRIDOR LOT

NOTES FOR APARTMENT TEST

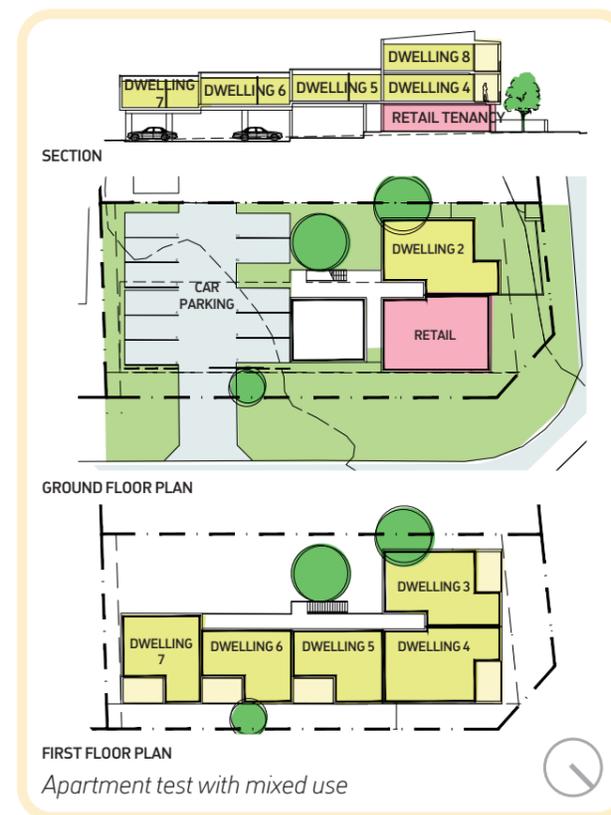
- + This site is on-corridor, located on Walter Road West. Amenity of residents across from this road is an important consideration for testing.
- + A generous landscaped setback is an important component in improving resident outlook, street interface and deep soil areas. Dwellings are encouraged to orientate north along Walter Road West with a landscaped layer. The benefit this provides is that it creates a green edge to the street and creates a comfortable environment for pedestrians using the footpath. Courtyards and balconies open to both streets at multiple levels.
- + A key consideration of this test has been to limit the visibility of driveways, garages through one narrow driveway to the back of the lot. Car parking is screened from the view of the street.
- + A generous rear setback considers rear neighbours' amenity. The southern edge of the site provides space for trees to grow as a landscaped buffer. Heights are limited to 2 storeys on this edge to reduce privacy and natural light impacts.
- + 3 storeys is encouraged towards the front of the site to provide a stronger urban edge and capitalise on the northern aspect.
- + The building is configured around a central courtyard with a small green communal open space away from the road.
- + This typology sets up an opportunity for corner lot development to amalgamate and 'plug into' the rear car parking space without the need for an individual driveway off Walter Road West (see this test in combination with Site 5 as a demonstration).



7.1.6. SITE 5 - ON CORRIDOR, CORNER LOT

NOTES FOR BOTH TESTS

- + This site is on-corridor, located on Walter Road West. Amenity of residents across from this road is an important consideration for testing.
- + A generous landscaped setback is an important component in improving resident outlook, street interface and deep soil areas. Dwellings are encouraged to orientate north along Walter Road West with a landscaped layer. The benefit this provides is that it creates a green edge to the street and creates a comfortable environment for pedestrians using the footpath. Courtyards and balconies open to both streets at multiple levels.
- + A key consideration for this test has been to limit the visibility of driveways, garages through one narrow driveway to the back of the lot. Garages are tucked out of sight of the street.
- + A generous rear setbacks consider rear neighbours. The southern edge of the site provides space for trees to grow as a landscaped buffer. Heights are limited to 2 storeys on this edge to reduce privacy and natural light impacts.
- + 3 storeys is encouraged towards the front of the site to provide a stronger urban edge and capitalise on the northern aspect.
- + The building is configured around a central courtyard with a small green communal open space away from the road.



ADDITIONAL NOTES FOR MIXED USE TEST

- + Parking for the retail space may require a variation to the City's parking requirements. This could be accommodated on the side street, off Walter Road West.

7.1.7. BEDFORD TOWN CENTRE

A design test has been undertaken for all lots identified in the area known as the Bedford Town Centre. The design testing aspiration for the Bedford Town Centre is to promote human scale urban development around a comfortable pedestrian-friendly street. Over time the intent is to create a local hub for residents, business owners and visitors.

The design response for development lots within the City of Bayswater takes a number of factors into account, including: site analysis, community workshops, community surveys and neighbouring strategic planning in the City of Stirling.

MIXED USE TEST

- + Tests conducted across multiple sites demonstrate the ability to accommodate commercial and retail space at ground level, and apartment development on upper levels.
- + Car parking is typically accommodated at ground level, with basements for larger sites C1 and C11 (Figure 31). The dimensions of these sites make for efficient car parking floor plates, which can deliver more flexible retail opportunities on the ground floor. For example local grocery stores or supermarkets.
- + Larger sites C1 and C11 can also accommodate higher buildings with minimal impact on neighbouring properties. The heights plan (Figure 30), shown adjacent, suggests a maximum of 5 storeys on the Walter Road West boundary for both sites. Results from the tests conducted recommend a height of 2 storeys within 20m of the rear/southern boundary for all sites, minimising potential privacy and overshadowing impacts to neighbouring properties.
- + Access to all sites has been considered under the scenario that lot amalgamation does not occur.
 - Sites C3, C4-7 and C11 are able to access development from local streets (Roseberry Street and Salisbury Street) via Walter Road West.
 - Access to C1 and C12 is from Grand Promenade, and Sites C2 and C10 from Walter Road West.
- + Opportunities to consolidate site access where lot amalgamation occurs is encouraged and should be explored.
- + Sites incorporate open space either on ground or on podium levels. This provides amenity to apartment residents living on upper levels, but also provides a landscape buffer to neighbours. For example on site C1's southern border where apartment development extends to the south of the site at 2 storeys.
- + A 2.5 metre colonnade has been applied to the design test, as influenced by the City of Stirling Walter Road West LDP. In an attempt to link both sides of the road with a similar building edge, this approach will provide continuous weather protection, and generous foot paths beside the road where space is limited.
- + Tests on Sites C5-7 reveal the limited ability to develop individual lots due to their narrow dimensions. Car parking layouts and floor plates are constrained, and are likely to require amalgamation. For this reason C5 assumes the amalgamation of three lots from the Roseberry Street corner, and C7 assumes the amalgamation of two lots beyond.
- + The repurposing or disposal of any surplus government owned land to the north-west of Lots 5-9 Walter Road West would improve the opportunities for development of Sites C5-11.



Figure 30: Heights Plan

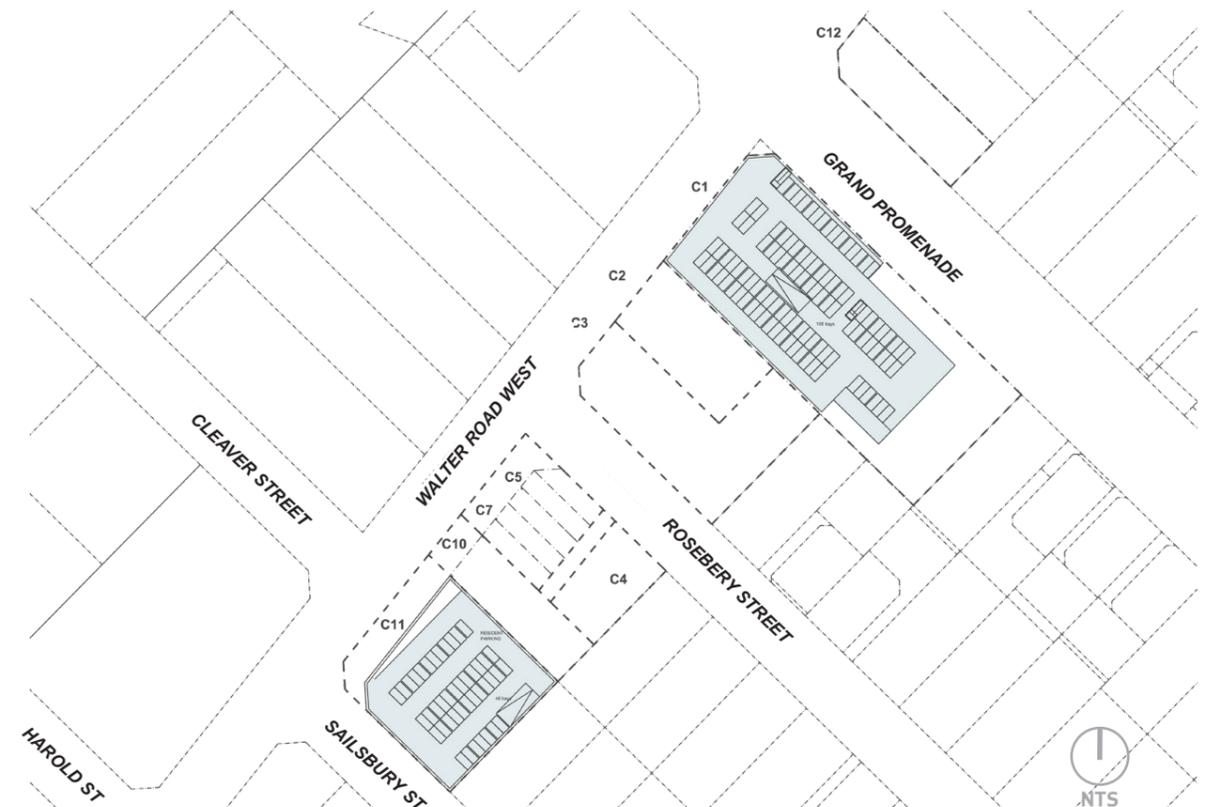


Figure 31: Basement



Figure 33: Ground Level



Figure 34: Level 1



Figure 35: Level 2

7.2 DEVELOPMENT YIELD PROJECTIONS

The Study utilises the outcomes from the design tests to produce a series of projections, dwelling yields and non-residential floor space yields. The projections assume that the yields produced can be achieved if modifications to the planning framework were made. This information is useful to the movement assessment conducted by Flyt (refer to Appendix 3).

Development yield projections are categorised into different zones. The zones are based on transport assessment requirements and the prevalent urban character.

- + Zone 1 - Bedford Town Centre
- + Zone 2 to 7 - General residential sites

Transport Report Considerations

The *Bedford North Corridor – Transport Impact Review* (Appendix 3) uses the development yield projections to understand potential impacts on the road network. More information on this can be found in Part 6 ‘Conclusions’ of that appendix.

The report notes it is important to take a realistic and balanced approach when understanding development growth targets and traffic impacts in infill environments:

Many inner-city locations along strategic local transport corridors (such as Walter Road West), have existing traffic signal controlled intersections operating at a poor level of service during peak hours. This is the nature of urban inner-city locations with significant AM peak school and commuter vehicle trips, as well as PM peak commuter and utility/leisure/recreation vehicle trips. Overtime Perth’s urban transport networks will develop to provide a wider range of opportunities for people to travel by non-car modes, whether that be by active transport or through improved public transport options. This change will occur in the congested areas of the city first and then inner-city locations, such as the Bedford North study area.

The City has an important role to play in the evolution of urban transport networks. The City can influence how corridors like Walter Road West function in the future, by ensuring a better balance is achieved between the interests of car users as opposed to providing an environment that encourages alternative modes of transport, such as walking, cycling and public transport.

In addition, the City has a role to play in making urban corridors, or parts of urban corridors more liveable and attractive as urban ‘places’ in their own right, through measures such as calming traffic and encouraging a mix land uses.

METHOD

Zone 1 calculations are direct floor space, apartment numbers and parking yields from the design testing exercise for affected lots. Only one design option was produced within this scope for Zone 1.

Zone 2 to 7 calculations involve scenarios that produce a range of development yield projections. The process includes these steps:

1. **Establish a Baseline**
Conduct a manual count of the number of developments on each lot using a combination of aerial imagery and spatial analysis.
2. **Understand the Titles**
Spatially map which lots are strata and green titled in the study area.
3. **Sample Lots Yield Potential**
Design testing of sample lots within the study area to understand the potential yields for different development typologies. For grouped and terrace typologies this information is then cross-checked against the recommended R-Codings suggested in Table 13. The results are then extrapolated across the entire study area.
4. **Research Realistic Scenarios**
Based on the aspirations discussed at community engagement sessions, research realistic development typology splits of nearby suburbs, using the ABS. Suburbs used were Leederville, North Perth and Mount Lawley.
5. **Test the scenarios**
Run the researched development scenarios on the study area to understand its potential. Prioritise the development of lots which would increase in development yield.
6. **Understand Where the Development Occurs**
Categorise the results into zones (see Table 9 and Table 10) to better understand where the majority of development is occurring.

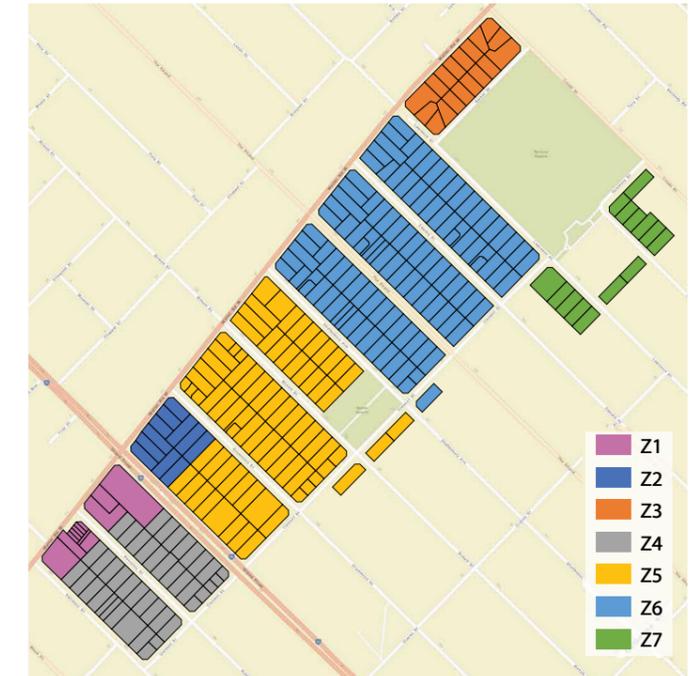


Figure 36: Development yield zones

SITE NUMBER	SITE ADDRESS	RESIDENTIAL APARTMENT YIELD	CAR PARKING BAYS - RESIDENTIAL	COMMERCIAL / RETAIL NLA M2	CAR PARKING BAYS - COMMERCIAL / RETAIL
C1	215 Grand Promenade, Bedford	55	76	1164	88
C2	70 Walter Road West, Bedford	14	21	65	2
C3	68 Walter Road West, Bedford	13	20	261	21
C4	211 Rosebery Street, Bedford	7	9	84	2
C5	66A+66+64 Walter Road West, Bedford	4	6	56	2
C7	62+62A Walter Road West, Bedford	3	6 (3 tandem)	34	1
C10	60 Walter Road West, Bedford	8	8	52	0
C11	54 Walter Road West, Bedford	30	46	452	16
C12	78 Walter Road West, Bedford	11	10	46	2
Total		145	196	2214	134

Table 9: Yield Information for Zone 1 (Commercial Sites)

Table 10: Yield Information for Zones 2 – 7 (Residential Sites)

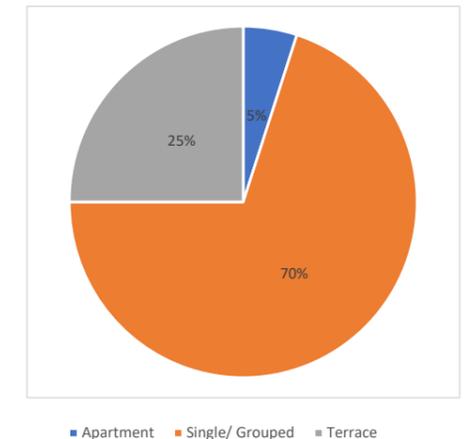
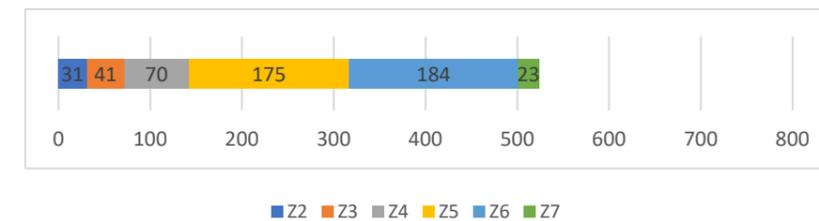
SCENARIO	CURRENT	LOW (BASED ON NORTH PERTH)	MEDIUM (BASED ON LEEDERVILLE)	HIGH (BASED ON MT LAWLEY)
Additional dwellings and/or lots	NA	27	171	241
Total dwellings and/or lots*	497	524	668	738
Apartment split	NA	5%	20%	25%
Single/grouped dwelling split	NA	70%	45%	55%
Terrace split	NA	25%	35%	20%
Green title development percentage	NA	50%	75%	75%
Strata Title development percentage	NA	0%	10%	20%
Zone 1 dwelling projections	0	Dwelling projections for Zone 1 are included in Table 9		
Zone 2 dwelling projections	29	2	8	12
Zone 3 dwelling projections	40	1	6	10
Zone 4 dwelling projections	68	2	19	27
Zone 5 dwelling projections	168	7	50	70
Zone 6 dwelling projections	172	12	74	103
Zone 7 dwelling projections	20	3	14	19

*Does not include Zone 1

ZONES 2-7 (LOW, BASED ON A NORTH PERTH DWELLING TYPE SCENARIO)

The low scenario assumes a split of 5% apartments, 70% single / grouped and 25% terrace development. 50% of green title lots and 0% of strata title lots are assumed to be developed.

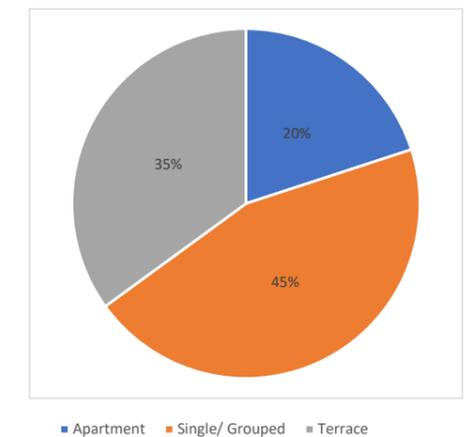
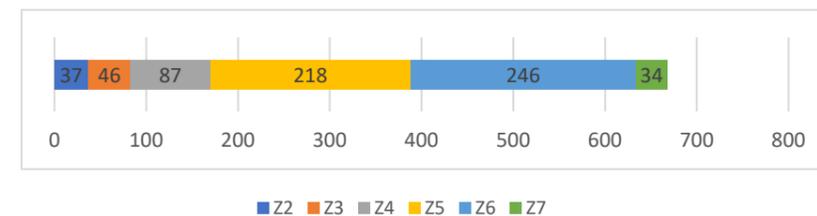
Dwelling yield per zone is shown below, and the distribution of dwelling typologies to the right.



ZONES 2-7 (MEDIUM, BASED ON A LEEDERVILLE DWELLING TYPE SCENARIO)

The medium scenario assumes a split of 20% apartments, 45% single / grouped and 35% terrace development. 75% of green title lots and 10% of strata title lots are assumed to be developed.

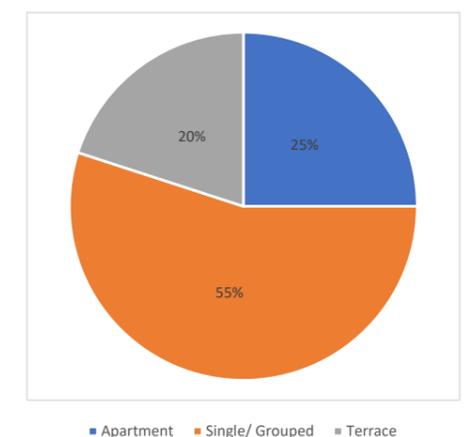
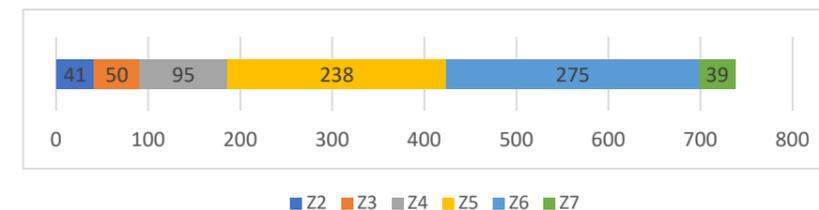
Dwelling yield per zone is shown below, and the distribution of dwelling typologies to the right.



ZONES 2-7 (HIGH, BASED ON A MOUNT LAWLEY DWELLING TYPE SCENARIO)

The high scenario assumes a split of 25% apartments, 55% single / grouped and 20% terrace development. 75% of green title lots and 20% of strata title lots are assumed to be developed.

Dwelling yield per zone is shown below, and the distribution of dwelling typologies to the right.



8



RECOMMENDATIONS

8.1 RECOMMENDATIONS

To achieve the project design principles established in this Study a list of recommendations and example design provisions has been provided to inform future actions for the City. *Note that specific policy and LDP drafting is outside the scope of this Study.*

This recommendations are explained over three interrelated tables.

- + Table 12 captures the high level recommendations resulting from this study and design testing
- + Table 13 includes additional detail on recommended R-codings for consideration in Bedford North
- + Table 14 includes additional detail on design provisions for consideration in Bedford North.

Other matters to note when reading these recommendations:

- + Some actions in this list sit outside of the planning system, but are important catalysts to assist with quality redevelopment in the area. For example, a key message from business and community members has been to establish a 'Bedford Town Centre' south of Grand Promenade on Walter Road West through streetscape upgrades. This can turn around what is a traffic dominated street to create a great place where locals can recreate, dine, shop and linger. The opportunity to investigate these as a partnership with the City of Stirling is important.
- + Some example provisions listed in Table 14 apply to certain geographic areas that are shown in Figure 37.
- + If updating the local planning framework there should be a focus on explaining the rationale/intent for example provisions. The information included throughout this study can assist / inform.

Project Urban Design Principles that inform these recommendations

- Principle 1
Maintaining space for yard and trees
- Principle 2
Setbacks to suit street character
- Principle 3
Promoting active, living spaces towards street fronts
- Principle 4
Bringing a mix of uses to a pedestrian-friendly Walter Road West

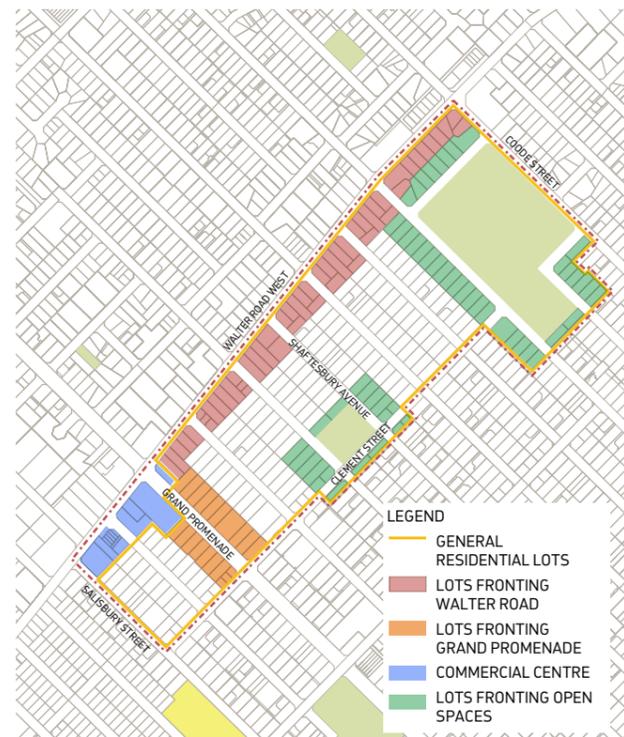


Figure 37: Recommendations 'applicable areas' plan

Table 12: Summary of Recommended Actions

SHORT NAME	RECOMMENDED ACTION	NOTES	JUSTIFICATION
R-Coding modifications to support apartment typologies	Consider modifications to R-Codings on selected lots to allow for a wider range and density of development with recommendations in Table 13	Current R-Codings would limit the ability to deliver increased densities or some smaller infill solutions (such as those demonstrated in design testing) on selected well-located lots. R-Coding changes must be delivered together with the 'Bedford Town Centre Local Development Plan' and 'Local Planning Framework design provision updates' to achieve Project Urban Design Principles	Urban design analysis, community workshop/ site walk feedback and lot testing exercises suggested the possibility for new residential densities and typologies in Bedford North.
Bedford Town Centre Local Development Plan	Consider the preparation of LDP/ Scheme Amendments to guide design of developments in the Bedford Town Centre.	This area is more complex in nature than areas outside of the sites, therefore an LDP will be a clearer way of translating Study findings and design testing into a statutory instrument specific for each lot.	An LDP is an appropriate mechanism to coordinate the development of these mixed use sites, given the site specific built form controls and access arrangements required.
Permit additional residential and/ or commercial uses on selected sites.	Consider modifications to the City of Bayswater Local Planning Scheme to allow for additional land uses as shown in Table 14.	This would permit some residential uses in the Bedford Town Centre; permit local commercial uses at selected sites near the Walter Road / Coode Street intersection; and permit incidental coffee/food uses on selected corner lots adjacent to R.A Cooke Reserve.	Project Urban Design Principle 4 supports a mix of uses, including living opportunities at the Bedford North Town Centre, commercial opportunities at selected places along Walter Road and corner lots adjacent to R.A Cooke Reserve.
Local Planning Framework design provision updates	Consider updating the City of Bayswater Local Planning Framework for lots in the Bedford North study area with recommendations from Table 15.	This recommendation largely relates to areas outside of the Town Centre sites, though there are some example provisions that could be applicable.	Planning framework updates are necessary to meet Project Urban Design Principles 1, 2, 3 and 4. These principles were formed through urban design analysis and community engagement activities.
Parking strategy	Consider the preparation of a parking strategy to interrogate Scheme parking requirements.	The strategy should look for opportunities where commercial/retail parking rates could be reduced and dispensation for visitor bays could be offered where on-street parking would be viable.	Oversupply of parking can lead to the likelihood of more open spaces being paved for cars, reducing spaces for landscape and drainage. Oversupply of parking is also linked to development feasibility, which can be marginal in middle ring suburbs. Use of common spaces (including streets) for occasional parking needs is preferred from this perspective.
Tree Local Planning Policy review	Consider reviewing the City of Bayswater Trees on Private Land Policy.	This should include consideration of future planning framework updates the performance of the policy and detail on which policy takes precedence.	Project Urban Design Principle 4 supports the provision of tree canopy. If changes are being made to the local planning framework this LPP requires alignment.
Bedford Town Centre land disposal	Consider re-purposing or disposal of any surplus Government land to the north-west of Lots 5-9 Walter Road West Bedford.	The land is part of the road reserve located immediately between Lots 5-9 Walter Road West Bedford and the Walter Road West carriageway.	Urban design analysis under Part 7.1.7 suggests this land could be surplus to requirements. An active street edge can be promoted if this land forms part of the development site, on the street.
Walter Road West upgrades	Consider commencing a formal project partnership with the City of Stirling to design and upgrade parts of Walter Road West in the project area (with an initial focus on the Town Centre between Grand Prom and Salsbury Street)	The purpose to create a more pedestrian and cycle friendly environment that new development can respond to in a positive, open way.	Project Urban Design Principles 3 and 4 support a mix of uses, including living opportunities along Walter Road. A holistic approach is required that thinks beyond the planning system alone. Encouraging development behaviour and design outcomes that address the street will require actions and upgrades that help adjacent landowners understand the opportunities and de-risk their development proposal. Without such actions development behaviours are likely to stay the same, with development turning away from busy road environments that aren't activated.
Bedford Town Centre place planning	Consider extending City of Bayswater Place Planning functions to Walter Road West. Explore opportunities for quick win projects to enhance the public realm and demonstrate positive change with the community and businesses (e.g. seating, shade, parklets, lighting, place branding and signage).	This should include detailed and ongoing engagement with businesses on their current and future operations, explore opportunities for promotion and marketing, and consideration of support for a new local Town Team support.	

Table 13: Summary of Recommended Density, Height and Development Types

APPLICABLE AREAS	TOWN CENTRE	LOTS FRONTING WALTER ROAD OUTSIDE OF THE TOWN CENTRE AREA	LOTS FRONTING GRAND PROMENADE OUTSIDE OF THE TOWN CENTRE AREA	LOTS FRONTING OPEN SPACE R.A COOKE OR BIRKETT RESERVE	REMAINING AREAS IN 'GENERAL RESIDENTIAL'
Intent	A higher density mixed use town centre area, with apartments above retail or commercial space.	A higher density residential edge to Walter Road with the introduction of a landscaped setback for improved amenity.	A higher density residential edge to Grand Promenade with the introduction of a landscaped setback for improved amenity.	A medium density residential edge to green open spaces in the Bedford North precinct, overlooking the existing amenity in these locations.	A medium density residential infill opportunities that improve current models of infill with greater consideration for landscape, public domain interface and internal amenity.
Existing R-Code	N/A	R40	R25	R25	R25
Recommended R-Code	RAC-0	R60	R50	R50	R35
Recommended maximum height limit	5 storeys	3 storeys	2 storeys	2 storeys*	2 storeys
Recommended for terrace development type	No	Yes	Yes	Yes	Yes
Recommended for grouped dwelling development type	No	Yes	Yes	Yes	Yes
Recommended for apartment development type	Yes	Yes	Yes	Yes	No
Notes	The RAC-0 coding would require a corresponding planning instrument to guide development. An LDP is recommended for this purpose.	An R60 coding is set to a default height of 3 storeys for apartment development (R-Codes Vol 2). Transition to 2 storeys is important where there is an interface to general residential areas.	Under R-Codes Vol 1 an R50 coding affords lower minimum lot sizes that could encourage four grouped dwellings on one site. For example grouped dwelling design testing in this study demonstrates minimum lot sizes down to 170m ² . Under R-Codes Vol 2 an R50 coding sets a default height of 3 storeys for apartment development, however it is recommended this be lowered to 2 storeys in design provisions.	Under R-Codes Vol 1 an R50 coding affords lower minimum lot sizes that could encourage four grouped dwellings on one site. For example grouped dwelling design testing in this study demonstrates minimum lot sizes down to 170m ² . Under R-Codes Vol 2 an R50 coding sets a default height of 3 storeys for apartment development, however it is recommended this be lowered to 2 storeys in design provisions.	Under R-Codes Vol 1 an R35 coding affords lower minimum lot sizes that could encourage three grouped dwellings on one site (using the design testing in this urban design study as a guide). * The exception to a 2 storey height could be consideration given to allow flexibility for additional height in the front 20 metres of corner lots facing R.A. Cooke Reserve as highlighted in Figure 38 'Area C'.

Table 14: Additional Land Use Recommendations

APPLICABLE AREAS SEE FIGURE 38	RECOMMENDED USES*
Area A	Additional uses that promote higher density residential are recommended for incorporation into the Scheme. Subject to review from the City they may be: <ul style="list-style-type: none"> - Dwellings - Aged or Dependent Persons - Dwellings - Multiple Dwelling Notes: Promoting multiple dwelling residential development at the Bedford North Town Centre is recommended above commercial and retail uses.
Area B	Additional uses that promote main street activity are recommended for incorporation into the Scheme. Subject to review from the City they may be: <ul style="list-style-type: none"> - Child Care Centre - Convenience Store - Lunch Bar - Medical Centre - Office - Restaurant - Retail - Shop Notes: Consideration of a wider mix of activities and uses could be promoted at the Coode Street intersection with Walter Road to offer convenience and experiences for those living within close proximity. The extent of this area reflects commercial uses that occur on the northern side of Walter Road (within the City of Stirling)
Area C	Additional uses for low impact casual dining or convenience purchases are recommended for incorporation into the Scheme. Subject to review from the City they may be: <ul style="list-style-type: none"> - Kiosk - Lunch Bar - Restaurant Notes: There are opportunities to activate public open space edges at selected locations (at corner sites) with incidental food and beverage uses e.g. local coffee shop(s), or convenience uses. Corner sites are better equipped to manage the mix of land uses, and are therefore recommended for this purpose.

* Note: It is recommended that any changes listed above require analysis of the most effective approach through the City's wider Scheme reviews in consultation with DPLH. One way of actioning these changes may be achieved through maintaining existing zonings and adding additional uses to City of Bayswater Local Planning Scheme 24 Appendix 2.

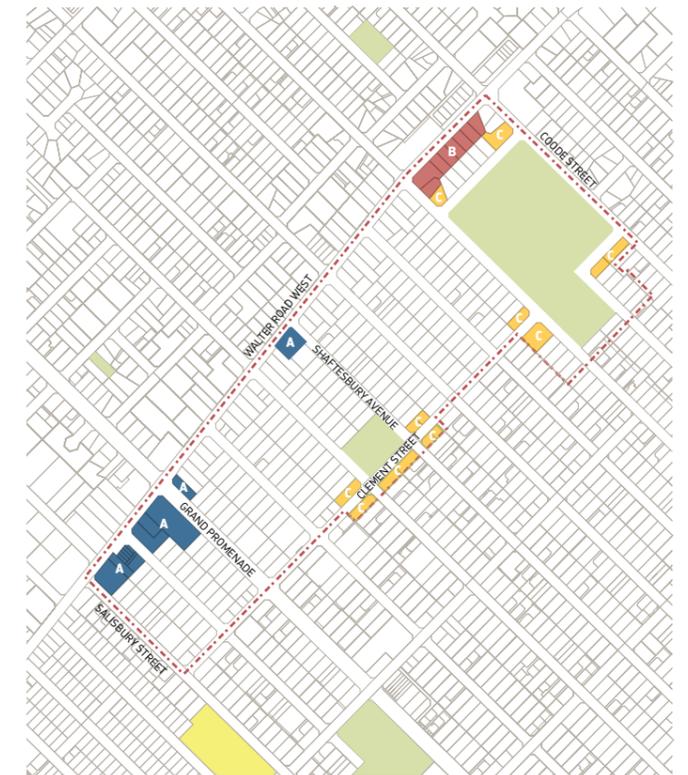
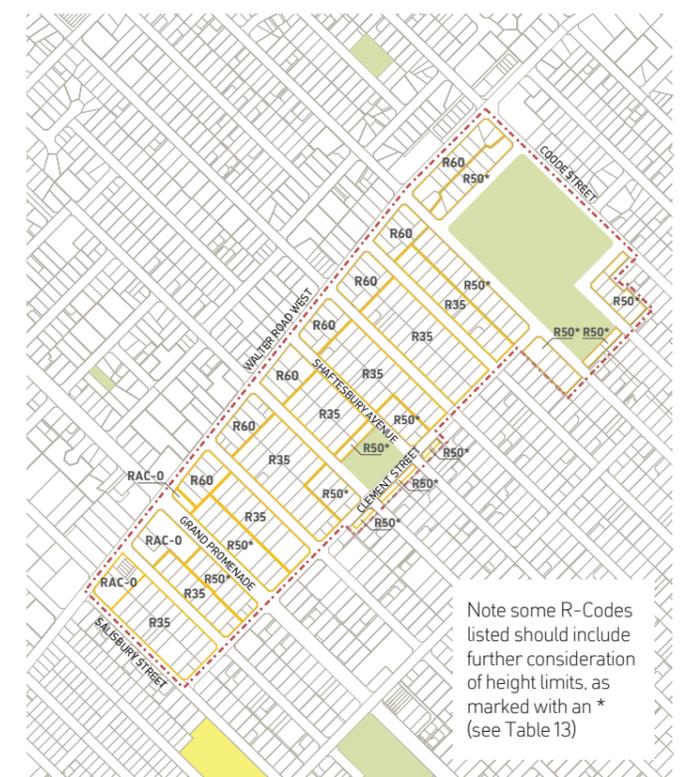


Figure 38: Additional use areas



Note some R-Codes listed should include further consideration of height limits, as marked with an * (see Table 13)

Figure 39: Recommended R-Codings

Table 15: Summary of Recommended Design Provisions for the Local Planning Framework

SHORT NAME	EXAMPLE PROVISION	RELATED TO PROJECT URBAN DESIGN PRINCIPLES
NAME AND NUMBER FOR REFERENCE ONLY	ANY EXAMPLE POLICY PROVISIONS WOULD BE SUBJECT TO FURTHER POLICY DRAFTING CONSIDERATION	
H-1 Heights (Off-Walter Road West)	A building envelope height of 7 metres (from natural ground level to top of parapet)* *Consideration should be given to allowing flexibility for additional height in the front 20 metres of corner lots facing R.A. Cooke Reserve as highlighted in Figure 38 'Area C' where mixed-use development may be promoted through an 'additional use' Notes: - This allows for heights of 2 storeys. - Includes provision for additional height to accommodate roof equipment. - For sloping sites the height of the building is taken from the relevant point on the site.	- Principle 3
H-2 Heights (Walter Road West)	A building envelope height of 10 metres (from natural ground level to top of parapet) toward the front of the block towards Walter Road West street frontage, and 7 metres on boundaries fronting onto secondary streets or other properties. Notes: - This allows for heights of 3 storeys towards Walter Road West. - Includes provision for additional height to accommodate roof equipment.	- Principle 3 - Principle 4
FS-1 Front Setbacks	A building envelope setback of 6-metres from the front of the lot that includes at least 50% of the setback area provided as soft landscaping. Notes: - Grouped dwelling typologies could consider courtyards in the front setback. - Where provided, on-site visitor bays are behind the building envelope - Front setbacks on Walter Road West should accommodate (and demonstrate) mature tree planting - For corner lots fronting Walter Road West secondary street setbacks can be reduced to 4 metres - The minimum soft landscaping calculation is demonstrated to be achieved in two scenarios in Figure 40 and Figure 41	- Principle 1 - Principle 2 - Principle 3 - Principle 4
RS-1 Rear Setbacks	A building envelope setback of 6-metres from the rear of the lot that includes soft landscaping. Notes: - Retention of trees should be encouraged, and R-Codes Volume 2 provision A3.3.1 can be used to link to the provision for this purpose.	- Principle 1
R-1 Retaining	Retaining walls are minimised to no more than 750mm to limit the amount of exposed retaining. Notes: - This helps to minimise cut and fill, and maintains existing levels throughout the precinct rather than flattening of lots.	- Principle 3
NGL-1 Natural Ground Level	Existing ground levels cannot be varied by more than 750mm. Where cut and fill is provided this is to be averaged across the length of the site (with all retaining concealed from the street frontage). Depth of cut and fill should be no more than 1500mm to allow for natural ventilation of car parking areas. Note: - This helps to minimise the impact of infill development on sloping sites.	- Principle 3

APPLICABLE AREA					POSSIBLE PLANNING FRAMEWORK LOCATION		
GENERAL RESIDENTIAL LOTS THROUGH BEDFORD NORTH	LOTS FRONTING WALTER ROAD WEST OUTSIDE OF THE BEDFORD NORTH TOWN CENTRE AREA	LOTS FRONTING GRAND PROMENADE OUTSIDE OF THE BEDFORD NORTH TOWN CENTRE AREA	LOTS FRONTING R.A. COOKE OR BIRKETT RESERVE	LOTS IN THE BEDFORD NORTH TOWN CENTRE AREA	SCHEME/POLICY PROVISIONS	GUIDANCE	OTHER
●		●	●	CONSIDERATION OF THIS PRIMARY CONTROL SHOULD VARY, BASED ON SITE SPECIFIC BASIS IN AN LDP	●	●	
	●			CONSIDERATION OF THIS PRIMARY CONTROL SHOULD VARY, BASED ON SITE SPECIFIC BASIS IN AN LDP	●	●	
●	●	●	●	CONSIDERATION OF THIS PRIMARY CONTROL SHOULD VARY, BASED ON SITE SPECIFIC BASIS IN AN LDP	●		
●	●	●	●	CONSIDERATION OF THIS PRIMARY CONTROL SHOULD VARY, BASED ON SITE SPECIFIC BASIS IN AN LDP	●		
●	●	●	●			●	
●	●	●	●				●

SHORT NAME	EXAMPLE PROVISION	RELATED TO PROJECT URBAN DESIGN PRINCIPLES
NAME AND NUMBER FOR REFERENCE ONLY	ANY EXAMPLE POLICY PROVISIONS WOULD BE SUBJECT TO FURTHER POLICY DRAFTING CONSIDERATION	
DG-1 Driveways and Garages (driveway widths)	Where vehicle access is required to the rear of a site a single lane driveway is narrowed to be no more than 3.5 metres wide at the crossover point to the street. <i>Note:</i> - A width narrower than 3.5 metres would allow more space for landscaping along parts of the fence line and should be encouraged. - This provision should be progressed with the City's transport engineering team.	- Principle 1 - Principle 3 - Principle 4
DG-2 Driveways / Garages (garage doors)	Garage doors should be out of line of sight from the primary street frontage. <i>Note:</i> - This provision should also be applicable to grouped dwelling developments.	- Principle 1 - Principle 3 - Principle 4
OS-1 Open space (north-fronted courtyard locations)	For north-fronted sites courtyards can be accommodated in the front setback.	- Principle 1 - Principle 3
OS-2 Open space (northern boundary primary open space)	Setback areas to the rear of sites can be included as the primary open space when on the northern boundary of the lot.	- Principle 1
L-1 Landscape (front setback)	A medium sized tree (as defined in R-Codes Volume 2) should be planted and maintained in each front setback area for each front-facing dwelling. <i>Note:</i> - To act as a natural buffer to vehicle activity and contribute to a more pedestrian friendly street environment and improve the tree canopy.	- Principle 1 - Principle 3
L-2 Landscape (rear setback)	Where there is no retention of trees (worthy or possible) in a rear setback, a medium sized tree (as defined in R-Codes Volume 2) should be planted and maintained in the rear setback area where one or more dwellings are facing the rear setback to act as a natural buffer and contribute to the wider tree canopy goals of the area.	- Principle 1
F-1 Fences (Fence height)	Primary street fence heights should be no more than 1200mm. Where the lot has a secondary street frontage fence heights should be no more than 1200m where that part of the fence is dividing the resident's primary open space areas from the street. <i>Note:</i> - This helps strengthen the connection between buildings and the street, and works together with setback and landscape example provisions.	
F-2 Fences (Fence location)	Front fences should be set back a minimum of 600mm behind the front boundary <i>Note:</i> - To improve the pedestrian interface to the street by providing a suitable planting area for landscaping to the street.	

APPLICABLE AREA					POSSIBLE PLANNING FRAMEWORK LOCATION		
GENERAL RESIDENTIAL LOTS THROUGH BEDFORD NORTH	LOTS FRONTING WALTER ROAD WEST OUTSIDE OF THE BEDFORD NORTH TOWN CENTRE AREA	LOTS FRONTING GRAND PROMENADE OUTSIDE OF THE BEDFORD NORTH TOWN CENTRE AREA	LOTS FRONTING R.A. COOKE OR BIRKETT RESERVE	LOTS IN THE BEDFORD NORTH TOWN CENTRE AREA	SCHEME/POLICY PROVISIONS	GUIDANCE	OTHER
●	●	●	●			●	● ENGINEERING POLICIES/ GUIDELINES
●	●	●	●	●		●	
●	●	●	●	●		●	
●	●	●	●	●		●	
●	●	●	●			●	● LANDSCAPE MANAGEMENT/ COMPLIANCE
●	●	●	●			●	● LANDSCAPE MANAGEMENT/ COMPLIANCE
●	●	●	●			●	
●	●	●	●			●	

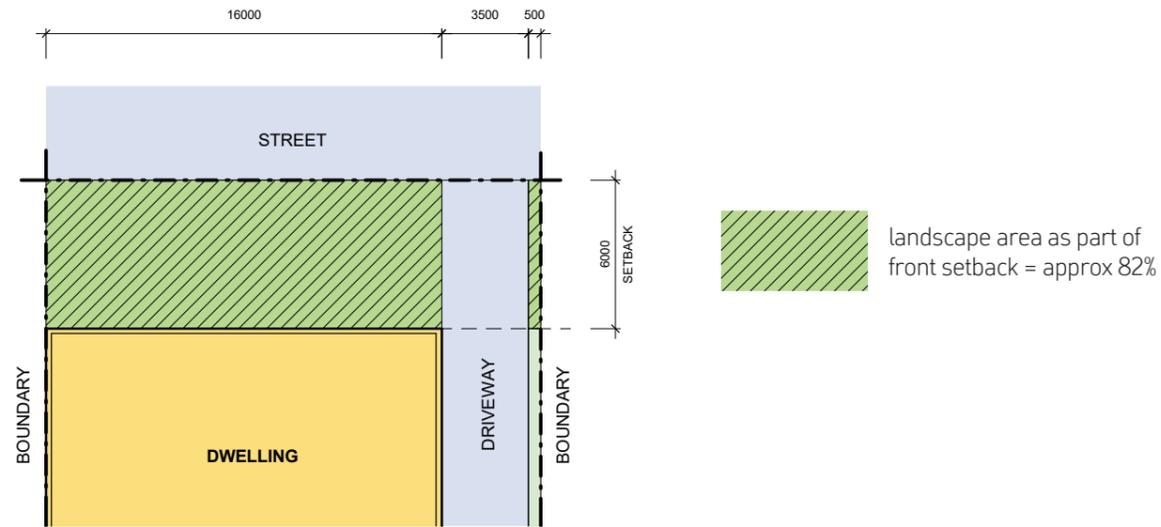


Figure 40: Soft landscaping demonstration for Design Provision FS-1 (front setback). Showing a 82% soft landscaping percentage could be reached on a typical 20m wide lot where no existing dwellings are retained and one crossover is achieved.

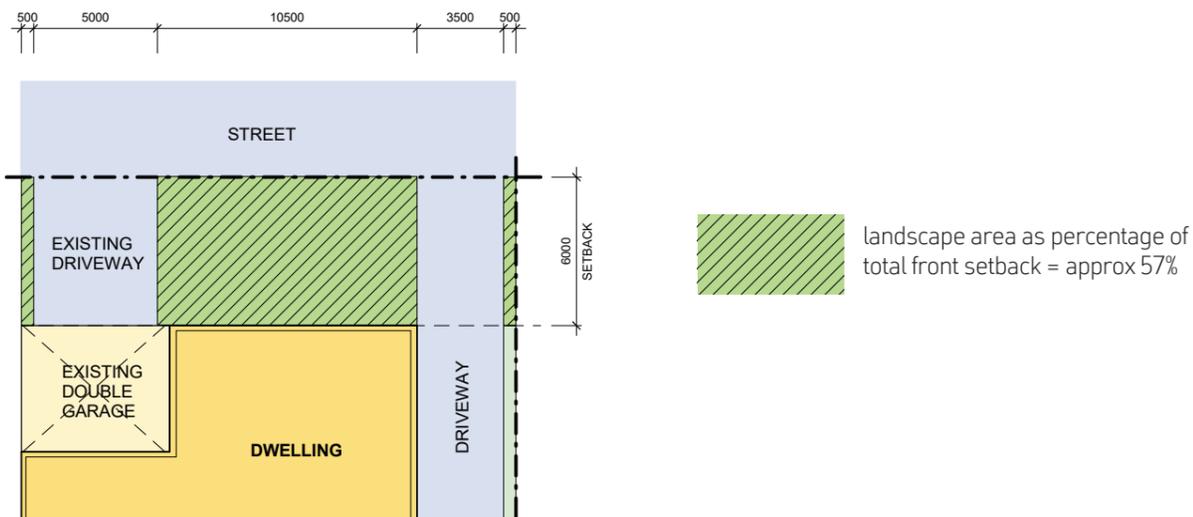


Figure 41: Soft landscaping demonstration for Design Provision FS-1 (front setback). Showing a 57% soft landscaping percentage could be reached on a typical 20m wide lot where an existing dwelling is retained and two crossovers remain as a result.

CONCLUDING REMARKS

Bedford North is an area in transition. Established suburban streets and houses are experiencing redevelopment activity that has challenged the qualities that have defined the place over time – such as local neighbourhood walkability, tree canopy and open building/street interfaces.

Walter Road West and Grand Promenade run through Bedford North, and their function has a large impact on the way the local community uses the neighbourhood. In recent years both streets have experienced increased vehicle traffic as Perth has grown. An absence of a cohesive strategy to link road design and function with urban design outcomes, can lead new development to ‘turn its back’ to both streets.

The Bedford North Urban Design Study draws together analysis of this study area and its context, and community inputs (through surveys, workshops and a site walk shop). This information has been summarised and proposed as a series of urban design principles:

- + Principle 1 - Maintaining space for yard and trees
- + Principle 2 - Setbacks to suit street character
- + Principle 3 - Promoting active, living spaces towards street fronts
- + Principle 4 - Bringing a mix of uses to a pedestrian-friendly Walter Road West

Informed by these principles, design testing has been undertaken to understand potential development scenarios on typical lots in the area. While there are limitations to these tests, they provide examples of development types that can be delivered on sites. Possible yields and movement implications are then explored.

Next steps for the City are outlined in the recommendations tables in Part 9 of this Study. A prioritisation exercise would be a useful first step for City, as there are many planning updates and non-planning activities in these recommendations tables that could take place over a long term programme to help Bedford North (and Walter Road West) reach its full potential:

- + Planning updates give an opportunity to address these impacts of poor quality development through Scheme amendments, LDP and policy provisions, and guidance to promote suitable development and landscape qualities.
- + Non-planning activities would give the City an opportunity to work with neighbouring City of Stirling to improve the condition along Walter Road West. Street upgrades and place planning activities could make a tangible difference for locals – to start re-balancing the pedestrian experience along the street. This has been achieved on other similar streets in Perth, where a conscious effort has been made to look beyond vehicle traffic modelling predictions and seek a balance for other users of the street.

The Bedford North area has great potential to build on its existing strengths – a diverse and connected local community, suburban qualities, proximity to the Perth CBD and other employment centres. Planning framework updates that prioritise recommendations outlined in this report, and a commitment to addressing the non-planning activities for Walter Road West will help to achieve this.

9



APPENDIX 1 DESIGN TESTING PLANS

A note on testing assumptions for multiple-unit (apartment) developments

Across sites an assumption has been made in relation to minimum apartment sizes on each relevant test.

Apartment size assumptions

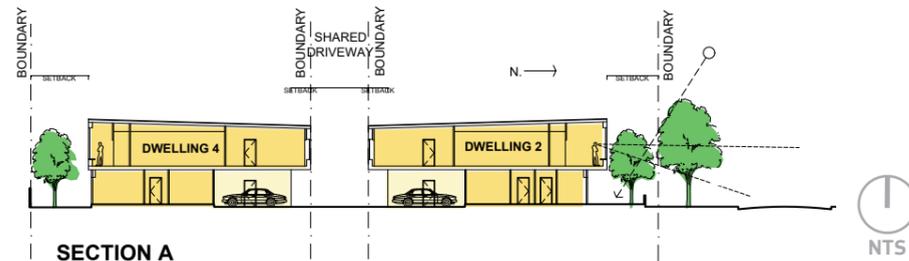
- 1 Bed = 50m² (minimum)
- 2 Bed = 72m² (minimum)
- 3 Bed = 90m² (minimum)

SITE 1 GROUPED DWELLING

- + YIELD: 4 DWELLINGS
- + HEIGHT: 2 FLOORS
- + PARKING: DOUBLE GARAGE PER DWELLING, OFF STREET
- + NOTE: PROPOSAL ALLOWS FOR TANDEM PARKING IN FRONT LOTS TO CREATE 3x FRONT TERRACES AT A MINIMUM WIDTH OF 5.5m AND A HEIGHT OF 3 LEVELS



GROUND FLOOR PLAN



SECTION A



SITE 1 APARTMENTS

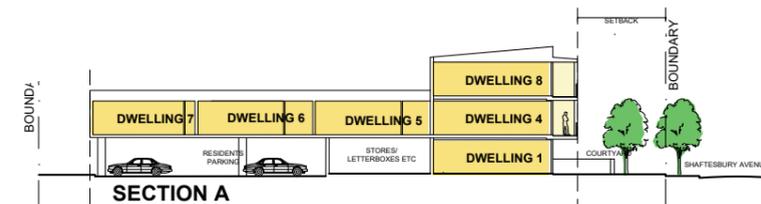
- + YIELD: 9 DWELLINGS
- + HEIGHT: 3 FLOORS
- + PARKING: 1 BEDROOM - 1 BAY
2 BEDROOM - 1.5 BAYS
VISITOR - ON STREET
TOTAL - 11 BAYS



GROUND FLOOR PLAN

FIRST FLOOR PLAN

SECOND FLOOR PLAN



SECTION A



**SITE 2
GROUPED DWELLING**

- + YIELD: 4 DWELLINGS
- + HEIGHT: 2 FLOORS
- + PARKING: DOUBLE GARAGE PER DWELLING, OFF STREET
- + NOTE: PROPOSAL ALLOWS FOR TANDEM PARKING IN FRONT LOTS TO CREATE 3x FRONT TERRACES AT A MINIMUM WIDTH OF 5.5m



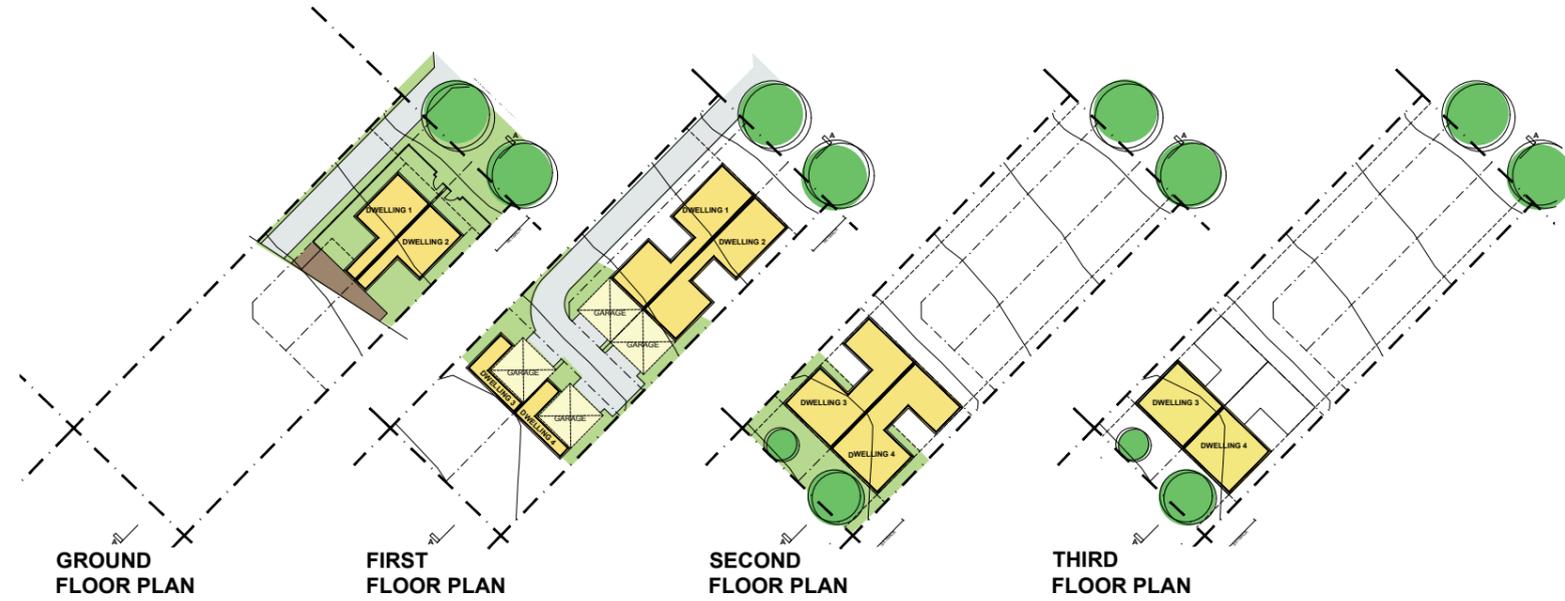
NTS

**SITE 2
TERRACES**

- + YIELD: 2 DWELLINGS
- + HEIGHT: 2 FLOORS
- + PARKING: DOUBLE GARAGE PER DWELLING, OFF STREET
- + NOTE: PROPOSAL ALLOWS FOR TANDEM PARKING IN FRONT LOTS TO CREATE 3x FRONT TERRACES AT A MINIMUM WIDTH OF 5.5m

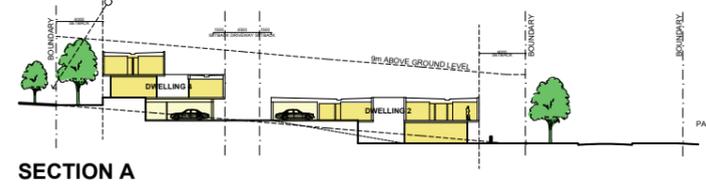


NTS



**SITE 3
GROUPED DWELLING**

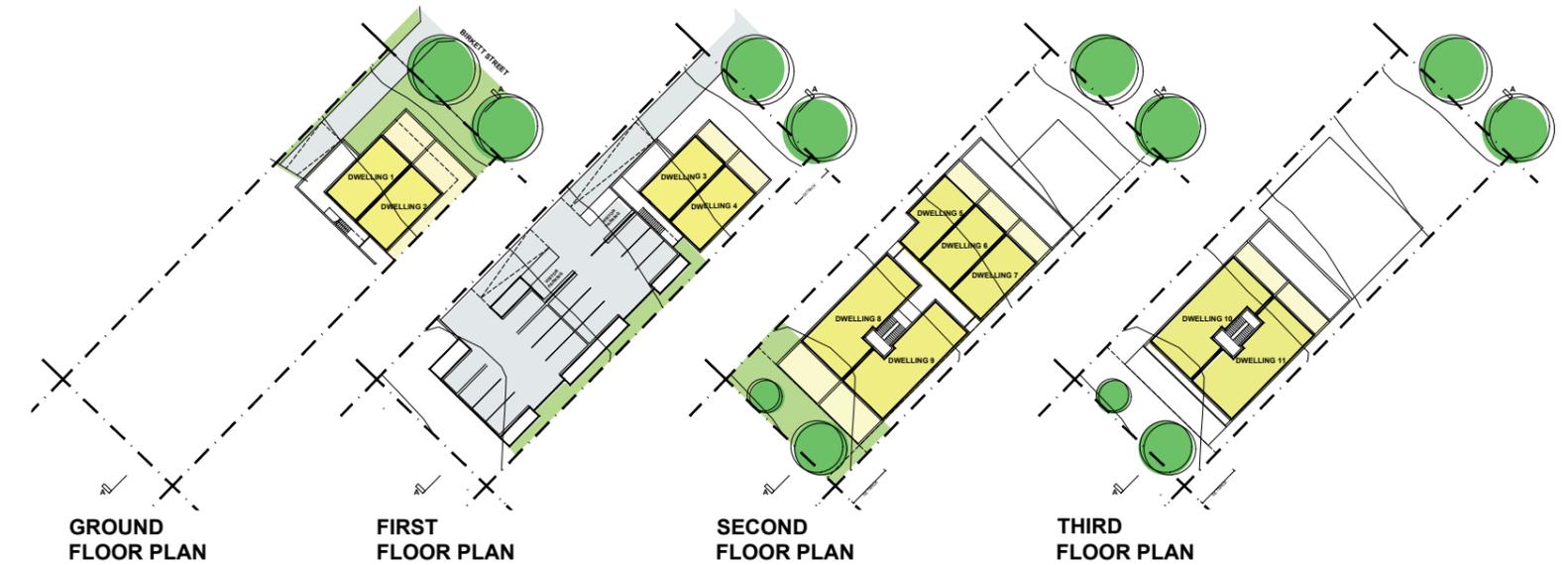
- + **YIELD:** 4 DWELLINGS
- + **HEIGHT:** 3 FLOORS (STAGGERED UP HILL)
- + **PARKING:** DOUBLE GARAGE PER DWELLING; OFF STREET



SECTION A

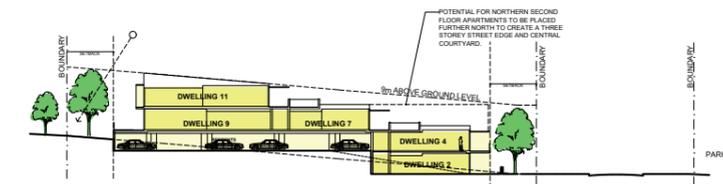


NTS



**SITE 3
APARTMENTS**

- + **YIELD:** 11 DWELLINGS
- + **HEIGHT:** 3 FLOORS (STAGGERED UP HILL)
- + **PARKING:**
1 BEDROOM APARTMENTS - 1 BAY
2 BEDROOM APARTMENTS - 1.75 BAYS
VISITOR - 2 BAYS
TOTAL - 16 BAYS



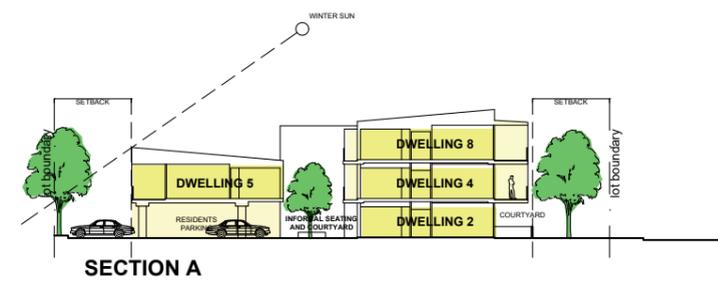
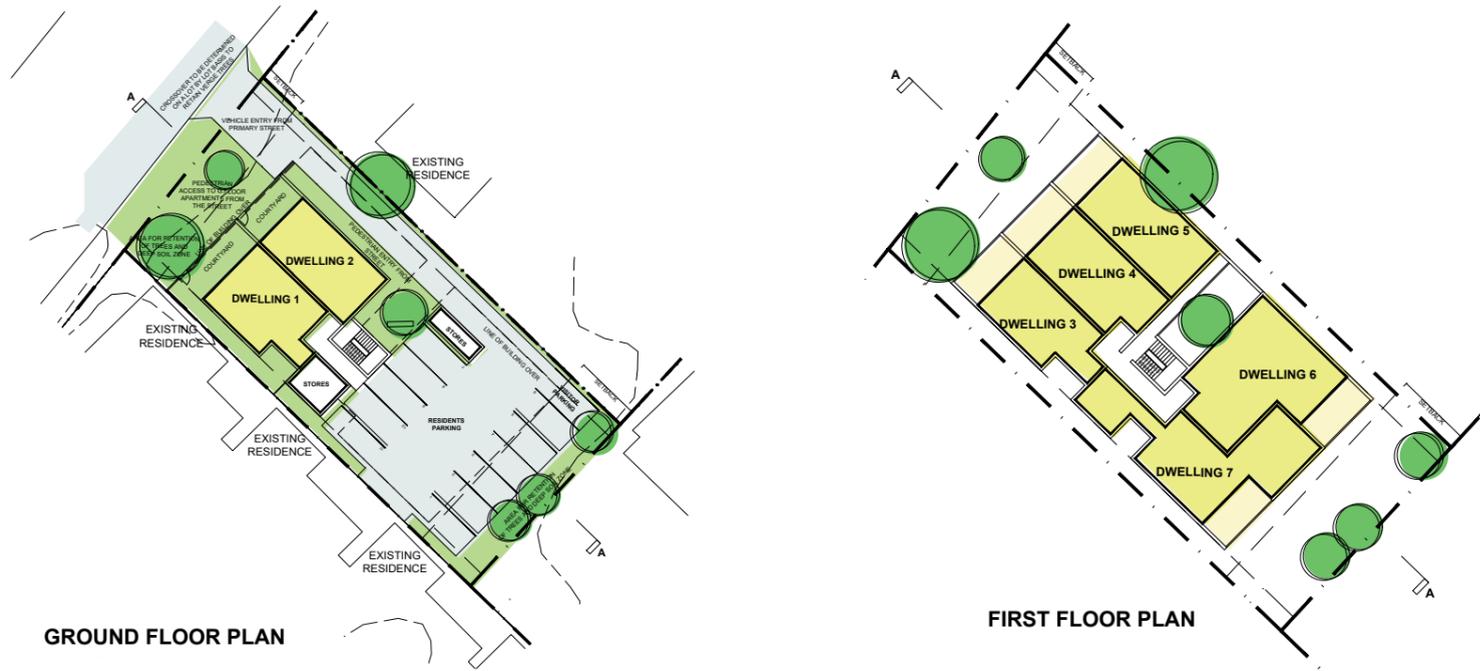
SECTION A



NTS

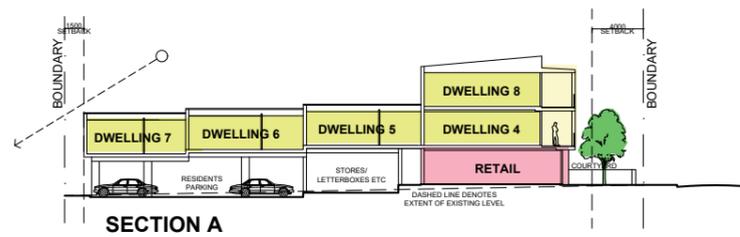
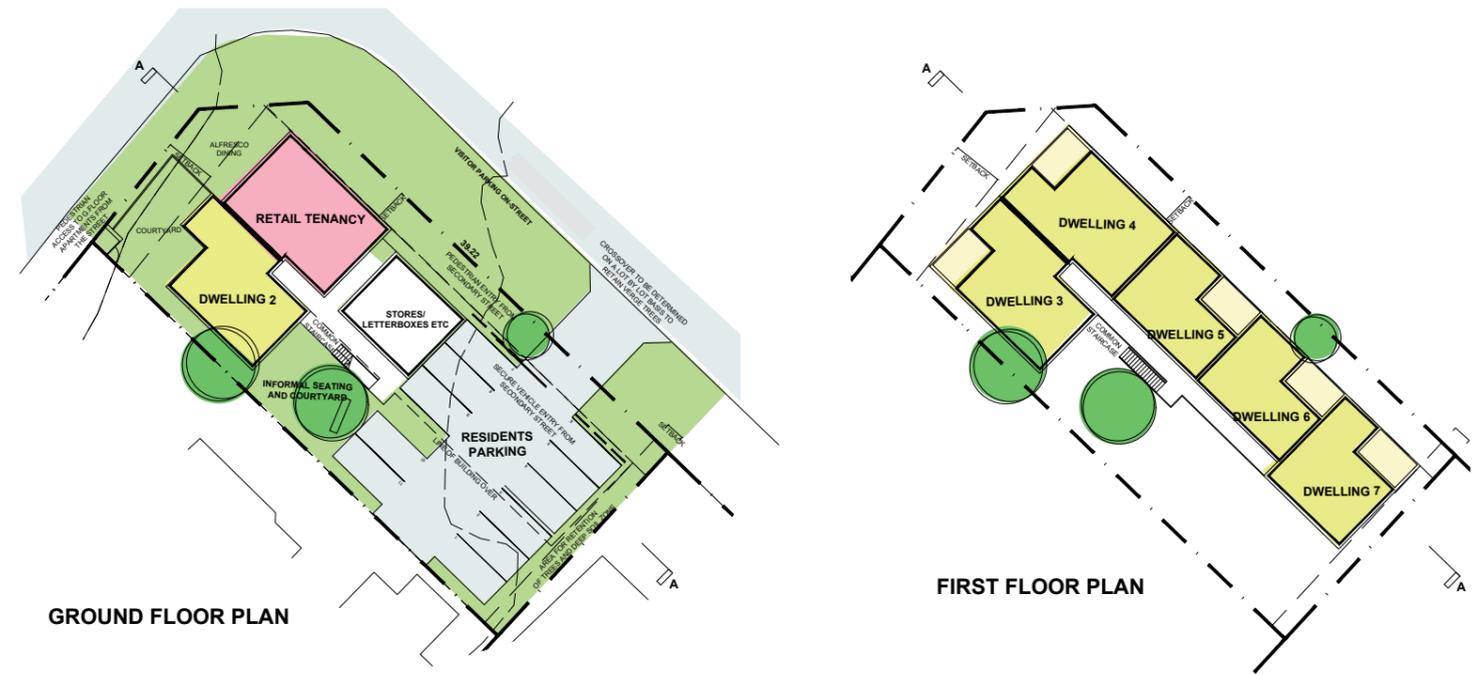
**SITE 4
APARTMENTS**

- + YIELD: 10 DWELLINGS
- + HEIGHT: 3 FLOORS
- + PARKING:
 1 BEDROOM APARTMENTS - 1 BAY
 2 BEDROOM APARTMENTS - 2 BAYS
 VISITOR - 1 BAY
 TOTAL - 12 BAYS



**SITE 5
MIXED USE DEVELOPMENT**

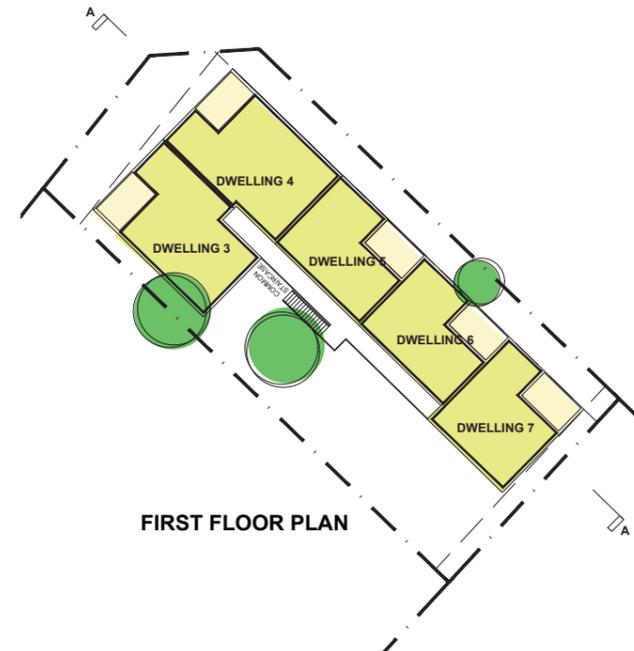
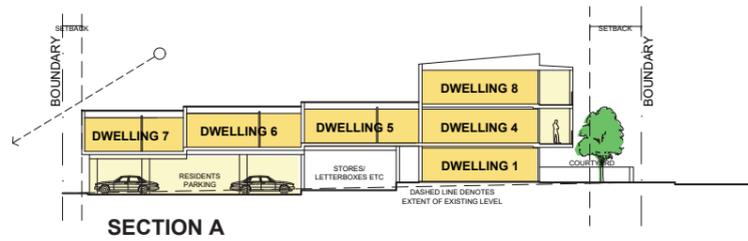
- + YIELD: 9 DWELLINGS
- + HEIGHT: 3 FLOORS
- + PARKING:
 1 BEDROOM APARTMENTS - 1 BAY
 2 BEDROOM APARTMENTS - 2 BAYS
 VISITOR - ON STREET
 RETAIL - ON STREET
 TOTAL - 11 BAYS





SITE 5 APARTMENTS

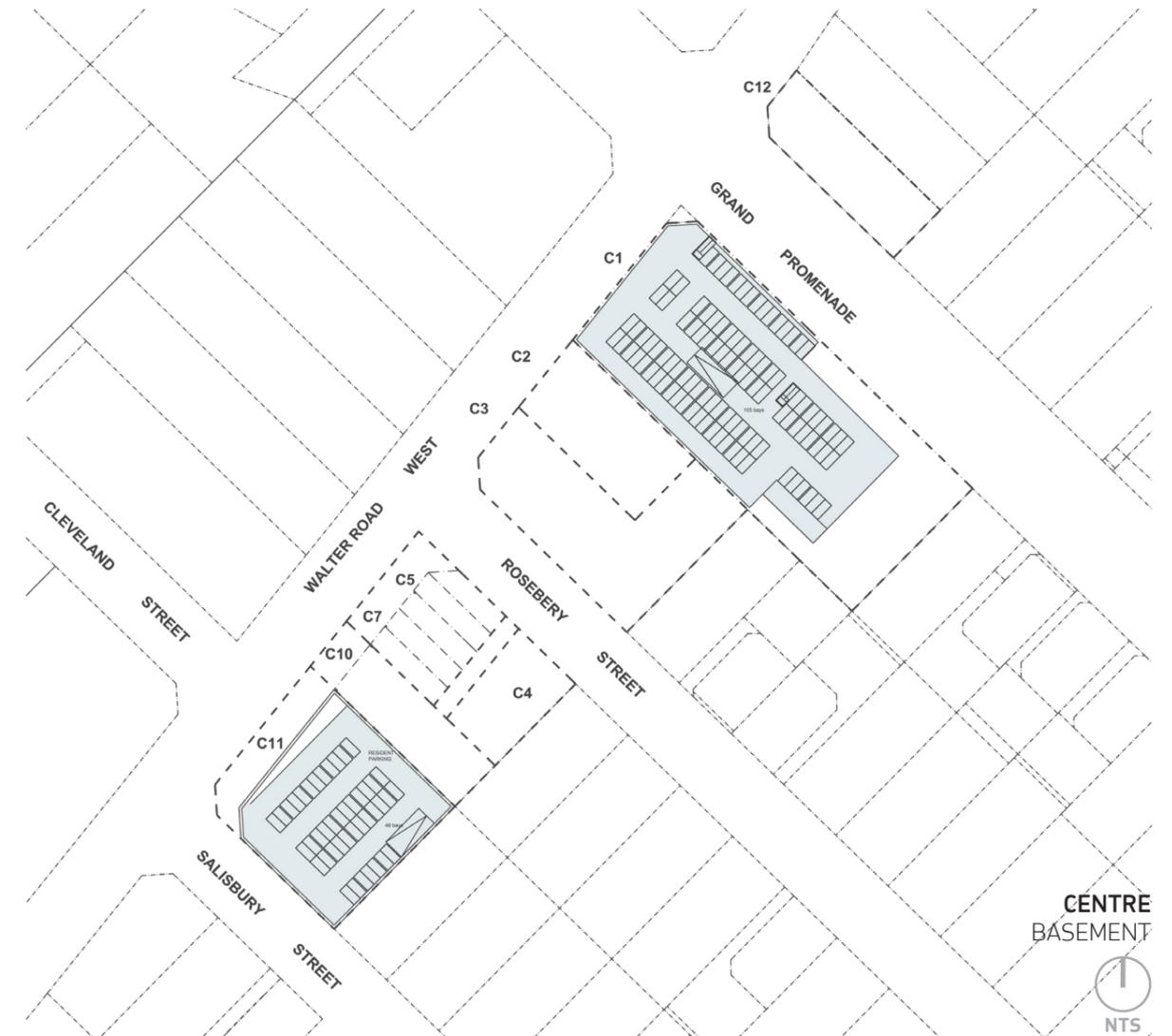
- + YIELD: 9 DWELLINGS
- + HEIGHT: 3 FLOORS
- + PARKING:
 - 1 BEDROOM APARTMENTS - 1 BAY
 - 2 BEDROOM APARTMENTS - 2 BAYS
 - VISITOR - ON STREET
 - TOTAL - 11 BAYS



SITE - CENTRE

(CALCULATIONS INCLUDE ALL LEVELS OF EACH DEVELOPMENT)

- + APARTMENT NUMBER (TOTAL):
 - SITE C1 - 55 DWELLINGS
 - SITE C2 - 14 DWELLINGS
 - SITE C3 - 13 DWELLINGS
 - SITE C4 - 7 DWELLINGS
 - SITE C5 - 4 DWELLINGS
 - SITE C7 - 3 DWELLINGS
 - SITE C10 - 8 DWELLINGS
 - SITE C11 - 30 DWELLINGS
 - SITE C12 - 11 DWELLINGS
- + PARKING (RESIDENTIAL):
 - SITE C1 - 76
 - SITE C2 - 21
 - SITE C3 - 20
 - SITE C4 - 9
 - SITE C5 - 6
 - SITE C7 - 6 (3 TANDEM)
 - SITE C10 - 8
 - SITE C11 - 46
 - SITE C12 - 10
- + RETAIL (NLA, m²):
 - SITE C1 - 1164 m²
 - SITE C2 - 65 m²
 - SITE C3 - 261 m²
 - SITE C4 - 84 m²
 - SITE C5 - 56 m²
 - SITE C7 - 34 m²
 - SITE C10 - 52 m²
 - SITE C11 - 452 m²
 - SITE C12 - 46 m²
- + PARKING (COMM./RETAIL):
 - SITE C1 - 88
 - SITE C2 - 2
 - SITE C3 - 21
 - SITE C4 - 2
 - SITE C5 - 2
 - SITE C7 - 1
 - SITE C10 - 0
 - SITE C11 - 16
 - SITE C12 - 2



SITE - CENTRE

(FOR YIELD CALCULATIONS SUMMARY, PLEASE REFER TO **PAGE 89**)



SITE - CENTRE

(FOR YIELD CALCULATIONS SUMMARY, PLEASE REFER TO **PAGE 89**)

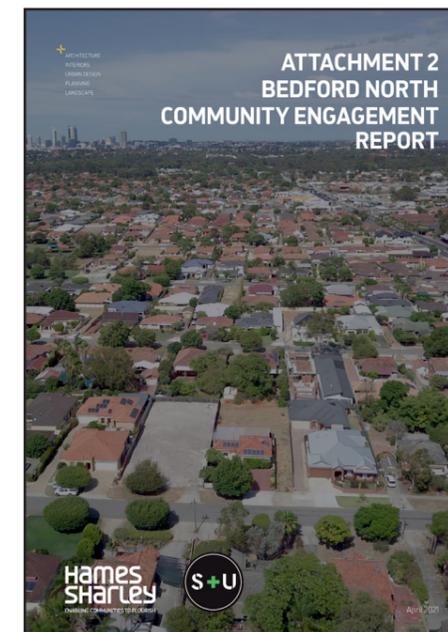
NOTE: THIS PLAN PROVIDES DESIGN CONSIDERATIONS FOR LEVELS ABOVE LEVEL 1 (WITH OPEN SPACE REMOVED)



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APPENDIX 2 ENGAGEMENT REPORT

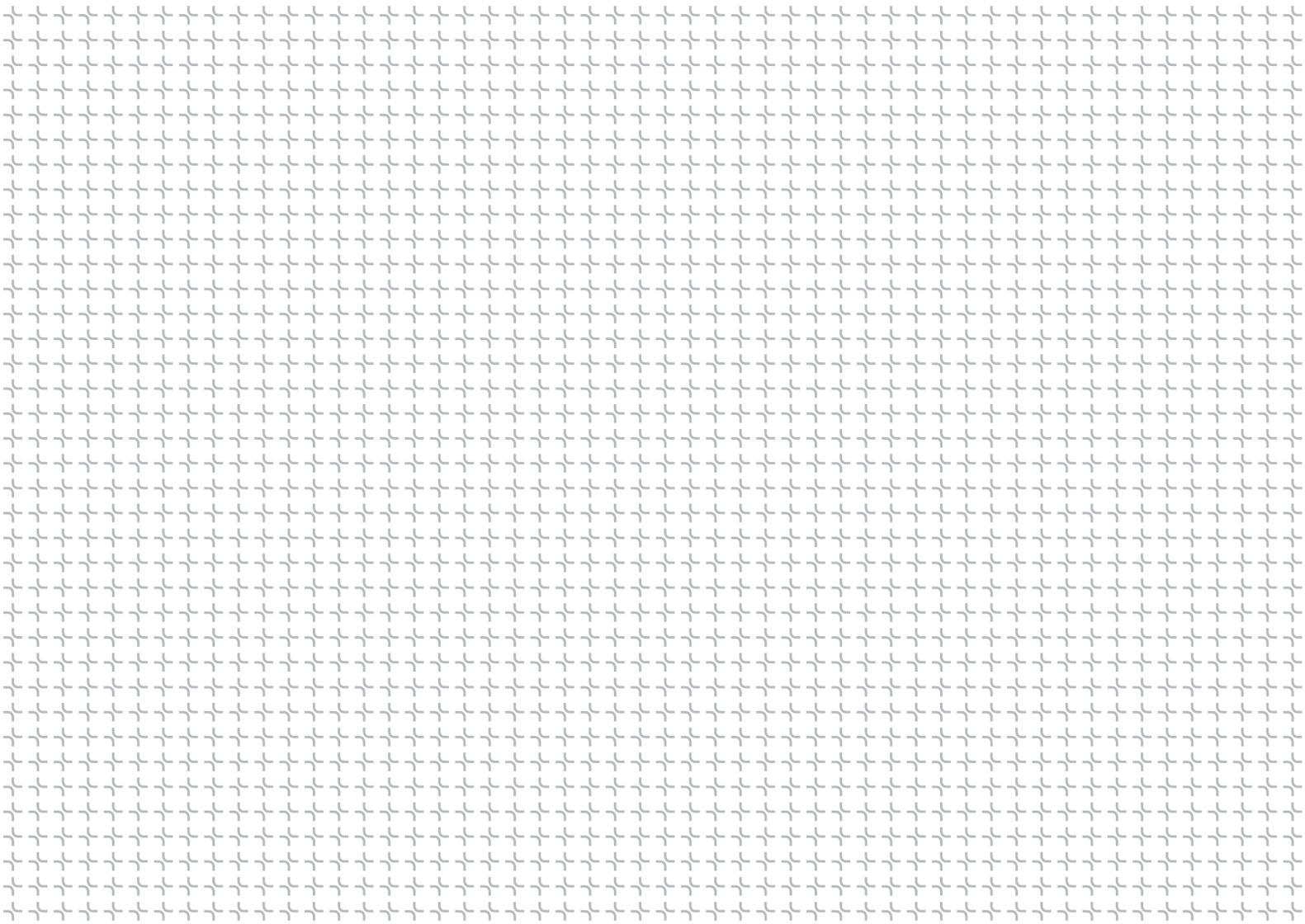


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APPENDIX 3 TRANSPORT REPORT





Hames SHARLEY

 ARCHITECTURE
INTERIORS
URBAN DESIGN
PLANNING
LANDSCAPE

www.hamessharley.com.au

