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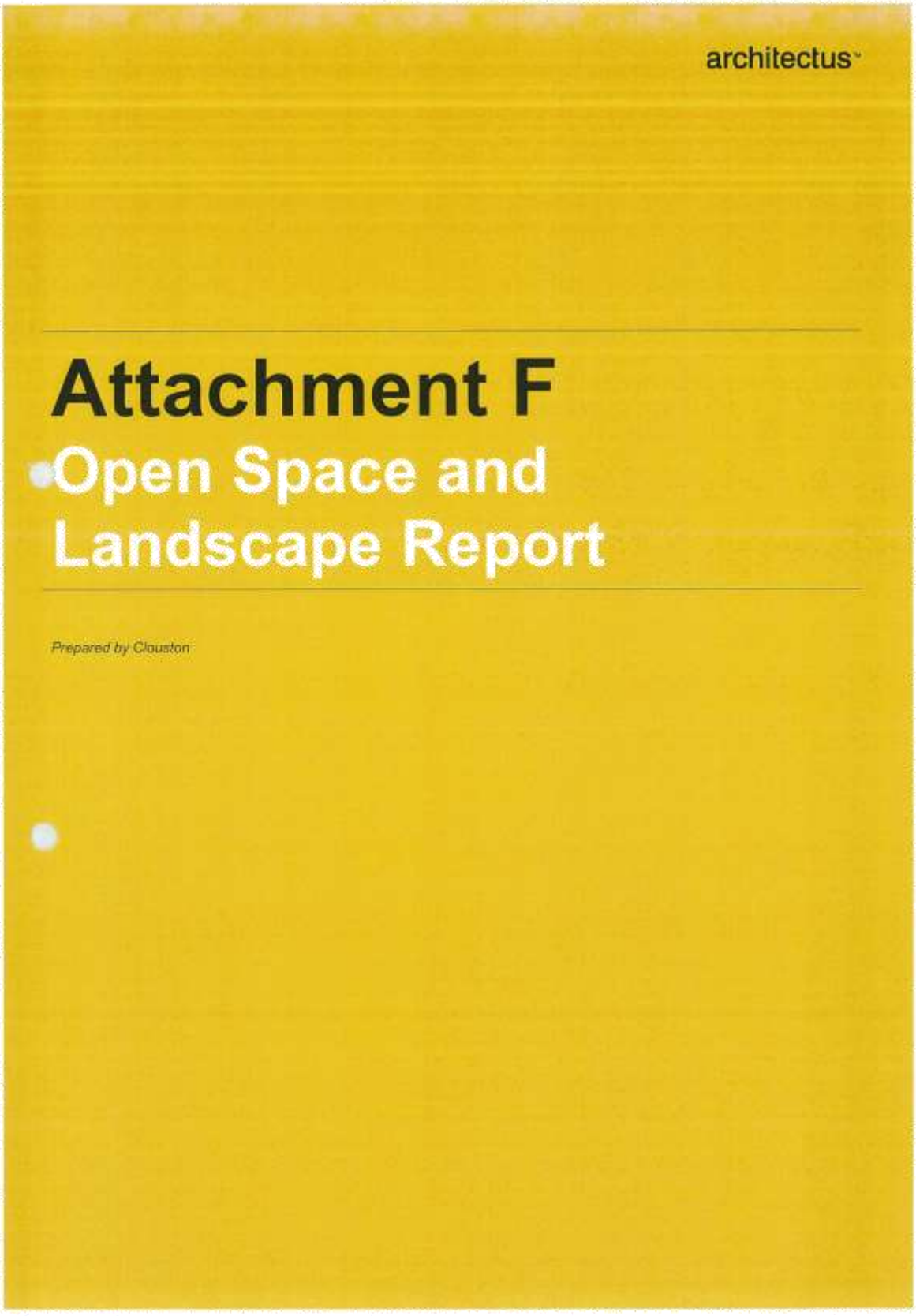

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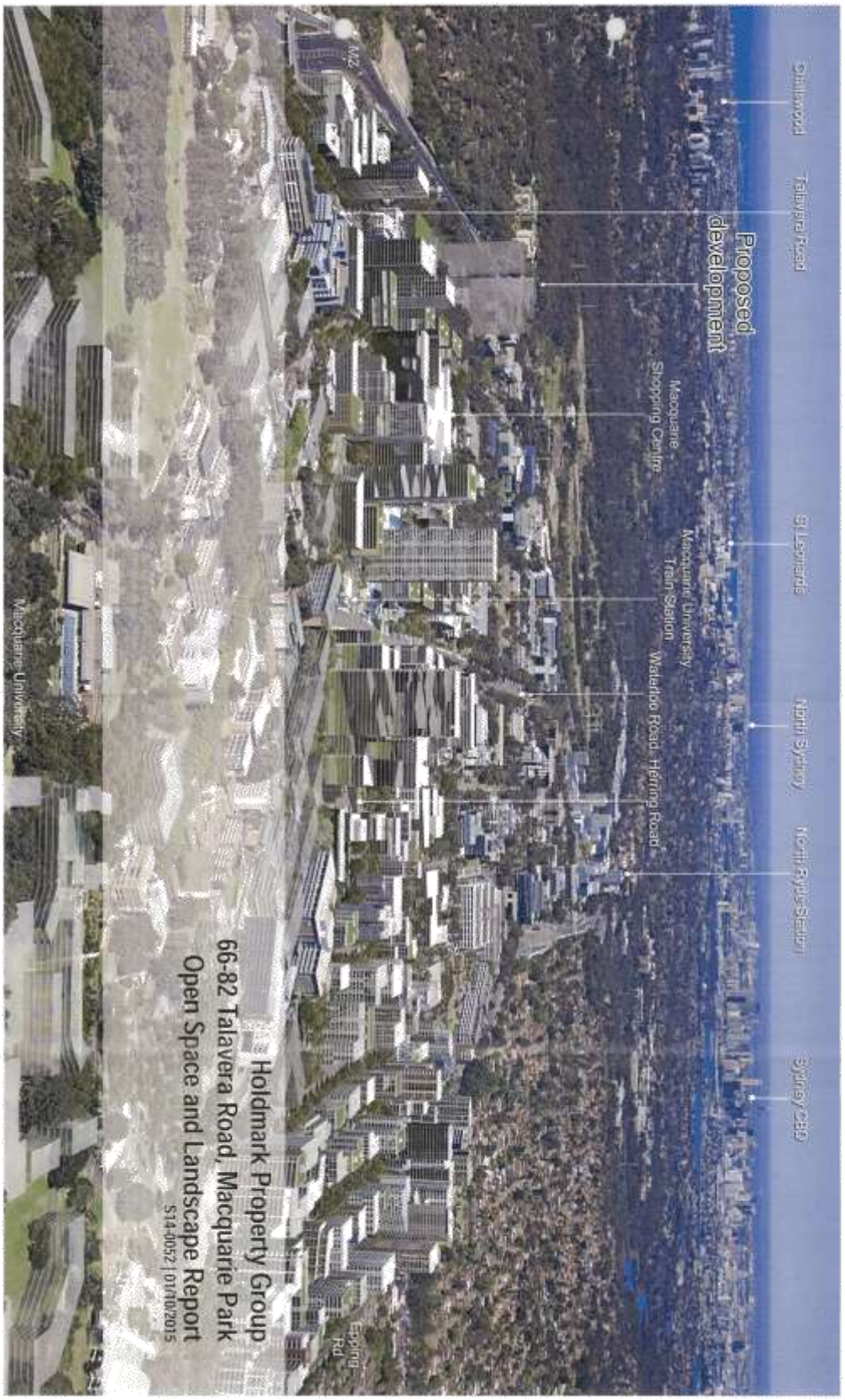

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66-82 TALAVERA ROAD,
MACQUARIE PARK
OPEN SPACE AND LANDSCAPE REPORT

Client:
HOLDMARK PROPERTY GROUP

Prepared by

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Note this document is preliminary unless validated.

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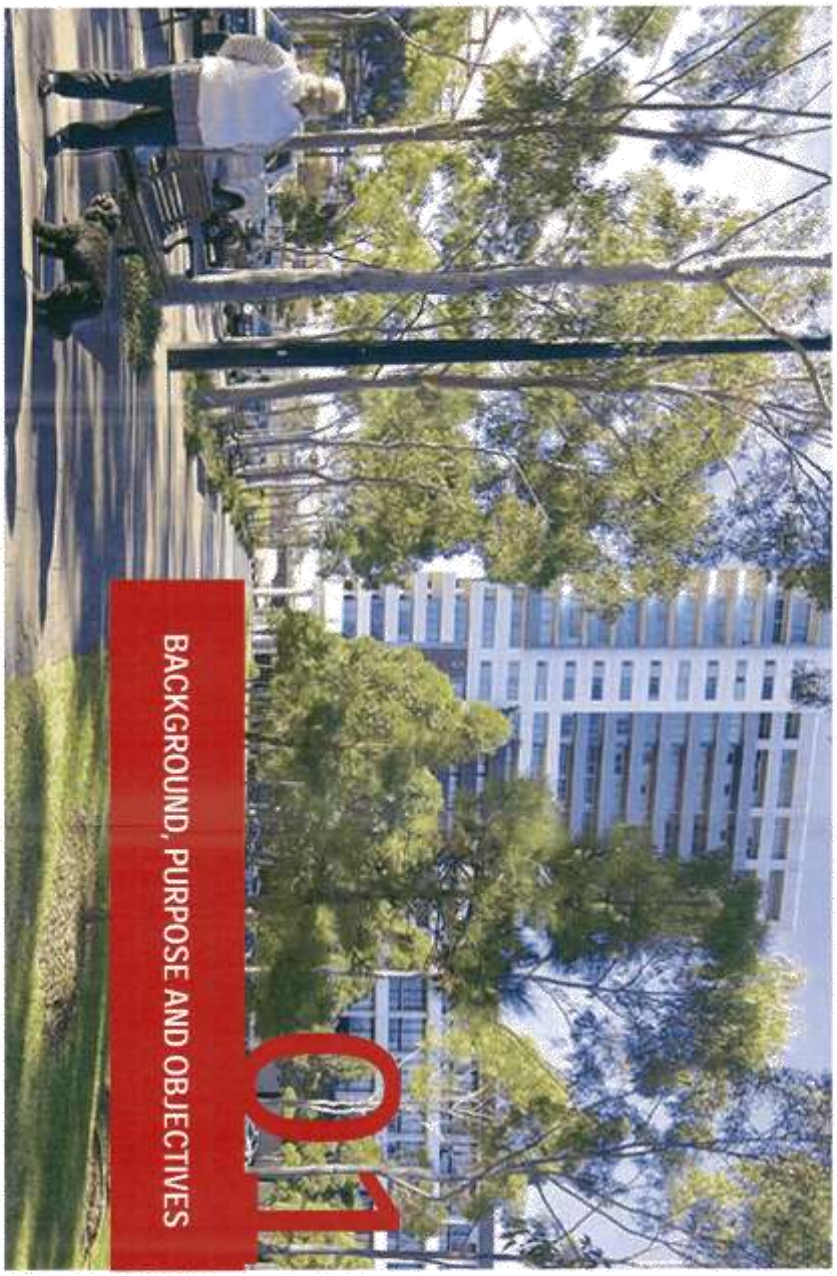

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1. BACKGROUND, PURPOSE AND OBJECTIVES

BACKGROUND

This Open Space and Landscape Report (OSLR) has been prepared in support of a Planning Proposal for 66-82 Talavera Road (the site). The site is located in Macquarie Park.

Macquarie Park is a precinct of strategic importance at both the local and state level. It is Sydney's second largest business district outside of CBD and North Sydney. It is a major employment, technology and research centre that is home to global players across the pharmaceutical, technology, electronics and telecommunications industries. It is situated in the Ryde Local Government Area (LGA).

Planning Proposal for 66-82 Talavera Road, Macquarie Park
The 66-82 Talavera Road, Macquarie Park Planning Proposal (PP) was prepared by Architectus in September 2015. The PP seeks to change the land use zoning of the site from currently B7 Business Park to B4 Mixed Uses. It further seeks to alter the current maximum built height controls and Floor Space Ratio (FSR) controls.

Rezoning of the site would allow for development of the site for mixed uses, including residential, retail, commercial and open space uses. The PP anticipates that open space would be rezoned to RE1 at a later stage, when the extent and boundaries of open space required are confirmed with Council.

66-82 Talavera Road, Macquarie Park. Urban Design Report
The "66-82 Talavera Road, Macquarie Park: Urban Design Report" (TRUDR) was prepared by Architectus in September 2015, in support of the PP. It summarises the preferred masterplan outcome that the PP seeks to enable, including the size and design of public open space to be dedicated to Ryde City Council.

66-82 Talavera Road, Macquarie Park. Submission to DP&E
The PP follows on from an earlier study which entailed a submission to the NSW Department of Planning and Environment (DP&E) Herring Road Urban Activation Precinct, the "66-82 Talavera Road, Macquarie Park" (TRMP) report, prepared by Architectus in August 2014.

The report supported the inclusion of the site in the Herring Road Priority Precinct. A key finding was the identified major opportunity for the provision of a new 1.5 hectare large district open space, a new resource referred to in the Ryde IOSP (Integrated Open Space Plan). Delivery of the open space would be facilitated through high density development of the site, including residential and commercial uses.

The new open space would deliver significant benefit as it would address an identified shortfall in the amount of open space in the Macquarie Park precinct.

Macquarie Park Framework for Open Space and Mixed Use Development
The "Macquarie Park Framework for Open Space and Mixed Used Development" (MPDF) was prepared by Architectus in June 2015.

The MPDF provides support for the PP, based on the site's ability to deliver a new local public open space that has the potential to address an identified gap in provision.

In doing so the MPDF proposes a set of key requirements to be met by development or rezoning proposals in Macquarie Park, in order to maintain and protect the integrity of the precinct as a major business and employment centre.

PURPOSE OF THIS REPORT

The purpose of this report is to complement the PP by providing an assessment of the site from an open space and landscape perspective. It is anticipated that, were the PP approved, this Open Space and Landscape Report will provide the framework that will guide the development of open space on the site.

PROJECT OBJECTIVES

The objectives of the project are to:

- Review the open space requirements of the Macquarie Park Precinct
- Assess the ability of the PP to contribute to meeting the open space requirements of the precinct, both in terms of the location and quantum of open space proposed
- Define principles to guide and inform the development of open space on the site
- Identify the likely capital and ongoing cost associated with the development of open space on the site.

Project Tasks
Preparation of this report involved:

- Review of relevant project-related studies and reports including the TRMP, MPDF, the draft PP and the draft TRUDR.
- Review of relevant background studies and reports including the Ryde Integrated Open Space Plan, the Ryde Local Planning Study 05 - Environment and Open Space.
- Review of the planning context.
- Review of the open space planning context, including existing provision and future demand.
- Preparation of an open space proposal, guidelines and design criteria for open space development.
- Assessment of the open space proposal against open space needs assessment and Council's open space planning.
- Estimation of the likely costs of delivering and maintaining open space on the site.

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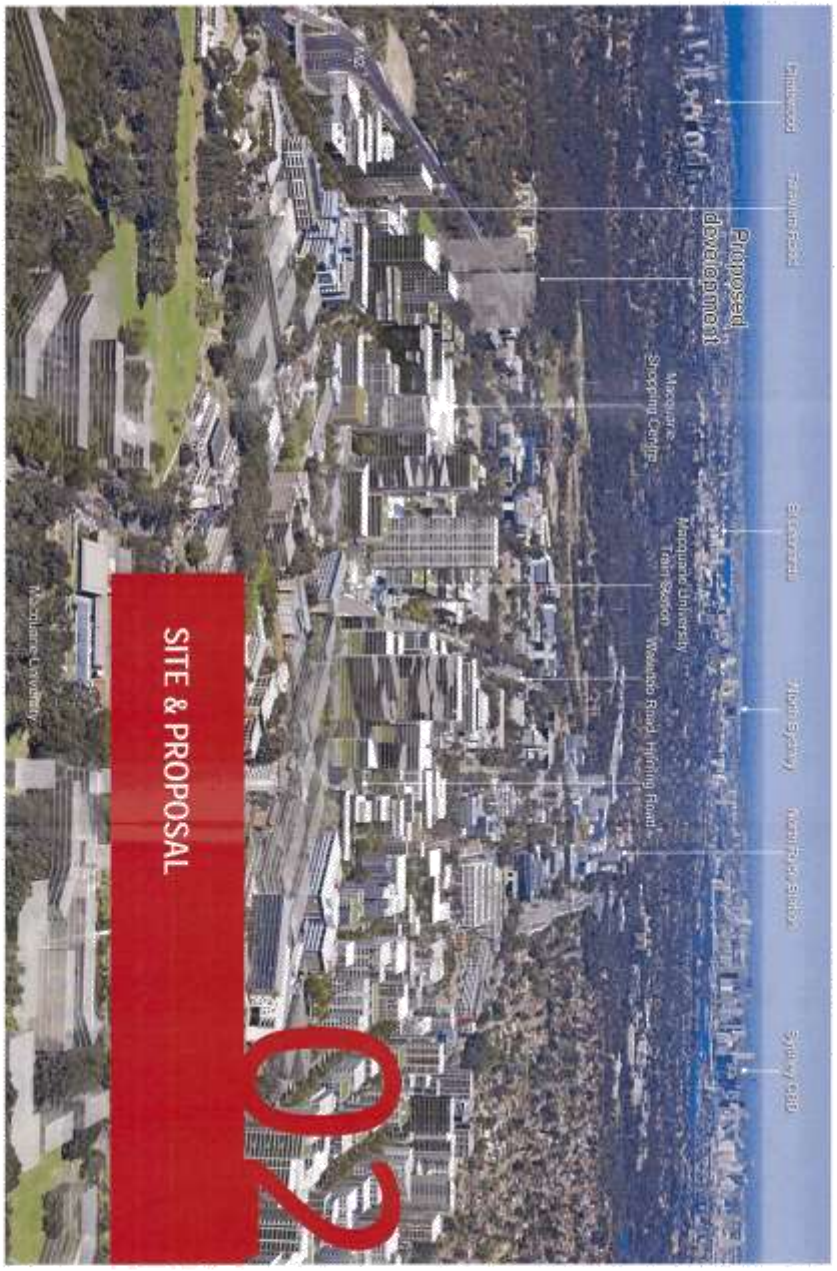

2. SITE & PROPOSAL

LOCATION AND CONTEXT

The site is located at 66-82 Talavera Road, in the north-eastern part of the Macquarie Park precinct. The site is bound by (refer Figure 1):

- Talavera Road to the south-west,
- Alma Road to the north-west,
- the M2 Motorway to the north-east and
- existing commercial buildings at 60 Talavera Road to the south-east.

Macquarie Park is a major business and education district in North Ryde, hosting telecommunications, technology, pharmaceutical and electronics companies.

The precinct also features a major regional shopping centre - the Macquarie Centre and Macquarie University, one of Australia's largest universities and a major research centre, together with the Macquarie University Hospital and other major research centres.

One of the key attractors of the precinct is its high quality environment and attractive setting, owing in part due to the park-like nature of the University campus, the adjoining Lane Cove National Park and open space and landscape features within the precinct itself.

NATURE OF THE SITE

The site currently features warehouses, commercial buildings and a conference centre. Associated structures include car parking, driveways and access roads, and tennis courts. The site also features large open landscape areas and a number of mature trees that give it a park-like character (refer Figures 2 to 4).

There has been a recent approval for a six storey commercial building containing approximately 9,000m² of commercial floor space in the southern corner of the site. This building is currently under construction.

The site slopes very steeply from the south-east to the north-west. A steep turfed embankment delineates the northern from the southern part of the site. The northern part of the site is lower than the adjoining M2 Motorway (refer Figures 3 and 4).

The site's topography combines with tree planting along the motorway and the site's north-eastern edge, to shield much of the site from views from the motorway (refer Figure 4).

BRIEF OUTLINE OF THE PROPOSAL

The Planning Proposal prepared for the site, the "66-82 Talavera Road, Macquarie Park Planning Proposal" (PP), seeks to rezone the site to B4 Mixed Use, to allow for mixed use development.

FIGURE 1: Site Location (source: Google Maps).

FIGURE 2: The site as seen from Alma Road, showing car parks and internal tree cover (source: Google Maps).

FIGURE 3: Talavera Road frontage, showing the steep slope of the site and its parklike character (source: Google Maps).

The potential urban design and development outcomes on the site are summarised in the "66-82 Talavera Road, Macquarie Park, Urban Design Report" (TRUDR). The report shows the preferred outcome for the site to be a combination of mixed use development and a new public open space.

Mixed use development would be located on the south-eastern part of the site and include a significant residential dwelling component. The new public open space would be approximately one hectare in size and be located in the north-western part of the site, along Alma Road.

There is also an option of providing key worker housing on the site. This would be accommodated either at the north of the proposed open space area or within the mixed use towers, as additional density. This is further discussed in section 5.

FIGURE 4: Looking south-east into the site from the M2, showing tree cover and the site's elevation relative to the M2 (source: Google Maps).

FIGURE 5: Illustrative view of proposed masterplan showing mixed use development and public open space (source: TRUDR).

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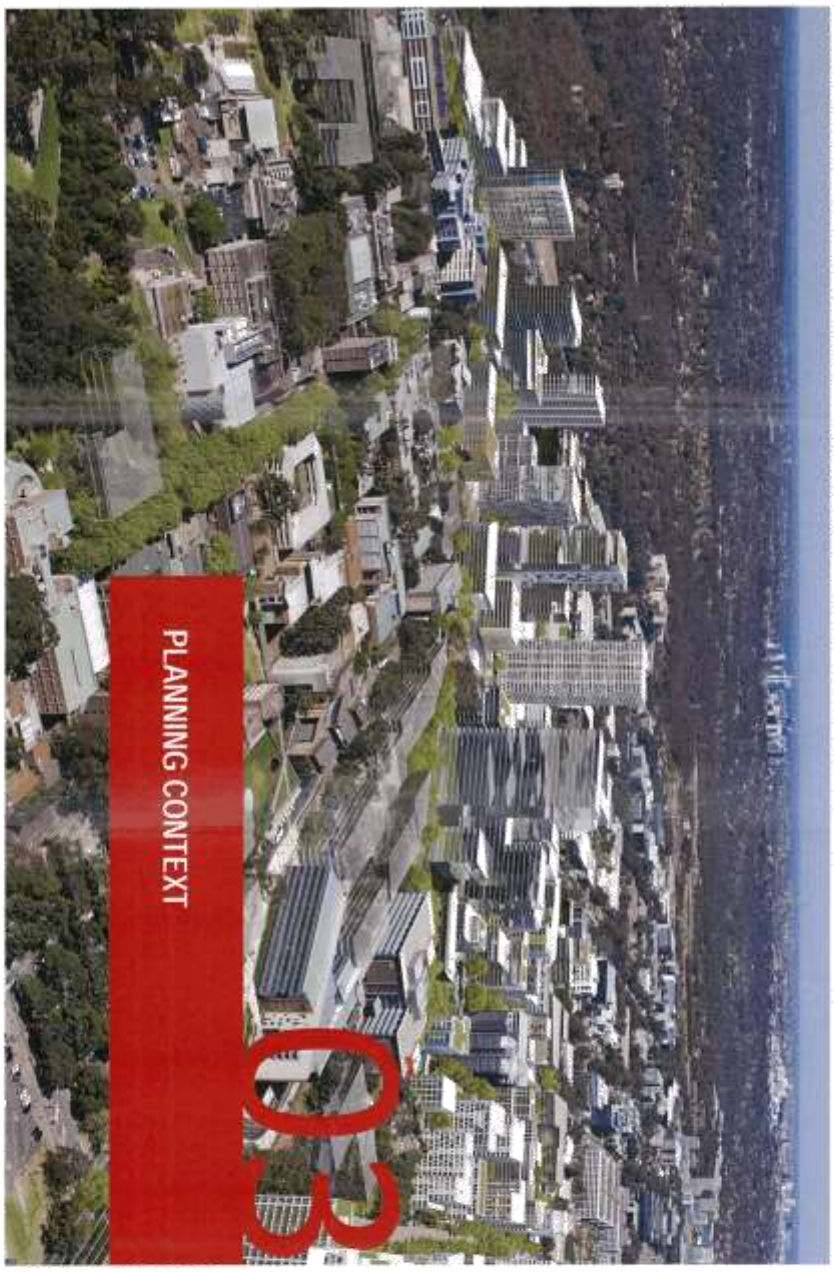

3. PLANNING CONTEXT

A PLAN FOR GROWING SYDNEY

The Sydney Metropolitan Strategy - "A Plan for Growing Sydney" (the Plan) sets the metropolitan planning context. It identifies Macquarie Park as a specialised centre that forms part of the 'Global Economic Corridor', a major economic cluster extending from Macquarie Park to Port Botany with a heavy concentration of knowledge-based jobs (refer Figure 6). Macquarie Park has been identified as being of particular importance for Sydney's continued growth.

Key actions identified in the Plan and relevant to Macquarie Park include

- increasing employment opportunities as well as mixed use activities in the Global Economic Corridor (Action 1.6.1)
- growing jobs and housing (Action 1.7.1)
- providing a range of services to be an attractive place to live in (Action 1.7.1)
- identifying and connecting open spaces to develop a city-wide 'green grid' of interconnected open spaces as a key ingredient to a highly livable city (Direction 3.2); and
- working with local Councils to encourage appropriate local planning for the open space needs of communities (Action 3.2.1).

Other priorities for the Macquarie Park Strategic Centre include:

- Work with council to retain a commercial core in Macquarie Park for long-term employment growth
- Work with Council to concentrate capacity for additional mixed-use development around train stations, including retail, services and housing
- Facilitate delivery of Herring Road, Macquarie Park Priority Precinct, and North Ryde Station Priority Precinct
- Investigate potential future opportunities for housing in areas within walking distance of train stations
- Support the land use requirements of the Medical Technology knowledge hub.

EPPING AND MACQUARIE PARK URBAN RENEWAL AREA

The Epping and Macquarie Park Urban Renewal Area has been identified by the Department of Planning and Environment (DP&E) as an important area within the Global Economic Corridor. It holds significant potential to deliver new community facilities, homes and public spaces in close proximity to public transport and employment opportunities.

The aim of the Urban Renewal Area is to allow the Government to plan for and deliver local infrastructure, to ensure services are available to the local community, both when and where they are needed.

The Epping and Macquarie Park Urban Renewal Area includes the Priority Precincts of Epping Town Centre, Herring Road and Macquarie University and North Ryde Station (refer Figure 7). Work to revitalise local areas is currently underway.

FIGURE 6: Global Economic Corridor (source: A Plan for Growing Sydney)

FIGURE 7: The Herring Road Priority Precinct in the context of the Epping and Macquarie Park Urban Renewal Area (source: DP&E 2014, p. 4)

FIGURE 8: Herring Road Priority Precinct, showing key features and site location immediately adjoining the Precinct (source: TRUDR).

HERRING ROAD PRIORITY PRECINCT

The Herring Road Priority Precinct is centred around Macquarie University Train Station and includes Macquarie University and the Macquarie Shopping Centre, a major regional shopping centre. The Precinct benefits from good access to public transport, as well as the employment opportunities offered by Macquarie Park.

The aim of Priority Precinct planning is to revitalise the area through a mix of residential, commercial, retail, educational and community buildings. The Precinct vision is for additional housing and employment opportunities in a higher density, mixed-use walkable centre around Macquarie University Train Station (refer Figure 8).

The Precinct is expected to become an attractive and comfortable place for people, with good access to transport, shops and services, as well as to community and recreation facilities, including local and regional parks.

The land uses proposed for the Precinct indicate a mix of university, commercial, residential and mixed use, with the main activity spine located along Herring Road (refer Figure 9 - Indicative Structure Plan).

The Indicative Structure Plan shows that the land uses immediately adjoining the site would be residential to the west, and mixed use to the south. No change in land use is proposed for land adjoining the site to the east.

FIGURE 9: Indicative Structure Plan for the Herring Road Priority Precinct showing proposed land uses (source: DP&E 2014)

Public Open Space Framework

The open space network proposed for the Herring Road Priority Precinct largely reflects the findings of the Ryde IOSP. It combines a network of natural creek corridors with parks and other recreation opportunities, as well as a network of canopied streets to connect open spaces to the town centre (refer Figure 10).

Key open spaces in the open space framework are the riparian corridors along Kikkiya and Shrimptons Creeks. They include a number of local parks along these creeks. For the most part, proposed parks consist of existing open space such as Wilga and Elouera Reserves that are proposed to be enhanced. The opportunity to improve access to and connections between existing open space is also recognised.

Potential locations for up to four new local parks are identified. They would be dispersed through the Precinct and connected via the creek corridors. It is noted that all four new parks would be smaller than the recommended minimum size of 0.5ha. This has been identified as a critical threshold to accommodate a basic range of local recreation functions, as well as concurrent use by several groups of users.

It is noted that the Precinct Plan does not mandate open space locations. Potential open space locations shown are indicative and would be subject to negotiation with land owners as part of the development application process. The proposed delivery model is through works in kind in lieu of Section 94 contributions.

There is a risk that potential open spaces are not realised unless outcomes can be successfully negotiated at the development assessment stage.

FIGURE 10: Indicative Open Space Framework - Herring Road Priority Precinct (source: DP&E 2015)

CITY OF RYDE DEVELOPMENT CONTROL PLAN

The City of Ryde Development Control Plan 2014 contains a section dedicated to Macquarie Park, namely Part 4.5 Macquarie Park Corridor (MPDCP). The MPDCP outlines the objectives, controls and design criteria to achieve development outcomes consistent with Council's vision for the Macquarie Park. The latest version MPDCP came into effect on 1 July 2015.

Section 5 of the MPDCP summarises the desired public domain outcomes, including the open space network. An Open Space Structure Plan identifies new public space and augments existing public open spaces to create an open space network. It seeks to integrate public open space with the street network to maximise pedestrian access opportunities, and to deliver a diverse range of open space types such as plazas, parks and natural areas along Shrimptons Creek (refer Figure 11).

The major new open space proposed by the MPDCP is 'Central Park', a new one hectare multi-function open space located at 43-61 Waterloo Road. The new park would meet the identified need from the IOSP to address an existing gap in provision by delivering a new public open space in the part of Macquarie Park centred on Lane Cove Road and the Macquarie Park train station.

Ryde Local Environmental Plan 2014

It is noted that Central Park has not yet been zoned as RE1 Public Recreation under the current Ryde Local Environmental Plan 2014 (Ryde LEP). The site for proposed Central Park is part of a larger parcel of land that currently retains a B3 Commercial Core zoning. There is a risk that this lack of statutory weight could threaten delivery of the proposed park.

FIGURE 11: Extract from Ryde LEP 2014 Land Zoning Map 4, showing proposed Central Park site and current B3 zoning

The LEP Land Zoning Map also shows that there is currently no zoned public open space in Macquarie Park, north of Waterloo Road.

FIGURE 12: Proposed Open Space Network (source: MPDCP)

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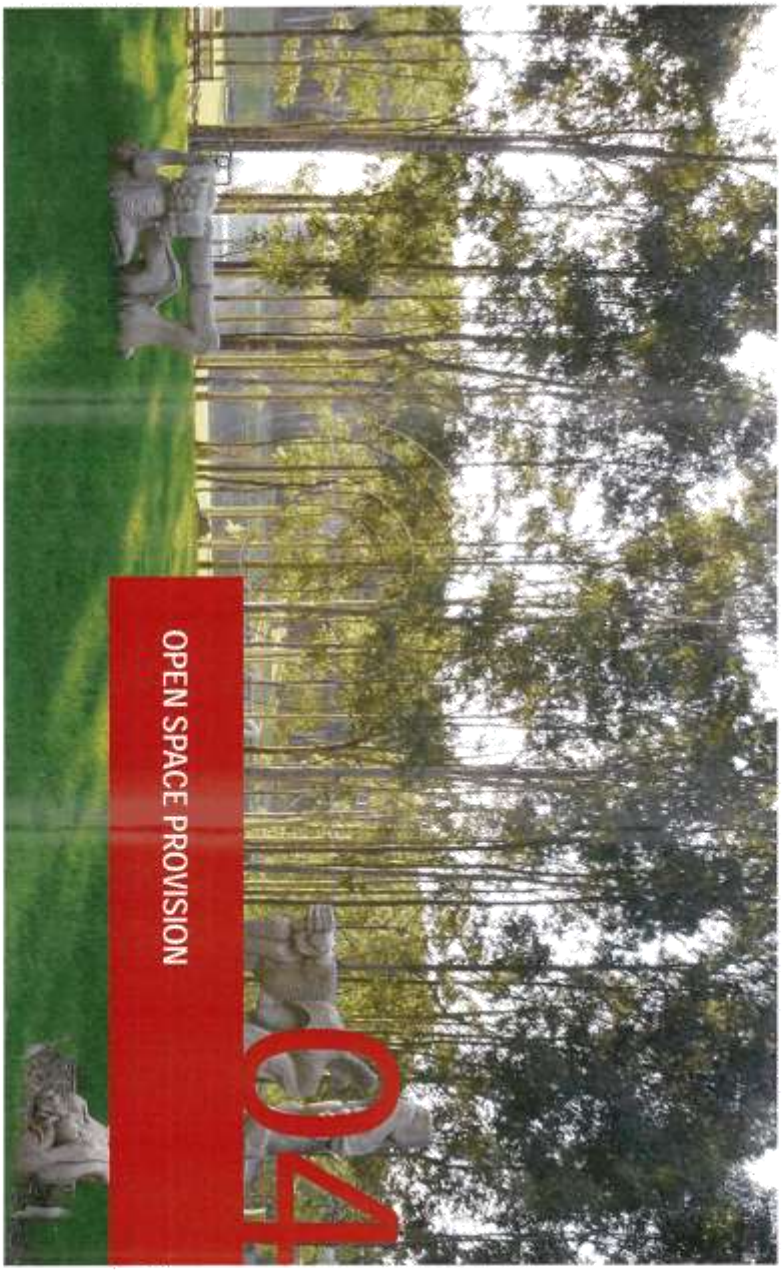

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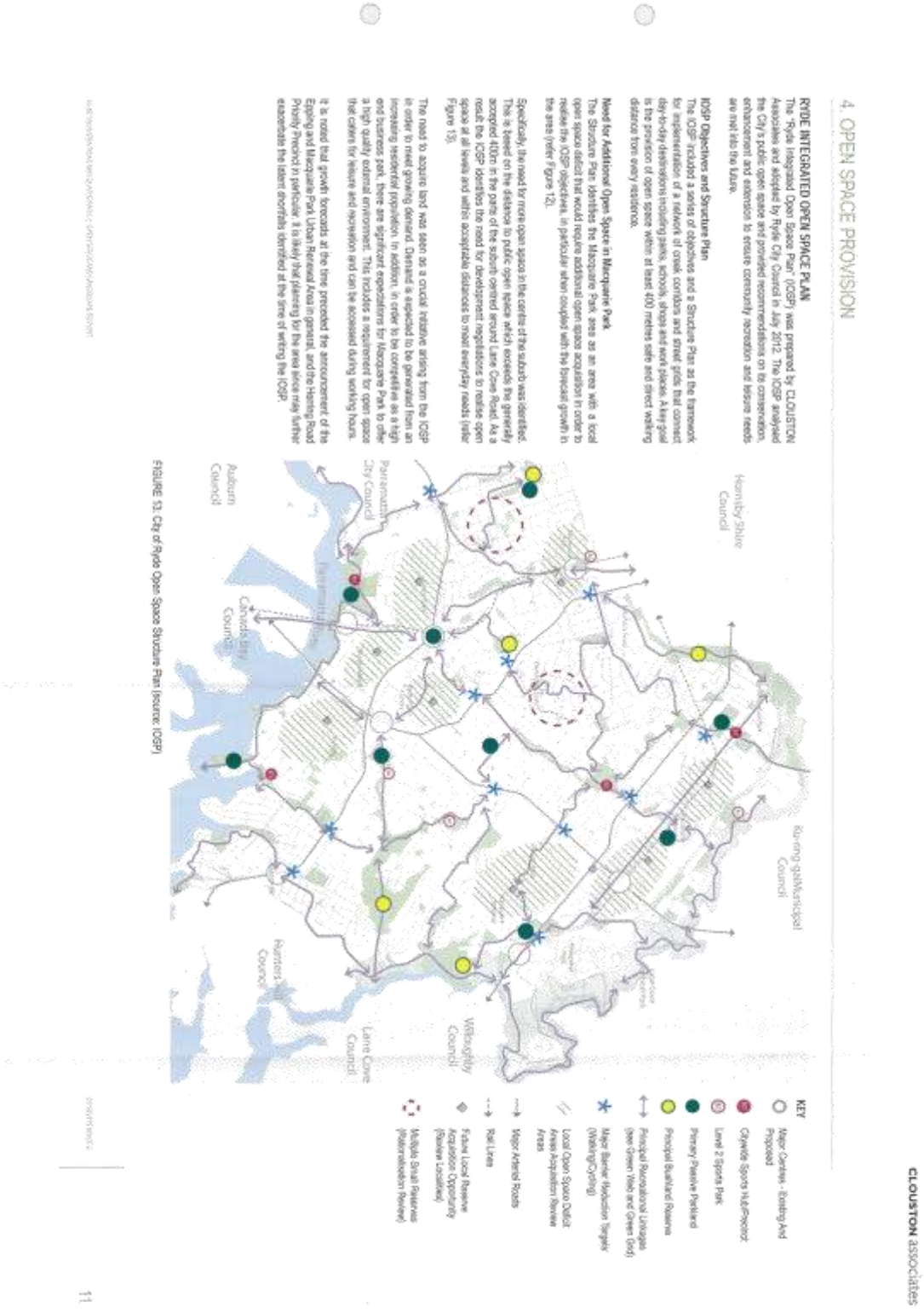

4. OPEN SPACE PROVISION

RYDE INTEGRATED OPEN SPACE PLAN

The 'Ryde Integrated Open Space Plan' (IOSP) was prepared by CLOUSTON Associates and adopted by Ryde City Council in July 2012. The IOSP analysed the City's public open space and provided recommendations on its conservation, enhancement and extension to ensure community recreation and leisure needs are met into the future.

IOSP Objectives and Structure Plan

The IOSP included a series of objectives and a Structure Plan as the framework for implementation of a network of creek corridors and street grids that connect day-to-day destinations including parks, schools, shops and work places. A key goal is the provision of open space within at least 400 metres safe and direct walking distance from every residence.

Need for Additional Open Space in Macquarie Park

The Structure Plan identifies the Macquarie Park area as an area with a local open space deficit that would require additional open space acquisition in order to realise the IOSP objectives, in particular when coupled with the forecast growth in the area (refer Figure 12).

Specifically, the need for more open space in the centre of the suburb was identified. This is based on the distance to public open space which exceeds the generally accepted 400m in the parts of the suburb centred around Lane Cove Road. As a result the IOSP identifies the need for development negotiations to realise open space at all levels and within acceptable distances to meet everyday needs (refer Figure 13).

The need to acquire land was seen as a crucial initiative arising from the IOSP in order to meet growing demand. Demand is expected to be generated from an increasing residential population. In addition, in order to be competitive as a high end business park, there are significant expectations for Macquarie Park to offer a high quality external environment. This includes a requirement for open space that caters for leisure and recreation and can be accessed during working hours.

It is noted that growth forecasts at the time preceded the announcement of the Epping and Macquarie Park Urban Renewal Area in general, and the Herring Road Priority Precinct in particular. It is likely that planning for the area since may further elaborate the latent shortfalls identified at the time of writing the IOSP.

FIGURE 13: City of Ryde Open Space Structure Plan (source: IOSP)

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4. OPEN SPACE PROVISION

Macquarie Park Open Space Strategy

The IOSP recommended that Ryde City Council work towards realising a major new park of at least two hectares in size in the centre of the Macquarie Park precinct (refer Figure 14). This would permit a range of uses including day-to-day uses and special or community events, and complement existing riparian corridors and other open space areas.

Alternatively, where development options suggest that two smaller reserves are more realistically achievable, the IOSP recommends that they should be of a minimum size of 1.5 hectares each and located to maximise access by foot. The IOSP notes the risk that such slightly smaller parks may offer reduced potential for accommodating large events. On this basis, a single, larger park was identified as the preferred outcome.

The major new park would be complemented by a series of smaller parks evenly distributed throughout Macquarie Park to ensure all residents are within 400m walking distance to open space. Smaller parks should be of a minimum size of 0.5 hectares to permit a range of unstructured recreation opportunities.

FIGURE 14: Accessibility of Open Space - Map Extract (source: IOSP)

All parks should have a minimum of two street frontages to optimise connectivity and promote active transport.

The final component of the local open space network would be a series of small social spaces associated with street corners or local shops and community buildings. These would act like small plazas and provide for resting as well as informal social gathering and meeting spaces.

FIGURE 15: Macquarie Park Green Infrastructure diagram (source: IOSP)

New Major Park Design Guidelines

The IOSP identified the Landcom Open Space Design Guidelines as the key document to provide guidance on the key open space and recreation infrastructure that should be provided in the new park, in order to meet the likely future needs of the Macquarie Park precinct.

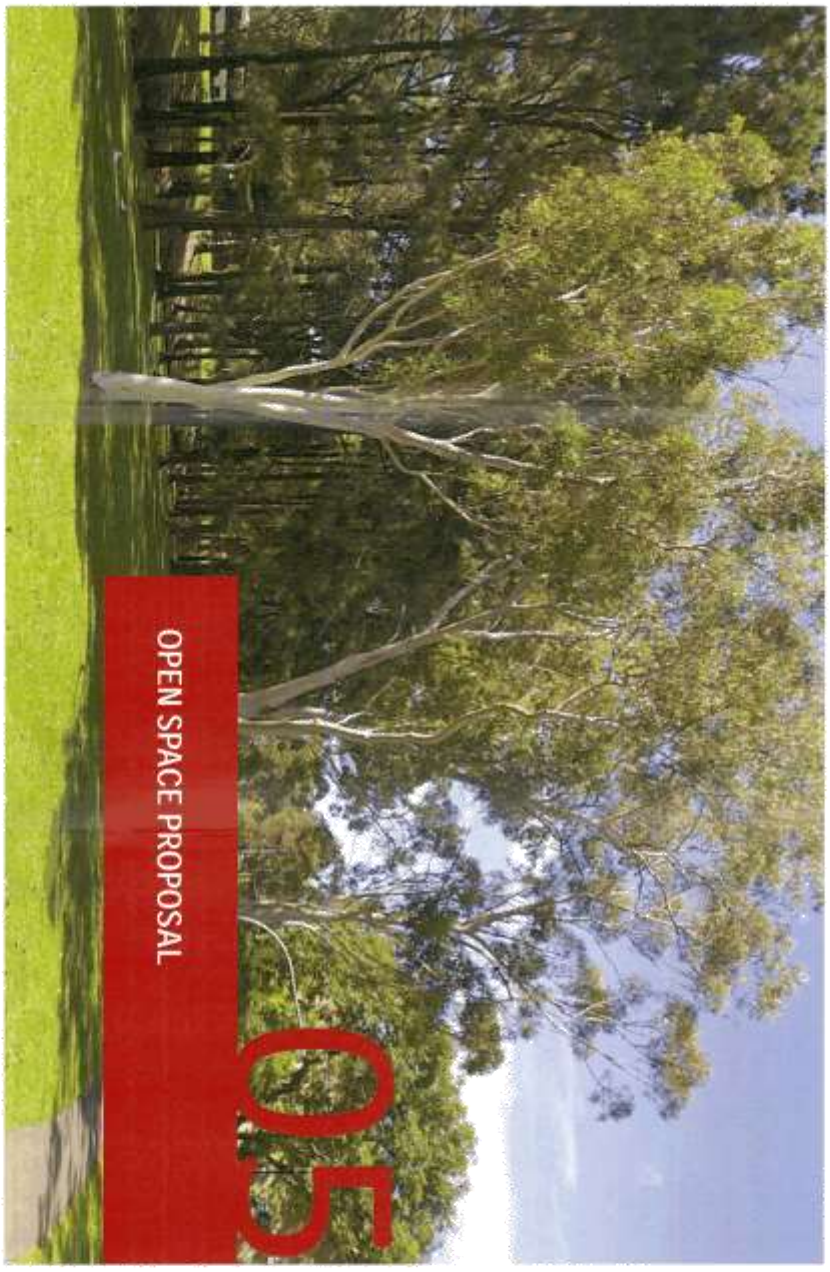
Key open space and recreation infrastructure to be provided would include:

- open areas to allow for informal or unstructured lunchtime sport
- significant play elements for a range of ages
- shade and shelter, preferably provided by trees
- stage/ performance facilities, either permanent or readily assembled, including power and services as required to stage special events
- amphitheatre style seating mitigating level changes
- designated locations for events facilities and management operations (tents, marquees, waste collection, plant, etc)
- lighting for safe night-time use
- public toilets.

ITEM 5 (continued) **ATTACHMENT 7**

4. OPEN SPACE PROVISION

ITEM 5 (continued) **ATTACHMENT 7**



ITEM 5 (continued) **ATTACHMENT 7**

5. OPEN SPACE PROPOSAL

LANDSCAPE DESIGN PRINCIPLES

Drawing on the findings of the IGSP in respect of the potential gap in open space provision in the Macquarie Park, the urban design and development masterplan for the site proposes the creation of a major new public open space as a key feature.

The principles for the siting and design of the new public open space are as follows (also refer Figure 16):

- provide direct street access from two streets to maximise access and passive surveillance
- provide open space in a single consolidated form to maximise usability and flexibility
- provide open space in a regular shape that supports multi-use including general community use, informal sports use and special events
- maximise passive surveillance from surrounding buildings through the provision of active building facades facing the open space
- take advantage of the topography to provide terraces overlooking the open space and mitigating the transition from public to private open spaces
- maximise year-round thermal comfort by maximising solar access and providing shade, from both tree cover and built structures
- provide park furniture and recreation facilities including seating, lighting and significant play elements for a range of ages
- provide surface treatments and materials that ensure the park is a resource that offers maximum usability including day and night, and through all seasons
- ensure that the park is accessible and able to be enjoyed by all members of the community, irrespective of age and ability
- provide a stage area to allow for community events and celebrations, including back-of-house access, parking and services.

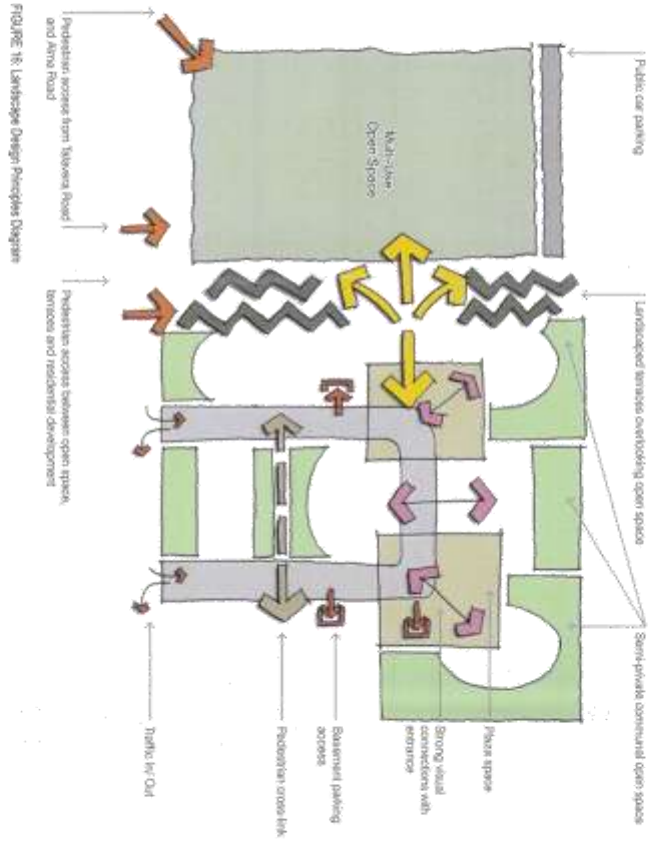


FIGURE 16: Landscape Design Principles Diagram

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5. OPEN SPACE PROPOSAL

LANDSCAPE CONCEPT

Purpose And Objective
Consistent with the above landscape design principles, the objective for the new public open space is to create a place that offers maximum flexibility and maximises opportunities for recreation and social interaction.

CONCEPT OPTIONS

The TRUDR has identified an opportunity for the site to deliver up to 38 dwelling as key worker housing. Two potential locations have been nominated, as follows:

1. Within the proposed mixed use towers, in addition to the nominated densities, or
2. Along the M2 corridor along the north-western site boundary.

Both options propose a major new public open space in the north-western part of the site. The preferred location of the key worker housing will influence the size and design of the open space.

Option 2 would locate the key worker housing within the area generally proposed for open space. Two buildings are proposed with a footprint of about 12m x 35m. They would face south to overlook the open space. They would be accessed via a rear car park covered with roof gardens.

COMMON FEATURES - OPTION 1 AND 2

The preferred masterplan for the site proposes a single open space area at the north-western end of the site (refer Figures 17 and 19).

Access
The park has two street frontages along Talavera and Alma Roads.

Pedestrian access would be via Talavera and Alma Roads. There would also be a public domain link, providing access to the park from the podium level of the proposed mixed use towers to the south-east.

Due to the site's existing topography, there would be a level change between Talavera Road and the open space. Maintenance vehicle access would be from Alma Street.

Orientation
The proposed open space would be oriented north-south to maximise solar access year round. This orientation is consistent with best practice orientation of sports fields, making the park suitable for playing of informal or special event sports games.

Multi-use Field
The bulk of the open space consists of a large, level multi-use field, approximately with a synthetic grass surface. The size of the field is sufficiently large to accommodate a competition size soccer pitch (90m x 45m) plus a 10m run-off area all around.

Landscaped Terraces
The multi-use field is overlooked by a series of four inter-linked terraces on the eastern side. They would deliver an additional 0.3ha of open space and are designed to mitigate the level change inherent in the site. They provide a range of recreation, leisure and entertainment opportunities that will provide an active park edge (refer Figures 18, 20- 25).

Active Park Edge
Typical activities along the park's eastern edge and within the terraces would include play areas for all ages including play equipment or games areas such as boules and chess, feature gardens, community gardens, public seating, public art, fountains or waterplay. There may also be community facilities such as multi-purpose rooms or a branch library and commercial outlets including cafes and restaurants (refer Figures 18, 20- 25).

UNIQUE FEATURES - OPTION 1

Option 1 proposes a single open space area of approximately 100m x 140m (1.4ha) (refer Figures 17, 23-25).

Pitch Size
The size of the field is sufficiently large to allow for a variety of sports activities to take place. It would accommodate either a 100m x 68m rugby pitch or a competition size soccer pitch (90m x 45m). This provides flexibility to cater for the future needs of residents in the area.

Access
Option 1 proposes a parking aisle along the M2 Motorway corridor boundary. This would provide approximately 22 standard parking spaces. It would further enable vehicular and service vehicle access to the park.

Special Events Area
The northern end of the field would be designed to provide a special events area that can be serviced from the parking aisle along the M2 boundary.

The car park and access road along the M2 would be highly beneficial in terms of the ability to stage events. It would provide a back of house area that would permit access by large vehicles and trucks. It would further integrate the respective infrastructure required to conduct and service special events.

UNIQUE FEATURES - OPTION 2

Option 2 accommodates key worker housing development at the northern end of the proposed open space (refer Figures 16 and 18). As a result, the total open space area is lightly smaller than in Option 1. It would be approximately 100m x 125m (1.25ha) in size (refer Figure 19).

Access
Option 2 proposes to provide access to the key worker housing via a covered car park along the northern site boundary.

No public parking is currently proposed for the site. It may be possible to provide some public parking within the key worker housing covered car park.

KEY DIFFERENCES - OPTION 1 AND 2

Pitch Size
The size of the multi-use field in Option 2 is smaller than in Option 1. The latter therefore offers a greater degree of flexibility in terms of being able to accommodate a wider range of sporting codes or exhibition matches.

However, the field is not intended as a professional or competition pitch. Even at the smaller size it would provide a sufficiently large field to allow for recreational games and training for a variety of codes.

Parking
Option 2 would not have a parking aisle at the northern site boundary. Unless car parking is able to be provided within the key worker housing covered car park, this would increase demand for on-street parking.

Access and Ability to Stage Events
The location of the key worker housing at the northern end of the site in Option 2 removes the parking aisle as an access point for major vehicles including trucks. They would typically be required as part of setting up and managing major events.

The loss of this access point with integrated servicing infrastructure may affect the type of event able to be staged in the park. Option 2 would therefore offer less flexibility in terms of potential future uses and program for the open space.

Residential Interface
The potential to hold major events on the site may be reduced under Option 2, as a result of the proximity of key worker dwellings.

The noise and servicing requirements of major events may not be considered compatible with the needs of immediately adjoining residents. This may impact on the type and frequency of events able to be held in the park.

SUMMARY
Both options would deliver a significant new public open space.

Option 2 would deliver a slightly smaller park with potentially reduced flexibility in terms of potential future uses and programming. In particular it may offer less potential for major or frequent events. However it offers scope for smaller and infrequent community events.

FIGURE 17: Landscape Concept Plan - Option 1

FIGURE 18: Elevation of Eastern Park Edge showing terracing

ITEM 5 (continued) **ATTACHMENT 7**

ITEM 5 (continued) **ATTACHMENT 7**

5. OPEN SPACE PROPOSAL

ABOVE:
FIGURE 20: Artist's Impression: Aerial View of the New Park in its Context

TOP LEFT:
FIGURE 21: Artist's Impression illustrating design principles for terracing along the eastern park edge

FIGURE 22: Section Through Eastern Park Edge Illustrating active built facade

KEY

1. Street access
2. Upper terrace: child care, health centre, etc (semi-private)
3. Middle terrace: restaurants, cafes, public art
4. Terraced gardens
5. Ground floor: cafes, community facilities, gym, amenities, public art/ interactive play, waterplay
6. Synthetic turf multi-use open space
7. Shaded groves: seating, picnic areas, play opportunities
8. Public domain link to podium level of mixed use buildings

5. OPEN SPACE PROPOSAL

FIGURE 23: Artist's Impression of the Terraces along the Eastern Park Edge

FIGURE 24: Artist's Impression looking north towards Alma Road from the Eastern Park Edge

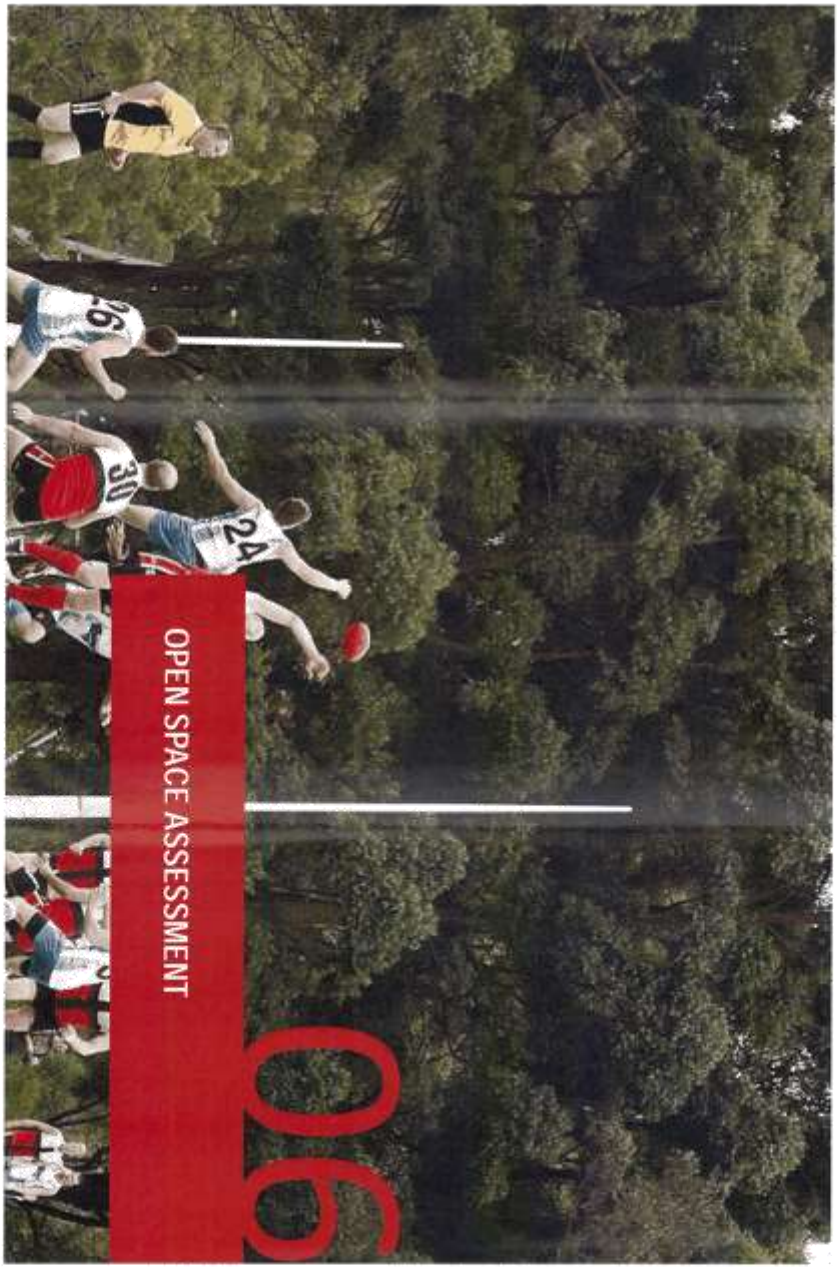
ITEM 5 (continued) **ATTACHMENT 7**

FIGURE 35: Artist's Impression: Aerial View of the New Park

5. OPEN SPACE PROPOSAL

CLOUSTON associates

ITEM 5 (continued) **ATTACHMENT 7**



6. OPEN SPACE ASSESSMENT

MACQUARIE PARK FRAMEWORK FOR OPEN SPACE

The "Macquarie Park Framework for Open Space and Mixed Used Development" (MPDF) was prepared by Architectus in June 2015, to provide Ryde City Council with a strategic framework for assessing rezoning applications in Macquarie Park. The major strategic consideration is that all rezoning applications ensure the continued viability of the precinct's commercial core and its integrity as a major employment centre.

The MPDF identifies substantial pressure for increased residential development within the Macquarie Park precinct driven by significant employment opportunities, good access and transport connections and a high quality built and natural environment.

These factors were recognised and have informed planning for the Epping and Macquarie Park Urban Renewal Area. As discussed above the area has been identified as holding significant potential to deliver new homes including through the Herring Road Priority Precinct.

The MPDF discusses the known shortfall of open space in the precinct, and its potential to limit the future attractiveness of Macquarie Park as a residential and employment locality. The pressure for more residential development in the precinct is identified as an opportunity to negotiate with potential developers to address the identified open space shortfall.

To assist Council in such negotiations and in the assessment of rezoning applications in Macquarie Park the MPDF provides a strategic assessment framework. It outlines the requirements to be met in order for rezoning applications to be considered.

Key requirements include:

- significant public open space will be provided (minimum 1ha in area), effectively addressing existing and forecast shortfalls and meeting minimum design standards and criteria
- minimum commercial floor space areas are delivered
- a high quality public domain is achieved
- critical social needs are met such as provision of key worker housing, affordable housing or childcare facilities

The MPDF found that there are only three sites within Macquarie Park that would meet all criteria under the framework (refer Figure 26). The small number of sites would ensure that the strategic employment role of the precinct would be protected while allowing for increased residential development and delivering important additional local public open space.

FIGURE 26: Potential Sites to Deliver Open Space in Macquarie Park

Need for Open Space in Macquarie Park

The MPDF draws on the findings of the IOSP to highlight the need for additional open space in the precinct, to meet the needs of both future residents and businesses. This includes the recommendation for a new major park complemented by a series of small parks and small social spaces as discussed above.

It further identifies that the creation of the Herring Road Priority Precinct will further accelerate growth and demand yet it will not provide any new public open space. This will result in even greater demand for open space than anticipated at the time of writing the IOSP.

MPDF Framework for Delivery of Open Space

The MPDF proposes that rezoning applications be granted subject to nine criteria, four of which relate to the ability of the site to provide additional public open space.

The open space criteria recommended by the framework are:

1. Provide either new open space shown in the Draft Macquarie Park DCP 2014 or a new 1 hectare minimum public open space, designed to Council's reasonable requirements
2. Where a site proposes to deliver the 1 hectare minimum open space, the site must be larger than 3 hectares, thereby allowing for a 2 hectare development site for mixed uses
3. The open space must have a frontage to a major road (Waterloo Road, Talavera Road, Wicks Road or Herring Road) and one secondary street
4. The proposed open space should satisfy specified design criteria (as set out in Section 4.1 of the MPDF) and be dedicated to Council on completion.

6. OPEN SPACE ASSESSMENT

ASSESSMENT OF MPDF

The MPDF recommends that rezoning applications be approved with a key consideration being the ability to deliver a major new park. The following table compares the Macquarie Park open space needs identified in the IOSP with the framework proposed by the MPDF.

IOSP Strategy for Macquarie Park	MPDF Identified Need	MPDF Recommendation
New major park, min 2ha Alternatively two major parks, min 1.5ha each	Major Park, min 1.5ha	Min 1ha open space
Location close to the core of the precinct	Location close to the core of the precinct	Identification of potential sites anywhere within the precinct - site selection not limited to open space planning criteria
Two street frontages	-	Two street frontages
Detailed design and infrastructure requirements	-	Designed to Council's requirements
Suite of local parks, min 0.5ha each, evenly distributed	Not discussed	N/A

The table shows that the recommendations of the IOSP have maintained a strong alignment into the MPDF, however full translation has not occurred. Instead, the identified need for open space has been replaced by a lesser requirement for the provision of public open space.

The MPDF is therefore ill suited to demonstrate that the provision of open space on the site will address the IOSP identified shortfall in open space.

The MPDF however provides a useful tool for Council in assessing rezoning proposals as it provides suitable criteria to assist Council in determining the merits of such applications.

It demonstrates that adherence to strict rezoning criteria will avoid the establishment of a planning precedent that could further increase pressure for residential development and undermine the importance of the Macquarie Park Precinct as an employment centre.

OPEN SPACE PLANNING ASSESSMENT OF THE PROPOSAL

While the proposed open space on the site falls short of delivering a park of the minimum size and in the location identified in the IOSP under either option, there are a number of factors which lend considerable merit to the proposal to rezone the site and deliver a new public open space, from an open space planning perspective.

Uncertainty of Central Park Realisation

While the Macquarie Park DCP provides for a new Central Park, the current land use zoning does not reflect this desired outcome.

The delivery of the Central Park was subject to a $6 million funding agreement between Ryde Council and DP&E as part of the Precinct Support Scheme for the former North Ryde Urban Activation Precinct.

However, it is understood that the site may be sold. This may jeopardise the delivery of Central Park. Delivery of the park as well as the timing of realisation are therefore highly uncertain.

It is further noted that Central Park by itself would not be sufficient to adequately address the existing shortfall of open space within Macquarie Park. It will need to be supported by additional open space areas.

Benefits of the Proposal

- The proposal would provide much needed certainty in respect of the delivery of a large new local park and importantly in the early phases of population growth in the locality
- The proposal would provide certainty regarding the timing of delivery of new public open space.

Accelerated Growth Exacerbating Gap in Open Space Provision

The preparation of the IOSP preceded the announcement of the Herring Road Priority Precinct. The IOSP identified shortfall in future public open space provision will be further exacerbated by the additional residential growth generated by the Priority Precinct.

Benefit of the Proposal

- The proposal would address the latent shortfall in open space provision in Macquarie Park, as identified in the IOSP.

Uncertainty of New Local Park Provision

Despite significant planned increases in the residential population as a result of the Herring Road Priority Precinct, there is a degree of uncertainty over the provision of new open space. While potential locations for up to four new local parks have been identified, they are undersized. Further, are not mandated and will be subject to negotiation through the development application process.

Resolution of open space provision at the individual building application stage removes the opportunity to develop a considered network that guarantees a high degree of connectivity and equity of access. There is a risk that the proposed process may deliver a sub-optimal network when measured against these critical open space planning considerations.

Further, Precinct planning relies to a significant degree on existing open space including along Shrimptons and Mars Creek, within Macquarie University and in Lane Cove National Park. The latter is not suited to meet the day-to-day demand for public open space, due to its conservation function and its separation from the Precinct by the M2, which is a major barrier to pedestrian movement.

There is therefore a risk that the Priority Precinct will not deliver such additional open space to meet the increased demand.

Benefits of the Proposal

- The proposal would assist in meeting the demand for open space that caters for the day-to-day needs generated by the Herring Road Priority Precinct by providing a large new local park immediately adjoining the Precinct.
- The proposal provides certainty of outcome in terms of open space delivery.

Open Space Distribution Pattern

The distribution of both current and planned future public open space in Macquarie Park is generally concentrated on the southern side of Waterloo Road. Together with the uncertainty over the delivery of new local parks through the Priority Precinct, this uneven distribution pattern has the potential to adversely effect residents and employees in the northern part of Macquarie Park.

Benefits of the Proposal

- The proposal would create a new public open space of significant size north of Waterloo Road, in the area of least open space provision.
- The proposal has the potential to make a significant contribution towards ensuring equity of access to public open space.

Macquarie University Campus Development

The campus of Macquarie University currently offers a pleasant and green environment offering recreation opportunities to staff and students, and possibly the local community. It is noted that the University is planning a suite of campus developments which will likely change the nature of the campus and potentially reduce available open space.

Further, an increase in the campus population (including students, staff and residential population) will add to demand for public open space and recreation facilities in the area.

6. OPEN SPACE ASSESSMENT

Benefits of the Proposal

- The proposal would create a new public open space of significant size within walking distance of the University campus.
- The proposal would reduce local reliance on the University grounds for informal recreation and access to nature.

Proximity to Macquarie Centre

The Macquarie Centre provides a major shopping, commercial and entertainment destination in Macquarie Park, featuring leisure attractions such as cinemas, indoor playgrounds, kids club and play land and the Macquarie Ice Rink. It is a regional destination that attracts a large number of people from within and outside the area. There is currently no public open space that would complement the offering of indoor activities with external recreation facilities.

Benefits of the Proposal

- The proposal would complement the recreation and leisure offering of the Macquarie Centre by providing a new public open space immediately adjoining the Centre.
- The co-location of community and recreation facilities and infrastructure is consistent with best practice planning principles. It creates significant activity hubs and reduces the need for travel to access a range of facilities and services.

CONCLUSION AND RECOMMENDATION

The above discussion outlines that while the proposal does not meet all aspects of the Open Space Strategy for Macquarie Park identified in the IOSP, planning has developed significantly since the IOSP was prepared. There is now significant planned population growth which is not currently matched with certainty in terms of planning for local open space provision.

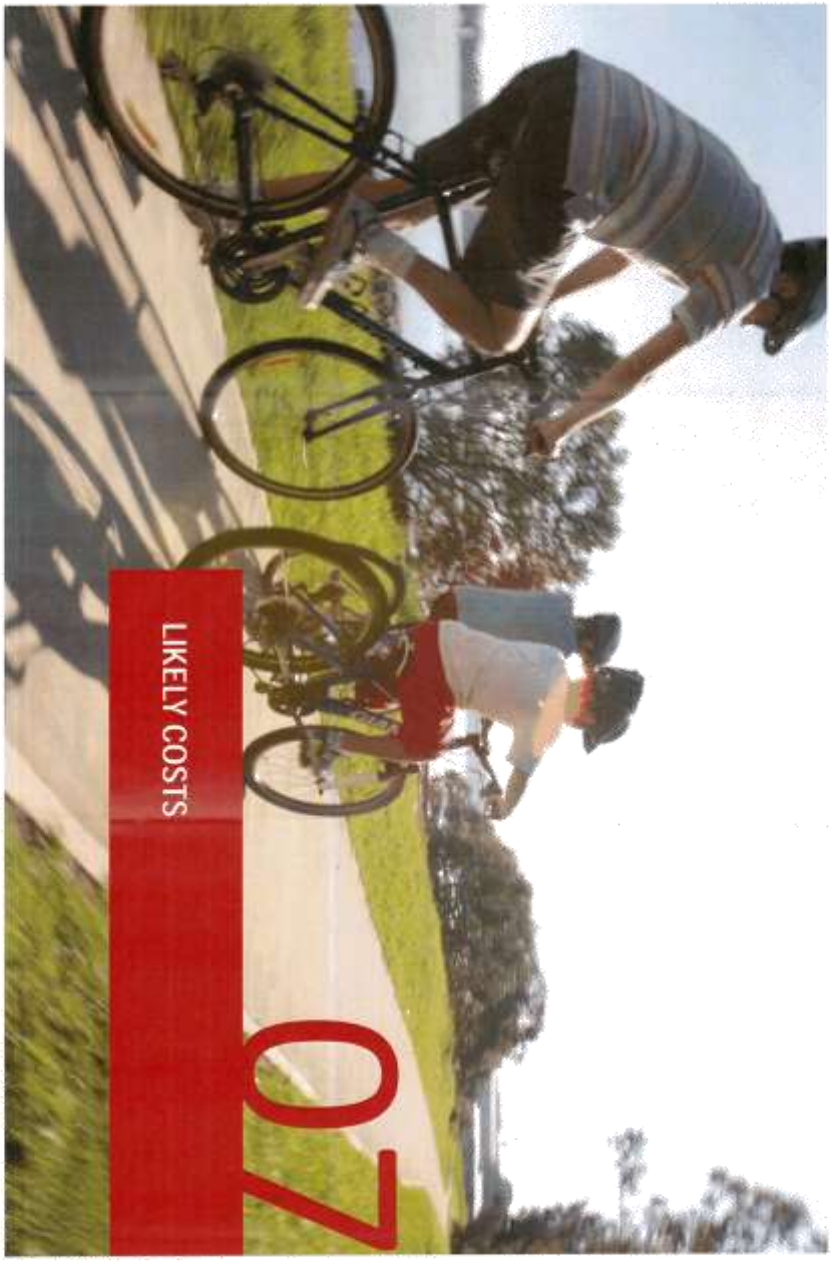
In this context and from an open space planning perspective, the above assessment demonstrates that the proposal to rezone the site and deliver a new public open space would deliver significant public benefit, irrespective of the option adopted for the location of key worker housing.

While Option 1 (accommodating key worker housing as additional density within the proposed mixed use towers) would be preferred in terms of the size and flexibility able to be offered by the new open space, Option 2 (location of key worker housing at the northern end of the open space) would still offer a significant open space resource.

From an open space planning perspective, the proposal to rezone the site should be supported, subject to the creation of a new public open space consistent with the planning and design principles outlined in section 5 of this report and the TRJDR.

Macquarie University - Mars Creek Lake

ITEM 5 (continued) **ATTACHMENT 7**



7. LIKELY COSTS

CAPITAL COSTS

The following provides an Opinion of Probably Cost associated with the landscape works for the proposed new open space.

For the purposes of feasibility, the costs provided reflect Option 1. Some savings might be expected from Option 2, due to the smaller field size and removal of at-grade parking.

It should be noted that:

- Costs are based on recent construction pricing (2014/2015 financial year) and may vary with market conditions.
- Costs exclude GST.
- Based on the conceptual stage of the design Provisional Sums have been provided for a number of items such as lighting, public art, drainage and irrigation.

It should be further noted that the terraces along the south-eastern edge of the park constitute about one third of the proposed open space. This portion of the park will be constructed on built structures and will be an integral part of the building design and construction.

The below costing does not cover the additional costs likely to be incurred as a result of building on structure. Examples of additional costs include, but are not limited to

- additional structural strengthening
- water-proofing and specialised drainage systems
- specialised light-weight soil and drainage mixes.

The following cost items are excluded:

- Demolition/ site clearing.
- Latent conditions.
- Civil works including earthworks.
- Stormwater works.
- Irrigation.
- Adjustments to existing services or utility service relocation

Summary of Key Elements	
Paving - exposed concrete	$360,550
Furniture and fittings	$782,200
Planting	$202,500
Synthetic Field	$805,000
Access Road and parking	$136,180
Provisional Sum Items	
Multi-use field lighting	$300,000
Public Art	$250,000
Water Play	$200,000
Irrigation	$100,000
Sub-total	$3,246,430
Preliminaries (10%)	$324,643.00
Design Contingency (20%)	$714,214.60
TOTAL	**$4,285,288**

ONGOING ANNUAL MAINTENANCE COSTS

It is anticipated that new open space will be a popular and highly used resource. In order to maintain the park to a high standard, in particular the synthetic turf surface, regular maintenance and repair work will be critical.

The synthetic turf will require both routine maintenance and specialist maintenance. Routine maintenance could be carried out by Council's general maintenance team or by designated grounds staff. Specialist maintenance should be carried out by a specialised contractor with proven expertise and a track record in synthetic turf management.

Routine Maintenance

Routine maintenance associated with a synthetic surface includes tasks such:

- Removal of foreign matter from the pitch surface (litter, grass clippings, leaves, etc.).
- Regular inspection of the pitch surface for damage & moss/weed growth.
- Weekly or fortnightly (depending on facility usage) drag-mat grooming of the pitch surface.

Specialist Maintenance

Over time fine particles of dust and debris can accumulate within the synthetic surfacing system. An annual specialist maintenance service is recommended to keep the synthetic field in optimal condition. This should include the following:

- Brushing & vacuuming of the pitch surface using purpose-built synthetic turf maintenance equipment to remove detritus material from amongst the synthetic surface infill.
- Grooming of the pitch surface to decompact the infill & to ensure that infill material is evenly distributed.
- Spreading of additional infill material if required.
- Repairs to damaged areas if required.
- Treatment of moss/weed growth if required.

Based on the above, the following annual maintenance costs may typically be incurred by a park of this nature:

Cleaning and rubbish removal	$3,600
General repairs	$10,000
Planting and softworks	$14,400
Synthetic Turf Surface - Routine Maintenance	$20,000
Synthetic Turf Surface - Specialist Maintenance	$4,000
TOTAL	**$52,000**

ITEM 5 (continued) **ATTACHMENT 7**

REFERENCES

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ITEM 5 (continued) **ATTACHMENT 7**

PROJECT CREDITS

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Rachel Nesbitt, Planner

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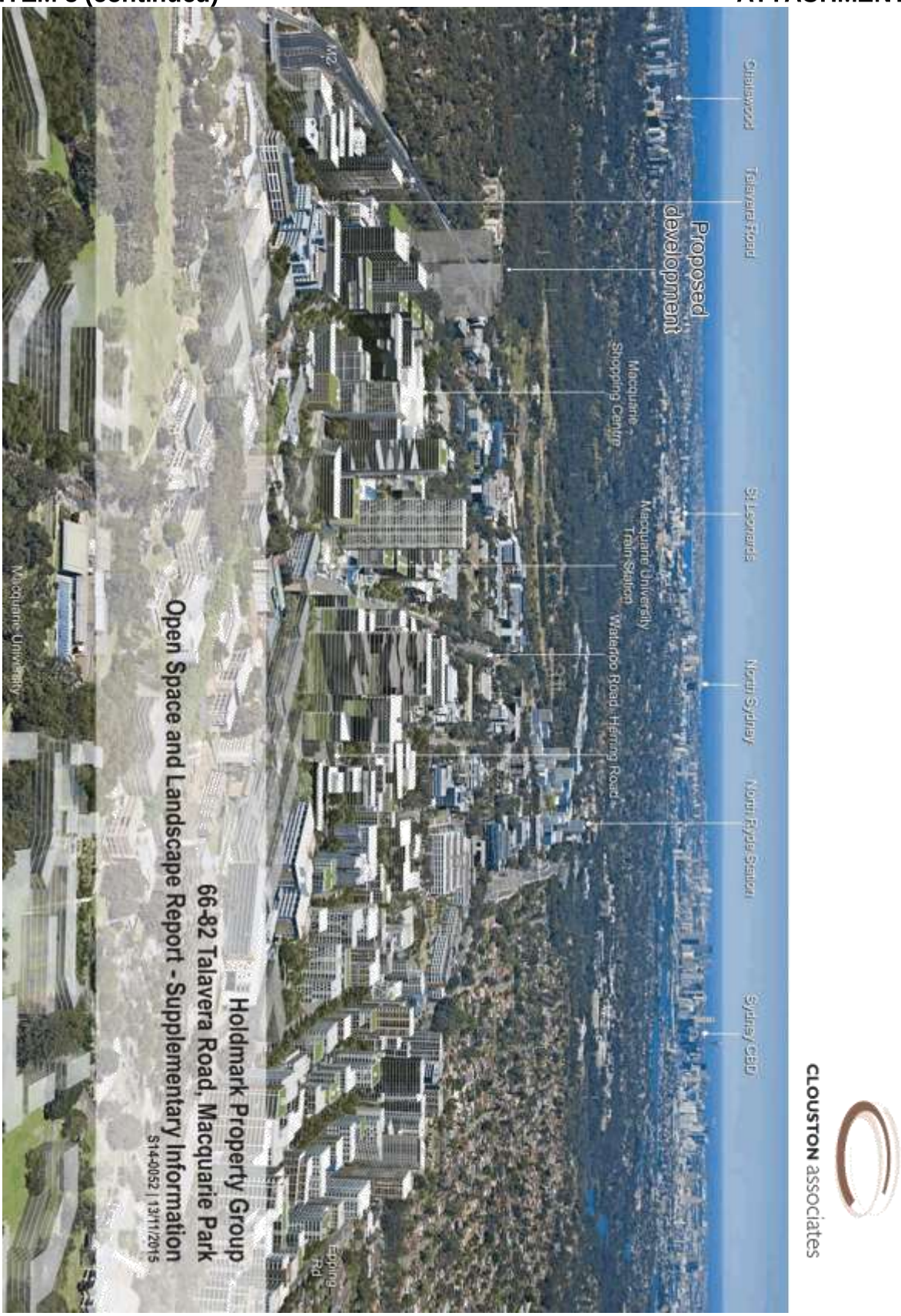
ITEM 5 (continued) **ATTACHMENT 8**



ITEM 5 (continued) **ATTACHMENT 8**

CLOUSTON associates

66-82 TALAVERA ROAD,
MACQUARIE PARK
OPEN SPACE AND LANDSCAPE REPORT
- SUPPLEMENTARY INFORMATION

Client
HOLDMARK PROPERTY GROUP

Prepared by

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Document	Issue	Date	Status	Reviewed	Verified	Validated
S14-0852 R02	A	13/11/2015	DRAFT	JF	JF	-
S14-0852 R02	B	13/11/15	FINAL	JF	JF	CL

Note: this document is preliminary unless validated.

CLOUSTON associates

TABLE OF CONTENTS

INTRODUCTION

The information contained in the report complements the "66-82 Talavera Road, Macquarie Park. Open Space and Landscape Report" (OSLR) prepared by CLOUSTON Associates for Holdmark Properties, in October 2015.

The OSLR was submitted to Ryde City Council (RCC) in support of a Planning Proposal (PP) to rezone the property at 66-82 Talavera Road, Macquarie Park (the site) from currently B7 Business Park to B4 Mixed Uses. The PP further seeks to alter the current built height controls and Floor Space Ratio (FSR).

PURPOSE OF THIS REPORT

RCC are currently in the process of assessing the PP and supporting information, including the OSLR. As part of the assessment process, RCC have raised the need for more information to enable RCC to understand and assess the nature of the interface between the proposed open space and the adjoining streets, namely Talavera and Alma Roads.

In response, this report contains a series of diagrams that illustrate in further detail the nature of this interface. The following diagrams are provided:

- Masterplan overlay highlighting locations and indicative heights of boundary walls.
- Two cross sections through the interface between the proposed open space and Talavera Road.
- One cross section through the interface between the proposed open space and Alma Road.

It should be noted that detailed designs were not prepared as part of the PP or the OSLR. The finished floor levels indicated on the plan and sections have been adopted based on current site levels and survey information, as well as the proposed masterplan outcomes. Subject to detailed design work, finished levels may vary to from those shown. They nevertheless provide a good indication of the likely outcomes and level changes to enable planning assessment.

STREET INTERFACE DESCRIPTION

Talavera Road

Talavera Road is a major road within the Macquarie Park Precinct and provides the primary street frontage for the site. The topography of the site rises steeply along Talavera Road, with a level change of about 19m from the north-western corner of the site towards the south-eastern corner of the site.

The proposed multi-use open space will be an essentially level surface that will accommodate active as well as passive uses. The relationship between the level field and the steep rise of Talavera Road will result in changes along the interface between the open space and the road.

As illustrated on Figure 1, there are a number of entrances along Talavera Road where access into the park and the terraces along its south-eastern edge will be possible at grade. Between these points will be boundary walls that will vary in height to mediate the level change between the field and the street.

The maximum height of these walls is likely to be about 3m, or one floor level. Walls would be raked along the footpath, resulting in the majority of boundary wall to appear lower from the park. To reduce the perceived wall height, a series of planters would be used to create the effect of a series of smaller walls stepping up towards the road – refer Figure 3.

Along the Talavera Road footpath balustrading would be provided in accordance with the requirements of the National Construction Code (NCC, formerly known as the BCA), typically where the level change exceeds 1m. Balustrades would be light-weight and transparent, in order to reduce the perceived height of the combined height of walls and balustrades, as well as to maximise views into and out of the park.

Further south along Talavera Road, the terraces extending along the south-eastern park edge would wrap around to continue along the Talavera Road frontage. Similar to the park's south-eastern edge, commercial space along the lower level would provide an active edge to the park, while a roof terrace would offer further recreation opportunities including gardens and the at-grade entrance from Talavera Road – refer Figure 2.

Alma Road

The interface between the park and Alma Road would be characterised by a continuous low park boundary wall, with entrances provided at intersections as well as mid block. The height of the wall would be about 800mm, to ensure good passive surveillance in and out of the park. The boundary wall would prevent vehicle access into the park, while the level change would reduce the height of the interface between the park and Talavera Road. The photograph of Hyde Park in Figure 5 illustrates the likely character of this edge condition.

CONCLUSION

The diagrams contained in this report illustrate the nature of the likely interface between the proposed open space and the adjoining roads. They indicate that the interface with Alma Road is likely to be constant along the road's length. It will consist of a low boundary wall punctuated by a number of entrances to facilitate equal access to the park. This treatment is consistent with other highly used and popular open spaces in the Sydney metropolitan area.

The interface between the open space and Talavera Road will be more variable, due to the need to mediate the level change between the essentially level open space and the rising topography along the road. The section diagrams indicate that there will likely be two retaining walls, ranging in height from 0 to 3m. A number of design measures have been indicated to ameliorate the perceived height of the boundary wall.

The diagrams and design measures indicated in this report demonstrate that the project offers significant potential to deliver a high quality public domain for both the proposed park and surrounding street system. They offer the potential to be further refined during future concept design and design development stages.

ITEM 5 (continued) **ATTACHMENT 8**

FIGURE 7: MASTERPLAN SHOWING LOCATIONS AND INDICATIVE HEIGHTS OF BOUNDARY WALLS

Not to scale

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FIGURE 2: SECTION A-A

FIGURE 3: SECTION B-B

FIGURE 4: SECTION C-C

FIGURE 5: BOUNDARY WALL PRECEDENT FOR ALMA ROAD, HYDE PARK

ITEM 5 (continued) **ATTACHMENT 8**

PROJECT CREDITS

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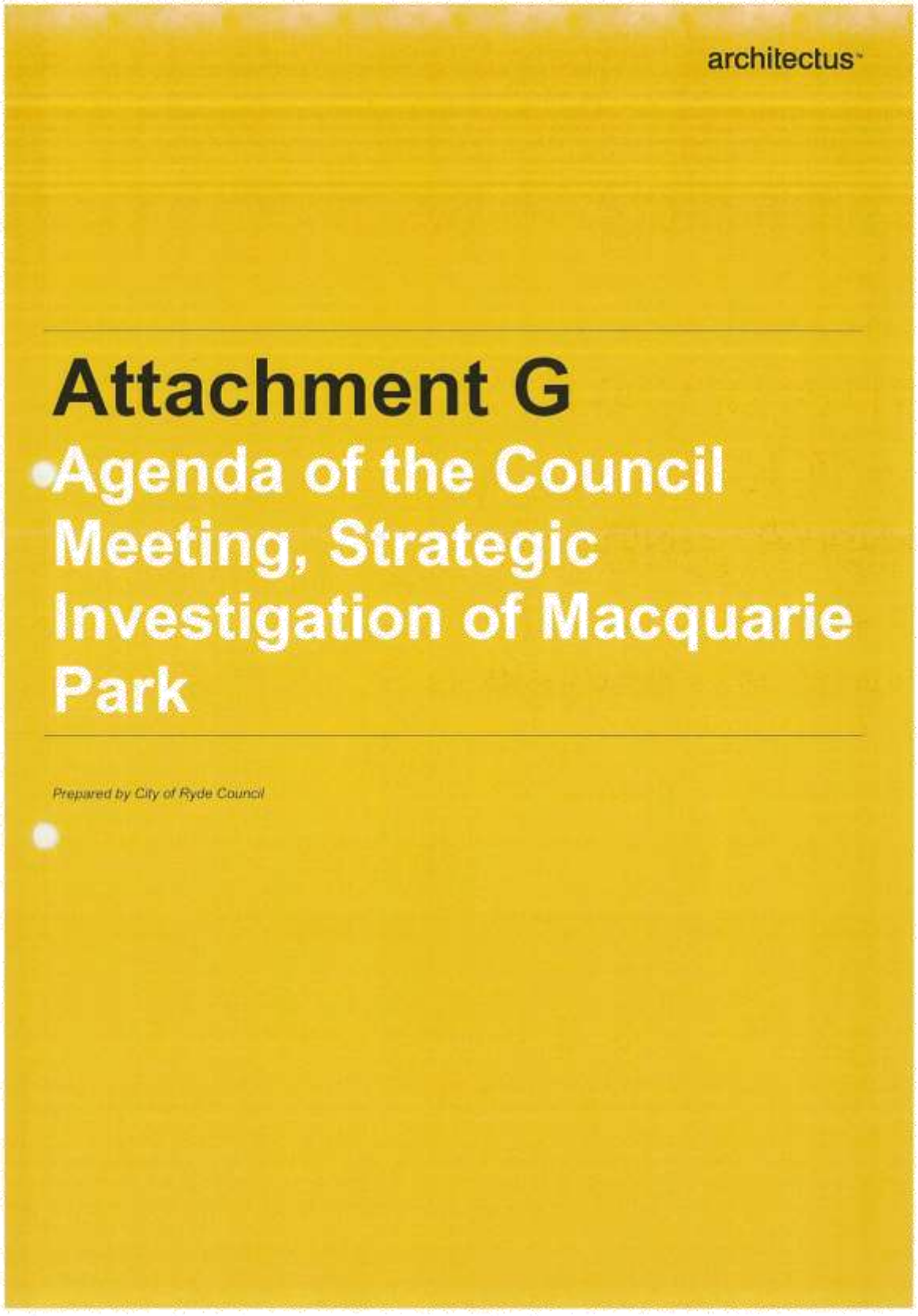
ITEM 5 (continued) **ATTACHMENT 9**



ITEM 5 (continued) **ATTACHMENT 9**

3 STRATEGIC INVESTIGATION OF MACQUARIE PARK

Report prepared by: Section Manager - Governance
File No.: ENV/08/3/8/14 - BP15/1344

CORRESPONDENCE:

Submitting correspondence from the NSW Department of Planning and Environment dated 1 September 2015 inviting Council to partner with the Department to undertake a strategic investigation of Macquarie Park.

RECOMMENDATION:

(a) That the correspondence be received and noted.

(b) That Council accept the invitation to partner with the NSW Department of Planning and Environment to undertake a strategic investigation of Macquarie Park.

ATTACHMENTS

1 A Plan for Growing Sydney - Request from the NSW Department of Planning and Environment dated 1 September 2015 to partner with Council to commence a strategic investigation of Macquarie Park

Report Prepared By:

Amanda Janvrin
Section Manager - Governance

Report Approved By:

Gail Connolly
General Manager

ITEM 5 (continued) **ATTACHMENT 9**

PRECIS OF CORRESPONDENCE 3 (continued) **ATTACHMENT 1**

NSW GOVERNMENT Planning & Environment

Ms Gail Connolly
General Manager
City of Ryde Council
Locked Bag 2069
North Ryde NSW 1670

15/12697

Dear Ms Connolly Gail

I am writing to invite Council to partner with the Department to undertake a strategic investigation of Macquarie Park.

As you are aware, *A Plan for Growing Sydney* identifies Macquarie Park as a strategic centre and recognises Macquarie Park's role as an important employment centre.

As part of the implementation of *A Plan for Growing Sydney*, the Department would like to partner with Council to commence a strategic review of Macquarie Park. This is an excellent opportunity to undertake a coordinated, strategic investigation of Macquarie Park in accordance with the actions identified in *A Plan for Growing Sydney*.

The strategic investigation provides the opportunity to work together to retain a commercial core in Macquarie Park for long term employment growth and identify the potential for additional uses, including retail, services and housing.

To initiate the investigation, the Department would like to meet with Council to discuss the scope of the strategic review and the ongoing working arrangements for the study. The Department will shortly provide Council with a draft scope of works for the initial phase of the study (an analysis of the demand and drivers for employment uses) for Council's consideration prior to the meeting.

It is expected that the scope of this investigation will also include infrastructure analysis to inform the investigation of the need for future upgrades and cost recovery mechanisms as per Councils' recent resolution.

The Department will be in contact shortly to confirm a meeting date for the first meeting. We look forward to working in partnership with City of Ryde Council.

If you have any further enquiries, Michael File, Director, Urban Renewal, can be contacted on 9228 6407 or by email michael.file@planning.nsw.gov.au

Yours sincerely

01.09.2015

Liz Develin
Deputy Secretary
Growth, Design and Programs

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City of Ryde
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- 4 SEP 2015
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File No:

Department of Planning & Environment
23-33 Bridge Street Sydney NSW 2000 | GPO Box 39 Sydney NSW 2001 | T 02 9228 6111 | F 02 9228 6455 | www.planning.nsw.gov.au

ITEM 5 (continued) **ATTACHMENT 9**

Record of Voting:

For the Motion: Unanimous

Note: Councillor Simon returned to the meeting at 9.12pm.

2 EXECUTION OF PLANNING AGREEMENT - NORTH RYDE STATION PRECINCT - REGIONAL ROAD UPGRADES

RESOLUTION: (Moved by Councillors Stott and Maggio)

That the correspondence be received and noted.

Record of Voting:

For the Motion: Unanimous

3 STRATEGIC INVESTIGATION OF MACQUARIE PARK

RESOLUTION: (Moved by Councillors Maggio and Pickering)

(a) That the correspondence be received and noted.

(b) That Council accept the invitation to partner with the NSW Department of Planning and Environment to undertake a strategic investigation of Macquarie Park.

Record of Voting:

For the Motion: Unanimous

4 STREET LIGHT REFORM - PRIVATISATION OF AUSGRID

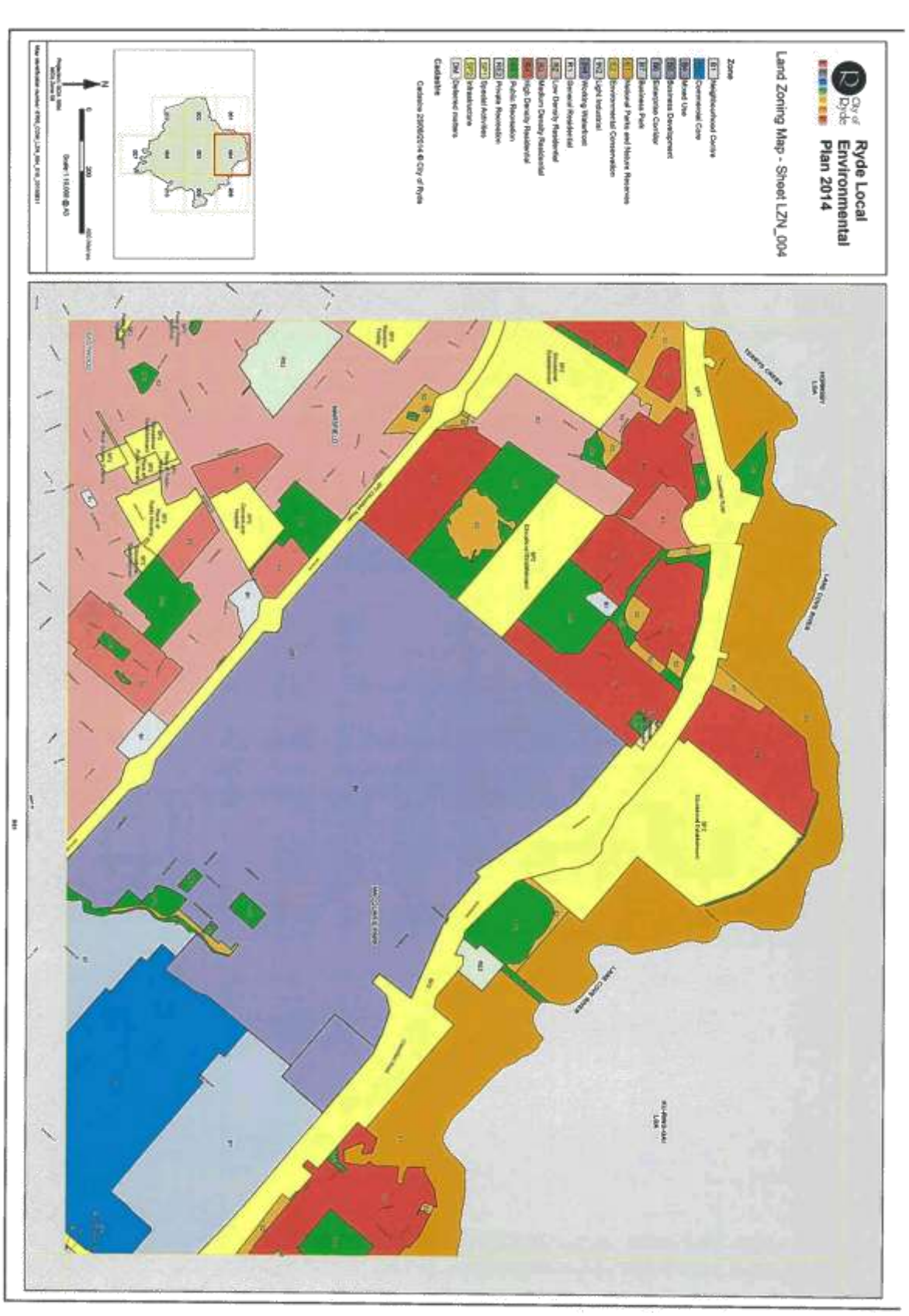
RESOLUTION: (Moved by Councillors Maggio and Pickering)

That the correspondence be received and noted.

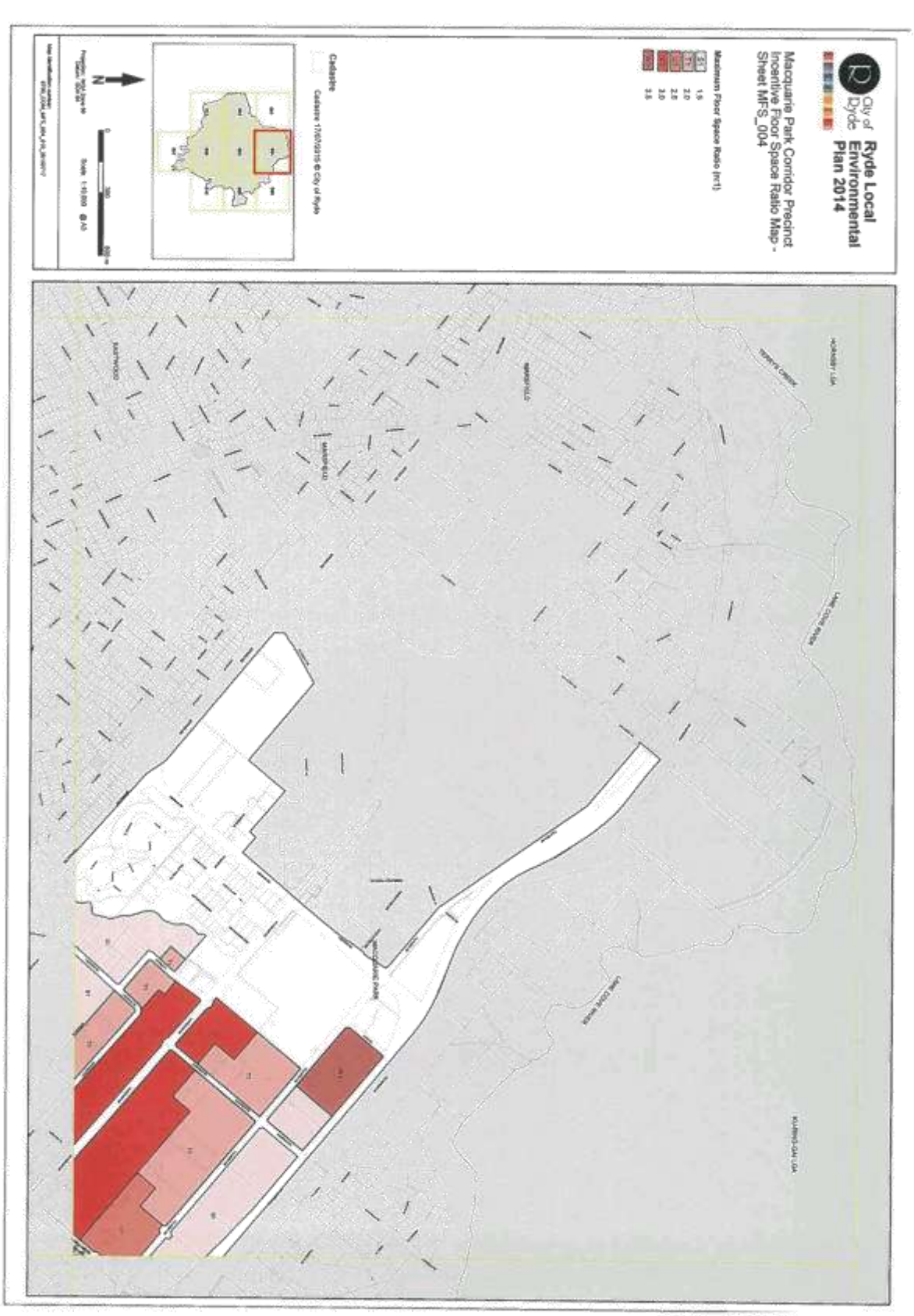
Record of Voting:

For the Motion: Unanimous

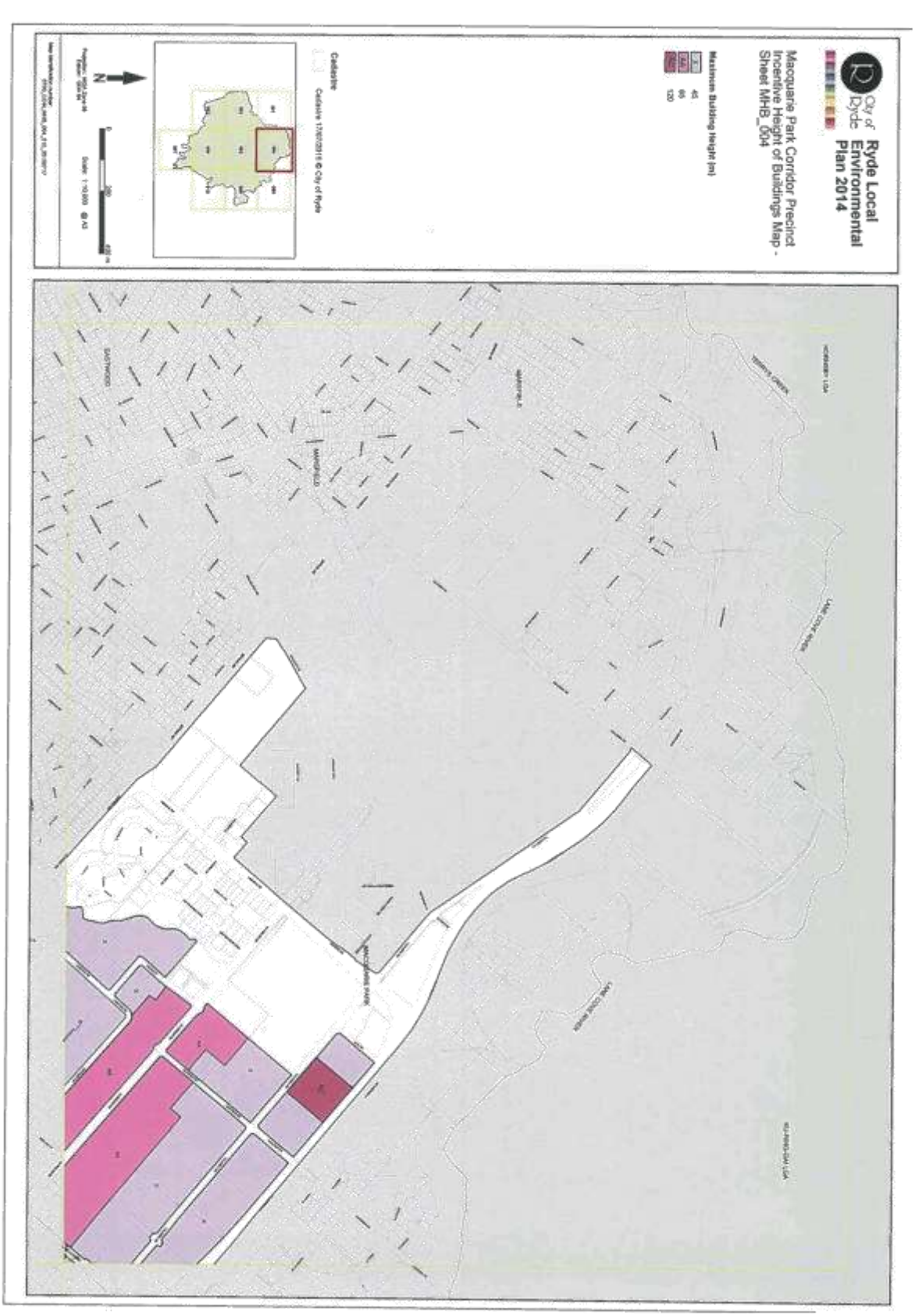
ITEM 5 (continued) **ATTACHMENT 10**



ITEM 5 (continued) **ATTACHMENT 10**



ITEM 5 (continued) **ATTACHMENT 10**



ITEM 5 (continued) **ATTACHMENT 11**

Peer Review

66 – 82 Talavera Road Macquarie Park Planning Proposal

80016046 v01

Prepared for
City of Ryde Council

22 November 2015

Cardno
Shaping the Future

ITEM 5 (continued) **ATTACHMENT 11**

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Document Information

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Version	Effective Date	Description of Revision	Prepared by:	Reviewed by:
01	22/11/2015	Draft report	David Yu / Aaron Tran	

ITEM 5 (continued) **ATTACHMENT 11**

Executive Summary

The purpose of this Peer Review is to provide the City of Ryde with a critical appraisal of the Traffic Impact Assessment (TIA) undertaken by Bitzios Consulting for a proposed change of land use at 66-82 Talavera Road, Macquarie Park. The TIA was submitted as part of a planning proposal to rezone land from B7 (Business Park) to B4 (Mixed Use) development.

This Peer Review report has been undertaken to inform City of Ryde of any deficiencies with the Traffic Impact Assessment undertaken by Bitzios Consulting and provide recommendations and comments in line with Council's guidelines and traffic engineering best practice. The Peer Review has been undertaken in a non-technical format so as to allow a non-technical audience to interpret the information easily and understand the recommendations and findings we have reported.

The Peer Review report will adhere to the following structure:

> **Introduction**: Provides an overview of the proposed development outlined in the Bitzios Consulting report and details the scope of works, assumptions, and reference documents.

> **Impact of Proposed Development**: Assesses the TIA report undertaken by Bitzios Consulting in regard to traffic generation, distribution, overall traffic assignment, SIDRA modelling, and impacts on the external road system. The Cardno peer review provides comments in regard to each of these components, identifies any deficiencies and makes recommendations where necessary.

> **Access Management**: Outlines the TIA report undertaken by Bitzios Consulting in regards to parking supply and access, traffic accessibility, pedestrian, cyclist and public transport accessibility. The Cardno peer review provides comments in regard to each of these components, identifies any deficiencies and makes recommendations where necessary.

> **Conclusions / Recommendations**: Provides an overall summary of the findings of the Peer Review and also provides recommendations for further study and/or clarification.

The purpose of this report Peer Review is solely to review the Traffic Impact Assessment undertaken by Bitzios Consulting in relation to the rezoning proposal at 66-82 Talavera Road, Macquarie Park.

The main Cardno findings are summarised as follows:

> Some of the Bitzios Traffic Generation assumptions are questionable; specifically, the omission of certain key aspects of the development from the traffic impact assessment may lead to traffic impacts being understated.

> Bitzios Consulting did not undertake intersection modelling of key external intersections. There is a risk that the traffic impacts of the development proposal are not fully quantified and potential mitigation measures may not be addressed as a result.

> There are discrepancies between the Cardno and Bitzios Consulting car parking calculations. The reasons for the discrepancies should be further investigated to ensure adequate on-site parking provision.

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Tables

Figures

1 Introduction

1.1 Overview

Cardno has been engaged by City of Ryde to undertake a peer review of the Traffic Impact Assessment undertaken by Bitzios Consulting for the proposed change of use at 66-82 Talavera Road, Macquarie Park from B7 (Business Park) to B4 (Mixed Use) development. The Planning Proposal for this development is proposing to increase the floor space ratio from 1:1 to 3.5:1 and increase the height limit from 30m to 120m. Cardno has reviewed the Traffic Impact Assessment to ensure that the Council requirements are satisfied, reporting the findings and providing recommendations for further study and/or clarification. The site location is shown in **Figure 1-1**.

Figure 1-1 Site Location

Source: Nearmaps (background map)

1.2 Proposed Development Details

The proposed development details are outlined in *Section 3.1* of the Bitzios Consulting TIA and include:

- Minimum 1 hectare public open space
- Minimum 20,000m² of non-residential floor space, with a combination of:
  - Childcare facilities suitable for 60 children (approximate gross floor area (GFA) of 800m²).
  - Council approved Astra Zeneca building (9,000m²).
  - Retail / restaurant (approximately 4,000m²).

- Commercial / office space (6200m²).

The site is proposed to be accessed in three locations as shown in **Figure 1-2**.

> Alma Road (currently a left-in / left-out arrangement)

> Western access (proposed left-in / left-out arrangement.

> Eastern access (currently a left-in / left-out arrangement, proposed to realign with shopping centre access to form a four-leg signalised intersection).

Figure 1-2 Proposed development layout and access locations

Source: 66-82 Talavera Road, Macquarie Park – Traffic Impact Assessment, Bitzios Consulting (2015)

1.3 Scope of works

The objective of this Cardno peer review is to assess the TIA prepared by Bitzios Consulting. This includes the following scope of works:

> Collate and review all available background documents and information.

> Review the prescribed TIA Assessment Procedure for Macquarie Park.

> Identify and evaluate all relevant development and traffic related assumptions, including:
  - Development traffic generation rate;
  - Assignment method adopted;
  - Signalised intersection warrant assessment;
  - SIDRA analysis.

> Examine parking supply, parking access and any potential traffic circulation issues.

> Review impacts on the external road system.

> Assess management measures for pedestrians and cyclists and access to nearby rail stations and activities (e.g. Macquarie University, Macquarie Centre).

> Review findings of Bitzios Consulting TIA report and provide commentary.

ITEM 5 (continued) **ATTACHMENT 11**

> Provide conclusions on the expected impacts of the development, recommendations for further information from the applicant and recommendations for modification of the development concept to address issues identified through the peer review process.

1.4 Assumptions and Exclusions

The assessment has been undertaken with the following assumptions and exclusions:

> Additional traffic surveys were not carried out;

> Site visits were not conducted.

1.5 Reference documents

> 66 – 82 Talavera Road, Macquarie Park Traffic Impact Assessment, Bitzios Consulting (2015);

> Interim Traffic Impact Assessment Process For Macquarie Park Corridor Development Applications, City of Ryde (2013);

> AS 2890 Standards;

> 66-82 Talavera Road Macquarie Park Urban Design report prepared for Holdmark Pty Ltd – Update (13 November 2015)

> RMS Guide to Traffic Generating Developments (2002); and

> RMS Technical Direction TDT 2013/04a.

ITEM 5 (continued) **ATTACHMENT 11**

2 Impact of proposed development

2.1 Traffic generation

The traffic generation rates used in the Bitzios Consulting TIA are:

- High density residential
  - AM peak: 0.19 trips per unit
  - PM peak: 0.15 trips per unit
- Office block
  - AM peak: 1.6 trips per 100m² GFA
  - PM peak: 1.2 trips per 100m² GFA
- Childcare (long day care)
  - AM peak: 0.8 trips per child
  - PM peak: 0.3 trips per child

The TIA assumes that the retail / restaurant land use (approximately 4,000m²) will primarily provide services for the residential developments in the area and reasons that *"restaurant generated traffic is outside of the commuter peak hours in any event"*. The retail / restaurant traffic generation has therefore been excluded from the Bitzios Consulting traffic impact assessment.

It also assumed that the childcare centre will provide services primarily to the residential development in the area and it has been estimated that approximately 20% (12) children attending the childcare centre would travel from outside of the development by car. The peak hour traffic generation components are outlined in **Table 2-1**.

Table 2-1 Peak hour traffic generation

Land use	Size	Trips generated	
		AM	PM
Apartment	38 (key worker dwellings)	7	6
	1,125	214	169
Childcare	60 children (12 arriving by car)	10	4
Non-residential	Astra Zeneca*	150	122
	6,200m² commercial / office space	99	74
Total traffic generated		480	374

** Council approved development adopted from the Astra Zeneca traffic impact assessment report*
Source: 66-82 Talavera Road, Macquarie Park – Traffic Impact Assessment, Bitzios Consulting (2015)

Cardno Comment 1
The traffic generation assumptions in the Bitzios Consulting TIA are generally reasonable and are in line with the traffic generation rates specified in the RMS Technical Direction TDT 2013/04a and RMS Guide to Traffic Generating Development 2002.
The traffic generation from retail / restaurant land use (approximately 4,000m²) has not been considered in the report. Cardno finds that excluding all trips generated from this land use is unreasonable. A retail / restaurant area of this scale would almost certainly attract external car trips and some of these would occur during the commuter peak hours. Cardno recommends that traffic volumes generated from this development be included in the assessment with a discount applied to account for the expected high proportion of self-contained, non-car trips.

Alternatively, Bitzios Consulting must provide further details on the assumptions used to justify the complete exclusion of retail / restaurant trips from the traffic impact assessment.
Cardno's high level worst case scenario assessment for the approximate 4,000m² is as follows: RMS trip generation rates for retail shopping centre is 12.5 per 100m² (during the weekday peak hour). A retail area of 4,000m² could therefore potentially generate 500 trips during the peak hour (Based on RMS Technical Direction TDT 2013/04a).
A justification of the assumption that only 20% (12) children attending the childcare centre would travel from outside of the development by car has not been provided. A justification for this relatively low percentage should be reported.
Committed developments in the vicinity have not been reported or detailed. Consideration of any committed developments should be discussed with Council and considered in the Traffic Impact Assessment.

2.2 Traffic distribution

The following trip distribution has been assumed by Bitzios Consulting throughout the TIA:

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

Cardno Comment 2
The report states that these trip distributions have been assumed to match the movement patterns identified in the previous *Herring Road Urban Activation Precinct (UAP) Transport Strategy*. This assumption is considered to be reasonable if the trip distribution in the Transport Strategy has previously been approved by Council. A reference to the relevant section of the *Herring Road Urban Activation Precinct (UAP) Transport Strategy* should be provided so that the assumptions can be validated.

2.3 Overall Traffic assignment

The overall traffic assignment for the existing and proposed development, as used by Bitzios Consulting, is shown in **Figure 2-1** to **Figure 2-4**.

Figure 2-1 AM Peak Existing Traffic Assignment

Source: 66-82 Talavera Road, Macquarie Park – Traffic Impact Assessment, Bitzios Consulting (2015)

ITEM 5 (continued) **ATTACHMENT 11**

Figure 2-2 PM Peak Existing Traffic Assignment

Source: 66-82 Talavera Road, Macquarie Park – Traffic Impact Assessment, Bitzios Consulting (2015)

Figure 2-3 AM Peak Development Traffic Assignment

Source: 66-82 Talavera Road, Macquarie Park – Traffic Impact Assessment, Bitzios Consulting (2015)

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Figure 2-4 PM Peak Development Traffic Assignment

PM Peak

Legend: Development Generated Traffic

Source: 66-82 Talavera Road, Macquarie Park – Traffic Impact Assessment, Bitzios Consulting (2015)

Cardno Comment 3

Figure 2-3 shows that in the AM peak hour the development generates a total of 481 inbound and outbound trips. **Figure 2-4** shows that in the PM peak hour the development generates a total of 374 inbound and outbound trips. These volumes are consistent with the development traffic volumes outlined in **Table 2-1**. The traffic distribution in the figures is shown to be consistent with the traffic distribution outlined in **Section 2.2** of the report.

The Bitzios Consulting report did not provide a traffic assignment stick diagram showing the scenario of existing + development traffic flows. Cardno's calculation of the AM and PM peak hour scenario of existing + development is shown in **Figure 2-5** and **Figure 2-6**. It is usual practice to include existing + development traffic volumes in diagrammatic form to explain the inputs used for future year SIDRA analysis.

Figure 2-5 AM Peak Existing + development Traffic Assignment

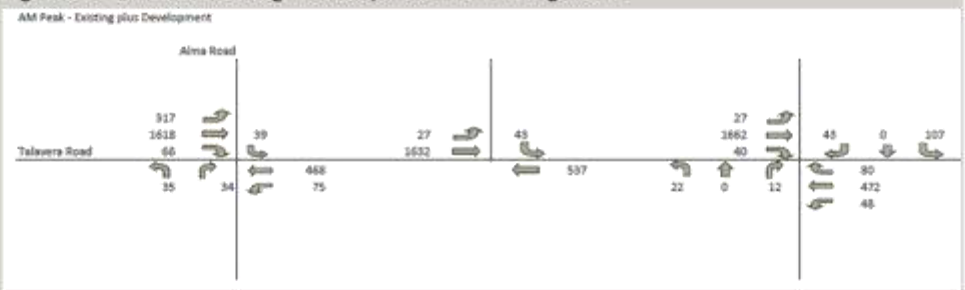
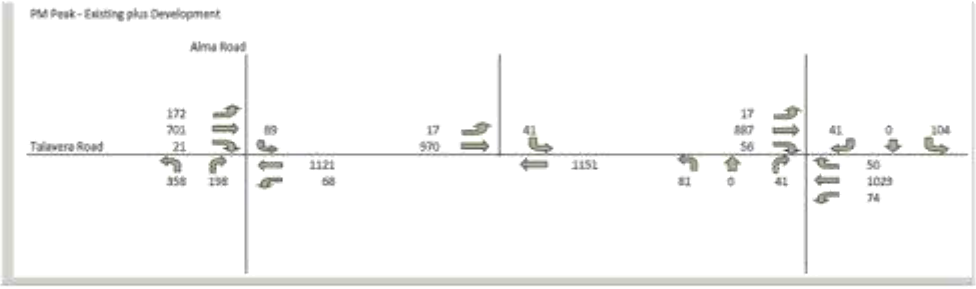


Figure 2-6 PM Peak Existing + development Traffic Assignment



2.4 SIDRA modelling

SIDRA analysis was undertaken by Bitzios Consulting for the following intersections for the existing AM and PM peak hour scenarios:

- Talavera Road / Herring Road / M2 on/off ramp;
- Talavera Road / Alma Road / Shopping Centre West Access;
- Talavera Road / Shopping Centre East Access;
- Talavera Road / Khartoum Road; and
- Talavera Road / Lane Cove Road.

SIDRA analysis was undertaken by Bitzios Consulting for the following proposed intersections for the existing + development AM and PM peak hour scenarios:

- Talavera Road / Alma Road / Shopping Centre West Access;
- Talavera Road / New Access; and
- Talavera Road / Shopping Centre East Access.

Cardno Comment 4

Cardno has reviewed the SIDRA files for the existing scenarios and proposed development scenarios. The SIDRA review included an assessment of the following components:

- Intersection Layout and geometry;
- Volumes;
- Priorities;
- Phasing;
- General SIDRA settings;
- Movement Summary reported results.

The following issues were identified:

- The intersection layout for the Talavera Road approach (eastern leg) of the Talavera Road / Lane Cove Road intersection is missing an approach lane.
- SIDRA 5.1 was used for the Talavera Road / Khartoum Road and Talavera Road / Lane Cove Road intersections, while the other intersections were assessed using the latest SIDRA 6.1 version. Cardno recommends that all intersections are assessed using SIDRA 6.1 as the results can vary significantly depending on which version of the software is used.
- The existing intersections were not assessed for the development traffic scenario in the report. It is recommended the existing intersections be assessed with the development traffic to ensure that development traffic does not contribute significantly to the need for upgrades of these intersections.

ITEM 5 (continued) **ATTACHMENT 11**

> There were discrepancies between Cardno's calculated existing + development scenario volumes for the Talavera Road / Alma Road intersection in both the AM and PM peak hours.

> Cardno discovered a shortfall of approximately 65 vehicles on the Talavera Road (western leg) through movement in the PM peak hour at the proposed Talavera Road / New Access Road intersection in the existing + development scenario.

2.5 Impacts on the external road system

The Traffic Impact assessment undertaken by Bitzios Consulting has only been undertaken for the existing scenario at the on/off ramp (M2)/Herring Road, Alma Road/Talavera Road/Shopping Centre West Access, Shopping Centre East Access/Talavera Road, Khartoum Road/Talavera Road, Lane Cove Road/Talavera Road and for the proposed site accesses.

The three (3) proposed accesses to the development are Alma Road/Talavera Road, Shopping Centre Western Access/Talavera Road, Shopping Centre Eastern Access/Talavera Road. These intersections were assessed by Bitzios Consulting for the existing + development scenario.

Cardno Comment 5
Cardno considers that the external intersections assessed by Bitzios Consulting for the proposed development are not sufficient and suggests that the traffic impact assessment should also assess the on/off ramp (M2)/Herring Road, Khartoum Road/Talavera Road and Lane Cove Road/Talavera Road intersections for the existing + development scenario.

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3 Parking & Access

3.1 Parking Supply and Access

The following parking rates have been referenced in the Bitzios Consulting report:

Residential Parking Requirement Rates (Macquarie Park Corridor Development Control Plan)

- 0.6 per one bedroom dwelling;
- 0.9 per two bedroom dwelling;
- 1.4 per three bedroom dwelling;
- 1 visitor space / 10 dwellings; and
- 1 car share space per 50 proposed parking spaces.

Non-Residential Parking Requirement Rates (Ryde Local Environmental Plan 2014)

- 1 space per 46m² GFA

The proposed development includes 11,000m² of non-residential floor space (excluding the Astra Zeneca building – 9,000m²) and 1,165 apartments (including key worker dwellings). The assumed residential mix is 20% one bedroom, 70% two bedroom, and 10% three bedroom apartments.

In the Bitzios Consulting report 1,173 resident parking spaces, 132 visitor parking spaces and 221 parking spaces for non-residential development are proposed. Thus, a maximum parking provision permissible for the proposed development is 1,526 spaces (excluding car share spaces and service vehicle spaces).

The initial draft Master Plan proposes the car parking spaces over several levels of basement car parking in conjunction with the changed land use type. 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.

The 66-82 Talavera Road Macquarie Park Urban Design report prepared for Holdmark Pty Ltd – Update (13 November 2015) states that the basement would contain loading docks for retail and commercial tenancies and accommodate service vehicles. An extract from this report is shown in **Figure 3-1**.

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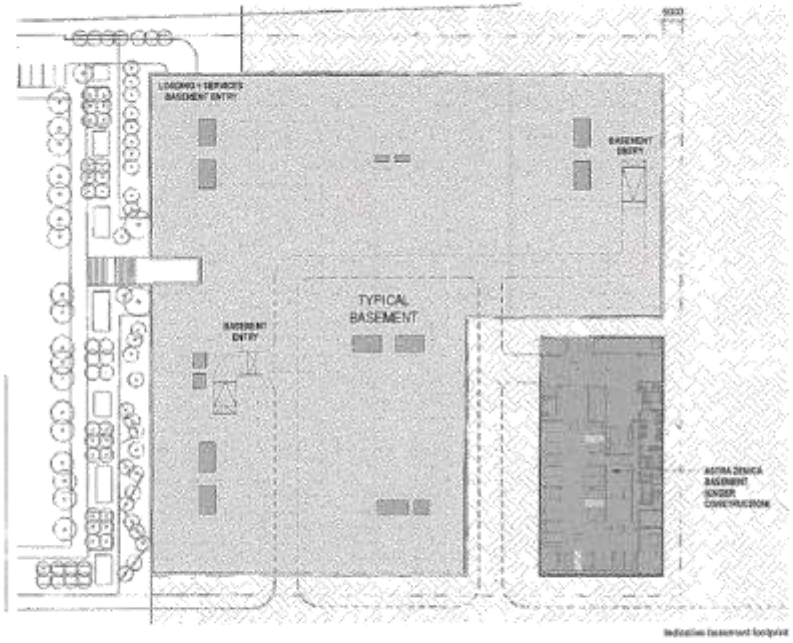
Figure 3-1 Proposed Basement Layout



Cardno Comment 6

The parking rates adopted in the Bitzios Consulting report are consistent with the LEP and DCP parking rates. However, the parking numbers are inconsistent with Cardno's calculation, which is detailed below:

Residential Parking spaces = (1,165 x 20% x 0.6) + (1,165 x 70% x 0.9) + (1,165 x 10% x 1.4) = 1,037

Visitor spaces = (1,165 / 10) = 116

Non-Residential development = (11,000 / 46) = 239

Total = 1,392 parking spaces (Maximum)

There is a discrepancy between the Cardno assessment and Bitzios Consulting calculations for the residential parking spaces, visitor parking spaces, and non-residential development spaces. There is a difference of approximately 134 car parking spaces. This disparity in parking numbers needs to be re-assessed or further details provided in regards to Bitzios Consulting's parking number calculations.

The parking access has been assessed at a high level and would require further assessment in the detailed design stage of the project as stated in the 66-82 Talavera Road Macquarie Park Urban Design report prepared for Holdmark Pty Ltd – Update (13 November 2015). The loading area and service vehicle bays should be designed in accordance with AS 2890 standards and the City of Ryde Council DCP. The basement layout shows that there are connections to the loading and service area, entry to the basement car park and also a connection to the Astra Zeneca basement. The design of accesses, parking, aisles widths, gradients, headroom clearance should designed in accordance with AS 2890 standards in the design stage of the project.

3.2 Traffic Accessibility

The Bitzios Consulting report includes details in regards to the proposed development access. It is proposed that the development be accessed via three (3) access points as shown previously in **Figure 1-2**. The accesses are located as follows:

> Alma Road / Talavera Road intersection (left-in/left-out arrangement);

> Western Site Access / Talavera Road intersection (left-in/left-out arrangement); and

ITEM 5 (continued) **ATTACHMENT 11**

> Eastern Site Access / Talavera Road intersection (left-in/left-out arrangement, proposed to re-align with shopping centre access to form a four-legged signalised intersection).

These three access points would replace the single access off Alma Road and the two access points off Talavera Road that currently exist.

Cardno Comment 7

It is considered that the proposed three (3) access points for the development would be sufficient considering that these intersections have been shown to operate at an acceptable level of service. The provision of a left-in/left-out arrangement for the proposed intersections would also help to improve traffic efficiency and road safety through reduced turning movement conflicts.

The proposed re-alignment of the Eastern Site Access / Talavera Road intersection with the shopping centre access to form a four-legged signalised intersection is considered to be acceptable as the intersection operates satisfactorily as a signaled four-legged intersection in the AM and PM peak hours with the development traffic. The queue lengths are less than 50m to the east and west along Talavera Road from this intersection. The adjacent intersections are Alma Road / Talavera Road to the west and Talavera Road / Khartoum Road intersection to the east, which are both over 100m away from the subject intersection. Therefore, queues from the Eastern Access / Talavera Road / Shopping Centre Access intersection do not queue to the adjacent intersections. It is preferable to replace staggered T-intersections with four way signalised intersections in urban environments.

3.3 Pedestrian and cyclist Accessibility

The report undertaken by Bitzios Consulting provides the following statement:

"The residential development is within walking distance to major shopping, education, recreational opportunities and mass public transport"

Cardno Comments 8

There is minimal reporting on the pedestrian and cyclist accessibility in regards to access to Macquarie Shopping Centre, Macquarie University and Macquarie University Train Station. Cardno's assessment of pedestrian accessibility is detailed below.

Pedestrian Accessibility

Macquarie Shopping Centre (Yellow): Is located approximately 40m away from the development, which is less than a minute walking distance. Cardno considers that there is good pedestrian accessibility to Macquarie Shopping Centre. The shopping centre can be accessed via the footpaths which are provided on both sides of Talavera road and via the two (2) signalised pedestrian crossings at Talavera Road.

Macquarie University (Red): Is located 380m away from the development, which is approximately 5 minutes walking distance. Cardno considers that there is good pedestrian accessibility to Macquarie University. There are footpaths provided on both sides along Talavera Road and Herring Road. There are signalised pedestrian crossings provided at the Talavera Road/Herring Road intersection.

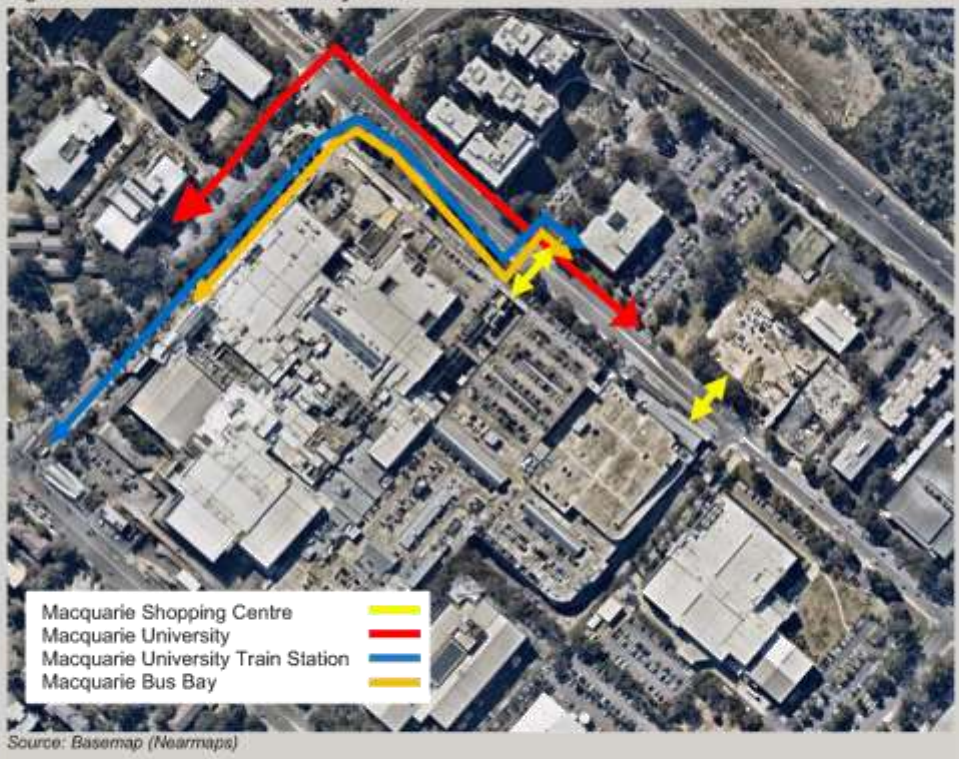
Macquarie University Train Station (Blue): Is located 560m away from the development, which is approximately 7 minutes walking distance. Cardno considers that there is good pedestrian accessibility to the Macquarie University Train Station. There are footpaths provided on both sides along Talavera Road and Herring Road. There are signalised pedestrian crossings provided across Talavera Road.

Macquarie Bus Bay (Orange): Is located 400m away from the development, which is approximately 5 minutes walking distance. There are footpaths provided on both sides along Talavera Road and Herring Road. There are signalised pedestrian crossings provided across Talavera Road.

Figure 3-2 shows the above pedestrian accessibility routes.

ITEM 5 (continued) **ATTACHMENT 11**

Figure 3-2 Pedestrian Accessibility Routes



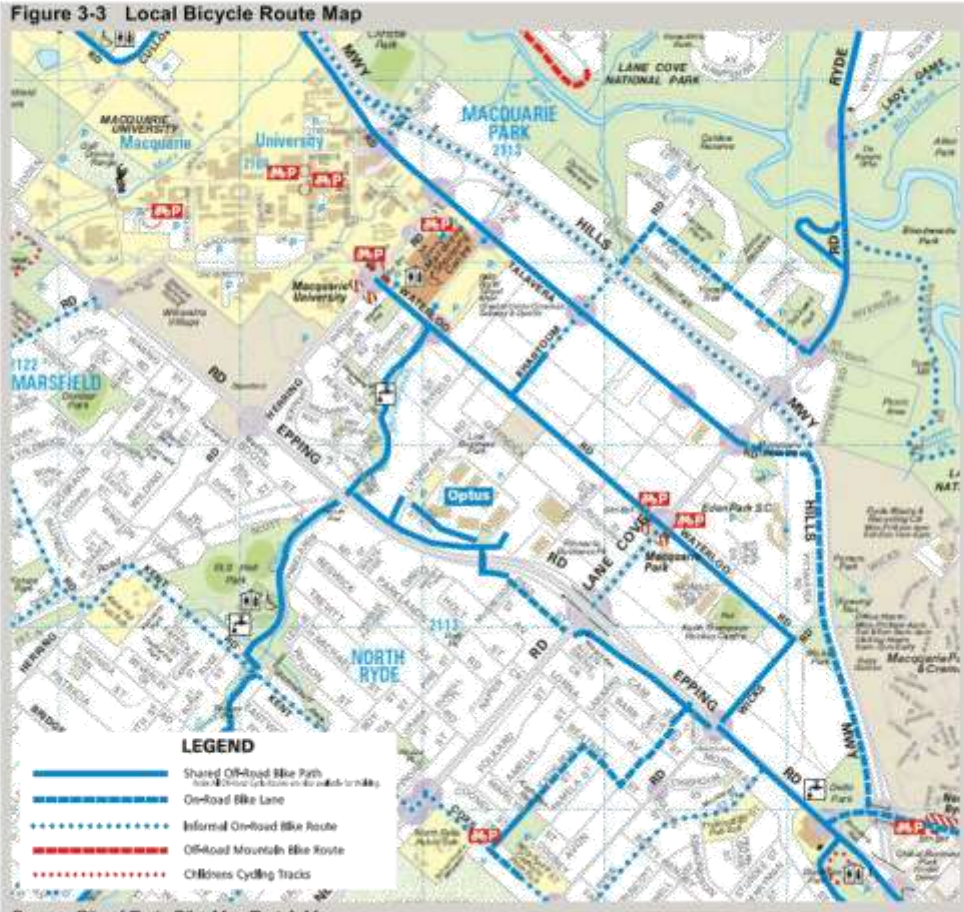
Source: Basemap (Nearmaps)

Cyclist Accessibility

The City of Ryde Bike Map Part A – Map shows that there is an off-road shared path bike route that runs along Talavera Road. This route is located directly in front of the proposed development. The route connects to Vimiera Road to the north and Hills Motorway to the south. Therefore, it is considered that adequate cyclist accessibility is provided for the proposed development. **Figure 3-3** is taken from the City of Ryde Bike Map Part A.

In summary, Cardno concurs with the Bitzios Consulting assessment that the proposed development benefits from excellent walking and cycling connectivity to surround public transport services and local amenities. However, this assertion should be further explained and justified in the traffic impact assessment.

Figure 3-3 Local Bicycle Route Map



Source: City of Ryde Bike Map Part A-Map.

It is stated in the Bitzios Consulting report that *"Under the Macquarie Park DCP, a Framework Travel Plan would be required for any future development which exceeds 10,000m²."* This should be undertaken as part of the development application to consider pedestrian and cyclist accessibility and potential mode share in further detail.

3.4 Public transport Accessibility

The report undertaken by Bitzios Consulting provides the following statement:

"The residential development is within walking distance to major shopping, education, recreational opportunities and mass public transport"

Cardno Comments 9
There is minimal reporting on public transport accessibility for the proposed development. Cardno has undertaken an assessment of public transport as detailed below. Bus Accessibility There are bus stops located at the Macquarie Bus Bay, which is located approximately 400m from the proposed development. There is also a bus stop located on Talavera Road, which is located

ITEM 5 (continued) **ATTACHMENT 11**

approximately 300m from the proposed development. The locations of these bus stops are shown in **Figure 3-4**. The bus services that operate at these bus stops are as follows:

- 197
- 288
- 290
- 292
- 295
- 459
- 506
- 507
- 518
- 544
- 545
- M54
- 550
- 562
- 565
- 572
- 575
- 630

As shown above, there is a significant number of bus services that operate at these stops. These services provide excellent connections throughout the Sydney region. Bus connections are provided to Parramatta, Sydney, Woolloomooloo, Auburn, Epping, North Epping, Marsfield, Mona Vale, Belrose, Gordon, Chatswood, Turramurra, Blacktown, and Hornsby.

Train Accessibility

The Macquarie University train station is located approximately 560m from the proposed development. The train station location is shown in **Figure 3-4**. There are two main lines that service this station, which are:

- T1 North Shore Line
- T1 Northern Line

ITEM 5 (continued) **ATTACHMENT 11**

Figure 3-4 Bus Stop and Train Station Locations

It is stated in the Bitzios Consulting report that *"Under the Macquarie Park DCP, a Framework Travel Plan would be required for any future development which exceeds 10,000m²."* This should consider the public transport services and potential mode share in further detail.

ITEM 5 (continued) **ATTACHMENT 11**

4 Conclusions / Recommendations

Cardno has reviewed the *66 – 82 Talavera Road, Macquarie Park Traffic Impact Assessment* undertaken by Bitzios Consulting (2015) and the *Urban Design report prepared for Holdmark Pty Ltd – Update* (13 November 2015). The findings of the report are summarised in **Table 4-1** below.

Table 4-1 Summary of the Traffic Impact Assessment Peer Review

Content	Section	Findings	Recommendation / Comments
Traffic Generation	2.1	- The Astra Zeneca traffic generation has not been considered in this study. - There was little justification for disregarding the traffic generation associated with the 4000m² retail / restaurant land use. - There was no justification or information provided in regard to the assumption that only 20% of children will come from outside the development by car. - No committed development traffic generation has been considered.	- The traffic generating potential of these aspects of the development or neighbouring developments should be included in the traffic impact assessment or robust justification provided for not including them.
Traffic Distribution	2.2	Traffic distribution is based on the Herring Road Urban Activation Precinct (UAP) Transport Strategy.	This is a reasonable assumption if these trip distributions have previously been approved with the UAP Transport Strategy.
Overall Traffic Assignment	2.3	The Traffic Impact Assessment report did not provide traffic assignment stick diagram for the existing + development scenario. The development traffic assignment is consistent with the proposed development traffic generation.	Cardno has provided the existing + development scenario traffic assignment stick diagram for the AM and PM peak hours. This is generally in line with the inputs used in the Bitzios Consulting SIDRA files. Discrepancies are outlined in **Section 2.4**.
SIDRA Modelling	2.4	SIDRA Intersection assessment was undertaken for the following: <u>Existing</u> -Talavera Road / Herring Road / M2 on/off ramp; -Talavera Road / Alma Road / Shopping Centre West Access; - Talavera Road / Shopping Centre East Access;	The following issues need to be rectified: - Intersection Layout of the Talavera Road approach (eastern leg) of the Talavera Road / Lane Cove Road intersection is missing an approach lane. - SIDRA 5.1 was used for the Talavera Road / Khartoum Road and Talavera Road / Lane Cove Road while the other intersections were assessed using the latest

ITEM 5 (continued) **ATTACHMENT 11**

Content	Section	Findings	Recommendation / Comments
		- Talavera Road / Khartoum Road; and - Talavera Road / Lane Cove Road. Existing with development - Talavera Road / Alma Road / Shopping Centre West Access; - Talavera Road / New Access; and - Talavera Road / Shopping Centre East Access.	SIDRA 6.1 version. Recommended that the intersections assessed using SIDRA 5.1 be assessed using SIDRA 6.1. - The existing intersections were not assessed for the development traffic scenario in the report. It is recommended the existing intersections be assessed with the development traffic. - There were discrepancies between the Cardno's calculated existing + development scenario volumes for the Talavera Road / Alma Road intersection for both the AM and PM peak hour volumes. - There was a shortfall of approximately 65 vehicles on the Talavera Road (western leg) through movement in the PM peak hour at the proposed Talavera Road / New Access Road intersection for the existing + development traffic scenario
Impacts On The External Road System	2.5	The following intersections were assessed as part of the TIA report for the existing scenario: - On/off ramp (M2)/Herring Road - Alma Road/Talavera Road/Shopping Centre West Access - Shopping Centre East Access/Talavera Road - Khartoum Road/Talavera Road - Lane Cove Road/Talavera Road	These intersections are the main intersections in the vicinity of the site and cover a sufficient area for the traffic assessment. SIDRA intersection assessment was not undertaken for the existing + development scenario at the following intersections: - On/off ramp (M2)/Herring Road - Khartoum Road/Talavera Road - Lane Cove Road/Talavera Road Further assessment is required at these intersections to quantify the potential traffic impacts of the development.
Parking Supply and Access	3.1	The parking rates from the Macquarie Park Corridor DCP and Ryde Local Environmental Plan were utilised. The car parking numbers calculated are 1,173 residential parking spaces, 132 visitor spaces, and 221 parking spaces for non-residential development.	- The parking rates are considered to be correct. However, Cardno has calculated different quantum of car parking spaces. Cardno has calculated 1,037 spaces for residential, 116 spaces for visitors and 239 for non-residential development. This is an inconsistency of 134 parking

ITEM 5 (continued) **ATTACHMENT 11**

Content	Section	Findings	Recommendation / Comments
		This is a total of 1,526 parking spaces. The Urban Design report provides a concept design layout of the basement car park. It shows access for car parking, service & loading vehicles and a connection to the Astra Zeneca.	spaces. It is recommended that Bitzios Consulting provide further details for their calculation or re-do their parking calculations. - The high level review of the access to the car park shows satisfactory connectivity. However, further assessment is required with the detailed design of the car park.
Traffic Accessibility	3.2	There are three access points that have been proposed as left-in/left-out. The eastern site access/Talavera Road intersection is proposed to be converted to a four legged signalised intersection.	Traffic accessibility from the three (3) proposed accesses and a high level assessment of the internal road network for the basement shows sufficient traffic accessibility. The internal traffic accessibility within the development needs to be further assessed as part of the detailed design stage.
Pedestrian and Cyclist Accessibility	3.3	There is minimal reporting of the pedestrian and cyclist accessibility in the TIA report.	Cardno's assessment of the pedestrian and cyclist accessibility shows that there is good pedestrian connections to Macquarie Shopping Centre, Macquarie University Train Station, Macquarie Bus Bay, and Macquarie University. There is also excellent cyclist accessibility to the development with a cycle route located on Talavera Road. A further framework Travel Plan is required as part of the proposed development.
Public Transport Accessibility	3.4	There is minimal reporting of the public transport accessibility in the TIA report.	Cardno's assessment of the public transport accessibility shows that there are excellent bus service connections located within 400m of the development. The Macquarie University Train Station, which is 560m away, is also easily accessible from the proposed development. A further framework Travel Plan is required as part of the proposed development.