

66-82 Talavera Road Macquarie Park

Submission to NSW Department of Planning and Environment
Herring Road Urban Activation Precinct

On behalf of Holdmark Property Group
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Executive summary

The opportunity

This report has been prepared by Architectus on behalf of Holdmark Property Group, for 66-82 Talavera Road, Macquarie Park. The site adjoins the Herring Road Urban Activation Precinct (UAP).

There is existing demand for large district open space in Macquarie Park, as identified in the City of Ryde Integrated Open Space Plan, prepared by Clouston Associates, 2012. The increased densities under the Herring Road UAP and under Ryde LEP 2014 – Amendment No. 1 (Macquarie Park) will increase this demand and place further pressure on open spaces.

Public open space and amenity is a fundamental part of the success of any planned mixed use centre or business park.

Importantly, neither the new LEP for Macquarie Park nor the Herring Road UAP provide for the minimum 1.5 hectare district open space recommended by the Integrated Open Space Plan. The owners of the site are willing to construct and dedicate a 1.5 hectare open space to Council, as part of a rezoning for high density mixed use development on the balance of the site.

The proposal

Architectus has prepared a master plan that prioritises the design, orientation and usability of a new 1.5 hectare open space to service Macquarie Park.

The new open space is proposed to be located on the intersection of Alma Road and Talavera Road, where it will be highly visible and will have a relationship with the Macquarie Park Shopping Centre, and is one block away from Waterloo Road. The park is 550m from Macquarie University Train Station and within a comfortable walking distance of many businesses and many new dwellings in the Herring Road UAP (as indicated in Bitzios Consulting Traffic Report; see Appendix A).

The remaining part of the site is proposed to be developed for residential uses. The proposed built form is designed to maximise solar access to the park and public domain. The master plan

achieves an FSR of 3.5:1, with maximum building height of 120m, which is consistent with the maximum proposed UAP controls.

It is worth noting that if the site was developed for commercial uses at the current FSR of 1.5:1, there would be 2.2 times the peak morning traffic volume than that generated by the proposed, predominately residential scheme.

Recommendation and next steps

Whilst Architectus recognises the importance of retaining employment lands in Macquarie Park, in this instance the opportunity and broad public benefit justifies the rezoning of this site to B4 Mixed Uses. The proposal retains a large proportion of the number of jobs historically generated on this site.

It is recommended that the subject site be included in the Herring Road UAP and rezoned for mixed uses and a 1.5 hectare public open space.

Inclusion of the site in the UAP would regularise the UAP boundary as the site is surrounded on three sides by the UAP boundary and the M2 Motorway.

The proposal offers a unique opportunity to satisfy an identified need for a large open space, which would be provided at no cost to the public purse.

Architectus and Holdmark would be pleased to meet with the NSW Department of Planning and Environment and City of Ryde Council to discuss this opportunity and how it might be delivered.

For more information, please contact:

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Proposed master plan



Artists impression of view from development overlooking proposed new park

The team

In preparing this report Architectus has relied on the expert of advice of a number of specialised consultants. Our team includes contributions and advice from;

Clouston Associates - Landscape architects

Clouston Associates is a multi-disciplinary practice, comprising landscape architecture, urban design, landscape planning, landscape ecology and horticulture skills.

Clouston are well placed to advise on this particular project, having prepared the City of Ryde Integrated Open Space Strategy, which was adopted by the City of Ryde Council in 2013.



Bitzios Consulting - Traffic and transport consultants

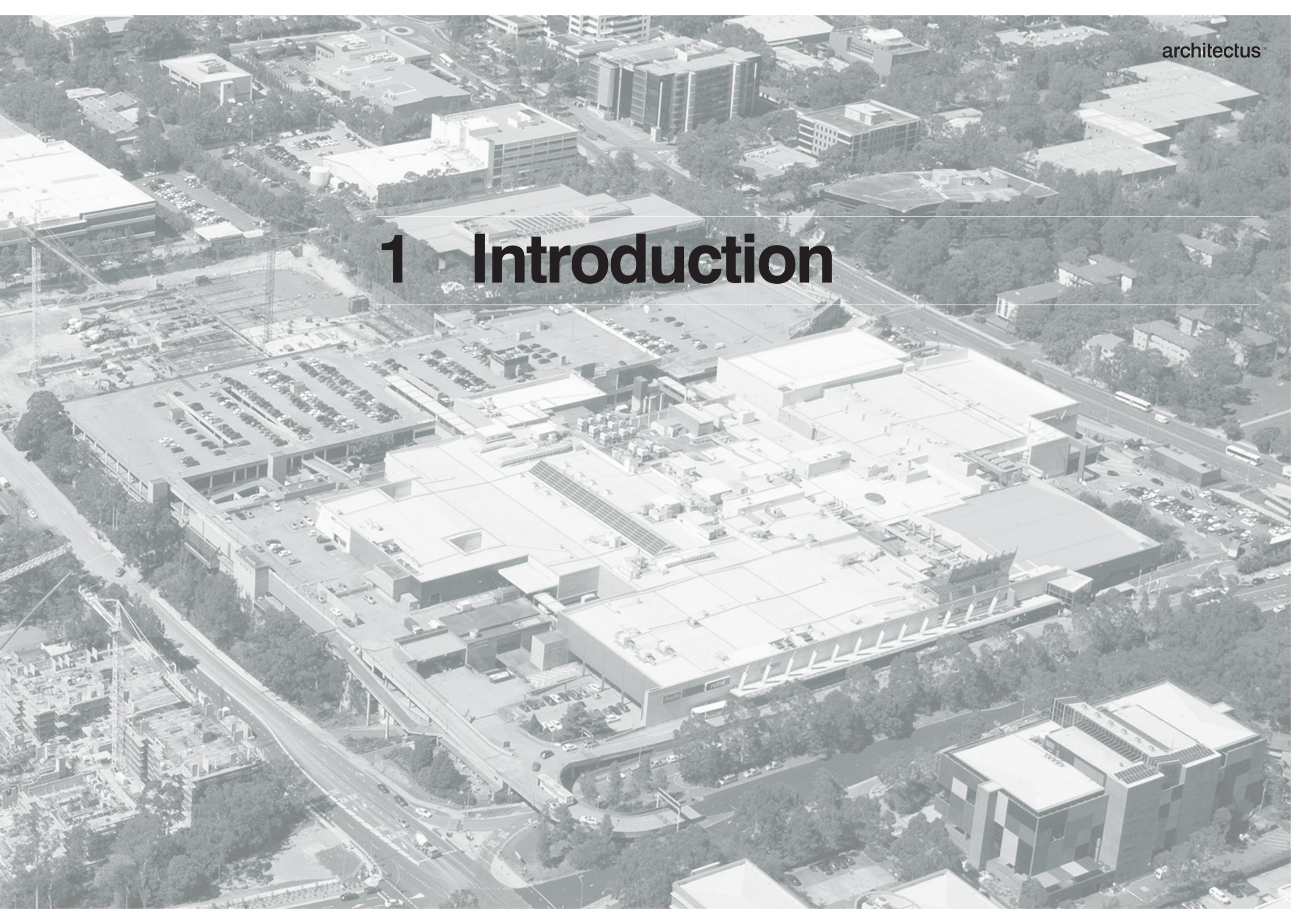
Bitzios Consulting is one of Australia's leading specialist traffic engineering and transport planning consultancies with offices in Sydney, Brisbane, Gold Coast and the Sunshine Coast.

Bitzios have a comprehensive understanding of the Macquarie Park area and its traffic challenges, having prepared a traffic model for the area for the City of Ryde Council and having worked with the City of Ryde Council and Architectus to identify the currently preferred new road layout for Macquarie Park.





1 Introduction



1.1 Purpose of this report

This report has been prepared by Architectus on behalf of Holdmark Property Group, for 66-82 Talavera Road, Macquarie Park. The primary purpose of this report is to:

- Identify the opportunity for **a new district 1.5 hectare open space** and high density residential development on the site; and
- Recommend that **the site be included in the Herring Road Urban Activation Precinct (UAP)** as a way to facilitate the delivery of the new park and dwellings.

The subject site is located adjacent to the Herring Road UAP and 550 metres from the Macquarie University Train Station. Architectus and Holdmark have identified a significant opportunity for the site and Macquarie Park: the construction and dedication of a new 1.5 hectare district open space on the site. The park would service the business park and the many new residents to be accommodated in the Herring Road UAP and the North Ryde UAP.

There is existing demand for large district open space in Macquarie Park, as identified in the City of Ryde Integrated Open Space Plan, prepared by Clouston Associates, 2012. The increased densities under the Herring Road UAP and under Ryde LEP 2014 – Amendment No. 1 (Macquarie Park) will increase this demand and place further pressure on open spaces. **Importantly, neither the new LEP for Macquarie Park nor the Herring Road UAP provide for the minimum 1.5 hectare district open space recommended by the Integrated Open Space Plan.**

This report provides a solution to this issue and the delivery of this new space by the private development sector at no cost to Council. Architectus has prepared a master plan that shows how the open space can be accommodated in the subject site as part of a viable mixed use development, which provides for the protection of the current number of jobs accommodated on the site.

The design, location and orientation of the open space are the highest priority. The master plan submitted as part of this report represents approximate building envelopes for the site, which would need to be subject to further testing and design development.



Aerial view of Macquarie Park showing development proposal in relation to Herring Road Urban Activation Precinct

Source: Herring Road, Macquarie Park Urban Activation Precinct Proposal

Architectus has considered the impact of the proposal on the employment/ specialised centre function of Macquarie Park. On balance, we consider that the benefits of this district open space for the function of Macquarie Park as a successful business park outweigh the re-zoning of a small area of employment-zoned land.

It is noted that employment numbers on the site peaked at 446 jobs. The office building and the community facilities in the proposed master plan will accommodate 417 jobs - generally maintaining the number of jobs generated on the site.

1.2 Regional context

The subject site is located adjacent to the Herring Road UAP, within Macquarie Park. The inclusion of the site in the UAP, as proposed, would extend the UAP boundary to the east and ensure significant new open space was part of the public domain strategy for the Herring Road UAP.

Macquarie Park is identified as a 'Specialised Centre' in the NSW Government's Draft Metropolitan Strategy For Sydney 2031. The objectives include the intensification of Macquarie Park for specialised business uses, and the delivery of infrastructure to support that growth. The maintenance of employment lands in Macquarie Park, and its success as an employment centre are priorities for both State government and the City of Ryde Council.

Macquarie Park is extremely well serviced by public transport and freeway connections to the City and a regional shopping centre (the Macquarie Shopping Centre, owned by AMP, adjoins the subject site).

Looking at the nearby centres, Macquarie Park is unique because of its employment function. Strategically, State Government and Council need to ensure that Macquarie Park has the right services and infrastructure, including open space, to ensure that Macquarie Park can continue to compete with Central Sydney and Parramatta as a place to locate business.



Regional land uses plan: Inclusion of the site into the UAP would reposition the UAP boundary

- Key: Regional Context Plan
- M2 Motorway
 - Arterial Roads
 - Chatswood to Epping rail line
 - Sydney Trains rail network
 - Lane Cove National Park
 - Site
- Metropolitan Subregional Strategy for Sydney 2031
- Urban Activation Precincts
 - Villages
 - Town Centres
 - Major Centres
 - Specialised Centres



Regional context plan: Macquarie Park is well served by rail and the M2 motorway

1.3 Local context

The subject site is located in the indented north-eastern corner of the Herring Road UAP, which is identified for future high density mixed use development. The draft UAP report recommends FSRs of up to 4.5:1 and maximum building heights of 120m for sites near Herring Road.

The subject site has the following important locational attributes:

- **Proximity to transport:** The site is 550m, measured along the footpath, from Macquarie University Train Station. A distance of 800m is generally accepted a comfortable walking distance from a rail station. The site is also within 400m of the future bus interchange on Herring Road by the Macquarie Shopping Centre (which is owned by AMP).
- **Highly-visible site:** The site is on a street corner and opposite the Macquarie Shopping Centre, which is a major attraction and soon to be the largest shopping centre in NSW. The site is one block away from Waterloo Road, which is the central spine of Macquarie Park. The site is also highly visible from the M2 Motorway.
- **Proximity to residential and employment uses:** The site is located between the high density residential Herring Road UAP and the employment lands. The site is within 800m of many workers and many existing and planned dwellings.



Local context plan



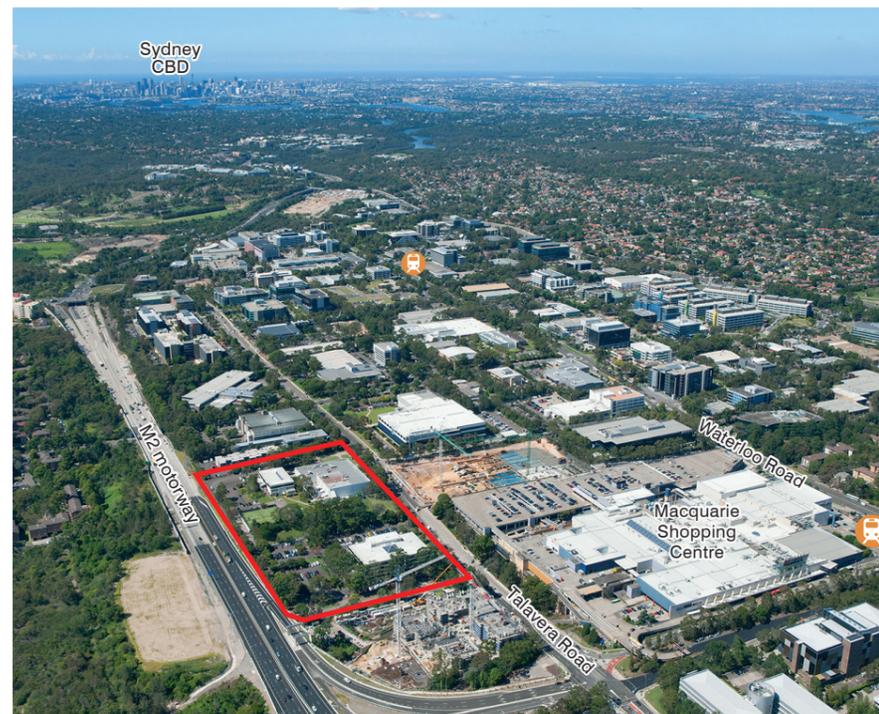
View of site looking southeast along Talavera Road at intersection with Alma Road



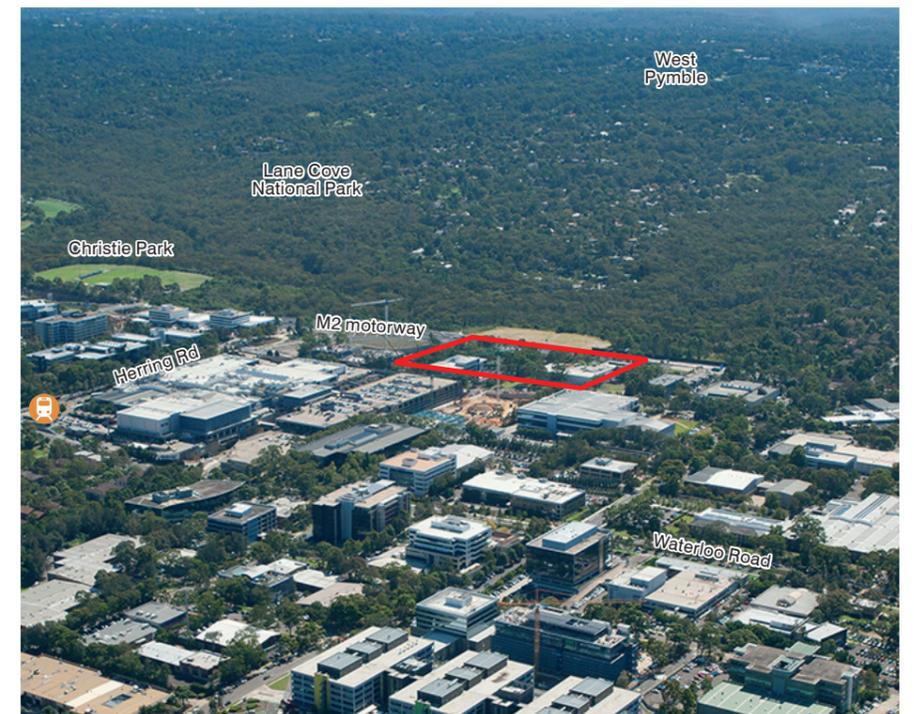
View of site looking northeast along Alma Road



Macquarie Park looking south east towards Sydney Central Bussiness District



Macquarie Park looking south



Macquarie Park looking north towards Lane Cove National Park

1.4 The site

The subject site has an area of almost 3.9 hectares (38,874sqm), with a frontage of 254 metres to Talavera Road and 153 metres to Alma Road.

The site is bound by:

- The M2 Motorway to the north-east;
- The Macquarie Shopping Centre to the south-west, on the other side of Talavera Road;
- A 3-storey office/ warehouse directly adjoining the site to the south-east; and
- An 8-storey residential complex to the north-west, which is still under construction.

Current uses on the site include (with reference to site plan to the right):

- A 4-storey office building fronting Alma Road, which accommodates 8224sqm of office area (Label A);
- A single storey warehouse on Talavera Road with some mezzanine office space (Label C);
- A conference centre behind the warehouse, that is occasionally utilised by the employees of the Alma Road office only (Label D).

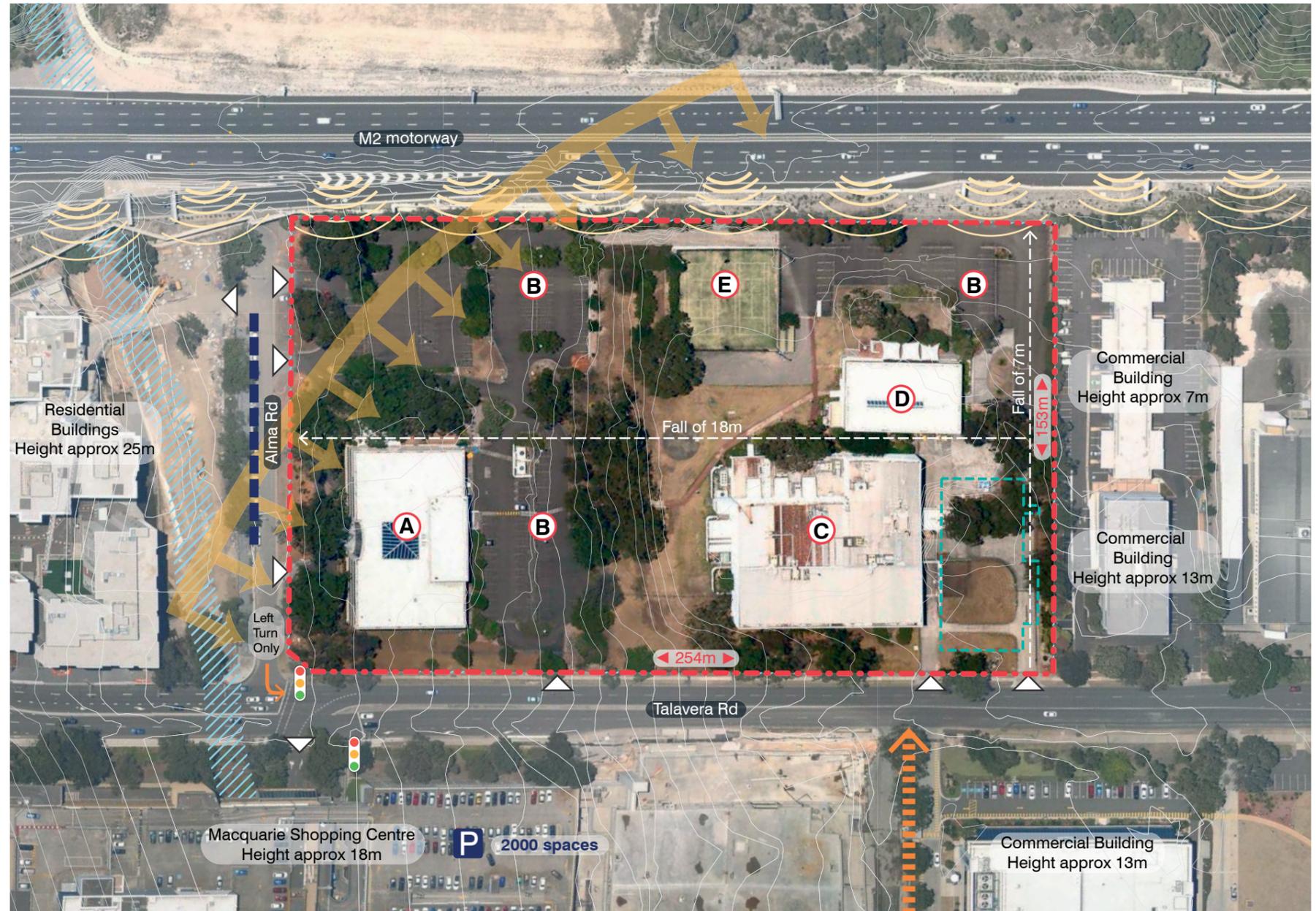
Other existing site features comprise (with reference to site plan to the right):

- Private tennis courts (Label E)
- Internal circulation areas and at-grade parking (Label B)

Refer to the plan to the right, which identifies other key features of the site.

Employment

At its peak the site has accommodated 446 jobs.



Key

- - - Site Boundary
- - - On-street Parking
- - - Traffic Direction
- - - Proposed new road (for inclusion in new Ryde Council DCP)
- △ Existing vehicle entries/ exits
- 🚦 Signalled intersections
- - - Future Astra Zeneca Commercial Building (under approval)
- /// Flood corridor
- 🌊 Noise pollution from M2 motorway
- ☀️ Solar access pathway

Site analysis plan

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Culloden Road

Road

2

University Avenue

Kikkiya Creek



2 Strategic planning context



2.1 Metropolitan Strategy and population targets

2.1.1 Metropolitan Strategy

Macquarie Park is identified as a ‘Specialised Centre’ in the NSW Government’s Draft Metropolitan Strategy For Sydney 2031.

The Draft Metropolitan Strategy for Sydney sets out the following, three priorities for the Macquarie Park Specialised Centre:

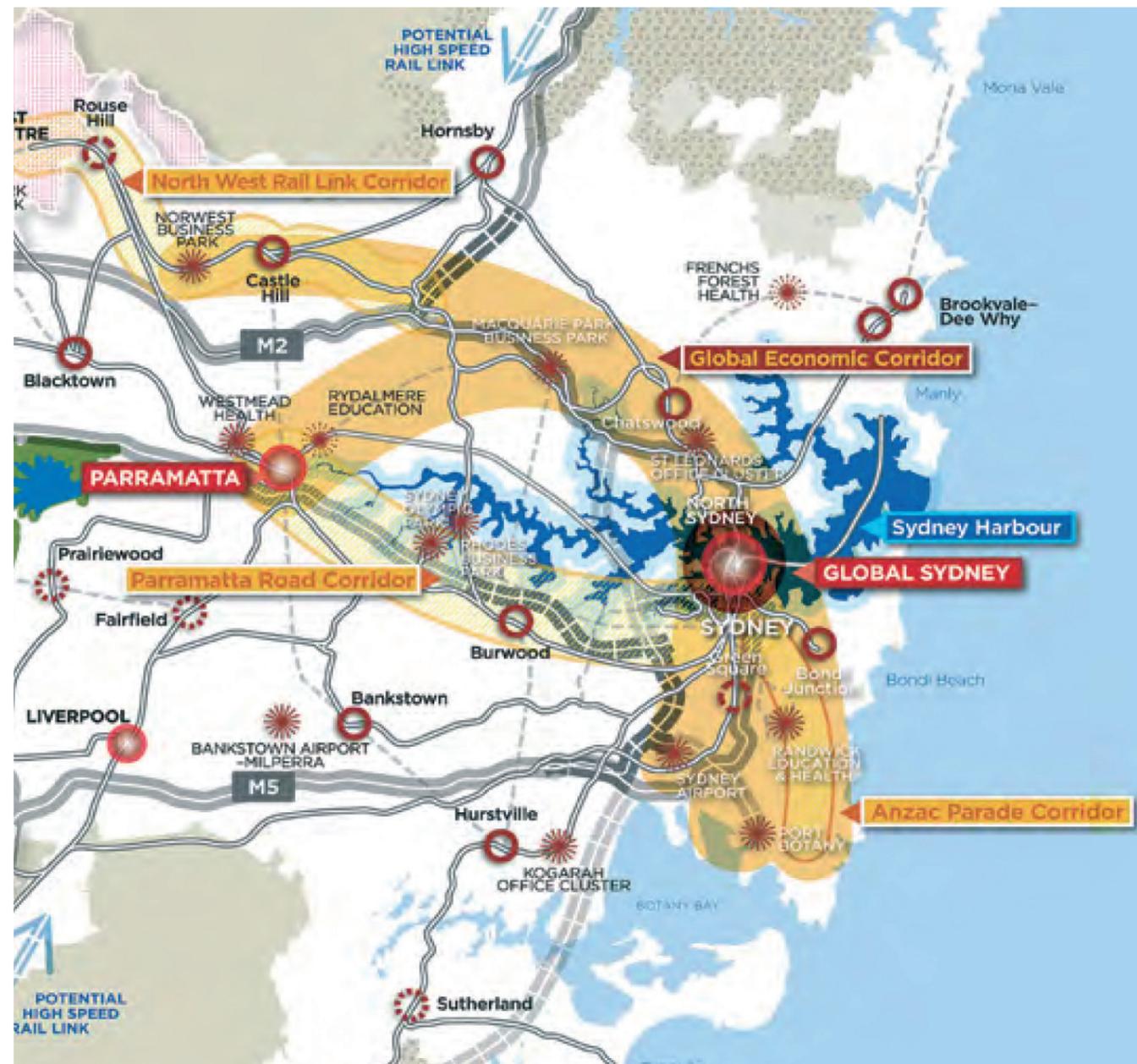
- “Continue to develop as a metropolitan-scale office park with a technology focus in the Global Economic Corridor, supporting and supported by the growth of Macquarie University Research Park, Macquarie Hospital, Macquarie Centre, Macquarie Park and Riverside Corporate Park (and Hospital)
- Expand office space to increase productivity advantages and prioritise office space over housing
- Provide capacity for at least 16,000 additional jobs to 2031.”

The City of Ryde Council is currently in the process of amending the controls for Macquarie Park to allow for additional building height and FSR on all of the employment land in Macquarie Park. Similarly, the recent Macquarie University Master Plan has resulted in increased long term capacity for employment on the university site. These initiatives will go a long way to facilitate significant employment growth in Macquarie Park.

However, having adequately zoned land will not secure investment in jobs. Part of securing the long-term success of Macquarie Park as a Specialised Centre will be ensuring that the area has good access to services, infrastructure, amenity and an appropriate workforce. These matters are essential if Macquarie Park is going to compete with other centres and business parks.

This is particularly important as Macquarie Park evolves from a traditional industrial park into a location for high-end technology and research jobs, which is central to Council’s and State Government’s vision for Macquarie Park. Macquarie Park must compete with centres like Parramatta and Melbourne for these uses. Businesses are looking for excellent amenity when selecting an office location, so they in turn can attract the best employees who ideally, will live in close proximity.

Large, high-quality open spaces, places for lunch-time and corporate social activities, events and places to eat and drink are an essential part of a successful Specialised Centre. Currently, the controls for Macquarie Park and the Herring Road UAP do not provide adequate open space for Macquarie Park.



Specialised Centres within Sydney’s Global Economic Corridor, Source: Draft Metropolitan Strategy for Sydney 2031

2.1.2 Dwelling projections

In June 2014, NSW Planning and Environment released new population and dwelling projections for NSW. The data indicates:

- 62,950 dwellings will be required to accommodate the projected population growth in Ryde, compared to 55,516 projected in 2011 - increase of 7,434 dwellings.
- Between 2016 and 2031, the projected demand is 14,950 dwellings for the Ryde Local Government Area.
- Between 2004 and 2011, the City of Ryde averaged 485 dwelling approvals per year. Dwelling approvals in the 12 months to June 2012 was 1,003 dwellings, and in the 12 months to June 2013 was 952 dwellings in the 12 months to June 2013. This indicates an average slightly under 1,000 dwelling approvals per year since 2012.

Based on the projected dwelling demand of 14,950 new dwellings between 2016 and 2031 for the Ryde LGA, and assuming that:

- In the year to June 2014, Council will approve an additional 1,000 dwellings,
- 3,000 new dwellings are to be provided in the North Ryde Urban Activation Precinct,
- 5,400 new dwellings are to be provided in the Herring Road Urban Activation Precinct,

There would be an underlying further demand for an additional 5,550 dwellings in the forecast period for the Ryde Local Government Area.

The subject site has the potential to accommodate approximately 1300 dwellings.



Proposed residential neighborhoods in the Herring Road UAP: Source: Herring Road, Macquarie Park Urban Activation Precinct Proposal

2.2 Herring Road Urban Activation Precinct

2.2.1 Review of the Herring Road UAP proposal

Architectus makes the following observations of the draft proposal for the Herring Road UAP:

Open space and public domain

The proposal does not provide for any new significant open space, only linear connections between existing open spaces. The planned spaces are unable to meet the demand for a district, 1.5 hectare open space identified in the City of Ryde Integrated Open Space Master Plan.

The planned densities in the Herring Road UAP also require good amenity to mitigate the impacts of high density living.

The Herring Road UAP proposal will result in significant uplift for many sites, without allowing Council to capture any additional value of that uplift, beyond the increase in Section 94 contributions that would result from the increased densities. There is no mechanism proposed as part of the UAP report for the delivery of new spaces, new roads or other community and transport infrastructure required to support the planned population growth. The Precinct Support Scheme funding is proposed to be allocated to works on Herring Road only.

Ryde LEP 2014 - Draft Amendment No. 1 (Macquarie Park) is accompanied by a mechanism for the delivery of new open spaces and streets that was developed by Architectus with the City of Ryde Council. In principle, the mechanism allows for 'bonus' FSR for the delivery of public domain, or a monetary contribution in lieu of on-site improvements. The mechanism allows for the collection of funds to provide the planned streets and open spaces in the new draft DCP for Macquarie Park. Importantly, the land within the Herring Road UAP was included in the calculations and modelling for this system. The inclusion of such land in the UAP and rezoning through this process will result in a significant shortfall in funds which were projected to deliver the planned parks in Macquarie Park.

Built form

The recommended heights in the Herring Road UAP proposal range from 45m to 120m. These heights are considered appropriate for their context, if the overshadowing impacts are tested and considered to be acceptable. Generally, the plan may benefit from more variation of the built form.

Recommended FSRs range between 2.5:1 and 4.5:1. Again, this general range seems appropriate for a town centre location, based on our experience with similar projects.

The strategy to create a 6-8 storey street wall height is supported. This will be important for the quality of the public domain.

Achievement of the vision outlined in the Herring Rd UAP master plan is likely to be frustrated by complex and fragmented land ownership patterns, particularly for the sites south-west of the train station. The nominated FSR of 4.0 and 4.5:1 will not be achievable on these small, single lots. Rezoning these small, fragmented land-holdings with this increased density may generate significant problems for implementation and assessment of DAs in this precinct. The advantage of the subject site is that it is a large consolidated lot with single ownership.

It is recommended that:

- **The subject site be included in the UAP, with a condition that a 1.5 hectare open space be constructed and dedicated to Council, generally in accordance with the design set out in this report, in order to identify the issue of a shortfall of open space**



Proposed Herring Road activity space: Source: Herring Road, Macquarie Park Urban Activation Precinct Proposal

2.2.2 Why the subject site should be included in the UAP

Herring Road was selected as a UAP because it:

- Has excellent access to public transport, providing an opportunity for the area to develop as a mixed-use, walkable centre
- Will have good connections to the North West Rail Link and the M2 Motorway
- Can respond to strong local market demand for additional housing
- Can provide homes next to the major metropolitan employment area of Macquarie Business Park
- Supports the metropolitan growth strategy for jobs and housing in Macquarie Park”

The subject site has all of the above attributes and should be included in the UAP.

The proposal has also been assessed in terms of traffic impacts and found to have an acceptable impact. It is worth noting that if the site was developed for commercial uses at the current FSR of 1.5:1, there would be 2.2 times the peak morning traffic volume than that generated by the proposed, predominately residential scheme (refer Bitzios Consulting Traffic Report; Appendix A).

Further, the development of this site for mixed uses would facilitate the delivery of a 1.5 hectare open space in the area, which is required to support the planned residential and business densities in Macquarie Park.



Proposed Herring Road UAP master plan: Source: Herring Road, Macquarie Park Urban Activation Precinct Proposal

2.3 Strategic need for open space

Evidence continues to build across the world that the quality of the public domain in our parks and open spaces is central to our individual and collective health and well-being. Accessible, safe and appealing public open space directly affects our sense of the liveability of our working and home environment; it also influences our decisions on where we want to live and work.

2.3.1 Why open space is important for business

Traditionally, open space planning did not consider that employment land uses would generate any significant demand for recreation during the working day and in that same vein Local Governments would not generally levy Section 94 Contributions for Public Open Space for business precincts.

However, progressive trends in the planning and design of working environments over the last twenty years responding to employee demands, as well as more recent shifts in the times at which many in the working community are choosing to take exercise (increasingly early morning, lunchtimes and early evenings) is requiring a commensurate move in planning to match this demand. In the case of nationally significant specialised centres such as Macquarie Park, this response becomes all the more critical, as explained below.

In preparing the Ryde Integrated Open Space Plan (IOSP) in 2012 CLOUSTON Associates was asked by Ryde City Council to provide an overview of likely requirements for public open space in the Macquarie Park Precinct (see Macquarie Park Green Infrastructure diagram). The following is a direct quote from that report, with respect to open space needs for major high technology employments areas:

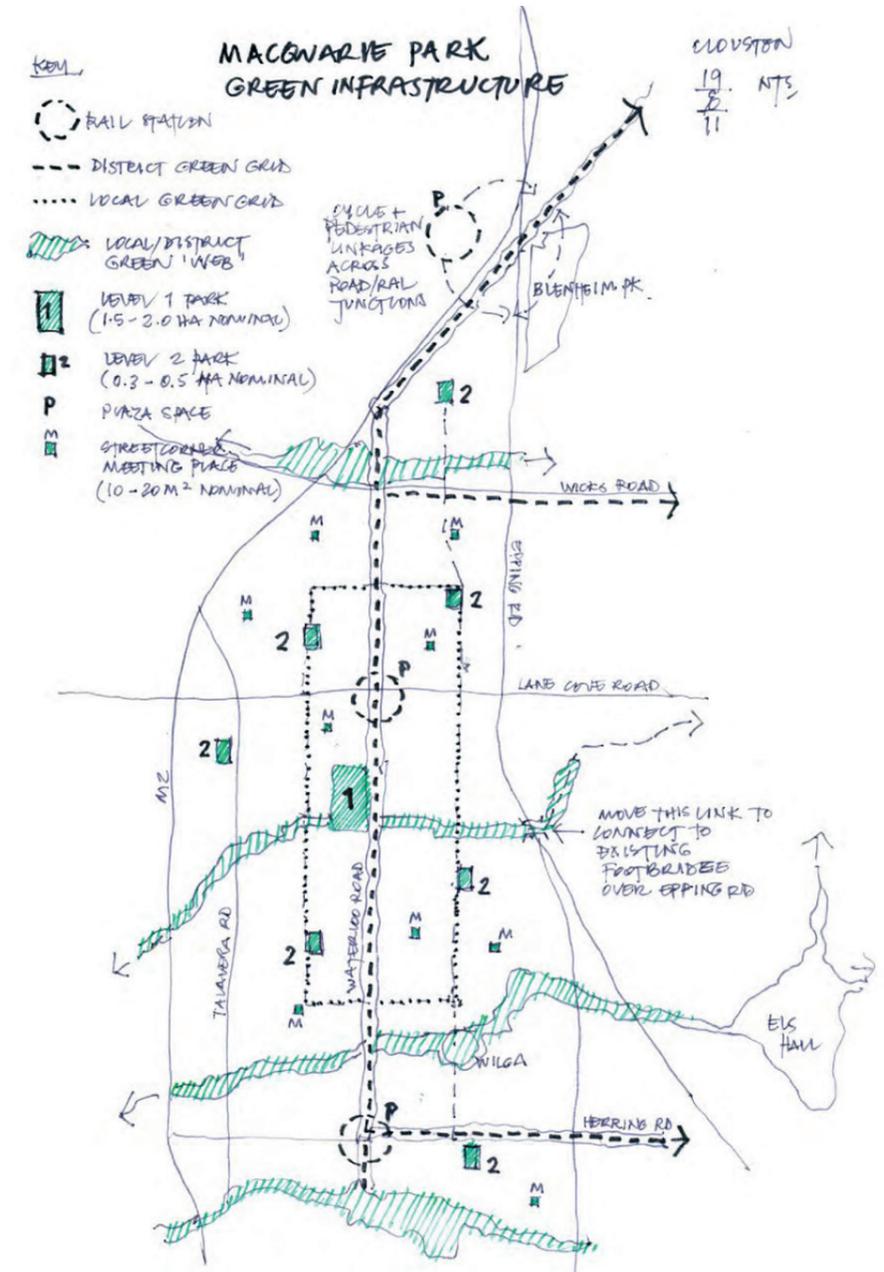
Most major international corporations seek development environments in which landscape and open space play a core role in site selection criteria – high-end technology and science parks around the world have hosted major corporations and research organisations since the advent of business parks such as Silicon Valley in the 1980s. For these organisations a high quantum and quality of landscape and open space has a range of benefits that

meet their corporate goals:

- *Inspiring work environments attracting top personnel and encouraging high productivity*
- *Raised corporate profile associated with benchmark design and an attractive business environment*
- *Commitment to ESD principles and high Green Star ratings in the built form and landscape*
- *Promotion of healthy lifestyles for staff through provision of recreation facilities and open space*
- *Opportunities to host/sponsor major events within the public domain.*

Typically, high-end business environments in contexts such as Macquarie Park generate needs for public open space during weekdays and working hours that cater for leisure and recreation uses such as:

- *Lunchtime team sports (e.g. touch football, basketball etc., often with inter-business competitions)*
- *Fitness training areas/facilities for personal training and fitness equipment/trails*
- *Shaded circuits and routes suitable for jogging, walking and cycling (not on major roads)*
- *Play spaces (especially associated with or adjoining crèches)*
- *Informal open space with trees, shade and shelter for lunchtime, breaks and working sessions (picnic tables, shelters, BBQ, wireless connectivity etc.)*
- *Natural creeks and formal or natural water bodies*
- *Corporate event and promotion spaces (often catering for significant numbers)*



Macquarie Park Green Infrastructure diagram, Source: Integrated Open Space Plan 2012 (Draft), City of Ryde

The recommendations report went on to observe that where such open space provision was inadequately supplied the impacts on the local Council and the community could be significant and might typically include:

- Major corporations choosing other locations offering a more extensive public domain
- Over-use of existing open space in the adjoining neighbourhoods with resulting cost impacts and negative community perceptions
- Lack of flexibility for open space provided for working communities to absorb additional residential demand by being available for use outside working hours

The net effect of such impacts can be a disjunction in social and economic integration between the working and adjoining residential neighbourhoods.

Current best practice in open space planning acknowledges that there is no single formula for the amount of open space required to meet the needs of a given working population; those needs vary greatly according to the mix of employment type, the local geography and the proximity and capacity of existing open space in the locality. Accordingly, any estimation of the quantum required must be based on site specific analysis of these and other factors.

The brief analysis undertaken for the Ryde IOSP recommended at minimum the following open space quantum for the employment area over and above any existing open space network (e.g. reserves on the Shrimptons Creek and Kikkaya Creek riparian corridors):

- A 2 Ha multi-use reserve close to the core of the employment area (where constraints on acquisition prevailed this could be a minimum of 1.5 Ha)
- A suite of local open spaces of 0.3-0.5 Ha in size evenly distributed across the locality (seven such reserves were illustrated for the whole Macquarie Park area)
- 3 plaza spaces, one near the core of the employment area and one on – or close to -the Herring Road and Waterloo Road

junction and one north-west of Blenheim Park

- A number of street corner meeting places (typically 10-20m2 in size). None were illustrated for the whole Macquarie Park area
- Continuous green web connections integrating recreation corridors on all east-west creeks
- District and Local Green Grid streets, as illustrated below.

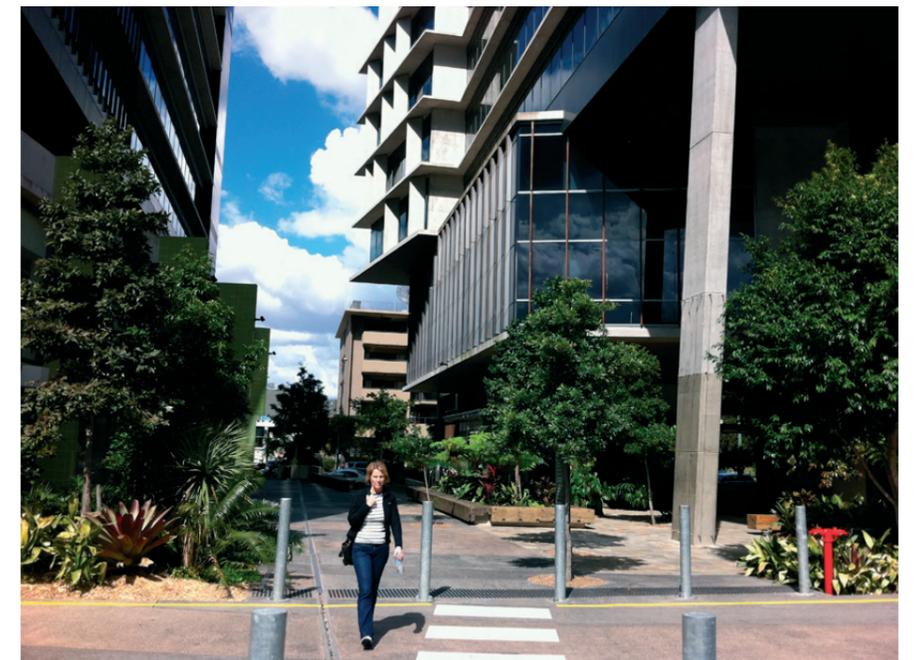
It should be noted here that this suggested provision was solely oriented to employment needs and did not address the needs of any additional residential population, such as may be generated by the Herring Road UAP, an initiative that post-dated the IOSP.



Active street and mixed use precinct: West End, Brisbane



Public grow gardens: Melbourne Docklands



Defined, landscaped internal streets: West End, Brisbane

2.3.2 Why open space is important for residential areas

The benefits to residential communities of a well-planned, accessible, safe and engaging public domain include environmental, cultural, social and economic values. In particular, the mental and physical health and well-being outcomes derived from the presence of a high quality public domain is being increasingly demonstrated by national and international research.

The NSW Department of Planning and Environment's guideline document, Open Space Planning Guidelines for Local Government, 2011 (OSPG 2011) provides research-based guidance on planning for open space in residential communities from rural to inner urban contexts with these values in mind. The following analysis draws on those guidelines.

For dense inner urban apartment living, such as will prevail in the Herring Road UAP, the quantum, quality and accessibility of such open space becomes critical to social cohesion in such communities, particularly in the absence of private gardens and ground level living.

The generally accepted norm of 800m maximum distance (say 10-15 minutes slow walk) between any residential dwelling and some local open space becomes tested for those who may live on upper floors of a high rise apartment blocks, where the first 5 minutes may be taken up in leaving the building, much less crossing major roads.

Consequently, local open space or at minimum off-road corridors (e.g. creeklines) which give access to such open space need to be easily accessed. In such environments the size (preferably 0.5 hectares in size but at minimum 0.3 hectares) and multi-use nature of such spaces is also important, as is the need for larger district level spaces for unstructured recreation within at least 2kms of most residences.

The OSPG 2011 recommends that the default provision for local and regional open space in any new or redeveloping community is 9% of total development area (including district open space this rises to 16%) rather than a per capita quantum. However, the guidelines stress the need to evaluate the site itself in terms of the distribution and accessibility of such space.

The proposals for open space in the Herring Road UAP make reference to the IOSP 2102 (a document that pre-dated the UAP) and suggested the need for additional open space, but provides no analysis of the quantum required for the significant additional population (at least 11,000 new residents). The UAP does not specifically identify the total amount of open space to be provided for the life of the development and thus it is not possible to assess what percentage of the total development area is dedicated to public open space.

Rather, the open space provision appears to be principally based on the embellishment of three small existing reserves (Wilga, Elouera and Quandong) and the enhancing of the Shrimptons and Kikkaya Creek corridors, as well as the notional locations of some additional open spaces of unspecified size and setting type.

The largest of the existing spaces to be embellished is Wilga Reserve at approximately 0.3 hectares (when the creek area is deducted) and this also the only level space that would appear to be suited to easy access and multi-use for local recreation. The total amount of reserve space specifically identified for such embellishment appears to be in the order of 1.41 hectares (excluding the creek corridors) over three separate locations.

There is no provision identified for any larger district level reserves in the UAP, as such provision is generally deemed to be available within an 800m radius of the UAP boundaries. The UAP report does not however describe, identify or analyse the settings and recreational functions of these nearby spaces nor does it state whether such space is currently below, at or over capacity from existing community use in those neighbourhoods.



Joynton Park, Victoria Park

2.3.3 Supply analysis

While recognizing that the longstanding benchmark of 2.83 hectares of open space per 1000 persons is generally recognised as being simplistic and unsubstantiated (for the ultimate population of the UAP this would suggest the need for up to 30 hectares of new open space), the level of provision proposed at 1.41 hectares/1000 future population appears to fall well below the average existing local and district level provision across the whole Ryde LGA at 3.41 hectares/1000 persons and for the Macquarie Park planning precinct at 2.95 hectares/1000 persons.

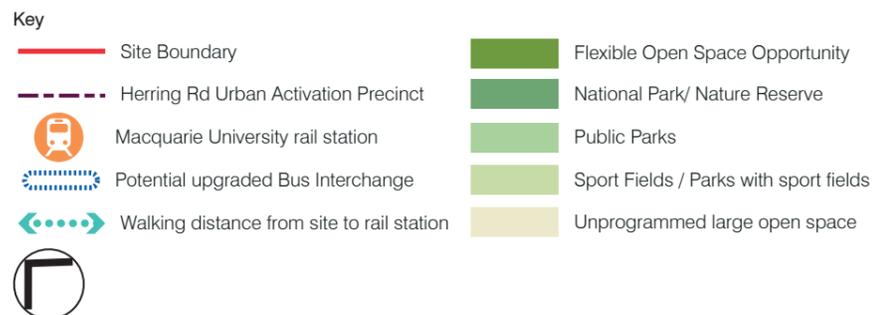
From this brief overview, it appears therefore that there is definitely a significant under-provision of both local and district level open space for the quantum of population.

The plan to the right shows all of the existing and planned open spaces within 800m of the Macquarie University Train Station, highlighting this under-provision.

2.3.4 Proposed open space

The proposed 1.5 hectare public open space at 66-82 Talavera Road, would clearly meet the definition of a district level multi-use space and, given that it lies 550 metres away from the Macquarie University Train Station and less than 800 metres from the heart of the Herring Road UAP, it would materially assist in meeting some of the apparent under-provision of open space in that precinct, as well as serving the adjoining employment precinct.

While the master plan provides convenient on-street parking for public use, the main access to the proposed park will be from the walking catchment.



Planned and existing open space within 800m and 400m of Macquarie University Station

2.3.5 The opportunity

The subject site provides a unique opportunity to provide this open space in close proximity to the commercial core and Macquarie Centre, at no cost to Council.

There are two options for the delivery of new public open space. The below table lists the options, and should be read with the plan opposite.

Method	Strengths	Weaknesses	For Macquarie Park/ Herring Road UAP
Identification of new open spaces in LEPs and DCP	<ul style="list-style-type: none"> – Increased certainty that they will be provided – Council can control the site and location 	<ul style="list-style-type: none"> – Has the potential to force Council to acquire the land – a significant risk – Large open spaces are difficult to achieve because the open space should not be more than 33% of a site, as development becomes unfeasible (based on experience). – It is difficult to achieve on land parcels designated for employment uses, which tend to have larger floorplate and where it does not make sense to develop tall, slim buildings on the remaining land 	<ul style="list-style-type: none"> – Neither the draft LEP /draft DCP for Macquarie Park nor the Herring Road UAP identify the requirement for a 1.5 hectare open space. It will not be delivered through this mechanism. The largest new open space required under the new controls for Macquarie Park is 0.7 hectare. – Architectus has looked at opportunities for Council or the Department of Planning to identify new 1.5 hectare open spaces in the planning controls. Such a site would need to meet the following criteria: <ul style="list-style-type: none"> – Be located on an accessible, visible site, within 800m of a station and as close to Waterloo Road as possible. – Have a site area of 4.5 hectares or more. – Not be recently developed, or strata-titled. <p>The sites that could be identified for the provision of a new 1.5 hectare open space are shown on the Potential Sites for a new District Open Space plan in blue. None of these sites meet the above three criteria, except for the subject site.</p>
Council purchasing land for new open space	<ul style="list-style-type: none"> – Council have control to achieve the best size, locations and design of the open space 	<ul style="list-style-type: none"> – Very expensive, and many Councils cannot afford this – Typically, contributions plans do not collect funds for open spaces in employment areas – Open space is typically needed most in high density locations, where land prices are high and the market is competitive 	<ul style="list-style-type: none"> – From our enquiries, we understand that there is only one development site currently for sale in the Macquarie Park area. It is 45-61 Waterloo Road (land area 3.9 hectares) being sold by Government Property NSW. Tenders have closed. We understand that this property is worth between \$40 - \$50 million. This site may yield 7 000sqm open space, but this is insufficient for a district open space minimum of 1.5ha. This site is shown on the Potential Sites for a new District Open Space plan in yellow. – The only other properties for sale are recently completed buildings. <p>In summary, given the amount of recent development and the price of land in Macquarie Park it is unlikely that this process will deliver new open space for Macquarie Park.</p>



Key

- The Site
- Urban Activation Precinct Boundaries
- Existing flexible open space sites over 1.5 Hectares in size
- Opportunity sites that exhibit potential for inclusion of a 1.5 Hectare flexible open space within development
- Large Recently developed/ Proposed development sites
- Large sites currently available for purchase

- A** Herring Road Urban Activation Precinct. No planned district open space.
- B** North Ryde Urban Activation Precinct. No planned district open space.
- C** Development site proffers opportunity for 1.5Ha flexible open space.
- D** Macquarie Centre Shopping Centre Extension
- E** Recently developed site. DA approved for part of the site. New street proposed through site does not leave adequate dimensions for a district park
- F** Recently developed site by Optus. New street proposed through site. No district open space provision.
- G** Recently developed site. No district open space provision.
- H** Site proffers opportunity for 1.5Ha district open space. Site will be crossed by a new road. It is unlikely that a significant new public space will be included as part of this private commercial development.
- I** Recently developed site. New streets proposed through site do not leave adequate dimensions for a 1.5Ha flexible open space.
- J** 3.9 Hectare site being sold by NSW Government, currently under due diligence. Cost of site approximately \$40-\$50 million. Planned urban park of 7 000sqm, but insufficient as district open space with 1.5 ha minimum.
- K** Recently developed site. No district open space provision.
- L** Recently developed site. No district open space provision.
- M** Site subject to flooding, and topographically challenged, being difficult to flatten. New street proposed through site does not leave adequate dimensions for 1.5Ha flexible open space.
- N** Site provides adequate dimensions for a 1.5Ha flexible open space, but is not within comfortable walking distance from Herring Rd Urban Activation Precinct or most of Macquarie Park. The site currently comprises the Ryde Resource and Recovery Centre, and may also be subject to soil contamination.



Analysis of potential sites for a new district open space

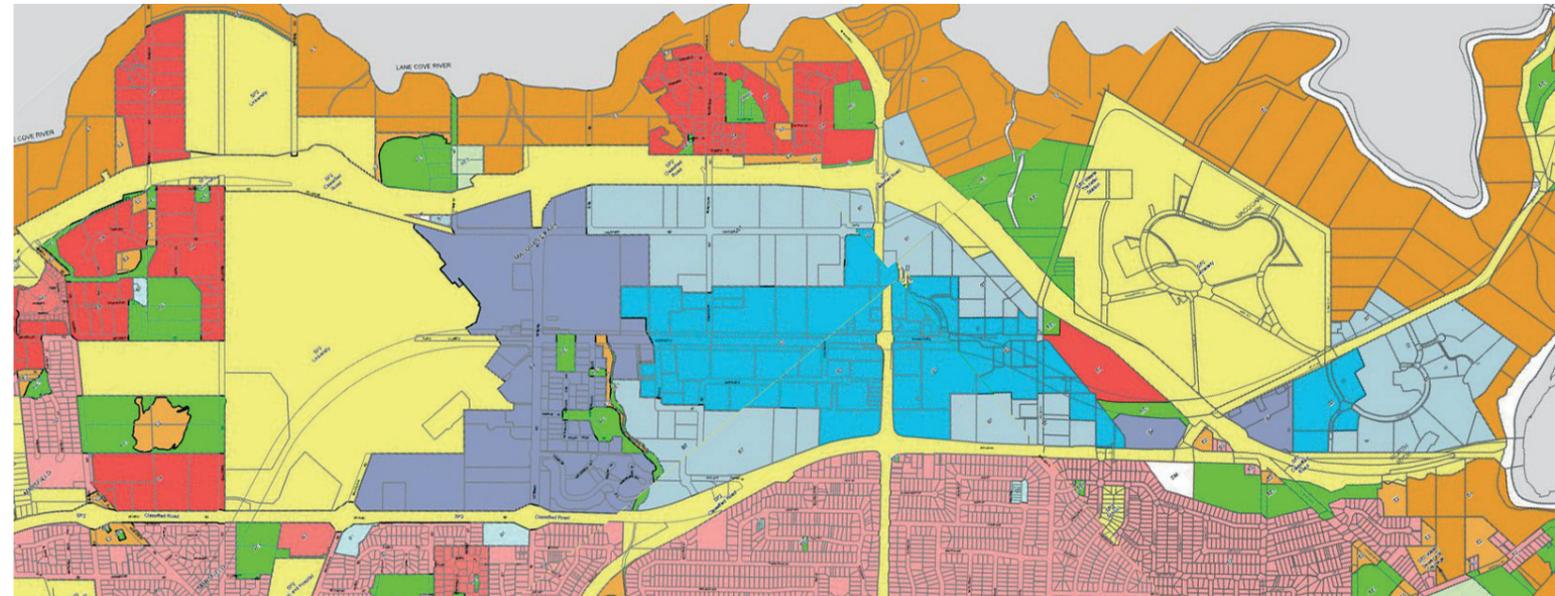
2.4 Current and proposed planning controls

The primary planning instrument for the subject site is Ryde LEP 2010. This section of the report outlines the key land use and built form provisions for the site, from Ryde LEP 2010.

In addition to the Herring Road UAP, there is also a draft Ryde LEP 2014 for the whole of the LGA, which is currently with the Minister for gazettal. This plan will not materially alter the controls for the site.

Ryde LEP 2014 - Draft Amendment No. 1 (Macquarie Park) is also with the Minister for gazettal. This draft LEP would provide an increase in height and FSR controls for the site and the remainder of Macquarie Park.

These controls are also presented in this section as the 'draft/proposed controls', and these composite plans also include the draft Herring Road UAP controls.



Current land use zoning, Ryde LEP 2010

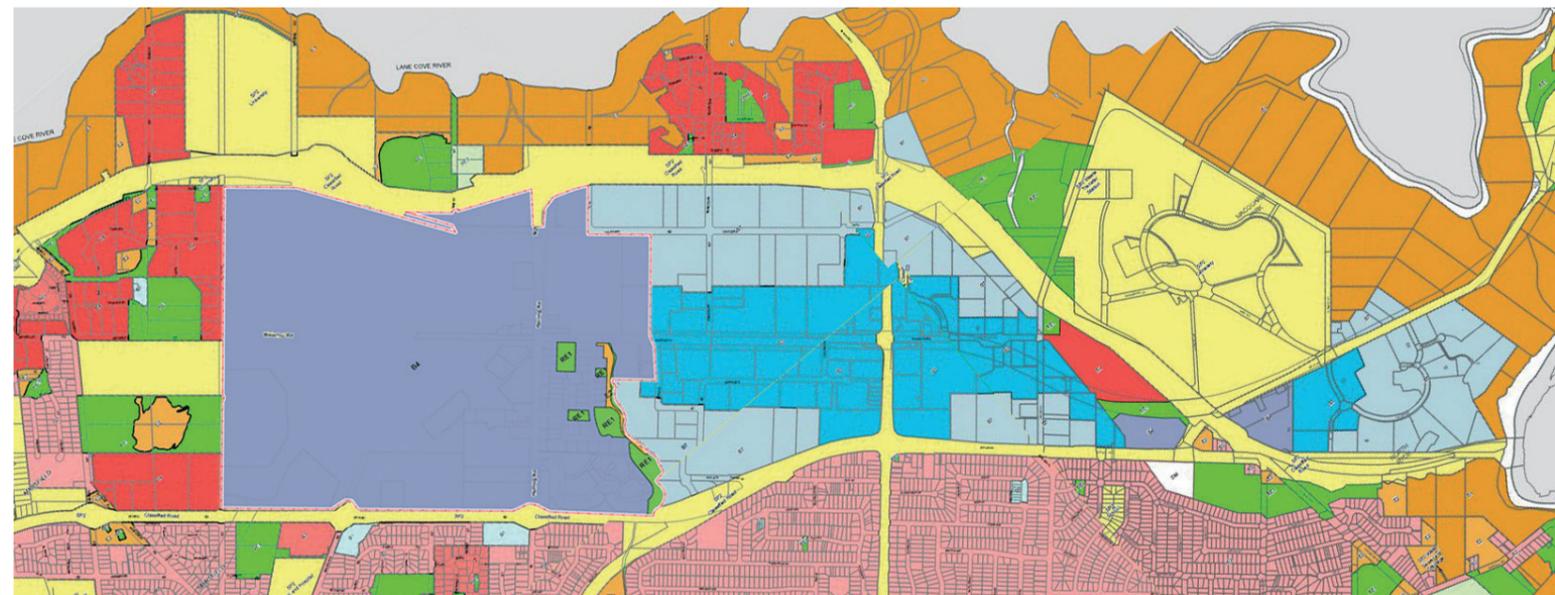
2.4.1 Land use/zoning

Current controls

Ryde LEP 2010 currently zones the site, and a large area of Macquarie Park, B7 - Business Park. This zones allows for a range of commercial and industrial uses, as well as some supporting retail and business uses. Residential uses and larger retail uses are prohibited in the zone.

Draft and proposed controls

As shown in the lower plan to the right, LEP Amendment No. 1 would not alter the land use controls for the subject site. The proposed Herring Road UAP controls would zone the land adjoining the subject site on two boundaries, B4 - Mixed Uses.



Composite plan showing draft land use zoning, Herring Road UAP, and current land use zoning, Ryde LEP 2010

2.4.2 Floor Space Ratio (FSR)

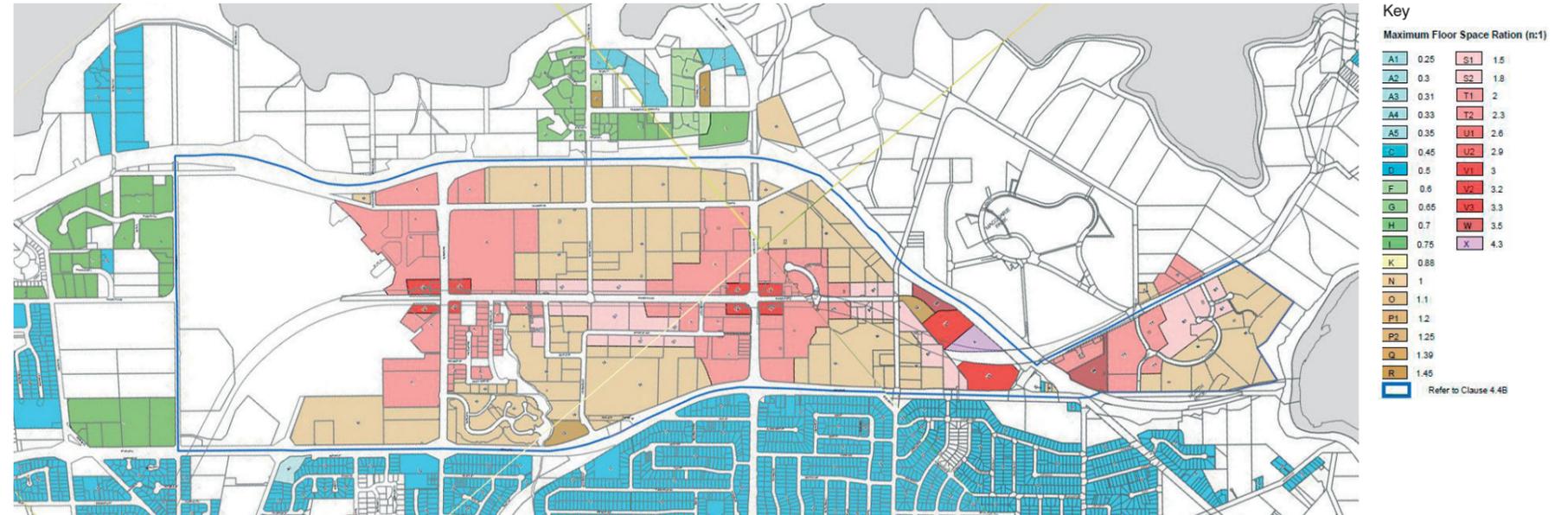
Current controls

Ryde LEP 2010 currently allows a maximum FSR on the subject site of 1:1.

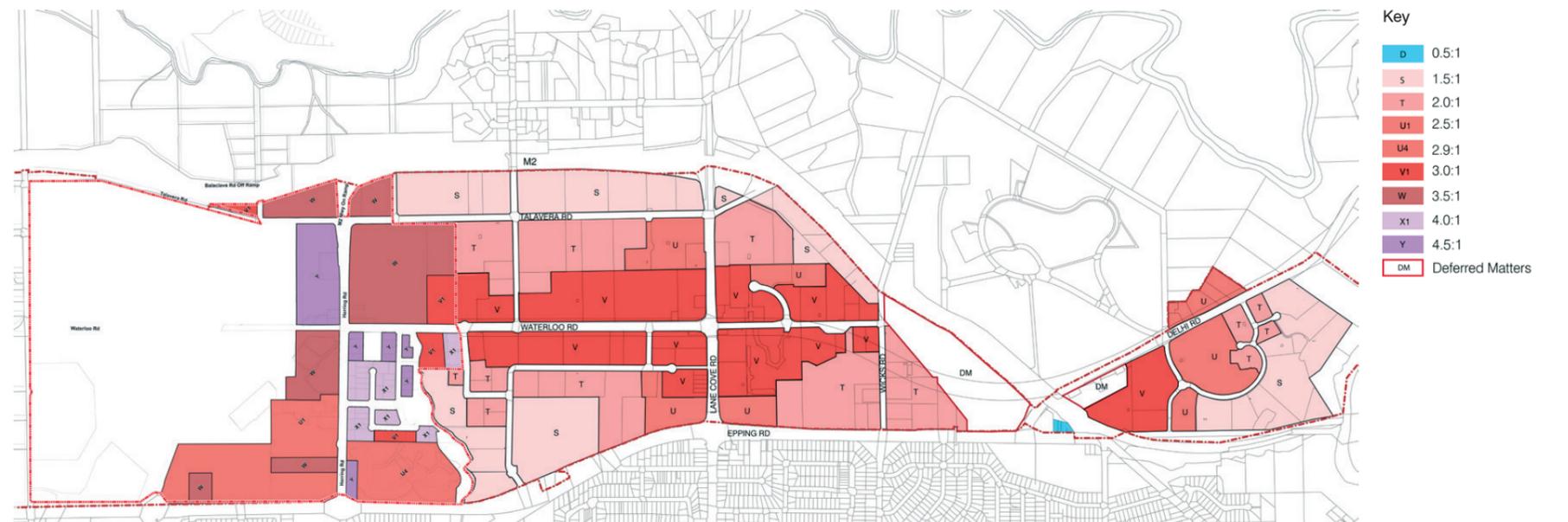
Draft and proposed controls

As shown in the lower plan to the right, LEP Amendment No. 1 would increase the maximum FSR to 1.5:1, but only where new public domain, or a monetary contribution in lieu of public domain is provided.

The proposed Herring Road UAP controls allows for FSRs of up to 4.5:1.



Current FSR controls, Ryde LEP 2010



Composite plan showing draft and planned FSR controls, Ryde LEP 2010 (Amendment No. 1) and Herring Road UAP

2.4.3 Maximum building height

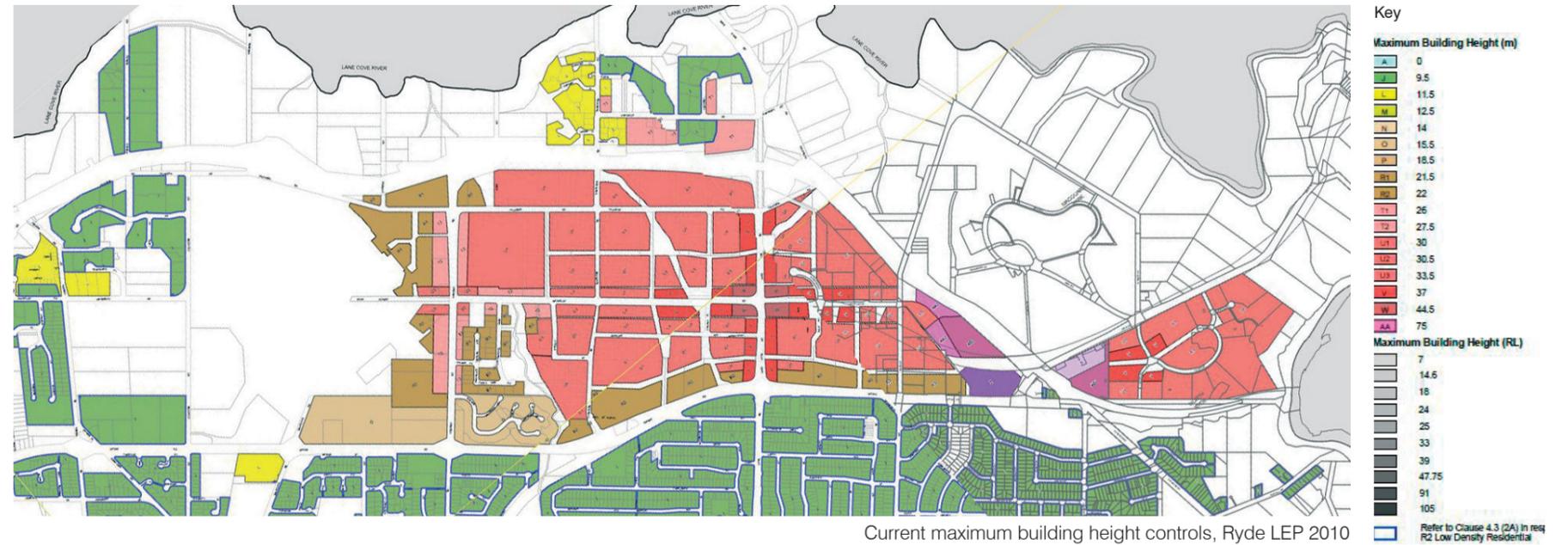
Current controls

Ryde LEP 2010 currently allows a maximum building height on the subject site of 30 metres.

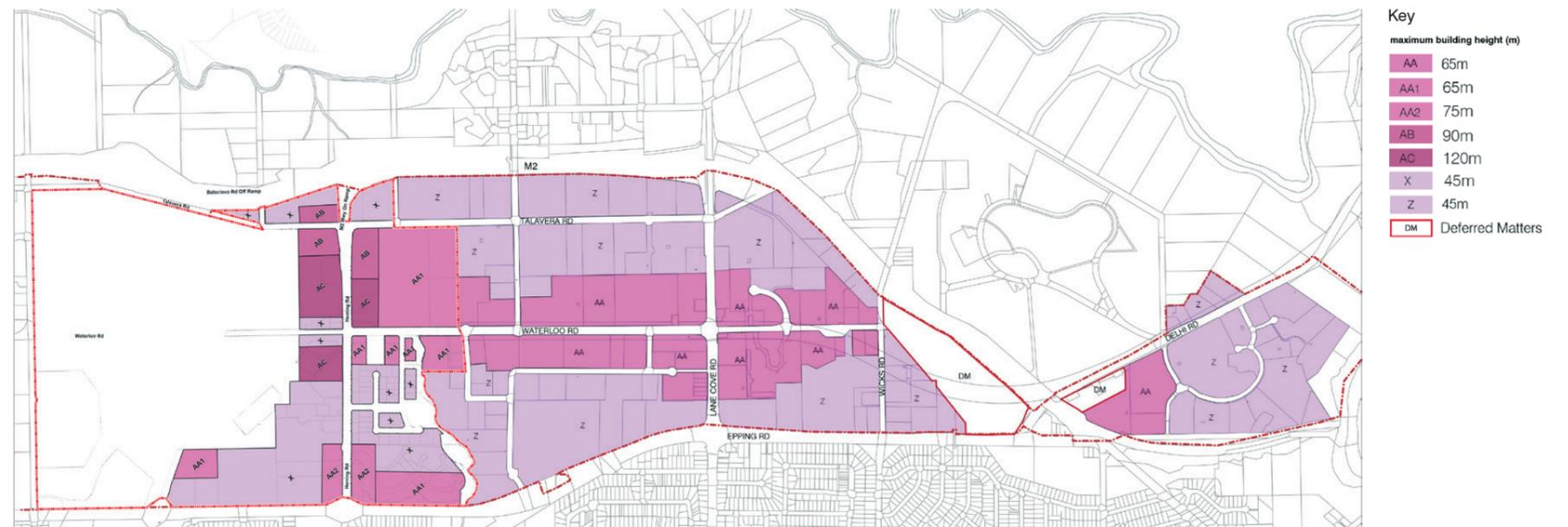
Draft and proposed controls

As shown in the lower plan to the right, LEP Amendment No. 1 would increase the maximum building height on the site to 45 metres.

The proposed Herring Road UAP controls allows for maximum building heights of up to 120 metres.



Current maximum building height controls, Ryde LEP 2010

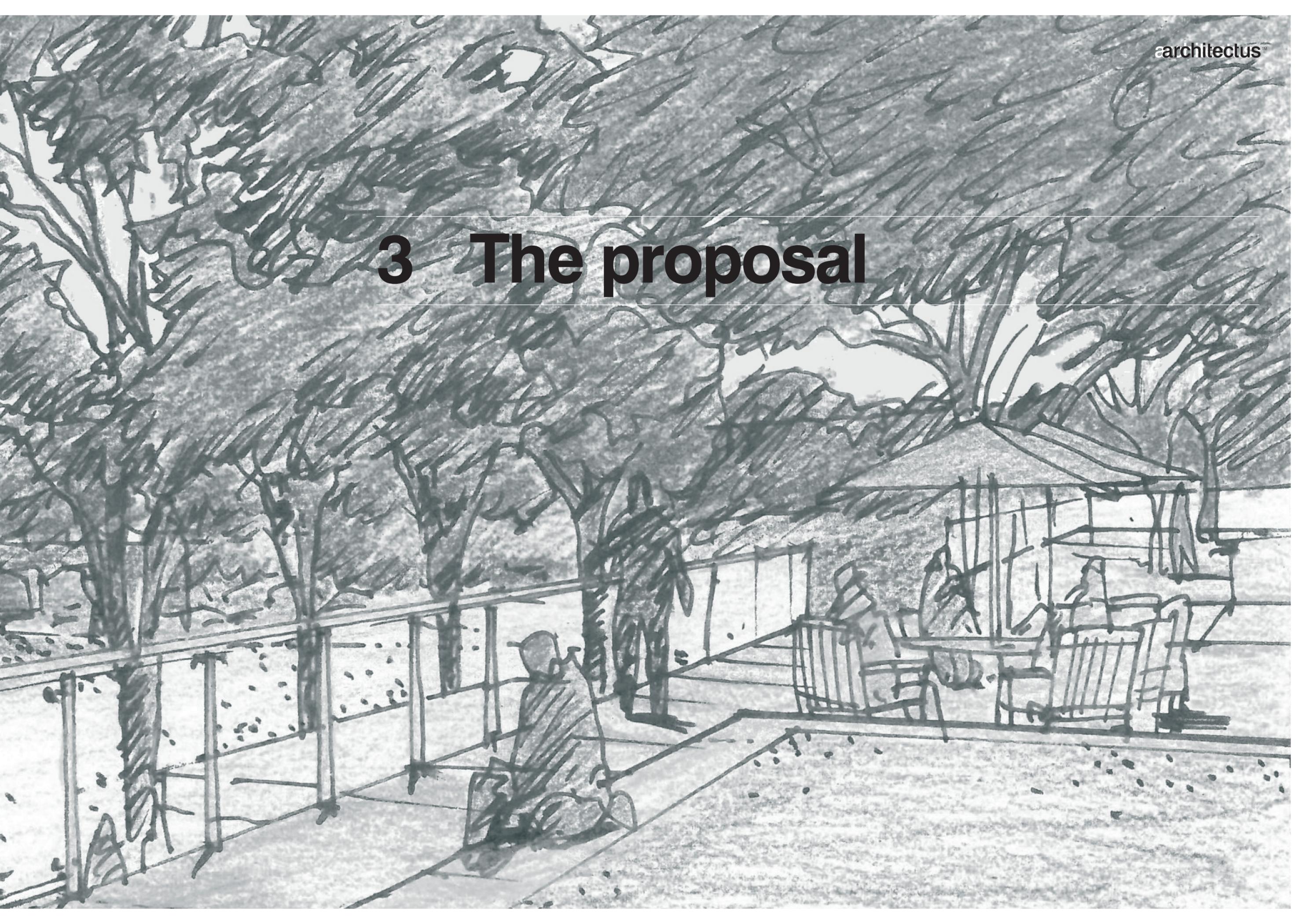


Composite plan showing draft and planned height controls, Ryde LEP 2010 (Amendment No. 1) and Herring Road UAP

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3 The proposal



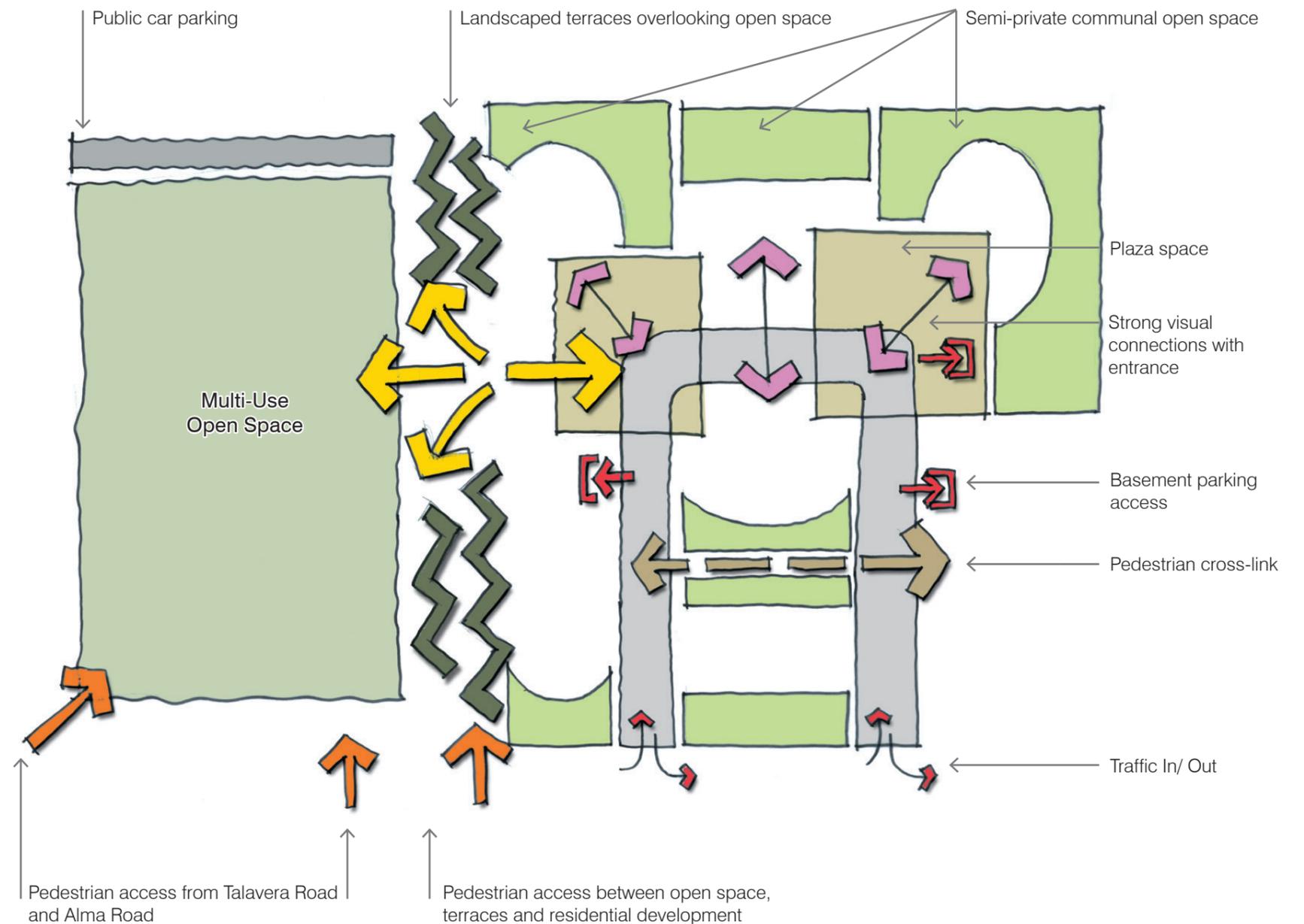
3.1 Design principles

3.1.1 Open space

The design, usability, orientation and location of the new district open space has been given priority for this master plan. The planning and design principles for the proposed open space should include:

- A consolidated form to a total of 1.5 Ha (this may include terracing)
- A north/south orientation for optimal solar access (generally two hours between 11am and 3pm on 21June)
- Ready pedestrian access from adjoining streets and buildings in line with AS1428
- High visibility from adjoining streets, minimum two adjoining street frontages to ensure it has a public character
- High levels of natural surveillance from residential dwellings and other public domain
- Active façades fronting the space (e.g. community uses, cafés, amenities)
- Multi use layout and design to allow for general day to day recreation, fitness, special event field sports, community events, celebrations and performances
- Seating, shade (structures and trees) and play areas
- Layout and design for day and evening use, including events stage area
- 'Back-of-house' event support space and services

Given the high levels of potential use and the permeable nature of walking routes to and across the space, the central green space may best be constructed as a synthetic grass surface. There are a number of successful examples which use this surface.



Landscape Principles diagram

3.1.2 Public domain and streets

- The new internal street should align with the new proposed street south of Talavera Road
- Internal streets should be designed as publicly accessible streets with similar dimensions, and section to public streets, and materials should give the streets more of a shared character
- New vehicle access points should be minimised, particularly near existing intersections and off Talavera Road.
- A suite of integrated and linked open spaces surrounding buildings that provide clear definition between public open space and residential community use
- Create amenity (optimal solar access, shelter from winds) and privacy for residents
- Design ground level to enhance sense of human scale
- Design walkable and cycle-friendly shared zone streets



Human scaled ground level and resident amenity: Power Street development, Erskineville

3.1.3 Built form

- Generally, the built form should comprise street walls with tall, slender, well-spaced towers.
- Architectus' Tower slenderness study (see Appendix B) indicates the following floorplate sizes, inclusive of balconies;
 - Up to 25 storeys – 800sqm GBA maximum
 - 26-35 storeys - 950sqm GBA maximum
 - Above 35 storeys – 1,100sqm GBA maximum
- Maximum building heights similar to the maximum heights in the UAP should be available
- All envelopes must be capable of achieving SEPP 65 standards, in particular:
 - 70% apartments with minimum 2-3 hrs mid-winter solar access



Slender tower forms, Sydney Olympic Park, Competition entry, Architectus for Ecove

- 60% apartments with natural ventilation
- 24m separation between tall buildings
- 18m maximum building depth for residential uses (excluding balconies)
- Minimise the visual bulk of the buildings from the new open space. Buildings should appear slender and maintain low-angle views to the sky between buildings

3.1.4 Land use

- Facilitate retention of the majority of jobs on the site
- Provide non-residential uses adjoining the park and other important public spaces
- Maximise residential densities in this well-serviced location



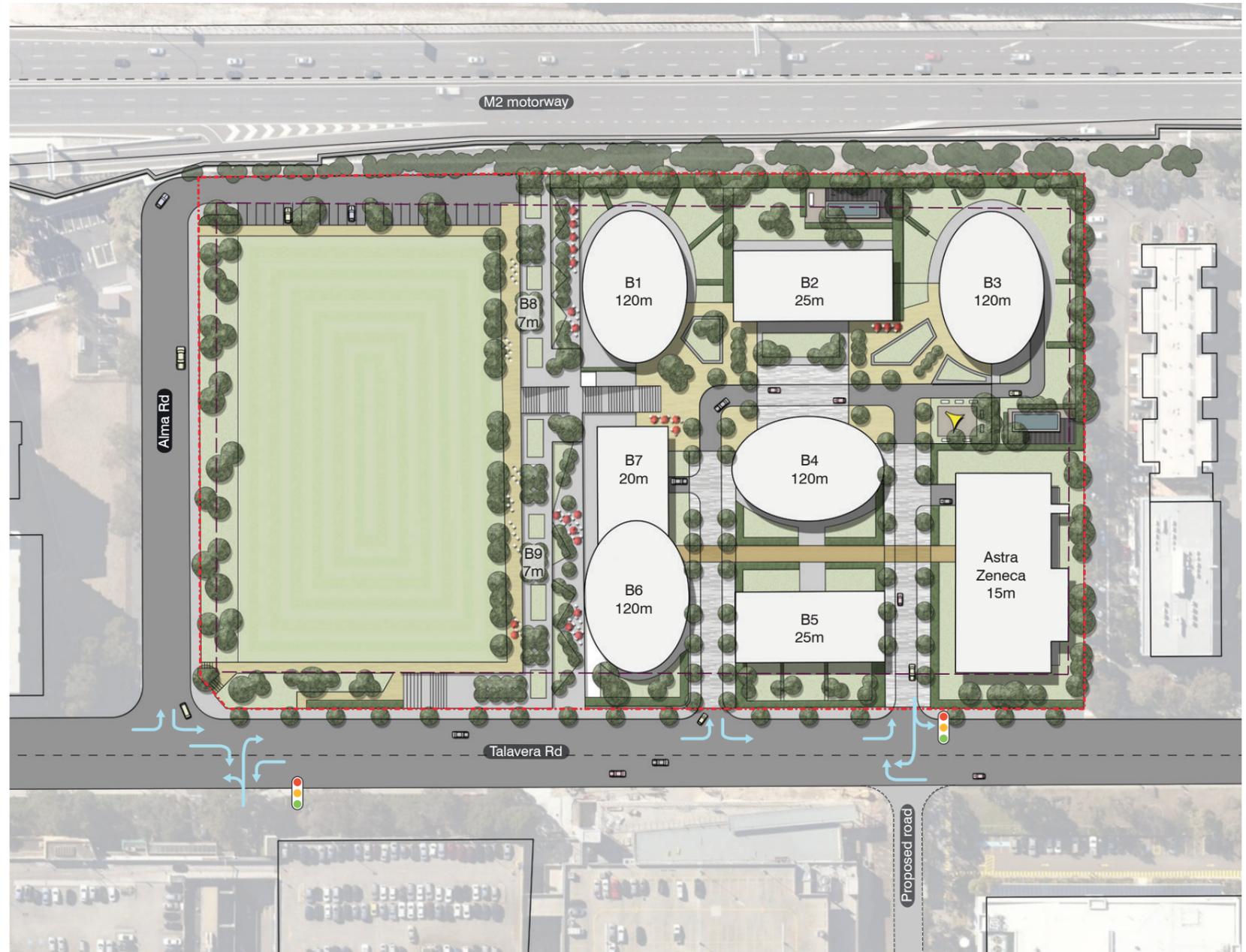
Active frontage, St. Margarets residential development, Bourke Street Darlinghurst

3.2 The master plan

Residential Buildings	
Building 1 (B1)	
Floorplate	1000 m2
Storeys	38
Gross Floor Area (75% GBA)	28 500 m2
Building 2 (B2)	
Floorplate	904 m2
Storeys	8
Gross Floor Area (75% GBA)	5424 m2
Building 3 (B3)	
Floorplate	1000 m2
Storeys	38
Gross Floor Area (75% GBA)	28 500 m2
Building 4 (B4)	
Floorplate	1000 m2
Storeys	38
Gross Floor Area (75% GBA)	28 500 m2
Building 5 (B6)	
Floorplate	846 m2
Storeys	8
Gross Floor Area (75% GBA)	5076 m2
Building 6 (B6)	
Floorplate	1000 m2
Storeys	38
Gross Floor Area (75% GBA)	28 500 m2
Building 7 (B7)	
Floorplate	568 m2
Storeys	6
Gross Floor Area (75% GBA)	2556 m2
Building 8 (B8) - upper level	
Floorplate	318 m2
Storeys	1
Gross Floor Area (75% of GBA)	239 m2
Building 9 (B9) - upper level	
Floorplate	578 m2
Storeys	1
Gross Floor Area (75% of GBA)	434 m2

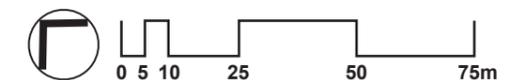
Commercial Buildings	
Building 8 (B8) -lower level	
Floorplate	842 m2
Storeys	1
Gross Floor Area (75% GBA)	632 m2
Building 9 (B9) - lower level	
Floorplate	1275 m2
Storeys	1
Gross Floor Area (75% GBA)	956 m2
Astra Zeneca	
Floorplate	1890 m2
Storeys	4
Gross Floor Area (75% GBA)	5670 m2

Note: The above data is preliminary and indicative only. Figures are subject to change as the result of detailed design.



Key

- - - - Site Boundary
- - - - Setbacks
- ← Traffic access movements
- Signalled intersections



Proposed master plan

Area	
Site area	38 874 m2
Residential site area	18 102 m2
Total proposed GBA	179 981 m2
Total proposed GFA (75% GFA)	134 986 m2
FSR	3.5:1
Public Domain	
Flat turfed public open space	9 032 m2
Other public open space	6 174 m2
Total Public open space	15 206 m2
Total Public open space as % of total site area	39%
Streets	4 290 m2
Streets as % of total site area	11%
Common open space	7 068m2
Common open space as % of total residential site area	39 %
Residential area	
Total residential GBA	170 304 m2
Total residential GFA (75% GBA)	127 728 m2
Number of apartments (average of 100 m2 each)	1277
Non-residential area	
Total commercial GBA	9 677 m2
Total commercial GFA (75% GBA)	7 258 m2
Estimated new jobs on site (rate of 1/20 m2 GFA)	363
Peak existing jobs on site	446
Car parking	
Spaces provided for residential uses (Herring Rd UAP rates with 70% 2BR/ 20% 1BR/ 10% 3BR mix)	1 405
Spaces provided for residential uses (Ryde LEP 2010 rate of 1 space/ 46 m2 GFA)	158
Total car spaces provided	1 563



Illustrative view of proposed master plan looking south-east towards the Herring Road Urban Activation Precinct

3.3 The public domain

3.3.1 New public park

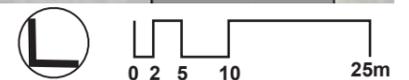
The proposed open space, totalling **1.5 Ha**, comprises the following elements:

- A single, level, open multi use green space (turf or synthetic surface) of **9100 m²**, including an event stage and support area to be dedicated to Council
- Four linked terrace spaces of **3000 m²** in total, overlooking the central green space, with each terrace offering a range of uses such as public seating under trees, play, outdoor café seating, boules courts etc. It is intended that these open spaces be protected for public use through right-of-way easement.
- Off-street pedestrian access from Talavera Road, linked to lift access on the building perimeters to ensure universal access to all areas of the public open space
- Tree and shrub planting on streets and terraces, offering amenity and shade
- Amenity night lighting and special event lighting and service infrastructure (three phase power, water etc.)

Off street parking bays on the northern side of the green space comprise 470 sqm and are excluded from the total open space calculations. The built form facing the central green space will have active façades.



Illustrative view of new public park; View looking north towards Alma Road



Illustrative view of proposed master plan: detail of new public park

3.3.2 Open space design

Architectus' master planning for the site provided for a 1.5 hectare open space. Clouston were involved in the siting and dimensions of the open space, with a view to create the best, most flexible space for Macquarie Park. Clouston were then requested by Holdmark Property Group to prepare a preliminary design concept for the 1.5 hectare space.

The design principles for the open space are:

- Provide a large, level playing field;
- Ensure that the park has a good relationship with the public domain by minimising level changes and providing level access with the public footpath where possible.
- Provide some at-grade parking to service the park;
- Provide commercial and community space at the edge of the park.
- Focus planting around the edge of the park to allow for active uses in the park.

The level change over the site is a challenge for the design of open space. In early options, the open space extended to the base of buildings B1, B6 and B7 (see master plan p32), but this was not considered to be an appropriately scaled interface for the open

space.

The solution was to introduce the terrace buildings (B8 and B9), to provide for a transitioned level change with terraced public open space above. The terraces provide for more passive recreation and places to sit and watch the activity in the main area of the park. The lower level of buildings B8 and B9 could be used for community, childcare and retail uses, which would activate the park. The upper level of buildings B8 and B9 is earmarked for residential use, and a small proportion of the terraced area at this level will be designed as private courtyards. The terrace which lies atop the upper, residential level will be entirely for public use.

Whilst the terraces are included within the 1.5 hectare open space, they are spatially appropriate because they improve the quality and operation of the open space whilst successfully negotiating the topography

Clouston have also assisted with a design concept for the common open space areas. The focus for these areas was to create spaces for gathering and interaction. The terraced design ensures that open spaces are private and usable, without the need to provide high fences.



Section west to east through new public park and terraces looking north-east towards the M2



Illustrative view of active frontages and landscaped terraces opening onto new dedicated public park; View looking north-east towards M2



Section north-east to south-west through new dedicated public park looking east towards new development



Illustrative aerial view of new public park

3.3.3 Communal open spaces and streets

The layout and design of open spaces associated with the buildings and streets on the eastern part of the site recognises the need for a mix of community and more private spaces including:

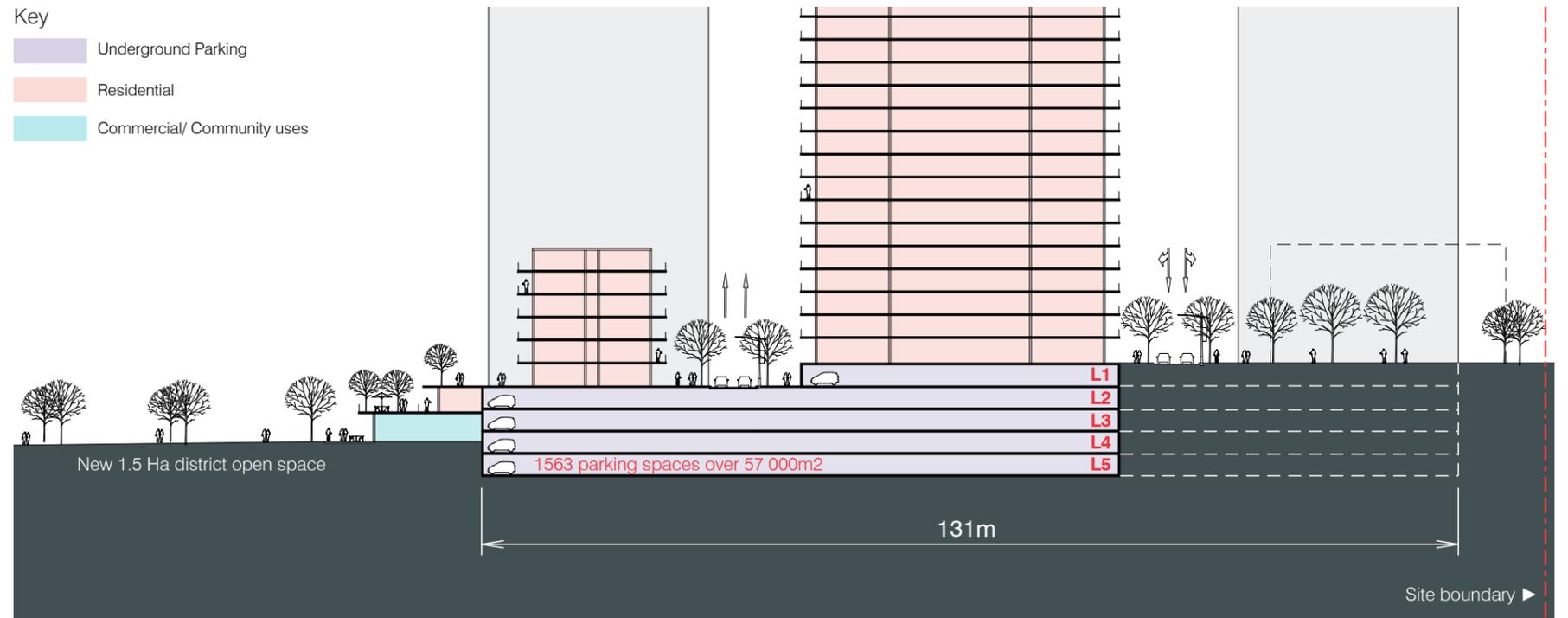
- Shared use streets designed for low vehicle speeds
- Defined and easily recognised entry landscapes for each building
- Community space adjoining each building
- A ground level local play space
- Swimming pools for use of residents
- Street trees and seating along all access roads

It is expected that the definition between public open space and the community spaces for residential users will be clearly defined by planting and/or permeable fencing, which establishes the principal uses whilst optimising casual surveillance.

It is proposed to have all-movements vehicle access at the easternmost entry to the built-up area of the site, with a signalised intersection on Talavera Road at this point. The location of this access point will align with the future Council road connecting Talavera Road and Waterloo Road.

The second vehicle entry-point to the site off Talavera Road to the west, and the Alma Road intersection are proposed as left-in/ left-out access.

A one-way link between the two internal circulation roads is proposed to improve opportunities for vehicles to circulate and avoid using the external road network. This link would be a share-zone to safely accommodate pedestrians.



Leafy internal streets and open spaces located over underground parking



Green internal and external streets: Park Lane, Central Park, Sydney



Communal grow gardens: Elephant Park, Central London

3.4 Residential Flat Design Code compliance

3.4.1 Sunlight/ daylight access

Sunlight/ daylight access to buildings

Daylight access to the indicative built form of the master plan proposal has been assessed for mid-winter (21 June) between the hours of between 9 am and 3 pm. With an FSR of 3.5, it is recommended that the proposed development be considered a dense urban area. The proposed master plan achieves SEPP 65 direct sunlight access (2-3 hrs) to approximately 70% of apartments.

Solar-access promoting features of the proposed development include;

- Elliptical tower form optimises the number of apartments receiving daylight access to habitable rooms and principal windows
- Provision of high ceilings and window-heads to allow deep sunlight penetration
- Provision of external horizontal shading to north-facing windows, and vertical shading to east and west-facing windows

Overshadowing

Potential overshadowing impacts of the indicative built form of the master plan proposal have been assessed for mid-winter (21 June) The 21st June is the shortest day of the year day, and has the longest shadows. For each of these days, an overshadowing study is provided for 9:00am, 12:00pm midday, and 2:00pm.

The proposal concentrates the tallest buildings away from the 1.5ha park to minimise overshadowing and maximise amenity to this public space. There is no overshadowing impact on adjacent residential areas, with shadows falling on commercial buildings where they have the least impact.



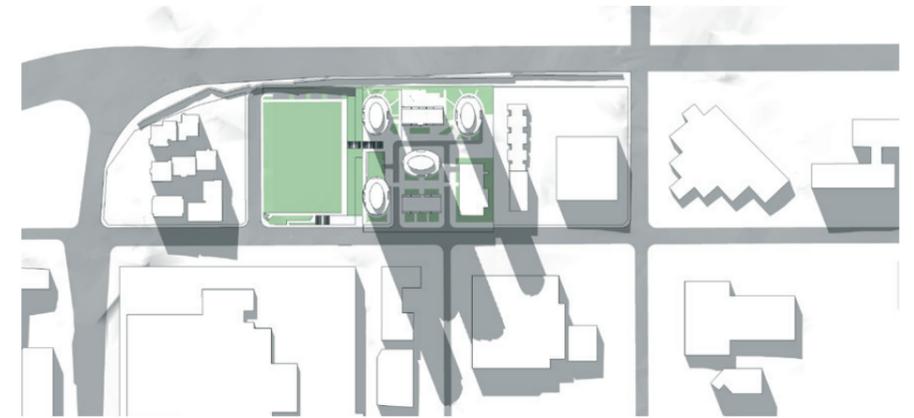
Sunlight/ Daylight access to proposed development at 10am on 21st June



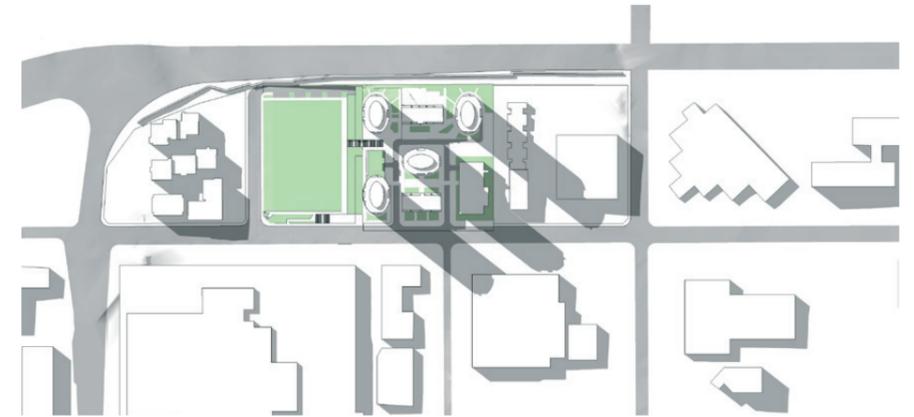
Sunlight/ Daylight access to proposed development at 12pm on 21st June



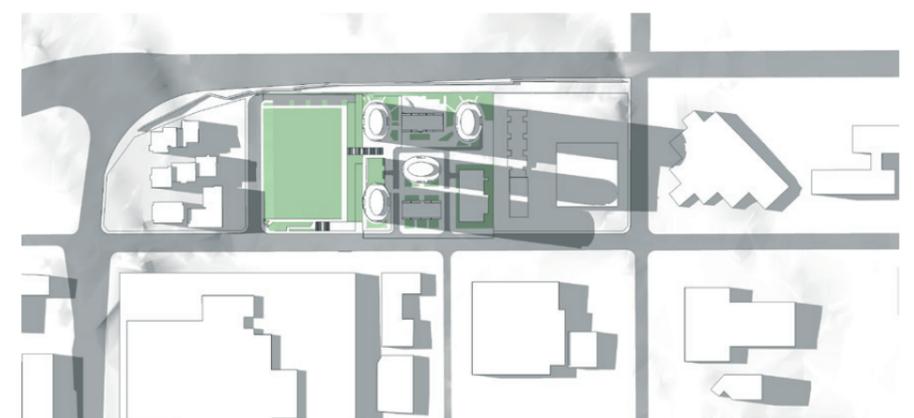
Sunlight/ Daylight access to proposed development at 2pm on 21st June



Overshadowing at 10am on 21st June



Overshadowing at 12pm on 21st June



Overshadowing at 2pm on 21st June

3.5 Proposed Local Environmental Plan controls

3.5.1 Land use zoning

It is recommended that the subject site be zoned **B4 Mixed Uses**, as per all other non-recreational land subject to the UAP. This will allow for the development of the new commercial building on Talavera Road, the new public open space and the residential uses proposed in the preferred master plan. Importantly, this zone will also facilitate active uses at ground levels, which will be important for the success of the park.

It is recommended that once the development is occupied and the park dedicated to Council, then the LEP be amended to **RE1 Zone – Public Recreation** for the park areas.

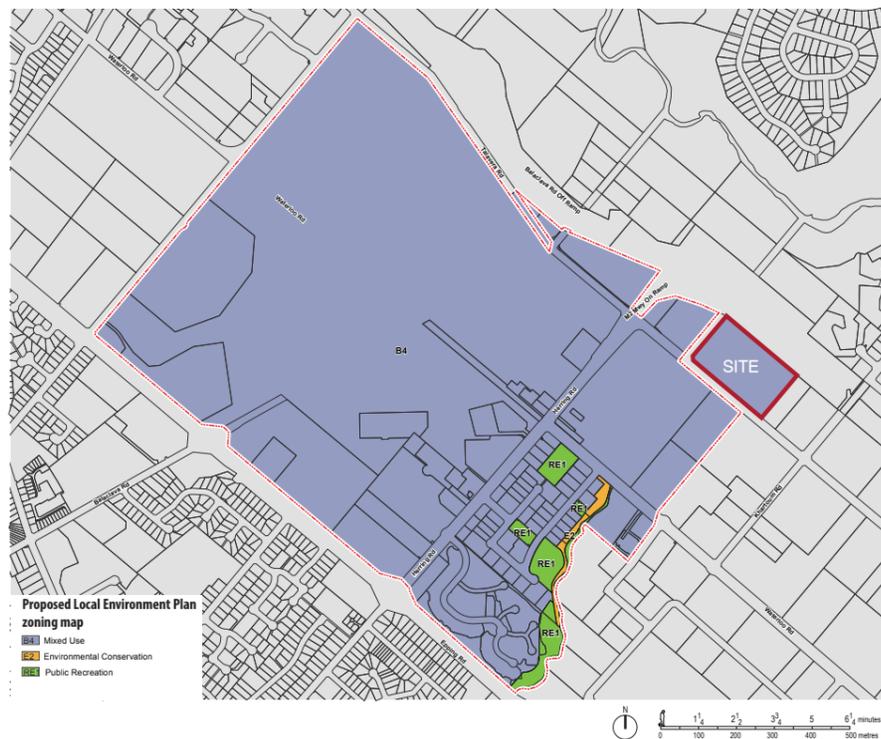
3.5.2 Building heights

It is recommended that the site have a maximum building height of **120m** across the whole site. This approach is consistent with the Department's directions to have one control per site, and allows some flexibility to make minor adjustments to the location of towers during the detailed design process. The FSR control and DCP provisions would restrict development on the site to a maximum of four towers.

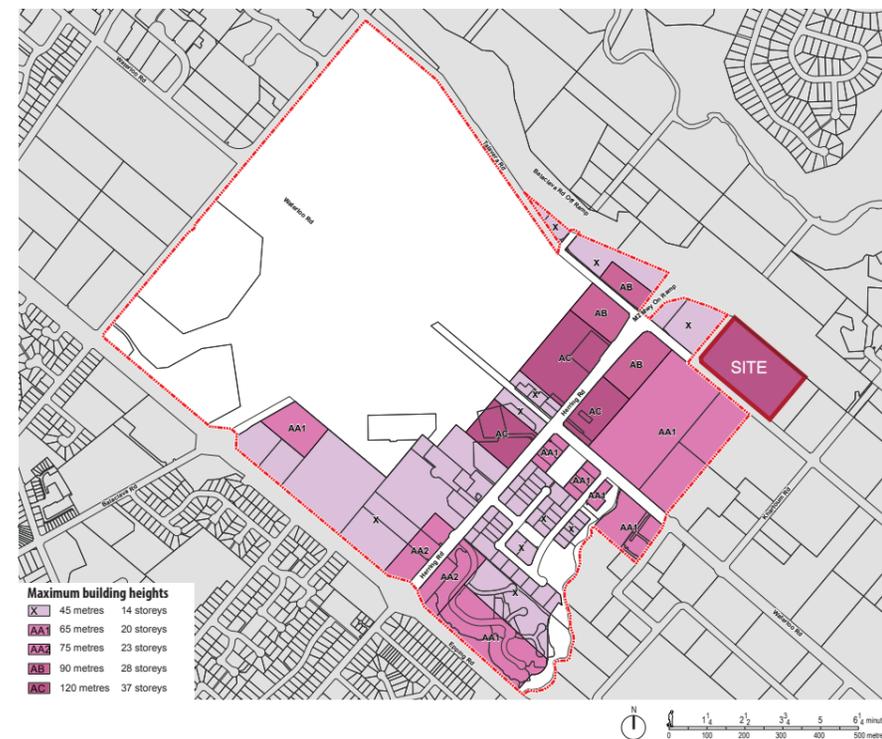
From an urban design perspective, it is appropriate to have the maximum building height on the periphery of the Herring Road UAP because the site will be a gateway for the precinct, marking the entrance to Macquarie Park from the M2 motorway, and also visually locating the new park. In practical terms, the additional height on the subject site is required commercially to allow for 1.5ha of the site to be dedicated to Council for public open space at no cost to Council.

3.5.3 Floor space ratio

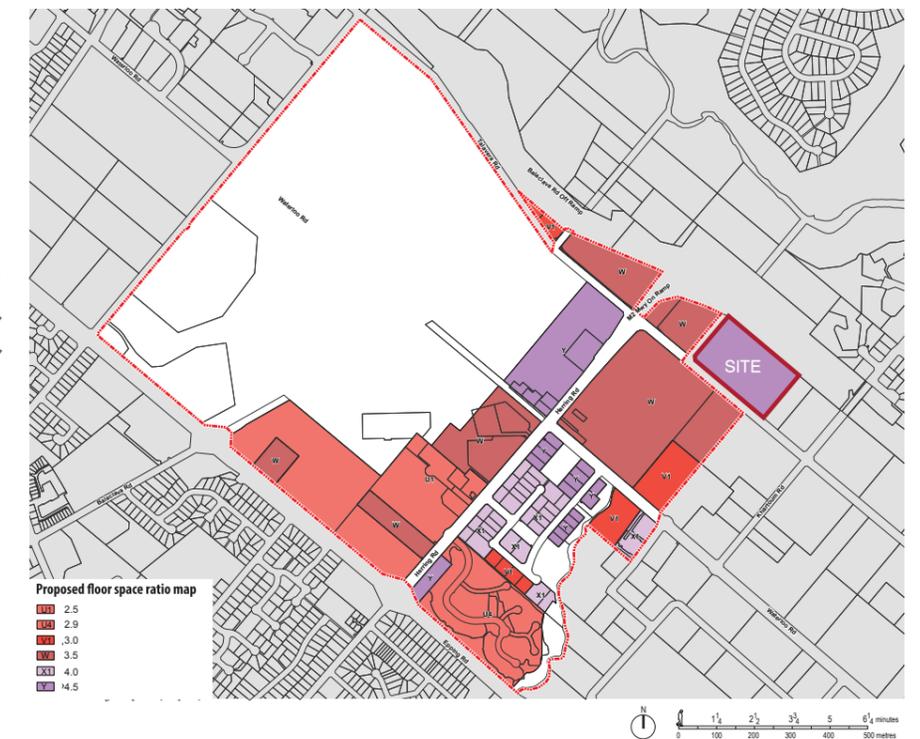
The preferred master plan for the site results in an **FSR of 3.5:1**. This is within the range of FSR controls for the Herring Road UAP.



Proposed Land Zoning for Herring Road UAP
Source: Herring Road, Macquarie Park Urban Activation Precinct Proposal



Proposed Building Heights for Herring Road UAP
Source: Herring Road, Macquarie Park Urban Activation Precinct Proposal



Proposed Floor Space Ratios for Herring Road UAP
Source: Herring Road, Macquarie Park Urban Activation Precinct Proposal

3.6 Development Control Plan and VPA

3.6.1 DCP controls

Should the Department of Planning and Environment support some residential uses on the site, detailed DCP provisions will need to be amended. Architectus can assist Council and the Department of Planning and Environment in the preparation of these controls in consultation with the land-owner.

The following DCP controls are likely to be required:

- The preferred built form, which shows ground plane RLs, a block plan showing heights in storeys and building footprints.
- The public domain – specific requirements for the design of streets and the new 1.5 hectare open space.
- Active frontages and land use plan – identifying where non-residential uses are required.

3.6.2 Voluntary Planning Agreement

It is recommended that there is a binding Heads of Agreement in place (between Holdmark Property Group and Council or the Department of Planning and Environment) for the construction and dedication of the new 1.5 hectare open space before the site is formally incorporated into the UAP with the associated re-zoning, height and FSR provisions.

The appropriate mechanism for the dedication of the park to Council is a voluntary planning agreement. Holdmark is willing to enter into a planning agreement for the dedication of this open space. The Agreement should identify development stages, and require that the park be dedicated to Council prior to the release of an Occupation Certificate for the final stage of the development (which should relate to the remaining 35% of units on the site).

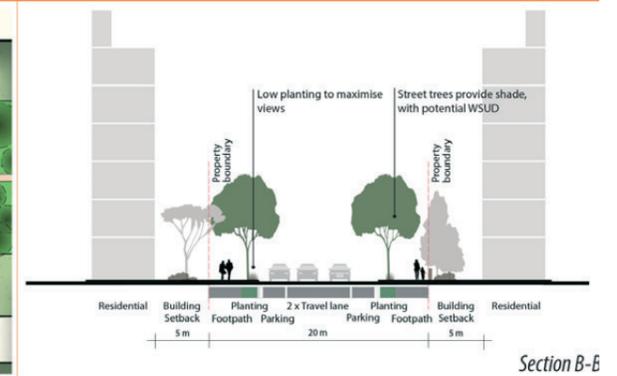
The level of embellishment to the new park is to be agreed with Council. Holdmark is also willing to agree that the cost of providing the new open space would not be offset against Section 94 contributions.

Local Streets

Local streets will better connect homes with workplaces and to the train station, university, shopping centre and open space.

Key improvements to local streets can:

- increase street and pedestrian/cycle connections resulting in a more fine grained network
- integrate pedestrian paths, street tree planting, traffic lanes and street parking
- encourage entrances that address the street
- seek passive surveillance from buildings, active ground floor uses resulting in increased pedestrian activity
- integrate with private landscape areas in building setbacks and contribute to the amenity of the street.



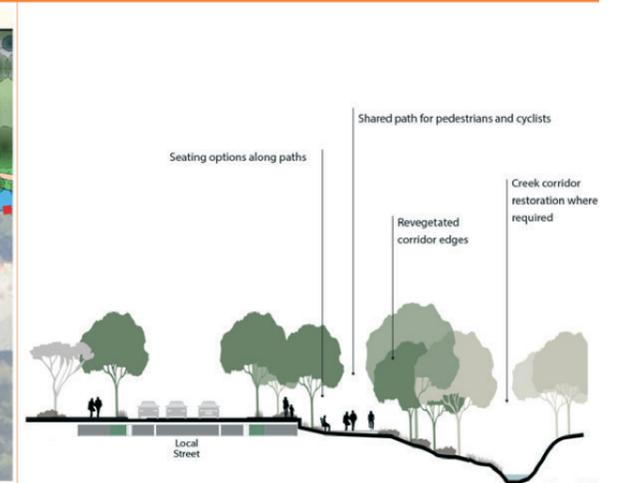
Proposed Local Street development controls for Herring Road UAP, Source: Herring Road, Macquarie Park Urban Activation Precinct Proposal

Local Parks and Spaces

Local and regional open spaces will be better connected and integrated into the Herring Road precinct.

Key improvement to local parks and spaces can:

- better connect existing local and regional parks to residential areas and business uses including the potential for a new bridge over Shrimptons Creek
- equitably distribute new local parks across the precinct as the area redevelops
- activate creek line corridors (Shrimptons Creek and Kikkiya Creek) with pathways, cycleways, frontages to local streets and better integrate with other open space areas
- improve lighting and provide clearer sight lines that can improve safety
- improve park and open space facilities, including signage and wayfinding
- better connect to parks outside the precinct along the existing creek line corridors



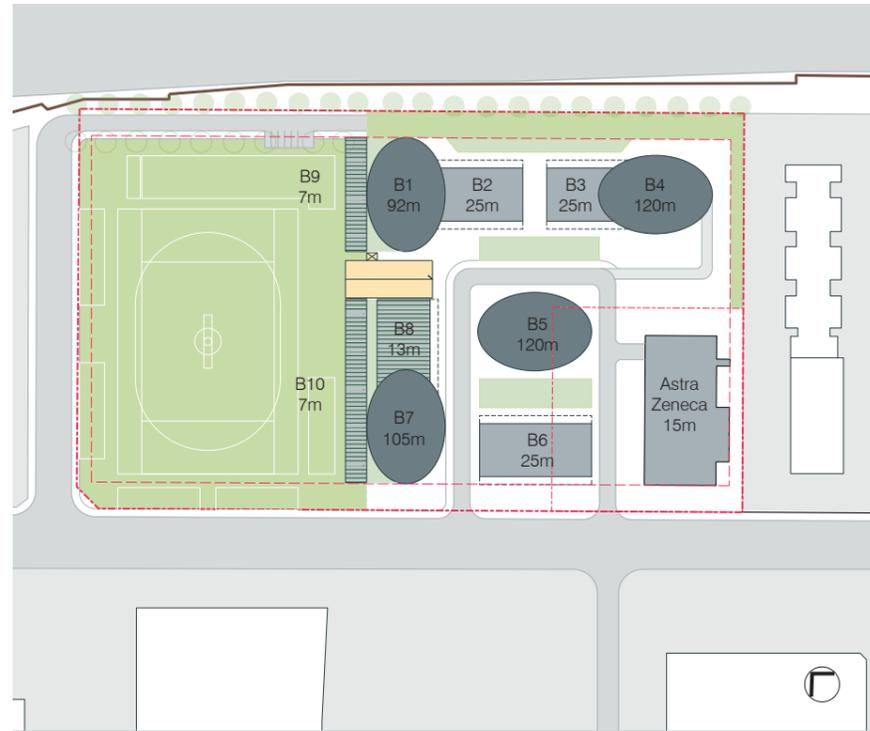
Proposed Local Parks and public spaces development controls for Herring Road UAP, Source: Herring Road, Macquarie Park Urban Activation Precinct Proposal

3.7 Options tested

Prior to arriving at the proposed master plan, Architectus tested a number of alternative master plan options.

3.7.1 Option 01 Variable heights

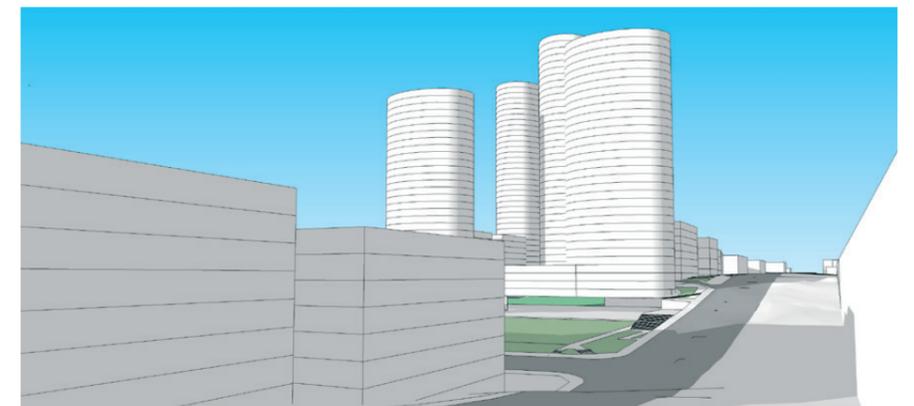
Strengths	Weaknesses	Conclusions
<ul style="list-style-type: none"> - Complies with SEPP 65 separation, solar access, cross ventilation, building depths - Park location is excellent – good visibility, public character and can be generally flat. - Varied heights provide interest and break up building bulk. - All buildings have good street address. - Good interface between buildings and the open space. - Maximises views for towers - Oval-shaped towers minimise visual bulk and ensure towers achieve 24m separation. 	<ul style="list-style-type: none"> - Less separation between towers when standing in the park than Option 2 and 4. - Exceeds 120m maximum building height. 	<ul style="list-style-type: none"> - Varied tower heights provide an excellent built form outcome, but requires building height in excess of 120m (the maximum height identified in the Herring Road UAP)



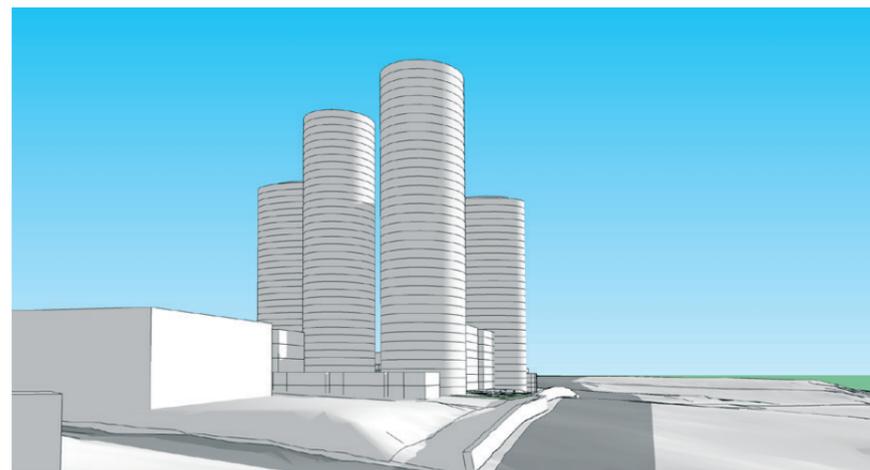
Option 01 Variable heights: Master plan



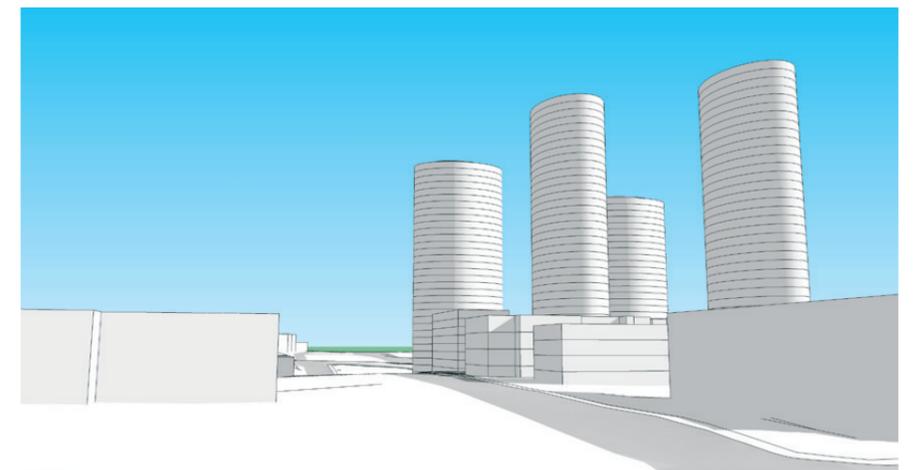
Option 01 Variable heights: View from new park (Alma Street)



Option 01 Variable heights: View from Talavera Road west, looking uphill to the east



Option 01 Variable heights: View from M2 Motorway



Option 01 Variable heights: View from Talavera Road east, looking downhill to the west

3.7.2 Option 02 East-west park

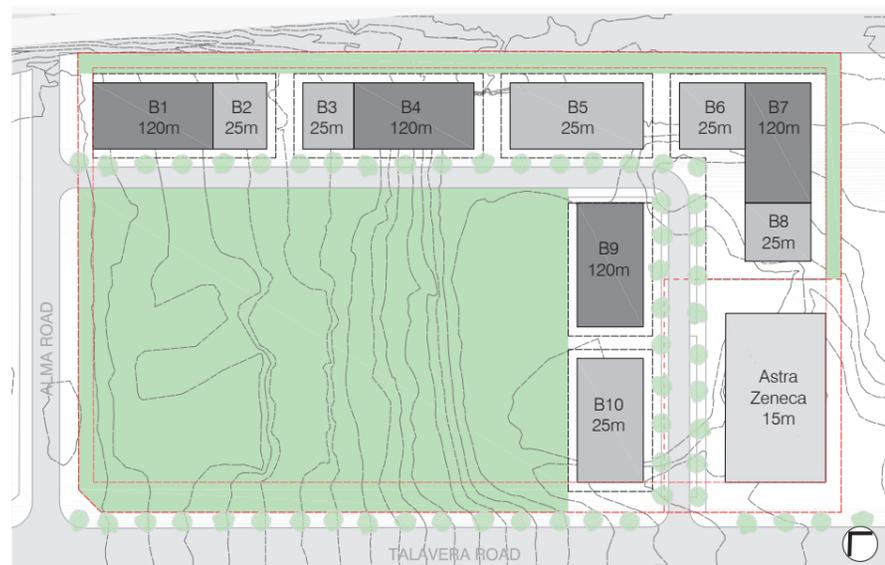
Strengths	Weaknesses	Conclusions
<ul style="list-style-type: none"> – Excellent tower separation – Complies with SEPP 65 separation, solar access, cross ventilation, building depths – Open space effectively relates to drainage channel west of Alma Road 	<ul style="list-style-type: none"> – Open space must be terraced because of level change and does not allow for a large, flexible open space for active play – Towers too close to motorway jeopardising resident amenity 	<ul style="list-style-type: none"> – Does not achieve objectives for district open space

3.7.3 Option 03 Western park

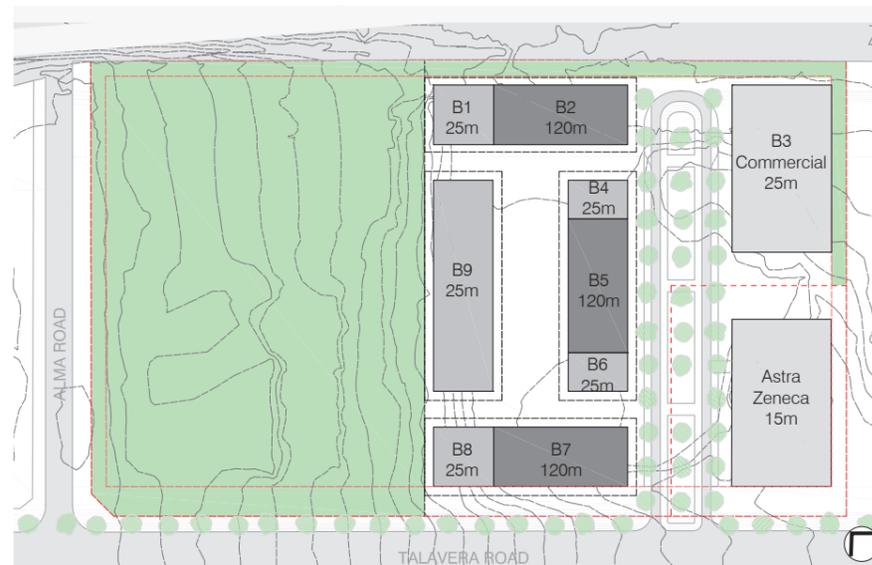
Strengths	Weaknesses	Conclusions
<ul style="list-style-type: none"> – Complies with SEPP 65 solar access and ventilation. – Park location is excellent – good visibility, public character and can be generally flat. – Open space effectively relates to drainage channel west of Alma Road 	<ul style="list-style-type: none"> – Does not achieve SEPP 65 tower separation distances – Towers are too bulky when viewed from the open space. – Poor street address – Buildings are too long 	<ul style="list-style-type: none"> – Built form needs further consideration in this configuration

3.7.4 Option 04 Centralised open space

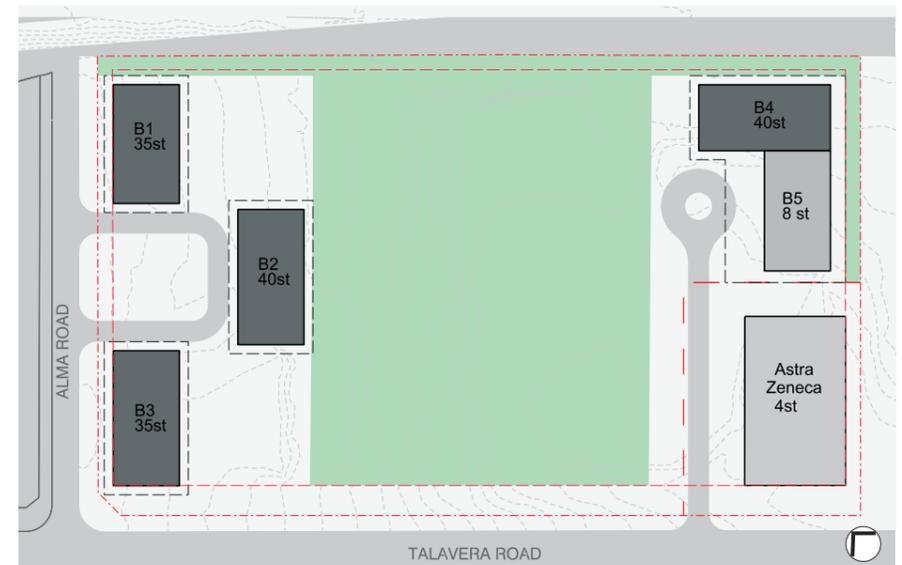
Strengths	Weaknesses	Conclusions
<ul style="list-style-type: none"> – Complies with SEPP 65 separation, solar access, cross ventilation, building depths – Internal park provides access from both sides of development 	<ul style="list-style-type: none"> – Open space feels internalised and private. – Poor interface between buildings and the open space – Park centred on steepest slope of site which would cause significant earthworks to be required – Reduced views from towers – Park overshadowed by western towers 	<ul style="list-style-type: none"> – Open space has only one street edge and provides less public amenity than preferred option



Option 02 East-west park: Master plan



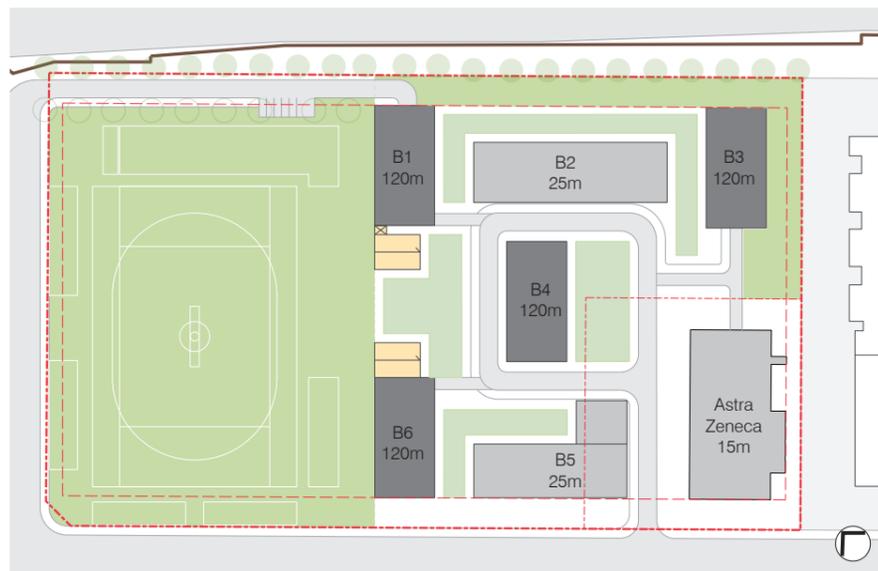
Option 03 Western park: Master plan



Option 04 Centralised open space: Master plan

3.7.5 Option 05 Looped internal road

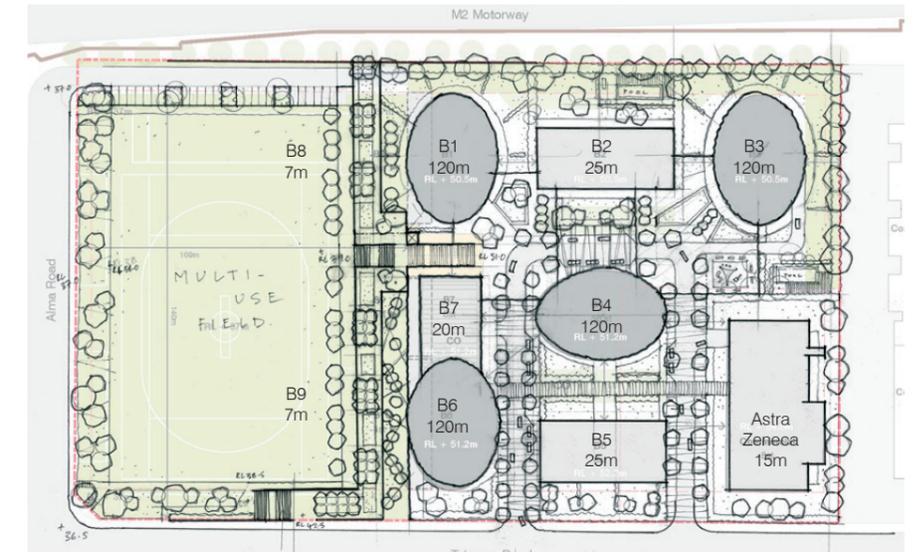
Strengths	Weaknesses	Conclusions
<ul style="list-style-type: none"> - Park location is excellent – good visibility, public character and can be generally flat. - New internal road adjoining the M2 provides good access to the park and the common basement - Open space effectively relates to drainage channel west of Alma Road 	<ul style="list-style-type: none"> - Road pattern is inefficient and does not provide good address for individual buildings. - Low-rise slab building adjoining the M2 is too long. 	<ul style="list-style-type: none"> - Need to further resolve road pattern and built form



Option 06 Looped internal road: Master plan

3.7.6 Preferred scheme

Strengths	Weaknesses	Conclusions
<ul style="list-style-type: none"> - Complies with SEPP 65 separation, solar access, cross ventilation, building depths - Park location is excellent – good visibility, public character and can be generally flat. - All buildings have good street address. - Good interface between buildings and the open space. - Maximises views for towers - Oval-shaped towers minimise visual bulk and ensure towers achieve 24m separation. - Open space effectively relates to drainage channel west of Alma Road 	<ul style="list-style-type: none"> - Less separation between towers when standing in the park than Option 2 and 4. 	<ul style="list-style-type: none"> - Recommend as basis for the master plan as this scheme provides more public and private amenity than any other option



Preferred scheme: Draft master plan



Preferred Scheme: View from new park (Alma Street)

3.8 Conclusion and recommendations

The inclusion of the subject site in the Herring Road UAP and rezoning for B4 Mixed Uses would result in the provision of a 1.5 hectare open space on the site at no cost to the public purse – a significant and important opportunity for Macquarie Park and City of Ryde.

This report provides an indicative building envelope plan for the redevelopment of the remainder of the site for residential uses. In summary, the master plan prioritises the location and design of the open space. In the proposed northern location the park will be visible, have excellent solar access and can be designed to be level (which has been a challenge on this site which has a fall of over 18m from the south to the north of the site). The preliminary design concept for the park, prepared by Clouston, ensures that it will have active edges, passive surveillance opportunities and a significant grassed area for a wide variety of active and passive recreation uses.

The built form provided in this report shows indicative envelopes that would be refined through detailed design, consultation and testing. In general, the plan seeks to provide SEPP 65 compliant

envelopes. Architectus and Holdmark would be pleased to meet with City of Ryde Council and NSW Department of Planning and Environment to discuss the preliminary plan in more detail.

Architectus recommends that the site be included in the Herring Road UAP (with B4 mixed use zoning; 120m height limit and 3.5:1 FSR) for the following reasons:

- **It will deliver a 1.5 hectare open space** that would not otherwise be provided in the Herring Road centre. The design of the open space represents design excellence and will be an enduring legacy of this UAP process.
- Holdmark Property Group is willing to develop and dedicate the open space, in addition to the payment of Section 94 contributions of the site. This offer represents a real chance to **capture some significant additional value** from the increased density on the site.
- Architectus has considered the impact of the rezoning proposal on employment uses and the function of Macquarie Park as a

Specialised Centre. In short, Architectus and Clouston consider that **a significant open space, such as that proposed, is essential to the long term success of Macquarie Park for employment uses**. On balance, the loss of a small area land for employment uses is justifiable on the grounds that it would result in much needed open space. In addition, the master plan submitted in this report allows for close to 400 jobs on site.

- Bitzios Traffic Consultants have reviewed both the proposed internal road layout, and the impact of the proposal on traffic circulation. The traffic report concludes that the proposed mixed use master plan at 3.5:1 would generate less traffic at peak times than if the site was developed at 1.5:1 for commercial uses. In summary, Bitzios have provided support for the proposed internal circulation, and found that, with some intersection works, **the proposed master plan would have an acceptable traffic impact**.

We look forward to meeting with the Department and Council to discuss this important opportunity for Macquarie Park further.



Appendix A

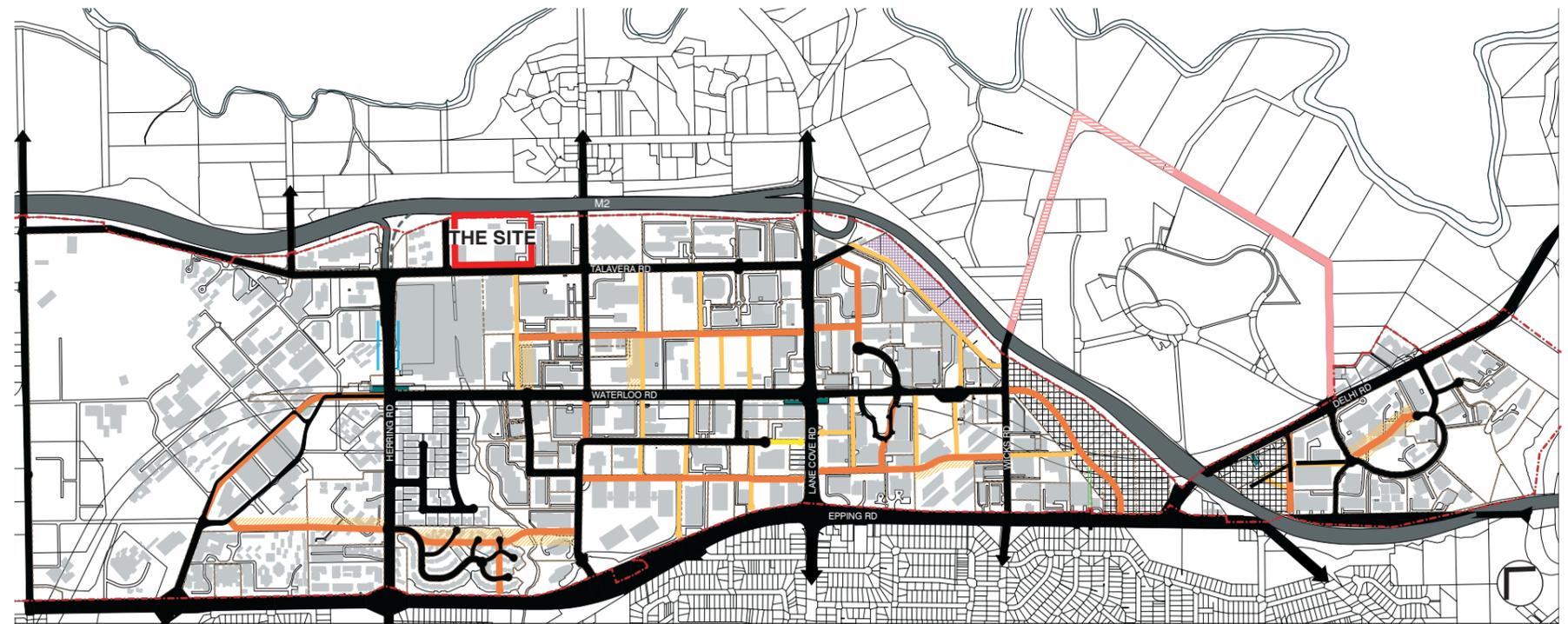
Traffic and parking

3.8.1 Proposed access network

In 2013 Architectus was engaged by City of Ryde Council to undertake a study to review the planning controls and public domain design for Macquarie Park, and develop a funding model that can deliver the necessary infrastructure and open space in Macquarie Park. One recommended planning control put forward in the report was a proposal for a new access network for the area.

The principles of the proposed access network are;

- Where possible, the alignment of proposed roads is consistent with existing private roads
- New roads parallel with Waterloo Rd are to be 20m wide.
- Generally a 200m road grid is achieved. A finer grained network is proposed along Waterloo Rd to fit existing pattern.
- The majority of the roads are on a single property lot reducing the need for co-ordination and reducing interface issues between sites. Half as many landowners are therefore affected compared to the DCP access network. Where possible, the road has been located on larger land holdings to reduce its relative impact on the site.
- In some locations the road connections to adjacent roads are fixed, but the alignment of the road between those two points is flexible. This is recommended for three large strategic sites to allow for flexibility in the design process and to recognise existing built form constraints. A preferred location of the road is shown within a hatched area. The road can be located in any alignment within the hatched area.
- Roads shown as cul-de-sacs are possible future access to Epping Road and Lane Cove Road subject to RMS approval
- The proposed east-west roads are in continuous alignment to achieve best traffic circulation. Several of the north-south roads are offset for cost effective implementation.
- Roads are to be shown in the DCP. Land owners are not permitted to build over the area designated for a road even if the incentive additional FSR for building the road is not taken up.



Council-endorsed new road network for Macquarie Park; Source: Macquarie Park Plan Review Recommendation Paper 2013,

- The proposed roads are required. Within the nominated hatched areas there is discretion to locate the road.

The proposed access network, as shown above, has been endorsed by Council.

Key			
	Study area boundary		Upgrade Interchange
	Existing road grid		Existing road upgrade for future consideration
	M2		Road connecting Wicks Rd and Delhi Rd proposed for future consideration
	Proposed new 20m road		Building footprints (existing & proposed)
	Proposed new 16m road		Building envelope (proposed)
	Proposed new 14m road		Potential bus layover
	Proposed new road to be provided in this zone		Deferred sites
	Property boundaries		
	Railway station entry/exit		

3.8.2 Summary of Bitzios traffic report

Master Plan

The draft Master Plan includes the following land use yield:

- Site Area: 38 874sqm;
- Public Open Space: 15 206sqm;
- Commercial Land Use (B8, B9 & Astra Zeneca): 7 258sqm GFA;
- Residential Apartments (B1-B7); 1 271apartments.

The draft Master Plan proposes 1 405 residential and 158 commercial car parking spaces, predominantly provided in a basement car park. A small amount of convenient ground level car parking will also be provided. The master plan proposes three access locations, one from the northern end of Alma Road and two access locations on Talavera Road.

Traffic Discounts

The proposed development is estimated to provide for around 363 employees across the 9 677sqm of commercial floor space and accommodate between 1900 and 2500 residents. Its close proximity to Macquarie Business Park, Macquarie Shopping Centre, the University and the rail station is expected to result in higher than average active transport mode share and public transport use. The Bureau of Statistics Journey to Work data for 2011 shows that the Herring Road precinct has a low private vehicle usage (33%) for journeys to work, compared to 32% for public transport and 24% for other modes, including walking and cycling, while 11% worked from home. The sites location and mix of land uses (residential, commercial and open space) presents a real transit orientated development opportunity. Subsequently the development is expected to produce higher levels of non-vehicle mode shares than current (2011) journey to work trips.

Traffic Generation Rates

The RMS *Guide to Traffic Generating Developments (2013)*, provides a technical direction for high density residential sites. Based on a comparison of sites with similar mode shares, a residential

vehicle trip rate of 0.24 vehicles per hour has been assumed for this assessment. This technical direction recommended a traffic generation rate for office of:

- Morning peak hour trips: 1.6 vehicle trips per 100m2 GFA;
- Evening peak hour trips: 1.2 vehicle trips per 100m2 GFA.

Development Generated Traffic

Guide to Traffic Generating Developments assumes for residential development that 80% of morning peak movements are outbound and 20% inbound. The split is reversed in the evening peak. See the table for figures for the calculated development generated peak hour vehicle trips.

The scale of generated traffic volumes and their distribution warrants the need for an all-movements access onto Talavera Road to limit circulation of traffic on Waterloo, Khartoum and Herring Roads that would be required under the current left in/out arrangements. Two possible all-movement access locations were assessed, namely:

- A signalised 4-way intersection of Alma Road/Talavera Road/Macquarie Shopping Centre access
- A signalised 3-way intersection of the sites western access and Talavera Road

It is noteworthy that the proposed land use will generate significantly fewer vehicle trips compared to a scheme that complies with the current controls (i.e. commercial uses). The current Floor Space Ratio (FSR) for the site for commercial use is 1.5:1, providing a potential GFA of 58,311m2. Based on “office” use and the RTA traffic generation rate, a scheme that complies with the current controls would generate in the order of 933 vehicles per hour in the morning peak, or 2.2 times the vehicle traffic generated by the proposed, predominantly residential mixed-use scheme.

Development Access Options

The development proposes three access points, one via Alma Road and two via Talavera Road.

Option 1: Eastern Site Access/Talavera Road

This option proposes an all-movements access at the eastern end of the site (see figure). The location of this access will align with a future local Council road connecting Talavera Road and Waterloo Road. The provision of a right turn lane will require further widening and land dedication (around 3.5-4m) along the Talavera Road frontage from the access point to the eastern site boundary.

The second left-in-left out access would require localised widening (around 3.5m) to accommodate a deceleration lane.

Option 2: Alma Road/Talavera Road/Macquarie Shopping Centre Access

This intersection would require a realignment of the southern end on Alma Road to provide a fourth leg into the existing Talavera Road/Macquarie Shopping centre signalised intersection (see figure). While this option utilises the existing intersection it requires a truncation of land (approximately 600m2) on the south-western corner of the site to align Alma Road with this intersection.

The provision of a right turn lane will require further widening and land dedication (around 3.5-4m) along the Talavera Road frontage from Alma Road for approximately 100m. The two left-in and left-out access locations would require localised widening (around 3.5m) to accommodate deceleration lanes.

Conclusion

The development site, as fundamentally a high-density residential development and within an 800m catchment of Macquarie Station, should be in the Herring Road UAP.

3.8.3 Parking provisions

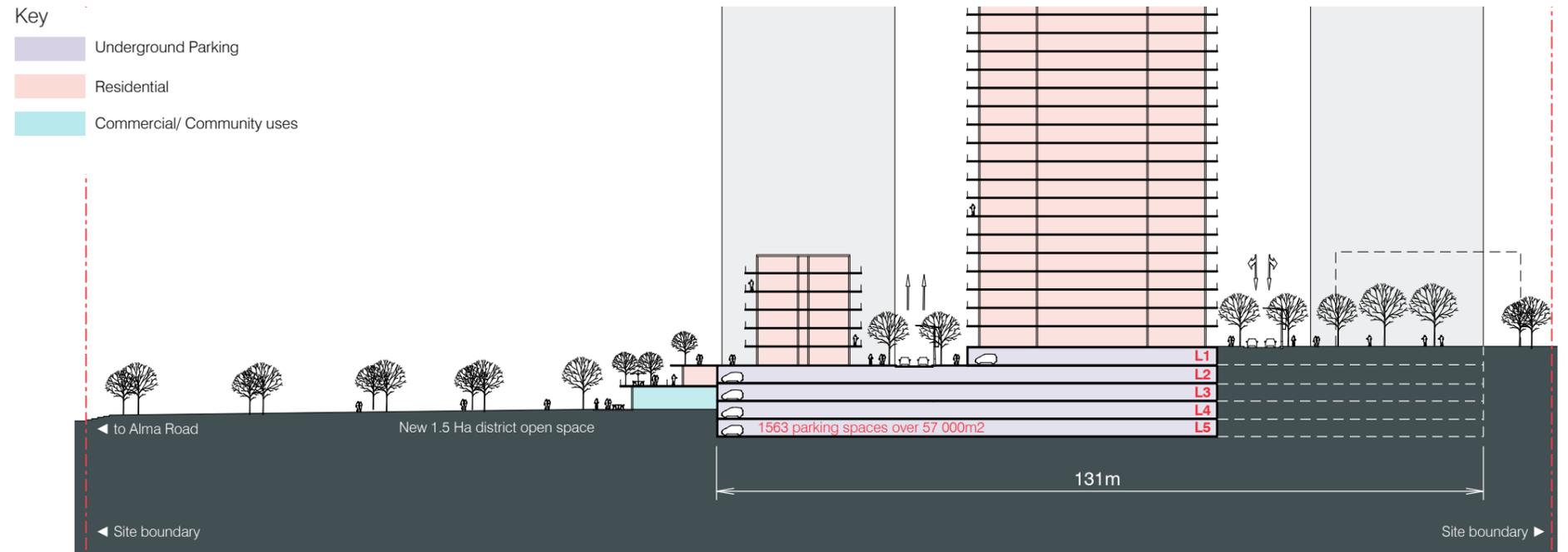
The proposed development delivers a total of 1 563 parking spaces.

Residential Parking

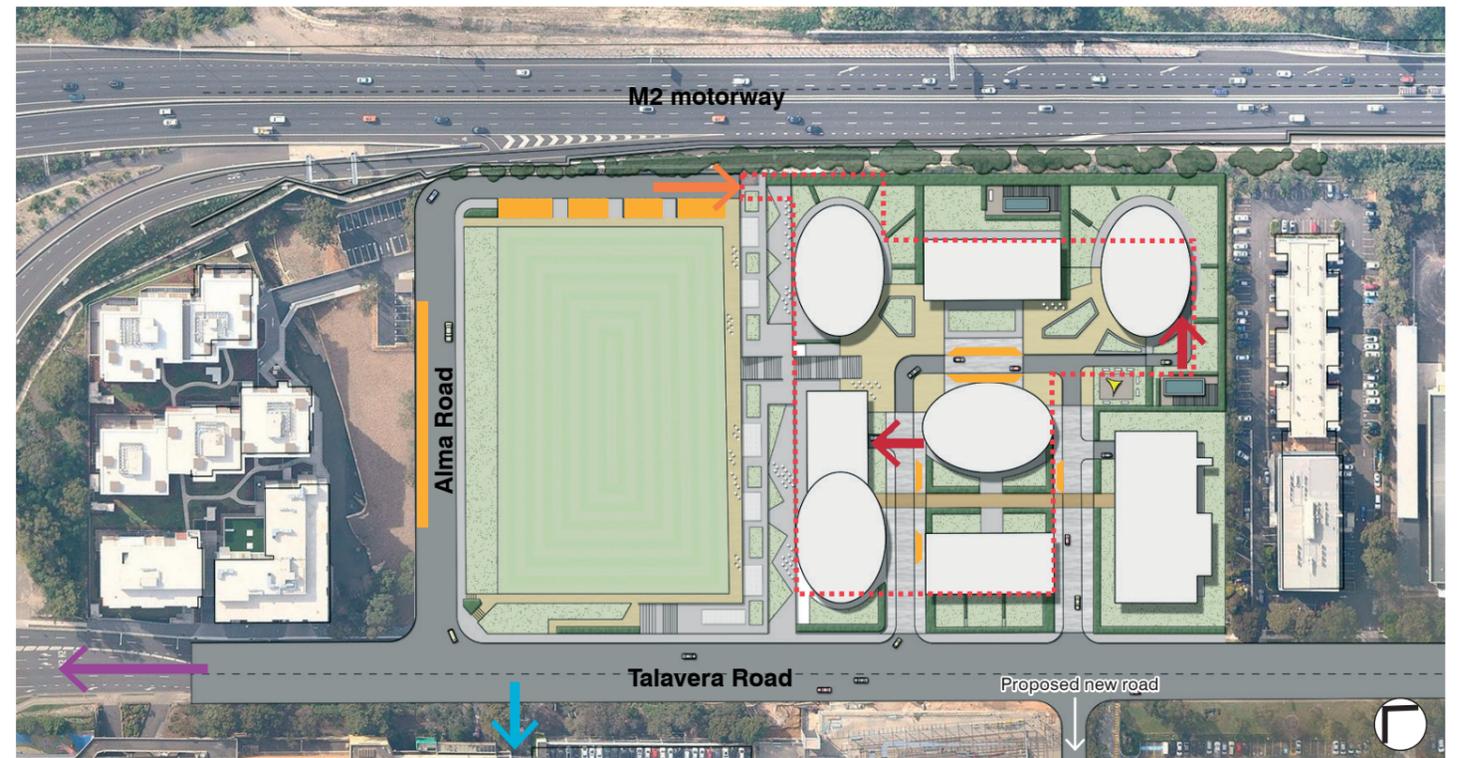
- 1 405 parking spaces for residential uses
- Calculated by adopting a 70% two-bedroom; 20% one-bedroom; 10% three-bedroom mix of apartments throughout
- Calculated using the Herring Road UAP parking rates for high-density residential areas
- One bedroom apartment: one space
- Two bedroom apartment: one space
- Three bedroom apartment (and larger): one space
- Visitor parking: one space per dwelling

Commercial Parking

- 158 parking spaces for commercial uses
- Calculated using the Ryde LEP 2010 parking rates for commercial areas of one space per 46sqm of commercial GFA



Parking provision in proposed development: 1563 spaces over 5 levels of underground parking



The proposed development presents access to a variety of parking options

3.8.4 Traffic report

**68 – 82 TALAVERA ROAD
TRAFFIC ASSESSMENT AND
UAP CONSIDERATION**

FOR
HOLDMARK



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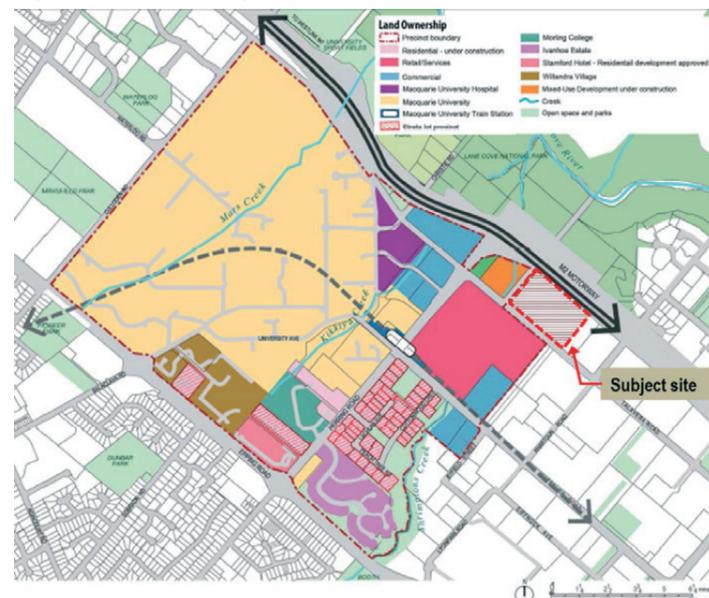
1. INTRODUCTION

1.1 BACKGROUND

Bitzios Consulting has been commissioned by Holdmark to prepare a preliminary traffic impact assessment (TIA) and TNSW submission for inclusion of the development site at 66-82 Talavera Road, Macquarie Park in the Herring Road Urban Activation Precinct (UAP).

1.2 HERRING ROAD UAP AND SITE LOCATION

The subject site is located at 66-82 Talavera Road, on the south-east corner of Alma Road and Talavera Road, and borders the south-east corner of the Herring Road UAP. Figure 1.1 shows the location of the subject site in context to the Herring Road UAP.



Source: Herring Road Urban Activation Precinct Planning Report (NSW Planning & Environment) June 2014

Figure 1.1: Herring Road UAP and Site Location

The site is located across the road from the Macquarie Shopping Centre and 500m walking distance to the Macquarie University Rail Station.

1.3 SCOPE

The scope of work involves a "high-level" traffic impact assessment of the proposed development to determine its potential traffic generation, feasibility of access arrangements and what traffic and transport impacts and mitigate works may be required, consistent with the Macquarie Park Draft LEP 2013 (Amendment 1).

The report also provides discussions and justification in support of the site being included in the Herring Road UAP.

2. TRAFFIC GENERATION

2.1 MASTER PLAN

The draft Master Plan is shown in Figure 2.1 containing the following land use yield:

- Site Area: 38,874m²;
- Public Open Space: 15,206m²;
- Commercial Land Use (B8, B9 & Astra Zeneca): 7,258m² GFA; and
- Residential Apartments (B1-B7): 1,277apartments.

The draft Master Plan proposes 1405 residential car parking spaces and 158 car parking spaces, predominantly provided in a basement car park. A small amount of convenient ground level car parking will also be provided.

The master plan proposes three access locations, one from the northern end of Alma Road and two access locations on Talavera Road.

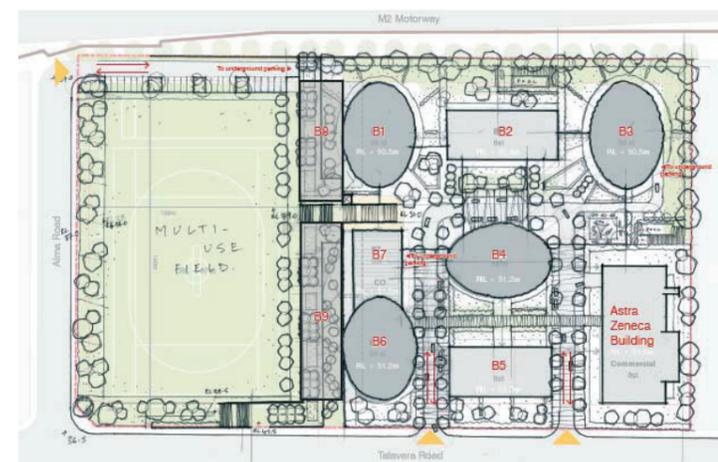


Figure 2.1: Draft Master Plan

2.2 TRAFFIC DISCOUNTS

The proposed development is estimated to provide for around 363 employees across the 9,677m² of commercial floor space and accommodate between 1900 and 2500 residents. Its close proximity to Macquarie Business Park, Macquarie Shopping Centre, the University and the rail station is expected to result in higher than average active transport mode share and public transport use. The Bureau of Statistics Journey to Work data for 2011 shows that the Herring Road precinct has a low private vehicle usage (33%) for journeys to work, compared to 32% for public transport and 24% for other modes, including walking and cycling, while 11% worked from home. The sites location and mix of land uses (residential, commercial and open space) presents a real transit orientated development opportunity. Subsequently the development is expected to produce higher levels of non-vehicle mode shares than current (2011) journey to work trips.

2.3 TRAFFIC GENERATION RATES

In May 2013, RMS released a technical direction relating to updated surveys and development trip generation for their *Guide to Traffic Generating Developments*. For high density residential, the guide compared 10 sites across metropolitan Sydney. The technical guide compared person and vehicle bases trips as well as mode share for each site. For the 10 metropolitan sites, the peak hour residential traffic generation (car trips) ranged between 0.07 and 0.32 vehicle trips per hour. Based on a comparison of sites with similar mode shares a residential vehicle trip rate of 0.24 vehicles per hour has been assumed for this assessment.

The technical direction included surveys and derived traffic generation rates for 10 office blocks, including eight in metropolitan Sydney, with most having access to the rail network. This technical direction recommended a traffic generation rate for office of:

- Morning peak hour trips - 1.6 vehicle trips per 100m² GFA; and
- Evening peak hour trips - 1.2 vehicle trips per 100m² GFA.

2.4 DEVELOPMENT GENERATED TRAFFIC

Table 2.1 calculates the development peak hour vehicle trips. This shows that the development is expected to generate 422 vehicle trips and 393 vehicle trips in the morning and evening peak hours respectively.

Table 2.1: Development Generated Vehicle Trips

Land Use	Quantity	AM Vehicle Trip Rate	AM Vehicle Trips	PM Vehicle Trip Rates	PM Vehicle Trips
Residential	1,277	0.24	306	0.24	306
Commercial	7,258 m ² GFA	1.6/100	116	1.2/100	87
Total			422		393

The RTA Guide to Traffic Generating Developments assumes for residential development that 80% of morning peak movements are outbound and 20% inbound. The split is reversed in the evening peak. For commercial development the RTA Guide assumes 80% of employees are inbound and 20% outbound in the morning peak, with the reverse occurring in the afternoon peak. Based on these assumptions the peak hour inbound and outbound development traffic movements are:

- AM peak outbound - 268 vph;
- AM peak inbound - 154 vph;
- PM peak inbound - 262 vph; and
- PM peak outbound - 131 vph.

It is noteworthy that the proposed land use will generate significantly fewer vehicle trips compared to a scheme that complies with the current controls (i.e. commercial uses). The current Floor Space Ratio (FSR) for the site for commercial use is 1.5:1, providing a potential GFA of 58,311m². Based on "office" use and the RTA traffic generation rate, a scheme that complies with the current controls would generate in the order of 933 vehicles per hour in the morning peak, or 2.2 times the vehicle traffic generated by the proposed, predominantly residential mixed-use scheme.

2.5 TRAFFIC DISTRIBUTION

The distribution of development traffic has been assumed to match the movement patterns identified in the Herring Road UAP (Appendix F) Transport Strategy, with:

- 65% of trips to/from the east;
- 14% of trips to/from the west;
- 11% of trips to/from the north; and
- 10% of trips to/from the south.

2.6 DEVELOPMENT ACCESS OPTIONS

The development proposes three access points, one via Alma Road and two via Talavera Road. Alma Road is located immediately west of the signalised access to the Macquarie Shopping Centre. The western-most access point on Talavera Road is approximately 100m-110m east of the signalised access to the Macquarie Shopping Centre, and would be appropriate for left-in/left-out movement only. The eastern-most access point on Talavera Road is located approximately 200m and equidistant between Khartoum Road signals and the Macquarie Centre access signals, and is likely to be suitable for an all-movements access.

The scale of generated traffic volumes and their distribution warrants the need for an all-movements access onto Talavera Road to limit circulation of traffic on Waterloo, Khartoum and Herring Roads that would be required under the current left in/out arrangements. Two possible all-movement access locations were assessed, namely:

- A signalised 4-way intersection of Alma Road/Talavera Road/Macquarie Shopping Centre access; and
- A signalised 3-way intersection of the sites western access and Talavera Road.

2.6.1 Alma Road/Talavera Road/Macquarie Shopping Centre Access

This intersection would require a realignment of the southern end on Alma Road to provide a fourth leg into the existing Talavera Road/Macquarie Shopping centre signalised intersection, as shown in Figure 2.2.

While this option utilises the existing intersection it requires a truncation of land (approximately 600m²) on the south-western corner of the site to align Alma Road with this intersection.

The provision of a right turn lane will require further widening and land dedication (around 3.5-4m) along the Talavera Road frontage from Alma Road for approximately 100m.

The two left-in and left-out access locations would require localised widening (around 3.5m) to accommodate deceleration lanes.



Figure 2.2: Alma Road/Talavera Road/Shopping Centre Intersection Concept

Development Traffic Movements

Figure 2.3 presents the development traffic movements based on the above traffic generation, distribution and access consideration.

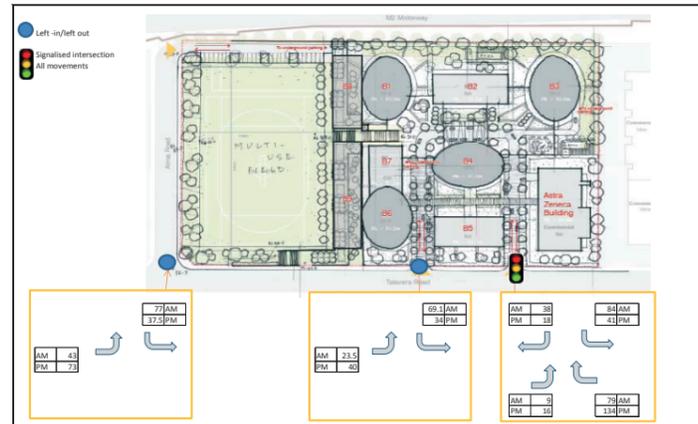


Figure 2.3: Development Traffic Movements – Signalised Alma Road Access Option

2.6.2 Eastern Site Access/Talavera Road

This option proposes an all-movements access at the eastern end of the site. The location of this access will align with a future local Council road connecting Talavera Road and Waterloo Road. The provision of a right turn lane will require further widening and land dedication (around 3.5-4m) along the Talavera Road frontage from the access point to the eastern site boundary.

The second left-in/left out access would require localised widening (around 3.5m) to accommodate a deceleration lane.

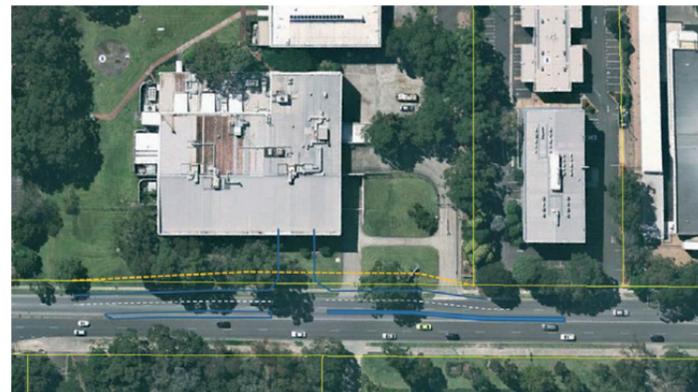


Figure 2.4: Eastern site access/Talavera Road/Intersection Concept

Development Traffic Movements

Figure 2.5 presents the development traffic movements based on the above traffic generation, distribution and access consideration.

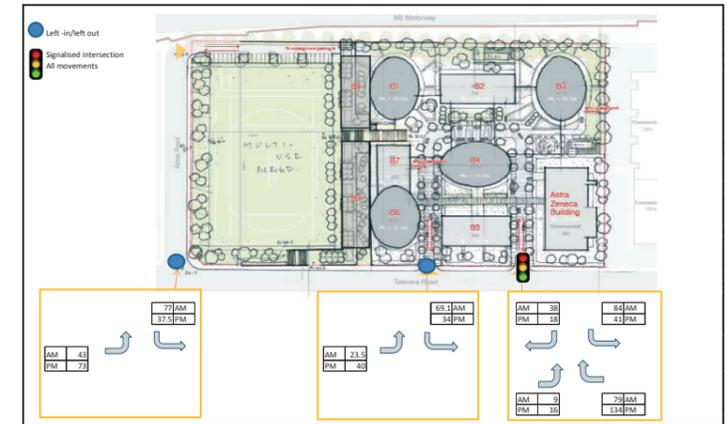


Figure 2.5: Development Traffic Movements – Signalised Eastern Access Option

3. PRELIMINARY IMPACTS ASSESSMENT

3.1 BACKGROUND TRAFFIC

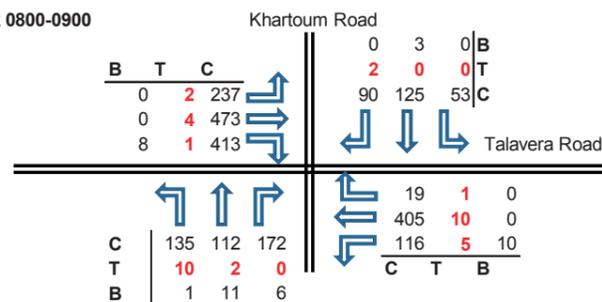
Traffic volumes at the intersection of Talavera Road and Khartoum Road were surveyed on 4 March 2014. The AM and PM peak periods observed were:

- AM Peak - 7:00-9:00am; and
- PM Peak - 4:00-6:00pm.

The survey results are show in Figure 3.1.

- AM Peak - 1130 vph eastbound, 650 vph westbound;
- PM Peak - 835 vph eastbound, 1037 vph westbound.

AM Peak 0800-0900



PM Peak (1700-1800)

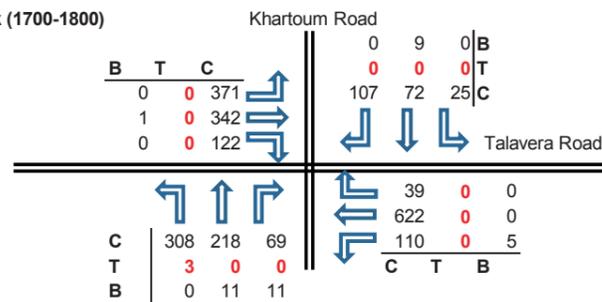


Figure 3.1: Peak Hour Traffic Count at Talavera Road/Khartoum Road Intersection

For assessment purposes a 2% CAGR has been assumed for background traffic, which is consistent with the Herring Road UAP Transport Strategy. Assuming a design horizon of 2021, the peak hour background traffic volumes are estimated as:

- 2021 AM Peak - 1290 vph eastbound, 746 vph westbound; and
- 2021 PM Peak - 959 vph eastbound, 1191 vph westbound.

3.2 ALMA ROAD/TALAVERA ROAD ACCESS INTERSECTION ASSESSMENT

A Sidra intersection analysis was undertaken of the proposed access via Alma Road. The intersection layout is shown in Figure 3.2.

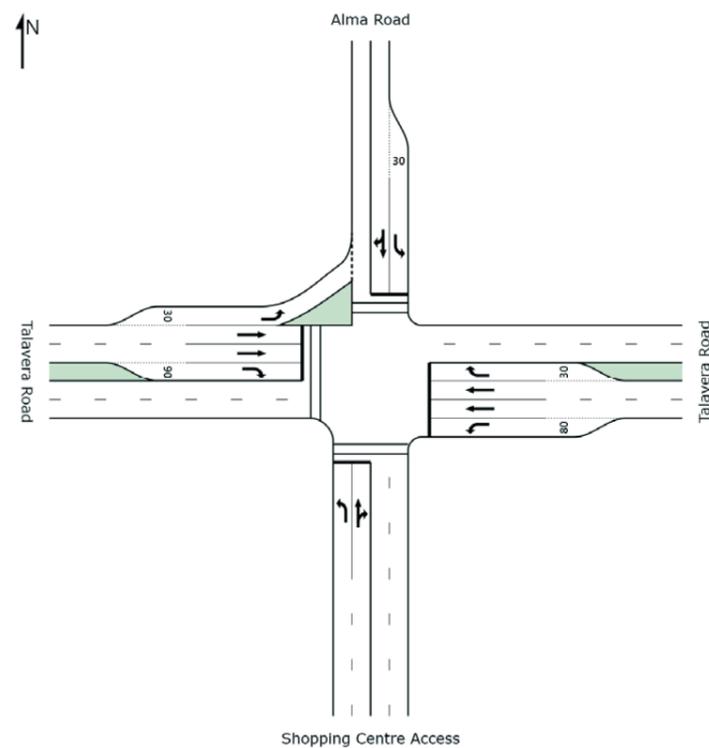


Figure 3.2: Alma Road/Talavera Road Intersection Configuration

Figure 3.3 presents the Sidra model intersection analysis for this intersection configuration. The analysis shows that will operate below capacity in the morning and evening peak periods, with acceptable queue and delay results.

2021 AM Peak

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow (veh/h)	HV %	Desg. Sat. (v/c)	Average Delay (sec)	Level of Service	95% Back of Queue (veh)	Distance (m)	Prop. Queue	Effective Stop Rate (per veh)	Average Speed (km/h)
East Talavera Road											
5	T	705	0.0	0.343	5.5	LOS A	4.5	31.5	0.32	0.26	50.8
6	R	83	0.0	0.587	50.1	LOS D	3.4	24.0	1.90	0.79	25.3
Approach											
		990	0.0	0.597	9.6	LOS A	4.5	31.5	0.30	0.33	48.3
North Side Access											
7	L	88	0.0	0.181	33.1	LOS C	2.7	18.9	0.81	0.76	31.4
9	R	40	0.0	0.062	32.1	LOS C	1.2	8.3	0.78	0.73	31.9
Approach											
		128	0.0	0.181	32.8	LOS C	2.7	18.9	0.80	0.75	31.5
West Talavera Road											
10	L	9	0.0	0.034	21.6	LOS C	0.2	1.4	0.58	0.67	37.8
11	T	1355	0.0	0.796	19.8	LOS B	21.9	153.6	0.84	0.79	36.8
Approach											
		1367	0.0	0.796	19.9	LOS B	21.9	153.6	0.84	0.79	36.8
All Vehicles											
		2364	0.0	0.796	16.9	LOS B	21.9	153.6	0.87	0.82	39.4

2021 PM Peak

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow (veh/h)	HV %	Desg. Sat. (v/c)	Average Delay (sec)	Level of Service	95% Back of Queue (veh)	Distance (m)	Prop. Queue	Effective Stop Rate (per veh)	Average Speed (km/h)
East Talavera Road											
5	T	1254	0.0	0.608	12.4	LOS B	14.9	104.5	0.75	0.87	42.5
6	R	141	0.0	0.799	45.6	LOS D	5.3	37.0	1.99	0.99	29.8
Approach											
		1395	0.0	0.799	15.8	LOS B	14.9	104.5	0.77	0.89	43.8
North Side Access											
7	L	43	0.0	0.077	27.2	LOS C	1.1	7.4	0.75	0.73	34.3
9	R	19	0.0	0.034	26.7	LOS C	0.5	3.2	0.73	0.79	34.6
Approach											
		62	0.0	0.077	27.1	LOS C	1.1	7.4	0.74	0.72	34.4
West Talavera Road											
10	L	17	0.0	0.053	24.5	LOS C	0.4	2.7	0.69	0.69	35.8
11	T	1039	0.0	0.755	24.2	LOS C	16.4	114.8	0.96	0.88	34.1
Approach											
		1026	0.0	0.755	24.2	LOS C	16.4	114.8	0.94	0.88	34.2
All Vehicles											
		2453	0.0	0.760	19.5	LOS B	16.4	114.8	0.84	0.77	37.2

Figure 3.3: Alma Road/Talavera Road Intersection Performance

3.3 EASTERN ACCESS/TALAVERA ROAD INTERSECTION ASSESSMENT (ALTERNATIVE OPTION)

A Sidra intersection analysis was undertaken of the proposed eastern access. The intersection layout is shown in Figure 3.4.

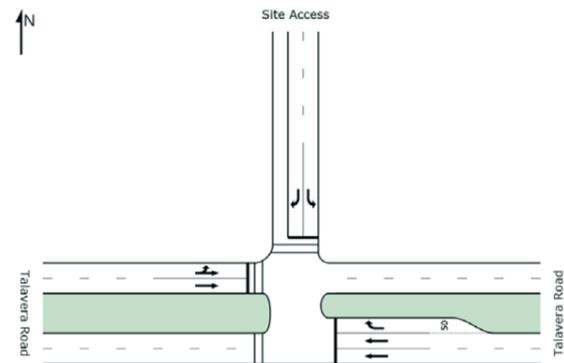


Figure 3.4: Eastern Site Access/ Talavera Road Intersection Configuration

Figure 3.5 presents the results of the intersection analysis. This shows that the intersection will approach capacity but remain under acceptable operation performance criteria (e.g. less than DoS 0.9) in 2021 for both peak periods. The 95th percentile queue on the eastbound approach is also nearing the upstream intersection (Shopping Centre Access).

2021 AM Peak

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/s	HVY %	Disp. Sats. sat	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prog. Queue	Effective Stop Rate per veh	Average Green Time sec
East Talavera Road											
5	T	705	0.0	0.543	5.5	LOS A	4.5	31.5	0.32	0.28	50.8
6	R	03	0.0	0.597	56.1	LOS D	3.4	24.0	1.00	0.79	25.3
Approach		868	0.0	0.597	9.8	LOS A	4.5	31.5	0.38	0.33	48.3
North Site Access											
7	L	08	0.0	0.181	33.1	LOS C	2.7	18.9	0.81	0.76	31.4
9	R	49	0.0	0.602	30.1	LOS C	1.2	8.3	0.78	0.75	31.9
Approach		129	0.0	0.181	32.0	LOS C	2.7	18.9	0.80	0.75	31.5
West Talavera Road											
10	L	9	0.0	0.034	21.6	LOS C	0.2	1.4	0.58	0.67	37.6
11	T	1358	0.0	0.796	19.9	LOS B	21.9	153.6	0.84	0.79	36.8
Approach		1367	0.0	0.796	19.9	LOS B	21.9	153.6	0.84	0.79	36.8
All Vehicles		2564	0.0	0.796	18.6	LOS B	21.9	153.6	0.87	0.82	38.4

2021 PM Peak

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/s	HVY %	Disp. Sats. sat	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prog. Queue	Effective Stop Rate per veh	Average Green Time sec
East Talavera Road											
5	T	1254	0.0	0.600	12.4	LOS B	14.9	104.5	0.75	0.67	42.5
6	R	141	0.0	0.760	45.6	LOS D	5.3	37.6	1.00	0.96	26.6
Approach		1395	0.0	0.760	15.0	LOS B	14.9	104.5	0.77	0.69	40.9
North Site Access											
7	L	43	0.0	0.077	27.2	LOS C	1.1	7.4	0.75	0.73	34.3
9	R	19	0.0	0.634	26.7	LOS C	0.5	3.2	0.73	0.70	34.8
Approach		62	0.0	0.077	27.1	LOS C	1.1	7.4	0.74	0.72	34.4
West Talavera Road											
10	L	17	0.0	0.063	24.5	LOS C	0.4	2.7	0.60	0.60	35.8
11	T	1009	0.0	0.755	24.2	LOS C	16.4	114.6	0.95	0.88	34.1
Approach		1026	0.0	0.755	24.2	LOS C	16.4	114.6	0.94	0.86	34.2
All Vehicles		2483	0.0	0.760	19.5	LOS B	16.4	114.6	0.84	0.77	37.2

Figure 3.5: Eastern Site Access/ Talavera Road Intersection Performance

3.4 COMPARISON OF ACCESS OPTIONS

Both access options will provide a high level of access to the site. The Alma Road access simply adds another leg to an existing signalised intersection, removing the need for additional traffic signals. The potential dis-benefit of this option is that it requires more land-take and impacting on the size and configuration of the public open space (multi-use fields).

The eastern access option introduces another set of traffic signals on Talavera Road, however requires less land take. This location would also allow for an all-movements connection, as a fourth leg, for the proposed local road connection between Talavera Road and Waterloo Road.

Based on the preliminary traffic analysis both options will operate at a similar level of service.

3.5 PUBLIC TRANSPORT

The nearest train station to the site is Macquarie University, which is around 550m walking distance away via Herring Road or Macquarie Shopping Centre.

Macquarie University station is located on the T1 North Shore and Northern Line.

The site is also served by a large number of bus routes. Many routes terminate at the Macquarie Centre, approximately 400m walking distance from the site via Herring Road. Continuing services also operate on Waterloo Road and Khartoum Road; bus stops along these routes are located less than 300m away.

Frequent bus services operate along Waterloo Road and Khartoum Road. Several routes also terminate on Herring Road at the Macquarie Centre shops. Local bus routes are shown in Figure 3.6 and nearby bus stops are also shown in Figure 3.7.



Source: Sydney Buses

Figure 3.6: Nearby Bus Routes



Figure 3.7: Nearby Bus Stops

3.6 ACTIVE TRANSPORT

There is a well-established network of pedestrian footpaths and crossing locations surrounding the development site, including connections to the Macquarie Shopping Centre, bus stops and the rail station.

There are several safe cycle routes in the local area. Shared off-road paths run along Talavera Road, Waterloo Road and Khartoum Road (mix of off-road cycle lane and road shoulder). There is also a shared off-road route from Ryde to Waterloo Road at Macquarie Centre, running along Shrimpton's Creek.

3.7 PARKING CONSIDERATIONS

The draft Master Plan proposes around 1600 off-street car parking spaces provided over several levels of basement parking. Access to the basement car parking is provided from Alma Road and via the internal circulation road. A small amount of convenient parking is also provided at ground level along the internal circulation road. A one-way link between the two circulation roads or a roundabout is recommended to improve opportunities for vehicles to circulate and avoid using the external road network. Presumably this could be provided between buildings B4 and B5.

An internal circulation roadway linking through the basement car park will provide a high level of accessibility for the site, provides redundancy should issues arise with one access point and enable a better level of traffic distribution to and from the site.

4. CONSIDERATIONS FOR INCLUSION IN THE HERRING ROAD UAP

As depicted in Figure 1.1, the site is located on the eastern corner of the Herring Road UAP. Notably the Alma Road access occurs from within the UAP area. Given the development's proximity and mix of land use it is appropriate that it be included in the Herring Road UAP. Key reasons for its inclusions are:

The development provides a mix of residential and commercial uses. The development proposes 1,271 residential dwellings which aligns with the UAP's objectives for increased residential population centred around the rail station. This is evident in Herring Road UAP indicative structure plan in Figure 4.1.



Source: Herring Road Urban Activation Precinct Planning Report (NSW Planning & Environment) June 2014

Figure 4.1: Indicative Structure Plan for the Herring Road Precinct.

The rail system has a limited practical catchment and buses play a key role serving a geographically diverse market of primarily "inbound" travel to the UAP area and particularly Macquarie University and employment within Macquarie Park. The increase in residential density provided by this site will provide additional demand of "outbound" travel, providing a more balanced transport network.

The development proposes a regional park (15,000m²) that will provide a place for recreational, sporting and community activities in support of new residential and mixed use activities for the site and the urban area precinct.

A key element of the Herring Road UAP is to encourage transit-oriented development focused on the public transit network. The subject development is within 550m walking distance of the rail station and a shorter distance to nearby bus stops. The land use mix, active transport network and proximity to public transit facilities "ticks the boxes" for this site as a transit-oriented development. In particular it:

- can increase the use and viability of public transport investment;
- will increase residential densities on existing transport corridors;
- provides a mixed-use centre with employment, residential housing and public open space;
- is easy walking distance to transport;
- will encourage 'active transport' to achieve shifts in transport modes that increase trips by public transport; and
- delivers new quality public spaces to the community.

5. CONCLUSIONS

The key findings from the preliminary traffic impact assessment for the 66-82 Talavera Road draft Master Plan are:

- The development is estimated to generate 422 vehicle trips and 393 vehicle trips in the AM and PM peak hours respectively;
- The volume and distribution of development generated traffic will warrant an "all-movement" signalised access from Talavera Road.
- The two "all-movement" access options were assessed, namely:
 - Alma Road/Talavera Road/Macquarie Shopping Centre; and
 - Eastern site access/Talavera Road.
- Both intersection options were assessed and shown to operate within acceptable RMS guidelines for intersection performance;
- The Alma Road/Talavera Road/Macquarie Shopping Centre realigned intersection would remove the need for a another set of traffic signals along Talavera Road, however it requires a truncation of the corner that may impact on the proposed open space;
- The Eastern site access/Talavera Road would introduce a new set of traffic signals along Talavera Road, but would require less land dedication for intersection works;
- Both options would require land dedication (3.5-4m) along part of the road frontage to accommodate additional right turn pockets and left turn deceleration lanes;
- The subject site is with 550m walking distance of the Macquarie University Rail Station and a shorter distance to nearby bus stops. In combination with the mix of uses (primarily residential) and public open space it presents an excellent opportunity to create a transit-oriented development focused on the public transport network; and
- *The development site, as fundamentally a high density residential development and within an 800m catchment of Macquarie Station, should be included in the Herring Road UAP.*

Appendix B

Tower slenderness study

Tower slenderness study

Architectus has researched methods to achieve tower slenderness to provide good urban design, internal amenity and address impacts of tower bulk on surroundings. The aim of this research is to develop 'rules of thumb' for appropriate tower proportions.

Benefits of slender towers

As urban densities increase the slenderness of tall towers are becoming an important consideration – especially for residential towers and their separation.

Benefits of slender towers include:

- Overcomes the sense of tower bulkiness and overwhelming of the public domain.
- Opportunities for views of sky between buildings and a feeling of openness.
- Minimising overshadowing, particularly extended periods of overshadowing in comparison to long elevations of lower scale development.
- Enables a good sunlight and daylight to the public domain.
- Creating better separation between buildings and better views - improves the amenity, privacy and outlook of apartments
- Increased residential amenity, as the floor-plates are more likely to achieve good solar access and ventilation requirements.
- Limits the number of apartments per level and the length of corridors.
- Ensures that apartments are not too deep and rooms don't rely on 'borrowed' light and air.

Local examples of floorplate controls

New South Wales

SEPP 65 and the Residential Flat Design Code provide design controls for all residential flat buildings in NSW. The Code has controls for building depth and separation and amenity. Together with fire regulations, the proper application of the Code should have the effect of limiting floorplates in residential buildings.

However, in the early master planning stages of a project, it is difficult to test all of these detailed design provisions. As a result, master plans, and planning controls can result in envelopes for large floor-plates that are acceptable from a design and amenity perspective.

There are no state-wide floor-plate controls for tall buildings in NSW.

Green Square, City of Sydney Council

In the South Dowling St Precinct within Victoria Park, Zetland (part of Green Square) detailed consideration has been given to the slenderness of towers. The resulting controls allow for 22-storey towers (approximately 70m in height) to a maximum of 750sqm of floor area including balconies (referred to here as 750sqm Gross Building Area floor-plate).

A significant separation distance between towers (60m) is also provided as this precinct is an inner city area but is not within a designated urban centre.

Central Sydney

In Central Sydney, a 1,000sqm Gross Floor Area maximum is applied to residential tower buildings. This would equate to 1,333sqm GBA. A maximum horizontal dimension of the building facade of 40m is also applied. Towers in Central Sydney have maximum building heights ranging from 60m to 235m.

International examples of floorplate controls

Calgary, Canada

The maximum floorplate size is 650 square metres of net residential floor area (i.e. not including elevator cores, balconies etc.). This would equate to 953sqm GBA.

Chicago, USA

There is no limit to floorplate size, but upper storeys are required to be smaller to give the towers a sculptural appearance.

New York, USA

Floorplate size is regulated using a site coverage control. Towers must cover 40% or less of a site area, with special exceptions up to 50% for smaller sites.

San Francisco, USA

The floorplate of towers in San Francisco must incrementally decrease as height increases. Lower parts of a tower must not exceed 1,600sqm GBA and the upper tower floorplates must not exceed 1,100sqm GBA.

Vancouver, Canada

The maximum floorplate size is 604sqm of net residential floor area (this equates to 886sqm GBA) and the maximum horizontal dimension of a tower is 27.5m.

Open balconies may extend beyond this provided they are less than 1/3 the overall façade length.

Design examples



Victoria Square North: 20 Gadigal Avenue, Zetland, NSW, Australia

- Floorplate: 700sqm including balcony
- Floorplate dimensions: 46m x 15.2m = 700sqm.
- Building Height: 85m and 26 storeys
- Slenderness ratio: 1:6 (using the narrow side of the building)



One Madison Park: East 23rd Street, New York, NY

- Slenderness ratio: 1:12 (Depth:Height)
- 50 Floors plus cellar/ 621 ft (189.28m)

Findings

There are a variety of different floorplate controls in other cities around the world. Ultimately, the controls are a function of different priorities for a city – whether the aspirations are access to sunlight, views, or densification and consolidation. Generally, it seems that larger cities have more relaxed floorplate controls, while smaller cities seek slimmer towers and more separation between towers.

A floorplate control that is simply a percentage of the site area can produce very bulky buildings on large sites or amalgamated sites.

Reducing the size of upper floorplates is a solution to reducing visual bulk for very tall buildings (say, over 50 storeys). In Sydney's climate, it is usually preferable to have a podium/tower form of development where the podium relates to the alignment and scale of the street and the tower relates to a wider context of towers. It is usually preferable to not have "wedding cake" or stepped built forms in favour of simplicity of built form.

It is now commonly acknowledged that the Green Square provisions (700sqm floorplate, 22-25 storeys) produce a tower with slender proportions.

Taller buildings can accommodate larger footprints, and still achieve good internal amenity, as more floor space is dedicated to lift cores/ services.

Architectus' recommendations

In order to achieve slender tower the following rules-of-thumb are recommended:

- Floor-plate sizes should be related to height as follows:
 - Up to 25 storeys – 800sqm GBA maximum
 - 26-35 storeys - 950sqm GBA maximum
 - Above 35 storeys – 1,100sqm GBA maximum
- The length (horizontal dimension) of a residential tower should not exceed 40m.
- A tower slenderness ratio (depth:height) should be at least 1:4.

The above recommendation is subject to detailed testing for each site, and in consideration of the site's context and constraints. Towers might not be able to achieve the above maximum floorplates if they cannot meet SEPP 65 standards for internal amenity.

Sources:

Extract from a study for the City of Toronto: www1.toronto.ca/city_of_toronto/city.../Tall-buildings-Final-pt5.pdf

Program for the 'Slenderness: New York\ Hong Kong' exhibition, Skyscraper Museum, New York: http://www.skyscraper.org/PROGRAMS/slender_program.htm

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August 2014