# Attachment A2(d)(v)

**Urban Design Study – 3 Site Analysis – Part 5 – Botany Road Precinct**

# 3.8 Existing Built Form

## 3.8.1 Study Area - Existing Built Form

The study area for the Botany Road Corridor consists of approximately 215,800 square meters or 21.59 ha in total land area covering the suburbs of Alexandria, Waterloo and Redfern. The study area includes:

- Regent Street, Botany Road, Wyndham Street, Cope Street and Gibbons Street as main street running north-south
- Lawson Square, Buckland Street, Raglan Street, Henderson Road as main streets running east-west, with various smaller laneways
- Waterloo Metro Quarter Precinct
- Redfern Station
- Daniel Dawson Reserve
- Gibbons Reserve
- Jack Floyd Reserve

The following significant areas are directly adjacent to the precinct:

- Waterloo Social Housing redevelopment
- Pemulwuy Redevelopment
- Australian Technology Park
- Redfern Street village and high Street
- National Centre for Indigenous Excellence (NCIE)
- Alexandria Park
- Proposed Waterloo Social Housing Park
- Proposed George Street high street and cycleway

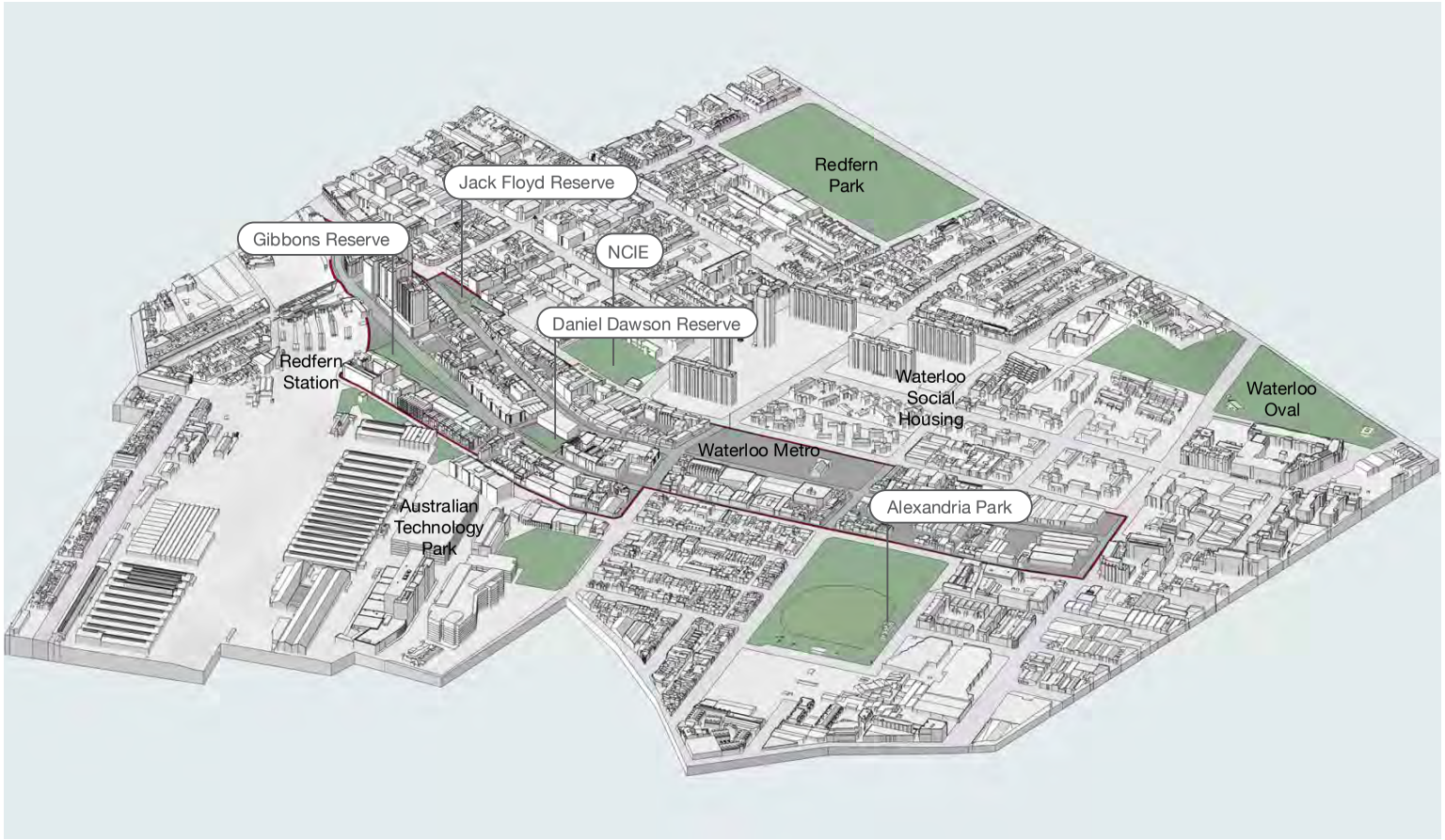



Figure 150: 3D Axonometric - The Botany Road Corridor study area with existing built form

## 3.8.2 Building Typologies

The relationships the buildings have to the streets and each other can be seen by categorising the existing building into typologies, patterns of configuration and format.

Patterns that are observable from the adjacent diagram are:

- Residential Typologies are predominantly on the edges of the study area, along Gibbons Street/ Wyndham Street and Cope Street.
- South of Raglan Street and Henderson Road is primarily industrial or commercial typologies, with interspersed residential with active ground floor use.
- Regent Street/ Botany Road is predominantly mixed typology, consisting of retail, hospitality, commercial and active ground floor uses. Some residential is scattered within these areas.
- Near Redfern Station, there are predominant residential typologies, with active ground level uses, which provide a commercial/ retail transition between Regent Street and Redfern Street high streets.

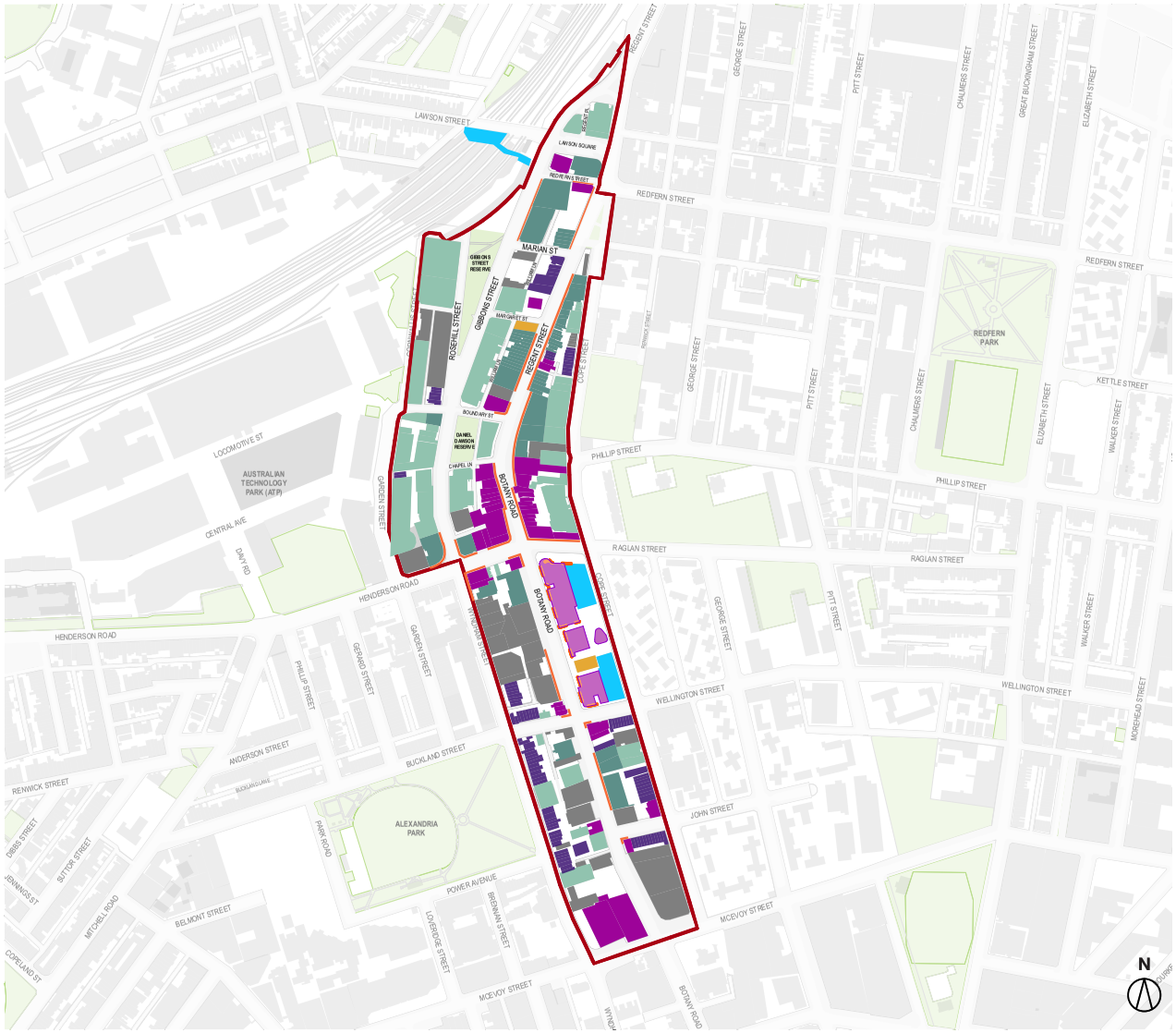



Figure 151: Building Typologies Map

Source: Hassell, 2018 Draft Central to Eveleigh Context Analyss Vision and Principles Report, p125.

## 3.8.3 Existing Key View Corridors

Figure 152 illustrates key views identified for the Botany Road Corridor with photos of key views on the following pages.[64]

1. View to Redfern Street from Redfern Station.
2. View to Redfern Station from Redfern Street.
3. View toward Jack Floyd Reserve and Regent Street.
4. View along Regent Street toward the high street shops and St Luke's Presbyterian Church.
5. View along Boundary Street towards Gibbons Street and ATP.
6. View into Gibbons Street Reserve from northern corner.
7. View into Daniel Dawson Reserve.
8. View uphill towards Redfern Station at Gibbons Street Reserve.
9. View down Chapel Lane to the Regent Street/Botany Road shops.
10. View along Regent Street/Botany Road where direction change occurs.
11. View along Regent Street/Botany Road where direction change occurs.
12. Corner Botany Road and Raglans Street towards Waterloo Metro Station.
13. View along Buckland Street to Alexander Park.
14. View along Buckland Street to Waterloo Housing Estate.
15. View towards future Waterloo Metro from corner Buckland Street/Botany Road.
16. View toward Green Square along Botany Road.
17. View northward along Botany Road, where Botany Road one way pair commences/ terminates.
18. View along Raglan Street, toward Waterloo Housing Estate.
19. View into Waterloo Housing Estate, from corner Raglan Street and Cope Street - established trees and future exit point for the Waterloo Metro.
20. View along Henderson Road towards Waterloo Housing Estate with Botany Road and traffic intersections in the foreground.
21. View from ATP toward Redfern Station with Sydney CBD/Chippendale in the background.
22. View out of ATP Public Plaza toward Garden Street/Boundary Street corner.
23. View along Regent Street toward Pemulway development.
24. View along the pedestrianised lane between Cope Street and Regent Street.
25. Entry to Alexander Park.
26. View along Margaret Street towards Gibbons Street Reserve, past St Luke's Presbyterian Church.
27. View at steep level change along Boundary Street toward ATP.
28. View along Regent Street toward the Sydney CBD.
29. View along Wellington Street at south east corner of the future Waterloo Estate Station.
30. View along Botany Road toward the Congregational Church at the SP2 Road Reserve set back.
31. View into the Botany Road plaza adjacent IGA, where substantial tree canopy and gathering space is present.
32. View toward the Black Theatre, Kooru Radio at the top of Cope Street.
33. View along Cope Street with substantial tree canopy.
34. Fine Grain view along Regent Street at socialand cultural landmarks.
35. View into Gibbons Street Reserve on approach from Redfern Station.
36. View along the closed off canal at Botany Road.

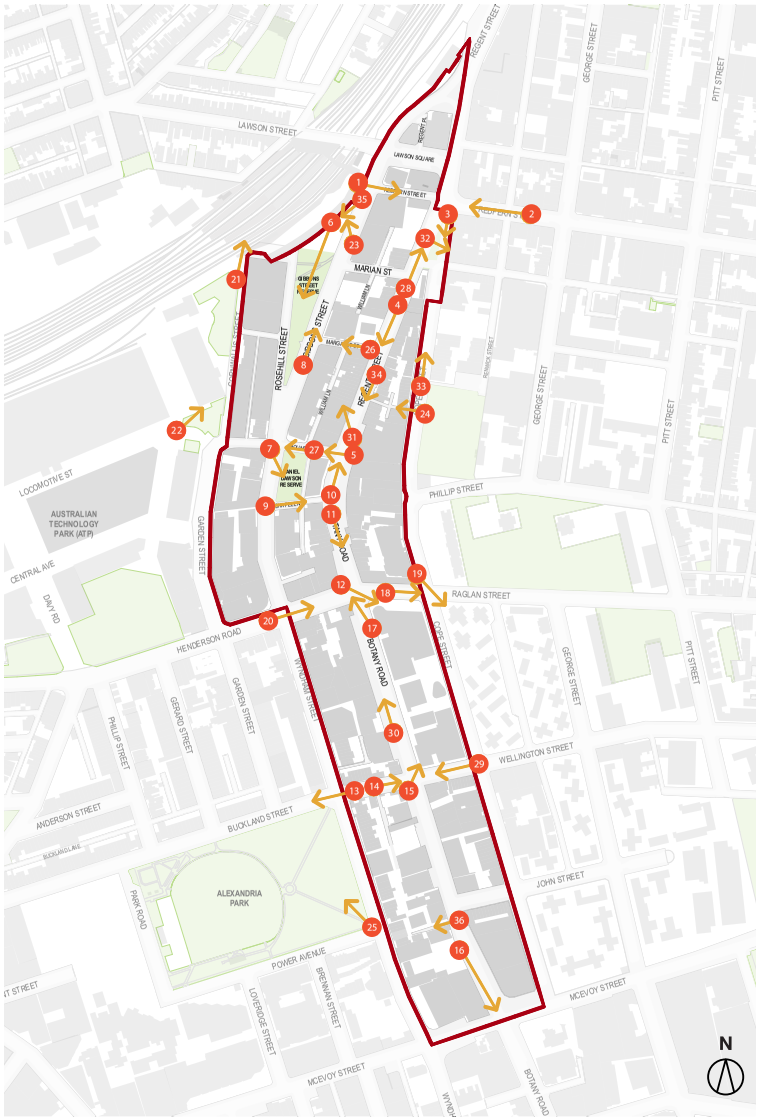



Figure 152: Key View Corridors
Source: City of Sydney, TZG overlay.

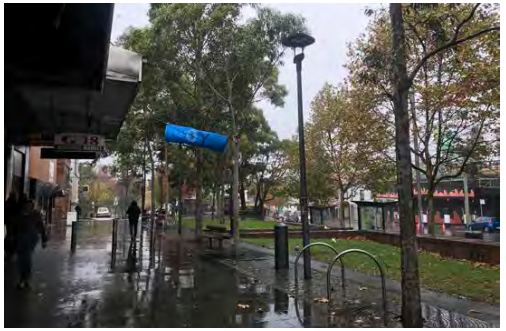
64: Refer to the Botany Road Corridor Heritage Study for key heritage significant views.



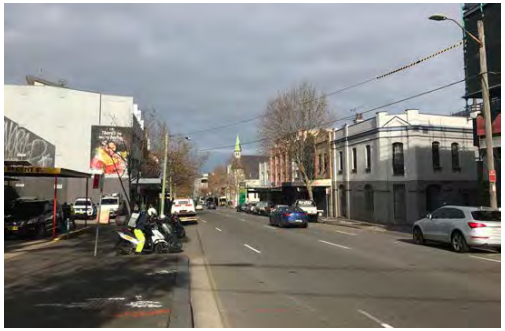

1 View to Redfern Street, from Redfern Station




2 View to Redfern Station from Redfern Street



3 View toward Jack Floyd Reserve and Regent Street



4 View along Regent Street toward the high street shops and St Luke's Presbyterian Church



5 View along Boundary Street, toward Gibbons Street and ATP



6 View into Gibbons Street Reserve, from northern corner



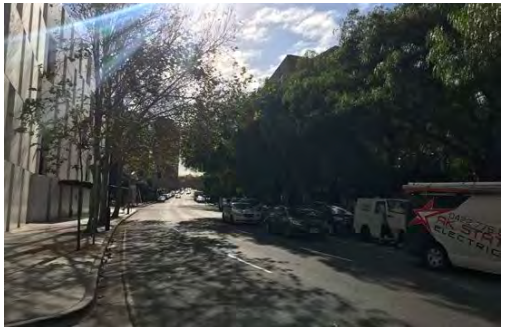
7 View into Daniel Dawson Reserve



8 View uphill toward Redfern Station at Gibbons Street Reserve



9 View down Chapel Ln to the Regent Street / Botany Road Shops



10 View along Regent Street / Botany Road, where direction change occurs (view in both directions)




11 View along Regent Street / Botany Road, where direction change occurs (view in both directions)



12 Corner Botany Road and Raglan Street, toward Waterloo Metro Station



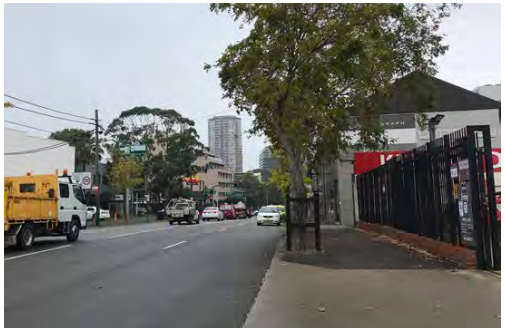
13 View along Buckland Street to Alexandria Park



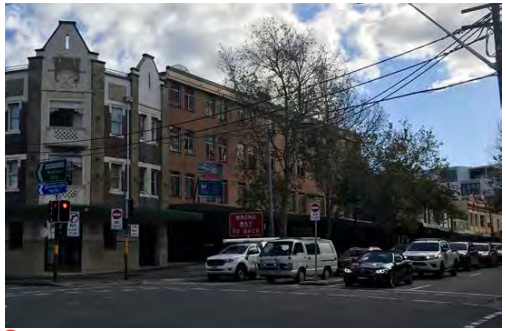
14 View along Buckland Street to Waterloo Housing Estate



15 View toward future Waterloo Metro from corner Buckland Street / Botany Road



16 View toward Green Square, along Botany Road.



17 View northward along Botany Road, where Botany road one way pair commences / terminates.



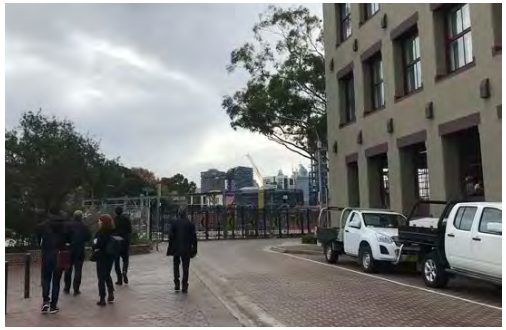
18 View along Raglan Street, toward Waterloo Housing Estate



19 View into Waterloo Housing Estate, from corner Raglan St and Cope Street - Established trees and future exit point for the Waterloo Metro.



20 View along Henderson Road, toward Waterloo Housing estate, with Botany Road and traffic intersections in the foreground



21 View from ATP toward Redfern Station with Sydney CBD / Chippendale in the background



22 View out of ATP Public Plaza toward Garden Street / Boundary Street corner



23 View along Regent Street toward Pemulwuy development



24 View along the pedestrianised lane between Cope Street and Regent Street



25 Entry to Alexandria Park


26 View along Margaret Street, toward Gibbons St Reserve, past St Lukes Presbyterian Church


27 View at level steep level change along Boundary St, toward ATP


28 View along Regent Street toward the Sydney CBD, at the bus stop


29 View along Wellington Street, at south east corner of the future Waterloo Metro Station.


30 View along Botany Road, toward the congregational Church, at the SP2 Road Reserve set back



31 View into the Botany Road plaza adjacent IGA, where substantial tree canopy and gathering space is present


32 View toward the Black Theatre, Kooru Radio at the top of Cope Street


33 View along Cope Street, with substantial tree canopy (in both directions)



34 Fine Grain view along Regent Street at social and cultural landmarks, such as 'The Bearded Tit'


35 View into Gibbons Reserve, coming from Redfern Station


36 View along the closed off canal, at Botany Road

## 3.8.4 Lot Size

The site contains varying lot sizes in a predominantly mixed pattern within each city block, reflecting gradual development of historical lots over time.

- Larger lots (1000 - 3000m2) generally contain multi-residential or commercial uses.
- Medium sized lots (300-1000m2) are generally found on the southern portion of Botany Road.
- Smaller lots (0-300m2) generally contain single residential or small shop fronts, typical of early terrace style settlement. These are generally located along Wyndham Street, facing Alexandria Park, or along Regent Street within the main high street shopping areas.
- Larger lots in residential areas appear to have resulted from amalgamation of smaller lots.

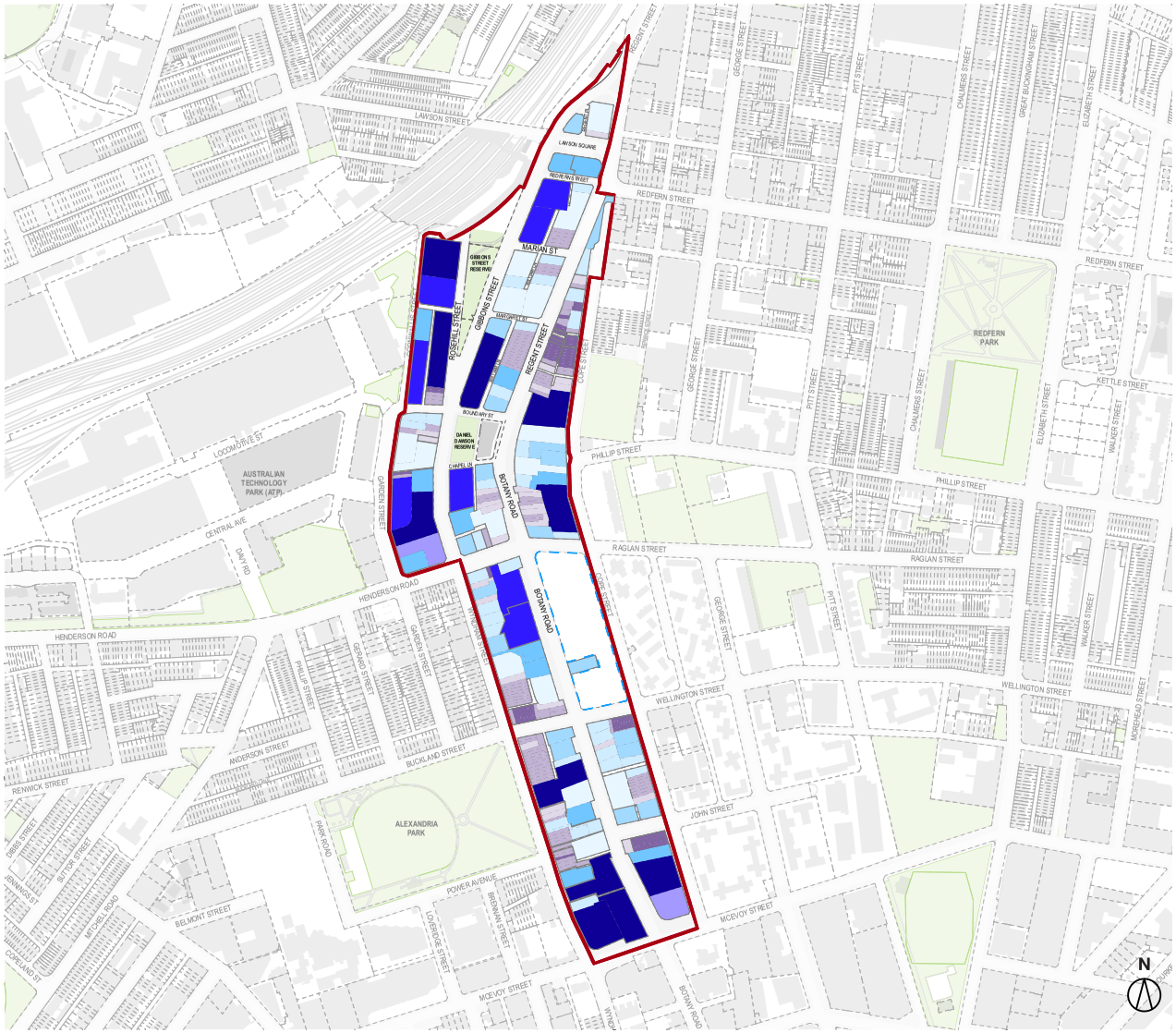



Figure 153: Lot Size
Source: TZG

## 3.8.5 Existing Built Heights Controls

Existing Building Heights within the site are generally between 5-10m on smaller sites, with between 10-20m on larger sites. At the north of the study area, between Margaret St and Lawson Square where LEP and DCP height controls do not currently apply, taller heights between 50-60m or 60-70m are found. Smaller building heights (5-10m) are generally found on industrial sites, or where there are single storey terraces.

Generally, lower heights are found in the south of the study area, with an increase in height occurring at Henderson Road steadily toward Redfern Station where buildings are taller. The City of Sydney's LEP and DCP controls reinforce lower heights across the site, with generally no heights taller than 22m (LEP) or 6 storeys (DCP).

Generally, DA approved heights between Margaret St and Marian St facing Gibbons Street, largely containing SSD approved development, juxtaposes between lower scale development on Regent Street.

The proposed Waterloo Station development exceeds current height controls in storeys, but is within the LEP height controls in metres. The proposed tower heights will create contrast with the adjacent lower scale buildings on Botany Road, Wyndham Street and adjacent residential areas. The proposed heights of the Waterloo Housing vary from 6 storeys to 30 storeys.

Daniel Dawson reserve currently has LEP height controls over but is unlikely to have built form in the future across the site due to it's prominent and valued use as a landscaped open space.

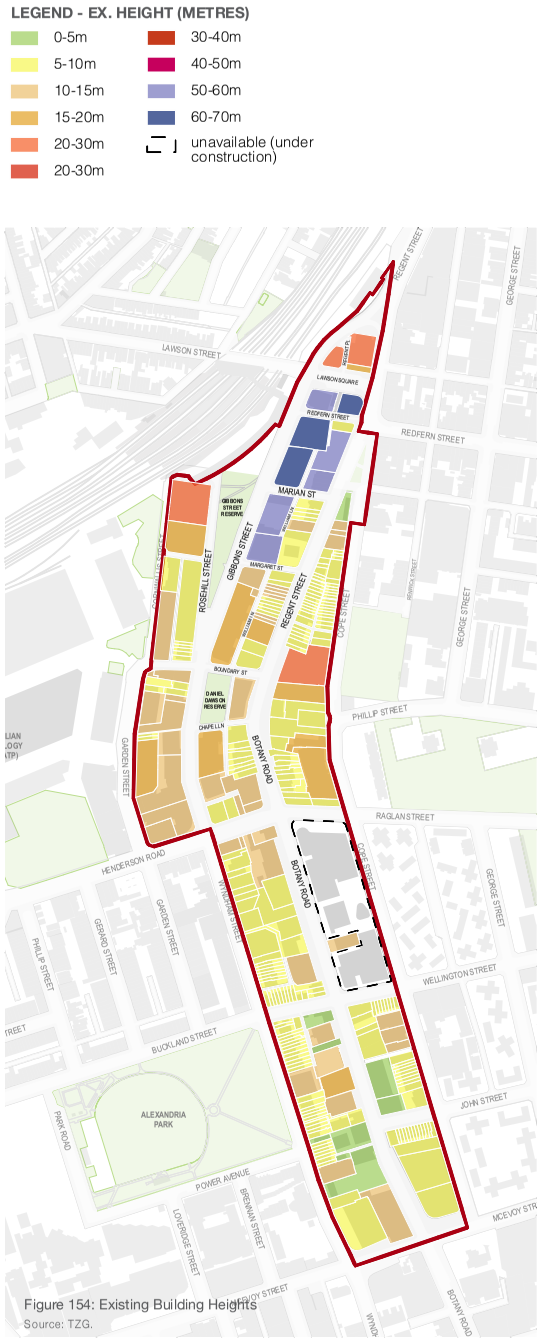



Figure 154: Existing Building Heights
Source: TZG.

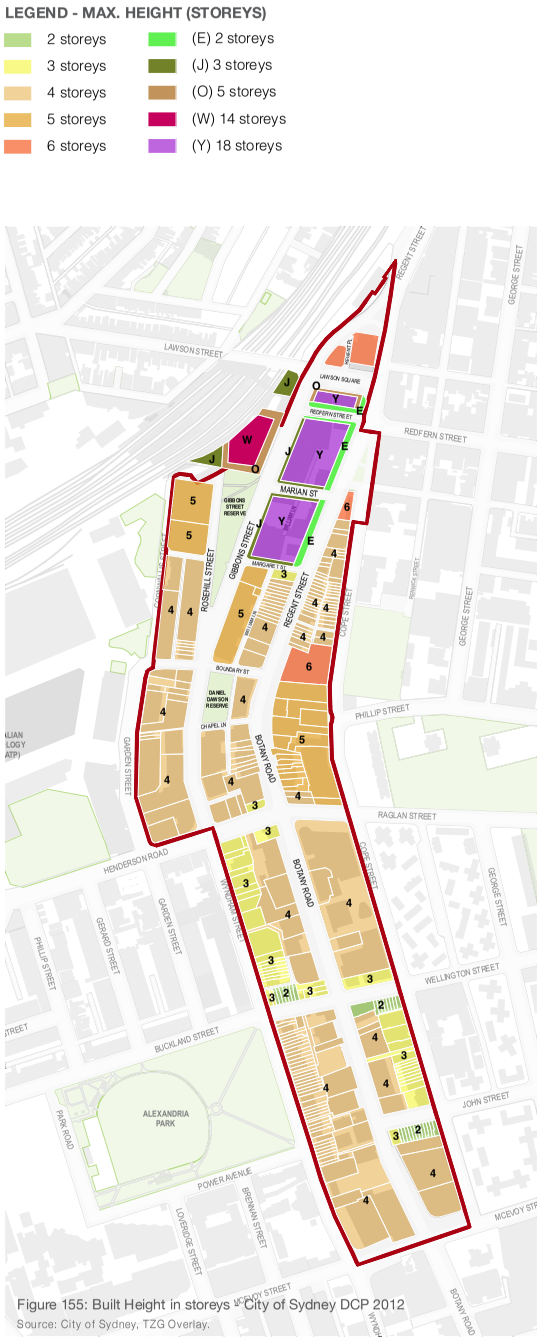



Figure 155: Built Height in storeys - City of Sydney DCP 2012
Source: City of Sydney, TZG Overlay.

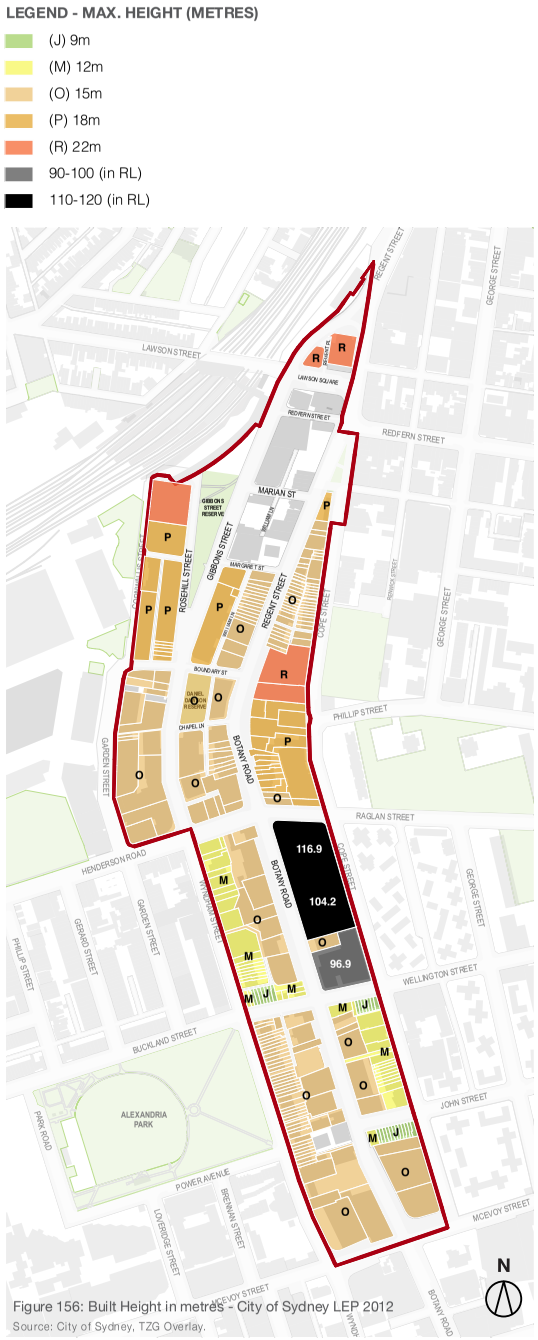



Figure 156: Built Height in metres - City of Sydney LEP 2012
Source: City of Sydney, TZG Overlay.

## 3.8.6 Existing Height Controls

Existing Height of Building Controls vary across the site.

Generally, land under State Governement control such as the former Redfern Waterloo Authority (RWA) lands near Redfern Station or Waterloo Station development land is subject to taller heights than elsewhere in the precinct.

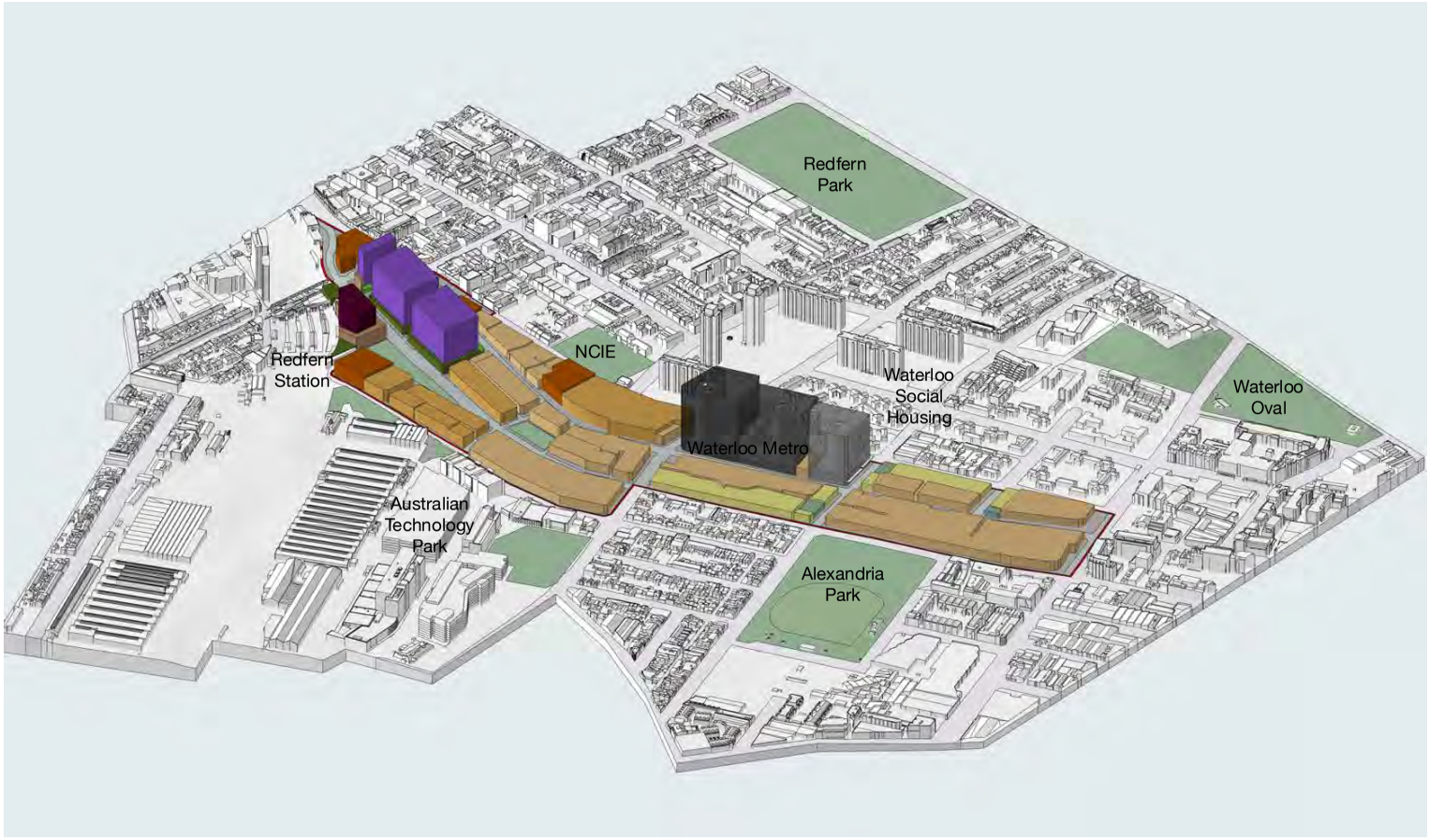



Figure 157: Existing Height Controls - LEP, DCP and RWA zoned land in 3D Axonometric

## Existing Height Controls - 3D

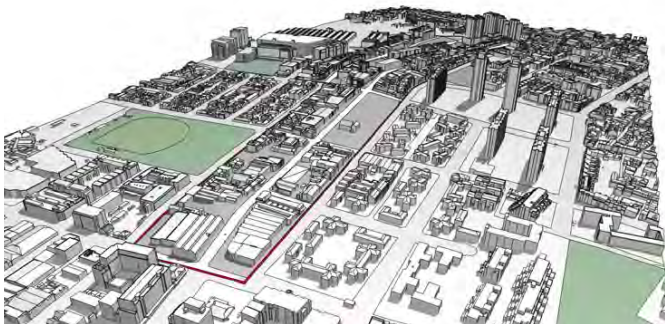




Figure 158: Existing Built Form (SE view) - Massing in 3D (top)
Figure 159: Existing Built Form (SE view) - Heights Controls (below)
Source: TZG

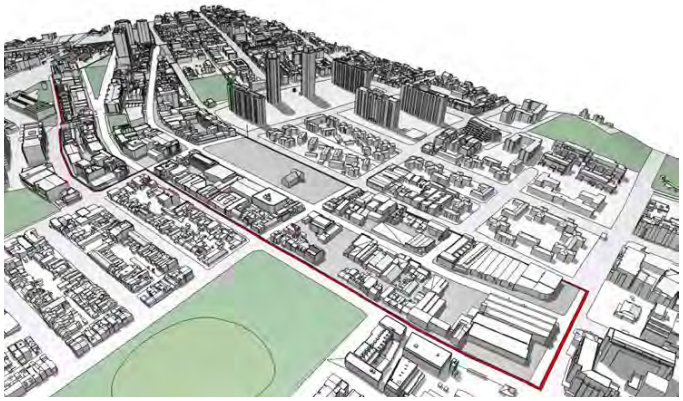
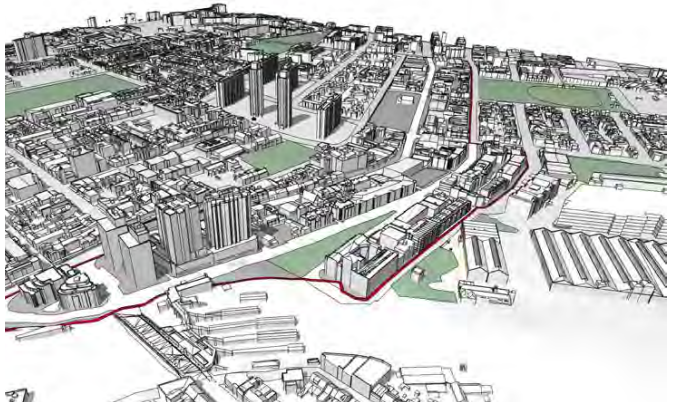




Figure 162: Existing Built Form (SW view) - Massing in 3D (top)
Figure 163: Existing Built Form (SW view) - Heights Controls (below)
Source: TZG



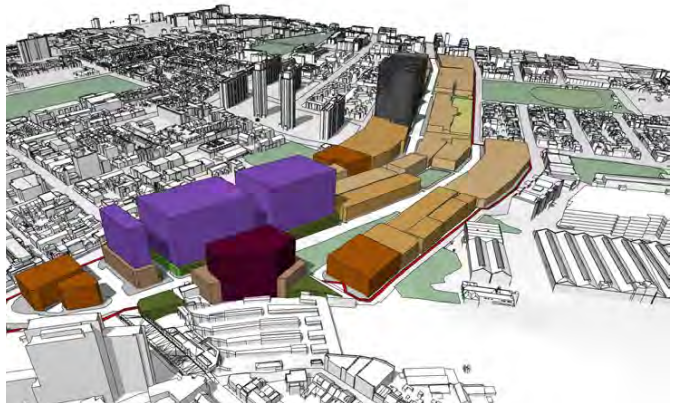
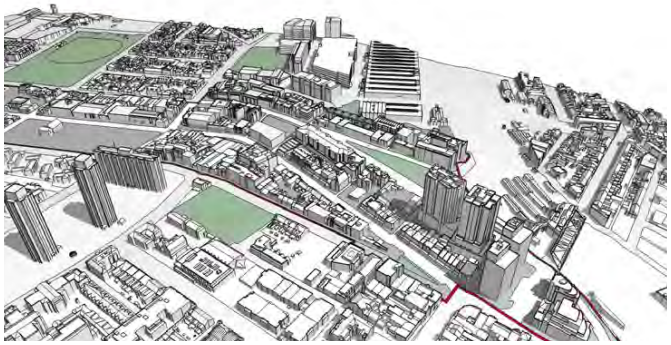


Figure 160: Existing Built Form (NW view) - Massing in 3D (top)
Figure 161: Existing Built Form (NW view) - Heights Controls (below)
Source: TZG

## Existing Height Controls - 3D





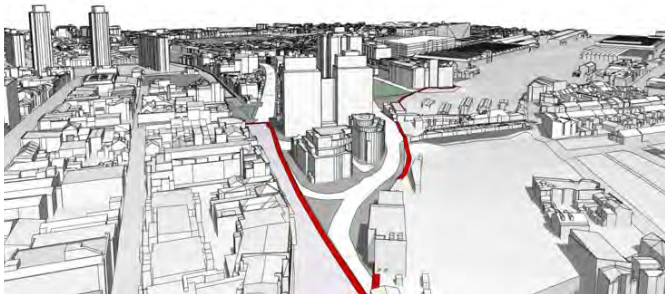








Figure 164: Existing Built Form (NE view) - Massing in 3D (top)
Figure 165: Existing Built Form (NE view) - Heights Controls (below)
Source: TZG

Figure 166: Existing Built Controls from North (top)
Figure 167: Existing Built Controls from South (below)
Source: TZG

Figure 168: Existing 3D view from North (top)
Figure 169: Existing 3D view from South (below)
Source: TZG

## 3.8.7 Active Street Frontages

Active Street frontages on the City of Sydney LEP and DCP maps are shown on the diagram adjacent to compare where existing fine grain and proposed fine grain or street activation exist.

In the City of Sydney LEP 2012, a building has an active street frontage if all promises on the ground floor of the building facing the street are used for the purposes of the business premises or retail premises. In the City of Sydney DCP, Active frontages are defined as follows:

*"A diverse range of activities should be provided at street level to reinforce the vitality and liveliness of the public domain."*

Active frontages are to contribute to the liveliness and vitality of streets by maximising entries, and minimising blank walls while providing elements of visual interest and high level finishes.

When existing frontage and planned frontages are overlaid, there is a rich fine grain of existing and potential shop fronts and activated frontages within the Botany Road and Regent Street areas. This creates an opportunity for future retail and commercial growth.

### Existing Active Frontages

An active frontage provides continuous business or retail uses that opens directly to the footpath. These uses create activity on the streets. They enhance public security, and passive surveillance and improve the amenity of the public domain by encouraging pedestrian activity. They also assist in supporting the economic viability of the street.

The figure adjacent surveys the existing active frontages, revealing majority are on Regent Street/ Botany Road, with some scattered active frontages at east/ west road intersections along Botany Road, Regent Street or Gibbons Street.

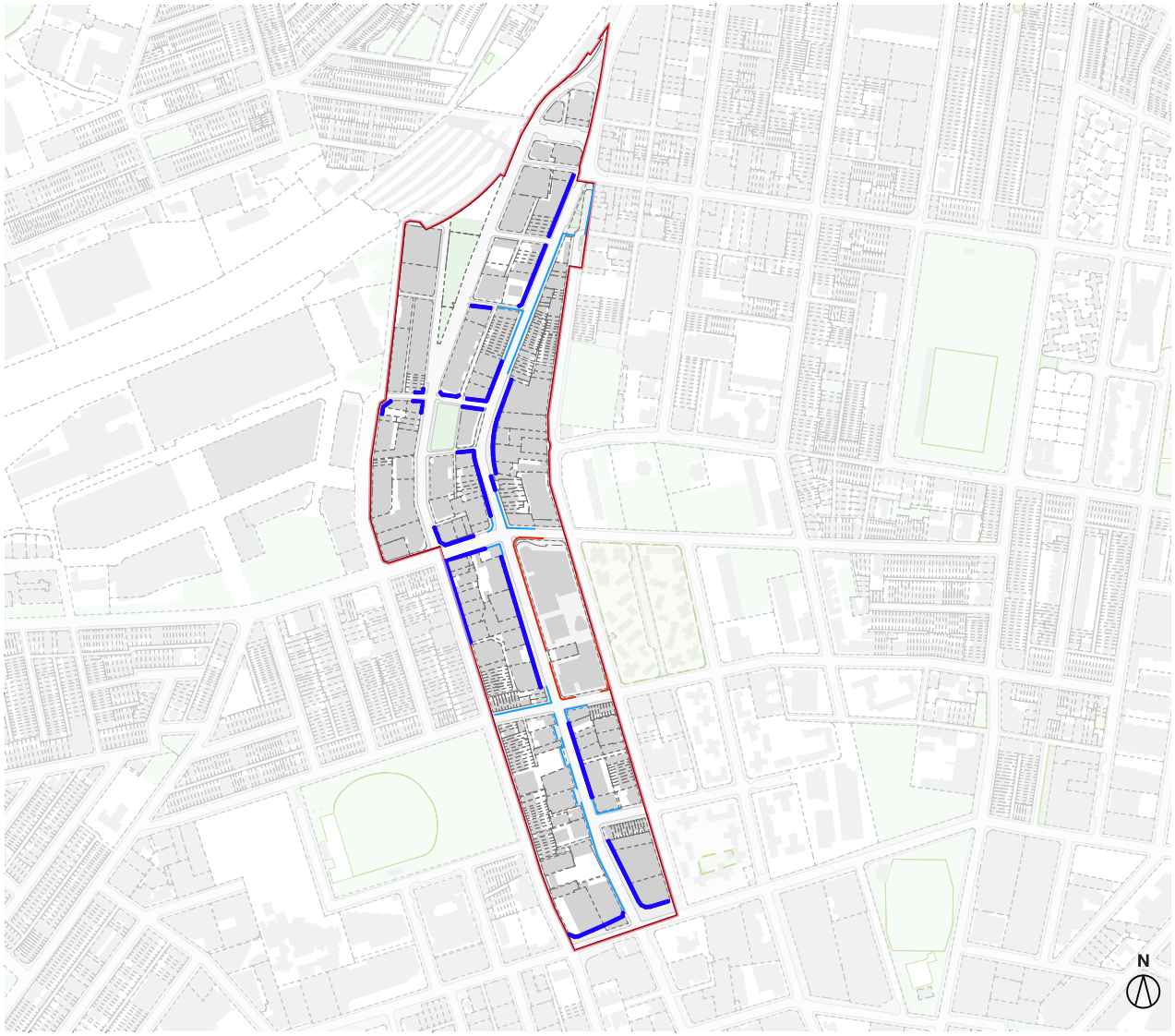



Figure 170: Fine Grain Map
Source: City of Sydney, TZG overlay.

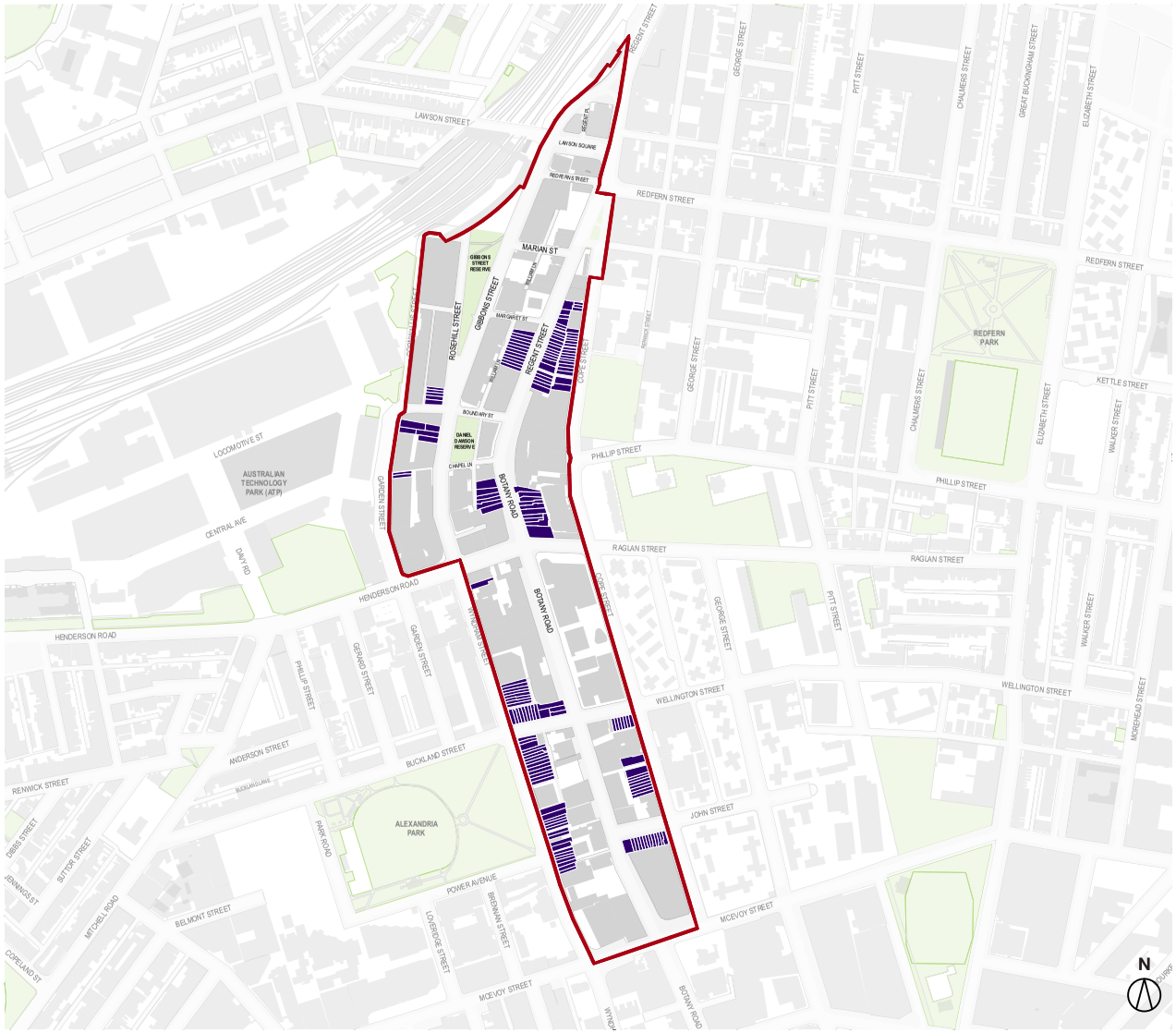
## 3.8.8 Fine Grain

'Fine Grain' urban patterns result from small lots with detailed and human scale façades or frontages. Often fine grain results from the historical built form, streets, places or developments being retained. Within the study area, the fine grain patterns are made up of a collection of terrace houses, low scale residential, retail shop fronts and smaller industrial buildings.

A concentration of 'fine urban grain' is seen at Regent street, at the existing retail high street shops as well as on Wyndham Street, opposite Alexandria Park. At Regent Street, the fine grain also has a tangible 'gritty' feel.

Below Raglan St and Hendersen Road the fine grain built form is more dispersed and less prevalent, particularly on Botany Road, where larger industrial or commercial buildings exist.

Some terrace housing exists along Cope Street creating a fine grain, with a residential feel.




**LEGEND**

- Small Lot
- Small Lot Frontage
- Active Frontage DCP
- Active Frontage LEP
- Existing Active Frontage

Figure 171: Fine Grain Map
Source: City of Sydney, TZG overlay.

## 3.8.9 Existing Street Setback Controls

Existing Buildings Generally have no setback from the lot edge.

Some warehouse or large development stock, built largely between 1950 onwards, incorporate SP2 special infrastructure road reserve setbacks from Botany Road.

Newer developments in the north of the area, particularly around Lawson Street and Redfern Station incorporate some setback at the upper stories of the development.

The planned Waterloo Metro station has setbacks as well as tower forms to allow for east-west wind paths.

SP2 Infrastructure road widening land reservation is reinforced in the City of Sydney DCP with a footpath widening setback for new development.

Within the study area there is no land that falls under the City of Sydney DCP 2012 Building Setback and Alignment map, meaning that no setback above nominated street frontage height may currently apply.

### Street frontage heights

Many areas within the Botany Road Corridor are subject to street frontage heights controls under the City of Sydney DCP 2012, with the aim to reinforce and enhance the existing character by responding to the nominated street frontage heights and setbacks.

None of the land within the Botany Road Corridor is however subject to street frontage heights under the Special Character Areas maps.

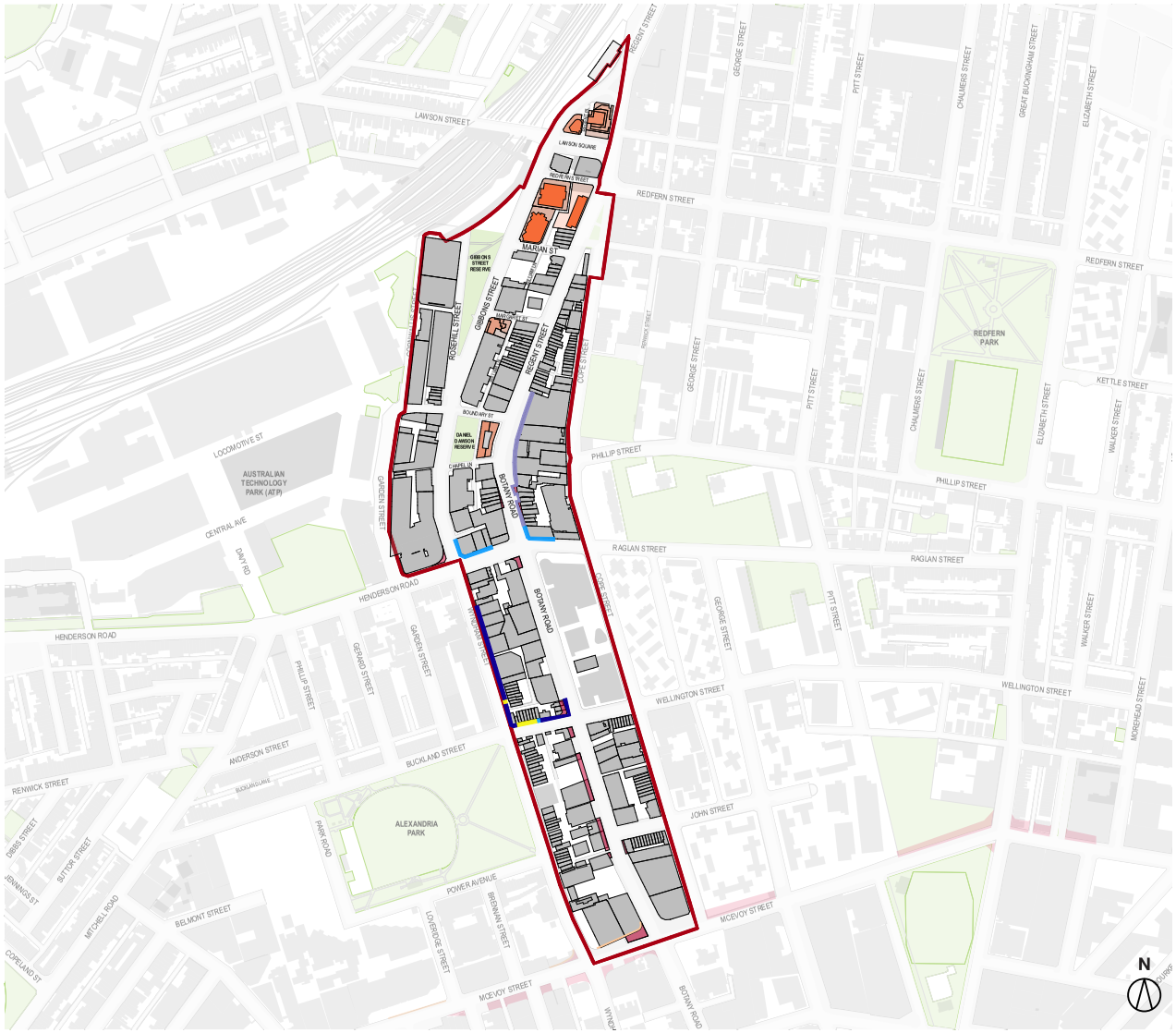
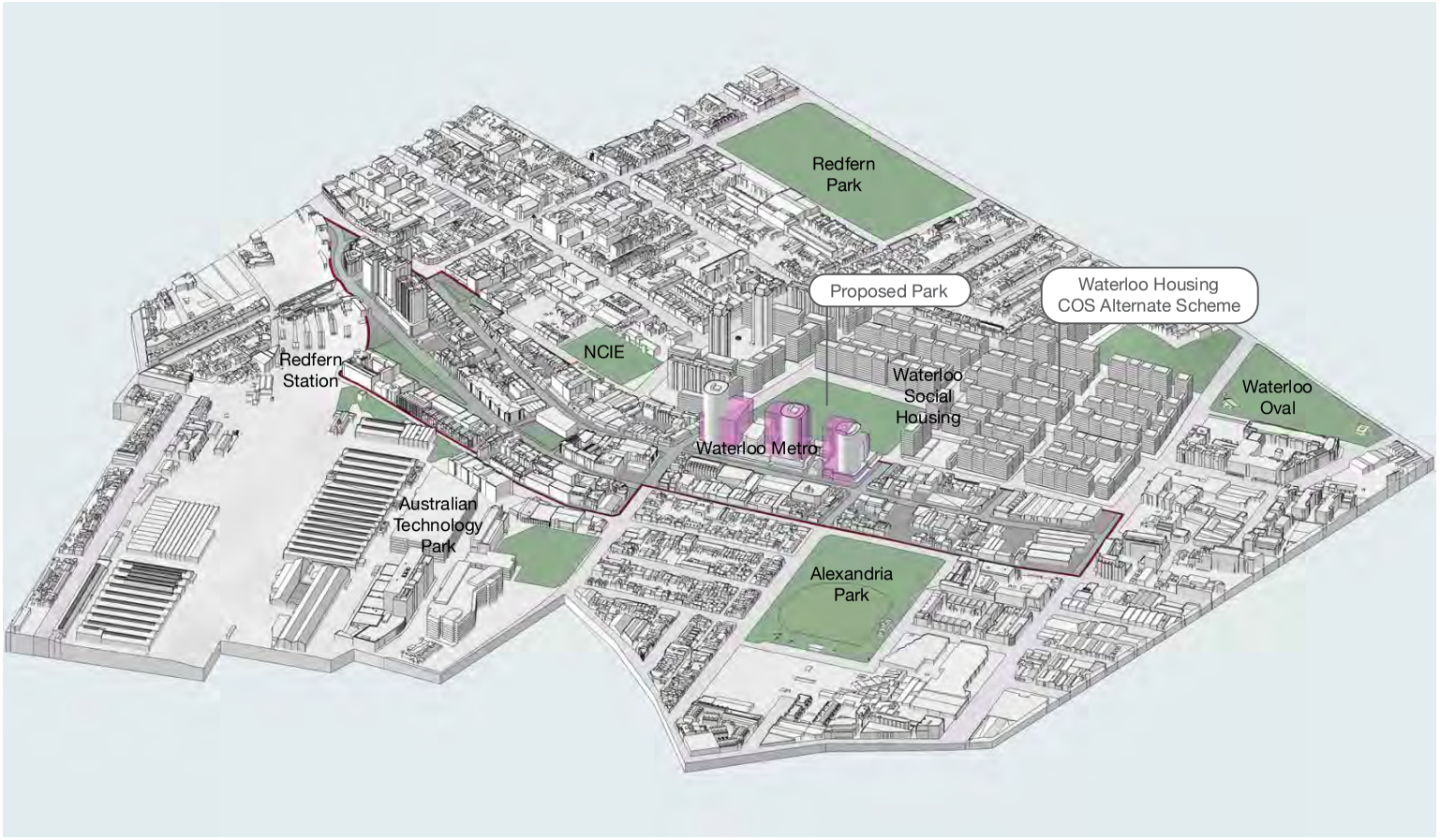



Figure 172: Street Setbacks
Source: City of Sydney LEP / DCP, TZG overlay.

## 3.8.10 Study Area - Future Built Form

Within a 15 year period, there is expected to be large scale changes to urban density within the Waterloo Housing Estate. Figure 221 adjacent shows the City of Sydney's proposed alternate scheme for the Waterloo Housing Estate that limits heights across the site and includes a proposed large public open space.

Both this scheme and LAHC schemes (Figure 222) provides substantial affordable housing, social housing and market housing directly adjacent to the study area, emphasising the need for the Botany Road Corridor to provide a balance between residential and a non-residential floorspace in the future.




**LEGEND**

Updated Waterloo Metro Built Form outline

Figure 173: 3D Axonometric - Study area with future built form anticipated for a 15 year time horizon

## Future Built Form - 15 year Staging

Figure 222 adjacent shows the Land and Housing Council (LAHC) proposed Stage 1 development scheme in the southern portion of the Waterloo Housing Estate. The proposed heights include dispersed tower forms with varied lower scale residential flat buildings, ultimately providing higher density of residential development than the City of Sydney scheme.

This scheme currently comprises 749 social housing dwellings owned by NSW Land and Housing Corporation, 125 privately owned dwellings, and some commercial properties on the south-east corner of Cope and Wellington streets.

The City of Sydney (Waterloo Estate's planning authority) is currently assessing a planning request from LAHC to increase building heights and density to allow for around 3,000 dwellings, plus space for businesses, shops and community facilities, along with a large new park and other public spaces.

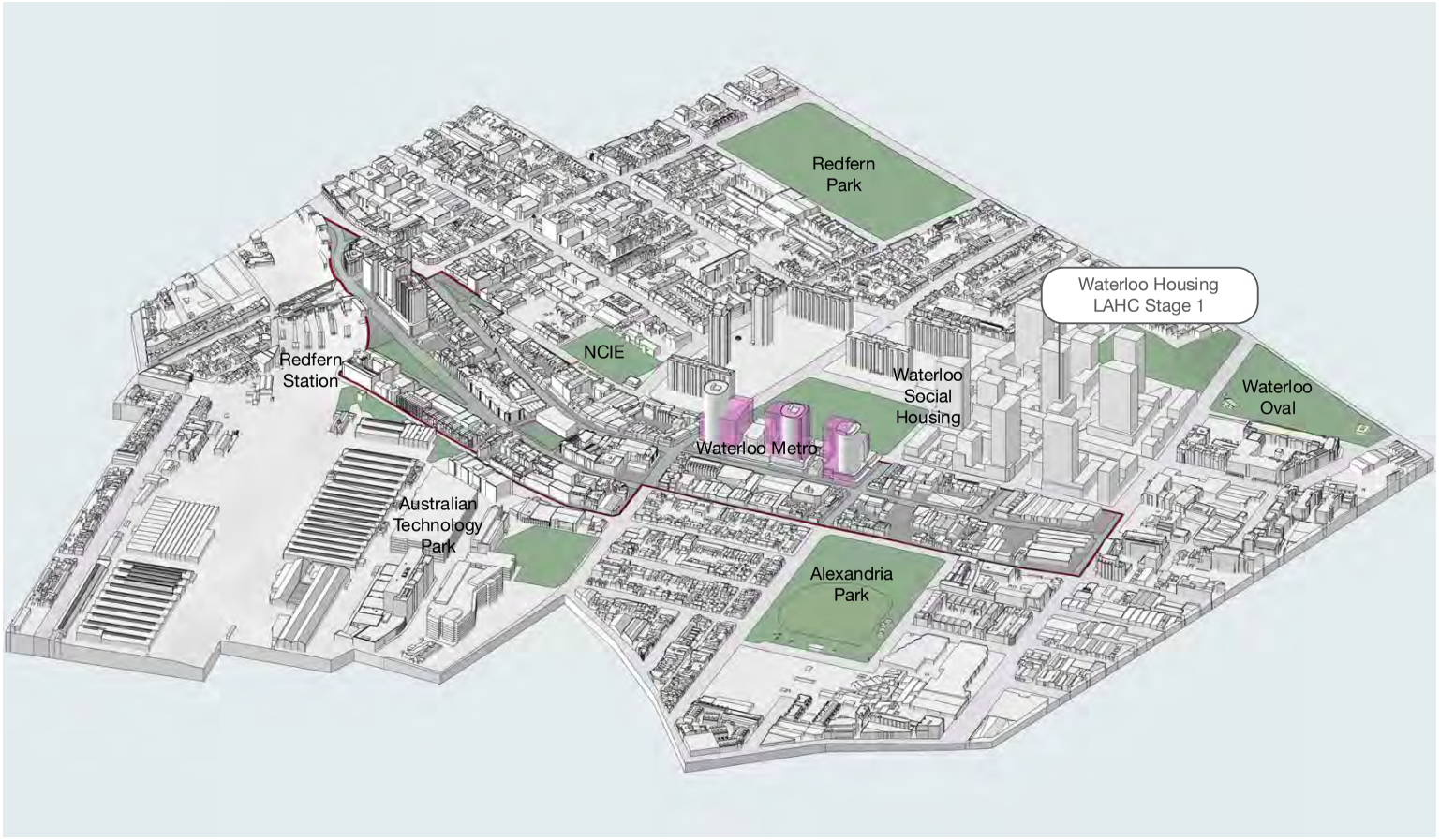



Figure 174: 3D Axonometric - The Botany Road Corridor study area with future built form, shown with staged implementation of the Waterloo Housing Redevelopment

## 3.8.11 Current and Future Development

The study area currently has various scales of development approved or under construction including:

1. Waterloo Metro Station Quarter
2. Redfern Station Redevelopment
3. Pemulwuy Redevelopment / The Block Redevelopment
4. Student Housing on Regent Street
5. Student Housing on Gibbons Street
6. City of Sydney approved Development Applications




**LEGEND**

Proposed Development

Updated Waterloo Metro Built Form outline

Figure 175: 3D Axonometric - Proposed Development within or adjacent to the study area

## 3.8.12 Capacity Analysis

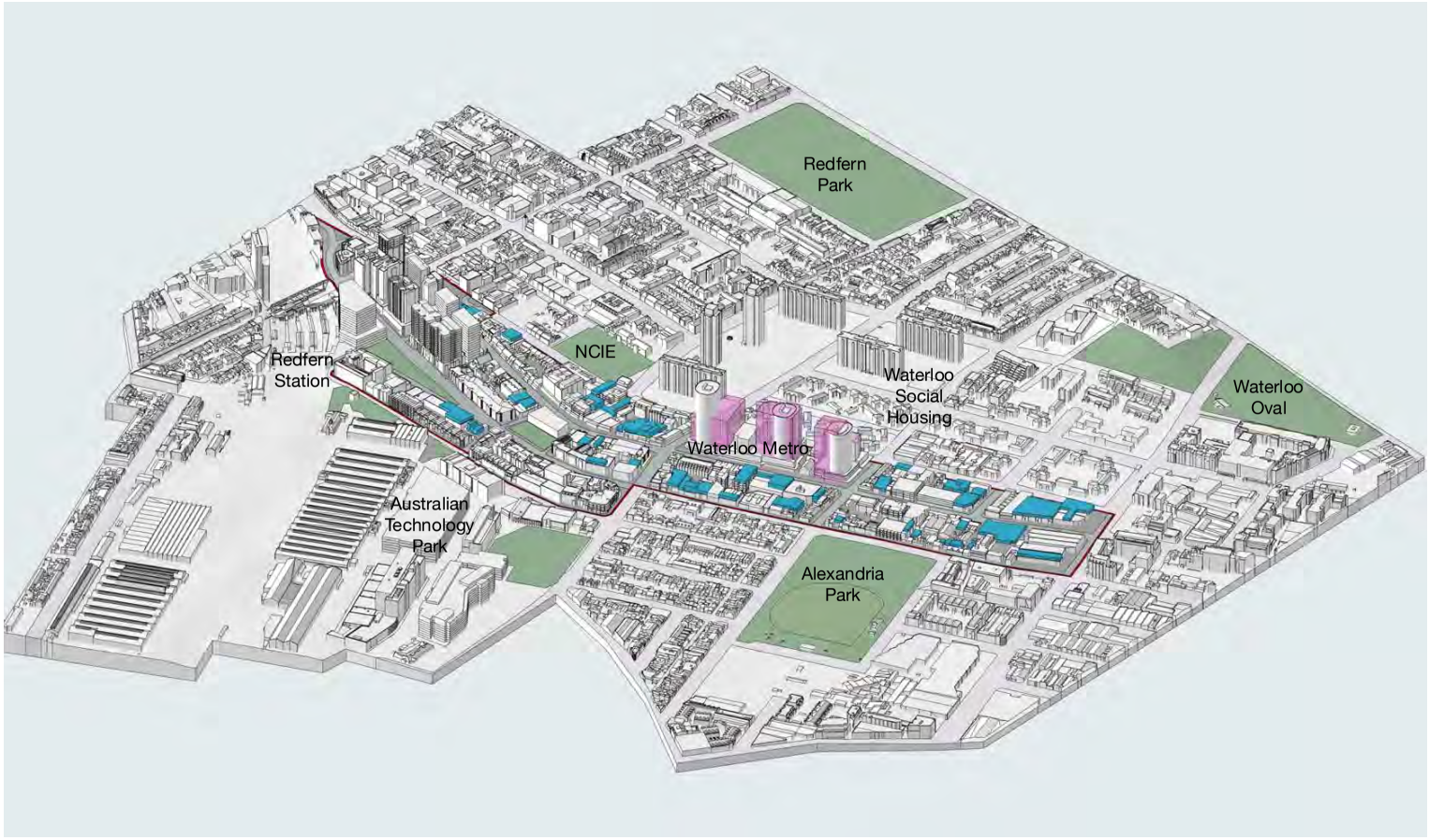
Capacity Lots have been identified within the study area by reviewing the City of Sydney's Floor Space Employment data (FES) against existing design parameters such as current FSR, Lot Size, land ownership type and current Height of Building Controls. Various constraints such as recent development, strata ownership, whether site small size, state significant development or a heritage item has eliminated certain lot from possible development.

For Figure 224 adjacent, if a lot has available FSR under its existing Height of Building controls, and is not constrained by 2 or more constraints, it is considered a opportunity capacity lot for future development.

Key Targets and yields within the study area for non residential floor space are:

- Waterloo Metro Quarter current scheme - 12,000m2 commercial
- Waterloo Metro Quarter updated scheme - 33,500m2 commercial
- BIS employment study - 138,000m2 (for Redfern to Eveleigh study area)

A key recommendation from the BIS Employment Study is that an area suitable for commercial floor space could be directly opposite Waterloo Metro Quarter due to the study area's proximity to transport.




**LEGEND**

Updated Waterloo Metro Built Form outline

Capacity sites based on City of Sydney FES Data Analysis for non-residential floorspace

Figure 176: 3D Axonometric showing capacity sites with future built form (15 years time horizon) and current built form controls applied to the site

## Capacity: Impact of existing Height and FSR Controls on floorspace yield

Under existing height controls, the lots identified to have capacity yield a relatively small amount of additional floorspace.

Larger sites, such as those bounded by McEvoy Street, Wyndham Street and Cope Street, those adjacent to Waterloo Metro Station development or those within Rosehill Street have large site area, but comparably small capacity with current height controls.

In order to gain a greater yield of commercial floorspace with future development it is highly likely that both height and FSR controls will need to be changed to incentivise landowners to undertake development.

| LAND USE ZONE | SUM OF RESI _FA | SUM OF NON_RESI FA |
|---|---|---|
| B4 | 19,143 | 3,730 |
| R1 | 3,697 | 271 |
| TOTAL | 22,840 | 4,000 |

*Sums above represent assumed totals dependant on current land use as residential versus non.residential

Figure 177: Residential and Non-Residential floorspace area (FA) yield with current height and FSR controls (m2).

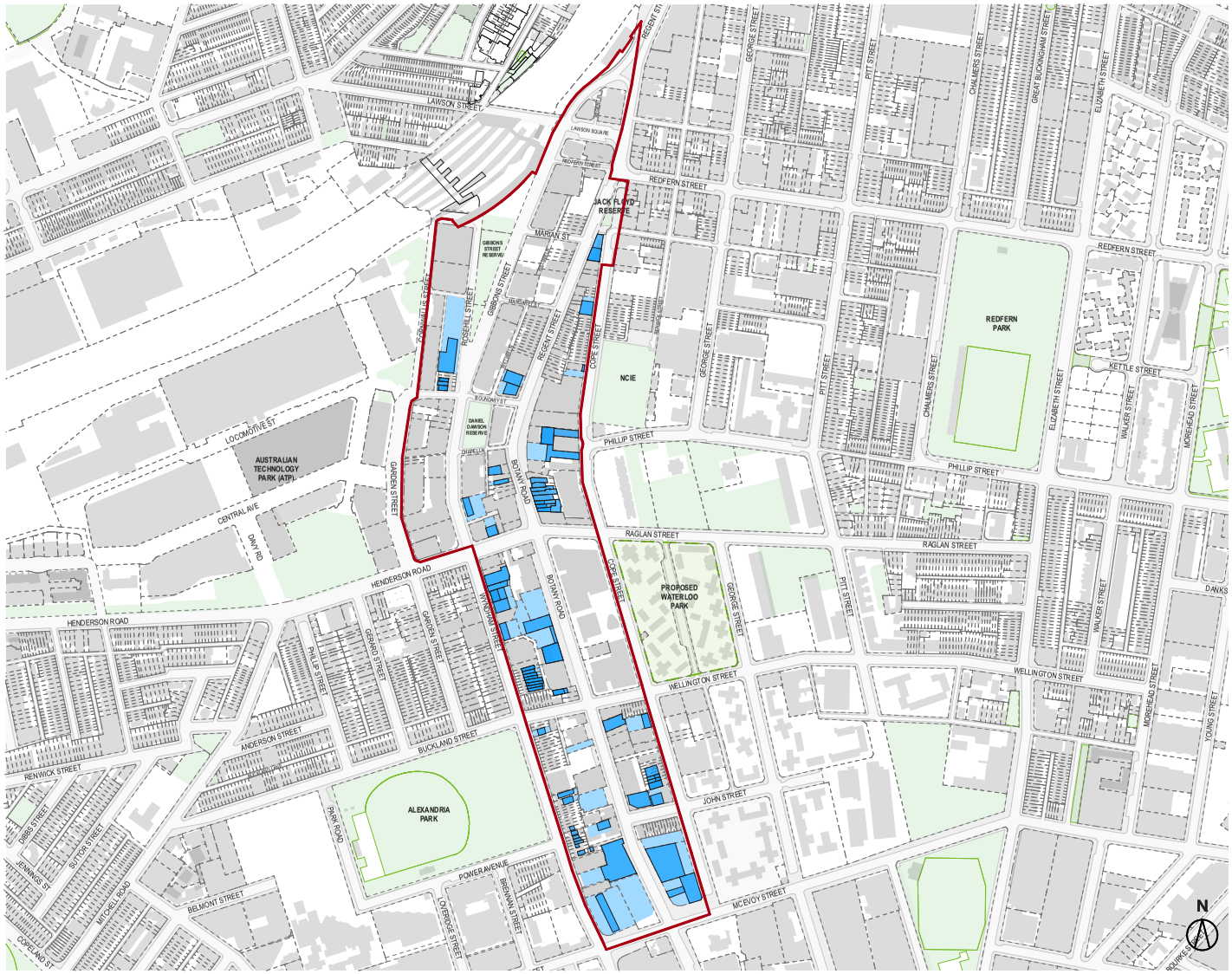



Figure 178: Capacity Sites - Opportunity Sites with current floorspace yield

## Capacity: Impact of Strata Ownership

Whilst Strata held sites are generally expected to have less chance of future development, due to multiple owners, some sites within the study area have been identified as possible floor space growth opportunities due to the low number of strata owners. A maximum number of 50 strata owners was determined by the City of Sydney to be suitable for selection as a capacity site to allow for larger sites to develop.

This consideration has been made in light of changes made to the NSW Strata Laws as from 30 November 2016. Prior to the changes all Lot Owners were required to be in agreement if a Strata Building was to be sold as a whole. The changed law now allows under the Strata Schemes Development Act, 2015 that if there is at least 75% of the lots in a Strata Scheme, the Owners Corporation can force the dissenting Lot Owners to join in a sale of the strata building if there is compliance with the Rules and Regulations.

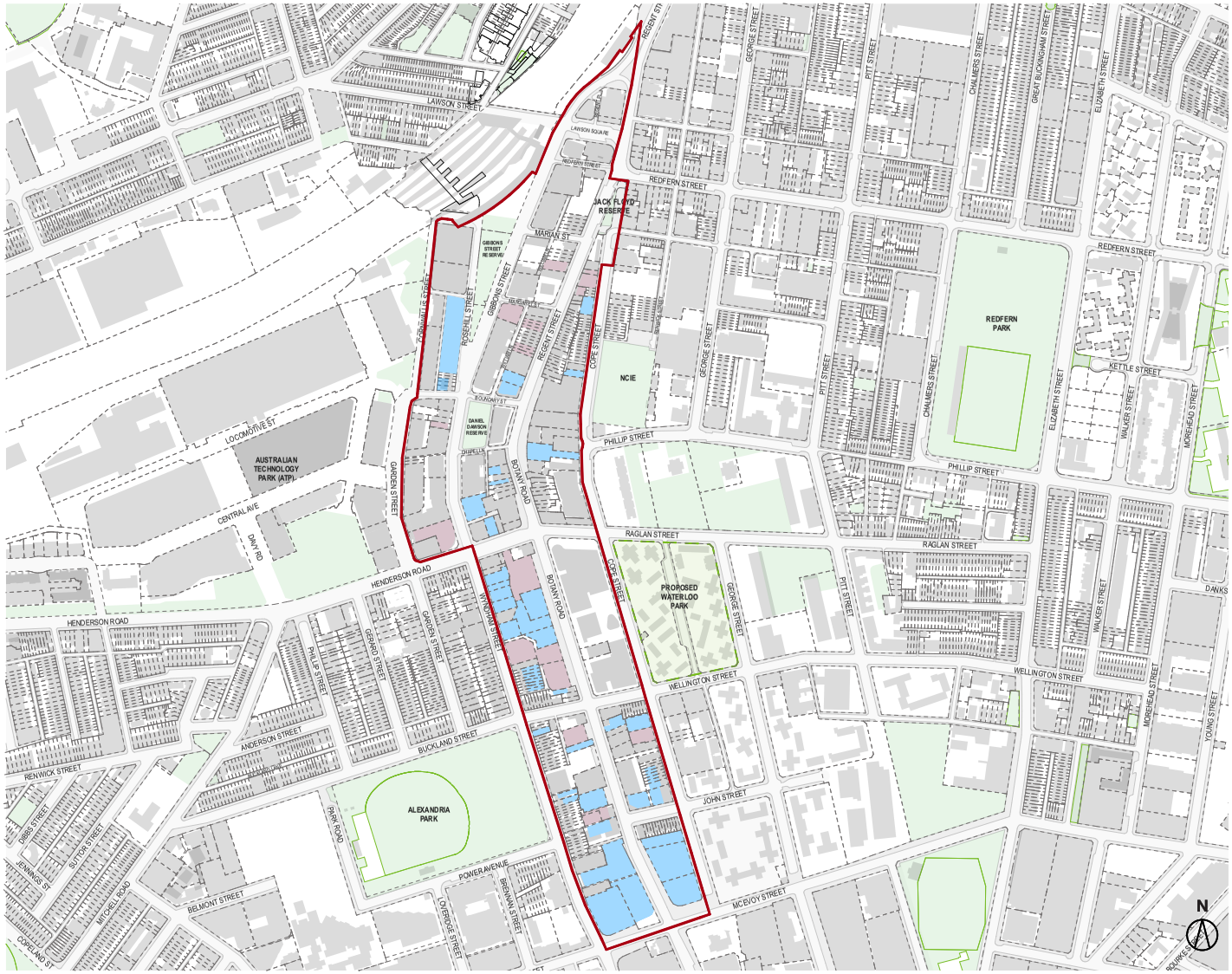



Figure 179: Capacity Sites - Strata and Opportunity Sites

## Capacity: Development Opportunity Areas

In Figure 228 key development opportunity areas have been identified as having the greatest capacity and possibility of accommodating floor space growth within the Botany Road Corridor study area due to:

- Their ability to leverage off increased Transport patronage,
- Identified opportunities to provide public domain and address improvement opposite the future Waterloo Metro Station.
- To support the growth of the over-station development with high demand employment floor space.
- Proximity to the Australian Technology Park employment lands.
- The larger size of lots, as well as possible height yields for commercial floor space.

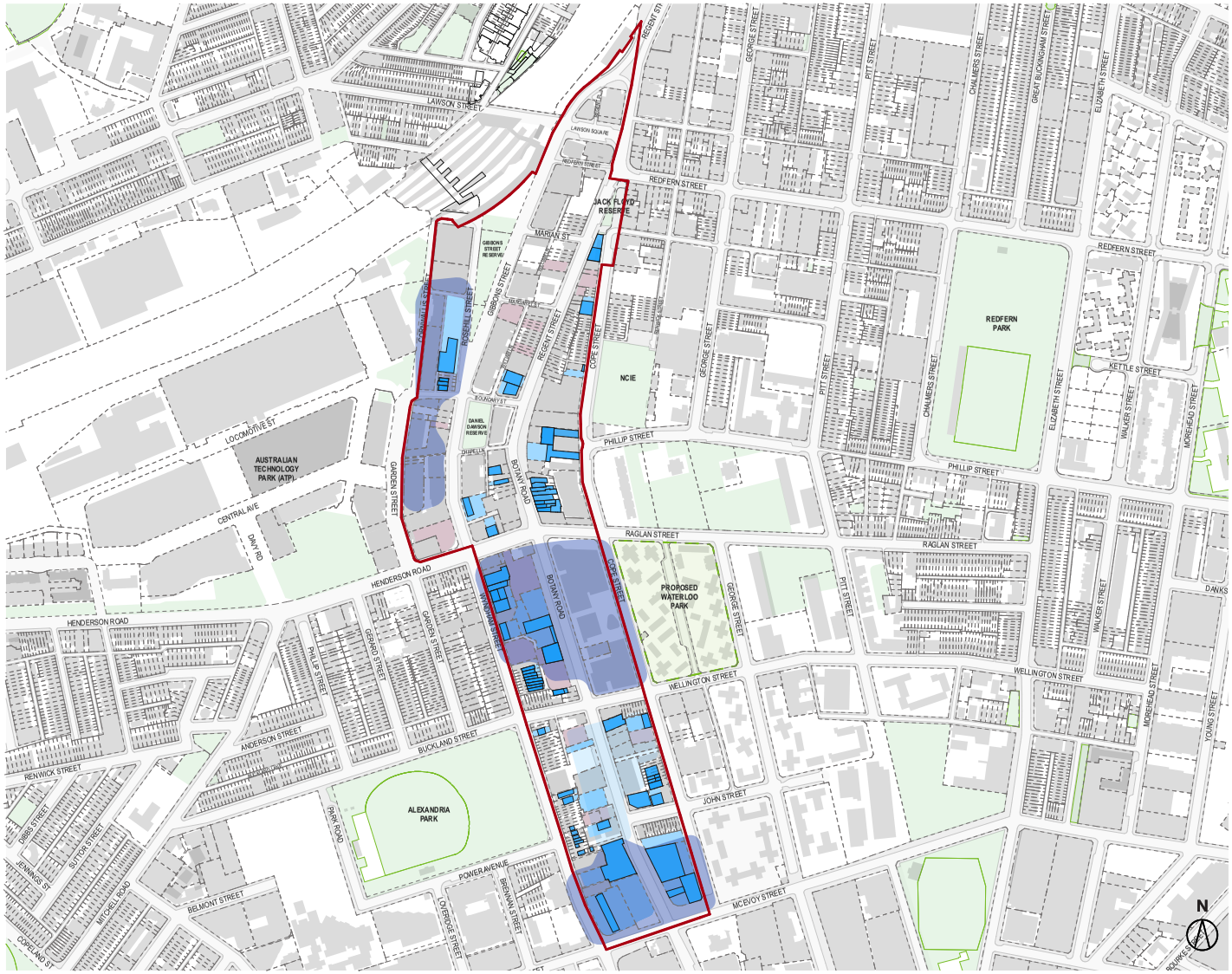



Figure 180: Development Opportunity Areas

## 3.8.13 Solar Access

Figure 229 adjacent shows Solar access planes that have been developed to enable continuation of existing solar access to parks, open space or significant landscaped areas. These solar access planes are based solely upon access to public open sapce and are intended to optimise and maintain existing solar amenity and assume no additional overshadowing occurs on open space between 9am and 3pm on June 21, Winter Solstice. Landscaped Special Areas of Importance identified for solar amenity protection include the NCIE's public open space, Jack Floyd Reserve, Alexandria Park, and the cluster of significant Aboriginal and Torres Strait Islander organisation at north Cope Street. Solar access to these public open space must be maintained at maximum 50% solar access to a continuous space for a minimum 4 hour period between 9m and 3pm on June 21, Winter Solstice. The exception to this is the NCIE, where 0% additional overshadowing is assumed in order to protect this significant space from impact from built form heights. Solar access to linear parks is not required to be maintained as per the City of Sydney DCP.

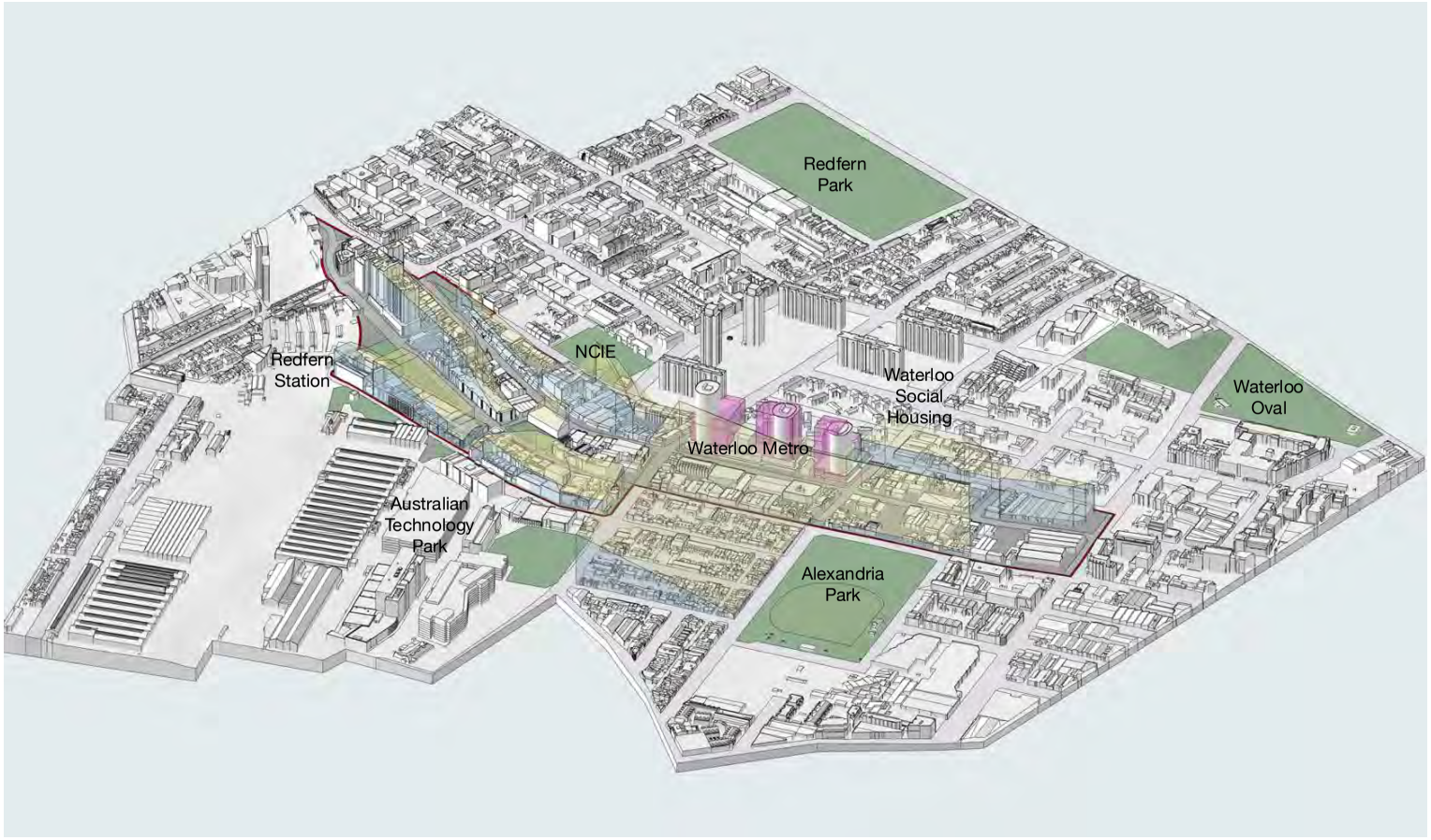



Figure 181: 3D Axonometric showing proposed solar planes across the study area

## Maximum Height in Storeys at the Solar Access Plane

The maximum possible built heights (in storeys) allowable in urban areas adjacent to parks, open space or reserves within or adjacent to the Botany Road Corridor study area can be determined by allowing some overshadowing to occur on the Winter Solstice. Figure 230 adjacent shows the maximum height in storeys achievable on various lots where no more than 50% additional overshadowing between 9am and 3pm on June 21 Winter Solstice.

If number of stories was maximised to the Solar Access Plane (SAP) determined, some height of Buildings could reach up to 25 storeys. However, where existing heritage conservation areas exist, historical fabric and areas of existing fine grain character considerations may further determine areas requiring lower heights than the maximum under the Solar Access Planes for landscaped open space. These areas are primarily at Regent / Cope Street near the NCIE, at Gibbons Street near Daniel Dawson Reserve to protect solar access, at Wyndham Street and at John Street.

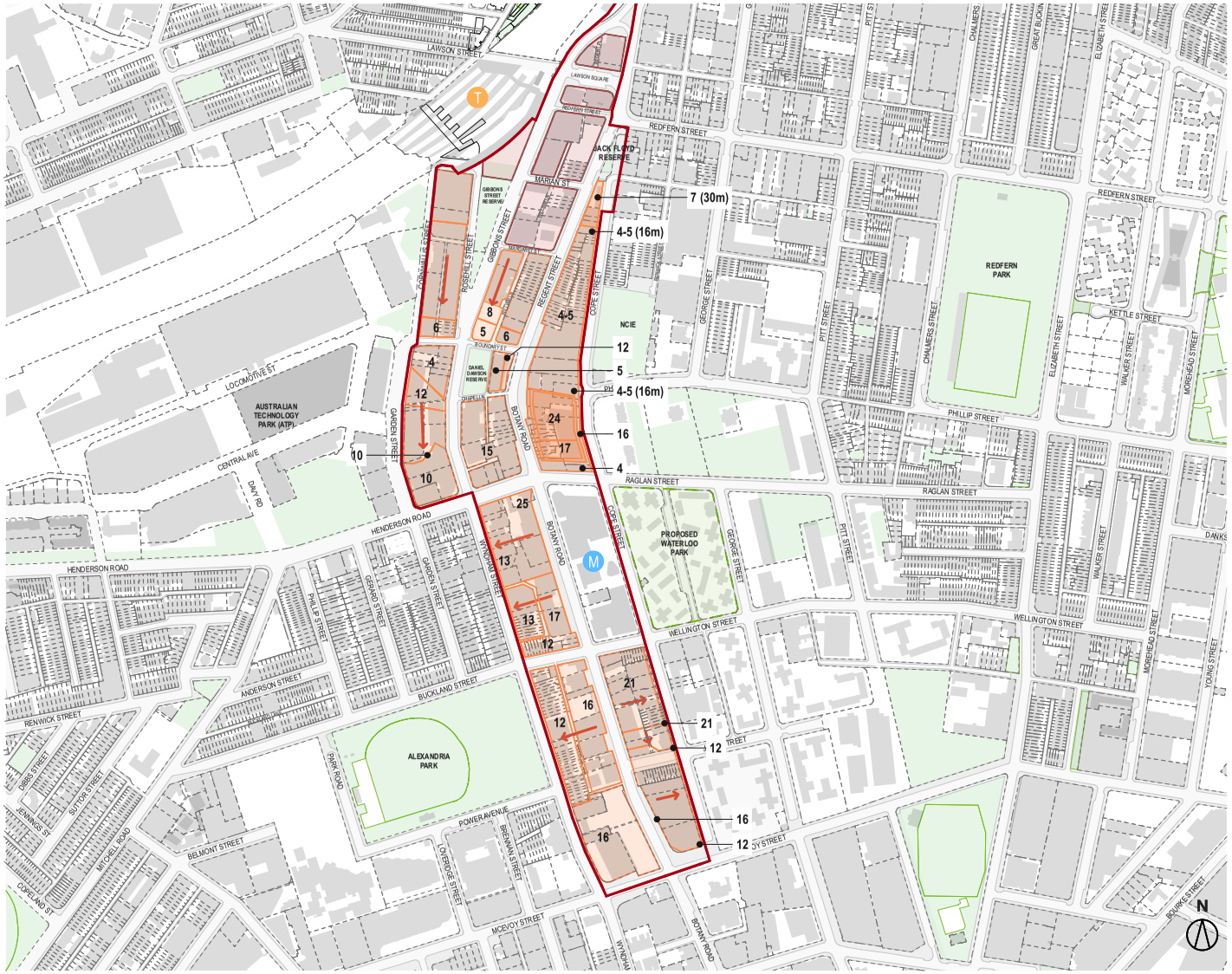


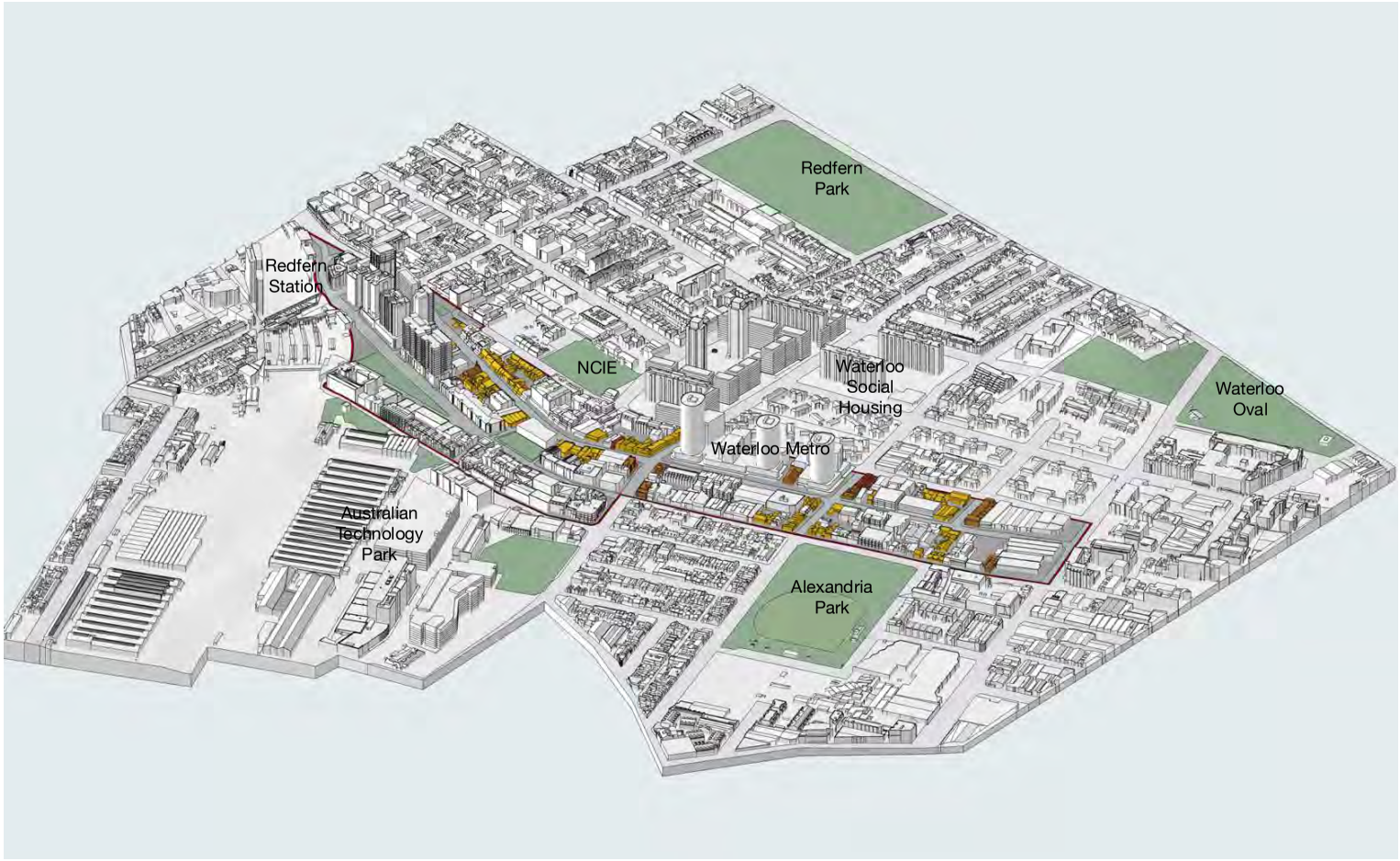

Figure 182: Maximum height of buildings identified with Solar Access Plane

## 3.8.14 Sensitive Areas

### Responding to Heritage Significance

Within the Botany Road Corridor Indigenous Significance report and Non-Indigenous Heritage Built Form report there are various sensitive areas that have been identified that require protection with future development. These include:

- Public Spaces that have been identified with Indigenous Significance.
- Built form that has been identified as having Indigenous Significance.
- Existing Heritage items.
- Proposed Heritage items.
- Proposed Contributory built form items.
- Heritage Conservation Areas.




LEGEND

- contributory items
- heritage items - existing
- heritage items - proposed

Figure 183: 3D Axonometric showing Summary of existing and proposed Heritage Items and Contributory Items

Figure 232 displays two key solar access planes that have been devised to provide solar access to key areas of Indigenous and non-Indigenous significance. These areas occur at two urban blocks - one bounded by Regent Street / Cope Street and one bounded by Wyndham Street / Botany Road and are devised to protect:

1. Residential properties within Alexandria Park Heritage Conservation Area facing the western side of Wyndham Street. This solar plane has been devised to private minimum 2 hours solar access to living areas within these properties between the hours of 10am-12pm on June 21, winter solstice.
2. The NCIE's private open space with the view to 0% additional overshadowing.
3. Residential Contributory items facing Buckland Street, whose private open space and living areas are primarily situated at the rear of their site.
4. Amenity to Indigenous signficant places, Heritage items and contributory items situated on the western side of Regent Street.




**LEGEND**

- contributory items
- heritage items - existing
- heritage items - proposed

Figure 184: 3D Axonometric showing Summary of existing and proposed Heritage Items and Contributory Items with heritage solar access planes overlaid.

## Heritage Items

Existing Heritage items and existing Heritage Conservation Areas within the study area are shown on Figure 233 adjacent.

Sensitive built form areas that have been identified for protection and sensitive responses with development are:

- Items proposed to have their Indigenous Significance included within an existing or new Heritage listing such as:
  1. Aboriginal Housing Company Office
  2. Former and First Aboriginal Medical Service (AMS) Office
  3. Former Aboriginal Legal Service (ALS) shopfront
  4. A current cluster of Aboriginal and Torres Strait Islander amenities, services and cultural Institutions used today by the Indigenous Community
  5. Jack Floyd Reserve
- Proposed Contributory Items; and,
- Proposed extension to Heritage Conservation Areas.

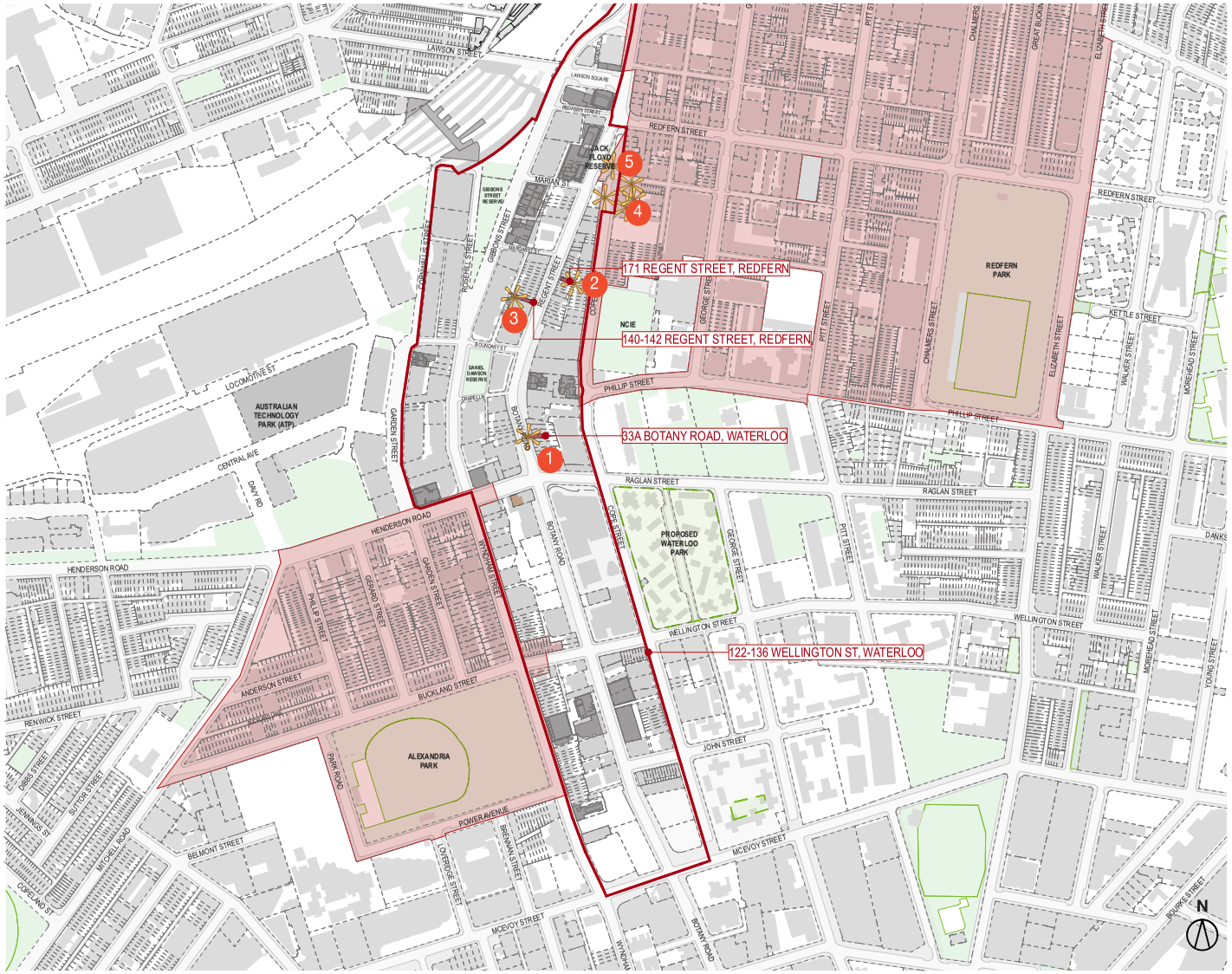


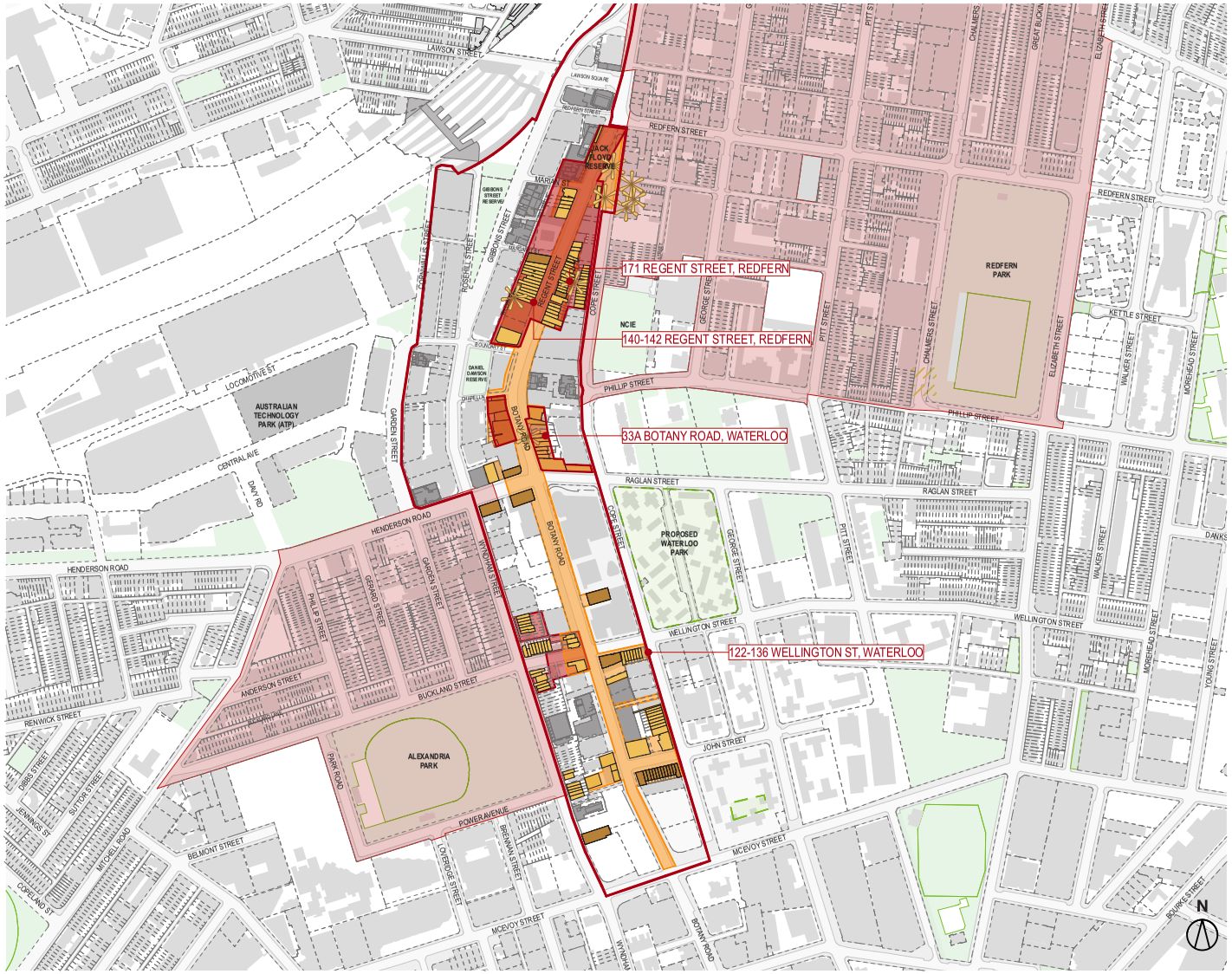

Figure 185: Existing Heritage Items and Heritage Conservation areas

## Heritage Conservation Areas

Various new or adjusted Heritage Conservation Area approaches are proposed along Botany Road / Regent Street[65] with the aim to:

- Capture areas of shared Indigenous and Non-Indigenous History.
- Preserve the fine grain of Regent Street.
- Preserve historical fabric within intersection corners.
- Provide for opportunities for Indigenous interpretation of social and culturally significant events.
- Reinforce Botany Road and Regent Street's role as a key Indigenous trade route, key Indigenous significant place and Botany Road Corridor.
- Recognise Botany Road as a link between Sydney Harbour and Botany Bay.
- Establish Botany Road / Regent Street as an Indigenous road and place.
- Acknowledge Jack Floyd Reserve as a key Indigenous signficant place.

Existing Heritage Conservation Areas within the study area are proposed to be extended along Wyndham Street and Cope Street.



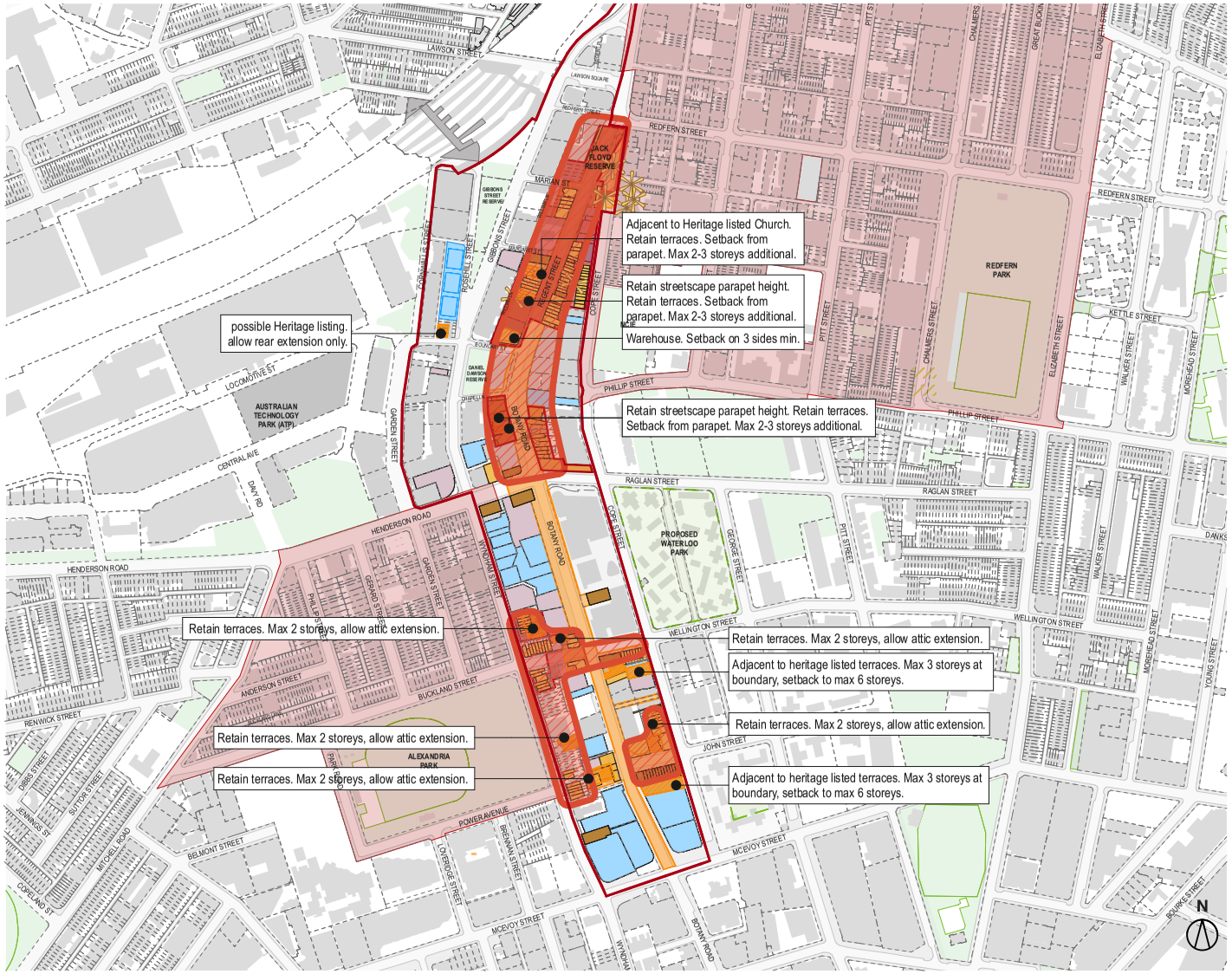

65: Refer TZG Non-Indigenous Heritage Report, 2020. To take a conservative approach to heritage and historical built fabric, the diagram adjacent references 'Option 3 Conservation Area'.

Figure 186: Proposed Heritage Items and Proposed Heritage Conservation Area updates

## Establishing Special Character Areas

When comparing proposed or existing sensitive heritage areas and historically significant places with development opportunity sites, some key areas can be identified that may require sensitive or respectful built form approaches within future development.

These areas have been identified on Figure 235 adjacent as potential Special Character Areas for consideration within the Urban Design Options and Planning Controls recommendations. Special Character Areas with the future planning controls are important to retain the identity and unique qulaities of place that may fall outside of traditional heritage conservation areas. Proposed considerations for built form within or adjacent to these Special Character Areas is annotated in the adjacent figure.




**LEGEND**

- Heritage Conservation Area
- Proposed extension to Heritage Conservation Areas
- Proposed New Heritage Conservation Area
- Heritage Contributory Items
- Existing Heritage Items
- Proposed Heritage Items
- Indigenous significance present within built form or public domain
- Capacity Lot
- Capacity Lot - Strata Property
- Sensitive Development Area - Special Character Areas

Figure 187: Sensitive Heritage areas compared with opportunity sites

## 3.8.15 Health and Amenity

### Noise and Air Pollution Impacts

Local Meteorological Conditions mean In summer, winds are typically from the northeast and southeast quadrants, with dominant winds from the northeast and south. During winter, winds are typically from the southwest and northwest quadrants, with winds from the northeast most frequent. Spring has similar distribution to the annual distribution, however indicates a slightly higher portion of northeast winds. Generally, existing Residential receivers on Botany Road, Gibbons Street and Regent Street are affected by Noise and Air quality particularly where no setback is present from the lot edge.

### Ambient Air Quality Summary

Main sources of air pollutants in the area include emissions from various commercial or industrial activities, motor vehicle exhaust and domestic wood heaters. Emissions, (PM10) concentrations are nominally highest in the summer months. The data indicate that levels of NO2 are relatively low compared to the criterion level and show a clear trend of seasonal fluctuation. Measured levels of CO are low compared to the criterion level and show a similar but less pronounced seasonal fluctuation trend relative to the trends in NO2 concentrations.

### Noise Quality Summary

Noise levels at façades along Botany Road/ Regent Street are generally consistent at between 67-72 $L_{Aeq}$ (Day 15-hour) and 65-69 $L_{Aeq}$ (Night). The noise survey results from Gibbons Street indicate that road traffic noise levels along this road can be similar to those along Botany Road/ Regent Street.

### Built Form Review for Noise and Air

The area accommodates a broad range of permissible building heights, ranging from 9m to over 100m. A portion of the Study Area, bounded by Gibbons, Regent, Lawson Square and Margaret Street, has no maximum building height under the LEP.

There is limited to no separation between each building, with only laneways and driveways providing some separation between structures.

### Existing Roads Review for Noise and Air

The separation distance to the roads within the Study Area is varied. Buildings within the Study Area can be typically characterised as vertical structures with limited to no separation between each building, with only laneways and driveways providing some separation between structures. At the Intersection of Chapel Lane and Botany Road / Regent Street, the roadway bends and an area of increased separation distance (approximately 12m) in front of the IGA shopping centre.

Vertical Façades exist in many recent developments, increasing noise. These will also result in roadway canyoning which prevents the air emissions from dispersing into a large volume of air before reaching people. Idling, stopping at and accelerating away from traffic lights, results in increased noise and air pollution. The percentage of heavy vehicles are a dominant contributor to the air pollution and noise emissions currently experienced within the Corridor.

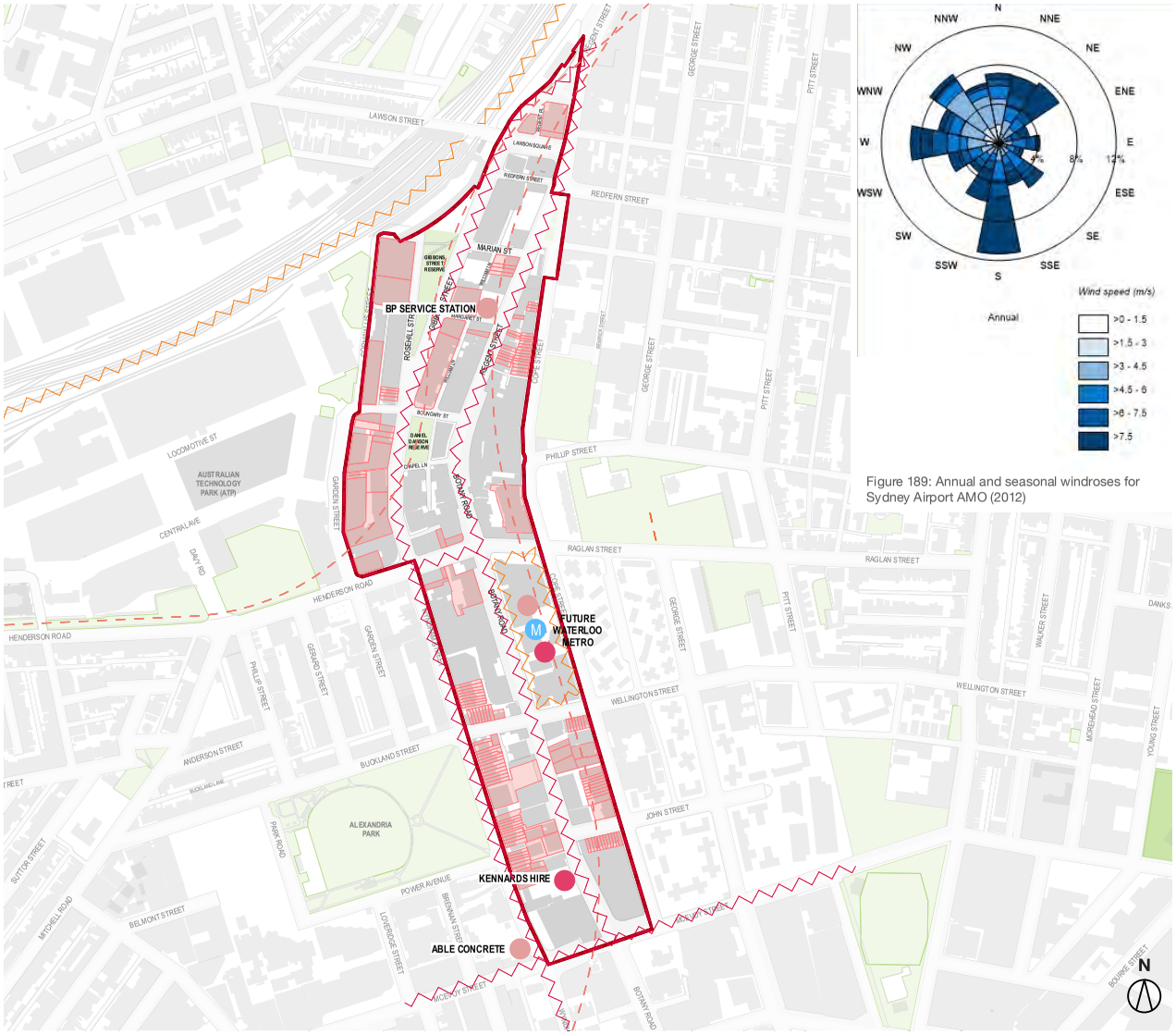



Figure 188: Existing Noise and Air impacts
Source: TZG overlay of Todoroski Sciences Stage 1 report findings.




Figure 189: Annual and seasonal windroses for Sydney Airport AMO (2012)