STUDIO RHIZOME

Architecture | Design | Urbanism

New Delhi | Sydney

SEPP 65
DESIGN VERIFICATION STATEMENT

Proposed Residential Flat Buildings for Affordable Housing
61-65 Lucas Avenue, 36 McKay Avenue & 31 Harvey Avenue
Moorebank NSW 2170

Project 16/007 | October 2020 | Rev D

STUDIO
RHIZOME

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Contents

1 QUALIFICATION AND DESIGN VERIFICATION

My full name is Noura Thaha. I hold the following qualifications:

- Bachelor of Architecture, University of Kerela (2008);

I have 11 years practical experience working in India, the USA and Australia. I have experience in the design of residential flat buildings in NSW. I am a Registered Architect in NSW (Registration No. 10167).

A copy of my Curriculum Vitae is provided within this design verification statement (**'Statement'**).

It is my professional opinion that the proposed development complies with all nine of the design quality principles under Schedule 1 of SEPP 65 and the Apartment Design Guide (ADG). The Apartment Design Guide provides objectives, design criteria and design guidance for the siting, design and amenity of apartment development, to support the principles set out in SEPP 65. Where the proposal varies from the objectives, criteria or guidance, justification is provided in this report.

Noura Thaha

5/10/2020

DATE

2 SEPP 65 ASSESSMENT

2.1 Introduction

Studio Rhizome has prepared the architectural drawings under the advice and direction of a registered Architect. The development meets the intent of the design quality principles as set out in Schedule 1 of State Environmental Planning Policy No.65 - Design Quality of Residential Apartment Development (**'SEPP 65'**).

This assessment of the proposal is made in accordance with the Design Quality Principles as set out in Schedule 1 of SEPP 65, and pages 12 and 13 of the *Apartment Design Guide – Tools for improving the design of residential apartment development* (**'ADG'**), which has been published to support the objectives and design quality principles of SEPP 65.

This assessment seeks to take into account these guiding principles in determining the quality of the design proposed.

2.2 References

Reference has also been made in preparing this Statement to the SEPP 65 and the ADG, prepared by the NSW Department of Planning and Environment (**'DP&E**").

2.3 Elevations and Photomontages

To satisfy the requirements of SEPP 65 a photorealistic montage has been prepared to demonstrate the streetscape character of the development. The photomontage(s) are/is provided below. Streetscape elevations are also provided.

Figure 1: Photomontage, Corner of Lucas and McKay Avenues

Figure 2: Photomontage, Corner of Lucas and Harvey Avenues

Figure 3: View from McKay Avenue looking north east to site

Figure 4: Streetscape Elevation Lucas Avenue

Figure 5: Streetscape Elevation McKay Avenue

Figure 6: Streetscape elevation Harvey Avenue

2.4 Design Quality Principles

Principle 1 – Context and neighbourhood character

Good design responds and contributes to its context. Context is the key natural and built features of an area, their relationship and the character they create when combined. It also includes social, economic, health and environmental conditions.

Responding to context involves identifying the desirable elements of an area's existing or future character. Well designed buildings respond to and enhance the qualities and identity of the area including the adjacent sites, streetscape and neighbourhood.

Consideration of local context is important for all sites, including sites in established areas, those undergoing change or identified for change.

Comment

The subject site is in an area with a low-density character but which is undergoing transition by virtue of the LEP zoning and standards for the area. Therefore, the future desired character largely governs the contextual fit of the proposed development with its surrounds.

The site is in a strategically important location in a high density residential zone adjacent to a local commercial centre, earmarked for higher densities. The site is close to existing services, retail, education and other institutions generally. The site is north of institutional uses including a church and school. It is north east of the Moorebank Shopping Village it is north west of the local library. A recent planning proposal has sought to downzone some of the R4 lands in the precinct. The subject site remains high density residential.

Due to the site and surrounding zoning and LEP standards the area is in transition from a relatively low density setting to a high density setting. It is noted there are a few high density residential developments in the area consistent with the current LEP with a number of DAs also consistent with the LEP, pointing to the transition from lower density to higher density.

Given the site is earmarked for high density residential development, it is adjacent to the local centre and it has good transport links, the proposed development of two five storey residential flat buildings with an affordable housing component is generally consistent with the strategic and statutory planning context of the area.

The proposed development is consistent with the desired future character of the area in terms of its land use, built form, bulk and scale, density and aesthetics. The proposed development is also compatible with the existing character of the area by providing appropriate setbacks, a well-articulated built form, and high quality landscape to protect the amenity of surrounding sites, even in their present low density form. It is noted the two most prominent residential flat buildings in the area are the six storey development at 80-82 Lucas Avenue, directly across the street from the subject site and 6-98 Nuwarra Road, which comprises two six storey buildings. This together with several recently consented residential flat buildings in immediate proximity to the subject site has set the direction for high density development in the area.

The site is relatively unique with three street frontages on a prominent location adjacent to the local centre. The Lucas Avenue frontage is significant and the site is relatively narrow in the east-west direction. The site responds to each street frontage by aligning the street with street setbacks consistent with the DCP. Bulk form is broken up into two separate buildings with a 12 m separation, breaking down bulk and scale along Lucas Avenue. A landscaped setback at each frontage is proposed. Direct Street address to Lucas Avenue is proposed, the longest frontage and busiest street fronting the site. Additional entries to individual units from terraces are proposed at ground level were appropriate to enhance the sense of address.

The bulk and scale of built form is greatest at the southern end of the site where it interfaces with the Local Centre Zone. Bulk and scale is reduced at the northern end of the site with a reasonable building width and a stepped façade with generous landscaped setbacks to the street. This responds to the slightly lower density R3 zone directly to the north across Harvey Avenue.

Deep soil landscape is concentrated in the western setback, the site's only shared boundary. The deep soil zone is well landscaped and functions as communal open space. A setback of 6-9 m is proposed. This creates separation to the adjoining residential sites. Each façade is articulated and modulated mitigating bulk and scale.

Proposed materials and finishes provide a contemporary aesthetic with a reinterpretation of traditional materials. This creates a compatibility with the existing materiality of built form but does so within an eye to the future desired character of the area.

The proposed development seeks the removal of a number of existing trees although existing trees in near site boundaries and trees within the public domain are retained. A tree replacement regime is proposed with a number of significant native trees proposed to enhance the local tree canopy. This responds to the tree canopy achieved within the church and school grounds to the south and provides a net increase in native landscape when compared to the existing site. Overall, the proposed development achieves two buildings in a garden setting and fits within the landscape context of the site. Where front boundary fencing is proposed at the northern part of the site the solid portion of the fence is limited and an open palisade form is proposed to maintain sightlines to and from the public domain and ensure that landscape within the setback contributes fully to the landscape character of the area.

Thus, the proposed development fits within the existing and future context of the site from both a strategic context and a built form context. While the proposed development is greater in bulk and scale to its neighbours, it responds at each interface to ensure compatibility is achieved.

The proposed development is consistent with the SEPP 65 principle.

Principle 2 – Built form and scale

Good design achieves a scale, bulk and height appropriate to the existing or desired future character of the street and surrounding buildings.

Good design also achieves an appropriate built form for a site and the building's purpose in terms of building alignments, proportions, building type, articulation and the manipulation of building elements.

Appropriate built form defines the public domain, contributes to the character of streetscapes and parks, including their views and vistas, and provides internal amenity and outlook.

Comment

As stated above, the local area is in transition from a relatively low density setting to a high density setting. The proposed development has a height, bulk and scale consistent with the desired future character of the area.

The proposed development breaks built form into two separate buildings with a clear visual break between the two built forms. The break is provided along the site's longest frontage with a landscaped open space between the two buildings. Each building aligns to the street. Each building is five storeys with a parapet roof line.

The façade is composed of a series of unified vertical and horizontal elements. Balconies and windows face each street and are integral to the articulation and overall composition of the façade. Horizontal cantilevered elements near the roof line add visual interest. The fifth floor of both buildings is distinguished from the levels below through variations in built form, materials and setbacks. This creates a clear base and top to the building. Each building maintains generous setbacks, placing the built form into a garden setting.

The proposed built form appropriately responds to its three prominent street frontages. Each building entry addresses Lucas Avenue, the most prominent frontage. The two Lucas Avenue frontages have recessive elements at the centre of the building with the street corners having increased visual emphasis. The façade design helps to signal the building entries. At ground level, courtyard project into the front setback. Proposed courtyard walls are articulated with visually permeable elements at the upper levels of the courtyard walls. Courtyard entries to the street are provided where appropriate. Landscape is integrated with the built form having a rhythmic pattern of tree planting which complements the geometric patterns created by the façade design.

Overall, the proposed built form is based on a modular, articulated façade design. Each façade is well setback from the boundary and a strong unified grid pattern is used to reduce visual clutter while still achieving a high degree of articulation.

The proposal will contribute towards increasing visual amenity and interest to the locality, and assist in setting the future quality of the area.

The proposed development is consistent with the SEPP 65 principle.

Principle 3 – Density

> *Good design achieves a high level of amenity for residents and each apartment, resulting in a density appropriate to the site and its context.*
>
> *Appropriate densities are consistent with the area's existing or projected population. Appropriate densities can be sustained by existing or proposed infrastructure, public transport, access to jobs, community facilities and the environment.*

Comment

The planning controls and plans which relate to the site are the Liverpool LEP which have zoned the site for high density residential development, a zone which is formed around the local centre zone

defined by the Moorebank Shopping Centre, creating a relationship between housing density and access to local goods, services and employment.

The proposed development meets the NSW State Government's directions and principles by providing in-fill housing in Moorebank in close proximity to public transport, goods, infrastructure and services.

Liverpool has also taken a leading role in the aerotropolis being formed around the new western Sydney airport. This major infrastructure is catalysing growth and change in the LGA and the subject site is well situated in regard to the regional road and transport network to benefit from this major investment. The site is therefore suitable for high density housing.

Housing affordability is also a key consideration in the local government area. The proposed development provides affordable housing and a density consistent with the High Density Residential zoning which contributes to the local housing supply. The proposed GFA of the development is consistent with a high density residential zoning. The proposed built form achieves a reasonable building depth and size which ensures all apartments have an appropriate unit depth, size and access to natural light and air. The proposed development includes a mix of studio, one bedroom, two bedroom and three bedroom dwellings, achieving hosing diversity and choice. A suitable amount of car parking is proposed. The proposed development provides appropriate private and landscaped common open space to ensure future residents have access to high quality open spaces.

The proposed density is thus appropriate to the site and the proposed development meets the SEPP 65 principle.

Principle 4 – Sustainability

> *Good design combines positive environmental, social and economic outcomes.*
>
> *Good sustainable design includes use of natural cross ventilation and sunlight for the amenity and liveability of residents and passive thermal design for ventilation, heating and cooling reducing reliance on technology and operation costs. Other elements include recycling and reuse of materials and waste, use of sustainable materials and deep soil zones for groundwater recharge and vegetation.*

Comment

A BASIX Certificate forms part of the application and the proposed development achieves a BASIX Certification. Efficient fixtures, taps and equipment are proposed to minimise energy and water consumption. Proposed landscape is predominantly native and low water demand species.

Energy efficiency is also achieved through the proposed building design. Although the site dimensions and particular orientation of the site in relation to true north make achieving a high proportion of dwellings with a northern aspect challenging, the design has maximised daylighting where possible. Single aspect south facing units are limited and the development is consistent with passive solar design principles. At least 70% of units receive 2 hours direct solar access in mid-winter. The design of the façade employs vertical blade wall elements, screens and recessed balconies which will assist in blocking hot summer sun to the western façade.

In addition, minimum 60% of units are cross ventilated via a dual aspect. Other units which are not dual aspect are designed to place habitable areas against the glassline and place non-habitable areas at

the deep parts of units. Beyond the 60% of units that are dual aspect, several units are cross-ventilated via a plenum system. The plenum is designed in accordance with advice from Windtech and details provided which demonstrate the enhanced ventilation system is viable.

The site has a good level of public transport accessibility and is adjacent to the Moorebank local centre zone and Moorebank Shopping Centre making the eco-footprint of the development is lower than the 'business as usual' scenario because residents are provided with a viable alternative to private car use to meet the day-to-day needs. This alternative is supported by providing secure bicycle parking for the site.

Water efficiency is also augmented through the use of a rainwater tank to irrigate common landscape. OSD is proposed on the site to mitigate potential stormwater impacts and manage the speed and flow of stormwater into the catchment. It is also noted that the proposed landscape species are generally low water demand.

The waste management plan also sets targets for the minimisation of waste by reuse and recycling of materials where possible.

All in all, the proposed development employs design solutions and appropriate technologies to achieve a more sustainable built form that meets the SEPP 65 principle.

Principle 5 – Landscape

> *Good design recognises that together landscape and buildings operate as an integrated and sustainable system, resulting in attractive developments with good amenity. A positive image and contextual fit of well designed developments is achieved by contributing to the landscape character of the streetscape and neighbourhood.*
>
> *Good landscape design enhances the development's environmental performance by retaining positive natural features which contribute to the local context, co-ordinating water and soil management, solar access, micro-climate, tree canopy, habitat values and preserving green networks.*
>
> *Good landscape design optimises useability, privacy and opportunities for social interaction, equitable access, respect for neighbours' amenity and provides for practical establishment and long term management.*

Comment

A landscape plan has been prepared by a qualified landscape architect. The design seeks to create passive recreation spaces which are resource and energy efficient and low maintenance with good solar access. The communal open space is extended along the western setback giving it a northern aspect. The common open space is also extended between buildings. Along the western side boundary of the site is robust landscape planting. Three Grey Box Eucalypts and a Red Gum are proposed along the western boundary concentrated in the centre of the site along the side boundary. These Cumberland Woodland Species are complemented by a number of proposed Water Gums. Exotics are placed as other feature trees complementing the major native plantings.

Where planting is proposed above the basement slab planter soil depths allow for growth of landscape.

The common space areas are sufficient to provide opportunities for variety of uses and users. Common open space landscape design is a combination of soft landscape and hardscape to make the spaces useful. Amenities such as seating and barbecues are proposed to add to the amenity and usability of the space. The barbecue area is situated at the centre of the open space, creating a landscaped space for residents to come together. A balanced planting of low water demand native and exotic species increased visual amenity within the development, and encourages use of common open spaces.

With the site having three prominent street frontages, streetscape contributing landscape is key to the overall landscape strategy. Existing trees near the site boundary are proposed to be retained and protected. Proposed landscape within the street setbacks is robust with a regular pattern of significant native trees. Importantly lost Grey Boxes on the site are replaced with new trees of the same species. A combination of Grey Boxes and Red Gums are proposed at the corners of the site. A prominent Red Gum is placed within the streetscape adjacent to the proposed building break creating a visual connection between the native tree planting at the street front with the trees within the western setback common open space. Regularly spaced Water Gums are placed within the street setback of Lucas Avenue creating a landscape rhythm between the Grey Box and Red Gum Feature trees. Lower shrubs and ground covers within a diverse palette further add to the proposed landscape character. New tree planting is also placed so as to minimise impacts on existing street trees.

The removal of a number of existing trees is proposed to facilitate redevelopment of the site but a robust replanting strategy results in an enhanced landscape character overall to contribute to the urban tree canopy and soften built form.

The proposed development meets the SEPP 65 principle.

Principle 6 – Amenity

> *Good design positively influences internal and external amenity for residents and neighbours. Achieving good amenity contributes to positive living environments and resident well being.*
>
> *Good amenity combines appropriate room dimensions and shapes, access to sunlight, natural ventilation, outlook, visual and acoustic privacy, storage, indoor and outdoor space, efficient layouts and service areas and ease of access for all age groups and degrees of mobility.*

Comment

The form and orientation of the proposed development aims to achieve a very high degree of amenity while minimising amenity impacts on neighbouring sites. The site does have a major constraint in terms of maximising natural daylighting due to the longest street frontage (Lucas Avenue) is oriented such that no apartment which faces its balconies and living rooms towards the Lucas Avenue can achieve the desired 2 hours of direct solar access in mid-winter. These units do however receive almost 2 hours of direct sunlight.

With that constraint the proposed development has broken up built form to achieve 70% of apartments receiving direct solar access to living rooms and balconies for at least 2 hours in mid-winter. Unit depths are generally shallower than 8 m, facilitating natural daylighting and ventilation and 60% of apartments are naturally ventilated via a dual aspect.

Privacy is protected by providing sufficient setbacks. For each tower setbacks up to 4 storeys are larger than the 6 m sought in the ADG. For Tower 1, the western side setback up to four storeys is a minimum of 7.8 m for small area of a balcony and generally ranges from 8 m to 10.2 m. Above four storeys the western setback is at least 9 m. To the northern boundary, Tower 1 has a minimum setback of 8.5 m up to four storeys, 2.5 m more than sought in the ADG. At the fifth storey the setback is at least 9 m. For Tower 2, the side (western) setback proposed is at least 7 m for the first 4 storeys and 9 m for the fifth storey, complying with ADG criteria. Along the western façade of Tower 2, balconies are recessed into the façade to provide an enhanced sense of privacy. Only the corner balcony facing north west has an open form. The southern portion of the western edge of this balcony is solid, directing views out towards the street. This ensures the privacy of the neighbouring dwelling (and future high density development) at 29 Harvey Avenue is protected.

Tower 2's south western corner is cut out in the proposal. This is to facilitate more sunlight into the common open spaces and to Tower 1 towards the south. There is therefore the potential for cross views between units at the corner. To mitigate potential impacts, windows are carefully placed to ensure direct sightlines do not arise. The (secondary) kitchen window of the west facing unit is fixed with a privacy screen to further protect privacy.

Proposed Tower 1 and Tower 2 are separated from one another by 12 m. At the fifth storey, windows and balconies between towers are at least 18 m apart. The floor plans and layouts have been desired to ensure the privacy of each of the proposed units on fifth storey is protected. This is achieved through the orientation of balconies and the placement of windows.

Waste disposal is convenient with a garbage bin and recycle bin located in a cabinet at each level with easy access by each apartment.

Each unit is designed to be compact, particularly given affordable housing is proposed. Regardless, each unit achieves the ADG criteria regarding:

- Room sizes
- Room dimensions
- Wardrobe sizes
- Glazing areas
- Room depth
- Balcony sizes
- Balcony dimensions

Beyond the standard elements which ensure a baseline of good residential amenity as set out in the ADG, the proposed development includes a number of design features which provide an exemplary level of amenity (taking on board key ADG guidance) which includes:

- Keeping the maximum number of apartments per corridor to 8
- Providing natural light and air to each lobby

- Minimal travel distances from lift to dwelling.

- Use of architectural roof features to add visual interest to built form and create a good quality outcome with accessible, green roof gardens.

- Landscaped setbacks to enhance the character of the street with robust urban tree canopy.

The proposed development achieves housing diversity and choice by including studio, one, two and three bedroom dwellings with varying unit sizes. Proposed balconies have sufficient size and proportions to be usable and accommodate furniture.

The proposed communal open space has a high-quality landscape character with several indigenous native trees and a combination of native and exotic landscape to creating visual interest and enhance amenity. The common open spaces are designed for passive recreation. Seating is proposed around the space and barbecue facilities are proposed at the central portion of the space. The total area of common open space is 930sqm at 25% of site area.

Access to and though the proposed development has been designed to ensure that all people (regardless of physical ability) are able to traverse the site. All building entrances have at grade access and each level including basement and roof levels are accessible by both lifts and stair. Adaptable units are proposed and 20% of apartments are capable of achieving the silver living standard. Adaptable units have been designed to minimise the amount of alteration required to convert from pre to post-adaptation.

The proposed development is consistent with the SEPP 65 principle.

Principle 7 – Safety

> *Good design optimises safety and security within the development and the public domain. It provides for quality public and private spaces that are clearly defined and fit for the intended purpose. Opportunities to maximise passive surveillance of public and communal areas promote safety.*
>
> *A positive relationship between public and private spaces is achieved through clearly defined secure access points and well lit and visible areas that are easily maintained and appropriate to the location and purpose.*

Comment

The proposed development ensures casual surveillance of public domain while maintaining internal privacy, avoiding dark and non-visual areas, promoting activity on the street, and providing a clear, safe access point. Furthermore, adequate lighting appropriate to its location and activities will be provided. The entry to each building directly faces the street and direct sightlines are maintained from the street to the lobby entry. The common open space between buildings is secured by a fence and locked gate with controlled access only allowed to residents of the development.

The ground level façade design is such that it does not allow climbing and opportunities for trespassing are minimised.

Proposed materials and finishes are of a high quality, avoiding expanses of paint and render near the ground level. This will assist in deterring vandalism and the like.

Territorial reinforcement will be focused on the common open space through shared ownership which is encouraged by minimising the number of units off a single corridor and creating high quality common open space. It is proposed to have a site manager as part of any strata agreement.

The proposed development is consistent with the SEPP 65 principle.

Principle 8 – Housing diversity and social interaction

> *Good design achieves a mix of apartment sizes, providing housing choice for different demographics, living needs and household budgets.*
>
> *Well designed apartment developments respond to social context by providing housing and facilities to suit the existing and future social mix.*
>
> *Good design involves practical and flexible features, including different types of communal spaces for a broad range of people and providing opportunities for social interaction among residents.*

Comment

The proposal provides for an appropriate mix of unit sizes each with internal and external amenity that increases housing stock and choice within a local centre area. The required number of adaptable units is achieved as well as silver living units under the proposal and accessible car parking is provided. A mix of studio, one, two and three bedroom apartments is proposed with unit sizes in accordance with the affordable housing SEPP.

The unit layouts are generally open plan to provide a degree of flexibility in future use. The proposed development in offering predominantly one and two bedroom apartments responds to the demographic trends which demonstrate that household sizes continue to reduce in size in part because people tend to remain single or without children longer on the one hand and an aging population of empty nesters is growing on the other hand. The unit types proposed also cater to key worker housing. In providing smaller housing, the proposed development adds to the housing supply in an appropriate way. At the same time, larger 3 bedroom units are provided although in a smaller proportion to the other unit types proposed.

A positive social impact arises also from the level of accessibility of the site. Access to and though the proposed development has been designed to ensure that all people (regardless of physical ability) are able to traverse the site.

The communal open space will encourage a variety of passive recreation in a quality landscaped environment, encouraging use and social interaction. The rooftop garden benefits form views and landscape.

The proposed development achieves the SEPP 65 principle.

Principle 9 – Aesthetics

Good design achieves a built form that has good proportions and a balanced composition of elements, reflecting the internal layout and structure. Good design uses a variety of materials, colours and textures.

The visual appearance of a well designed apartment development responds to the existing or future local context, particularly desirable elements and repetitions of the streetscape.

Comment

The key objective of the building aesthetic is to break down the length of facades through a modular design while at the same time creating a flow between each façade element. A balanced composition of geometric forms with clear vertical and horizontal elements work together with attention seeking elements in the composition such as blade walls, cantilevered horizontal slabs and distinct balcony forms, flow into areas of finer grain patterns of vertical and horizontal lines largely created through window placement. The similar patterns repeat over different parts of the façade, creating a dialogue between the different modules. The modules, although distinct, flow together with variations on a similar pattern, weaving each element together in order to move the eye over each composed façade.

Overall, a modern aesthetic is proposed, reinterpreting traditional materials. A neutral colour palette with tonal differences creates additional emphasis for the proposed accent elements. Finishes with different textures and materiality are proposed, horizontal and vertical “stria” cladding, metal, render/paint and brick. These materials are used in combination to enhance the underlying composition and structure of each façade, create visual interest while unifying the overall built form aesthetic and ensuring expanses of monotonous materials, render and blank walls are avoided.

A clear base to the building is established with the top storey distinguished from the lower levels in some places through setbacks and in other places through a variation in façade elements, roof detailing, texture and materiality.

A combination of a native and exotic landscaping, with natives predominating is proposed to soften built form and contribute to the landscape quality of the streetscape. Large native tree planting is concentrated at the corners of the site to reinforce the built form aesthetic which also emphasises important corners.

Overall, the proposed development meets the SEPP 65 principle.

3 ADG COMPLIANCE TABLE

Note:

A development needs to demonstrate how it meets the objective and design criteria. The design criteria set a clear measurable benchmark for how the objective can be practically achieved. If it is not possible to satisfy the design criteria, applications must demonstrate what other design responses are used to achieve the objective and the design guidance can be used to assist in this.

Not all sections in the ADG specify design criteria. In these instances the design guidance should be referred to when demonstrating how an objective is being achieved.

The design objectives, criteria and design guidance are cited below.

The compliance table below addresses each objective. If a criteria is met, it is considered that the objective is satisfied. Where a criteria is not met it is demonstrated that the underlying objective is satisfied and the guidance is followed where possible.

	Design Guidance / Criteria	***Proposed Development***	***Comply***
OBJECTIVE 3A-1 Site Analysis	Site analysis illustrates that design decisions have been based on opportunities and constraints of the site conditions and their relationship to the surrounding context	The proposed development responds to the particular opportunities and constraints of the site. This is primarily the extensive street frontages, the longest frontage being to the east, the area earmarked for a transition in density from low to high density, the orientation of the lot in relation to true north. To respond to these matters, the development is broken into two buildings with units concentrated on the northern and western facades. Buildings provide positive address to the street and the primary common open space is co-joined with a landscape side setback to the west to provide a recreation space and a buffer to the existing dwellings to the west. Built form is reduced at the northern end with a stepping façade, increased street setback and narrower built form where the site is across Harvey Avenue from the R3 zone.	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
guidance	Each element in the Site Analysis Checklist should be addressed.	Refer to site analysis	✓
OBJECTIVE 3B-1 Orientation	Building Types and layouts respond to the streetscape and site while optimising solar access	The proposed development balances the need to maximise solar access while providing a building which addresses the street and achieves casual surveillance of each of the three street frontages.	✓
guidance	Buildings along the street frontage define the street, by facing it and incorporating direct access from the street.	The proposed development fronts each street frontage and direct access from the street is proposed where possible. Built form generally aligns to the street and helps to define it. Proposed landscape reinforces this alignment.	✓
	Where the street frontage is to the east or west, rear buildings should be orientated to the north.	The street frontage is the east. The proposed built form seeks to orient as many units as possible in the southern building to the north. However, because the north point is to the north west of the site's primary orientation and the narrowest width of the site is in the east-west direction, the largest proportion of units are oriented towards the north west. Suitable building setbacks to the western boundary protect privacy to neighbouring sites, while maximising solar access for the proposed.	✓
	Where the street frontage is to the north or south, overshadowing to the south should be minimised and buildings behind the street frontage should be orientated to the east and west.	Street frontages are also north and south on the site given it is a triple street frontage site. Buildings are oriented to the east and west where possible.	✓
OBJECTIVE 3B-2 Overshadowing	Overshadowing of neighbouring properties is minimised during mid winter	Overshadowing of neighbours is minimised by providing adequate side setbacks and also by virtue of the site orientation itself where shadow impact on neighbours only occurs in the early morning (until 9.30 a.m. in mid-winter). Upper level side setbacks are generally 9 m, stepping away from the side boundary. Just after 10 a.m., all shadow impacts are away from adjoining sites in mid-winter meaning that overshadowing impacts are minimal. Shadows arising from the proposed development primarily fall on the road reserve. The shadow sweeps quickly due to the narrow profile of the building in the east-west direction. A minor extent of overshadowing occurs to the front setbacks of sites across Lucas Avenue after 2 p.m. in mid-winter. This	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
		has a very minor adverse impact on neighbouring sites and overall the proposed development has only a minor impact on the local area overall.	
guidance	Living areas, private open space and communal open space should receive solar access in accordance with Sections 3D Communal and public open space and 4A Solar and daylight access.	The proposed development achieves good solar access to buildings and common open spaces.	✓
	Solar access to living rooms, balconies and private open spaces of neighbours should be considered.	The proposed development does not give rise to significant overshadowing of neighbouring sites.	✓
	Where an adjoining property does not currently receive the required hours of solar access, the proposed building ensures solar access to neighbouring properties is not reduced by more than 20%.	N/A	N/A
	If the proposal will significantly reduce the solar access of neighbours, building separation should be increased beyond minimums contained in Section 3F Visual Privacy.	Detail shadow analysis has been carried out and demonstrates that shadow impact on neighbouring sites is no significant.	N/A
	Overshadowing should be minimised to the south or downhill by increased upper level setbacks.	Given site context, overshadowing impact is acceptable without increase southern setbacks	N/A
	It is optimal to orientate buildings at 90 degrees to the boundary with neighbouring properties to minimise overshadowing and privacy impacts, particularly where minimum setbacks are used and where buildings are higher than the adjoining development.	Buildings oriented to side boundaries. An exception to the southern portion of the western boundary. However, as this is at the southern portion or the site, the alternative orientation does not increase overshadowing.	✓
	A minimum of 4 hours of solar access should be retained to solar collectors on neighbouring buildings.	Roofs of adjoining dwellings maintain sunlight for at least 4 hours	✓
OBJECTIVE 3C-1 Public domain interface	Transition between private and public domain is achieved without compromising safety and security.	The public and private domain are clearly defined and casual surveillance is achieved. A transition from public to private is also achieved at the building entrance	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
guidance	Terraces, balconies and courtyard apartments should have direct street entry, where appropriate.	Terraces have a direct street address where appropriate.	✓
	Changes in level between private terraces, front gardens and dwelling entries above the street level provide surveillance and improve visual privacy for ground level dwellings.	Metal palisade fences are proposed as courtyard walls facing the street with hedge planting to approximately 1.5 m behind to afford privacy. This works to create security, privacy and a level of casual surveillance without raising terrace levels significantly above the street level.	✓
	Upper level balconies and windows should overlook the public domain.	Balconies and living rooms do face public domain.	✓
	Front fences and walls along street frontages should use visually permeable materials and treatments. The height of solid fences or walls should be limited to 1m.	A front boundary fence is not proposed. Proposed courtyard walls which are located within the front setback are visually permeable metal fences with screen planting behind to ensure courtyard walls do not dominate the streetscape.	✓
	Length of solid walls should be limited along street frontages.	Solid walls limited	✓
	Opportunities should be provided for casual interaction between residents and the public domain. Design solutions may include seating at building entries, near letter boxes and in private courtyards adjacent to streets.	Proposed building entrances provide opportunities for casual interaction. Planter heights near entry are suitable for seating.	✓
	In developments with multiple buildings and/or entries, pedestrian entries and spaces associated with individual buildings/entries should be differentiated to improve legibility for residents, using a number of the following design solutions: • Architectural detailing • Changes in materials • Plant species • Colours.	Proposed entries are identifiable and logically located.	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
	Opportunities for people to be concealed should be minimised.	Concealment areas are minimised	✓
OBJECTIVE 3C-2	Amenity of the public domain is retained and enhanced	The proposed development provides enhances amenity to the public domain with a new tree planting strategy with native species including Grey Box, Red Gum and Water Gum. Direct street address is achieved and individual courtyards with entries to the street provide additional quality to the public domain interface. Deep soil areas are proposed within each street setback. Existing trees within the public domain and near the public domain are proposed to be retained and protected.	✓
guidance	Planting softens the edges of any raised terraces to the street, for example above sub-basement car parking.	Planting is proposed to terrace edges.	✓
	Mail boxes should be located in lobbies, perpendicular to the street alignment or integrated into front fences where individual street entries are provided.	The letterbox is at the entry perpendicular to the street alignment.	✓
	The visual prominence of underground car park vents should be minimised and located at a low level where possible.	Car park vents are integrated with design and outtake is at roof.	✓
	Substations, pump rooms, garbage storage areas and other service requirements should be located in basement car parks or out of view	Services, plants and other such areas are out of view. The only equipment which is visible is that which cannot be concealed such as the fire booster valve. Also, a substation is required which is proposed to be located at the least prominent frontage at the corner of the site.	✓
	Ramping for accessibility should be minimised by building entry location and setting ground floor levels in relation to footpath levels.	Both buildings are accessible with limited ramps to enter the building.	✓
	Durable, graffiti resistant and easily cleanable materials should be used.	The materiality and colours of the façade are designed to deter graffiti where possible and minimise cleaning on the ground floor.	✓
	Where development adjoins public parks, open space or bushland, the design positively addresses this interface and uses a number of the following design solutions:	N/A	N/A

	Design Guidance / Criteria	*Proposed Development*	*Comply*
	• Street access, pedestrian paths and building entries which are clearly defined • Paths, low fences and planting that clearly delineate between communal/private open space and the adjoining public open space • Minimal use of blank walls, fences and ground level parking.		
	On sloping sites protrusion of car parking above ground level should be minimised by using split levels to step underground car parking.	Basement is not readily visible.	✓
OBJECTIVE 3D-1 Communal and public open space	An adequate area of communal open space is provided to enhance residence amenity and to provide opportunities for landscaping.	Common open space proposed with a good level of amenity and high quality landscape.	✓
CRITERIA 3D-1 Communal and public open space	1. Communal open space has a minimum area equal to 25% of the site.	The communal open space is designed with an area of 930m^2 which is 25 % of the site.	✓
	2. Developments achieve a minimum of 50% direct sunlight to the principal usable part of the communal open space for a minimum of 2 hours between 9am and 3pm on 21 June (mid winter).	Communal open space is provided on the roof level facing north and will receive optimal, uninterrupted levels of sunlight. Ground level common open space is within the western setback giving it a northern aspect.	✓
guidance	Communal open space should be consolidated into a well designed, easily identified and usable area	Common open space is consolidated, easy to find and useable.	✓
	Communal open space should have a minimum dimension of 3m, and larger developments should consider greater dimensions	The proposed communal open spaces have 3m minimum dimension.	✓
	Communal open space should be co-located with deep soil areas	Ground level common open space co-located with deep soil zone	✓
	Direct, equitable access should be provided to communal open space areas from common circulation areas, entries and lobbies	Communal open space is accessible	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
	Where communal open space cannot be provided at ground level, it should be provided on a podium or roof	Communal open space provided at ground level and Communal open space is provided on the roof level.	✓
	Where developments are unable to achieve the design criteria, such as on small lots, sites within business zones, or in a dense urban area, they should: • Provide communal open spaces elsewhere such as a landscaped roof top terrace or a common room • Provide larger balconies or increased private open space for apartments • Demonstrate good proximity to public open space and facilities and/or provide contributions to public open space		n/a
OBJECTIVE 3D-2 Communal and public open space	Communal open space is designed to allow for a range of activities, respond to site conditions and be attractive and inviting.	Common open space is attractive with good quality landscape and proportions. Space is designed to encourage passive recreation. BBQ area is located at centre of open space creating a heart to the communal area	✓
guidance	Facilities are provided within communal open spaces and common spaces for a range of age groups, incorporating some of the following elements: • Seating for individuals or groups • Barbeque areas • Play equipment or play areas • Swimming pools, gyms, tennis courts or common rooms.	Seating and barbeque area proposed Areas of hard and soft scape	✓
	The location of facilities responds to microclimate and site conditions with access to sun in winter, shade in summer and shelter from strong winds and down drafts	Proposed landscape planting includes native planting and mature trees.	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
	Visual impacts of services should be minimised, including location of ventilation duct outlets from basement car parks, electrical substations and detention tanks	Generally service areas and other equipment are concealed. One exception is substation which is required to be located near Harvey Avenue boundary which is the least visually prominent. The substation is setback from the boundary as much as practical and is buffered by landscape. The other exception is fire booster valve. It is located near front of common open space with some landscape around and is therefore sufficiently screened. Otherwise wherever possible services do not give rise to visual impacts.	✓
OBJECTIVE 3D-3 Communal and public open space	Communal open space is designed to maximise safety	Common open space is secure and dark and blind corners avoided	✓
guidance	Communal open space and the public domain should be readily visible from habitable rooms and private open space areas while maintaining visual privacy. Design solutions may include: • Bay windows • Corner windows • Balconies.	Ground level common open space is casually surveilled and physically secured from public domain.	✓
	Communal open space should be well lit.	Communal open space maximises passive light (solar) and will be lit at night, while considering light spillage into residences facing it. It is sought that lighting detail be provided at CC stage	✓
	Where communal open space/facilities are provided for children and young people they are safe and contained.	N/A. Play equipment and the like are not proposed.	N/A
OBJECTIVE 3D-4 Communal and public open space	Public open space, where provided, is responsive to the existing pattern and uses of the neighbourhood	N/A	N/A

<table>
<tr><th></th><th>Design Guidance / Criteria</th><th>Proposed Development</th><th>Comply</th></tr>
<tr><td>guidance</td><td>The public open space should be well connected with public streets along at least one edge.</td><td>N/A</td><td>N/A</td></tr>
<tr><td></td><td>The public open space should be connected with nearby parks and other landscape elements.</td><td>N/A</td><td>N/A</td></tr>
<tr><td></td><td>Public open space should be linked through view lines, pedestrian desire paths, termination points and the wider street grid.</td><td>N/A</td><td>N/A</td></tr>
<tr><td></td><td>Solar access should be provided year round along with protection for people of all ages.</td><td>N/A</td><td>N/A</td></tr>
<tr><td></td><td>A positive address and active frontages should be provided adjacent to public open space.</td><td>Positive street address is provided to public domain although the public domain is not a public open space per se.</td><td>✓</td></tr>
<tr><td></td><td>Boundaries should be clearly defined between public open space and private areas.</td><td>A clear demarcation between the public and private domain is achieved on the site.</td><td>✓</td></tr>
<tr><td>OBJECTIVE
3E-1
Deep soil zones</td><td>Deep soil zones provide areas on the site that allow for and support healthy plant and tree growth. They improve residential amenity and promote management of water and air quality</td><td>Deep soil zones are provided in setback areas with the largest area at the western side setback. Other consolidated areas of deep soil occur at the south eastern and northern eastern corners of the site, the most prominent street corners.</td><td>✓</td></tr>
<tr><td>CRITERIA
3E-1
Deep soil zones</td><td>1. Deep soil zones are to meet the following minimum requirements:
<table>
<tr><th><u>Site area</u></th><th><u>Minimum dimensions</u></th><th><u>Deep soil zone (% of site area)</u></th></tr>
<tr><td>Less than 650m^2</td><td>-</td><td rowspan="4">7%</td></tr>
<tr><td>650m^2 – 1,500m^2</td><td>3m</td></tr>
<tr><td>Greater than 1,500m^2</td><td>6m</td></tr>
<tr><td>Greater than 1,500m^2 with significant existing tree cover</td><td>6m</td></tr>
</table></td><td>635m^2 of deep soil is provided with a minimum dimension of 6 m.

In addition to this 396m^2 of deep soil with a minimum dimension of 3m is proposed further augmenting the landscape character of the site.</td><td>✓</td></tr>
</table>

	Design Guidance / Criteria	*Proposed Development*	*Comply*
guidance	On some sites it may be possible to provide larger deep soil zones, depending the site area and context: • 10% of the site as deep soil on sites with an area of 650m^2 – 1,500m^2 • 15% of the site as deep soil on sites greater than 1,500m^2.	Substantial deep soil is provided on the site although at lesser dimensions to 6 m in some locations. See above.	✓
	Deep soil zones should be located to retain existing significant trees and to allow for the development of healthy root systems, providing anchorage and stability for mature trees. Design solutions may include: • Basement and sub basement car park design that is consolidated beneath building footprints • Use of increased front and side setbacks • Adequate clearance around trees to ensure long term health • Co-location with other deep soil areas on adjacent sites to create larger contiguous areas of deeps soil.	Deep soil is provided. The basement setback from Lucas Avenue has been increased since the Pre-DA and DEP meetings to provide more area for root zones.	✓
	Achieving the design criteria may not be possible on some sites including where: • The location and building typology have limited or no space for deep soil at ground level (eg central business district, constrained sites, high density areas, or in centres) • There is 100% site coverage or non-residential uses at ground floor level. Where a proposal does not achieve deep soil requirements, acceptable stormwater management should be achieved and alternative forms of planting provided such as on structure.	Criteria achieved	
OBJECTIVE 3F-1	Adequate building separation distances are shared equitably between neighbouring sites, to achieve reasonable levels of external and internal visual privacy.	Visual privacy is achieved by employing appropriate setbacks to windows and laying out apartments to minimise privacy impacts. Setbacks to adjoining sites meet ADG criteria.	✓

<table>
<tr><th></th><th>Design Guidance / Criteria</th><th>Proposed Development</th><th>Comply</th></tr>
<tr><td>Visual Privacy</td><td></td><td>Within site, privacy is maintained at upper levels though design, window placement, etc.</td><td></td></tr>
<tr><td>CRITERIA
3F-1
Visual privacy</td><td>1. Separation between windows and balconies is provided to ensure visual privacy is achieved. Minimum required separation distances from buildings to the side and rear boundaries are as follows:
<table><tr><th>Building height</th><th>Habitable rooms and balconies</th><th>Non-habitable rooms</th></tr><tr><td>Up to 12m (4 storeys)</td><td>6m</td><td>3m</td></tr><tr><td>Up to 25m (5-8 storeys)</td><td>9m</td><td>4.5m</td></tr><tr><td>Over 25m (9+ storeys)</td><td>12m</td><td>6m</td></tr></table>Note: Separation distances between buildings on the same site should combine required building separations depending on the type of room.
Gallery access circulation should be treated as habitable space when measuring privacy separation distances between neighbouring properties.</td><td>Interface with Neighbouring sites:
The only shared boundary is to the west where the subject site interfaces with two neighbouring sites.
Tower 1
From Ground Level to the fourth storey Tower 1 achieves a setback greater than 6 m to habitable rooms and balconies. The setback is generally 8 m at this interface. At the fifth storey, the minimum setback is 9 m. Tower 1 is fully complying and at the lower levels generally provides a substantially greater setback than suggested in the criteria.
Tower 2
Tower 2 has a setback from Ground Level to the fourth storey of at least 7 m to habitable rooms and balconies. A setback of at least 9 m is provided to habitable rooms and balconies at the fifth storey.
Within the subject site
Tower 1 and Tower 2 are separated by 12 m, and thus comply with the criteria up to four storeys. At the fifth storey, separation is 18 m between habitable room windows and balconies.
Tower 2’s south western corner is cut out in the proposal. This is to facilitate more sunlight into the common open spaces and to Tower 1 towards the south. There is therefore the potential for cross views between units at the corner. To mitigate potential impacts, windows are carefully placed to ensure direct sightlines do not arise. The secondary kitchen window of the west facing unit is affixed with a privacy screen to further protect privacy.</td><td>✓</td></tr>
<tr><td>guidance</td><td>Generally, one step in the built form as the height increases due to building separations is desirable. Additional steps should be careful not to cause a ‘ziggurat’ appearance.</td><td>A maximum of 1 step in each building. The street frontages generally avoid a step and instead seek a 5 storey street wall with balanced horizontal and vertical proportions. To the western boundary and between the two towers</td><td>✓</td></tr>
</table>

	Design Guidance / Criteria	*Proposed Development*	*Comply*
		the fifth storey is setback to mitigate visual impacts and reduce the sense of enclosure at these interfaces.	
	For residential buildings, next to commercial buildings, separation distances should be measured as follows: • For retail, office spaces and commercial balconies use the habitable room distances • For service and plant areas use the non-habitable room distances.	N/A	N/A
	New development should be located and oriented to maximise visual privacy between buildings on site and for neighbouring buildings. Design solutions include: • Site layout and building orientation to minimise privacy impacts • On sloping sites, apartments on different levels have appropriate visual separation distances.	See responses above. The proposal complies with criteria for setbacks to shared boundary.	✓
	Apartment buildings should have an increased separation distance of 3m (in addition to the requirements set out in design criteria) when adjacent to a different zone that permits lower density residential development to provide for a transition in scale and increased landscaping.	Site is not in a transitional setting. The proposed built form does provide a slightly greater front setback to Harvey Avenue where the R3 Zone is located north across Harvey Avenue from the subject site. A stepped northern façade also works to break down bulk and scale with its broken edges. Harvey Avenue acts as an edge to the zone and the transition to the R3 zone for the subject site is not across a shared boundary.	✓
	Direct lines of sight should be avoided for windows and balconies across corners.	The proposal avoids direct lines of sight across corners	✓
	No separation is required between blank walls.	Noted	✓
OBJECTIVE 3F-2	Site and building design elements increase privacy without compromising access to light and air and balance outlook and views from habitable rooms and private open space	Privacy is generally achieved through separation and setbacks. Where privacy screens or the like are proposed to further enhance privacy, screens are oriented to allow for solar access as well.	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
Visual privacy			
guidance	Communal open space, common areas and access paths should be separated from private open space and windows to apartments, particularly habitable room windows. Design solutions may include: • Setbacks • Solid or partially solid balustrades to balconies at lower levels • Fencing and/or trees and vegetation to separate spaces • Screening devices • Bay windows or pop out windows to provide privacy in one direction and outlook in another • Raising apartments/private open space above the public domain or communal open space • Planter boxes incorporated into walls and balustrades to increase visual separation • Pergolas or shading devices to limit overlooking of lower apartments or private open space • On constrained sites where it can be demonstrated that building layout opportunities are limited, fixed louvres or screen panels to windows and/or balconies.	Protection for windows from common open space and circulation areas is achieved through a combination of means including courtyard extensions, screening devices and planter boxes.	✓
	Bedrooms, living spaces and other habitable rooms should be separated from gallery access and other open circulation space by the apartment's service areas.	Separation is provided between habitable areas and open circulation	✓
	Balconies and private terraces should be located in front of living rooms to increase internal privacy.	Balconies adjoin living rooms and in most cases are located in front of living rooms	✓
	Windows should be offset from the windows of adjacent buildings.	Windows are offset	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
	Recessed balconies and/or vertical fins should be used between adjacent balconies.	Recessed balconies are proposed where balconies are relatively close together. Fin walls are used in some locations which enhance privacy.	✓
OBJECTIVE 3G-1 Pedestrian access and entries	Building entries and pedestrian access connects to and addresses the public domain.	Residential entries connect to and addresses the street. Individual residential dwelling entries via courtyard also enhance the sense of address.	✓
guidance	Multiple entries (including communal building entries and individual ground floor entries) should be provided to activate the street edge.	Each building is provided with one main entry, which is appropriate to buildings with only 6 units per core maximum and a total height of only 5 storeys. Individual apartments are provided with individual street entries where topography and other factors make it convenient and easy. A secure common open space entry is also provided which addresses the street.	✓
	Entry locations relate to the street and subdivision pattern and the existing pedestrian network.	The main entries are located on the most prominent street frontage.	✓
	Building entries should be clearly identifiable and communal entries should be clearly distinguishable from private entries.	The entries to the building are direct from the street and is distinctive with different materiality and signalled through built form.	✓
	Where street frontage is limited and multiple buildings are located on the site, a primary street address should be provided with clear sight lines and pathways to secondary building entries.	N/A	N/A
OBJECTIVE 3G-2 Pedestrian access and entries	Access, entries and pathways are accessible and easy to identify	Entries are easily identifiable and also accessible.	✓
guidance	Building access areas including lift lobbies, stairwells and hallways should be clearly visible from the public domain and communal spaces.	Direct sightlines are achieved to each building entry from the public domain.	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
	The design of ground floors and underground car parks minimise level changes along pathways and entries.	Level changes are minimal and ramping is imperceptible.	✓
	Steps and ramps should be integrated into the overall building and landscape design.	No switchback ramps are proposed at ground level.	✓
	For large developments 'way finding' maps should be provided to assist visitors and residents.	Site has very simple wayfinding and should not require extensive signage.	✓
	For large developments electronic access and audio/video intercom should be provided to manage access.	Electronic access shall be provided.	✓
OBJECTIVE 3G-3 Pedestrian access and entries	Large sites provide pedestrian links for access to streets and connection to destinations	A secondary entry is provided from the common open space to the street. With the sites relatively narrow profile and extensive street frontages, through site links and the like are considered unnecessary.	✓
guidance	Pedestrian links through sites facilitate direct connections to open space, main streets, centres and public transport.	N/A	N/A
	Pedestrian links should be direct, have clear sight lines, be overlooked by habitable rooms or private open spaces of dwellings, be well lit and contain active uses, where appropriate.	The ground level common open space which does provide a kind of pedestrian linkage through the site is casually surveilled.	✓
OBJECTIVE 3H-1 Vehicle access	Vehicle access points are designed and located to achieve safety, minimise conflicts between pedestrians and vehicles and create high quality streetscapes.	Vehicle access is placed at the site's low point and away from main pedestrian entries. The driveway maintains clear sightlines.	✓
guidance	Car park access should be integrated with the building's overall façade. Design solutions may include: • The materials and colour palette to minimise visibility from the street • Security doors or gates at entries that minimise voids in the façade	Vehicle access is recessive at the side of the building to minimise visual impacts.	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
	• Where doors are not provided, the visible interior reflects the façade design and the building services, pipes and ducts are concealed.		
	Car park entries should be located behind the building line.	The security door will be recessed behind the building line.	✓
	Vehicle entries should be located at the lowest point of the site minimising ramp lengths, excavation and impacts on the building form and layout.	The driveway is located at the lowest point facing the street.	✓
	Car park entry and access should be located on secondary streets or lanes where available.	The driveway is located away from the most prominent frontage which is Lucas Avenue.	N/A
	Vehicle standing areas that increase driveway width and encroach into setbacks should be avoided.	There is no vehicle standing area on the driveway.	✓
	Access point locations should avoid headlight glare to habitable rooms.	N/A	✓
	Adequate separation distances should be provided between vehicle entries and street intersections.	The driveway is located a sufficient distance from an intersection and pedestrian crossings.	✓
	The width and number of vehicle access points should be limited to the minimum.	One access point is proposed at McKay Avenue.	✓
	Visual impact of long driveways should be minimised through changing alignments and screen planting.	A long driveway is not proposed. It quickly descends into the basement.	✓
	The need for large vehicles to enter or turn around within the site should be avoided.	It is not proposed for large vehicles to enter the site.	✓
	Garbage collection, loading and servicing areas are screened.	Garbage room is located in basement with temporary bin holding area near kerb for collection day only. Building manager will be responsible for wheeling bins to kerb and returning them to waste room on collection day.	✓
	Clear sight lines should be provided at pedestrian and vehicle crossings.	Clear sight lines are provided at driveway	✓
	Traffic calming devices such as changes in paving material or textures should be used where appropriate.	Single driveway proposed which is clearly visible and distinguishable.	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
	Pedestrian and vehicle access should be separated and distinguishable. Design solutions may include: • Changes in surface materials • Level changes • The use of landscaping for separation.	Pedestrian entries are well away from vehicle entry on a different street frontage.	✓
OBJECTIVE 3J-1 Bicycle and car parking	Car parking is provided based on proximity to public transport in metropolitan Sydney and centres in regional areas.	Parking requirements are determined in relation to the site context and availability and legislative standards. Sufficient secure bicycle parking is also provided on site.	✓
CRITERIA 3J-1 Bicycle and car parking	1. For development in the following locations: • On sites that are within 800m of a railway station or light rail stop in the Sydney Metropolitan Area, or • On land zoned, and sites within 400m of land zoned, B3 Commercial Core, B4 Mixed Use or equipment in a nominated regional centre The minimum car parking requirement for residents and visitors is set out in the Guide to Traffic Generating Developments, or the car parking requirement prescribed by the relevant council, whichever is less. The car parking needs for a development must be provided off street.	The subject site is located adjacent to a local centre zone and within walking distance of bus stops with frequent service but not near a railway station. Affordable housing is proposed and parking is sought in accordance with the legislation.	N/A
guidance	Where a car share scheme operates locally, provide car share parking spaces within the development Car share spaces, when provided, should be on site.	N/A	N/A
	Where less parking is provided in a development, council should not provide on street resident parking permits.	N/A	N/A
OBJECTIVE 3J-2	Parking and facilities are provided for other modes of transport	Bicycle parking provided.	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
Bicycle and car parking			
guidance	Conveniently located and sufficient numbers of parking spaces should be provided for motorbikes and scooters.	Motorbike parking provided in basement levels	✓
	Secure undercover bicycle parking should be provided that is easily accessible from both the public domain and common areas.	Bicycle parking provided.	✓
	Conveniently located charging stations are provided for electric vehicles, where desirable.	N/A	N/A
OBJECTIVE 3J-3 Bicycle and car parking	Car park design and access is safe and secure	Car park design is to Australian Standards and is safe and secure.	✓
guidance	Supporting facilities within car parks, including garbage, plant and switch rooms, storage areas and car wash bays can be accessed without crossing car parking spaces.	Basement designed with access to plant rooms not conflicting with parking spaces. Where storage areas are behind parking spaces they will belong to the same unit as the parking space.	✓
	Direct, clearly visible and well lit access should be provided into common circulation areas.	Direct and visible access to lifts from car park is provided.	✓
	A clearly defined and visible lobby or waiting area should be provided to lifts and stairs.	Sufficient space is proposed in front of each lift entry to ensure safety and amenity and avoid conflicts with cars.	✓
	For larger car parks, safe pedestrian access should be clearly defined and circulation areas have good lighting, colour, line marking and/or bollards.	Car park is not considered large with a single double loaded aisle of parking proposed	✓
OBJECTIVE 3J-4 Bicycle and car parking	Visual and environmental impacts of underground car parking are minimised	Car parking areas are below ground and not visible.	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
guidance	Excavation should be minimised through efficient car park layouts and ramp design.	Car parking layout is relatively efficient and responds to the constraints of the site which in this case is that the site is relatively long and thin.	✓
	Car parking layout should be well organised, using a logical, efficient structural grid and double loaded aisles.	Car parking area provides double loaded aisles and allows for two-way movement. The basement has a logical layout.	✓
	Protrusion of car parks should not exceed 1m above ground level. Design solutions may include stepping car park levels or using split levels on sloping sites.	The car park does not protrude 1 m above ground level.	✓
	Natural ventilation should be provided to basement and sub basement car parking areas.	Car park intake and outtake ducts are indicated on plan.	✓
	Ventilation grills or screening devices for car parking openings should be integrated into the façade and landscape design.	Visual intrusion of ventilation grills from underground car parking areas will be integrated and softened through building and landscape design.	✓
OBJECTIVE 3J-5 Bicycle and car parking	Visual and environmental impacts of on-grade car parking are minimised	On grade parking not proposed.	N/A
guidance	On-grade car parking should be avoided.	On grade parking not proposed.	✓
	Where on-grade parking is unavoidable, the following design solutions are used: • Parking is located on the side or rear of the lot away from the primary street frontage • Cars are screened from view of streets, buildings, communal and private open space areas • Safe and direct access to building entry points is provided • Parking is incorporated into the landscape design of the site, by extending planting and materials into the car park space	N/A	N/A

	Design Guidance / Criteria	*Proposed Development*	*Comply*
	• Stormwater run-off is managed appropriately from car parking surfaces • Bio-swales, rain gardens or on site detention tanks are provided, where appropriate • Light coloured paving materials or permeable paving systems are used and shade trees are planted between every 4-5 parking spaces to reduce increased surface temperatures from large areas of paving.		
OBJECTIVE 3J-6 Bicycle and car parking	Visual and environmental impacts of above ground enclosed car parking are minimised	N/A	N/A
guidance	Exposed parking should not be located along primary street frontages.	N/A	N/A
	Screening, landscaping and other design elements including public art should be used to integrate the above ground car parking with the façade. Design solutions may include: • Car parking that is concealed behind the façade, with windows integrated into the overall façade design (approach should be limited to developments where a larger floor plate podium is suitable at lower levels) • Car parking that is "wrapped" with other uses, such as retail, commercial or two storey Small Office/Home Office (SOHO) units along the street frontage.	N/A	N/A
	Positive street address and active frontages should be provided at ground level.	Positive street address is proposed with building entries facing the most prominent street on the site – Lucas Avenue. Individual dwelling entries from courtyards directly to the street are also proposed where practical. It is also noted that the proposed ground floor has an increased floor to ceiling height	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
		which could allow for future conversion into commercial development if demand arose, given the site's location adjacent to the local centre zone.	
OBJECTIVE 4A-1 Solar and daylight access	To optimise the number of apartments receiving sunlight to habitable rooms, primary windows and private open space.	The proposal provides solar access to habitable rooms and private open space. It is noted that the subject site is somewhat constrained in terms of solar access because the longest frontage of the site faces east south east. Due to this all units facing Lucas Avenue are incapable of achieving 2 hours direct solar access in mid-winter. To address this constraint, the maximum number of apartments possible have been oriented to the north and west. Even with this constraint, the proposed development does achieve the applicable criteria of 70%.	✓
CRITERIA 4A-1	1. Living rooms and private open spaces of at least 70% of apartments in a building receive a minimum of 2 hours direct sunlight between 9am and 3pm at mid winter in the Sydney Metropolitan Area and in the Newcastle and Wollongong local government areas.	The proposal achieves the minimum required criterion of 71% (54/76). It is noted that 60% of units receive 3 hours direct sunlight.	✓
	2. In all other areas, living rooms and private open spaces of at least 70% of apartments in a building receive a minimum of 3 hours of direct sunlight between 9am and 3pm at mind winter.	N/A	N/A
	3. A maximum of 15% of apartments in a building receive no direct sunlight between 9am and 3pm at mid winter.	Unit 002 receives no sunlight in midwinter which is 1% of units (1/76). All other units receive at least some sunlight to a habitable room or the balcony. 12% of apartments receive no direct sunlight to both the living room and balcony (9/76).	✓
guidance	The design maximises north aspect and the number of single aspect south facing apartments is minimised.	Criteria met. Sought to maximise northern aspect even though primary frontage is to the east south east and so those units which face Lucas Avenue receive just under 2 hours direct sunlight. Majority of south facing units are dual aspect.	✓
	Single aspect, single storey apartments should have a northerly or easterly aspect.	Single aspect units have an east south east aspect and a west north west aspect. Where the single aspect units face west, living rooms are recessed behind balconies and vertical fin walls assist in blocking sun in warmer months. In colder months these single aspect units will be well lit.	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
	Living areas are best located to the north and service areas to the south and west of apartments.	Living areas are oriented north where possible. Along these lines generally in each apartment service areas are located in deeper parts of units and living rooms towards the primary glassline.	✓
	To optimise the direct sunlight to habitable rooms and balconies a number of the following design features are used: • Dual aspect apartments • Shallow apartment layouts • Two storey and mezzanine level apartments • Bay windows.	Dual aspect apartments proposed. Shallow apartment layouts proposed. Where corner balconies are proposed, one of 2 living room windows is pushed to edge of building to maximise daylighting to living room.	✓
	To maximise the benefit to residents of direct sunlight within living rooms and private open spaces, a minimum of 1m2 of direct sunlight, measured at 1m above floor level, is achieved for at least 15 minutes.	Noted that applicable criteria met and thus guidance is of lower order consideration. Solar access diagrams are provided as part of the DA.	✓
	Achieving the design criteria may not be possible on some sites. This includes: • Where greater residential amenity can be achieved along a busy road or rail line by orientating the living rooms away from the noise source • On south facing sloping sites • Where significant views are oriented away from the desired aspect for direct sunlight. Design drawings need to demonstrate how site constraints and orientation preclude meeting the design criteria and how the development meets the objective.	Noted that applicable criteria met and thus guidance is of lower order consideration. However, as mentioned earlier, the site is constrained by having primary frontage oriented such that living rooms and balconies which face it achieve just under two hours direct sunlight. Regardless, the design has achieved the applicable 70% criteria.	✓
OBJECTIVE 4A-2	Daylight access is maximised where sunlight is limited	Daylight is maximised to units facing Lucas Avenue and McKay Avenue by maximising glazing, articulated façades, providing dual aspect apartments, and reducing unit depth for single aspect units. It is also noted the ground	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
Solar and daylight access		floor has a higher ceiling height than the standard which shall improve daylighting to the lower level units.	
guidance	Courtyards, skylights and high level windows (with sills of 1,500mm or greater) are used only as secondary light source in habitable rooms.	Note. Skylights and atriums are not relied on as primary light source. High Level windows are used in some cases for secondary light sources	✓
	Where courtyards are used: • Use is restricted to kitchen, bathrooms and service areas • Building services are concealed with appropriate detailing and materials to visible walls • Courtyards are fully open to the sky • Access is provided to the light well from a communal area for cleaning and maintenance • Acoustic	Note. Courtyards for ground level units are open to sky.	✓
	Opportunities for reflected light into apartments are optimised through: • Reflective exterior surfaces on building opposite south facing windows • Positioning windows to face other buildings or surfaces (on neighbouring sites or within the site) that will reflect • Integrating light shelves into the design • Light coloured internal finishes.	Note. More details on finishes and materials provided as part of the CC. Elevations and Photomontages are provided to indicate likely materials and finishes. Units are generally shallow. Light coloured internal finishes are likely.	
OBJECTIVE 4A-3 Solar and daylight access	Design incorporates shading and glare control, particularly for warmer months	Design of western façade employed balconies with living rooms recessed behind and well as fin walls and screens to reduce head loads during summer months.	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
guidance	A number of the following design features are used: • Balconies or sun shading that extend far enough to shade summer sun, but allow winter sun to penetrate living areas • Shading devices such as eaves, awnings, balconies, pergolas, external louvres and planting • Horizontal shading to north facing windows • Vertical shading to east and particularly west facing windows • Operable shading to allow adjustment and choice • High performance glass that minimises external glare off windows, with consideration given to reduced tint glass or glass with a reflectance level below 20% (reflective films are avoided).	Balconies generally act as passive solar design devices by virtue of their position and depth. Vertical fin projections are proposed to western façade to assist in shading.	✓
OBJECTIVE 4B-1 Natural Ventilation	All habitable rooms are naturally ventilated.	All habitable rooms are ventilated. A number of non-habitable rooms are also ventilated in the proposed development.	✓
guidance	The building's orientation maximises capture and use of prevailing breezes for natural ventilation in habitable rooms.	Site is well oriented for capturing breezes. Building generally aligns with site boundaries and thus the resulting units are also generally well oriented to capture breezes.	✓
	Depths of habitable rooms support natural ventilation.	Depth of rooms are generally limited to ensure a good degree of natural ventilation. The deepest units proposed are dual aspect and these units are still consistent with the criteria of having open plan living room/kitchen depths of no more than 8 m.	✓
	The area of unobstructed window openings should be equal to at least 5% of the floor area served.	Each room has a window opening which is at least 5% of room size. Operable glazing is maximised in the proposed open plan living room/kitchen/dining room spaces as well.	✓
	Light wells are not the primary air source for habitable rooms.	The proposal does not use light wells as primary air source.	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
	Doors and openable windows maximise natural ventilation opportunities by using the following design solutions: • Adjustable windows with large effective openable areas • A variety of window types that provide safety and flexibility such as awnings and louvres • Windows which the occupants can reconfigure to funnel breezes into the apartment such as vertical louvres, casement windows and externally opening doors.	Doors and windows are designed to be large and operable, in particular to living rooms and bedrooms. All units have living rooms adjoining balcony/terrace areas, with many bedrooms also having direct access to private open space. The proposal uses building indentations where possible. A variety of window types are proposed.	✓
OBJECTIVE 4B-2 Natural ventilation	The layout and design of single aspect apartments maximises natural ventilation	Single aspect apartments are designed to maximise natural ventilation. In single aspect apartments, non-habitable spaces such as bathrooms are located in the deeper parts of the unit. Unit layouts avoid corners and are generally open plan. Units are not excessively deep. Plenums are used in 13 apartments to augment natural ventilation.	✓
guidance	Apartment depths are limited to maximise ventilation and airflow.	Building and habitable room depths are appropriate for the development and maximises natural cross ventilation opportunities where possible. Units are designed so that deeper parts of the units are used for non-habitable spaces such as bathrooms, laundries and storage. This pushes habitable areas towards windows. The majority of units are quite shallow with deeper units approaching 8 m limited.	✓
	Natural ventilation to single aspect apartments is achieved with the following design solutions: • Primary windows are augmented with plenums and light wells (generally not suitable for cross ventilation) • Stack effect ventilation / solar chimneys or similar to naturally ventilate internal building areas or rooms such as bathrooms and laundries	The habitable room depths and overall building depth is minimised as much as possible while considering internal amenity needs. Building indentations and steps are used to promote airflow and maximise opportunities for airflow through the apartment. Each single aspect unit is sufficiently wide and the length of glazing maximised. Single aspect apartments are generally limited in depth and non-habitable areas located at the deeper parts of the apartment. Plenums are used to augment natural ventilation in 13 units.	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
	• Courtyards or building indentations have a width to depth ratio of 2:1 or 3:1 to ensure effective air circulation and avoid trapped smells.		
OBJECTIVE 4B-3 Natural Ventilation	The number of apartments with natural cross ventilation is maximised to create a comfortable indoor environment for residents	Units with natural cross ventilation are maximised given the site dimensions and characteristics. Built form is broken into two towers to maximise dual aspect apartments. Stepped facades are used to create windows on different planes. It is also noted that the ground level has higher floor to ceiling heights than the standard which shall help facilitate air flow through the lower units which may not be as successful as upper level units in capturing breezes.	✓
CRITERIA 4B-3 Natural Ventilation	1. At least 60% of apartments are naturally cross ventilated in the first nine storeys of the building. Apartments at ten storeys or greater are deemed to be cross ventilated only if any enclosure of the balconies at these levels allows adequate natural ventilation and cannot be fully enclosed.	The proposal meets this criterion. 48 units out of total 76 units (63%) of the apartments achieve cross ventilation via a dual aspect. It is also noted that there are several units which while not technically cross ventilated will be very well ventilated by using long glasslines, stepped facades, recessed balconies and maximising operable glazing and dedicated plenum. 13 units use a plenum to augment natural ventilation. If these units are considered cross-ventilated then the total number of cross-ventilated units is 61 or 80% of apartments. The plenums have been designed as per advice from Windtech and a detail is provided to demonstrate the plenum can be an effective means of ventilation.	✓
	2. Overall depth of a cross-over or cross-through apartment does not exceed 18m, measured glass line to glass line.	No cross through apartment is proposed.	N/A
guidance	The building should include dual aspect apartments, cross through apartments and corner apartments and limit apartment depths.	Dual aspect apartments in the development are generally achieves at building corners.	✓
	In cross-through apartments external window and door opening sizes/areas on one side of an apartment (inlet side) are approximately equal to the external window and door opening sizes/areas on the other side of the apartment (outlet side).	Proposed operable windows are adjustable.	✓

	Design Guidance / Criteria		*Proposed Development*	*Comply*
	Apartments are designed to minimise the number of corners, doors and rooms that might obstruct airflow.		Unit layouts are generally simple and minimise corners and other obstructions to airflow.	✓
	Apartment depths, combined with appropriate ceiling heights, maximise cross ventilation and airflow.		Building and habitable room depths are appropriate for the development and maximises natural cross ventilation opportunities where possible.	✓
OBJECTIVE 4C-1 Ceiling heights	Ceiling height achieves sufficient natural ventilation and daylight access.		The ceiling height is designed at 2.7m for all habitable rooms. A minimum 3.05 m floor-to-floor height is proposed. Although there is a suggestion that a 3.1 floor to floor may be desirable, a 3.05 m floor to floor is sufficient to ensure a 2.7 m ceiling height is achieved. It is noted that ground floor has an increased floor to ceiling height	✓
CRITERIA 4C -1 Ceiling heights	1. Measured from finish floor level to finished floor level, minimum ceiling heights are:		A minimum 3.1 m floor-to-floor height is proposed. At ground level a 3.6 m floor-to-floor height is proposed consistent with the criteria given the site is a key site adjacent to a local centre zone.	✓
	Minimum ceiling height (for apartment and mixed use buildings)			
	Habitable rooms	2.7m		
	Non-habitable	2.4m		
	For 2 storey apartments	2.7m for main living area floor 2.4m for second floor, where its area does not exceed 50% of the apartment area		
	Attic spaces	1.8m at edge of room with a 30 degree minimum ceiling slope		
	If located in mixed use areas	3.3m for ground and first floor to promote future flexibility of use		
	These minimums do not preclude higher ceilings if desired.			
guidance	Ceiling height can accommodate use of ceiling fans for cooling and heat distribution.		N/A	N/A

	Design Guidance / Criteria	*Proposed Development*	*Comply*
OBJECTIVE 4C-2 Ceiling Heights	Ceiling height increases the sense of space in apartments and provides for well proportioned rooms.	The proposal meets ceiling height criteria. Ground level is provided with increased floor to ceiling height to ensure good amenity to lower level.	✓
guidance	A number of the following design solutions can be used: • The hierarchy of rooms in an apartment is defined using changes in ceiling heights and alternatives such as raked or curved ceilings, or double height spaces • Well proportioned rooms are provided, for example, smaller rooms feel larger and more spacious with higher ceilings • Ceiling heights are maximised in habitable rooms by ensuring that bulkheads to not intrude. The stacking of service rooms from floor to floor and coordination of bulkhead location above non-habitable areas, such as robes or storage, can assist.	Rooms are well proportions. It is noted that units are generally laid out to avoid bulk heads and the like in main living spaces and habitable rooms.	✓
OBJECTIVE 4C-3 Ceiling Heights	Ceiling heights contribute to the flexibility of building use over the life of the building	Ground floor is provided with increased ceiling heights to provide future flexibility of use. Although site is not in a mixed use zone, it is in a high density zone immediately adjacent to the business zone. It may be desirable to provide a non-residential use in the building in the future. This is signalled through Council's own designation of the site as a key site where food and drink premises are contemplated.	✓
guidance	Ceiling heights of lower level apartments in centres should be greater than the minimum required by the design criteria allowing flexibility and conversion to non-residential uses.	See response above.	✓
OBJECTIVE 4D-1	The layout of rooms within an apartment is functional, well organised and provides a high standard of amenity.	The design of apartment layout is an integration of reasonable function, location and dimension as well as amenity.	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
Apartment size and layout			
CRTIERIA 4D-1	1. Apartments are required to have the following minimum internal areas: Apartment type — Minimum internal area Studio — 35m^2 1 bedroom — 50m^2 2 bedroom — 70m^2 3 bedroom — 90m^2 The minimum internal areas include only one bathroom. Additional bathrooms increase the minimum internal area by 5 m^2 each.	All apartments meet minimum internal areas corresponding to number of bedrooms (and any additional bathrooms).	✓
	2. Every habitable room must have a window in an external wall with a total minimum glass area of not less than 10% of the floor area of the room. Daylight and air may not be borrowed from other rooms.	Large operable glass windows will be provided in each habitable room being min 10% of the floor area of the room.	
guidance	Kitchens should not be located as part of the main circulation space in larger apartments (such as hallway or entry space).	Kitchens in larger units (2-3 bedroom) avoid circulation areas and are integrated as part of open plan living and dining spaces.	✓
	A window should be visible from any point in a habitable room.	The proposal complies. The bedrooms incorporate large windows or operable doors to balconies and there are no 'snorkel' effect bedrooms.	✓
	Where minimum area or room dimensions are not met apartments need to demonstrate that they are well designed and demonstrate the usability and functionality of the space with realistically scaled furniture layouts and circulation areas. These circumstances would be assessed on their merits.	All rooms are functional and can accommodate necessary furniture, etc. Furniture layouts are shown on each plan.	✓
OBJECTIVE 4D-2	Environmental performance of the apartment is maximised	Layouts are in accordance with ADG criteria and guidance.	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
Apartment size and layout			
CRITERIA 4D-2	1. Habitable room depths are limited to a maximum of 2.5 x the ceiling height.	The proposal complies with maximum habitable room depth except where exemption is permitted. In this regard, it should be noted that the units integrate an open plan living, dining and kitchen layout.	✓
	2. In open plan layouts (where the living, dining and kitchen are combined) the maximum habitable room depth is 8m from a window.	The proposal complies with this requirement. Where there is exceedance, the internal areas are generous and combine kitchen, living and dining areas adjoining large private open space for solar access and natural ventilation. Depth of these open plan rooms is limited to 8 m	✓
guidance	Greater than minimum ceiling heights can allow for proportional increases in room depth up to the permitted maximum depths.	Note. Ground level units have greater floor to ceiling heights.	✓
	All living areas and bedrooms should be located on the external face of the building.	The proposal complies. Many of the bedrooms also adjoin private space areas with direct access as well.	✓
	Where possible: • Bathrooms and laundries should have an external openable window. • Main living spaces should be oriented toward the primary outlook and aspect and away from noise sources.	A number of bathrooms are at external face of building and have windows Main living spaces are oriented away from noise sources and have a primary outlook.	✓
OBJECTIVE 4D-3 Apartment Size and Layout	Apartment layouts are designed to accommodate a variety of household activities and needs	Apartment layouts are simple and open plan. Like rooms are typically conjoined making them flexible.	✓
CRTIERIA 4D-3	1. Master bedrooms have a minimum area of $10m^2$ and other bedrooms $9m^2$ (excluding wardrobe space).	The proposal complies with this criterion.	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
	2. Bedrooms have a minimum dimension of 3m (excluding wardrobe space).	The proposal complies with this criterion.	✓
	3. Living rooms or combined living/dining rooms have a minimum width of: • 3.6m for studio and 1 bedroom apartments • 4m for 2 and 3 bedroom apartments.	The proposal complies with this criterion.	✓
	4. The width of cross-over or cross-through apartments are at least 4m internally to avoid deep narrow apartment layouts.	Cross-through unit is not proposed.	N/A
guidance	Access to bedrooms, bathrooms and laundries is separated from living areas minimising direct openings between living and service areas.	The proposal avoids direct access to bathrooms and laundries from living areas where possible. Where this occurs the door does not impact on furniture layouts or circulation space within the living room.	✓
	All bedrooms allow a minimum length of 1.5m for robes.	The proposal complies.	✓
	The main bedroom of an apartment or a studio apartment should be provided with a wardrobe of a minimum 1.8m long, 0.6m deep and 2.1m high.	The proposal complies.	✓
	Apartment layouts allow flexibility over time, design solutions may include: • Dimensions that facilitate a variety of future arrangements and removal • Spaces for a range of activities and privacy levels between different spaces within the apartment • Dual master apartments • Dual key apartments *Note: Dual key apartments which are separate but on the same title are regarded as two sole occupancy units for the purposes of the Building Code of Australia and for calculating the mix of apartments.*	Dimensions and rooms shapes allow different arrangement using the open plan concept. Like rooms generally grouped such as bedrooms which could be reconfigured by changes to stud walls, etc. Adjoining units are mirrored in many cases which could make their consolidation quite straight forward.	✓

<table>
<tr><th></th><th>Design Guidance / Criteria</th><th>Proposed Development</th><th>Comply</th></tr>
<tr><td></td><td>• Room sizes and proportions or open plans (rectangular spaces (2:3) are more easily furnished than square spaces (1:1)).
• Efficient planning of circulation by stairs, corridors and through rooms to maximise the amount of usable floor space in rooms.</td><td></td><td></td></tr>
<tr><td>OBJECTIVE
4E-1
Private open space and balconies</td><td>Apartments provide appropriately sized private open space and balconies to enhance residential amenity.</td><td>The proposal provides balconies and terraces to enhance the amenity and outdoor lifestyle for residents. Each of these POS have a space suitable for table and chairs. Even studio units provided with a usable balcony sizes appropriate to the unit sizes itself.</td><td>✓</td></tr>
<tr><td>CRITERIA
4E-1</td><td>1. All apartments are required to have primary balconies as follows:
<table>
<tr><th>Dwelling type</th><th>Minimum area</th><th>Minimum depth</th></tr>
<tr><td>Studio apartments</td><td>4m^2</td><td>-</td></tr>
<tr><td>1 bedroom apartments</td><td>8m^2</td><td>2m</td></tr>
<tr><td>2 bedroom apartments</td><td>10m^2</td><td>2m</td></tr>
<tr><td>3+ bedroom apartments</td><td>12m^2</td><td>2.4m</td></tr>
</table>
The minimum balcony depths to be counted as contributing to the balcony area is 1m.</td><td>All primary balconies meet the minimum size and dimension criteria.</td><td>✓</td></tr>
<tr><td></td><td>2. For apartments at ground level or on a podium or similar structure, a private open space is provided instead of a balcony. It must have a minimum area of 15m^2 and a minimum depth of 3m.</td><td>Each ground floor apartment has a terrace with a minimum area of 15 m^2 and at least one space of 2 m x 2 m suitable for furniture.</td><td>✓</td></tr>
<tr><td>guidance</td><td>Increased communal open space should be provided where the number or size of balconies are reduced.</td><td>Balconies comply with criterion and no additional communal open space need to be provided.</td><td>N/A</td></tr>
<tr><td></td><td>Storage areas on balconies is additional to the minimum balcony size.</td><td>Storage is not provided on balconies.</td><td>N/A</td></tr>
</table>

	Design Guidance / Criteria	*Proposed Development*	*Comply*
	Balcony use may be limited in some proposals by: • Consistently high wind speeds at 10 storeys and above • Close proximity to road, rail and other noise sources • Exposure to significant levels of aircraft noise • Heritage and adaptive reuse of existing buildings. In these situations, juliet balconies, operable walls, enclosed wintergardens or bay windows may be appropriate, and other amenity benefits for occupants should also be provided in the apartments or in the development or both. Natural ventilation also needs to be demonstrated.	N/A Proposed balconies meet criteria.	N/A
OBJECTIVE 4E-2 Private open space and balconies	Primary private open space and balconies are appropriately located to enhance liveability for residents	POS is generally designed as an extension of the living room. With west facing units, balconies also act as passive solar design elements blocking hot summer sun and allowing low angle winter sun to penetrate. All POS are dimensioned to allow for furniture placement making them usable and integral to the overall amenity of the unit.	✓
guidance	Primary open space and balconies should be located adjacent to the living room, dining room or kitchen the living space.	See responses above. The proposal complies.	✓
	Private open spaces and balconies predominantly face north, east or west.	These have been maximised, within the context of site constraints. Some balconies do face south to provide casual surveillance of the McKay Avenue public domain. These units and balconies also have a very high quality view over the heavy native tree canopy stretching across the sites to the south of the subject site. These south facing balconies belong to dual aspect apartments which achieve a high level of amenity.	✓
	Primary open space and balconies should be orientated with the longer side facing outwards or be open to the sky to optimise daylight access into adjacent rooms.	The private open space's longer sides face outwards and optimise solar access where possible to maximise capture of natural light to the living space internally.	✓
OBJECTIVE 4E-3	Private open space and balcony design is integrated into and contributes to the overall architectural form and detail of the building	The balcony design is fundamental to the overall composition and architectural detail of the building.	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
Private open space and balconies			
guidance	Solid, partially solid or transparent fences and balustrades are selected to respond to the location. They are designed to allow views and passive surveillance of the street while maintaining visual privacy and allowing for a range of uses on the balcony. Solid and partially solid balustrades are preferred.	The balconies are proposed in a combination of frosted glass and solid. The private open spaces are generous in proportion, depth and width and shall not impact on privacy of the internal areas of the units. The glass balustrades assist in casual surveillance and provide a feeling of openness for the development.	✓
	Full width full height glass balustrades alone are generally not desirable.	Note. Semi-transparent glass used for balustrade where glazed balustrades are proposed.	✓
	Projecting balconies should be integrated into the building design and the design of soffits considered.	Balconies generally conform to building footprint to maximise solar access and ventilation capture. Where balconies protrude for articulation soffit design has been considered.	✓
	Operable screens, shutters, hoods and pergolas are used to control sunlight and wind.	These will be integrated at appropriate windows and openings.	✓
	Balustrades are set back from the building or balcony edge where overlooking or safety is an issue.	Noted.	✓
	Downpipes and balcony drainage are integrated with the overall façade and building design.	Downpipes are not visible.	✓
	Air-conditioning units should be located on roofs, in basements, or full integrated into the building design.	A/C located on balconies due to balcony glass not being clear glass.an A/C protective covering proposed	✓
	Where clothes drying, storage or air conditioning units are located on balconies, they should be screened and integrated in the building design.	Note/to be addressed at CC stage.	✓
	Ceilings of apartments below terraces should be insulated to avoid heat loss.	BASIX requirements cover this. Although for the majority of levels, floor plans are the same so the only instances of this occur at the uppermost level and additional floor to floor heights are proposed for the uppermost storey to allow for this,	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
	Water and gas outlets should be provided for primary balconies and private open space.	Note/to be addressed at CC stage.	✓
OBJECTIVE 4E-4 Private open space and balcony design maximises safety	Private open space and balcony design maximises safety	This will be detailed at CC stage but DA indicates standard balustrades that avoid footholds and climbing.	✓
guidance	Changes in ground levels or landscaping are minimised.	The proposal seeks to provide minimal ground level changes to frontage and landscaped areas although the site is sloping irregularly towards the corners.	✓
	Design and detailing of balconies avoids opportunities for climbing and falls.	The balcony barriers are of appropriate height to discourage climbing and are designed to avoid footholds	Note/to be addressed at CC stage
OBJECTIVE 4F-1 Common circulation and spaces	Common circulation spaces achieve good amenity and properly service the number of apartments.	Common circulation space including lobby, internal corridors and vertical circulation have considered safety, amenity and durability. Corridor widths are adequate and wayfinding is not complex. A maximum of 8 units off a core. Natural light and air provided to each corridor.	✓
CRITERIA 4F -1	1. The maximum number of apartments off a circulation core on a single level is eight.	The proposal has a maximum of 8 units off a single core.	✓
	2. For buildings of 10 storeys and over, the maximum number of apartments sharing a single lift is 40.	N/A	N/A

	Design Guidance / Criteria	*Proposed Development*	*Comply*
guidance	Greater than minimum requirements for corridor widths and/or ceiling heights allow comfortable movement and access particularly in entry lobbies, outside lifts and at apartment entry doors.	The corridor width is appropriate for circulation.	✓
	Daylight and natural ventilation should be provided to all common circulation spaces that are above ground.	Natural daylight and ventilation provided to each corridor.	✓
	Windows should be provided in common circulation spaces and should be adjacent to the stair or lift core or at the ends of corridors.	Window provided to each common corridor.	✓
	Longer corridors greater than 12m in length from the lift core should be articulated. Design solutions may include: • A series of foyer areas with windows and spaces for seating • Wider areas at apartment entry doors and varied ceiling heights.	Corridors are designed to be articulated including foyer area. Sufficient space is provided in the corridors for entries, circulation, disabled access and the like.	✓
	Design common circulation spaces to maximise opportunities for dual aspect apartments, including multiple core apartment buildings and cross over apartments.	See response above. The proposal has provided dual aspect apartments.	✓
	Achieving the design criteria for the number of apartments off a circulation core may not be possible. Where a development is unable to achieve the design criteria, a high level of amenity for common lobbies, corridors and apartments should be demonstrated, including: • Sunlight and natural cross ventilation in apartments • Access to ample daylight and natural ventilation in common circulation spaces • Common areas for seating and gathering • Generous corridors with greater than minimum ceiling heights • Other innovative design solutions that provide high levels of amenity.	A high level of amenity is provided for common circulation cores. Natural daylighting and solar access achieved.	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
	Where design criteria 1 is not achieved, no more than 12 apartments should be provided off a circulation core on a single level.	N/A. See responses above.	N/A
	Primary living room or bedroom windows should not open directly onto common circulation spaces, whether open or enclosed. Visual and acoustic privacy from common circulation spaces to any other rooms should be carefully controlled.	The living, bedroom and balcony areas are generally located away from common circulation areas. Where windows are near a circulation space as for example the pathways to the common garden on ground level, privacy measures are provided such as courtyards, planters and screens to provide privacy.	✓
OBJECTIVE 4F-2	Common circulation spaces promote safety and provide for social interaction between residents	Common circulation spaces are safe. Direct sightlines are maintained from the street to each entry. Entries are secured. Wayfinding is simple. Corridors has a sufficient width and shall not feel dark, enclosed or oppressive.	✓
guidance	Direct and legible access should be provided between vertical circulation points and apartment entries by minimising corridor or gallery length to give short, straight, clear sight lines.	The corridor provides clear circulation with compact cores and no more than 8 units on a single corridor.	✓
	Tight corners and spaces are avoided.	This has been avoided where possible.	✓
	Circulation spaces should be well lit at night.	Adequate lighting is provided to circulation areas at night.	✓
	Legible signage should be provided for apartment numbers, common areas and general wayfinding.	Signage will be provided to signalise apartment direction from core area, each unit and from ground floor lobby. To be detailed at CC	✓
	Incidental spaces, for example space for seating in a corridor, at a stair landing, or near a window are provided.	There are opportunities to provide these on the ground floor lobby.	✓
	In larger developments, community rooms for activities such as owners corporation meetings or resident use should be provided and are ideally co-located with communal open space.	N/A	N/A
	Where external galleries are provided, they are more open than closed above the balustrade along their length.	N/A	N/A

	Design Guidance / Criteria		*Proposed Development*	*Comply*
OBJECTIVE 4G-1 Storage	Adequate, well designed storage is provided in each apartment.		Adequate storage is provided to all apartments and applicable criteria is met. Ancillary storage is also provided in the basement.	✓
CRITERIA 4G-1	1. In addition to storage in kitchens, bathrooms and bedrooms, the following storage is provided:		The proposal complies with this criterion. Units have at least 50% storage located within the apartment and some units have storage in the basement.	✓
	Dwelling type	Storage size volume		
	Studio apartments	$4m^3$		
	1 bedroom apartments	$6m^3$		
	2 bedroom apartments	$8m^3$		
	3+ bedroom apartments	$10m^3$		
	At least 50% of the required storage is to be located within the apartment.			
guidance	Storage is accessible from either circulation or living areas.		These areas are accessible from circulation or living areas.	✓
	Storage provided on balconies (in addition to the minimum balcony size) is integrated into the balcony design, weather proof and screened from view from the street.		N/A	N/A
	Left over space such as under stairs is used for storage.		N/A	N/A
OBJECTIVE 4G-2 Storage	Additional storage is conveniently located, accessible and nominated for individual apartments		Ancillary storey is located in basement in convenient spaces near the lift or associated with individual car parking spaces.	✓
guidance	Storage not located in apartments is secure and clearly allocated to specific apartments.		These are securely located in a designated area in the basement and allocated to each unit.	✓
	Storage is provided for larger and less frequently accessed items.		See response above.	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
	Storage space in internal or basement car parks is provided at the rear or side of the car spaces or in cages so that allocated car parking remains accessible.	See response above.	✓
	If communal storage rooms are provided they should be accessible from common circulation areas of the building.	N/A	✓
	Storage not located in an apartment is integrated into the overall building design and is not visible from the public domain.	See response above.	✓
OBJECTIVE 4H-1 Acoustic privacy	Noise transfer is minimised through the siting of buildings and building layout.	Acoustic privacy has been protected through building separation and the arrangement of apartment layouts. An acoustic report forms part of the application. The site does have three street frontages so road noise can be at issue. Proposed materials are durable and units are designed to provide acoustic privacy.	✓
guidance	Adequate building separation is provided within the development and from neighbouring buildings/adjacent uses.	The building layout and window specifications avoid acoustic privacy impacts.	✓
	Window and door openings are generally orientated away from noise sources.	The building is oriented to maximise capture of natural light and also addressing of the public domain.	✓
	Noisy areas within buildings including building entries and corridors should be located next to or above each other and quieter areas next to or above quieter areas.	Internal living and bedroom areas are located away from the corridor and service areas to maximise acoustic privacy to sensitive parts within each unit.	✓
	Storage and circulation areas and non-habitable rooms should be located to buffer noise from external sources.	See response above.	✓
	The number of party walls (walls shared with other apartments) are limited and are appropriately insulated.	N/A.	N/A
	Noise sources such as garbage doors, driveways, service areas, plant rooms, building services, mechanical equipment, active communal open	These are mostly provided at basement floors or concealed within the building.	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
	spaces and circulation areas should be located at least 3m away from bedrooms.	Unit near driveway is dual aspect and living room recessed behind balcony. The bedroom near the driveway is dual aspect.	
OBJECTIVE 4H-2 Acoustic privacy	Noise impacts are mitigated within apartments through layout and acoustic treatments	The layout has had regard to potential noise sources. Layouts and materials provide for acoustic privacy. An acoustic report forms part of the application. Each building is setback from the street.	✓
guidance	Internal apartment layout separates noisy spaces from quiet spaces, using a number of the following design solutions: • Rooms with similar noise requirements are grouped together • Doors separate different use zones • Wardrobes in bedrooms are co-located to act as sound buffers.	See responses above.	✓
	Where physical separation cannot be achieved noise conflicts are resolved using the following design solutions: • Double or acoustic glazing • Acoustic seals • Use of materials with low noise penetration properties • Continuous walls to ground level courtyards where they do not conflict with streetscape or other amenity requirements.	The site is not generally in a high noise sources location. Setbacks are employed in development.	✓
OBJECTIVE 4J-1 Noise and pollution	In noisy or hostile environments the impacts of external noise and pollution are minimised through the careful siting and layout of buildings	The site is not in a noisy or hostile environment. Buildings are setback from the street and layouts protect acoustic privacy.	✓
guidance	To minimise impacts the following design solutions may be used:	These principles where appropriate have been used to minimise noise pollution impacts from the road. Appropriate glazing as per technical	✓

	Design Guidance / Criteria	Proposed Development	Comply
	• Physical separation between buildings and the noise or pollution source • Residential uses are located perpendicular to the noise source and where possible buffered by other uses • Non-residential buildings are sited to be parallel with the noise source to provide a continuous building that shields residential uses and communal open spaces • Non-residential uses are located at lower levels vertically separating the residential component from the noise or pollution source. Setbacks to be underside of residential floor levels should increase relative to traffic volumes and other noise sources • Buildings should respond to both solar access and noise. Where solar access is away from the noise source, non-habitable rooms can provide a buffer • Where solar access is in the same direction as the noise source, dual aspect apartments with shallow building depths are preferable • Landscape design reduces the perception of noise and acts as a filter for air pollution generated by traffic and industry.	recommendations contained within the BCA will be adopted to minimise acoustic and pollution impacts.	
	Achieving the design criteria in this ADG may not be possible in some situations due to noise and pollution. Where developments are unable to achieve the design criteria, alternatives may be considered in the following areas: • Solar and daylight access • Private open space and balconies • Natural cross ventilation.	N/A	N/A

	Design Guidance / Criteria	*Proposed Development*	*Comply*
OBJECTIVE 4J-2 Noise and pollution	Appropriate noise shielding or attenuation techniques for the building design, construction and choice of materials are used to mitigate noise transmission	The site is not in a highly noisy position. The proposed design and layouts are suitable to protect acoustic amenity.	✓
guidance	Design solutions to mitigate noise include: • Limiting the number and size of openings facing noise sources • Providing seals to prevent noise transfer through gaps • Using double or acoustic glazing, acoustic louvres or enclosed balconies (wintergardens) • Using materials with mass and/or sound insulation or absorption properties eg solid balcony balustrades, external screens and soffits.	See responses above.	✓
OBJECTIVE 4K-1 Apartment mix	A range of apartment types and sizes is provided to cater for different household types now and into the future	Studio, one bed, two bed and three bed apartments are proposed. Different layouts and characters are proposed. Affordable housing and market rate housing is proposed.	✓
guidance	A variety of apartment types is provided.	The proposal provides a range of studio, 1 and 2 bedroom units which are considered appropriate for the area/demography. Affordable housing and market rate housing is proposed.	✓
	The apartment mix is appropriate, taking into consideration: • The distance to public transport, employment and education centres • The current market demands and projected future demographic trends • The demand for social and affordable housing • Different cultural and socioeconomic groups.	See response above. This has been fully taken into the design consideration and is considered appropriate for the locality.	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
	Flexible apartment configurations are provided to support diverse household types and stages of life including single person households, families, multi-generational families and group households.	Apartment mix and configurations are varied to support diverse demographic types and living arrangements.	✓
OBJECTIVE 4K-2	The apartment mix is distributed to suitable locations within the building	Different dwelling types are distributed throughout locations in the building. Generally larger units take up corner positions.	✓
guidance	Different apartment types are located to achieve successful façade composition and to optimise solar access.	See responses above. The unit mix, layout, siting and internal design achieves good daylighting. Articulated facades ensure adequate glazing. Each facade is well designed and composed.	✓
	Larger apartment types are located on the ground or roof level where there is potential for more open space and on corners where more building frontage is available.	Larger apartments are located at ground and upper levels. They are also located on corners almost exclusively to achieve more frontage.	✓
OBJECTIVE 4L-1 Ground floor apartments	Street frontage activity is maximised where ground floor apartments are located	Street frontage activity is promoted by orienting units to each street front, providing individual entries where topography allows and where the frontage is not constrained by necessary stormwater management. Ground floor terraces facing the street have fences that are visually permeable at the upper levels to avoid a fortress like effect and instead promote a sense of openness and connection to the public domain.	✓
guidance	Direct street access should be provided to ground floor apartments.	The proposed provides direct street access to ground floor apartments where topography allows.	✓
	Activity is achieved through front gardens, terraces and the façade of the building. Design solutions may include: • Both street, foyer and other common internal circulation entrances to ground floor apartments • Private open space is next to the street • Doors and windows face the street.	N/A. See above responses.	N/A

	Design Guidance / Criteria	*Proposed Development*	*Comply*
	Retail or home office spaces should be located along street frontages.	N/A.	N/A
	Ground floor apartment layouts support small office home office (SOHO) use to provide future opportunities for conversion into commercial or retail areas. In these cases, provide higher floor to ceiling heights and ground floor amenities for easy conversion.	Ground floor has retail area with minimum 3.3m ceiling height which allows for flexibility of use.	✓
OBJECTIVE 4L-2 Ground floor apartments	Design of ground floor apartments delivers amenity and safety for residents	Ground floor apartment design has regard to amenity and safety. Terrace fences are designed to avoid footholds. Upper levels of fences are visually permeable. Landscape augments safety by further helping to prevent footholds and climbing. Setback zones are designed to maintain sightlines and avoid areas of concealment. Ground level apartments are all provided with adequately sized private open spaces. Each frontage provides good casual surveillance also deterring crime.	✓
guidance	Privacy and safety should be provided without obstructing casual surveillance. Design solutions may include: • Elevation of private gardens and terraces above the street level by 1-1.5m • Landscaping and private courtyards • Window sill heights that minimise sight lines into apartments • Integrating balustrades, safety bars or screens with the exterior design.	See response above in 4H and 4J, the proposal complies with these criteria. Privacy and safety have been considered in an appropriate way as a part of the integrated design.	✓
	Solar access should be maximised through: • High ceilings and tall windows • Trees and shrubs that allow solar access in winter and shade in summer.	Residential ceilings meet ADG criteria to achieve solar access. The number of units with a southern aspect is restricted. Ground level provides floor to floor height of 3.6 m to benefit lower level units. Upper levels have minimum floor-to-floor height of 3.1 m to ensure generous ceiling heights. Landscape is positioned to contribute to passive solar design.	✓
OBJECTIVE 4M-1	Building facades provide visual interest along the street while respecting the character of the local area	Building façade provide visual interest with a cohesive modular design with varied materials and finishes. The materials represent a contemporary interpretation of traditional materials and are compatible with the local area	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
Facades		while avoiding typical façade designs in the area which are dominated by paint and render or red brick.	
guidance	Design solutions for front building facades may include: • A composition of varied building elements • A defined base, middle and top of buildings • Revealing and concealing certain elements • Changes in texture, material, detail and colour to modify the prominence of elements.	Refer to photomontage. The building façade comprises a series of vertical and horizontal elements to break down bulk and scale, and a serious of finishes, materiality and colours to complement and enhance the existing streetscape.	✓
	Building services should be integrated within the overall façade.	See responses above. These are provided in the basement and plant rooms except where authorities require them to be directly accessible from the street.	✓
	Building facades should be well resolved with an appropriate scale and proportion to the streetscape and human scale. Design solutions may include: • Well composed horizontal and vertical elements • Variation in floor heights to enhance the human scale • Elements that are proportional and arranged in patterns • Public artwork or treatments to exterior blank walls • Grouping of floors or elements such as balconies and windows on taller buildings.	Refer to photomontage. The design avoids blank facades. A modular design is proposed with well composed vertical and horizontal elements. The modules of the façade flow from one to the other to create a cohesive composition and a clear base, middle and top to the buildings. An underlying cubic structure provides a sculptural quality. Façade materials contribute to the overall composition and are sufficiently varied to create visual interest. The buildings are designed to be complementary but not identical, achieving a good quality streetscape outcome.	✓
	Building facades relate to key datum lines of adjacent buildings through upper level setbacks, parapets, cornices, awnings or colonnade heights.	The proposed development comprises tower forms set within landscaped setbacks which relate well to the future context of the site which is represented by the other approved residential flat building on adjoining sites. The proposed roof slab is consistent with the LEP height limit and thus achieves a level of compatibility with the desired future character of the area in terms of scale.	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
	Shadow is created on the façade throughout the day with building articulation, balconies and deeper window results.	See above responses. The proposal engaged vertical and horizontal elements to reduce the bulk and create interest with shadows. This includes projecting fine walls, framing elements and serrated building edges.	✓
OBJECTIVE 4M-2 Facades	Building functions are expressed by the facade	The proposed façade design does not employ false facades or other extraneous elements. Façade composition accentuates key residential elements such as balconies. Lobby entries also feature prominently. Slabs levels are also clearly expressed.	✓
guidance	Building entries should be clearly defined.	Building entries are clearly defined by porticos facing Lucas Avenue.	✓
	Important corners are given visual prominence through a change in articulation, materials or colour, roof expression or changes in height.	Corners are expressed to create visual interest but maintain consistency with the overall building composition.	✓
	The apartment layout should be expressed externally through façade features such as part walls and floor slabs.	The building articulation reflects the internal layout and floor levels are clearly identifiable.	✓
OBJECTIVE 4N-1 Roof design	Roof treatments are integrated into the building design and positively respond to the street	The roof treatment is fully in keeping with the cubic structure of the building and its contemporary aesthetic. The green roof elements and rooftop common open space which form part of the roofscape are integral to the development and contribute to the purposes of the development, to create a good place for people to live.	✓
guidance	Roof design relates to the street. Design solutions may include: Special roof features and strong corners Use of skillion or very low pitch hipped roofs Breaking down the massing of the roof by using smaller elements to avoid bulk Using materials or a pitched form complementary to adjacent buildings.	The roof feature acts as a cap to the cubic form of the building form and is integrated with the overall façade composition.	✓
	Roof treatments should be integrated with the building design. Design solutions may include:	Roof materials compliment the building. The simple roof form compliments the overall aesthetic of the development. The roof garden adds significant amenity to the development.	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
	• Roof design proportionate to the overall building size, scale and form • Roof materials compliment the building • Service elements are integrated.		
OBJECTIVE 4N-2 Roof design	Opportunities to use roof space for residential accommodation and open space are maximised	Roof gardens with green roof elements are proposed. This adds significant amenity to the development.	✓
guidance	Habitable roof space should be provided with good levels of amenity. Design solutions may include: • Penthouse apartments • Dormer or clerestory windows • Openable skylights.	N/A	N/A
	Open space is provided on roof tops subject to acceptable visual and acoustic privacy, comfort levels, safety and security considerations.	The roof top gardens proposed provide additional residential amenity and create a special secondary source of relaxation and socialisation space for residents.	✓
OBJECTIVE 4N-3 Roof design	Roof design incorporates sustainability features	Green roof elements proposed. Shading structures proposed.	✓
guidance	Roof design maximises solar access to apartments during winter and provides shade during summer. Design solutions may include: • The roof lifts to the north • Eaves and overhangs shade walls and windows from summer sun.	The roof design does not hinder solar access to apartments.	✓
	Skylights and ventilation systems should be integrated into the roof design.	Building systems are integrated into the roof and will not be visible from the street.	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
OBJECTIVE 4O-1 Landscape design	Landscape design is viable and sustainable	Large extents of landscape are provided on site with significantly more deep soil provided than what is suggested in the ADG. The species proposed are suitable to the local setting and are generally natives. A range of sizes and vegetation types are proposed to achieve a high quality environment and contribute to the quality of the public domain.	✓
guidance	Landscape design should be environmentally sustainable and can enhance environmental performance by incorporating: • Diverse and appropriate planting • Bio-filtration gardens • Appropriately planted shading trees • Areas for residents to plant vegetables and herbs • Composting • Green roofs or walls.	The landscape design is appropriate for the climate, the setting, the suggested demographics and usage needs. It incorporates a number of elements including green walls (trellis) and recreation areas that are suitable for the locality and in accordance with Council policies. The plant species is responsive to the area and minimises ongoing care and appropriate for soil area/depth for on structure planting. Tree proposed contribute positively to the streetscape and add to the urban canopy.	✓
	Ongoing maintenance plans should be prepared.	This is provided as part of the CC.	✓
	Microclimate is enhanced by: • Appropriately scaled trees near the eastern and western elevations for shade • A balance of evergreen and deciduous trees to provide shading in summer and sunlight access in winter • Shade structures such as pergolas for balconies and courtyards.	Note. See response above Balconies are shaded by roofs and vertical blade walls in many instances. Green roof proposed also helps to reduce urban heat island effect	✓
	Tree and shrub selection considers size at maturity and the potential for roots to compete.	Landscape design has had regard to mature plant sizes.	✓
OBJECTIVE 4O-2	Landscape design contributes to the streetscape and amenity	Proposed deep soil setbacks provide opportunities for planting. Where fencing is proposed at the street boundary it has an open palisade form to maximise the visibility of onsite landscape from the public domain. Additional setbacks are provided at corners where important trees are	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
Landscape design		located. The proposed landscape design is of a high quality and native species are proposed.	
guidance	Landscape design responds to the existing site conditions including: • Changes of levels • Views • Significant landscape features including trees and rock outcrops.	Landscape design has considered the site conditions for views and levels.	✓
	Significant landscape features should be protected by: • Tree protection zones • Appropriate signage and fencing during construction.	An arborist report forms part of the application. Trees are retained and protected where practical and where significant.	✓
	Plants selected should be endemic to the region and reflect the local ecology.	See responses above and the landscape plan that accompanies the DA.	✓
OBJECTIVE 4P-1 Planting on structures	Appropriate soil profiles are provided	Soil details provided in landscape plan	✓
guidance	Structures are reinforced for additional saturated soil weight.	See responses above and the landscape plan that accompanies the DA.	✓
	Soil volume is appropriate for plant growth, considerations include: • Modifying depths and widths according to the planting mix and irrigation frequency • Free draining and long soil life span • Tree anchorage.	See responses above and the landscape plan that accompanies the DA.	✓
	Minimum soil standards for plant sizes should be provided in accordance with Table 5.	The proposal complies with ADG and DCP requirements.	✓

<table>
<tr><th></th><th>Design Guidance / Criteria</th><th>Proposed Development</th><th>Comply</th></tr>
<tr><td></td><td>Table 5 – Minimum soil standards for plant types and sizes
<table>
<tr><th>Plant type</th><th>Definition</th><th>Soil volume</th><th>Soil depth</th><th>Soil area</th></tr>
<tr><td>Large trees</td><td>12-18m high, up to 16m crown spread at maturity</td><td>150m^3</td><td>1,200mm</td><td>10m x 10m or equivalent</td></tr>
<tr><td>Medium trees</td><td>8-12m high, up to 8m crown spread at maturity</td><td>35m^3</td><td>1,000mm</td><td>6m x 6m or equivalent</td></tr>
<tr><td>Small trees</td><td>6-8m high, up to 4m crown spread at maturity</td><td>9m^3</td><td>800mm</td><td>3.5m x 3.5m or equivalent</td></tr>
<tr><td>Shrubs</td><td></td><td></td><td>500-600mm</td><td></td></tr>
<tr><td>Ground</td><td></td><td></td><td>300-450mm</td><td></td></tr>
<tr><td>Turf</td><td></td><td></td><td>200mm</td><td></td></tr>
</table>
Note: The above has been calculated assuming fortnightly irrigation. Any sub-surface drainage requirements are in addition to the above minimum soil depths.</td><td></td><td></td></tr>
<tr><td>OBJECTIVE 4P-2
Planting on structures</td><td>Plant growth is optimised with appropriate selection and maintenance</td><td>Planters are indicated where on structure planting is proposed with sufficient soil depths and sufficient planter widths to support the propose species.</td><td>✓</td></tr>
</table>

	Design Guidance / Criteria	*Proposed Development*	*Comply*
guidance	Plants are suited to site conditions, considerations include: • Drought and wind tolerance • Seasonal changes in solar access • Modified substrate depths for a diverse range of plants • Plant longevity.	Generally low water demand species are proposed. The landscape proposed is generally native or selected to be suitable for the local climate.	✓
	A landscape maintenance plan is prepared.	The landscape plans include maintenance notes that can direct a more detailed maintenance plan at CC stage. Refer to Landscape Plan 1 of 4 by Michael Siu Landscape Architects.	
	Irrigation and drainage systems respond to: • Changing site conditions • Soil profile and the planting regime • Whether rainwater, stormwater or recycled grey water is used.	Note. See responses above and stormwater management plan that accompanies the DA.	✓
OBJECTIVE 4P-3 Planting on structures	Planting on structures contributes to the quality and amenity of communal and public open spaces	Planting on structures is proposed between the buildings where the basement stretches between the two buildings. Planters allow for a range of landscape and contribute to the quality of this part of the space. The space is connected to a generous deep soil zone. Planters are proposed at the roof garden as well with sufficient sizes and depths.	✓
guidance	Building design incorporates opportunities for planting on structures. Design solutions may include: • Green walls with specialised lighting for indoor green walls • Wall design that incorporates planting • Green roofs, particularly where roofs are visible from the public domain • Planter boxes.	The proposal incorporates planting to soften the driveway and roof top communal open space that will be suitable for all ages, household types and maximises casual surveillance/minimises safety hazards.	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
	Note: Structures designed to accommodate green walls should be integrated into the building façade and consider the ability of the façade to change over time.		
OBJECTIVE 4Q-1 Universal design	Universal design features are included in apartment design to promote flexible housing for all community members	The proposed development provides barrier free access. Adaptable housing is proposed.	✓
guidance	Developments achieve a benchmark of 20% of the total apartments incorporating the Liveable Housing Guideline's silver level universal design features.	The proposal is able to achieve this objective. Liveable units are proposed.	✓
OBJECTIVE 4Q-2 Universal design	A variety of apartments with adaptable designs are provided	Adaptable units are proposed for units with different numbers of bedrooms.	✓
guidance	Adaptable housing should be provided in accordance with the relevant council policy.	The proposal achieves Liverpool Council criteria	✓
	Design solutions for adaptable apartments include: • Convenient access to communal and public areas • High level of solar access • Minimal structural change or residential amenity loss when adapted • Larger car parking spaces for accessibility • Parking titled separately from apartments or shared car parking arrangements.	Note. The adaptable units meet these requirements. Refer to the adaptable unit plan and carparking area plans that accompany the architectural plans.	✓
OBJECTIVE 4Q-3	Apartment layouts are flexible and accommodate a range of lifestyle needs	Apartment layouts are generally open plan with like rooms co-located. They provide a degree of flexibility.	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
Universal design			
guidance	Apartment design incorporates flexible design solutions which may include: • Rooms with multiple functions • Dual master bedroom apartments with separate bathrooms • Larger apartments with various living space options • Open plan 'loft' style apartments with only a fixed kitchen, laundry and bathroom.	Each apartment is open plan.	✓
OBJECTIVE 4R-1 Adaptive reuse	New additions to existing buildings are contemporary and complementary and enhance an area's identity and sense of place	N/A	N/A
guidance	Design solutions may include: • New elements to align with existing building • Additions that complement the existing character, siting, scale, proportion, pattern, form and detailing • Use of contemporary and complementary materials, finishes, textures and colours.	N/A	N/A
	Additions to heritage items should be clearly identifiable from the original building.	N/A	N/A
	New additions allow for the interpretation and future evolution of the building.	N/A	N/A
OBJECTIVE 4R-2 Adaptive reuse	Adapted buildings provide residential amenity while not precluding future adaptive reuse	N/A	N/A

	Design Guidance / Criteria	*Proposed Development*	*Comply*
guidance	Design features should be incorporated sensitively into adapted buildings to make up for any physical limitations, to ensure residential amenity is achieved. Design solutions may include: • Generously sized voids in deeper buildings • Alternative apartment types when orientation is poor • Using additions to expand the existing building envelope.	N/A	N/A
	Some proposals that adapt existing buildings may not be able to achieve all of the design criteria in this ADG. Where developments are unable to achieve the design criteria, alternatives could be considered in the following areas: • Where there are existing higher ceilings, depths of habitable rooms could increase subject to demonstrating access to natural ventilation, cross ventilation (when applicable) and solar and daylight access and Natural Ventilation (as set out in the ADG) • Alternatives to providing deep soil where less than the minimum requirement is currently available on the site • Building and visual separation – subject to demonstrating alternative design approaches to achieving privacy • Common circulation • Car parking • Alternative approaches to private open space and balconies.	N/A	N/A
OBJECTIVE 4S-1 Mixed use	Mixed use developments are provided in appropriate locations and provide active street frontages that encourage pedestrian movement	It is noted the site is adjacent to a mixed use area. The proposal incorporates increased floor to ceiling heights for ground level to build in a future flexibility of use.	✓
guidance	Mixed use development should be concentrated around public transport and centres.	It is noted that the proposal provides increased floor to ceiling height at ground level to provide future flexibility of use given the sites interface with the B2 zone and is designated a Key Site.	✓
	Mixed use developments positively contribute to the public domain. Design solutions may include:	N/A	N/A

	Design Guidance / Criteria	*Proposed Development*	*Comply*
	• Development addresses the street • Active frontages are provided • Diverse activities and uses • Avoiding blank walls at the ground level • Live/work apartments on the ground floor level, rather than commercial.		
OBJECTIVE 4S-2 Mixed use	Residential levels of the building are integrated within the development, and safety and amenity is maximised for residents	N/A	N/A
guidance	Residential circulation areas should be clearly defined. Design solutions may include: • Residential entries are separated from commercial entries and directly accessible from the street • Commercial service areas are separated from residential components • Residential car parking and communal facilities are separated or secured • Security at entries and safe pedestrian routes are provided • Concealment opportunities are avoided.	N/A	N/A
	Landscaped communal open space should be provided at podium or roof levels.	N/A	N/A
OBJECTIVE 4T-1 Awnings and signage	Awnings are well located and complement and integrate with the building design	N/A Portico at building entries provides protection.	N/A

	Design Guidance / Criteria	*Proposed Development*	*Comply*
guidance	Awnings should be located along streets with high pedestrian activity and active frontages.	N/A	N/A
	A number of the following design solutions are used: • Continuous awnings are maintained and provided in areas with an existing pattern • Height, depth, material and form complements the existing street character • Awnings are wrapped around the secondary frontages of corner sites • Awnings are retractable in areas without an established pattern.	N/A	N/A
	Awnings should be located over building entries for building address and public domain amenity.	Porticos at building entries act as awnings.	N/A
	Awnings relate to residential windows, balconies, street tree planting, power poles and street infrastructure.	N/A	N/A
	Gutters and down pipes should be integrated and concealed.	N/A	N/A
	Lighting under awnings should be provided for pedestrian safety.	N/A	N/A
OBJECTIVE 4T-2 Awnings and signage	Signage responds to the context and desired streetscape character	N/A Only discrete address signage to be provided consistent with the residential use.	N/A
guidance	Signage should be integrated into the building design and respond to the scale, proportion and detailing of the development.	N/A	N/A
	Legible and discrete way finding should be provided for larger developments.	N/A	N/A

	Design Guidance / Criteria	*Proposed Development*	*Comply*
	Signage is limited to being on and below awnings and a single façade sign on the primary street frontage.	N/A	N/A
OBJECTIVE 4U-1 Energy efficiency	Development incorporates passive environmental design	The proposed development seeks to provide daylighting and natural ventilation to all apartments. High Thermal mass materials are utilised. Generally living rooms are recessed behind balconies which allows high summer sun to be blocked but allows lower angle winter sun to penetrate. The western façade include shade screens to protect further from the hot western sun.	✓
guidance	Adequate natural light is provided to habitable rooms (see Solar and daylight access in ADG).	See Solar and Daylight Access part of this table. It is noted that the building design has used building articulation to maximise daylighting including secondary windows in many bedrooms and living spaces.	✓
	Well located, screened outdoor areas should be provided for clothes drying.	Translucent and solid balustrades allow for clothes drying to occur on balconies without adding to visual clutter in the public domain.	✓
OBJECTIVE 4U-2 Energy efficiency	Development incorporates passive solar design to optimise heat storage in winter and reduce heat transfer in summer	The proposed development seeks to provide daylighting and natural ventilation to all apartments. High Thermal mass materials are utilised. Generally living rooms are recessed behind balconies which allows high summer sun to be blocked but allows lower angle winter sun to penetrate.	✓
guidance	A number of the following design solutions are used: • The use of smart glass or other technologies on north and west elevations • Thermal mass in the floors and walls of north facing rooms is maximised • Polished concrete floors, tiles or timber rather than carpet • Insulated roofs, walls and floors and seals on window and door openings • Overhangs and shading devices such as awnings, blinds and screens.	Note. Thermal mass materials proposed Overhangs and vertical blades proposed Floor to ceiling heights allow for good insultation	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
	Provision of consolidated heating and cooling infrastructure should be located in a centralised location (eg the basement).	Consolidated heating and cooling is not proposed.	n/a
OBJECTIVE 4U-3 Energy efficiency	Adequate natural ventilation minimises the need for mechanical ventilation	The proposed apartments achieve a good level of natural ventilation. Units are not excessively deep. Sufficient operable windows are proposed. Many units are dual aspect and cross-ventilated. Facades are stepped and articulated.	✓
guidance	A number of the following design solutions are used: • Rooms with similar usage are grouped together • Natural cross ventilation for apartments is optimised • Natural ventilation is provided to all habitable rooms and as many non-habitable rooms, common areas and circulation spaces as possible.	Note. The building achieves criteria of 60% for cross ventilation. Stepped and articulated facades are provided. Rooms with similar usage are grouped in most apartments. Natural ventilation is provided to all habitable rooms and a number of non-habitable spaces as well.	✓
OBJECTIVE 4V-1 Water management and conservation	Potable water use is minimised	Low water demand landscape proposed. BASIX certification achieves water savings provisions. Rainwater Reuse proposed.	✓
guidance	Water efficient fittings, appliances and wastewater reuse should be incorporated.	Refer to BASIX report with recommendations which will be implemented to achieve energy and water conservation.	✓
	Apartments should be individually metered.	Note.	
	Rainwater should be collected, stored and reused on site.	Refer to stormwater management plans.	✓
	Drought tolerant, low water use plants should be used within landscaped areas.	Lower water demand native species for landscape and stormwater management plan provided.	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
OBJECTIVE 4V-2 Water management and conservation	Urban stormwater is treated on site before being discharged to receiving waters	Large landscape OSD is proposed with treatment devices.	✓
guidance	Water sensitive urban design systems are designed by a suitably qualified professional.	See responses above. Lower water demand native species for landscape and stormwater management plan provided.	✓
	A number of the following design solutions are used: • Runoff is collected from roofs and balconies in water tanks and plumbed into toilets, laundry and irrigation • Porous and open paving materials is maximised • On site stormwater and infiltration, including bio-retention systems such as rain gardens or street tree pits.	See responses above and refer to relevant plans/documents that accompany the DA.	✓
OBJECTIVE 4V-3 Water management and conservation	Flood management systems are integrated into site design	Site is not flood prone	n/a
guidance	Detention tanks should be located under paved areas, driveways or in basement car parks.	n/a	n/a
	On large sites parks or open spaces are designed to provide temporary on site detention basins.	N/A	N/A
OBJECTIVE 4W-1	Waste storage facilities are designed to minimise impacts on the streetscape, building entry and amenity of residents	Waste rooms provided. Waste bins on each floor in each corridor to make sure disposal is convenient. Bulk waste area provided. A building manager will ensure bin areas are maintained, etc. A detailed waste management	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
Waste management		plan is provided by LID waste consultants responding to the particulars of the site.	
guidance	Adequately sized storage areas for rubbish bins should be located discreetly away from the front of the development or in the basement car park.	The proposal waste room is in basement.	✓
	Waste and recycling storage areas should be well ventilated.	These areas will be ventilated. A waste management plan accompanies the DA and recommendations provided.	✓
	Circulation design allows bins to be easily manoeuvred between storage and collection points.	Refer to waste management plan. The waste room is in the basement near the driveway so bins can be transported to the kerb by the building manager for collection.	✓
	Temporary storage should be provided for large bulk items such as mattresses.	Refer to waste management plan. Bulk waste area designated in basement.	✓
	A waste management plan should be prepared.	The DA is accompanied by a waste management plan.	✓
OBJECTIVE 4W-2 Waste management	Domestic waste is minimised by providing safe and convenient source separation and recycling	Waste bin and recycling bin provided in convenient location in each corridor for residents.	✓
guidance	All dwellings should have a waste and recycling cupboard or temporary storage area of sufficient size to hold two days' worth of waste and recycling.	Each unit has temporary waste storage areas and a garbage room is at each level of the development. Building manager will monitor waste bins and replace them as they become full.	✓
	Communal waste and recycling rooms are in convenient and accessible locations related to each vertical core.	These are easily accessible at each corridor. The bulk waste is located in a convenient position in the basement.	✓
	For mixed use developments, residential waste and recycling storage areas and access should be separate and secure from other uses.	The waste storage areas are separated and secure.	✓
	Alternative waste disposal methods such as compositing should be provided.	Note. This can be provided as condition of consent given the large area of landscape and common open space proposed.	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
OBJECTIVE 4X-1 Building maintenance	Building design detail provides protection from weathering	The proposed design provides protection by using durable materials and façade detailing.	✓
guidance	A number of the following design solutions are used: • Roof overhangs to protect walls • Hoods over windows and doors to protect openings • Detailing horizontal edges with drip lines to avoid staining of surfaces • Methods to eliminate or reduce planter box leaching • Appropriate design and material selection for hostile locations.	Horizontal edging indicated on façade. Durable materials proposed.	✓
OBJECTIVE 4X-2 Building maintenance	Systems and access enable ease of maintenance	Plant and service areas are conveniently located.	✓
guidance	Window design enables cleaning from the inside of the building.	Windows will be cleanable from the inside.	✓
	Building maintenance systems should be incorporated and integrated into the design of the building form, roof and façade.	Building maintenance and service areas are generally not visible from the street.	✓
	Design solutions do not require external scaffolding for maintenance access.	See response above.	✓
	Manually operated systems such as blinds, sunshades and curtains are used in preference to mechanical systems.	Mechanical systems are not proposed.	✓
	Centralised maintenance, services and storage should be provided for communal open space areas within the building.	See responses above.	✓

	Design Guidance / Criteria	*Proposed Development*	*Comply*
OBJECTIVE 4X-3 Building maintenance	Material selection reduces ongoing maintenance costs	Materials proposed are durable and seek to minimise ongoing maintenance.	✓
	A number of the following design solutions are used: • Sensors to control artificial lighting in common circulation and spaces • Natural materials that weather well and improve with time such as face brickwork • Easily cleaned surfaces that are graffiti resistant • Robust and durable materials and finishes are used in locations which receive heavy wear and tear, such as common circulation areas and lift interiors.	Note. Common areas such as basement lighting is sensor activated as per BASIX. Brick is a featured item. Paint and render is limited.	✓

3.1 Curriculum Vitae

Noura Thaha

As a registered architect in NSW, Noura has over 11 years of experience in Australia, USA and India, including many single & multi residential projects, mixed use buildings, infrastructure projects etc. Noura has experience in providing development advices and feasibility studies, analysing planning controls, Apartment design guide and BCA standards. She has successfully completed many development and construction certificate applications for apartments and mixed use developments.

Major Projects

The Palm- 5 Storey Multi- residential developments with 78 units, Carlingford (2014- 2017)

5 storey Multi Residential development with 64 units, Epping (2014 – 2018)

28 Storey Mixed use development with Retail, 134 Hotel suites & 276 Residential units, Gosford (2015-2017)

8 Storey Shoptop development with Retail and 42 residential units, Parramatta (2014 – 2015)

4 Storey Mixed use developments with Retail and 113 Residential units, Eastwood (2015- 2018)

5 Storey Boutique hotel with 30 rooms, Parramatta (2015- 2017)

Railway Terminal, Jeddah International Airport

Grange County School, Oxford , UK (2011)

Qualification

Bachelor of Architecture (5 year)

(University of Kerala, 2008) Accredited by the Architects Accreditation Council of Australia

Registered Architect

Registration ARB# 10167

AIA