

Burwood North Precinct Masterplan Precinct Analysis Summary Report



DRAFT

Prepared for:



Inc.1874
Burwood Council
2 Conder Street
Burwood, NSW 2134

Revision(s)	Date	By	Checked
Rev A Draft	28/11/2022	Tamara Obradovic	Laura Clarke & Lachlan Abercrombie
Rev B	13/12/2022	Tamara Obradovic	Laura Clarke & Lachlan Abercrombie

Prepared by:



Cox Architecture
70 George Street
The Rocks (Tallawoladah) NSW 2000
Australia
T +61 2 9267 9599
F +61 2 9264 5844
sydney@cox.com.au
coxarchitecture.com.au

Contents

DRAFT

Terms and Abbreviations	4	Site Appreciation and Opportunities	23
Acknowledgement of Country	5	Site Context	24
Introduction	7	Sustainability	26
Introduction	8	Infrastructure and Collaboration	30
Purpose of this Report	9	Productivity	36
Context	11	Liveability	38
Aboriginal Culture and Heritage	12	Case Studies	43
European Heritage	14		
Regional Context	16		
Burwood North's Community	18		
Strategic Planning Context	20		

Terms and Abbreviations

DRAFT

BRT	Bus Rapid Transit
CBD	Central Business District
CPTED	Crime Prevention Through Environmental Design
DCP	Development Control Plan
DPE	Department of Planning and Environment
FSR	Floor Space Ratio
LEP	Local Environment Plan
LGA	Local Government Area
PRCUTS	Parramatta Road Corridor Urban Transformation Strategy
PV	Photovoltaic
SMW	Sydney Metro West
TfNSW	Transport for New South Wales
WSUD	Water Sensitive Urban Design

Acknowledgement of Country

DRAFT

COX acknowledges the enduring spirit of Wann Country. We recognise the knowledges, languages, stories, songlines, land, skies, waterways, and Spirit systems that have nurtured the local peoples here for millennia.

We pay our respects to the local peoples of the place on which the Burwood North Precinct stands, the Wangal people, and any other peoples that call this place home. We pay our deepest respects to Elders, past, present, and emerging and recognise your continuing cultural and Ancestral connections.

We also acknowledge Gadigal Country, upon which this document was crafted, as well as the Traditional Custodians of this place, the D'harawal, Dharug, Eora, Gia-maragal, Gundungurra and Guringai peoples. We pay our respects to the many Aboriginal peoples that now know this place as your home and mother and acknowledge the caretaking relationships you have here.

DRAFT



DRAFT

Introduction



Figure 1: Meryla Street, Burwood. Source: COX

Introduction

"Home to a thriving town centre and cherished heritage conservation areas, with world class transport, well designed buildings and inviting public spaces.

We are planning for a wide range of jobs to enable more locals to work closer to home, a strong night-time economy and safe, green leafy neighbourhoods filled with distinct character, offering a range of housing options and access to open space."

Cr John Faker Mayor of Burwood

Purpose of the Burwood North Precinct Masterplan

Burwood Council is preparing an updated masterplan and supporting studies for the Burwood North Precinct building upon the work already undertaken as part of the Parramatta Road Corridor Urban Transformation Strategy (PRCUTS).

The masterplan will articulate a clear vision and provide an urban design framework for the public and private domain, with a view to improve the amenity and quality of the built environment. In addition, the masterplan will provide recommendations on land use zones, building heights, floor space ratios (FSRs), road network improvements and public domain improvements that will facilitate activation, job creation and housing choice.

The masterplan will seek to capture the opportunity afforded by a new metro station at Burwood North on the Sydney Metro West network, building on the vision for PRCUTS to reflect the unique characteristics of the established place and community.

The masterplan will articulate a cohesive vision for the Precinct that strives to deliver an outcome that is feasible, maximises public benefit and delivers high quality public domain, open spaces and community infrastructure.

An Implementation Plan will also be prepared that outlines the recommended planning controls, policies and infrastructure necessary to enable the successful delivery and realisation of the masterplan.

The recommendations may inform amendments to the Burwood Local Environmental Plan 2012 (BLEP) 2012 and Burwood Development Control Plan (DCP)

Parramatta Road

The Burwood North Precinct is identified within PRCUTS, which seeks to revitalise land along the length of the Parramatta Road corridor between Parramatta and the Sydney CBD. The portion of the Burwood North Precinct within the Burwood the Burwood LGA has not yet been rezoned to reflect the PRCUTS scenario. The City of Canada Bay has recently exhibited a planning proposal for the portion of the Precinct within the City of Canada Bay LGA.

The PRCUTS vision for the Burwood North Precinct identifies capacity for a maximum of 3,500 dwellings and minimum 82,500m² of commercial floorspace. Testing previously undertaken by Council has indicated that urban renewal is not feasible under the PRCUTS scenario.

Catalytic Renewal

Sydney Metro West (SMW) is a new 24-kilometre metro line with stations confirmed at Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock, The Bays, Pyrmont and Hunter Street in the Sydney CBD.

A proposed metro station at Burwood North will provide connections to Parramatta CBD and Sydney CBD in just 10 minutes either way.

The Sydney Metro West station, currently under construction, at Burwood North will be the required catalyst for the urban regeneration of the Burwood North Precinct and surrounding area.

The connectivity afforded by the metro station positions Burwood North as a highly attractive place to live, work and visit. In addition to this, Burwood North is already supported by existing rail and bus networks that will continue to play an important role in providing local and regional connectivity.

The Burwood town centre already has one of the highest number of jobs that can be accessed by public transport in Greater Sydney. For residents of Burwood North the metro will mean that there are additional rail connections to the employment, activity, health, education and recreation opportunities at Westmead, Parramatta, Sydney Olympic Park, The Bays, the Sydney CBD, Chatswood, Macquarie Park and the emerging Western Parkland City. This connectivity will offer residents and workers of Burwood North unprecedented opportunities to move around the city.

The proposed Metro station within the Precinct fundamentally changes the potential accessibility, amenity and commercial appeal of Burwood North, and necessitates a complete review of any previous plans and policies to guide growth and development within Burwood North to respond to the catalytic opportunities created by SMW.

DRAFT

The masterplan will enable Burwood North to build on its already attractive lifestyle offerings including extensive retail, dining, schools and open spaces. These offerings will be strengthened and supported by greater housing options, enhanced walkability and landscape quality, as well as a mixture of land uses along key corridors such as Burwood Road and Parramatta Road that will increase the liveability, sustainability and attraction of Burwood North as a place to live, work and visit.



Figure 2: Burwood North Precinct. Source: COX

Purpose of this Report

The Precinct Analysis Summary Report presents the results of the first stage of the Burwood North Precinct Masterplan project; analysing and investigating the precinct context, opportunities and constraints.

The site analysis investigation has been undertaken in a number of ways including:

- **Desktop analysis** - reviewing previous reports and studies undertaken for the precinct and reviewing the current strategic planning context
- **Stakeholder engagement** - a wide range of stakeholders have been engaged through the analysis and visioning process including Burwood Council staff, State government and institutional stakeholders of the precinct, landowners in the precinct, and the general community
- **Site visits** - the project team undertook numerous site visits at various times of the day, week and year to gain an appreciation for the Precinct.

Outcomes of the stakeholder engagement process are contained within the Burwood North Precinct Masterplan: Engagement Outcomes Report, by COX.

This report also includes a wide range of exemplar projects that have been studied for their relevance to the future renewal of the Burwood North Precinct. These exemplar projects identify best practice examples of local and international projects delivering outcomes such as:

- Places that have achieved mode shift towards public and active transport, reducing private vehicle use
- Revitalisation of streets incorporating:
 - shared spaces, prioritising pedestrian amenity
 - urban greening and restoration of ecological systems
- Successful urban parks and public spaces
- Urban greening that contributes to urban cooling and local biodiversity
- Developments showcasing high sustainability including recycled materials, water and off grid energy production.

Team and Roles

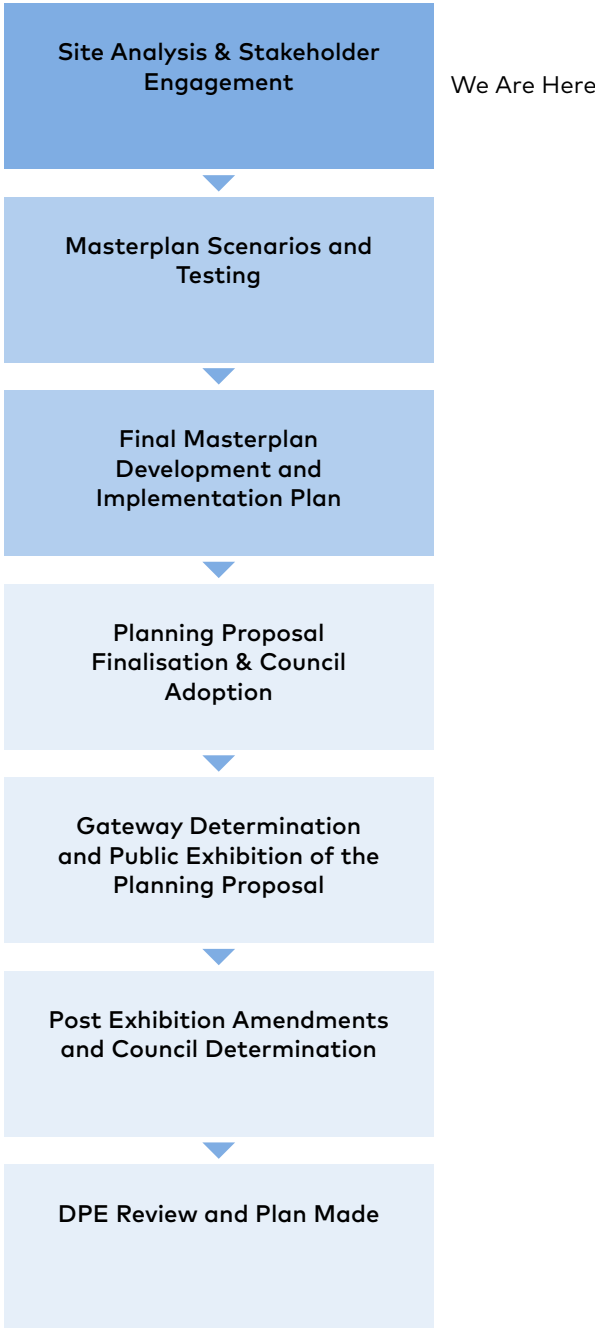
Cox Architecture has been engaged to assist Council in the preparation of the masterplan for the Burwood North Precinct. COX will lead the urban design and built form elements of Masterplan and is supported by a number of consultants to deliver the Masterplan including:

- **JLL**, who will provide the economic analysis of the Precinct and will test the feasibility of the recommended Masterplan with regard to market trends, costs, constraints, redevelopment potential, and infrastructure.
- **SCT Consulting**, who will provide traffic and transport advice and ensure that well-planned infrastructure and transportation systems are the foundation of safe, sustainable and liveable Burwood North.
- **Mott MacDonald**, who will provide drainage and flood management, geotechnical and contamination assessments, utilities and infrastructure servicing, as well as ecological sustainability advice. Mott MacDonald will provide an integrated engineering design service with the ability to draw on each of the technical disciplines to provide innovative solutions for Burwood North.
- **Oculus**, who will undertake the landscape and place analysis and ensure that the masterplan meets the recreational and environmental needs of the Burwood North community.
- **Dominic Steele Consulting Archaeology**, who will lead the identification of Aboriginal cultural heritage opportunities through community engagement and will be captured in an Aboriginal Design Principles Report to inform the preparation of the Masterplan.

This report should be read in conjunction with supporting reports including:

- Burwood North Precinct Masterplan: Landscape and Public Domain Report, by Oculus
- Burwood North Precinct Masterplan: First Nations Design Principles Report, by Dominic Steel Consulting Archaeology
- Burwood North Precinct Masterplan: Transport Context, Opportunities and Constraints, by SCT Consulting
- Burwood North Precinct Masterplan: Sustainability Statement, by Mott MacDonald
- Burwood North Precinct Masterplan: Storm water & Flood Study, by Mott MacDonald
- Burwood North Precinct Masterplan: Geotechnical Study, by Mott MacDonald
- Burwood North Precinct Masterplan: Utilities Study, by Mott MacDonald
- Burwood North Precinct Masterplan: Preliminary Site Investigation, by Mott MacDonald
- Burwood North Precinct Masterplan: Engagement Outcomes Report, by COX

Project Timeline



DRAFT

DRAFT





Context

DRAFT

Figure 4: Burwood Park. Source: COX

Aboriginal Culture and Heritage

Wangal Country

DRAFT

People and Place

The lands that have become known as Burwood formed part of the traditional Country of the Wangal (or Wanngal). Their country extended along the southern shore of Parramatta River from between today's Pyrmont in the east and the City of Parramatta in the West. The southern boundary is not known but may have been formed in part by the Cook's River.

Neighbouring groups to the Wangal included the Burramattagal whose Country was to the west (around Parramatta) and the Wallumettagal or Wallumedegal whose Country was to the north and across the Parramatta River. The Cadigal were at the eastern end of Wann. Wangal people would have had access to other clan estates by permission or through family ties, and this would have been reciprocated.

Historical evidence suggests Wangal people were a saltwater clan who spoke the coastal Sydney language or dialect that was closely related to the inland Sydney language

It is likely that Wangal people travelled across and camped throughout all parts of Wann at different times. Some places in Wann will have been used and reused more frequently than others. The area that became known as 'The Flats' (Homebush) was a popular fishing ground located at the western end of Wann that was used by Wangal people and their neighbours and continued to be used by people after Invasion.

In this part of Wann where the project is located Wangal people will have used sandstone shelters where suitable rock was exposed on the foreshore or used purpose-built bark shelters in the forests and woodlands situated away from the shoreline. Traditional bark shelters were still being constructed by Aboriginal people as late as the 1810s at Newington.

Elevated, dry, and flat landforms with good aspect, proximity to abundant and predictable resources and drinking water and positioned adjacent or overlooking water may have been attractive campsite locations. Historical records from Sydney suggests people did not camp at one location for extended periods but short term stops and over-night camps by individual family groups are recorded.

Environment and Resources

Burwood is centrally located on a prominent shale ridgeline that separates the Cooks and Parramatta Rivers. This land form also linked and 'separated' the Aboriginal communities living on the two rivers. Wangal people would have had easy access to the lands at Burwood by canoe from the Parramatta River and via ridgeline and side-spur topographic/terrain routes and other created pathways that are likely to have criss-crossed Wangal Country and connected people to other places and clan estates.

Topography

The highest points in the local landscape are to the south of the project area, along the main east-west trending ridgeline. The site is located at lower elevation on the eastern side of a north-south trending ridgeline spur that slopes to the east, with a difference in elevation of about 20m, and extends down to meet lower-lying land that is crossed by a freshwater watercourse draining into the river.

A cross-section drawn through the Country on the northern side of the ridgeline, from the higher ground at Parramatta Road down to the lower ground around the river embayments, would pass through elevated ridge and low rolling hill landforms, watercourses, mangroves, salt marsh, mud flat, and swamp oak zonation at the foreshore

Flora and Fauna

In 1788 vast Turpentine-Ironbark Forests covered the landscape from today's inner western Sydney suburbs of Glebe and Newtown westward to around Auburn (refer to figure 8) The forests dominated the vegetation of the shale Country at Burwood. There were also likely to have been timber and grassland more closely resembling Cumberland Plain Woodland that was seen by the British on Burramattagal Country at Parramatta and likely to have characterised the Country of the inland clans living on the Cumberland Plain. The forests were progressively cleared following Invasion, and the now remnant Sydney Turpentine-Ironbark Forest is an endangered ecological community under the EPBC Act 1999 and TSC Act 1995. Queen Elizabeth Park and Rothwell Park have remnant old growth trees of the Turpentine-Ironbark Forest. Ecological

connectivity across parks and reserves is restricted but in combination the areas open space conserves a significant number of native flora and fauna species.

The most common trees in the forests are likely to have been Turpentine (*Syncarpia glomulifera*), White Stringybark (*E. globoidea*), Red Mahogany (*E. resinifera*), and Grey Ironbark (*E. paniculata*). Common in the understorey are likely to have been *Acacia falcata*, *A. parramattensis*, *Dodonaea triquetra*, *Pittosporum undulatum* and *Polyscias sambucifolia*. The understorey would have ranged from dense scrub up to 3m high, to open and grassy with scattered shrubs. Dense scrub may have been along watercourses with Paperbarks (*Melaleuca decora* most common) found in depressions and on creek flats.

Hydrology

The southern shoreline of the Parramatta River in Wann has numerous rocky headlands and embayments that are fed by freshwater watercourses that flow from high ground on the northern side of the ridgeline watershed located between the Cooks River and Parramatta River.

The Burwood North Precinct sits within one of three sub-catchments of the Greater Burwood sub-precinct. The original source of the watercourse may have been around today as far as Malvern Hill and flowing in a north-easterly direction. It has since been undergrounded flowing through the trunk drainage system, emerging at Parramatta Road and flowing through St Luke's Park in a concrete-lined channel adjacent to Concord Oval, before discharging into Canada Bay.

Burwood North's rich natural and cultural landscape provides immense potential for revealing site narratives and restoring natural ecologies.

Refer to *Burwood North Precinct Masterplan: First Nations Design Principles Report* by Dominic Steel Consulting Archaeology for further information.

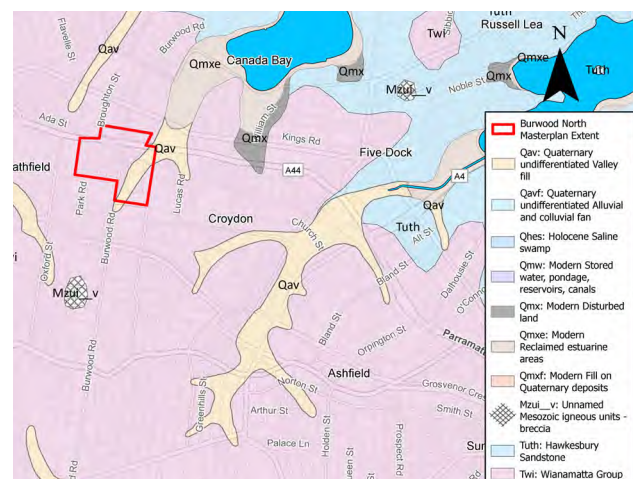


Figure 5: The geology is Ashfield Shale and soils are of the Blacktown Soils Landscape. Quaternary-period valley infills mark the alignment of the unnamed Aboriginal watercourse that originally crossed the land. Source: Burwood North Masterplan First Nations Design Preciples Report

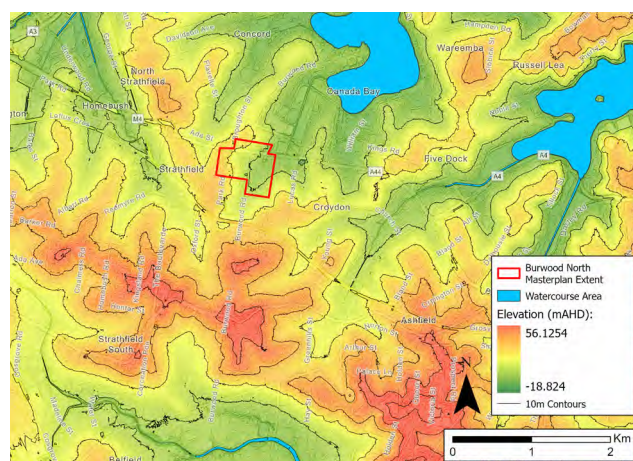


Figure 6: Landforms and inferred access and travel routes through Country. Source: Burwood North Masterplan First Nations Design Preciples Report



Figure 7: Parramatta River, 1867. Source: Dictionary of Sydney, State Library of New South Wales

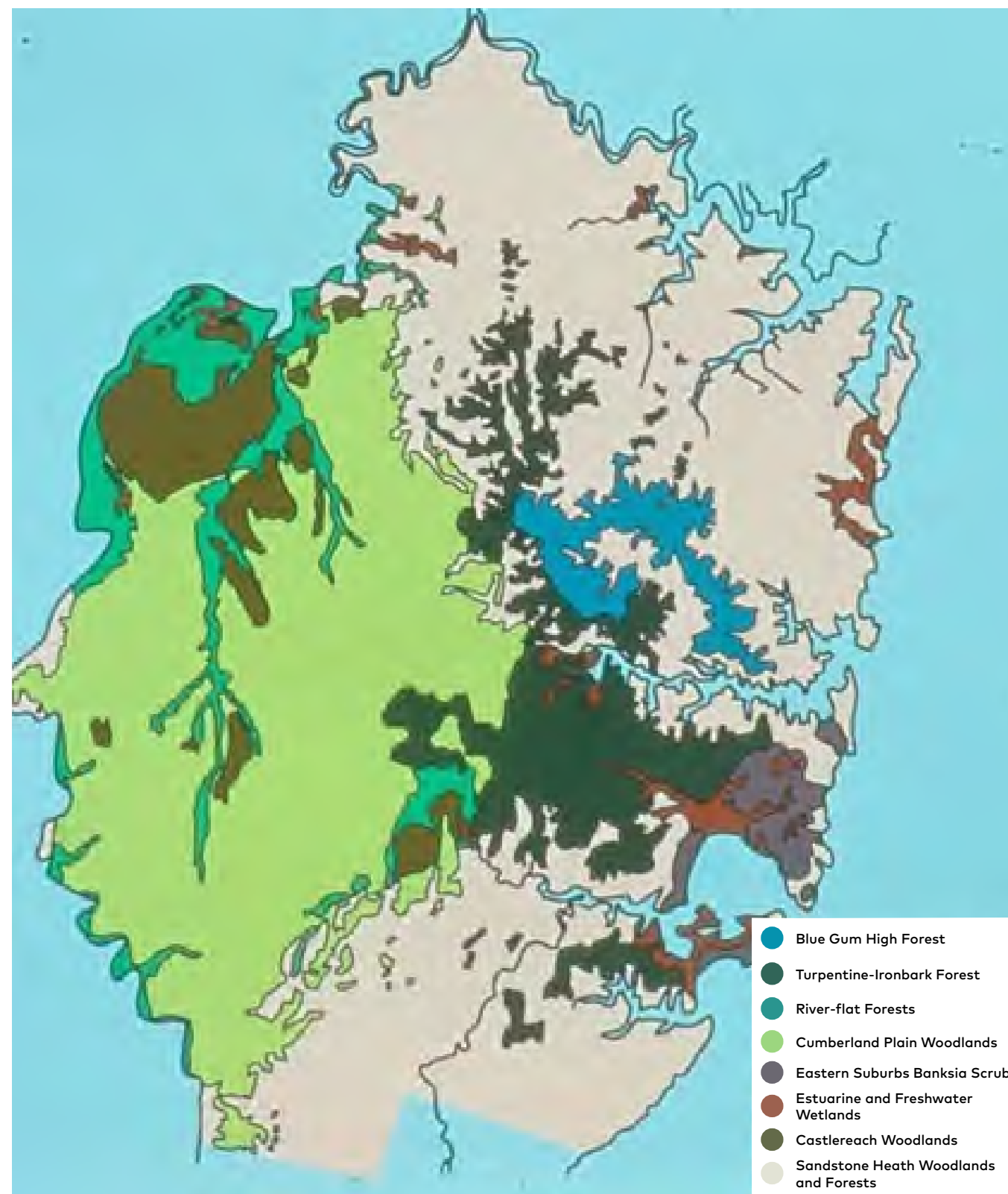


Figure 8: Natural Vegetation, Sydney, 1788. Source: Yarallas's Landscape Heritage, Stuart Read



Burwood Memories

Burwood's proud Indigenous history

The indigenous history of what is today the Burwood LGA has been shaped and influenced by the geological makeup of the land. We know that place, country, and culture are incredibly important values to first Australians and this this area was inhabited by the Wangal Clan of the Darung Tribe.

Located on a ridge between the Cooks and Parramatta Rivers this landscape was easily accessible to the local clans. Archaeological evidence reveals that Eucalypt trees and native grasses were once plentiful in the area and while it is not known for certain, it's very likely that hunts for food such as kangaroos occurred due to the relative flat terrain.

The first recorded meeting between Indigenous Australians and European settlers near what is modern-day Burwood took place on February 5th 1788 at the very southern bank of the Parramatta River. The meeting was later described in a diary entry by Lieutenant William Bradley RN.

Because of the early settlement by Europeans in the area and the lack of sandstone in the vicinity there are no relics visible in the Burwood LGA today. However, the area is still important land to the Wangal People, and Council pays its respect to the traditional owners by performing an acknowledgment of country at all public events.

Picture – The above picture and information about local Indigenous history is sourced from a 1997 text called Aboriginal History of Burwood Municipality by Michael Guider. The image depicts a traditional kangaroo hunt.

Figure 9: Source: <https://www.burwood.nsw.gov.au/Our-Council/Our-Burwood/History-and-Heritage>

European Heritage

DRAFT

Early Settlers

The first permanent incursions onto Wangal Country occurred in the form of what were at first, small and isolated settler farms located near water adjacent to the Sydney-Parramatta track that was progressively formalised and became Parramatta Road. The first settler in Burwood was a free woman named Sarah Nelson who was given fifteen acres of land in 1794. 'Nelson Farm' occupied today's Malvern Hill area with the farm's eastern boundary being Dickinson Avenue Croydon. The farm was accessed from Parramatta Road via a bush track, which ran slightly to the east of today's Cheltenham Road.

Most early grants were small compared to the 250 acres (100 hectares) that was granted to Captain Thomas Rowley in 1799. This gift was later extended to 750 acres (three hundred hectares) and covered most of today's Burwood and Croydon. Rowley named this land Burwood after a same-named farm in England. Rowley did not live on this land on Wangal Country but spent his life at Kingston Farm in the Stanmore area located within Gadigal Country.

The impact on the native grasses and ground covers in the Wangal forests from what the introduced sheep ate, and on the soils below the ground from compaction and accelerated erosion from hard hooves, would have increase exponentially over time to leave native grasses and their biodiversity depleted within decades.

Burwood Villa was built by Rowleys successor, Alexander Riley who bought the Burwood Estate in about 1812. Riley completed building the villa in 1814 and lived there until 1817. The villa was painted by Joseph Lycett and the estate was described by Joseph Lycett in 1824. At this time Wangal forests and woodlands were cut down and the natives grasses replaced on large settler estates.

During this period there was small scale farming and timber getting, together with inns and blacksmiths along Parramatta Road, but relatively little development. The existing Bath Arms Hotel sits on the site of a coach inn since the 1820's.

Riley's Burwood Estate was leased until after his death in 1833 and was subsequently subdivided into four parts, with further subdivision occurring in 1835. However, the area was still considered isolated and multiple allotments were purchased and consolidated (Fox & Associates, 1988:20).

The Arrival of the Railway

The construction of the Sydney to Parramatta railway line provided the next impetus for development within the area. The line opened in 1855 with a limited number of stops. One of these was Homebush, but despite this, development was not rapid or extensive – there was still plenty of land for residential purposes closer to Sydney (Jones, 1985:23). Rather than the working-class, it was the more affluent that were drawn to the area and established country villas.

The subdivisions of Burwood Estate, Redmyre and Strathfield slowly changed the character of the area. It became a wealthy enclave, with Sydney's wealthy business men attracted by the rural aspect, within easy commute of the CBD. Country villas were established by the wealthy from the 1850s, but with increasing pace from the 1870s. In 1895, Strathfield and Burwood were praised for their large houses and well laid out gardens

Subdivision and Urbanisation

From the 1880s many of the former large estates that had been created on Wangal Country during the Macquarie period, such as at Burwood, were progressively subdivided into smaller land parcels as demand for land increased and residential suburbs emerged and followed road and rail transport corridors. Burwood was incorporated as a municipality in 1874 (Dunlop, 1974).

From 1900, Burwood and Strathfield municipality took deliberate steps to embrace new controls provided to it by the Local Government Act (1906), which allowed it to proscribe the inclusion of proper drainage, wide streets and control density (Fox & Associates, 1988:30). The strong influence of the municipalities has been credited with the maintenance of the upper and middle-class status of Burwood and Strathfield:

During this period, therefore, the current form of the area became solidified, with much of the area given over to residential, free-standing houses and retail being centred along Parramatta Road, Railway Parade and Burwood Road.

Suburban Consolidation

Sydney's urban sprawl began in earnest during the 1920s, however by this time Burwood and Strathfield were well-established. Some of the larger homes were subdivided into flats and surplus land sold for small houses. During this period, many of the Victorian villas began to be converted into schools and institutions, thereby preserving these buildings and providing amenities and facilities to the local areas (Fox & Associates, 1988a:32).

Municipalities were quick to identify the threat to the Garden Suburb ideal brought about by the pressure for higher densities: Burwood was proclaimed a residential district. This meant that businesses could only be erected on established business strips. Additionally, residential flats were not approved.

Subdivision and intensification would continue in the years following World War II.

The conversion of larger houses into hostels and flats continued and the municipalities found that it had to allow the construction of some residential flats, but this form of housing was comparatively under-represented. The limited number of apartments led to a stabilisation of the population in Burwood and Strathfield from the end of World War II.

Strathfield and Burwood in particular, have maintained high house prices and subsequently, a high socio-economic status, with a large proportion of employers, white-collar workers and professionals.

The physical form of the Burwood North Precinct has undergone some increase in density, being overlaid since the 1970s with some apartment buildings of increasing size and height, particularly around Burwood Park, and the development of Westfield and Burwood Plazas.

Heritage Listings

Locally listed items are largely residential, with houses representing the architectural styles from the Victorian era through to the Federation and Inter-war years as the area developed as a 'Garden Suburb'. The early country villas built in the 1870s and 1880s, have been preserved through their conversion from private residences into institutions, such as schools and community centres - (e.g. Woodstock, now a community centre; Teachers Residence" Christian Bros. High School). The layout of Burwood is regular – dominated by north-south and east-west roads laid out on a standard grid. The only discordant element to this is the railway line, which roughly dissects the Burwood precinct in half, taking a more organic-like contour based route on a northwest-southeast alignment.

Refer to *Burwood North Precinct Masterplan: First Nations Design Principles Report* by Dominic Steel Consulting Archaeology for further information.

Sources: Burwood North Precinct Masterplan First Nations Design Principles Report
Burwood, Strathfield and Homebush Precinct - Non-Indigenous Heritage Assessment, Aecom



Figure 11: Burwood Villa - Early 1900's. Source: <https://www.burwood.nsw.gov.au/Our-Council/News-and-Media/News-Stories/Mayors-Message>



Figure 10: Burwood Road pre 1920. Burwood Park on the left and the intersection of Wilga St on the right where Westfield now stands. Source: <https://www.pinterest.com.au/sofierusin/burwood-history/>



Figure 12: Burwood Road 1940's. Source: <https://twitter.com/oldshopsoz/status/1033901103694340096>

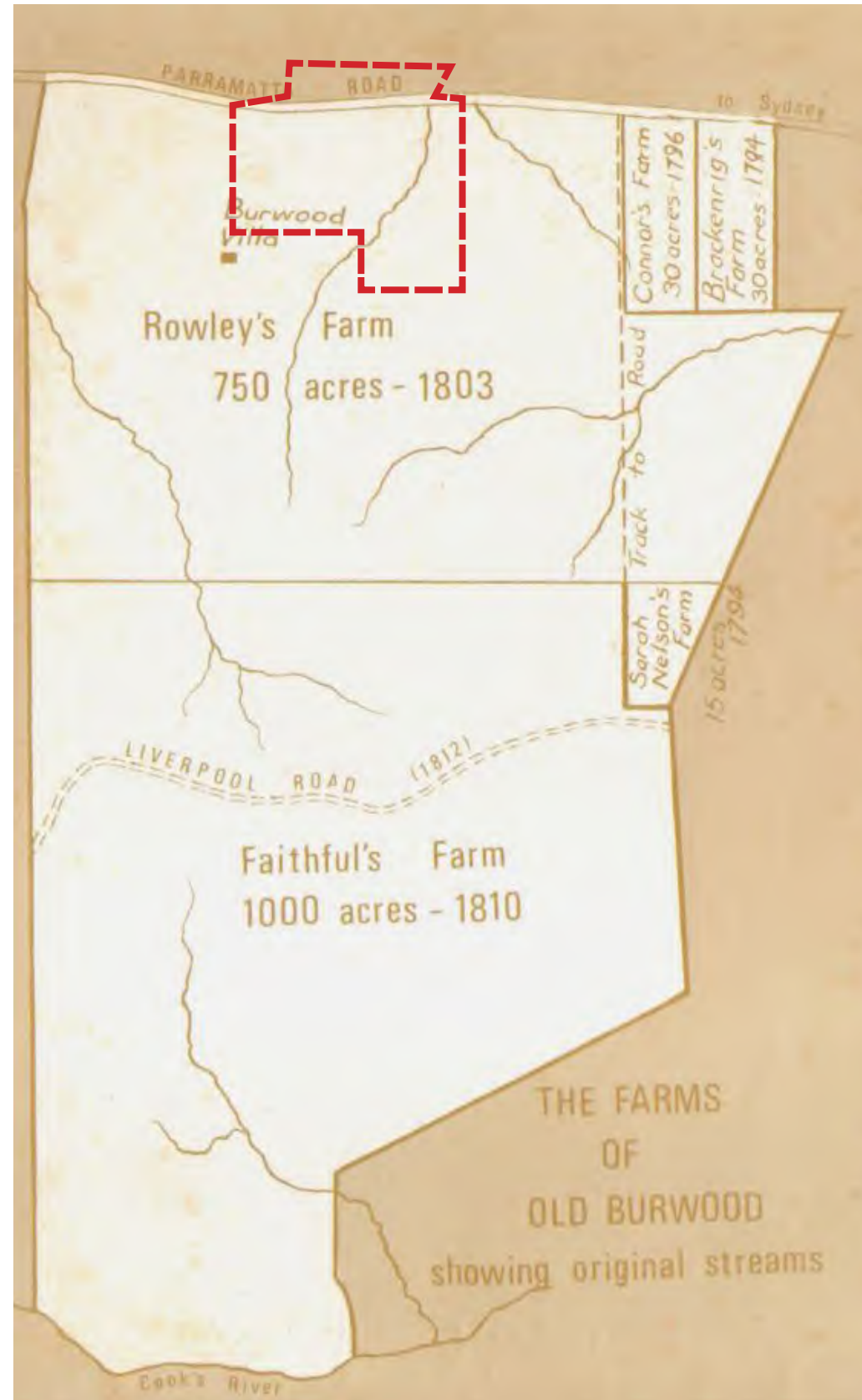
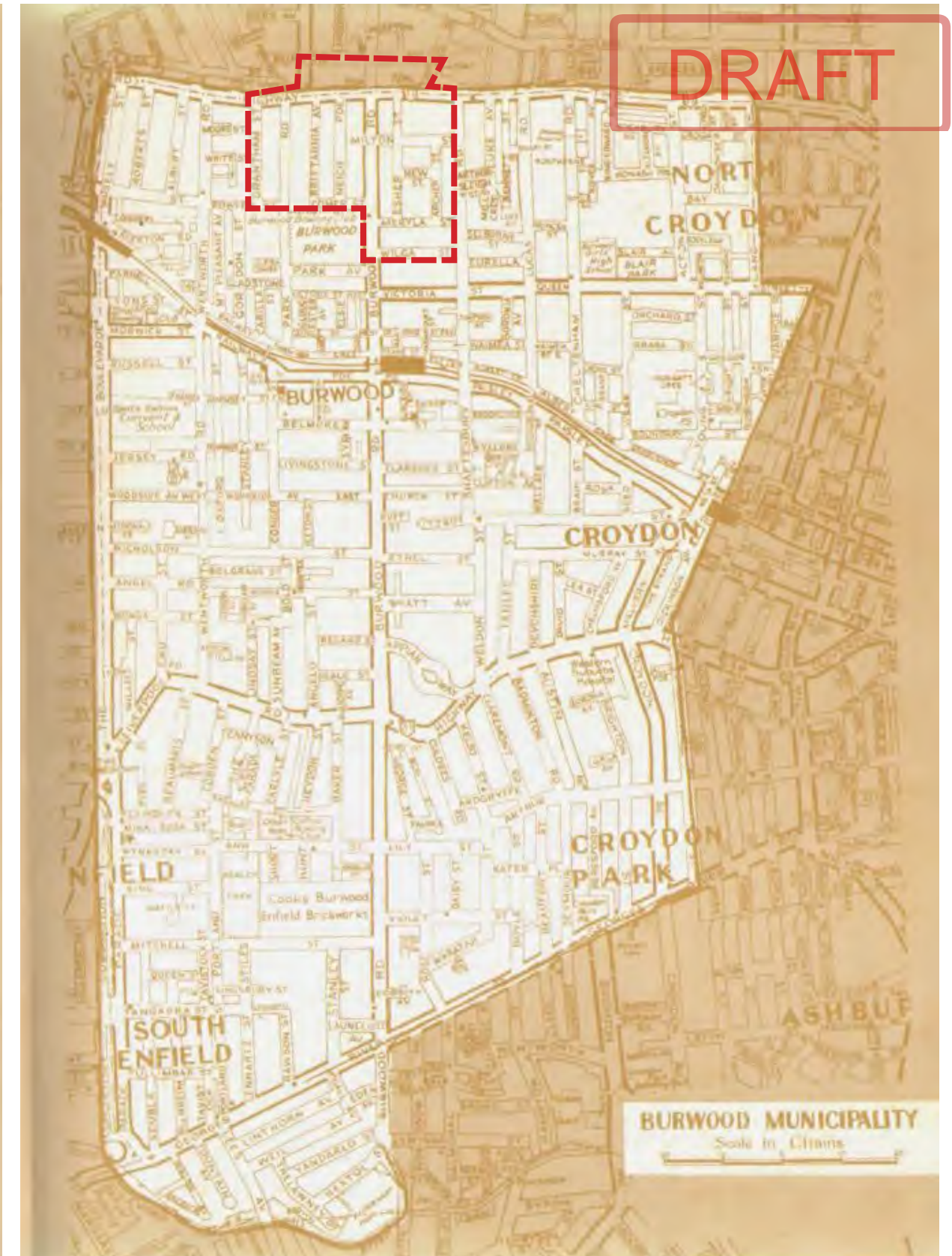


Figure 13: Early Land grants - Subdivision - Urbanisation. Source: https://www.holyinnocentscroydon.org.au/files/pdf/Harvest_of_the_Years_Part1.pdf



Regional Context

DRAFT

Strategic Position

Burwood North is strategically located straddling Parramatta Road at the central point between the Sydney CBD (12km east) and Parramatta (13km west). Burwood North sits within the Eastern City District as part of the Greater Cities Commission Greater Sydney Region Plan: A Metropolis of Three Cities, 2018. The Eastern City is nominated to become more innovative and globally competitive carving out a greater portion of knowledge intensive jobs from the Asia Pacific Region. The plan nominates Burwood as a key strategic centre alongside Kogarah, Green Square, Randwick, Maroubra Junction, Bondi Junction.

As identified in the Eastern District Plan, 'Strategic centres are expected to accommodate high levels of private sector investment, enabling them to grow and evolve. They will become increasingly important parts of the region's structure.... and will contribute to enabling increased access to a wide range of goods, services and jobs'.

Being a location that is highly accessible to jobs and services in the Greater Sydney region, Burwood North will also be a key location for the provision of additional housing, assisting to achieve NSW Government priority to deliver over 400,000 new homes across NSW.

The Parramatta Road Corridor Urban Transformation Strategy (PRCUTS) prepared in 2016, identified Burwood North as a precinct which was catalytic to the revitalisation of land from Granville to Camperdown. It established a 30 year vision to connect the cities two main central business districts of Sydney and Parramatta, via a renewed urban corridor oriented along Parramatta Road, attracting investment funding new homes, jobs and improved transport, open spaces and public amenity.

Connectivity

Burwood North is currently well serviced with rail connections at Burwood Station to Sydney and Parramatta. Bus services are based around the Parramatta Road strategic bus corridor. Seven bus routes service Parramatta Road within 400 metres of the Precinct and an additional 12 bus routes are located within 800 metres. Several bus services connect to Burwood Station, located south of the Burwood Precinct boundary, which provides an attractive public transport option for commuters travelling east towards Sydney CBD or west towards Parramatta.

During 2021, the NSW Government approved a concept plan and major civil construction works for Sydney Metro West, a new rail link operating between Westmead and the Bays Precinct increasing connectivity both east and west. Anticipated to open in 2030, Sydney Metro West will deliver a station at Burwood North, helping to further strengthen connections between the precinct and existing and emerging industry and employment hubs and communities both in the east and west of the city, increasing both the employment and residential capacity of the area. It presents a catalytic opportunity that will support the growth of the strategic centre at Burwood.

The research paper by the Committee for Sydney 'Rethinking Station Precincts' (May 2022) indicates that the Burwood Town Centres has one of the highest effective job densities (the number of jobs that can be accessed by public transport from a particular area) in Greater Sydney. With the Burwood North metro station, this accessibility will be further enhanced, making the area an important location for land use intensification and urban renewal.

Local Economy

Burwood's economy is largely focused around the town centre. 'Burwood Council area's Gross Regional Product (GRP) was \$2.7 billion in the 2018 financial year, growing 2.7% from the previous year. This makes the area the hub of the Inner West region with its broad spectrum of businesses and economic input'. (Burwood Local Strategic Planning Statement). Parramatta Road largely comprises car sales and servicing centres.

Key Attractors

Whilst there is provision for a variety of retail, entertainment, community and recreational facilities within Burwood, the expected growth will increase demand for open space, community, cultural and recreational facilities across the Burwood North Precinct.

Retail and Entertainment

Currently Burwood Road is a popular retail, dining and entertainment strip serving as the spine of the town centre with the Westfield Shopping Centre serving as a major retail destination servicing both the locals and visitors alike. There is a high concentration of dining venues in the town centre, in and around the train station and Burwood Road south, many of which offer genuine and regional specific Asian cuisine. The Burwood Chinatown development has become a popular destination with an activated arcade and a number of laneways eateries in the adjoining streets and lanes.

Health and Education

The health care and social assistance industry is the largest employment type in the Burwood North area. (Refer *Burwood North Precinct Masterplan: Employment Land Use Survey Summary*, by JLL) Whilst there are a number of health and social assistance businesses and services located within the Burwood North Precinct, the primary medical cluster is to the south of the precinct in the Town Centre. St. John of God Private Hospital and Medical Centre is located to the west of the precinct. There is an opportunity to increase overall medical provision in Burwood North.

There are also a high number of public and private educational facilities located within and in close proximity to the Burwood North Precinct including Burwood Girls High School, Holy Innocents Catholic Primary School, Southern Cross Catholic College, MLC School and Burwood Primary School.

Community

There are a range of community facilities in Burwood LGA including one aquatic centre, five community centres, early education centres, a library and community hub within the town centre. Recent demand studies show that there is a need to expand existing and provide additional community facilities to service the growing population.

Cultural

There is current planning in place for a dedicated arts and cultural centre/ performance space and plaza adjacent to the Council Chambers. There are also no performing or creative arts centres in neighbouring Strathfield or Canada Bay, highlighting a need to expand cultural provision in Burwood North.

Sport and Recreation

The Burwood North Precinct is anchored by an extensive open space network to the north east of the precinct that follows the original St. Luke's creek line extending to the Parramatta River. Concord Oval, Saint Luke's Park, Queen Elizabeth Park to the north and Wangal Park to the east are larger or notable open space areas within walking distance of the precinct. A large proportion of the open space areas to the north are fenced off and inaccessible as they are dedicated sports facilities for paying customers. As a result, while there is a large volume of open space there is very little publicly accessible active open space. A new urban park is proposed as part of the arts and cultural centre.

Burwood Park is a large and heavily used open space area anchoring the precinct to the south west and is currently the only open space area servicing the precinct to the south of Parramatta Road.



Figure 15: Activated 'Eat Street' Laneway - Burwood Chinatown. Source: COX



Figure 16: High Density Development - Burwood Road North. Source: COX



Figure 17: Bath Arms Hotel - Burwood Road/Parramatta Road. Source: COX

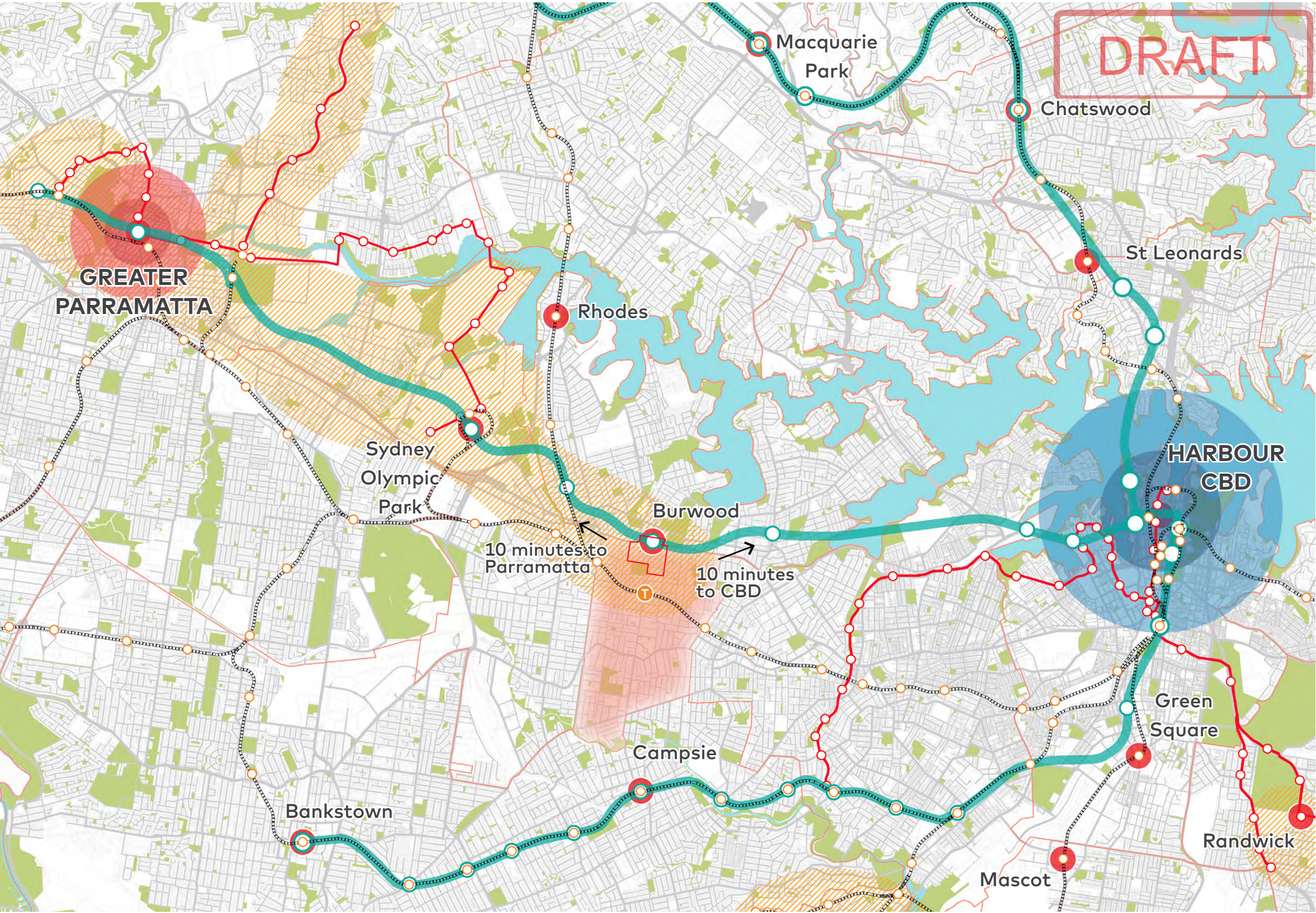


Figure 18: Regional Context Diagram. Source: COX

- | | | | | |
|------------------------------|--------------|--------------------|------------------|--------------------|
| Precinct Boundary | Harbour CBD | Greater Parramatta | Strategic Centre | Urban Renewal Area |
| Transit Oriented Development | Railway line | Train station | Light Rail Line | Light Rail Stop |
| Metro Line | Metro Stop | LGA Boundaries | Burwood LGA | |

Burwood North's Community

Burwood North's Community

Burwood North has a diverse established community which is an asset that can be enhanced and expanded into the future through the Masterplan. Burwood already has a thriving day and night-time economy, with a strong cultural, retail, food and beverage and entertainment offering that attracts not only Burwood residents but those from the wider region. Burwood north precinct offers great potential to extend and diversify the late night offerings.

The 2021 census found that over 71% of the Burwood North community (the area of the Burwood suburb north of Burwood Station) were born overseas, significantly higher than the statistic of 39% for Greater Sydney residents. The community displays a diverse mix of cultures including Chinese, English, Nepalese, Indian, Italian, Greek and Arabic contributing to the diverse mix of cultures, foods and traditions experienced in Burwood daily and through its local and cultural events throughout the year. A strong trend towards Chinese population growth is narrowing this diversity.

Within Burwood North itself, Burwood Road has long been a successful and vibrant high street, anchored around Burwood Station and forming the backbone of the Burwood community. The activity on Burwood Road extends over 1km, and reaches into Burwood North to the future metro station located on Parramatta Road. Burwood Road will continue to be a critical connector between the two transport nodes and activity centres at the Burwood North metro station and the Burwood train station, presenting exciting opportunities to be revitalised with enhanced public domain and additional activation through Burwood North.

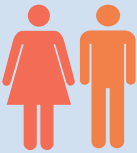
Over the last 10 years, Burwood has seen a significant increase in apartment living within the LGA, centred around growth in the town centre. This has been clearly highlighted in the 2021 census showing that 66% of Burwood North residents are now living in high density apartments along with a greater proportion of young workforce, couples without children and group households compared to Greater Sydney.

More than half the population are renters which is much higher compared to 35% in Greater Sydney highlighting issues related to affordability and the creation of a community that is shifting away from long term landownership.

One third of the Burwood North population does not own a car and half the population travel to work by public transport. This highlights the importance of accessibility to public transport and convenience to services as a key driver for the creation of the existing walking community.

There is evidence of a large increase in health care and social assistance workers within the precinct boosting the local healthcare and social assistance industry. There is also a steady increase of people working in the professional, scientific and technical service, administrative and support service and manufacturing industry sectors. This presents great potential to stimulate local job growth and strengthen local industry in relevant sectors.

DRAFT



The **Burwood LGA** is currently home to **40,397 people**, with approximately **8,000** of those living within the northern portion of the suburb of Burwood. **2,652** of those residents live within the **Burwood North Precinct** (the area for this Masterplan).



28% of Burwood North residents are the **young workforce aged 25-34** compared with 16% in Greater Sydney



16% of Burwood North residents live in a **separate house** compared with 53% in Greater Sydney

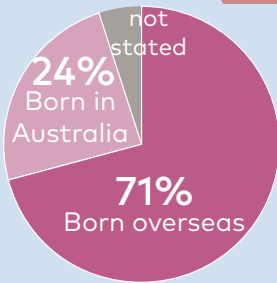
66% of Burwood North residents live in a **high density apartment** compared with 27% in Greater Sydney



20% of Burwood North households are **couples with children** compared with 34% in Greater Sydney



14% of Burwood North households are **group households** compared with 4% in Greater Sydney



71% of Burwood North residents were **born overseas** compared with 39% in Greater Sydney

45% of residents have **Chinese ancestry**

- 11% Nepalese**
- 13% English & Australian**
- 3% Indian**
- 3% Italian**
- 3% Vietnamese**



58% of Burwood North residents **rent their home** compared with 35% in Greater Sydney



31% of Burwood North residents **do not own a car** compared with 11% in Greater Sydney

49% of Burwood North residents **travel to work by public transport** compared with 23% in Greater Sydney (2016 statistic)



31%



45%



4%



8%

2021 statistics (unless noted as 2016) for the suburb of Burwood (north) - Profile.id
The geography for these statistics extends outside the Burwood North Precinct boundary and includes the area between the rail corridor to the south, Wentworth Road to the west, Lucas Road to the east and Parramatta Road to the north.



Figure 19: Community Event - Burwood Park. Source: <https://www.burwood.nsw.gov.au/For-Residents/Venues-for-Hire/Burwood-Park-Pavilion>



Figure 20: Burwood Road. Source: <https://www.burwood.nsw.gov.au/For-Residents/Our-Community/Multicultural-Burwood/Community-Snapshot>



Figure 21: Burwood Chinatown. Source: COX



Figure 22: Burwood Street Festival. Source: <https://www.facebook.com/burwoodcouncil/>

Strategic Planning Context

Document Review and Key Findings

DRAFT

An extensive range of documents have been reviewed and analysed to understand the strategic planning process and priorities to date, and to draw on the ideas and knowledge of previous studies undertaken in the North Burwood Precinct. These studies form the basis of the opportunities and constraints that accompany the site analysis for the precinct.

A comprehensive list of Council, community and consultant plans, strategies, studies, and community engagement summaries formed part of the desktop analysis. The key state and local government plans and master planning studies include the following:

- Burwood Precinct Masterplan Report, 2022
- Burwood North Precinct Online Engagement, February 2022
- Burwood Town Centre Urban Design Study and Masterplan, 2021
- Burwood Local Strategic Planning Statement
- Burwood 2036, Community Strategic Plan
- Future Transport Strategy
- Burwood Housing Strategy, 2020
- Parramatta Road Transformation Precincts Vision Report, 2019
- PRCUTS Control Built Form Testing, 2019
- Burwood Community Facilities and Open Space Strategy, 2019
- Burwood, Strathfield and Homebush Planned Precinct, Urban Design Report, 2018
- Greater Sydney Regional Plan, 2018
- Eastern District Plan, 2018
- The Parramatta Road Corridor Urban Transformation Strategy, 2016

Key findings and recommendations which are relevant and used to guide the master planning process for the Burwood North Precinct are summarised below.

Council Vision

The Burwood 2036, Community Strategic Plan has recently been update to include a new vision for Burwood:

'Burwood is a welcoming and inclusive community that is defined by our diversity of people, liveable places and progressive ideas. We acknowledge and celebrate our history and place, protect our heritage and environment and share a quality of life that is equitable, sustainable and supports each other to thrive and prosper'. (Burwood 2036 CSP)

Regional Context

The regional context sets the basis for the strategic direction for the Burwood North Precinct.

- Burwood North is part of the Eastern City District aiming to become more innovative and globally competitive carving out a greater portion of knowledge intensive jobs
- Burwood is identified as a strategic centre, providing a wide range of goods, services and jobs
- Burwood Council recognises the opportunity presented by Sydney Metro to transform and elevate the vision for the Burwood North Precinct

Local Context

Finding have been grouped under 4 themes : natural, built and Land Use and Social Infrastructure, for ease of reference:

Natural

- The area was originally Turpentine - Ironbark Forest with St' Luke Creek running through the site and linking to Parramatta Rive to the North
- Relevance of former St. Luke's Canal and resultant flood zones within precinct
- Soil contamination along Burwood and Parramatta Roads and fill along creek zone
- Shallow rock present within precinct - sitting anywhere between 1-4m below ground

Built

- Parramatta Road is the backbone of Burwood North renewal precinct supporting trade, movement, place and commerce
- Burwood Road is a key north south- public transit corridor
- Original 'garden suburb' grid and allotments are still visible within wide tree lined streets and scale of lots
- Burwood 'Fine Grain Main Street' should build on existing urban fabric and character with pedestrian focused human scale outcomes with a healthy relationship to Parramatta Road
- PRCUTS provides a starting point for identifying the requirement for additional walking, cycling and site through links with improved amenity and locating three new local parks within the precinct
- Create a network of connected open space and green links

- Providing active façades on Burwood Road and laneways, friendly façades on local streets and mixed façades on laneways further away from metro
- Small retail laneways plazas to compliment main activities on Burwood Road
- Create experience routes connecting to laneway plazas ie. Through-site links with a place overlay and unique character
- Character Areas could include 'Burwood Lanes' as destination corridors for retail and employment along Burwood and Parramatta Roads defined by shop-top housing, hardscape transit plaza, laneways and small open spaces and 'Residential Nexus' defined by medium density residential flat building and linear green connections and open space adjacent to heritage buildings and equitable distribution of community facilities
- A proposed 6m setback under PRCUTS on Parramatta Road ensures sufficient areas for street tree planting in private lots
- Potential for adaptive re-use for heritage items and sensitive integration of heritage items into new development - 45 degree transitions
- Locate parks next to heritage items
- There is a shortfall of open space in the Burwood Area
- Recommended size for a local park is 2,300-2,500m²
- Promote narrow lot, medium density development that maintains Burwood Road Lot Rhythm
- Concentrate height in the Metro Precinct
- Possible transfer of heights to avoid bulky forms
- Encourage lot development with a terrace feel in areas adjacent to low density residential
- Implement fine grain texture to built from along Burwood Road
- Tall and medium density residential buildings and mixed-use building will characterise the Metro Precinct
- Parking should be unbundled from sale of apartments in metro precinct with minimum parking within 800m of metro and other rail station and not parking within 400m
- There will be a demand for dwellings of a variety of sizes - most demand is for apartments in high density developments, predominantly one and two bedroom dwellings to cater to lone person households and couples without children - include large apartments min. 3 bedrooms suitable for larger household sizes
- Create additional medium density housing capacity to increase housing diversity and choice
- There is a lack of medium density dwellings

available in Burwood for couples with children and one parent families

- Allow increased floor area in apartment developments if affordable housing is provided
- Use SEPP 70 to require affordable housing contributions in any future rezoning as part of major housing development along Parramatta Road and near the Burwood North Metro Station
- There is a lack single-level stock that could be suitable for older people
- Currently an oversupply of apartments
- Growing number of international students and renters living in high density dwellings
- Continue to liaise with community housing providers to facilitate housing development

Land Use

- Council wishes to promote the vibrancy and destination value of the Town Centre
- Locate large scale commercial along Parramatta Road with ground floor retail along Burwood Road and Parramatta Road at key activity nodes surrounding Metro entry
- Clearly defined precincts including shopping adjacent to Westfield, residential in the middle and medical and education closer to Parramatta Road
- Potential to extend commercial activities into adjacent podiums on Parramatta road where lots are too narrow
- Clearly defined precincts including shopping adjacent to Westfield, residential in the middle and medical and education closer to Parramatta Road
- Activated laneways and pedestrian connections have an opportunity to create destination eat streets

Social Infrastructure

- Original Victorian villas were converted into schools and institutions, preserving buildings and providing amenities and facilities to the local areas
- There is insufficient social infrastructure including community, recreational and cultural facilities within the precinct
- Provide a community facility on council owned land/ car park
- Investigate potential for shared use of existing community/ educational facilities

DRAFT

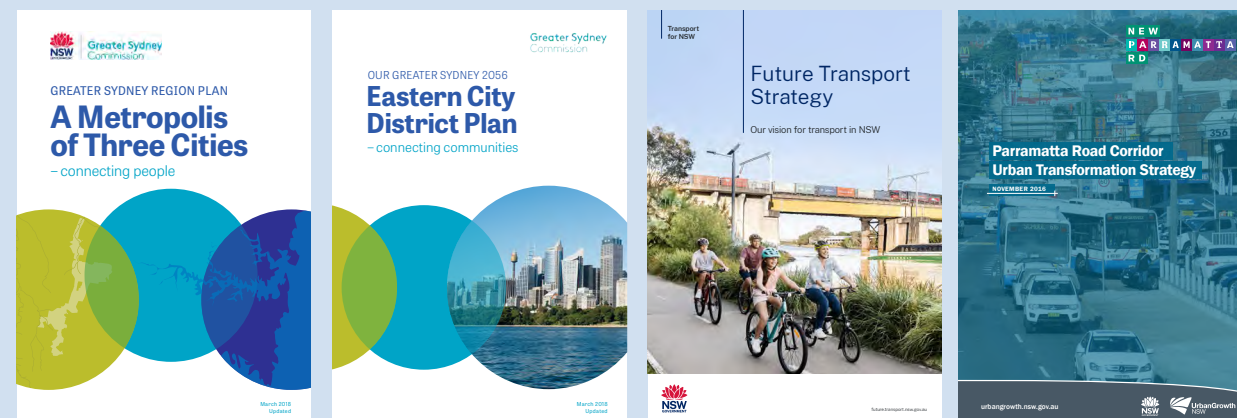
Community Prioritisation

A community online engagement process, that took place in February 2022, outlines the key community priorities and levels of prioritisation as summarised below:

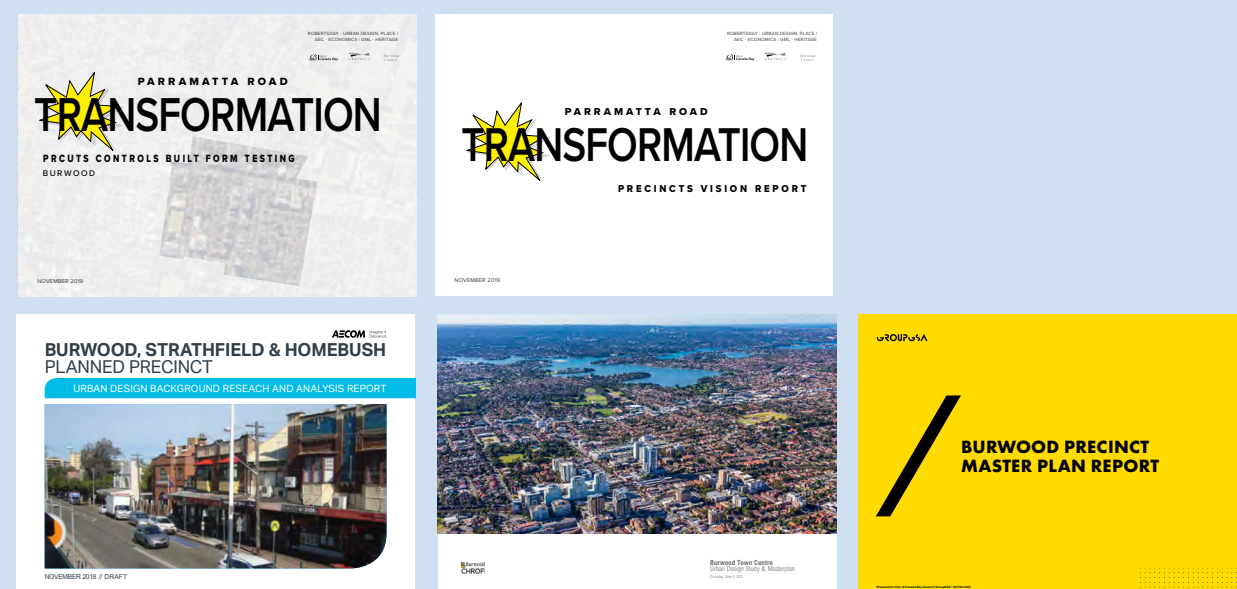
1. Special planning controls to secure affordable housing
2. A range of dwelling sizes to support a diverse community
3. Affordable housing for families, couples and singles
4. Key worker housing
5. Options for assisted living for seniors or people with disabilities
6. Housing diversity and affordability
7. Alternative housing models 'rent to own', shared equity and 'live work'

Source: Burwood North Precinct Online Engagement, February 2022

NSW Government Strategies



Supporting Studies and Masterplans



Burwood Council Strategies



DRAFT



DRAFT

Site Appreciation and Opportunities

The analysis and resulting masterplan opportunities and constraints for the Burwood North Precinct are underpinned by the vision and priorities as set out in the Burwood Local Planning Strategic Statement under the following four themes:

- Sustainability
- Infrastructure and Collaboration
- Liveability
- Productivity

These themes set out the basis for land use action in the Burwood LGA as part of Council's 20-year vision.

The following site appreciation, constraints and opportunities have been clustered under these four themes and have further been informed by:

- Desktop analysis - reviewing previous reports and studies undertaken for the precinct and reviewing the current strategic planning context
- Stakeholder engagement - a wide range of stakeholders have been engaged through the analysis and visioning process including Burwood Council staff, State government and institutional stakeholders of the precinct, landowners in the precinct, and the general community
- Site visits - the project team undertook numerous site visits at various times of the day, week and year to gain an appreciation for the Precinct.



Figure 23: Burwood Road looking south from corner of Burton Street.
Source: COX

Site Appreciation and Opportunities

Site Context

Study Area

The Burwood North Precinct is located immediately north of the existing Burwood Town Centre and Rail Station. The Burwood North Precinct as identified in the Parramatta Road Corridor Urban Transformation Strategy (PRCUTS) is bound by Meryla Street and Burwood Park to the south, Parramatta Road to the north, Shaftesbury Road to the east and Park Street to the west. Council has extended the precinct southwards from Meryla Street to include Wilga Street and westwards from Park Street to include Grantham Street. This area is identified as the study area.

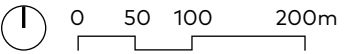
The area of influence for the Burwood North Precinct extends north across Parramatta Road. This part of the Precinct, bound by Burton Street to the north, Loftus Street to the east and Broughton Street to the west is within the LGA of the City of Canada Bay. This part of the Precinct does not form part of the Masterplan, but will be considered in the context of investigations as part of the preparation of the Masterplan.

Concord Oval sits to the north-east of the Precinct forming part of the broader open space connection to Parramatta River. A metro station, located on the northern side of Parramatta road is currently under construction, with entries located north and south of Parramatta Road on Burwood Road. The southern entry point to the metro station will be located on Burwood Road within the Burwood LGA.



Figure 24: Study Area. Source: COX

Study Area Boundary (Burwood LGA) Area of Investigation LGA Boundaries



Character and Identity

Burwood North is a highly urbanised precinct oriented around Burwood Road, the main north-south spine through the suburb connecting between the Parramatta River to the north and the Cooks River and Campsie to the south. Burwood Road is characteristic of a vehicle dominated transit spine serviced by laneways either side to both east and west. The area of Burwood Road directly south of the precinct is a thriving dining and entertainment hub with many small scale restaurants that spill onto the streets with outdoor dining.

The historic street grid is characterised by narrow footpaths, and a range of road widths and verge conditions that support limited street tree plantings with some local streets accommodating mature street tree plantings where verges widths allow. Tree growth if often inhibited by overhead power lines.

Burwood Park provides visual relief and an extensive green space within the heart of Burwood Town Centre characterised by mature Fig Tree plantings and manicured open lawns and planted zones reflective of the original historical parkland character.

The Burwood North precinct is characterised by a mix of lot sizes. Land fronting Parramatta Road comprises car sales and servicing centres, the Burwood bus depot and a mix of retail and commercial uses. Land south of Parramatta Road along Burwood Road contains largely commercial and mixed uses extending towards the Burwood Town Centre with large commercial frontages and some fine grain as characteristic of the southern position of Burwood Road. The portion north of Parramatta Road comprises a small cluster of shops at Parramatta Road.

The remainder of the precinct is dominated by both low and medium density residential development of varying age and architectural style. The majority of older low density residential dwellings are red brick inter-war and post-war dwellings setback behind low fences and front gardens. More recent higher density development in the area has heightened the dichotomy between high and low built fabric gradually eroding the human scale character of the precinct. New development in some instances being of poor quality with a poor interface with the public domain with service laneways dominated by parking, service infrastructure and blank façades.

Heritage items are scattered throughout the Precinct and include a number of individual dwellings and the significant Bath Arms Hotel, the site of a coach inn since the 1820's.



Figure 32: Upgraded streetscape along north Burwood Road - large commercial frontages contrast the existing fine grain. Source: COX



Figure 31: Local Street within minimal street tree planting and narrow footpaths. Source: COX



Figure 25: Wilga Street looking east - Burwood Westfield Car Park - borrowed landscape. Source: COX



Figure 29: New development with poor public domain interface along streets and lanes. Source: COX



Figure 30: Historic Burwood Park. Source: COX



Figure 26: Wide street with nature street trees. Source: COX



Figure 27: Parramatta Road looking towards city and proposed metro site and heritage Bath Arms Hotel. Source: COX



Figure 28: Development of varying age and architectural style. Source: COX

Site Appreciation and Opportunities

Sustainability

As nominated in the Burwood Local Strategic Planning Statement

DRAFT

Ecology

This section analyses both past and present site ecological and hydrological conditions along with existing open space and street tree quantity and distribution to determine existing constraints and opportunities for improved ecological function of the urban forest and local waterways. It looks at protecting and enhancing existing landscapes, increasing quality and quantity of open space throughout the precinct maximising recreational opportunities, biodiversity, habitat creation and moderating micro-climate. It also identifies opportunities for strengthening green grid connections and restoring the health and well-being of broader natural systems.

For further flooding information, refer *Burwood North Precinct Masterplan: Storm water & Flood Study, December 2022 Updated Baseline Report* by Mott MacDonald

Vision

- Green, open spaces and tree lined streets.

Planning Priorities

- Deliver high quality open space and recreation facilities.
- Increase urban tree canopy cover.
- Deliver Green Grid connections.
- Promote the improved health and enjoyment of the Cooks River waterway and Parramatta River catchment.
- Protect and enhance biodiversity.
- Protect and enhance scenic and cultural landscapes.

Source: Burwood Local Strategic Planning Statement



Figure 33: Native Street Tree Plantings - along selected local streets. Source: COX



Figure 35: Passive Open Space - Burwood Park - minimising heat island effect. Source: COX



Figure 37: Burwood Park -local waterways can assist with bio-filtration and habitat creation. Source: COX



Figure 34: Street Tree canopy - narrow verges - including trees on both public and private land. Source: COX



Figure 36: Mature and significant plantings of Figs in Burwood Park - contribute to local biodiversity and regulate micro-climate. Source: COX

Constraints

- Capacity of existing trunk drainage
- Original creek-line (St Luke's Canal) has been covered over and piped resulting in fragmented overland flow and localised flash flooding
- Canopy cover currently sits at an overall average of only approximately 10%
- Additional open space requires the acquisition of land
- Different street and verge widths limit potential for street tree planting throughout the precinct
- Canada Bay Council relies on storm water run-off from Burwood for irrigation of sports fields.
- Overhead and underground services, street and traffic signs and awnings limit tree planting potential
- Burwood North experiences heat island effect with heightened effects around large lot commercial developments and major roads.
- Historic Burwood Park to be preserved as a scenic and cultural landscape

Opportunities

- Daylight overland flow paths to create new blue-green connections and ecological corridors that assist with storm water management and flood mitigation
- Locate open spaces areas along overland flow paths and within flood prone areas
- Provide a range of scales and types of open spaces which support biodiversity, mitigate climate change and maximise recreational opportunities
- Deliver green grid priority connections – Burwood Road, Broughton Street and Parramatta Road, and secondary local green corridor connections along Park Road and Meryla linking to local parks, sport and recreation zones and the Parramatta River and Cooks River open space corridors
- Create new green links to connect the existing and proposed network of parks and open spaces
- Increase tree plantings in parks and streets to extend tree canopy aligning with NSW target of 40% canopy cover by 2036 - to be done alongside power line under grounding to support healthy tree growth
- Maximise biodiversity and habitat creation re-establishing remnant vegetation communities, ie. Sydney Turpentine Iron-bark forest, for all public and private spaces.
- Prioritise retention of existing mature trees on both public and private land.
- Maximise precinct wide permeability within both public and private areas
- Integrate verge planting and WSUD into existing streetscapes and public domain to assist with bio-filtration, biodiversity and habitat creation
- Integrate on-site detention into future developments
- Preserve Burwood Park's historic and cultural landscape



Figure 38: Precinct Ecology Opportunities and Constraints Diagram. Source: COX



Sustainability

DRAFT

Resilience

This section assess the precinct's current capacity for resilience with relation to land ownership, governance and physical site conditions. It determines constraints and opportunities for maximising the capacity of the precinct to integrate a range of sustainability initiatives, managing and integrating waste, water, energy, transport and smart city sustainable technologies combined with precinct wide green infrastructure solutions to mitigate the effects of climate change and work towards Net Zero emissions by 2050.



Figure 40: Community composting scheme. Source: Sustainable Burwood, Version No.1



Figure 44: Council led tree planting schemes. Source: Sustainable Burwood, Version No.1



Figure 42: Vehicular dominated - Burwood Road. Source: Sustainable Burwood, Version No.1

Vision

- A leader in sustainable and resilient city processes.

Planning Priorities

- Protect and enhance biodiversity.
- Reduce carbon emissions and manage energy, water and waste efficiently.
- Build resilience across Burwood Council and the Burwood community.

Source: Burwood Local Strategic Planning Statement



Figure 41: Burwood Park. Source: Sustainable Burwood, Version No.1

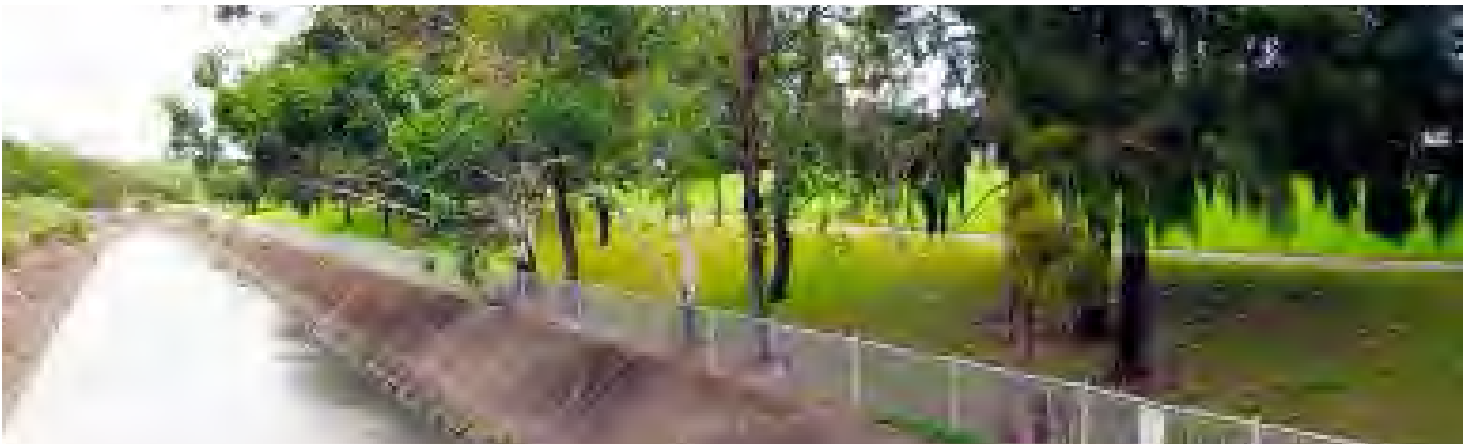


Figure 43: Existing St. Luke's canal to north west of precinct. Source: Sustainable Burwood, Version No.1

Constraints

- Increased intense rainfall events
- Increasing urban heat island effect
- Single lot ownership limits potential to create integrated low-carbon infrastructure
- Current policy and controls are not sufficient to support a transition to net-zero
- Vehicle dominated streets with limited sustainable transport infrastructure

Opportunities

- Create controls which mandate new development to integrate vertical green and have at least 50% of the roof area filled with grass, shrubs or trees to clean air, cool the urban environment and increase biodiversity
- Encourage rainwater collection and re-use through planned recycle water schemes.
- Introduce controls to efficiently manage energy, waste and water in the precinct
- Establish a low carbon precinct through both precinct scale, block scale and lot scale, circular, sustainable and retro-fit initiatives, aiming for net zero emissions by 2050
- Support precinct based initiatives where possible to increase renewable energy generation and efficiency supporting micro-grids and circular systems for heating and cooling
- Encourage commercial ownership structures for precinct utility services reducing cost of overall operation within development and public domain.
- Reduce precinct wide car parking provision and private vehicle ownership through, reduced on-site parking rates, decoupled parking schemes, electric vehicle charging stations within developments and the implementation of car share initiatives.
- Promote active transport through improved pedestrian and cycle infrastructure
- Integrate adaptive building design to enable flexible future use of car parking
- Support and encourage the use of materials with low-embodied carbon
- New development to incorporate sustainable waste management
- Integrate passive heating and cooling measures
- Introduce streetscape greening, WSUD measures to mitigate effects of climate change.
- Integrate deciduous trees to moderate micro-climate and thermal comfort.
- Drive community education around sustainable practices
- Introduce a smart city strategy to support precinct wide sustainability
- Encourage urban farming both on rooftop and within both public and private land.
- Define a climate positive pathway to achieve whole of life net zero by 2030



Figure 45: Rooftop Garden - Eve Apartments, Erskineville. Source: <https://www.360.net.au/eve>

Site Appreciation and Opportunities

Infrastructure and Collaboration

DRAFT

Vehicular Access and Movement

This section explores vehicular access and movement throughout the precinct, taking into account existing public transport corridors and provision requirements, future road widening along Parramatta Road, parking requirements and servicing and access requirements for existing and potential future commercial, retail and residential properties. It looks at opportunities to re-imagine road functions along Burwood and Parramatta Road and the reallocation of space for pedestrian and cyclists within local streets along with innovative parking strategies and tactical urbanism interventions to unlock the public domain.

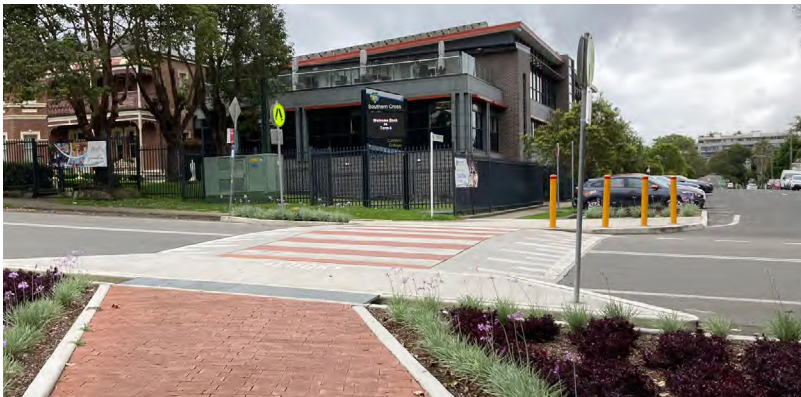


Figure 51: Traffic calming measure/ pedestrian cycle link. Source: COX



Figure 50: On-Street Parking and Cycle conflicts - Neich Parade. Source: COX



Figure 49: Car dominated Parramatta Road. Source: COX



Figure 47: Car dominated Burwood Road south - north-south bus route. Source: COX



Figure 46: Narrow local street. Source: COX



Figure 48: Traffic calming measures - Burwood Road north. Source: COX



Figure 52: Existing service lane parking areas. Source: COX

Vision

- Infrastructure is delivered to support a growing population.
- A collaborative approach to planning delivers great outcomes for the community.

Planning Priorities

- Deliver local infrastructure, services and facilities.

Source: Burwood Local Strategic Planning Statement

Constraints

- Accommodate local bus networks and retain bus movement along Burwood Road
- Parramatta Road will continue to be an important regional east-west vehicular route and is a state owned road
- Accommodating TfNSW's potential future road widening for BRT (Bus Rapid Transit)
- Constrained road widths to balance movement function and place
- Parking requirements to service activity centres conflict with the strategy of reducing overall parking provision to encourage mode shift towards public and active transport
- Conflicts between school children and vehicles compromise safety
- Service lane parking and access requirements
- Long blocks and fragmented street grid

Opportunities

- Re-imagine the way Burwood Road functions within the town centre and Burwood North, reducing private vehicle volumes by incentivising alternative routes
- Create shared zones with pedestrian, cycle and public transport priority, with improved public domain amenity and accessibility within activity zones and along key movement corridors (where vehicular movement network permits).
- Review private vehicle movements and speeds in local neighbourhood streets to find opportunities for slow streets and shared zones
- Extend street grid through future renewal to provide additional east-west, north-south links that break down longer blocks and maximise permeability and legibility of street network.
- Re-organise vehicular movement patterns within local neighbourhoods to create super blocks, removing through traffic and reallocating street space to public space
- Reallocate road space from parking to create widened footpaths and accommodate cycleways and street tree planting
- Review parking policy, provision and design controls to better utilise space and encourage mode shift
- Limit parking along Burwood Road, minimising parking for visitors while maintaining servicing, freight and on demand delivery access
- Implement innovative parking strategies for new development which reduce reliance on service lanes
- Implement tactical urbanism to trial low cost traffic management/ urban activation initiatives.
- Establish a micro-mobility hub to consolidate and reduce freight movements to service retail and businesses.

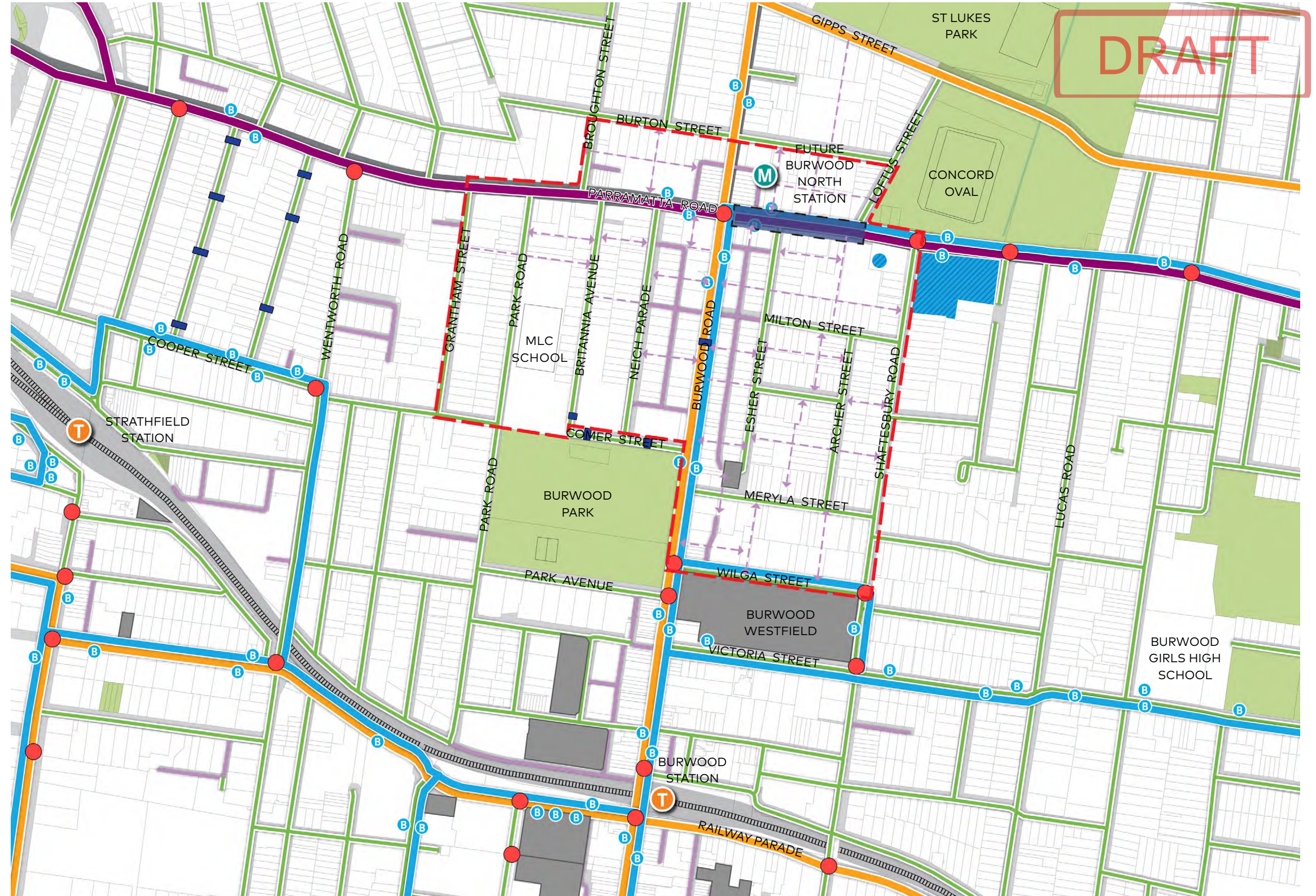
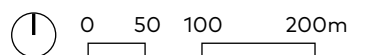
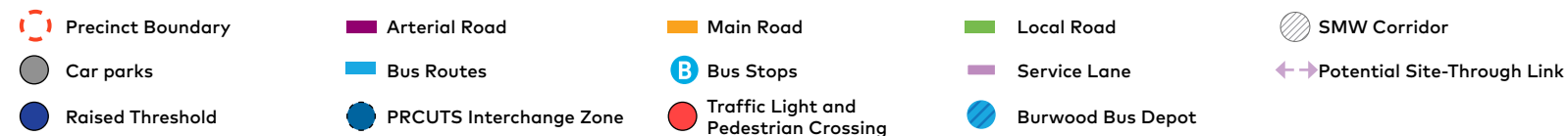


Figure 53: Vehicular Access and Movement Opportunities and Constraints Diagram. Source: COX



Infrastructure and Collaboration

DRAFT

Pedestrian and Cycle Movement

This section explores pedestrian and cycle movement throughout the precinct, taking into account existing barriers, amenity, lack of connection to key destinations and overall vehicle dominated primary movement corridors. It identifies opportunities for a safe, integrated, legible and connected pedestrian and cycle precinct-wide network that provides additional connections, crossings and enhanced public amenity, prioritising pedestrians in areas of high activity and ensuring safety, encouraging play and multi-functional use of existing local streets and associated public domain.

Vision

- Infrastructure is delivered to support a growing population.
- A collaborative approach to planning delivers great outcomes for the community.

Planning Priorities

- Deliver local infrastructure, services and facilities.

Source: Burwood Local Strategic Planning Statement



Figure 57: Raised threshold pedestrian/ cycle crossing - Burwood Road. Source: COX



Figure 61: Parramatta Road - limited pedestrian cycle amenity. Source: COX



Figure 62: Milton Street footpath with low quality verge planting. Source: COX



Figure 56: On-road cycleway, Neich Parade. Source: COX



Figure 55: Cluttered footpath - Burwood Road. Source: COX



Figure 58: Limited pedestrian crossing provision - Burwood Road north. Source: COX



Figure 59: Temporary low cost plaza - road closure - Burwood Road south. Source: COX



Figure 60: Narrow verge and footpath - Shaftesbury Road. Source: COX



Figure 63: Existing laneway network. Source: COX

Constraints

- Constrained road widths to accommodate dedicated bike lanes
- Parramatta Road presents a significant barrier to north south pedestrian and cycle connectivity
- Large block sizes limit through site connections - reliance on developers to provide
- Limited crossings along Burwood and Parramatta Roads
- Existing parking requirements and provision to service activity centres conflicts with the need to increase pedestrian and cycle amenity along Burwood Road and Parramatta Road.
- Fragmented grid and disconnected laneways reduce site wide permeability

Opportunities

- Improve precinct wide pedestrian amenity to support 'a walking community' and improve connectivity to and between key transport nodes, civic retail destinations and parks and open space areas.
- Upgrade Burwood Road and Park Road (adjoining MLC School) to become pedestrian priority high activity zones.
- Create shared zones with pedestrian and cycle priority within key activity zones and along key movement corridors (where movement network permits)
- Provide additional pedestrian crossings along Burwood Road
- Create pedestrian and cycle 'filtration nodes' at key streets adjoining Burwood Road and connecting to local laneways.
- Create play streets as an extension of public domain in local neighbourhood streets
- Create additional through-site links maximising precinct wide liveability, permeability and connectivity and reinforcing the original grid street pattern.
- Enhance north-south pedestrian and cycle connectivity across Parramatta Road with additional crossing points, particularly around the metro station
- Upgrade pedestrian bridge at Broughton Street.
- Upgrade pedestrian and cycle amenity along Parramatta Road in line with the PRCUTS vision
- Upgrade active transport connections and expand the local cycle network along key green corridors and links connecting to the regional network, key transport nodes, civic destinations and recreational open space areas.
- Upgrade public domain along Comer Street, improving pedestrian and cycle amenity along the Powell's Creek Corridor
- Reallocate road space from parking to create widened footpaths and accommodate cycleways and street tree planting
- Implement tactical urbanism to trial low cost traffic management/ urban activation initiatives

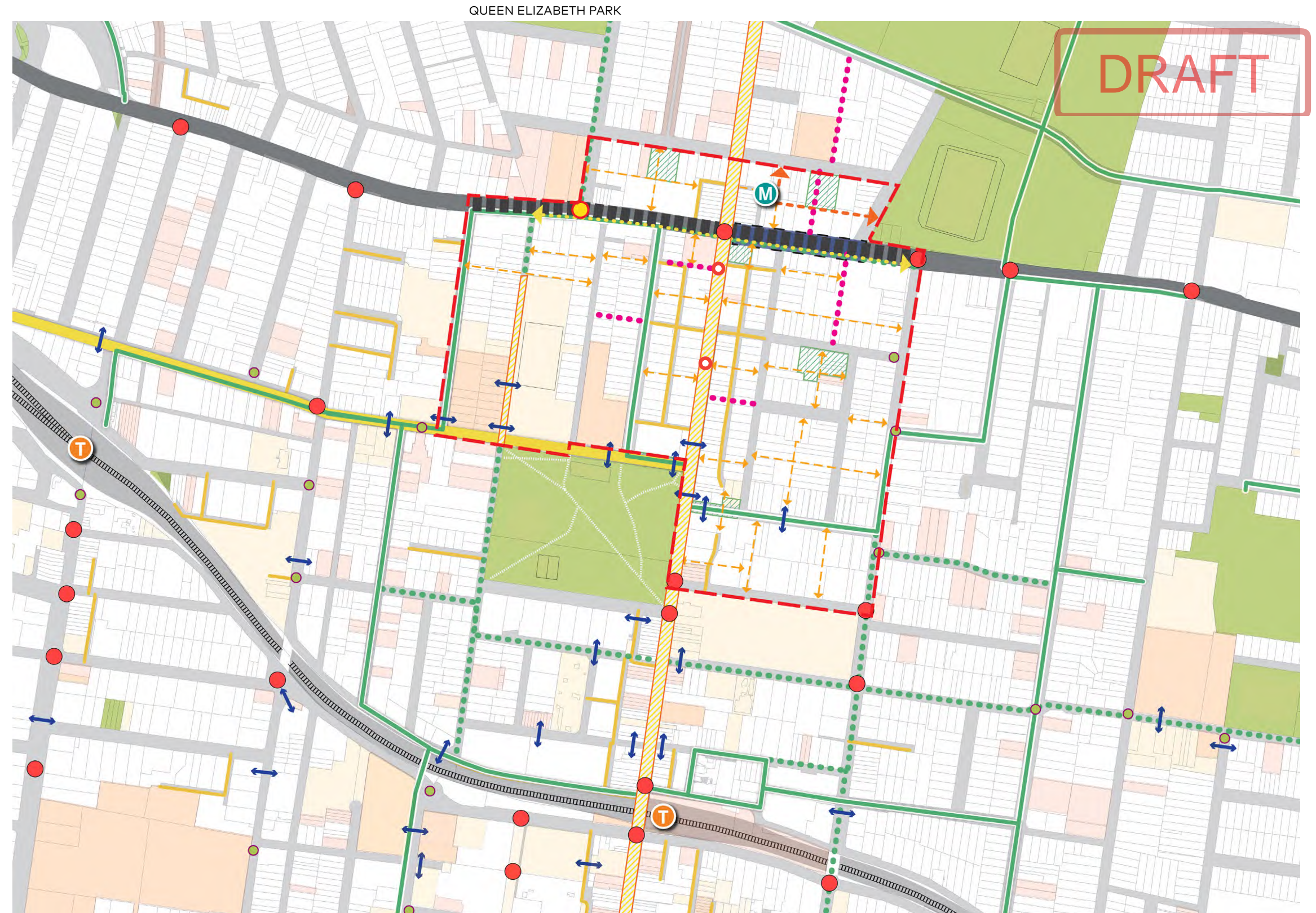
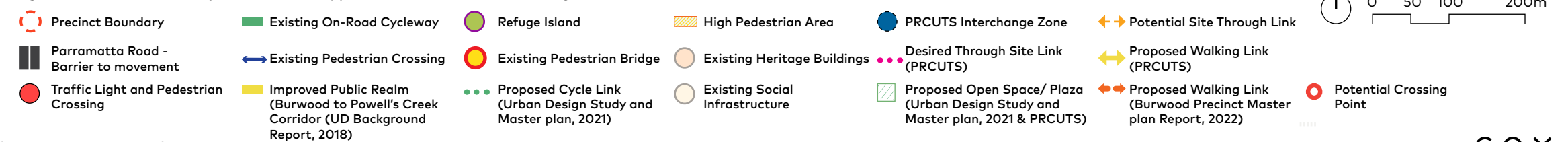


Figure 64: Pedestrian and Cycle Movement Opportunities and Constraints Diagram. Source: COX



Infrastructure and Collaboration

DRAFT

Places and Spaces

This section explores the existing public domain, social infrastructure and cultural offering and increasing demand to asses capacity of the precinct for maximising public benefit. Recognising future development as a catalyst for increasing capacity of sites provides immense potential along with enhancing existing facilities, streets and open spaces to create diverse, efficient, activated and integrated places and spaces for people and the broader community offering a range of activities and experiences.

Vision

- Infrastructure is delivered to support a growing population.
- A collaborative approach to planning delivers great outcomes for the community.

Planning Priorities

- Deliver local infrastructure, services and facilities.

Source: Burwood Local Strategic Planning Statement



Figure 65: Community facility - Burwood Park. Source: COX



Figure 66: Fitness station - Burwood Park. Source: COX



Figure 67: MLC School straddles Park Road. Source: COX



Figure 68: MLC School - private sports fields. Source: COX

Constraints

- Burwood currently has a shortfall of open space, currently having 10m²/person of open space which is significantly lower than neighbouring LGA's.
- Burwood Park is the only single open space in Burwood North, highly utilised and nearing capacity, servicing a range of different user groups and a rapidly growing population
- Land acquisition and funding is required to acquire new public open space
- There is a need to accommodate large groups without overcrowding in new open space areas
- There is currently a limited community, culture and arts offering in the precinct
- Heavy congestion and limited crossing points of Burwood Road limits place potential
- Limited indoor/outdoor recreational spaces
- Limited way finding and safe and legible pedestrian and cycle connectivity to local area facilities
- Community services are clustered around Burwood Station south of the precinct will minimal provision in the north
- MLC School sports and aquatic centre facilities are disconnected from Burwood Park

Opportunities

- Create additional recreational spaces and parks and plazas across the precinct to include diverse scales and programming to compliment offering in local area
- Open up and visually and physically connect existing MLC Aquatic Centre with Burwood Park
- Provide increased public domain amenity and pedestrian/cycle priority and connectivity to local schools and community facilities
- Enhance Burwood Road to become a destination with increased public amenity including social spaces at key activity nodes and east west connection nodes
- Expand existing community facility within Burwood Park to service increased community demand
- Underutilised car parks and Council owned lands present an opportunity to provide additional community services, facilities, spaces or integrate into new development
- Encourage shared use of educational facilities out of school hours and/or integrate into new development
- Intensify recreational use/programming within Burwood Park to maximise amenity and whilst preserving cultural landscape.
- Westfield is a major regional retail attractor bringing additional people to Burwood. There is an opportunity to expand the public domain around Westfield to accommodate high pedestrian volumes.

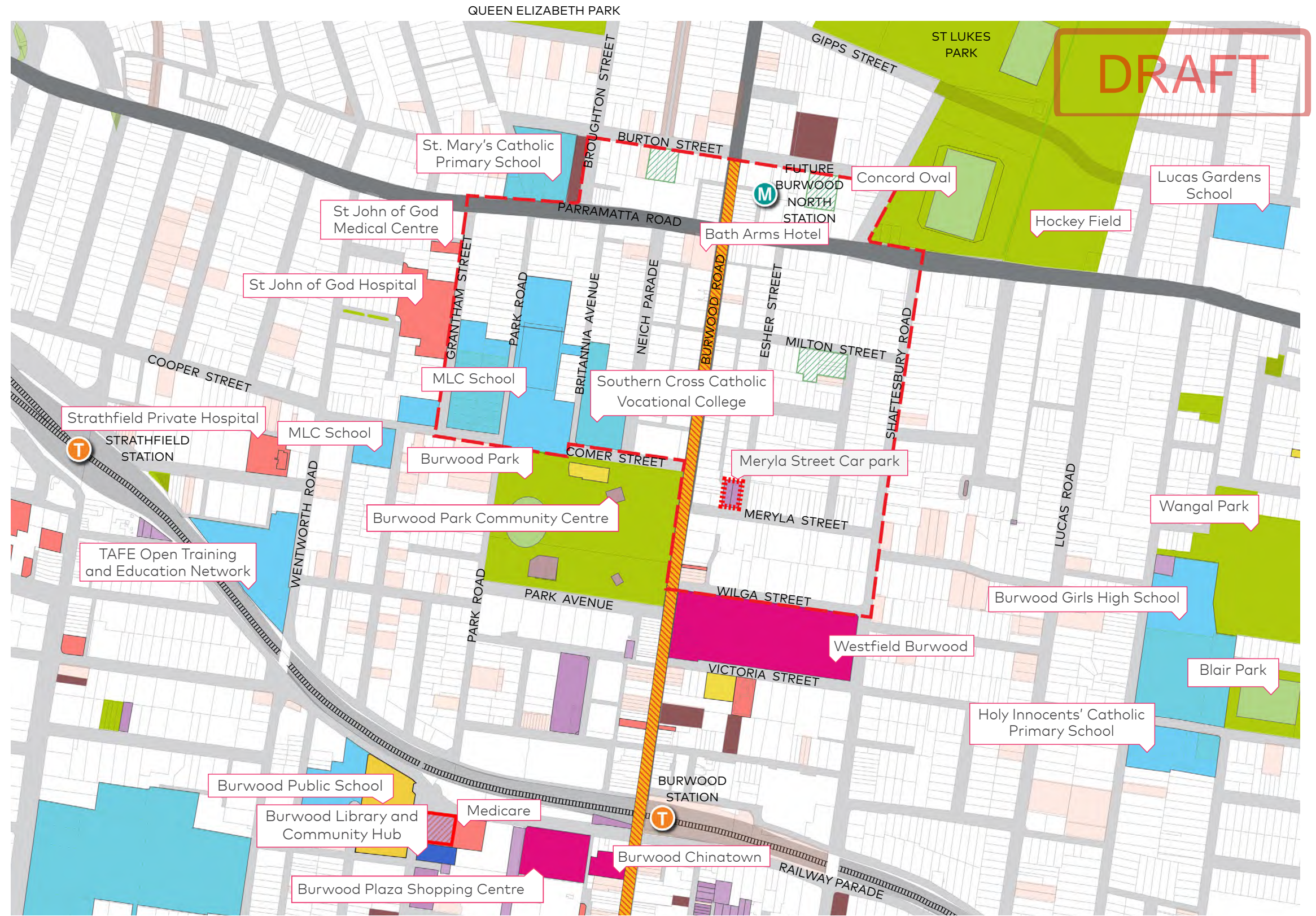
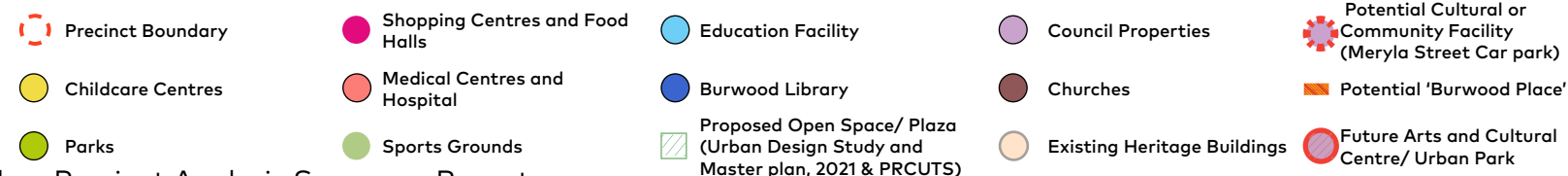


Figure 69: Places and Spaces Opportunities and Constraints Diagram. Source: COX



0 50 100 200m

Site Appreciation and Opportunities

Productivity

DRAFT

Land Use and Function

Burwood North is uniquely place as an extension of the existing Burwood town centre and will be supported by the future Sydney Metro station. This section explores the physical, social, cultural and economic constraints, drivers and market opportunities for the site, leveraging existing growth in educational, health and social service industries and its centrally placed and highly connected strategic location in relation to Sydney's commercial, retail, health, education and innovation hubs. There is also immense potential to support, compliment and diversify its thriving dining culture.

Vision

- A strong and thriving centre for jobs and investment and a leading entertainment destination.

Planning Priorities

- Strategically grow investment, business opportunities and jobs.
- Grow Burwood's night-time entertainment, dining and other recreational opportunities.
- Increase the long term viability of all centres.
- Support urban freight and commercial servicing along commercial corridors.

Source: Burwood Local Strategic Planning Statement



Figure 70: Street-side food stalls - laneway - Burwood town centre. Source: COX



Figure 75: Local business within residential property - Live-work. Source: COX



Figure 71: Crowne Plaza Hotel - Burwood Road. Source: COX



Figure 74: Outdoor dining - Burwood Road. Source: COX



Figure 72: Burwood Chinatown. Source: COX



Figure 73: Commercial premises - Burwood Road north. Source: COX

Constraints

- Narrow commercial lots along Parramatta Road limit commercial uses
- Westfield is a potential competitor to new businesses setting up in mixed-use zone
- Limited crossings and traffic congestion along Burwood Road
- Limited pedestrian and cycle amenity along Burwood Road and Parramatta Road
- Small scale food and beverage outlets characterise the area around Burwood Station on Burwood Road. The desire to extend this into Burwood North should not detract from the vibrancy of the existing offering.
- Soil contamination from prior land uses to be taken into consideration during any future development

Opportunities

- Diversify economic role and function of Burwood Road North, leverage strategic centre advantage and proximity to Parramatta Road and the new metro station
- Expand and integrate growing educational, health and social service sectors and locate away from main thoroughfare to ensure affordability
- Explore research and innovation partnerships and collaborative opportunities with USYD and UTS
- Maximise opportunities for ground floor activation along Burwood Road, primarily focused around key activity nodes.
- Increase night-time entertainment and food and beverage offering in Burwood North complimenting and diversifying the current offer in Burwood Town Centre and Westfield
- Market the area as a high quality eat street destination
- Leverage the cafe culture trend
- Filter activity into adjoining small streets and laneways expanding centre east and west
- Preserve the enterprise corridor along Parramatta Road for affordable mixed/ industrial spaces encouraging small local businesses to continue/ establish themselves
- Explore live/work built opportunities
- Expand into podium of adjacent lots where blocks are too shallow to accommodate employment space along Parramatta Road
- Explore the integration of commercial/ retail into existing and potential open spaces and community and recreational facilities to ensure long term viability, maintenance and adaptability of social infrastructure.
- Explore potential to integrate hotel accommodation into new development in line with strategic centre growth
- Explore the role and function of the Coronation Club and its integration into future development as a local f&b destination

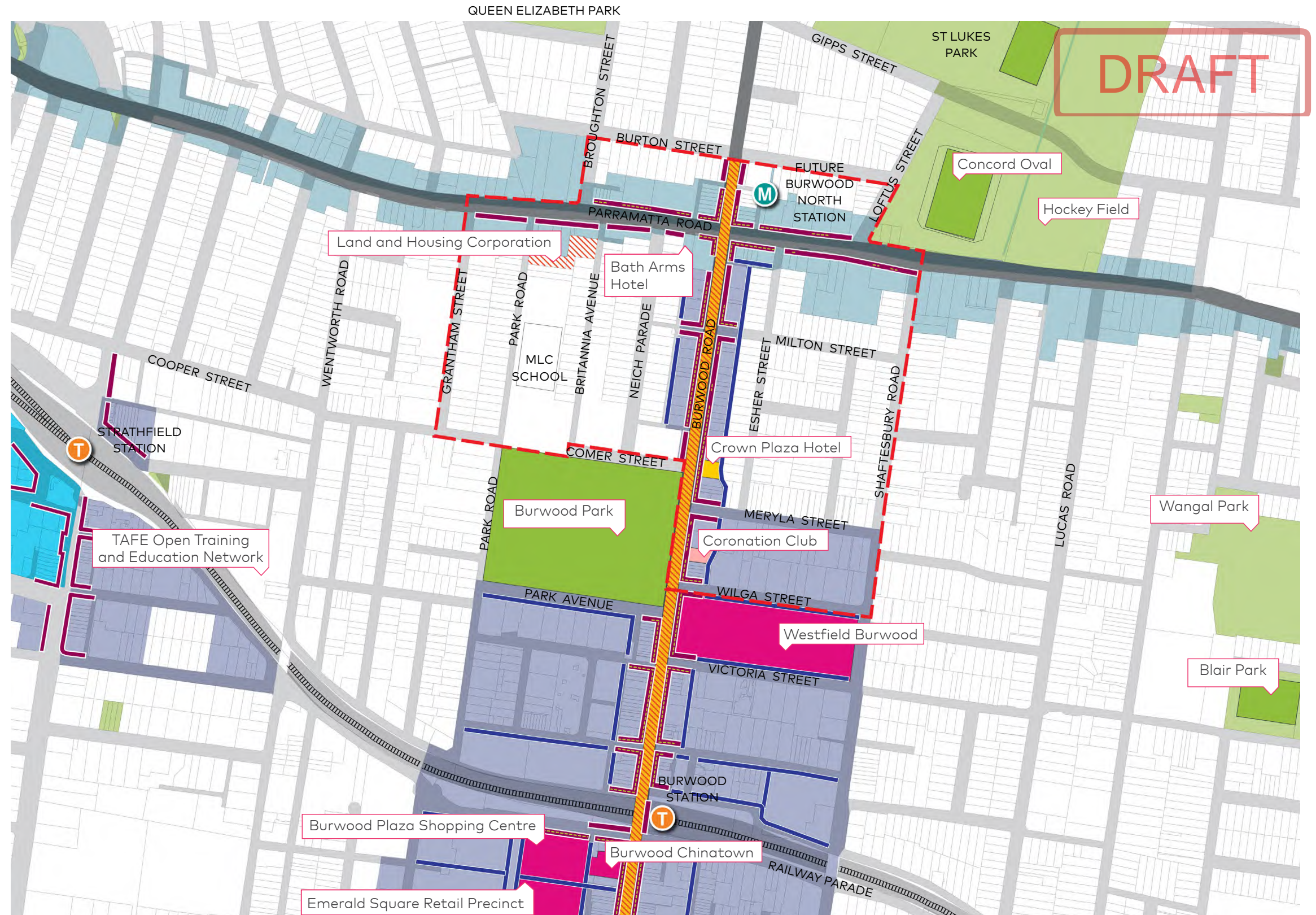


Figure 76: Land Use and Function Opportunities and Constraints Diagram. Source: COX



Site Appreciation and Opportunities

Liveability

DRAFT

Built Form and Character

This section explores the existing character of Burwood North constrained by existing development controls, fragmented land ownerships and existing diverse yet unsympathetic built fabric to identify opportunities for creating distinctive character zones and associated design controls within the precinct in order to preserve and protect existing heritage, fine grain and human scale character and diversity whilst ensuring a unified and distinctive built form from outcome and identity for the future of Burwood North.

Vision

- A great strategic centre with high density, high quality urban design and inviting public spaces.
- A diversity of housing types and affordability provides better housing choice.
- Local character is protected and enhanced

Planning Priorities

- Provide housing supply, choice and affordability in close proximity to jobs, services and public transport.
- Provide high quality planning and urban design outcomes for key sites and precincts.
- Identify local character areas considering preservation, enhancement and desired future character.

Source: Burwood Local Strategic Planning Statement



Figure 77: Bath Arms Hotel - Parramatta Road. Source: COX



Figure 80: Dichotomy of high and low - old and new. Source: COX



Figure 78: Unsympathetic transitions to existing heritage buildings. Source: COX



Figure 79: Contrasting scales and architectural styles. Source: COX



Figure 81: Borrowed landscape - green street. Source: COX

Constraints

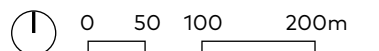
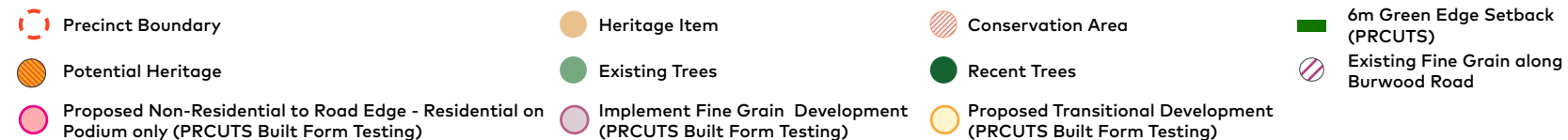
- Fragmented land ownership creates dichotomy of high and low density, old and new and in some instances outcomes that are unsympathetic to local character and heritage
- Need to ensure development controls encourage diversity of housing options/ typologies whilst remaining feasible and affordable
- Achieving fine grain, narrow lot human scale character whilst also enabling lot amalgamation/ consolidation

Opportunities

- Deliver the PRCUTS vision for Parramatta Road with a 6m landscaped setback through the precinct.
- Define distinctive character areas within the precinct which respond to local context and are reinforced through built controls, bulk, form, materiality, setbacks etc.
- Create different character zones along the length of Burwood Road to respond to local context.
- Develop appropriate planning controls to encourage high quality planning and urban design outcomes
- Protect human scale/ fine grain experience along Burwood Road through appropriate building height and setbacks and narrow lot development
- Preserve 'garden suburb' character of local streets with appropriate setback for tree planting and greening.
- Provide appropriate height transitions and curtilage to heritage items with the potential to integrate with new public open spaces and green links to reveal and celebrate the cultural and historic context
- Adaptively re-use heritage items and integrate sympathetically into new development proposals
- Locate greatest height around station precincts with tall landmark buildings at key intersection acting as urban markers.
- Integrate a unique medium density housing typology that sympathetically transitions to residential areas and provides diversity in local housing stock.
- Use built form to define street edges and differentiate street hierarchy defined by different degrees of streetscape activation



Figure 82: Built Form and Character Opportunities and Constraints Diagram. Source: COX



Site Appreciation and Opportunities

Liveability

DRAFT

Development Constraints

This section explores the constraints that will inhibit a consistent development approach across the precinct including limitations associated with individual land ownership, strata tile and the recent and unsympathetic development within the precinct. It identifies opportunities for developing controls that assist with maximising the efficiencies of sites through revised building setbacks and building controls that encourage narrow lot development, maximise public domain outcomes, improve public interface and amenity, legibility and hierarchy of streets and ensure human scale and diversity whilst creating a distinctive and recognisable identity for Burwood North.

Vision

- A great strategic centre with high density, high quality urban design and inviting public spaces.
- A diversity of housing types and affordability provides better housing choice.
- Local character is protected and enhanced

Planning Priorities

- Provide housing supply, choice and affordability in close proximity to jobs, services and public transport.
- Provide high quality planning and urban design outcomes for key sites and precincts.
- Identify local character areas considering preservation, enhancement and desired future character.

Source: Burwood Local Strategic Planning Statement



Figure 83: Existing dichotomy of high and low - constrained public domain interface. Source: COX



Figure 84: Existing strata tilted properties are more challenging to redevelop. Source: COX



Figure 85: Podium setbacks in new development - retaining human scale - streetscape experience. Source: Google Street view



Figure 86: Poor public interface along lanes and streets within new development. Source: COX



Figure 87: Existing high density development adjacent to metro station. Source: COX

Constraints

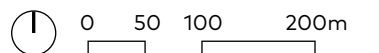
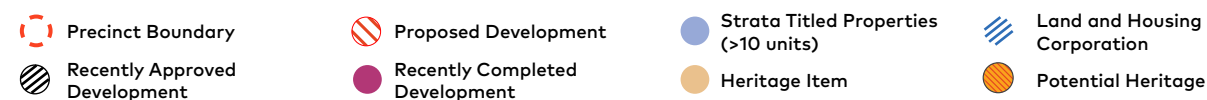
- Strata titled properties in the precinct are unlikely be redeveloped in the medium term
- Existing dichotomy of high and low density, old and new buildings with different materials, bulk, scale and form diminishes local character rather than contributing to a unified future character
- Parking entries and service provision in new developments create blank façades along existing laneways resulting in a poor public interface
- Fragmented lot ownership and strata titled sites limit potential to create integrated development precincts and consolidated parking solutions
- Open space controls within new development on constrained narrow depth lots compromise built form outcomes
- Existing Land and Housing Corporation Land requires establishment of partnerships with developers

Opportunities

- Maximise active façades along Burwood Road within new development
- Maximise friendly façades including lobbies and residential entries throughout precinct which bring life to streetscape
- Limited number of recent developments within the precinct presents a large number of sites that could undergo renewal
- Consolidate lots to maximise public domain amenity and public open space provision
- Revise setback controls to enable consolidated and shared open space provision
- Revise setback controls to maximise feasibility and efficiency of sites allowing for an overall reduction in height, ensuring more sympathetic built form outcomes and maximised public domain provision and amenity.
- Improve public interface of new development through innovative parking strategies which allow for laneway façades to be activated and sleeved with retail/ commercial uses
- Ensure appropriate podium setbacks to retain human scale experience
- Utilise rooftop areas for open space provision within new developments



Figure 88: Development Constraints Diagram. Source: COX



DRAFT



DRAFT

Case Studies

A selection of case studies have been critically reviewed for their relevance to the renewal of the Burwood North Precinct.

Oculus and Mott MacDonald have provided input into the case studies presented in this section. Refer *Burwood North Precinct Masterplan: Landscape and Public Domain Report*, by Oculus, and *Burwood North Precinct Masterplan: Sustainability Statement*, by Mott MacDonald for additional case studies.

Each benchmark has been chosen for specific relevance to one or more of the following criteria:

- Urban regeneration or revitalisation - 'giving back' - both consolidated and singular developments
- Density done well - providing height and density with human scale
- Retrofitting the built environment - integration of new and existing land uses
- New types of urban environments, from the built form to the public domain
- Shared space - maximising efficiency and use
- Sense of place - Meaningful and sympathetic response to physical, cultural, and landscape heritage
- Mode shift - strategies for the creation of walkable neighbourhoods/ streets for people
- Multi-modal transit networks - integration and connectivity throughout precinct
- Existing fabric - 'Consideration of interfaces with surrounding established urban fabric
- Uplift and equity - consideration for new and emerging communities
- Integrated blue green infrastructure - blurring boundaries between the public and private domain
- Strategic approach to safeguarding sustainable outcomes

Figure 89: Comer Street looking east towards Burwood Road with Burwood Park on the right. Source: COX

Case Studies - Precinct Development

Central Park, Sydney

The 5.8 ha site on the border of Broadway and Chippendale is close to Sydney's major transport hub Central Station and two large universities. Formerly occupied by Carlton and United Brewery, the site is now a mixed-use development which has become a vibrant inner city neighbourhood with one of the highest population densities in Australia.

Characteristics, Uses, Users and Activities

- The built fabric surrounding Central Park includes some of Sydney's oldest workers cottages, terraces and warehouses.
- Central Park provides a mix of commercial spaces, residential apartments, student accommodation, shopping centre and cinemas as well as laneway retail including an eat street 'Spice 'Alley' which supports a vibrant night time economy.
- The site planning creates an interconnected network of new places, streets, lanes, parks and plazas.
- The north facing public park provides valuable open space for the area and hosts markets and events.
- One Central Park has a 42m cantilevered heliostat sky garden, vertical hanging gardens, a low carbon tri generation plant and internal water recycling plant.



Figure 93: Distinctive central green delivered in phase 1 - green streets - supporting active mobility. Source: COX



Figure 92: Sympathetic transition to existing heritage buildings - integrating filtration nodes/ plaza spaces - built form diversity. Source: Google Street View



Figure 91: Site through links - active frontages - permeable pedestrian network. Source: Google Street View

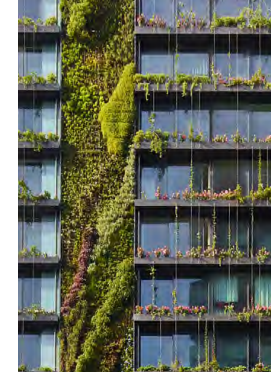


Figure 94: Green Building. Source: https://www.ideagroup.it/blog/biophilic-design-la-progettazione-vitale/ajn_ptw_sydney_ocr_murrayfredericks_facadedetail/

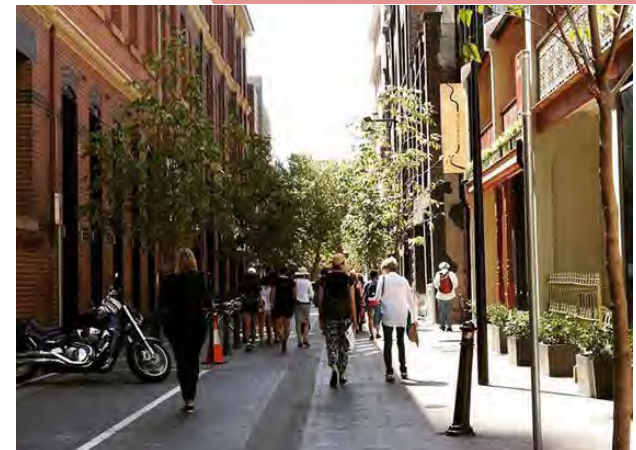


Figure 90: Human Scale Laneways - integrating heritage built fabric - Hunter Street North. Source: <https://www.pinterest.com.au/pin/526499012678328238/>

Lessons for Burwood North

- Sympathetic urban infill retains historic fabric to create human scale and mixed character
- New buildings respond to adjoining heritage through setbacks, heights, built form and materiality.
- Existing fabric is stitched into the new development through the fine grain activated laneways, permeable walking and cycling network and narrow slow speed laneways.
- New development provides through site links and activated street frontages, spaces and connections support a diverse range of activities including night time economy.
- Planted verges and street trees provide urban greening, shade, and comfort.
- Incorporates a large public park
- Delivered by a single developer which allowed for sustainability initiatives at scale to be incorporated from day one.

DRAFT

Resource Rows, Copenhagen

Resource Rows is part of the Orestad Syd development, the most southern urban extension of Orestad stretching 5 kilometres from the centre of Copenhagen to Kalvebod nature reserve.

Characteristics, Uses, Users and Activities

- 92 built to rent homes across two rows of three-storey terraced houses book ended by two five-storey apartment blocks, oriented around a central courtyard.
- Private courtyards with little to no fencing actively engage with shared courtyard space
- Circular economy construction: up-cycled old buildings into new including recycled brickwork 3m2 panels fabricated from cut out segments of brick walls and recycled timber used for window frames, terraces and decking.
- Shared courtyard and roof terraces include a number of greenhouses made from recycled windows.
- Energy provided by solar panels and water to air heat pumps.



Figure 95: - Minimal setback - defined street edge - public domain contribution. Source: <https://lendager.com/project/resource-rows/>



Figure 98: Rooftop as active space for socialisation
Figure 99: Source: <https://www.architectsjournal.co.uk/buildings/old-into-new-recycled-bricks-form-facade-of-copenhagen-housing-project>



Figure 97: Central courtyard space - minimal fencing activates edges - integration of public/ private space . Source: <https://lendager.com/project/resource-rows/>



Figure 96: Recycled time greenhouse on rooftop. Source: <https://lendager.com/project/resource-rows/>

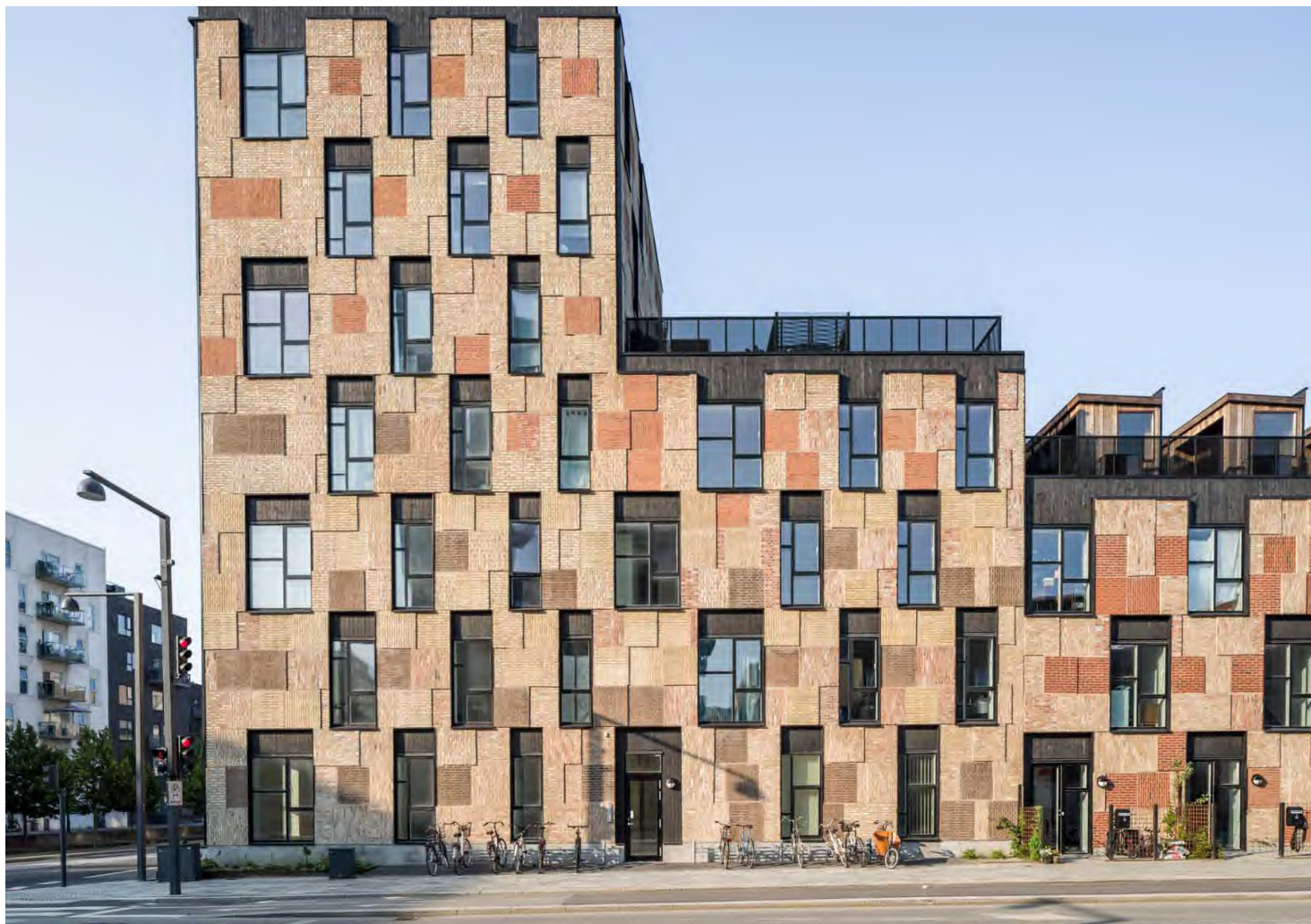


Figure 100: Height transitions maintain human scale -height at intersection provides visual anchor. Source: <https://lendager.com/project/resource-rows/>

Lessons for Burwood North

- 29% CO2 is saved by up-cycling only 10% of all building materials, converting 463 tonnes of waste into building materials.
- Incorporation of energy efficient initiatives.
- Recycling materials from existing building stock contextualises character of buildings and breathes life into buildings telling a story of place.
- Shared courtyards and rooftop gardens engage residents through active and social life and opportunities for urban farming.
- Building height provides human scale with height at corners providing visual anchors at street intersections
- The architect, Lendager (Denmark) researched and sourced recycled material, designed prototypes and found partners to produce new building products from old.
- With a minimal street setback, the building defines the street edge and incorporates translucent fencing, greening and provides a public domain contribution.

DRAFT

Case Studies - Block Development - Urban Infill - Residential

Powerhouse, Philadelphia

DRAFT

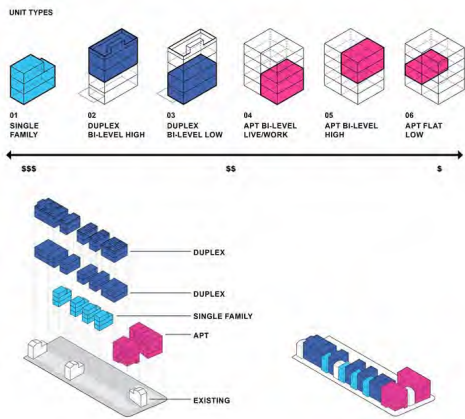


Figure 101: Diverse housing typologies



Figure 102: Integrating row houses into existing street wall. Source: <http://www.is-architects.com/powerhouse/vfuhwcalj5ba677qa1f180wmqpf5y5>

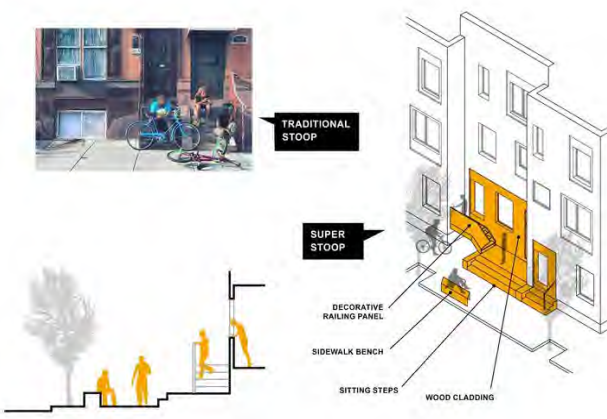


Figure 103: 'Super Stoops'. Source: <http://www.is-architects.com/powerhouse/vfuhwcalj5ba677qa1f180wmqpf5y5>



Figure 105: Rooftop private space. Source: <http://www.is-architects.com/powerhouse/vfuhwcalj5ba677qa1f180wmqpf5y5>



Figure 106: Green Rooftops. Source: <http://www.is-architects.com/powerhouse/vfuhwcalj5ba677qa1f180wmqpf5y5>

The project built in 2017 carefully fits a dense cluster of units into an urban block in Philadelphia's Francisville neighbourhood on the edge of Centre City. The neighbourhood has been undergoing rapid gentrification with a large proportion of renters and entrepreneurs drawn to the area by housing that is less expensive than the Centre City.

Characteristics, Uses, Users and Activities

- Creates 'street level social spaces' defined by 'super stoops' - navigating grade changes
- Spans a cluster of 31 units of a variety of typologies - single family town homes, duplexes and two small apartment buildings
- All units achieve LEED platinum certifications
- Manages storm water on site and provides rain gardens along curb line
- Fabricated metal handrail panels designed by a local artist
- Respects local character through material expression



Figure 104: Street level social spaces blur boundary between public and private space - local artist designed balustrades. Source: <http://www.is-architects.com/powerhouse/vfuhwcalj5ba677qa1f180wmqpf5y5>

Lessons for Burwood North

- Considers affordability - a diversity of living options at a range of prices and in keeping with the character of the surrounding community
- Street level social spaces blur boundaries between public and private spaces, an innovative response to site topography.
- Responds to local context and neighbourhood character by integrating row houses into the existing street wall with complimentary materiality, stoop setbacks blurring boundary between old and new.
- Green roofs mitigate heat island and provide additional private open space in a compact urban form.
- Manages storm water on site and contributes to neighbourhood WSUD networks. On-site energy production and LEED Platinum certification
- Encourages community participation in design with local artists employed.

Case Studies - Block Development - Urban Infill - Mixed-Use

Foley Lane, Sydney

A prominent collection of character buildings fronting Oxford Street within the renowned urban village of Darlinghurst, a 10 minute walk from the centre of Sydney CBD, are being revitalised and re-purposed to provide a mix of modern, heritage inspired office, retail and hotel accommodation.

Characteristics, Uses, Users and Activities

- The development adaptively reuses the heritage building with an additional structure on top.
- The development adds to the diversity and mix of existing bars, retailers and creative spaces surrounding the site.
- The development is reinvigorating the street life of the historic precinct by providing additional through-site links and laneway activation
- Accommodates laneway servicing and drop off whilst creating a shared zone environment with good pedestrian amenity.
- The laneway is bookended with public spaces drawing people through the space
- It works with the unique topographical constraints to provide through-site links with double height lobby spaces and maximise ground floor activation and land use efficiency.



Figure 108: Adaptive re-use - mixed -use maintaining high street character - activation of rear laneway. Source: FJMT Architects



Figure 110: Combination of shared zones and service vehicle access areas. Source: FJMT Architects



Figure 109: Sympathetic renewal - retaining human scale - fine grain character of precinct. Source: <https://www.australianpropertyjournal.com.au/2022/05/19/oxford-st-revitalisation-gets-the-red-orange-yellow-green-blue-and-violet-light/>

DRAFT



Figure 107: Ground floor Laneway Activation - Public Art. Source: <https://www.commercialrealestate.com.au/news/reviving-one-of-sydneys-great-neighbourhoods-1174945/>

Lessons for Burwood North

- Maximises laneway interface activation and amenity, also incorporating servicing in a shared zone environment.
- Sympathetic to heritage character, maintaining Oxford Street's high street character, human scale and fine grain experience.
- Laneway paving treatment adds to character and richness of local area identity
- Incorporates mixed-use which responds to local hospitality, retail and creative industries.
- Improves through site connectivity between lanes and through to Oxford Street
- Incorporate public art to enliven the streetscape.

Waltham Forest - 'Mini Holland' Scheme, London

Waltham Forest is a culturally diverse neighbourhood 10km north east from London CBD. In 2020 funding was allocated to an experimental Low Traffic Neighbourhood as part of a key council strategy to create Liveable Neighbourhoods. London's Mini-Holland programme is part of the Mayor's Healthy Streets approach which aims to make three outer London boroughs cycle-friendly with significant upgrades to streets and junctions to ensure they are safer for cyclists and pedestrians, including children. Many of these boroughs have low rates of car ownership so the programme aims to increase the safety and attractiveness of walking and cycling.

Characteristics, Uses, Users and Activities

- Main street used to have high car traffic but is now restricted to buses and bikes only between 10am and 10pm. Increased footpath space enables dining, sociable and safe streets.
- Default speed limit reduced to 20mph (32km/h) in residential areas and some high streets across the borough.
- The scheme was implemented by experimental traffic management and included consultation with key stakeholders and emergency services. It limits through traffic on local streets whilst allowing indirect access to residents. It also includes the closure of selected roads, creating small public squares and plazas.
- Removal of kerbs to create high quality flush paved zones with new cycle infrastructure.



Figure 111: Bike Infrastructure. Source: <https://www.pgweb.uk/planning-all-subjects/healthy-streets/1188-a-tour-of-waltham-forest-s-mini-holland>



Figure 112: Filtration nodes - social spaces. Source: <https://www.pgweb.uk/planning-all-subjects/healthy-streets/1188-a-tour-of-waltham-forest-s-mini-holland>



Figure 113: Flush pavements along main street. Source: <https://www.pgweb.uk/planning-all-subjects/healthy-streets/1188-a-tour-of-waltham-forest-s-mini-holland>



Figure 114: Pedestrian/ cycle/ bus transit priority along main street - lively sociable and safe streets. Source: <https://road.cc/content/news/251586-waltham-forest-mini-holland-crackdown-motorists-parking-cycle-lanes>

DRAFT

Lessons for Burwood North

- Councils directing funds towards creating low traffic neighbourhoods with the prioritisation of pedestrians and cyclists. This supports equitable access to safe transport modes.
- Main Streets becoming lively sociable and safe streets which encourage outdoor dining and boost local business and economy.
- Filtration nodes and WSUD are incorporated into the upgraded streetscapes.

NEWHAM AND WALTHAM FOREST LOW TRAFFIC NEIGHBOURHOODS

Changes since the scheme was implemented
Comparison of before and after scheme implementation (Oct 2018 and Oct 2021)

	AREA 1 MARYLAND	AREA 2 ODESSA
Traffic on internal streets	76% decrease	61% decrease
Traffic on boundary streets	19% increase (see notes below)	3% decrease
Speeds on internal streets	5% decrease	6% decrease
Speeds on boundary streets	No significant change	4% increase
Directional traffic (boundary and internal streets)	33% decrease (east-west)	18% decrease (east-west)*
Cycling on internal streets	125% increase	172% increase
Air quality (nitrogen dioxide)	3% better	No significant change
Road safety	Fewer injuries	Fewer injuries
Bus journey times	7% increase	5% decrease
Fire brigade response times	No significant change	Slight improvement
Flytipping	24% decrease	13% decrease

Figure 115: Source: <https://road.cc/content/news/251586-waltham-forest-mini-holland-crackdown-motorists-parking-cycle-lanes>

Superblocks, Barcelona

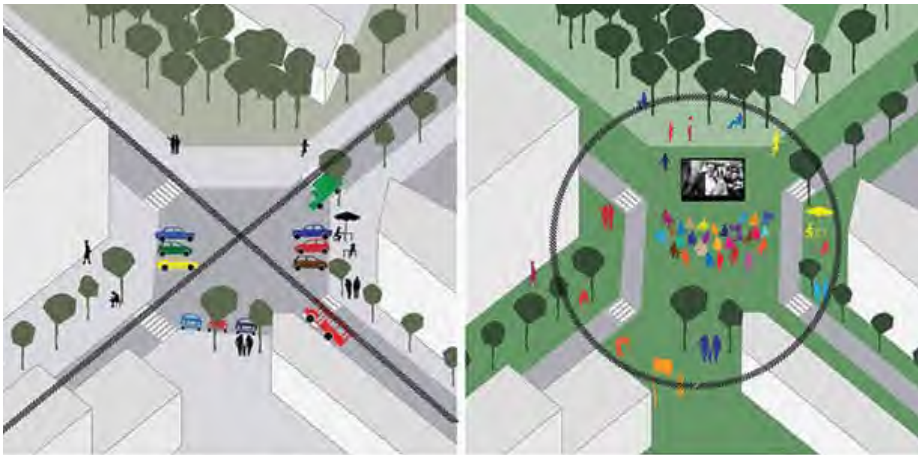
Superilles, or Superblocks is a project designed by Barcelona City Council in collaboration with the Urban Ecology Agency that aims to foster sustainable mobility, reallocating road space back to people, creating social cohesion involving public participation and a reduced ecological footprint. The project promotes a new type of urbanism across 5 macro-areas in Barcelona chosen for the experiment.

Characteristics, Uses, Users and Activities

- Macro areas are three blocks wide and three blocks long - larger than a block but smaller than a neighbourhood, where traffic is limited to residents only. Through traffic and buses are redirected to the perimeter. The scheme preserves adequate circulation of people, goods and services using fewer vehicles on fewer streets.
- Street intersections become public squares for the neighbourhood, with local traffic travelling at 10km/hour
- Significant environmental outcomes by reducing CO2 emissions, traffic noise and allocating more space for greening, social gathering and play.
- The City Of Barcelona aims to turn 1 out of 3 streets into green streets by 2030, in line with the 2024 Urban Mobility Plan which aims to reduce private vehicle journeys from 26% to 18% by 2024.



Figure 117: Super block plaza space. Source: <https://www.archdaily.com/office/leku-studio>



Rethinking urban public space:

Figure 119: Reducing vehicle through routes to maximise public space. Source: <https://www.archdaily.com/office/leku-studio>



Figure 118: Temporary low cost interventions - tactical urbanism. Source: <https://www.archdaily.com/office/leku-studio>

DRAFT



Figure 116: Superblock Concept applied to Barcelona Street Grid. Source: <https://barcelonarchitecturewalks.com/barcelona-superblocks/>

Lessons for Burwood North

- Proximity to efficient public transport reduces need for private vehicle journeys.
- Re-establishing and reinforcing the historic street grid allows for similar interventions. Impacts to streets identified for through traffic need to be considered in their urban form and street design.
- Limited public open space in Burwood provides opportunities for innovation and increased efficiencies through the use of existing streets for additional public open space and amenity
- Apartment living which is increasing in Burwood will result in increased public open space demand and a higher number of pedestrians moving around the streets.

Case Studies - Green Streets

Malop Street, Geelong

Malop Street is a shining example of how a traditional retail street can become an inviting public space during the day and night.

Characteristics, Uses, Users and Activities

- The project converted a car dominated streetscape into a green spine, incorporating separated bicycle lanes, extensive verge and street tree plantings with a great diversity of plant types.
- A horticultural connection to nearby Johnstone Park and Geelong Botanic Gardens was established through the use of a both indigenous and exotic species.
- Wide footpaths provide opportunities for outdoor dining
- The street incorporates integrated intimate seating spaces not often seen in streetscape design.
- Water sensitive urban design measures are incorporated through the extensive use of rain gardens.
- Public art is integrated along the street.



Figure 120: Streetscape Greening - expanded public domain and separated active transport connections. Source: <https://www.outlinesla.com.au/project/malop-street-green-spine>



Figure 121: Intimate seating spaces. Source: <https://www.establishedtrees.com.au/geelong-malop-street-hailed-as-leading-the-way-for-greening-projects/>



Figure 122: Car park removal to allow for additional street trees. Source: <https://www.revitalisingcentralgeelong.vic.gov.au/projects/underway-projects/green-spine-future-blocks>

DRAFT



Figure 123: Extended footpaths provide areas for street tree plantings and seating zones. Source: <https://www.outlinesla.com.au/project/malop-street-green-spine>

Lessons for Burwood North

- Potential to substantially change the character and experience of a main street through the introduction of green infrastructure and public domain upgrades.
- Integration of diverse street tree and verge plantings providing distinctive character, connecting to place and restoring local ecologies.
- Removal of car parking to facilitate improved pedestrian and cycle amenity through the integration of separated bicycle links along a main street.
- High quality public domain integrating incidental spaces and places for seating and gathering along the main street including opportunities for outdoor dining.
- WSUD integration into the main street.
- Potential to express local culture through public art.

Case Studies - Local Street - Shared Streets

Fort Street, Auckland

Fort Street is one of several new shared spaces implemented in Auckland's Central Business District in recent years to enhance pedestrian connectivity and provide a high-quality public domain.

Characteristics, Uses, Users and Activities

- Prioritises pedestrians and cyclists and includes bike parking facilities with 10km/hour car speeds.
- Continuous paving treatment with no level change and integrated street tree planting.
- Provides for a diversity of users and uses including opportunities for outdoor dining and seating areas for gathering.
- Extensive collaboration with key stakeholders and monitoring and evaluating of the project before and after implementation to understand and communicate its impacts.



Figure 124: Integrated Seating Areas. Source: <https://www.stuff.co.nz/life-style/home-property/72930841/shared-space-lifts-fort-street>



Figure 125: Extended outdoor dining zones. Source: <https://www.stuff.co.nz/life-style/home-property/72930841/shared-space-lifts-fort-street>



Figure 127: Flush paved shared zones prioritising walking and cycling. Source: <https://www.viennacouver.com/2015/01/aucklands-city-centre-shared-space-programme/>

DRAFT

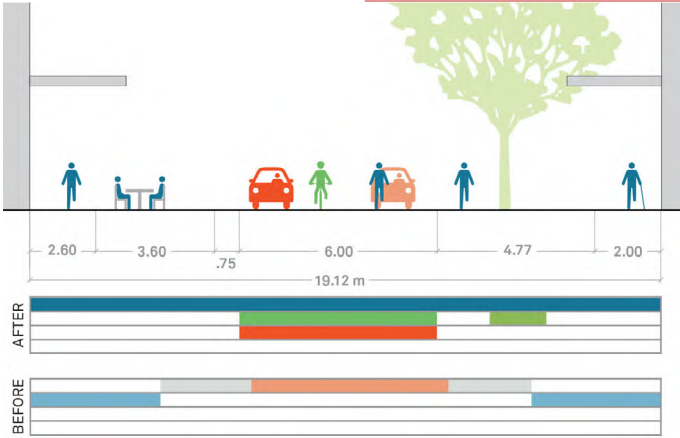


Figure 126: Before and after comparison - increased public amenity. Source: <https://www.stuff.co.nz/life-style/home-property/72930841/shared-space-lifts-fort-street>

Lessons for Burwood North

- Much like Burwood Road it shows how a traffic dominated street can become a more attractive destination, increasing visitors for shopping and other activities
- Encourages street life and becomes part of a city wide integrated shared streets and laneways network.
- By monitoring and evaluating impacts over time, positive impacts can be demonstrated and communicated to remove stigma around change. At Fort Street in Auckland, benefits included:
 - 54% increase in pedestrian volumes
 - 47% increase in consumer spending
 - 25% decrease in vehicle volumes
 - 80% of people surveyed felt safer in the area.
- Public domain treatment reinforces fine grain and human scale.

Tanner Springs Park,
Portland

Located on the site of a former wetland, rail yards and industry, Tanner Springs Park is a 60x60m city park within the Pearl District in the northern part of downtown Portland. The area has progressively established itself a new young, mixed, urban and dynamic neighbourhood and is home to families and businesses.

Characteristics, Uses, Users and Activities

- Urban park with a wetland providing bio-filtration, natural habitat, cooling, site interpretation and education.
- The park recaptures a transect of the major natural plant communities historically found in Willamette Valley - prairie and woodland
- Storm water runoff is fed into a natural water feature with a spring and natural cleansing system.
- Projects is the outcomes of an intense community participation and stakeholder and steering group engagement - capturing the hopes and dreams of the community
- The park creates a refuge for people and wildlife in the midst of a bustling downtown neighbourhood. It is designed as a passive park for reflection with a range of spaces and places including a board walk and lawn terraces for seating and gathering.



Figure 128: Urban wetland - neighbourhood integration. Source: <https://ramboll.com/projects/germany/tanner-springs-park>



Figure 129: Re-establishing remnant plant communities. Source: <https://greenworkspc.com/ourwork/tanner-springs-park>



Figure 130: Boardwalks and seating areas. Source: <https://ramboll.com/projects/germany/tanner-springs-park>

DRAFT



Figure 131: Blue Green Master Plan. Source: <https://ramboll.com/projects/germany/tanner-springs-park>

Lessons for Burwood North

- Burwood has a former creek which has been filled in for development. There is an opportunity for potential daylighting of the former creek and the inclusion of open spaces that incorporate urban wetlands to assist with flood mitigation and help filter storm water before it is released into Parramatta River.
- There is an opportunity for site interpretation, revealing the water story of Burwood by creating a place for engaging with water through reflection, respite, gathering and socialisation.
- There is an opportunity to create a distinctive local park as part of a network of parks throughout Burwood.
- Urban wetlands can assist with mitigating negative effects of climate change and help to restore the natural ecologies of Burwood, providing habitat for local birds and wildlife.
- The park demonstrates successful outcomes of a community engagement process.

Joynton Avenue Creative Centre and Matron Ruby Grant Park Sydney

Located in Green Square, Australia's largest urban renewal project being developed around a train station 9 minutes from Sydney's CBD, the Joynton Creative Centre is an adaptive re-use project occupying a former nurses accommodation block. The adjoining Matron Ruby Grant Park provides valuable open space for a dense urban community.

Characteristics, Uses, Users and Activities

- Existing vaults create an outdoor room which addresses the park and the community shed is now a community workshop.
- Integrates small spaces for art-making and subsidised offices, classrooms for creative practice and start-ups. The wider community has access for workshops and exhibitions.
- Storm water management reed beds are integrated into the park design, reinstating native plants of the former Waterloo swamp that covered the area.
- The park provides defined outdoor spaces including open lawn areas for gathering, seating and children's play areas including water play.
- The park and community centre integrate public art



Figure 132: Integration of parkland and adaptive re-use of heritage building to create community hub. Source: <https://landscapeaustralia.com/articles/matron-ruby-grant-park/>



Figure 133: Indoor/ outdoor community space. Source: <https://107.org.au/joynton-avenue-event-spaces/>



Figure 134: Activating/ programming public space. Source: <https://landscapeaustralia.com/articles/matron-ruby-grant-park/>



Figure 135: Adaptive-reuse of heritage building for community program. Source: <https://www.facebook.com/dianaparadayoga/>



Figure 136: Open lawn area providing for a range of uses and users - WSUD integration in form of storm water management reed beds. Source: <https://landscapeaustralia.com/articles/matron-ruby-grant-park/>

DRAFT

Lessons for Burwood North

- A number of heritage houses in Burwood have potential to be adaptively re-used and integrated alongside proposed open space, local parks, through-site connections and green links.
- Burwood offers the potential to celebrate local history and culture through the adaptive re-use of existing heritage fabric.
- Increasing demand for community facilities alongside the growing population in Burwood calls for additional community facilities to be integrated into the precinct.
- Located on a former creek-line, Burwood North has potential to integrate storm water management and bio-filtration alongside water play into the design of local parks, open space areas and streets, also offering the potential to reinstate local ecologies
- The limited open space offering in Burwood requires highly programmed public spaces offering a variety of activities and uses.
- There is opportunity to involve the community through public art projects.

Fish Lane Precinct, Brisbane

Fish Lane is an example of the successful master planning and urban transformation of a neglected post-industrial area to create a vibrant arts precinct in central Brisbane, adjoining South Bank and the Queensland Art Precinct.

Characteristics, Uses, Users and Activities

- Creates a lively shared street environment whilst managing 24 hour use by both vehicles and pedestrians
- Incorporates tactical urbanism through public private partnerships. The development was led by a private development company who builds a cooperative culture across landowners, stakeholder and approval authorities to create a residential and commercial neighbourhood of distinctive character.
- Fish Lane Town Square was established beneath a rail overpass and includes moveable furniture and fixtures to allow maintenance for rail authorities.
- Fish Lane includes public artworks, more than 30 so far, that are continually added and renewed.
- The developer manages precinct activation. The 19 retail tenancies leased by the developer are designed and managed to space-specific goals.
- The design of new buildings respects and references precinct history in new building, pavements and installations, retaining fine grain intimate qualities.



Figure 137: - Urban infill - sympathetic fine grain design - 24 hour shared environment - lined by retail tenancies. Source: <https://www.realestate.com.au/sold/property-apartment-qld-south+brisbane-137588130>



Figure 138: Public artwork in laneway - heritage integration. Source: <https://heritage.brisbane.qld.gov.au/heritage-places/1955>



Figure 139: Fish Lane Town Square beneath railway overpass - urban greening. Source: <https://propertymash.com/research/fish-lane-town-square-wins-prestigious-award/>

DRAFT



Figure 140: Activated ground floor along laneway. Source: https://www.visitbrisbane.com.au/brisbane/things-to-do/shopping/fish-lane?sc_lang=en-au

Lessons for Burwood North

- Mixed-use development provides opportunities to reclaim Burwood's laneways as a distinctive destination for pedestrian use, retail, food and beverage.
- Public private partnerships have supported developer driven outcomes. The developer creates buildings in blocks that front and bookend the laneway and drives projects along and around the laneway as part of their overall vision for the precinct.
- The development entity is in charge of and ensures sympathetic fine grain design response and heritage integration and manages activities and events within laneway.
- Tactical urbanism interventions ensure human scale, contribute urban greening and public art and imbue the place with distinctive character
- Shared zones support vehicle and servicing access

Hackney Play Streets, Kings Crescent Estate, London

DRAFT

Hackney Play Streets is a ground breaking scheme by Hackney Council enabling residents to close residential streets temporarily or permanently to increase opportunities for play. Kings Crescent Estate's main street has been designed to be a permanent playable area and is main route to an adjacent major open space, Clissold Park. In other parts of Hackney borough, residents apply to have streets temporarily closed regularly to enable outdoor play.

Characteristics, Uses, Users and Activities

- The scheme enable streets to be temporarily closed for a few hours per week or month, so that children can play out in the neighbourhood streets together.
- There are more than 60 play streets in Hackney, including 3 schools and a children's centre. People living on the streets can still drive to and from their home at 10km/hour
- The scheme builds social cohesion and strengthens sense of community.
- Hackney Play Association in partnership with Hackney Council supports residents, schools and community organisations to get involved.



Figure 141: Street closure - activation. Source: <https://www.hackneyplay.org/playstreets/home/>



Figure 142: Crescent Estate - shared courtyard. Source: <http://www.studiofalaj.com/portfolio/kings-crescent-estate/>



Figure 143: School street activation. Source: <https://www.hackneyplay.org/playstreets/school-play-streets/>

Lessons for Burwood North

- The large number of educational facilities within and around Burwood North, and dense residential environment could benefit from such schemes.
- Limited open space and public gathering space in Burwood North would benefit from use of local streets as places for people.
- Increased density will require a greater quantum of public space for community and neighbours to come together.
- These streets have the potential for other social uses and events that support community building.



Figure 144: Tactical urbanism - low cost intervention to create play street. Source: <https://www.theguardian.com/artanddesign/2021/feb/25/set-children-free-are-playgrounds-a-form-of-incarceration>

Case Studies - Precinct Development - Eco-Neighbourhood - Circular

Hammarby Sjöstad, Stockholm

Hammarby is an eco-district development of 160Ha, situated along the Hammarby Lake and located 3km south of Stockholm CBD in a former industrial area. The district is an example of circular design and lifestyle. The strategy of a walkable town with a high proportion of green space balances built up areas, infrastructure and public realm.

Characteristics, Uses, Users and Activities

- The absence of fences and the presence of public spaces and walkways creates a welcoming environment attracting active mobility - 19ha of green area.
- 80% of trips made by public transport
- Central vacuum system for recycling
- Heating supplied by district sources contributes to achieving energy and waste water targets:
 - 34% of heat comes from purified waste water
 - 47% from combustible household waste
 - 16% from bio fuel (2002 figures).
 - Solar hot water heating
- When the heat has been extracted from the warm, purified waste water, the remaining cold water can be used for district cooling.
- Bio-gas is used as fuel for vehicles such as buses, taxis and waste collection trucks, and to heat 1000 homes in the area.
- Sludge produced by the treatment process is recycled and used for fertilising farmland and forestry land.
- Rainwater is collected on green roofs or is drained off through canals which become part of the integrated open space network.
- Runoff from roads is captured separately and drained off to treatment pools before being allowed to infiltrate the ground.



Figure 145: Hammarby Eco-neighbourhood. Source: <https://cmgrannis.medium.com/hammarby-sj%C3%B6stad-stockholm-sweden-894e6cc2dcfa>



Figure 146: Integrated canal network - part of site WSUD scheme. Source: <https://cmgrannis.medium.com/hammarby-sj%C3%B6stad-stockholm-sweden-894e6cc2dcfa>



Figure 147: Narrow local streets - flush pavements - enhanced pedestrian/cycle priority. Source: <https://cmgrannis.medium.com/hammarby-sj%C3%B6stad-stockholm-sweden-894e6cc2dcfa>



Figure 148: Maximum 6 storey development maintains human scale. Source: <https://www.thenatureofcities.com/2014/02/12/hammarby-sjostad-a-new-generation-of-sustainable-urban-eco-districts/>



Figure 148: Circular systems for water, waste, and energy. Source: <https://ecosistemaurbano.org/english/work-in-progress-eco-neighbourhoods-in-the-north-of-europe/>

DRAFT

Lessons for Burwood North

- Precinct scale initiatives have potential to create closed loop waste, water and energy cycles reducing reliance on fossil fuel and mitigate
- Green roofs can be incorporated into new development.
- Precinct wide WSUD integration provides detention, bio-filtration and opportunities for re-use.
- Efficient fixture and fittings can reduce overall potable water use

Osterbro Climate Quarter, Copenhagen

Located 4km north of the Copenhagen CBD, Osterbro created the first climate-resilient district by implementing extensive green infrastructure.

Characteristics, Uses, Users and Activities

- Integrated system of green streets and pocket parks serve as retention areas and water basin. Local hills funnel water to designated retention areas.
- Public squares collect water from surrounding buildings roofs and distribute the water locally, managing 30% of total rainwater.
- 50,000m2 of city space to become climate-resilient, natural urban infrastructure. 20% of neighbourhood surfaces to become green, sequestering CO2 and improving biodiversity.
- Reduces the cost of damage from cloudburst and requirements to implement sewer expansion.
- 10,000 people have taken part in projects with 170 citizen-led initiatives.



Figure 149: Green Streets and pockets parks combined to create precinct wide WSUD network. Source: <https://landezine-award.com/sankt-kjelds-square-and-bryggervangen/solutions/>



Figure 150: Green infrastructure for flood mitigation



Figure 151: Public squares collect and distribute water locally. Source: <file:///C:/Users/tamara.obradovic/Downloads/transport-for-nsw-mobilit-summit-henriette-vamberg.pdf>



Figure 152: Storm water grate detail. Source: <https://landezine-award.com/sankt-kjelds-square-and-bryggervangen/>



Figure 153: Pocket parks serve a retention areas - provide cooling, shade and shelter, increased bio-diversity and habitat - mitigating the effects of climate change. Source: <https://goexplorer.org/copenhagen-worlds-first-climate-resilient-neighborhood/>

Lessons for Burwood North

- Green infrastructure integration into existing urban fabric can mitigate flooding in existing flood prone areas in Burwood North, assist with rainwater collection and re-use and bio-filtration for storm water runoff.
- Creates positive environmental impacts, improving air quality, sequestering CO2 and improving local biodiversity.
- Can provide long term cost savings from ongoing maintenance and infrastructure upgrades.
- Opportunity to engage and educate the local community in Burwood North though implementation and initiative creation.

DRAFT

DRAFT