

Waterloo Urban Design Report



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Introduction

The City of Sydney has prepared a planning proposal to facilitate the redevelopment of Waterloo Estate (South) in response to a request from NSW Land and Housing Corporation (LAHC).

This Study sets out an urban design approach that underpins the proposed planning controls in the planning proposal.

The Study has been prepared as part of the assessment of LAHC's request to prepare a planning proposal, including the technical studies lodged with the request, and the further development of the City's Alternative Approach from 2019.

The Study describes the planning proposal's urban design approach. It then chronologically documents and compares the various master plans, urban design approaches and a comparison to some City of Sydney neighbourhoods and parks that have informed the development of the City's proposal.

Waterloo Now

The land resumptions and demolition by the State Government in the period after World War 2, concentrated in the 1970's, rendered Waterloo distinctly different from the surrounding areas which are richly varied and everchanging, constructed over time in the nineteenth and early twentieth century.

At Waterloo, hundreds of lots were amalgamated, terrace housing and some factories demolished, and streets were removed resulting in unusually large blocks.

Private and public space became undefined.

Above ground car parking left streets devoid of social activity.

Waterloo became an unvaried monotonous reconstruction of housing with little local employment, shopping areas or social facilities.

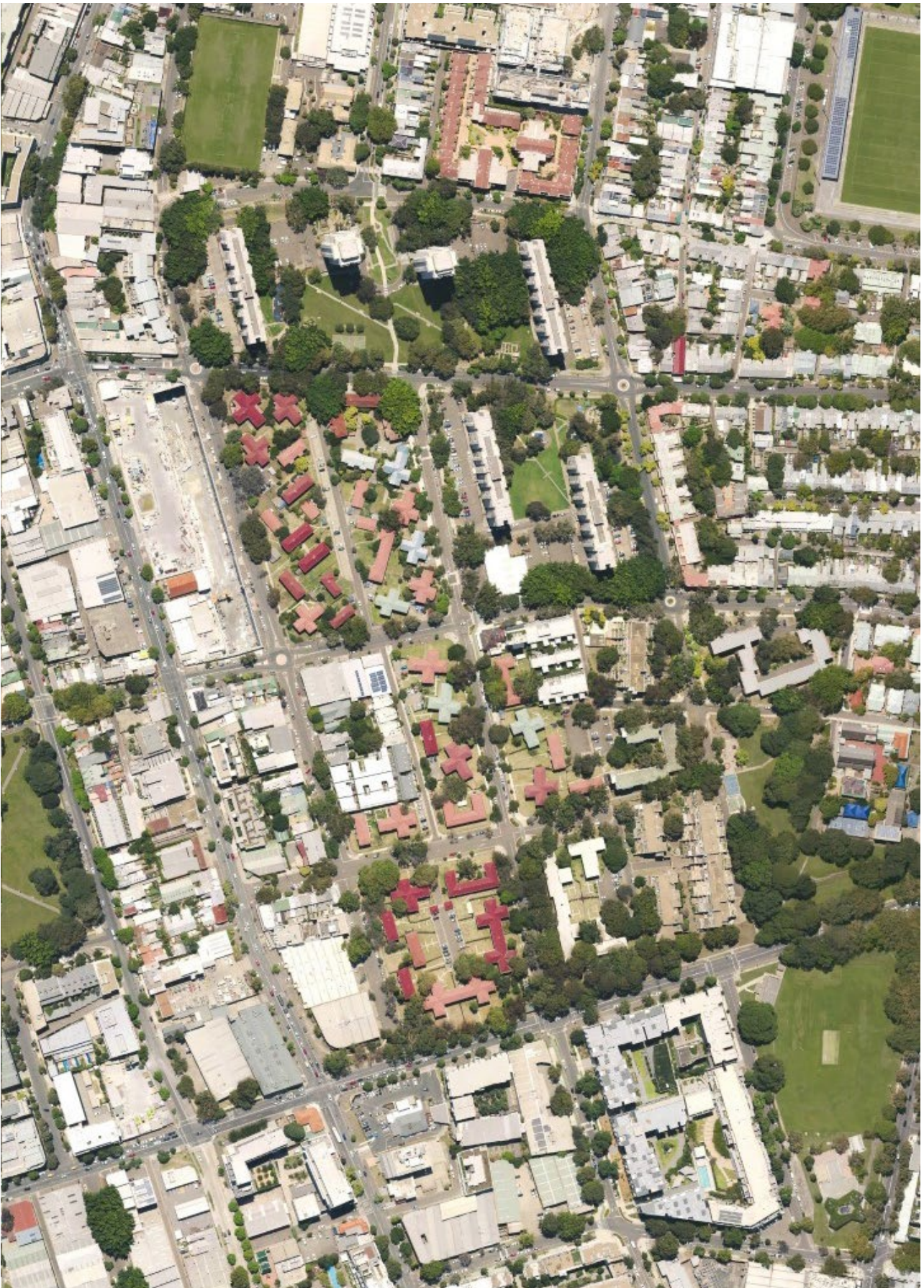
Nevertheless, a there is a strong community spirit with enduring social bounds and pride that sustain community life.

With just over 2000 dwellings on around 20 hectares of land its density is similar to the surrounding suburbs, that largely consist of terrace houses, interspersed with new and old workplaces and shopping streets.



Waterloo Aerial View 1950's

Waterloo Urban Design Report



Waterloo aerial view 2020

The Planning Proposal

The City has developed this urban design approach to underpin its planning proposal. It has been prepared in response to the LAHC Planning Proposal request of May 2020. The City aims to provide for around 3000 dwellings in Waterloo south, consistent with the LAHC request, and has further developed and improved the City's Alternative Approach endorsed by Council in March 2019.

The design of the planning proposal is derived from an understand of the place as it is now and the positive lessons learned over this century and in the making of successful new development areas in the City of Sydney and the communities response to these both positive and critical.

Making a good place for more people living closer together requires careful consideration in design, beyond usual practice, it means making better streets and parks and better housing amenity. Making a place that the community can live in and enjoy.

The design promotes an equitable distribution of amenity for an integrated community, provides certainty of development outcomes with enough flexibility to ensure variety and innovation in implementation over a decade in time.

The urban design of Waterloo is based on:

- an understanding of the topography and natural setting with
 - careful placement of two new parks large and small
 - the maximum retention of existing and the addition of new trees;
- an improved street layout that
 - keeps and improves the existing streets,
 - widens and extends two existing narrow streets,
 - revives streets resumed late last century;
- setting aside places for future community facilities that
 - can accommodate a range of possible uses,
 - are easily accessed and identified;
- a clear set of street blocks and development lots that
 - are formed by the streets,
 - are easy and flexible to implement,
 - accommodate the anticipated building forms,
 - clearly and unambiguously define the public and private space;
- the definition of building forms for mixed use and apartment buildings that
 - ensure good amenity in the streets and parks,
 - fit the blocks and lots,
 - share amenity equitably among themselves,
 - are placed to receive sunlight throughout the year,
 - have a width that ensure good natural ventilation and natural light to their interiors,
 - are sized to be easily managed and cared for,
 - have a range of heights suited to their surrounds.

Taken together these elements recreate Waterloo as a place for its community that is understandable, open, safe, tree filled, sunlit, airy and calm.



Waterloo south Planning Proposal aerial view February 2021

Site Geography

The site is bounded by existing streets from Raglan Street in the north and thence clockwise George, Wellington, Gibson, Kellick, Pitt, McEvoy and Cope streets. The land area inside the centreline of these streets is around 12.25 hectares.

The topography of the site is fundamental to the urban structure of the Planning Proposal.

The topography is distinctly different on either side of George Street. West of George Street the site is almost flat, falling slightly to the west with a slope of around 1:50. The low point is on Cope Street, south of Wellington Street. Ponding occurs when the generally east west slope is interrupted by north south structures. This is evident in: Cope Street between Raglan and John streets; Cooper Street between Wellington and John streets; and, on George Street between McEvoy to John streets where there is a slight depression. The almost flat gentle slope makes this part of the site ideal for parks and for locating housing for people of all abilities.

East of George Street the topography slopes towards Waterloo Park and Mount Carmel. Between George and West streets, the slope is around 1:12 and between West and Pitt streets it is around 1:7. These slopes are not accessible for people of all abilities, requiring careful layout of streets and walkways to ensure equitable access across the site.

The site is characterised by the large number of significant trees. The planning proposal conserves the majority of the significant trees by placement of the parks, new streets and building setbacks.

Public Space - Parks

The main park is bounded by Cope, Raglan, George and McEvoy streets including Cooper Street and its associated parking and a small substation.

The park is surrounded by existing streets. It sits between the new Waterloo Metro Station on Cope Street to the west; Raglan Street, bus stops to the north; and, two regional bicycle paths on George and Wellington streets. Together the streets maximise access to the park for the community. People arriving at or existing from the metro station walk through the park ensuring that there is always some activity. It is quiet removed from the nearby busy, noisy and polluted Botany Road and McEvoy Street. Its location is roughly equidistant to Redfern, Alexandria and Waterloo parks improving access to parks in the local area. It is on flat land making it easy to construct, flexible in the uses it can accommodate and accessible to people of all abilities. It contains existing significant trees that can be conserved. It is over two hectares in size, similar to the size of Redfern and Alexandria parks, excluding their ovals. It is large enough for many groups of people to use at the same time and to accommodate wide range uses to meet the community's diverse needs. Its size allows people in the park to be clearly visible from all sides and you can see from one side to another. It will be the focus of community activity.

A smaller park is located in the south at the centre of the block bounded by Cope, John, George and McEvoy Streets, accessed by a southern extension of Cooper Street and new walkways from George and Cope streets. It is on flat land, contains existing significant trees to be conserved and is suitable for passive recreation.

The two parks are visible from each other along Cooper Street. Taken together and with the existing Waterloo and Redfern parks everywhere within Waterloo estate is less than a 200 metre, a few minutes' walk along streets, to a park.

WATERLOO SOUTH – PARK LOCATIONS



Public Space - Streets

The existing streets: Cope, Raglan, George, Wellington, Reeve, Pitt, Kellick, and Gibson streets; are retained with their existing reservation and most of the existing street trees conserved. They are improved with new tree plantings, new street furniture and underground services. The existing regional bicycle path remains in George Street and the Wellington Street regional bicycle path is extended. The two paths cross at the centre of the estate.

The existing Cooper and West streets will be progressively widened with development on each side. Their existing carriageway can remain until the widening is complete. They will then be improved with adjusted carriageways and new footpaths, tree planting and furniture.

The former Mead, the eastern part of John and the southern part of Pitt streets were resumed by the forerunner of LAHC in the later part of last century. These are rededicated and remade as streets with tree planting, furniture, underground services and footpaths. John Street between Mead and Pitt streets is without traffic, providing an accessible path on the slope with a series of pedestrian ramps.

West Street is extended south to John Street opposite Mead Street.

Cooper Street is extended south to connect to the new small park, where it bifurcates to form a one way circuit around the park and a possible community building lot. The circuit forms a public square in the interior of the block.

In the more steeply sloping part of the site West, Mead and Pitt streets run along the contour and are generally flat and accessible to everyone; only the existing Wellington, Reeve and McEvoy streets run up the slope.

Most streets run north south ensuring they receive sunlight throughout the year assisting tree growth and improving the amenity they provide for people walking or lingering in them.

The main existing streets are one chain, approximately twenty metres, wide. The new and extended West, Mead and Pitt streets when measured with their accompanying setbacks are likewise twenty metres wide. Cooper Street sits between two narrower blocks and it is itself narrower, fifteen metres including the setback area north of John Street and twelve metres for the short length between John Street and the square and six metres around the square.

George Street runs north south through the centre of the estate and connects to Redfern in the north and Green Square town centre in the south. It is the main street of the community with continuous ground floor retail frontage on both sides south of Wellington Street.

Pitt and Wellington streets connect to the surrounding area to provide access, while George and Cope streets remain closed to traffic from McEvoy Street. The new intersection at Pitt Street has restricted access with left in and left out movements only allowed, discouraging through traffic.

Perpendicular to George Street, John Street bisects Waterloo south connecting the north south streets. It is the main internal circulation street giving access to most of the carpark entries.

Cooper, West and Mead streets run north south, have slow traffic speeds and are quiet residential streets. Mead Street is a yield street with two-way traffic and a turnaround at its southern end. Cooper Street south of John Street is a shared zone, used only for accessing the park and community building.

Waterloo Urban Design Report



View looking south along George Street



View looking north along Cooper Street towards new park

Public Space – Community Facilities

To maximise the use of the main park no community facilities will be placed there. There will be a small amenity building within the park the site of which is yet to be determined. South of Wellington Street two small building sites have been identified that are suitable for buildings containing community facility.

Both are located on Cooper Street, one adjacent to the small park in the south and the other in the northern block. Cooper Street connects the two parks and the potential community building sites, establishing its character as the neighbourhood community street.

Some of the ground floor retail space is also suitable for community uses. Particularly suitable locations are along Cooper Street to reinforce its character and along McEvoy Street overlooking the small park. Small community meeting rooms can be located on the ground floor of other buildings across the site.

Private Space - Blocks and Lots

The public space of the streets defines ten rectangular blocks, the largest in the north being the main park. Like the streets most blocks have their major axis running north south maximising the perimeter exposure to sunlight. The blocks are wide enough to fit ranges of building on each side with a courtyard at their centre.

Most of the blocks are bisected by walkways dividing them into two half blocks. There are some exceptions:

- Reeve Street divides the two small blocks either side of it as a pair like the others albeit Reeve Street is a street not a walkway; and
- The block bounded by Cope, John, George and McEvoy streets contains the south extension of Cooper Street and its circuit and square. This block is divided north south along Cooper Street and around the square.

Each half block is divided into two or more lots that span latitudinally across the blocks with dual street frontages. The lots are flexible and varying in size allowing a variety of apartment building arrangements. The minimum depth of a lot at the end of each block with three street frontages allows for the typical building depth and separation from its boundary.

The lots can be developed individually, in half block parts or as full blocks. This allows a flexible approach to staging and development while ensuring variety of building characters.

Shared facilities including car parking, access, loading, service connections and substations are located in basements and can be shared among several lots within the one block or half block.

WATERLOO SOUTH – ESTIMATED BLOCK YIELDS



Private Space - Walkways and small squares

Walkways are on private land with unrestricted rights of footway access. They increase the pedestrian permeability. They also provide access and egress to courtyards for maintenance and escape. They bisect blocks along their minor axis linking parallel streets.

Walkways are six metres wide. Typically, they widen to twelve metres in mid-block courtyards for the length of their passage through the courtyard less three metres at each side, generally twelve metres, to form small squares at the centre of blocks.

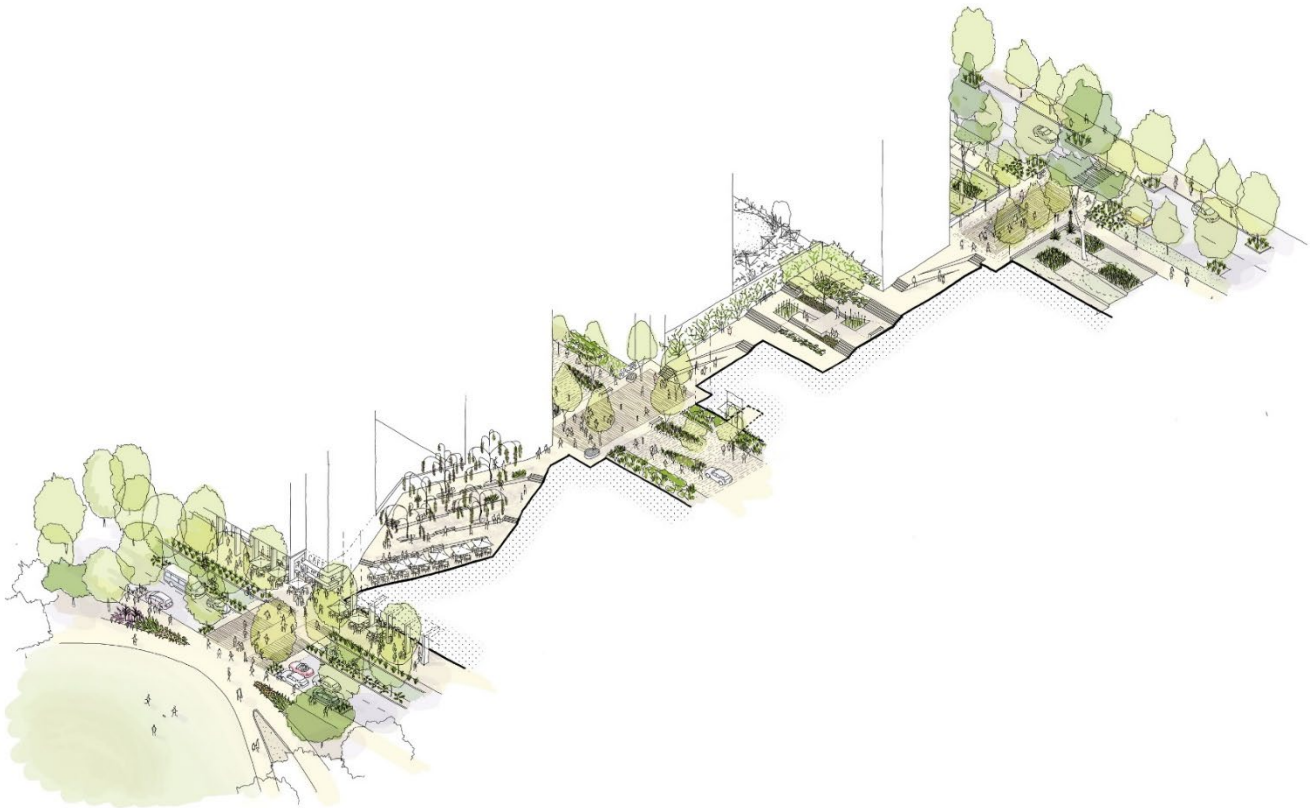
The small squares are planted with trees and contain seats. They are places for pause and relaxation. Every dwelling is no more than a couple of minutes from a small square.

The walkways and small squares that connect to George Street, the main shopping street, have active frontage and can contain outdoor dining areas.

Underground driveways that link car parks pass under walkways but not under the small squares.

The walkways location and purpose are as follows:

- Cope to Cooper streets – is located at a low point to assist overland flow from Cooper to Cope Street, does not have a small square, is flat and accessible to people of all abilities, separates the low buildings that surround the Cooper Street heritage items, and provides frontage to a four storey building at the centre of the block.
- Cope to Cooper Street square– connects to the park at the centre of the block, is covered by a glass roof to protect it from wind downdraft, has active frontages on both sides and can contain outdoor dining and is flat and accessible to people of all abilities.
- Cooper to George streets – contains outdoor dining and active frontage linking the retail frontages of George and Cooper streets, and are flat and accessible to people of all abilities
- Cooper Street square to George Street [two walkways] – contains outdoor dining and active frontage linking the retail frontages of George Street and align with the east west parts of Cooper circuit to provide clear sight lines for increased pedestrian safety linking to the small park either side of the possible community centre to George Street, they are overland flow paths relieving ponding from George Street and transporting the water to the small park, and are flat and accessible to people of all abilities, they are short and do not have small squares
- George to West streets is opposite Reeve Street and contains outdoor dining and active frontage, the small square contains a stair and a publicly accessible lift to provide access for people of all abilities, the lift also provides access to the retail level and retail basement car parking, it will be owned and managed by the retailer
- George to Mead streets contains outdoor dining and active frontage, it has a gradual slope and provides access for people of all abilities
- Mead to Pitt streets contains a series of ramps with a switch back set of ramps in the small square to provide access to people of all abilities
- Wellington to Kellick streets is located opposite Park Lane connecting to Waterloo Park, it is steep and not accessible to people of all abilities as neither Wellington nor Kellick streets are accessible at this location.



Sketch showing walkways connecting north-south streets with small squares located mid-block.

Private Space - Setbacks

Setbacks provide an intermediate space between ground level apartments and the street enabling people to protect their privacy with gardens and planting. These front gardens are good for the environment and provide variety and interest to passers-by in the street and amenity and identity for people living in apartments.

Where ground floors have retail uses setbacks are generally kept to zero. On George Street buildings on the eastern side are setback ten metres. This generous setback ensures the conservation of several significant trees. It captures the afternoon sun and is ideal for outdoor dining. The setback spatially widens the street emphasising it as the main street. The retail premises on this side of the street are deep to accommodate supermarkets or large fresh food stores, behind smaller shops and businesses lining the frontage.

West of George Street many street frontages are subject to flooding and flood planning levels lift ground floors above the street level, here setbacks are kept to zero. John Street has short blocks, car entries, apartment entries at ground level and is steeply sloping east of George Street here the setbacks are also kept at zero. Most residential entries and apartment frontages occur at ground level—on West, Mead, Pitt, Kellick, and the west side of Cooper streets. These have a three metre or more setbacks. Most of the setback areas contains front gardens and private entries for apartments that open on to them. Shared entries to apartment buildings have awnings or porches in the setback to provide shelter to front doors and individual character to each building.

Most buildings have upper level setbacks that lower the visible height of the street wall. Upper level setbacks maintain building separation distances and maximise sunlight to parks, streets and neighbouring buildings. Buildings of around nine stories have a single level upper level setback while the buildings of 11-13 stories have a double storey upper level setback. There are additional upper level setbacks to buildings north and north east of the small park to increase the amount of sunlight to it.

On Cope Street, narrow triangular setbacks allow the majority of the building façades that sit above them to be orientated so they receive two hours of midwinter sunlight while the facade below aligns with the existing street alignment.

Private Space - Awnings and colonnades

Awnings and colonnades protect shopfronts and shoppers from harsh sunlight and rain improving the amenity for shoppers and supporting the viability of shops.

Along the retail frontages of George, McEvoy and Wellington streets and at the base of towers continuous awnings protect shop fronts and residential building entries, provide amenity to pedestrians and minimise wind impacts from tall buildings.

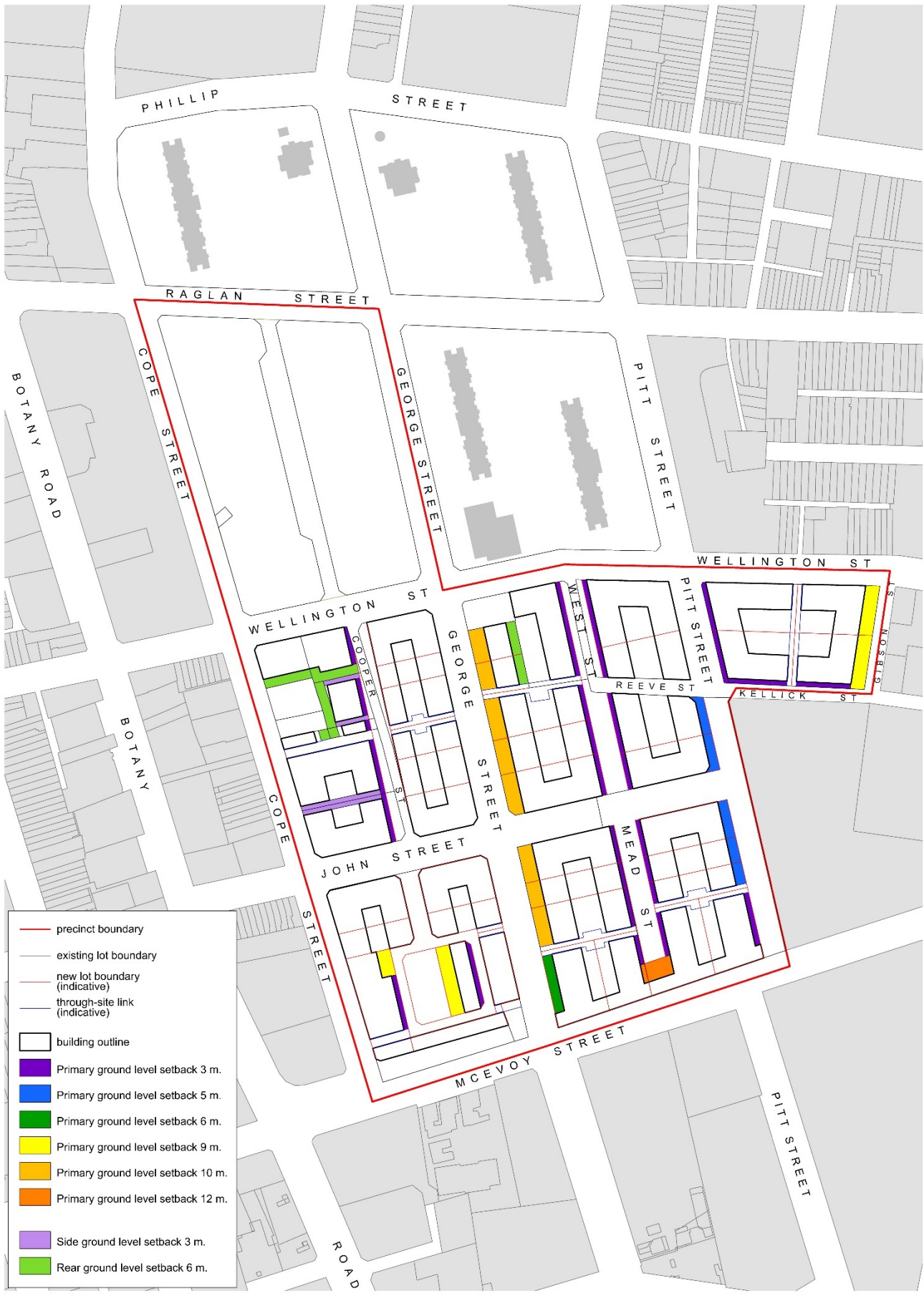
In some places where there is not adequate space for awnings, colonnades are provided to shopfronts. These are along the eastern side of Cooper Street, a narrower street, between Wellington and John Streets; and, on the south and east side of the square made by the bifurcated narrow Cooper Circuit.

At the south end of Mead Street, a colonnade links to McEvoy Street to increase pedestrian permeability.

Colonnades are three metres deep lined with active frontage and can contain outdoor dining areas.

Awnings can also be placed on residential streets to protect shared residential entries.

WATERLOO SOUTH – STREET LEVEL SETBACKS



Private Space - Building types - general

Use

Most of the development proposed [around 90% of the floor area] is residential.

Retail and commercial use ground floors are concentrated along both sides of George Street and along McEvoy Street and the ground floors to the towers. On the east side of George Street, the retail space is the full depth of block but due to the slope is below ground on the West and Mead streets frontages. On the east side between John and Wellington streets the retail frontage is continuous around the block and either side of the walkway. Here the retail area also occupies the full depth of the ground floor. South of John Street on George Street and along McEvoy Street the shops are limited to the depth of the buildings fronting the street.

The existing amount of commercial space in the buildings fronting Wellington Street between Cope and Cooper streets is maintained on the lower levels of new development.

Arrangement and Entry

Generally, buildings are arranged to form continuous street frontages, broken by mid-block walkways. Together they form courtyards within the blocks that are open to and divided by the walkways.

Building entries are from the streets with each building having a separate entry. Buildings have secondary access to courtyards.

Height

Generally, the buildings that have a west or east frontage are around eight storeys high for the full length of the streets they face. buildings that face parks have an extensive and green outlook and are thirteen storeys high. Along the wider George Street the height is eleven storeys with thirteen storey corner buildings to give emphasis.

Between the north south buildings and in line with the courtyards, buildings are limited to four storeys above the courtyard level. The lower buildings provide more light to the courtyards and John Street and assist in minimising wind impacts within the courtyards.

On Cope Streets adjacent to the one and two storey heritage buildings, buildings are limited to two storeys to provide an appropriate setting. On Cooper Street to the rear of the Cope Street heritage buildings the buildings are limited to four storeys to provide an appropriate setting.

On Cooper Street south of John Street the building height lowers to increase sun access to the small park.

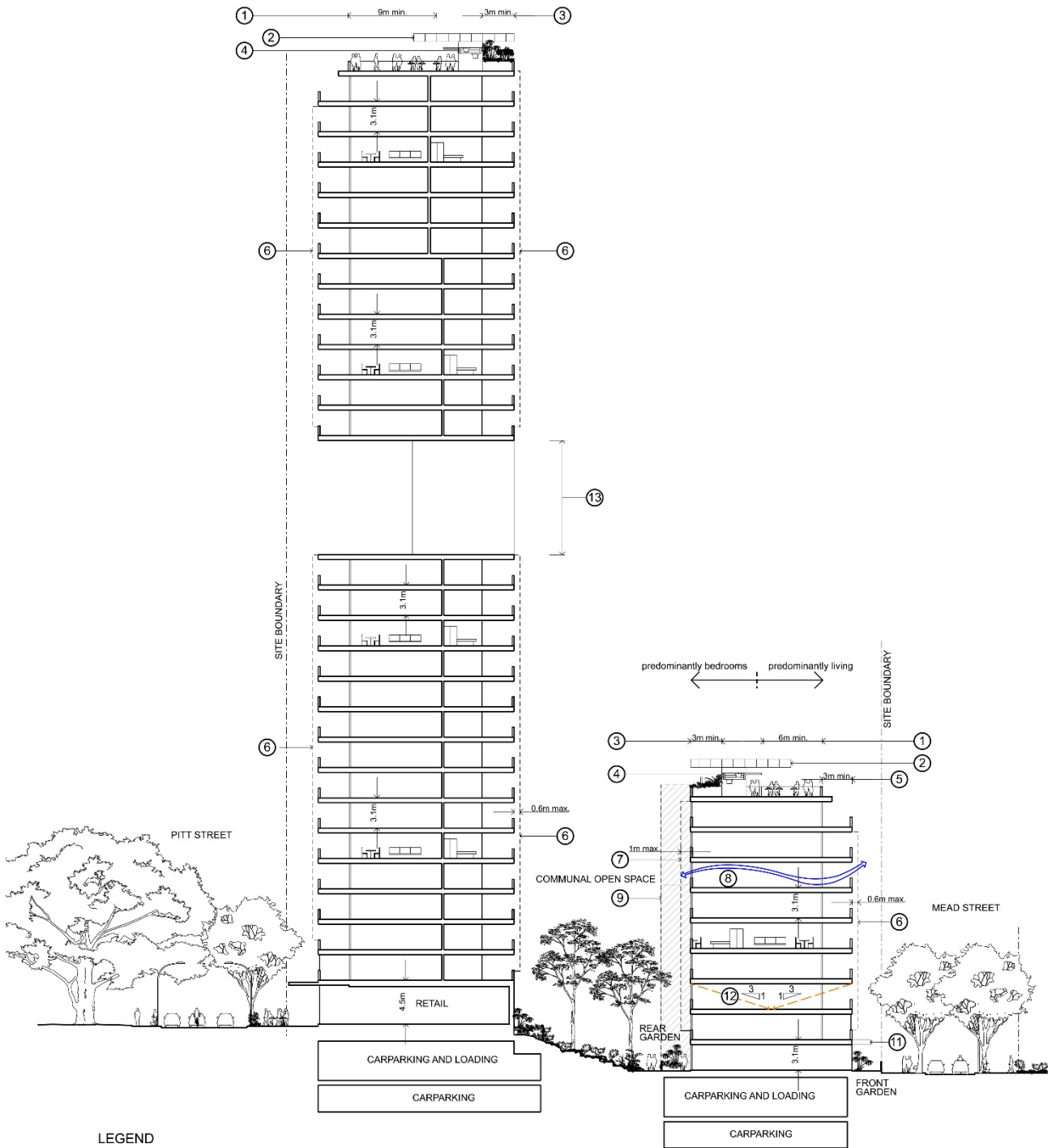
On McEvoy Street the height is limited to minimise overshadowing of neighbouring properties to the south in mid winter. Immediately north of the McEvoy Street buildings are three towers that front Cope, George and Pitt Streets.

Depth

Generally, building depths of the residential parts of buildings are limited to 16.5 metres. The depth assumes a minimum ceiling height of 2.7 metres and ensures a maximum half building depth to ceiling ratio of 3:1, noting that this is beyond a ratio of 2:1 required to provide good natural light but less than the height to depth ratio often found in apartment buildings today. Either side of Cooper Street the building depth is reduced to provide courtyard widths for adequate building separation.

Most buildings span between the active streets and the quiet courtyards. The streets are wider, and more sun filled than the courtyards. Given these circumstances apartments are best arranged with living rooms facing the streets and most bedrooms facing into the courtyards.

TYPICAL BLOCK ARRANGEMENT WITH TALL BUILDING – cross section



LEGEND

- ① principal usable part of communal open space
- ② maximise solar panels
- ③ green roofs and shared gardens
- ④ shared clothes lines
- ⑤ upper level setback
- ⑥ shading zone
- ⑦ projecting windows zone
- ⑧ cross ventilation
- ⑨ vertical circulation zone
- ⑩ continuous awning
- ⑪ entry awning
- ⑫ daylight
- ⑬ clear horizontal break to tall buildings

Private Space - Building types - towers

Towers are limited to the southern area near McEvoy Street, widely spaced and located to minimise mid-winter overshadowing of neighbouring properties to the south.

Towers have small, maximum 750 square metres building envelope floor areas to minimise the adverse effects of overshadowing and wind downdraft to footpaths and parks.

To minimise the effects of wind downdrafts, towers have:

- substantial, equal to a minimum of three storeys, clear breaks just below two thirds of their height, and above the height of surrounding buildings;
- awnings at ground level;
- strongly modelled facades; and
- rounded corners.

Minimising the adverse effects of wind must be a major component when determining design excellence of tower buildings in competition processes.

The towers at the south form a compositional pairing with existing towers in the north locating Waterloo north and south from within itself and in the surrounding areas when viewed on the horizon. This enhances Waterloo's distinctive character while integrating it with other nearby neighbourhoods like the Lachlan area that also is defined by a small number of towers on its southern limit.

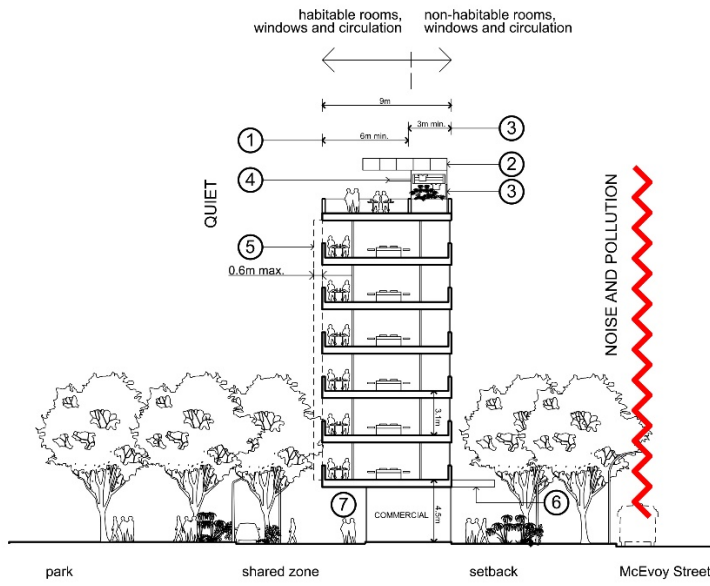
Private Space - Noise barrier buildings

McEvoy Street is a busy road with its vehicles producing noise and pollution. To protect the health and well-being of people in dwellings along McEvoy Street building depths are limited to nine metres to allow all habitable rooms to have windows facing north away from McEvoy Street. Private and communal open spaces must also face away from McEvoy Street. Non-habitable rooms, bathrooms and laundries, and common access corridors, stairs and lifts face McEvoy Street and windows not required for adequate ventilation of habitable rooms are also allowed. At the ends of these buildings projecting fins and other special window designs and devices are to be used to protect people in apartments from noise.

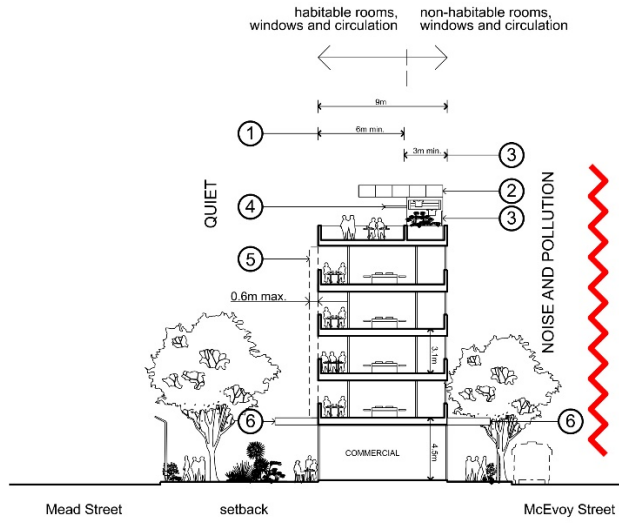
The continuous frontage of the two buildings is not broken by Mead or Cooper streets. They have zero setbacks to George and Pitt streets projecting beyond the building alignment to the north. The careful siting enables the buildings act as noise barriers protecting the residents of buildings further north and people enjoying the small park and in Mead Street from noise.

No residential apartments are located on the ground floor facing McEvoy Street.

ARRANGEMENT FOR BUILDINGS FRONTING McEVROY STREET – cross section



Buildings fronting Cooper Park and McEvoy Street



Buildings fronting Mead Street and McEvoy Street

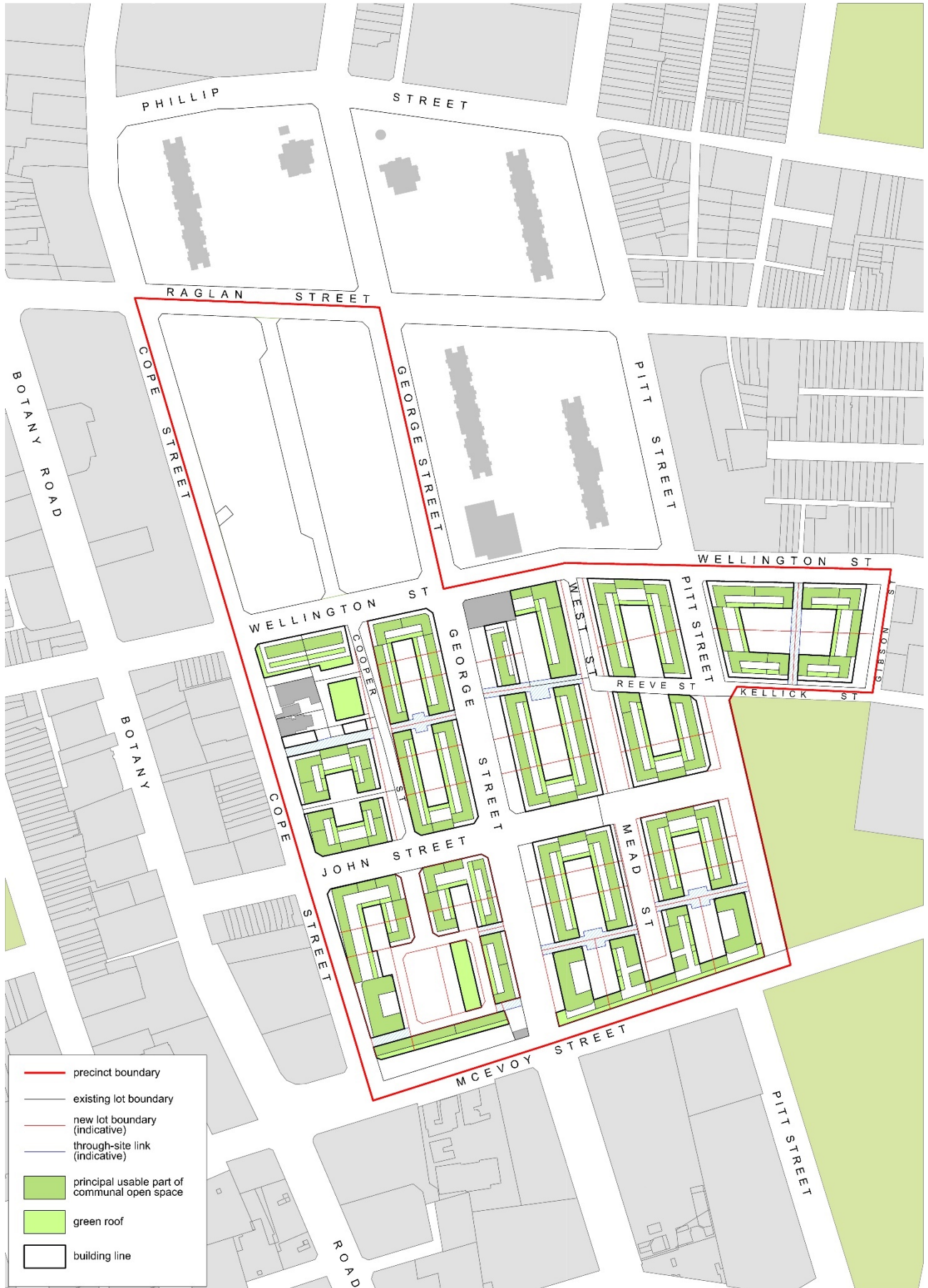
LEGEND

- ① principal usable part of communal open space
- ② maximise solar panels
- ③ green roofs and shared gardens
- ④ shared clothes lines
- ⑤ shading zone
- ⑥ awning
- ⑦ colonnade

Communal Open Space - Roofs

The roofs have abundant access to sunlight and the principal useable parts of communal open space are best placed here. The communal open space is located in a six metre zone overlooking the streets and walkways. To protect the quiet enjoyment of the courtyards a three metre zone on the courtyard side contains landscaping including shared productive gardens. In between, stair and lift access and small areas of plant are located. Space for cloths drying with access to sunlight is also provided on roofs in any of these areas. The roofs are covered with solar panels to a maximum extent except when the minimum sun access is required for the principal usable part of communal open space or for the clothes drying areas.

WATERLOO ESTATE – ROOF LEVEL COMMUNAL OPEN SPACE AND GREEN ROOFS



Communal Open Space - Courtyards

Generally, courtyards are eighteen metres wide to provide adequate separation between the buildings that face across them.

On the narrower block between Cooper, Wellington, George and John streets this is reduced to 13.5 metres. Here the narrower buildings facing Cooper Street do not require habitable rooms to face into the courtyard.

Immediately south of John Street either side of Cooper Street the buildings are limited to four storeys and, consequently, here the courtyards are 12 metres wide.

Windows, and common circulation stairs and lifts can project into the courtyard areas to a limited extent.

Generally, courtyards consist of a central communal open space. Protected from the streets they are quiet and shaded. They are predominately landscaped with trees. There are areas for seating and quiet repose and small scale children's play. They can contain composting areas and some shared productive garden areas.

At courtyard level private gardens three metres wide provide access and maintain privacy between courtyard level apartments and the communal open space.

Walkways provide access and egress from courtyards for maintenance and escape.

Either side of George Street retail areas extend under the courtyards.

WATERLOO ESTATE – GROUND LEVEL DEEP SOIL AND PLANTING LOCATIONS



Common Car Parking

Waterloo is well serviced by public and active transport. It has a metro station and is within walking distance of Redfern and Green Square heavy rail stations. Several bus routes pass through or stop nearby. Major regional bicycle paths intersect Waterloo on both north south and east west axes. It is an easy bicycle ride and a comfortable walk from Waterloo to schools, regional open space, sports fields, Green Square town centre and Central Sydney.

Consequently, car parking requirements are minimal. Carparking is restricted to basements.

Car park entries are concentrated along John Street and restricted along Cope, Cooper, George, Mead, Kellick, Wellington, Gibson and McEvoy streets and from walkways. Small shared driveways are proposed at the northern and southern ends of the Cope, Wellington, Cooper, John streets block for car park entries. There are two car park entries from Reeve Street and one from the northern part of West and Pitt streets.

Carparking is not allowed under setbacks and is minimised under walkways and courtyards to maximise deep soils areas and landscaping.

WATERLOO ESTATE – CARPARK LOCATIONS AND ENTRIES



Local Climate Responsive buildings

The planning of the buildings will be responsive to Sydney's climate and respectful to the urban context. The buildings heights are above the height of trees and continuous long the north south axis. To reduce heat, build up in the street corridors, which may not escape at night, building facades should be designed to minimise reflected and radiated heat.

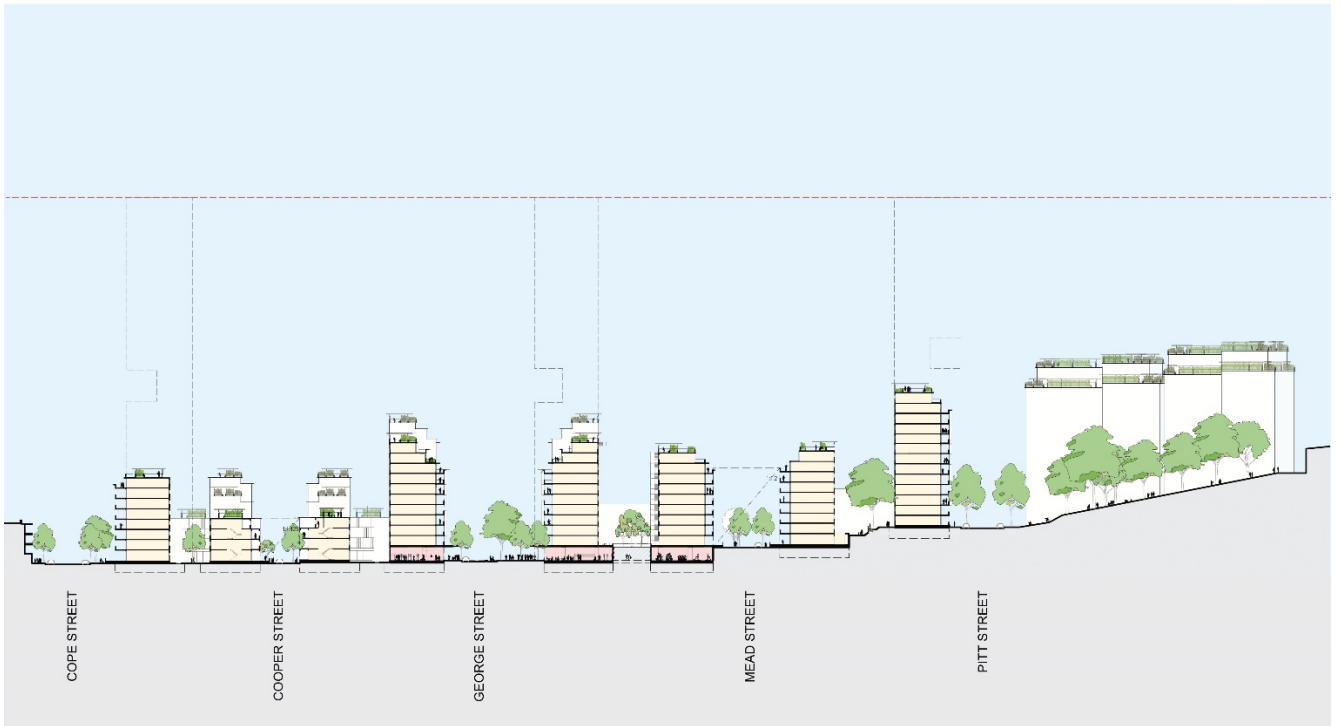
The following measures guide the resolution of the facades:

- Minimising the extent of unshaded facade glazing.
- Distribution of facade glazing horizontally, with solid walls below sills, maximising the penetration of natural light into the interior, whilst minimising reflected heat to the exterior.
- Minimising glazing with high solar reflectivity, which can increase heat in the local environment and reduce the benefits gained from solar exposure in winter.

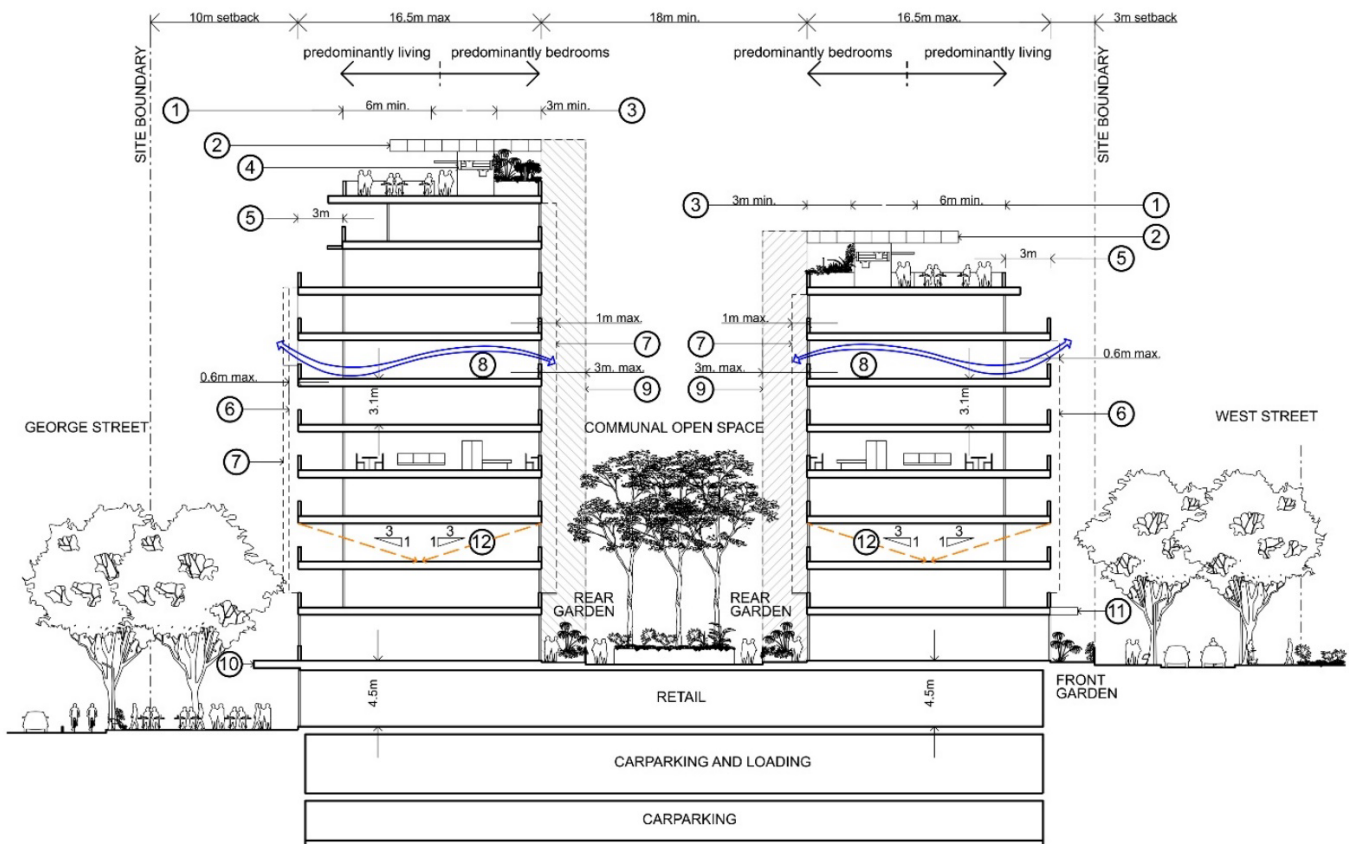
Projecting windows are encouraged to catch midwinter sunlight on the west facing facades as the orientation of these facades is slightly south of west. Projecting windows capture the northern light and protect against the greater heat of the western sunlight. Projecting windows are also encouraged on south facing facades to capture some early morning sunlight around the equinox and in courtyards to capture northern sun and aid visual privacy by encouraging windows to not face into each other across the courtyard.

On the roofs, solar panels and roof planting will be combined for the greatest effective energy production, reflect heat and contribution to cooling the building below by shading.

To lower maintenance costs and to maintain the appearance of buildings over many years, long life and low maintenance façade materials should be used.



Cross section through precinct showing arrangement of perimeter blocks located between north-south streets.



Detail cross section of perimeter block located between George and West Streets.

Reference design of a typical block

The block bounded by George, John, West streets and the George to West streets walkway is examined in greater detail to illustrate a typical arrangement of different uses, a group of buildings with individual entries, vertical circulation and apartments. It is a fairly typical block with a mix of uses, each of the three main building height ranges and is set on the slope from George to West streets.

General arrangement – street frontages

Building to the street frontages forms a three-sided perimeter range of buildings surrounding a courtyard that opens to the walkway to the north. This block contains a supermarket and other retail and commercial uses on the George Street level for the full depth of the buildings and courtyards above and loading and carparking underneath.

On the west, George Street is flat and the buildings are setback ten metres from the existing street alignment creating a publicly accessible space in front of a row of shops. This space allows the conservation of some significant trees and areas for outdoor dining and goods display as well as informal seating and landscaping. The retail frontage is protected by a continuous awning and interspersed with three residential entry lobbies to the apartment buildings above.

To the south, the existing John Street rises by almost four metres from George Street to the new West Street. There is a shop on the corner to George Street. Next to this the loading and carparking entry and then the residential entry lobby to the central building on this frontage. The apartments are raised above the street level ensuring privacy to their lowest level.

The new West Street runs along the land contour to the east and is flat. There is a three metre setback from the new street alignment occupied with the private gardens and street entries to the street level apartments that face it. These apartments sit over the rear of the George Street facing retail area. Between the private gardens are three apartment entries with front doors protected by awnings or porches.

The north is bounded by a six metre wide right of way pedestrian walkway that widens at the centre of the block to form a small square. The square has stairs, a lift and trees and the supermarket entry at the George street level. It is overlooked by apartments on both sides. The lift connects the supermarket entry to the retail car park and makes it accessible to people from the higher part of the site. This allows it to be also used by people to negotiate the slope. The small square is ideally suited as an outdoor dining area. The courtyard is entered from the square at the West street level.

The multiple shops and apartment building entries, small gardens and the thoughtful relationship to the topography all contribute to streets with a variety of characters: an active, tree filled and generous main street; or quiet, green residential streets. These simple relationships combine to create a good place for the community to enjoy.

Communal courtyard

The courtyard sits on structure above the retail levels below and is enclosed on three sides and open to the walkway on the northern side gaining sun access. On the other three sides courtyard level apartments have private gardens that provide privacy between the private dwelling interiors and the communal courtyard. The gardens open directly onto a walkway surrounding the central planting. The lobby and stairs of each apartment building also open to the walkway so that it is accessible to all apartments and can be used as a path of travel for escape. Plant and equipment should not be placed in the courtyard.

The courtyard is extensively planted providing a quite retreat for people at the centre of each block. It may contain small seating areas and composting and gardening facilities.

Communal roof terraces

Each building has a roof terrace that is bathed in sunshine and is the principal usable parts of communal open space. Stairs and lifts connect to the apartments they serve located directly underneath. The multiple buildings ensure an equitable distribution of communal space for every apartment. The active area of the roof terraces face out to the streets they overlook. The courtyard side has planted areas ensuring quietness. Clothes drying is accommodated where it receives sunshine and breeze and areas of mechanical plant are acoustically enclosed. The roofs are shaded by extensive areas of solar panels that produce sustainable energy and reflect heat.

Car parking

There are two basement levels of car parking the first contains loading facilities for the supermarket and other retail and residential loading needs, waste storage, plant and equipment, a some retail car parking and a link to the lots north of the walkway that share the car park entry.

Apartment building layouts

There are seven buildings of four to thirteen storeys that line the streets clearly, define them without creating ambiguous space and equally sharing the amenity they provide without preferencing one building over another.

Along George Street the height is eleven storeys with a thirteen-storey corner building that emphasises the intersection with John Street. The two topmost floors are setback three metres diminishing the apparent height when viewed from the street with a greater view of the sky for pedestrians whilst allowing more light into the street to encourage tree growth and for the amenity of people in the street. The predominate street wall height of around 30 metres matches the combined width of the street and its ground level setbacks. This relationship allows winter sunshine to reach the apartments throughout the year. Similarly, on West Street the seven-storey street wall height, with the upper storey setback, is around 23 metres high, a little more than the combined street and setback width of 20 metres. The centre building on John Street is lower, four storeys high, allowing more light into the east west orientated street, more view of the sky from within the courtyards and separate the range of buildings on the other two streets. The syncopated rhythm of building heights and light in John Street enlivens makes more distinctive its character.

Each building is organised around a central stair and lift that connect the apartment floors to basement carparking, street level entry lobby, courtyard level and communal roof terrace. The length, area and cost of shared internal lobbies are minimised. It limits the number of households that share a residential floor enabling people to better know their neighbours well contributing to community formation and trust. It eliminates the need for long corridors with multiple apartment entries where you are less likely to know everyone that shares this space. It more easily allows cross through naturally cross ventilated apartments without needing double height apartments that require stairs contributing cost and additional area to obtain the same level of amenity.

The apartment sizes meet the criteria of the Apartment Design Guide. Larger apartments are located in the upper level setback stories and have generous terraces in the setback zone. There are between 12 and 53 apartments in each building. The building depth encourages predominately cross ventilated apartments. Living rooms and balconies overlook the active public streets and bedrooms overlook the quiet private internal courtyard.

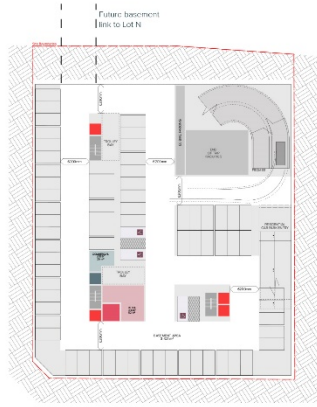
As the buildings' height is above the tree line forming north south street corridors careful design is required to reduce the heat that the buildings could potentially reflect and radiate by limiting and shading glazing and encouraging windows to project to catch sunlight from the north.

The configuration of the buildings promotes the design of beautiful apartments by responding to the shape, size and character of the surrounding streets and courtyards and the building form that houses them. The dimensions and arrangement allow for a variety of easy to plan simple apartment layouts with equitably distributed amenity and without the need to resort to complex forms and solutions.

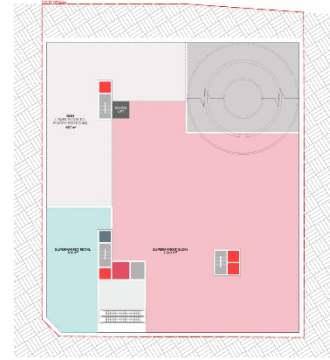
WATERLOO ESTATE – REFERENCE DESIGN – LAHC PLANNING PROPOSAL REQUEST



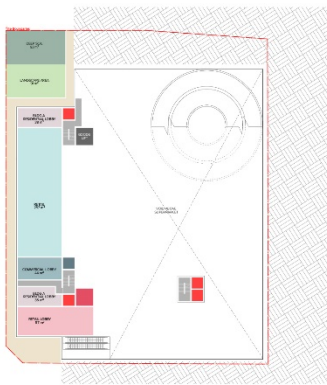
Basement 3+4



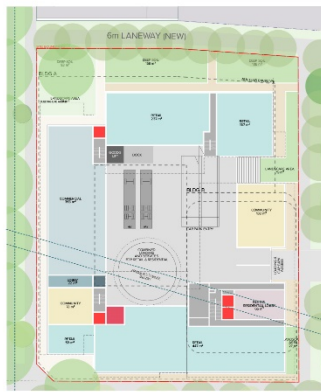
Basement 2



Basement 1



Lower Ground



Street level



Level 1



Level 2

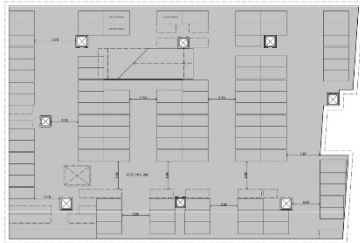


Level 3

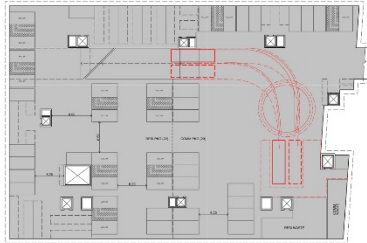


Level 4

WATERLOO ESTATE – REFERENCE DESIGN – CoS PLANNING PROPOSAL



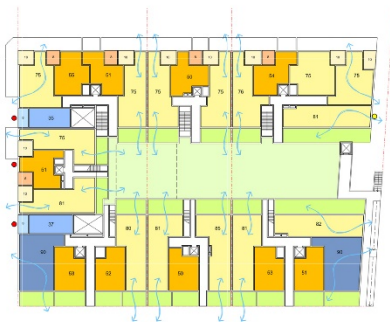
Basement 2



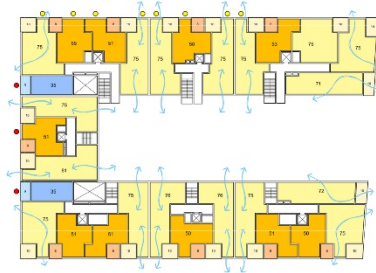
Basement 1



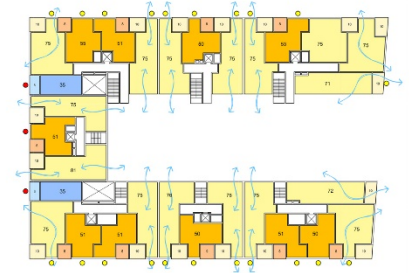
Street level



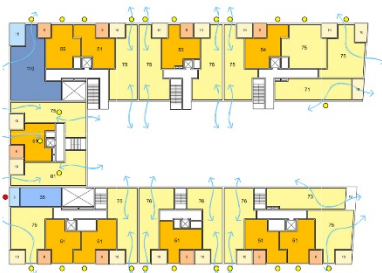
Level 1



Level 2



Level 3



Level 4



Level 5



Level 6

WATERLOO ESTATE – REFERENCE DESIGN – LAHC PLANNING PROPOSAL REQUEST



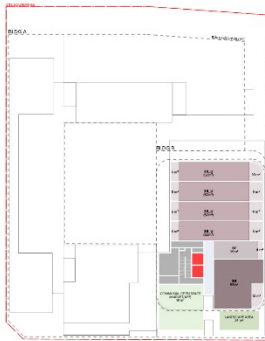
Level 5



Level 6



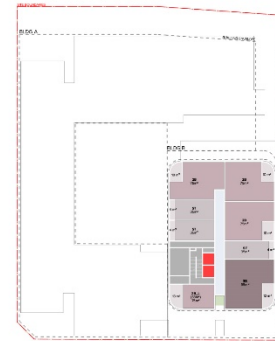
Level 7



Level 8



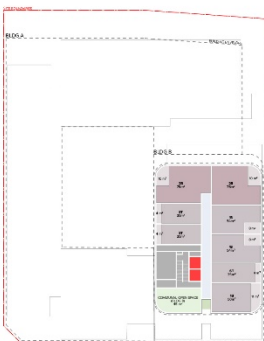
Level 9



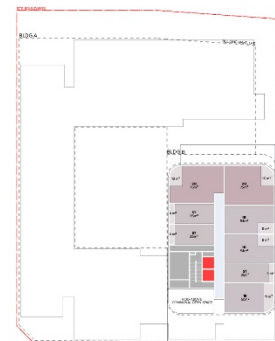
Level 10+12



Level 11+13

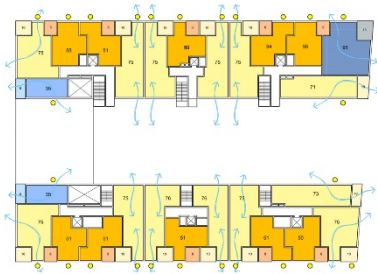


Level 14



Level 15

WATERLOO ESTATE – REFERENCE DESIGN – CoS PLANNING PROPOSAL



Level 7



Level 8



Level 9



Level 10

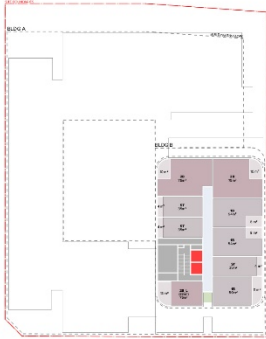


Level 11+12

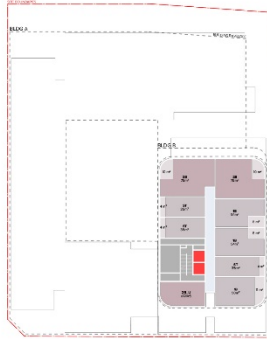


Roof level

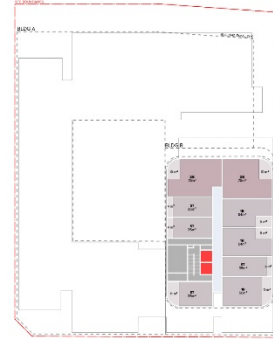
WATERLOO ESTATE – REFERENCE DESIGN – LAHC PLANNING PROPOSAL REQUEST



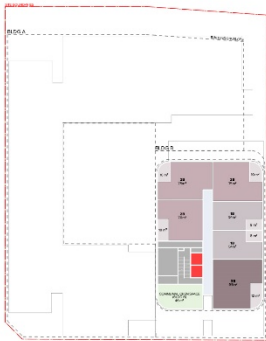
Basement 16+18



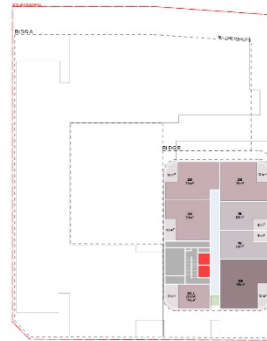
Level 17+19



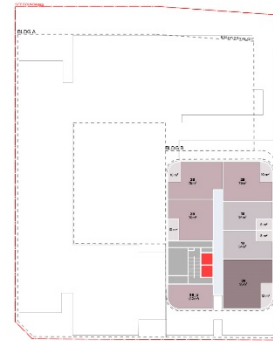
Level 20-22



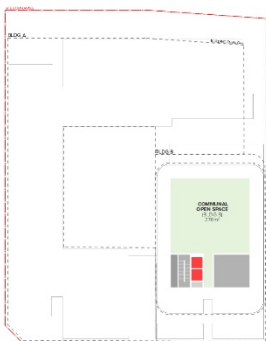
Level 23+24



Level 25, 27, 29

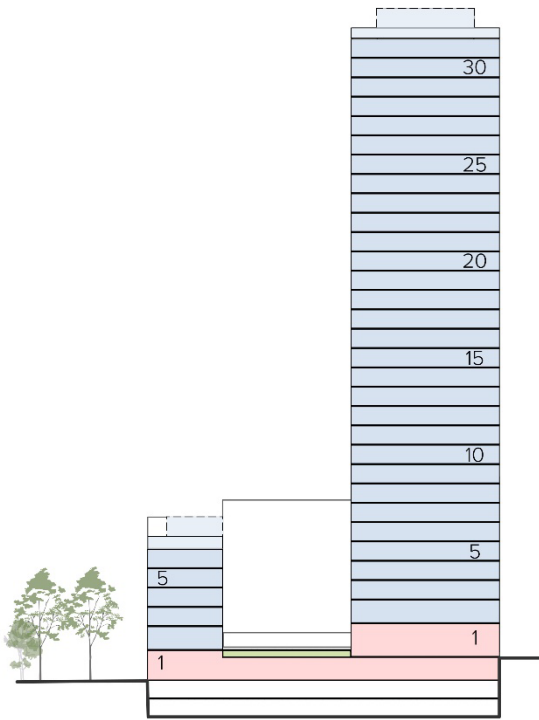


Level 26, 28, 30

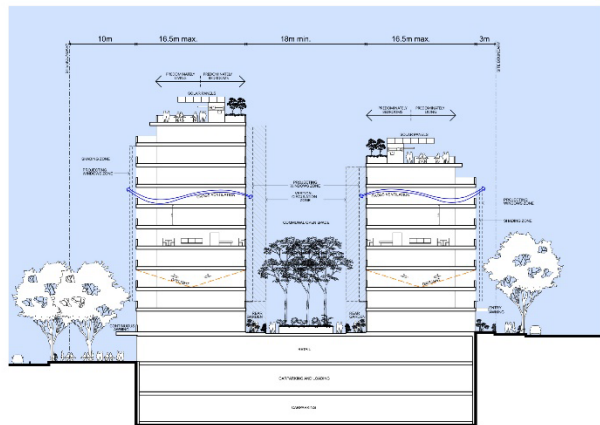


Roof level (Level 31)

WATERLOO ESTATE – REFERENCE DESIGN – COMPARATIVE CROSS SECTION



LAHC Planning Proposal request



CoS Planning Proposal.

LAHC Preferred Masterplan

In August 2018, the NSW Government released a brochure containing three options for the redevelopment of the Waterloo Estate, one proposing up to 7,200 dwellings, multiple towers of up to 40 storeys, and the redevelopment of Waterloo Estate as part of the NSW Government's Communities Plus program. The brochure options proposed a mix of 30 per cent social and 65 per cent private housing and allowed for 5 per cent of new dwellings to be delivered as affordable housing.

After exhibiting three options for the site in 2018, the Land and Housing Corporation (LAHC) released its preferred masterplan for the site in January 2019. The preferred option proposed that existing buildings would be replaced by around 6,800 dwellings in a gross site area of around 19 hectares, built over 20 years, with towers of up to 40-storeys and a target of 30 per cent social housing and 5 per cent affordable housing.

The community expressed significant concerns about the proposals.

The City's analysis of the Preferred Masterplan revealed several concerns, these included:

- An unprecedented density for an area of this size in Australia and a rarity in other OECD countries
- The use of the City's streets to accommodate development
- Building height that interfered with the safe operation of Sydney airport
- Inadequate sunlight to the proposed parks
- The closure of George Street
- Diverting the regional bicycle path away from George Street, around the site
- The use of the closed George Street to meet the area requirements for parks
- Narrow new streets in a high intensity development
- Loss of significant trees
- Inadequate building separations that did not meet the design criteria of the Apartment Design Guide
- A preponderance of towers that overshadowed streets, courtyards and lower buildings
- Towers with no or minimal setbacks to break downdrafts of winds to keep streets and parks safe and comfortable for daily use
- Inequitable distribution of amenity – the towers receive sunlight, the low buildings are overshadowed
- Carparking connection tunnels under city streets
- No apparent attention to energy saving and amenity of apartments through passive design strategies
- No consideration of access for people of all abilities throughout the neighbourhood

WATERLOO ESTATE – LAHC Preferred Masterplan – March 2019



Review of the LAHC Preferred Masterplan

In response to significant concerns about the Preferred Masterplan, the City undertook a more detailed urban design study of the site and reasonable precedents, in order to generate better, more acceptable and more sustainable solutions.

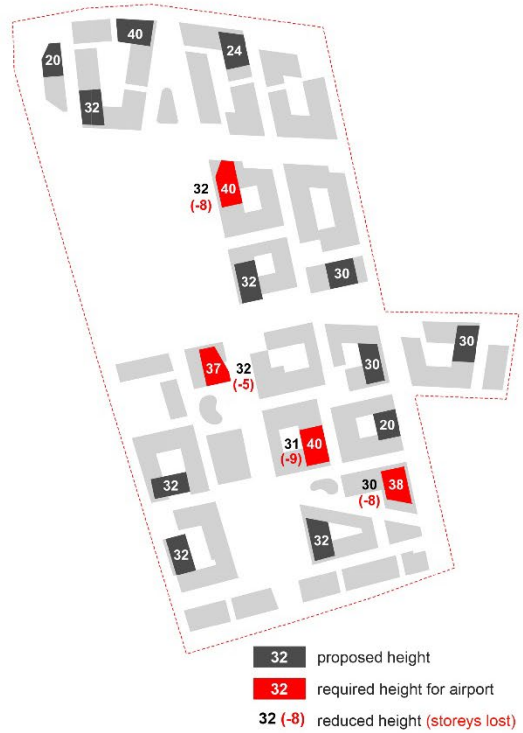
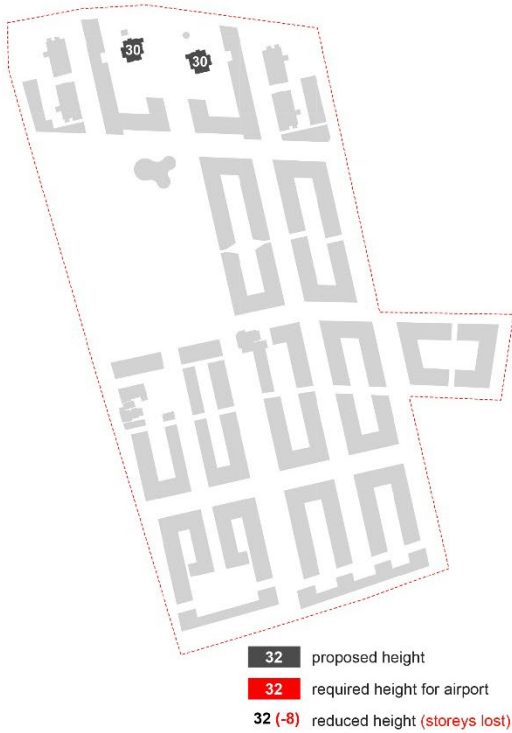
Key areas of precedent investigation included open space quantity, quality and arrangement; streets; retail characteristics; and density.

Comparing the precedent studies with the Preferred Masterplan confirmed the residents' concerns that the proposal was poor and would produce a poor place, too dense, lacking in good parks, and served by unconventional narrow streets with poor amenity.

MATTERS OF CONCERN WITH LAHC'S PREFERRED MASTERPLAN

CoS Alternative Approach

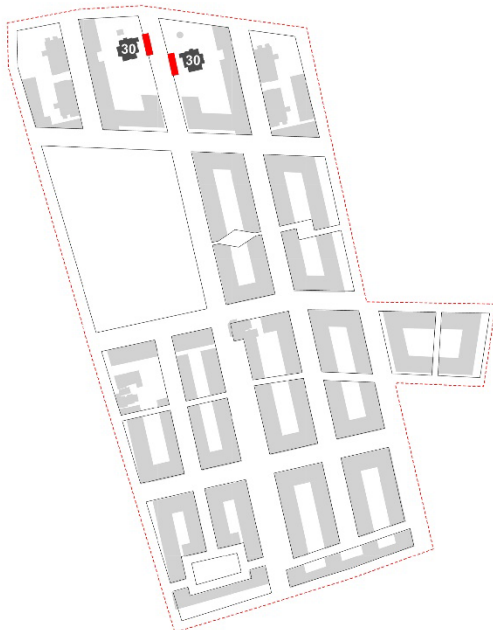
LAHC Preferred Masterplan



Number of towers that would breach height limits required for safe air traffic operations

CoS Alternative Approach

LAHC Preferred Masterplan



"... it is recommended that any proposed tall building located on the corner of a block facing outward toward the fringe of the city should have a podium around the base to deflect downwash from pedestrians at ground level. The **size of the tower setback** will depend on the size, shape, and orientation of the tower, but **should be in the order of at least 8 m** on the windward and side faces".
(CPT 2013: Draft Wind Assessment for the City of Sydney)

Number of buildings that would create uncomfortable or hazardous wind conditions at street level

Waterloo compared to some City of Sydney neighbourhoods

This urban design analysis compares areas in the City of Sydney, setting a context for parameters for the reconstruction of the Waterloo estate.

Some of the densest neighbourhoods in the City of Sydney were analysed and compared:

- Victoria and Epsom Park (completed and planned urban renewal areas)
- Green Square Town Centre and Epsom Park (planned urban renewal areas)
- Kings Cross, Potts Point and Rushcutters Bay

The comparisons of urban form revealed key factors relevant to the planning of future development at Waterloo.

Open Space:

- With some exceptions, development is generally centred around a main park with some smaller additional parks located away from the centre.
- The area of land dedicated to parks in these study areas varies with the average being around 15%.
- Each combined estate or neighbourhood contains a main park of at least 2.9ha.

Streets:

- Dedication to streets is extremely consistent in the urban renewal areas, at around 34-35%.
- A lower figure in Kings Cross, Potts Point and Rushcutters Bay is reflective of the period of development. Streets in the urban renewal areas are more comparable to Waterloo because they have been designed to enable buildings to meet current amenity standards as set out in the Apartment Design Guide (ADG), as well as delivering accessibility and high quality public spaces.

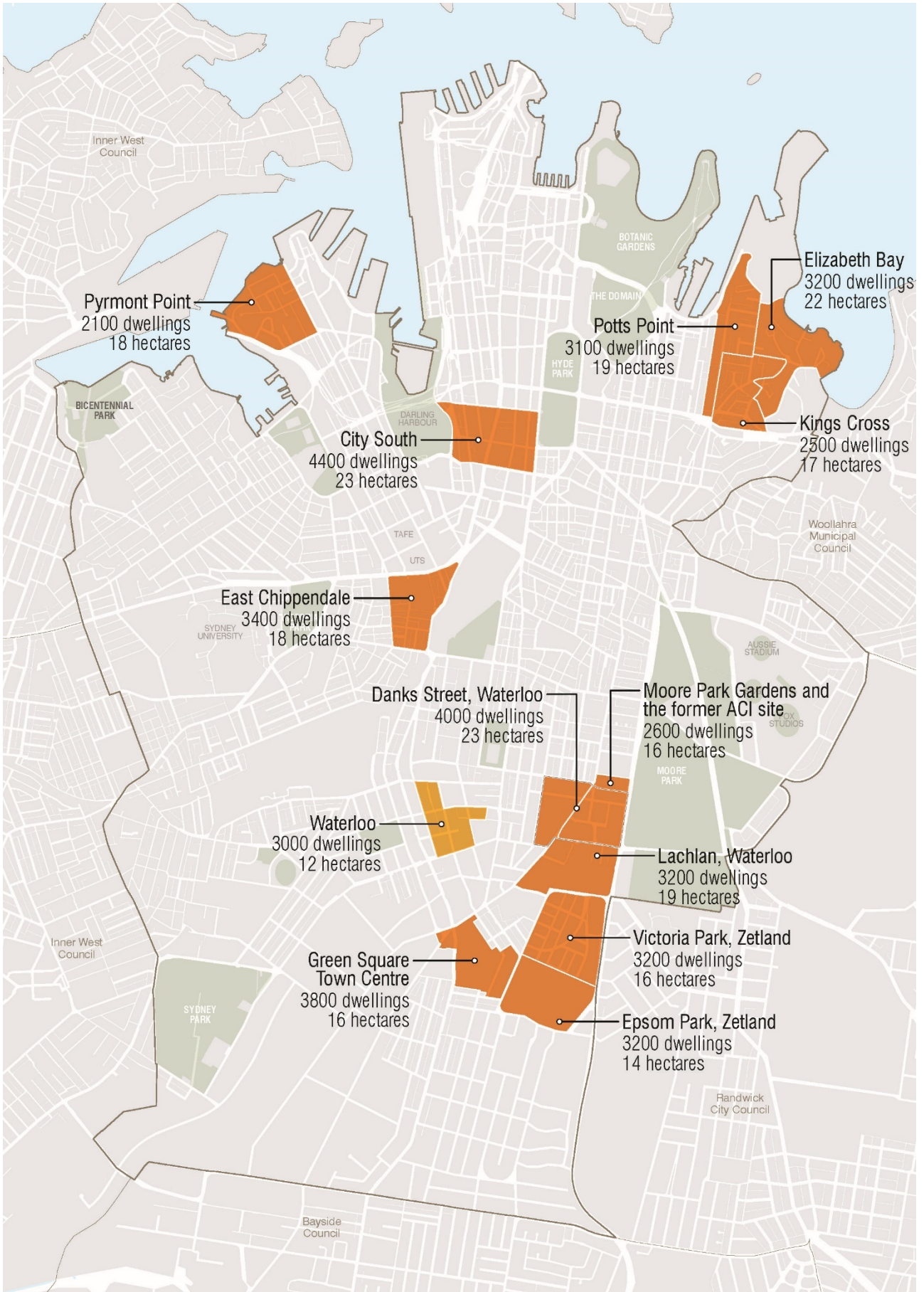
Retail:

- Retail frontages for urban areas of this scale and density vary from 2.7 to 5km required to serve the needs of the community locally.

Density:

- Density varies only slightly between 145 dw/Ha to 161 dw/Ha.

DENSITY OF SIMILAR SIZED AREAS WITH THE CITY OF SYDNEY LGA



Victoria Park and Epsom Park

Nearby to the south west of Waterloo are the recently completed neighbourhood of Victoria Park and the rapidly developing neighbourhood of Epsom Park. With a combined area over four times the size of Waterloo [almost 45 hectares] they will have around twice the number of dwellings [6600+] as Waterloo south will have.

Public Space

Streets

There is a relatively normal amount [34%] of land dedicated to streets in this area. A loose grid is orientated close to the cardinal points, skewed to the existing lots and surrounding streets, and with more north-south streets than east-west. This provides more sunlight to the streets and lessens the extent of south facing facades.

Parks and community facilities

There is a relatively normal amount [15%] of land dedicated to parks in this area including a main park that is well over 2 hectares in area. Each neighbourhood has its own main park and some smaller parks at their edges. The two main community facilities are located with an immediate relationship to public parks and occupy around half a hectare of land.

Non road based transport

Two regional cycle paths intersect the area linking it to its surroundings including the Green Square Town Centre where the nearest train station is located. A transit route reserved for a future light rail passes through from the east to the north.

Private Space

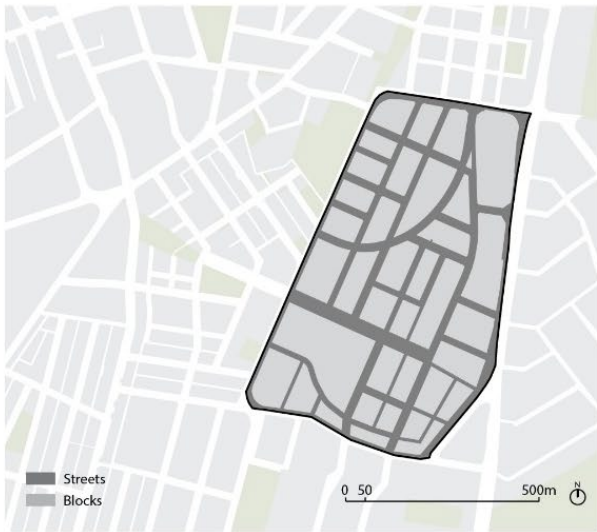
Blocks and Lots

The blocks are similar in size to the surrounding areas although the number of lots is far less. The blocks are generally orientated with the long axis orientated north south maximising the streets exposure to sunlight. Single lot blocks have limited the variety in architectural character.

Retail frontage

Retail frontage is concentrated at and along the transit route and fronting the main parks, and on the surrounding streets.

VICTORIA PARK + EPSOM PARK



34% dedicated to streets (15.2Ha)



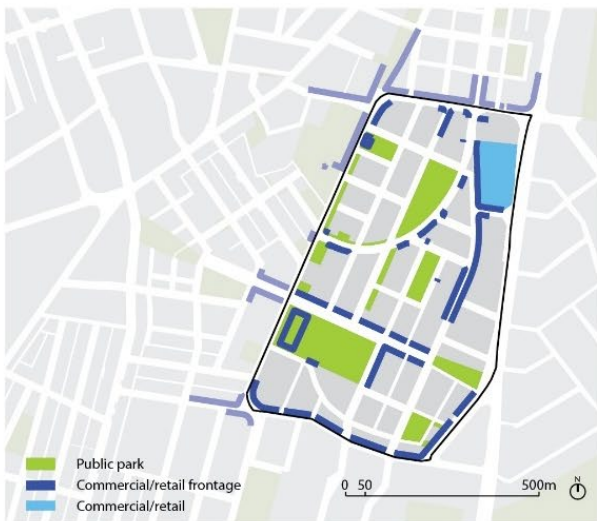
15% dedicated to public park (6.7Ha)
0.49Ha of community facilities



The regional cycle network runs through the precinct aligned with proposed transit stops.



38 Blocks + 67 Lots



2.7km of ground level commercial/retail frontage



44.75ha



6,638 Dwellings (existing and proposed)
148 Dw/Ha



34% Streets



15% Park
2.9Ha Main Park



38 Blocks
67 Lots



2.7km Retail frontage

Green Square Town Centre and Epsom Park

Nearby to the south and west of Waterloo are the rapidly developing Green Square Town Centre and Epsom Park. At almost four times the size of Waterloo [36+ hectares] they will have around double number of dwellings [5800+] as Waterloo south is planned to have.

Public Space

Streets

There is a relatively normal amount [34+%] of land dedicated to streets in this area. A loose grid generally orientated close to the cardinal points, although distorted and skewed to the existing lots and surrounding streets, with more north-south streets than east-west providing more sunlight to the streets and lessening the extent of south facing facades.

Parks and community facilities

There is a relatively normal amount [15%] of land dedicated to parks in this area including a main park that is well over 2 hectares in area. Two main community facilities are located with an immediate relationship to public parks and occupy around half a hectare of land.

Non road based transport

Two regional cycle paths intersect the area linking it to its surroundings including the Green Square Town Centre where the nearest train station is located. A transit route reserved for a future light rail passes through from the east to the north.

Private Space

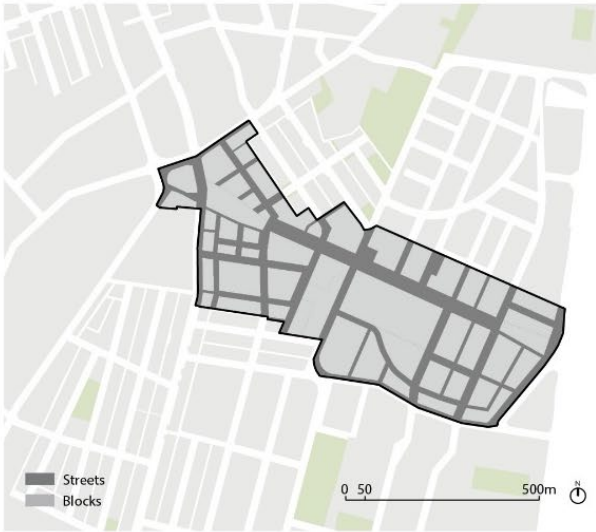
Blocks and Lots

The blocks are similar in size to the surrounding areas although the number of lots is less.

Retail frontage

Retail frontage is concentrated onto the surrounding streets and along the transit route and facing the main parks.

GREEN SQUARE TOWN CENTRE + EPSOM PARK



34.5 % dedicated to streets (12.58 Ha)



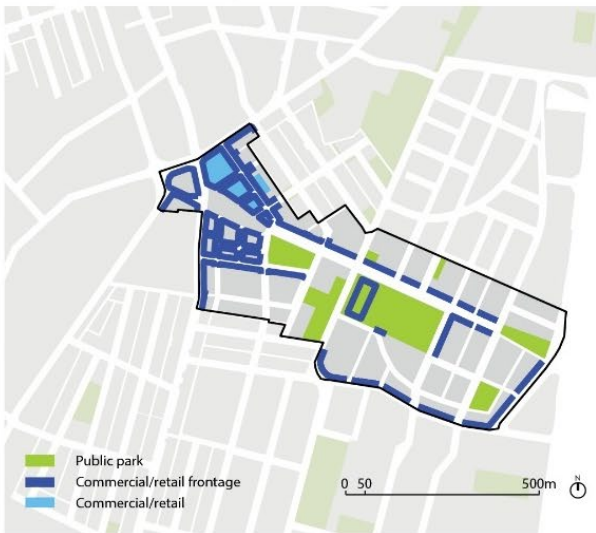
16.8 % dedicated to public park (6.15Ha)



The regional cycle network runs through the precinct aligned with proposed transit stops.



42 Blocks + 54 Lots



4.54km of ground level commercial/retail frontage

-  36.48 Ha
-  5815 Dwellings (Proposed) 161 Dw/Ha
-  34.5 % Streets
-  16.8 % Park
2.9Ha Main Park
-  43 Blocks
54 Lots
-  4.54 km Retail frontage

Kings Cross, Potts Point and Rushcutters Bay

At a similar distance away from Central Sydney as Waterloo, are Kings Cross, Potts Point and Rushcutters Bay. These are some of the densest areas in Australia. At over four times the size of Waterloo [almost 52+ hectares] they have slightly more than twice the number of dwellings [3000+] as Waterloo south is planned to have.

Public Space

Streets

There is slightly less than the relatively normal amount [at 29%] of land dedicated to streets in this area. A topographically determined street layout dominates in this hilly area. Where there is less slope a loose grid orientated close to the cardinal points, skewed to the original lots dominates.

Parks and community facilities

There is a slightly less than relatively normal amount [almost 14%] of land dedicated to parks in this area, given an earlier lack of park dedications. Parks and squares have later been added by locating them on top of carparks and resumed land, and these are sometimes less than satisfactory. The main park is well over 4 hectares in area is located by the harbour on flat land. The main community facilities include a school and hospital that serve the greater community.

Non road based transport

There is a train station at Kings Cross that is within walking distance of most of the area. Separated cycle paths are planned for the area but not yet implemented.

Private Space

Blocks and Lots

There are slightly fewer blocks than normal as there are some streets that do not connect due to topological constraints and historic development patterns. Some of the larger blocks contain large institutions.

Retail frontage

There is a relatively large length of retail frontage concentrated around the station and radiating from it in several directions. Darlinghurst Road and Macleay Street serve as a main street on the ridge and generally run north south.

KINGS CROSS + POTTS POINT + RUSHCUTTERS BAY



29% dedicated to streets (15 Ha)



13.7% dedicated to public park (7.2Ha)
2.9Ha Community facilities (outside parks)



The regional cycle network runs through the precinct



40 Blocks + 590 Lots



5km of ground level commercial/retail frontage



52.44HA



7,586 Dwellings
145 Dw/Ha



29% Streets



14% Park
4.5Ha Main Park



40 Blocks
590 Lots



5km Retail frontage

Waterloo

Public Space

Streets

Waterloo has too few streets. Only 25% of its land area is dedicated as streets, whereas in other places in the City of Sydney it is normal to have 30-35% of the land as streets. The street layout is disjointed, limiting access into and through the area, isolating it from the surrounds. Most of its streets are around 20 metres [one chain or 66 feet] wide and support a thick canopy of trees, comfortable footpaths and verges, traffic lanes and car parking. There are also some streets [around 6 metres] that are too narrow to contain safe footpaths, have little or no room for tree planting. Many of the existing streets in the east are too steep to be easily accessible to everyone.

Parks

There are no parks in the Waterloo estate. Some large open green areas function somewhat like parks, but their ambiguous ownership limits their use by the wider community, and they lack activity. The parts of open space that present somewhat like parks are small and isolated to northern part of the estate.

Public and active transport

Waterloo estate is adjacent to a new Metro station, in walking distance of Redfern and Green Square rail stations, crossed by two regional bicycle paths and served by several bus routes. Waterloo sits around the crossing of major north-south [George Street] and east-west [Wellington Street] regional cycle paths., these streets will connect people through the area and link Waterloo to the city in the north; Green Square Town Centre in the south [completed]; Alexandria Park and Community School in the west and Moore Park in the east. Redfern and Green Square railway stations are less than a ten-minute walk [800 metres] from the estate. The new metro station will be immediately adjacent to the estate.

Private Space

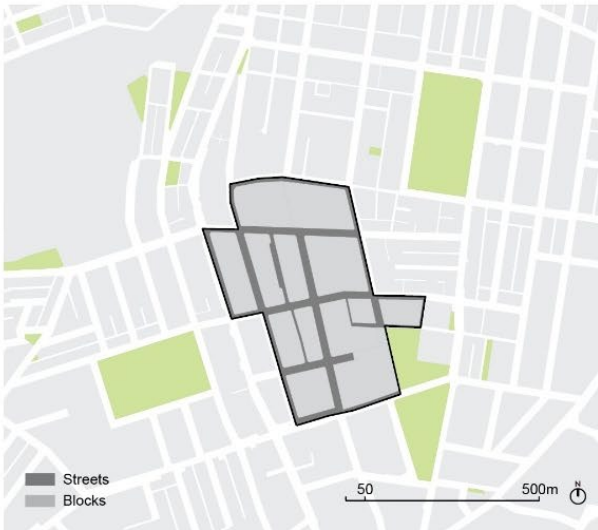
Blocks and Lots

The previous land resumptions and amalgamations have left Waterloo with relatively too few blocks and lots. This limits flexibility for incremental change, limits variety and creates large residential communities that are difficult to manage.

Retail frontage

Waterloo is underprovided with retail space. People travel long distances to obtain daily needs and the streets lack activity that might otherwise be stimulated by retail frontages on the streets.

WATERLOO – existing neighbourhood



25% dedicated to streets (5.3 Ha)



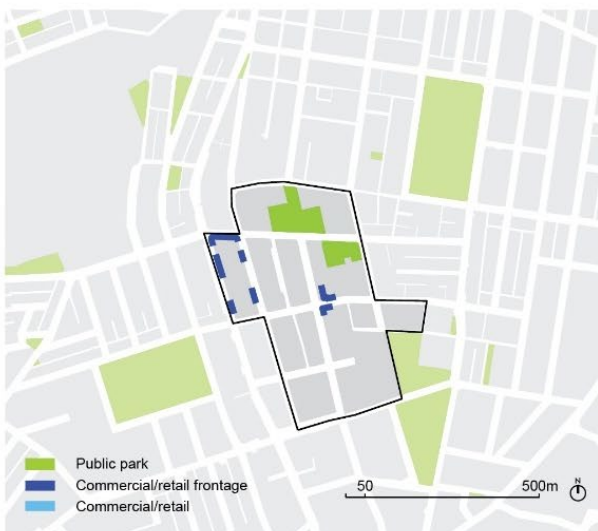
7.7% public park (1.6Ha)









The regional cycle network runs through the precinct



13 Blocks 51 Lots



0.38 km of ground level commercial/retail frontage

-  20.8 Ha
-  2,021 Dwellings
97 Dw/Ha
-  25% Streets
-  7.7% Park
1.0 Ha Main Park
-  11 Blocks
40 Lots
-  0.38 km Retail frontage

Parks and their neighbourhoods

The City of Sydney's Open Space, Sports and Recreation Needs Analysis report sets specific requirements for new urban renewal areas in terms of open space planning.

Further analysis was required to understand the open space planning needs of Waterloo, in more detail.

This comparative analysis is in two parts:

1. Open space quantum and distribution in communities of a similar size and density to the future Waterloo.
2. Exemplar Parks within the City of Sydney or immediately adjacent. They are enjoyed and supported and are easy to manage and maintain. They serve as exemplars for a new park at Waterloo.

The following common attributes of open space quantum, distribution and design are fundamental to successful open space and community planning and design:

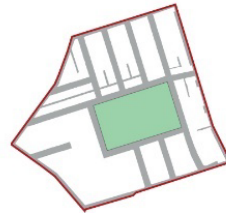
- A 'Main Park' is essential to the recreational needs of all communities.
- Size - Parks are generally over 2 hectares in size, which is large enough to enable a variety of uses, serving diverse user groups to use the park at the same time and throughout the day. This in turn promotes community cohesion with diversity, community formation and well-being generating a sense of place, identity and belonging.
- Shape – The Parks are generally rectangular to fit best with the street block structure but the important characteristic is that they have a good proportion and minimum dimension that allows for a kickabout space or large grassed, informal, active recreation area without conflicting with the people movement functions at the edge of the Park.
- The Grade - Parks are located on generally flat land enabling all people to access and use them and making them suitable for a wide range of activities. Their flatness also maximises their flexibility in use over time.

Street frontages - Parks are generally surrounded by streets promoting access and visibility; ensuring that they are identified as belonging to the whole community; and preventing conflicts between their flexible public use and potentially sensitive adjoining private users.

OPEN SPACE COMPARISONS



Central Park
 56,589 sqm
 main park - 7,694 sqm
 % of parks - 13.6%
 1.65 sqm park/person
 2,229 Dw



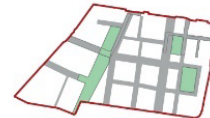
Alexandria Park
 248,674 sqm
 main park - 41,322 sqm
 % of parks - 16.6%
 14.1 sqm park/person
 1,543 Dw



Darling Quarter
 51,190 sqm
 main park - 6,190 sqm
 % of parks - 16.6 %
 1.8 sqm park/person
 2,519 Dw



Redfern Estate
 408,021 sqm
 main park = 46,468 sqm
 % of parks = 11.4%
 10.5 sqm park/person
 2,218 Dw



Lachlan
 173,068 sqm
 main park = 11,308 sqm
 % of parks = 10%
 2.4 sqm park/person
 3,768 Dw



Harold Park
 111,498 sqm
 main park = 30,319 sqm
 % of parks = 32.6%
 13.1 sqm park/person
 1,465 Dw



Waterloo Estate
 186,604 sqm
 main park = 22660 sqm
 % of parks = 12%
 2.0 sqm park/person
 5660 Dw



Victoria Park
 224,687 sqm
 main park = 13,010 sqm
 % of parks = 12.8 %
 4.8 sqm park/person
 3,124 Dw



Green Square Town Centre
 159,200 sqm
 main park = 8,651 sqm
 % of parks = 14.9%
 6 sqm park/person
 7,509 Dw

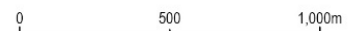
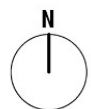


Epsom Park
 205,622 sqm
 main park = 27,773 sqm
 % of parks = 18.3%
 5.6 sqm park/person
 3,514 Dw



North Rosebery
 79,293 sqm
 main park = 8,127 sqm
 % of parks = 11%
 1.5 sqm park/person
 1,701 Dw

All figures approximate only
 Areas and population based on multiple sources.
 Workers included as 0.2 person equivalent.
 Excludes small parks and regional open space.
 When these are included the average open space per person is increased.
 Site area excludes bounding streets.
 Population is calculated at a rate of 1.95 people per dwelling.



Park comparisons

The City contains a number of parks of the size, use and character that provide precedent for the design of a new park on Waterloo estate. These parks are well used and well liked by their communities, have a particular character and form a focus for community life in their neighbourhoods. Although each are adapted to the particular circumstances of their site, surrounding communities needs and the history of their declaration and changes of time; they all common factors that used in the design of good parks:

The size of around 2 hectares provides space a variety of uses and users to be in the park at any time, this encourages community social life and allows family and other groups of varying ages to be in the park together while having a variety of places available for different activities. It is a size that allows retreat from the activity of the surrounding city while still being visible and safe

- Generally surrounded by public spaces, usually streets, but sometimes public or community buildings, that define the park as an open public space accessible to all from the local community and visitors alike.
- A generally squarish proportion that consolidates the space allowing views to all parts of the park from within it and its surrounds for safety an orientation and is flexible to accommodate the sizes or a range of activities.
- Flat to be accessible to people of all abilities and suitable for a wide range of passive and active recreation activities
- Overlooked by residential development for safety and security but separated from these by streets so that incompatible uses, like throwing a ball, are not inhibited by the colaction with private property, that may have glass windows to enjoy the view but can be easily broken.
- Are within an easy walk of their surrounding community well connected by a intersecting permeable grid of streets
- Are often on lower lying land and serve to assist in the overland flow of water and minimising the effects of flooding during heavy rainfall events
- Have abundant sunlight trees and green spaces a healthy place for people and wildlife.

OPEN SPACE COMPARISONS



Alexandria Park Selected public park 1.6Ha
New surrounding parks 0 50 250m N



Redfern Park Selected public park 2.2Ha
New surrounding parks 0 50 250m N



Camperdown Memorial Park Selected public park 3.3Ha
New surrounding parks 0 50 250m N



The Village Green Selected public park 2.0Ha
New surrounding parks 0 50 250m N



Gunyama Park Selected public park 2.8Ha
New surrounding parks 0 50 250m N



Turruwul Park Selected public park 2.2Ha
New surrounding parks 0 50 250m N

The City of Sydney's Alternative Approach

The design shortcomings of the preferred masterplan, and the collective knowledge derived by the long term care maintenance and continuous making and remaking of new places, led the City to independently test an alternative approach to the redevelopment of the estate in endeavour to assist improving plan making for Waterloo.

The bases of the alternative approach are the Planning Priorities of the Eastern District Plan, Sustainable Sydney 2030, the City's Community Plan, and lessons learnt from successful high density communities in the City of Sydney.

The following Planning Priorities became Objectives for the approach:

- Providing services and social infrastructure to meet people's changing needs
- Fostering healthy, creative, culturally rich and socially connected communities
- Providing housing supply, choice and affordability, with access to jobs, services and public transport
- Creating and renewing great places and local centres, and respecting the District's heritage
- Increasing urban tree canopy cover and delivering Green Grid connections
- Delivering high quality open space
- Reducing carbon emissions and managing energy, water and waste efficiently
- Adapting to the impacts of urban and natural hazards and climate change

These intersected with and are reinforced by the strategic directions of the City's plan:

- A leading environmental performer
- Integrated transport for a connected city
- A city for walking and cycling
- A lively and engaging city centre
- Resilient and inclusive local communities
- A cultural and creative city
- Housing for a diverse community
- Sustainable development, renewal and design

The aim of the Alternative Approach is to achieve these objectives while maximising the number of people to take advantage of the accessibility of the site to high amenity with the new metro station, close proximity to the city and the successfully new development in the nearby Green Square area.

The design is formed around the making of high quality public space, parks and streets, that ensures high amenity and equity for people living in the community, critical for making successful high density places.

CITY OF SYDNEY ALTERNATIVE APPROACH – MARCH 2019



Open Space Location

Based on comparative studies and the directions given in the City's Open Space Sports and Recreation Space Study, a main park of more than 2 hectares is required at Waterloo.

Where should the park be located?

The park location is determined by the overlapping best fit of high level criteria, a type of multi-criteria analysis.

Given the required size of the park blocks that have multiple ownership are excluded as they require more complex requirements for dedication and staging.

Parks should not be located adjacent to busy roads as the noise and pollution spoil the quiet enjoyment of people in parks, and it is not safe to locate parks that are used by children close by fast moving traffic. The park is best located away from Botany Road and McEvoy Street.

The surrounding area contains and is served by existing parks on three sides: Redfern Park to the north east, Alexandria Park to the west and Waterloo Park to the south east. The area to the north west is not as well served. The new park is best located central to the estate towards the north west.

The majority of parks uses work best on generally flat land, and this also supports access by all user groups. At Waterloo there are large areas of relatively flat land west of George Street and south of Raglan Street.

Overlaying the attribute areas provides an ideal park location. The best fit is the block bounded by Cope, Raglan, George and Wellington streets, including Cooper Street between Raglan and Wellington streets.

The area at the south west of the site is further from the existing and new park location and a supplementary small park could be located here if required.

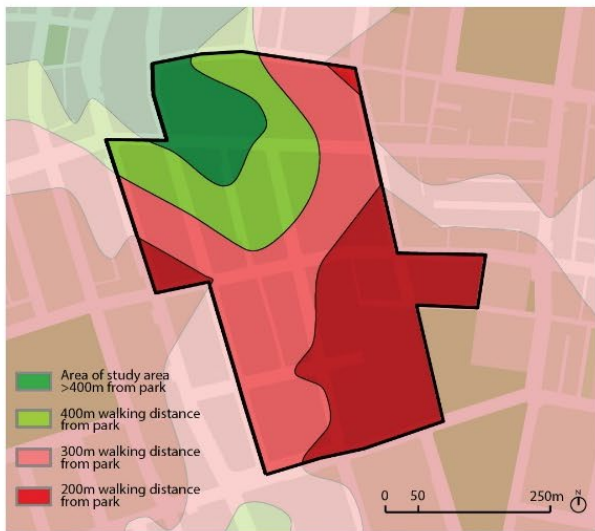
OPEN SPACE LOCATION



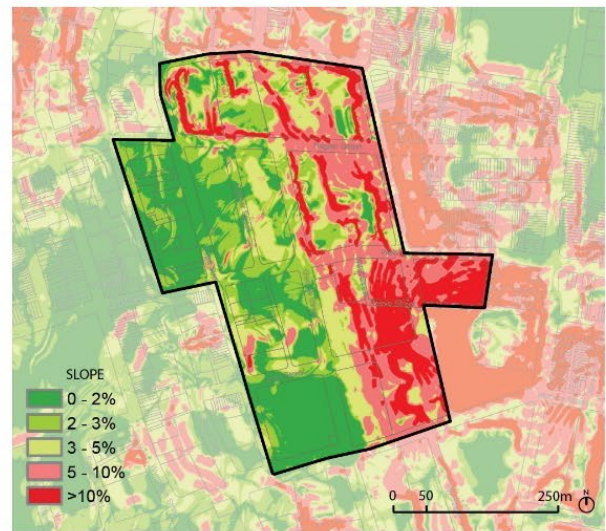
Locate park on single ownership blocks



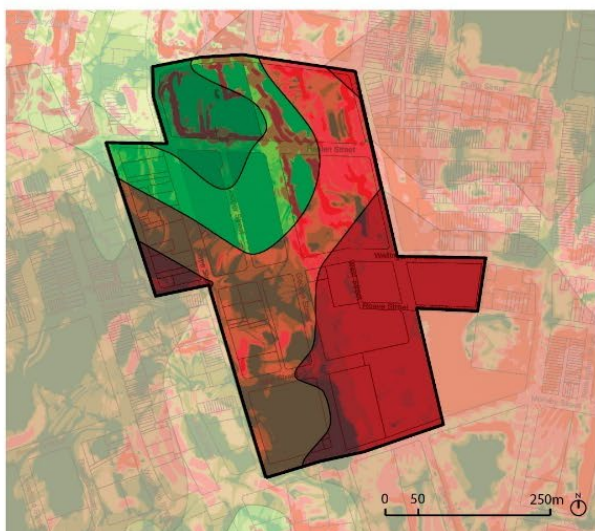
Locate park away from busy roads



Locate park in the area least well serviced by existing parks



Locate park on flat land



Park criteria overlay



Area where all park criteria are met

The street layout

The existing street layout is the inheritance of its subdivision in the late nineteenth century and consists of three north south streets; Cope, George and Pitt; and four east west streets, Phillip, Raglan, Wellington, John and McEvoy. One chain, around 20 metres, wide, the streets support the movement of pedestrians, cyclists and vehicles and accommodate significant tree plantings. McEvoy Street is now a busy road subject to widening in part and in the north Phillip Street was added incrementally.

The streets fan and bend to integrate with the streets of other earlier developed estates that surround it. They form relatively large blocks, almost 200 metres centre to centre. As a consequence, the primary street pattern is overlaid with a series of smaller streets and lanes including Cooper, West, Reeve and Mead streets. The smaller reservations, around 6 – 9 metres do not support trees and have narrow footpaths.

In the 1970's some of the lanes and streets were resumed, closed and incorporated into new development, disaggregating and isolating the layout. The resumptions included Mead Street, George and Cooper street north of Raglan, Pitt Street south of Reeve, and several lines running north south between George and Pitt streets.

The City's Alternative Approach firstly reinstates the closed Cooper George, Mead, John and Pitt streets.

These are supplemented by the extension of West Street to the south to meet Mead Street and north to Phillip Street and the southern extension of Cooper Street.

The narrow streets are generally widened to 20 metres to match the others.

The result is more streets running north south. This is an advantage as while east west streets are more overshadowed by buildings on their north frontage, a northerly orientation ensures more year round sun access. Access to sunlight provides pedestrians with amenity in winter months and promotes more, healthier tree growth.

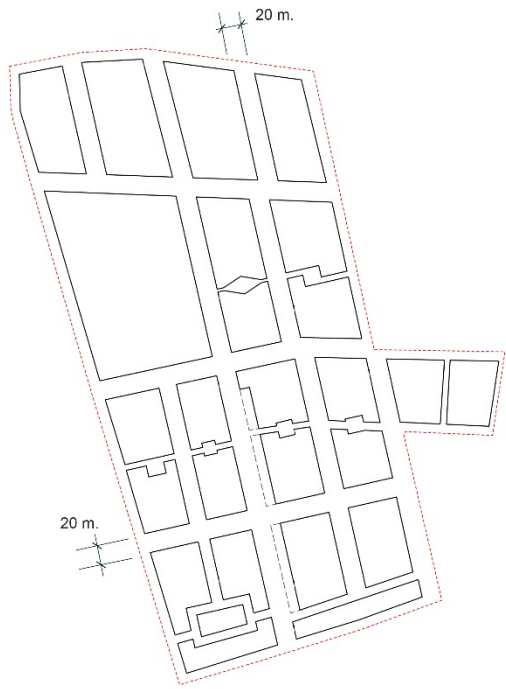
The orientation ensures that the new streets between George and Pitt run along the contour and are relatively flat so its footpaths are accessible to people of all abilities.

The street pattern is overlaid with east west midblock walkways 6 metres wide to increase the choice of walking routes and shorten the distance taken by people walking through the area.

East of George Street the walkways ascend the slope. Here they are formed by ramps to ensure access to people of all abilities.

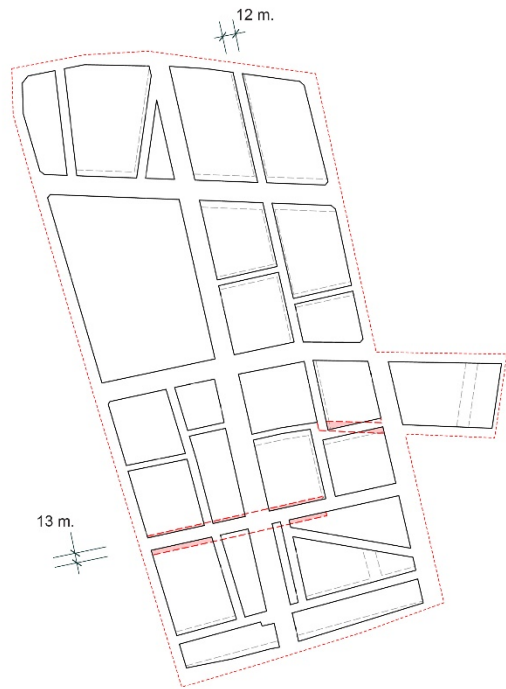
The walkways widen at the centre of blocks to small squares that have trees and are places to sit solitarily or in small groups away from the activity of streets.

STREET LAYOUT COMPARISON



--- EXTG. STREET ALIGNMENT DELETED
■ EXTG. PUBLIC LAND TO BE PRIVATISED
TOTAL AREA - 71,540 sqm. (37% site area)

CoS Alternative Approach



--- EXTG. STREET ALIGNMENT DELETED
■ EXTG. PUBLIC LAND TO BE PRIVATISED
TOTAL AREA - 66,100 sqm. (35% site area)

LAHC Preferred Masterplan

Community facilities

The main hub of community facilities is located in a free-standing building in the park at the north east corner of the park.

It sits among existing significant trees overlooking the park and addressing Raglan and George streets. Over three stories its spaces can accommodate a wide range of community facilities in varying sized rooms the use of which can change overtime as community needs change.

It will be used day and night throughout the year in concert with the park providing a safe and secure centre in the public space of Waterloo.



Alternative Approach scheme: view looking south east across the new park – March 2019



Alternative Approach scheme: view looking south along George Street – March 2019

Building types

There are four proposed building types:

- Mixed use buildings with ground floor retail and commercial uses and upper level apartment buildings
- Apartment buildings
- Special noise barrier buildings along McEvoy Street
- Renovated existing social housing towers and slabs.

The buildings line the streets in ranges defining them and enclosing quiet courtyards in the interior of the blocks formed by the streets.

Building heights along the streets are generally around seven stories or just a little more than the width of the streets. This relationship ensures adequate sunlight to and view to the sky from the streets. Some have upper storey setbacks to maintain the street proportion and its sunlit character.

Around the new park and facing onto the existing Waterloo Park the buildings are taller to allow more people to share the amenity provided by the greater outlook and view to the trees and activity within the parks, concentrating more people in the areas of greater amenity.

The width of the blocks formed by the streets are generally around 51 metres. This is distributed with 18 metre wide courtyards at the centre of buildings 16.5 metres deep.

A building depth of 16.5 metres is an ideal maximum dimension for good amenity in apartments. It suits natural cross ventilation and good levels of natural light with the centre being three times the depth of the normal ceiling height of 2.7 metres. It allows multiple arrangements of apartment plans and sizes.

The streets have more light and activity while the courtyards are quiet and private. These characteristics and the building depth encourage apartment arrangements that place living areas on the street side and bedrooms on the courtyard side. This reinforces the underlying characteristics of the various elements of urban form encouraging better outcomes for everyday life. Balconies overlooking and passively surveilling the streets, people sleeping without being disturbed by the noise of café life or others enjoying a late night at home.

The roofs receive plenty of sunlight and have greater outlook and are therefore best suited for the principal usable part of communal open space. The courtyards can maximise the deep soil and be filled with trees.

The relatively even height, continuous streets of different buildings spreads the amenity given by sunlight and ventilation evenly. It allows social housing buildings to stand alongside market housing building undistinguished in any way. It ensures tenure blind buildings in a mixed tenure community. Along the shorter blocks of the east west streets the centre building of each block is lower, generally at four stories to increase the amount of light into these streets and the courtyards that they sit at the heads of.

The buildings set back and are lower adjacent to existing dwellings along Pitt, McEvoy and Cope streets to minimise overshadowing of existing dwellings.



Alternative Approach – aerial view looking north east over the new park – March 2019

Noise Barrier Buildings

On McEvoy Street, thin buildings are sited as a continuous noise barrier to the busy street. The thin cross section allows apartment layouts to have habitable rooms facing away from the street and non-habitable rooms and access to be arranged along the street. This closely follows the objectives and guidance of the Apartment Design Guide for Noise and Pollution.

Mixed use buildings

Ground floor retail and commercial uses surround the park and line George Street, these are the overlapping foci that form the heart of activity for Waterloo. In most ways the apartments above are the same as the other apartment buildings.

At the ground level retail and commercial uses provide continuous active frontage and pedestrians are protected from the weather by awnings. On the east side of George Street, the non-residential space can extend under the to West Street where due to the slope it will be underground to accommodate larger retail or commercial tenancies.

Either side of George Street retail areas can open onto the walkways and small squares.

Existing towers and slabs

Conserving the existing towers and slab buildings may be more economic than demolishing and replacing them, it will conserve some of the existing character of the area and saves the considerable embodied energy and material of these buildings becoming waste.

The services need renewal and the apartments enlarged. In France this is normal practice and has led to cost savings when redeveloping existing housing estates. In Bordeaux the architects Lacaton & Vassal + Frédéric Druot + Christophe Hutin have added additional space, renewed the facades of large slab buildings while the residents have remained in place. Keeping people in their homes means not relocating people a positive social benefit and economic saving.

A similar operation is proposed in the City's alternative response.

WATERLOO ESTATE – EXISTING TOWERS AND SLAB BLOCK BUILDINGS



Study for renewing existing tower buildings - Matavai and Turanga
(based on designs developed by Tim Williams & Associates P/L)



Study for renewing existing slab block buildings - Marton, Solander, Banks, Cook
(based on designs developed by MAKO Architecture P/L)

The City's Alternative Approach and LAHC's Preferred Masterplan Compared

In late 2019 The City's Alternative Approach and the Preferred Masterplan were compared in an endeavour to assist finding an acceptable plan.

Several key points of difference were identified:

- The park size, location and its access to sunlight
- George Street, its closure, the rerouting of the cycle path and its use as a parkland
- Building on existing streets, width of new streets widths, and sunlight and wind in streets
- Tower heights and their effects

Parks

The preferred masterplan proposed two parks each smaller than the one proposed by the alternative approach

The agreed Study Requirements for the State Significant Precinct of the Waterloo estate included a requirement to provide 15% of the land as public open space i.e. park. This is supported by the City's Open Space, Sports and Recreation Study that recommends the same amount.

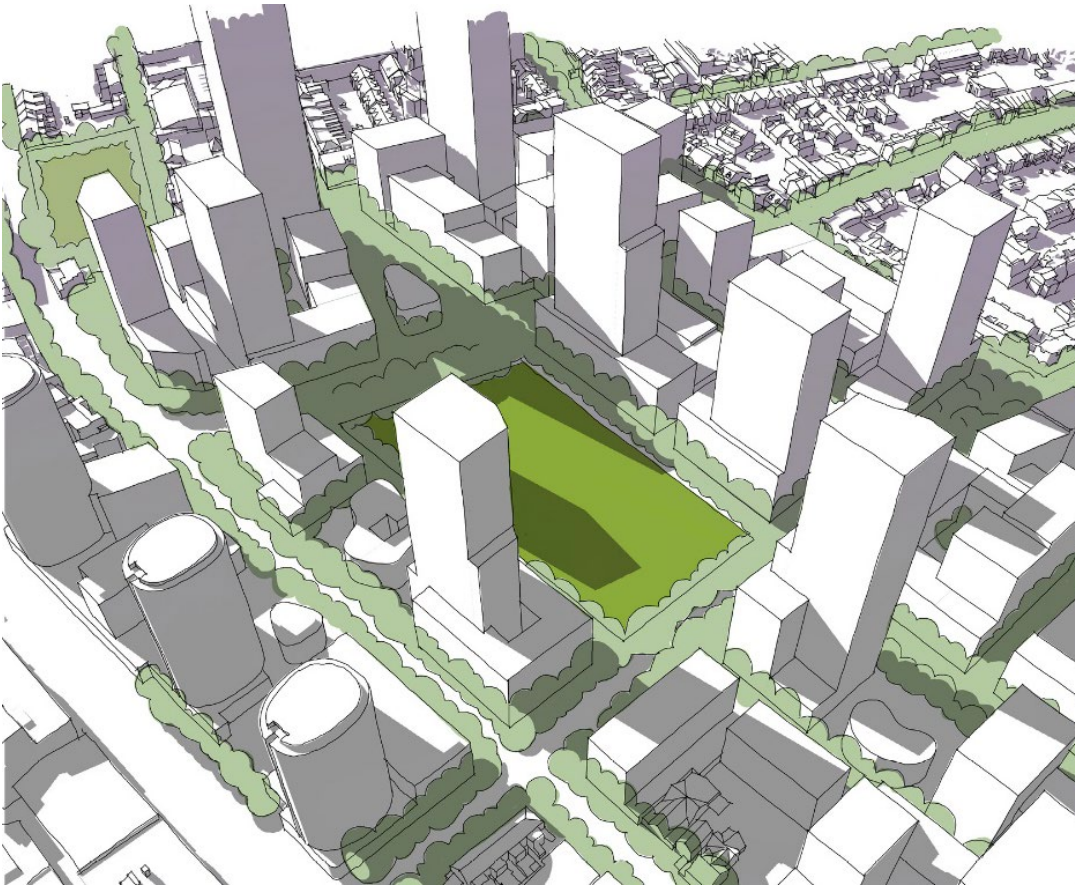
To meet this requirement, the Preferred Masterplan proposed to close George Street between Raglan and McEvoy streets – turning the street into parkland.

This is not acceptable to the City.

Closing George Street between Raglan and Wellington streets has several difficulties.

The park loses the definition of a street on its eastern side bringing park users and ground level users on the eastern frontage into conflict. The frontages need physical separation from the park for access, acoustic and visual privacy and safety [for example from a stray ball]. These conflicts are difficult to manage and usually result with alienation of the parks area or restricting its use. The alienation reduces the area available for recreation and restricting use of parks is difficult to manage and generally disobeyed creating conflict, banning ball play in a park is seen by most people as ridiculous.

Streets contain service lines owned and controlled by utilities. The utilities need be fully accessed without notice. This restricts tree planting, furniture and equipment placement and the like. These restrictions inevitably impede the planning and use of the park. This restriction is particularly unacceptable in the southern park where a large proportion of the park is centrally located in the path of George Street.



LAHC Preferred Masterplan aerial view



CoS Alternative Approach – aerial view

When combined with the need to continue to locate the regional bicycle path in the line of George Street including the street area as part of the parks is not acceptable.

It was agreed to adopt the City's preferred park location of the full block between Cope, Raglan, George and Wellington streets incorporating Cope Street. The City agreed that a smaller park is to be located in south of the site to enhance access to parkland in this area a small part of which is just over 200 walking distance from the main park.

Regional bicycle paths

The City's regional bicycle routes plan includes two main paths that intersect in at the centre of the Waterloo estate: north-south along George Street and east-west along Wellington Street.

The preferred masterplan did not include nor preclude the Wellington Street route.

The George Street route was planned by LAHC to be diverted around the estate via McEvoy, Cope and Phillip streets. This is not acceptable to the City and Transport for New South Wales.

Regional bicycle paths are routes that connect major destinations for many people and allow fast, safe, high capacity travel along paths separated from vehicle traffic. They are used by a variety of users including commuters and people who use bicycles for their work. The George Street path connects Green Square Town Centre to Central Sydney and is the City of Sydney's major north south regional bicycle path.

To operate successfully the route needs also to be straight and not divert, providing the most direct connection possible. Experience shows that diversions, such as that proposed by LAHC, are not followed by many users who continue to use the straight path to save time. This creates safety problems as fast travelling cyclists leave the pathways designed for their safety and the safety of other road users and conflict can result.

At Waterloo this problem exists between Phillip and Wellington streets where George Street was been removed in the 1970's by the State Government. Despite sign posting and markings that compel cyclists to divert around or dismount they continue to use the pedestrian paths in this area creating conflict. Any new plan for the Waterloo Estate is expected to solve this conflict.

Separated bicycle paths exist in George Street, the Preferred Masterplan would remove these paths and replace them with longer new paths.

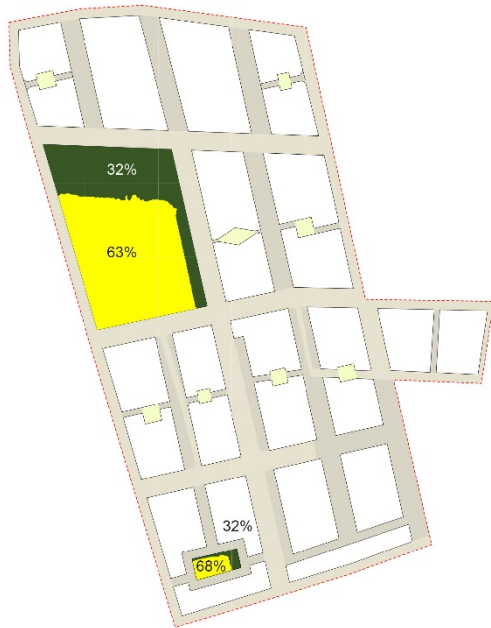
Transport New South Wales do not support adding separated bicycle paths to McEvoy Street as it conflicts with their current planning.

If the bicycle path on George Street was to remain in the Preferred Masterplan it would conflict with park users as George Street in the Preferred Masterplan is included into park areas. The conflict between fast moving cyclists and children playing in parks is a safety problem that can only be resolved by restricting park uses, restricting play in parks is difficult if not impossible to manage.

The City's Alternative Approach reinstates George Street between Philip and Raglan streets and allows separated bicycle paths to be extended in a normal fashion through the estate.

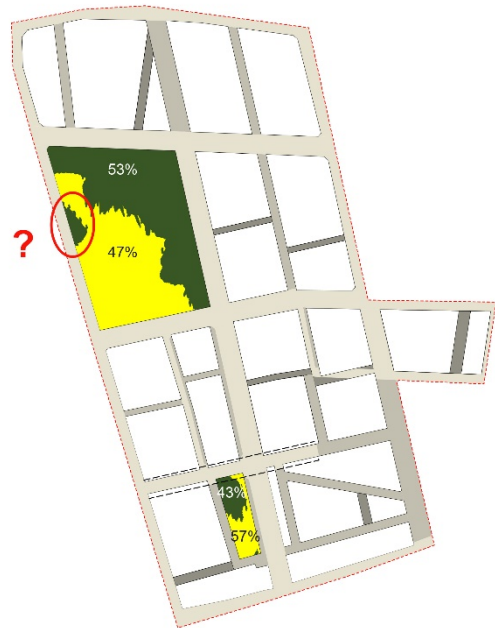
It was agreed to not move the existing regional bicycle path from George Street and to include the planned regional path along Wellington Street.

COMPARISON OF SUNLIGHT AVAILABLE TO PARKS



AREA OF PARK RECEIVING MIN. 4 hrs sunlight
AREA OF PARK RECEIVING LESS THAN 4 hrs sunlight
10 min. interval, 1 m. grid

CoS Alternative Approach



AREA OF PARK RECEIVING MIN. 4 hrs sunlight
AREA OF PARK RECEIVING LESS THAN 4 hrs sunlight
10 min. interval, 1 m. grid

LAHC Preferred Masterplan

Street widths and sunlight to streets

Streets are the predominate public space of the city. They are open to all, connective, and accommodate multiple users and meet multiple needs. They are the primary character forming element of places.

In the City of Sydney streets support most of its trees. Street trees absorb pollutants and replenish the air with oxygen. They provide shade and cool the environment in the heat. Promoting tree growth is an important design criterion in the layout of streets. Tree growth is greatly assisted by access to sunlight.

The Alternative Approach orients most streets along a north south axis. They are 20 metre wide like the existing predominate street widths in the city, including the main existing streets in Waterloo: Raglan, Wellington, John, Cope, George and Pitt streets. Increased pedestrian permeability is provided with a series of narrower [6 metres] east west walkways between the existing streets and the inclusion of footpaths within the new and widened north south streets. The predominance of north south streets creates more intersections on the east west streets. Each intersection allows sunlight in, maximising the available sunlight to these streets. The width and orientation of the north south streets receives sunlight year round.

The Preferred Masterplan has generally narrower, with 6 and 9 metre street reservations in a generally 12 metre building to building, new streets evenly distributed in the east west and north south axes. The narrowness and the lack of hierarchy in orientation lessen the access to sunlight in these streets, particularly, in mid-winter.

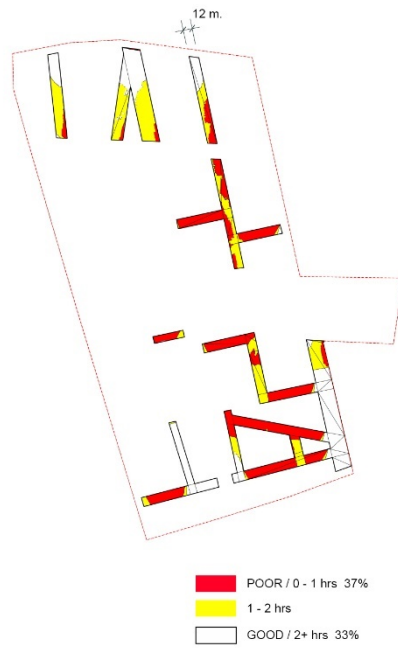
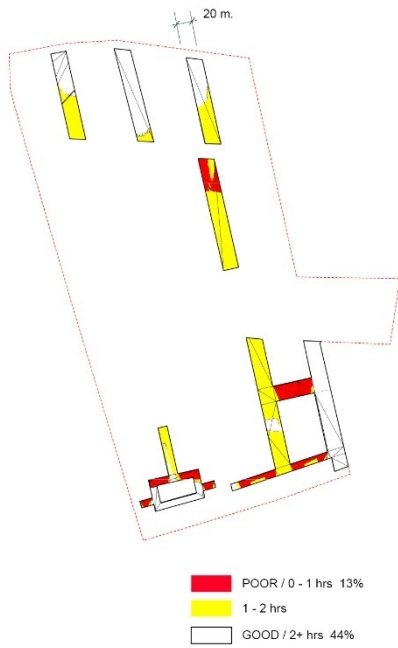
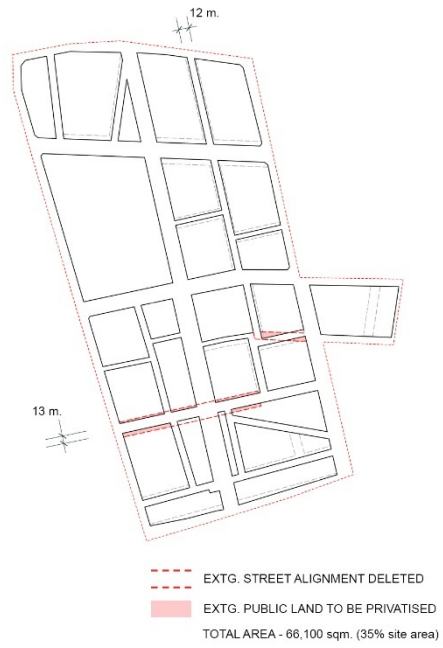
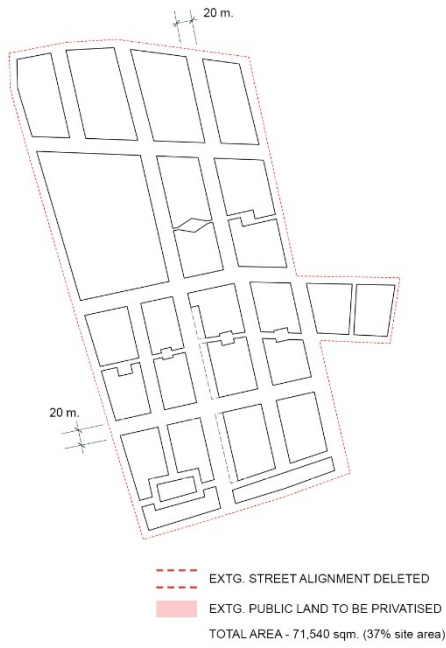
Within the 12 metre building separation the proposed the street reservations proposed are generally 6 and 9 metres wide. These widths are suitable for shared zones in low use streets – streets that are not required for access to car parks and are located where low [10kph] speed zones are likely to be approved, for example around parks, but not elsewhere.

The Preferred Masterplan includes the narrowing the existing John Street reservation, from 20 metres to 13 metres, to increase the amount of developable land. Implement the narrowing requires a street closure; a complex, time consuming, uncertain legal and bureaucratic process; followed by service relocation and tree removal. John Street is managed and controlled by the City, its agreement to the narrowing was not sought during the design process and is not likely to be agreed. It also proposed closing Reeve Street and reopening it in a slightly different position in a slightly narrower reservation. This is also not acceptable to the City.

The Alternative Approach's streets orientation and width provides more sunlight proportionally and in aggregate than the preferred masterplan. The Alternative Approach's streets have more sunlight providing better amenity and better tree growth and greater canopy cover, they are cooler in summer.

LHC agreed not to narrow John Street, not to close and reopen reeve Street and to increase the width of West Street between Reeve and John streets.

COMPARISON OF STREET NETWORKS – WIDTHS AND SUNLIGHT ACCESS



Tower heights

LAHC's Preferred Masterplan includes seventeen towers of over 20 storeys, with 15 of these over 30 storeys and six of these over forty storeys.

Waterloo is affected by height limitations that provide safe landing paths, including in emergency situations and for special emergency services like the Flying Doctors Service, to Sydney Airport. The limits are derived from international air safety standards. At Waterloo this limits the heights of buildings to around thirty storeys, the forty storey buildings exceed the limit. Permission to exceed the limit is required from the airport authorities and is unlikely to be obtained. There are over 400 apartments in the Preferred Masterplan that are not likely to receive consent.

The towers contain around two thirds of the proposed apartments around the same as the number of private apartments proposed. Apartments in towers generally have better amenity with more access to sunlight, greater building separation, less apartments per floor and better outlook and privacy. Apartments in towers are more expensive to construct. Apartments in towers, even those at lower levels, have a sale price that is higher than similar apartments in lower buildings, raising the average housing price. The Preferred Masterplan the private and social does not describe the future distribution of social and private housing. A market response that seeks to maximise profit would place all the private housing in the towers and all the private housing in the low buildings. An unintended consequence of the distribution of the building form between towers and low buildings is that the social housing has less amenity and be easy to distinguish from the private housing. This result contradicts LAHC's intention to provide tender blind buildings; ie, buildings that in appearance cannot be distinguished as social or private housing.

Waterloo is exposed to strong winds from the west and the south. When these winds hit the sides of tall buildings, they produce downdrafts that create uncomfortable and sometimes unsafe environments at ground level. These conditions can be relieved by providing podium level setbacks of a minimum of 8 metres, sometimes 10 metres is required, or by providing voids within the buildings that allow the downdrafts to be diverted at a safe higher level. The Preferred Masterplan does not allow for the diversion of downdrafts by setbacks or breaks in the towers. Consequently, wind conditions on some streets and parks are unacceptable.

The only towers in the City's Alternative Approach are the existing Matavai and Turanga towers at the north end of the estate. The approach is to renovate the towers, refitting them to a contemporary standard.

The preponderance of towers in the preferred masterplan leads to shadows clumping limiting sunlight into streets and courtyards.

LAHC agreed to reduce the height of some towers to meet the operational requirements of Sydney airport.

COMPARISON OF TOWER HEIGHTS



Sunlight to courtyards in midwinter

Both LAHC's Preferred Masterplan and the City's Alternative Approach have street perimeter building forms that surround communal courtyards.

In both, the principal usable part of communal open space is located on the roofs of buildings where there is access to winter sunlight to meet the design criteria of the Apartment Design Guide.

The communal courtyards provide opportunity for landscaping, including trees, to meet the canopy target requirements. Therefore, the courtyard size and the amount of sunlight they receive is beneficial even though this is not subject to a design criterion in the Apartment Design Guide.

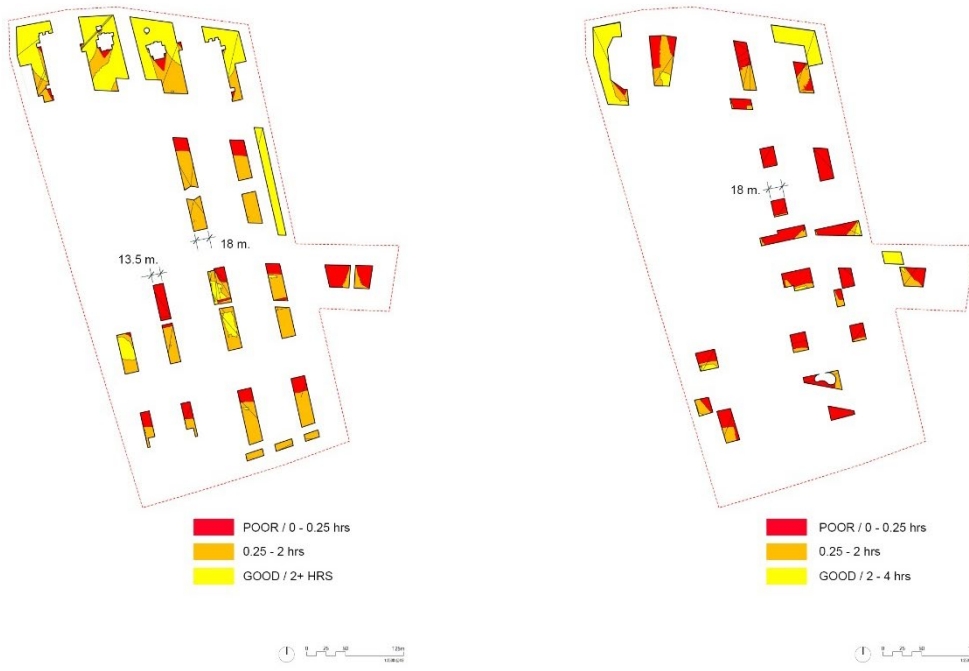
In both, the courtyards are generally 18 metres wide to meet the visual privacy building separation criteria of the Apartment Design Guide.

The City's Alternative Approach has more courtyards than LAHC's Preferred Masterplan. The City's courtyards are larger with their long axis in a north/south solar orientation. The size and length increase sunlight to the courtyards. It provides an environment for easier and more certain tree growth.

The Preferred Masterplan's courtyards are more often squarish rather than rectangular and consequently are smaller, more enclosed and receive less sunlight.

The City's courtyards receive significantly more sunlight proportionally and in aggregate.

COMPARISON OF COURTYARDS – MID-WINTER SUNLIGHT ACCESS



LAHC Planning Proposal Request

In May 2020, LAHC submitted a Planning Proposal request. The Planning Proposal request is reduced in extent from the Preferred Masterplan excluding the area north east of Raglan, George and Wellington streets. The proposal contains around 3000 dwellings.

The Planning Proposal request includes some improvements from the Preferred Masterplan in response to the consultation process and the City's Alternative Approach:

- The main park is larger located between Cope, Raglan, George and Wellington streets and includes Cooper Street between Raglan and Wellington streets
- More sunlight is provided to the parks
- No development is proposed on the city's streets
- George Street is not closed or used as parkland
- The regional bicycle path on George Street remains in place
- John Street is not narrowed
- The extension of West Street is widened
- The building separation across the new street just north of and parallel to McEvoy Street is increased
- The towers have been reduced to around 30 storeys so that they do not interfere with the operational requirements of Sydney airport
- The gross density is consequently reduced

WATERLOO ESTATE – LAHC’S PLANNING PROPOSAL REQUEST SCHEME

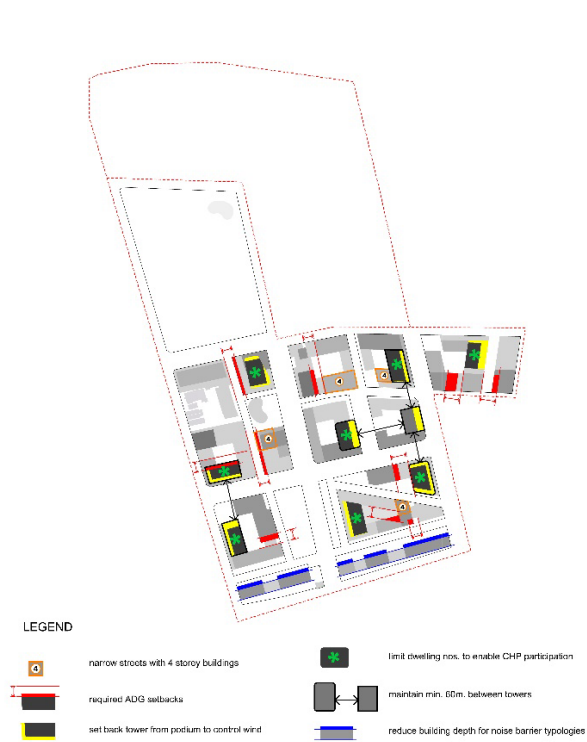


The following issues remain a concern:

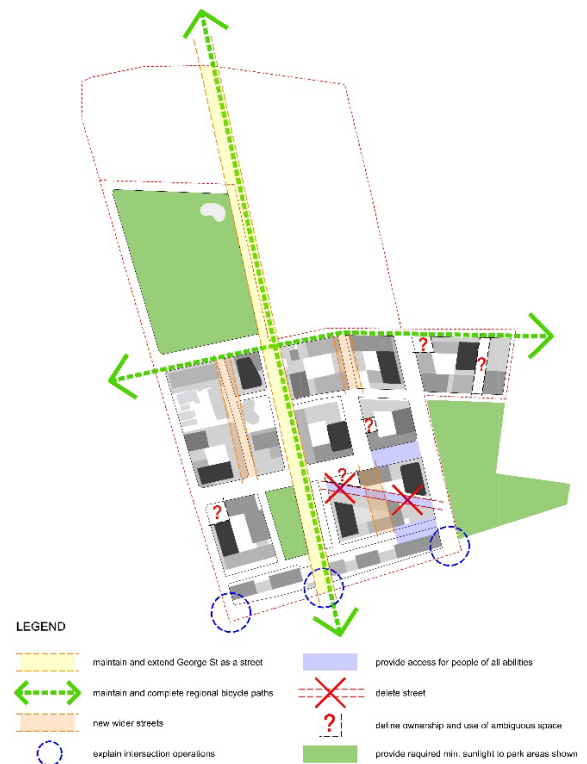
- Some new streets and walkways are not accessible to people of all abilities as they run east west up the slope, rather than north south across it. This restricts access from the west of the site, isolating Pitt, West, Reeve and Kellick streets; and, areas south and west from the Pitt and McEvoy streets intersection, to the park and future Metro station.
- A preponderance of towers; nine towers, eight of around 30 storeys and, in addition, three fifteen storey buildings remain,
 - in some places these towers are located closer together than required by Sydney Development Control Plan 2012
 - They do not have sufficient podium setbacks or other measures to protect the surrounding public spaces from wind downdraft
 - They limit sun access to streets, courtyards and lower buildings
 - They risk undermining the goal of tenure blind development
 - They limit future development to a small number of tier one developers, limiting competition and denying entry to lower cost developers including community housing providers
- East-west orientation of new street layout limits solar access into new streets, lessening amenity and tree growth
- Some buildings do not meet the building separation criteria of the Apartment Design Guide
- George Street bisects the southern park unnecessarily, decreasing the usefulness of the park while necessitating two new streets either side of it that duplicate the traffic function of George Street thereby increasing the amount of land dedicated to streets
- Several setback areas are located on corners and lack definition between the public and private space creating ambiguous places that are difficult to manage
- The lack of lots creates large parcels that are not suitable for subdivision, lessening building design diversity along streets.
- The intensity of development is unevenly spread causing peaks in density adjacent to significantly less dense lots, for example, the lot bounded by Cope, John and Cooper Streets has a density of over 11:1 and its neighbour around 3:1. The double digit density does not exist outside Central Sydney in the City of Sydney Local Government Area, it is not an appropriate density for housing in this area.
- The majority of dwellings (two thirds) are located in high rise buildings with high amenity while one third have lesser amenity risking an inequitable distribution of amenity to different housing tenures
- The failure to make a main street. The distribution of non-residential space has two characteristics, a concentrated centre with most of the space being located below or above George Street level not on grade with it and a series of small retail spaces scattered across the site. The scattered non-residential uses is generally a failed strategy and non-residential uses not on street level are always difficult to sustain
- the parks receive barely enough mid-winter sunlight and risks being undermined in future development proposals.

Although the improvements are beneficial the remaining issues of concern are not simply resolved by a series of incremental changes addressing each shortcoming.

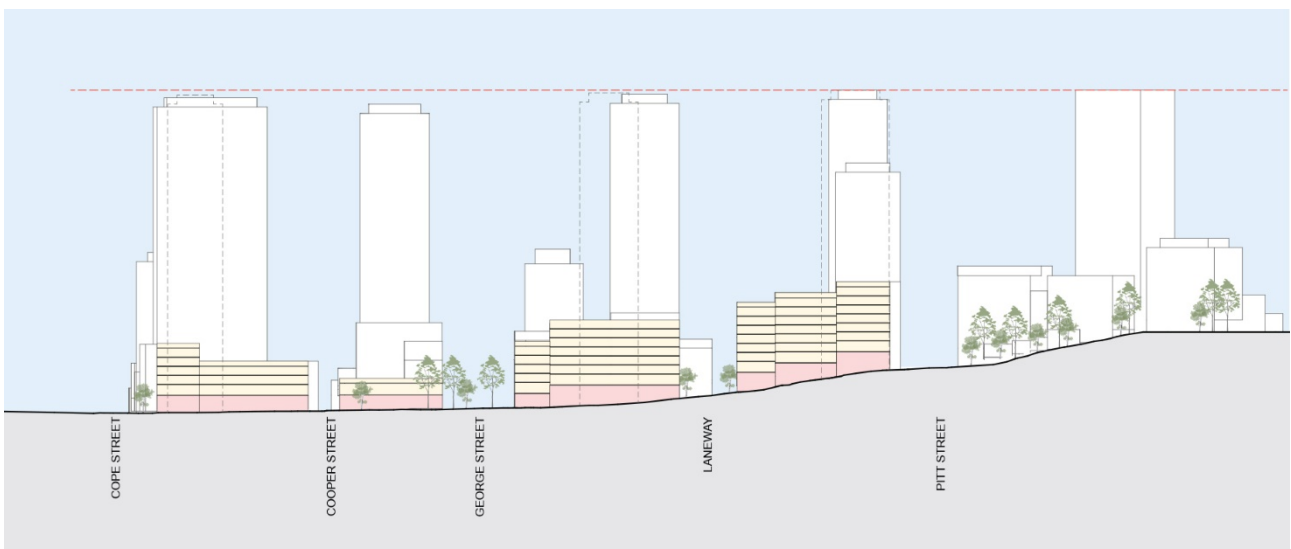
MATTERS OF CONCERN WITH LAHC's PLANNING PROPOSAL REQUEST



Matters of concern – streets and parks



Matters of concerns – built form



Cross section through precinct showing arrangement of towers and lower built form in the LAHC planning proposal request scheme.

Planning Proposal and the LAHC Request Compared

When compared to LAHC's request the Planning Proposal has the following advantages:

- Access for people of all abilities is provided by -
 - The eastern extension of John Street designed as a series of pedestrian ramps
 - The new streets Mead and West Street are orientated north south along the contour and are flat and accessible
 - Walkways with easements with public right of way, the provision ramps and a the use of a lift to access a supermarket gives access for people of all abilities within and across the area including providing a choice of routes
- The new streets – Mead Street; and the extension of West, Pitt and Cooper streets are orientated north-south to enjoy greater sun access in mid-winter whereas the request new street run east west and the new streets around the small park simply duplicate and undermine the character of George Street
- Proposes less area of new streets and parks and therefore minimises the cost of construction and ongoing maintenance
- Requires less land dedication for streets and parks and thereby increases the developable area, lowering the intensity of development on average across the site
- With most buildings of a relatively even height the intensity of development is more evenly spread without peaks of density on some sites
- There are only three buildings of 15 storeys or more, it minimises the environmental effects of tall buildings – wind and overshadowing. LAHC's Proposal has eleven buildings of 15 storeys or more.
- Fits more comfortably into the existing skyline, when viewed from the main public spaces that surround Waterloo, including Redfern Park, Alexandria Park, the existing Waterloo Park, the new park and from the north and south approaches along George Street
- Wind conditions in the streets and parks are safer and more comfortable. The towers in the Planning Proposal are designed with three storey breaks to relieve wind downdraft, whereas LAHC's request has minimal podium setbacks to the towers insufficient to break the downdraft.
- The parks have a higher proportion of their area receiving four hours sunlight in midwinter
- continuous retail frontage along George Street for two full blocks makes a main street focus for the community

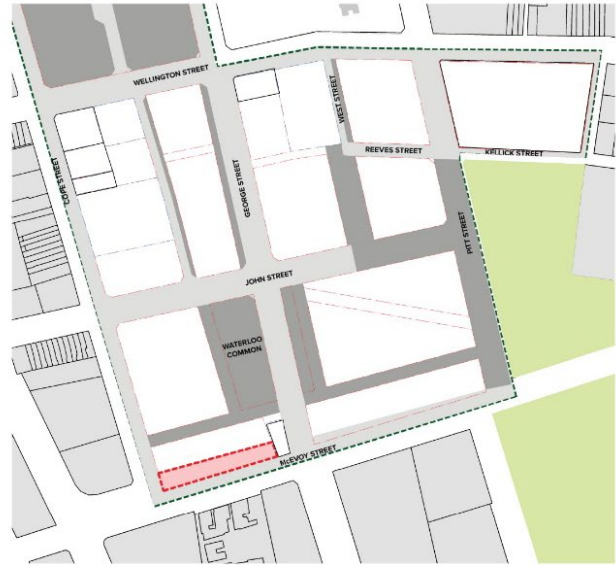
COMPARISON OF LAND DEDICATIONS

CoS PLANNING PROPOSAL



- Former streets
- Street widening - LaHC land
- Street widening - other land
- New streets and walkways
- New park areas dedicated from LaHC-owned land
- New lot boundaries
- Existing lot boundaries

LAHC PLANNING PROPOSAL REQUEST



- - - Proposed Lot Boundary
- - - Private Lot Boundary
- SP2 Zone to be dedicated to RMS
- Existing public domain owned and managed by the City of Sydney
- Existing private domain to be dedicated to the City of Sydney

COMPARISON OF STREET LAYOUT AND ACCESSIBILITY

CoS PLANNING PROPOSAL



- New accessible routes via ramp
- New accessible routes via lift
- New accessible routes via walkway
- Existing accessible routes
- New non-accessible routes
- Existing non-accessible routes
- 1.12 Slope

LAHC PLANNING PROPOSAL REQUEST



- New accessible routes via ramp
- New accessible routes via lift
- New accessible routes via walkway
- Existing accessible routes
- New non-accessible routes
- Existing non-accessible routes
- 1.12 Slope

COMPARISON OF FLOOR SPACE RATIOS

CoS PLANNING PROPOSAL



A	0.25		
S2	1.75	W3	3.88
U2	2.64	X2	4.04
U3	2.03	X3	4.09
U4	2.89	X4	4.43
V2	3.1	Z1	5.16
V3	3.14	Z2	5.57

LAHC PLANNING PROPOSAL REQUEST



P	1.23		
V2	3.06	Y2	4.89
V3	3.09	Y3	4.94
V5	3.27	AA3	6.55
X2	4.34	AE2	10.80

COMPARISON OF NON-RESIDENTIAL USES

CoS PLANNING PROPOSAL



	precinct boundary		park
	existing lot boundary		non-residential use
	new lot boundary (indicative)		potential location for supermarket
	through-site link (indicative)		number of levels of non-residential use

LAHC PLANNING PROPOSAL REQUEST



	Existing Community Facilities		Park
	Community Facilities		
	Retail & Commercial		

COMPARISON OF APARTMENT YIELDS PER BLOCK

CoS PLANNING PROPOSAL



- Existing site boundary
- New lot boundary
- Right of way
- LaHC-owned site
- 153 Dwellings per block - LaHC-owned sites
- 82 Dwellings per lot - LaHC-owned sites
- 255 Dwellings per lot - privately-owned sites

LAHC PLANNING PROPOSAL REQUEST



- Proposed lot boundary
- 250 Number of dwelling units

COMPARISON OF SUNLIGHT ACCESS TO STREETS

CoS PLANNING PROPOSAL



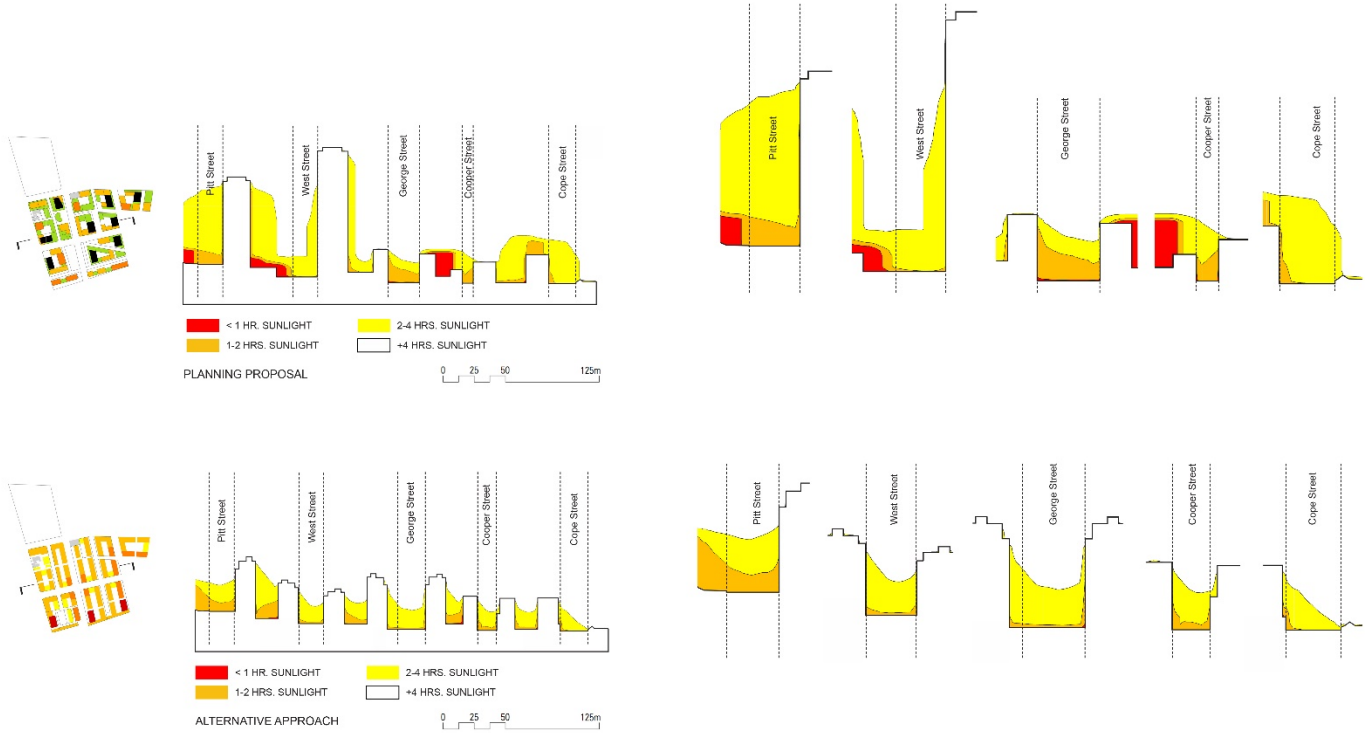
- less than 1 hr.
- 1 - 1.9 hrs.
- 2 - 3.9 hrs
- 4 hrs or more

LAHC PLANNING PROPOSAL REQUEST



- less than 1 hr.
- 1 - 1.9 hrs.
- 2 - 3.9 hrs
- 4 hrs or more

COMPARISON OF SUNLIGHT ACCESS TO STREETS



Cross sections through streets showing the amount of sunlight reaching street level (LAHC Planning Proposal request above; CoS Planning Proposal below)

COMPARISON OF SUNLIGHT ACCESS TO PARKS

CoS PLANNING PROPOSAL

LAHC PLANNING PROPOSAL REQUEST



Area of parks receiving minimum 4 hours sunlight at the winter solstice (June 22)

COMPARISON OF BUILT FORM – HEIGHT IN STOREYS

CoS PLANNING PROPOSAL

LAHC PLANNING PROPOSAL REQUEST



Heritage	8 Storeys
1 Storey	9 Storeys
2 Storeys	10 Storeys
3 Storeys	11 Storeys
4 Storeys	12 Storeys
5 Storeys	13 Storeys
6 Storeys	Towers
7 Storeys	

