



WATERLOO ESTATE WATERLOO SOUTH

URBAN DESIGN & PUBLIC DOMAIN STUDY

08 APRIL 2020

APPENDICES VOLUME 1

PLANNING PROPOSAL



QUALITY ASSURANCE

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QUALITY CONTROL

This document is for discussion purposes only unless signed and dated by a Director of Turner

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REPORT DETAILS

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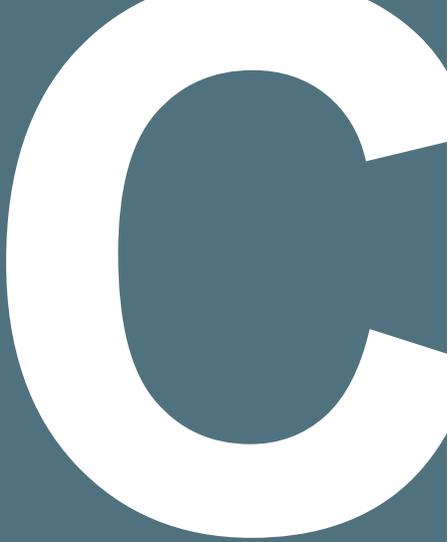


TURNER turf RD-TRIBE BREATHE ARCHITECTURE



Fig. 0.01 Family & Culture Day, October 2015
Source: Counterpoint Community Services Facebook Page, 2018





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7.1 BASELINE ANALYSIS

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7.1.1 STRATEGIC ALIGNMENT

The Waterloo Estate vision and objectives align with the strategies and goals set out across State and Local policies

SEPP (State Significant Precincts) 2005, Department of Planning & Environment

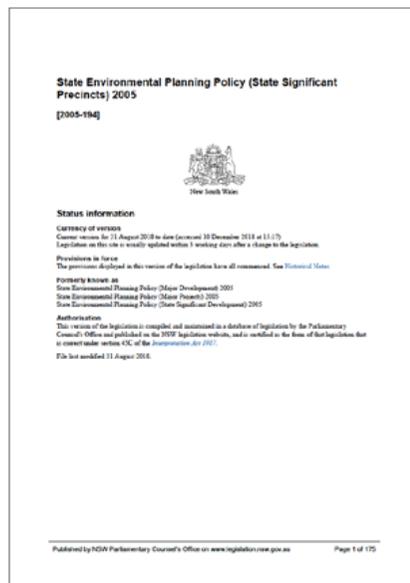


Fig. 7.1.1

Initially declared an State Significant Precinct (SSP), the Estate is now subject to a council-led Planning Proposal process. The SEPP identifies key characteristics of the precinct guiding urban renewal requirements, including density and scale.

Identifies and empowers key areas of economic, environmental, heritage and social significance to further develop, or redevelop. These are areas which carry State importance and are typically large in scale. Designation as a State Significant Precinct allows comprehensive investigations into rezoning and planning controls through an in depth consultative and research-based process to achieve development government objectives.

SEPP (Urban Renewal) 2010, Department of Planning & Environment

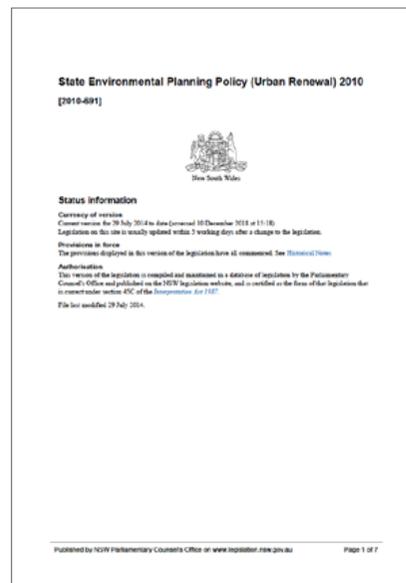


Fig. 7.1.2

The Estate has been identified as an area in need of renewal, requiring improved and additional housing, open spaces and integration with the surrounding urban fabric.

Establishes a State process for the assessment and identification of urban precincts in need of renewal, in particular those accessible by public transport. Identification is based on an area's planning significance, suitability with regard to environmental, social and economic factors and the implications of any proposals at the local and regional scale including impact on infrastructure.

Greater Sydney Regional Plan, Greater Sydney Commission, 2018

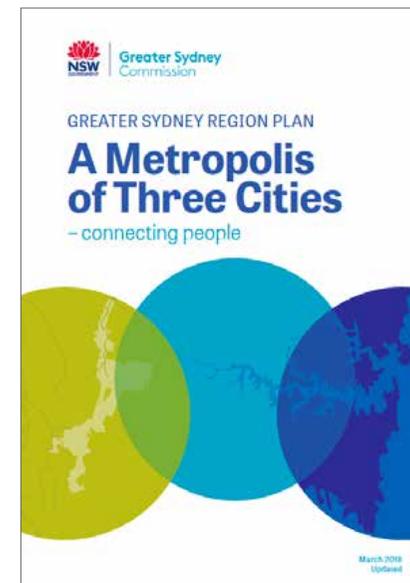


Fig. 7.1.3

The Estate forms a key part of the Eastern Harbour City, providing new housing within a major urban renewal area as part of the '30-minute city' whilst strengthening green and social infrastructure.

The current primary document for the Sydney Metropolitan region through to 2056. The vision brings together land use, transport and infrastructure planning to guide district and local plans moving forward. As part of this, the Plan runs parallel to 'Future Transport 2056' and the 'State-Infrastructure Strategy 2036'. The Plan identifies 10 directions to drive three key districts as centres of growth, these include; The Eastern Harbour City (CBD and Eastern Suburbs), The Central River City (Parramatta) and the Western Parkland City (Badgerys Creek Aerotropolis), each with a distinct identity and offering to the wider metropolitan region.

**Eastern District Plan,
Greater Sydney Commission, 2018**

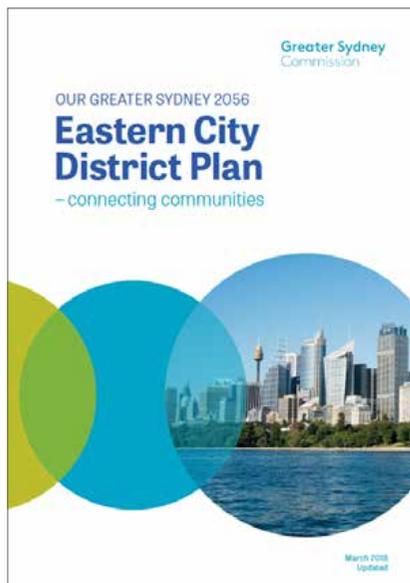


Fig. 71.4

Using the new metro station as a catalyst, the Estate provides major urban renewal, increasing housing provision a short distance from Central Sydney and other local employment centres.

Forming a bridge between regional (A Metropolis of Three Cities) and local planning policy (Sydney LEP and DCP), The Eastern District Plan establishes a number of priorities to manage economic, social and environmental growth over a 20-year period. The Plan stands as part of the Greater Sydney Commission's 'Metropolis of Three Cities' and alongside several other key district policies encompassing the metropolitan region.

Through the implementation of 10 Directions the Plan aims to support and grow international trade, further evolve the night-time economy, drive growth of the 'innovation corridor' and key health and education precincts, as well as improve infrastructure, open space access and the urban tree canopy to ensure a responsive and resilient district.

**Future Transport Strategy 2056,
Transport for NSW,**



Fig. 71.5

The Waterloo Metro Station will provide direct links to Central Sydney and beyond. The opportunities for the Estate include encouraging pedestrian and bicycle movement, reduction of congestion and pollution and connecting into existing active transport routes.

Continuing the ambitions of '2012 Long Term Transport Master Plan', the Future Transport Strategy looks ahead to 2056. A stronger emphasis is placed on new technology, co-design and cross agency cooperation to meet the rapidly growing demand across the State, such as the Greater Sydney Commissions 'Growth Infrastructure Compacts'. Co-design will focus on closer engagement with customers, industry and communities in the formation of transport plans to ensure plans are relevant and reflective of changing community need.

**Future Directions for Social Housing in NSW
(2014), NSW Family and Community Services**

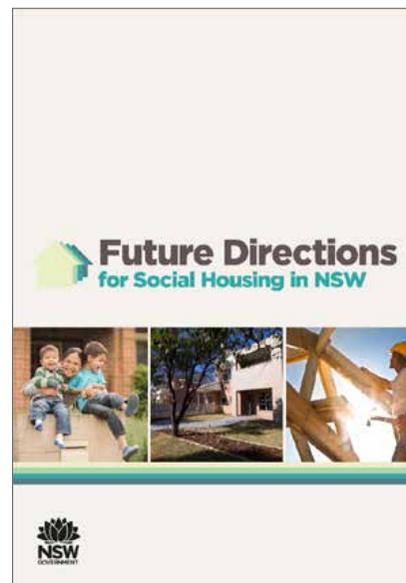


Fig. 71.6

The Estate is of State importance in achieving the government's objectives to deliver more housing and better outcomes for social housing tenants, including transitioning out of social housing.

Part of the 'Family and Community Services' agency's initiatives and reforms to improve their offering for those in need.

The 'Future Directions' plan provides a 10-year strategy to improve the effectiveness of social housing in NSW through three core priorities:

1. More Social Housing
2. More Opportunities, Support and Incentives to avoid / leave Social Housing
3. A better Social Housing Experience.

These priorities will make use of the 'Social and Affordable Housing Fund' which will facilitate up to \$1billion of new social and affordable housing, all with the aim of supporting those in need of assistance, whilst also

**Central to Eveleigh Urban Transformation
Strategy, Urban Growth NSW, 2016**



Fig. 71.7

The Estate will provide a diverse and dynamic new urban village, connected to the wider city region by a new metro station as well as supporting pedestrian and bicycle movement routes.

The 'Central to Eveleigh Corridor' is envisioned as a major growth district within Sydney. Over 50 hectares of government owned land have been split into three distinct projects including 'Redfern to Eveleigh', 'Central Station' and 'Waterloo'. The strategy aims to better connect these diverse areas in support of the goals of 'Metropolis of Three Cities' (superseding 'A Plan for a Growing Sydney'), delivering new homes, businesses and public spaces. Investment in public transport, in particular railways, will stand as a key driver in this process. In doing so, inclusive growth is sought, bringing the benefits of continued prosperity to all communities whilst accommodating a growing and changing population.



Better Placed,
Government Architect NSW, 2017

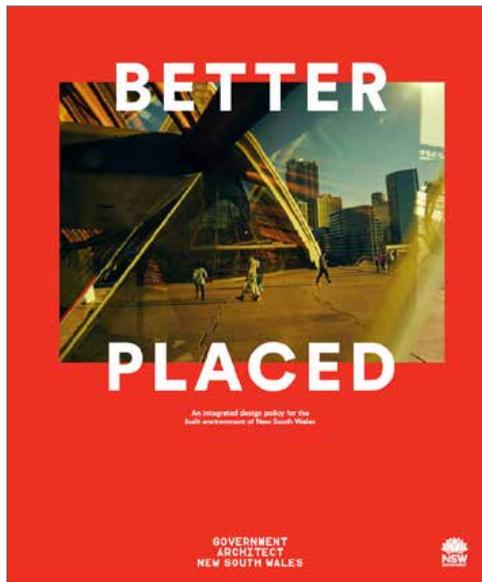


Fig. 71.8

The Estate aims to welcome all through high-quality, interesting and attractive spaces whilst providing privacy and amenity to new residents.

Through 'Better Placed' the Government Architect provides guidance on both the processes and outcomes of design in support of existing planning policy and best practice. The aim is to assist built environment professionals, politicians, policy makers and communities in working together through the design process to achieve the best possible results with regard to quality, longevity and operation.

"Good design creates useable, user friendly, enjoyable and attractive places and spaces, which continue to provide value and benefits to people, the place and the natural environment over extended periods. Good design brings benefits socially, environmentally and economically, and builds on these benefits over time – it adds value." P.49

Sustainable Green Grid,
Government Architect NSW, 2016

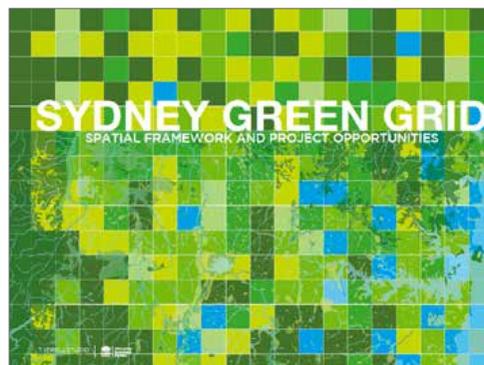


Fig. 71.9

The Estate has the opportunity to contribute to the Sydney Green Grid by providing additional open space and improved connections to the existing open space network.

The first overarching strategy for the Sydney metropolitan region focused solely on green infrastructure. From recreational spaces, to waterways, urban agriculture and ecology. The Green Grid supports the promotion, consolidation and creation of a connected network of open spaces across the Sydney region as a means of reducing environmental impact as well as maintaining Sydney's reputation as one of the world's most liveable cities.

Greener Places,
Government Architect NSW, 2017

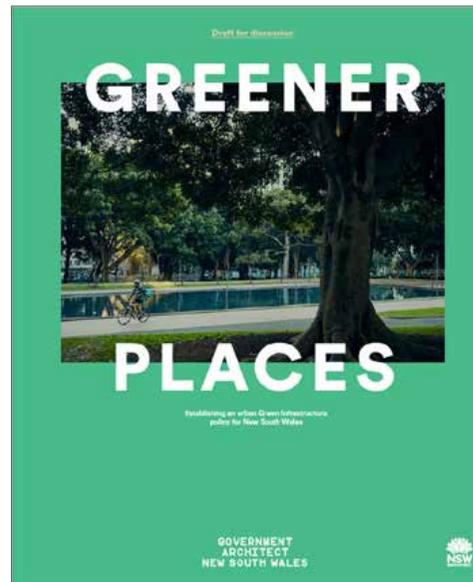


Fig. 71.10

New open spaces, green and blue links will integrate with Sydney's wider 'Green Grid' along with hard and soft landscaping across the Estate.

The draft policy aims to promote discussion around green space policy amongst key stakeholders and the community. Greener Places outlines what green infrastructure is, its value and how it can be effectively integrated into the urban fabric using four core principles: 1. Integration: Combine green infrastructure with urban development and grey infrastructure, 2. Connectivity: Create an interconnected network of open space, 3. Multifunctionality: Deliver multiple ecosystem services simultaneously, 4. Participation: Involve stakeholders in development and implementation.

Apartment Design Guide,
NSW Department of Planning & Environment

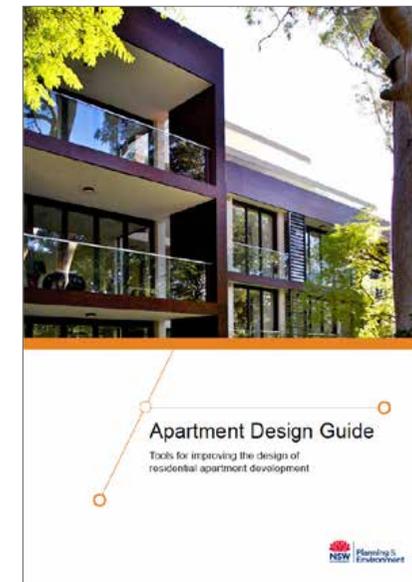


Fig. 71.11

All residential units of the Estate will be designed to satisfy the objectives of Local and State standards by providing modern, comfortable units with private amenity space.

A key tool in establishing residential design guidance, the 'Apartment Design Guide' is empowered through the 'State Environmental Planning Policy 65: Design Quality of Residential Flat Development' (SEPP 65) and follows its predecessor the 'Residential Flat Design Code'. The guide states key suggested minimum space and amenity standards to improve liveability and longevity of apartment developments, providing detail on the nine design principles of SEPP 65.

A Liveability Framework for Sydney, NSW
 Department of Planning & Environment and
 Greater Sydney Commission, 2016

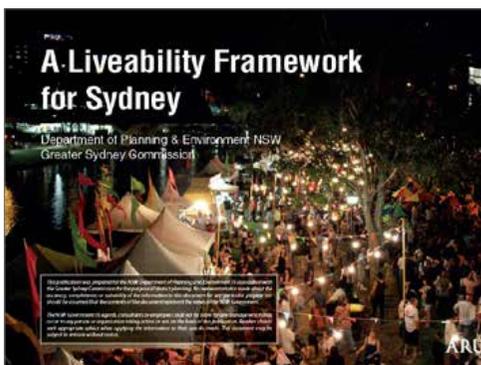


Fig. 7.112

An enjoyable and welcoming public realm, well designed residential dwellings and multiple community facilities will aim to facilitate social cohesion and the liveability of the Estate.

As Sydney continues to enjoy record economic growth which draws the focus of cross governmental attention, there is considered awareness of the need to balance this with social growth. The Liveability Framework aims to provide an understanding of social context within the growth context to ensure the city's reputation as a global leader in urban living is maintained and that the benefits of growth are spread across the social and demographic spectrum.

Create in NSW: Arts and Cultural Policy Framework (2013) Arts NSW

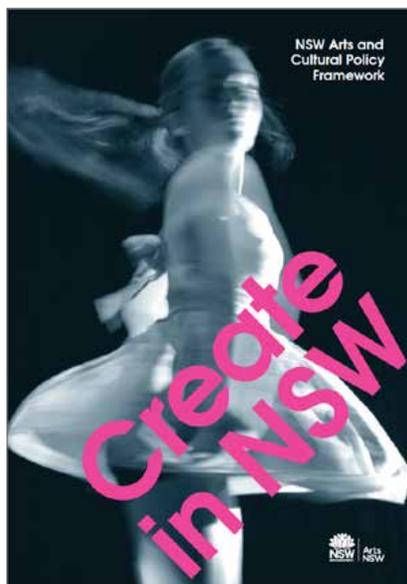


Fig. 7.113

A range of new community facilities, as well as formal and informal open spaces, aim to support local cultural and social activity.

A cross governmental policy to guide public funding of the arts across the entirety of NSW, focused on improving three core areas; 'Excellence, Access and Strength'. This includes support for innovation, leadership and Aboriginal culture as well building on and forming new international links. The arts form an important part of the NSW economy and access at all levels, whether across ages, abilities or skill sets is vital for its success.

City Plan 2036,
 City of Sydney, 2019



Fig. 7.114

The City Plan sets a vision for the next two decades of growth and development in the City.

A new net zero energy use target is established, and increased emphasis is placed on local character and infrastructure.

The plan is a Local Strategic Planning Statement (LSPS) sitting above the LEP and DCP, guiding their development with a vision that incorporates infrastructure, liveability, productivity and sustainability.

The City of Sydney's 'City Plan 2036' provides the next stage of the 'Green, Global and Connected' vision that was first formed in 2008 and later developed through 'Sustainable Sydney 2030'.

Housing for All,
 City of Sydney, 2019

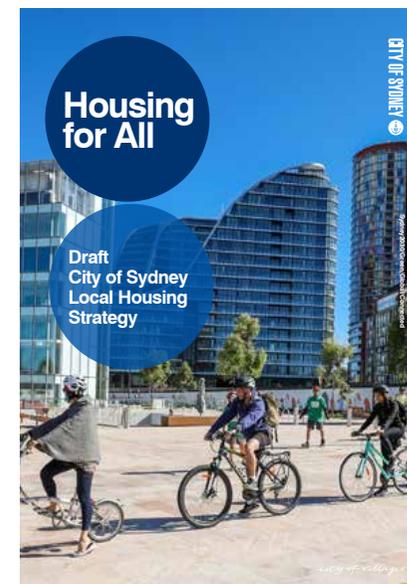


Fig. 7.115

Housing for All will guide housing delivery over the next 20 years alongside the LSPS through zoning controls, partnerships and other means, ensuring density is well placed and appropriate.

Directed by the Greater Sydney Region Plan, all local councils are required to prepare a housing plan to give clarity of vision for housing delivery.

The plan establishes priorities, objectives and actions for 56,000 dwellings by 2036, connecting into the principles of 'liveability' from the LSPS.

Typically, housing is a State level concern, but LGA's use a number of routes to address local needs.



**Sydney LEP 2012,
NSW Department of Planning & Environment**



Fig. 71.16

The Estate will renew existing social housing whilst providing additional social (affordable rental) and market units, retail spaces, services, community facilities and open spaces.

Statutory document empowered by the Environmental Planning & Assessment Act 1979, providing subsequent power to the Development Control Plan (DCP) and supporting documents. Together these form the planning framework for direction and decision making in the City of Sydney government area.

Sydney LEP (2012) aims to reinforce the City of Sydney as the centre of the metropolitan region, encourage further growth through increased density and improved consideration of employment uses. In support of this are policies supporting growth and diversification of residential uses as well as improved infrastructure and transport.

**Sydney DCP 2012,
Draft, City of Sydney**



Fig. 71.17

The renewal of the Estate will integrate with existing networks whilst creating a place with a distinct identity.

Provides detailed guidance on the implementation of policy ambitions established through Sydney LEP 2012. These include the recognition and support of distinctive character areas, including heritage, and design which responds to this, the enhancement of the public realm, integration of Sustainable Sydney 2030 objectives and encouraging ecologically sustainable development.

**Central Sydney Planning Strategy 2016 -2036,
Draft, City of Sydney**



Fig. 71.18

The Estate provides a major opportunity for large scale urban renewal, increasing housing and improving the public realm.

Overarching comprehensive planning strategy for Sydney outlining how growth will be realised and managed through to 2036. Focus is given to achieving balance between residential, commercial and environmental pressures in parallel to infrastructure and transport.

**Sustainable Sydney 2030,
City of Sydney, 2017**

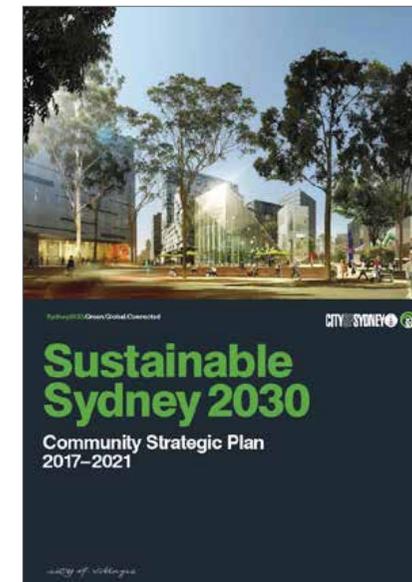


Fig. 71.19

A multi-faceted masterplan will provide a new urban village connecting to the existing fabric of Sydney providing new housing, community facilities and open spaces.

The primary strategic vision for the City of Sydney, the result of extensive community engagement forming key priorities to be realised through various policies and action plans. The core focus aligns with the Premier's 12 Priorities as well as multiple international agreements, ultimately laying the foundations for a 'green, global and connected city'. This will be achieved through expanded green links, further minimising environmental impacts and ensuring a global orientation in terms of trade and knowledge exchange.

Development Capacity Study 2019, City of Sydney



Fig. 71.20

The past decade has seen growth of 30,000 new dwellings and 117,000 new workers across the City. With the City projected to continue growing, the capacity study provides insight to where and how this growth can be best captured.

The study uses the 2017 Floor Space and Employment Survey to calculate potential development capacities across the City area, as well as the likelihood of development.

The study informs a range of other policy documents including 'Housing for All', to ensure projections are accurate and informed.

Digital Strategy 2017, City of Sydney

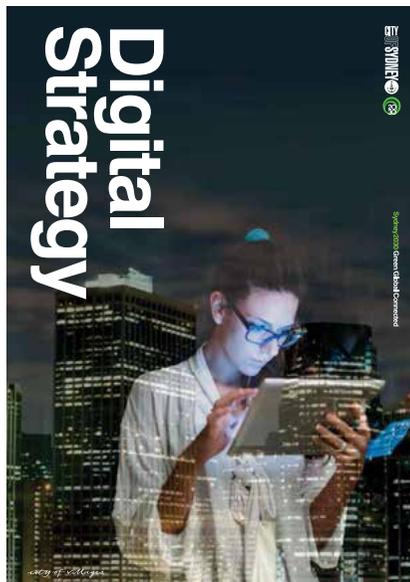


Fig. 71.21

Delivering a connected community that aligns itself with the wide-scale digital approach that the CoS outlines.

The Sustainable Sydney 2030 vision revealed the communities desire for a smart city in the digital age. The City of Sydney (CoS) Digital Strategy begins to blueprint a strategy for a digital city, being one that allows increased accessibility to technology, economical engagement and provides the amenities and services for the growing residential population.

The strategy identifies six key priorities within the blueprint. All priorities are community driven, aiming to increase skills, participation, amenity and engagement for all members of the community.

The Waterloo Estate has the opportunity to support the new digital approach to placemaking, in particular its role in engaging community and economy in the delivery.

Creative City, City of Sydney, 2014

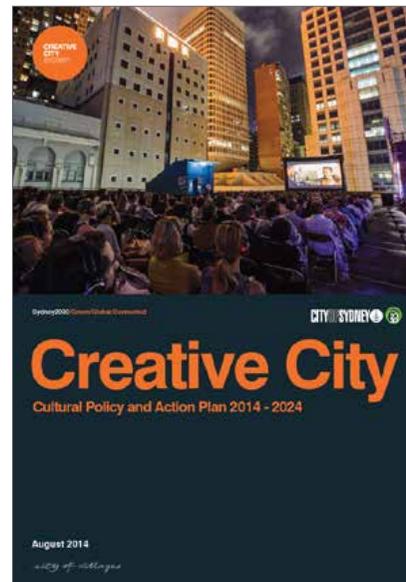


Fig. 71.22

Cultural and community facilities will form a key element of the Estate.

Born out of 'Sustainable Sydney 2030', the 'Creative City Cultural Policy' is a 10-year strategic plan for directing initiatives, grants, sponsorship, infrastructure, advocacy, services and regulations in pursuit of supporting city-wide creative expression.

Liveable Green Network, City of Sydney, 2011

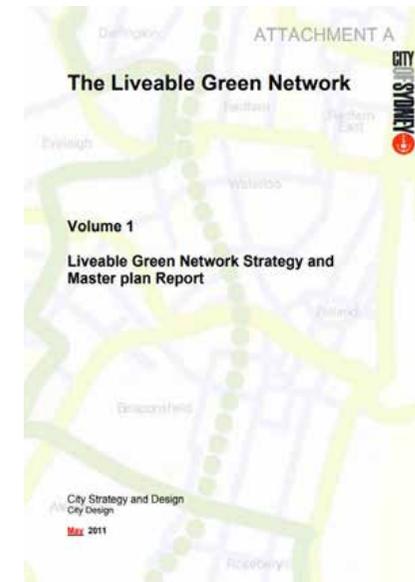


Fig. 71.23

The Liveable Green Network is focused on creating a connected pedestrian and cycle network to major destinations across the City and Inner Sydney area.

The Liveable Green Network is an important element of the Sustainable Sydney 2030 program that focuses on delivering a connected pedestrian and cycle network. The report identifies existing weaknesses and the networks and uses case study research to develop a series of solutions to completing these connections.

With a focus on active transport, the Liveable Green Network will help deliver targets 7, 8 and 9 of Sustainable Sydney 2030, by making walking and cycling more attractive, through a connected pedestrian and cycle network, with the most convenient and direct connections to major destinations across the City and Inner Sydney area at a City Wide, City Centre and Village Centre level.



Environmental Action 2016-2021, City of Sydney, 2017

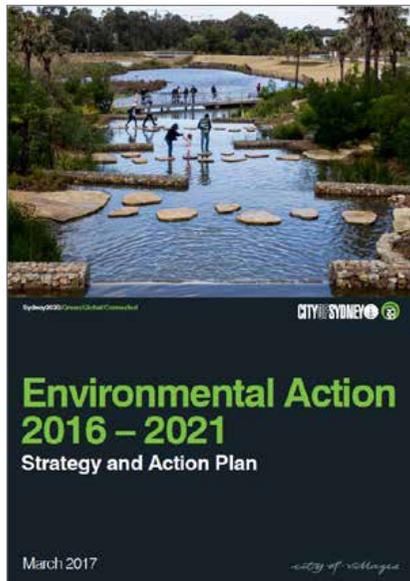


Fig. 71.24

Building orientation, designed to environmental standards integrated with landscaping will minimise environmental impact.

A five-year overarching environmental plan feeding into Sustainable Sydney 2030. This plan establishes the city's aims to reduce waste, move to a low-carbon place through the use of renewable energy, improve the quality and care of the regions water resources and boost urban biodiversity.

Open Space, Sports and Recreation Needs Study, Volume 1, City of Sydney, 2016



Fig. 71.25

Integrating the findings of the Study into the Waterloo Estate will work to maximise the value, diversity and quality of the open spaces available.

The City of Sydney Open Space, Sports and Recreation Needs Study details the objectives, directions and recommendations for the future planning provisions, development and management of the city's public open space and recreation facilities.

The study revealed nine strategy directions. Of these nine directions, the Waterloo Estate has the opportunity to support:

- More open space for a growing population
- Access to recreation in the city will be inclusive and accessible for all
- Linking the network
- Involving the community
- Recreation will be environmentally sustainable

Open Space, Sports and Recreation Needs Study, Volume 2, City of Sydney, 2016

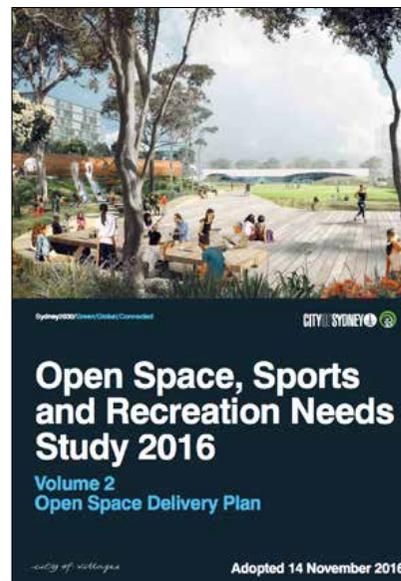


Fig. 71.26

A series of quantitative and qualitative benchmarks with criteria frameworks guide the delivery of future open space, sports and recreations provisions.

The second volume of the City of Sydney's open space study establishes benchmarks and a strategy to ensure the delivery of an interconnected network of open spaces is achievable.

The delivery plan incorporates demographic, density and preference projections to guide the scale and form of provisions with the overarching ambition of improve quality, volume and accessibility.

Public Domain Manual, City of Sydney, 2017



Public Domain Manual

February 2017



Fig. 71.27

Ensuring that the progression of the Waterloo Estate's public domain is aligned with the rules and regulations delivered by the CoS in the interest of the greater community.

The City of Sydney's Public Domain Manual provides information on the process of submission, management and responsibilities of works undertaken in the public domain. The document applies to works during Construction Certificate, construction and Occupation Certificate stages.

Sydney Street Code, City of Sydney, 2013

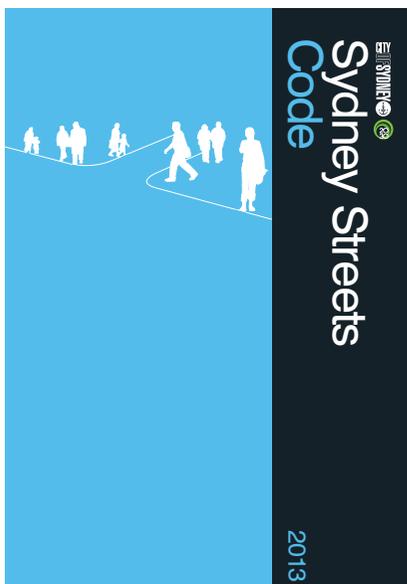


Fig. 71.28

Gathering a coherent understanding of the possible street typologies surrounding the Waterloo Estate can assist in developing design responses that will be more responsive, connected and sustainable when delivered.

The Sydney Streets Code is one of five code documents published by the City of Sydney. The Sydney Streets Code details the guidelines, design coordination and material palettes for works undertaken in the city's public domain. The document is suggested to be read alongside the companion document, 'Sydney Streets Code Technical Specification.'

- The code details five key design principles:
1. Public space, public life
 2. Promote sustainability
 3. Promote inclusive design
 4. Promote active transport
 5. Respect distinctiveness and 'place'

Street Tree Masterplan, City of Sydney, 2011



Fig. 71.29

Supporting the recognition that trees are one of the most significant factors in making a street a 'place.'

The City of Sydney's Street Tree Master Plan is one part of a suite of documents that will allow a more proactive management of its tree resources. With this resource, a co-ordinated and strategic approach to street trees will emerge. The plan details the street tree arrangements for city by understanding the city as a series of unique precincts. The plan also details the species selection process and the technical guidelines for planting, establishment and maintenance.

From the document, information regarding the microclimate, geological conditions and present species arrangement is provided. Understanding the given information will help drive more sustainable and complete decisions regarding the new planting around the Waterloo Estate and how it may better respond to its context.

Urban Forest Strategy, City of Sydney, 2013

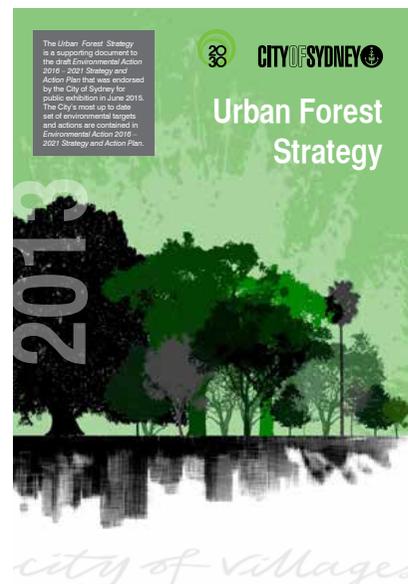


Fig. 71.30

Highlighting the need to protect and maintain existing trees, with the aim of increasing the average total canopy by 23.25% by 2030, increase species diversity and engage and educate the community.

The Urban Forest Strategy outlines the way the City will work to improve the environment, using trees, whilst managing the associated risks and costs.

- The strategy names four fundamental objectives:
1. Protect and maintain the existing urban forest
 2. Increase canopy cover
 3. Improve urban forest diversity
 4. Increase community knowledge and engagement

The strategy is an essential component of the Greening Sydney Plan which aims to achieve the benchmarks set by the Sustainable Sydney 2030. The urban forest considers all trees and vegetation located throughout the City of Sydney. The document details the actual canopy (as of 2008) of the Waterloo region at 16.0% and recognises the target canopy of 20%.

Sydney Landscape Code, City of Sydney

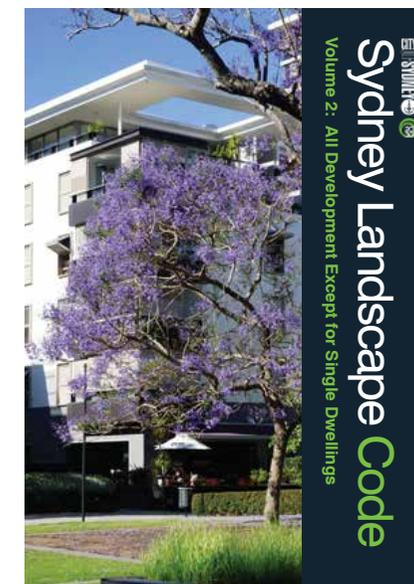


Fig. 71.31

The principles and codes within the Sydney Landscape Code are aligned with the targets set by the Sustainable Sydney 2030 vision for Sydney as a green, global and connected city, which the Waterloo Estate will contribute to.

The purpose of the Sydney Landscape Code is to guide the creation of high quality and sustainable spaces within private developments in the City of Sydney. The codes inform land owners of the correct means of contributing to the greening of the city, including the requirements for Development Application Submissions.

- The code sets out five landscape design principles:
1. Promote responsive landscape environments
 2. Promote sustainability
 3. Create beautiful and comfortable places for people
 4. Contribute to and enhance the natural environment and urban ecology
 5. Promote and improve water quality



Sydney Streets Technical Specification, City of Sydney, 2016



Fig. 71.32

Adhering to the specifications to ensure a high quality urban streetscape is provided.

The Sydney Streets Technical Specification sets out the technical requirements for streets and footpaths in the City of Sydney Local Government Area. The document is an accompaniment to the 'Sydney Streets Code 2013.' The specification draws on the Sustainable Sydney 2030 objectives, with the new standards intending to produce long-term maintenance benefits.

Sydney Lights Design Code, City of Sydney, 2015

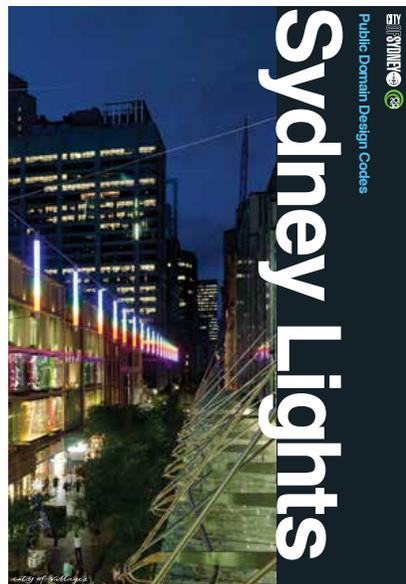


Fig. 71.33

Recognising the shift toward a more sustainable lighting strategy and the role lighting has in the creative and artistic expression of Waterloo.

The City of Sydney's Sydney Lights Code creates a coherent approach for lighting the City's public domain. The City has over 400km of roadway, over 400 parks and open space and numerous other spatial typologies, all of which require lighting to ensure safety, engagement and legibility.

Five key principles are outlined in the document:

1. Promote safety and inclusive design
2. Enhance public spaces, public life
3. Promote sustainability
4. Promote active transport
5. Respect distinctiveness and place

The Waterloo Estate has the capacity to meet all the guiding principles of the code, particularly those relating to safety, active transport and spatial distinctiveness.

Cycle Strategy and Action Plan (2007-2017), City of Sydney, 2007



Fig. 71.34

Waterloo's public domain can contribute to the city meeting the predicted targets, including increasing the number of bicycle trips from less than 2% in 2006 to 10% by 2016.

The Cycle Strategy and Action Plan was developed by the City of Sydney following their commitment to making cycling an equal first choice transport mode. The strategy details the infrastructure requirements needed to make cycling a safer, more comfortable experience for current and potential commuters.

Alongside the infrastructure requirements, the plan outlines the importance of social initiatives. These initiatives aspire to promote an awareness of cycling as a transit method, the benefits of cycling for the community and individuals, and generally shift the occasionally negative behavioural responses that are aligned with cycling. Rethinking how cycling infrastructure is integrated into existing and proposed urban areas is essential for the Waterloo Estate which will be co-located with the new metro station.

Draft Cycle Strategy and Action Plan, City of Sydney, 2018



Fig. 71.35

Ensuring that the streetscape and open space connections will assist in achieving the plan and principles outlined by the latest cycling strategy.

This document is a follow on from the Action Plan from 2007 - 2017. Whilst it maintains many of the existing significant principles and values from the original document, it has developed a new set of principles to move the city into a more sustainable future.

The guiding principles are:

1. Leadership and advocacy
2. Supporting businesses
3. Supporting people to ride
4. Connecting the network

Urban Ecology Strategic Action Plan, City of Sydney, 2014

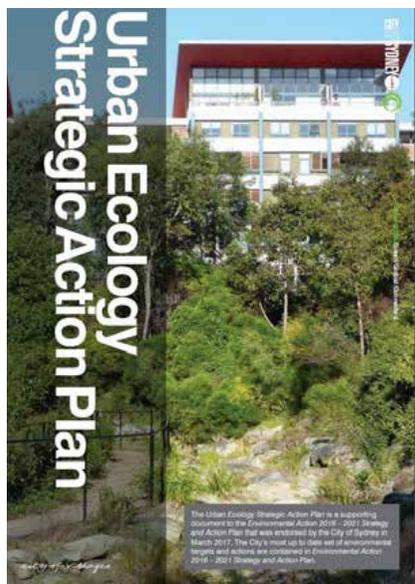


Fig. 71.36

Improving bio-diversity and creating a resilient and diverse urban ecosystem for the Waterloo Estate, informed by the findings and research within the Plan.

The Urban Ecology Strategic Action Plan is a supporting document to the Environmental Action 2016 – 2021 Strategy and Action Plan. The focus of this plan is to explore the potential to conserve, restore and promote local flora and fauna to increase the biodiversity within the city.

Legible Sydney, Wayfinding Strategy, City of Sydney, 2016



Fig. 71.37

Delivering a Estate that is legible and safe for the existing and incoming diverse members of the community.

The Legible Sydney Wayfinding Strategy is aimed at creating a more legible public domain that will begin to encourage people to walk with comfort and confidence around the City of Sydney. The strategy develops a set of coherent responses to wayfinding, including detailing how digital technology is an important component of wayfinding moving into the future.

The Waterloo Estate must adopt contemporary wayfinding strategies to ensure it is easily accessible for those in the immediate community and those who are visiting the area. Delivering a communicable streetscape both day and night is also highly important to ensure the space remains regularly active and safe for users.

Walking Strategy and Action Plan, City of Sydney, 2017



Fig. 71.38

Informing the design of the Waterloo Estate, ensuring the delivery of a walkable precinct.

The Walking Strategy and Action Plan recognises the value of a walkable city, for both the community and the environment. This document explores the walkable routes commonly undertaken by residents, and reflects on the characteristics that make this condition possible.

- There are four priorities guiding the document:
1. Make walking quick, convenient and easy
 2. Make walking inviting and interesting
 3. Make walking safe and comfortable
 4. Create a strong walking culture

Community Garden Guidelines, City of Sydney, 2016

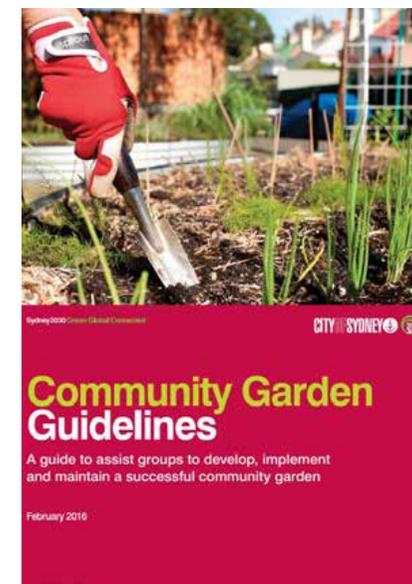


Fig. 71.39

Guiding the edible landscape initiative across the Waterloo Estate.

This document is a guide for community groups and residents to create a successful community garden in their area. Community Gardens form part of the Sustainable Sydney 2030 program and are popular ways of exploring sustainable and regenerative initiatives.

The guidelines suggest typologies for gardens based on a key set of characteristics and outline the correct method to engage authorities and community member awareness to maximise the gardens success.



Fig. 7.1.40 Waterloo Park Playground provides a key open space with dense tree cover.
Source: RobertsDay, 2018

7.1.2 ENVIRONMENT + OPEN SPACE

Waterloo has the opportunity to contribute to the Sydney Green Grid and the Liveable Green Network by providing additional open space and improved connections to the existing open space network

Within the local area of Sydney there are more than 400 parks and open spaces covering more than 188 hectares. These include regional, district, local and pocket parks, sports facilities, plazas, laneways and streets. Within a 2km radius of the Estate there are 2 major regional parks, Moore Park (115 hectares) and Sydney Park (40 hectares). Outside of this, other major parks include Prince Alfred Park, Victoria Park and Centennial Park.

Regional strategies emphasise that as Sydney grows, increased liveability will provide the context for development, and green infrastructure and open space are fundamental in the creation of the city's future. The Sydney Green Grid proposes a network of high-quality open spaces including national, regional and local parks. This network provides a framework from which open spaces are connected to the public realm. Connectivity will be achieved through green corridors, transport routes, pedestrian links and cycleways.

Major urban transformation projects, such as the renewal of the Estate, offer opportunities to provide additional open space and improve connections to the existing open space network. The focus will be in providing connections and access to existing major regional open spaces such as Moore Park, Centennial Parklands and Sydney Park to meet recreational needs and enhance liveability in these areas.

Walking times from the Estate to regional parks range from 17 to 40 minutes and can be longer due to limited, signalised crossings or busy arterial roads such as the Eastern Distributor, Cleveland Street, McEvoy Street and Botany Road. Poor amenity on these roads can deter pedestrians and cyclists from accessing these regional open spaces and reinforces the importance of district, neighbourhood and local parks and amenities in close proximity to the Estate.

EXISTING OPEN SPACE NETWORK



Fig. 7.1.41 Existing open space network.
Source: Sydney Green Grid, The NSW Government Architects Office & Tyrell Studio, March 2017.
Waterloo Open Space Study Report - Draft, Clouston Associates, Dec 2017.

- Legend**
- Waterloo Estate
 - Metro Station
 - Laneway
 - Regional Park
 - District Park
 - Local Park
 - Pocket Park
 - COS Future Provision
 - Civic Spaces
 - Water Bodies



PUBLIC DOMAIN

The Estate has the opportunity to connect and contribute to key environmental and open space regional strategies in Greater Sydney

GREEN GRID

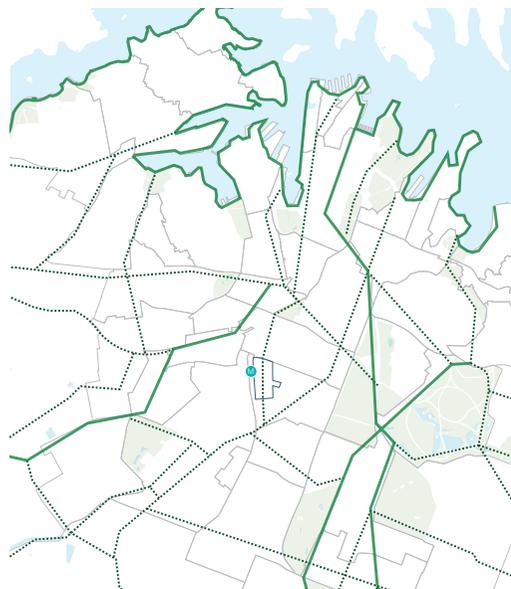


Fig. 71.42
Source: Sydney Green Grid, The NSW Government Architects Office & Tyrell Studio, March 2017.

- Legend**
- Waterloo Estate
 - Metro Station
 - Major Green Grid Project Opportunity
 - Green Grid Project Opportunity

George Street has the opportunity to be developed as a major green link that connects to the Sydney Green Grid.

'Bourke Street and George Street Active Transport Green Links' are identified as a Sydney Green Grid project opportunity. Under the urban renewal initiative, the Estate has the opportunity to provide additional open spaces and improve existing connections to the wider open space network. Within the Green Grid framework, George Street has the potential to become a vital link within the network. By aligning with the region's strategic initiatives, the Estate can assist with the delivery of the Metropolitan Green Grid across Greater Sydney.

BLUE GRID

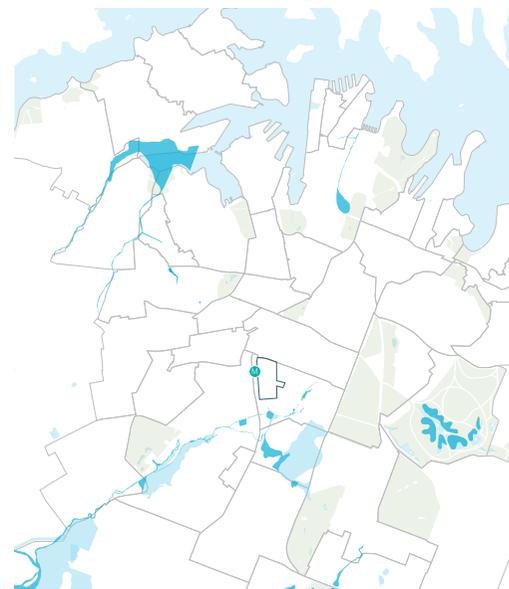


Fig. 71.43
Source: Sydney Green Grid, The NSW Government Architects Office & Tyrell Studio, March 2017.

- Current Water Network
- Historical Water Network

The Estate has the opportunity to provide blue-green infrastructure that connects to and reinforces the blue grid.

Historically, water has contributed to the agricultural and industrial development of the area. During the mid-nineteenth Century, Waterloo provided the water supply to swamps and creeks including Alexandria Canal (known as Shea's Creek) and Waterloo Swamp. The integration of water sensitive urban design (WSUD) strategies within the Estate as part of the water management system connects back to the cultural significance of water and will also increase the recreational value of the water infrastructure.

ECOLOGICAL GRID



Fig. 71.44
Source: Sydney Green Grid, The NSW Government Architects Office & Tyrell Studio, March 2017.

- Water Bodies
- SSROC Supporting Areas
- SSROC Priority Habitats
- High Environmental Lands

The Estate has the opportunity to connect to existing biodiversity corridors and support threatened flora and fauna species.

The Southern Sydney Regional Organisation of Council's (SSROC) 'Connected Corridors for Biodiversity' project maps the Estate as a habitat supporting area for identified species. The corridor adjoins Waterloo Park and Waterloo Oval that have been identified as 'High Environmental Lands' for biodiversity conservation. The Estate has the opportunity to encourage the growth of landscape plantings and street trees as habitats that support mobile species such as birds and bats. By providing a connected biodiversity corridor, the movement and dispersal of ecological communities across the ecological grid will be facilitated, supporting regional strategies.

OCHRE GRID

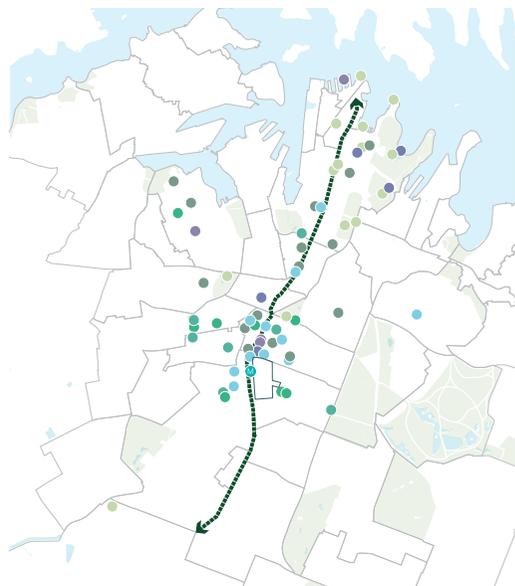


Fig. 71.45
Source: Sydney Green Grid, The NSW Government Architects Office & Tyrell Studio, March 2017.

- Legend**
- Early Contact
 - Civil Rights
 - Education
 - Working Life
 - Sports and Leisure
 - Performing Arts
 - Visual Arts
 - ➔ Aboriginal Walking Track

The Estate has the opportunity to contribute to the cultural and economic development of the indigenous population.

The OCHRE Plan was established to encourage the growth of the social, economic and cultural life of Aboriginal communities. The Estate's strong Aboriginal history provides the opportunity to preserve and nurture Aboriginal culture. Local business and arts also have the opportunity to empower the Aboriginal community both economically and culturally. Understanding the significant indigenous sites within the Estate will provide opportunities for connection and integration to the OCHRE grid.

URBAN FOREST

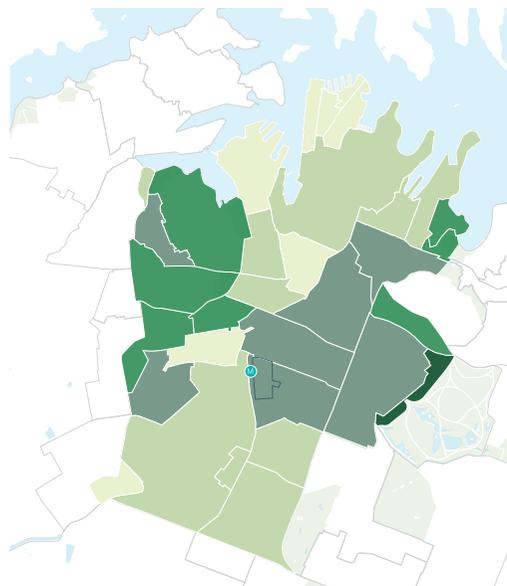


Fig. 71.46
Source: Adapted from City of Sydney Urban Forest Strategy 2013, City of Sydney, Feb 2013.

- 7-9%
- 10-15%
- 16-20%
- 21-26%
- 27-30%

The Estate has the opportunity to reinforce the City of Sydney's urban forest strategy through a retention strategy that respects the established street tree character, and a replenishment strategy that reinforces the existing residential character of the area.

The Estate was developed from the late 1950s to the 1980s. At the time only small trees could be identified at the corner of Pitt and Philip Streets and along George Street. The large trees (such as Figs and Eucalypts) that exist within the Estate today are less than 45 years old. The Estate captures 939 existing trees located within both public and private land ownership. The trees within the site are comprised of endemic, native exotic and invasive species with a total of 111 species types within or adjacent to the Estate.

LIVEABLE GREEN NETWORK



Fig. 71.47
Source: Adapted from City of Sydney Liveable Green Network Strategy and Masterplan Report, City of Sydney, May 2011.

- ⋯ Central Spine Circular Quay - Botany Bay
- Sydney Harbour Foreshore Walk
- Harbour to The Bay
- Main Green Corridor
- Liveable Green Network

The renewal of the Estate will contribute to the Liveable Green Network by addressing a network gap and supporting the existing public domain.

With a focus on active transport, the Liveable Green Network will help deliver targets 7, 8 and 9 of Sustainable Sydney 2030 by making walking and cycling more attractive through a connected pedestrian and cycle network with the most convenient and direct connections to major destinations across the City and Inner Sydney area. The Estate currently blocks this connectivity, the large blocks and change in levels between Pitt and George Streets creating a barrier to pedestrian movement. The existing Waterloo Green provides a barrier to cycle movement, with conflicts between residents and cyclist creating a perception that it is not safe.

CHARACTER

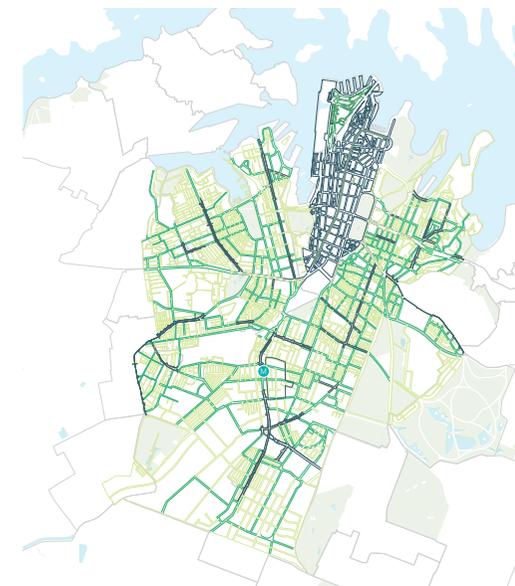


Fig. 71.48
Source: Adapted from Sydney Streets Design Code, City of Sydney, 2013.

- George Street - Distinctive Place
- Heritage Area
- City Centre and Gateways
- Local Areas
- Local Areas with Higher Activity
- Village Centres and Activity Strip

The approach for the public domain in the renewal of the Estate will need to be assessed based on future uses and the vision for the Estate and surrounding areas.

In local areas such as Redfern and Waterloo, squares and plazas often occur at train stations, or are created by street closures, creating social spaces for the local community and residents of the area. Within the Estate street closures at the southern ends of Cope, George and Mead Streets, have created pedestrian through site links for cyclists and small pocket plazas for leisure and social activity. However, there are limited facilities such as benches, that are often heavily shaded by existing trees, creating an unpleasant microclimate.



OPEN SPACE

Understanding the open space structure, hierarchy, use and connections within and outside the Estate boundary is key to identifying the opportunities and challenges

While there is a significant amount of open space within the Estate, much of it is underutilised and lacks definition and purpose other than to provide visual amenity and a sense of openness. The use of space is influenced by a range of factors including microclimate, accessibility (on foot, by bicycle or by wheelchairs) and use (whether the open space is for private, communal or public use).

Local parks such as Waterloo Park (including Waterloo Oval south of McEvoy Street) flank the south-eastern corner of the site but provide limited use due to the steep and undulating topography.

Open space within the Estate is owned and managed by LAHC and is predominantly private or communal space for residents. The northern open lawn areas/park are publicly accessible providing facilities such as bench seating co-located under or near tree clusters. Waterloo Green, which is part of the open space network within the Estate, is publicly accessible, privately owned space. Semi-enclosed open space to the west and east of the open lawn areas provides facilities such as community gardens, barbecue areas, outdoor fitness equipment and play spaces for local residents.

Waterloo Green 1.7 Ha open space (Publicly accessible private land)

LOCAL OPEN SPACE AMENITY



Fig. 71.49
Source: Clouston Associates, 2017

- Legend**
- [Icon] Waterloo Estate
 - [Icon] Waterloo South
 - [Icon] Metro Station
 - [Icon] District Park
 - [Icon] Local Park
 - [Icon] Pocket Park
 - [Icon] Roof Garden
 - [Icon] Public Sports Facilities
 - [Icon] Private Sports Facilities
 - [Icon] Neighbourhood Playground
 - [Icon] Pocket Playground
 - [Icon] Regional Playground
 - [Icon] Publicly Accessible Open Space
 - [Icon] Trees

URBAN FOREST

Future ongoing and continuous planting will be required to maintain and improve canopy cover and age class distribution

Canopy cover exceeds advocated targets for the overall suburb of Waterloo however removal of large canopy trees, over the masterplan life, will have a corresponding negative effect and requires a tree replacement strategy to increase the canopy cover over time.

Figs and large Eucalypts that have been planted in close proximity to each other, and adjacent buildings, have inter grown asymmetric canopies and root structures that are intertwined with adjacent built infrastructure, or other surrounding trees, creating issues for individual trees and surrounding infrastructure such as footpaths, walls, carparking and below ground drainage lines.

Retention of larger Eucalypts will assist with the delivery of mature landscapes across the site for future buildings, streets and open space, however will be challenging due to Eucalypts generally having a low tolerance of related construction disturbance.

Due to the area's sandy soils, tree root systems have developed at greater depths and distances away from trees, under existing pavements and structures, with some clearly visible on the ground surface.

Adequate space needs to be allowed for trunks and roots of both figs and larger Eucalypts to allow future expansion of young and semi mature trees. Large scale figs require ample space both above and below ground. Such issues will create challenges for developing new infrastructure including pathways.

939 Existing trees
Canopy Cover 31%
 (Waterloo Estate)

EXISTING CANOPY COVER



Fig. 71.50
 Source: Waterloo Estate-South, Urban Forest Study, Arterra, 2020

Legend

-  Waterloo Estate
-  Waterloo South
-  Metro Station
-  Existing Canopy Cover



TREES

Within Waterloo South, there are 440 High and moderate value trees, representing 47% of the overall existing trees within the Estate

There are 477 existing Low value and 22 “Should remove/ No retention” value trees, constituting 51% and 2% respectively, of the existing overall trees within the Estate. Low retention value trees are generally in poor condition, have structural defects, are small growing or commonplace trees and have no historic, environmental or social significance.

Both categories of trees should be considered for replacement as part of the tree replacement strategy with more appropriate planting that contributes to a productive landscape and biodiversity.

HIGH VALUE TREES



Fig. 71.51
Source: Waterloo South, Urban Forest Study, Arterra, 2020



Within Waterloo South, there are 141 existing High value trees, constituting 15% of the existing overall trees within Waterloo South.

- High retention value tree characteristics:
- Large
 - Visually prominent
 - Historically or environmentally important
 - In good or very good condition
 - Part of an important group of trees

Removal of high value trees should be avoided where possible and feasible.

MODERATE VALUE TREES



Fig. 71.52
Source: Waterloo South, Urban Forest Study, Arterra, 2020



Within Waterloo South, there are 299 existing Moderate value trees, constituting 32% of the existing overall trees within Waterloo South.

- Moderate retention value tree characteristics:
- Mature with average form and vigour
 - Mature with minor defects
 - Smaller or semi-mature trees with good form and vigour
 - In good to reasonable condition
 - Of lesser value within a good grouping of trees

Moderate value trees should be retained where possible and feasible.

FIGS



Fig. 71.53
Waterloo South, Urban Forest Study, Arterra, 2020



Within the Estate, there are 69 existing Fig trees, within the High to Low value categories, constituting 6% of the existing overall trees within the Estate.

Mature figs that over-shadow particular areas throughout the area have created uninviting and unusable space beneath, due to heavy shade, constant fruit and leaf fall and extensive surface root and buttress systems.

However, they do contribute to the landscape character of the Estate and High and Moderate value examples should be retained where possible and feasible.

TREE FAMILIES



Fig. 71.54 Waterloo South, Urban Forest Study, Arterra, 2020

- Myrtaceae
- Platanaceae
- Casuarinaceae
- Ulmaceae
- Sapindaceae
- Arecaceae
- Moraceae

BIODIVERSITY CONSTRAINTS



Fig. 71.55 Waterloo South, Urban Forest Study, Arterra, 2020

- Low biodiversity constraints
- Moderate biodiversity constraints

Within the Estate, the tree population is dominated by four to five tree ‘families’, with one family (Myrtaceae) dominating at 47 percent, this is higher than the City of Sydney’s target of 40 percent family and 10 percent for an individual species.

Composition of tree species within the Estate are approaching or exceeding set targets and removal of sections of Myrtaceae family will need to be considered to prevent further skewing of the representation of the family.

Key species include:

- Eucalyptus microcorys (Tallowood) (31%)
- Ficus macrocarpa var. hillii (Hills Weeping Fig) (22%)
- Corymbia maculata (Spotted Gum) (8%)
- Eucalyptus saligna (Sydney Blue Gum) (5%)
- Corymbia citriodora (Lemon Scented Gum) (5%)

For further review of the retention of trees within the Estate, a tree by tree assessment will need to take into account the condition of the tree in relation to its age and lifespan, as well as its immediate existing environment, and its impact to existing and future infrastructure within the Estate. Further work will also need to take into account community consultation and the significance of the Estate’s trees to the local residents.

Classifications are based on Environment NSW standard measures of Biodiversity.



URBAN FORM

The urban character of Waterloo and surrounding areas reflects a history of ad hoc growth over time

A large part of the historic urban structure surrounding the Estate remains, including:

- Orthogonal network of streets, including the main north-south arterial roads connecting to Central Sydney, and the east-west routes with a more local function.
- The fine-grained Nineteenth Century / early Twentieth Century terraces that define the interface between the Estate and the adjacent urban areas.
- The activity centres around Redfern Street and Regent Street that provide local concentrations of community facilities and places of social interaction.
- Prominent corner buildings on key streets, often denoted by a pub or other community facility exist, but no longer within the Estate boundary.
- The orientation and general arrangement of high streets in village centres suggest these calmer/slower streets interconnect between two main/high traffic roads (e.g., Redfern Street between Regent Street/ Botany Rd and Chalmers Street).

Building heights at the district scale illustrate how more recent development within the locations designated for urban renewal and positioned around transit corridors are resulting in the clustering of taller buildings, particularly around:

- Central Station / Ultimo,
- Green Square Town Centre,
- Lachlan / ACI Urban Renewal Precincts, and
- Zetland / Victoria Urban Renewal Precincts.

BUILDING HEIGHTS AT DISTRICT LEVEL

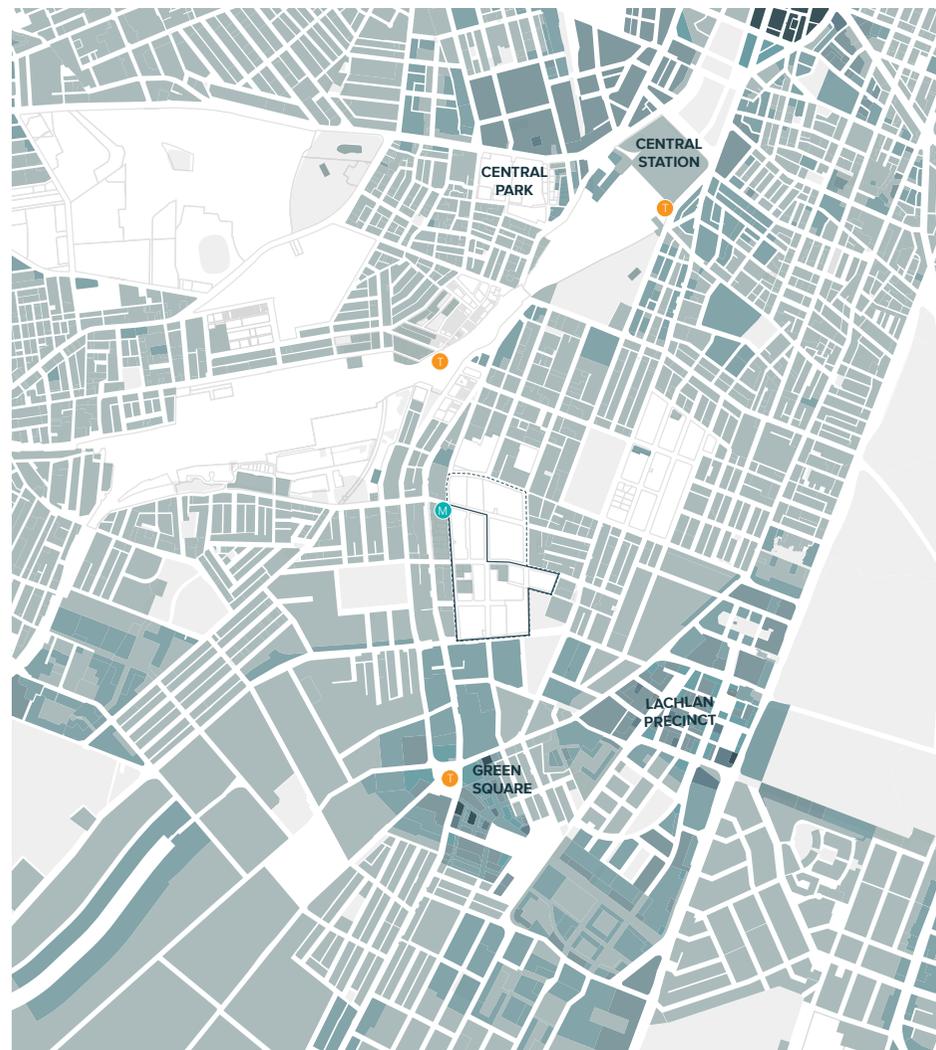


Fig. 71.56
Source: Sydney LEP 2012 Height of Buildings Map, City of Sydney 2012

Legend

- | | | | | |
|-----------------|----------------|---------------|-----------------|--------------|
| Waterloo Estate | Waterloo South | Train Station | 1 to 19 metres | 60-79 metres |
| | | Metro Station | 20 to 39 metres | 80-99 metres |
| | | Open Space | 40 to 59 metres | > 100 metres |

LAND USE



Fig. 71.57
Source: Sydney LEP 2012 Land Use Map, City of Sydney 2012

Legend

- Waterloo Estate
- Waterloo South
- Train Station
- Metro Station
- B1 Neighbourhood Centre
- B2 Local Centre
- B4 Mixed Use
- B5 Business Development
- B6 Enterprise Corridor
- B7 Business Park
- R1 General Residential
- R2 Low Density Residential
- R3 Medium Density Residential
- RE1 Public Recreation
- SP2 Infrastructure

Renewal precincts are crucial contributors to the development of the 30-minute city, with local centres vital in providing essential access to day-to-day goods and services close to where people live.

As Sydney continues to grow, existing zoning patterns will need to be revised to better reflect the changing density of these inner-city locales to ensure the 30 minute city can be successfully realised.

At present, many renewal precincts are zoned R1 General Residential and B4 Mixed Use. A mix of land-use zoning is at the heart of establishing liveable neighbourhoods and is required in renewal precincts to promote healthy, active lifestyles and social interaction that can better support the arts, creativity, cultural expression and innovation.

CHARACTER



Fig. 71.58

● Building Footprint

In contrast to the urban grain of its context, the Estate forms something of an ‘island’, disconnected from the surrounding grid of streets and the surrounding urban form.

A series of distinct ‘character areas’ surround the Estate:

- The heritage conservation areas.
- The railway lands around the Australian Technology Park (ATP) and Redfern Station.
- Botany Road to the west, which transitions in character south of McEvoy Street.
- The area to the south, progressively being redeveloped to multi-residential uses.



HOUSING TYPOLOGIES



Fig. 71.59

Legend

Six categories of existing building typologies are identified for the residential and non-residential buildings across the Estate.

1. Towers located to the north of the Estate
2. Slab buildings located to the north of the Estate
3. Medium density residential buildings located to the east and south of the Estate
4. Low rise walk ups located to the west and south of the Estate
5. Terrace housing located to the west of the Estate
6. Non-residential buildings including IGA X-press and other small retailers are located within the Estate.



Fig. 71.60 Turanga Tower



Fig. 71.61 Typical lowrise walk up flat building



Fig. 71.62 James Cook Building



Fig. 71.63 228-231 Cope Street.



Fig. 71.64 Drysdale



Fig. 71.65 Waterloo Congregational Church

BUILDING HEIGHTS



Fig. 71.66

EXISTING BLOCK STRUCTURE



Fig. 71.67

- Legend**
- Waterloo Estate
 - Waterloo South
 - Metro Station
 - 20 to 30 storeys
 - 16 to 20 storeys
 - 5 to 8 storeys
 - 3 to 4 storeys
 - 1 to 2 storeys

- > 3ha
- 2 to 3ha
- 1.5 to 2ha
- 1 to 1.5ha
- 0.5 to 1ha
- < 0.5ha

There is a transition in building height within the Estate boundaries from south to north, with the tallest building located to the north, closer to Redfern Village.

The amalgamation of blocks within the Estate in the latter half of the Twentieth Century has led to a coarsening of the grid.

Building heights at the Estate scale show:

- The predominance of low-rise buildings flanking the Estate’s western and eastern sides except at the north.
- The transition to medium and high-rise closer to the Redfern Street Village.
- South of McEvoy Street more recent development of medium-rise apartment blocks.

The urban grain resulting from the area’s historical evolution, has provided the blocks that are in evidence today. Whereas much of the finer grain nature of the traditional urban fabric of the Estate’s surrounding urban context remains intact, within the Estate the amalgamation of blocks in the latter half of the Twentieth Century has led to a coarsening of the grid. The result has been a reduction in the Estate’s walkable permeability and its ability to accommodate a mixture of uses and evolve to changing use requirements over time.



HERITAGE AND CONSERVATION

The Estate is surrounded by four heritage conservation areas that reflect different cycles of the area's history

The Waterloo Heritage Conservation Area to the east has significance as early residential subdivisions of the Mount Lachlan Estate. Redfern Estate Heritage Conservation Area to the north is historically significant as an early Victorian structured subdivision covering the entire grant to William Redfern. Zetland Estate Heritage Conservation Area to the south-east is a rare early Victorian residential subdivision of the industrial south in the Waterloo Estate, developed in association with the draining of Waterloo Swamp. Alexandria Park Heritage Conservation Area to the west is significant as a remnant of the growth of the Municipality of Alexandria in the second half of the nineteenth century.

HERITAGE CONSERVATION AREAS

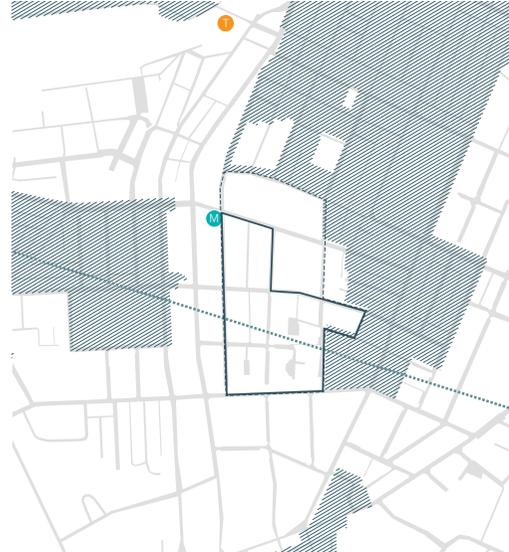


Fig. 71.68
Source: Urbis, Stage 1 Heritage Assessment Report: Waterloo Estate Study Area, Feb 2018

- Legend**
- Waterloo Estate
 - Train Station
 - Metro Station
 - Heritage Conservation Area
 - Pressure Tunnel



Fig. 71.69 Redfern Street
Source: Urbis. 2017



Fig. 71.70 Pitt Street
Source: Pablo Codina. 2019



Fig. 71.71 George Street
Source: Urbis. 2017



Fig. 71.72 John Street
Source: Urbis. 2017

HERITAGE ITEMS



Fig. 7.173
Source: Urbis, Stage 1 Heritage Assessment Report: Waterloo Estate Study Area, Feb 2018

- Legend**
- Waterloo Estate
 - Train Station
 - Heritage Parks
 - Metro Station
 - Heritage Items
 - Pressure Tunnel
 - Waterloo South



Fig. 7.174 Gadigal House
Source: Turner, 2019



Fig. 7.175 The Cricketers Arms
Source: Urbis, 2017



Fig. 7.176 Former CBC Bank
Source: Google Maps, 2019



Fig. 7.177 221 Pitt Street
Source: Turner, 2019



Fig. 7.178 The Cauliflower Hotel
Source: Urbis, 2017



Fig. 7.179 Mount Carmel Catholic Primary School
Source: Turner, 2019



HERITAGE AND ITEMS OF INTEREST

There are a number of significant heritage items within the Estate boundaries that will need to be considered as part of the renewal process

There are five items of heritage significance within the Estate and one within the Metro Quarter adjacent to the Estate. The existing social housing buildings within the Estate, which were constructed from the 1940s through to the 1970s, have not been identified as being of heritage significance.

The following buildings are identified on the NSW Office of Environment and Heritage database:

1. The Duke of Wellington Hotel
291 George Street
2. The former Waterloo Pre-school
225-227 Cope Street and the area extending south, including Lot 4 DP 10721
3. Waterloo Congregational Church (adjacent to the Estate)
4. Terrace Houses, 229-231 Cope Street
5. Electricity Substation, 336 George Street
6. Water Pressure Tunnel

HERITAGE ITEMS WITHIN THE ESTATE



Fig. 71.80
Source: Waterloo South Planning Proposal - Heritage Impact Statement, Urbis, 2020

- Legend**
- Waterloo Estate
 - Waterloo South
 - Metro Station
 - Heritage Item
 - Heritage-listed Pressure Tunnel



Fig. 71.81 The Duke of Wellington Hotel,



Fig. 71.82 The former Waterloo Pre-school,



Fig. 71.83 Waterloo Congregational Church



Fig. 71.84 Terrace Houses



Fig. 71.85 Electricity Substation

CRITICAL INTERFACES



Fig. 71.86

EXISTING PUBLICLY ACCESSIBLE OPEN SPACE

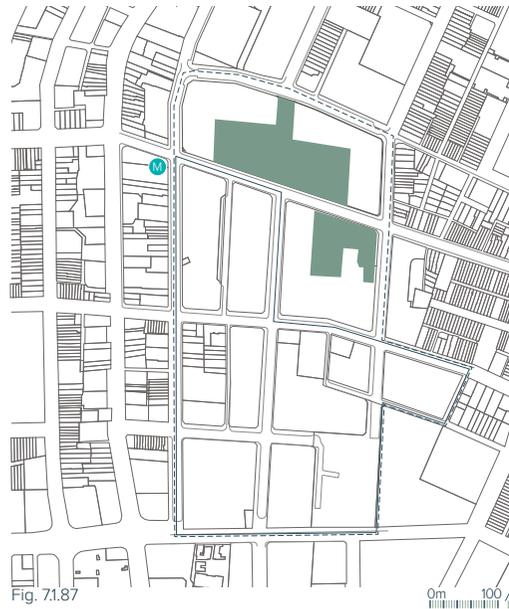


Fig. 71.87

Legend

-  Waterloo Estate
-  Metro Station
-  Heritage Item
-  Heritage-listed Pressure Tunnel
-  Critical Interfaces
-  Waterloo Green
-  Waterloo South
-  Heritage Conservation Area

Heritage items and heritage conservation areas (HCAs) considered as part of the renewal of the Estate.

Within the Estate, the two major publicly accessible open spaces include Waterloo Green and the open space at the corner of Pitt and Raglan streets.



Fig. 71.88 The existing Waterloo Green
Source: Turner, 2019



EXTERNAL VIEWS

Waterloo's tower and slab blocks are the most dominant element in the existing skyline, rising above the lower scale of the traditional terraces within the Estate's immediate context

The Estate is visually contained with its edges clearly defined by boundary streets. Within the Estate boundaries there is a relatively open character, defined by:

- A grid pattern of streets.
- Large blocks.
- A high ratio of open land to built land leads to a relatively open visual quality.
- The substantial stock of large trees both in the street scape and within the lots.
- At 113 and 117 metres, the existing towers Matavai & Turanga form skyline views from elevated locations within a 2km radius.



Fig. 71.89
Source: Waterloo Visual Impact Study Stage 1 Report, Cardno, March 2020.

Legend

- Waterloo Estate
- Waterloo South
- Metro Station
- View Direction

LONG DISTANCE VIEWS (+1KM)



Fig. 71.90 Sydney Park, hill-top facing north-east
Source: Haycraft Duloy Pty Ltd. 2019. **1**



Fig. 71.91 Moore Park, facing west
Source: Haycraft Duloy Pty Ltd. 2019. **2**

MIDDLE DISTANCE VIEWS (250 - 1KM)



Fig. 71.92 Lachlan Street and Gadigal Avenue facing west
Source: Haycraft Duloy Pty Ltd. 2019. **3**



Fig. 71.93 Green Square Plaza facing north
Source: Haycraft Duloy Pty Ltd. 2019. **4**

CLOSE DISTANCE VIEWS (UP TO 250M)



Fig. 71.94 Alexandria Park, south-west corner facing north-east
Source: Haycraft Duloy Pty Ltd. 2019. **5**



Fig. 71.95 Redfern Park, north-east corner facing south-west
Source: Haycraft Duloy Pty Ltd. 2019. **6**



Fig. 71.96 Redfern Park, north-east corner facing south-west
Source: Haycraft Duloy Pty Ltd. 2019. **7**



Fig. 71.97 George Street between Albert Street and Philip Street facing south. Source: Haycraft Duloy Pty Ltd. 2019. **8**



EXTERNAL VIEWS



Fig. 71.98
Source: Waterloo Visual Impact Study Stage 1 Report, Cardno, Nov 2020.

Legend

- Waterloo Estate
- Waterloo South
- Metro Station
- View Direction



Fig. 71.99 Redfern Oval, south-east corner facing south-west
Source: Haycraft Duloy Pty Ltd. 2019. **9**



Fig. 71.100 Wellington Street and Gibson Street facing west
Source: Haycraft Duloy Pty Ltd. 2019. **10**



Fig. 71.101 Wellington Street and Beaumont Street facing west
Source: Haycraft Duloy Pty Ltd. 2019. **11**



Fig. 71.102 Kellick Street and Gibson Street facing west
Source: Haycraft Duloy Pty Ltd. 2019. **12**



Fig. 71.103 Waterloo Oval, south-east corner facing north-east
Source: Haycraft Duloy Pty Ltd. 2019. **13**



Fig. 71.104 George Street between Allen Street and Bourke Street facing north.
Source: Haycraft Duloy Pty Ltd. 2019. **14**



Fig. 71.105 Botany Road and McEvoy Street facing north-east
Source: Haycraft Duloy Pty Ltd. 2019. **15**



Fig. 71.106 John Street between Botany Road and Cope Street facing east.
Source: Haycraft Duloy Pty Ltd. 2019. **16**



LOCAL VIEWS

Significant parts of the Estate are visually contained by street wall development along much of its eastern edge

Local views corridors from the view analysis include:

- East – west views on Wellington and Raglan streets extend beyond the site to Botany Road and Elizabeth Street
- North – south views are available on Cope, George and Pitt Streets. Where the original street grid pattern has been truncated by road closures (e.g. at the northern and southern extremities of Cooper Street and George Street), the arrangement of buildings has conserved these long views
- Significant parts of the Estate are visually contained by street wall development along much of its eastern edge (from Wellington Street to Phillip Street)

LOCAL VIEWS



Fig. 7.1107
Source: Waterloo Visual Impact Study Stage 1 Report, Cardno, March 2020.

Legend

- Waterloo Estate
- Waterloo South
- Train Station
- Metro Station
- View Direction

CRITICAL VIEWPOINTS, CLOSE VIEWS (UP TO 250M)



Fig. 71.108 Wellington Street between Botany Road and Cope Street facing east. Source: Haycraft Duloy Pty Ltd. 2019. **17**



Fig. 71.109 Botany Road between Raglan Street and Wellington Street facing east. Source: Haycraft Duloy Pty Ltd. 2019. **18**



Fig. 71.110 Corner Henderson Road and Botany Road. Source: Haycraft Duloy Pty Ltd. 2019. **19**



Fig. 71.111 NCIE Oval, north-west corner facing south. Source: Haycraft Duloy Pty Ltd. 2019. **20**



Fig. 71.112 Garden Street and Buckland Street facing east. Source: Haycraft Duloy Pty Ltd. 2019. **21**



Fig. 71.113 Alexandria Park, north-east corner facing east. Source: Haycraft Duloy Pty Ltd. 2019. **22**



Fig. 71.114 Alexandria Park, south-east corner facing north-east. Source: Haycraft Duloy Pty Ltd. 2019. **23**



Fig. 71.115 Off Philip Street, west of Turanga Tower, facing south. Source: Haycraft Duloy Pty Ltd. 2019. **24**

CRITICAL VIEWPOINTS, INTERNAL VIEWS



Fig. 71.116 George Street and Wellington Street facing south. Source: Haycraft Duloy Pty Ltd. 2019. **25**



Fig. 71.117 Cooper Street, near Raglan Street, facing south. Source: Haycraft Duloy Pty Ltd. 2019. **26**

7.1.3 TRANSPORT, STREETS AND CONNECTIVITY

Waterloo Metro Station will connect Waterloo to the 30 minute city with the opportunity to become an active transport hub that prioritises walking and cycling

The Estate is highly connected by active transport to Central Sydney and its opportunities for jobs, services and retail. Located 3.3km (45 minutes walk, 15 minutes cycle) from the city centre (GPO, Martin Place). Green Square Town Centre, a designated strategic centre, is within 800m (10 minute walk) of the southern end of the Estate, which will provide it with even greater connectivity to local services and amenities as the centre develops.

Due to its proximity to both Redfern and Green Square stations, the Estate also has a high level of public transport connectivity to jobs within 30 minutes of the site. The new Sydney Metro station will expand the reach of this catchment both geographically and temporally, running 21 hours a day, that will provide greater flexibility for shift labour.

Dedicated and shared cycle paths link the site as far as Prince Alfred Park and Central Station. Additional connectivity around Regent Street or Devonshire Street could foreseeably extend this to the Goods Line, and thus a high quality non-motorised link to key destinations such as UTS, TAFE, ABC and the current Powerhouse Museum site along Harris Street.

THE 30 MINUTE CITY

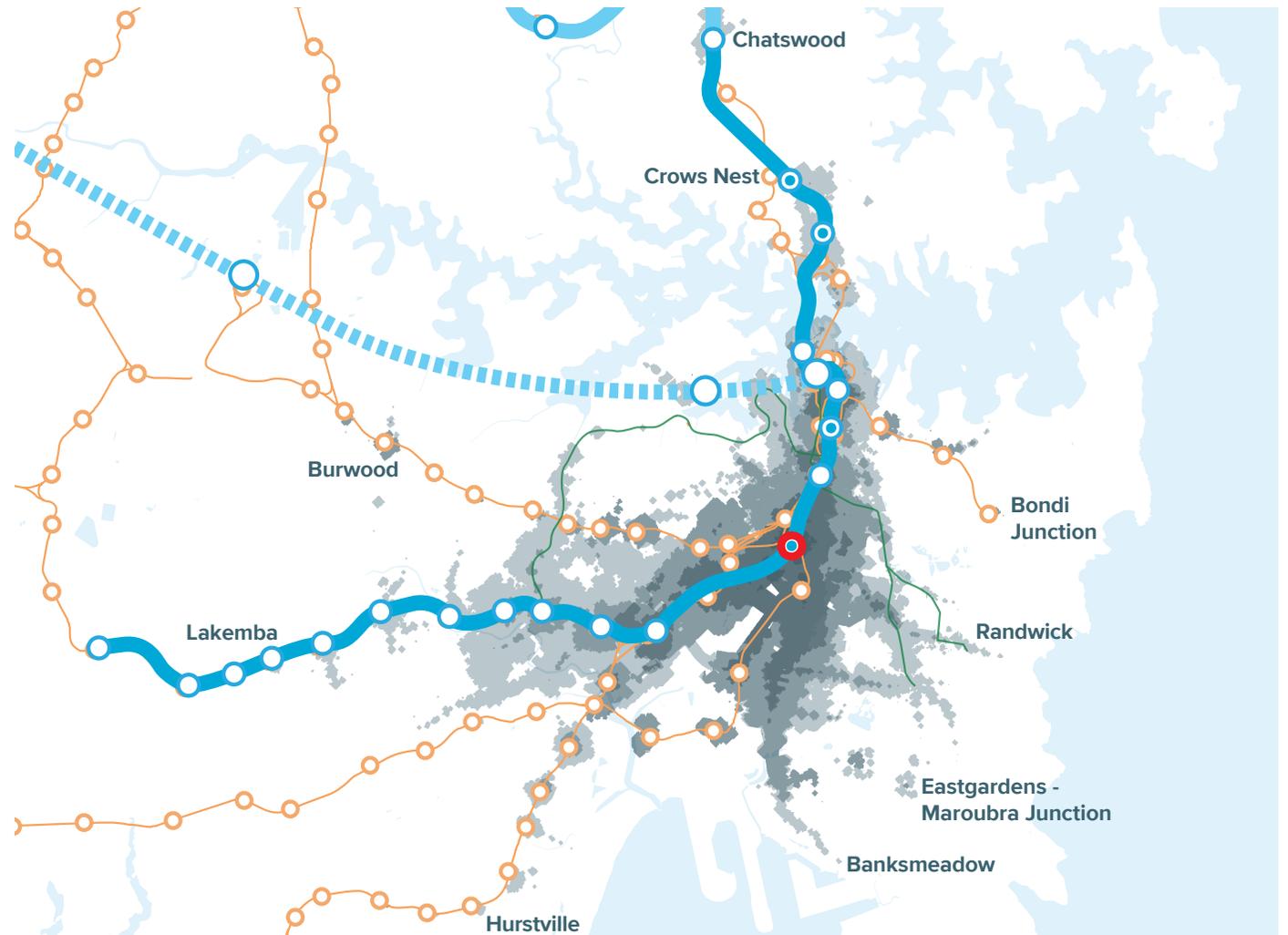


Fig. 7.1.118 Areas accessible within 30 minutes from Waterloo through walking, cycling and public transport. Source: Adapted from Eastern City District Plan, Greater Sydney Commission, March 2018.

- Legend**
- Waterloo Estate
 - Metro Station
 - Integrated Station Development (ISD)
 - Sydney Metro Northwest/ City & Southwest Line
 - Sydney Metro West Line
 - Train Station
 - Train Line
 - Light Rail Route
 - Eastern Economic Corridor
 - The 30-minute City
 - Major Development

ACTIVE TRANSPORT

PEDESTRIAN NETWORK

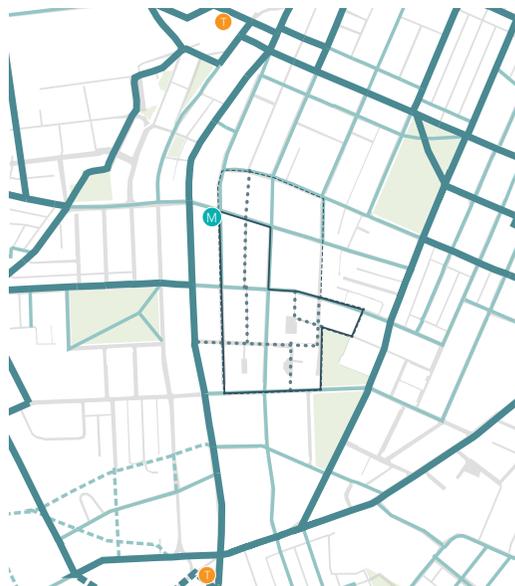


Fig. 7.1.119
Source: Adapted from City of Sydney Liveable Green Network Strategy and Masterplan Report, City of Sydney, May 2011.

- Legend**
- Waterloo Estate
 - Waterloo South
 - Train Station
 - Metro Station
 - Primary Walking Network
 - Proposed Primary Walking Network
 - Local Walking Network

Reinforcing the existing pedestrian network will be an important consideration to promote active transport modes by providing a walkable, safe and high quality public domain.

Walkability is the combination of several factors including, the walking catchment within and around the Estate, streets that are conducive to walking, and barriers to walking. The primary barriers to movement are streets above 1,000vph for which the crossing times create a barrier to free movement. Primarily, Botany Road / Regent Street, Lawson Street and Square, and McEvoy Street act as barriers to movement.

CYCLE NETWORK

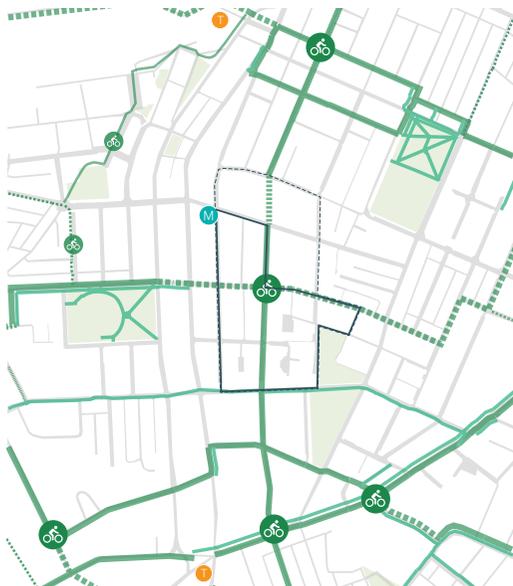


Fig. 7.1.120
Source: Adapted from Draft Cycling Strategy and Action Plan, City of Sydney, 2018.

- Regional Bike Network
- Proposed Regional Bike Network
- Local Bike Network
- Proposed Local Bike Network
- Shared Path

By connecting to the existing and future cycle network, there is potential for active transport to play a significant role in short and medium distance trips to, from and within the Estate.

Under the City of Sydney's strategy, dedicated north-south cycle facilities are currently provided on George Street, though there is no dedicated link through Waterloo Green where cyclists are supposed to dismount. The cycle network is vital to the city's commercial health, providing access to jobs, retail and leisure activities in Sydney CBD and Green Square, the latter set to grow significantly in the future with the development of Green Square Town Centre.

BUS NETWORK



Fig. 7.1.121
Source: State Transit Eastern Suburbs Network Map, Transport NSW, 2019.

- Bus Route
- Bus Stop

The Estate is well served by an interconnected bus network connecting key destinations to the east and west as well as to Central Sydney.

The bus network in and around Waterloo is heavily focused on north-south travel, particularly to Central Sydney. Botany Road is a key bus corridor connecting Central Sydney to Redfern, Waterloo, Alexandria, Green Square, Mascot and Botany. These routes are typically frequent and operate a range of hours.

Bus services also operate east-west routes, linking Randwick, Coogee, Bondi Junction, Moore Park and Kingsford to the east with Glebe, Newtown, Marrickville and Sydenham to the west. These routes serve an important cross-regional function, but are infrequent, convoluted and lengthy, reducing reliability.

TRAIN AND METRO NETWORK



Fig. 7.1.122

- Sydney Trains Airport & South Line
- Sydney Metro City & Southwest

The Estate is highly connected, with Redfern and Green Square Stations located within 400m of the Estate boundaries.

Sydney Metro City & Southwest is a new metro line under construction from Chatswood to Sydney CBD and Bankstown, that will start operating in 2024. Waterloo Station will provide enhanced connectivity to Greater Sydney with services every 4 minutes in each direction and trains every 2 minutes in peak hours carrying up to 40,000 people per hour. Approximately 3,700 people will access Waterloo Station in the AM peak hour and 2,350 would exit. In addition, recent upgrades to Redfern Station have added a second concourse and improved access and egress, bringing the entrance closer to the development area for the Redfern Station Precinct.



STREET NETWORK

NORTH-SOUTH CONNECTIVITY

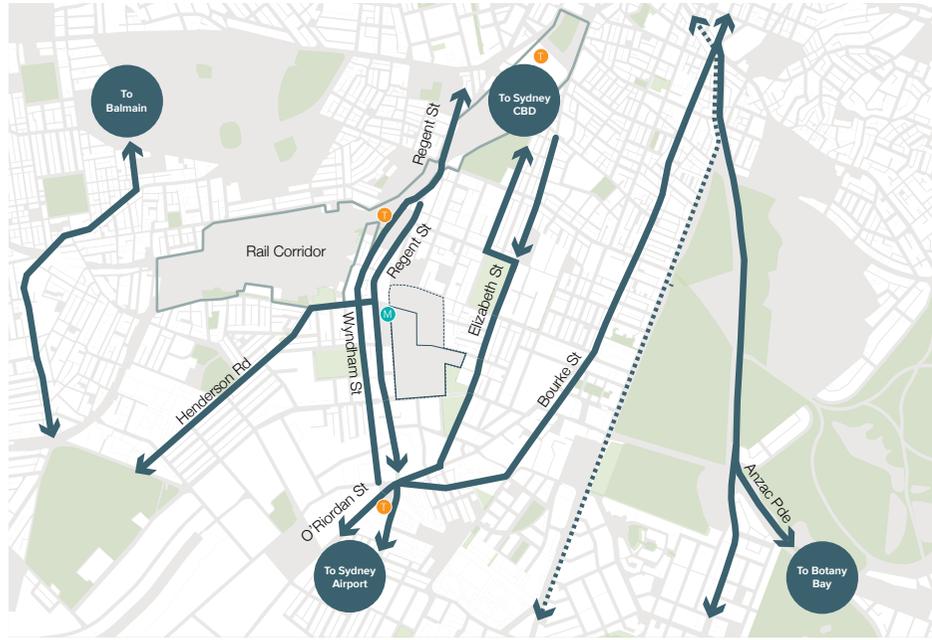


Fig. 7.1.123



Legend

- Waterloo Estate
- Waterloo South
- Train Station
- Metro Station
- Major Route
- Motorway

The existing street network facilitates north-south pedestrian movement in the area with relative ease.

EAST-WEST CONNECTIVITY

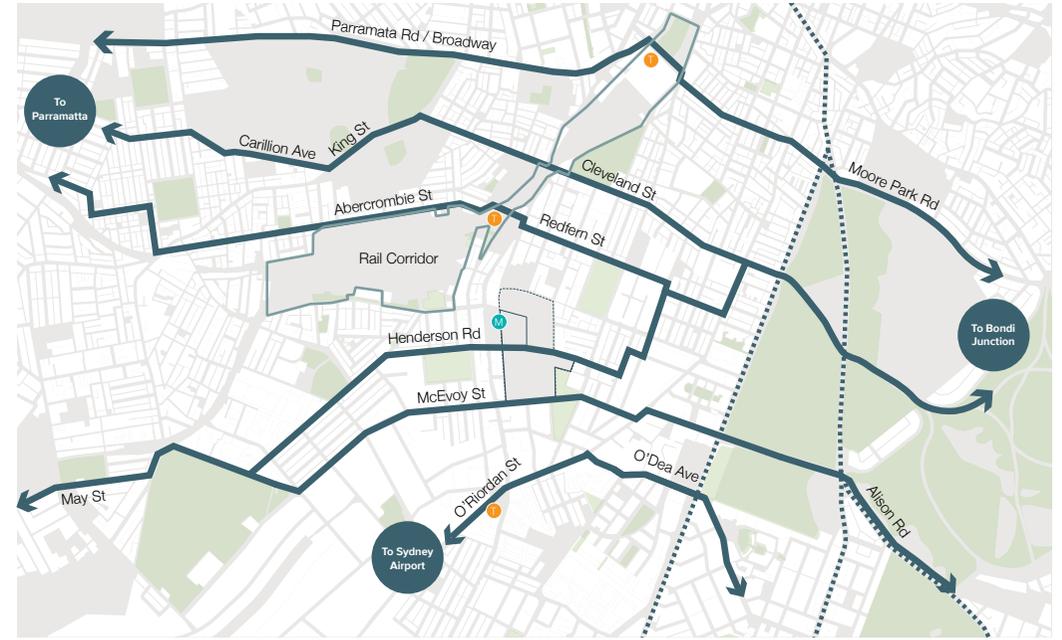


Fig. 7.1.124



East-west pedestrian movement is significantly more difficult due to the nature of public transport services, the railway line and busy roads impeding movement and the perception of safety.

Connectivity is a key consideration in the renewal of the Estate to promote active transport modes for increased liveability

McEVOY STREET WIDENING

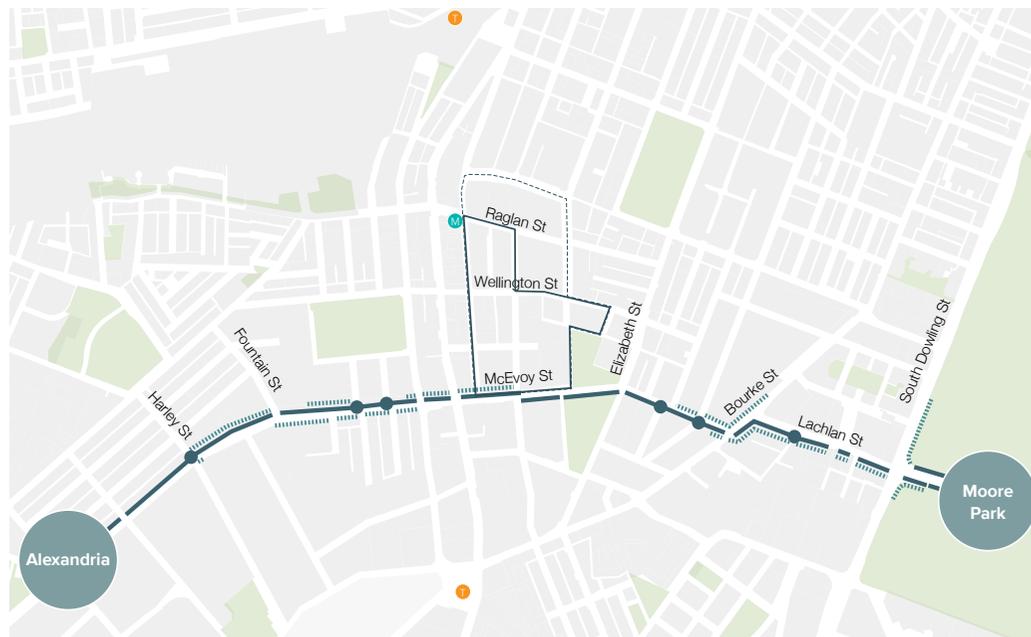


Fig. 7.1.125
Source: Alexandria to Moore Park Connectivity Upgrade - Community Update, RMS, June 2017.



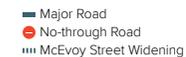
The Estate occupies an 'island' within an area that includes busy roads, with Botany Road, Elizabeth Street, Henderson Road and McEvoy Street all experiencing traffic volumes greater than 1,000 vehicles per hour during the peak hour.

The Alexandria to Moore Park Connectivity Upgrade will involve widening to McEvoy Street and the expansion of road junctions, that are intended to improve traffic flows, but which could also impede pedestrian movement north-south between the Estate and Green Square.

STREET NETWORK



Fig. 7.1.126



Streets within the Estate are relatively lightly trafficked, due in part to the closure of some of the through streets to the surrounding network. Most local streets in the area have 50km/h speed limits and are two traffic plus two parking lanes wide, with some streets 40km/h zones including George Street and Redfern Street.



JAMES COOK



Fig. 71.27 Social gathering
Source: LAHC, 2018

7.1.4 HOUSING DIVERSITY AND LIVEABILITY

HOUSING TYPOLOGIES



Fig. 7.1.128

EXISTING HOUSING AGE



Fig. 7.1.129

Legend



Housing typologies within the Estate are distributed across low, medium and high rise typologies.

The taller buildings, (campus style blocks) are located to the north. Medium rise buildings are located to the east where the topography rises up to Mount Carmel. They tend to have deeper plans and integrate private amenity space in balconies. Predominant built form includes the cross form, double cross form and short low bar type which accommodates the walk up units. Their arrangement across the Estate creates significant private communal open space and undefined street edges.

The existing housing within the Estate was primarily built between 1960s to 1980s.

- The existing buildings in the Estate were built:
- Waterloo Congregational Church: c. 1883.
 - Low-rise walk-up buildings (Madden Place): c. 1961
 - Low-rise walk-up buildings (Other): various ages
 - Terrace housing: various ages
 - Mid-rise buildings (Camellia Grove): c. 1971
 - Slab buildings (Daniel Solander, Marton, James Cooks, and Joseph Banks): c. 1974
 - Towers buildings (Turanga & Matawai): c. 1976
 - Mid-rise buildings (Drysdale & Dobell): c. 1982



7.1.5 EMPLOYMENT, SERVICES, RETAIL, ARTS AND CULTURE

Waterloo is located between the Green Square Strategic Centre and the area south of Redfern Station identified for renewal in the Eastern City District Plan

As a Strategic Centre, Green Square is expected to generate over 20,000 jobs, high levels of economic activity and be the focus of business and commercial growth, supported by new infrastructure investment in the area.

The retail and commercial offering along Regent and Redfern streets has seen a resurgence with the increase in creative industries and small bars and restaurants. This resurgence is limited along the north-south thoroughfare of Regent Street/Botany Road which lacks the presence of a cohesive main street and lack of identifiable commercial centre. With the predominate residential land uses and few immediate economic uses, the Estate's challenge is to link this community with the established economic centres by increasing links either north towards Redfern or south to Green Square. Between Botany Road and Central Station railyard, the

Australian Technology Park (ATP) occupies a significant land holding, but lacks integration with the centres of Redfern and Waterloo. The ATP is centred on a number of re-purposed heritage buildings complemented by a number of large floor-plate commercial buildings, developed from the late 1990's as a destination for knowledge workers, technological companies and university expansion.

Adjacent to Redfern Station are the twin GCA towers previously used for commercial, emergency services and education purposes and currently being adapted and retrofitted as residential apartments.

ACTIVE FRONTTAGES



Fig. 7.1.130 Source: Adapted from Sydney DCP 2012 Active Frontages Map, City of Sydney, 2012.

Legend

- Waterloo Estate
- Waterloo South
- Train Station
- Metro Station
- View Direction

NEIGHBOURHOOD RETAIL

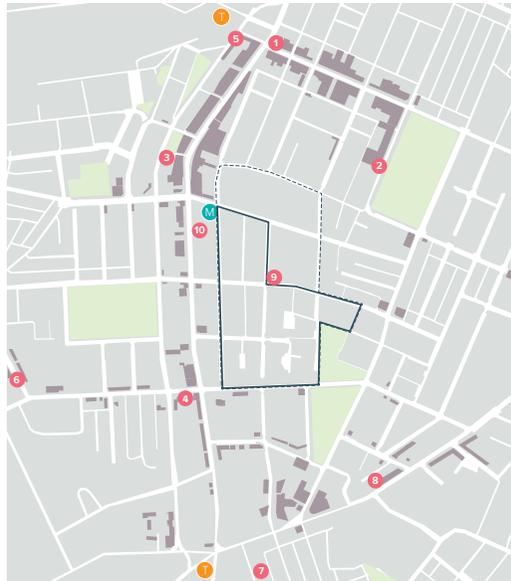


Fig. 7.1.131
Source: Waterloo South Economic development, local retail and services study, Macroplan Dimasi, 2020

Legend

- Waterloo Estate
- Neighbourhood Retail**
- Train Station
- Metro Station
- 1 Redfern Village
- 2 Woolworths Redfern
- 3 IGA Waterloo
- 4 IGA Alexandria
- 5 SPAR
- 6 Woolworths Alexandria
- 7 Woolworths Green Square
- 8 Miracle Mart Supermarket
- 9 IGA X-press
- 10 Proposed Waterloo Metro Supermarket

The Estate’s predominantly residential character acts as a buffer between the two growing commercial centres of Redfern and Green Square and the employment and urban services land at Green Square-Mascot.

Redfern Street Village is to the north of the Estate and comprises a retail and convenience strip along Redfern Street. To the west of the Estate, the existing retail strip along Botany Road and Regent Street extends to Redfern Station. This includes food and beverage premises and large-format factory outlets. Industrial and commercial uses with large-format warehouses and factory outlets are located south of McEvoy Street.

LOCAL RETAIL



Fig. 7.1.132
Source: Waterloo South Economic development, local retail and services study, Macroplan Dimasi, 2020

- Local Businesses
- Neighbourhood Businesses

The majority of registered businesses located in or close to the Estate are situated along Botany Road.

There are approximate 103 GST registered businesses in close proximity to the Estate. Most businesses are in Transport, Postal and Warehousing, Professional, Scientific and Technical Service and Construction.



COMMUNITY SERVICES AND FACILITIES

The majority of facilities that serve the existing community's needs are located outside the Estate boundaries

One kilometre is considered to be the maximum distance most people will walk to reach a local destination. Within this catchment, a broad range of facilities constitute the area's social infrastructure and form the existing community's 'kit of parts'.

COMMUNITY SERVICES

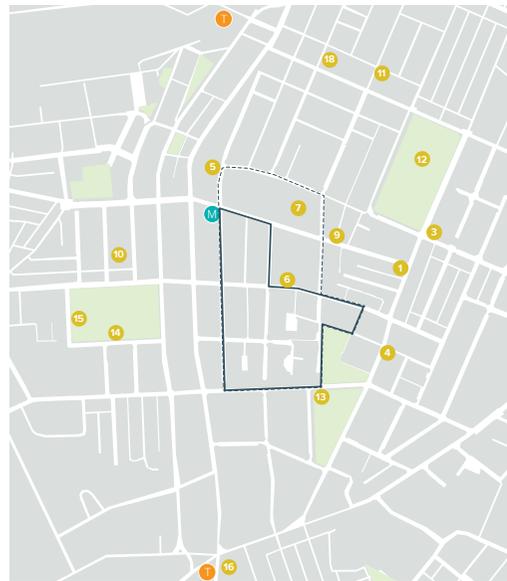


Fig. 71.133
Source: Waterloo South Economic development, local retail and services study, Macroplan Dimasi, 2020

- | | | |
|-----------------|----------------------------------------|-------------------------------------|
| Legend | Community Services | 10 Alexandria Town Hall |
| Waterloo Estate | 1 Catholic Community Services NSW | 11 Redfern Town Hall |
| Waterloo South | 2 Waterloo Library | 12 Redfern Oval |
| Train Station | 3 PCYC | 13 Waterloo Oval |
| Metro Station | 4 Waterloo Connect | 14 Alexandria Park Community Centre |
| | 5 The Salvation Army | 15 Alexandria Park Tennis Court |
| | 6 Waterloo Public Housing Action Group | 16 Green Square Library |
| | 7 The 'Factory' Community Centre | |

Although there are a broad range of facilities within the walking catchment serving the community's varying needs, only two services are located within the Estate boundary.

The Estate is well served by emergency and justice services. This includes the NSW Fire and Rescue stations located at Redfern, Central Sydney, Darlinghurst and Alexandria; NSW Ambulance stations located at Eveleigh, Paddington and Camperdown; NSW Police, including the Central Local Area Command, Surry Hills Local Area Command and Redfern Local Area Command.

ABORIGINAL COMMUNITY SERVICES

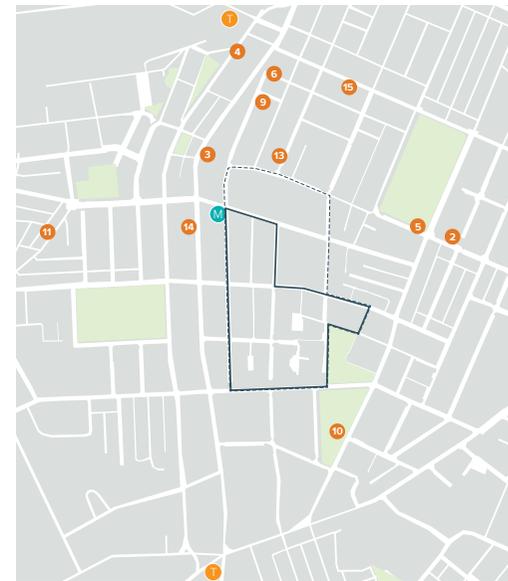


Fig. 71.134
Source: Waterloo South Economic development, local retail and services study, Macroplan Dimasi, 2020

- | | |
|---------------------------------------------|----------------------------------------------------|
| Aboriginal Community Services | 10 Weave Youth and Community Services |
| 1 South Sydney Aboriginal Corporation | 11 Alileena/Warrambucca Aboriginal Home Care |
| 2 Resource Centre | 12 National Centre of Indigenous Excellence |
| 3 Aboriginal Legal Service (NSW/ACT) | 13 Aurora Education Foundation |
| 4 First Peoples Disability Network | 14 Aboriginal Medical Service Co-operative Ltd |
| 5 Kincheta Boys Home Aboriginal Corporation | Family Services |
| 6 Aboriginal Employment Centre | 1 Our Lady of Mount Carmel Catholic Primary School |
| 9 Wyanga Aboriginal Aged Care Program | 2 Central Sydney Intensive English High School |

There are a range of community services outside the Estate boundaries that serve the specific needs of the existing Aboriginal community within the Estate.

The Aboriginal Medical Service is a multidisciplinary health care facility that provides acute and primary health to the local Indigenous communities but is not restricted to the local community.

FAMILY SERVICES

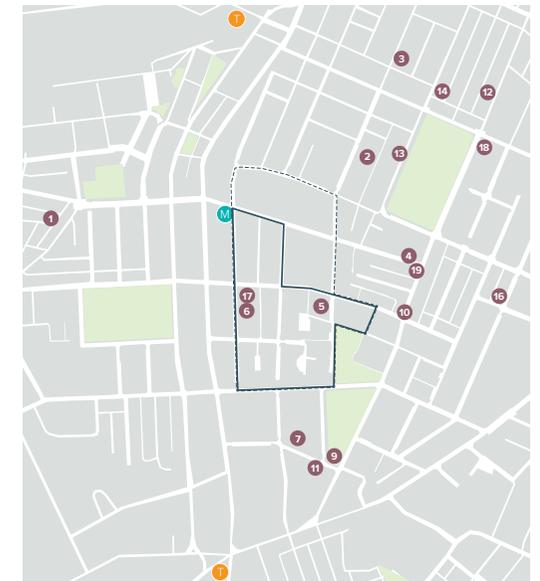


Fig. 71.135
Source: Waterloo South Economic development, local retail and services study, Macroplan Dimasi, 2020

- | | |
|----------------------------------------------|----------------------------------------------------|
| 5 Lois Barker Child & Family Learning Centre | 14 Aged Care Support Services |
| 6 Waterloo Long Day Care | 16 Frederic House |
| 7 The Green Elephant Early Learning Centre | 17 Co-operative Home Care |
| 9 South Sydney Youth Services | 18 Annie Green Court |
| 10 The Fact Tree Youth Services | Education |
| 11 Weave Youth and Community Services | 1 Our Lady of Mount Carmel Catholic Primary School |
| 12 Yfoundations | 2 Central Sydney Intensive English High School |
| 13 The Salvation Army Aged Care Plus | |

The area to the east of the Estate is well served by youth and elderly services, with social infrastructure targeting youth located in Waterloo, Redfern and Alexandria and health facilities to serve the ageing population of the Estate.

Youth services are vital for disadvantaged youth as they create access to support services and enable participation in recreation and leisure programs. However, with a growing population, there will be increased demand for sport and recreation amongst other activities. Existing services that cater to the ageing population are located within close proximity to the Estate. These range from aged care services to social and leisure programs. Most of the health-related care delivered to older people is provided directly by the SLHD Aged Care and Rehabilitation (AC&R) service.

EDUCATION



Fig. 7.1136
Source: Waterloo South Economic development, local retail and services study, Macroplan Dimasi, 2020

- Legend**
- 3 Alexandria Park Community School
 - 4 Eastern Gymnastics Academy
 - 5 Hillsong International Leadership College
 - 6 La Bioethetique Academie-Sydney
 - 7 Taylor's College
 - 9 International Screen Academy
 - 10 Green Square Public School
 - 11 Eveleigh Works
 - 12 Education Training and Employment Australia
 - 13 TOP Education Institute
 - 14 Czech & Slovak School of Sydney
 - Health**
 - 1 Redfern Community Health Centre
 - 2 Waterloo Medical Centre
 - 7 Healthcare Family Medical Centre
 - Redfern Station Medical Centre

Primary and secondary educational facilities serve the Waterloo community, including the Alexandria Park Community School and Our Lady of Mount Carmel Catholic Primary School.

Access to education is a vital pillar of social infrastructure. Other schools in the vicinity include specialised schools such as the Cleveland Street Intensive English High School. A new 14-storey high school will be built on Cleveland Street for 1,200 students and is expected to open in 2020, further enhancing the provision of social infrastructure in the area to meet the demands of the future population.

HEALTH



Fig. 7.1137
Source: Waterloo South Economic development, local retail and services study, Macroplan Dimasi, 2020

- 3 Green Square Health
- 4 Fountain Street General Practice
- 5 Citydoc Medical Centre
- 6 Dr Tan Surgery
- 7 The Byrne Surgery
- 8 Sydney Southwest Area Health Service
- 10 Regent House
- Odyssey House
- 11 MPW Dentistry
- 12 100 Redfern Smiles
- 13 Redfern Dentist
- 14 151 Degree Dental
- 15 Hurst Stephanie Psychologist Solo
- 16 International Institute for Creativity Psych & Consultant Psych
- 17 Consultant Psych
- 18 Rebecca Rose Psychology Waterloo
- DSA Specialist Intervention Services

The Estate is well served by a range of health services near that include two major health and medical centres and four hospitals.

The Estate is located in the NSW Health Sydney Local Health District (SLHD). The SLHD owns and operates the Redfern Community Health Centre (CHC) on Redfern Street. It is located next door to the Aboriginal Medical Centre and provides prevention, early intervention, assessment, treatment, health maintenance and continuing care services. The closest public hospitals to the Waterloo Estate include St Vincent's Hospital (Darlinghurst), Royal Prince Alfred Hospital (Camperdown) and Prince of Wales and Sydney Children's Hospital (Randwick).

OPEN SPACE

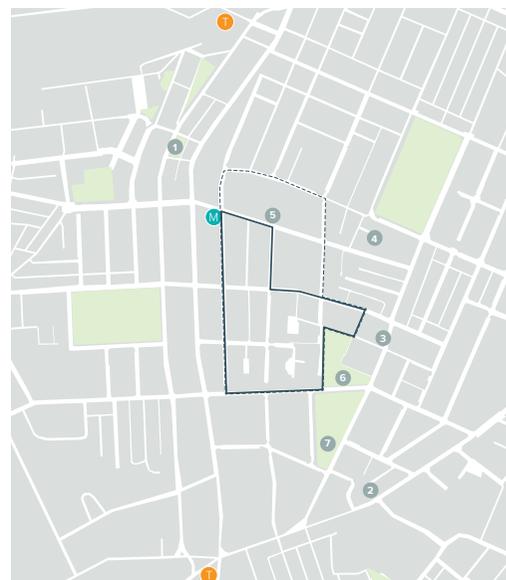


Fig. 7.1138
Source: Waterloo South Economic development, local retail and services study, Macroplan Dimasi, 2020

- 19 Uplift Psychological Services Redfern
- 20 Mylife Psychologists
- 21 George Vallies Allied Health
- 22 Viewpoint Optical
- 23 Osteopathy Central-Redfern
- 24 Kirby's Pharmacy
- 25 Stern's Pharmacy
- 26 Goldcross Pharmacy
- 27 Alexandria Physio & Pilates
- 28 Bondi Boxing Club
- 29 Anytime Fitness
- 30 Crossfit Sydney
- 31 F45 Training Health Club
- 32
- 33 **Open Space**
- Daniel Dowson Park

There is a network of public open spaces within walking distance of the Estate. Although there is a large area of open space within the Estate boundaries that is publicly accessible, it is all privately owned.

With a growing population, there will be increased demand for open space for sport and recreation amongst other activities in addition to the existing public open spaces surrounding the Estate. The City of Sydney's Open Space, Sports and Recreation Needs Study (2016) outlines the need for a new public open space which will be provided as part of the renewal of the Estate.

COMMUNITY GARDENS



Fig. 7.1139
Source: Waterloo South Economic development, local retail and services study, Macroplan Dimasi, 2020

- Short Street Reserve
- 1 Tobruk Reserve
- 2 Vescey Reserve
- 3 Waterloo Green
- 4 Waterloo Park
- 5 Weave Fernside Skate Park
- 6 **Community Gardens**
- 7 Alexandria Park and Community Garden
- The Eden Community Garden
- 1 The Salvation Army Community Garden
- 2 Waterloo Community Gardens - Cook
- 3 Waterloo Community Gardens - Marton
- 4 Waterloo Community Gardens - Solander
- 5
- 6

There are a number of existing community gardens located within the northern half of the Estate.

There are a number of existing community gardens within the Estate boundaries that are run and managed by local social housing residents.



ARTS AND CULTURE

Waterloo's cultural life has a long history, stretching back to the traditional way of life of the Aboriginal people

Waterloo's cultural infrastructure includes both the physical facilities and services that are carried out within these facilities. 1,123 cultural assets and resources have been mapped in the Waterloo Cultural Map that include:

- Community Arts and Cultural Facilities
- Aboriginal Arts and Cultural Facilities
- Creative Industries
- Public Art Spaces
- Open Space and Leisure
- Places of Worship
- Key Festival and Event Venues.

Although the existing Estate has limited arts and cultural facilities, the area is rich in its local community culture, shown through the range of art networks, public art and creative spaces within close proximity to the Estate boundaries.

ARTS AND CULTURE

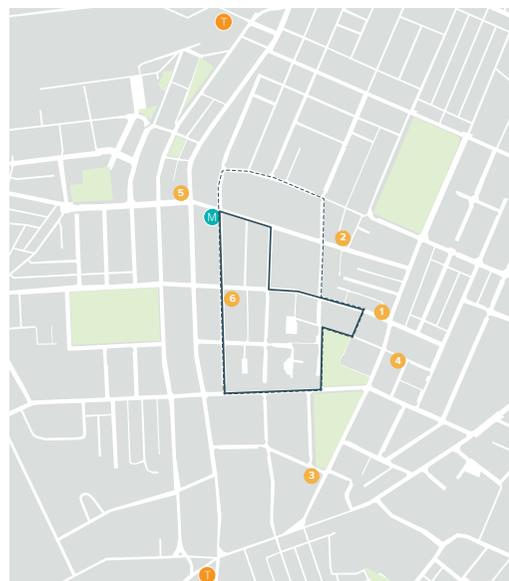


Fig. 71.140
Source: Waterloo South Public Art Plan, Milne Stonehouse & Sue Boaden, 2020



Six community centres are located within the walking catchment of the Estate, providing a range of art and cultural activities. These are provided and managed both by local government as well as non-profit organisations.

The Fact Tree Youth Service offers a variety of living skills programs and workshops targeted towards young people. The Factory Community Centre located on Raglan Street next to the Estate provides public art and creative arts workshops. Within the Estate, the Ethnic Communities' Council of NSW promotes the development of a multicultural community. Waterloo Library offers cultural education through cultural programs and collections. The City of Sydney's Cultural Plan and Community Well-being Indicators 2016 identifies the need for additional cultural facilities and programs to meet the demands of the growing population.

ABORIGINAL ARTS AND CULTURE



Fig. 71.141
Source: Waterloo South Public Art Plan, Milne Stonehouse & Sue Boaden, 2020



Seven cultural facilities within the walking catchment of the Estate promote Indigenous arts and culture. These include gallery spaces, non-profit organisations and creative industries.

Waterloo Estate has a strong existing Aboriginal presence in its local community and culture as well as in its history. Despite this, there is a lack of programs and facilities that showcase and inform the public about Aboriginal culture and history. The City of Sydney's Eora Economic Development Plan supports future actions for Waterloo that promote learning, understanding and celebration of Aboriginal culture.

PUBLIC ART

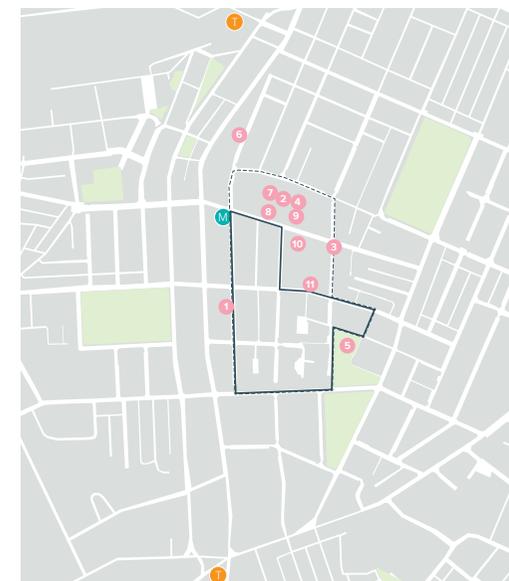


Fig. 71.142
Source: Waterloo South Public Art Plan, Milne Stonehouse & Sue Boaden, 2020



Eleven public art installations are within the walking catchment of the Estate. These include monuments, murals and mosaics in the public domain as well as the interior design and furniture within the Matavai and Turanga.

Most of the public art within the Estate was commissioned before 2005. This includes wall murals and heritage installations created by local residents and artists. These artworks represent the significant local culture influenced by the local community.

There are opportunities to include innovative media such as projections and LED displays as part of the public art strategy. The reuse, decommission and renewal of current artwork collection should also be considered.

CREATIVE INDUSTRIES



Fig. 7.1143
Source: Waterloo South Public Art Plan, Milne Stonehouse & Sue Boaden, 2020

- Creative Industries**
- 1 CM Harris Architects
- 2 David Mitchell Architects Pty Ltd
- 3 Hamish Glen Architects
- 4 Wilkinson & Associates Architects Pty Ltd
- 5 Darren Knight Gallery
- 6 Nussinov Gallery
- 7 aMBUSH Gallery
- 8 Utopia Gallery
- 9 Artbank Sydney
- 10 Matthias Media
- 11 SLOT Window Gallery
- 12 Sydney Film School
- 13 International Screen Academy
- 14 May Space
- 15 The Green Square Centre
- 16 Orchard Gallery
- 17 107 Projects

There are a number of creative and cultural businesses within walking distance of the Estate. These span thirteen industry sectors: advertising, architecture, design, visual arts, music, performing arts, publishing, screen and radio.

Waterloo’s history and heritage is evidenced by the wide range of creative industries including artisan work, engineering production, digital business initiatives and craft-based industry.

Despite the growing creative clusters around the Estate at Green Square and Redfern Village, the area currently lacks support facilities, activities and programs that contribute to the local cultural economy. Despite the emerging co-working cultural spaces in nearby suburbs, the creative infrastructure in Waterloo operates in isolation.

PLACES OF WORSHIP

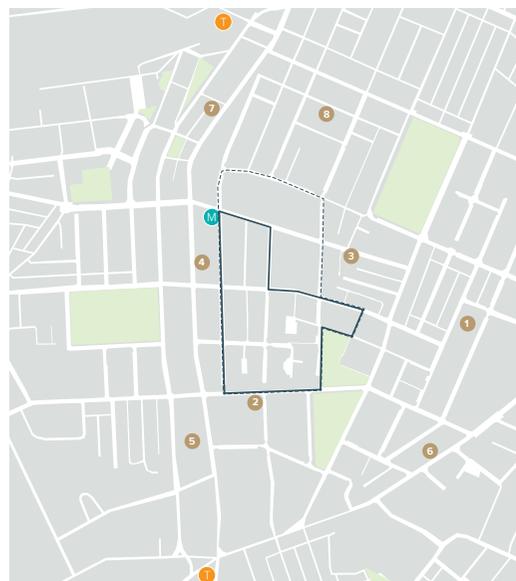


Fig. 7.1144
Source: Waterloo South Public Art Plan, Milne Stonehouse & Sue Boaden, 2020

- Places of Worship**
- 1 Hillsong Church, Waterloo Campus
- 2 Green Square Masjid
- 3 South Sydney Uniting Church
- 4 Waterloo Congregational Church
- 5 Yiu Ming Temple
- 6 Grace City Church
- 7 Uniting Church Tonga Parish
- 8 St Vincent de Paul’s Catholic Church

There are at least eight places of worship within the walking catchment of the Estate, to service a broad range of religious affiliations.

KEY FESTIVALS AND EVENTS

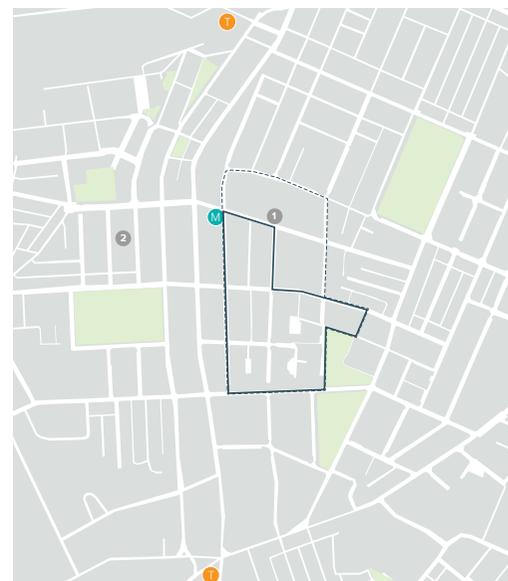


Fig. 7.1145
Source: Waterloo South Public Art Plan, Milne Stonehouse & Sue Boaden, 2020

- Key Festivals + Events**
- 1 Redfern/Waterloo Pet Day
- 2 Milkcrate Theatre

There are two key events within the walking catchment of the Estate, including one within the Estate.

DAY / NIGHT ACTIVITIES



Fig. 7.1146
Source: Waterloo South Economic development, local retail and services study, Macroplan Dimasi, 2020

- ☺ Day - Night Activities**
- Neighbourhood Businesses

The Estate has the opportunity to build upon the existing night economy in Redfern Street.

Waterloo’s existing night time economy is focused on a small number of local pubs. Most of the evening economy is outside the Estate boundaries, centred on Redfern Street and Regent Street (extending to the lot immediately south of Henderson Road). Both are defined as a Local Centre Area in the City of Sydney’s Late Night Trading Premises DCP. These areas have the potential to support an increase in night time activity, particularly where a number of commercial premises are vacant or underutilised. On weekends a number of premises trade to midnight. Since the DCP was prepared, a number of new small bars and restaurants have enhanced the evening economy of Redfern.



Fig. 71.147 Regional Chamber of Commerce and Industry, Picardie
Source: Designboom, Danny Hudson, 2012



7.1.6 SUSTAINABILITY AND INFRASTRUCTURE



Fig. 7.1148 Solar roof panels
Source: Green Roofs Australasia, 2019



Fig. 7.1149 Bioswale
Source: Carvalho & Good, PLCC, 2019



Fig. 7.1150 Vertical garden by Patrick Blanc
Source: Inhabitat, 2019

The sustainability study identifies that future development at Waterloo South will need to:

- Address ecologically sustainable development principles within a precautionary approach, the consideration of inter-generational equity, the conservation of biological diversity and the embedding of environmental factors in the valuation of assets and services.
- Align with the Greater Sydney Commission's objectives for a productive, liveable and sustainable Sydney through smart and sustainable planning for the Eastern City District.
- Align with the City of Sydney's Sustainable Sydney 2030 targets and the actions detailed in the Environmental Action Plan and Energy Master Plans.
- Go beyond BASIX targets and demonstrate best practice particularly with regards to affordable living considerations.
- Integrate climate change mitigation and adaptation urban design strategies to account for more extreme heatwaves, intense storms and localised flooding
- Consider mitigation strategies that include green walls and façades, green pavements, bio-retention systems, rain gardens, street plantings, open spaces and parks.
- Consider transport for NSW (TfNSW) actions regarding electric vehicles, transit oriented development (TOD) and the commitment to prioritise walking and cycling.
- Consider minimisation of energy, water and resource use. Water use to maximise social and economic benefits for the community and align with the Environmental, Planning and Assessment Act's (EP&A's) environmental protection license requirements.
- Encourage water conservation programs (eg, demand management, leak management) and efficiency measures at Estate level.



AIRPORT OPERATION CONSTRAINTS

The PANS-OPS and the RTCC/ MVA constraints limit the potential maximum permissible building height including crane heights

There are two height constraints that will limit the maximum permissible building height (including cranes) that would be approved by aviation authorities due to the Estate's proximity to the airport:

- Obstacle Limitations Surface (OLS) ranging from 55 - 84m - The OLS is a surface which defines the airspace surrounding Sydney Airport that must be protected from obstacles to ensure aircraft flying in good weather during the initial and final stages of flight can do so safely. If this threshold limit is exceeded, it triggers further impact assessments.
- 126.4m PANS-OPS - The PANS-OPS Circling Surface for Category A & B Aircraft covers the majority of the Estate. This is the published flight procedures.
- 152.4m Radar Terrain Clearance Chart / Minimum Vector Altitude (RTCC/MVA) covers a small portion of the Estate at the north-east corner.

PRESCRIBED AIRSPACE LIMITS

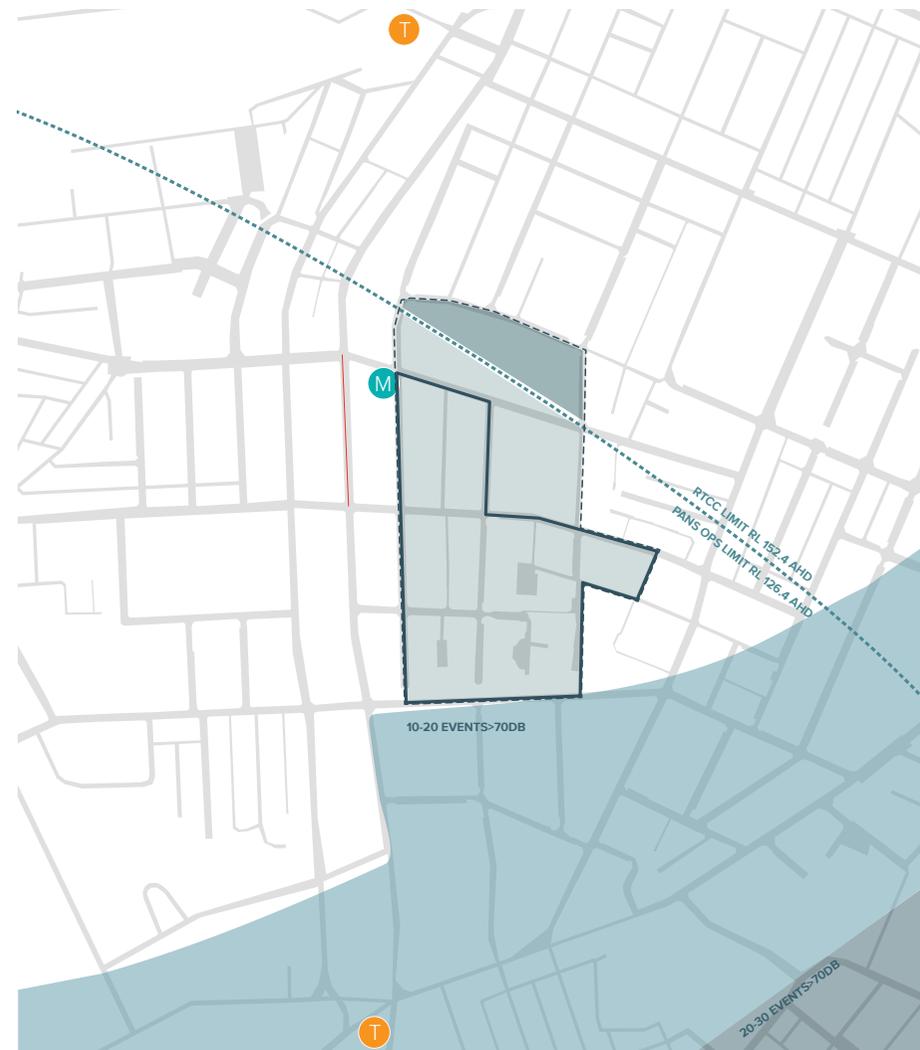


Fig. 7.1151
Source: Waterloo South Planning Proposal - Aeronautical Impact Assessment, Strategic Airspace, 2020



GEOTECHNICAL

TOPOGRAPHY



Fig. 7.1152 Topography.
Source: Waterloo - Geotech and Contamination Study, AECOM, 2020

- Legend**
- Waterloo Estate
 - Waterloo South
 - Metro Station

The Estate sits above a Botany Sands aquifer

CONTAMINATION



Fig. 7.1153 Areas with potential contamination.
Source: Waterloo - Geotech and Contamination Study, AECOM, 2020

- Site with Potential Contamination

None of the existing sites within the Estate have been identified with the potential to contain contaminants that impact soil and groundwater conditions but further investigations should be undertaken.

List of identified sites with potential contaminants:

No.	Site	Distance
1	Formerly Gas n Go Alexandria (fully redeveloped into residential apartments)	119m
2	Alexandria Gardens (under assessment)	64m
3	Proposed Construction Site (regulation under CLM Act not required)	21m
4	Caltex Alexandria Service Station (regulation under CLM Act not required)	180m



WATER

Flooding is an issue that will need to be considered in future developments within the Estate

Flood management measures will need to be implemented in the Estate as outlined in the Alexandria Canal Floodplain Risk Management Study (2014).

The majority of flooding within the Alexandria Canal catchment is characterised by overland flow with:

- Critical storm duration between one and three hours across the catchment.
- Peak of the flood within 30-60 minutes after the start of the storm.
- Short duration “flash” flooding that does not allow sufficient time to evacuate residents from homes.

The existing formal drainage systems consist of:

- Overland flow paths through kerb and gutter systems.
- Local drainage system owned and maintained by the City of Sydney.
- Trunk drainage system owned by Sydney Water Corporation discharging to Shea’s Creek, Alexandria Canal and Cooks River.

ALEXANDRIA CANAL CATCHMENT

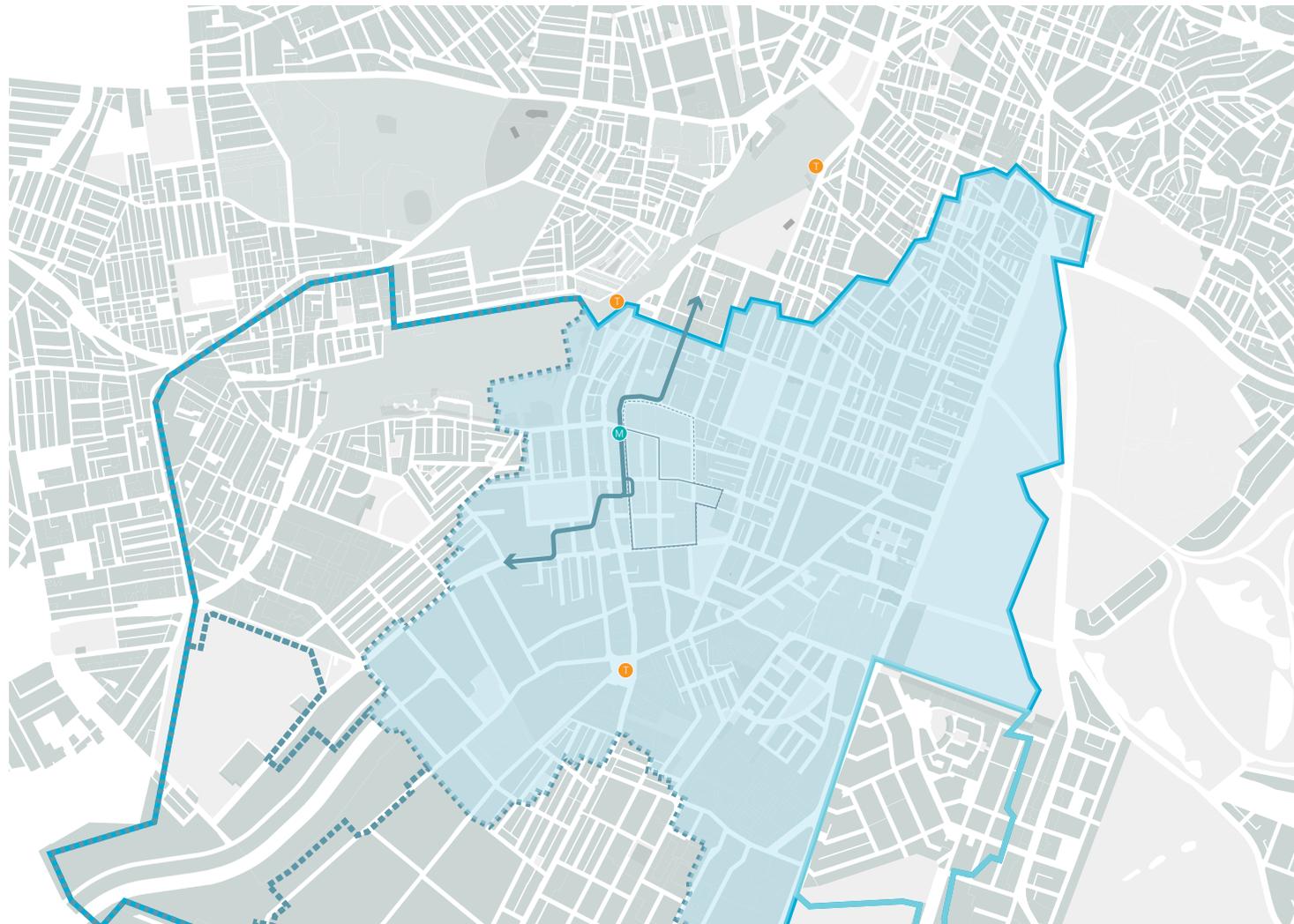


Fig. 7.1154
Source: Waterloo South - Flooding and Stormwater Study, AECOM, 2020



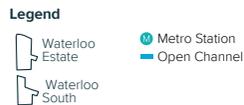
Legend

- Train Station
- Metro Station
- Alexandria Canal Catchment
- Shea's Creek Sub-catchment
- Other Sub-catchment
- Waterloo Estate
- Waterloo South

EXISTING OPEN CHANNEL



Fig. 7.1155 Existing Storm Drainage
Source: Waterloo South - Flooding and Stormwater Study, AECOM, 2020



100YR ARI FLOOD LEVELS

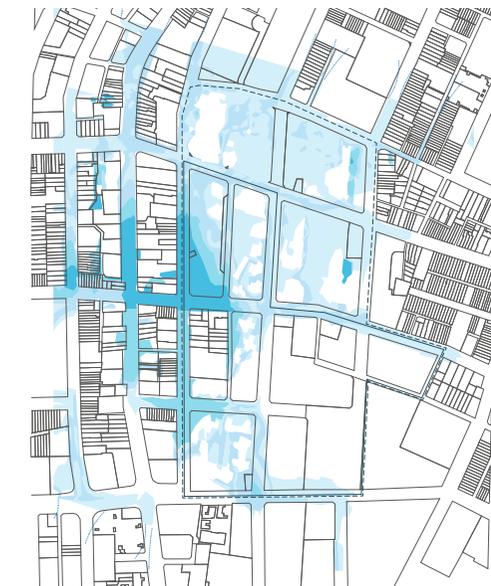


Fig. 7.1156 Waterloo Flood Map
Source: Waterloo South - Flooding and Stormwater Study, AECOM, 2020



Primary sources of flooding can be attributed to a number of issues, the most notable is the trunk drainage system being outlet constrained at the Cope Street open channel.



Fig. 7.1158 Existing open channel at Cope Street
Source: Turner, 2018.

The majority of the Estate is located in a flood plain with a high risk of 'flash flooding'. Future development will need to be designed to meet freeboard levels.

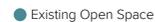
The City of Sydney's Interim Floodplain Management Policy sets out the requirements for the management of flood risk for all new developments within the LGA. This ensures:

- New development will not experience undue flood risk and,
- existing development will not be adversely flood affected through increased damage or hazards created by new development.

WSUD



Fig. 7.1157 Existing landscaped areas.
Source: Waterloo Estate - Existing Open Space Analysis, Clouston Associates, Aug 2018.



The Estate contains a large proportion of grassed open area (approximately 30% compared to 5% in the Metro Quarter) that acts as informal flood storage during major storm events.

Landscaped open areas have the capacity to act as informal flood storage during major storm events as part of the Water Sensitive Urban Design (WSUD) strategy.



MICROCLIMATE

OVERSHADOWING

Solar access to public open spaces and existing context will need to consider City of Sydney and ADG amenity requirements



Fig. 71.159 Shadow Composite June 21 from 9am-3pm. 0m 100m



Fig. 71.160 Shadow Composite September/March 21 from 9am-3pm. 0m 100m



Fig. 71.161 Shadow Composite December 21 from 9am-3pm. 0m 100m

- Legend**
-  Waterloo Estate
 -  Waterloo South
 -  Shadow

AIR QUALITY



Fig. 7.1162
Source: <http://www.metropia.com>

Air quality within the Estate is mainly influenced by emissions from road transport on streets like Botany Road and McEvoy Street.

Future detailed air quality dispersion modelling will determine the air quality impacts on the surrounding sensitive locations. Air quality management strategies will to be a consideration in the development of the masterplan.

NOISE

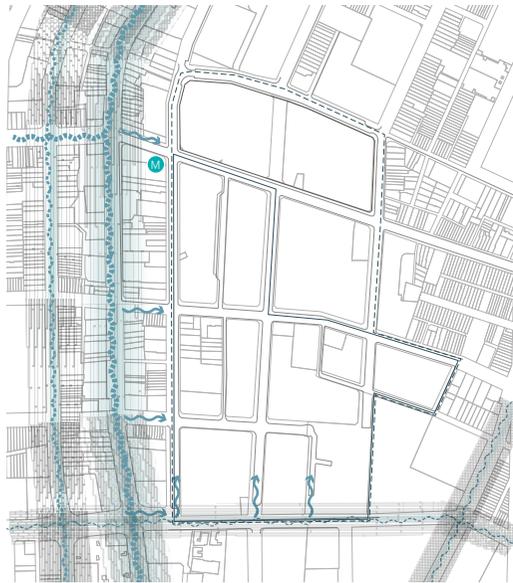


Fig. 7.1163 Day time noise sources
Source: Waterloo - Geotech and Contamination Study, AECOM, 2020

- Legend**
- Waterloo Estate
 - Metro Station
 - Waterloo South
 - Noise

Existing background noise on McEvoy Street and Botany Road exceeds current standards for residential accommodation due to high vehicle numbers.

Local conditions and noise sources at the local level include noise generated by the traffic flowing along McEvoy Street as a result of the large and regular volume of traffic and those generated by heavy vehicles. Existing buildings in the Estate and adjoining streets act as barriers to noise permeability. Where practical, landscaping and vegetation should be provided as both visual and physical barriers from roads.

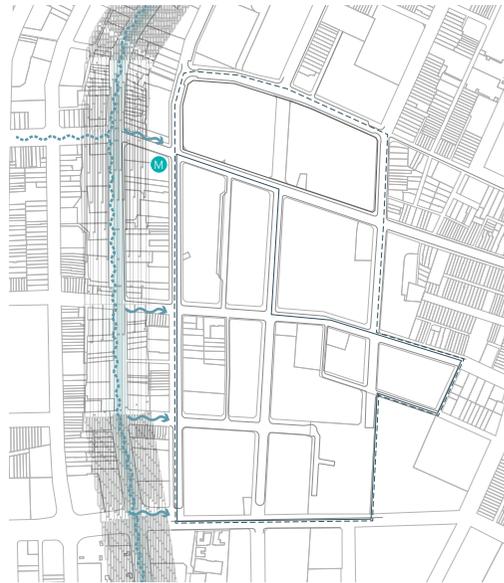


Fig. 7.1164 Night time noise sources
Source: Waterloo - Geotech and Contamination Study, AECOM, 2020

- Noise

WIND

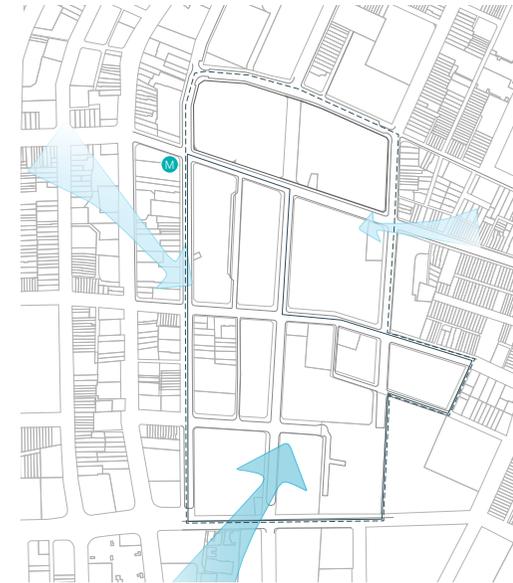


Fig. 7.1165 Prevailing winds
Source: Waterloo South Masterplan - Pedestrian Wind Environment Study, Windtech, 2020

- Wind

The prevailing winds that impact the Estate are the southerly and westerly winds. These impacts will potentially need to be addressed through wind mitigation strategies.

- Key wind impacts include:
- Southerly winds are the most frequent and strongest wind for the Sydney region.
 - Westerly winds are most frequent during winter and usually a cold wind that could cause discomfort in outdoor areas.
 - North-easterly winds occur most frequently during the warmer months of the year for the Sydney region, and are typically milder than southerly or westerly winds.
 - The exposed nature of the existing site creates adverse wind conditions around medium to high buildings.



INFRASTRUCTURE

Changes to the current street grid will need to consider the extensive layers of utilities that criss-cross the Estate

There are a range of existing utilities and services infrastructure located throughout the Estate. These include:

- Potable water
- Waste water
- Electrical
- Gas
- Telecom
- Waste

Main service routes are located along Cope, Wellington and George streets. Potential diversions, removal or reticulation of existing and potential connection to, external utilities will need to consider advice from the relevant authorities.

The current street network accommodates all main utility service routings for the Estate. Proposed major utilities such as the proposed electrical trunk lead in feeder cables from the Zetland substation will continue to utilise the street network. Any variation or expansion of the current street grid needs to be coordinated with the extensive layers of utilities throughout the Estate.

A number of different telecommunications providers currently service the area, including NBN, Nextgen, Optus, Telstra, Verizon and Vocus Fibre. Waste servicing is currently provided by the City of Sydney.

Further site investigations, modelling and consultation with the relevant authority will need to be undertaken on existing and future demand on utilities.



Fig. 7.1166 Existing utility routes
Source: Waterloo - Utilities and Servicing Study, AECOM, 2020



Legend

Waterloo Estate	Metro Station	Electricity
Waterloo South	Water	Gas
	Waste	

WATER



Fig. 71.167 Existing potable water network
Source: Waterloo - Utilities and Servicing Study, AECOM, 2020

- Legend**
- Waterloo Estate
 - Waterloo South
 - Metro Station
 - Water**
 - 1 2475 SCL IBL Pressure Tunnel & Shaft
 - 2 Existing 500mm diameter CICL main
 - 3 Existing 450mm diameter CICL main
 - 4 Existing 300mm diameter CICL main
 - 5 Existing 250mm diameter CICL main
 - 6 Existing 225mm diameter CICL main

Drinking water is supplied by Sydney Water from the Prospect and / or Kurnell systems via the Potts Hill trunk delivery system incorporating the Potts Hill Reservoirs and Crown Street Reservoir

Key existing potable network infrastructure includes:

- A DN450mm Cast iron cement lined (CICL) main running along Cope Street and McEvoy Street.
- A DN300mm CICL main running along Raglan Street and continuing south along George Street.
- A number of other small reticulation mains ranging in size from DN100mm to DN250mm servicing existing properties within and adjacent to the Estate.
- A DN2475 Steel cement lined / internal bitumen line (SCL/IBL) Pressure Tunnel & Shaft crossing the southern portion of the site.

WASTE



Fig. 71.168 Existing sewer network.
Source: Waterloo - Utilities and Servicing Study, AECOM, 2020

- Waste**
- 1 Existing 600mm diameter main
- 2 Existing 450mm diameter main
- 3 Existing 400mm diameter main
- 4 Existing 225mm diameter

Waste water facilities are provided by Sydney Water through the Malabar Sewage treatment plant network

The existing internal wastewater network primarily consists of:

- A DN600mm Vitrified clay (VC) main running along Cope Street (western boundary of the site), between Wellington Street and McEvoy Street
- A DN400 VC running south along Cope Street
- A number of smaller reticulation mains ranging in size from DN225mm to DN300mm servicing individual building lots

ELECTRICITY



Fig. 71.169 Existing energy network.
Source: Waterloo - Utilities and Servicing Study, AECOM, 2020

- Electricity**
- 1 Existing Connection to trunk lead-in feeder alignment
- 2 New Ausgrid feeder from Zetland Substation (ZN188)

Electricity servicing to the Estate is provided by Ausgrid via cables from the nearby Zetland Zone substation

A number of existing electrical assets within the site boundary include:

- A large concentration of low voltage (LV) distribution cables and conduits within George Street, McEvoy Street, Wellington Street and Elizabeth Street.
- Existing overhead power running along George, Cooper, Cope, Pitt, Raglan, Phillip, Wellington and John Streets, except Mead Street.
- A number of above-ground distribution substations stepping down the 11kV supply located on McEvoy, George, Cope, Phillip, Raglan and Pitt Street.

GAS



Fig. 71.170 Existing gas network.
Source: Waterloo - Utilities and Servicing Study, AECOM, 2020

- Gas**
- 1 Existing 110mm diameter main
- 2 Existing 75mm diameter main
- 3 Existing 50mm diameter main
- 4 Existing 30mm diameter main

Jemena currently supplies gas to the area through existing gas mains

The extensive network of gas mains within the Estate include:

- An external secondary trunk main (1,050kPa) that lies approximately 150m from the south boundary at the intersection of George and Allen Streets.
- A number of medium pressure 210kPa network mains that service existing buildings.

7.2 OPTIONS

7.2.1	Options Testing	280
7.2.2	Early Design Thinking	288
7.2.3	Concept Plan Options	290
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Place Performance Measures



7.2.1 OPTIONS TESTING

PUBLIC OPEN SPACE

Understanding opportunities and constraints to create an open space framework that meets the needs of the community

To best align with open space requirements, to provide 15% of the site area as open space (City of Sydney Open Space, Sports and Recreation Needs Study, Vol 2, 2016), a number of different locations for parks were explored. Options provided a better understanding of the Estate's opportunities and constraints such as topography, flooding and stormwater. With this understanding Waterloo Estate aims to provide an open space framework that maximises the opportunity to provide parks with flexibility and the capacity to meet the diverse needs of the community.

PRIMARY PARKS

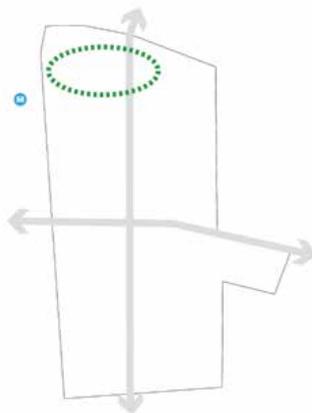


Fig. 7.2.1 Primary park Option 1

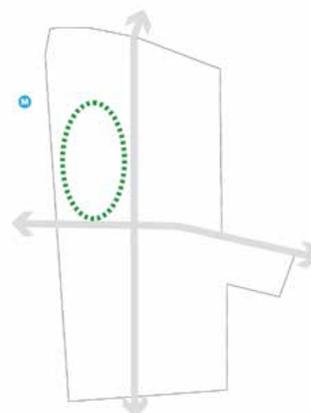


Fig. 7.2.2 Primary park Option 2

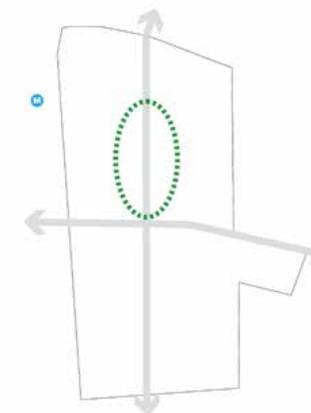


Fig. 7.2.3 Primary park Option 3



Legend

- Public Open space location
- Existing Lkey lcal cross streets
- Waterloo Station

OPTION 1

Summary

- Compound shape with east/west orientation.
- Northern location reduces 400m catchment within the Estate.
- Three street frontages.
- Topography not level.
- Does not have potential to assist in stormwater detention.
- No control over building height and shade to north.
- Close to but not adjoining Waterloo Metro.

- Public Open space location
- Existing Lkey lcal cross streets
- Waterloo Station

OPTION 2

- Compound shape with north/south orientation.
- Central location increases 400m catchment within the Estate.
- Four street frontages.
- Topography generally level.
- Has potential to assist in stormwater detention.
- Control over building height and shade to north as part of Estate.
- Immediately adjoins Waterloo Metro Station and Metro Quarter (with the majority of Metro Quarter frontage shared).

- Public Open space location
- Existing Lkey lcal cross streets
- Waterloo Station

OPTION 3

- Compound shape with north/south orientation.
- Central location maximises 400m catchment within the Estate.
- Three street frontage.
- Topography generally level on west side but steeper on east side.
- No significant potential to assist in stormwater detention
- Control over building height and shade to north as part of Estate.
- Close to but does not immediately adjoin Waterloo Metro Station and Metro Quarter.
- George Street divides open space.

SECONDARY PARKS

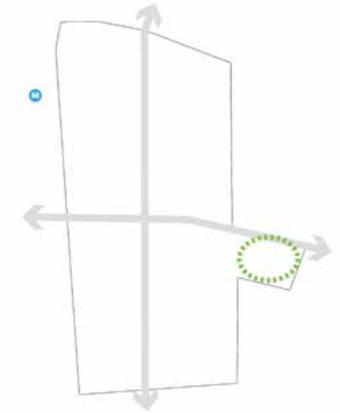
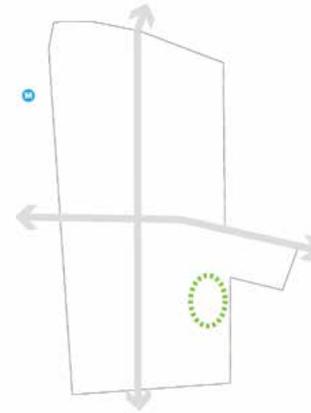
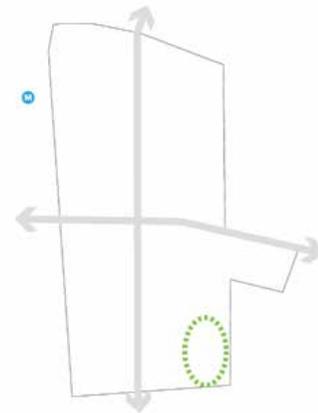
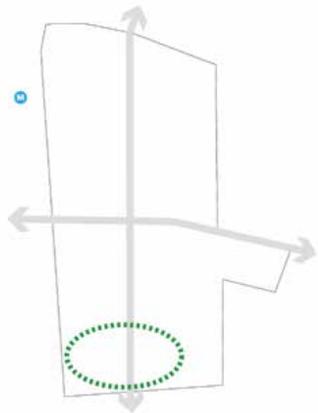


Fig. 7.2.4 Primary park Option 4



Fig. 7.2.5 Secondary park Option 1



Fig. 7.2.6 Secondary park Option 2



Fig. 7.2.7 Secondary park Option 3



Legend

- Waterloo Estate
- Public Open space location
- Existing Lkey lcal cross streets
- Waterloo Station

- Public Open space location
- Existing Lkey lcal cross streets
- Waterloo Station

- Public Open space location
- Existing Lkey lcal cross streets
- Waterloo Station

- Public Open space location
- Existing Lkey lcal cross streets
- Waterloo Station

OPTION 4

- Compound shape with east/west orientation.
- Topography not level throughout.
- Four street frontages.
- Adjoins arterial road on south (McEvoy Street).
- No significant potential to assist in stormwater detention.
- George Street divides open space.

OPTION 1

- Compound shape with north/south orientation.
- Two street frontages.
- Close to arterial road on south (McEvoy Street).
- Enhances Waterloo Park by extending total area.
- Topography relatively steep.
- Control over building height and shade to north as part of Estate.

OPTION 2

- Compound with square shape.
- Two street frontages.
- Away from arterial roads.
- Enhances Waterloo Park by extending total area and immediately adjoins small existing level area of park to east.
- Topography relatively steep.
- Control over building height and shade to north as part of Estate.

OPTION 3

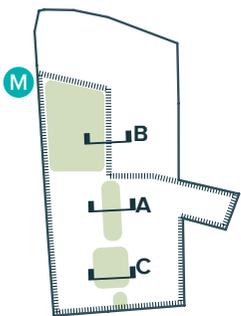
- Compound square shape with east/ west orientation.
- Four street frontages.
- Away from arterial roads.
- Enhances Waterloo Park by extending total area and immediately adjoins small existing level area of park to south.
- Topography relatively steep, but existing buildings create large level platform area.
- No control over building height and shade to north as not part of Estate, although currently low-rise HCA..



GEORGE STREET INTERIM OPTIONS

Retention of existing condition

The existing George Street condition favours vehicular travel and parking. The cycleway runs north-south along the eastern edge. Often the wide carriageway reduces the space and opportunity available for comfortable pedestrian movement. The canopy coverage between Wellington and Raglan streets is minimal given the reduced verge along the eastern edge.



BETWEEN WELLINGTON & JOHN STREETS SECTION A

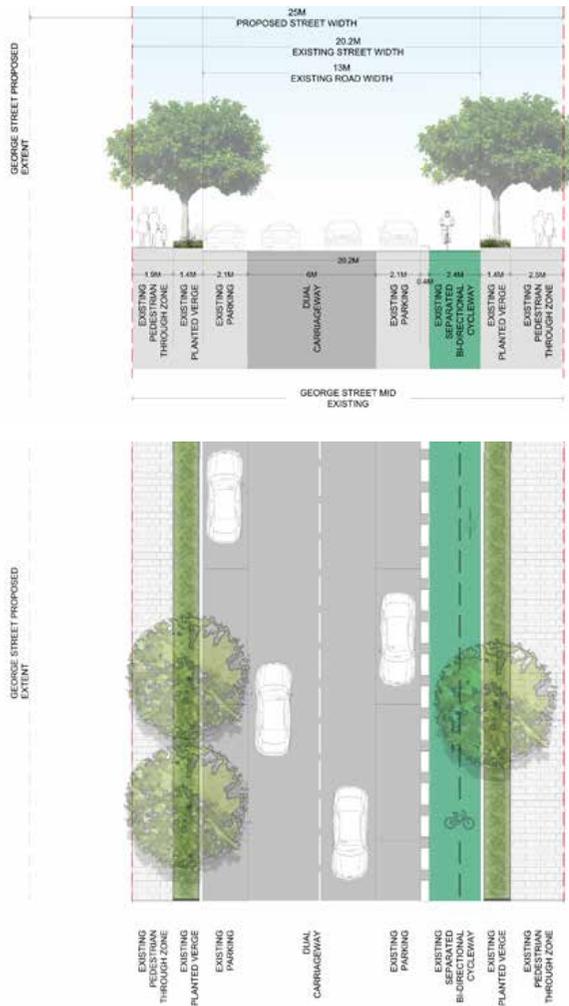


Fig. 7.2.8 George Street Mid 25m

BETWEEN RAGLAN & WELLINGTON STREETS SECTION B

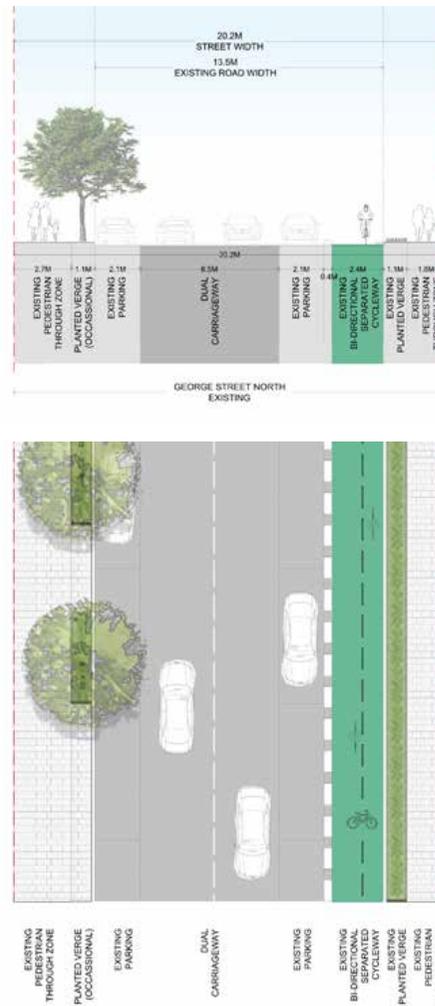


Fig. 7.2.9 George Street North 20m

BETWEEN JOHN & MCEVOY STREETS SECTION C

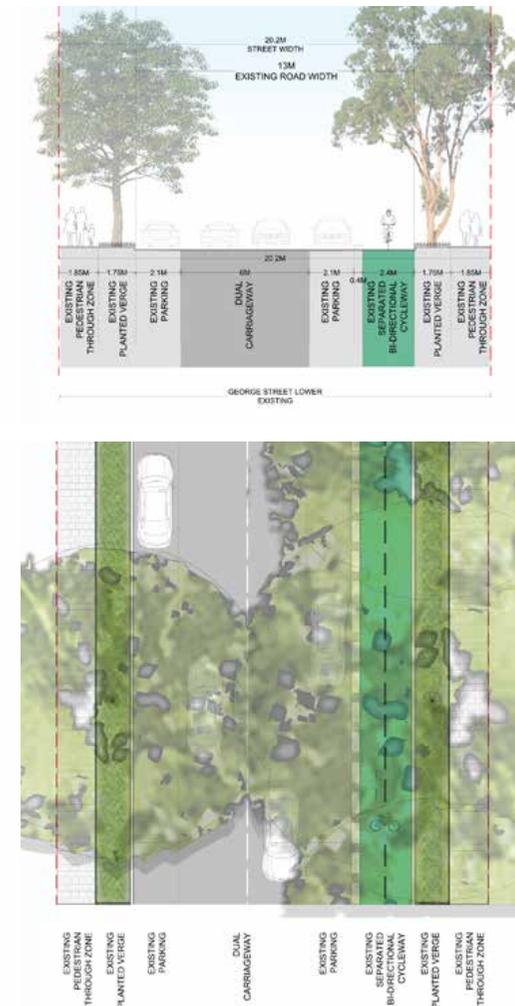
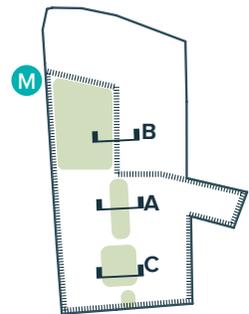


Fig. 7.2.10 George Street South 20m

Option 1

Option 1 is influenced by the addition to the eastern cyclway of a planted verge, buffering the existing cyclway from the carriageway. The planted verge will increase the opportunity for tree planting, particularly between Raglan and Wellington Street. However, it reduces the opportunity to improve the existing public through zone and public domain furniture zones on both the western and eastern edges.



BETWEEN WELLINGTON & JOHN STREETS SECTION A

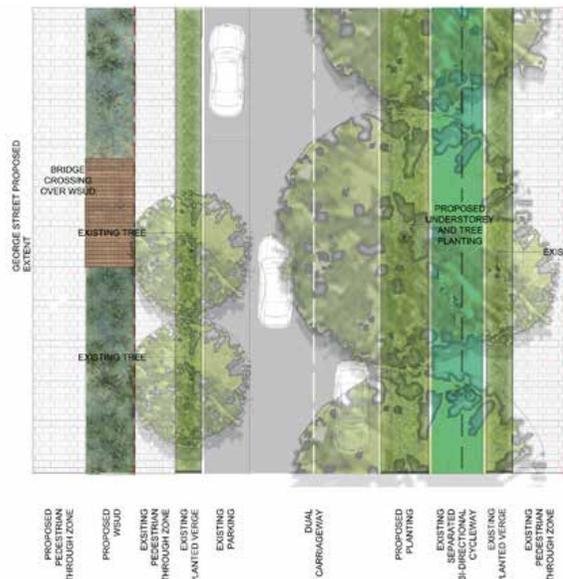
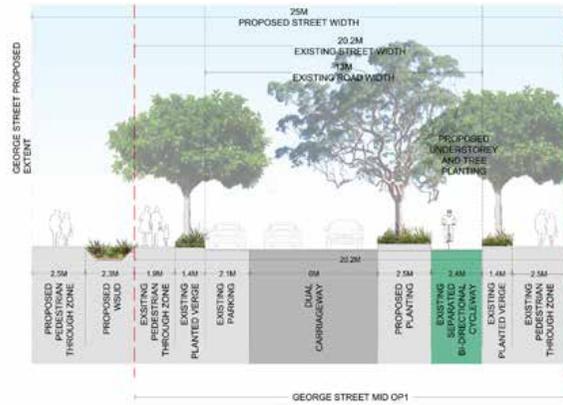


Fig. 7.2.11 George Street Mid 25m

BETWEEN RAGLAN & WELLINGTON STREETS SECTION B

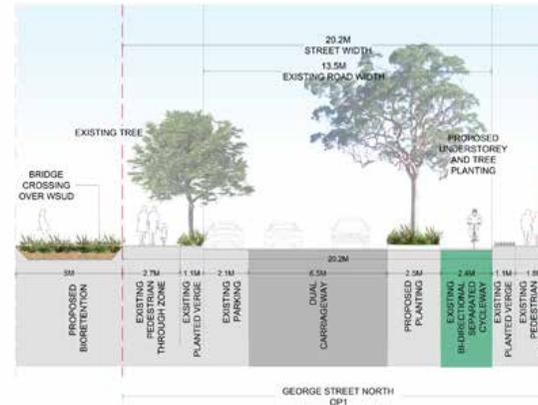


Fig. 7.2.12 George Street North 20m

BETWEEN JOHN & MCEVOY STREETS SECTION C

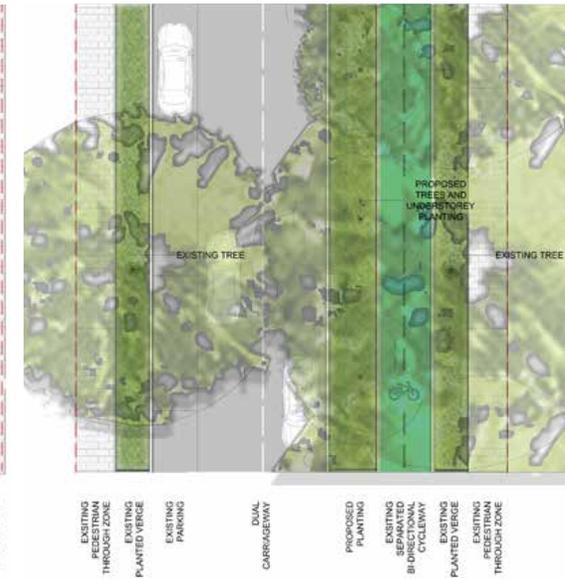
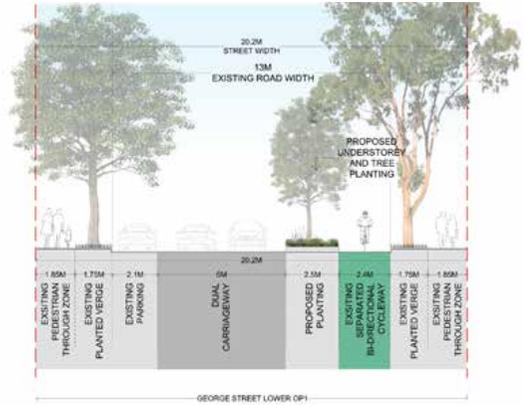


Fig. 7.2.13 George Street South 20m



GEORGE STREET INTERIM OPTIONS

BETWEEN WELLINGTON & JOHN STREETS SECTION A

BETWEEN RAGLAN & WELLINGTON STREETS SECTION B

BETWEEN JOHN & MCEVOY STREETS SECTION C

Option 2

Option 2 shifts the existing cycleway into the eastern parking lane. Whilst this option does increase the public domain furniture zone and pedestrian through zone, it does not maximise their potential across both the eastern and western edges along the entire length of George Street.

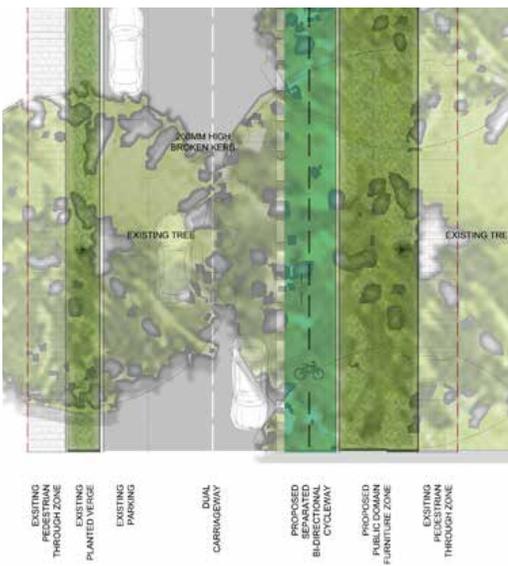
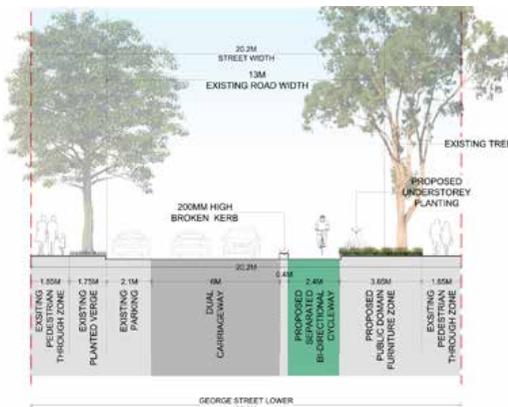
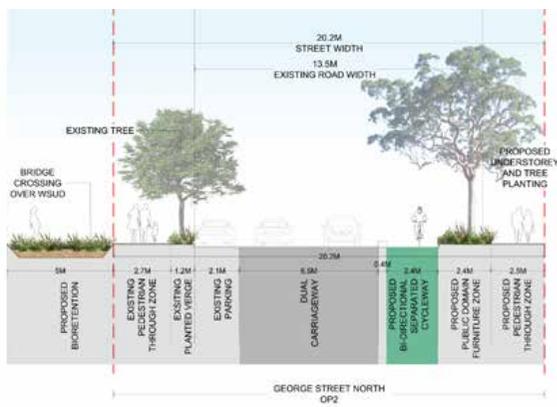
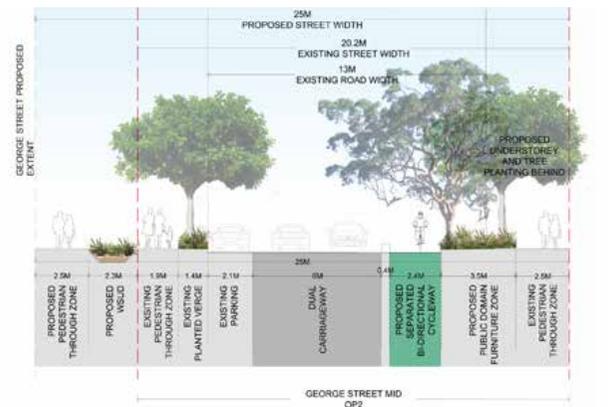
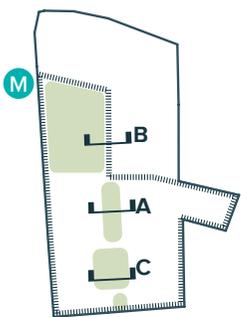


Fig. 7.2.14 George Street North 20m

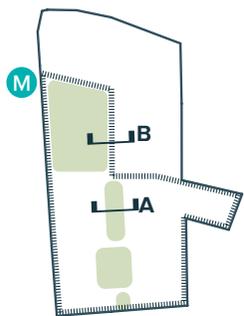
Fig. 7.2.15 George Street North 20m

Fig. 7.2.16 George Street South 20m



Option 3

Option 3 expands upon the concept of option 2. Whilst the cycleway remains shifted into the existing eastern parking lane, there are more improvements and modifications made to the adjacent footpath and public domain. The verges on both sides are widened to ensure the best opportunity for increased canopy coverage across the entire length of George Street. Similarly, the pedestrian through zone is maximised on both the eastern and western edges, allowing a clear movement zone from north to south, using the adjacent park interfaces and widening to further build upon this. A broken kerb separates the cycleway from the carriageway.



BETWEEN WELLINGTON & JOHN STREETS SECTION A

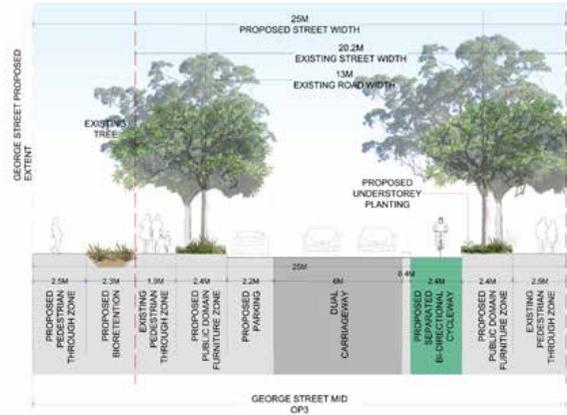


Fig. 7.2.17 George Street Mid 20m

BETWEEN RAGLAN & WELLINGTON STREETS SECTION B

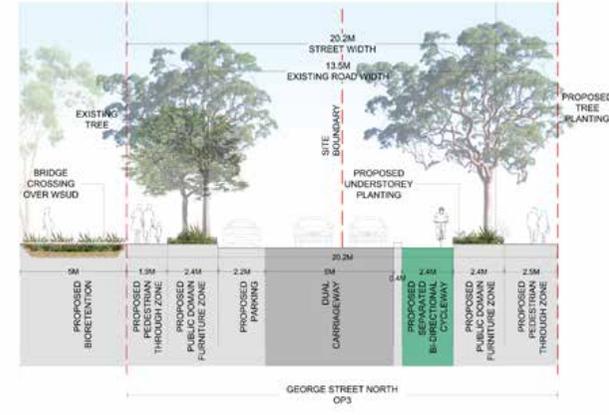


Fig. 7.2.18 George Street North 20m

Option 2 Variation to the City of Sydney Tree Diversity Mix to achieve a higher replacement ration

Replacement trees provided in option 2 are developed to increase canopy coverage in a manner appropriate to the street forms provided, based on varying the City of Sydney tree size diversity mix:

Extra Large / Civic	6%	41
Large	33%	211
Medium	45%	294
Small	16%	104
TOTAL	100%	650

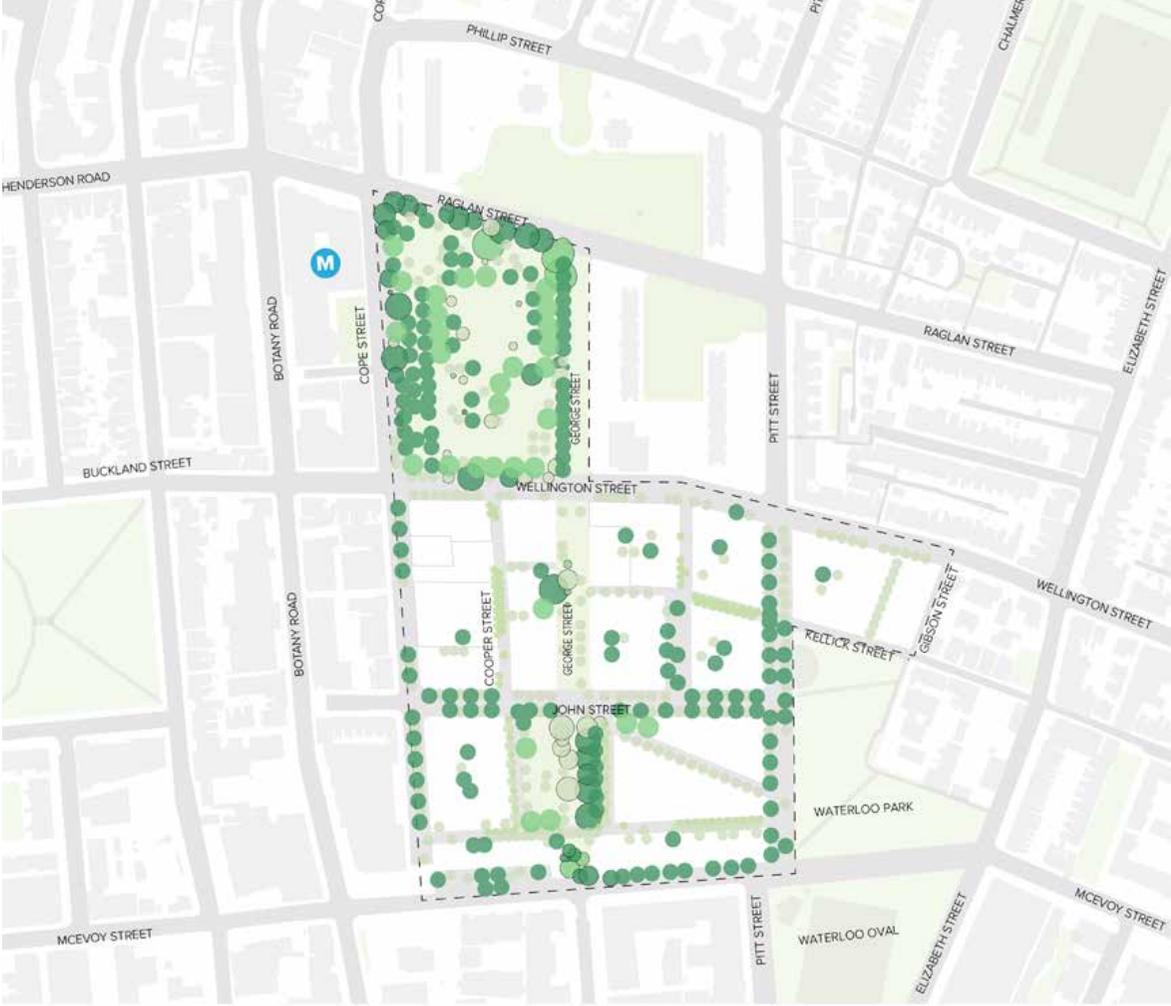


Fig. 7.2.20 Tree replacement option - Site specific

W 7.2.2 EARLY DESIGN THINKING

Six scenarios were explored, focusing on a set of influences or circumstances to understand the place characteristics that evolved

Strengths

A set of strengths, potential outcomes and potential challenges of the place characteristics created through each scenario emerged.

The Street Level Experience

HOW GREEN?

- Centrally located 2 hectare park
- Retains a portion of the current Waterloo Green
- Prioritises pedestrian and cycle movement
- Retains all moderate and significant trees within the new public domain
- Characterises Waterloo Station as a park environment
- Connects people to nature and food production
- Optimises age diversity objectives of play and rest with a new community route for all ages and abilities
- Improves the usability of Waterloo Park

HOW LOW?

- Reduces the overall number of tall buildings
- Supports density and height focused on the Metro Quarter
- Creates shared courtyards
- Reinforces the major existing streets
- Supports fine grain retail



Fig. 7.2.21. Multi-layered integration of vegetation



Fig. 7.2.22. Utilising height to benefit urban and open space relationship

Potential Outcomes

- 25 percent total open space (15% public open space and 10% contributory open space)
- Retain all moderate and significant trees (33%)
- Access to open space within 250m of Estate residents
- Range of heights from 4-32 storeys
- Retain elements of Waterloo Green

- Average 12 storey heights
- Range of heights from 8-15 storeys
- No tower buildings
- Reduced contributory open space areas
- Communal open spaces at roof level

Potential Challenges

- Increased number of taller buildings
- Management challenge of increased open space
- Delivery challenge of green architecture

- Environmental performance of streets
- Environmental performance of open space
- Pressure on street widths for 'link-place' outcomes
- Large plots lack ability to provide diverse typologies
- 'Wall' effect created due to lack of break up of built form

HOW CONNECTED?

- Creates a greater hierarchy of streets and social spaces
- Reduces walking journey times
- Creates more ground floor frontage with active street edges
- Creates smaller plots and a greater diversity of buildings
- Creates a variety of open spaces
- Supports a safe and connected pedestrian environment



Fig. 7.2.23. Creating hierarchy of movement and open space

HOW CENTRED?

- Provides density and height at the centre of the site
- Provides sensitive interfaces with the existing context
- Creates a large and flexible park
- Provides a central activity centre supporting a local community gathering place at Waterloo Station



Fig. 7.2.24. Facilitating activity and community

HOW DIVERSE?

- Finer grain uses that respond to the diverse character areas surrounding the Precinct
- Co-location of new uses with existing site qualities
- Adaptation and re-use of existing building fabric and spaces
- Diversity of plot sizes
- Provides a variety of open space typologies within 200 metres walking distance of Estate residents
- Co-location of open spaces with a variety of community uses



Fig. 7.2.25. Inter-mixing uses to encourage activity

HOW BLUE?

- Reinforces the cultural significance of water
- Creates a direct connection between Waterloo Metro Station to sustainable transport links
- Reduces the urban heat island effect
- Maximises the integration of storm water management within the public realm
- Optimises child focused design and learning
- Increases the amount of built form frontage to high quality open space



Fig. 7.2.26. Use of blue and green elements form identity and improve open space enjoyment

- Greatest number of tall buildings
- Greater number of plots at various sizes
- Opportunity to form more fine grain developments
- Increased connectivity through the ground plane
- Greatest opportunity for non-residential ground plane

- Activity centre created around the Metro Quarter
- Connection from new park to current Waterloo Green
- Provides most sensitive interface with built form context
- Increased built form with address to park
- Range in heights from 4-32 storeys

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- Activity centre created around the Metro Quarter
- Connection from new park to current Waterloo Green
- Provides most sensitive interface with built form context
- Increased built form with address to park
- Range in heights from 4-32 storeys

- Increased number of taller buildings
- Management and maintenance of increased public realm area

- Park is internalised within the Estate
- Compact centre creates largely residential quarters
- Flood management and mitigation

- Park is internalised within the Estate
- Compact centre creates largely residential quarters
- Flood management and mitigation

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- Compact centre creates largely residential quarters
- Flood management and mitigation

W 7.2.3 CONCEPT PLAN OPTIONS

Three concept plan options were explored to understand different place characteristics and outcomes

WATERLOO ESTATE



Fig. 7.2.27. A diverse use of built and open forms

Waterloo Estate explored a variety of parks, community services, spaces and events connected by fine grain pedestrian focused streets building on the diversity that characterises Waterloo’s natural, social and built environment

Responds to the following community considerations:

- Responds to resident’s aspirations for culture and community life with a variety of communal spaces for arts, recreation and recognition of Aboriginal culture and heritage.
- Respects the social significance of existing Waterloo Green for current residents.
- Acknowledges desire for improved housing and neighbourhood design with limited through traffic for quieter streets.
- Supports need for a diverse range of outdoor features for all peoples and ages.

WATERLOO VILLAGE GREEN



Fig. 7.2.28. Utilising green and blue elements as primary urban elements

Waterloo Village Green explored the characteristics of connecting parks, community services, spaces and events through a continuous walkable ‘blue-green’ corridor that connects people to Waterloo’s unique natural and cultural heritage

Responds to the following community considerations:

- Recognises and celebrates the significant Aboriginal culture and heritage of the area.
- Responds to community desire for green spaces, gardens, trees and wildlife, and outdoor communal spaces for social connection and creativity.
- Acknowledges desire for improved access to transit, increased pedestrian pathways and limited through-traffic.

WATERLOO PARK



Fig. 7.2.29. Connecting local services and facilities through green spaces and routes

Waterloo Park explored the characteristics of a centralised Waterloo Village around the primary park with a walkable ‘green line’ connecting people to key community services, spaces and events

Responds to the following community considerations:

- Responds to community desire for open green spaces, gardens, trees and wild life.
- Addresses request to accommodate multiple public realm uses such as shaded resting areas, private courtyards, playgrounds, active recreation and community events.
- Supports need for cultural event spaces, a large community centre and recognition of Aboriginal culture and heritage.



OPEN SPACE APPROACH

Three approaches to the public domain and open space

WATERLOO ESTATE

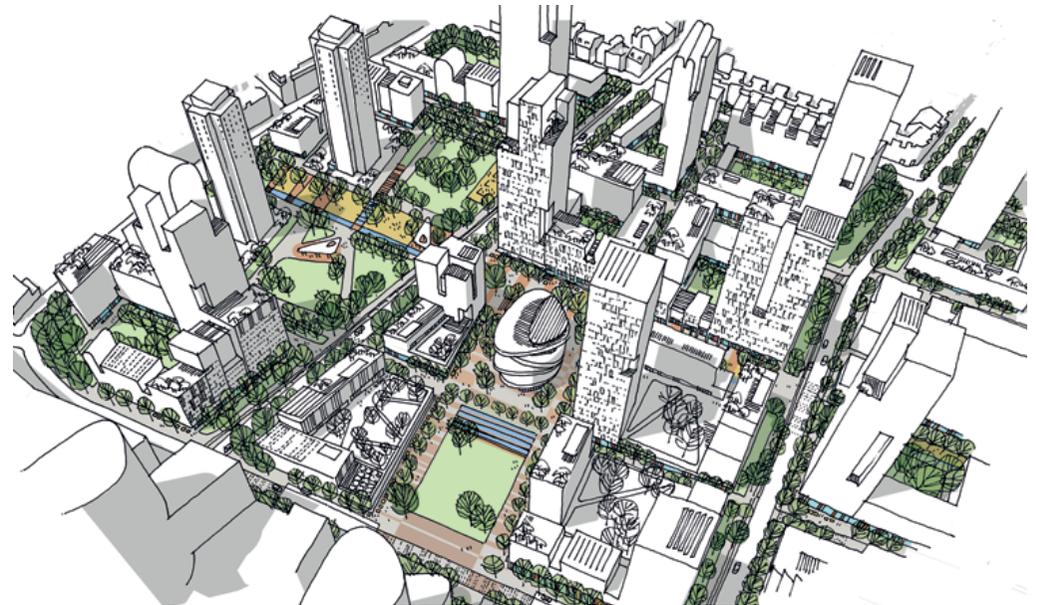


Fig. 7.2.30. Multiple built and open spaces provide a diverse identity

A social place celebrating the historical character of Waterloo with a mix of parks and streetscapes supporting a local village atmosphere

A combination of smaller parks, local retail streets and social corners offer residents and visitors greater choice of street life experiences and acknowledges the historical role of commerce in the area. The series of open spaces support a range of local resident amenity such as food gardens, playgrounds, arts and craft areas, Aboriginal culture spaces, sport courts, chess tables and BBQ areas for people of all backgrounds and ages to enjoy.



Fig. 7.2.31 View of Waterloo Green
Source: Tim Throsby (illustrator), 2018

WATERLOO VILLAGE GREEN

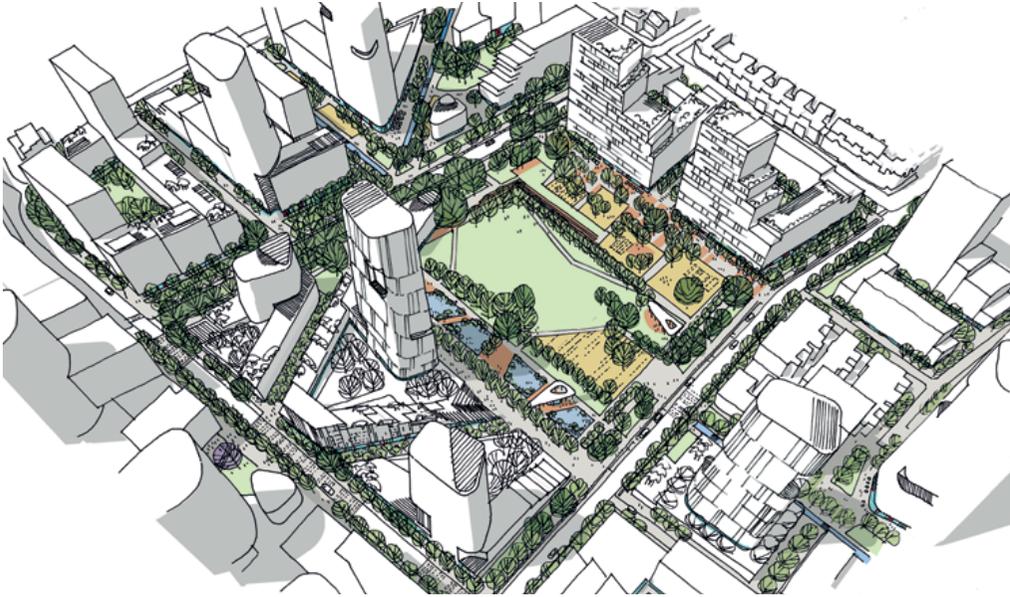


Fig. 7.2.32. A central open space facilitates the community

A distinctive place which connects people to nature with enhanced connections to the Metro Station

The primary “Village Green” considers a diverse range of cultural, community and recreational amenity spaces for local residents and visitors of all ages to appreciate. Commercial, cultural, and community use spaces are concentrated along the east-west ‘green’ boulevards anticipating pedestrian flows to and from the Metro Station.



Fig. 7.2.33 View of Village Green
Source: Tim Throsby (illustrator), 2018

WATERLOO PARK

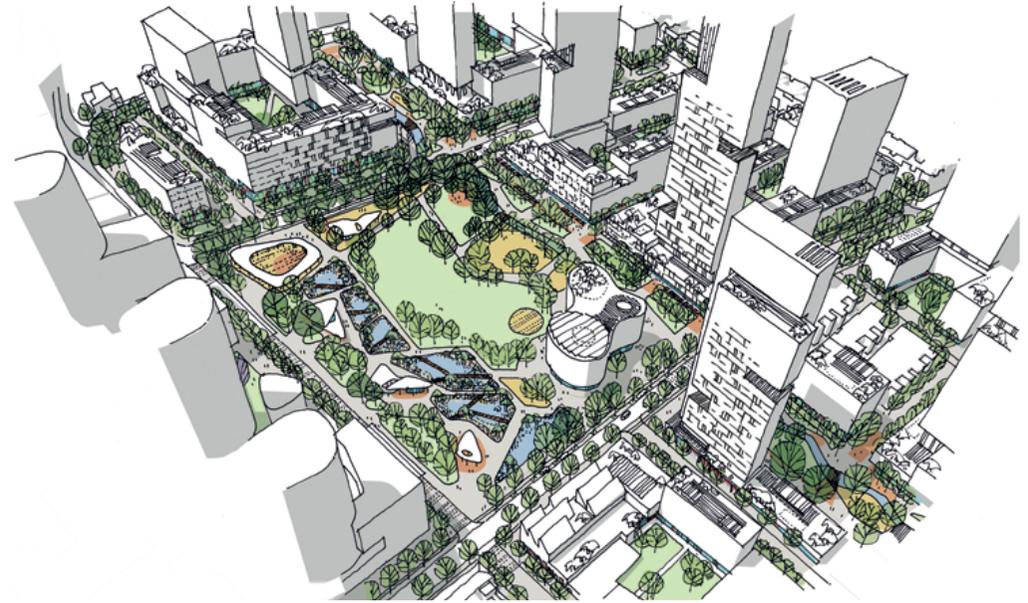


Fig. 7.2.34. Connecting the surroundings to a new hub

A comfortable place which acknowledges the Metro Station as a new regional ‘hub’ with a large community park

A new and expanded “Waterloo Park” is located next to the station. Consideration has been given for a diverse range of food, fitness, play, Aboriginal culture and community spaces within the park to make it safe and enjoyable for all ages. The park’s significant water features acknowledge the indigenous heritage of the site and naturally treat and store storm water. The park edges are activated by a mix of retail and community use facilities.



Fig. 7.2.35 View of Waterloo Park
Source: Tim Throsby, 2018



BUILT FORM APPROACH

Three approaches to urban and built form

WATERLOO ESTATE

Tall Buildings - Neighbourhood Level (16+ storeys)

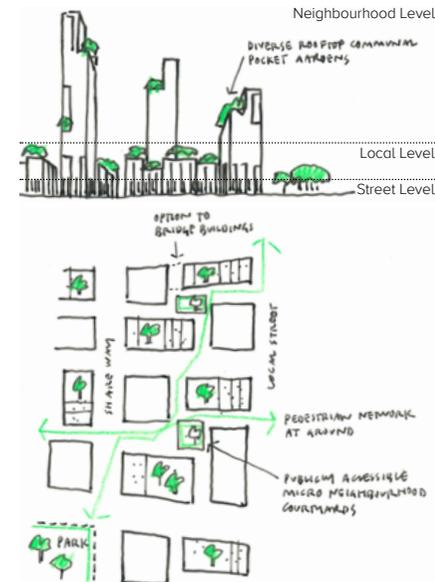
- Footprints between 600-675m².
- Maximised dual aspect or corner apartments.
- Excellent cross-ventilation opportunities
- Skinny 'pencil' tower that meets the ground.
- Potential for 'infill' tower within fine grain ground plane.
- Diverse distribution of height to follow rich and varied ground plane.
- High and low heights 'checker board' in plan to enable tight shared streets.

Mid Rise - Local Level (8-15 storeys)

- Building forms 'extruded' fine grain pattern to maintain vertical diversity allowing for micro sites within lots.
- Varied street scape with rich palette of form, material and character.
- Buildings 'frame' an internal network of publicly accessible open space allowing more corners.
- Roof scape provides communal green space with good amenity to support towers.

Low Rise - Street Level (1-6 storeys plus attic)

- Super fine grain similar to historic pattern allowing for adaptability to incorporate existing buildings, trees and topographical features.
- Increased permeability and intersection nodes.
- Maximum flexibility.



A broad range of residential building forms and heights distributed throughout the Precinct offer a variety of different housing options. Taller buildings are located in a manner which respects existing densities of the surrounding area. Streets are primarily defined by low-rise buildings offering a more pedestrian friendly experience.



Fig. 7.2.36. Diversity in built form

WATERLOO VILLAGE GREEN

Tall Buildings - Neighbourhood Level (16+ storeys)

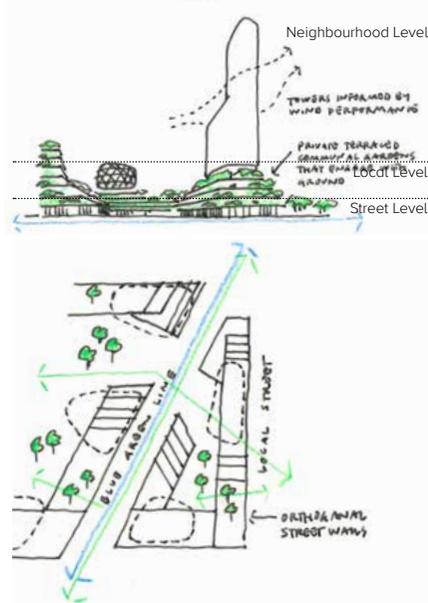
- Footprints between 600-900m².
- Responds to natural elements and environmental factors.
- Independent from plinth to allow for civic and community uses at base.
- Tall buildings become 'place' markers for each micro community.
- Opportunity for high performance buildings that minimise impacts to neighbours.

Mid Rise - Local Level (8-15 storeys)

- Buildings along 'disrupted' edge embrace the landscape with open arm courtyards.
- Encourage change of scale through landscape between street and rooftop gardens.
- Height varied or terraced to introduce landscape at each level.
- Edges to Precinct perimeter adopt similar change in scale.

Low Rise - Street Level (1-6 storeys plus attic)

- Introduce finer grain that enjoys aspect to landscape edges.
- Reduced wind and heat impacts at street level.
- Increased green aspect at street level.



A variety of block shapes, residential building forms and heights allow for interesting architectural responses for home types and streetscapes with taller buildings located along wider east-west boulevards.



Fig. 7.2.37. Open space is framed by a diverse surrounding urban fabric

WATERLOO PARK

Tall Buildings - Neighbourhood Level (16+ storeys)

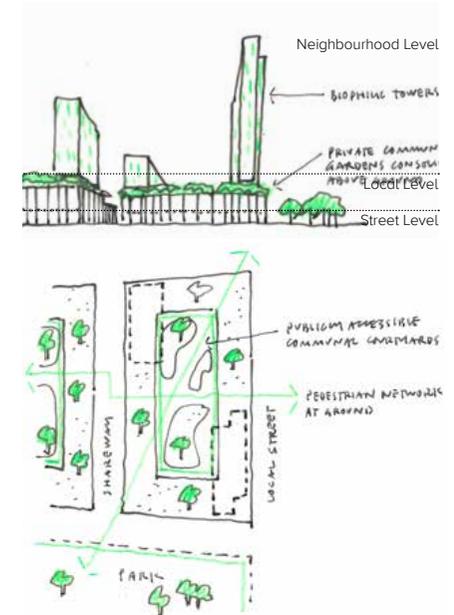
- Footprints between 600-900m².
- Oriented to maximise solar performance and views to open space.
- Disengaged from plinth to allow elevated private communal open space with good amenity.
- Tall buildings strengthen edges of key open space (eg. Central Park, New York City)
- Efficient floor plates.

Mid Rise - Local Level (8-15 storeys)

- Building forms continuous perimeter street edge.
- Supports rooftop gardens for private communal activity in winter.
- Building forms backdrop to street tree canopy scale.
- Maintains good surveillance to all internal courtyard and perimeter public domain.
- Finer grain and materiality to suit street scale.

Low Rise - Street Level (1-6 storeys plus attic)

- Finer grain to support flexibility and economic sustainability for all uses and activities.
- Potentially recessed or zero lot line to create depth and variety along edge.
- Opportunity for street accessed terraces.
- Encourages ground level publicly accessible courtyards.



Residential buildings are arranged in a courtyard style supporting more uniform building heights and opportunities for more local communal spaces throughout the neighbourhood. Taller buildings are located around the park and along George Street.

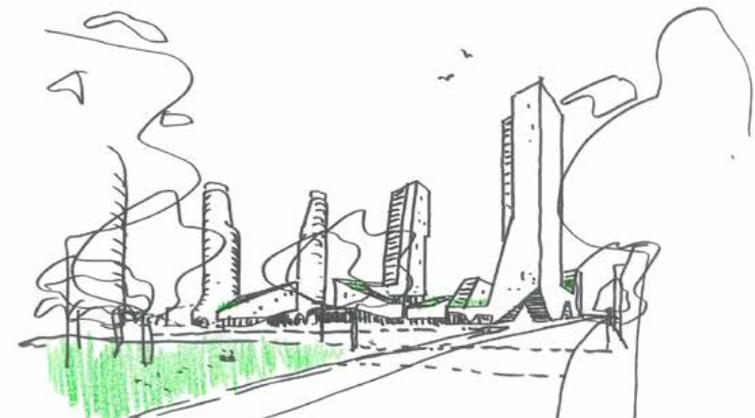


Fig. 7.2.38 Integration of green space and built form to key movement routes



STAGING APPROACH

Analysis and comparison of the possible staging and delivery of the three approaches provided an understanding of the strengths, potential outcomes and potential challenges

LOT STRUCTURE



Legend
■ Potential Staging Lots

WATERLOO ESTATE

WATERLOO VILLAGE GREEN

WATERLOO PARK

0m 300m

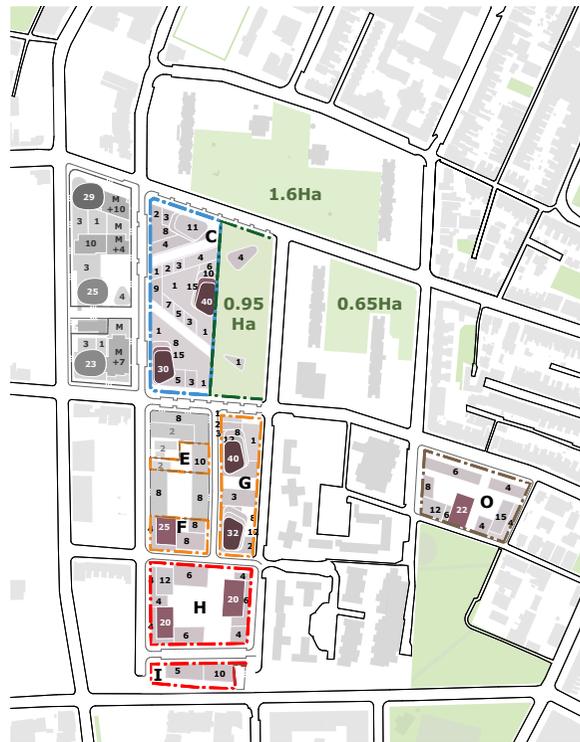
Fig. 7.2.39. Indicative future lot arrangements

STAGING 5 YEARS

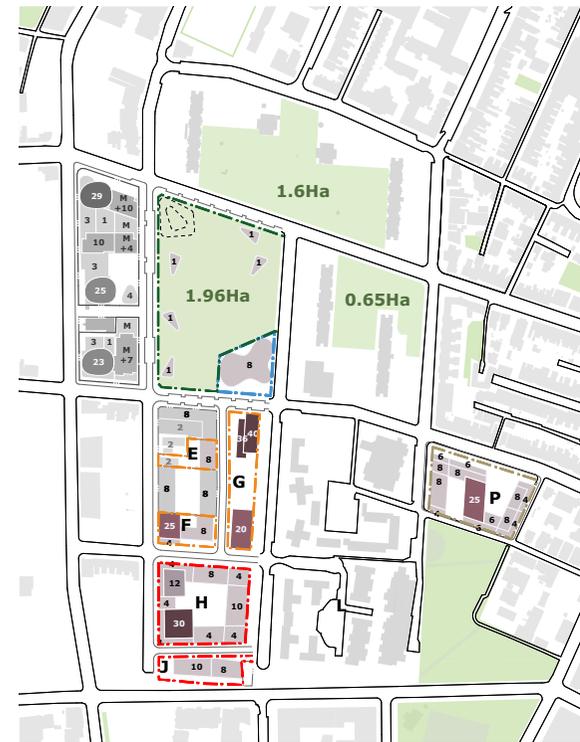
5 YEAR COMPARISON



WATERLOO ESTATE



WATERLOO VILLAGE GREEN



WATERLOO PARK



Fig. 7.2.40. Comparison of initial stages of development



STAGING 10 YEARS

10 YEAR COMPARISON



WATERLOO ESTATE

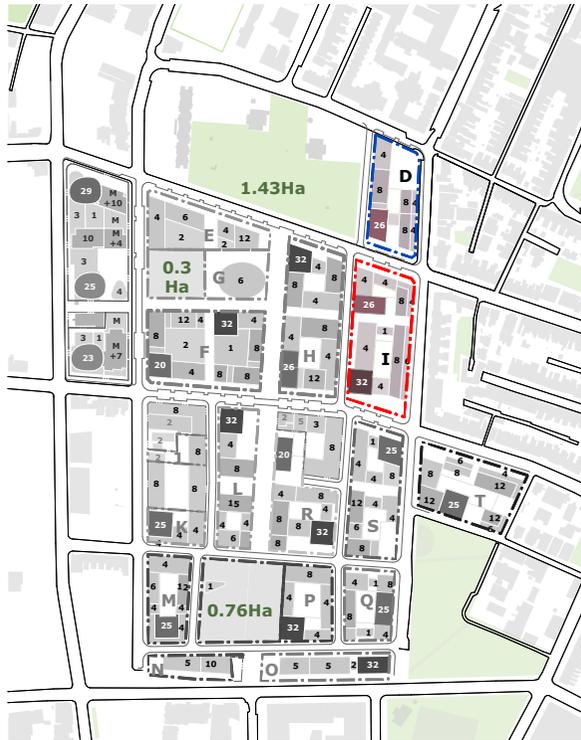
WATERLOO VILLAGE GREEN

WATERLOO PARK

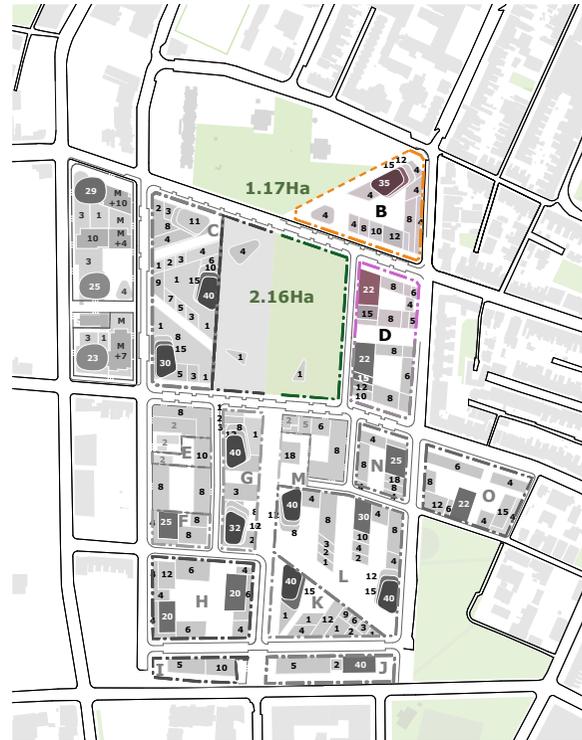
Fig. 72.41. Comparison of mid-stages of development

STAGING 15 YEARS

15 YEAR COMPARISON



WATERLOO ESTATE



WATERLOO VILLAGE GREEN



WATERLOO PARK

Fig. 7.2.42. Comparison of latter-stages of development



STAGING 20 YEARS

20 YEAR COMPARISON

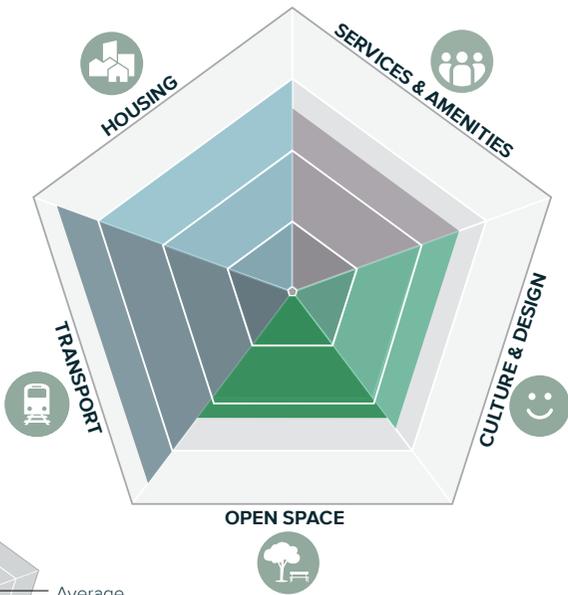


Fig. 72.43. Comparison of final stages of development

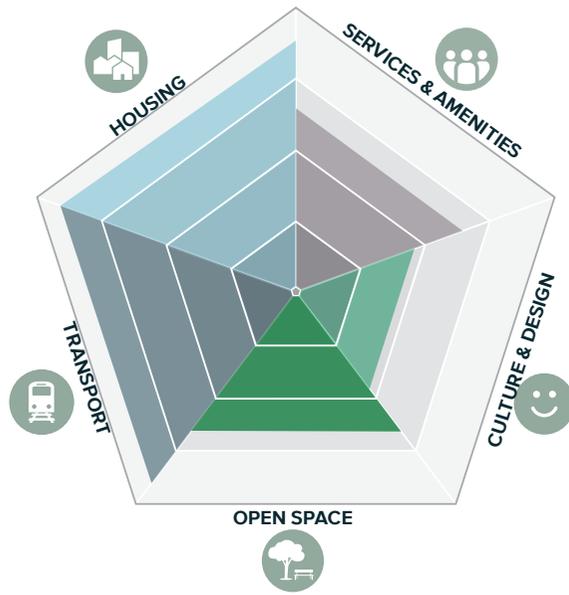
7.2.4 OPTIONS ASSESSMENT

PLACE PERFORMANCE MEASURES

WATERLOO ESTATE



WATERLOO VILLAGE GREEN



WATERLOO PARK

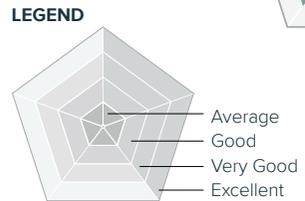
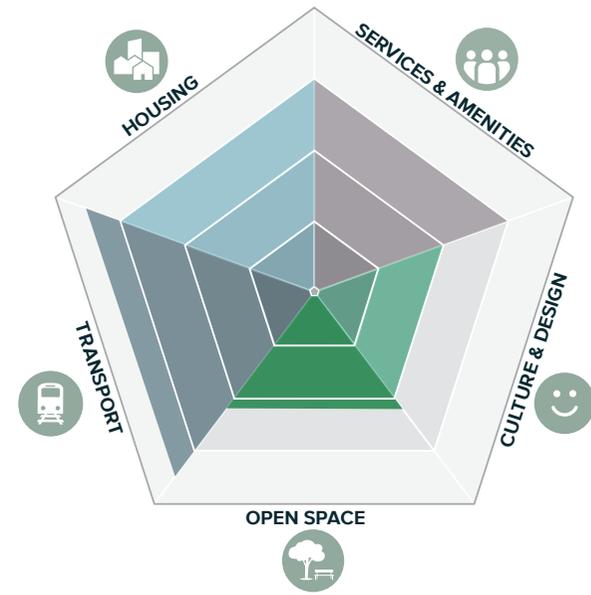


Fig. 7.2.44. Place Performance Measures



PLACE PERFORMANCE SCORECARD

OBJECTIVE	MEASURE	METRIC	CONCEPT PLAN OPTIONS									
			Base Target		Stretch Target		Waterloo Estate		Village Green		Waterloo Park	
Transport & Connectivity A well connected inner city location.	Walk Score	Walkability measure	95		100		100		98		95	
	Intersection Density	Percentage increase of intersection density over existing place per km2	35%		45%		112%		54%		100%	
	Block Size	Maximum dimension of block sizes	S 40% M 30% L 30%	S 50% M 25% L 25%	S 40% M 40% L 20%	S 21% M 58% L 21%	S 18% M 41% L 41%					
	Streets as Places	Number of potential activities per street	3 activities / block		5 activities / block		3		3		3	
Open Space & Environment High quality public spaces and a sustainable urban environment.	Tree Retention Ratio	Percentage of existing high and moderate value trees retained	50%		70%		42%		45%		41%	
	Tree Replacement Ratio	Replacement ratio for every high and moderate value tree removed	3.0 : 1		3.6 : 1		3 : 1		3 : 1		3 : 1	
	Green View Index	Percentage of canopy cover visible in the public domain at eye level	30%		36%		66%		50%		46%	
	Landscape Replacement Area	Percentage of	80%		100%		55%		78%		59%	
Culture & Design A safe and welcoming place to live and visit.	Building Entries	Number of building entries per 100 metres of building facade	10		15		11		10		12	
	Adaptable Ground Floor Frontage	Linear metre of active ground floor space	5,000 m		8,000 m		5,385 m		4,885 m		4,263 m	
		Floor to floor ceiling height	4.5 m - GL 3.6 m - L1		5.0 m - GL 3.6 m - L1		4.5 m - GL 3.6 m - L1		4.5 m - GL 3.6 m - L1		4.5 m - GL 3.6 m - L1	
		Depth and height of pedestrian shelter at the ground plane	3.2 m H x 3m D		3.2 m H x 3m D		3.2 m H x 3m D		3.2 m H x 3m D		3.2 m H x 3m D	
	Lot Frontage Widths	Mix of lot frontage widths (XS, S, M, L & XL)	XS 20% S 20% M 20% L 20% XL 20%	XS 20% S 20% M 20% L 20% XL 20%	XS 20% S 2.5% M 22.5% L 55% XL 20%	XS 2.5% S 10% M 32.5% L 45% XL 10%	XS 2.5% S 7.5% M 25% L 50% XL 15%					
Housing A fully, integrated urban village of social (affordable rental) and private housing.	Micro-Neighbourhoods	Number of micro-neighbourhoods	6		9		9		10		8	
	Vertical Village	Ratio of private communal space per resident	1 / 50 residents		1 / 40 residents		1 / 50 residents		1 / 45 residents		1 / 45 residents	
	Open Space Accessibility	Percentage of building entries to be within 100m of open space	80%		100%		95%		95%		93%	
Services & Amenities New improved services, facilities and amenities to support a diverse community.	Productive Garden Space	Area of productive garden provided per bedroom	0.5m ² / room		0.6m ² / room		0.5m² / room (20% in public domain)		0.5m² / room (25% in public domain)		0.5m² / room (30% in public domain)	
	Parks as Places	Number of activities per public open space	10 activities / park		12 activities / park		Waterloo Green - 11 George Street - 3 Urban Plaza - 5 South Park - 10		Central Park - 14 George Street - 3		Primary Park - 14 George Street - 8	
	Edible Landscapes	Percentage of edible species	30%		45%		30%		30%		30%	

LEARNINGS

OBJECTIVE	CONCEPT PLAN OPTIONS			KEY LEARNINGS
	Waterloo Estate	Village Green	Waterloo Park	
<p>Transport & Connectivity A well connected inner city location.</p>				<p>All concept plan options perform very well, given the proximity to the Metro station and a walkable street grid network, however the Waterloo Estate and Village Green concept plan options perform slightly better.</p>
<p>Open Space & Environment High quality public spaces and a sustainable urban environment.</p>				<p>All concept plan options perform well in terms of urban greenery. However, the Village Green concept plan option performs slightly better than the Waterloo Estate and Waterloo Park concept plan options because of better tree retention results and landscape replacement area.</p>
<p>Culture & Design A safe and welcoming place to live and visit.</p>				<p>The Waterloo Estate and Village Green concept plan options score highly. However, the Waterloo Estate concept plan option scores the highest because it provides the greatest amount of adaptable ground floors, building entries and lot diversity, contributing to a place with fine grain and high adaptability.</p>
<p>Housing A fully, integrated urban village of social (affordable rental) and private housing.</p>				<p>While the Waterloo Park and Village Green concept plan options provide quality housing density, the Waterloo Estate concept plan option provides the opportunity an additional micro neighbourhood whilst providing a comparable diversity of dwelling types with a high degree of open space accessibility.</p>
<p>Services & Amenities New improved services, facilities and amenities to support a diverse community.</p>				<p>The diversity of parks within the Waterloo Estate concept plan option provides a substantially increased opportunity for productive gardens, place activation and edible landscapes allocated across the precinct.</p>

7.3 PUBLIC DOMAIN

7.3.1	Framework, Strategy and Key Places	307
7.3.2	Access and Circulation, Streets and Materiality	323
7.3.3	Ecology and Biodiversity	347
7.3.4	Public Art, Signage and Wayfinding	363



Fig. 7.31 Baffi and Mo, Redfern

7.3.1 FRAMEWORK, STRATEGY AND KEY PLACES

The new and diverse public domain will invite the existing and future community of Waterloo to grow and experience a unique place where people are proud to live, work and play

Waterloo South, as the first stage of the renewal of Waterloo Estate, will set a new benchmark for urban renewal within Sydney and create a place for a growing community as part of Waterloo's transformation. The public domain strategy forms part of the project proposition to deliver the Vision and Project Objectives for the Estate. The public domain response provides a comprehensive vision and strategy for the public domain framework that will help define the Indicative Concept Proposal for Waterloo South.



PUBLIC DOMAIN RESPONSE

Creating a welcoming environment that will grow and change with the community over time, strengthening the existing community and creating new communities

The public domain and open space responses are guidelines that help achieve the project vision and objectives. The five over-arching responses help shape public domain and open space design considerations to create a public domain that will function as a binding agent for Waterloo South and the Estate, creating a network of legible, accessible and flexible spaces for people to interact and strengthen Waterloo's community.

PUBLIC DOMAIN AND OPEN SPACE AS AN INTEGRATED GREEN SYSTEM



Fig. 7.3.2 TL Bryant Park, NYC TR: South Boulevard, Copenhagen, 2016
BL: Printing Press Communal Roof NYC. BR: Central Park, Sydney

Strengthening Waterloo's green grid, whilst enhancing the communities health and well being within an urban environment by providing connections to nature through public domain and open space

The public domain and open space will need to promote a sense of health and well-being across the diverse community by providing high quality and sustainable public domain that is safe, welcoming, accessible and connects people to nature. Waterloo South has the opportunity to create a series of integrated green systems by retaining key existing trees and canopy, maximising access to open space, reinforcing and strengthening district green grid connections, and incorporating biophilic design principles (by designing with an understanding of the need to connect with nature), to contribute to climate mitigation and create a healthy, liveable urban environment.

WALKABLE AND ACTIVATED PUBLIC DOMAIN AND OPEN SPACE



Fig. 7.3.3 TL: Cafe Breakout, Redfern TR: AECCAFE, Kensington Street, Sydney
BL: New Road, Brighton BR: NAIDOC Week, Redfern

Create better walking environments by activating the public domain and strengthening the community's connection with Waterloo at eye level whilst providing a safe environment for pedestrians and cyclists

Waterloo South will need to be a highly walkable place. The public domain will harness opportunities to create a linked and diverse network of spaces, and deliver a fine grained urban grid, to support and promote a highly walkable place. Opportunities for highly activated and diverse streets, laneways and pedestrian links will create an urban neighbourhood for people that is safe, walkable and connected.

CONNECTED BLUE GREEN INFRASTRUCTURE AND SUSTAINABILITY NETWORK

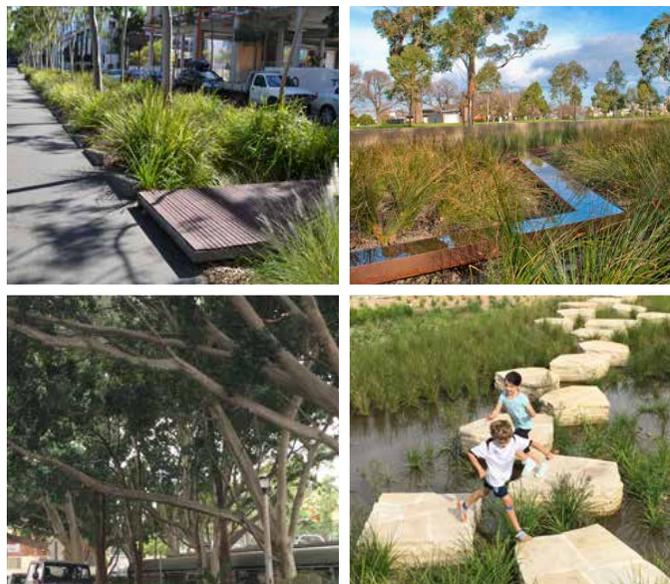


Fig. 7.3.4 TL: Victoria Park, Sydney. TR: Edinburgh Raingarden, Melbourne
BL: Waterloo. BR: Sydney Park, Sydney

Establish a public domain and open space network that enhances and mitigates existing Blue-Green systems whilst creating opportunities to encourage bio-diversity and contribute to a GreenStar community

With an increased global and community focus on environment and sustainability, ensuring Waterloo South adopts similar attitudes is primary. Blue-Green infrastructure includes an extensive approach to street tree planting, understory planting, bio-retention and tree pits. This network of infrastructure works to support and improve existing habitat arrangements and biodiversity. Integrating elements of play and exploration within the network promotes an awareness and presence of the network and infrastructure throughout the community.

CREATE AN ACCESSIBLE PLACE



Fig. 7.3.5 TL: Bryant Park, NYC. TR: Brooklyn Grange, NYC
BL: Laneways, Melbourne. BR: Sydney University Library Lawn, Sydney

Provide an all ages place with a diverse range of activation types and create spaces that are adaptive to the needs of an evolving community

The public domain and open space network needs to support the diverse community by providing an adaptable and flexible public domain network. Waterloo South presents opportunities to create safe and pleasant connections between key destinations for people of all ages with a high level of amenity, activity and inclusiveness.

CULTURAL INTEGRATION AND INTERPRETATION



Fig. 7.3.6 TL: Bush Traders, Darwin. TR: Street Art Melbourne, Matt Adante
BL: Pitt Street Mall, Sydney. BR: Chippendale Green, Sydney

Provide an art and culture strategy that encourages and interprets culture and environment whilst integrating with the existing and future urban fabric

Cultural interpretation and integration will be present in numerous forms and styles including street art, temporary events, Indigenous programmes and street performance. The variety of large and more intimately scaled public spaces will serve to facilitate these activities by offering a spatial platform and occasional vertical canvas for the arts to manifest. Of particular importance is the capacity for Indigenous representation and engagement. Indigenous arts and sculpture will provide visual diversity and connect to the past, present and future Indigenous presence within Waterloo.



PUBLIC DOMAIN STRATEGY

Creating a welcoming environment that will grow and change with the community over time, strengthening existing and creating new communities

The renewal of Waterloo South will create an environment for people. The public domain will be inviting and set the foundation for a unique neighbourhood where the existing and future communities of the Estate can grow, and experience a place where people are proud to live, work and play.

The public domain aims to put the community first. By creating a pedestrian priority precinct, the public domain will provide an active, safe and adaptive environment that promotes community interaction through flexibility of uses, and a diverse hierarchy of spaces where people can gather, meet and relax. Streets will be places of social connectedness through the inclusion of activated street interfaces, and an energised ground plane where buildings contribute positively to the public domain.

Waterloo South will become a place that is inclusive, inviting and welcoming, engendering a strong sense of belonging within the community; a place to share, experience, engage and interact. The public domain will harness Waterloo's existing character of strength, integrity and resilience, creating a dynamic and vibrant neighbourhood, where residents and visitors experience an Estate that engages with the whole of Waterloo and is a welcoming place.

The public domain strategy demonstrates consideration and application of City of Sydney's public domain codes where appropriate. These include the Sydney Streets Technical Specification (2013) and other relevant City of Sydney design codes.

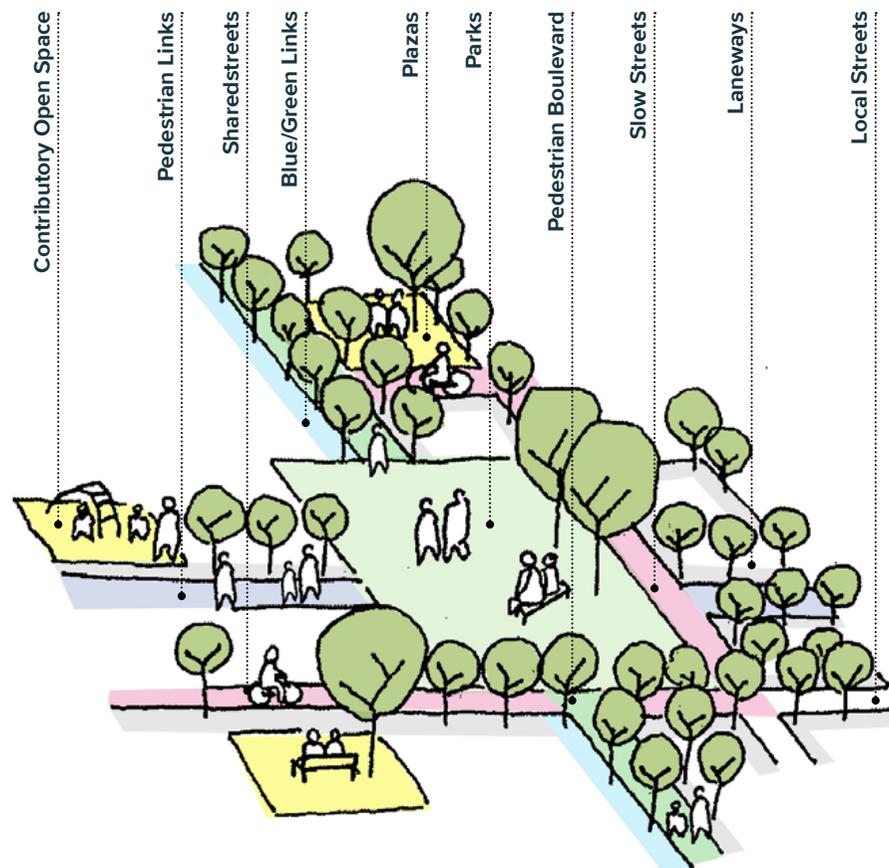


Fig. 7.3.7 Public Domain Strategy

PUBLIC DOMAIN MASTERPLAN

Strengthening community and connections

Waterloo South’s public domain will create an active, safe, adaptive and resilient Estate. Promoting community interaction, the public domain will enable flexibility of use for the community, both residents and visitors. Developing unique place characteristics, through built form and public domain strategies, the public domain plan creates a hierarchy of movement systems and spaces catering to the diverse needs and lifestyles of the community.

LEGEND

- ① **VILLAGE GREEN**
Supports community gatherings, events, recreation, productive landscape and water management
- ② **WATERLOO COMMON**
Provides open space for neighbourhood gathering, productive landscape, play and water management
- ③ **GEORGE STREET**
20 - 25m wide tree lined, landscaped corridor connecting the community to key destinations
- ④ **WATERLOO METRO STATION**
Sydney metro station
- ⑤ **RETAIL AND SERVICES HUBS**
Provide a mix of local retail and services
- ⑥ **COMMUNITY HUBS**
Provide community gathering space and community services
- ⑦ **BLUE LINE**
A pedestrian connection between key destinations that reflects the local water story
- ⑧ **COMMUNITY GARDENS**
Provide productive opportunities, for the community to grow and harvest produce
- ⑨ **ACTIVITY PLAY ZONES**
Provide opportunities for active uses including play space, picnic areas, fitness and youth zones
- ⑩ **ACCESSIBLE LOCAL MOVEMENT ROUTE**
Provides a route that connects key spaces, destinations and amenities that is safe and accessible for all ages and abilities



Fig. 7.3.8 Waterloo South indicative concept proposal





KEY PLACES

Waterloo South has a place for each and every person

Waterloo South's public open space is defined by two key places. These places are the Village Green and Waterloo Common. These places are anchored by community amenity and are the heart of the public domain. Each key place is reflective of a particular character and uses, ensuring a variety of places for the diverse community living within Waterloo South.

A third key place envisioned for the overall Estate is the renewal of George Street into a Pedestrian Boulevard as the major north - south spine that connects the Estate to surrounding neighbourhoods. In the interim, George Street will retain its current use for vehicular movement but proposed to be modified into an 'activity street' that promotes pedestrian and cycle movement and provides enhanced amenity that includes cafe breakout spaces to support the proposed intensification of retail uses.

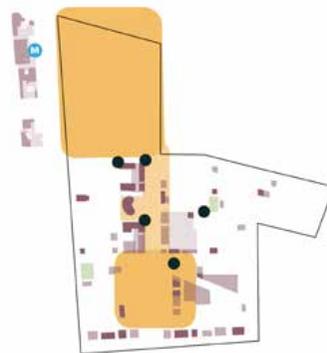
Responsive to the architectural character and community within its immediate surrounds, each key place aims to provide for the community's needs, providing places to meet, gather and connect. The pocket parks located across Waterloo South increase the overall open space and diversity available and act as local places for leisure and social connection throughout the public domain.

The streets of Waterloo South connect the key places to the greater Waterloo community. George Street is the major north - south connection, embracing the northern and southern key places along its spine. The laneways that run east-west from George Street disperse pedestrian movements and filter the circulation towards the smaller pocket parks and active street edges beyond, connecting Waterloo South into its surrounds and to the future Waterloo Metro Station.

The streets are key places themselves, offering more than the typical transit. They are diverse in their typologies, ranging from pedestrian only laneways to shared zones and local streets. The streets are active places, with

ground floor retail and services, pocket parks, landscape setbacks and pedestrian breakout spaces activating their edges.

The activation of the public domain is heavily influenced by the arrangement of ground floor retail and services. Active building frontages, streetscape and public open space work together to form social corners. These corners are characterised by their northern orientation, adjacent to ground level activation and public open space, and their location at the intersection of two or more streets. The key places, be they social corners, streets or open spaces, are evenly distributed across Waterloo South and reflect the unique qualities and character of Waterloo.



Legend

- Retail
- Pocket Parks
- Key Places
- Social Corners

Fig. 7.3.9 Waterloo South key places



VILLAGE GREEN

The Village Green maximises its spatial opportunity by providing a central lawn for active recreation. Enclaves of activity zones flank its southern half providing opportunity for play space, sporting and youth zones, waterplay and community gardens. Ample shading is provided along the perimeter of the Village Green and within key areas. Directly opposite the main entry to the future Waterloo Metro Station, the Gadigal Gardens reflect the rich tapestry of Indigenous heritage within Waterloo and is anchored by a feature community pavillion, the 'Big Roof'.



Fig. 7.3.10 Bryant Park, NYC



Fig. 7.3.11 Ian Potter Wild Play, Centennial Park



Fig. 7.3.12 Campus Maritus, Detroit



Fig. 7.3.13 Beacon Food Forest, Seattle

WATERLOO COMMON

Waterloo Common will provide local open space amenity for residents and users at the southern end of the Estate. These uses include a flexible urban plaza for community events and daily use, a neighbourhood play space and a youth activity space. A smaller productive landscape zone (community garden) and passive shaded lawn areas complete the programmable space.



Fig. 7.3.14 Edible Park, Medini, Malaysia



Fig. 7.3.15 Goyder Square, Palmerston



Fig. 7.3.16 Granary Square, London



Fig. 7.3.17 Clyde Warren Park, Dallas

GEORGE STREET PEDESTRIAN BOULEVARD

The future vision for George Street is to reimagine and renew it as a tree lined Pedestrian Boulevard that provides opportunity for contributory open space with 'micro' spaces dedicated to uses that respond to building ground floor uses. Amenities include cafe breakout spaces, micro plazas, micro play spaces and food production, as well as rest and leisure. George Street will become the major north - south 'green' spine that connects the Estate to surrounding neighbourhoods.



Fig. 7.3.18 Sonder Boulevard, Copenhagen



Fig. 7.3.19 Passeig de Joan, Barcelona



Fig. 7.3.20 Passeig de Joan, Barcelona



Fig. 7.3.21 Edinburgh Rain Garden, Melbourne

GEORGE STREET ACTIVITY STREET

Recognising that the evolution of George Street into a future Pedestrian Boulevard will take time, an interim approach to George Street has been developed to transition it from a car focused street into a pedestrian focused 'activity street', with a mix of active ground floor retail and service uses, landscape setbacks and pedestrian breakout spaces activating the edges. The proposed changes to George Street supports the renewal of Waterloo South into a Pedestrian Priority Precinct that promotes pedestrian and cycle movement and active transport modes.



Fig. 7.3.22 Baffi and Mo, Redfern



Fig. 7.3.23 804 Congress Avenue



Fig. 7.3.24 Bourke Street Cycleway, Sydney



Fig. 7.3.25 Bourke Street Cycleway, Sydney

URBAN PLAZAS

Two new urban plazas provide activated public space that connects the Estate to the major transport hub. Within the plaza, a community building interfaces with both the Metro Quarter and Village Green, offering a common connection and visual locator for people. Seating groves and raised lawns will keep users comfortable, whilst temporary event space offers the community the opportunity to occupy the space and create a sense of ownership and place.



Fig. 7.3.26 Pitt Street Mall, Sydney



Fig. 7.3.27 'Edge of Trees' by Janet Lawrence, Sydney



Fig. 8.3.28 Clyde Warren Park, Dallas



Fig. 7.3.29 Macquarie University Courtyard

SOCIAL CORNERS AND POCKET PARKS

The social corners and pocket parks are the secondary public domain opportunities throughout Waterloo South. The pocket parks provide more intimate community places for residents within the immediate vicinity. Edible landscape opportunities, doorstep play and cafe breakout spaces respond to their location, size and flexibility of design. Social corners are characterised by their northern orientation, location at the intersection of two or more streets and their proximity to key public open spaces and retail or community uses.



Fig. 7.3.30 Rad Lab Pocket Park, Los Angeles



Fig. 7.3.31 Chippendale Green, Sydney



Fig. 7.3.32 Sydney Laneways Art Program, Sydney



Fig. 7.3.33 Bakery Lane, Brisbane



VILLAGE GREEN



Fig. 7.3.34 Village Green Programming

KEY PRINCIPLES

- Planted Edge: productive landscape, tree retention, passive recreation and urban forest
- Open Lawn: passive recreation and activities.
- Big Roof: Ideal for community events and gathering
- Playspace: Designed to service the community
- Market and Amenity Zone: Tree groves with flexible space for markets and amenity.
- Community Garden: The largest single edible landscape opportunity.
- Gadigal Garden: A flexible recreation space, connecting to and expressive of the Indigenous narrative of Waterloo.
- Pedestrian Connection: Key through site link for pedestrian movement.
- Bio-retention: Planted swales contributing to the Water Story of Waterloo.
- Waterplay: Active water zone for play and exploration



Fig. 7.3.35 Joynton Park, Zetland

OBJECTIVES

- Create a central destination for the community, complimented by a nearby community building and public exhibition space for community recreation
- Offer a variety of programmable spaces to cater to the needs of all community members, offering both temporary and permanent activity options. These may range from local markets to fixed playgrounds and youth recreation.
- Deliver a clear and legible pedestrian connection, both along the Village Green's boundaries and within the space itself. Connections between programmed spaces are encouraged by numerous way finding measures, pavement treatments and amenity stations.
- Provide equal access to all members of the community.
- Use the programmed and unprogrammed spaces to express the cultural and creative identity of Waterloo through public art and installation.



Fig. 7.3.36 Ian Potter Wild Play, Centennial Park

CONSIDERATIONS

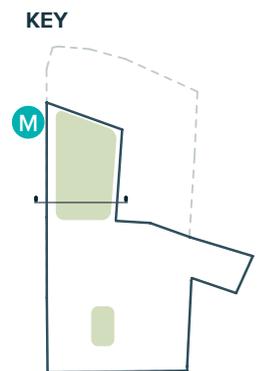
- Improve ease of connection between the Village Green and the remaining Estate.
- Maximise programmable space to provide a safe and vibrant public domain.
- Use active breakout spaces to keep the edges of the park active and safe during night and day.
- Integrate and explore the possibilities of Water Sensitive Urban Design as an ecological, sustainable design initiative as well as a play space and aesthetic resolution for the space.
- Use urban elements and materiality to define the public domain and distinguish the unique characters within the greater Village Green featuring the characteristic of Waterloo.
- Push the boundaries of public art integration.



Fig. 7.3.37 Menidi Edible Park, Malaysia



Fig. 7.3.38 Village Green Typical Section





WATERLOO COMMON



Fig. 7.3.39 Waterloo Common Programming



KEY PRINCIPLES

- Planting: productive landscape, tree retention, passive recreation and urban forest
- Urban plaza: Increasing the programmable community space. Inclusive of picnic and BBQ facilities and shelter.
- Playsapce: Designed to service the southern neighbourhood.
- Community Gardens: Waterloo South's second largest single edible landscape opportunity.
- Bio-retention: Planted swales contributing to the Water Story of Waterloo.
- Lawn: Accomodate existing and proposed trees.

Pedestrian Connection: Key through site link for pedestrian movement.

Park Laneway: Laneways moving residents north-south along park.

OBJECTIVES

- Create a local park, reflective of and in response to the needs of the immediate surrounding community.
- Ensuring the resolution of public space meets a high design resolution and execution.
- Support the existing tree species in the area, but increasing the overall canopy cover, and using species to complement the present environment.
- Provide programmed spaces that will be diverse and collaborative, that allow the community to represent their identity and explore the possibilities and potential of their neighbourhood.
- Provide equal access to all members of the community.

CONSIDERATIONS

- Integrate Indigenous culture and heritage through edible landscapes, art and materiality.
- Explore the potential of smaller neighbourhood scale programmable space through innovative design and resolution.
- Continue the linear band of Water Sensitive Urban Design that integrates the Blue Line through the entire Estate.
- Provide and explore the possibilities of materiality, furniture, fixtures and lighting in distinguishing use and program in smaller spaces both day and night.



Fig. 7.3.40 Bonn Square, Oxford



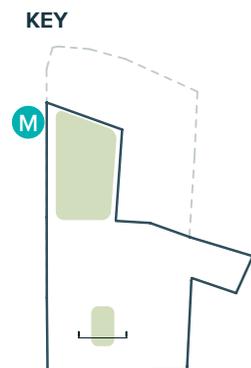
Fig. 7.3.41 Wulaba Park, Waterloo



Fig. 7.3.42 Chippendale Green, Sydney



Fig. 7.3.43 Waterloo Common Typical Section



KEY



GEORGE STREET PEDESTRIAN BOULEVARD (FUTURE VISION)

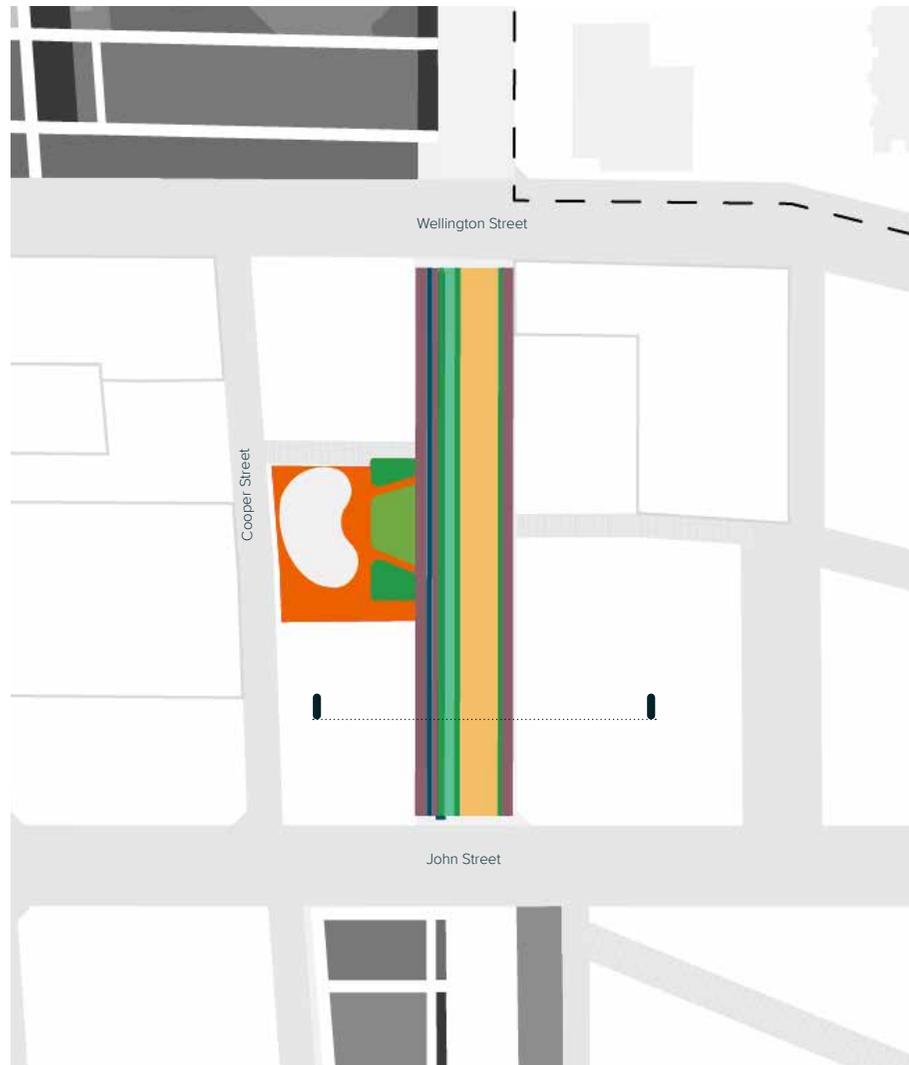


Fig. 7.3.44 Pedestrian Boulevard Programming

KEY PRINCIPLES

- Bushtucker garden: garden that features plants native to Waterloo and the Greater Sydney.
- Urban plaza: Compliment community facilities, offering flexible space for mobile furniture and breakout.
- Pedestrian Movement: Dedicated pedestrian movement zone.
- Cycleway: Dedicated cycleway for George Street
- Bio-retention: Planted swales contributing to the Water Story of Waterloo.
- Lawn: Accomodate existing and proposed trees.
- Pedestrian Connection: Key through site link for pedestrian movement.
- Planted Verge / Public Domain Furniture Zone: Accomodating existing trees and providing public domain amenities.

OBJECTIVES

- Create a safe and inviting pedestrian passage for the community that will serve as a central spine for the Estate.
- Provide equal access to all members of the community.
- Remain active and populous during both day and night.
- Use the linear nature of the Pedestrian Boulevard to anchor the Blue-Green link that is expressed throughout the Estate.
- Achieve Water Sensitive Urban Design outcomes through rain gardens, water storage and selective planting.
- Ensure that the furniture, urban elements and materiality of the site are reflective of the interests and needs of the community.

CONSIDERATIONS

- Use activation, lighting and fixtures to ensure pedestrian safety day and night.
- Integrate Indigenous culture and heritage through edible landscapes, art and materiality.
- Express Water Sensitive Urban Design as a sustainable and aesthetically appropriate Blue-Green link for the Estate.
- Explore the possibilities of activities and programs for smaller spaces, breakout spaces and pocket parks.



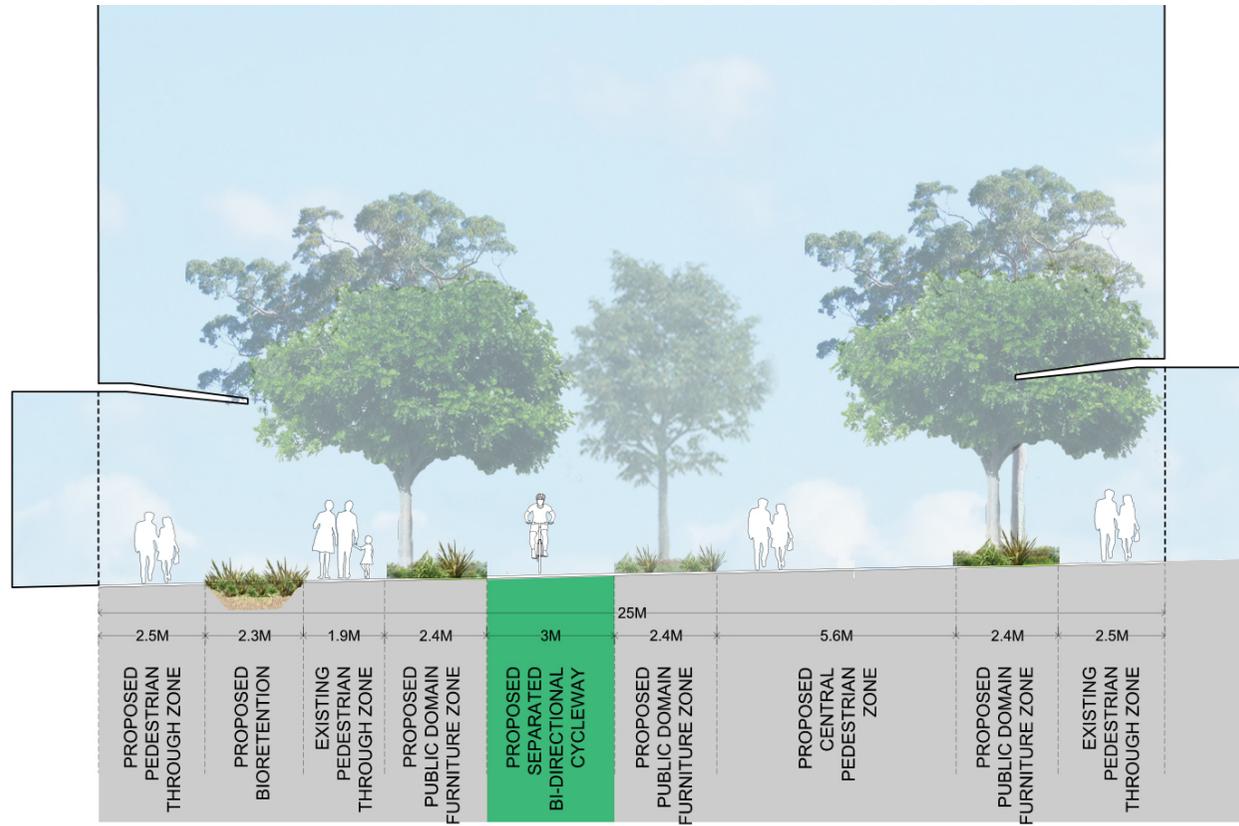
Fig. 7.3.45 Baffi and Mo, Redfern



Fig. 7.3.46 Sonder Boulevard, Copenhagen



Fig. 7.3.47 Hammarby sjöstad, Stockholm



KEY

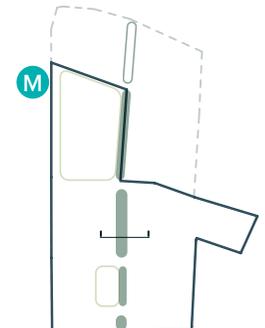


Fig. 7.3.48 George Street Pedestrian Boulevard Typical Section



GEORGE STREET ACTIVITY STREET (INTERIM APPROACH)

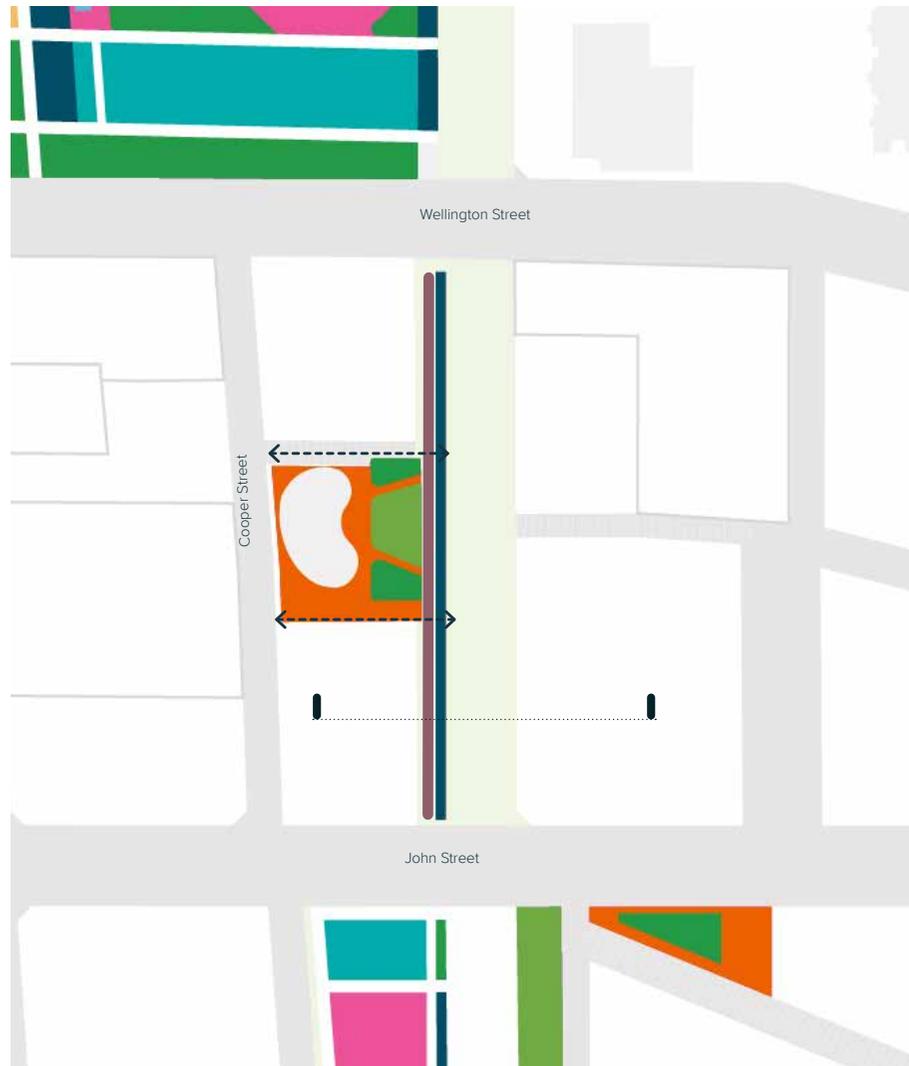


Fig. 7.3.49 George Street Activity Programming

KEY PRINCIPLES

- Bushtucker garden: garden that features plants native to Waterloo and the Greater Sydney area which are used in traditional food and medicine resources.
- Urban Zone: Compliment community facilities, offering flexible space for mobile furniture and breakout.
- Bio-retention: Planted swales contributing to the Water Story of Waterloo.
- ↔ Pedestrian Connection: Key through site link for pedestrian movement.
- Lawn: Accomodate existing and proposed trees
- Pedestrian movement zone: 2.5m pedestrian movement zone connecting the estate from north to south.

OBJECTIVES

- Create a safe and inviting pedestrian passage for the community that will serve as a central spine for Waterloo South.
- Provide equal access to all members of the community.
- Remain active day and night.
- Use the linear nature of George Street to anchor the Blue Line that is expressed through Waterloo South.
- Achieve Water Sensitive Urban Design outcomes through rain gardens, water storage and selective planting.
- Ensure that the furniture, urban elements and materiality of the site are reflective of the interests and needs of the community.

CONSIDERATIONS

- Use activation, lighting and fixtures to ensure pedestrian safety day and night.
- Integrate Indigenous culture and heritage through edible landscapes, art and materiality.
- Express Water Sensitive Urban Design as a sustainable and aesthetically appropriate Blue Line for Waterloo South.
- Explore the possibilities of activities and programs for smaller spaces, breakout spaces and pocket parks.



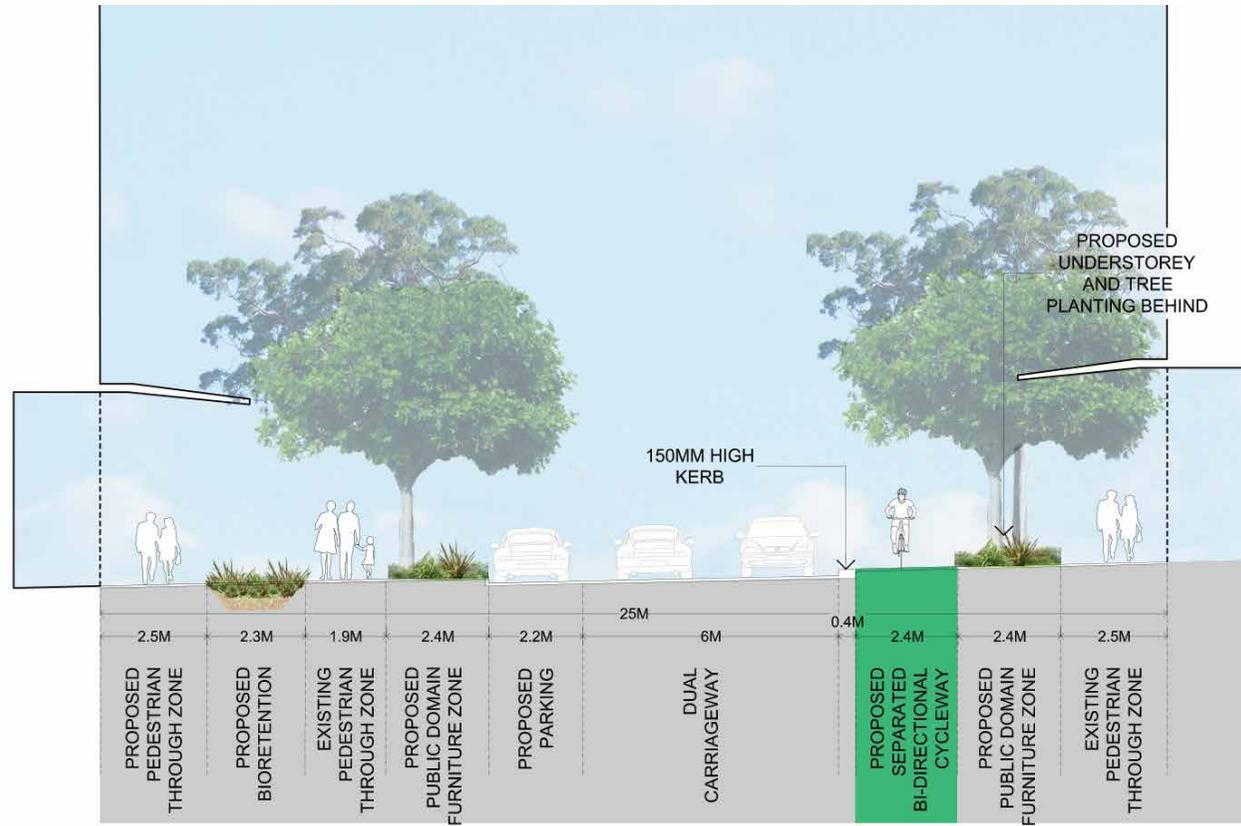
Fig. 7.3.50 Passeig de Joan, Barcelona



Fig. 7.3.51 Sonder Boulevard, Copenhagen



Fig. 7.3.52 Bourke Street Cycleway, Sydney



KEY

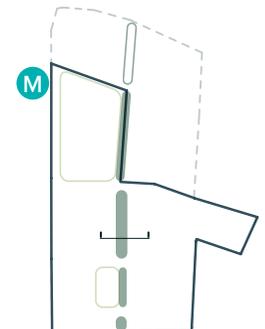


Fig. 7.3.53 George Street Activity Street Typical Section

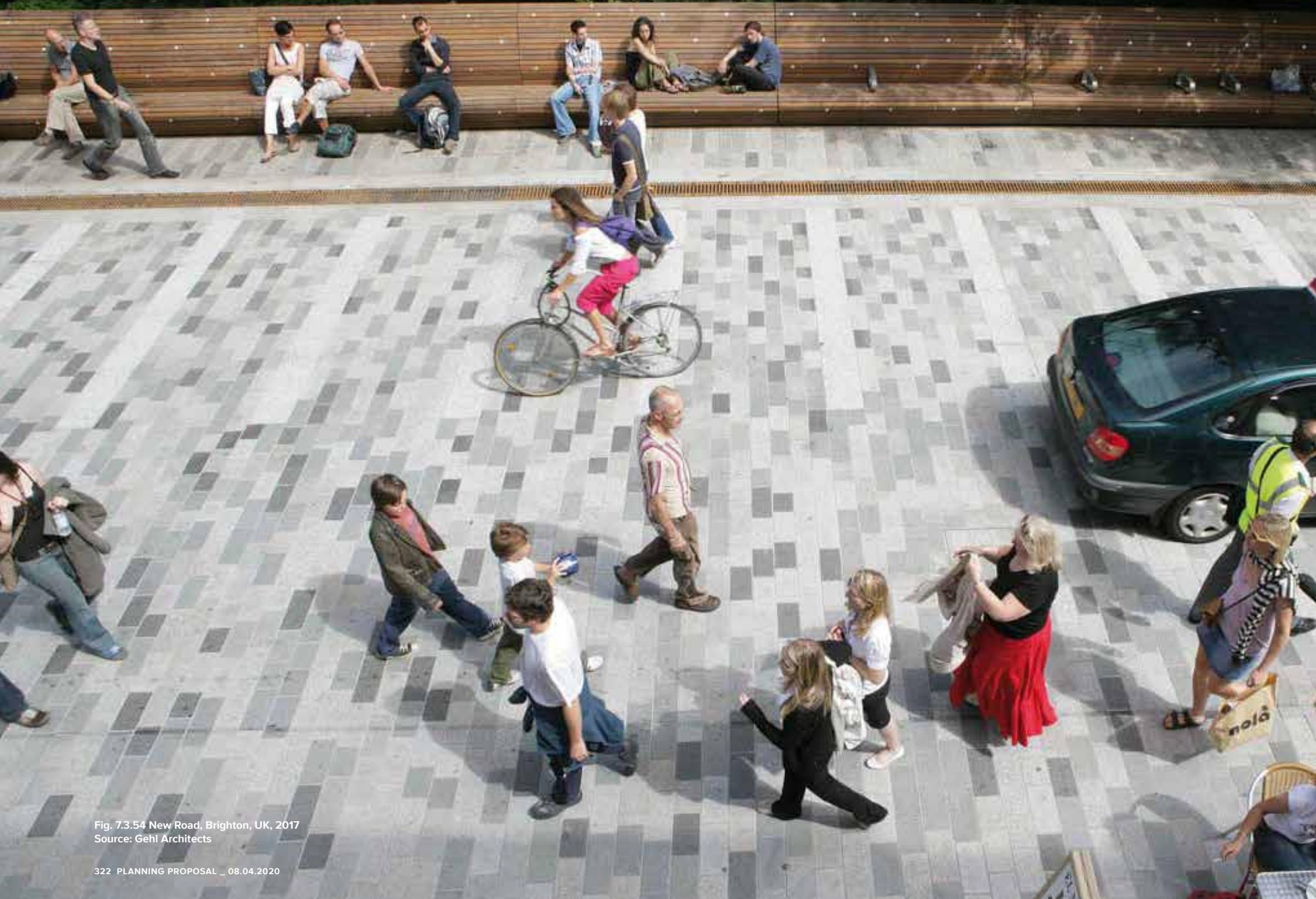


Fig. 7.3.54 New Road, Brighton, UK, 2017
Source: Gehl Architects

7.3.2 ACCESS AND CIRCULATION, STREETS AND MATERIALITY

Developing an accessible and active public domain that reflects the unique character of the Estate

The Waterloo South public domain will connect the Estate as one community to its greater context and create a highly walkable environment that is seamless and celebrates Waterloo's unique characteristics. Within Waterloo South, the street geometry and arrangement will promote pedestrian priority. The streets will be supported by a selection of suitable materials and amenities that will provide ease of circulation, access and improve safety.

The public domain access and circulation, streets and materiality demonstrate consideration and application of the City of Sydney Public Domain Codes (2012), Sydney Street Technical Specifications (2013) and Cycle Strategy Action Plan (2007-2017, 2018) and relevant City of Sydney codes where appropriate.



Fig. 7.3.55 Indicative CGI: Waterloo Common and George Street
Source: Virtual Ideas, 2020

WATERLOO AS A PEDESTRIAN PRIORITY PRECINCT

SLOW STREET SYSTEM



Fig. 7.3.56 New Road, Brighton

Creating a safer pedestrian environment

Slow streets throughout Waterloo South will prioritise active modes of transport such as walking and cycling. Waterloo's streets will be redefined, creating opportunities for new uses other than mobility. Streets will be designed for speed reduction to 40km/hr, creating an environment that is safe for pedestrians and cyclists. With widened footpaths, shared ways, through-site links and vehicle carriageways reduced to 6m, the Waterloo South's street network will be reimagined as multi-purpose social places for the community.

CONNECTED STREET NETWORK



Fig. 7.3.57 AECCAFE, Kensington Street, Sydney

A safe, accessible and complete street grid will keep Waterloo South connected

Increased connectivity will come with the re-introduction of the historical fine grain street network. The laneways prioritise pedestrian movement, dispersing people into the residential areas of Waterloo South from the major parks and places. Street geometry such as intersections with enhanced pedestrian crossings at major east-west and north-south connections, ensure that pedestrian connectivity is not compromised as the street network transitions from the fine grain links to the primary vehicular and pedestrian connections.

PROMOTE ACTIVE TRANSPORT



Fig. 7.3.58 Copenhagen Cycle Strategy

Providing the community with a public domain which places cycling and pedestrian movement at the forefront of the transport grid

Waterloo South recognises the importance of active transport as the primary transport method, as recommended in City of Sydney's 2020 vision. Pedestrianised laneways, shared slow streets and widened footpaths provide ample space for pedestrian movement across the entirety of Waterloo South. There are numerous cycle paths leading into the Estate from surrounding suburbs, and these connections are maintained and improved through the inclusion of dedicated cycle routes, and shared cycle routes at the Metro Quarter.

INCREASED ACCESSIBILITY

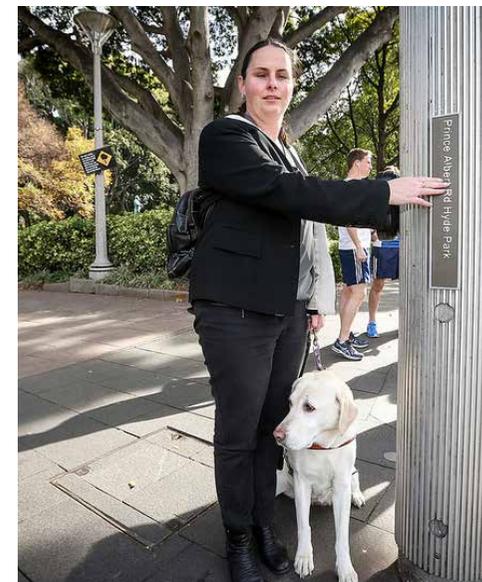


Fig. 7.3.59 Wayfinding, City of Sydney

Ensuring that the streets of Waterloo South are accessible to all people

As a pedestrian priority precinct, Waterloo South will be a place that is accessible to all people, including those with mobility issues or other impairments. An Accessible Local Movement Route (ALMR) will allow for easy connectivity to key destinations and services. Widened footpaths provide ample space for pedestrian movement and amenity, particularly to and from the Metro Quarter and future Waterloo Metro Station and the major public open spaces. Visual connections and sight lines that are revealed or enhanced by the new street network will provide improved safety and way-finding



A PEDESTRIAN PRIORITY PRECINCT

As the first stage in the renewal of the Estate, Waterloo South provides the opportunity to put in place strategies that will help the Estate to evolve over time into a pedestrian priority precinct

The re-configuration of the Estate's existing street grid will transform it into a vibrant, activated, safe and walkable place to live, work and visit. The new and diverse range of streets will support new shops, services and other businesses, contributing to an activated and more highly connected and integrated movement network.

Recognising that the evolution of the Estate into a future Pedestrian Priority Precinct will take time, the strategies for Waterloo South have been developed to support the evolution of the Estate over time. An staged approach to the street network has been developed. This includes:

- An interim approach for George Street to transition it from a car focused street into a pedestrian focused 'activity street', with a mix of active ground floor retail and service uses, landscape setbacks and pedestrian breakout spaces activating the edges.
- A holistic approach to the Local Accessible Movement Route (ALMR) to provide for connected accessible movement across Waterloo South and the Estate throughout the renewal.

PEDESTRIAN NETWORK



Fig. 7.3.60 Waterloo Estate Pedestrian Network

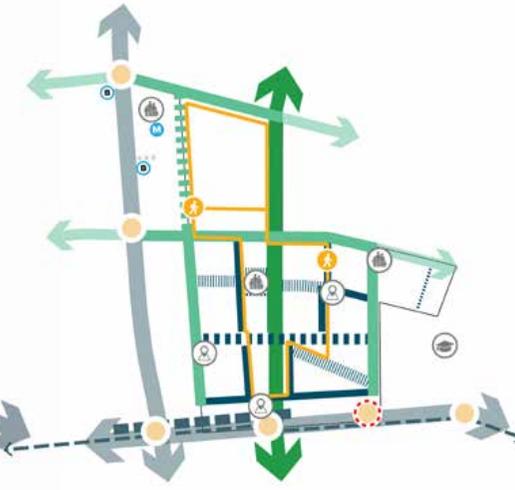


Fig. 7.3.61 Waterloo South Pedestrian Network

Pedestrian movement will be safe, accessible and available to all

As a pedestrian priority precinct, the Estate will introduce street speed reduction, designated pedestrian laneways and an Accessible Local Movement Route. The transformation of George Street into a Pedestrian Boulevard offers a direct and safe connection between the north and south of the Estate, connecting to the edges of major public open spaces. The Accessible Local Movement Route allows all people in the community to safely and comfortably access key community hubs, public spaces and major transport locations.

Waterloo South will introduce street speed reduction, designated pedestrian laneways, a modified George Street into an 'activity street' and an Accessible Local Movement Route. It will allow all people in the community to safely and comfortably access key community hubs, public spaces and major transport locations and will be extended in later stages through Waterloo North and Waterloo Central.

Legend

- Arterial Road
- Local Street
- Local Shared Slow Street
- McEvoy Widening
- ||||| Pedestrian Laneway
- Shared Slow Street

SHARED SLOW STREET NETWORK

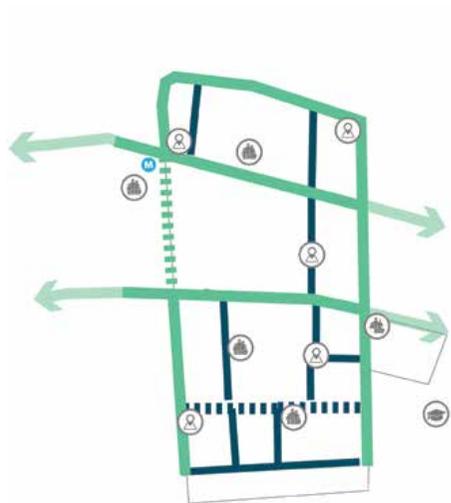


Fig. 7.3.62 Waterloo Estate Shared Slow Street Network

Establishing a connected street network that encourages active transport

Across the Estate, streets will be designed for speed reduction to 40km/hr for local streets and laneways, with pedestrian laneways removing cars entirely in favour of pedestrian only movement. The network of shared slow streets provides a safer movement corridor for cyclists and, along with widened footpaths, provides ample space for cyclists, pedestrians and vehicles to all move safely throughout the Estate.

-  Educational Building
-  Social Corner
-  Community Hub
-  Metro

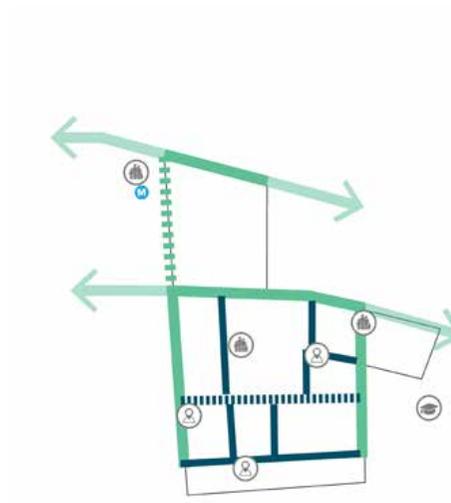


Fig. 7.3.63 Waterloo South Shared Slow Street Network

The evolution of the Estate into a Pedestrian Priority Precinct will begin with the renewal of Waterloo South. Waterloo South will deliver the majority of the new network of shared slow streets envisaged for the Estate. This will provide for safer movement corridors for cyclists and, along with widened footpaths, provides ample space for cyclists, pedestrians and vehicles to all move safely throughout Waterloo South.

GEORGE STREET PEDESTRIAN BOULEVARD

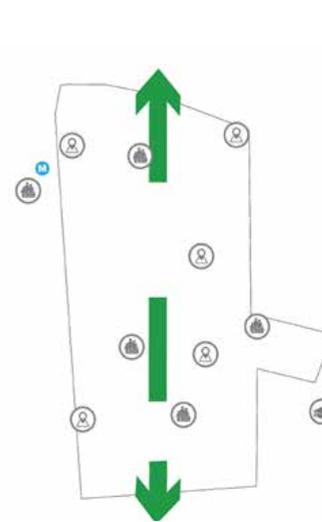


Fig. 7.3.64 Waterloo Estate Pedestrian Boulevard

Creating a green movement corridor that prioritises pedestrian movement

The future George Street Pedestrian Boulevard will transform George Street into a new 'green' movement corridor by giving priority to pedestrians. The Boulevard will serve as the north-south pedestrian spine, connecting the community to key public spaces and the finer grain street network. The edges of the Boulevard will be activated by ground floor retail and services, edible landscape initiatives and activation stations (cafe breakout, fitness, doorstep play). Bio-retention runs the length of the Boulevard, connecting green and blue infrastructure along its spine.

-  Laneways
-  New Crossing
-  Accessible Local Movement Route
-  Pedestrian Links
-  Signalised Intersection
-  Pedestrian Boulevard

GEORGE STREET ACTIVITY STREET

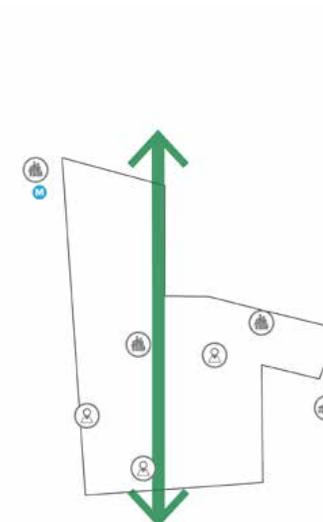


Fig. 7.3.65 Waterloo South George Street Activity Street

Creating an interim movement corridor that prioritises pedestrian movement

An interim approach to George Street will transition it from its current character as a car focused street into a pedestrian focused 'activity street', with a mix of active ground floor retail and service uses, landscape setbacks and pedestrian breakout spaces activating the edges. The proposed changes to George Street will prioritise pedestrian and cycle movement and active transport modes.



COMPLETE STREETS

Waterloo's streets are for everyone

The approach to Waterloo South and the Estate adopts a 'Complete Streets' approach whereby streets are considered as social places beyond just their functional purposes. These places are developed holistically, integrating all aspects of public domain design, to create environments that are unique, engaging, hard working and high performing.

SAFE AND WALKABLE



Fig. 73.66
Source: New Road, Brighton

Creating an Estate that promotes walking as a safe, simple and efficient transport mode

Waterloo South and the Estate is to be a pedestrian priority precinct. The 'Complete Streets' approach implements a slow street network, increasing the safety for walking and cycling, through vehicular speed reduction. An Accessible Local Movement Route will provide universal access and amenity, for children, the elderly and members of the community with mobility impairments, to access key community facilities and public open spaces throughout the Estate at all stages of the renewal.

HEALTHY AND GREEN



Fig. 73.67
Source: Passieg de St Joan, Barcelona

Delivering streets that are environmentally responsive and contribute to the community's health and wellbeing

Waterloo South and the Estate's 'Complete Streets' approach aims to improve community health and well-being through street 'greening' and cooling initiatives. An increased number of street trees, understorey planting and water sensitive urban design (WSUD) opportunities, will provide benefits such as improved air quality and lower ambient temperatures, shading roads and footpaths, to create a comfortable walkable environment. Street planting will strengthen biophilic connections and visually soften the streetscape, social spaces and key destinations, enhancing the everyday quality of life for residents, workers and visitors.

ACTIVATED AND ECONOMIC

Fig. 7.3.68 Baffi & Mo, Redfern

Creating activated and vibrant streets that contribute to community life

An interconnected and diverse network of streets will support social activity, encourage active ground floor uses and provide opportunities for activation and occupation of the public domain. Through increased social activity, public space programming, and active retail frontages, Waterloo South will be an attractive place to live, work, rest and play and encourage residents and visitors to shop, eat, socialise and meet all their daily needs within the area. This typically enhances retail spending, and increases the viability of business, leading towards economic growth and opportunities to encourage local retail that is unique to Waterloo.

PLACEMAKING CATALYSTS

Fig. 7.3.69 Eats Beats Street, 2018, Kensington Street, Sydney

Providing a stage for placemaking to encourage retail, service and community activation opportunities throughout Waterloo South

The streets throughout Waterloo South are important placemaking catalysts, that contribute to the public open spaces they surround, and are the basic infrastructure required to establish a healthy and sustainable community. Their diversity are unique responses to their context and potential use, by the Estate's residents and visitors, throughout the year. The streets support the retail, service and other community activation opportunities at ground level as well as providing passive and active programmed spaces for all of the community that are uniquely Waterloo.



Fig. 7.3.70 Pitt Street Mall, Sydney



ACCESSIBLE LOCAL MOVEMENT ROUTE

PRECEDENTS

A community that is connected, informed and creative



Fig. 7.3.72 Van Gogh-Roosegaarde, Netherlands



Fig. 7.3.73 Southbank Crossing, London



Fig. 7.3.74 Nelson Street Cycleway, Auckland



Fig. 7.3.75 Greenman Plus Scheme, Singapore



Fig. 7.3.76 Passeig de St Joan, Barcelona



Fig. 7.3.77 Wayfinding, City of Sydney

The Accessible Local Movement Route (ALMR) includes a range of simple design initiatives that will help define its character, including:

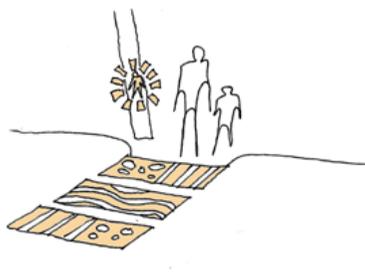
DESTINATION WAYFINDING



Fig. 7.3.71 Accessible Local Movement Route

Utilising way finding signage to measure distance and denote directions using walking distance in minutes, encouraging walking and cycling as a transport mode.

VISIBLE AND SAFE CROSSING DESTINATIONS



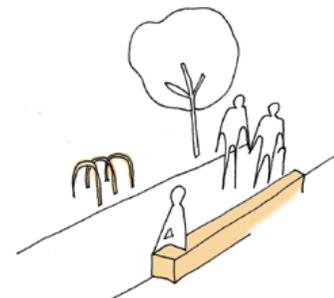
Clear and visible pedestrian crossings leading towards, from and between key places, which will be signified through signage and public art. Crossings will be accessible for all people, including the implementation of strategies to aid those with mobility impairments. Strategies recommended include increased colour contrast, braille on signage, aural signals and increased crossing times.

ACCESSIBLE AMENITY



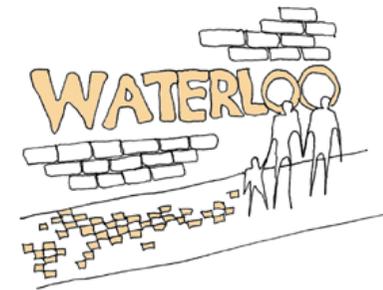
Enhanced public amenity for people of all ages and abilities. Water bubblers, bicycle parking, fitness stations, kids play and seating are just a small range of the possible inclusions.

AMENITY FOR ALL



Adjusting heights of amenities for children and adults, whilst offering accessible seating options, and providing adequate shade along the route will ensure an inclusive and comfortable experience for all.

PUBLIC ART AS IDENTITY AND PASSAGE



Public art is an important component of the Accessible Local Movement Route, adding local personality, character and identity. Public art is a method of way finding and locating, and also an opportunity to invite community participation in creating a place that reflects the Estate's unique cultural heritage, character and community.

ACCESSIBILITY

Celebrating the Estate's unique topography whilst providing universal access throughout the neighbourhood

To encourage pedestrian movement throughout Waterloo South, and provide equitable access to key facilities and public open spaces, an Accessible Local Movement Route (ALMR) has been incorporated. Waterloo South's topography poses some challenges for accessibility, particularly in the east, with a notable increase in grade. Pedestrian laneways off Pitt Street will include stairs and ramps, for a unique laneway character, distinct from other street typologies. The ALMR provides a universally accessible route, connecting the community to key destinations, in a safe environment for all ages. As a pedestrian priority precinct, the existing and new streets and laneways should incorporate geometries that maximise pedestrian comfort and accessibility wherever possible.

- Legend**
- Accessible Local Movement Route: Max grade 1:20
 - Existing Street
 - Laneways and Streets requiring stair/ramp access for pedestrians. Grade <1:20
 - Shared Streets / Laneways. Grade >1:20

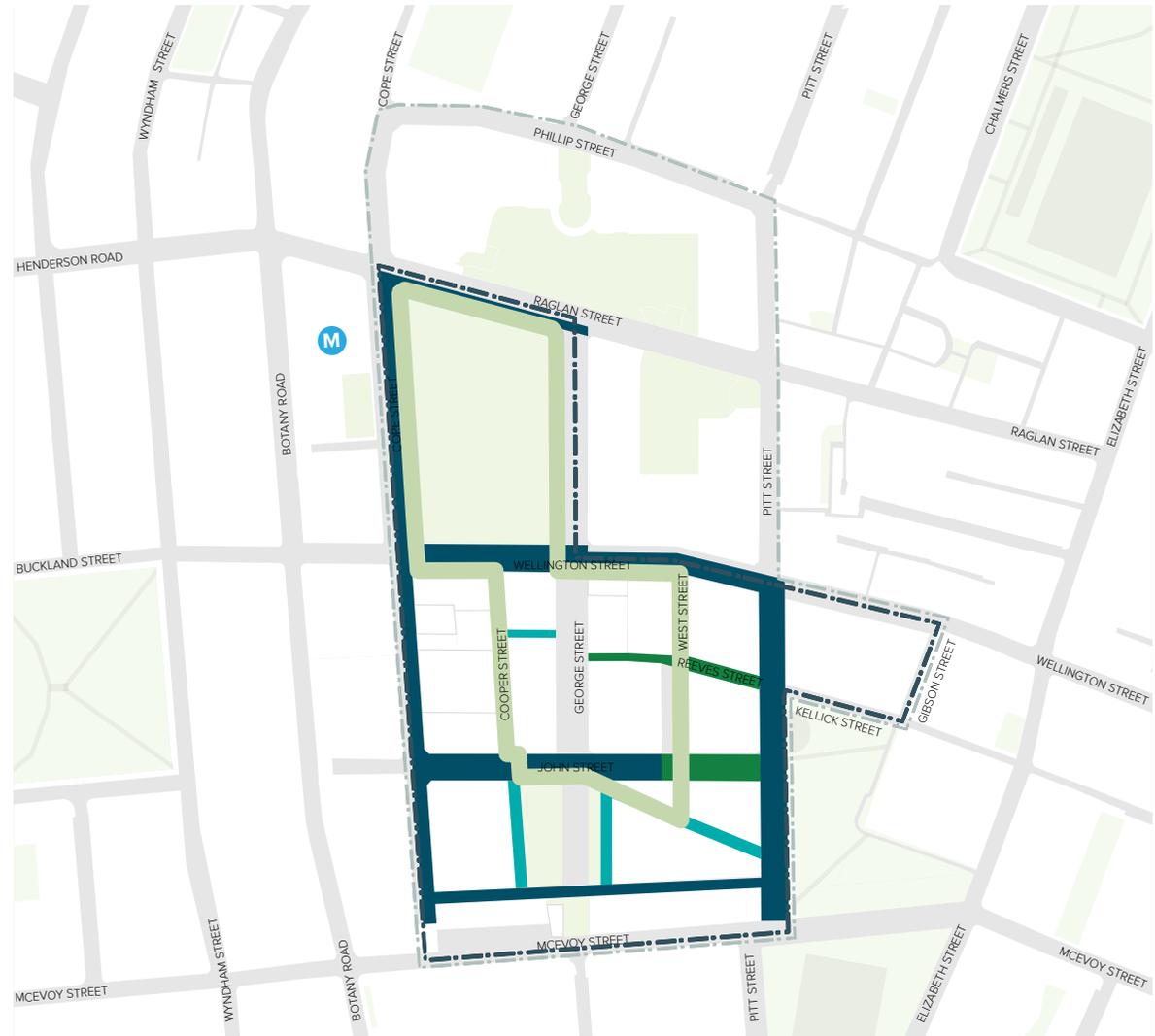


Fig. 7.3.78 Accessibility



SAFETY AND DESIGN

A safe and welcoming place to live and visit

Public safety for pedestrians, cyclists and motorists is important for the Estate to be a welcoming and safe place for people to live and visit. Throughout Waterloo South buildings define the public domain, reinforcing sight lines and strengthening views to and from key spaces, streets and laneways, for good passive surveillance.

Through a combination of co-locating community buildings with key public domain spaces, and a fine grain street network, activity is enhanced at these key places. This is strengthened by well programmed public domain spaces and the creation of parks as places for people to meet and spend time throughout the day.

By limiting blank facades, providing active retail and community edges, landscaped building setbacks, and active social corners, a safe and vibrant day to night economy will be encouraged, promoting pedestrian activity and active use of the public domain.

In line with the guidelines of the Sydney Streets Code, Waterloo South, as a pedestrian priority environment, will reduce and slow vehicle movements with a network of shared slow streets, laneways and pedestrian links, increasing the ground level permeability of the Estate.

Increased visibility and active edges at ground level through a mix of uses, with residential uses at both ground and upper levels addressing the streets and laneways, will maximise passive surveillance, creating a safe environment to live, work and visit.



Fig. 7.3.79 Active Edges: Melbourne Laneways



Fig. 7.3.80 Views: Bryant Park, NYC



Fig. 7.3.81 Active Edges: Mint Plaza, San Francisco



Fig. 7.3.82 Sightlines: Klyde Warren Park, Dallas, Texas



Fig. 7.3.83 Sightlines: Passeig de St Joan, Barcelona



Fig. 7.3.84 Street Speed Reduction / Slow Shared Streets: New Road, Brighton



Fig. 7.3.85 Passive Surveillance: Bonn Square,



Fig. 7.3.86 Cycle and Pedestrian Strategy: Auckland

VIEWS

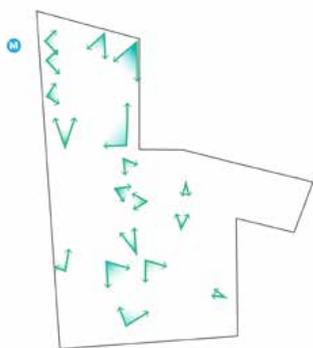


Fig. 7.3.87 Views



Clear and extensive views across and within all key places and space

The Village Green and Waterloo Common, along with all pocket parks and urban plazas, offer clear and ample view corridors across the spaces and along the adjacent streets. These views will be clear and well illuminated both night and day, for the safety of users at all times.

Views within key public spaces and social corners.

SIGHTLINES

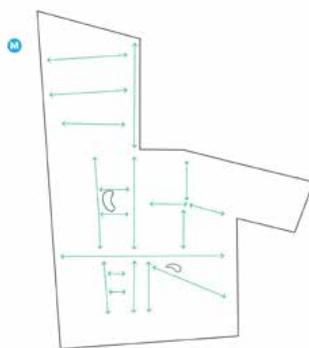


Fig. 7.3.88 Sightlines



Maintaining and improving visual connections throughout Waterloo South

Sight lines are provided along all major streets, park and plaza connections. Sight lines that are unobstructed, well lit and continuous, provide clarity in direction and destination, and can improve overall public safety. These sight lines will optimise visual connection between the community and all major transport and community hubs, promoting a safe movement route for all people at all times.

Sightlines

PASSIVE SURVEILLANCE

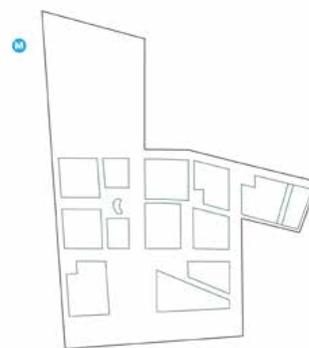


Fig. 7.3.89 Passive Surveillance



Providing passive surveillance opportunities to increase community safety

Passive surveillance is provided on all frontages by residential and commercial uses that address all orientations at the upper levels. Passive surveillance is important for community connection and safety, particularly within the Village Green and Waterloo Common, which are large spaces, but also along the pedestrianised laneways that comprise the fine grain street network of Waterloo South.

Passive Surveillance from upper levels.

ACTIVE EDGES

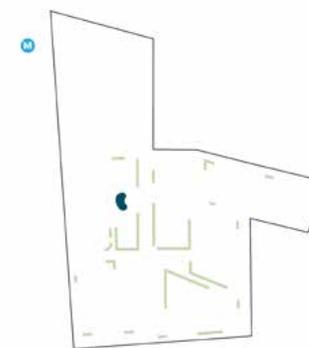


Fig. 7.3.90 Active Edges



Keeping the street active and open at all times

Waterloo South encourages and facilitates active edges, particularly with ground floor retail, services and community facilities. Activation of the streetscape through non-residential uses can promote night time uses, increasing the community presence throughout the day. Additional activation is provided by the inclusion of pocket parks, social corners, George Street Activity Street, Village Green and Waterloo Common, that incorporate a range of meeting places and activity stations to encourage use day and night.

Active Edges: Ground floor retail and other activation typologies

Community Buildings



STREET GEOMETRY

Ensuring people are prioritised in the public domain

The streets within Waterloo South are a combination of existing and new, arranged to promote pedestrian permeability and safety, and contribute to the creation of a pedestrian priority precinct. The contribution of streets to the urban environment is enhanced by their design and are in accordance with the current relevant Australian Standards and Sydney Street Codes 2013. Along with meeting the requirements of these documents, the street network:

- References the historical context and present geography of the site,
- Prioritises pedestrian movement by ensuring wide clear thoroughfares and regular safe crossings between carriageways,
- Contributes to a balanced public domain by creating conditions that favour pedestrian and cycle movement, without compromising efficiency in vehicle movement and;
- Streets will be constructed to be robust, easily maintained and environmentally responsive.

Legend

Marked Pedestrian Crossing	Raised Threshold	Signalised Intersections
Intersection with Enhanced Pedestrian Provisions (Kerb/Pavement extensions, raised thresholds, footpath continuity treatment)	Separated Cyclepath	Existing Streets
Shared Cycleway	Traffic Calmed Zones (Pedestrian only zones, shared zones or slow streets)	New Streets
	Pedestrian Only Zone	Major Park

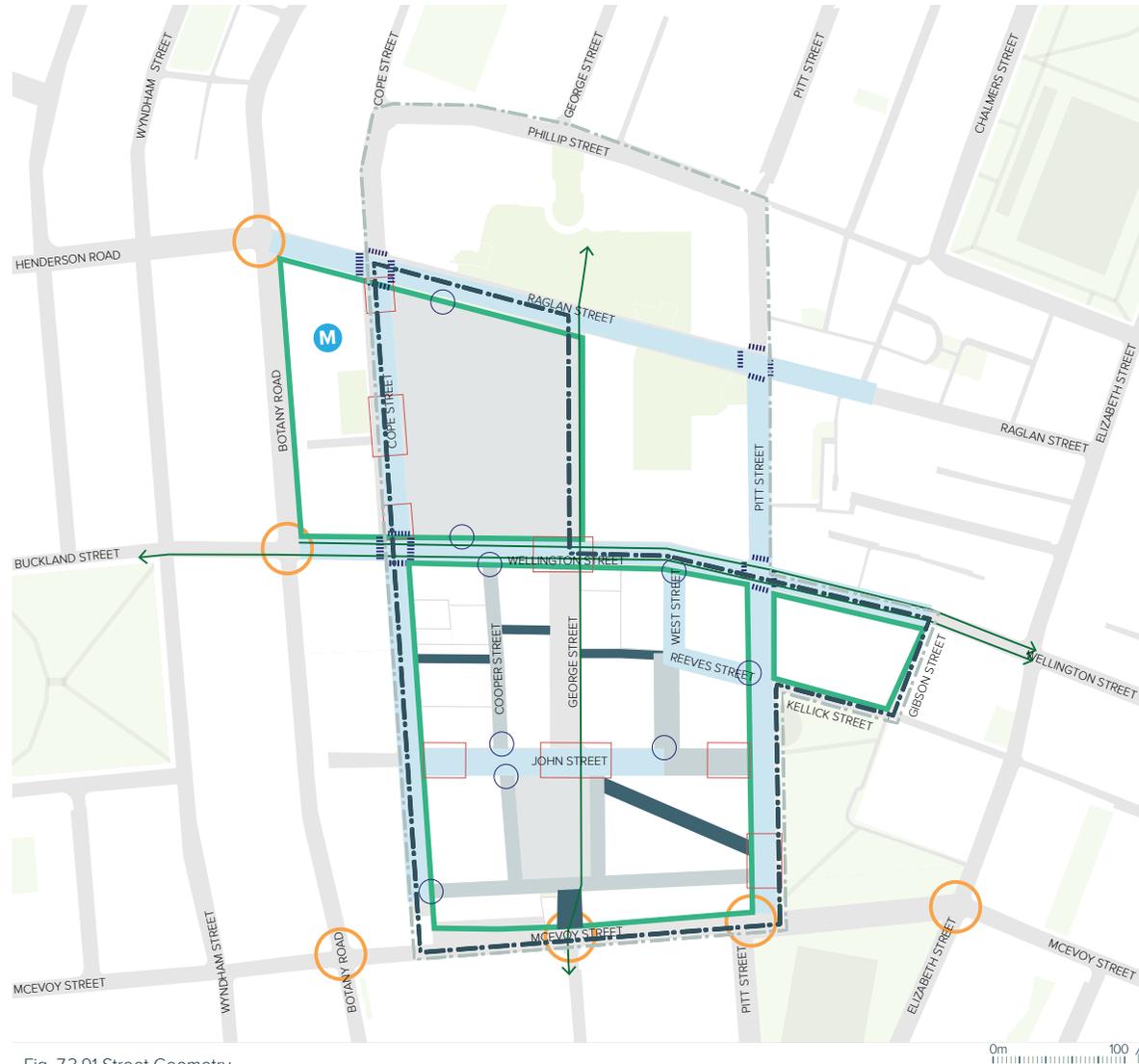


Fig. 7.3.91 Street Geometry

EMERGENCY AND MAINTENANCE VEHICLE ACCESS

Safety and security is considered through the inclusion of streets that are accessible for emergency and maintenance vehicles

Throughout Waterloo South there is a network of connected streets providing emergency and maintenance vehicle access. Six metre wide carriageways provide parking bays and/or dedicated loading and drop off zones for vehicles. Three metre carriageways are designed without kerbs, and also include dedicated loading and drop off zones for emergency and maintenance vehicles.

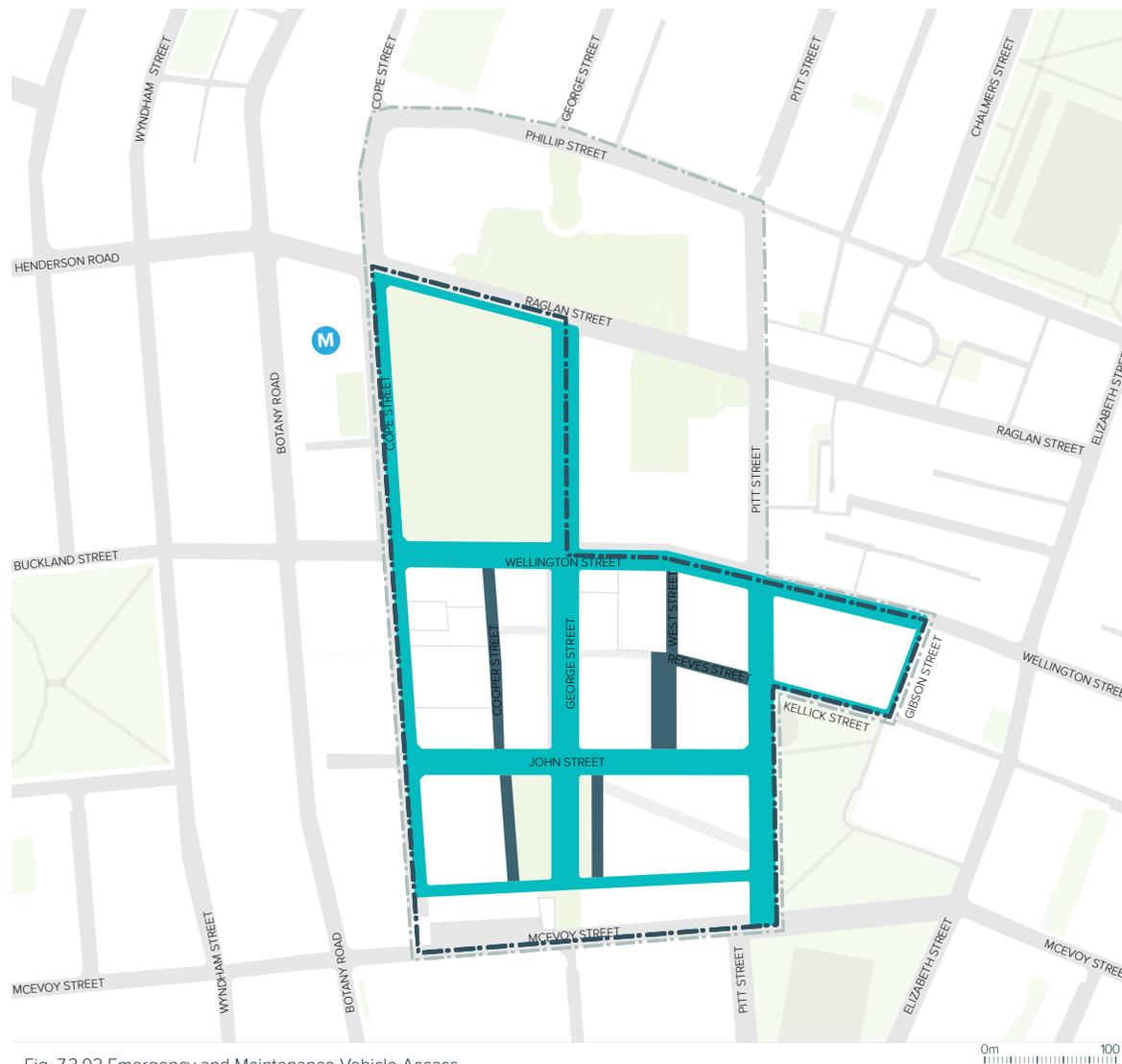


Fig. 7.3.92 Emergency and Maintenance Vehicle Access

- Legend**
- Emergency and Maintenance Vehicle Access 6m carriageway
 - Emergency and Maintenance Vehicle Access 3m carriageway with allocated loading and drop-off zones



KEY STREETS

Streets as social places, active spaces and community connectors

The streets of Waterloo South connect people to the numerous community, social, retail and services, and transport facilities available. Ranging from wider arterial roads to narrower laneway connections, these streets become social spaces in addition to their functional purpose. Increased building setbacks and widened footpaths, new and upgraded crossings, shared zones and reduced vehicle speeds, prioritise pedestrian and cycle movement.

The existing street tree canopy is increased by renewed planting palettes and tree replacement ratios, and with Water Sensitive Urban Design (WSUD) initiatives, presents a 'green' and environmentally sustainable street approach. Activity stations, adjoining major parks and urban plazas, complements the streetscapes and increases the activity along their edges.

The laneways are opportunities for pedestrians to move from the busier active areas of Waterloo South, around activity centres and public open spaces, into the quieter more residential zones, with complete ease through a dispersed range of routes and options.

The streets are also catalysts for community collaboration. They create opportunities for cultural and creative representation, in the diverse range of streets, as variable as they are possible, ranging from public and street art to cultural activity installations and edible landscapes.

- Legend**
- Pedestrian Boulevard 20 - 25m
 - Local Street 20.2m
 - Local shared street 20.2m
 - Shared Slow Street 13m
 - Neighbourhood Laneways 9m
 - Park Laneways 9m
 - Pedestrian Access Laneway 9m
 - Pedestrian Laneway 6m
 - Open Space (Parks and Setbacks)
 - Social Corners
 - Community Buildings

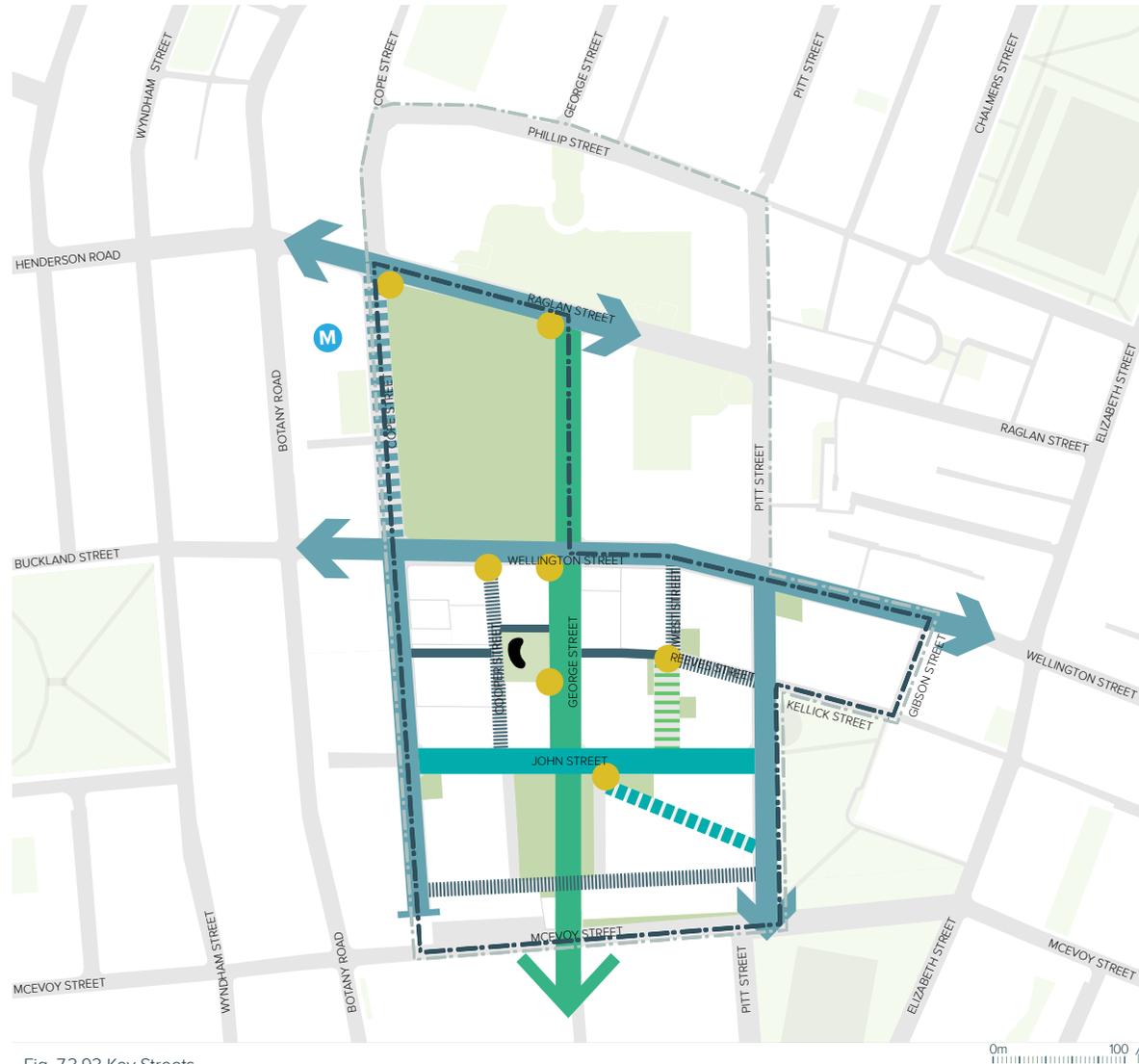


Fig. 7.3.93 Key Streets

GEORGE STREET

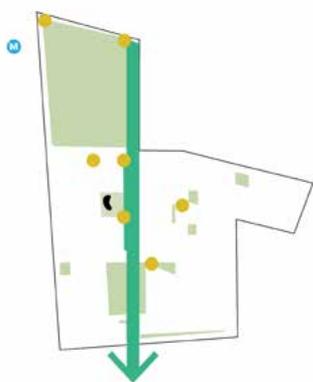


Fig. 7.3.94 George Street Activity Street



Fig. 7.3.95 Hammarby Sjöstad, Stockholm



Fig. 7.3.96 Sønder Boulevard, Copenhagen

LOCAL AND CONNECTOR STREETS

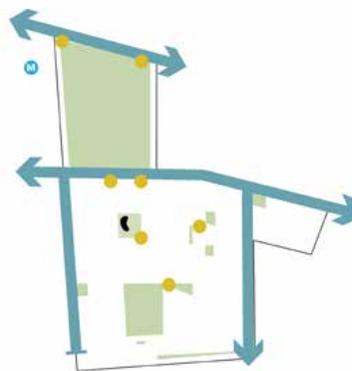


Fig. 7.3.97 Local and Connector Streets



Fig. 7.3.98 Baptist Street, Redfern



Fig. 7.3.99 Stanley Street, Southbank Brisbane

A renewed approach to connecting the Estate, through greening, activation and collaboration

George Street is modified into an 'activity street' that links the northern and southern areas of Waterloo South. Widened footpaths adjoining active building frontages, creates opportunities for retail and cafe breakout spaces. Connecting to the edges of both the major parks, the George Street Activity Street is the first stage of the renewal of George Street into a future Pedestrian Boulevard and 'Green Spine' of the Estate, and a primary component of the Accessible Local Movement Route.

Legend

- George Street Activity Street (20 - 25m)
- Open Space (Parks and Setbacks)
- Social Corners
- Community Buildings

Reinvigorating the Estate's primary connector streets as green spaces for people

The major east-west connectors through Waterloo South are the existing Raglan and Wellington streets. These streets border the Village Green and connect the Estate to the Greater Sydney area through dedicated cycle paths, bus routes and widened pedestrian thoroughfares. Wellington Street, Raglan Street and Pitt Street will become Waterloo South's 'green' corridors. The existing streetscape has a well established tree canopy, which will be maintained and increased over time, through building setbacks and tree replacement ratio strategies. Ground floor retail and services will be encouraged to spill into the wider and more pedestrian friendly sidewalks which will contribute to a more comfortable and enjoyable pedestrian experience. Pitt Street, which runs north-south along the eastern edge of Waterloo South, will have wider footpaths on the western side that will provide ease of pedestrian movements and a larger landscaped interface to the existing buildings on the opposite side of Pitt Street.

Legend

- Local Street 20.2m
- Open Space (Parks and Setbacks)
- Social Corners
- Community Buildings



COPE STREET METRO

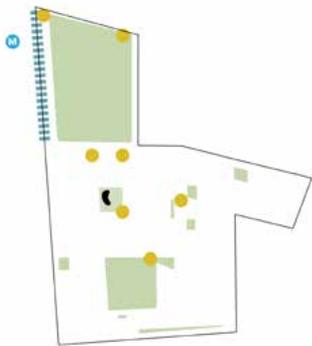


Fig. 7.3.100 Cope Street Metro



Fig. 8.3.1.101 New Road, Brighton



Fig. 7.3.102 George Street, Lightrail Station, Sydney

An active, shared street connecting the Metro Quarter to Waterloo South

Running adjacent and parallel to the Metro Quarter, Cope Street Metro will be a highly active streetscape. It is the interface between the Metro Quarter and Village Green to the east and offers multiple bicycle parking and seating options along its length. The Metro Quarter's ground level retail and community uses will activate the streetscape, whilst the reduced vehicular speeds of the shared slow-street will prioritise pedestrian and cyclist safety.

- Legend**
- Local shared street 20.2m
 - Open Space (Parks and Setbacks)
 - Social Corners
 - Community Buildings

GATEWAY PEDESTRIAN LINKS

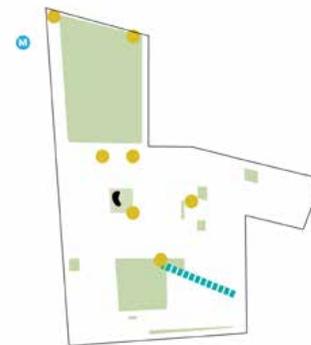


Fig. 7.3.103 Gateway Pedestrian Links



Fig. 7.3.104 Mariahilferstrasse, Vienna



Fig. 7.3.105 Passeig de St Joan, Barcelona

Active entry streetscapes promoting the culture, creativity and community of the Estate, while connecting the community to the neighbouring suburbs of Redfern and Waterloo

The Gateway Pedestrian Link is located on the edge of Waterloo South, connecting the community to Waterloo (and in the future Redfern with a future northern Gateway Link proposed for Waterloo North), and drawing pedestrian movements towards George Street and the Metro Quarter. While the southern Gateway Pedestrian Link is a key thoroughfare, it contains a number of breakout spaces and activation stations to attract community use throughout the day and evening. The Link is anchored by community uses, and contributes to breakout spaces for these uses. A widened tree-lined path prioritises pedestrian and cyclist safety by eliminating or restricting vehicular traffic to service and emergency vehicles only at reduced speeds.

- Legend**
- Gateway Pedestrian Link (Laneway 9m)
 - Open Space (Parks and Setbacks)
 - Social Corners
 - Community Buildings

LANEWAY CONNECTIONS

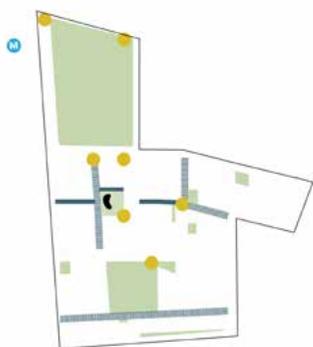


Fig. 7.3.106 North-South Neighbourhood Laneways 0m 100m



Fig. 7.3.107 Sydney Laneways



Fig. 7.3.108 Bakery Lane, Brisbane

Re-establishing the fine grain network of historic Waterloo, creating a connected Waterloo South and unique experiences

The Neighbourhood Laneways, referencing the finer grain streetscape of historic Waterloo, are key contributors to the Accessible Local Movement Route and opportunities to express culture and creativity through landscape and public art. The Park Laneways, adjoining the Village Green and Waterloo Common, create separate pedestrian zones and expand their overall public open space. These laneways are also key contributors to social corners, providing locations for important visual nodes to assist with wayfinding, such as significant trees and public art installations.

The smaller east - west Pedestrian Laneways, referencing the finer grain streetscape of historic Waterloo, are dispersed throughout Waterloo South, providing local connections between key places. These laneways are often steeper than existing streets, running north – south, as they traverse the steeper topography to the east with a series of stairways and ramps. Street and public art, and unique pavement treatments, will provide a unique identity differentiating their fine grain, pedestrian only character from the other streets, lanes and links. A single avenue of smaller street trees, where possible, will provide greenery and shade.

- Legend**
- ▬ Neighbourhood Laneways 9m
 - ▬ Park Laneways 9m
 - ▬ Pedestrian Laneways 6m
 - Open Space (Parks and Setbacks)
 - Social Corners
 - Community Buildings



Fig. 7.3.109 Pitt Street Mall, Sydney



INDICATIVE PAVEMENT AND KERB TYPES

Creating an interesting and dynamic ground plane which defines and unifies key areas within Waterloo South

Pavements and kerbs are crucial for defining key areas, creating a legible street hierarchy, wayfinding, and pedestrian and vehicular safety.

Street pavements and material pavements must be consistent with the design objectives and key principles of the City of Sydney (CoS) Streets Technical Specifications (2013) and Australian Standards. Paving selection is conscious of ongoing maintenance and aims to be robust, durable and easily maintained.

In major public spaces such as the Village Green & Waterloo Common a special paving treatment of concrete unit pavers with brick feature paving has been chosen to create a unique sense of place. Variations in size and finish of recurring paving elements, brick and concrete, provide rhythm and interest along major north-south & east-west streets & laneways while highlighting key destinations throughout Waterloo South.

Legend

- P1  CoS Concrete Unit Paver
- P2  Hamlet Blue Brick Paving
- P3  CoS Concrete Unit Paver with Concrete Setts, with Hamlet Blue Brick Banding
- P4  In special areas: Hamlet Blue Brick with CoS Concrete Unit Paver
- P5  Special areas: Hamlet Blue Brick with sandstone and metal inlay

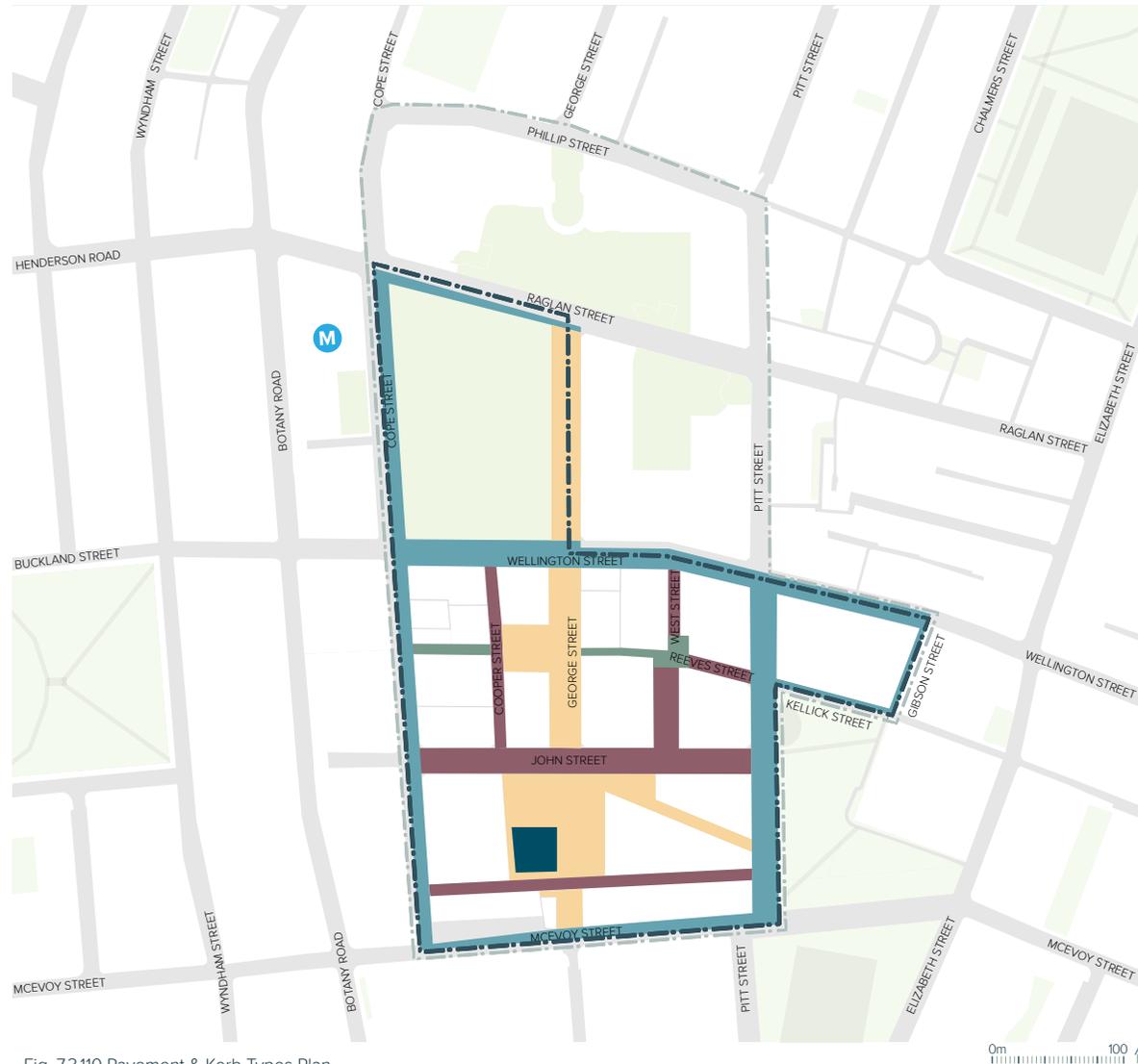


Fig. 7.3.110 Pavement & Kerb Types Plan

PAVING

DESIGN ELEMENTS TABLE

PAVEMENTS

- Along existing major local streets such as Pitt, Cope, Wellington & Raglan paving will be hard wearing to ensure durability in a high trafficked area.
- CoS concrete unit pavers are used mixed throughout laneways & pocket parks amongst the Estate.
- Laneways within Waterloo South will have their own unique locale defined by brick paving.

KERB AND KERB RAMPS

- Along existing major local streets such as Pitt, Cope, Wellington & Raglan in-situ concrete kerbs & ramps will be necessary to match existing.
- Laneways will have flush kerbs for ease of movement.
- The slow shared street (John St.) will require kerbs & raised threshold. These will be finished to match the selected unit paver.

PIT LIDS

- All streets, lanes and plazas:
- Infill lids with adjacent pavement type only.
 - Align service lids with pavement coursing and expansion joints.

DRIVEWAY CROSS OVERS

All driveway crossovers throughout Waterloo South must be treated with the adjacent pavement type to ensure pedestrian priority.

PARKING BAYS

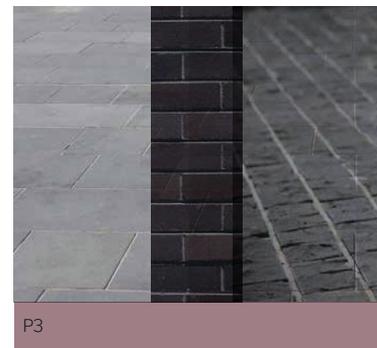
Parking bays along existing Pitt Street and Cope Street must be treated in accordance with the CoS standards, to ensure delineation between road & parking lanes.



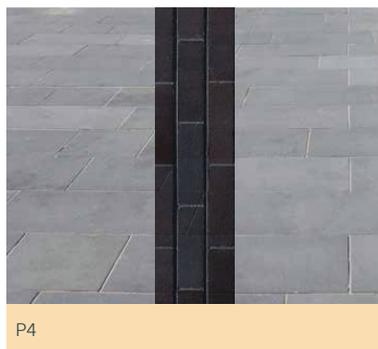
P1
Fig. 7.3.111
CoS Concrete Unit Paver



P2
Fig. 7.3.112 Hamlet Blue Brick Paving



P3
Fig. 7.3.113 CoS Concrete Unit Paver with Concrete Setts, with Hamlet Blue Brick Banding



P4
Fig. 7.3.114
Hamlet Blue Brick with CoS Concrete Unit Paver



P5
Fig. 7.3.115
Hamlet Blue Brick with sandstone inlay and metal inlay



INDICATIVE FURNITURE AND URBAN ELEMENTS

Providing a consistent suite of furniture & urban elements, complimentary to the built and natural surrounds whilst also sympathetic to the sites rich heritage

Furniture and urban elements within Waterloo South aim to be aesthetically pleasing, functional and robust for residents and the wider community. The amount and type of furniture in different areas will be determined by the expected rate of use and program identified for that specific area. Public Domain furniture is to be in accordance with City of Sydney palette (Sydney Street Codes 2013) as well as purpose built elements in special / key areas that help identify the sites characteristics and culture. Overall, the palette will improve the local aesthetic of the Estate and set a precedent for future development in the LGA.

Waterloo South will have a consistent palette or suite of furniture and urban elements, complimentary to the built and natural surrounds whilst also being sympathetic to the sites rich heritage.

Along most north-south, east-west streets and laneways standard City of Sydney furniture shall be utilised for functionality, to meet the everyday needs of a community made up of residents, commuters and visitors. Unique proposals for furniture & urban elements will be in key spaces such as the Village Green and Waterloo Common. This will create a sense of arrival and defined program within areas for the community.

- Legend**
- City of Sydney furniture palette
 - Special areas: Unique palette to key spaces

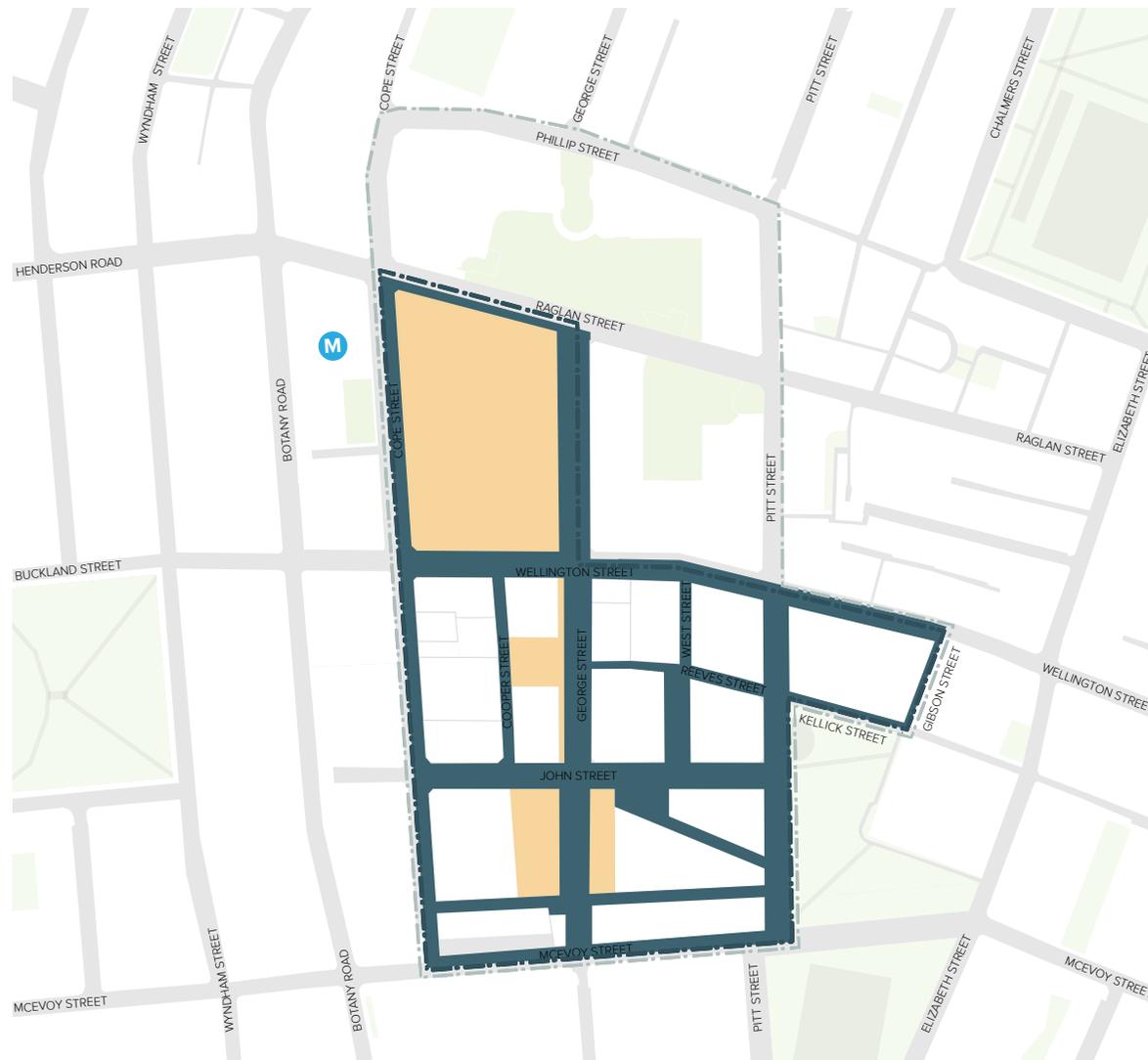


Fig. 7.3.116 Furniture & Elements Plan

DESIGN ELEMENTS TABLE

REQUIRED ELEMENTS

Waterloo South will need a variety of public domain elements which will fulfil different requirements across the Precinct. Elements required in the public domain will be dependant upon location, expected rate of use and program.

EXISTING STREETS

Along existing major local streets such as Pitt, Cope, Wellington & Raglan any upgrades to furniture and urban elements will be to the standard CoS furniture palette. Elements include:

- Seating
- Cycle Parking
- Bollards
- Bins
- Bus Shelters
- Bubblers
- Parking Meters
- Signage
- Tree Grates

LANEWAYS & SHARED STREETS

Laneways and shared streets will focus on pedestrian amenity through furniture and urban elements. These elements will also be utilised in traffic calming measures.

Elements include:

- Seating
- Cycle Parking
- Bollards
- Bins
- Bubblers
- Signage specifically wayfinding
- Tree Grates

VILLAGE GREEN, WATERLOO COMMON & LANEWAYS

Public places & select laneways will require tailored amenity for the community and guests of Waterloo South. The urban elements will be unique and site specific to create a feeling of arrival and a sense of place.

Elements include:

- Seating
- Bins
- Bubblers
- BBQ's
- Shelters
- Signage specifically way finding & information
- Tree Grates

FURNITURE



Fig. 7.3.117 Seat: Bronze Powdercoated Steel frame + recycled composite seat



Fig. 7.3.118 Seat: Formed Concrete Cube



Fig. 7.3.119 Timber Bench Seating



Fig. 7.3.120 Circular Seating

URBAN ELEMENTS



Fig. 7.3.121 Bollard: Bronze Powdercoated Aluminium



Fig. 7.3.122 Cycle Parking: Stainless Steel



Fig. 7.3.123 Bin: Recycled Aluminium & Powdercoated metropolis bronze & Polished Stainless Steel



Fig. 7.3.124 Tree Grate: Stainless Steel

SHELTERS



Fig. 7.3.125 Picnic Table Seating



Fig. 7.3.126 Dual Burner BBQ



Fig. 7.3.127 Bespoke Shelter: Powdercoated Aluminium



INDICATIVE LIGHTING

Creating safe, beautiful and vibrant places full of day and evening activity for residents and visitors

Lighting within Waterloo South must complement the streetscape and create safe, functional streets for pedestrians & vehicular traffic. Lighting type, size and function will vary across Waterloo South. A specific focus will be placed on creating safe, beautiful places for day and evening activity for residents and visitors. Lighting design must be conscious to tie into the existing condition and adhere to requirements outlined by the City of Sydney; Sydney Streets Code (2013), Sydney Lights Design Code (2015), Australian Standards, and the Sydney Streets Technical Specifications (2013).

Existing standard Energy Australia poles occur on Pitt, Cope, Wellington & Raglan streets. In areas such as the Village Green & Waterloo Common there will be distinctive street lighting features which complement the palette of these key areas. On north-south streets such as Cope Street and George Street, the City of Sydney Bronze Smart Pole will be utilised. This new technology will provide residents and guests a chance to connect to wifi and explore Waterloo South whilst also setting a quality precedent for future development in the LGA. Wall mounted or catenary lighting will be used along minor laneways to create a unique condition and sense of place whilst also improving safety at night.

Legend

- Existing Ausgrid Lighting Pole
- City of Sydney Lighting
- Wall mounted / Catenary lighting
- Special areas: Unique palette to place

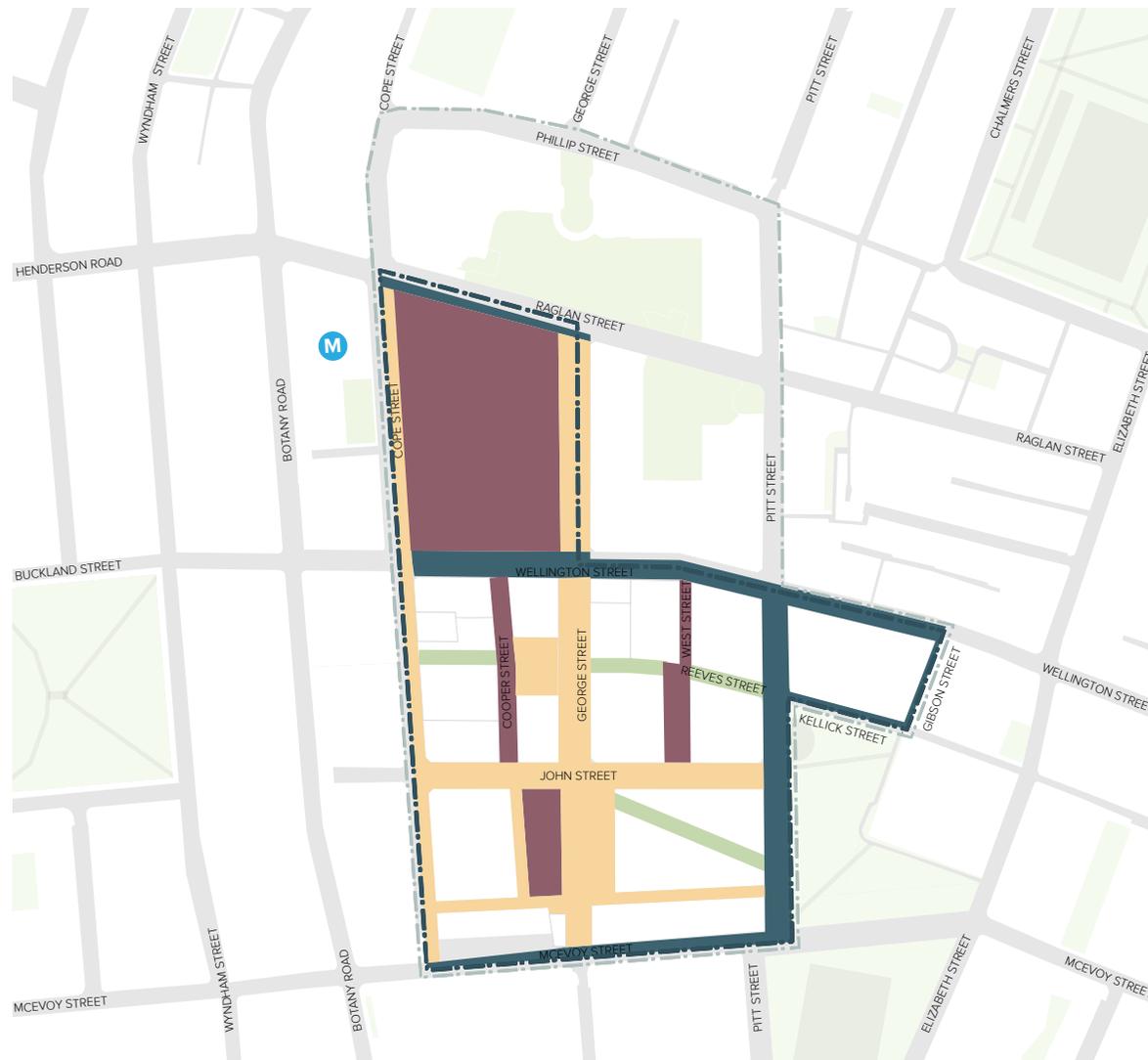


Fig. 7.3:128 Lighting Plan

DESIGN ELEMENTS TABLE

EXISTING LIGHTING

Along existing major local streets such as Pitt, Cope, Wellington & Raglan any upgrades to lighting will be to match existing.

- Lighting type:
- Ausgrid Lighting Pole

SMART ZONES

Smart zones have been identified on major north-south site links including George Street & Cope Street. As well as the southern east-west lane & shared slow street (John St.) also bounding each side of the major public spaces.

- Lighting type:
- City of Sydney Bronze Smart Pole

LANES

Laneways across Waterloo South are identified for inclusion of unique lighting elements to create character & improve surveillance at night.

- Lighting type:
- Catenary Lighting
 - Wall Mounted Lighting
 - Decorative Lighting

SPECIAL AREAS

These major public spaces are identified for special treatment in regards to lighting. Lighting in these places must facilitate safe night activation, contribute to the character of the space and be flexible to work with programming.

- Lighting type:
- Catenary Lighting
 - Wall Mounted Lighting
 - Decorative Lighting
 - City of Sydney Bronze Smart Pole
 - Public art / Lighting Installations

EXISTING LIGHTING



Fig. 7.3.129 Ausgrid Lighting Pole

CITY OF SYDNEY LIGHTING

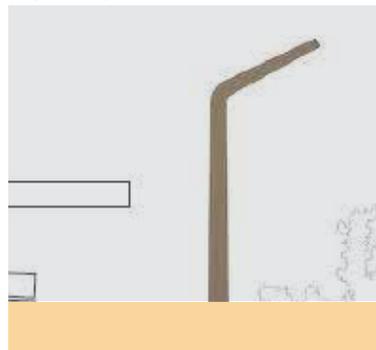


Fig. 7.3.130 City of Sydney Bronze Smart Pole

SPECIAL AREA



Fig. 7.3.131 Public Art / Lighting Installations with City of Sydney Lighting

LANES



Fig. 7.3.132 Decorative Lighting



Fig. 7.3.133 Catenary Lighting



Fig. 7.3.134 Wall Mounted Lighting

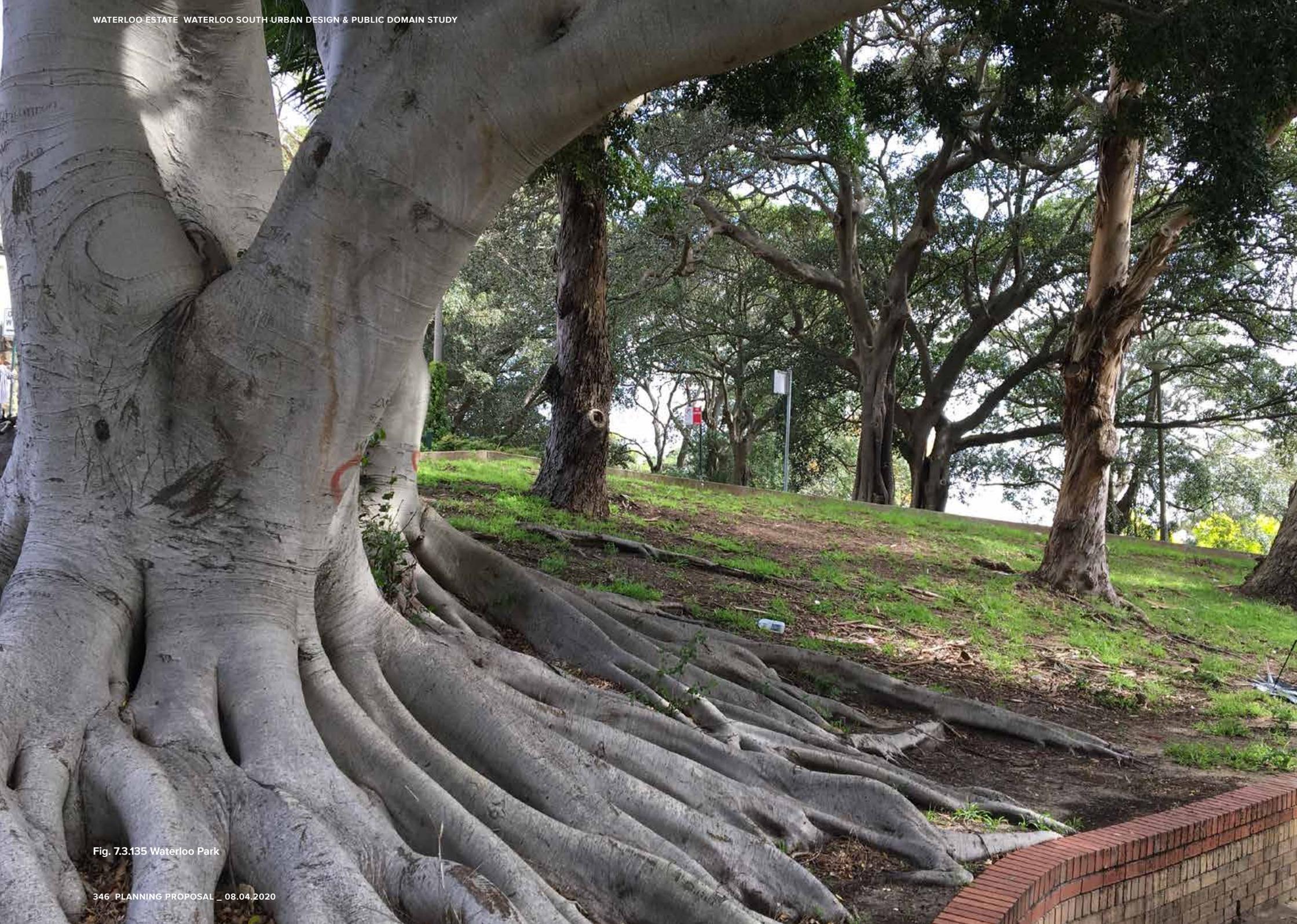


Fig. 7.3.135 Waterloo Park

7.3.3 ECOLOGY AND BIODIVERSITY

Delivering a Waterloo South that is a sustainable, regenerative and environmentally responsible landscape

Ensuring that ecology and biodiversity is thoughtfully integrated into all aspects of public domain design, informed by City of Sydney's (CoS) Sustainable Sydney 2030 Vision.

Waterloo South will weave into the existing Green Grid within Sydney, offering renewed possibilities and uses for open space and providing opportunities to improve existing biodiversity connections in the region. Support for a diverse landscape will be driven by the inclusion of extensive native and exotic planting throughout the public domain and water sensitive urban design (WSUD) opportunities. Water storage, recycling and filtration is integrated throughout the Estate, with WSUD along George Street anchoring the initiative and reflecting Waterloo's historical water story.

Creating a considered urban forest for Waterloo South is of high priority. Increasing the canopy cover across Waterloo South and selecting a variety of native, seasonal street planting will complete the urban forest palette. Waterloo South will also integrate productive landscape initiatives throughout the public and communal open space in the form of community gardens, edible landscapes and roof gardens. These initiatives are opportunities for the landscape to reference Indigenous history and natural heritage through planting.

The design and approach to ecology and biodiversity has been developed in alignment with the City of Sydney's codes. These include, City of Sydney Street Tree Masterplan (2011), Urban Forest Strategy (2013), Liveable Green Network (2011), Landscape Code (2016) and the Urban Ecology Strategy Action Plan (2014).



WATER SENSITIVE URBAN DESIGN

Waterloo South will be developed with consideration for the changing attitudes toward water preservation and reuse, in alignment with the CoS vision for a sustainable city

Waterloo South's water sensitive urban design (WSUD) strategy will efficiently utilise public space to treat and manage stormwater across the site. At present, the majority of Waterloo South is located within a flood plain and suffers from poor drainage during major rain events. Well considered approaches to water storage and bio-retention will work to mitigate flooding and offer cultural, environmental and aesthetic amenity for Waterloo South. Beneath the Village Green and Waterloo Common, a detention basin will assist in treating the overland flows and flood mitigation across the Estate. Planted tree pits throughout Waterloo South and along streetscapes will contribute to the filtration and treatment of stormwater before it enters other bio-retention and WSUD systems.

Refer to the separate report prepared by AECOM for more details.

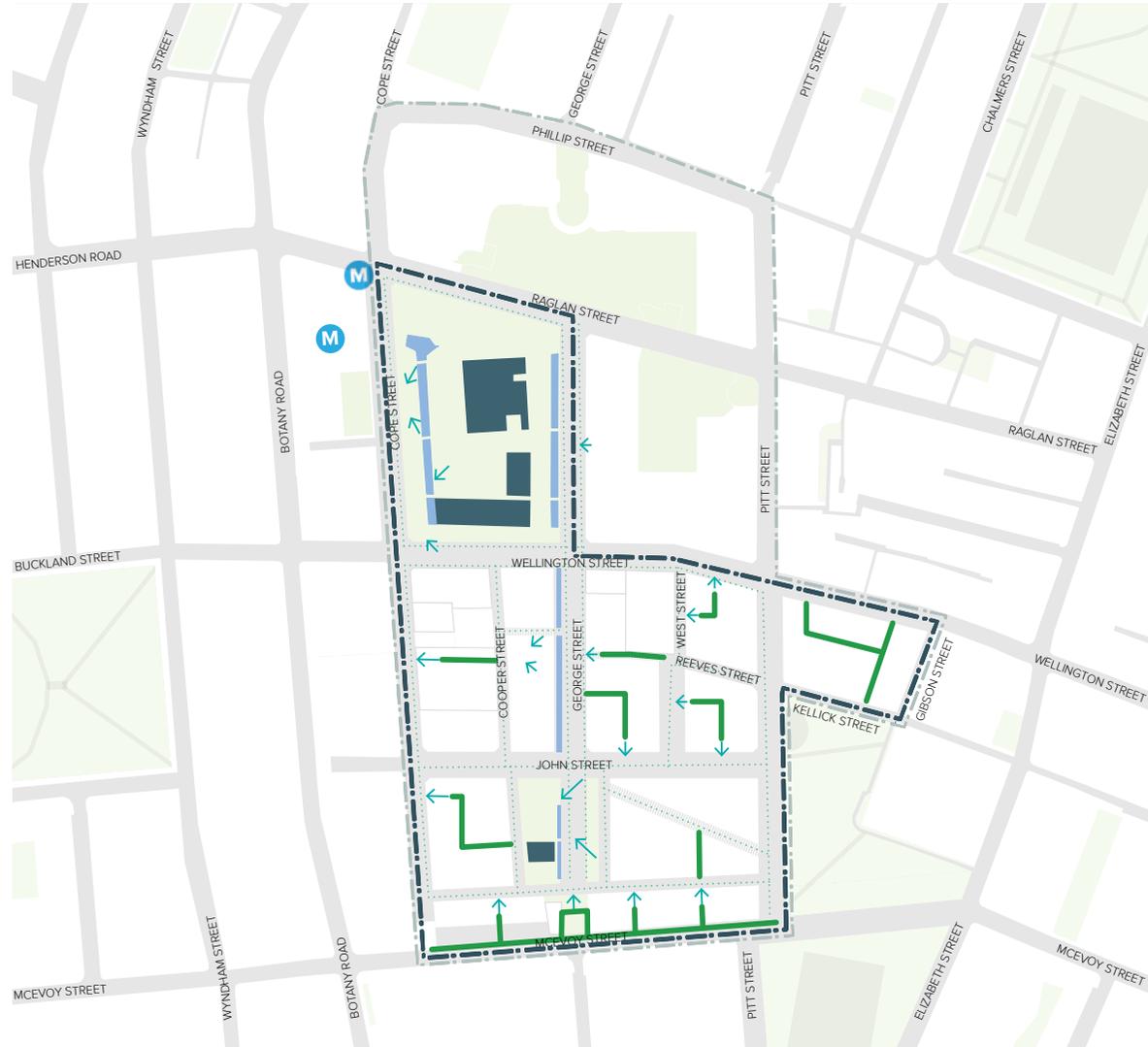


Fig. 7.3.136 Water Sensitive Urban Design and Waterplay

- Legend**
- Detention Basin
 - Raingarden
 - Indicative Bypass
 - Water Sensitive Urban Design
 - Overland Flow
 - Biofiltration Street Trees

WATER SENSITIVE URBAN DESIGN/ BIO-RETENTION



Fig. 7.3.137 Edinburgh Rain Gardens, Fitzroy, Melbourne



Fig. 7.3.138 Victoria Park, Sydney

Maximising opportunities to manage the water that enters Waterloo South using a range of Water Sensitive Urban Design initiatives

Across Waterloo South, a number of measures have been introduced to treat and manage stormwater before it enters major water systems. Bio-retention pits run the entire length of George Street, contributing to not only water treatment, but serving as a spine to the water story of Waterloo. In the Village Green, the bio-retention bodies flank the eastern and western edges, ensuring better filtration and treatment of water that runs into the site. To further support the WSUD strategy throughout streetscapes, bio-retention tree pits have been incorporated to assist with treating runoff volumes along pedestrian pathways in rainfall events.

WATERPLAY / WATER SENSITIVE URBAN DESIGN INTERPRETIVE PLAY



Fig. 7.3.139 Sydney Park, Sydney



Fig. 7.3.140 Goyder Square, Palmerston Northern Territory

A robust and responsive water landscape that is considerate of the environment, and works to educate the next generation of Waterloo South's community through play

Traditional interpretations of waterplay will be plentiful and present within the public domain along with non traditional forms of WSUD as interpretive play. Along George Street, a linear stretch of bio-retention will run from the Village Green, to the edge of Waterloo Common in the south. This WSUD element will be complemented by a similar sized WSUD initiative throughout the Village Green, which will also be designed as informal play elements. Regular concrete crossing intervals will be integrated into the design of the WSUD, to allow for ease of access east-west across Waterloo South.

WATER SENSITIVE URBAN DESIGN PLANTING



Fig. 7.3.141
Juncus usitatus



Fig. 7.3.142
Carex appressa



Fig. 7.3.143
Carex fascicularis



Fig. 7.3.144
Ficinia nodosa

Using planting to add texture, increase biodiversity and contribute to the filtration of water on site

The WSUD planting palette proposes integration of flood tolerant species within the under storey mix, to further assist with stormwater management and pollutant filtration, serving as a resilient landscape strategy surviving through both flood events and short periods of drought.



URBAN FOREST AND BIODIVERSITY

Waterloo South’s urban forest and planting strategies will connect the existing network of green spaces and urban forest, strengthening biodiversity locally and regionally

Trees and their associated canopy are one of the most important natural components for a city. The urban forest scheme for Waterloo South will deliver aesthetic and functional benefits for the community. Where tree removal is necessary a targeted replenishment strategy of three to one will be implemented to recover and increase cover in the area.

Aligning with the City of Sydney’s vision, the urban forest within Waterloo South will provide a canopy coverage target of 30 percent with the indicative concept masterplan giving the potential for 42 percent, increasing the existing coverage from 28.9 percent. Canopy coverage offers respite from the heat of the summer sun and shades the surfaces of passage and movement across Waterloo South. The environmental benefits of shaded hard scape is well documented as a key factor in combating the impacts of the urban heat island effect.

With reference to the Urban Ecology Strategic Action Plan produced by the CoS, the biodiversity scheme for Waterloo South intends to improve upon the existing network of flora and fauna. Waterloo South aims to deliver a resilient urban ecosystem, through considered planting, approaches to water management, edible landscape and the general arrangement of public open space.

To develop a liveable Estate, there will be an increased focus on creating areas of habitat and protection for the local fauna, particularly native birds, reptiles and mammals. Increasing the presence of native stingless bees will also be a priority. With the growing education on the decline of this critical species, providing an assortment of colourful, flowering native plants is vital. These may include a selection of Callistemons, Eucalyptus trees and Banksias.

- Legend**
- Proposed Tree
 - High Value Retained
 - Medium Value Retained
 - Fig

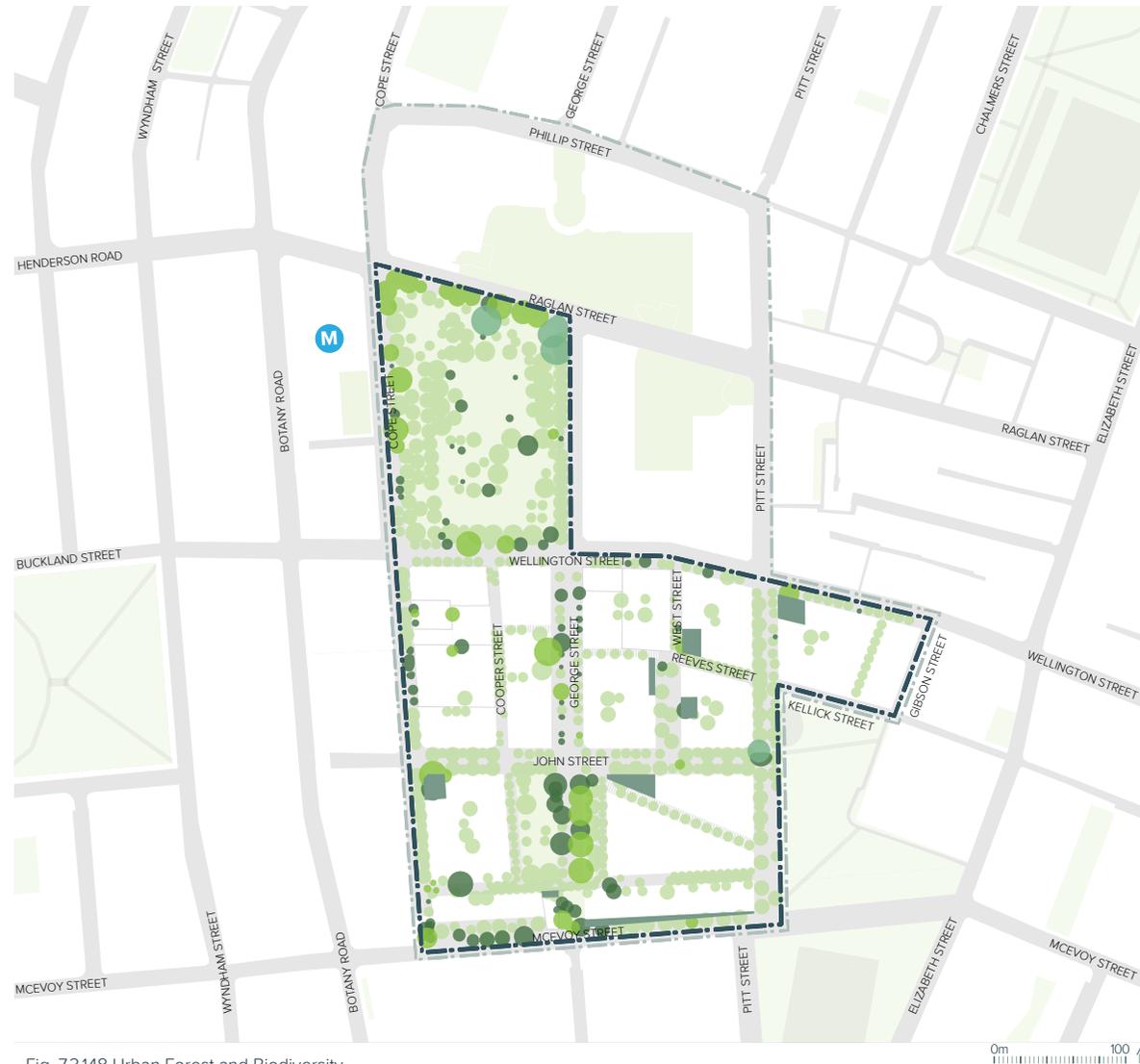


Fig. 7.3.148 Urban Forest and Biodiversity

EXISTING TREES



Fig. 7.3.149 Existing Trees Retained



Existing significant trees are an important asset and contribute to Waterloo South’s existing character. It is important to maintain their presence while strengthening urban forest and biodiversity connections

Across Waterloo South, with a focus on high and moderate value trees, retention of significant trees such as signature figs (*Ficus microcarpa* and *Ficus rubiginosa*) and Eucalypts (*Eucalyptus microcorys*) have been prioritised to help shape the public domain while preserving and building upon the existing urban forest character of Waterloo South.

Significant street trees along existing local streets particularly on the corner of Pitt and Wellington have been prioritised to create public spaces. Other civic trees opposite the Metro Quarter and throughout Waterloo Common have also been retained, with the public domain complementing their retention. Building setbacks, pocket parks and the major parks, Village Green and Waterloo Common, have been specifically located to ensure that a large percentage of high value trees are retained where possible.

- Legend**
- High Value Retained
 - Fig
 - Medium Value Retained

PROPOSED TREES

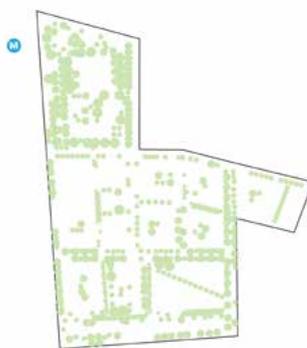


Fig. 7.3.150 Proposed Trees



The presence of existing valuable trees will be enhanced by the tree replenishment scheme, with an increase in canopy coverage site wide

Waterloo South will increase its existing canopy coverage from 28.9% to a target of 30% and potential of 42 percent from the indicative concept masterplan, providing shade amenity to help reduce the urban heat island effect and strengthening Waterloo South’s biodiversity. The tree replenishment strategy ensures an increase in the existing canopy coverage and actual trees for both the public and private domain. Through tree replenishment the streetscapes and public spaces will be shaped as green places, providing adequate shade coverage during summer months, improving amenity and creating comfortable spaces to live, work and play.

- Legend**
- Proposed Tree

UNDERSTOREY

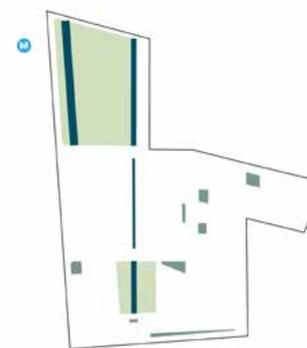


Fig. 7.3.151 Understorey



Using an assortment of understorey planting initiatives to bring the biodiversity grid to street level

Low growing under storey species have been selected to further define the streetscape and public spaces, provide habitat within an urban environment, increasing local biodiversity and avoiding obstruction of sight lines across Waterloo South, providing for a safe and healthy environment. Species include a variety of indigenous, native and exotics with consideration of WSUD and productive landscape strategies, where WSUD including flood tolerant species and elements of bush tucker. Seasonal planting will provide edible qualities such as flowers, roots and seeds.

- Legend**
- Major Park
 - Water Sensitive Urban Design
 - Setback



INDICATIVE STREET TREE PLANTING

Diversifying the streetscape through a colourful, textural and seasonal street tree palette

Street tree species have been selected to provide a mix of species, native and exotic, evergreen and deciduous, to encourage diversity whilst providing adequate shade amenity and contributing to the target 30% canopy coverage.

Across Waterloo South tree planting will help characterise and define the streetscape typologies. Large trees will be specified along George Street, local streets and in major public spaces. Wellington and Raglan streets will become Waterloo South's green street corridors with new proposed trees set amongst signature existing trees retained within landscaped setbacks, pocket parks and social corners. These streets will harness Waterloo's existing urban forest characteristics while strengthening the Estate's biodiversity connections.

Large trees will mediate the scale of the built form, frame views along major pedestrian paths and provide much needed shade in open areas. A predominantly native evergreen palette will define Waterloo South with variations in colour and form. Occasional seasonal planting will diversify the street edges and aid way finding. Laneways across the site will be punctuated by a variety of small trees. These trees will boast a variety of seasonal colour, texture and form to compliment the fine grain of laneways in Waterloo South.

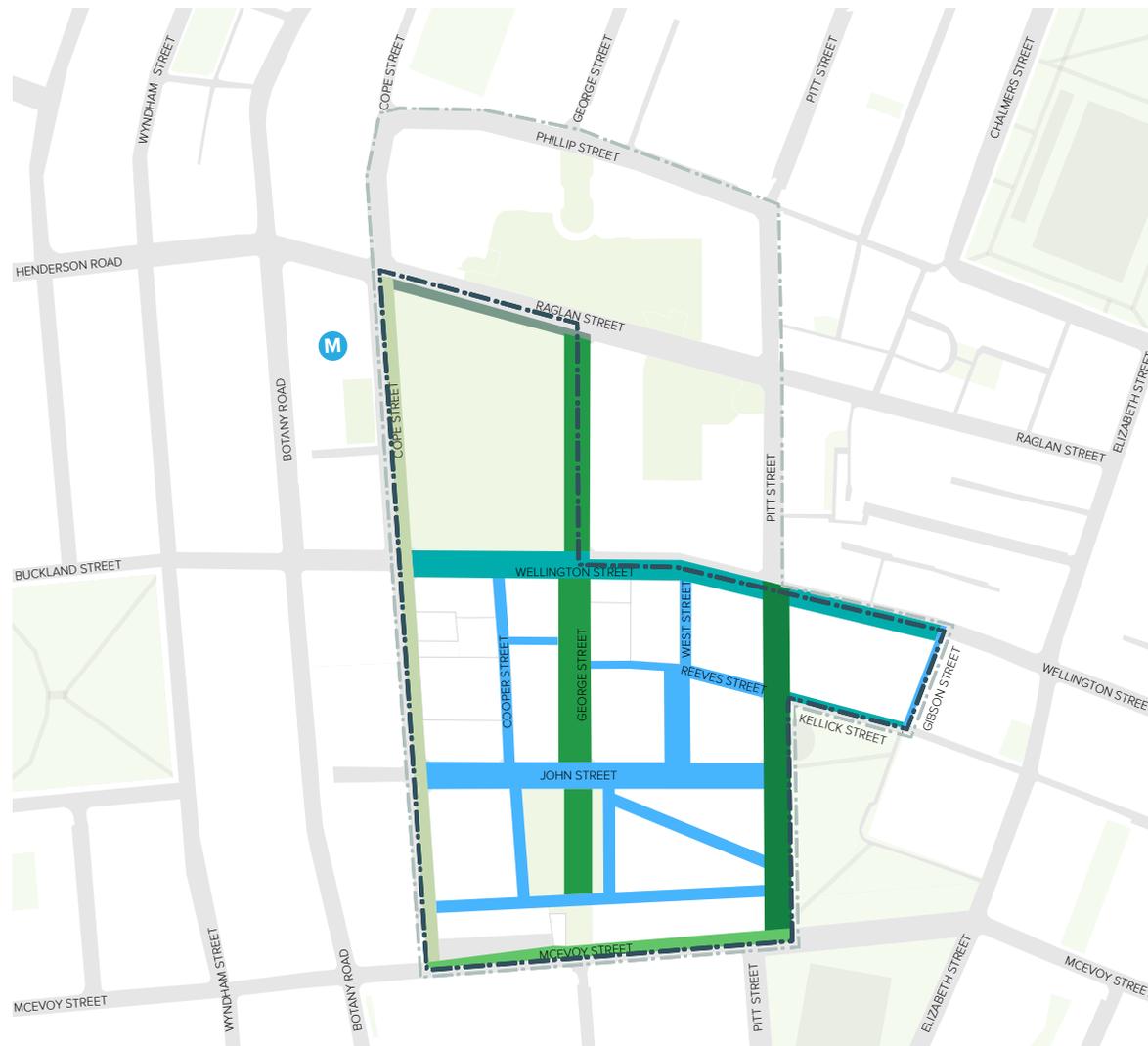


Fig. 7.3152 Street Tree Diagram



GEORGE STREET



Fig. 7.3.153
Angophora costata



Fig. 7.3.154 Angophora
floribunda



Fig. 7.3.155 Lophostemon
confertus



Fig. 7.3.156 Harpullia
pendula

RAGLAN STREET



Fig. 7.3.157 Argyrodermon
actinophyllum



Fig. 7.3.158 Eucalyptus
microcorys



Fig. 7.3.159 Lophostemon
confertus

COPE STREET



Fig. 7.3.160 Syzygium
paniculatum



Fig. 7.3.161 Banksia
integrifolia

COPE STREET



Fig. 7.3.162 Corymbia
eximia



Fig. 7.3.163 Corymbia
maculata



Fig. 7.3.164 Liriodendron
tulipifera



Fig. 7.3.165 Melaleuca
quinquenervia

WELLINGTON STREET



Fig. 7.3.166 Afrocarpus
falcatus



Fig. 7.3.167 Eucalyptus
haemastoma



Fig. 7.3.168 Fraxinus
pennsylvanica



Fig. 7.3.169 Melaleuca
quinquenervia

MCEVOY STREET



Fig. 7.3.170 Corymbia
maculata



Fig. 7.3.171 Eucalyptus
pilularis



Fig. 7.3.172 Eucalyptus
saligna

PITT STREET



Fig. 7.3.173 Corymbia
eximia



Fig. 7.3.174 Flindersia
australis



Fig. 7.3.175 Koelreuteria
paniculata

LANEWAYS



Fig. 7.3.176 Backhousia
citriodora



Fig. 7.3.177 Brachychiton
acerifolius

LANEWAYS



Fig. 7.3.178 Diploglottis
australis



Fig. 7.3.179 Elaeocarpus
eumundi



Fig. 7.3.180 Flindersia
australis



Fig. 7.3.181 Livistona
australis



Fig. 7.3.182 Pyrus calleryana
'chanticleer'



Fig. 7.3.183 Robinia pseudoacacia
'frisja'



Fig. 7.3.184 Tristaniopsis laurina
luscious



Fig. 7.3.185 Waterhousea floribunda
'Green Avenue'



INDICATIVE PUBLIC SPACE PLANTING

Providing a rich palette of trees and understory planting to diversify and define Waterloo South's public spaces

Across Waterloo South there are four tree typologies that will be introduced to help define the public domain. Civic trees are considered icons for way finding and location within certain public areas. Many of the existing fig trees are considered civic, encompassing Waterloo's existing character and will be complemented by the seasonal colours of the Jacarandas and other seasonal planting.

Larger trees will outline the Village Green's edges and run the length of George Street. Medium size trees will be distributed across the majority of Waterloo South. Native species, such as the Melaleuca quinquenervia, will run alongside the seasonal colours of Pyrus and Robina. Smaller trees will be co-located with more intimate spaces and add colours and textures to their surrounds.

Under storey planting will be characterised by a predominantly native palette. Locations will include major open spaces, tree pits and in Water Sensitive Urban Design initiatives such as bio-retention basins. The under storey palette supports the intention to create edible landscapes. Plants include those native to the Sydney region and which have historically been used for bush tucker.

LEGEND

- Civic Trees (Extra Large)
 - Large Trees
 - Medium Trees
 - Small Trees
- Note: All Trees with outlines are existing specimens to be retained.

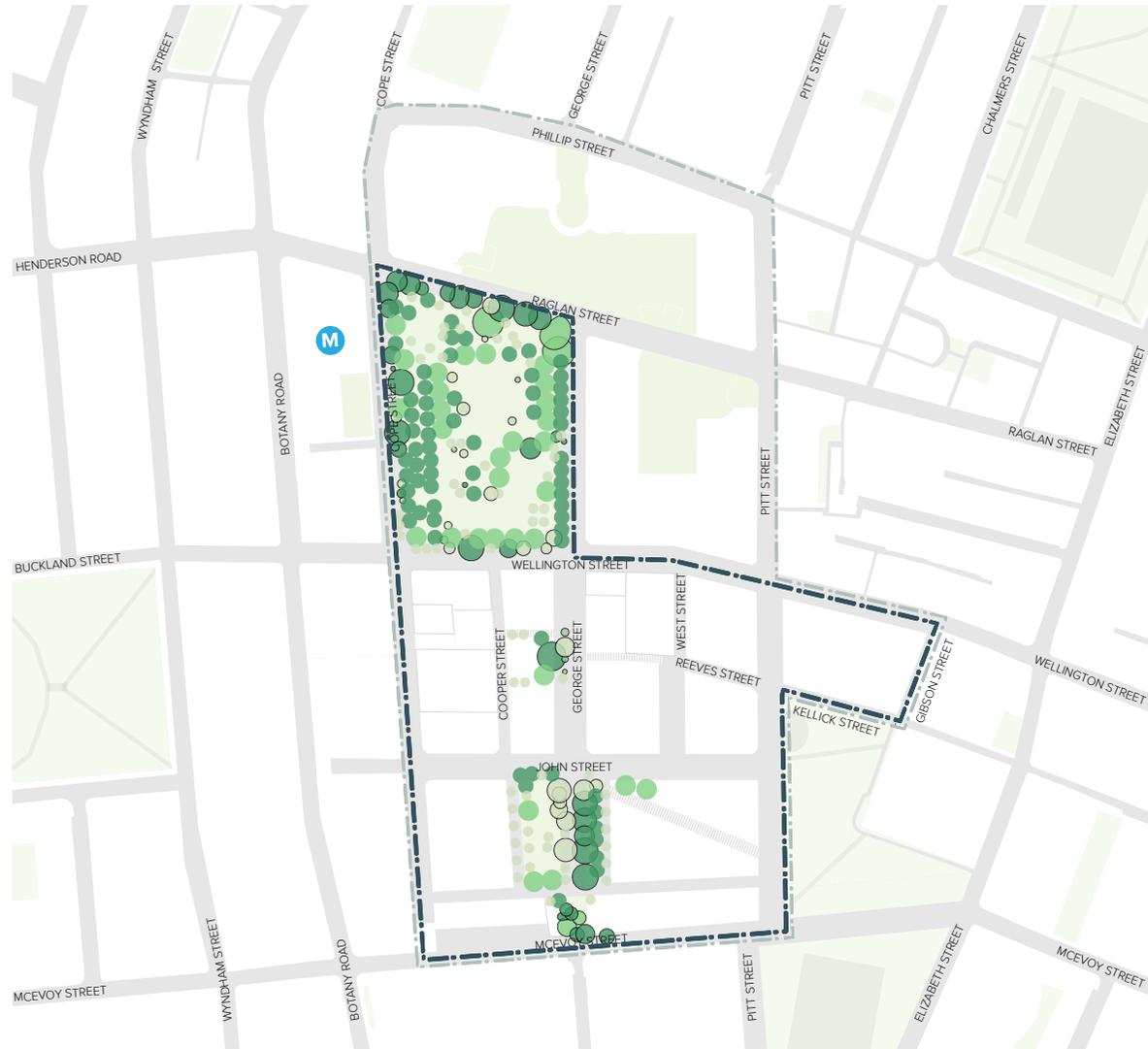


Fig. 7.3.186 Tree Hierarchy

CIVIC



Fig. 7.3.187
Corymbia maculata



Fig. 7.3.188
Eucalyptus grandis



Fig. 7.3.189
Ficus macrophylla



Fig. 7.3.190
Ficus rubiginosa



Fig. 7.3.191
Jacaranda mimosifolia



Fig. 7.3.192
Livistona australis



Fig. 7.3.193
Lophostemon confertus

LARGE



Fig. 7.3.194
Angophora costata



Fig. 7.3.195
Backhousia citriodora



Fig. 7.3.196
Eucalyptus microcorys



Fig. 7.3.197
Eucalyptus pilularis



Fig. 7.3.198
Syncarpia glomulifera

MEDIUM



Fig. 7.3.199
Acmena smithii



Fig. 7.3.200
Corymbia eximia



Fig. 7.3.201
Melaleuca quinquenervia



Fig. 7.3.202
Pyrus ussuriensis



Fig. 7.3.203
Robinia pseudoacacia 'Frisia'



Fig. 7.3.204
Syzygium paniculatum



Fig. 7.3.205
Waterhousea floribunda
'Green Avenue'

SMALL



Fig. 7.3.206
Banksia integrifolia



Fig. 7.3.207
Citrus lemon x reticulata



Fig. 7.3.208
Citrus x meyeri



Fig. 7.3.209
Citrus reticulata



Fig. 7.3.210
Citrus sinensis



Fig. 7.3.211
Cupaniopsis anacardioides



Fig. 7.3.212
Elaeocarpus eumundii



SMALL TREES



Fig. 7.3.213
Laurus nobilis



Fig. 7.3.214
Prunus domestica



Fig. 7.3.215
Prunus persica



Fig. 7.3.216
Prunus persica
var *Nectarine*



Fig. 7.3.217
Pyrus calleryana 'Chanticleer'



Fig. 7.3.218
Tristaniopsis laurina 'Luscious'



Fig. 7.3.219
Ulmus parvifolia 'Todd'

UNDERSTOREY SHRUBS



Fig. 7.3.220
Anigozanthos manglesii



Fig. 7.3.221
Asplenium australasicum



Fig. 7.3.222
Aspidistra elatior



Fig. 7.3.223
Banksia ericifolia



Fig. 7.3.224
Banksia integrifolia prostrate



Fig. 7.3.225
Banksia spinulosa



Fig. 7.3.226
Baumea articulata



Fig. 7.3.227
Callistemon viminalis 'Little John'



Fig. 7.3.228
Callistemon 'White Anzac'



Fig. 7.3.229
Carpobrotus glaucescens



Fig. 7.3.230
Cymbopogon citratus



Fig. 7.3.231
Cymbopogon obtectus



Fig. 7.3.232
Dianella caerulea



Fig. 7.3.233
Dietes robinsoniana



Fig. 7.3.234
Eleocharis sphacelata



Fig. 7.3.235
Elettaria cardamomum



Fig. 7.3.236
Farugium japonicum 'Giganteum'



Fig. 7.3.237
Goodenia ovata



Fig. 7.3.238
Hebe inspiration

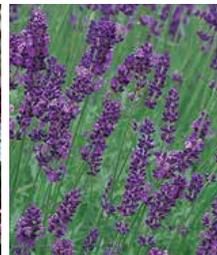


Fig. 7.3.239
Lavender angustifolia 'Munstead'



Fig. 7.3.240
Lomandra longifolia



Fig. 7.3.241
Loropetalum chinense



Fig. 7.3.242
Philodendron 'Xanadu'



Fig. 7.3.243
Raphiolepis indica 'Oriental Pearl'

UNDERSTOREY SHRUBS



Fig. 7.3.244 *Rosemarinus officinalis* 'Blue Lagoon'



Fig. 7.3.245 *Thymus vulgaris*



Fig. 7.3.246 *Salvia officinalis*



Fig. 7.3.247 *Viola hederacea*



Fig. 7.3.248 *Westringia fruticosa*



Fig. 7.3.249 *Xanthorrhoea* spp

GROUND COVERS



Fig. 7.3.250 *Liriope muscari*



Fig. 7.3.251 *Hardenbergia violacea*



Fig. 7.3.252 *Hibbertia scandens*



Fig. 7.3.253 *Melaleuca hypericifolia* 'Ulladulla Beacon'



Fig. 7.3.254 *Scaevola aemula*



Fig. 7.3.255 *Poa* spp.



Fig. 7.3.256 *Themeda triandra*

GRASSES



PRODUCTIVE LANDSCAPE

Landscape use is maximised through the inclusion and distribution of productive landscape initiatives

The principle of a productive landscape is to encourage design initiatives moving into the future of regenerative urban design. With a growing population, opportunities are maximised to localise food production. Beyond simple agricultural values, the productive landscape initiative has a variety of community benefits, all of which are highly valuable for the Estate's community.

Across Waterloo South, a number of opportunities have been integrated to strengthen productive landscape principles into the design. Three major ideas have been explored; community gardens / farms, edible landscapes and communal courtyards and rooftop gardens. All of these opportunities are a response to create community, reference and educate about culture and promote an awareness of ecology and sustainability. The productive landscape initiative is an opportunity to reflect Waterloo's Indigenous history using native flora especially planting associated with bush tucker.



Fig. 7.3.257 Beacons Food Forest, Washington



Fig. 7.3.258 Boston Rooftop Farms, Boston



Fig. 7.3.259. Brooklyn Grange, New York City

COMMUNITY GARDENS
PROPOSED LOCATIONS



Fig. 7.3.260 Community Gardens



Promoting food security, climate change mitigation and the benefits of a healthy lifestyle, through community organised gardens and urban farms

Community gardens are encouraged and promoted by the CoS, with the Community Garden Guidelines developed to ensure a safe, educational and productive outcome of these initiatives. For Waterloo South, there is a focus on delivering two community gardens/farms that cater for all members of the community throughout the Estate's neighbourhoods.

The community gardens in the Village Green and Waterloo Common are the two major contributors to the productive landscape initiative. A portion of Waterloo South's productive landscape initiatives will be provided to the community as community gardens. The distribution of these parks also provides ease of access for residents living in all areas of the Estate.

- Legend**
- Community Garden Village Green
 - Community Garden Waterloo Commons

EDIBLE LANDSCAPES
PROPOSED LOCATIONS



Fig. 7.3.261 Edible Landscapes



Developing a tapestry of edible landscapes throughout Waterloo South to reference Indigenous bush tucker and educate the community on the possibilities of sustainable living

It is intended that a target of 30% of plants within the public domain provide edible qualities that contribute to the productive landscape initiatives. The integration of edible species into the selected planting palettes include integration of bush tucker species, such as Syzygium spp, Backhousia citriodora and Dianella spp, which provide edible flowers, roots and seeds. Along with bush tucker species, many native blooming species, such as Angophora costata and Banksia spp., provide an excellent nectar source for honeybees.

- Legend**
- Water Sensitive Urban Design
 - Pedestrian Boulevard
 - Productive Laneways

ROOFTOP GARDENS
PROPOSED LOCATIONS

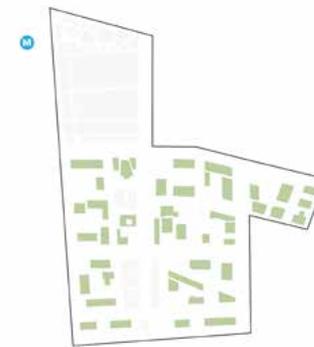


Fig. 7.3.262 Rooftop Gardens



Rooftop Gardens complete the productive landscape movement, contributing to the amenity of the vertical village

The productive landscape initiative will include a rooftop planting scheme across Waterloo South. From small private rooftop gardens, to large rooftop plots for harvesting produce, the potential of this movement is widespread. The rooftop gardens form part of the vertical villages that are encouraged for a range of building typologies to create smaller sub-communities in larger buildings or developments.

- Legend**
- Rooftop Gardens



INDICATIVE PRODUCTIVE LANDSCAPE PLANTING PALETTE

Including a wide variety of native and exotic edible plants into the landscape for productive purposes and to encourage community living

The productive landscape planting palette has been developed to reflect Indigenous and native planting that is endemic to the region. A palette has been created for trees, under storey and edible landscapes / bush tucker, to ensure all aspects of the productive landscape initiative are met. Whilst some plants on the list are included because of their edible nature, others are plants commonly used for medicinal needs, or for structures such as woven baskets. Alongside this, there is a selection of non-Indigenous perennial herbs, fruiting trees and shrubs, and seasonal planting, that completes the palette throughout Waterloo South.

BUSH TUCKER: TREES

Fig. 7.3.263
Acmena smithii



Use: Small edible berries

Fig. 7.3.264
Angophora costata



Use: Flowers to support honey production

Fig. 7.3.265
Backhousia citriodora



Use: Leaves for teas, fragrant oils, healing

Fig. 7.3.266
Banksia integrifolia



Use: Sugar nectar from Banksia blossoms

Fig. 7.3.267 *Diploglottis australis*



Use: Small, edible fruits

Fig. 7.3.268
Livistona australis



Use: Edible growing bud

BUSH TUCKER: UNDERSTOREY

Fig. 7.3.269
Melaleuca quinquenervia



Use: Flowers to support honey production

Fig. 7.3.270
Syzygium paniculatum



Use: Small, edible fruits

Fig. 7.3.271
Banksia ericifolia



Use: Sugar nectar from Banksia blossoms

Fig. 7.3.272 *Banksia integrifolia prostrata*



Use: Sugar nectar from Banksia blossoms

Fig. 7.3.273
Banksia spinulosa



Use: Sugar nectar from Banksia blossoms

Fig. 7.3.274 *Carpobrotus glaucenscens*



Use: Small, edible fruits

Fig. 7.3.275
Dianella caerulea



Use: Fronds for basket weaving, edible berries

Fig. 7.3.276 *Lomandra longifolia*



Use: Fronds for weaving

Fig. 7.3.277
Viola hederacea



Use: Small, edible flowers

PRODUCTIVE LANDSCAPE PALETTE TABLE

TREES

Drawing from the palette of species typically found in the Eastern Banskia Scrub of the Waterloo area, the selected range offers a variety of productive landscape opportunities, with particular focus on Indigenous uses for native plants; for nectar, tea making or use of bark for structures and art-making.

UNDER STOREY

The suggested species draws on the plants commonly used by Indigenous people for weaving, structure or as a food source. All species are suitable for the area.

BUSH TUCKER / EDIBLE LANDSCAPES

Edible landscape and bush tucker opportunities will be integrated into all areas of the Estate. The species selected are endemic to the region and can tolerate both sun and shade conditions.

EDIBLE LANDSCAPES: TREES

Fig. 7.3.278
Citrus lemon x reticulata



Use: Edible Fruit

Fig. 7.3.279
Citrus x meyeri



Use: Edible Fruit

Fig. 7.3.280
Citrus reticulata



Use: Edible Fruit

Fig. 7.3.281
Citrus sinesis



Use: Edible Fruit

Fig. 7.3.282
Laurus nobilis



Use: Edible Fruit

Fig. 7.3.283
Prunus domestica



Use: Edible Fruit

Fig. 7.3.284
Prunus persica



Use: Edible Fruit

Fig. 7.3.285 *Prunus persica* var. *Nectarine*



Use: Edible Fruit

EDIBLE LANDSCAPE: UNDER STOREY

Fig. 7.3.286
Elettaria cardomomum



Use: Fragrant leaves, edible seedpods

Fig. 7.3.287
Cymbopogon citratus



Use: Fragrant, edible leaves

Fig. 7.3.288 *Hebe inspiration*



Use: Flowers to support honey production

Fig. 7.3.289 *Lavender angustifolia* 'Munstead'



Use: Fragrant flowers for teas

Fig. 7.3.290 *Rosemarinus officinalis* 'Blue Lagoon'



Use: Edible, fragrant leaves

Fig. 7.3.291
Thyme vulgaris



Use: Edible, fragrant leaves

Fig. 7.3.292
Salvia officinalis



Use: Flowers to support honey production



Fig. 7.3.293 Beam Festival, Chippendale
Source: <https://www.timeout.com>

7.3.4 PUBLIC ART, SIGNAGE AND WAY FINDING

Public art is a creative, inclusive and empowering method of engaging and representing Waterloo's community

Public art is an essential component in developing the cultural and creative character of Waterloo South and the Estate. Public art provides the capacity to recognise the sites Indigenous culture and heritage through cultural expression. Expressions of public art can take a variety of forms, from way finding methods, pavement treatments and decoration, installation, temporary works and events, street art and art as function (seating, lighting). Public art can diversify the landscape, promote a colourful and creative community and improve connections between the diverse community within the Estate.

Waterloo is a place rich in cultural history and heritage. Originally, the land was a series of swamps and marshes, with the Waterloo Swamp dominating much of the Waterloo and Zetland region. Post European settlement, the region began to evolve. Waterloo underwent mass changes in character, emerging as an industrial place for milling, tanning, fell mongering, wool washing, brewing and soap making. Eventually, the area transformed from being purely industrial to residential. By the 1980s, the Estate was one of the largest public housing precincts in New South Wales. Today, the community of Waterloo is culturally diverse, rich in Indigenous representation and transforming into the future. Whilst there is an obvious focus on using public art as a mechanism to represent the past, it is also a method of exploring the present and the transition towards the culture and character of Waterloo in the future.

The art for Waterloo South goes beyond being a placemaking, way finding and aesthetic initiative. Public art has the capacity to engage the community by allowing them to contribute to the visual landscape of the place.

The strategy for public art, signage and way finding has been developed in alignment with the following City of Sydney Codes; Creative City, Cultural Policy and Action Plan (2014 - 2024), Legible Sydney Way finding Strategy (2012) and the City Art Public Art Strategy (2016), as well as the Waterloo South Public Art Plan, Milne and Stonehous (2020).



NARRATIVE

Public art provides the opportunity to recognise the Indigenous culture and heritage present within the Estate

The Estate's evolution from a wetland of diverse flora and fauna, to an industrial precinct and finally a key suburb on the outskirts of Central Sydney, has resulted in an area rich in heritage and culture.

The adaptability and resilience of Waterloo are key characteristics of defining the Estate's spirit of place, sense of belonging and celebration of cultural diversity.

Waterloo South's Public Art Plan is driven by Waterloo's sense of place and its defining characteristics, driving identity, a sense of belonging, a value for the land and a celebration of the cultural diversity of the community

Waterloo South's public art curatorial narrative will reinforce the sites past, present and future, whilst building upon the idea of public space as outdoor 'rooms' and connecting the community with their neighbourhood.

Public art will examine connections between community and the Estate alongside the use of public art as a method of way finding, community collaboration and the establishment of Waterloo South as a strong cultural domain within the Greater Sydney region.

Refer to the Waterloo South Public Art Plan prepared by Milne and Stonehouse for further information.



Fig. 7.3.294 Street Art, Redfern



Fig. 7.3.295 Lata 65, Portugal



Fig. 7.3.296 Kopupaka Reserve in Te Hauauru Park, Auckland

PRINCIPLES

SITE SPECIFICITY

ACTIVATED PUBLIC DOMAIN AND STREETScape

EXCELLENCE, INTEGRITY AND SUSTAINABILITY

CULTURAL COMMUNITY

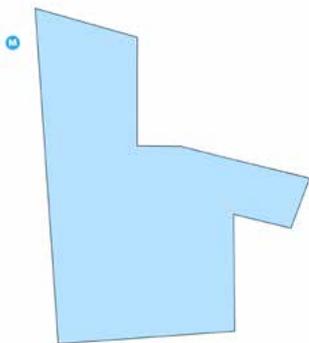


Fig. 7.3.297 Art and Site

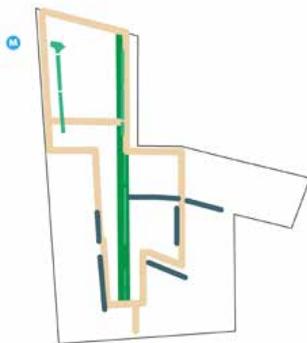


Fig. 7.3.298 Art and Community

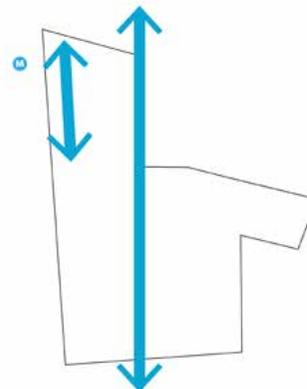


Fig. 7.3.299 Art and Environment

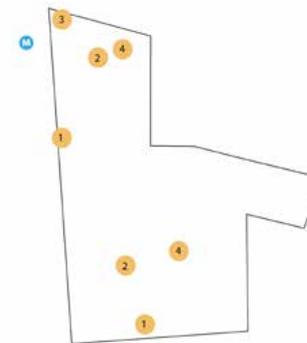


Fig. 7.3.300 Art and Environment



Recognising the site's Aboriginal and 'making' history. Celebrating the stories of Waterloo through art

The Waterloo area is rich in heritage, including that of the Indigenous people. Much of the public art throughout the site will focus on representing the characteristic of Waterloo from an area rich in Indigenous culture, to an industrial hub for inner city Sydney, to its eventual emergence as a home to many nationalities in the present day. But perhaps most importantly, the public art plan will look to the future, acknowledging the need for trans-generational thinking when expressing culture in art form giving a voice and opportunity to the local community and its artists.

Offering the streetscape and public domain as a canvas for interpretation and to enhance community social connections

Waterloo South's fine grain street grid and open space arrangement provides an opportunity to explore the possibilities of public art as a cultural presence and community builder. The public domain and streetscape will offer a canvas for interpretation, and enhance social connections, strengthening the communities experience at eye level. Public art will contribute to bringing spaces to life and transforming them from day to night, creating vibrant spaces for people to live, work and play.

Creating an embedded approach through durable and ecologically sustainable public art

The public art plan for Waterloo South recognises and interprets Waterloo's environmental heritage, practices and possibilities. Public art will be robust, of high quality and ecologically sustainable whilst initiating conversation and education around sustainability particularly connected with Waterloo South's water story. Inclusion of numerous WSUD initiatives across Waterloo South, significantly along George Street is where art and environment will seek to express the connection between sustainability, nature and built environment.

Integrated public art projects that recognise existing and future communities

The Estate community is culturally complex and multi-cultural. Through public art, a sense of place and community unique to the Estate will emerge providing opportunities to build knowledge and skills. The quality of this engagement will be apparent through the moments of interaction and participation between community members and the artworks. This diversity in form and subject will contribute to the creation of a supportive, equal and collaborative community.

Legend

Waterloo South

Legend

Accessible Local Movement Route
Art Lanes
Water Sensitive Urban Design

Legend

Water Story
George Street / Pedestrian Boulevard

Legend

1 Gateways
2 Major Parks
3 Waterloo Metro Hub
4 Community Spaces



PUBLIC ART OPPORTUNITIES

Ensuring all areas of Waterloo South explore the potential of public art as a mechanism for cultural expression, collaboration and wayfinding

Across Waterloo South, there are many opportunities for public art to work as an important component of the urban landscape. The primary locations for public art are all primary public spaces, streets, laneways and community hubs.

The opportunities for public art are also maximised by understanding the breadth of public art that is available. Sculpture, lighting, temporary and fixed art, street art, murals, performance or events, and pavement / facade art are just a small assortment of the categories of public art possibilities.

As a significant aspect and voice for the Estate, the Waterloo South Public Art Plan aims to explore the contribution of these art forms to the canvas of the Estate, reflecting culture and community life, whilst strengthening the community's connection to Waterloo at eye level, contributing to an activated public domain that engages the community and creates a welcoming and distinct place.

Refer to the Waterloo South Public Art Plan prepared by Milne and Stonehouse for further information.

- Legend**
- Accessible Local Movement Route
 - Art Lanes
 - Bio Retention
 - 1 Gateways
 - 2 Major Parks
 - 3 Waterloo Metro Hub
 - 4 Community Spaces

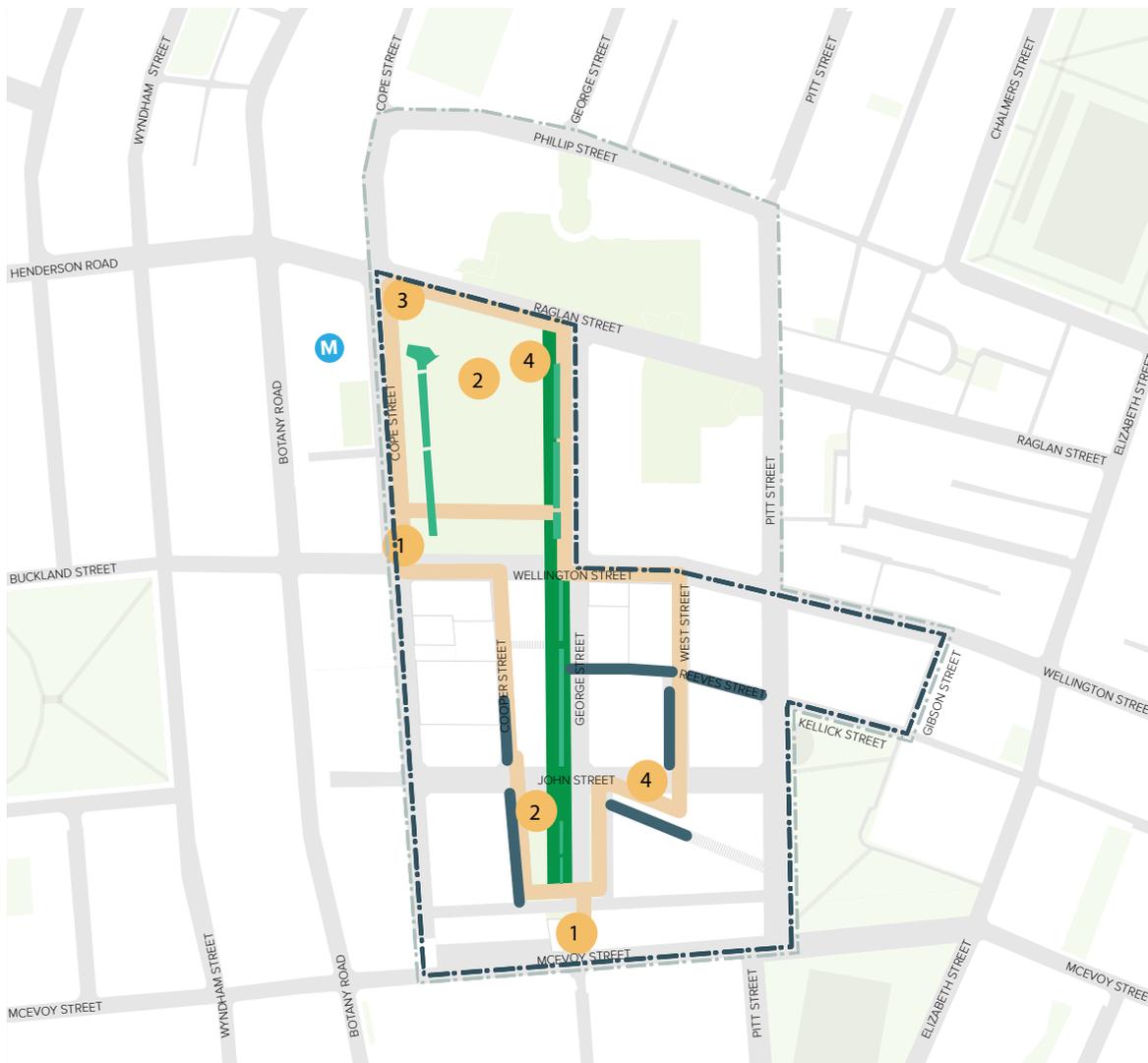


Fig. 7.3.301 Public Art Opportunities

PUBLIC ART AND WAYFINDING

Using public art as a public domain guidance tool that is informative and fun to encourage pedestrian movement throughout Waterloo South

Public art is often associated with way finding, as it delivers recognisable and unique elements to an otherwise typical public domain. Public art can be used as a mechanism for delivering unique visual modes, that can be translated and associated with particular locations. There is the potential to use pieces of public art in larger open spaces to make sub-spaces easily identifiable and communicable.

Public art as a way finding measure also includes the treatment of pavement and facades to define direction and destination. Having public art that responds to the conditions of both day and night, can encourage the use of spaces and provide a safe night environment. Using lighting systems as a component of public art can diversify the night time street scape and provide simple methods of direction.

EQUAL ACCESS AND PUBLIC ART



Fig. 7.3.302 Sydney Laneways Art Program, 2017

Integrating new technologies and using art and wayfinding diversity to deliver a public domain that is easy to navigate for all members of the community

Waterloo South will be home to people of varied nationality, ability and age. In considering this, all signage and way finding measures will work to improve accessibility for all groups. Traditional measures including tactile locations and signalised intersections could be improved with the introduction of digital and audible technologies. Public art has an important role in providing equitable access, with colour and sensory stimulations introduced to ease way finding for those who may experience difficulty moving through Waterloo South.



Fig. 7.3.303 Southbank Crossing, London



Fig. 7.3.304 Walk the Walls Carringbah



Fig. 7.3.305 Pink Street, Lisbon

Creating and improving community connections through public art

The Accessible Local Movement Route will provide an accessible route for all residents and will feature public art that is both aesthetically pleasing, engaging and responsive to the needs of the community. Along this route, public art plays the role of a way finding measure, visual locator and reflector of culture providing an inviting experience through Waterloo South while illuminating Waterloo's unique character and heritage.

Public art methods can be important in easy way finding, including selective treatments of pavement, lighting arrangements and street art or murals. The potential of public art and signage can also be explored. Public art can diversify the landscape, promote a colourful and creative community, and improve connections between the diverse communities within the Estate.



WAYFINDING AND SIGNAGE

Delivering a legible Waterloo South that encourages pedestrian movement, with comfort and ease

A holistic approach to future way finding and signage will aim to contribute to the development of an accessible and pedestrian friendly public domain through the implementation of contemporary strategies.

All wayfinding and signage will be consistent with the design objectives and key principles of the City of Sydney Legible Way finding Strategy (2012). The strategy will ensure that Waterloo South is easily navigated by locals and tourists alike, using clear and consistent way finding measures throughout.

Simplified and legible street scapes have economic benefits, with retailers benefiting from regular pedestrian traffic. Having a legible street scape extends to all people, with the strategies implemented reflecting the needs of all community members, including those with disabilities and impairments. Signage, defined pathways and crossing points are all important components of the public domain. Increased pedestrian participation is a positive contributing factor to a safe public domain.

Signage location and distribution will be balanced across Waterloo South, whilst also applying consistency in form and style for ease of legibility. Regulating the signage of commerce in the public domain will deliver a consistent dialogue between the community and Waterloo South's commercial operators.



Fig. 7.3.306 City of Sydney Legible Sydney



Fig. 7.3.307 City of Sydney Legible Sydney



Fig. 7.3.308 City of Sydney Legible Sydney



Fig. 7.3.309 Indicative CGI: Waterloo Common facing east
Source: Virtual Ideas, 2020

7.4 LAND USE, SUSTAINABILITY AND RESILIENCE

7.4.1	Non-Residential Land Uses	372
7.4.2	Retail Strategy	375
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7.4.1 INDICATIVE NON-RESIDENTIAL LAND USES

Providing supporting land uses, with a mix of uses that includes retail, social infrastructure, entertainment and businesses will be important to create vibrant places and spaces

INDICATIVE COMMUNITY AND CULTURAL FACILITIES



Fig. 7.4.2 Storytime
Source: <https://www.probuild.com.au>, 2019



Fig. 7.4.3
Source: <https://dynamic.architecture.com.au>



Fig. 7.4.4 Bike repair workshop
Source: LAHC, 2018



Fig. 7.4.1 Indicative locations for community and cultural facilities



Fig. 7.4.5
Source: LAHC, 2018



Fig. 7.4.6
Source: <https://injalak.com>, 2019



Fig. 7.4.7 Easter egg painting
Source: Turner, 2019



Fig. 7.4.8
Source: <https://www.rmycph.com.au>, 2019



Fig. 7.4.9 Rock climbing
Source: LAHC, 2018



Fig. 7.4.10
Source: <https://cityofsydney.nsw.gov.au>, 2019

The retail and ancillary non-retail offer is based on meeting the needs of local residents and workers, both existing and future, and also to draw people in from across the broader region through uses that activate Waterloo South in the evenings and on weekends

INDICATIVE RETAIL AND SERVICES



Fig. 7.4.12 Source: <https://esperan-ctide.com>, 2019



Fig. 7.4.13 Source: <https://www.firstchoicebb.com.au>, 2019



Fig. 7.4.14 Source: <http://www.thecom-mune.co>, 2019



Fig. 7.4.11 Indicative locations for retail and services



Fig. 7.4.15 "It's possible to love a bank"
Source: <https://www.marketingmag.com.au>



Fig. 7.4.16 Source: LAHC, 2018



Fig. 7.4.17 Active façades in Cabramatta encourages street life

7.4.2 RETAIL STRATEGY

Introduction

The retail strategy is informed by retail experts MacroPlan Dimasi and Right Angle Studio. This work justifies a place led approach to creating a diversity of retail experiences, including the opportunity for cooperative retail models as part of the overall project goals, focussing on equity, activity and affordability.

Research has been undertaken into precedent neighbourhoods around the world which have a similar population density to what is envisioned for Waterloo South.

These precedent neighbourhoods in conjunction with WalkScore have been used to develop an Urbanity Index - a gauge for an equitable distribution of retail and other amenities over time within Waterloo South and the Estate.

When compared with a 'business as usual' retail model that responds to immediate market demand, with the majority of the ground floor sold as residential dwellings, the research concludes a radically different approach is required to enable the intensity of retail and other amenities to evolve over time with population growth in the Redfern-Waterloo neighbourhood.



URBANITY INDEX

Urbanity and density are two very different things. In order to create the Urbanity Index we look to world best practice examples

Urbanity is the functional intensity of retail activities and other amenities people require at different population densities to have a 'liveable' city lifestyle.

Urbanity challenges conventional retail theory on commercial demand and the innovation required for truly adaptable lower levels (including ground, first floor and basement) addressing building design, legislation and ownership.

Using the projections for population growth in Waterloo and analysing neighbourhoods of comparative population from around the world, the analysis of six categories including retail and other amenities standardised by WalkScore has revealed trends which can be used as a guide for Waterloo South and the Estate.

The results suggest that Waterloo South must provide significantly more truly adaptable ground floor space if it is to reach its full potential to create a great place.



Fig. 7.4.18 La Placita Public Space by Gehl
Source: <http://gehlpeople.com>, 2018

Chippendale, Sydney

At just over 0.5 square kilometres in size, Chippendale has a population of approximately 10,000 residents. The neighbourhood blends modern high density with adaptive use of historic buildings and the provision of quality public amenity.



Fig. 7.4.19
Source: thepeakmagazine.com. Amy Van. 2019

West End, Vancouver

West End Vancouver is a small rectangle of land of just 2 square kilometres within Vancouver's downtown peninsula. With about 42,000 residents in total, it is one of the most densely populated neighbourhoods in North America.



Fig. 7.4.20
Source: <https://fraseropolis.com>, 2019

WEST VILLAGE, NYC

West Village in New York City has a population density of more than 26,000 people per square kilometre. Although primarily residential in land use, it comprises a multitude of restaurants, cafes and shops. It is estimated that 13,000 people visit the neighbourhood each day.



Fig. 7.4.21
Source: <https://www.tracysnewyorklife.com>, 2019

WATERLOO RETAIL STRATEGY

The case studies set a benchmark for the functional intensity of retail and other non-residential uses across Waterloo South

The Urbanity Index summarises the research undertaken by Roberts Day into great neighbourhoods of a comparable density to Redfern-Waterloo over time, supported by WalkScore.

Using WalkScore, the Urbanity Index was developed by assessing the number of restaurants, bars and cafes; groceries; outdoor places; school and education facilities; art and community uses; entertainment facilities and healthcare within each of the case study areas.

These precincts were used as a benchmark to understand the provision of retail and amenities which can be offered at this density.

The key conclusions of this process are:

- To consider the change and evolution of place and retail over time.
- To explore opportunities to unlock ground floor spaces for non residential uses to reflect the minimum amenity required now and into the future;
- Retail spaces need to be flexible so they can change over time.
- Flexibility allows the delivery of sufficient amenity and services to support the target population by 2036.
- It allows us to gauge the equitable distribution of a variety of services and amenities.

Compared to a Business as Usual model, the adaptive ground floor at Waterloo South under an Urbanity Model over time is the inverse

Business as Usual 2036



Fig. 7.4.22 Retail strategy for Business as Usual model to year

Urbanity Model 2036

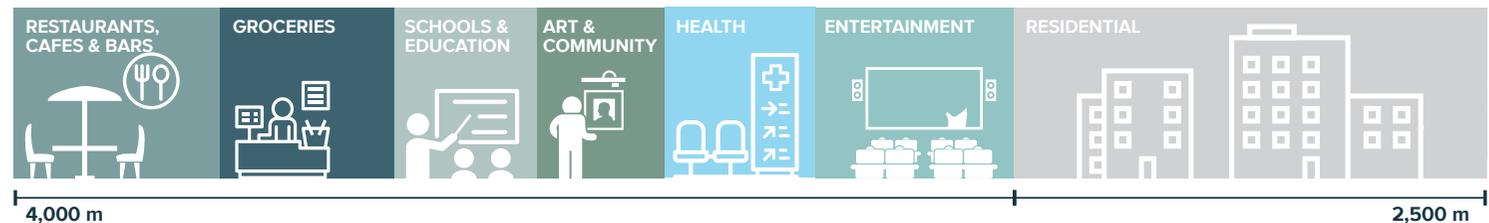


Fig. 7.4.23 Retail strategy for urbanity model to year 2036

Urbanity Model 2056



Fig. 7.4.24 Retail strategy for urbanity model to year 2056



GROUND PLANE EVOLUTION OVER TIME

There are currently very few non-residential uses activating the ground plane in Waterloo

Informed by the project vision and objectives to create a people friendly place, the following diagrams illustrate one way for retail to be distributed across Waterloo South following four principles:

1. Completing the activation of the Metro Quarter as a vibrant retail place and the reimagining and renewal of George Street into a main street retail environment.
2. Activate the perimeter of the Village Green and Waterloo Common with a diverse retail program to equitably distribute access to daily needs within the Estate.
3. Allocate retail along key connective streets, benefiting from significant flows of people, to further improve the integration of the Estate with the neighbourhood context.
4. Activate smaller spaces (laneways and social corners) with smaller scale retail units to improve retail diversity, activation, sense of place and belonging for all micro-neighbourhoods.
5. Pedestrianisation and activation of George Street to renew it into an 'active spine' or Activity Street.

Legend

- Restaurants, Cafes and Bars
- Groceries
- Potential Supermarket Location
- Schools and Education
- Art & Community
- Entertainment
- Health
- Other Non Residential Uses

EXISTING NON-RESIDENTIAL USES 2016

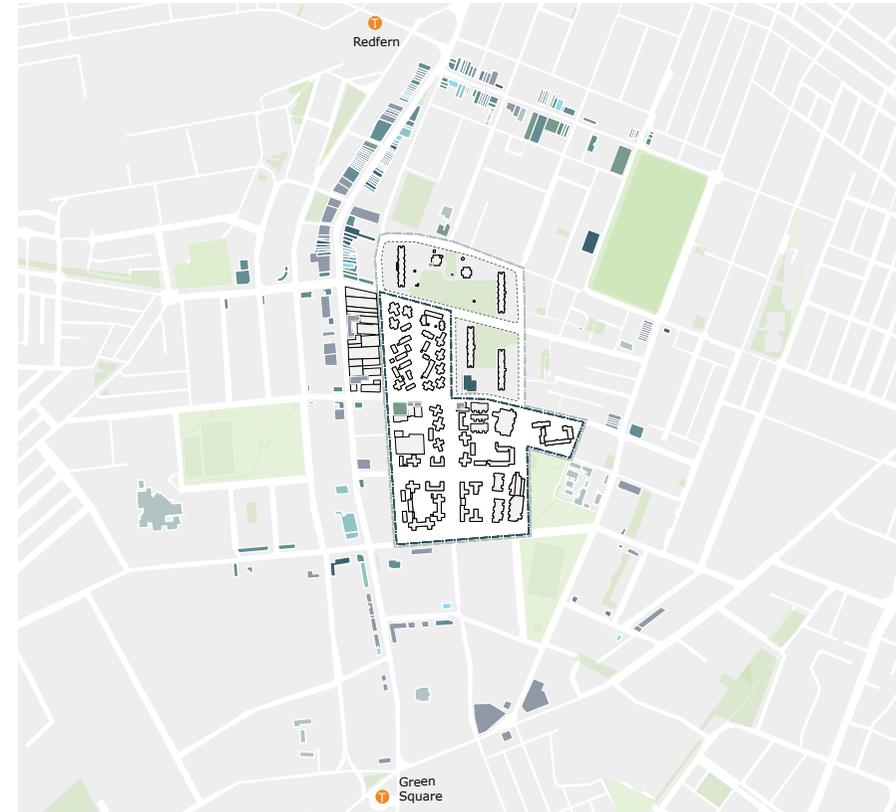


Fig. 7.4.25 Local existing non-residential ground floor uses

There are currently very few non-residential uses activating the ground plane in Waterloo.

URBANITY MODEL 2036

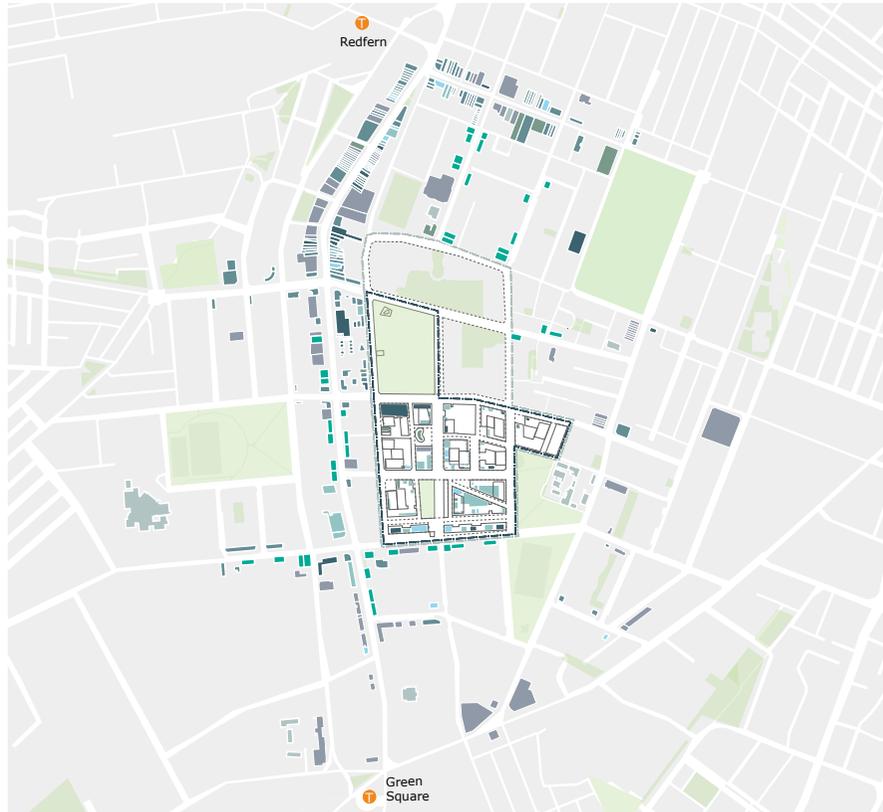


Fig. 7.4.26 Local non-residential ground floor uses under Urbanity model to year 2036

Under the Urbanity model the ground plane would accommodate considerably more non-residential uses by 2036 than a 'business as usual' approach.

URBANITY MODEL 2056

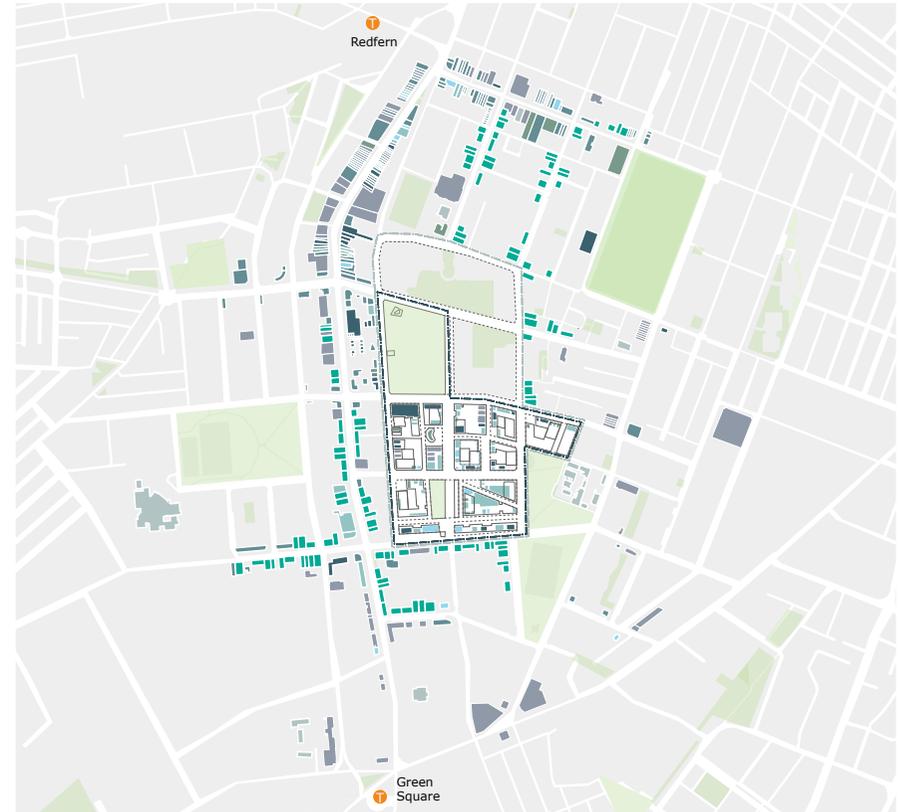


Fig. 7.4.27 Local non-residential ground floor uses under Urbanity model to year 2056

By 2056, the adaptable ground plane will have completed the activation of the Metro Quarter, Village Green and Waterloo Common, complementing the growth outside the Estate's boundaries.



NON-RESIDENTIAL ADAPTATION OVER TIME STRATEGY

A key component of the retail strategy is to design resilient and adaptable spaces that can evolve over time

International best practice reveals that designers are commonly anticipating future change by designing flexible/adaptable spaces so that a building can accommodate active uses into the future, requiring minimal internal building redesign and structural change (Marshall, 2016). This ensures the resilience and longevity of built form, allowing the building to survive and stay relevant to economic, social and cultural changes for next 50 - 100 and years.

The retail strategy for Waterloo South embraces best practice design techniques by drawing inspiration from successful local & international examples. This includes designing flexible/adaptable basement car parking which can accommodate retail, commercial and other active uses in the future. In doing so, Waterloo South can adapt and transform over time as these spaces evolve into activated retail, commercial and community space, particularly in key locations.

Additionally, by designing flexible ground level and first level residential spaces, the future Estate can accommodate retail, commercial and other active uses to adapt to the growing population and modal shift, particularly once the metro station is complete. The retail strategy for Waterloo South embraces best practice design techniques and draws inspiration from successful local examples which have done this in the past.

ADAPTABLE GROUND FLOOR AND FIRST FLOOR

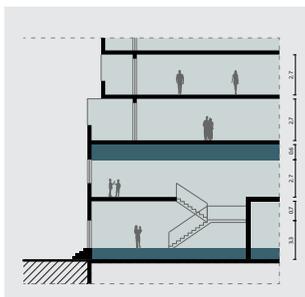


Fig. 7.4.28

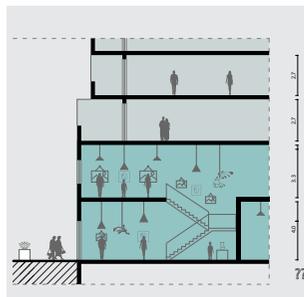


Fig. 7.4.29



Fig. 7.4.30 Retail Space, Boston
Source: <https://linearretail.com>, 2019



Fig. 7.4.31 Loft Apartments, Seattle
Source: <http://www.seattle.gov>, 2019



Fig. 7.4.32 Duke Condos, Toronto
Source: <https://www.buzzbuzzhome.com>

ADAPTABLE GROUND FLOOR AND BASEMENT

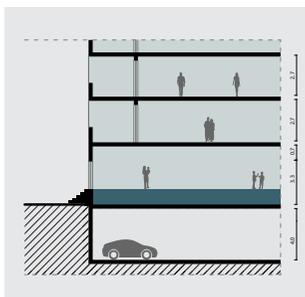


Fig. 7.4.33

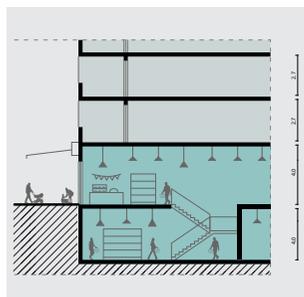


Fig. 7.4.34



Fig. 7.4.35 Paddy's Markets, Sydney
Source: <https://sydney-mobile-secure-straliaweb.com.au>



Fig. 7.4.36 Sogo Mall, Hong Kong
Spurce: <http://www.discoverhong-kong.com>



Fig. 7.4.37 Mr Wong, Sydney
Source: <https://merivale.com>

AWNING AND COLONNADE STRATEGY

Awnings and colonnades will ensure enjoyable and well functioning non-residential frontages

A key component of the retail strategy for Waterloo South is to provide pedestrian shelter for key movement corridors and areas of anticipated foot traffic through the design of permanent and adaptable awnings and colonnades. Previous studies (Jan Gehl, 2007; CityLab 2012) have found that continuous awning structures create a more pedestrian friendly and inviting streetscape/public realm.

The awning strategy for Waterloo South is composed of three key options, with the strategy principles remaining consistent throughout. Awnings are designed/anticipated to be located based on the key movement networks, destinations and clusters of active building uses both now and into the future. Adaptable awnings can be added over time as streetscapes change and incorporate more active uses such as dining and street retail.

Based on the Retail Strategy (see 'Ground plane activities over time' on p.378-379), the following principles guide the Retail Frontage Strategy:

1. Wide (3.5m minimum) awnings and verandahs shall provide people with continuous protection from elements, particularly along main streets, the Village Green, Waterloo Common and wherever retail is located.
2. The retail frontage of smaller shared lanes will include awnings of 1.5m (maximum) wide and shall be designed for flexibility in the form of retractable awnings.
3. Colonnades are recommended for the Community Hubs and key neighbouring frontages, given the typology's significance in resolving change in levels/topography. These include both integrated colonnades and additive colonnades.
4. Retail frontages shall be an integral part of the design of the building facades.

Legend

- Awning (3.5m wide)
- Retractable Awning (1.5m wide)
- Setbacks for non-residential (colonnades)

AWNING AND COLONNADE LOCATIONS



Fig. 7.4.38 Awning and colonnade strategy



There are four types of frontages proposed as part of the Awning and Colonnade strategy

COLONNADE (INTEGRATED)

With an Integrated Colonnade, the facade of the building encroaches over the public right of way, absorbing the sidewalk within the arcade. This is the most urban of all frontage types. The colonnade adds to the width of the pedestrian footpath.

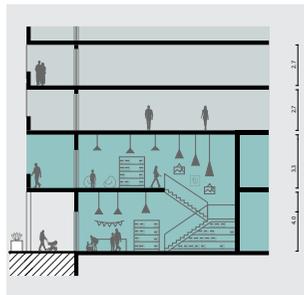


Fig. 7.4.39

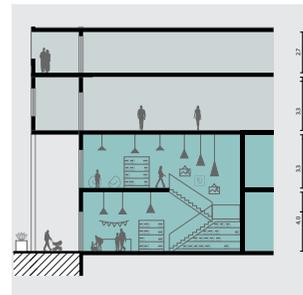


Fig. 7.4.40



Fig. 7.4.41 Thames Tower
Source: <http://mydn-a.com>



Fig. 7.4.42 Kenson Building, Ottawa
Source: <https://urbisite.blogspot.com>



Fig. 7.4.43 Chanel Boutique Store, Hong Kong
Source: <http://butterboom.com>

COLONNADE ADDITIVE (POST VERANDAH)

A Post Verandah Colonnade features an arcade as an additive form to the building facade, where only the arcade encroaches over the public right of way. This approach is possible in setback areas.

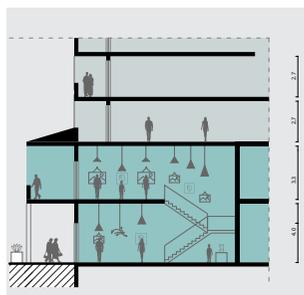


Fig. 7.4.44

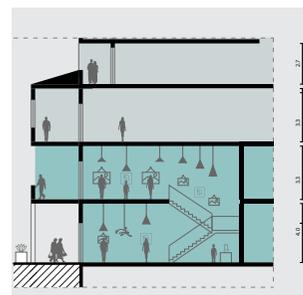


Fig. 7.4.45



Fig. 7.4.46 Bendigo Verandahs
Source: <https://www.vline.com.au>



Fig. 7.4.47 Angel Lane, Sydney
Source: heliosscreen.com.au



Fig. 7.4.48 Beerhouse, Cape Town
Source: <https://idmmag.com>

AWNING

With the Awning typology, the facade is aligned with the right of way or close to the property line, with the building entrance at sidewalk grade. This type is common for retail use, with the awning covering the right of way.

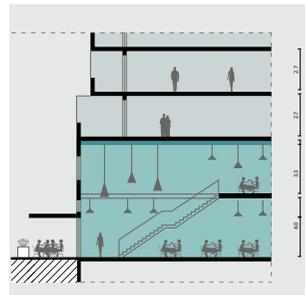


Fig. 7.4.49



Fig. 7.4.50 Mixed-Use Building, Vancouver
Source: <https://www.skyscrapercity.com>



Fig. 7.4.51 Northern Plaza, Monash University
Source: <http://www.landezine.com>



Fig. 7.4.52 Street in Athens
Source: <https://www.flickr.com>



Fig. 7.4.53 Awnings in Seattle
Source: <https://nacto.org>

RETRACTABLE AWNING

For the Retractable Awning typology, the facade has a nil setback to the right of way or is close to the property boundary. It allows space for retractable awnings to be extended and retracted according to the weather conditions and if the uses are active day and night. It is often used in laneways due to its flexibility in controlling sunlight access.

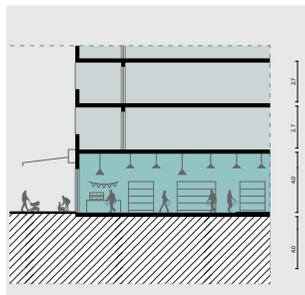


Fig. 7.4.54



Fig. 7.4.55 Angel Lane, Sydney
Source: <https://www.heliosscreen.com.au>



Fig. 7.4.56 Newbury St, Boston
Source: <https://www.tripadvisor.ie>



Fig. 7.4.57 Cafe des Beaux Arts, Paris
Source: <https://www.thekitchn.com>



Fig. 7.4.58 Sicilian Avenue
Source: <https://www.victorianawnings.co.uk>



7.4.3 PARKING, LOADING AND SERVICES

COMBINED ACCESS AND SERVICES INDICATIVE STRATEGY

BASEMENT STRATEGY

The combined access and services strategy will contribute to vibrant places and spaces by increasing opportunities for active uses at street level

The combined access and services strategy will:

- Minimise inactive or blank façades for an activated public domain
- Minimise vehicle entries on streets to reduce conflicts with pedestrians & cyclists
- Additional active ground level uses
- Reduce basement area through combined services & loading

New vehicle entries located on secondary laneways to reduce impact on connecting streets, with access to loading bay and carpark through a common driveway entry. Basement connections only (no parking) will be provided at a minimum depth of 1.5m below new streets. Loading bays and ramps can be sleeved with:

Active frontage

- Non-residential uses such as retail, services, community and cultural uses.
- Residential dwellings and building entries.
- Retail Display windows (regularly refreshed), eg., David Jones seasonal displays
- Greenwalls
- Public art installations

Inactive frontage

- Substations and other utilities requiring frontage to the street
- Fire booster cupboards
- Emergency egress

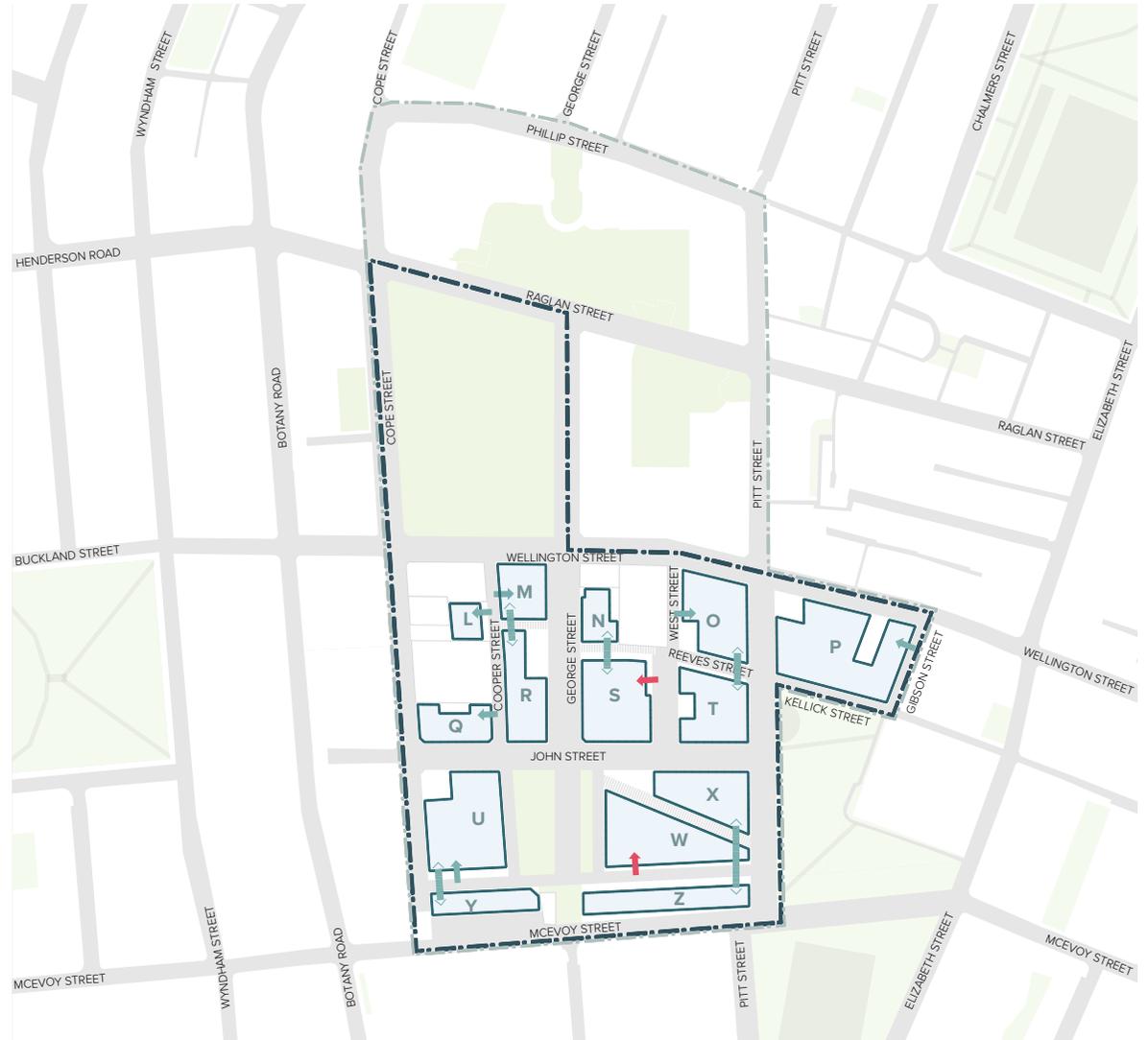
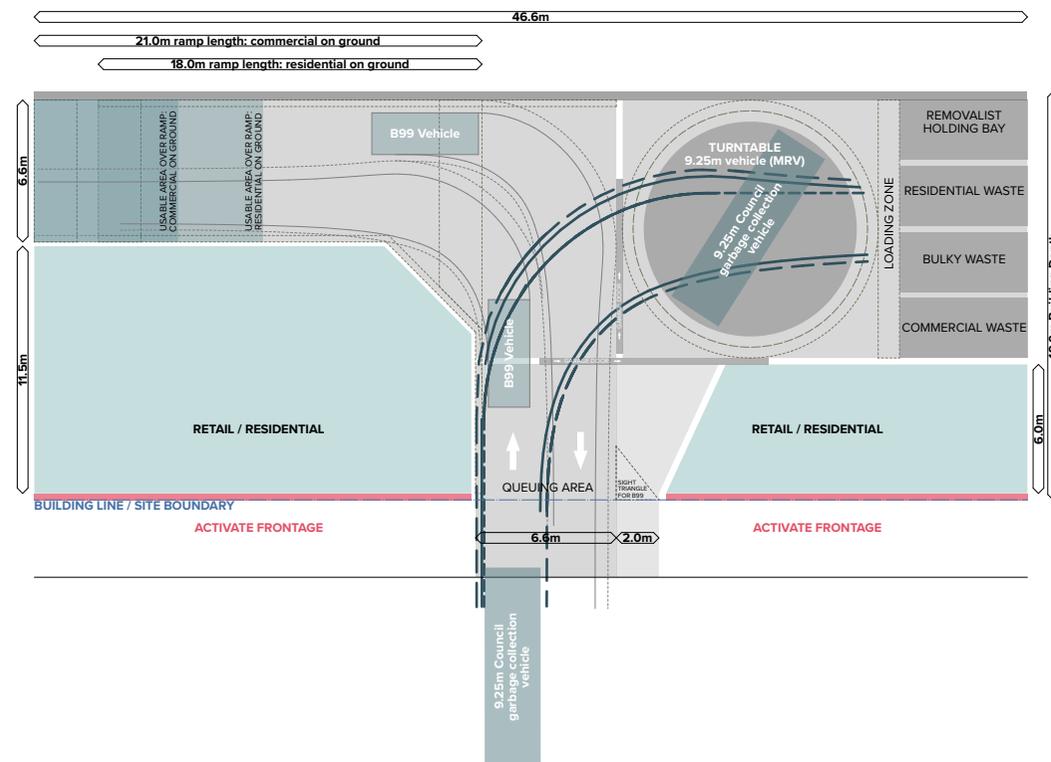


Fig. 7.4.59 Basement location and connection strategy



**COMMON DRIVEWAY
PERPENDICULAR RAMP**



**COMMON DRIVEWAY
DIRECT ACCESS TO RAMP**

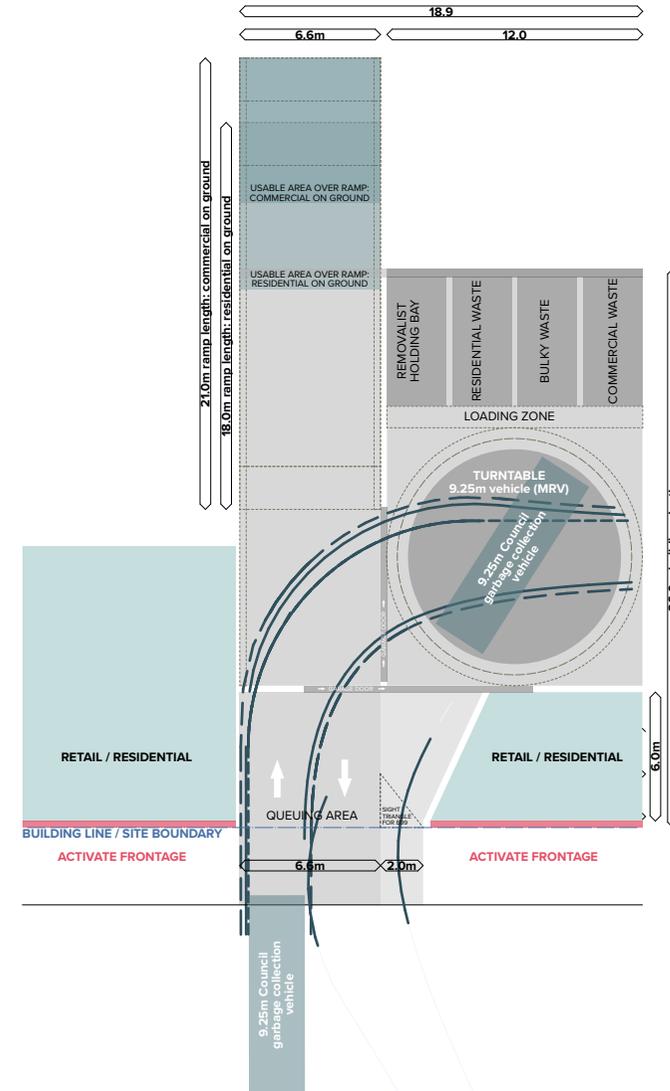


Fig. 7.4.60 Typical basement entry arrangements

W 7.4.4 SUSTAINABILITY AND RESILIENCE

The renewal of Waterloo South is an opportunity to deliver on local, metropolitan and regional sustainability targets offering a new benchmark for sustainable urban precincts

Waterloo has a long history underpinned by community and practical sustainability initiatives. The greatest opportunity to be realised at Waterloo South will be its ability to provide long term value to the community through being more sustainable and resilient in the face of future challenges and opportunities. Careful consideration of the existing context, as well as an appreciation of stakeholder needs, expectations and impacts, provides an important baseline to drive more sustainable outcomes for the Estate.

HEALTH, WELL-BEING & SAFETY

Access to fresh food, safe walkable streets, sense of community, wellness spaces and pride of place will contribute to the health and well-being of current and future Estate residents



Fig. 7.4.61 Passeig De St Joan Boulevard

The design and planning of Waterloo South will have a profound effect on the physical health and mental well-being of residents and visitors. Urban farms, community gardens and food cooperatives provide an opportunity for residents to have affordable fresh food. Public domain activation, walkable streets, open space and community hubs will contribute to the overall safety of the Estate offering health benefits by keeping people more active and connected to their community.

ACTIVATION (STAGING)

The Estate is already an established place and renewal of Waterloo South must ensure strong place outcomes and continuous activation within the community



Fig. 7.4.62 High Line, New York

The scale and staging of the Estate renewal offers considerable opportunities for temporary activation and engagement with current residents and the surrounding community. Maintaining pedestrian access, community art project, tactical urbanism and community drop-in or project 'discovery' centres are just some of the ways to keep the community members informed and social connections intact during construction and throughout the life cycle of the development.

RESILIENCE AND ADAPTATION

Buildings and infrastructure within Waterloo South should be designed for flexibility to adapt for changing community and individual needs that may be influenced by economics, environmental, cultural or other circumstances



Fig. 7.4.63 Sankt Kjelds Quarter

Global warming is predicted to increase localised weather events within Waterloo, particularly in relation to heat waves and flooding. Buildings and infrastructure need to adapt to these changes over time to improve the overall safety and resilience of the communities.

COMMUNITY FACILITIES

Community hubs and other community-centred facilities will provide social spaces to strengthen social bonds and relationships across the community offering critical services and support for all residents



Fig. 7.4.64 Joyton Avenue Creative Centre

Community hubs located throughout each of Waterloo South's character areas will offer spaces for local community events and programs. Hubs should be designed and programmed to be diverse and inclusive for all ages, abilities, cultures and socio-economic backgrounds where everyone feels welcome. Programs and uses should align with local community needs such as recreation, education, training and health related services.

WATER MANAGEMENT

The story, culture, use and treatment of water within the public domain, open space and buildings is an integral component of the Waterloo community



Fig. 7.4.65 Sydney Park

There are significant opportunities for water sensitive urban design and sustainable water systems within Waterloo South. Traditionally a wetland, water plays a central role in the history of Waterloo. Site areas prone to flooding should consider ecologically passive stormwater and treatment solutions such as bio-filtration swales. Vegetative walls and roofs should be integrated to both slow and treat storm water flows throughout Waterloo South. Surface level water treatment should be prioritised in open space and public domain areas, where feasible, to align with regional Blue and Green Grid goals.

ENERGY

A combination of passive design strategies and integration of efficient and clean energy technologies will make Waterloo South a low carbon, energy smart precinct



Fig. 7.4.66 National University of Singapore

Massing and built form design within Waterloo South considers optimum solar access for open space and private residences. Building envelopes are to be designed with optimal thermal efficiencies to reduce mechanical energy loads. Consideration should be given to smart, renewable and scalable energy solutions for public domain and residential structures. Intelligent metering and operating systems will promote efficient use of energy through the life of the Estate.

WASTE

Planning and design of Waterloo South will facilitate and prioritise waste management practices in line with city and regional waste reductions targets.



Fig. 7.4.67 Dockside Green, Canada

Building and public domain design should provide conveniently located waste management and recycling infrastructure to reduce littering and promote recycling. Estate-wide organic composting should be considered in support of precinct goals for productive landscapes such as roof top and community gardens. Waste governance strategies should be considered for commercial use spaces to allow for reduction in landfill waste, particularly single use plastics.

7.5 PRIVATE DOMAIN

7.5.1	Approach to Built Form	390
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7.5.1 APPROACH TO BUILT FORM

INDICATIVE STREETWALLS

The first 10 metres. Streetwalls ranging in height from 2 to 8 storeys define the public domain and craft the street level experience

Within Waterloo South, streetwalls define the public domain and create the street level experience. The width between and height of streetwall buildings defines the scale of the public domain.

Visual interest is achieved through scale, built form variation and character. Modulated streetwalls support a human scale environment. Key strategies include:

- Setting taller buildings back from the street edge to create a pedestrian scaled public domain at key street frontages,
- Limiting maximum streetwall lengths,
- Providing consistent street wall definition and;
- Supporting the street level experience through scale, variation and a mix of architectural responses.

STREETWALLS

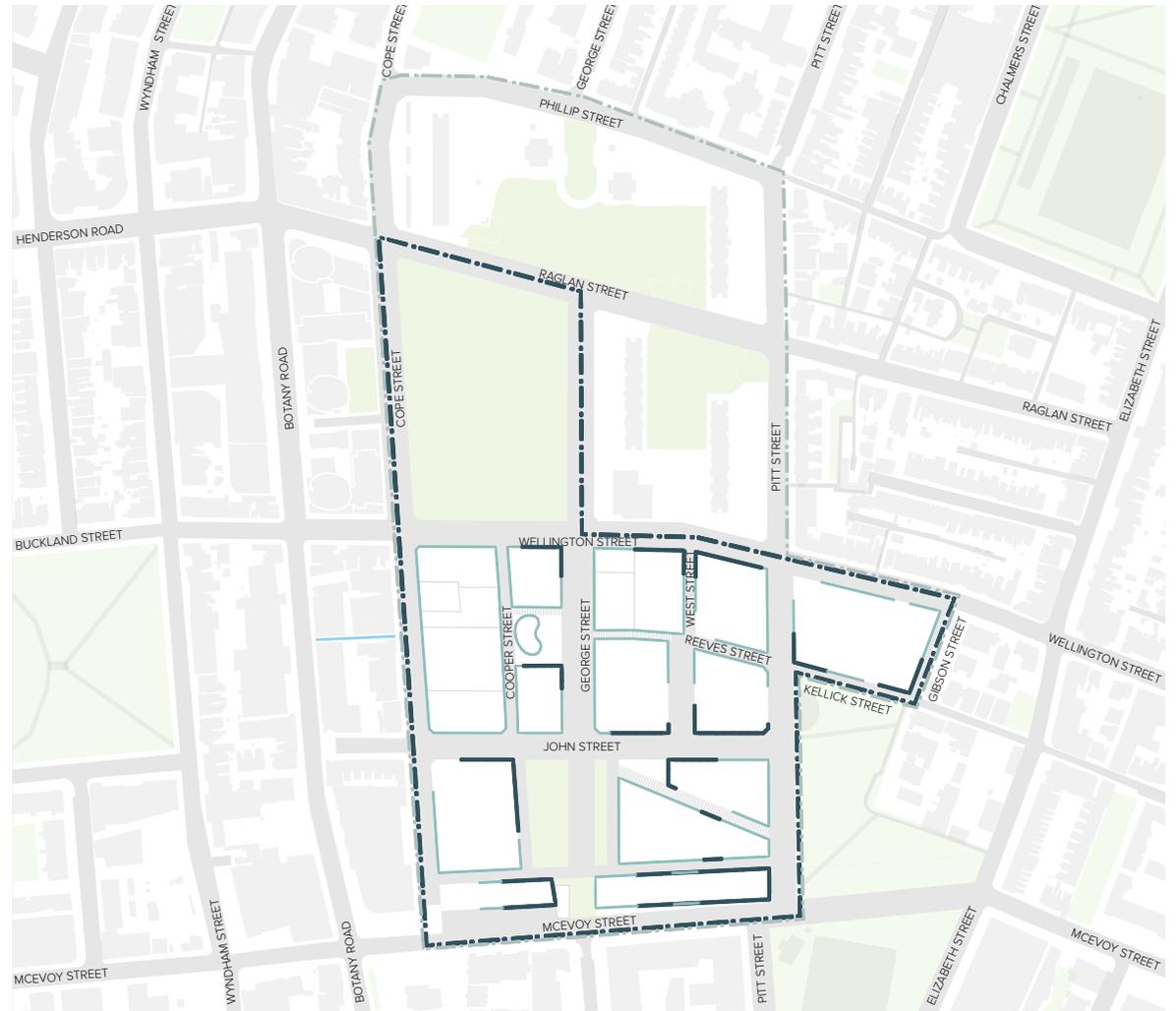


Fig. 7.5.1 Proposed streetwalls



Legend

- Waterloo South Boundary
- Waterloo Estate Boundary
- Private Sites
- Streetwall (2-6 storeys)
- Streetwall (8 storeys)

Block Length

Where blocks are over 65 metres in length, breaks in the building form are provided to reduce visual bulk and massing

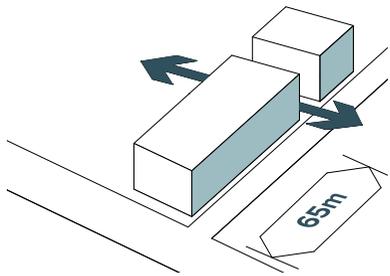


Fig. 7.5.2 Maximum block length

Facade Length

Changes in facade treatment for buildings over 40 metres provides variety and visual interest at the pedestrian level

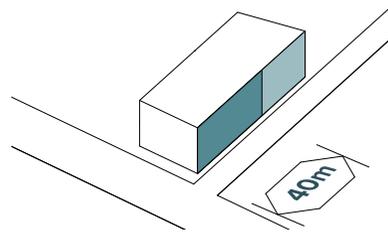


Fig. 7.5.4 Maximum facade length

Articulation

A mix of frontage widths provides modulation at the street level and views to new activities that work with pedestrian traffic to create an active and vibrant environment

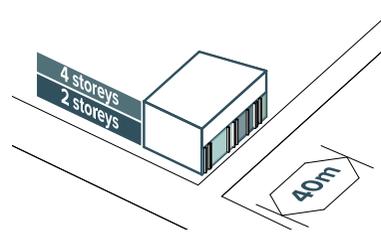


Fig. 7.5.6 Facade articulation

For buildings over 4 storeys, modulation in the building form provides visual interest through changes in material, colour and depth of usable space

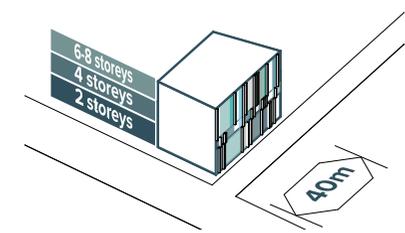


Fig. 7.5.8 Facade articulation

Strategies include:

- Full height breaks to provide through site pedestrian links to publicly accessible courtyards and private courtyards
- Double height through site pedestrian links into publicly accessible courtyards and private communal courtyards
- Double height visual connections into private communal courtyards

Strategies include:

- A maximum length of 40 metres for a singular facade expression.

Strategies include:

- Variation in form, proportion, position, quantity and composition to provide visual interest
- Variation in building massing, materials, glazing extent and proportion, material finishes and colour, or architectural detail, to break up massing and height

Strategies include:

- Contrast in materials, articulation and fenestration patterns
- Changes in the facade plane through reveals, recesses, recessed or projecting balconies, and bay or sawtooth windows



Fig. 7.5.3 Reduction of block length
Source: George & Allen, Waterloo, Turner, 2019

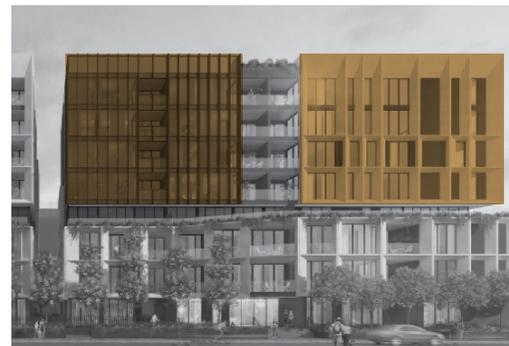


Fig. 7.5.5 Reduction of facade length
Source: Parkview Apartments, DKO Architects, 2017



Fig. 7.5.7 Ground floor facade articulation
Source: The Rathbone, Scott Carver, 2017



Fig. 7.5.9 Facade articulation
Source: Divercity, Waterloo, Turner, 2019



STREET LEVEL SETBACKS

Street level setbacks provide space for active uses along key streets and buffers for increased privacy to the private domain

Street setbacks are transition zones between the public and private domain that provide the opportunity for different interface responses to support social interaction.

Non-residential setbacks have been provided along key streets to:

- Provide active uses at the interface between public and private domain, adjacent to community spaces, to extend and activate the public domain.
- Respond to flooding and freeboard requirements.

Residential setbacks have been provided along key streets to:

- Provide space for landscape buffers that increase privacy for ground level residential dwellings as a transition between public and private domain.
- Provide semi-private space that fosters social interaction among neighbours.
- Respond to flooding and freeboard requirements and allow for connections between changes in level.

INDICATIVE STREET LEVEL SETBACKS

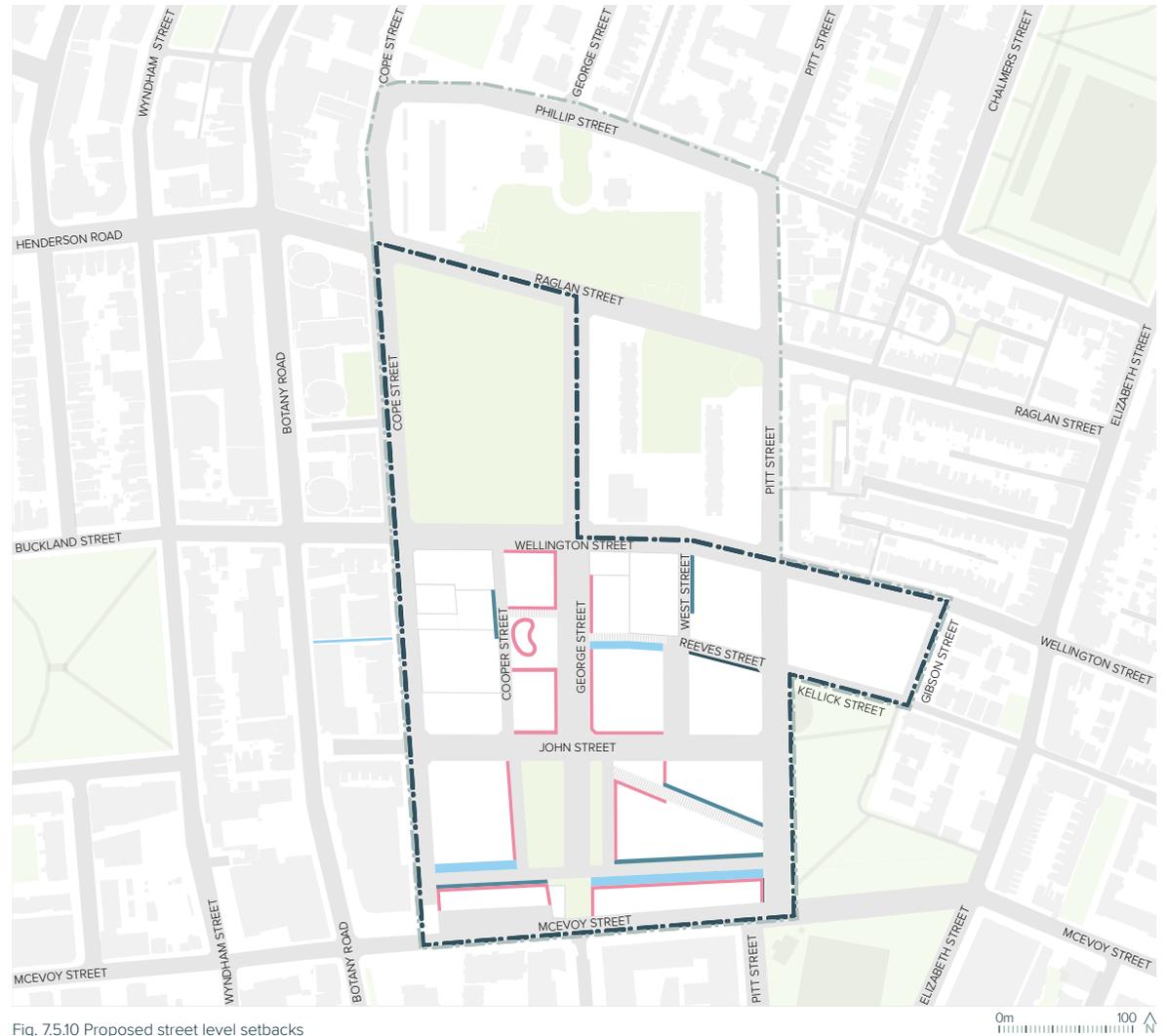


Fig. 7.5.10 Proposed street level setbacks

Legend

- Waterloo South Boundary
- Waterloo Estate Boundary
- Private Sites
- 2.0m Building Setback
- 3.0m Building Setback
- 6.0m Building Setback
- Street Level Setback (1-2 Storeys) for active uses

STREET LEVEL SETBACKS

Street level setbacks provide a protected transition zone between the private and public domain

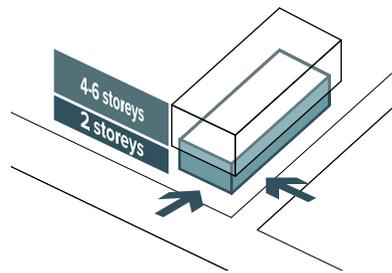


Fig. 7.5.11 Street level setbacks

Strategies include:

- For non-residential uses setbacks provide space for entries and outdoor areas for activation
- For residential uses, setbacks provide space for larger terraces, landscaped buffers to the street, and residential entries for increased passive surveillance, as well as space to respond to freeboard requirements



Fig. 7.5.12 Street level setbacks
Source: Union Balmain, Turner, 2019

STREET CORNERS

Setbacks at street corners increases pedestrian visibility and passive surveillance

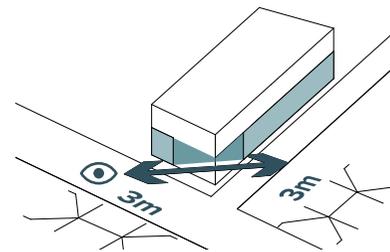


Fig. 7.5.13 Corner setback

Strategies include:

- Ground and first level setback at corners to maintain pedestrian visibility
- Building setback from boundary at corners to maintain pedestrian visibility and wind mitigation



Fig. 7.5.14 Street corner setbacks
Source: Asper, Turner, 2019

CHANGES IN MATERIAL

Modulation in the building form through changes in material, colour and depth of usable space are provided to reduce visual bulk and massing at the pedestrian level

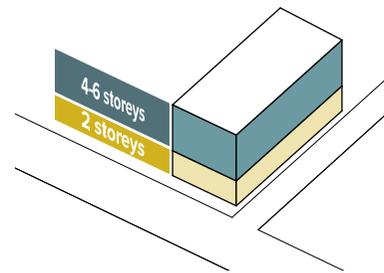


Fig. 7.5.15 Change of materials on lower levels

Strategies include:

- Contrast in materials, articulation and fenestration patterns.
- Changes in facade treatments



Fig. 7.5.16 Change of materials
Source: Tejon 35, Meridian 105 Architecture, 2014

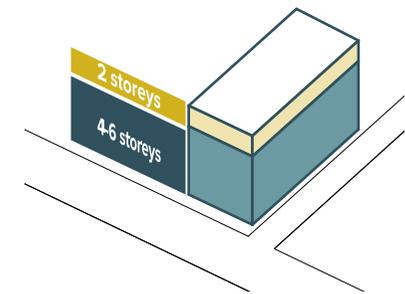


Fig. 7.5.17 Change of materials on upper levels

Strategies include:

- Contrast in materials, articulation and fenestration patterns
- Changes in facade treatments



Fig. 7.5.18 Change of materials
Source: Parkview Apartments, DKO Architects, 2017



UPPER LEVEL SETBACKS OR CHANGE IN MATERIAL

Upper level setbacks help to decrease perceived building heights to better define and improve the experience at street level



Upper level setbacks, attics and changes in facade plane have been provided along key streets to:

- Provide human scale to the street through reduced building heights at the interface between the public and private domain.
- Respond to existing context by providing an appropriate transition in height.
- Improve the pedestrian experience through increased daylight access to the public domain.

INDICATIVE UPPER LEVEL SETBACKS OR CHANGES IN MATERIAL / PLANE

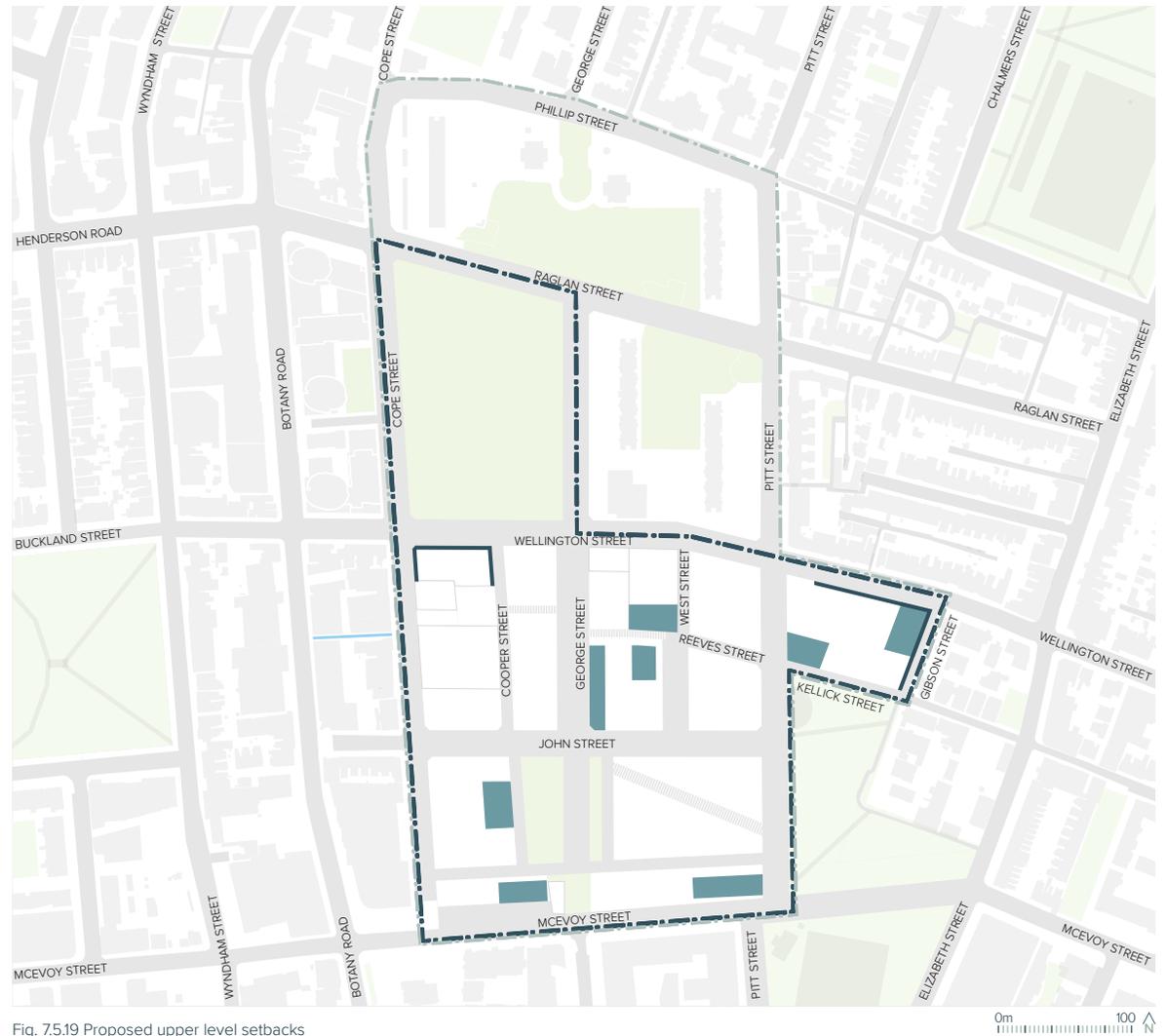


Fig. 7.5.19 Proposed upper level setbacks

Legend

- Waterloo South Boundary
- Waterloo Estate Boundary
- Private Sites
- Upper level setback
- Building with an attic

UPPER LEVEL SETBACKS

Upper level setbacks are provided to reduce visual bulk and massing, for a maximum 6 storey streetwall height, at critical interfaces to existing context and the public domain

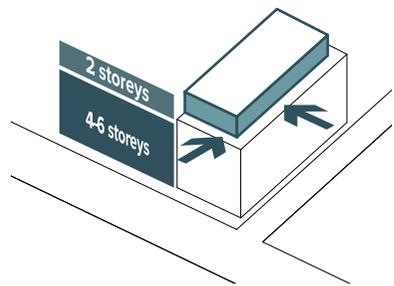


Fig. 7.5.20 Upper level setback

Strategies include:

- 1 - 2 storey upper level setbacks to maintain existing streetwall heights and relationship to existing context



Fig. 7.5.21 Upper level setbacks
Source: Camden Courtyards, Sheppard Robson, 2017

ATTICS

Attics are provided for additional typologies to increase housing and built form diversity whilst minimising visual bulk and massing impacts

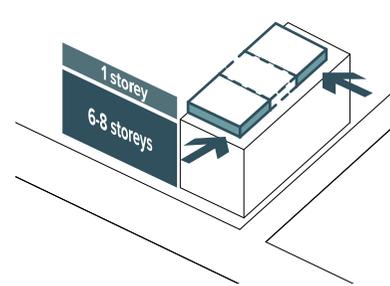


Fig. 7.5.22 Attic level setback

Strategies include:

- Double height apartments
- Dormer or clerestory windows



Fig. 7.5.23 Attic level setback
Source: Union Balmain, Turner, 2019

CHANGES IN FACADE PLANE

Modulation in the building form provides visual interest through changes in the depth of usable space and reduces visual bulk and mass

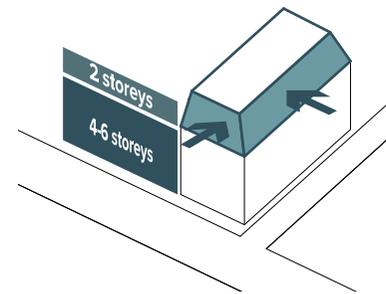


Fig. 7.5.24 Change of facade plane on upper levels

Strategies include:

- Changes in the facade plane through reveals, recesses, recessed or projecting balconies, and bay or sawtooth windows



Fig. 7.5.25 Change of facade plane
Source: Tjornely, Greve, Studio Local, 2018



NEIGHBOURHOOD BUILDINGS

MAXIMUM FLOORPLATE

Neighbourhood buildings provide small 'infill' forms that meet the ground and extrude the fine grained urban character vertically

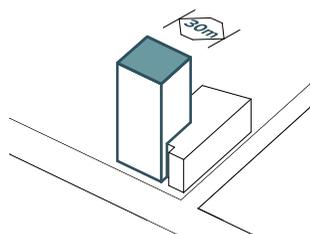


Fig. 7.5.26 Maximum floor plate size

Small floorplate sizes between 500 - 600 square metres GBA (for 15 to 20 storeys respectively) supports a finer grain character at street level.

Maximum dimension of 30 metres in any one direction.

Typically 5 - 6 dwellings per core.

MAXIMUM HEIGHT

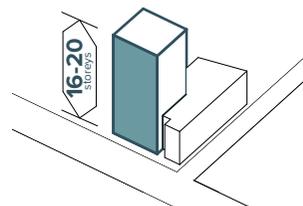


Fig. 7.5.29 Maximum height in storeys

Range in height between 16 - 20 storeys.

Slender form assists in mitigating wind effects and visual bulk and scale.

ENVELOPE

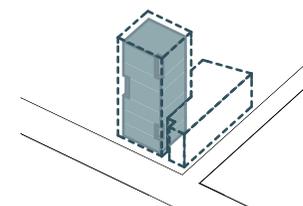


Fig. 7.5.32 Loose-fit envelope

Building envelope efficiency provides a lower efficiency that reflects the smaller floorplate, compared to larger floorplate tall buildings.

Increased amenity is provided through the reduced number of dwellings served by a common core.

Building form with direct relationship to the ground to maintain fine grain vertically.



Fig. 7.5.27 The Book Company HQ, Seoul
Source: N.E.E.D Architecture, 2017



Fig. 7.5.28 Rebel 1, Warsaw
Source: WWA, 2013



Fig. 7.5.30 Building Pueyrredón 1101
Source: Estudio Pablo Gagliardo, 2017



Fig. 7.5.31 Asnieres, Paris
Source: Louis Paillard, 2017



Fig. 7.5.33 Lower East Side Towers, NY
Source: Space 4 Architecture, 2017



Fig. 7.5.34 Huma Klabin
Source: UNA Architects, 2016

TALL BUILDINGS

Tall buildings provide a transition in scale that contributes to an attractive skyline and relates to existing heights within the locality

MAXIMUM FLOORPLATE

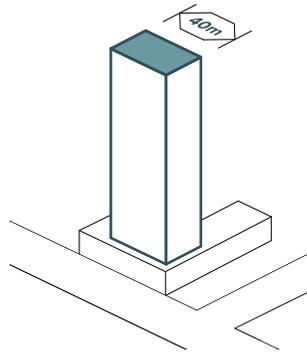


Fig. 7.5.35 Maximum floor plate size

Floorplate size up to 675 square metres GBA maintain a slender form for reduced visual bulk and scale.

Maximum dimension of 45 metres in any one direction.

Typically 6 -7 dwellings per core.

MAXIMUM HEIGHT

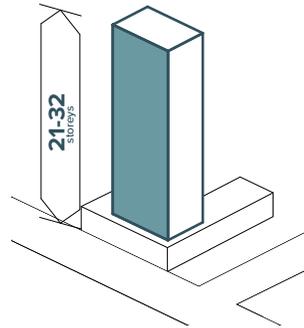


Fig. 7.5.36 Maximum height in storeys

Range in height between 21 - 32 storeys.

Slender form assists in mitigating wind effects.

The PANS OPS Limit (RL 126.4 metres) constrains maximum height. Any breach of the PANS OPS would need to be applied for through the relevant authorities and agencies to ascertain if it would be permissible.

ENVELOPE

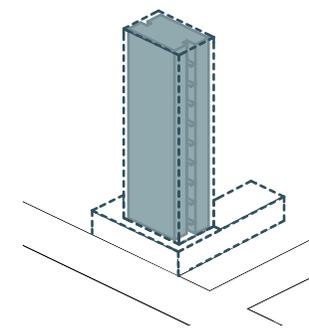


Fig. 7.5.37 Loose-fit building envelope

Building envelope efficiency provides for a higher efficiency that reflects the larger floorplate.

Building form on podium bases that range from 2 to 8 storeys.



Fig. 7.5.38 Gramercy, HK. Source: Aedas, 2013



Fig. 7.5.39 Park Tower, Antwerp. Source: Studio Farris Architects, 2014



Fig. 7.5.40 The Beacon, HK. Source: Aedas, 2017



Fig. 7.5.41 Edificio Itaim. Source: FGMF Arquitetos, 2012



Fig. 7.5.42 Unitt Urban Living. Source: Basichees Arquitectos Associados, 2014



7.5.2 RESPONSE TO SOLAR, WIND, FLOODING, ESD, NOISE AND POLLUTION

The built form for Waterloo South responds to key environmental constraints that includes solar access, wind, flooding, pollution and noise

SOLAR RESPONSE

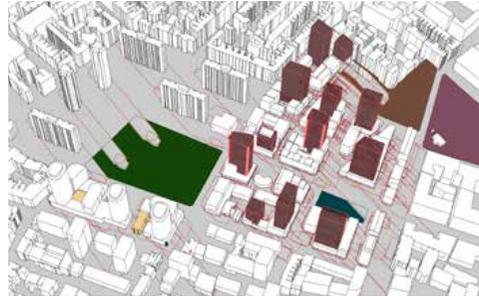


Fig. 7.5.43 Solar access analysis

The desired built form outcome for Waterloo South has been developed with consideration to achieving or exceeding minimum required solar access under the relevant state and local policies

The Waterloo South public domain and built form have been designed to achieve solar access to existing and future parks for a minimum of 4 hours between 9am and 3pm to a minimum 50% fixed area of the park area at mid winter.

Building envelopes have been designed to ensure that **70-75% of the primary envelope facade area - North, East and West - receive a minimum of 2 hours direct sunlight between 9am and 3pm at mid winter.**

Refer to Appendix 7.9 for further details.

WIND RESPONSE



Fig. 7.5.44 Wind tunnel model
Source: Windtech, 2020

Wind tunnel testing of Waterloo South indicates that wind conditions for the majority of trafficable outdoor locations within and around the development will be suitable for their intended uses

Wind mitigation measures that have been incorporated as part of the Waterloo South public domain and built form include:

- Inclusion of densely foliating evergreen shrubs, capable of growing to a height of 1m above a 0.5m planter box
- Chamfering of 2 buildings
- Inclusion of 3.0m wide ground level awning along key façades with the exception of George Street which provides a 2.5m wide ground level awning to accommodate existing trees.
- Inclusion of 2.0m high screen along the southern perimeter of 1 affected podium
- Retention of trees as noted in the tree retention plan
- Inclusion of trees as noted in the tree replenishment plan

Refer to the report by Windtech for further details.

FLOODING



Fig. 7.5.45 WSUD mitigation response
Source: AECOM, 2020

Flooding and stormwater analysis of Waterloo South indicates the proposed development does not worsen the flood levels compared to existing conditions

Consideration of a range of flood mitigation measures have been considered as part of the Waterloo South public domain and built form, these include:

- On-site detention
- Provision of appropriate building flood planning levels (FPLs), to offset adverse flood impacts during extreme weather events. The adopted criteria for setting of FPL was the maximum of Probable Maximum Flood (PMF) level and the 100 year Annual Recurrence Interval (ARI) + 0.5m level.
- Building setbacks
- Improved drainage and sound emergency response frameworks
- A shelter in place strategy for the buildings over evacuation has been adopted, to avoid unnecessary vehicle or pedestrian movements during an extreme storm event, as the duration of inundation is relatively short and the rate of rise is relatively rapid.
- For public open space areas, a refuge point within a facility that can be accessed easily.
- WSUD measures implemented in the public domain for water quality enhancement.

Refer to the report by AECOM for further details.

POLLUTION (AIR QUALITY)



Fig. 7.5.46 Topography influences air quality
Source: SLR, 2020

Landscaping and built form measures to mitigate pollution have been considered as part of the development of Waterloo South

The existing air-quality throughout Waterloo South has been reviewed. The following mitigation measures have been considered as part of the Waterloo South public domain and built form:

- Built form has been designed to avoid street canyons
- Vegetation barriers to help mitigate air pollution
- Vegetation planned for the development to optimise the air quality throughout Waterloo South.

Refer to the report by SLR for further details.

NOISE

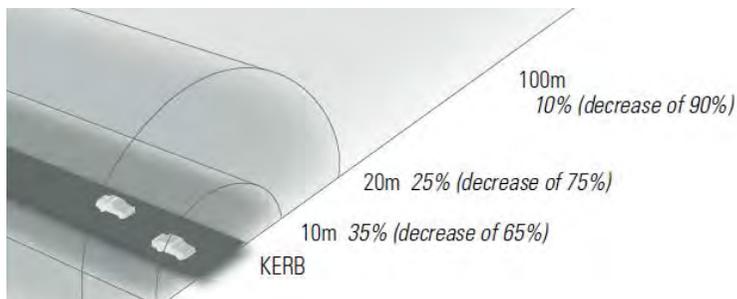


Fig. 7.9.47 Percentage of pollutant concentration relative to kerbside concentration
Source: DoP, 2008

A range of mitigation measures have been considered as part of the development of Waterloo South

The existing noise environment throughout Waterloo South is dominated by road traffic noise. The following mitigation measures have been considered as part of the Waterloo South public domain and built form:

- Providing options for building layout and orientation to reduce noise impacts on residential dwellings at higher levels in order to meet City of Sydney internal noise requirements
- Provide quiet spaces within the precinct by using the built environment to shield areas from local road traffic noise
- Include traffic calming measures to reduce noise from local traffic.

Refer to the report by SLR for further details.

7.5.3 INDIVIDUAL LOT STUDY

Lot S was selected to test outcomes and verify the projected yield targets

The individual lot study tests the design ideas and strategies, their outcomes and verifies the projected yield targets and amenity for the existing and future context against the Place Performance Measures, Apartment Design Guide and the City of Sydney Development Control requirements.

Lot S

Lot S was chosen for the detailed site study as it contains a mix of built form heights and typologies with a mix of building uses that includes residential, retail and supermarket uses. The site is also constrained by the alignment of the train line and the heritage listed pressure tunnel that crosses diagonally below the lot.

Lot Selection

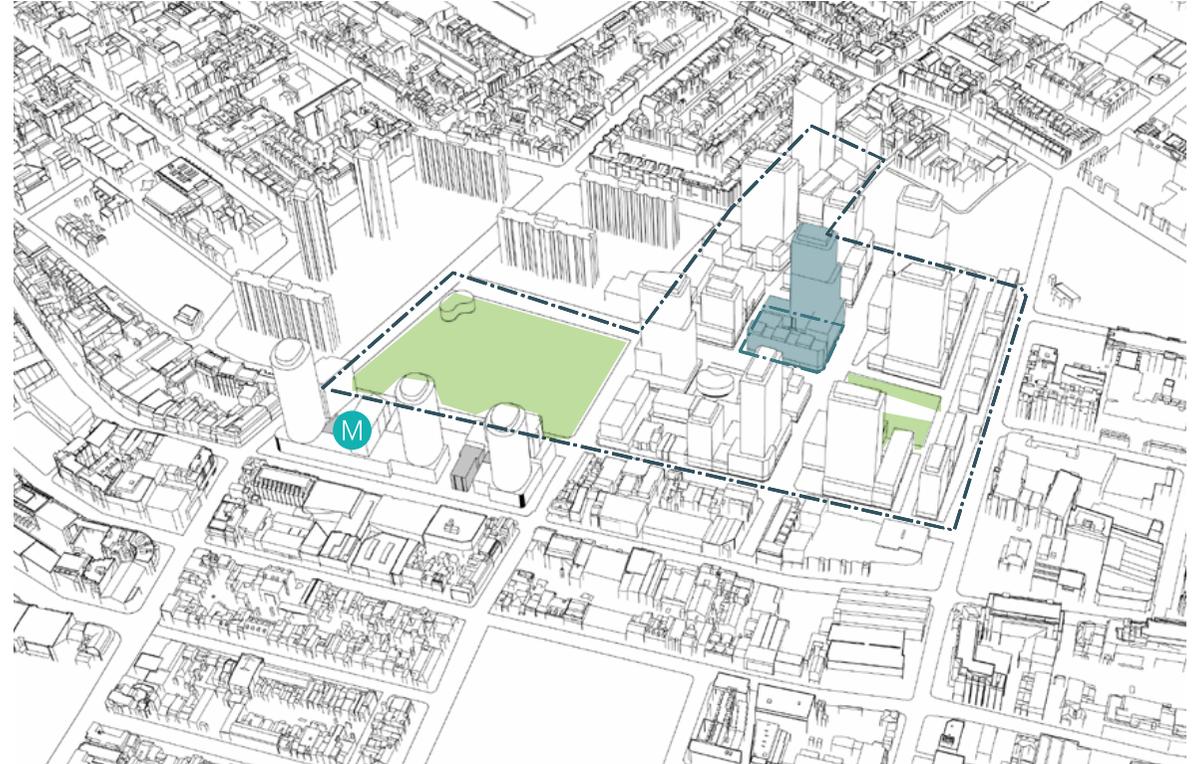


Fig. 7.5.48 Selected lot analysis

Legend

- Waterloo South Boundary
- ⊙ Metro Station
- ⋯ Lot S Boundary
- Open Space
- Built form



POLICY CONTEXT

Good apartment design delivers better living environments for residents, and enhances streetscapes and neighbourhoods across the state.

SEPP 65 and the Apartment Design Guide (ADG) encourages a more consistent approach to apartment design across the state, more certainty for councils, architects and applicants, and promotes design innovation through Design Review Panels.

The ADG helps to achieve better design and planning for residential apartment development, by providing benchmarks for designing and assessing these developments. The ADG provides objectives, design criteria and design guidance on how residential development proposals can meet the principles through good design and planning practice.

If a DCP contains provisions that specify requirements, standards or controls identified in Schedule 6A of SEPP 65, those DCP provisions will have no effect, and the relevant ADG provisions will prevail.

SEPP 65, NSW Dept. of Planning & Environment, 2017



Fig. 7.5.49

SEPP 65 – Design Quality of Residential Apartment Development provides a consistent planning framework to improve the design quality of residential apartment development in NSW. It gives legal force to the ADG.

Schedule 1 sets out nine design quality principles, which must be considered when designing proposals, and during the development assessment process:

- Context and neighbourhood character
- Built form and scale
- Density
- Sustainability
- Landscape
- Amenity
- Safety
- Housing diversity and social interaction
- Aesthetics

Apartment Design Guide, NSW Dept. of Planning & Environment, 2015

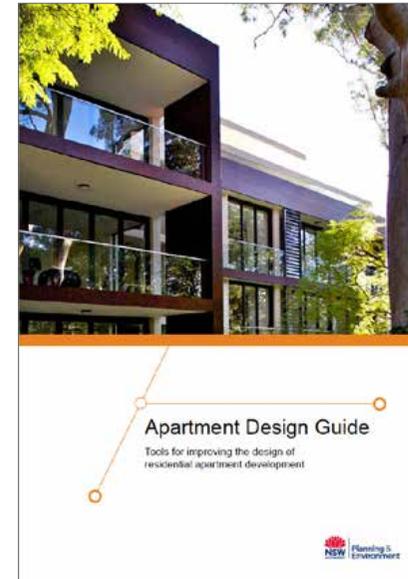


Fig. 7.5.50

The ADG provides design guidance to improve the planning and design of residential apartment development. Apart from the non-discretionary development standards, the ADG is not intended to be and should not be applied as a set of strict development standards.

Parts 3 and 4 provide detailed objectives, design criteria and design guidance of provisions siting a development and designing the building, including the ADG provisions identified in clause 6A of SEPP 65 that prevail over any similar provisions in a Council DCP:

- Visual privacy
- Solar and daylight access
- Common circulation and space
- Apartment size and layout
- Ceiling heights
- Private open space and balconies
- Natural ventilation
- Storage

A development needs to demonstrate how it meets the objectives and design criteria set out in Parts 3 and 4. The design criteria sets a clear and measurable benchmark on how the objective can be practically achieved.

If it is not possible to satisfy the design criteria, developments must demonstrate how, through good design, the objective can be achieved. The design guidance can be used to assist in this. For example:

ADG Objective 3B-2 Design guidance:
Where an adjoining property does not currently receive the required hours of solar access, the proposed building ensures solar access to neighbouring properties is not reduced by more than 20%

Planning Circular,
NSW Dept. of Planning & Environment, 2017



Fig. 7.5.51

The Planning Circular provides guidance on the application of the ADG in the development assessment process under SEPP 65

Sydney DCP 2012,
City of Sydney



Fig. 7.5.52

The Sydney DCP 2012 provides detailed guidance on the implementation of policy outlined in the Sydney LEP 2012.

ADG Objective 3D-1 Design criteria:

Developments to **achieve a minimum of 50% direct sunlight to the principal usable part** of the communal open space for **a minimum of 2 hours between 9am and 3pm mid winter**.

ADG Objective 4A-1 Design criteria:

Living rooms and private open spaces of at least **70% of apartments** in a building **receive a minimum of 2 hours direct sunlight between 9 am and 3 pm at mid winter**.

A **maximum of 15% of apartments** in a building **receive no direct sunlight between 9 am and 3 pm at mid winter**.

SEPP 65 gives legal force to the ADG. The ADG is a guide containing design guidance to improve the planning and design of residential apartment development in NSW.

SEPP 65 and the ADG applies to:

- Residential flat buildings, shop top housing and the residential component of mixed use developments.
- Buildings that are three or more storeys.
- Buildings with four or more dwellings.

Apart from the non-discretionary development standards in SEPP 65, the ADG is not intended to be and should not be applied as a set of strict development standards.

The Sydney DCP provisions includes the recognition and support of distinctive character areas, including heritage, and design which responds to this, the enhancement of the public realm, integration of Sustainable Sydney 2030 objectives and encouraging ecologically sustainable development. For example:

Clause 4.2.3.1 (2) provision states:

Development sites and neighbouring dwellings are to **achieve a minimum of 2 hours direct sunlight between 9am and 3pm on 21 June** onto at least 1 square metre of living room windows and **at least 50% of the minimum amount of private open space**.

Clause 4.2.3.1 (3) provision states:

New development must not create any additional overshadowing onto a neighbouring dwelling **where that dwelling currently receives less than 2 hours direct sunlight** to habitable rooms and 50% of the private open space between 9am and 3pm on 21 June.

LOT S ANALYSIS

LOT S TYPICAL BLOCK

Lot S was chosen for a detailed site study to explore the following unique combination of elements:

- The site provide a transition between Waterloo Common to the south and the rest of the Estate.
- The site is also challenged by an east/west slope.
- A mix of street typologies that includes George Street, a shared slow street, a shared zone laneway and a pedestrian laneway.
- A mix of built form heights ranging from 4 to 31 storeys, with streetwall heights ranging from 4 to 8 storeys.
- A courtyard building typology.
- A mix of building uses that includes residential, community and retail uses, including a supermarket.
- Shadow impacts from and to adjacent buildings.

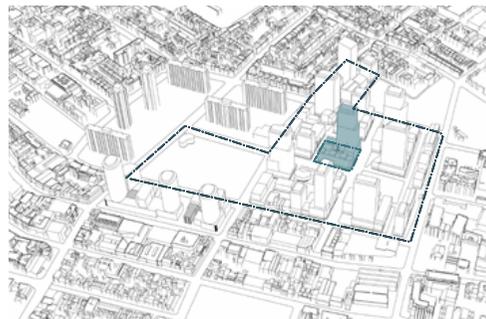
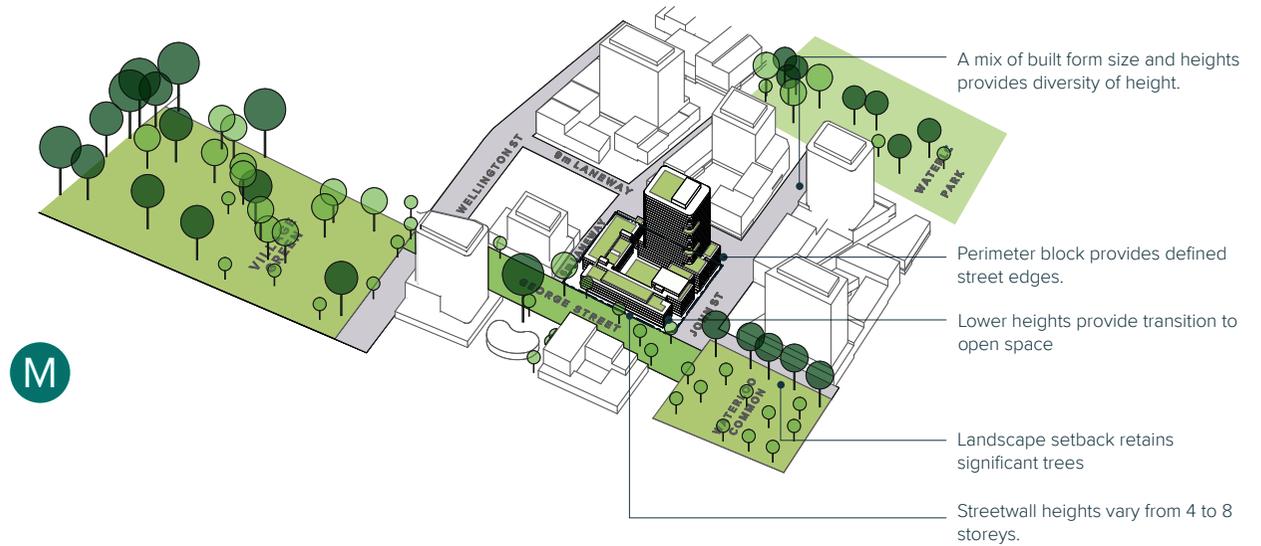


Fig. 7.5.53 Lot S

- Legend**
- Open Space
 - Ⓜ Proposed Waterloo Metro Development
 - Proposed Future Built Form
 - Analysed Lot Boundary
 - Existing High and Moderate Value Trees Retained
 - New Proposed Trees

Fig. 7.5.54 Lot S Massing

LOT S SITE ANALYSIS



Open Space Accessibility

Residential entries are within 100m of an open space typology (public or private) to connect residents to nature for increased health and well-being

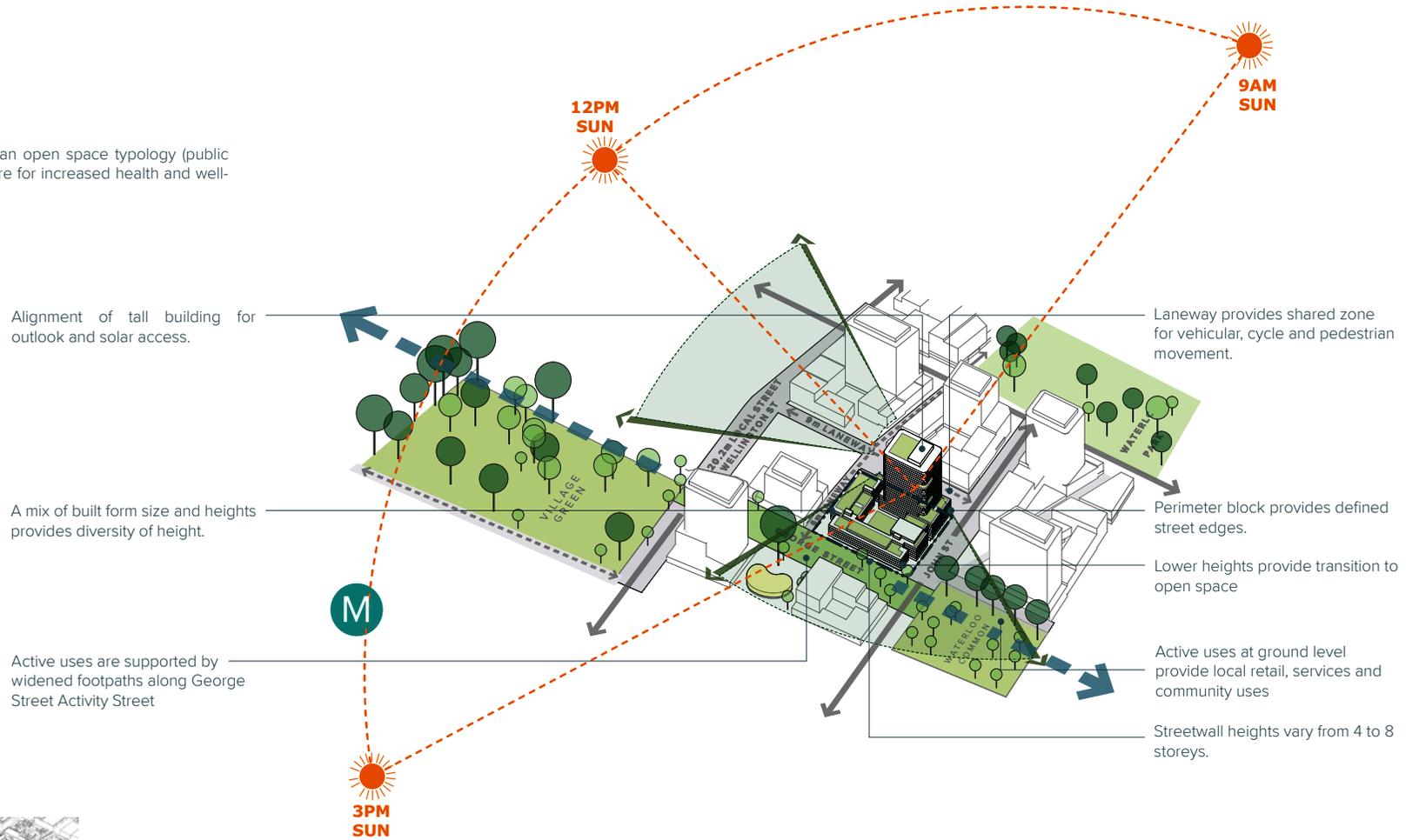


Fig. 7.5.55 Lot S

Legend

- Open Space
- M Proposed Waterloo Metro Development
- Proposed Future Built Form
- Analysed Lot Boundary
- Existing High and Moderate Value Trees Retained
- New Proposed Trees
- Sun path on June 21
- Views
- Pedestrian Boulevard
- Streets
- Lot Boundary

Fig. 7.5.56 Lot S site analysis





LOT S OPEN SPACE

A range of open space typologies are provided to retain existing trees, provide access to open space within 200 metres of building entries and support a range of social interaction opportunities for the community.



Urban Forest

Landscape setbacks and setback zones retain existing high and moderate value trees to provide mature landscape elements. Proposed trees build upon the existing tree lined street character.



Fig. 75.57 Lot S urban forest

Legend

- Existing high and moderate value trees retained
- Proposed trees
- George Street Activity Street
- Landscape retention zone

Tree Retention	
High value trees	1 (33%)
Moderate value trees	2 (24%)

Tree Replacement Ratio 3 : 1
Target for Waterloo South

Productive Landscape Target 307 m² (1 m²/ dwelling)
(30% provided within public open space and 70% within the development lots)



Open Space

Land dedication for an increased public domain provides for the retention of existing high and moderate trees. Communal open space at street and roof levels provide for a range of open space typologies and maximise solar access to these spaces.



Fig. 75.60 Lot S open space

Legend

- Urban Plaza
- George Street Activity Street
- Communal Open Space

Lot S Site Area 3,985 m²

Open Space	
Deep Soil (Provided at street level)	350 m ² (8% of site area)
Communal Open Space (Above street level)	860 m ² (21% of site area)
Vertical Villages (Additional communal spaces / 50 dwellings)	360 m ² (9% of site area)

Total Open space 1,570 m² (38% of site area)



Landscape Replacement Area Control (LRA)

A mix of open spaces, vertical gardens and planter boxes on private open space provides greater access to nature to promote health and well-being.



Fig. 75.63 Lot S landscaping above street level

Landscape Replacement Area (LRA)

Target LRA - 80% of Site area 3,188 m²
Within S, 38% of the target LRA is provided as open space

Additional 42% of landscape to meet the target LRA is provided through:

Landscaped Areas (Non-trafficable space above street level)	690 m ² (17% of site area)
Planter Boxes (Horizontal area of planters within private open space)	600 m ² (15% of site area)
Vertical Gardens (Vertical area of landscaped facade)	400 m ² (10% of site area)



Fig. 5.58 Setbacks for tree retention Joynon Avenue, Green Square 406 PLANNING PROPOSAL _ 08.04.2020



Fig. 75.59 Urban plaza Civic Place, Green Square



Fig. 75.61 Communal open space Big Yard, Berlin



Fig. 75.62 Common open space on roof level, The Commons, Melbourne



Fig. 75.64 Vertical village open space The Carve, Oslo



Fig. 75.65 Rooftop productive garden The Commons, Melbourne

Note the distribution of social (affordable rental) and market dwellings can be delivered to provide equitable access to communal open space

LOT S STREET INTERFACE

A richer and more varied street level experience is supported through the **fine grain lot sub-division**. This provides **flexibility in staging** and **enables more innovative responses**.



Street Level Connectivity

Through site connections add to the network of accessible and safe connections to promote walking and cycling.

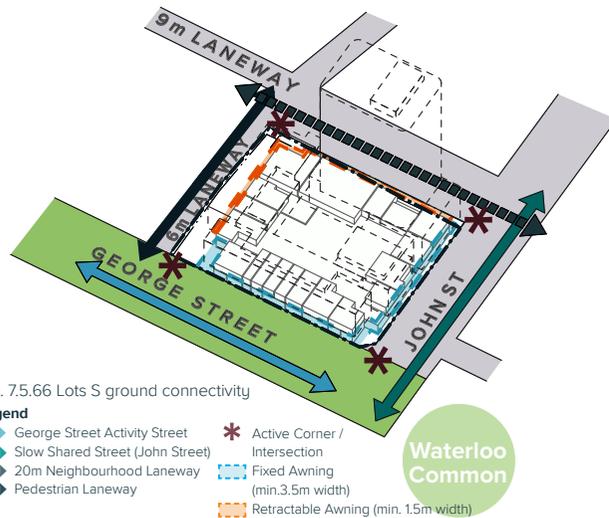


Fig. 7.5.66 Lots S ground connectivity

Legend

- George Street Activity Street
- Slow Shared Street (John Street)
- 20m Neighbourhood Laneway
- Pedestrian Laneway
- Active Corner / Intersection
- Fixed Awning (min.3.5m width)
- Retractable Awning (min. 1.5m width)

Small Block

Built form articulation is required

Intersection Density

No. Intersections 4

Building Entries

Target minimum 10 building entries / 100m facade

Retail Entries 17

Community Entries 1

Residential Entries 3

Pedestrian Shelter

Awnings are required for non-residential uses to provide pedestrian shelter



Fig. 7.5.67 The living street
The Woonerf, The Netherlands



Fig. 7.5.68 Active street corners
Surry Hills, Sydney



Adaptable Ground Floors and Active Frontages

A range of non-residential frontage widths from extra small to large encourages a mix of business and services and promotes active public frontages for an activated street level experience.

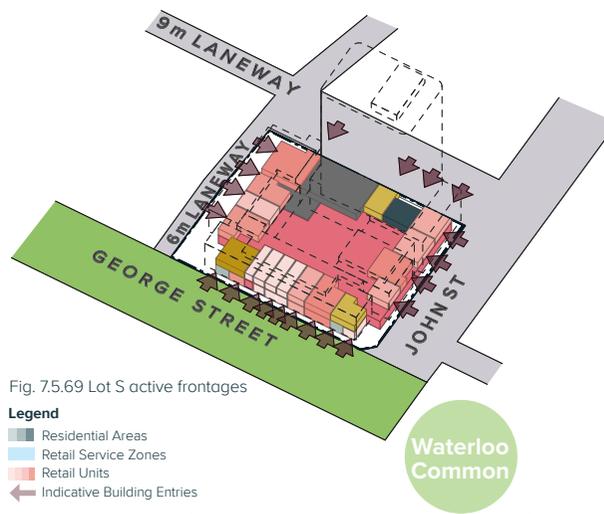


Fig. 7.5.69 Lot S active frontages

Legend

- Residential Areas
- Retail Service Zones
- Retail Units
- Indicative Building Entries

Ground Plane Diversity (Non-Residential)

A range of frontage sizes provides street level diversity

Active Frontage:	193 m² (87%)
Retail Frontage	154 m (70%)
Community Frontage	14 m (6%)
Residential Frontage	27 m (11%)

Non-Residential Area:

3,800 m²
Retail Area 3,580 m ²
Community Area 220 m ²

Ground Plane Transparency (Non-Residential)

75% of facade to provide interior visibility to activate the public domain



Fig. 7.5.70 Active ground plan



Building Character Diversity

The built form arrangement provides lot division flexibility to enable a finer grain of individual buildings that could be delivered separately. This supports staging flexibility and design excellence through design diversity.

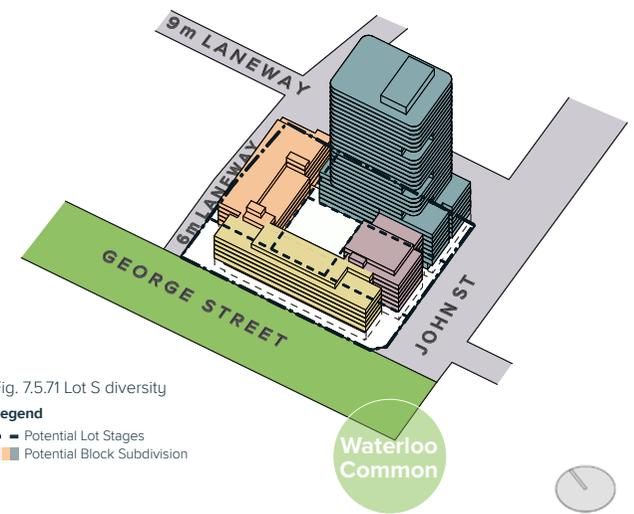


Fig. 7.5.71 Lot S diversity

Legend

- Potential Lot Stages
- Potential Block Subdivision

Block and Building Sub-division

The mix of building form and height provides the opportunity to stage the block into a range of smaller components that can be delivered separately to provide built form diversity, with the flexibility to accommodate a diverse range of uses over time through floor-to-floor heights that can be adapted to non-residential uses.

Building Envelope Heights (Floor to Floor Heights)

Basement 1	4.5 m (For future adaptation to non-residential uses)
Ground Level	4.5 m (For future adaptation to non-residential uses)
Level 1	3.7 m (For future adaptation to non-residential uses)
Typical Residential	3.1 m (To achieve 2.7m ADG floor-ceiling height)



LOT S BUILDING STRATEGY

The building strategy provides a **'loose-fit' envelope** that supports an active ground plane and design diversity, with taller buildings providing slender forms that reinforce the finer grain at street level.



Flexible Urban Form

Building envelopes are 25 - 30% larger than the gross floor area to allow for building articulation and amenity to support buildings that contribute to a lively, attractive and safe neighbourhood.



Parking & Loading

Reduction of parking rates in recognition of proximity to Waterloo metro station allows for reduced basement footprints and the flexibility to retain existing trees and provide deep soil zones for landscaping.



Combined Access and Services Strategy

Combined basement access reduces the number of vehicle entries on streets for a more active ground plane to promote active transport modes. Vehicle entries are located in quieter streets to reduce impact to local traffic flows.

16+ STOREYS	Target Efficiency 74%
Achieved Efficiency	70%
8-15 STOREYS	Target Efficiency 72.5%
Achieved Efficiency	70%
3-7 STOREYS	Target Efficiency 70%
Achieved Efficiency	70%
1-2 STOREYS (Non-Residential)	Target Efficiency 90%
Achieved Efficiency	90%
(Residential)	Target Efficiency 60%
Achieved Efficiency	63%
Lot S Efficiency	

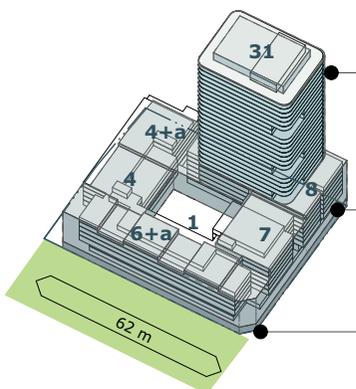


Fig. 5.72 Lot S efficiency

Legend

- ★ Building Envelope Area (BEA) 0.6m Min
- ✳ Building Articulation Zone (BAZ) 1.2m - 2.5m or greater

Building Efficiency

	Achieved
Site Area	3,895 m ²
Building Envelope Area (BEA)	35,520 m ²
Gross Floor Area (GFA)	27,620 m ² (78% of BEA)

Yield Analysis

	Achieved
Studio / 1 Bed	118 (39%)
2 Bed	155 (51%)
3 Bed	30 (10%)
Total	304

Tall Buildings

Maximum Gross Building Area (GBA) to provide slender forms:

31 Storey Maximum Floorplate	675 m ²
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Vertical Village

Target 1 communal private open space / 50 dwellings

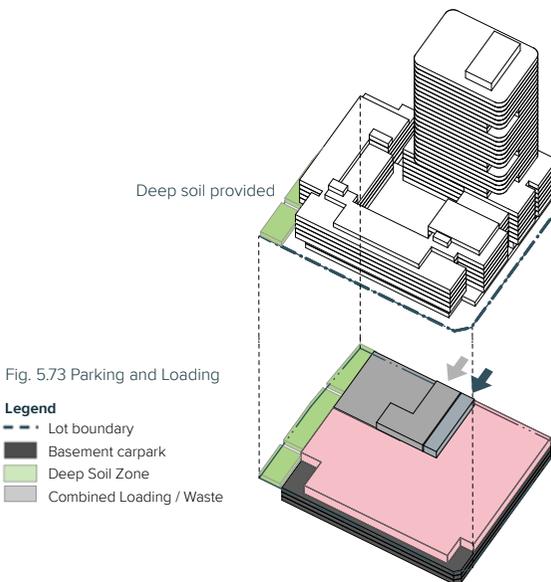


Fig. 5.73 Parking and Loading

Legend

- - Lot boundary
- Basement carpark
- Deep Soil Zone
- Combined Loading / Waste

Carpark Area

No. Cars	300
No. Levels	2.5

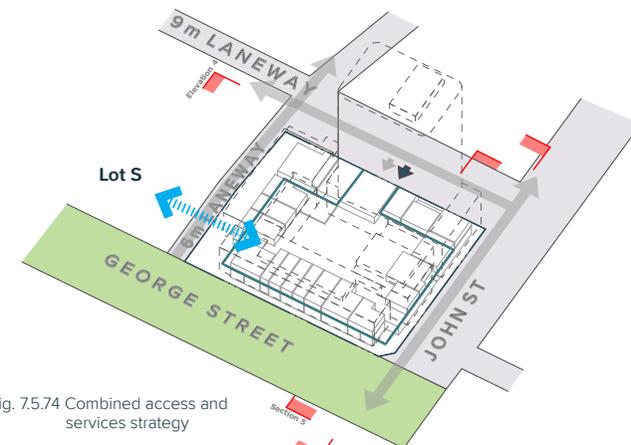


Fig. 7.5.74 Combined access and services strategy

Legend

- ➔ Vehicular Access
- ➔ Loading Dock Entry/Exit
- ↔ Car Park Vehicle Route
- ↔ Connection provided between Lots N & S basements below pedestrian laneway
- ↔ Local Street
- ↔ Laneway
- ⋯ Pedestrian Laneway

Loading & Servicing

Combined waste, loading and services provided within Lot S to meet Lot S and N requirements to minimise vehicle entries at street level

Building Entries

Target for Inactive Facades Maximum 7m inactive / blank facade

In circumstances where blank or inactive facades greater than 7m is unavoidable, public art, street murals or affordances to be provided to present an attractive and interesting appearance.

LOT S _ SOLAR ACCESS SUMMARY

The Waterloo South Indicative Concept Proposal building envelopes have been tested to ensure that **70- 75% of the primary envelope facade area - North, East and West - receive a minimum of 2 hours direct sunlight between 9am and 3pm at mid winter.**

The individual lot analysis validates the assumptions for the building envelopes, with Lot S meeting or exceeding the **ADG Objective 4A-1 Design Criteria** for a **minimum 70% of apartments to receive 2 hours direct sunlight between 9am and 3pm mid winter.**

SOLAR AND DAYLIGHT ACCESS (ADG 4A)

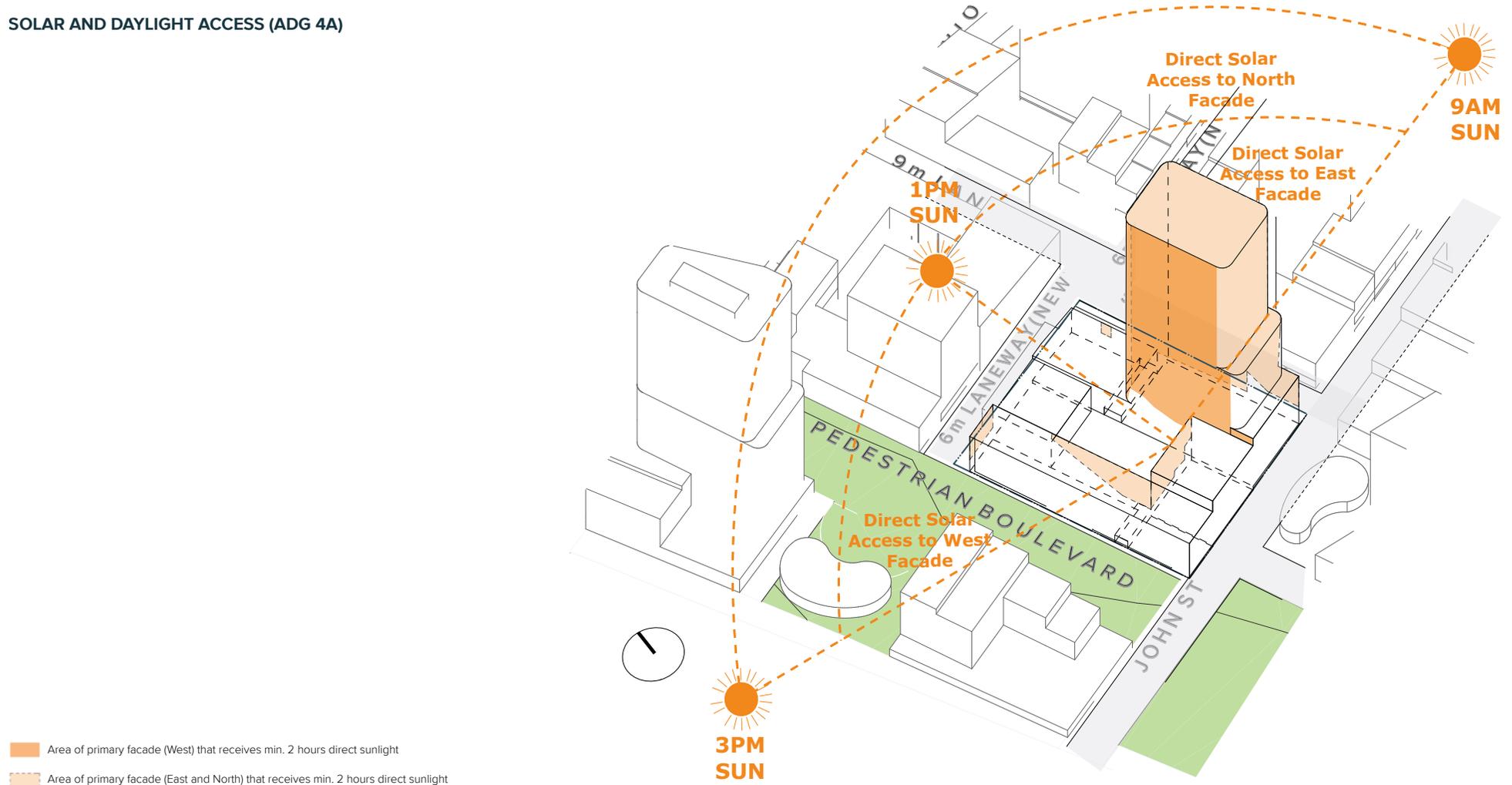


Fig. 7.5.75 Solar access



LOT S _ SOLAR ACCESS TO FACADES

73% of the primary envelope facade area (North, West and East) receives a minimum 2 hours solar access between 9am to 3 pm at mid-winter.

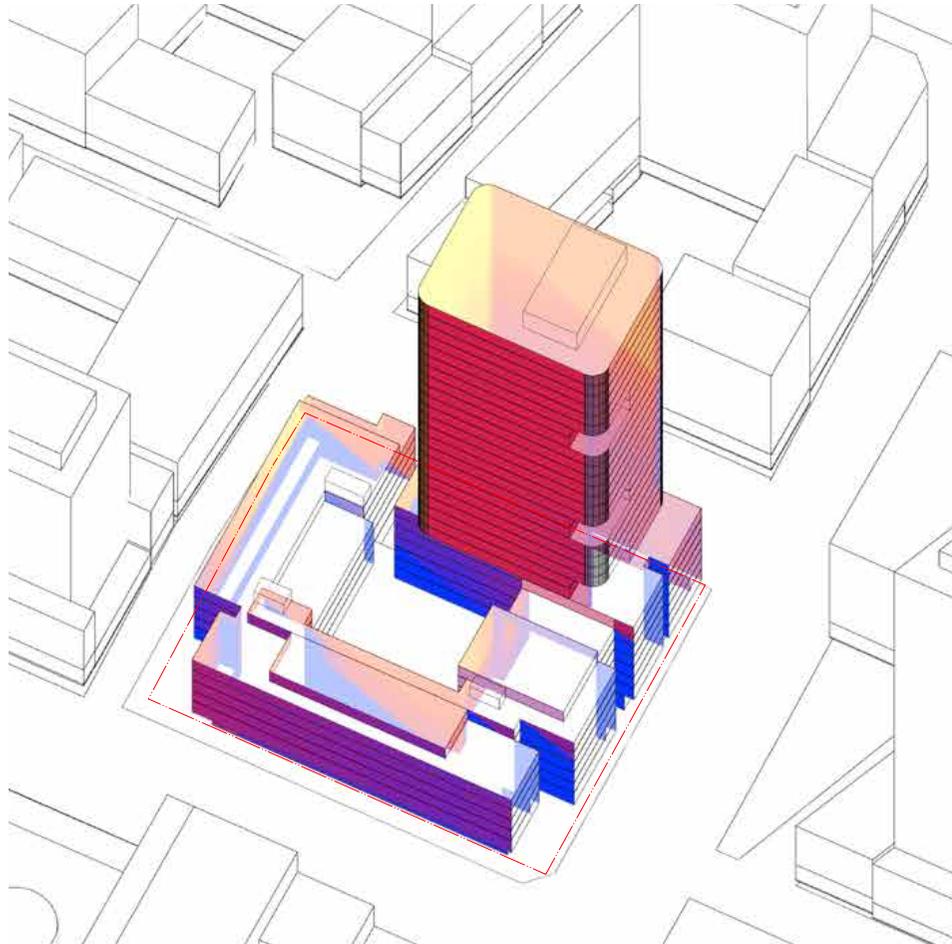


Fig. 7.5.76 Solar access to primary façades - West façade

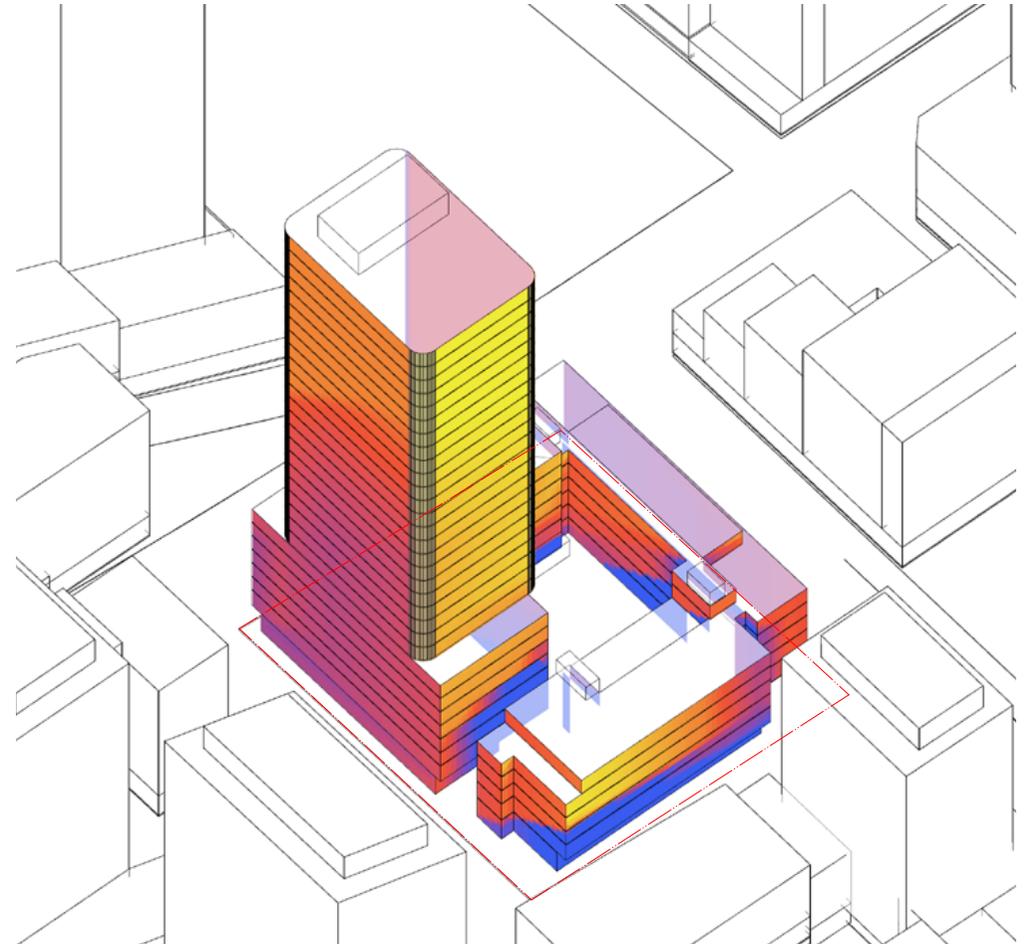


Fig. 7.5.77 Solar access to primary façades - North and East façades

LOT S _SOLAR ACCESS TO COMMUNAL OPEN SPACE

Communal open spaces located on roof levels achieve a minimum of 50% direct sunlight to the principal usable part for a minimum of 2 hours between 9am and 3pm mid winter.
COMMUNAL OPEN SPACE (ADG 3D)



Fig. 7.578 Solar access to communal open space - View from the West

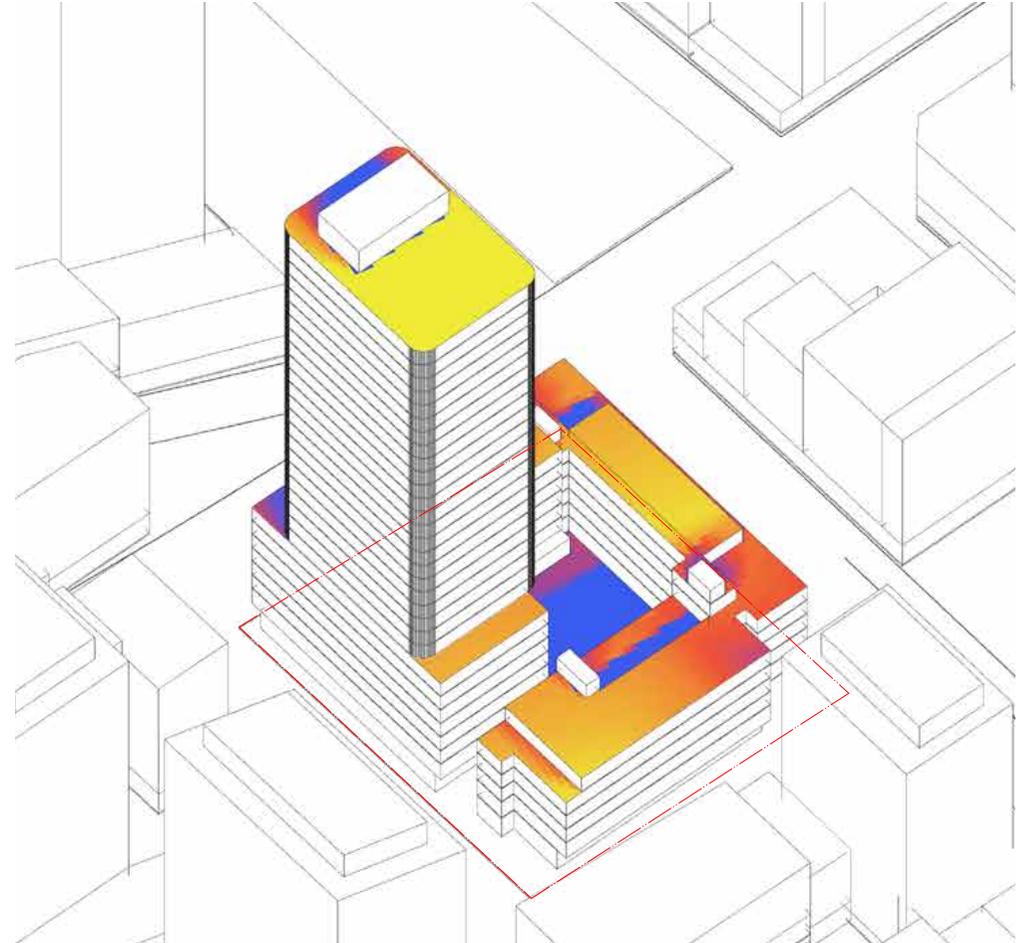


Fig. 7.579 Solar access to communal open space - View from the North-East



LOT S _ ADG DESIGN CRITERIA

The building strategy provides a **'loose-fit' envelope** that provides a building articulation zone, supports an active ground plane and design diversity. Taller buildings provide slender forms that reinforce the finer grain at street level.

Building Envelope and Height
 Building envelopes have been designed with consideration to ADG guidance for building depth and separation

Typical Podium Level
 The apartment configuration for podium levels are designed to maximise amenity, respond to the streetwall alignments and podium setbacks, and provide good passive surveillance of the public domain and communal open spaces.

Typical Upper Level
 The apartment configuration for upper levels are designed to maximise amenity through optimum orientation for solar access, slender floorplates for good natural ventilation and daylight, a variety of outlooks for district views.

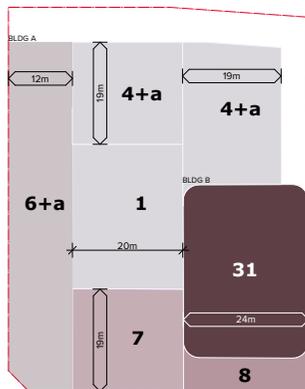


Fig. 75.80 Lot S Building Envelope Plan

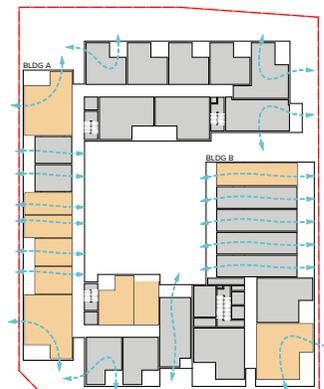


Fig. 75.81 Lot S typical mid-level floor plan

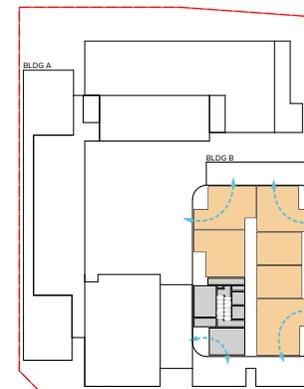


Fig. 75.82 Lot S typical tower level floor plan

	Building A	Building B	Building A	Building B	Building A	Building B		
Communal Open Space (ADG 3D)	✓	✓	Solar and Daylight Access (ADG 4A)	✓	✓	Apartment Size and Layout (ADG 4D)	✓	✓
Minimum 25% of Site Area		Additional communal open spaces provided for vertical villages	Minimum 70% of apartments receive 2 hours sunlight between 9am-3pm mid-winter Max. 15% apartments with no direct sunlight	71%	75%	<ul style="list-style-type: none"> Studio min. 40 m² 1 Bedroom min. 50 m² 2 Bedroom (1 Bath) min. 70 m² 3 Bedroom min. 90 m² 4 Bedroom - 	Sizes range from 35- 40 m ² (Provided for diversity) 50 - 54 m ² 70 -89 m ² 90 - 95 m ² -	
50% of the principal usable area receives 2 hours sunlight between 9am-3pm mid-winter			Natural Ventilation (ADG 4B)	✓	✓	Private Open Space (ADG 4E)	✓	✓
Deep Soil (ADG 3E)	✓	✓	Minimum 60% of apartments are naturally cross ventilated in the first 9 storeys	63%	60%	<ul style="list-style-type: none"> Studio min. 4 m² 1 Bedroom min. 8 m² 2 Bedroom min. 10 m² 3 Bedroom min. 12 m² 		
7 - 15% of Site Areas			Ceiling Heights (ADG 4C)	✓	✓	Common Circulation and Spaces (ADG 4F)	✓	✓
Visual Privacy (ADG 3F)	✓	✓	<ul style="list-style-type: none"> Habitable min. 2.7m Non-Habitable min. 2.4m 			No. Apartments / Core max. 8 - 12		
4 Storeys			2 Storey Apartments					
<ul style="list-style-type: none"> Habitable/Balconies min. 6m Non-Habitable min. 3m 			<ul style="list-style-type: none"> Main Living Floor min. 2.7m Secondary level min. 2.4m 					
5-8 Storeys			Attic Spaces					
<ul style="list-style-type: none"> Habitable / Balconies min. 9m Non-Habitable min. 4.5m 			<ul style="list-style-type: none"> Height at Edge min. 1.8m Minimum Ceiling Slope min. 30° 					
+9 Storeys			Mixed Use Areas					
<ul style="list-style-type: none"> Habitable / Balconies min. 12m Non-Habitable min. 6m 								

Note:
 Compliance is based on the 3 scenarios provided for the detailed lot studies on the following pages

LOT S _ ILLUSTRATIVE BLOCK PLANNING

BASEMENT 3 & 4

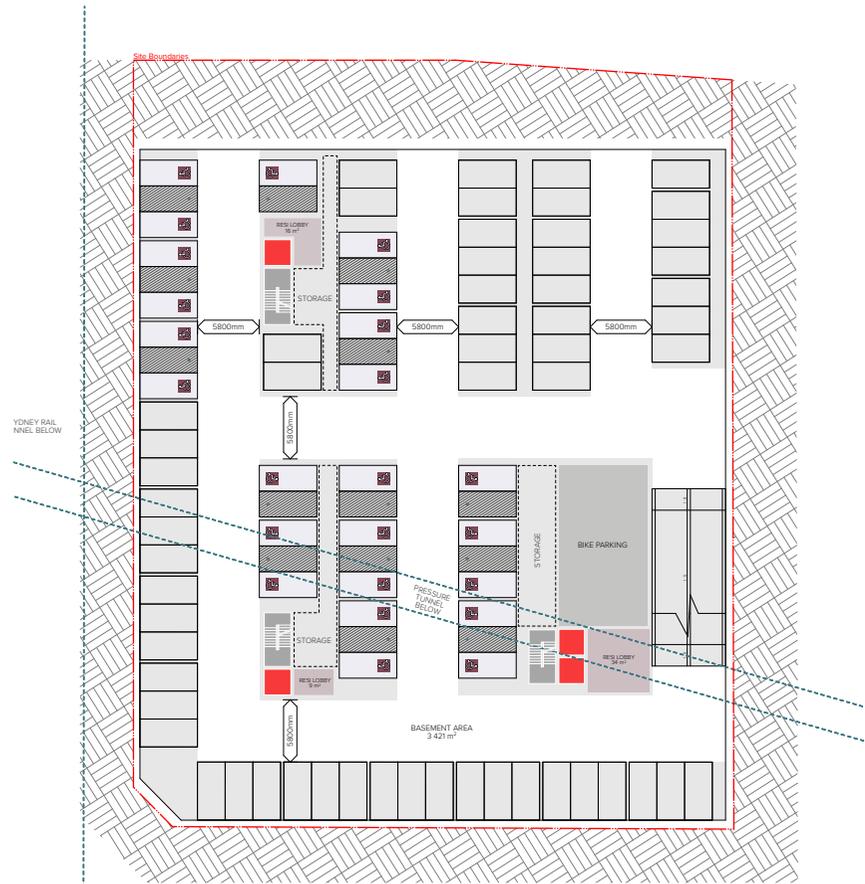


Fig. 7.5.83 Basement 03-04

BASEMENT 2

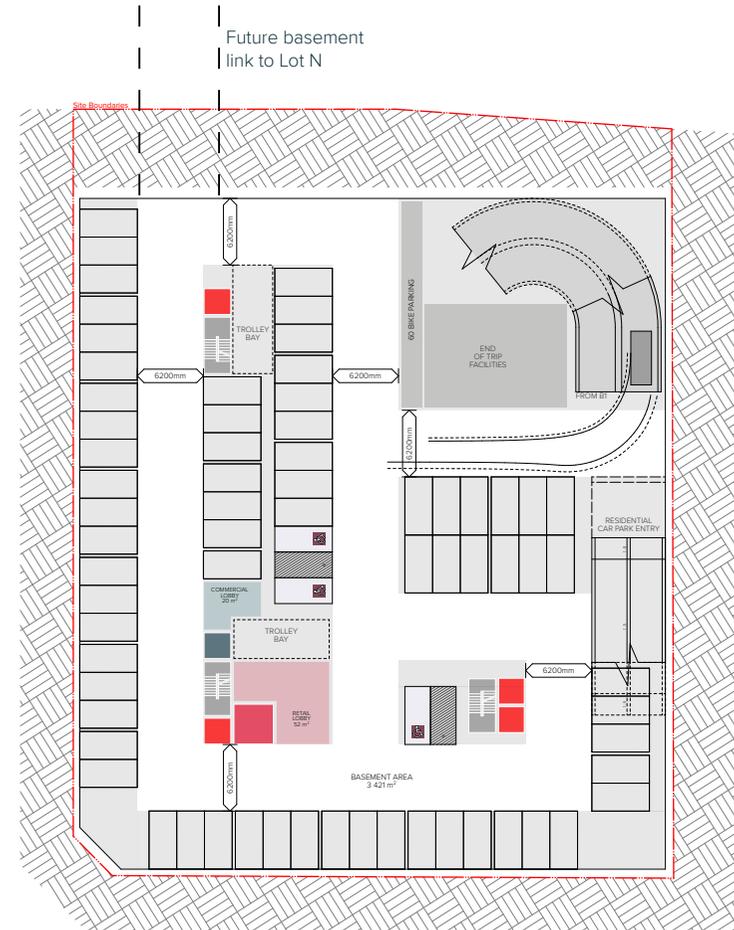


Fig. 7.5.84 Basement 02



LOT S_ ILLUSTRATIVE BLOCK PLANNING

BASEMENT 1

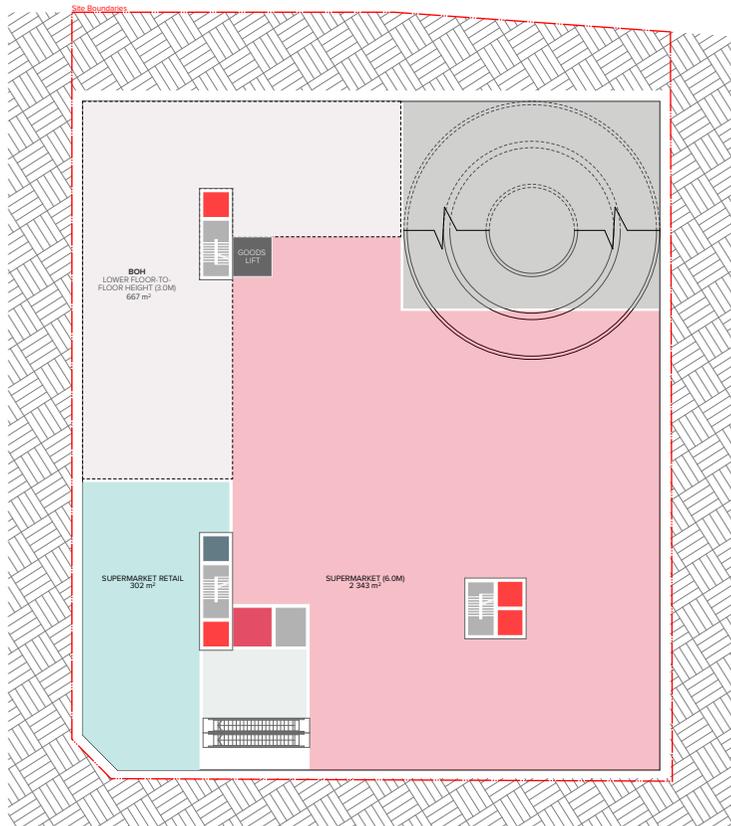


Fig. 7.5.85 Basement 01

LOWER GROUND LEVEL

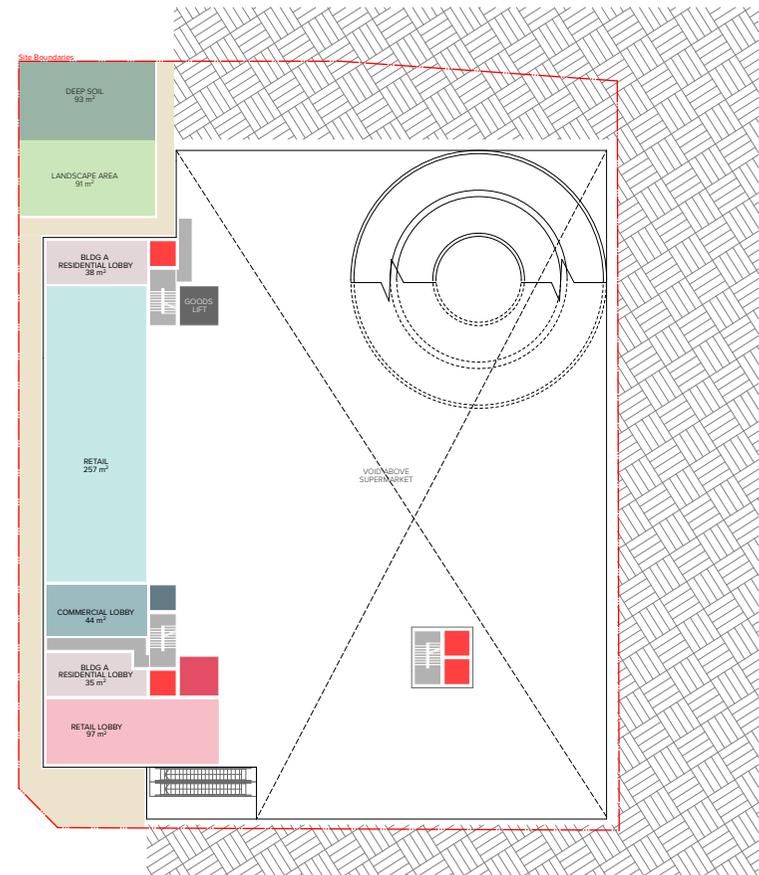


Fig. 7.5.86 Lower Ground Level

LOT S _ ILLUSTRATIVE BLOCK PLANNING

GROUND LEVEL

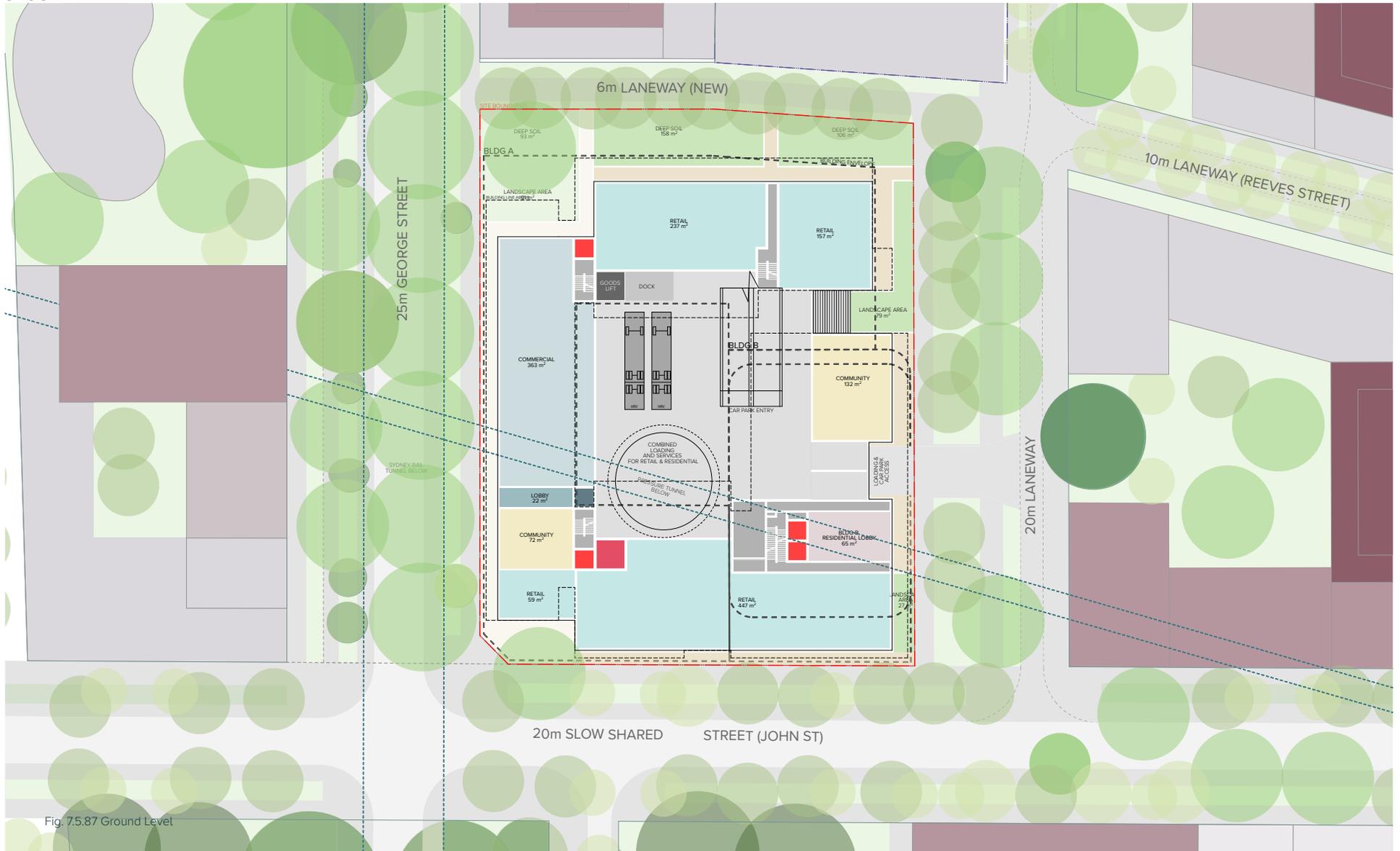
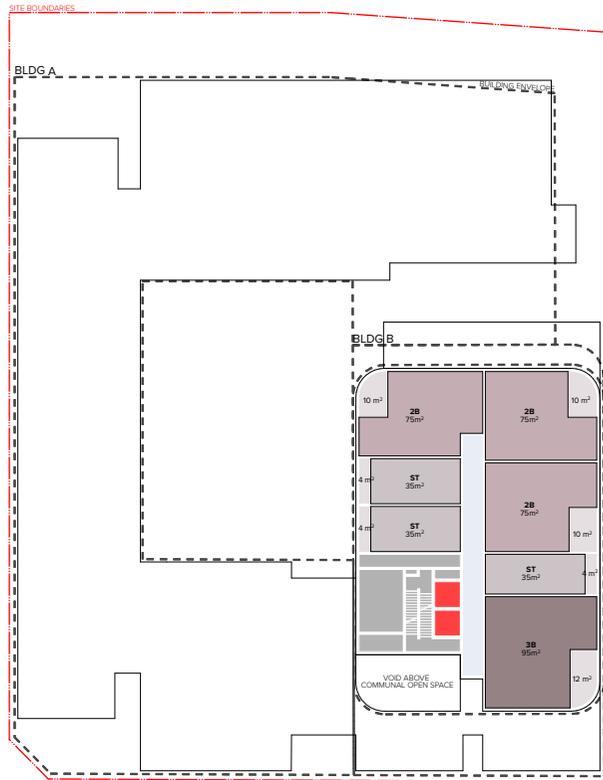


Fig. 7.5.87 Ground Level



LOT S_ ILLUSTRATIVE BLOCK PLANNING

LEVEL 9



LEVEL 10 & 12

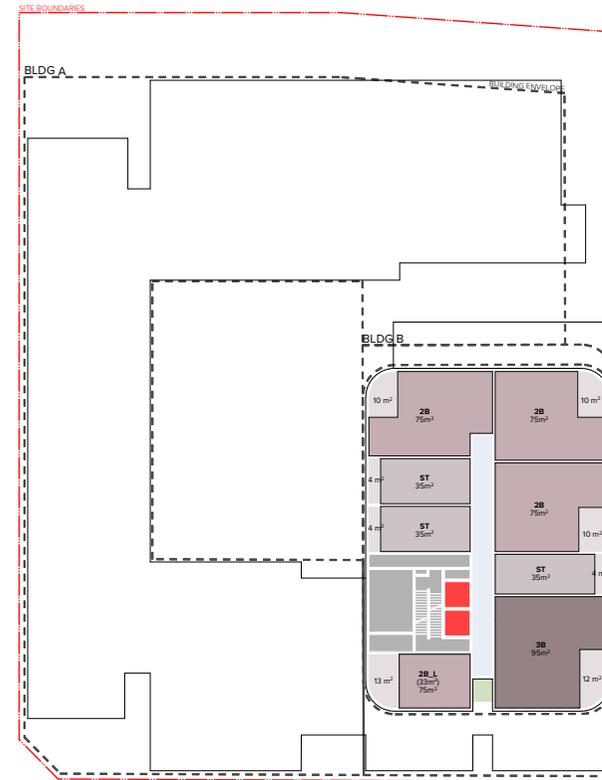


Fig. 7.5.96 Level 09

Fig. 7.5.97 Level 10 and 12

LOT S _ ILLUSTRATIVE BLOCK PLANNING

LEVEL 11 & 13

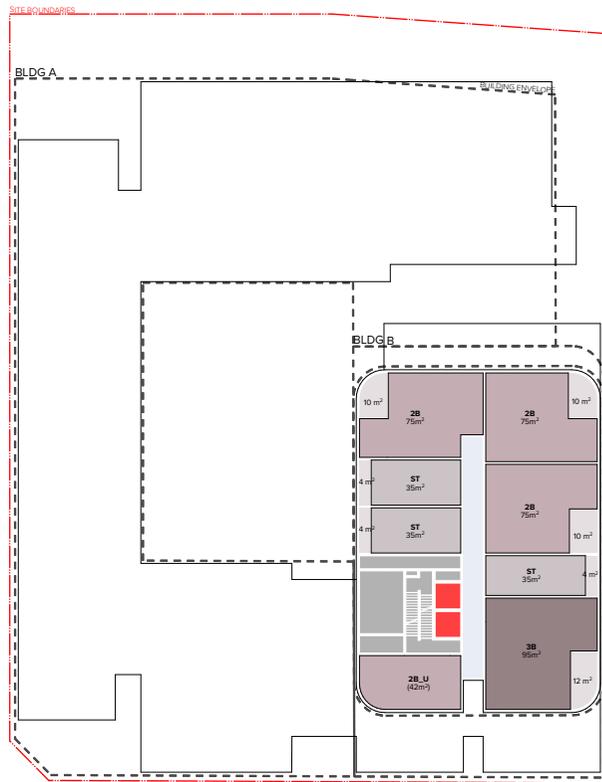


Fig. 7.5.98 Level 11 and 13

LEVEL 14

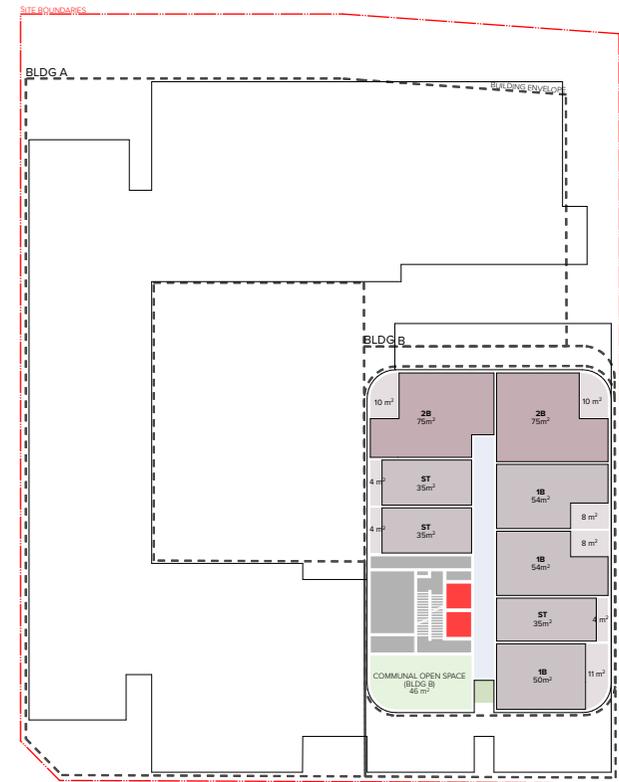


Fig. 7.5.99 Level 14



LOT S_ ILLUSTRATIVE BLOCK PLANNING

LEVEL 15

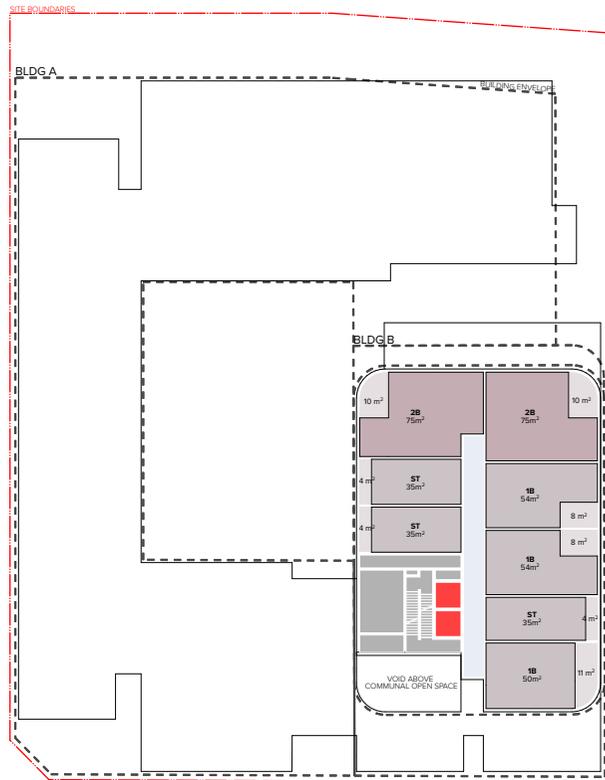


Fig. 7.5.100 Level 15

LEVEL 16 & 18

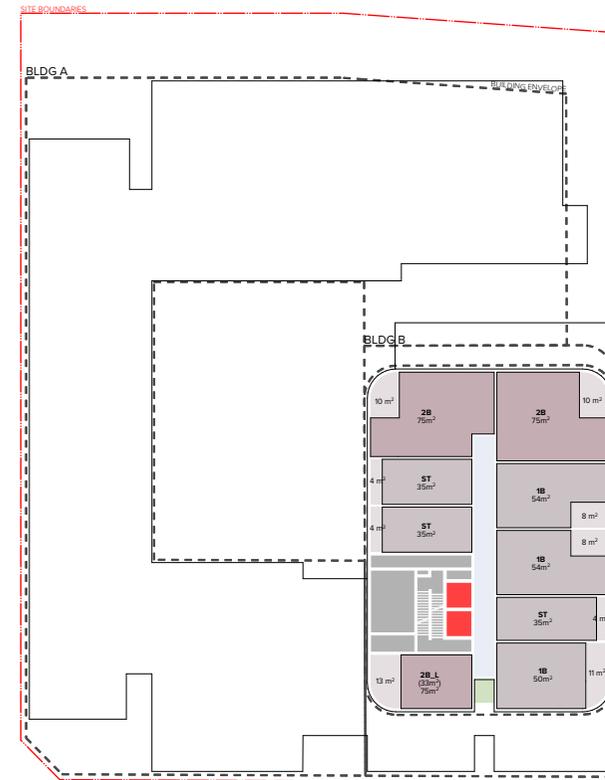


Fig. 7.5.101 Level 16 and 18

LOT S _ ILLUSTRATIVE BLOCK PLANNING

LEVEL 17 & 19

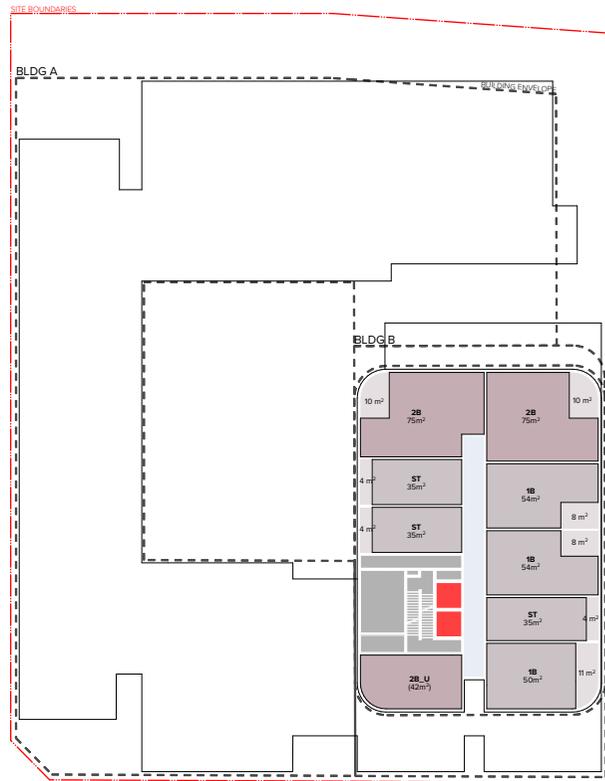


Fig. 7.5.102 Level 17 and 19

LEVEL 20 - 22

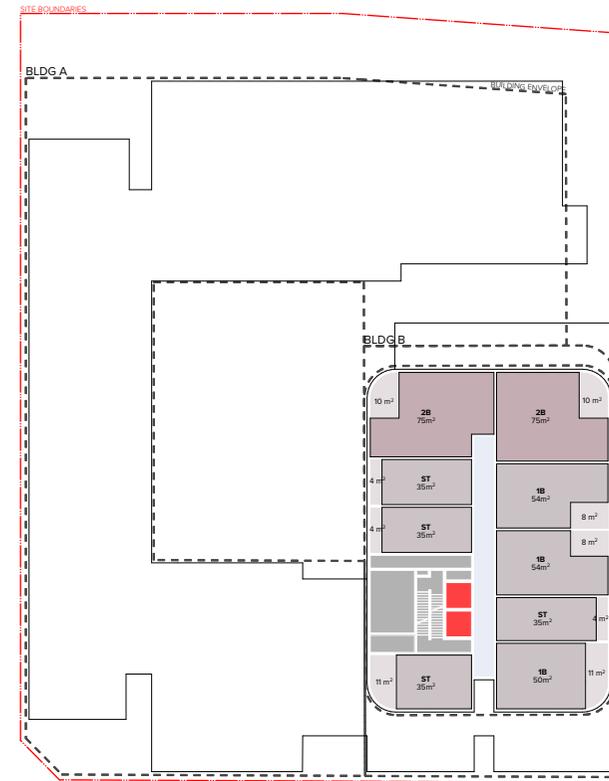


Fig. 7.5.103 Level 20 - 22



LOT S_ ILLUSTRATIVE BLOCK PLANNING

LEVEL 23 & 24

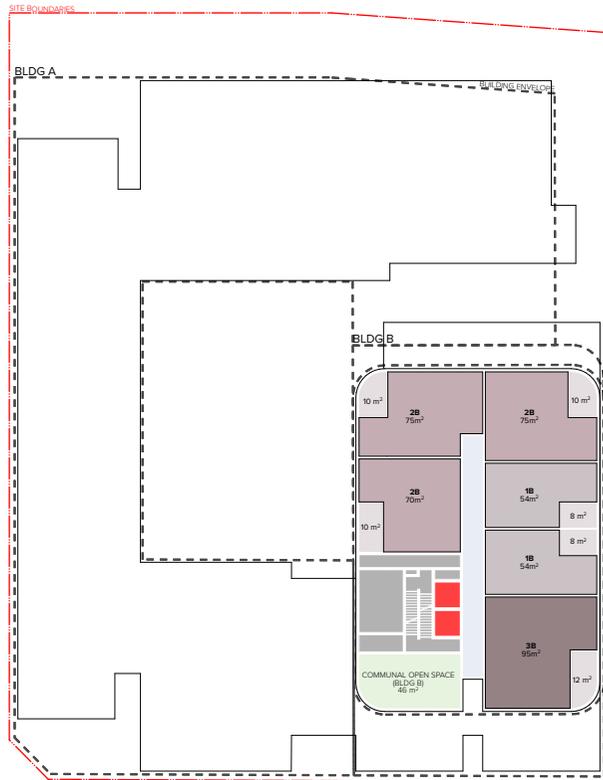


Fig. 7.5.104 Levels 23 and 24

LEVEL 25, 27 & 29

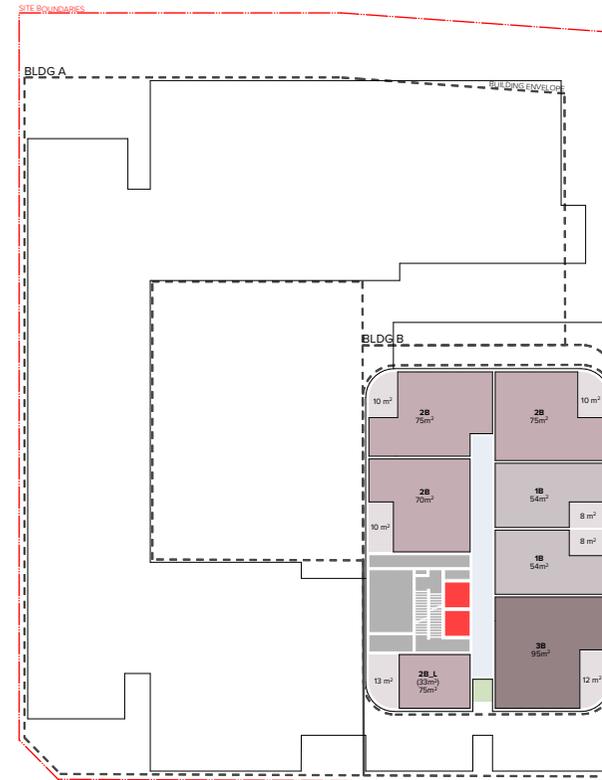


Fig. 7.5.105 Levels 25, 27 and 29

LOT S _ ILLUSTRATIVE BLOCK PLANNING

LEVEL 26, 28 & 30

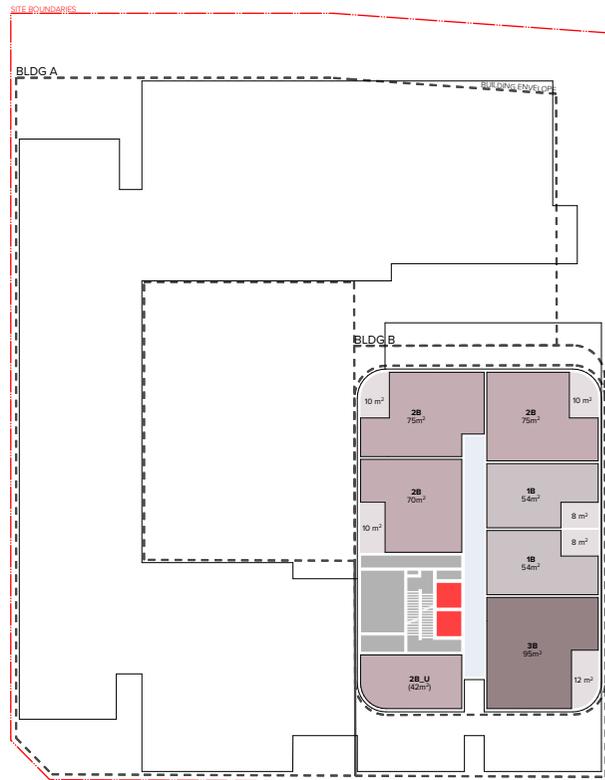


Fig. 7.5.106 Levels 26,28 and 30

ROOF LEVEL

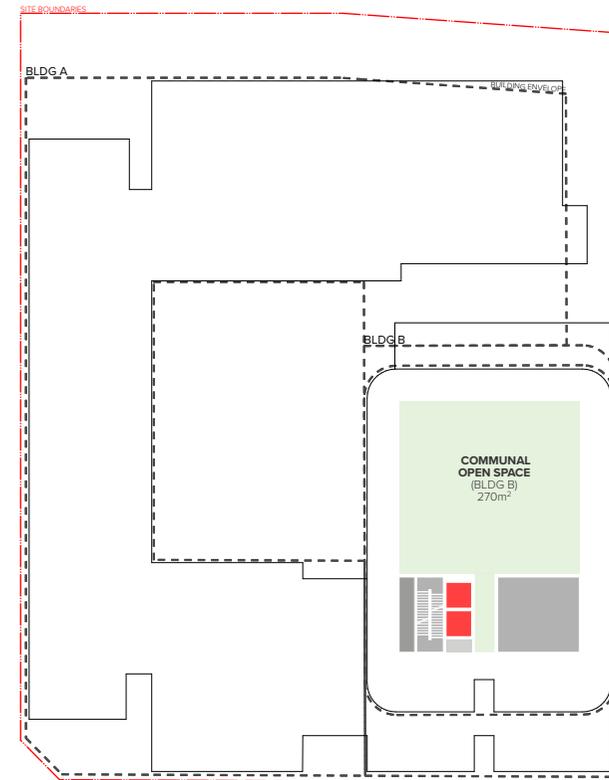
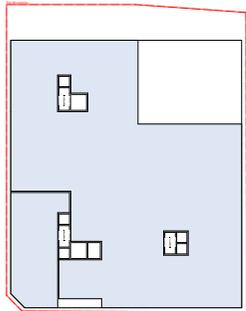


Fig. 7.5.107 Roof level

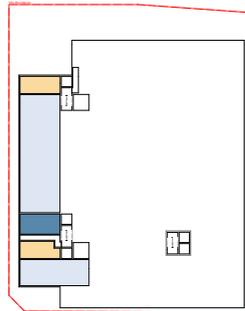


LOT S _ GFA ANALYSIS

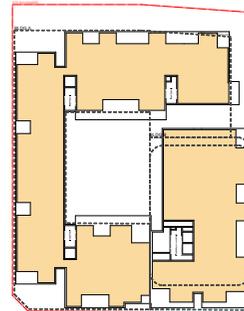
The building strategy provides a 'loose-fit' envelope that provides a building articulation zone, supports an active ground plane and design diversity. Taller buildings provide slender forms that reinforce the finer grain at street level.



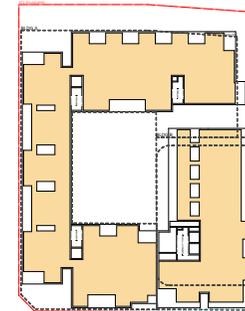
Lower Ground



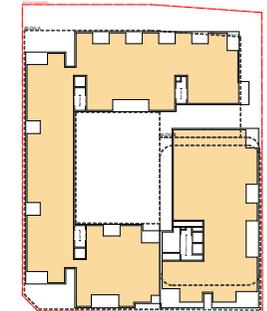
Ground Level



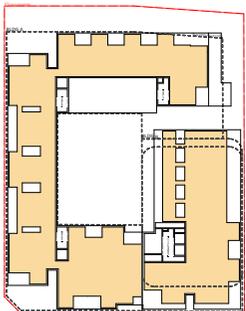
Level 1



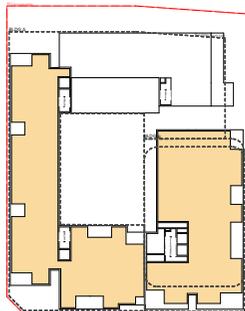
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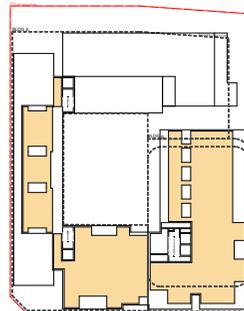
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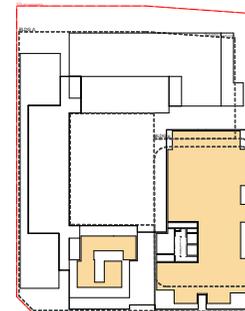
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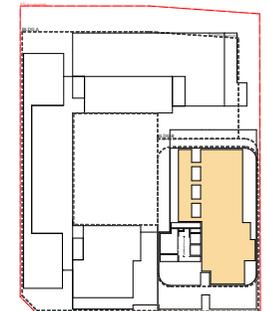
Level 5



Level 6



Level 7

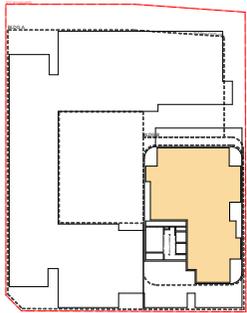


Level 8

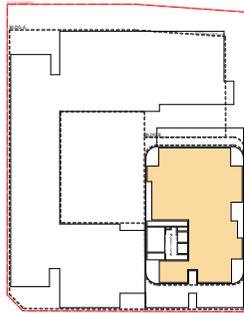
Legend



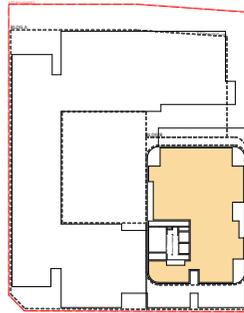
Fig. 7.5.108



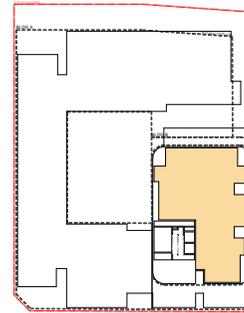
Level 09



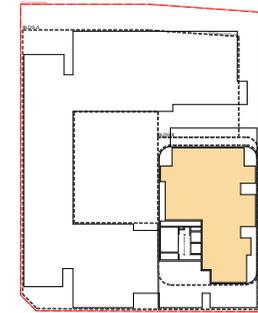
Level 10, 12



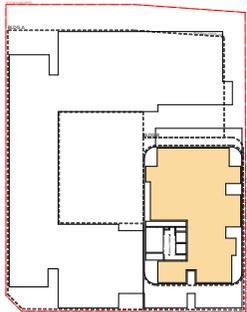
Level 11, 13



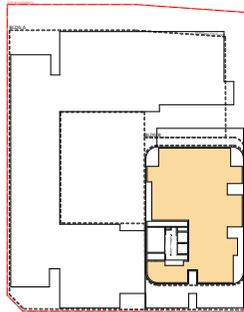
Level 14



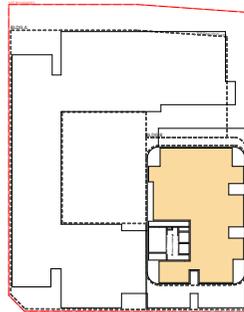
Level 15



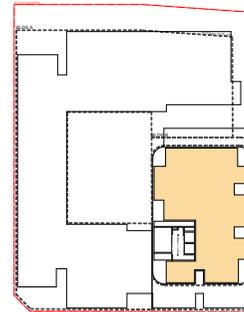
Level 16 & 18



Level 17, 19, 25 & 19



Level 20 - 22



Level 26, 28 & 30

Fig. 7.5.109



LOT S _ SOLAR ACCESS ANALYSIS

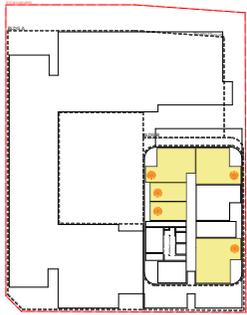
The Lot S Detail Lot Study demonstrates indicative building envelopes support built form with the capacity to achieve solar access consistent with ADG amenity requirements. **70% of dwellings in Building A** receive a minimum 2 hours of sunlight between 9am to 3pm at mid-winter. **75% of dwellings in Building B** receive a minimum 2 hours of sunlight between 9am to 3pm at mid-winter.



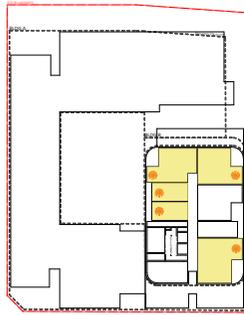
Legend

 Receives min. 2 hours solar access between 9am to 3pm at mid-winter

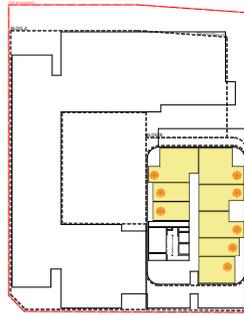
Fig. 7.5.110



Level 10, 12



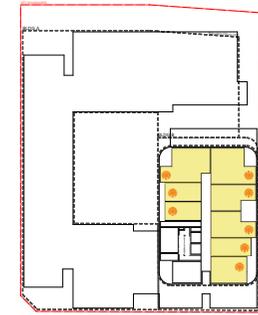
Level 11, 13



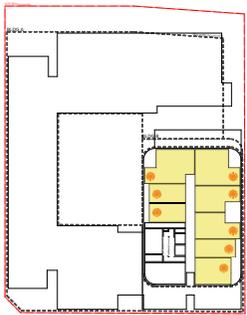
Level 14



Level 15



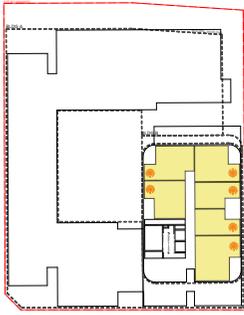
Level 16 & 18



Level 17 & 19



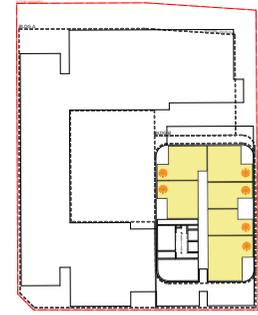
Level 20 - 22



Level 23 & 24



Level 25, 27 & 29



Level 26, 28 & 30

Fig. 7.5.105



LOT S _ CROSS VENTILATION ANALYSIS

The Lot S Detail Lot Study demonstrates indicative building envelopes support built form with the capacity to achieve cross-ventilation consistent with ADG amenity requirements. **63%** of dwellings in Building A and **60%** of dwellings in Building B are cross-ventilated.

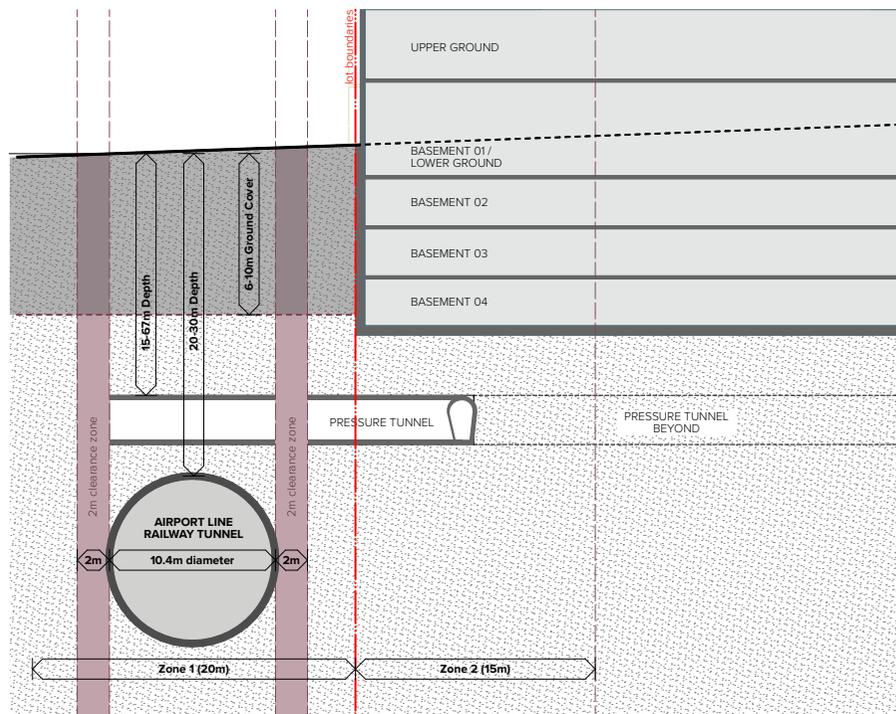


Fig. 7.5.106

LOT S _ RELATIONSHIP TO RAIL TUNNEL & HERITAGE PRESSURE TUNNEL

The building strategy provides a **'loose-fit' envelope** that provides a building articulation zone, supports an active ground plane and design diversity. Taller buildings provide slender forms that reinforce the finer grain at street level.

INDICATIVE SECTION THROUGH SYDNEY TRAINS AIRPORT LINE



INDICATIVE SECTION THROUGH HERITAGE WATER PRESSURE TUNNEL

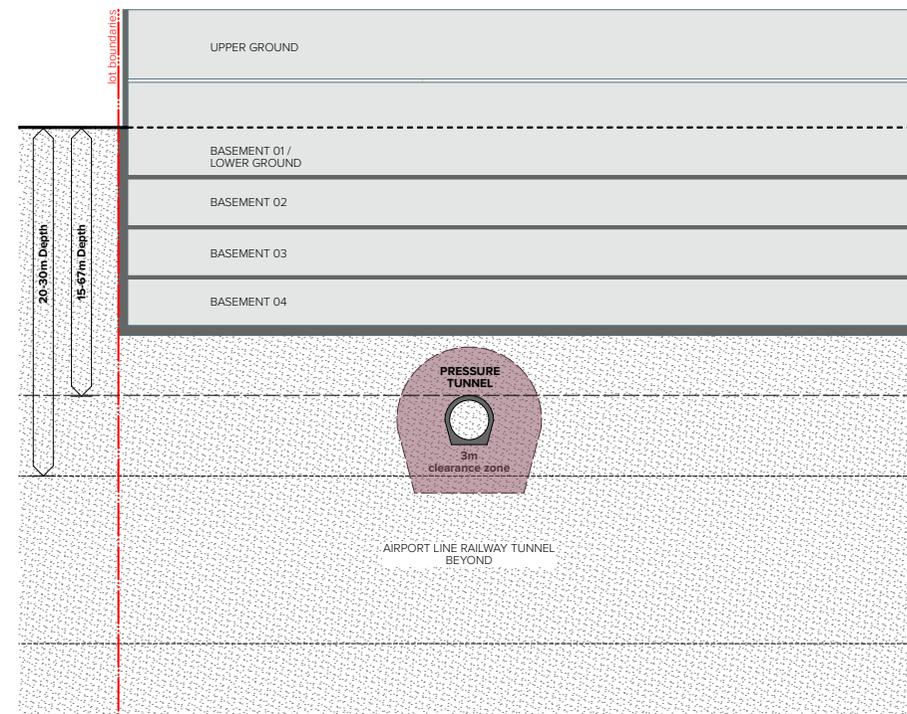


Fig. 7.5.113



7.5.4 APPROACH TO PRIVATE SITES

POTENTIAL FOR FUTURE DEVELOPMENT WITHIN PRIVATE SITES

A number of scenarios were explored as part of the development of the approach to the private sites within Waterloo South

There are a number of sites within Waterloo South under private ownership, containing 125 private dwellings and commercial uses. The private sites are located at:

- ① **221-223 Cope Street** (Vental Blind Building)
Existing commercial uses - Ethnic Communities Council of NSW
116 Wellington Street
Existing commercial uses
- ② **225-227 Cope Street**
Existing residential uses - The former Waterloo Pre-School and an item of Heritage Significance
- ③ **111 Cooper Street**
Existing residential uses
- ④ **233-239 Cope Street** (Orbit Waterloo)
123-131 Cooper Street
Existing multi-residential uses
- ⑤ **291 George Street**
Existing multi-residential uses - previously The Duke of Wellington Hotel and an item of Heritage Significance
- ⑥ **110 Wellington Street**
Existing multi-residential uses

A range of options were explored for the private sites within that included:

- Retaining existing buildings
- Investigating the potential future envelopes within existing controls
- Investigating the potential future envelopes targeting an overall FSR of 3.09 : 1 to be equitable within the overall masterplan.

There are various factors that influence the management of the development capacity of a site.

The Apartment Design Guide, prepared by the NSW Department of Planning & Environment, is a key document in assisting urban designers and planners to manage residential apartment development.

These include:

- Size and orientation of the site
- Interface with the public domain and neighbours
- Response to the existing and future context
- Response to key attributes within the site
- Setbacks
- Communal open space including landscaping
- Building separation and depth
- Building performance and orientation
- Three dimensional building envelope

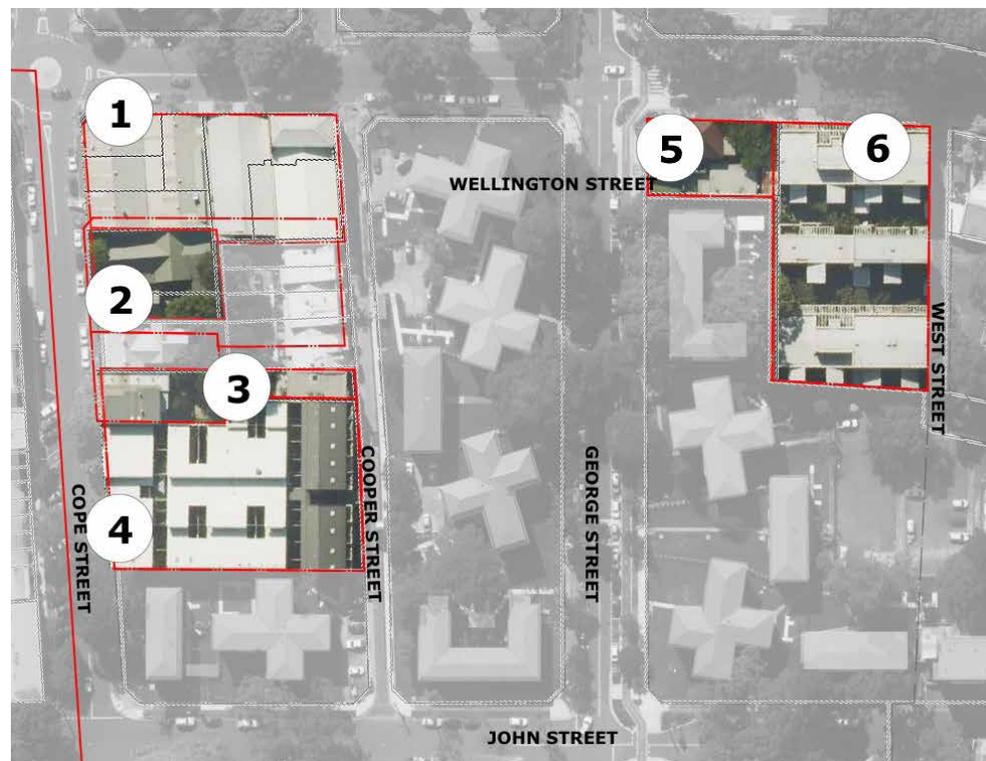


Fig. 7.5.114 Private sites within Waterloo South



Fig. 7.5.115 **221-223 Cope Street & 116 Wellington Street**



Fig. 7.5.116 **225-227 Cope Street**



Fig. 7.5.117 **233-239 Cope Street**



Fig. 7.5.118 **111 Cooper Street**



Fig. 7.5.119 **123-131 Cooper Street**



Fig. 7.5.120 **291 George Street**

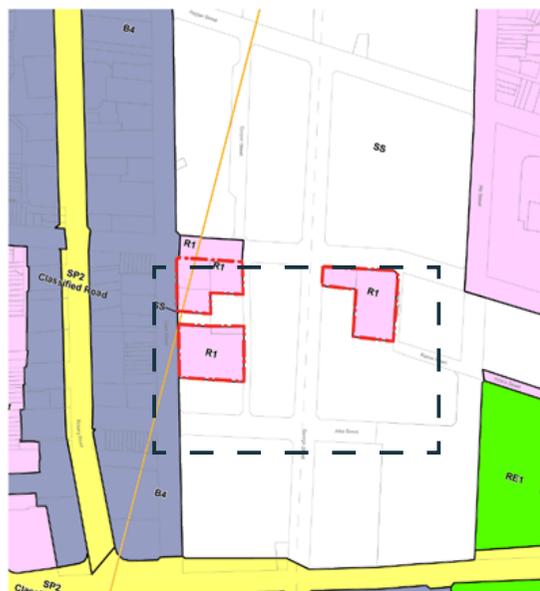


Fig. 7.5.121 **110 Wellington Street**



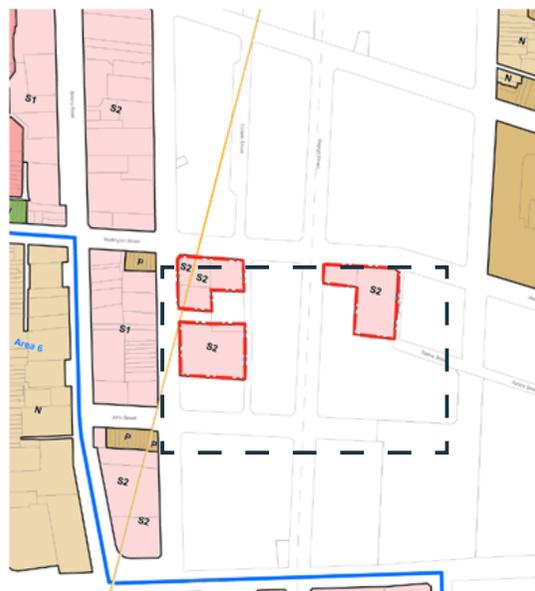
POTENTIAL FOR FUTURE DEVELOPMENT WITHIN CURRENT CONTROLS

The majority of the existing private sites achieve the maximum FSR allowable under the current controls.



LAND USE

R1 General Residential



FLOOR SPACE RATIO (FSR)

S2 1.75



HEIGHT OF BUILDINGS (HOB)

O 15
P 18

EXISTING PRIVATE SITES

Sites with Limited Re-Development Potential

The majority of the existing private sites achieve the maximum FSR allowable under the current controls.

Sites that currently achieve maximum FSR 1.75 : 1

1. **221-223 Cope Street** (Vental Blind Building) and **116 Wellington Street**
Current FSR approx 1.75 : 1

4. **233-239 Cope Street** (Orbit Waterloo)
123-131 Cooper Street
Current FSR approx 1.75 : 1

5. **291 George Street**
Current FSR approx 1.75 : 1

6. **110 Wellington Street**
Current FSR approx 1.71 : 1

Sites with Re-Development Potential

Sites that have opportunities for further re-development under the current controls are:

2. **225-227 Cope Street**
Current FSR approx 0.64 : 1
Potential FSR approx 0.91 : 1
This site is constrained by its heritage item listing

3. **111 Cooper Street**
Current FSR approx 0.77 : 1
Potential FSR approx 1.75 : 1

Legend

- Items of Heritage Significance
- Existing Building Footprint
- Proposed Private Sites Building Footprint
- Proposed Estate Building Footprint
- 2, 3, ...** Building Height



Fig. 7.5.123 Plan of Existing Private Sites



Fig. 7.5.124 Indicative massing of Existing Private Sites

PRIVATE SITES WITH POTENTIAL FOR INCREASED FSR UNDER CURRENT CONTROLS



Fig. 7.5.125 Plan



Fig. 7.5.126 Indicative massing



BEST AND HIGHEST USE _ EXISTING CONTEXT

Analysis of the re-development potential for the Private Sites under a best and highest use approach provides a range from FSR 1.79 : 1 to FSR 2.34 : 1 when the existing context is considered

PRIVATE SITES BEST & HIGHEST USE RESPONDING TO CURRENT CONTEXT



Fig. 7.5.127 Plan

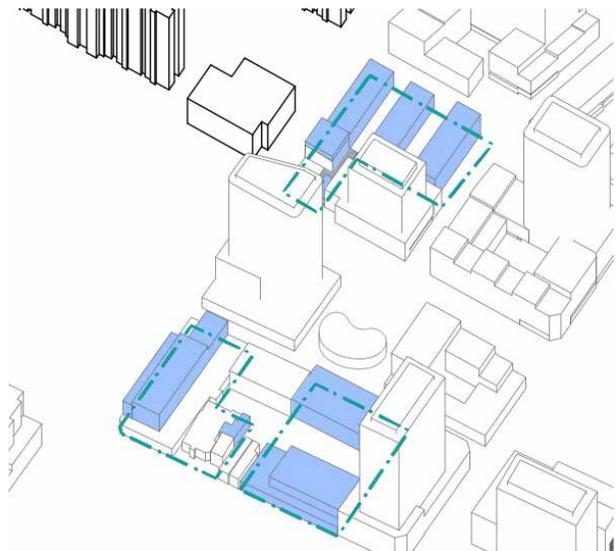


Fig. 7.5.128 Indicative massing Option 1
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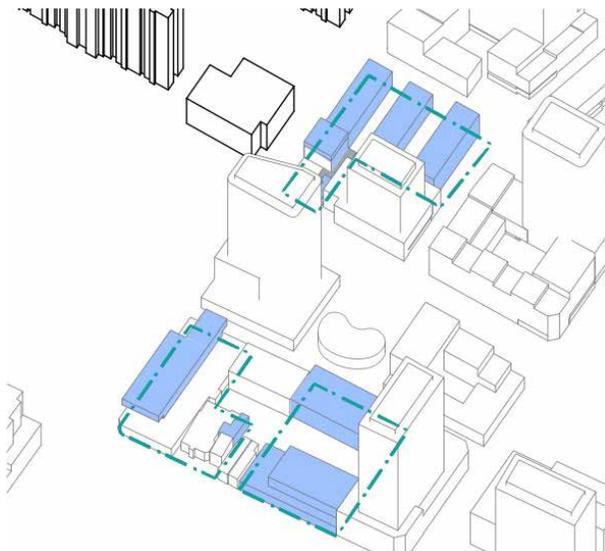


Fig. 7.5.129 Indicative massing Option2

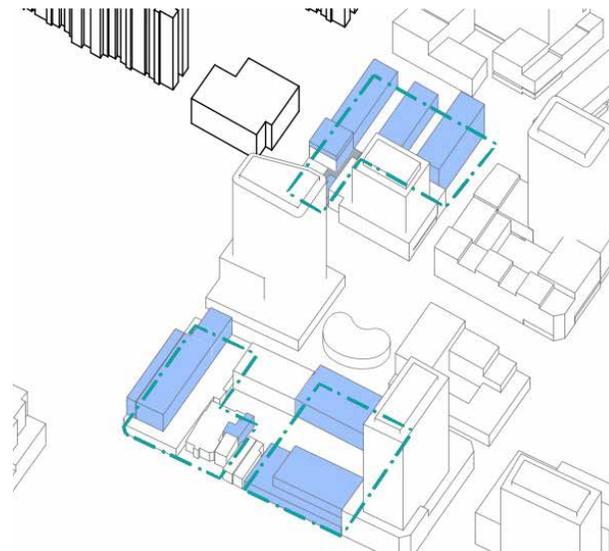


Fig. 7.5.130 Indicative massing Option 3



POTENTIAL FOR FUTURE DEVELOPMENT _ APPLYING A MAXIMUM FSR CONTROL

RE-DEVELOPMENT POTENTIAL AS INDIVIDUAL LOTS

This scenario considers the possible development potential if the private sites are re-developed as individual lots with a maximum target FSR 3.09 : 1.

Each individual lot will be influenced by different factors that will impact the achievable GFA.

1. **221-223 Cope Street** (Vental Blind Building) and **116 Wellington Street** (Retain & re-develop)
Current FSR approx 1.75 : 1
Potential FSR approx 3.09 : 1
2. **225-227 Cope Street** (Retain & re-develop)
Current FSR approx 0.64 : 1
Potential FSR approx 0.91 : 1
This site is constrained by its heritage item listing
3. **111 Cooper Street** (Demolish & re-develop)
Current FSR approx 0.77 : 1
Potential FSR approx 1.64 : 1
4. **233-239 Cope Street** (Orbit Waterloo)
123-131 Cooper Street (Demolish & re-develop)
Current FSR approx 1.75 : 1
Potential FSR approx 3.0 : 1
5. **291 George Street** (Retain & re-develop)
Current FSR approx 1.75 : 1
Potential FSR approx 2.00 : 1
This site is constrained by its heritage item listing
6. **110 Wellington Street** (Demolish & re-develop)
Current FSR approx 1.71 : 1
Potential FSR approx 3.0 : 1

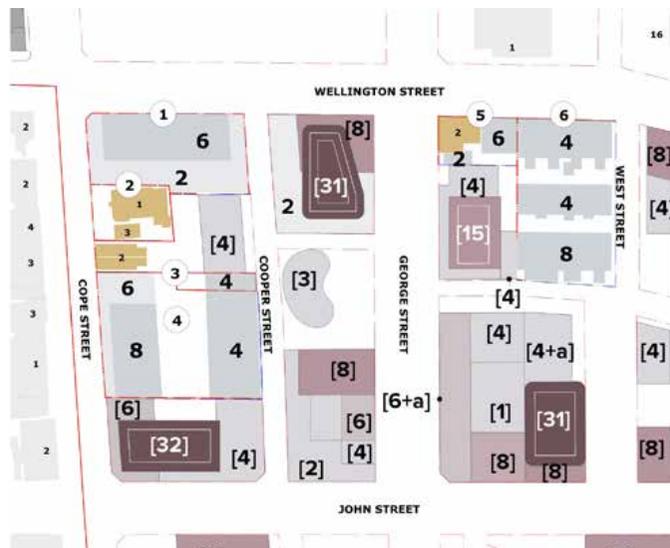


Fig. 7.5.135 Plan

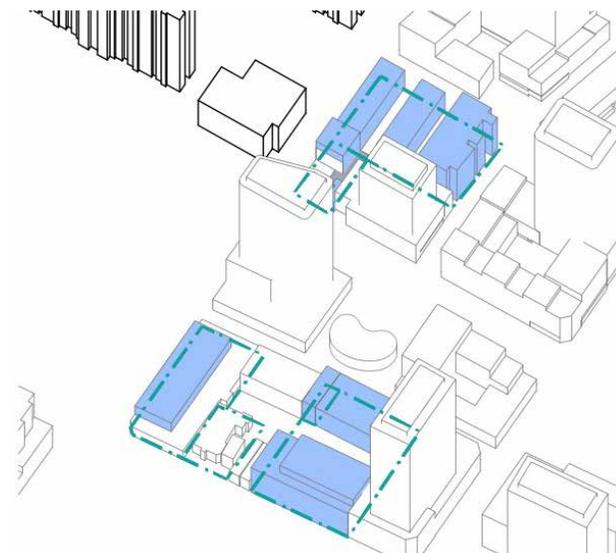


Fig. 7.5.136 Indicative massing Option 7

RE-DEVELOPMENT POTENTIAL AS AMALGAMATED LOTS

This scenario considers the possible development potential if the private sites are amalgamated and re-developed with a maximum target FSR 3.09 : 1.

Each individual lot will be influenced by different factors that will impact the achievable GFA.

1. **221-223 Cope Street** (Vental Blind Building)
116 Wellington Street
225-227 Cope Street (Retain & re-develop)
This site is constrained by its heritage item listing

Potential FSR approx 3.09 : 1
2. **111 Cooper Street**
233-239 Cope Street (Orbit Waterloo)
123-131 Cooper Street (Demolish & re-develop)

Potential FSR approx 3.09 : 1
3. **291 George Street** (Retain & re-develop)
This site is constrained by its heritage item listing
110 Wellington Street (Demolish & Re-develop)

Potential FSR approx 3.09 : 1

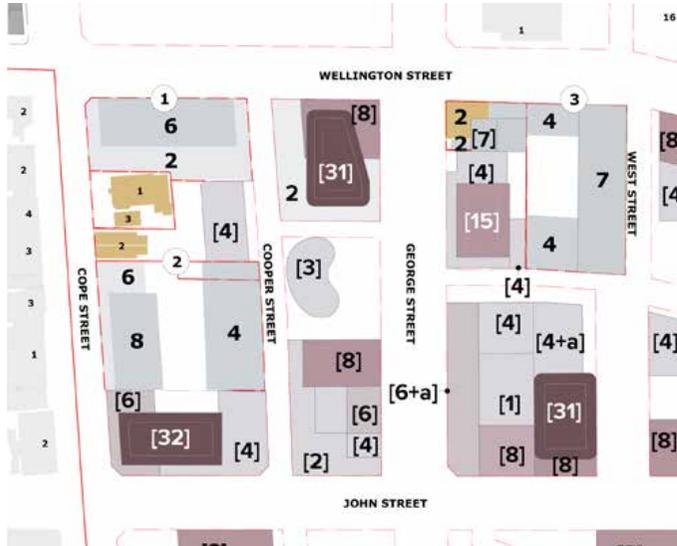


Fig. 7.5.137 Plan

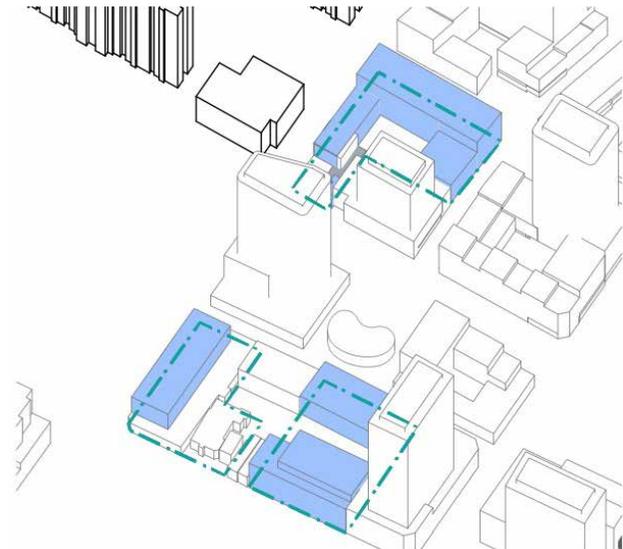


Fig. 7.5.138 Indicative massing Option 8

RE-DEVELOPMENT POTENTIAL AS AMALGAMATED LOTS WITH TALL BUILDINGS

This scenario considers the possible development potential if the private sites are re-developed as individual lots with a maximum target FSR 3.09 : 1.

Each individual lot will be influenced by different factors that will impact the achievable GFA.

1. **221-223 Cope Street** (Vental Blind Building)
116 Wellington Street
225-227 Cope Street (Retain & re-develop)
 This site is constrained by its heritage item listing

Potential FSR approx 3.09 : 1

2. **111 Cooper Street**
233-239 Cope Street (Orbit Waterloo)
123-131 Cooper Street (Demolish & re-develop)

Potential FSR approx 3.09 : 1

3. **291 George Street** (Retain & re-develop)
 This site is constrained by its heritage item listing
110 Wellington Street (Demolish & re-develop)

Potential FSR approx 3.09 : 1

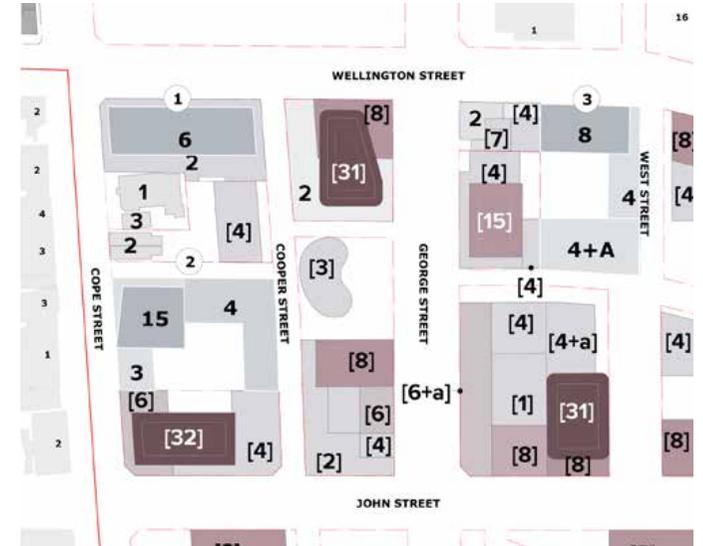


Fig. 7.5.139 Plan

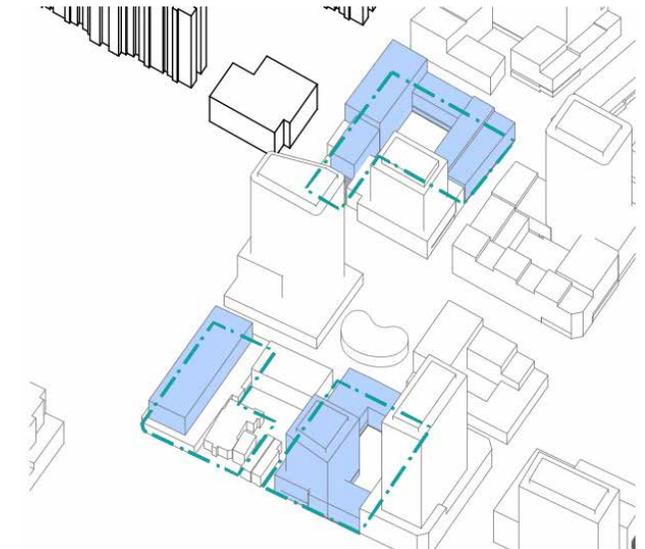


Fig. 7.5.140 Indicative massing Option 9





POTENTIAL FOR FUTURE DEVELOPMENT _ CURRENT CONTROLS

A possible future built form outcome for the Botany Road Corridor under current controls was assessed for solar access as part of the development of the Waterloo South Indicative Concept Proposal. Waterloo South does not reduce the capacity of future development within the Botany Road Corridor to meet or exceed the ADG objectives and design criteria for solar access.

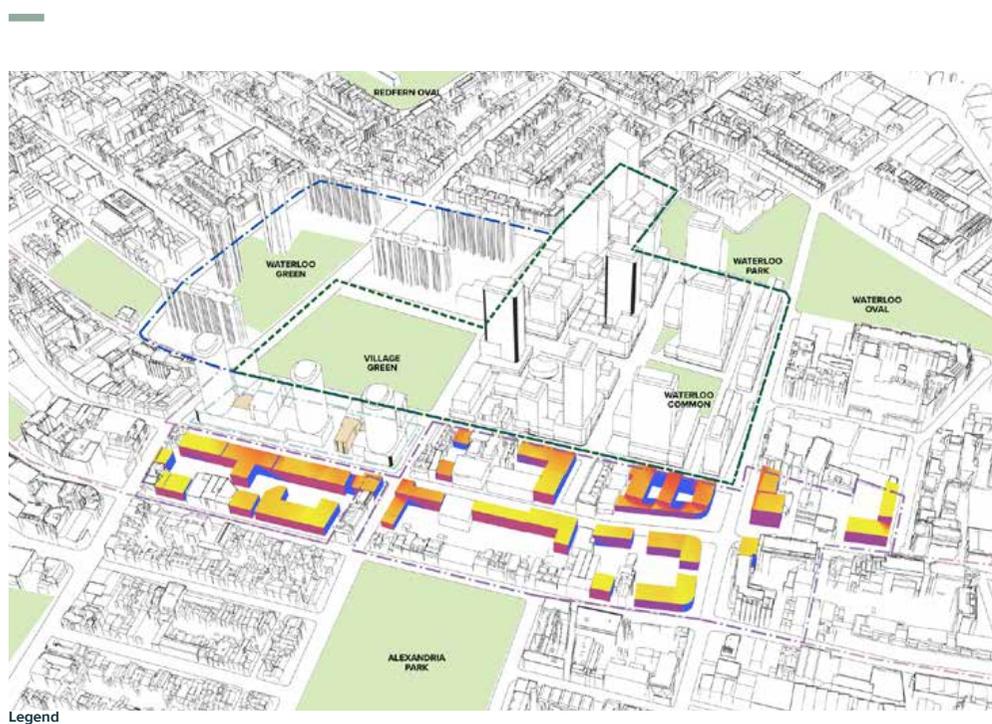


Fig. 7.5.143 Solar access to future potential context between 9am - 3pm mid winter, south west view
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BOTANY ROAD CORRIDOR RE-DEVELOPMENT POTENTIAL UNDER CURRENT CONTROLS

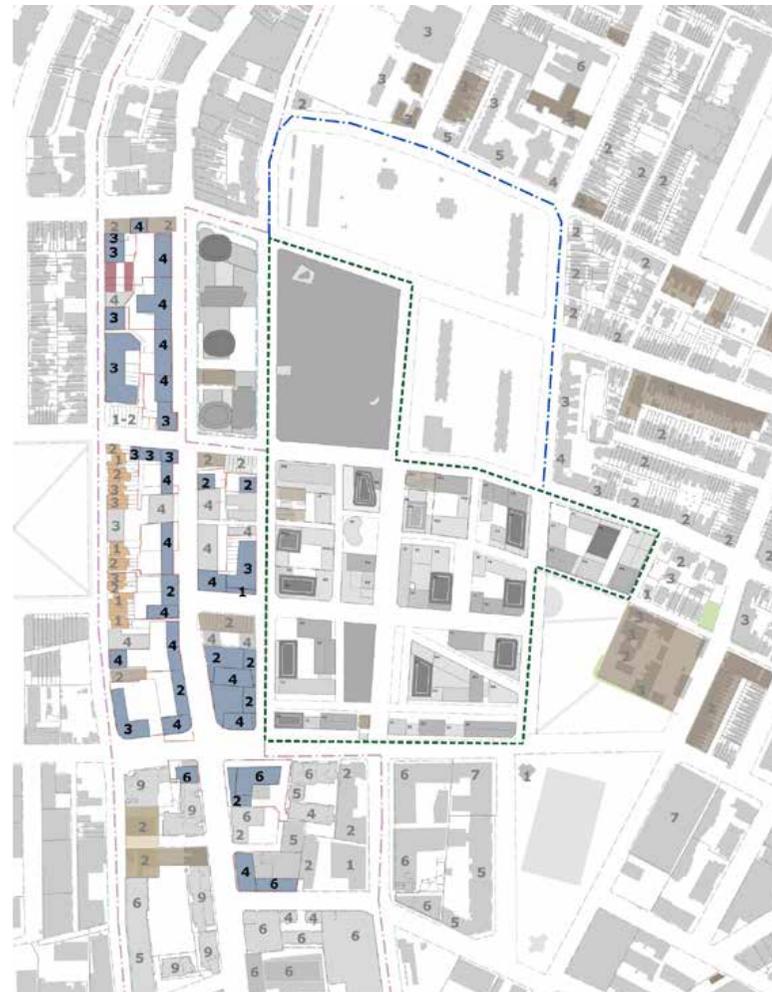


Fig. 7.5.144 Botany Road Corridor potential built form under existing height controls

POTENTIAL FOR FUTURE DEVELOPMENT _ 'UPLIFT' POTENTIAL

A possible future built form outcome for the Botany Road Corridor with 'uplift' potential was assessed for solar access as part of the development of the Waterloo South Indicative Concept Proposal. Waterloo South does not reduce the capacity of future development within the Botany Road Corridor to meet or exceed the ADG objectives and design criteria for solar access.



Fig. 7.5.145 Solar access to future potential context between 9am - 3pm mid winter, south west view

BOTANY ROAD CORRIDOR RE-DEVELOPMENT POTENTIAL UNDER FUTURE 'UPLIFT' CONTROLS

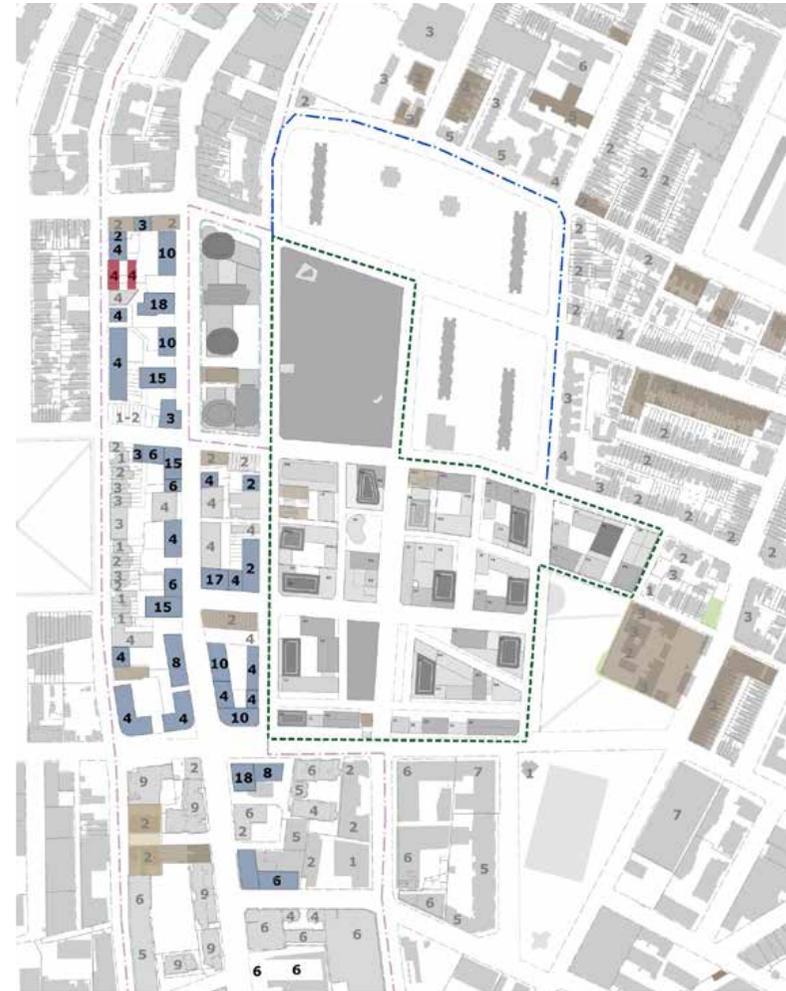


Fig. 7.5.146 Botany Road Corridor potential built form under future 'uplift' controls

