Attachment G -
Design Verification Statements

TURNER

LACHLAN'S LINE for Greenland

2017SNH012 – Ryde – LDA2016/0395
25-27 Epping Road Macquarie Park
16063 Lot 104 and 15039 Lot 105

RESPONSE TO SYDNEY NORTH PLANNING PANEL RECORDS OF DEFERRAL
DATED 9 AUGUST 2017 & 27 SEPTEMBER 2017
13 October 2017

Introduction
The following report outlines the responses to the architectural components associated with the Sydney North Planning Panel Records of Deferral dated 9 August and 27 September 2017.

Also included is a statement referring to ADG/SEPP 65.

SYDNEY NORTH PLANNING PANEL
The Planning Panel's main concern in the initial deferral dated 9 August was solar access to apartments/balconies and communal open space. Steve King was appointed as an independent consultant to review this solar access consistent with ADG principles for the combined sites Lot 104 and Lot 105.

The second deferral dated 27 September focused on optimising solar access to apartments and major communal open spaces by reducing heights of certain buildings and increasing the heights of others.

Therefore, as a team, we have investigated a number of iterations of amended plans with options A to D being the initial response. In conjunction with the redesign and redistribution of both Lots it was considered that GFA should maintain as closely as possible the current application figures.

The planning panel also discussed the possibility of removing "half" of the top two floors of Buildings J & K on Lot 105 and this was also looked into as a way of improving solar access.

The team quite quickly went through the varying options and the "half" floor options were discounted due to inefficiencies in building envelopes and the need for two sets of fire stairs and the lifts to still go up the two half floors. The form of both buildings J & K would also have been compromised by this option and the removal of full floors off both buildings was deemd the best way forward.

Options A to D were presented to council on the 4th October with council strongly recommending the team look at options that only considered adding a maximum of two floors onto Building M as this was the building the planning panel identified as the best one to improve the solar access and have least impact on neighbouring buildings and the surrounding area. The Planning Panel also discussed removing two floors off both buildings J & K on Lot 105 and council was happy to see this occur also.

The team then looked through additional options and the optimal change was option F which removes two full floors off buildings J & K on Lot 105 and adds two full floors onto buildings L3 and M on Lot 104.

This option maintains the brick parapet line at Level 10 on buildings L1, L2 and L3 as shown on drawing DA07.001K, the view from Epping Road. This also shows how the buildings now gradually

step up along the site with each building getting progressively higher as you move along from building L1 to M. You can also see that the two additional floors onto buildings L3 are below the 57m height limit and building M is only one storey plus plant/stair/lift over-run above the height limit. This increase will be dealt with by Urbis and their Clause 4.6 variation request. There is a slight increase in residential GFA as a result of this redistribution, but the ground floor retail GFA has reduced a similar amount as indicated in our area schedules. The overall difference in GFA from the current DA to the amended scheme is 25sq.m less GFA.

The removal of two full floors off Buildings J & K improves the solar access to the major communal spaces as well as improving solar access to apartments on Lot 104. This improvement whilst numerically being quite small as noted in Steve King's report does reflect the planning panel's desire for optimising the solar access for the development.

In addition the addition of two floors onto building's L3 and M will have least amount of structural impact on those buildings.

In terms of solar for we defer to Steve King's solar access sensitivity study that demonstrates the optimisation of the development with minimal impact on surrounding areas.

In terms of cross ventilation for the changes are above level 9, so do not affect the ADG requirements.

Design Verification Statement (Lot 104)

TURNER

LACHLAN'S LINE for Greenland

2017SNH012 – Ryde – LDA2016/0395
25-27 Epping Road Macquarie Park
16063 Lot 104

RESPONSE TO SYDNEY NORTH PLANNING PANEL RECORDS OF DEFERRAL
DATED 9 AUGUST 2017 & 27 SEPTEMBER 2017
10 November 2017

DESIGN VERIFICATION STATEMENT.
We confirm that Kevin Driver has directed the amendments to the DA design and documentation of the residential flat development at Lot 104 Lachlan's Line, North Ryde in response to Sydney North Planning Panel comments.

The amendments have been prepared in accordance with the design quality principles set out in Part 2 of State Environment Planning Policy No. 65 – Design Quality of Residential Flat Development.

Kevin Driver is a registered Architect under the NSW Architects Act, 2003, registration number 7347.

ADG COMPLIANCE SCHEDULE

ADG Ref.	Item Description	Notes	Compliance
	SITING THE DEVELOPMENT		
3A	**SITE ANALYSIS**		
3A-1 p47	**Objective:** Site Analysis illustrates that design decisions have been based on opportunities & constraints of the site conditions & their relationship to the surrounding context.		✓
	Design Guidance		**Considered**
	Each element in the Site Analysis Checklist is addressed.		YES
3B	**ORIENTATION**		
3B-1 p49	**Objective:** Building types & layouts respond to the streetscape & site while optimising solar access within the development		✓
	Design Guidance		**Considered**
	Buildings along the street frontage define the street by facing it & incorporating direct access from the street		YES
	Where the street frontage is to the east or west, rear buildings are orientated to the north		YES
	Where the street frontage is to the north or south, over-shadowing to the south is minimised & buildings behind the street frontage are orientated to the east & west		YES
3B-2 p49	**Objective:** Overshadowing of neighbouring properties is minimised during mid winter.		✓
	Design Guidance		**Considered**
	Living areas, private open space & communal open space receive solar access in accordance with section 3D Communal & Public Open Space and section 4A Solar & Daylight Access		YES
	Solar access to living rooms, balconies & private open spaces of neighbours are considered		YES
	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%		NA
	If the proposal will reduce the solar access of neighbours, building separation is increased beyond minimums contained in 3F Visual Privacy		NA
	Overshadowing is minimised to the south or downhill by increased upper level setbacks		YES
	Buildings are orientated at 90 deg to the boundary with neighbouring properties to minimise overshadowing & privacy impacts, particularly where minimum setbacks are used & where buildings are higher than the adjoining development		YES
	A minimum of 4 hours of solar access is retained to solar collectors on neighbouring buildings		NA
3C	**PUBLIC DOMAIN INTERFACE**		
3C-1 p51	**Objective:** Transition between private & public domain is achieved without compromising safety & security.		✓
	Design Guidance		**Considered**
	Terraces, balconies and courtyard apartments have direct street entry, where appropriate		YES
	Changes in level between private terraces, front gardens & dwelling entries above the street level provide surveillance & improve visual privacy for ground level dwellings	No ground level apartments	NA
	Upper level balconies & windows overlook the public domain		YES
	Front fences & walls along street frontages use visually permeable materials & treatments. Height of solid fences or walls is limited to 1m		NA
	Length of solid walls is limited along street frontages		YES
	Opportunities for casual interaction between residents & the public domain is provided for. Design solutions may include seating at building entries, near letter boxes & in private courtyards adjacent to streets		YES
	In developments with multiple buildings and/or entries, pedestrian entries & spaces associated with individual buildings/entries are		YES

ADG COMPLIANCE SCHEDULE

ADG Ref.	Item Description	Notes	Compliance
	differentiated to improve legibility for residents, using the following design solutions: - Architectural detailing - Changes in materials - Plant Species - Colours - Opportunities for people to be concealed are minimised		
3C-2 p53	**Objective:** Amenity of the public domain is retained & enhanced.		✓
	Design Guidance		**Considered**
	Planting is used to soften the edges of any raised terraces to the street, for example above sub-basement car parking		YES
	Mail boxes are located in lobbies, perpendicular to the street alignment or integrated into front fences where individual street entries are provided		YES
	The visual prominence of underground car park vents is minimised & located at a low level where possible		YES
	Substations, pump rooms, garbage storage areas & other service requirements are located in basement car parks or out of view		YES
	Ramping for accessibility is minimised by building entry location & setting ground floor levels in relation to footpath levels		YES
	Durable, graffiti resistant & easily cleanable materials are used		YES
	Where development adjoins public parks, open space or bushland, the design positively addresses this interface & uses the following design solutions: - Street access, pedestrian paths & building entries are clearly defined - Paths, low fences & planting are clearly delineate between communal/private open space & the adjoining public open space - Minimal use of blank walls, fences & ground level parking		YES
	On sloping sites protrusion of car parking above ground level is minimised by using split levels to step underground car parking		YES
	COMMUNAL & PUBLIC OPEN SPACE		
3D-1 p55	**Objective:** An adequate area of communal open space is provided to enhance residential amenity & to provide opportunities for landscaping.		✓
	Design Criteria		
1	Communal open space has a minimum area equal to 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 9 am and 3 pm on 21 June (mid winter)	Achieved through Design Guidance	✘
	Communal open space is consolidated into a well designed, easily identified & usable area		YES
	Communal open space have a minimum dimension of 3m. Larger developments should consider greater dimensions		YES
	Communal open space are co-located with deep soil areas		YES
	Direct, equitable access are provided to communal open space areas from common circulation areas, entries & lobbies		YES
	Where communal open space cannot be provided at ground level, it is provided on a podium or roof		YES
	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 need to: - Provide communal 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 & facilities and/or provide contributions to public open space		YES

ADG COMPLIANCE SCHEDULE

ADG Ref.	Item Description	Notes	Compliance
3D-2 p57	**Objective:** Communal open space is designed to allow for a range of activities, respond to site conditions & be attractive and inviting		✓
	Design Guidance		**Considered**
	Facilities are provided within communal open spaces & common spaces for a range of age groups (see 4F Common Circulation & Spaces), incorporating the following: - Seating for individuals or groups - Barbeque areas - Play equipment or play areas - Swimming pools, gyms, tennis courts or common rooms		YES
	Location of facilities responds to microclimate & site conditions with access to sun in winter, shade in summer & shelter from strong winds & down drafts		YES
	Visual impacts of services are minimised, including location of ventilation duct outlets from basement car parks, electrical substations & detention tanks		YES
3D-3 p57	**Objective:** Communal open space is designed to allow for a range of activities, respond to site conditions & be attractive and inviting		✓
	Design Guidance		**Considered**
	Communal open space & public domain should be readily visible from habitable rooms & private open space areas while maintaining visual privacy. Design solutions include: • Bay windows • Corner windows • Balconies		YES
	Communal open space is well lit	Building layouts are designed to optimise masterplan layouts, with communal open spaces facing north	YES
	Communal open space/facilities that are provided for children & young people are safe and contained		YES
3D-4 p59	**Objective:** Public open space, where provided, responds to the existing pattern & uses of the neighbourhood.		✓
	Design Guidance		**Considered**
	Public open space is well connected with public streets along at least one edge		YES
	POS is connected with nearby parks & other landscape elements		YES
	POS is linked through view lines, pedestrian desire paths, termination points & the wider street grid		YES
	Solar access is provided year round along with protection from strong winds		YES
	Opportunities for a range of recreational activities is provided for people of all ages		YES
	Positive street address & active street frontages are provided adjacent to POS		YES
	Boundaries are clearly defined between POS & private areas		YES
3E	**DEEP SOIL ZONES**		
3E-1 p61	**Objective:** Deep soil zones are suitable for healthy plant & tree growth, improve residential amenity and promote management of water and air quality.		✓
	Design Criteria		

ADG COMPLIANCE SCHEDULE

ADG Ref.	Item Description	Notes	Compliance
	1 Deep soil zones are to meet the following minimum requirements: <table><tr><th>Site Area (sqm)</th><th>Minimum Dim. (m)</th><th>Deep Soil Zone (% of site area)</th></tr><tr><td>less than 650</td><td>-</td><td rowspan="4">7</td></tr><tr><td>650-1500</td><td>3</td></tr><tr><td>greater than 1500</td><td>6</td></tr><tr><td>greater than 1500 with significant existing tree cover</td><td>6</td></tr></table>		✓
	Design Guidance		**Considered**
	On some sites it may be possible to provide larger deep soil zones, depending on the site area & context: 10% of the site as deep soil on sites with an area of 650sqm - 1,500sqm 15% of the site as deep soil on sites greater than 1,500sqm		YES
	Deep soil zones are located to retain existing significant trees & to allow for the development of healthy root systems, providing anchorage & stability for mature trees. Design solutions may include: Basement & sub-basement car park design that is consolidated beneath building footprints Use of increased front & 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 deep soil	Lot 104 is a B4 mixed use zone with high site coverage and buildings to be built close to street frontages in accordance with DCP controls. NB There is deep soil landscaping along Epping & Delhi Roads.	NA
	Achieving the design criteria may not be possible on some sites including where: location & building typology have limited or no space for deep soil at ground level (e.g. 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 is achieved & alternative forms of planting provided		NA
3F	**VISUAL PRIVACY**		
3F-1 p63	**Objective:** Adequate building separation distances are shared equitably between neighbouring sites, to achieve reasonable levels of external & internal visual privacy.		✓
	Design Criteria		
	Separation between windows & balconies is provided to ensure visual privacy is achieved. Minimum required separation distances from buildings to the side & rear boundaries are as follows: <table><tr><th>Building Height (m)</th><th>Habitable Rooms & Balconies. (m)</th><th>Non-Habitable Rooms (m)</th></tr><tr><td>up to 12 4 storeys)</td><td>6</td><td>3</td></tr><tr><td>up to 25 (5-8 storeys)</td><td>9</td><td>4.5</td></tr><tr><td>over 25 (9+ storeys)</td><td>12</td><td>6</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.		✓
	Design Guidance		**Considered**

ADG COMPLIANCE SCHEDULE

ADG Ref.	Item Description	Notes	Compliance
	Generally as the height increases, one step in the built form is desirable due to building separations. Any additional steps do not to cause a 'ziggurat' appearance		YES
	For residential buildings next to commercial buildings, separation distances are measured as follows: Retail, office spaces & commercial balconies use the habitable room distances Service & plant areas use the non-habitable room distances		YES
	New development are located & oriented to maximise visual privacy between buildings on site & for neighbouring buildings. Design solutions include: site layout & building are orientated to minimise privacy impacts (see 3B Orientation) on sloping sites, apartments on different levels have appropriate visual separation distances (see pg 63 figure 3F.4)		YES
	Apartment buildings have an increased separation distance of 3m (in addition to 3F-1 Design Criteria) when adjacent to a different zone that permits lower density residential development, to provide for a transition in scale & increased landscaping (pg 63 figure 3F.5)		NA
	Direct lines of sight are avoided for windows & balconies across corners		YES
	No separation is required between blank walls		NA
3F-2 p65	**Objective:** Site & building design elements increase privacy without compromising access to light & air and balance outlook & views from habitable rooms & private open space.		✓
	Design Guidance		**Considered**
	Communal open space, common areas & access paths are separated from private open space & windows to apartments, particularly habitable room windows. Design solutions include: • setbacks • solid or partially solid balustrades on 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 & outlook in another • raising apartments or private open space above the public domain or communal open space • planter boxes incorporated into walls & 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 on windows and/or balconies		YES
	Bedrooms, living spaces & other habitable rooms are separated from gallery access & other open circulation space by the apartment's service areas	Apartment types design with detailed input from marketing consultants, and is consistent with best practice apartment typologies	NA
	Balconies & private terraces are located in front of living rooms to increase internal privacy		YES
	Windows are offset from the windows of adjacent buildings		YES
	Recessed balconies and/or vertical fins are used between adjacent balconies		YES
3G	**PEDESTRIAN ACCESS & ENTRIES**		
3G-1 p67	**Objective:** Building entries & pedestrian access connects to and addresses the public domain.		✓
	Design Guidance		**Considered**

ADG COMPLIANCE SCHEDULE

ADG Ref.	Item Description	Notes	Compliance
	Multiple entries (including communal building entries & individual ground floor entries) activate the street edge		YES
	Entry locations relate to the street & subdivision pattern, and the existing pedestrian network		YES
	Building entries are clearly identifiable. Communal entries are clearly distinguishable from private entries		YES
	Where street frontage is limited, a primary street address should be provided with clear sight lines and pathways to secondary building entries	Blocks L4 & L5 have access to the level 01 residential podium, which has clear access from ground level. From the podium level, each terrace has a clear address from the courtyards	YES
3G-2 p67	**Objective:** Access, entries & pathways are accessible & easy to identify.		✓
	Design Guidance		**Considered**
	Building access areas including lift lobbies, stairwells & hallways are clearly visible from the public domain & communal spaces		YES
	The design of ground floors & underground car parks minimise level changes along pathways & entries		YES
	Steps & ramps are integrated into the overall building & landscape design		YES
	For large developments 'way finding' maps are provided to assist visitors & residents		YES
	For large developments electronic access & audio/video intercom are provided to manage access		YES
3G-3 p67	**Objective:** Large sites provide pedestrian links for access to streets & connection to destinations.		✓
	Design Guidance		**Considered**
	Pedestrian links through sites facilitate direct connections to open space, main streets, centres & public transport		YES
	Pedestrian links are direct, have clear sight lines, are overlooked by habitable rooms or private open spaces of dwellings, are well lit & contain active uses, where appropriate		YES
3H	**VEHICLE ACCESS**		
3H-1 p69	**Objective:** Vehicle access points are designed & located to achieve safety, minimise conflicts between pedestrians & vehicles and create high quality streetscapes.		✓
	Design Guidance		**Considered**
	Car park access is integrated with the building's overall facade. Design solutions include: materials & colour palette minimise visibility from street security doors/gates minimise voids in the facade where doors are not provided, visible interiors reflect facade design, and building services, pipes & ducts are concealed		YES
	Carpark entries are located behind the building line		YES
	Vehicle entries are located at the lowest point of the site, minimising ramp lengths, excavation & impacts on the building form and layout		YES
	Car park entry & access are located on secondary streets or lanes where available		YES
	Vehicle standing areas that increase driveway width & encroach into setbacks are avoided		YES/NO/NA

ADG COMPLIANCE SCHEDULE

ADG Ref.	Item Description	Notes	Compliance
	Access point is located to avoid headlight glare to habitable rooms		YES/NO/NA
	Adequate separation distances are provided between vehicle entries & street intersections		YES
	The width & number of vehicle access points are limited to the minimum		YES
	Visual impact of long driveways is minimised through changing alignments & screen planting		NA
	The need for large vehicles to enter or turn around within the site is avoided	Mixed-use precinct designed according to the original masterplan, with the main entry for large vehicles to enter the site through Spine Road	NO
	Garbage collection, loading & servicing areas are screened		YES
	Clear sight lines are provided at pedestrian & vehicle crossings		YES
	Traffic calming devices, such as changes in paving material or textures, are used where appropriate		YES
	Pedestrian & vehicle access are separated & distinguishable. Design solutions include: • Changes in surface materials • Level changes • Landscaping for separation		YES
3J	**BICYCLE & CAR PARKING**		
3J-1 p71	**Objective:** Car parking is provided based on proximity to public transport in metropolitan Sydney & centres in regional areas.		✓
	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 equivalent in a nominated regional centre the minimum car parking requirement for residents & 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.		✓
	Design Guidance		**Considered**
	Where a car share scheme operates locally, car share parking spaces are provided within the development.		YES
	Where less car parking is provided in a development, council do not provide on street resident parking permits		YES
3J-2 p71	**Objective:** Parking & facilities are provided for other modes of transport.		✓
	Design Guidance		**Considered**
	Conveniently located & sufficient numbers of parking spaces are provided for motorbikes & scooters		YES
	Secure undercover bicycle parking is provided & easily accessible from both public domain & common areas		YES
	Conveniently located charging stations are provided for electric vehicles, where desirable		YES
3J-3 p73	**Objective:** Car park design & access is safe and secure.		✓
	Design Guidance		**Considered**

ADG COMPLIANCE SCHEDULE

ADG Ref.	Item Description	Notes	Compliance
	Supporting facilities within car parks, including garbage, plant & switch rooms, storage areas & car wash bays can be accessed without crossing car parking spaces		YES
	Direct, clearly visible & well lit access is provided into common circulation areas		YES
	Clearly defined & visible lobby or waiting area is provided to lifts & stairs		YES
	For larger car parks, safe pedestrian access is clearly defined & circulation areas have good lighting, colour, line marking and/or bollards		YES
3J-4 p73	**Objective:** Visual & environmental impacts of underground car parking are minimised.		✓
	Design Guidance		**Considered**
	Excavation minimised through efficient car park layouts & ramp design		YES
	Car parking layout is well organised, using a logical, efficient structural grid & double loaded aisles		YES
	Protrusion of car parks do not exceed 1m above ground level. Solution include stepping car park levels or using split levels on sloping sites	Retail loading zone is on grade, with the majority of car spaces mainly below ground. Split levels utilised to minimise excavation	YES
	Natural ventilation is provided to basement & sub-basement car parking		YES
	Ventilation grills or screening devices for car parking openings are integrated into the facade & landscape design		YES
3J-5 p75	**Objective:** Visual & environmental impacts of on-grade car parking are minimised.		✓
	Design Guidance		**Considered**
	On-grade car parking is avoided		YES
	Where on-grade car 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 & private open space areas • Safe & direct access to building entry points is provided • Parking is incorporated into the landscape design, by extending planting & materials into the car park space • 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. Shade trees are planted between every 4-5 parking spaces to reduce increased surface temperatures to large areas of paving	No on-grade car parking	NA
3J-6 p75	**Objective:** Visual & environmental impacts of above ground enclosed car parking are minimised.		✓
	Design Guidance		**Considered**
	Exposed parking is not located along primary street frontages		YES
	Screening, landscaping & other design elements including public art are used to integrate the above ground car parking with the facade. Design solutions include: • Car parking that is concealed behind facade, with windows integrated into the overall facade design		YES

ADG COMPLIANCE SCHEDULE

ADG Ref.	Item Description	Notes	Compliance
	(limited to developments where 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		
	Positive street address & active frontages are provided at ground level		YES
PART4	**DESIGNING THE BUILDING**		
	SOLAR & DAYLIGHT ACCESS		
4A-1 p79	**Objective:** To optimise number of apartments receiving sunlight to habitable rooms, primary windows & private open space.		✓
	Design Criteria		
	Living rooms & private open spaces of at least 70% of apartments in a building receive a minimum of 2 hrs direct sunlight between 9am - 3pm at mid winter in Sydney Metropolitan Area and in Newcastle and Wollongong local government areas	• Lot 104 achieves a minimum of 2-hours solar to 49.1% (299 out of 609 units) [target: no less than 70%]	No – Refer independent solar analysis
	In all other areas, living rooms & private open spaces of at least 70% of apartments in a building receive a minimum of 3 hrs direct sunlight between 9 am - 3 pm at mid winter		NA
	A maximum of 15% of apartments in a building receive no direct sunlight between 9 am - 3 pm at mid winter	27.1% apartments have no solar (165 out of 609) [target no more than 15%]	No – Refer independent solar analysis
	Design Guidance		**Considered**
	The design maximises north aspect. The number of single aspect south facing apartments is minimised		YES
	Single aspect, single storey apartments have a northerly or easterly aspect	Wherever possible, compliant with design criteria	YES
	Living areas are located to the north and service areas to the south & west of apartments		YES
	To optimise direct sunlight to habitable rooms & balconies a number of the following design features are used: • Dual aspect apartments • Shallow apartment layouts • Two storey &mezzanine level apartments • Bay windows		YES
	To maximise the benefit to residents of direct sunlight within living rooms & private open spaces, a minimum of 1sqm of direct sunlight, measured at 1m above floor level, is achieved for at least 15 minutes		YES
	Achieving the design criteria may not be possible 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 • significant views are oriented away from the desired aspect for direct sunlight Design drawings need to demonstrate how site constraints & orientation preclude meeting Design Criteria & how the development meets the objective.		NA
4A-2 p81	**Objective:** Daylight access is maximised where sunlight is limited.		✓

ADG COMPLIANCE SCHEDULE

ADG Ref.	Item Description	Notes	Compliance
	Design Guidance		**Considered**
	Courtyards, skylights & high level windows (with sills of 1,500mm or greater) are used only as a secondary light source in habitable rooms		YES
	Where courtyards are used: • Use is restricted to kitchens, bathrooms & service areas • Building services are concealed with appropriate detailing & materials to visible walls • Courtyards are fully open to the sky • Access is provided to the light well from communal area for cleaning & maintenance • Acoustic privacy, fire safety & minimum privacy separation distances (see 3F Visual Privacy) are achieved		YES
	Opportunities for reflected light into apartments are optimised through: • Reflective exterior surfaces on buildings opposite south facing windows • Positioning windows to face other buildings or surfaces (on neighbouring sites or within site) that will reflect light • Integrating light shelves into the design • Light coloured internal finishes		YES
4A-3 p81	**Objective:** Design incorporates shading & glare control, particularly for warmer months.		✓
	Design Guidance		**Considered**
	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 & planting • Horizontal shading to north facing windows • Vertical shading to east & particularly west facing windows • Operable shading to allow adjustment & choice • High performance glass that minimises external glare off windows, with consideration given to reduce tint glass or glass with a reflectance level below 20% (reflective films are avoided)		YES
4B	**NATURAL VENTILATION**		
4B-1 p83	**Objective:** All habitable rooms are naturally ventilated.		✓
	Design Guidance		**Considered**
	The building's orientation maximises capture & use of prevailing breezes for natural ventilation in habitable rooms		YES
	Depths of habitable rooms support natural ventilation		YES
	The area of unobstructed window openings should be equal to at least 5% of the floor area served		YES
	Light wells are not the primary air source for habitable rooms		YES
	Doors & openable windows maximise natural ventilation opportunities by using the following design solutions: • Adjustable windows with large effective openable areas • Variety of window types that provide safety & flexibility such as awnings & louvres • Windows that occupants can reconfigure to funnel breezes into apartment, such as vertical louvres, casement windows & externally opening doors		YES
4B-2 p83	**Objective:** The layout & design of single aspect apartments maximises natural ventilation.		✓
	Design Guidance		**Considered**
	Apartment depths limited to maximise ventilation & airflow		YES/NO/NA

ADG COMPLIANCE SCHEDULE

ADG Ref.	Item Description	Notes	Compliance
	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 used to naturally ventilate internal building areas or rooms such as bathrooms & laundries • Courtyards or building indentations have a width to depth ratio of 2:1 or 3:1 to ensure effective air circulation & avoid trapped smells		YES
4B-3 p85	**Objective:** Number of apartments with natural cross vent is maximised to create comfortable indoor environments for residents.		✓
	Design Criteria		
	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		✓
	Overall depth of a cross-over or cross-through apartment does not exceed 18m, measured glass line to glass line		✓
	Design Guidance		**Considered**
	The building includes dual aspect apartments, cross through apartments & corner apartments, and limited apartment depths		YES
	In cross-through apartments, external window & door opening sizes/areas on one side of an apartment (inlet side) are approximately equal to the external window & door opening sizes/areas on the other side of the apartment (outlet side)		YES
	Apartments are designed to minimise the number of corners, doors & rooms that might obstruct airflow		YES
	Apartment depths, combined with appropriate ceiling heights, maximise cross ventilation & airflow		YES
4C	**CEILING HEIGHTS**		
4C-1 p87	**Objective:** Ceiling height achieves sufficient natural ventilation & daylight access.		✓
	Design Criteria		
	Measured from finished floor level to finished ceiling level, minimum ceiling heights are : Minimum Ceiling Height for apt and mixed-used buildings (m) Habitable rooms: 2.7 Non-habitable rooms: 2.4 For 2 storey apts: 2.7 for main living area floor; 2.4 for second floor, where its area does not exceed 50% of the apt area Attic spaces: 1.8 at edge of room with 30deg minimum ceiling slope If located in mixed-used areas: 3.3 for ground and first floor to promote future flexibility of use	Some habitable rooms have localised bulkheads at 2400mm high where necessary for services.	No, with qualications
	Design Guidance		**Considered**
	Ceiling height accommodates use of ceiling fans for cooling & heat distribution		YES
4C-2 p87	**Objective:** Ceiling height increases the sense of space in apartments & provides for well proportioned rooms.		✓
	Design Guidance		**Considered**
	A number of the following design solutions are used: · • Hierachy of rooms in apartment is defined using changes in ceiling heights & alternatives such as raked or curved ceilings, or double height spaces ·		YES

ADG COMPLIANCE SCHEDULE

ADG Ref.	Item Description	Notes	Compliance
	• Well proportioned rooms are provided, for example, smaller rooms feel larger & more spacious with higher ceilings · • Ceiling heights are maximised in habitable rooms by ensuring that bulkheads do not intrude. The stacking of service rooms from floor to floor & coordination of bulkhead locations above non-habitable areas, such as robes or storage, can assist		
4C-3 p87	**Objective**: Ceiling heights contribute to the flexibility of building use over the life of the building.		✓
	Design Guidance		**Considered**
	Ceiling heights of lower level apartments should be greater than the minimum required by Design Criteria allowing flexibility & conversion to non-residential uses	No apartments below Level 01	YES
4D	**APARTMENT SIZE & LAYOUT**		
4D-1 p89	**Objective:** The layout of rooms within apartment is functional, well organised & provides a high standard of amenity.		✓
	Design Criteria		
	Apartments have the following minimum internal areas : Apartment Type / Minimum Internal Area (sqm) Studio 35 1 Bedroom 50 2 Bedroom 70 3 Bedroom 90 The minimum internal areas include only one bathroom. Additional bathrooms increase the minimum internal area by 5sqm each. A fourth bedroom & further additional bedrooms increase the minimum internal area by 12sqm each		✓
	Every habitable room has 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 & air is not borrowed from other rooms		✓
	Design Guidance		**Considered**
	Kitchens is not located as part of the main circulation space in larger apartments (such as hallway or entry space)		YES
	A window is visible from any point in a habitable room		YES
	Where minimum areas or room dimensions are not met, apartments demonstrate that they are well designed and demonstrate the usability & functionality of the space with realistically scaled furniture layouts & circulation areas.		YES
4D-2 p89	**Objective:** Environmental performance of the apartment is maximised.		✓
	Design Criteria		
	Habitable room depths are limited to a maximum of 2.5 x the ceiling height		✓
	In open plan layouts (living, dining & kitchen are combined) maximum habitable room depth is 8m from a window		✓
	Design Guidance		**Considered**
	Greater than minimum ceiling heights allow for proportional increases in room depth up to the permitted max depths		YES
	All living areas & bedrooms are located on the external face of building		YES
	Where possible: · • bathrooms & laundries have external openable window • main living spaces are oriented toward the primary outlook & aspect and away from noise sources		YES
4D-3 p91	**Objective:** Apartment layouts are designed to accommodate a variety of household activities & needs.		✓
	Design Criteria		

ADG COMPLIANCE SCHEDULE

ADG Ref.	Item Description	Notes	Compliance
	Master bedrooms have a minimum area of 10sqm & other bedrooms 9sqm (excluding wardrobe space)		✓
	Bedrooms have a minimum dimension of 3m (excluding wardrobe space)		✓
	Living rooms or combined living/dining rooms have a minimum width of: · 3.6m for studio & 1 bedroom apartments · 4m for 2 & 3 bedroom apartments		✓
	The width of cross-over or cross-through apartments are at least 4m internally to avoid deep narrow apartment layouts		✓
	Design Guidance		**Considered**
	Access to bedrooms, bathrooms & laundries is separated from living areas minimising direct openings between living & service areas	Where possible	YES
	All bedrooms allow a minimum length of 1.5m for robes		YES
	Main bedroom of apartment or studio apartment is provided with a wardrobe of minimum 1.8m L x 0.6m D x 2.1m H		YES
	• Apartment layouts allow flexibility over time, design solutions include: • Dimensions that facilitate a variety of furniture arrangements & removal • Spaces for a range of activities & 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 BCA & for calculating mix of apartments • Room sizes & proportions or open plans (rectangular spaces 2:3 are more easily furnished than square spaces 1:1) • Efficient planning of circulation by stairs, corridors & through rooms to maximize the amount of usable floor space in rooms		YES
4E	**PRIVATE OPEN SPACE & BALCONIES**		
4E-1 p93	**Objective:** Apartments provide appropriately sized private open space & balconies to enhance residential amenity.		✓
	Design Criteria		
	All apartments are required to have primary balconies as follows: Apartment Type / Minimum Area (sqm) / Minimum Depth (m) Studio / 4 / - 1 Bedroom / 8 / 2 2 Bedroom / 10 / 2 3+ Bedroom / 12 / 2.4 The minimum balcony depth to be counted as contributing to the balcony area is 1m		✓
	For apartments at ground level or on podium or similar, a private open space is provided instead of a balcony. It must have minimum area of 15sqm & minimum depth of 3m		✓
	Design Guidance		**Considered**
	Increased communal open space are provided where the number or size of balconies are reduced		NA
	Storage areas on balconies is additional to the minimum balcony size		NA
	Balcony use may be limited in some proposals where: • consistently high wind speeds at 10 storeys & above • close proximity to road, rail or other noise sources • exposure to significant levels of aircraft noise • heritage & adaptive reuse of existing buildings In these situations, • juliet balconies, • operable walls,		YES

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ADG COMPLIANCE SCHEDULE

ADG Ref.	Item Description	Notes	Compliance
	• enclosed wintergardens • bay windows are appropriate. Other amenity benefits for occupants are provided in the apartments or in the development or both. Natural ventilation is also demonstrated		
4E-2 p93	**Objective:** Primary private open space & balconies are appropriately located to enhance liveability for residents		✓
	Design Guidance		**Considered**
	Primary open space & balconies are located adjacent to the living room, dining room or kitchen to extend the living space		YES
	POS & balconies predominantly face north, east or west		YES
	POS & balconies are orientated with the longer side facing outwards or be open to the sky to optimise daylight access into adjacent rooms		YES
4E-3 p95	**Objective:** Private open space & balcony design is integrated into & contributes to the overall architectural form & detail of the building		✓
	Design Guidance		**Considered**
	Solid, partially solid or transparent fences & balustrades are selected to respond to the location. They are designed to allow views & passive surveillance of the street while maintaining visual privacy & allowing for a range of uses on the balcony. Solid & partially solid balustrades are preferred		YES
	Full width full height glass balustrades alone are generally not desirable	Block M has glass balustrades integrated with horizontal projections to provide solar amenity, shading and privacy	YES
	Projecting balconies are integrated into the building design. The design of soffits are considered		YES
	Operable screens, shutters, hoods & pergolas are used to control sunlight & wind		YES
	Balustrades are set back from the building or balcony edge where overlooking or where safety is an issue		YES
	Downpipes & balcony drainage are integrated with the overall facade & building design		YES
	Air-conditioning units are located on roofs, in basements, or fully integrated into the building design		YES
	Where clothes drying, storage or air conditioning units are located on balconies, they are screened & integrated in the building design		YES
	Ceilings of apartments below terraces are insulated to avoid heat loss		YES
4E-4 p95	**Objective:** Private open space & balcony design maximises safety		✓
	Design Guidance		**Considered**
	Changes in ground levels or landscaping are minimised		YES
	Balcony design & detailing avoids opportunities for climbing & falling		YES
4F	**COMMON CIRCULATION & SPACES**		
4F-1 p97	**Objective:** Common circulation spaces achieve good amenity & properly service the number of apartments		✓

ADG COMPLIANCE SCHEDULE

ADG Ref.	Item Description	Notes	Compliance
	Design Criteria		
	The maximum number of apartments off a circulation core on a single level is eight		✘
	For buildings of 10 storeys & over, the maximum number of apartments sharing a single lift is 40		NA
	Design Guidance		**Considered**
	Greater than minimum requirements for corridor widths and/or ceiling heights allow comfortable movement & access particularly in entry lobbies, outside lifts & at apartment entry doors		YES
	Daylight & natural ventilation are provided to all common circulation spaces that are above ground		YES
	Windows are provided in common circulation spaces & are adjacent to the stair or lift core or at the ends of corridors		YES
	Longer corridors greater than 12m in length from the lift core are articulated. Design solutions include: • Series of foyer areas with windows & spaces for seating • Wider areas at apartment entry doors & varied ceiling heights		YES
	Common circulation spaces maximise opportunities for dual aspect apartments, including multiple core apartment buildings & cross over apartments		NA
	Achieving Design Criteria for the number of apartments off a circulation core may not be possible. Where development is unable to achieve this, a high level of amenity for common lobbies, corridors & apartments is demonstrated, including: • Sunlight & natural cross ventilation in apartments • Access to ample daylight & natural ventilation in common circulation spaces • Common areas for seating & gathering • Generous corridors with greater than minimum ceiling heights • Other innovative design solutions that provide high levels of amenity		YES
	Where Design Criteria 1 is not achieved, no more than 12 apartments should be provided off a circulation core on a single level		YES
	Primary living room or bedroom windows do not open directly onto common circulation spaces, open or enclosed. Visual & acoustic privacy from common circulation spaces to any other rooms are carefully controlled		YES
4F-2 p99	**Objective:** Common circulation spaces promote safety & provide for social interaction between residents		✓
	Design Guidance		**Considered**
	Direct & legible access are provided between vertical circulation points & apartment entries by minimising corridor or gallery length to give short, straight, clear sight lines		YES
	Tight corners & spaces are avoided		YES
	Circulation spaces are well lit at night		YES
	Legible signage are provided for apartment numbers, common areas & general wayfinding		YES
	Incidental spaces, eg space for seating in a corridor, at a stair landing, or near a window are provided		YES
	In larger developments, community rooms for activities such as owners corporation meetings or resident use, are provided & are co-located with communal open space		YES

ADG COMPLIANCE SCHEDULE

ADG Ref.	Item Description	Notes	Compliance
	Where external galleries are provided, they are more open than closed above the balustrade along their length		YES
4G	**STORAGE**		
4G-1 p101	**Objective:** Adequate, well designed storage is provided in each apartment		✓
	Design Criteria		
	In addition to storage in kitchens, bathrooms and bedrooms, the following storage is provided: Apartment Type / Storage Size Volume (cubic m) Studio 4 1 Bedroom 6 2 Bedroom 8 3+ Bedroom 10 At least 50% of the required storage is to be located within the apartment		✓
	Design Guidance		**Considered**
	Storage is accessible from either circulation or living areas		YES
	Storage provided on balconies (in addition to the minimum balcony size) is integrated into the balcony design, weather proofed & screened from view from the street		NA
	Left over space such as under stairs is used for storage		YES
4G-2 p101	**Objective:** Additional storage is conveniently located, accessible & nominated for individual apartments		✓
	Design Guidance		**Considered**
	Storage not located in apartments is secure and clearly allocated to specific apartments		YES
	Storage is provided for larger & less frequently accessed items		YES
	Storage space in internal or basement car parks is provided at the rear or side of car spaces or in cages, such that allocated car parking remains accessible		YES
	If communal storage rooms are provided they are accessible from common circulation areas of the building		NA
	Storage not located in apartment is integrated into the overall building design & not visible from public domain		YES
4H	**ACOUSTIC PRIVACY**		
4H-1 p103	**Objective:** Noise transfer is minimised through the siting of buildings & building layout		✓
	Design Guidance		**Considered**
	Adequate building separation is provided within the development & from neighbouring buildings/adjacent uses (see 2F Building Separation & 3F Visual Privacy)		YES
	Window & door openings are orientated away from noise sources		YES
	Noisy areas within buildings including building entries & corridors are located next to or above each other while quieter areas are located next to or above quieter areas		YES

ADG COMPLIANCE SCHEDULE

ADG Ref.	Item Description	Notes	Compliance
	Storage, circulation areas & non-habitable rooms are located to buffer noise from external sources		YES
	The number of party walls (shared with other apartments) are limited & are appropriately insulated		YES
	Noise sources such as garage doors, driveways, service areas, plant rooms, building services, mechanical equipment, active communal open spaces & circulation areas should be located at least 3m away from bedrooms		YES
4H-2 p103	**Objective:** Noise impacts are mitigated within apartments through layout & acoustic treatments		✓
	Design Guidance		**Considered**
	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		YES
	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		YES
4J	**NOISE & POLLUTION**		
4J-1 p105	**Objective:** In noisy or hostile environments impacts of external noise & pollution are minimised through careful siting & layout		✓
	Design Guidance		**Considered**
	To minimise impacts the following design solutions are used: • Physical separation between buildings & the noise or pollution source • Residential uses are located perpendicular to the noise source & 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 & communal open spaces • Non-residential uses are located at lower levels vertically separating residential component from noise or pollution source. Setbacks to the underside of residential floor levels are increased, relative to traffic volumes & other noise sources • Buildings respond to both solar access & noise. Where solar access is away from noise source, non-habitable rooms will provide a buffer • Where solar access is in the same direction as the noise source, dual aspect apartments with shallow building depths are preferred • Landscape design reduces the perception of noise & acts as a filter for air pollution generated by traffic & industry		YES
	Where developments are unable to achieve Design Criteria, alternatives are considered in the following areas: • Solar & daylight access • Private open space & balconies		

ADG COMPLIANCE SCHEDULE

ADG Ref.	Item Description	Notes	Compliance
	• Natural cross ventilation		
4J-2 p105	**Objective:** Appropriate noise shielding or attenuation techniques for building design, construction & choice of materials are used to mitigate noise transmission		✓
	Design Guidance		**Considered**
	Design solutions to mitigate noise include: • Limiting the number & 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 & soffits		YES
4K	**APARTMENT MIX**		
4K-1 p107	**Objective:** A range of apartment types & sizes is provided to cater for different household types now & into the future		✓
	Design Guidance		**Considered**
	A variety of apartment types is provided		YES
	The apartment mix is appropriate, taking into consideration: Distance to public transport, employment & education centres • Current market demands & projected future demographic trends • Demand for social & affordable housing • Different cultural & socioeconomic groups		YES
	Flexible apartment configurations are provided to support diverse household types & stages of life including single person households, families, multi-generational families & group households		YES
4K-2 p107	**Objective:** The apartment mix is distributed to suitable locations within the building		✓
	Design Guidance		**Considered**
	Different apartment types are located to achieve successful facade composition & to optimise solar access		YES
	Larger apartment types are located on ground or roof level where there is potential for more open space, and on corners where more building frontage is available		YES
4L	**GROUND FLOOR APARTMENTS**		
4L-1 p109	**Objective:** Street frontage activity is maximised where ground floor apartments are located		NA
	Design Guidance		**Considered**
	Direct street access is provided to ground floor apartments		NA
	Activity is achieved through front gardens, terraces & the facade of the building. Design solutions include: • Both street, foyer & other common internal circulation entrances to ground floor apartments • Private open space is next to the street • Doors & windows face the street		NA
	Retail or home office spaces are located along street frontages		NA

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ADG COMPLIANCE SCHEDULE

ADG Ref.	Item Description	Notes	Compliance
	Ground floor apartment layouts support SOHO use & provide opportunities for future conversion into commercial or retail areas. In these cases higher floor to ceiling heights & easy conversion to ground floor amenities are provided.		NA
4L-2 p109	**Objective:** Design of ground floor apartments delivers amenity & safety for residents		NA
	Design Guidance		**Considered**
	Privacy & safety are provided without obstructing casual surveillance. Design solutions include: • Elevating private gardens & terraces above the street level by 1-1.5m (see pg 109 Figure 4L.4) • Landscaping & private courtyards • Window sill heights minimise sight lines into apartments • Integrating balustrades, safety bars or screens with exterior design		NA
	Solar access is maximised through: High ceilings & tall windows Trees & shrubs allow solar access in winter & shade in summer		NA
4M	**FACADES**		
4M-1 p111	**Objective:** Building facades provide visual interest along the street while respecting the character of the local area		✓
	Design Guidance		**Considered**
	Design solutions for front building facades include: • Composition of varied building elements • Defined base, middle & top of buildings • Revealing & concealing certain elements		YES
	Building services are integrated within the overall facade		YES
	Building facades are well resolved with appropriate scale & proportion to streetscape & with consideration of human scale. Solutions include: • Well composed horizontal & vertical elements • Variation in floor heights to enhance the human scale • Elements that are proportional & arranged in patterns • Public artwork or treatments to exterior blank walls • Grouping of floors or elements such as balconies & windows on taller buildings		YES
	Building facades relate to key datum lines of adjacent buildings through upper level setbacks, parapets, cornices, awnings or colonnade heights		YES
	Shadow is created on the facade throughout the day with building articulation, balconies & deeper window reveals		YES
4M-2 p111	**Objective:** Building functions are expressed by the facade		✓
	Design Guidance		**Considered**
	Building entries are clearly defined		YES
	Important corners are given visual prominence through change in articulation, materials or colour, roof expression or changes in height		YES

ADG COMPLIANCE SCHEDULE

ADG Ref.	Item Description	Notes	Compliance
	Apartment layout is expressed externally through facade features such as party walls & floor slabs		YES
4N	**ROOF DESIGN**		
4N-1 p113	**Objective:** Roof treatments are integrated into the building design & positively respond to the street		✓
	Design Guidance		**Considered**
	Roof design relates to the street. Design solutions include: • Special roof features & 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 pitched form complementary to adjacent buildings		YES
	Roof treatments are integrated with the building design. Design solutions include: • Roof design is in proportion to the overall building size, scale & form • Roof materials compliment the building • Service elements are integrated		YES
4N-2 p113	**Objective:** Opportunities to use roof space for residential accommodation & open space are maximised		NA
	Design Guidance		**Considered**
	Habitable roof space are provided with good levels of amenity. Design solutions include: • Penthouse apartments • Dormer or clerestory windows • Openable skylights		NA
	Open space is provided on roof tops subject to acceptable visual & acoustic privacy, comfort levels, safety & security considerations		NA
4N-3 p113	**Objective:** Roof design incorporates sustainability features		✓
	Design Guidance		**Considered**
	Roof design maximises solar access to apartments during winter & provides shade during summer. Design solutions include: • Roof lifts to the north • Eaves & overhangs shade walls & windows from summer sun	Flat Roof	NA
	Skylights & ventilation systems are integrated into the roof design		YES
4O	**LANDSCAPE DESIGN**		
4O-1 p115	**Objective:** Landscape design is viable & sustainable		✓
	Design Guidance		**Considered**
	Landscape design is environmentally sustainable & can enhance environmental performance by incorporating: • Diverse & appropriate planting • Bio-filtration gardens • Appropriately planted shading trees • Areas for residents to plant vegetables & herbs • Composting • Green roofs or walls		YES
	Ongoing maintenance plans are prepared		YES

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ADG COMPLIANCE SCHEDULE

ADG Ref.	Item Description	Notes	Compliance
	Microclimate is enhanced by: • Appropriately scaled trees near the eastern & western elevations for shade • Balance of evergreen & deciduous trees to provide shading in summer & sunlight access in winter • Shade structures such as pergolas for balconies & courtyards		YES
	Tree & shrub selection considers size at maturity & the potential for roots to compete.		YES
4O-2 p115	**Objective:** Landscape design contributes to streetscape & amenity		✓
	Design Guidance		**Considered**
	Landscape design responds to the existing site conditions including: • Changes of levels • Views • Significant landscape features including trees & rock outcrops		YES
	Significant landscape features are protected by: • Tree protection zones • Appropriate signage & fencing during construction		YES
	Plants selected are endemic to region & reflect local ecology		YES
4P	**PLANTING ON STRUCTURES**		
4P-1 p117	**Objective:** Appropriate soil profiles are provided		✓
	Design Guidance		**Considered**
	Structures are reinforced for additional saturated soil weight		YES
	Soil volume is appropriate for plant growth, including: • Modifying depths & widths according to planting mix & irrigation frequency • Free draining & long soil life span • Tree anchorage		YES
	Minimum soil standards for plant sizes should be provided in accordance with: Site Area (sqm) / Recommended Tree Planting Up to 850 — 1 medium tree per 50sqm of deep soil zone 850 - 1,500 — 1 large tree or 2 medium trees per 90sqm of deep soil zone Greater than 1,500 — 1 large tree or 2 medium trees per 80sqm of deep soil zone		YES
4P-2 p117	**Objective:** Plant growth is optimised with appropriate selection & maintenance		✓
	Design Guidance		**Considered**
	Plants are suited to site conditions, considerations include: • Drought & wind tolerance • Seasonal changes in solar access • Modified substrate depths for a diverse range of plants • Plant longevity		YES
	A landscape maintenance plan is prepared		YES

ADG COMPLIANCE SCHEDULE

ADG Ref.	Item Description	Notes	Compliance
	Irrigation & drainage systems respond to: • Changing site conditions • Soil profile & planting regime • Whether rainwater, stormwater or recycled grey water is used		YES
4P-3 p117	**Objective:** Planting on structures contributes to the quality & amenity of communal & public open spaces		✓
	Design Guidance		**Considered**
	Building design incorporates opportunities for planting on structures. Design solutions 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 Note: structures designed to accommodate green walls should be integrated into the building facade & consider the ability of the facade to change over time		YES
4Q	**UNIVERSAL DESIGN**		
4Q-1 p119	**Objective:** Universal design features are included in apartment design to promote flexible housing for all community members		✓
	Design Guidance		**Considered**
	Developments achieve a benchmark of 20% of the total apartments incorporating the Livable Housing Guideline's silver level universal design features		YES
4Q-2 p119	**Objective:** A variety of apartments with adaptable designs are provided		✓
	Design Guidance		**Considered**
	Adaptable housing should be provided in accordance with the relevant council policy		YES
	Design solutions for adaptable apartments include: • Convenient access to communal & public areas • High level of solar access • Minimal structural change & residential amenity loss when adapted • Larger car parking spaces for accessibility • Parking titled separately from apartments or shared car parking arrangements		YES
4Q-3 p119	**Objective:** Apartment layouts are flexible & accommodate a range of lifestyle needs		✓
	Design Guidance		**Considered**
	Flexible design solutions 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 & bathroom		YES
4R	**ADAPTIVE REUSE**		

ADG COMPLIANCE SCHEDULE

ADG Ref.	Item Description	Notes	Compliance
4R-1 p121	**Objective:** New additions to existing buildings are contemporary, complementary & enhance area's identity & sense of place		NA
	Design Guidance		**Considered**
	Design solutions include: • New elements align with the existing building • Additions complement the existing character, siting, scale, proportion, pattern, form & detailing • Contemporary & complementary materials, finishes, textures & colours		NA
	Additions to heritage items are clearly identifiable from the original building		NA
	New additions allow for interpretation & future evolution of the building		NA
4R-2 p121	**Objective:** Adapted buildings provide residential amenity but does not precluding future adaptive reuse		NA
	Design Guidance		**Considered**
	Design features are incorporated sensitively to make up for any physical limitations, to ensure residential amenity. Design solutions include: • Generously sized voids in deeper buildings • Alternative apartment types when orientation is poor • Additions to expand the existing building envelope		NA
	Where developments are unable to achieve Design Criteria, alternatives are considered in the following areas: • Where there are existing higher ceilings, depths of habitable rooms can increase subject to demonstrating access to natural ventilation, cross ventilation (when applicable) and solar & daylight access (see 4A & 4B) • Alternatives to providing deep soil where less than the minimum requirement is currently available on the site • Building & visual separation subject to demonstrating alternative design approaches to achieving privacy • Common circulation • Car parking • Alternative approaches to private open space & balconies		NA
4S	**MIXED USE**		
4S-1 p123	**Objective:** Mixed use developments are provided in appropriate locations & provide active street frontages that encourage pedestrian movement.		✓
	Design Guidance		**Considered**
	Mixed use development are concentrated around public transport & centres		YES
	Mixed use developments positively contribute to the public domain. Design solutions include: • Development addresses the street • Active frontages provided • Diverse activities & uses • Avoiding blank walls at the ground level • Live/work apartments on the ground floor level, rather than commercial		YES
4S-2 p123	**Objective:** Residential levels of the building are integrated within the development. Safety & amenity is maximised.		✓

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ADG COMPLIANCE SCHEDULE

ADG Ref.	Item Description	Notes	Compliance
	Design Guidance		**Considered**
	Residential circulation areas are clearly defined. Solutions include: • Residential entries separated from commercial entries & directly accessible from the street • Commercial service areas separated from residential components • Residential car parking & communal facilities separated or secured • Security at entries & safe pedestrian routes are provided • Concealment opportunities are avoided		YES
	Landscaped communal open space are provided at podium or roof		YES
4T	**AWNING & SIGNAGE**		
4T-1 p125	**Objective:** Awnings are well located and complement & integrate with the building design.		✓
	Design Guidance		**Considered**
	Awnings are located along streets with high pedestrian activity & active frontages		YES
	A number of the following design solutions are used: • Continuous awnings are maintained & provided in areas with an existing pattern • Height, depth, material & form complements existing street character • Protection from sun & rain is provided • Awnings are wrapped around secondary frontages of corner sites • Awnings are retractable in areas without an established pattern		YES
	Awnings are located over building entries for building address & public domain amenity		YES
	Awnings relate to residential windows, balconies, street tree planting, power poles & street infrastructure		YES
	Gutters & down pipes are integrated and concealed		YES
	Lighting under awnings is provided for pedestrian safety		YES
4T-2 p125	**Objective:** Signage responds to context & desired streetscape character.		✓
	Design Guidance		**Considered**
	Signage is integrated into building design & respond to scale, proportion & detailing of the development		YES
	Legible & discrete way finding is provided for larger developments		YES
	Signage is limited to being on & below awnings, and single facade sign on primary street frontages		YES
4U	**ENERGY EFFICIENCY**		
4U-1 p127	**Objective:** Development incorporates passive environmental design.		✓
	Design Guidance		**Considered**

ADG COMPLIANCE SCHEDULE

ADG Ref.	Item Description	Notes	Compliance
	Adequate natural light is provided to habitable rooms (see 4A Solar & Daylight Access)		YES
	Well located, screened outdoor areas are provided for clothes drying		NA
4U-2 p127	**Objective:** Passive solar design is incorporated to optimise heat storage in winter & reduce heat transfer in summer.		✓
	Design Guidance		**Considered**
	A number of the following design solutions are used: • Use of smart glass or other on north & west elevations • Thermal mass maximised in floors & walls of north facing rooms • Polished concrete floors, tiles or timber rather than carpet • Insulated roofs, walls & floors. Seals on window & door openings • Overhangs & shading devices such as awnings, blinds & screens		YES
	Provision of consolidated heating & cooling infrastructure is located in a centralised location (eg basement)		YES
4V	**WATER MANAGEMENT & CONSERVATION**		
4V-1 p129	**Objective:** Potable water use is minimised.		✓
	Design Guidance		**Considered**
	Water efficient fittings, appliances & wastewater reuse are incorporated		YES
	Apartments are individually metered		YES
	Rainwater is collected, stored & reused on site		YES
	Drought tolerant, low water use plants are used within landscaped areas		YES
4V-2 p129	**Objective:** Urban stormwater is treated on site before being discharged to receiving waters.		✓
	Water sensitive urban design systems are designed by a suitably qualified professional		YES
	A number of the following design solutions are used: • Runoff is collected from roofs & balconies in water tanks and plumbed into toilets, laundry & irrigation • Porous & open paving materials is maximised • On site stormwater & infiltration, including bio-retention systems such as rain gardens or street tree pits		YES
4V-3 p129	**Objective:** Flood management systems are integrated into site.		✓
	Design Guidance		**Considered**
	Detention tanks are located under paved areas, driveways or in basement car parks		YES
	On large sites, parks or open spaces are designed to provide temporary on site detention basins		YES
4W	**WASTE MANAGEMENT**		

ADG COMPLIANCE SCHEDULE

ADG Ref.	Item Description	Notes	Compliance
4W-1 p131	**Objective:** Waste storage facilities are designed to minimise impacts on streetscape, building entry & amenity of residents.		✓
	Design Guidance		**Considered**
	Adequately sized storage areas for rubbish bins are located discreetly away from the front of the development or in basement car park		YES
	Waste & recycling storage areas are well ventilated		YES
	Circulation design allows bins to be easily manoeuvred between storage & collection points		YES
	Temporary storage are provided for large bulk items such as mattresses		YES
	Waste management plan is prepared		YES
4W-2 p131	**Objective:** Domestic waste is minimised by providing safe & convenient source separation & recycling.		✓
	Design Guidance		**Considered**
	All dwellings have a waste & recycling cupboard or temporary storage area of sufficient size to hold two days worth of waste & recycling		YES
	Communal waste & recycling rooms are in convenient & accessible locations related to each vertical core		YES
	For mixed use developments, residential waste & recycling storage areas & access is separate & secure from other uses		YES
	Alternative waste disposal methods such as composting is provided		YES
4X	**BUILDING MAINTENANCE**		
4X-1 p133	**Objective:** Building design detail provides protection from weathering.		✓
	Design Guidance		**Considered**
	A number of the following design solutions are used: • Roof overhangs to protect walls • Hoods over windows & doors to protect openings • Detailing horizontal edges with drip lines to avoid staining surfaces • Methods to eliminate or reduce planter box leaching • Appropriate design & material selection for hostile locations		YES
4X-2 p133	**Objective:** Systems & access enable ease of maintenance.		✓
	Design Guidance		**Considered**
	Window design enables cleaning from the inside of the building		YES
	Building maintenance systems are incorporated & integrated into the design of the building form, roof & facade		YES
	Design does not require external scaffolding for maintenance access		YES
	Manually operated systems such as blinds, sunshades & curtains are used in preference to mechanical systems		YES

ADG COMPLIANCE SCHEDULE

ADG Ref.	Item Description	Notes	Compliance
	Centralised maintenance, services & storage are provided for communal open space areas within the building		YES
4X-3 p133	**Objective:** Material selection reduces ongoing maintenance costs.		✓
	Design Guidance		**Considered**
	A number of the following design solutions are used: • Sensors to control artificial lighting in common circulation & spaces • Natural materials that weather well & improve with time, such as face brickwork • Easily cleaned surfaces that are graffiti resistant • Robust & durable materials & finishes in locations which receive heavy wear & tear such as common circulation areas & lift interiors		YES

Design Verification Statement (Lot 105)

TURNER

LACHLAN'S LINE for Greenland

2017SNH012 – Ryde – LDA2016/0395
25-27 Epping Road Macquarie Park
16063 Lot 105

RESPONSE TO SYDNEY NORTH PLANNING PANEL RECORDS OF DEFERRAL
DATED 9 AUGUST 2017 & 27 SEPTEMBER 2017
10 November 2017

DESIGN VERIFICATION STATEMENT.
We confirm that Kevin Driver has directed the design and documentation of the residential flat development at Lot 105 Lachlan's Line, North Ryde in response to Sydney North Planning Panel comments.

The design has been prepared in accordance with the design quality principles set out in Part 2 of State Environment Planning Policy No. 65 – Design Quality of Residential Flat Development.

Kevin Driver is a registered Architect under the NSW Architects Act, 2003, registration number 7347.

PART 3

SEPP 65
DESIGN QUALITY PRINCIPLES

Design quality 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.

Proposal

The site sits within the Lachlan's Line precinct, which is undergoing a change to residential and commercial uses, underpinned by new infrastructure, including roads, park and a pedestrian/ cycle bridge link to North Ryde Station.

The North Ryde Station Precinct DCP outlines the intent for the overall precinct, and is the subject of an update being prepared by Urban Growth.

The proposal for Lot 104 and Lot 105 will deliver both residential, retail and community uses that will serve as a new centre for the burgeoning community.

The proposal responds to the new context of street and park, defining the new public spaces, and setting a high standard for future development within the precinct.

Design quality 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.

Proposal

The built form comprises two buildings known as Building J to the west, and Building K to the east.

There is a through site link known as Village Square between Retail Street and the new park.

Building J is 18-, 17-, 14- and 11-storeys.

Building K is 15- and 11-storeys.

The steps in the building form relate to a datum within Lot 104 that provides scale to Retail Street and Lachlan's Square.

The heights and built form reflects the intentions of the master plan prepared by Bates Smart, which is the subject of a new DCP in preparation by Urban Growth.

There are 4 key contextual drivers for the built form:

1.

The main vehicular access to Lachlan's Line will be along Spine Road from the north. As the road is curved, the north western corner of Lot 105 will be a striking landmark terminating this view. As such, this element of the building is given a different character from the remainder of the building, and is given a singular tower form for the full building height, hovering above the street.

2.

The new park provides a wide expanse from which the north western face of Lot 105 will be viewed. As such, it is important to articulate these surfaces both vertically and horizontally to break down the scale and provide a planar composition, as if it were a large canvas. A base-middle-top articulation gives an overall structure to the composition.

3.

The Retail Street elevation, by contrast, is seen largely obliquely from the street, or in segments from the elevated communal courtyards of Lot 104. A datum at 11-storeys gives a scale to the street, and reflects a similar device used through Lot 104. The subtle plane changes vertically also present the building forms as a series of towers, rather than large planes.

4.

The pedestrian/cycle bridge from North Ryde Station winds its way towards Lachlan's Line on axis with the slender end elevation of Building K. As such, the composition of this facade has been given a series of 3 architectural languages and forms that hover between 3 different planes. This accentuates the slenderness of the form, and provides an animated architectural play at the main pedestrian entry to Lachlan's Line

Design quality 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
.

Proposal

The total site area for Lot 105 is 2,822 sqm.

Lot 105 will have a total GFA of 21,195 sqm.

The layouts include a range of 1-bed, 1-bed + study, 2-bed/1-bath, 2-bed/2- bath and 3-bed apartments to provide a range of typologies and living patterns.

The residential uses are supported by ground level retail that will serve the wider community.

The site is located in close proximity to North Ryde rail Station, bus routes, and key vehicular arteries.

The residential density is appropriate to the range of amenities, workplace and educational facilities in close proximity, and reflects the Controls for the site.

Design quality 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
.

Proposal

The development is designed to embrace ESD principles. The proposal generates 60% cross-ventilated apartments.
The massing and orientation have been organised to provide good natural daylighting and solar access into the primary living spaces, external living areas and courtyards.

Design quality 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 usability, privacy and opportunities for social interaction, equitable access, respect for neighbours' amenity, provides for practical establishment and long term management.

Proposal

The proposal incorporates a new publicly accessible plaza between the buildings that is activated by retail and offers connectivity between the retail precinct and the park, known as Village Square.
The residents will also avail of the benefits of the new park, Lachlan's Square, as well as the communal facilities within Lot 104.
For further detail on the landscape design, please refer to drawings and report provided by Aspect Studios.

Design quality 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, and ease of access for all age groups and degree of mobility.

Proposal

Apartments will feature a mix of unit typologies, providing a high level of cross-ventilation with dual aspect orientation. The development achieves 60% of apartments as naturally cross ventillated.

Apartment layouts have been developed to maximise the number of north facing units and ensure the provision of park and district views.

The development achieves 42% of apartments receiving 2-hours of sunlight to the living room glazing during the winter solstice.

Privacy is maintained between apartments through orientation and internal layouts.

10.1% of the apartments will be adaptable throughout the building in different typologies to offer variety to potential purchasers. A total of 20% of the apartments will comply with the Liveable Housing Silver Level Guidelines.

Design quality 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.

Proposal

Clear pedestrian routes around the full perimeter of the site to the streets and park enable safe access within the site.

The new vehicular and pedestrian network will bring public activation into the site.

Passive surveillance over the public domain is afforded by residential apartment balconies and windows, as well as by way of the retail at ground level.

There will be appropriate lighting to all exterior areas.

There are clear entry points to the buildings via a generous lobbies off of Retail Street that are fully glazed and well-lit. This provides security for those entering the building, as well as providing activation and casual surveillance to the street.

The retail tenancies at ground level provides street activation, as well as passive surveillance.

The building will utilise a security system at all pedestrian and vehicular entry points, and within the lifts.

Design quality principle 8
Social dimension

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, providing opportunities for social interaction amongst residents.

Proposal

The development provides a range of unit typologies and sizes that will appeal to a range of different price points.

The publicly accessible areas within the site, the public park to the north, and the communal facilities in Lot 104 are designed to engender community spirit for residents within the development that include a pool and gym.

The development is adjacent to a wide range of facilities.

Design quality 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 well-designed apartment development responds to the existing or future local context, particularly desirable elements and repetitions of the streetscape.

Proposal

The building forms and their articulation relate to vehicular and pedestrian access and movement, as well as street and park frontages, each requiring differing approaches to scale.

These differing requirements have been addressed using a limited palette that has been deployed in a manner appropriate to each aspect.

There are 4 facade types deloyed throughout the composition.

Facade type 1: Glazed facade with bronze tinted glass with expressed dark bronze coloured mullions. Glass to slab edges.

Facade type 2: Concrete frame portals, painted white, with expressed slabs and panels of masonry. Glazed balustrades.

Facade type 3: 450mm expressed slab edges, painted white. Full-height glazing and glass balustrades.

Facade type 4: Deep expressed mullions in a light bronze highlight colour.

The base of the building is given a civic expression by way of a single-storey colonnade in a glazed white brick and cantilevered awning.

There are 4 key contextual drivers for the built form where these systems are used to different effect:

1.

The main vehicular access to Lachlan's Line will be along Spine Road from the north. The north western corner of Lot 105 will be a striking landmark terminating this view. As such, this element of the building is given a different character from the remainder of the building, and is given a singular tower form for the full building height, hovering above the street. (Facade type 1 and 4).

2.

The new park provides a wide expanse from which the north western face of Lot 105 will be viewed. These surfaces are articulated both vertically and horizontally A base-middle-top articulation gives an overall structure to the composition. (Facade type 2 and 3).

3.

The Retail Street elevation is seen largely obliquely. A datum at 11-storeys gives a scale to the street, and reflects a similar device used through Lot 104. The subtle plane changes vertically also present the building forms as a series of towers, rather than large planes. (Facade type 2 and 3).

4.

The pedestrian/cycle bridge from North Ryde Station winds its way towards Lachlan's Line on axis with the slender end elevation of Building K. The composition of this facade has been given a series of 3 architectural languages and forms that hover between 3 different planes. (Facade type 2, 3 and 4).

The proposal for Lot 105 has been developed to be familial to the design for Lot 104 by Bates Smart, but offering differentiation for both residents, and as a positive urban response.

The development presents a refined approach to architectural expression, and a palette of quality materials that will set a benchmark for future developments in the Lachlan's Line precinct

PART 4

RESPONSE TO APARTMENT DESIGN GUIDE OBJECTIVES

The following provides a design response to the relevant objectives of the Apartment Design Guide (ADG) and describes the measures by which the proposed development meets the objects of the ADG.

3A Site analysis [p.47]	
Objective 3A-1 Site analysis illustrates that design decisions have been based on opportunities and constraints of the site conditions and their relationship to the surrounding context	• A context plan is provided with the submission. • The layout reflects the masterplan for the site. • The built form responds to the street conditions, footbridge, and new public park. • The building form and character reflects the two key vehicular (Spine Road) and pedestrian (footbridge) access points to the site. • As this is the first development at Lachlan's Line, there is little existing built context.
3B Orientation [p.49]	
Objective 3B-1 Building types and layouts respond to the streetscape and site while optimising solar access within the development	• The proposal activates the street and park, while maximising the solar access by locating the cores to the south western facade.
Objective 3B-2 Overshadowing of neighbouring properties is minimised during mid-winter Design Guidance • 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% • A minimum of 4 hours of solar access should be retained to solar collectors on neighbouring buildings.	• Lot 104 is located to the south of Lot 105, and forms part of this DA (refer to drawings and report by Bates Smart). • The building form of Lot 105 has been reduced by removing two floors off each building to optimise the effects on Lot 104 solar.
3C Public domain interface [p.51]	
Objective 3C-1 Transition between private and public domain is achieved without compromising safety and security	• The ground level largely comprises retail. • The residential entries are at street level and are clearly legible. They are glazed and well-lit.
Objective 3C-2 Amenity of the public domain is retained and enhanced	• Most of the perimeter of the building is activated by retail and lobbies. • The through site link (Village Square) to the park is a mini-plaza with opportunities for cafe seating, and incorporates planting and benches. • The car park entries and services are located on Spine Road, away from the retail strip, plaza and park.

3D Communal and public open space [p.55]	
Objective 3D-1 An adequate area of communal open space is provided to enhance residential amenity and to provide opportunities for landscaping. Design Criteria • Communal open space has a minimum area equal to 25% of the site • 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 9 am and 3 pm on 21 June (mid winter) • The communal open space should have a minimum dimension of 3m	• Communal open space is provided within Lot 104 (refer to report by Bates Smart). These areas now have improved solar access resulting from the reduction in floor levels of Buildings J & K on Lot 105. • There is also publicly accessible outdoor space between the two buildings in the Village Square. • There is also access to the large public park to the north of both buildings.
3E Deep soil zones [p.61]	
Objective 3E-1 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. Design criteria Deep soil zones are to meet the following minimum requirements: • 7% of site area • <650sqm – no min dimension • 650sqm-1500sqm – 3m min dimension • >1500sqm – 6m min dimension Objective 3J-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	• NA as this is a mixed use zone.

3J Bicycle and car parking [p.71]	
Objective 3J-1 Car parking is provided based on proximity to public transport in metropolitan Sydney and centres in regional areas Design criteria • The car parking needs for a development must be provided off street	• 223 car parking spaces are provided for residential use, in line with the DCP controls. • The visitor and retail component of the parking is provided in Lot 104 (access via tunnel below Retail Street).
Objective 3J-2 Parking and facilities are provided for other modes of transport	• Bicycles: Unchanged from original DA • Motorcycles: Unchanged from original DA
Objective 3J-3 Car park design and access is safe and secure	• The car park is laid out clearly such that the lobbies are clearly legible. • B1 is accessed directly from Spine Road, while B2 and B3 are accessed from Lot 104 by way of the tunnel.
Objective 3J-4 Visual and environmental impacts of underground car parking are minimised	• The car park is efficient and sits below the building footprints.
Objective 3J-6 Visual and environmental impacts of above ground enclosed car parking are minimised	• The car park is largely subterranean, utilising the natural topography at the north western end on Spine Road, which is a naturally low point, for the car park entry.
4A Solar and daylight access [p.79]	
Objective 4A-1 To optimise the number of apartments receiving sunlight to habitable rooms, primary windows and private open space Design criteria • Living rooms and private open spaces of at least 70% of apartments in a building receive a minimum of 2 hours direct sunlight between 9 am and 3 pm at mid winter in the Sydney Metropolitan Area and in the Newcastle and Wollongong local government areas • A maximum of 15% of apartments in a building receive no direct sunlight between 9 am and 3 pm at mid winter	• Lot 105 achieves a minimum of 2-hours solar to 42.1% (115 out of 273 units) [target: no less than 70%] • 24.9% apartments have no solar (68 out of 273) [target no more than 15%]
Objective 4A-2 Daylight access is maximised where sunlight is limited	• Not Applicable

Objective 4A-3 Design incorporates shading and glare control, particularly for warmer months.	• Balconies are sited in front of much of the glazing to provide shading. • Many rooms at the facade incorporate panels of masonry panels to minimise solar gain. • Projecting slab edges will also provide shading.
4B Natural ventilation [p.83]	
Objective 4B-1 All habitable rooms are naturally ventilated	• The requirements of this objective are met with the proposed glazing system.
Objective 4B-3 The number of apartments with natural cross ventilation is maximised to create a comfortable indoor environment for residents Design criteria • 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 • Overall depth of a cross-over or crossthrough apartment does not exceed 18m, measured glass line to glass line	• Lot 105 achieves a natural cross ventilation to 60% of apartments in the first 9-levels (107 out of 178 units) [target: no less than 60%] No crossover or cross-through apartments are provided.
4C Ceiling heights [p.87]	
Objective 4C-1 Ceiling height achieves sufficient natural ventilation and daylight access Design criteria • Measured from finished floor level to finished ceiling level, minimum ceiling heights are: • Habitable rooms: 2.7m • Non-habitable: 2.4m • If located in mixed use area: 3.3m for ground and first floor to promote flexibility	• The floor-to-floor is 3.1m, providing ample clearance for the required ceiling heights. • A higher floor-to-floor is provided for the ground level retail. • Some habitable rooms will incorporate bulkheads at 2400mm, but the requirements of the Objective will be met.
Objective 4C-2 Ceiling height increases the sense of space in apartments and provides for well-proportioned rooms	• The requirements of this Objective will be met in the detailed design of apartments.
Objective 4C-3 Ceiling heights contribute to the flexibility of building use over the life of the building	• Not Applicable

4D Apartment size and layout [p.89]

Objective 4D-1 The layout of rooms within an apartment is functional, well organised and provides a high standard of amenity Design criteria • Apartments are required to have the following minimum internal areas: • Studio: 35sqm • 1 bedroom: 50sqm • 2 bedroom: 70sqm • 3 bedroom: 90sqm The minimum internal areas include only one bathroom. Additional bathrooms increase the minimum internal area by 5m each A fourth bedroom and further additional bedrooms increase the minimum internal area by 12mÇ each • 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 Design Guidance • A window should be visible from any point in a habitable room	• The apartments sizes are greater than the minimums in this Objective. • Habitable rooms are provided with glazing in accordance with the Objective.
Objective 4D-2 Environmental performance of the apartment is maximized Design Criteria • Habitable room depths are limited to a maximum of 2.5 x the ceiling height • In open plan layouts (where the living, dining and kitchen are combined) the maximum habitable room depth is 8m from a window.	• At a ceiling height of 2.7m, this is a depth of 6.75m. This is the maximum depth for any habitable room.
Objective 4D-3 Apartment layouts are designed to accommodate a variety of household activities and needs Design criteria Master bedrooms have a minimum area of 10m2 and other bedrooms 9m2 (excluding wardrobe space) Bedrooms have a minimum dimension of 3m (excluding wardrobe space) 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 width of cross-over or cross-through apartments are at least 4m internally to avoid deep narrow apartment layouts	• The apartment room dimensions are equal or greater than the numerics provided in this Objective.

4E Private open space and balconies [p.92]	
Objective 4E-1 Apartments provide appropriately sized private open space and balconies to enhance residential amenity	• All balconies are equal or greater than the numerics provided in this Objective.
Objective 4E-2 Primary private open space and balconies are appropriately located to enhance liveability for residents	• The plans reflect the intent of this Objective.
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 architectural language incorporates the balcony design into the composition and massing of the buildings.
4F Common circulation and spaces [p.97]	
Objective 4F-1 Common circulation spaces achieve good amenity and properly service the number of apartments Design criteria • The maximum number of apartments off a circulation core on a single level is eight • For buildings of 10 storeys and over, the maximum number of apartments sharing a single lift is 40 • Where design criteria 1 is not achieved, no more than 12 apartments should be provided off a circulation core on a single level	• The maximum number of apartments off of a core on any given floor in each building is 11, in accordance with the Objective.
Objective 4F-2 Common circulation spaces promote safety and provide for social interaction between residents	• Corridors are straight and legible, and are also provided with daylight.
4G Storage [p.101]	
Objective 4G-1 Adequate, well designed storage is provided in each apartment Design criteria • In addition to storage in kitchens, bathrooms and bedrooms, the following storage is provided: • 1 bed: 6m3 • 2 bed: 8m3 • 3 bed: 10m3 At least 50% of the required storage is to be located within the apartment	• All apartments provide a minimum of 50% of the storage requirement within the unit. Some apartments provide all the necessary storage within the apartments.
Objective 4G-2 Additional storage is conveniently located, accessible and nominated for individual apartments	• Storage in cages located within the basement provide the remaining required volume.

4H Acoustic Privacy [p.103]	
Objective 4H-1 Noise transfer is minimised through the siting of buildings and building layout.	• Lot 105 is not directly adjacent to the surrounding noisy streets, but does experience some of the effects of vehicular noise at the higher levels. These levels are provided with laminated glass, window seals, and mechanical ventilation. Refer to Acoustic Report.
Objective 4H-2 Noise impacts are mitigated within apartments through layout and acoustic treatments	• Apartment layouts have considered the appropriate distribution of spaces to minimise internal disturbance by way of noise.
4K Apartment Mix [p.107]	
Objective 4K-1 A range of apartment types and sizes is provided to cater for different household types now and into the future	• The layouts include a range of 1-bed, 1-bed + study, 2-bed/1-bath, 2-bed/2-bath and 3-bed apartments to provide a range of typologies and living patterns.
Objective 4K-2 The apartment mix is distributed to suitable locations within the building	• Apartments have been located such that the larger units are at the higher levels to avail of the view and amenity, as well as maximise solar access and natural cross ventilation.
4L Ground floor apartments [p.109]	
Objective 4L-1 Street frontage activity is maximised where ground floor apartments are located	• Not applicable ('ground level' apartments are 3.5m minimum above the natural ground due to site topography).
Objective 4L-2 Design of ground floor apartments delivers amenity and safety for residents	• Not applicable.
4M Facades [p.111]	
Objective 4M-1 Building facades provide visual interest along the street while respecting the character of the local area	• A high level of articulation and large-scale compositional elements have been provided.
Objective 4M-2 Building functions are expressed by the facade	• The civic nature of the ground level retail is celebrated by way of a masonry colonnade.
4N Roof design [p.113]	
Objective 4N-1 Roof treatments are integrated into the building design and positively respond to the street	• The massing of the building is articulated in silhouette. • The plant rooms are either integrated or set back. • The two key corners are marked with a crest of expressed light bronze mullions.

4O Landscape design [p.115]	
Objective 4O-1 Landscape design is viable and sustainable	• Refer to report and drawings by Aspect Studios. • This Objective is satisfied by the proposal.
Objective 4O-2 Landscape design contributes to the streetscape and amenity	• Refer to report and drawings by Aspect Studios. • This Objective is satisfied by the proposal.
4P Planting on structures [p.116]	
Objective 4P-1 Appropriate soil profiles are provided	• Refer to report and drawings by Aspect Studios. • This Objective is satisfied by the proposal.
Objective 4P-2 Plant growth is optimised with appropriate selection and maintenance	• Refer to report and drawings by Aspect Studios. • This Objective is satisfied by the proposal.
Objective 4P-3 Planting on structures contributes to the quality and amenity of communal and public open spaces	• Refer to report and drawings by Aspect Studios. • This Objective is satisfied by the proposal.
4S Mixed use [p.122]	
Objective 4S-1 Mixed use developments are provided in appropriate locations and provide active street frontages that encourage pedestrian movement	• Retail Street and the park are both highly activated with retail uses and residential lobbies.
Objective 4S-2 Residential levels of the building are integrated within the development, and safety and amenity is maximised for residents	• Residential entry lobbies are separate and clearly legible. • Good security is provided at the entries, and at the lifts.
4T Awnings and signage [p.125]	
Objective 4T-1 Awnings are well located and complement and integrate with the building design	• Awnings are provided to most of the building perimeter, associated with the retail uses. • These are integrated at street level.
Objective 4T-2 Signage responds to the context and desired streetscape character	• Retail signage will be the subject of a policy to be developed at the next stage and provided to all new tenants. • Clear wayfinding for the residential uses will be provided.
4U Energy efficiency [p.127]	
Objective 4U-1 Development incorporates passive environmental design	• The building layout has considered natural light maximisation to all apartments.

Objective 4U-2 Development incorporates passive solar design to optimise heat storage in winter and reduce heat transfer in summer	• A range of overhangs in the form of balconies and slab extensions are provided. • Many areas of external wall are masonry to improve the thermal mass.
Objective 4U-3 Adequate natural ventilation minimises the need for mechanical ventilation	• The building articulation seeks to maximise the natural cross ventilation provided to the development.
4V Water management and conservation [p.129]	
Objective 4V-1 Potable water use is minimised	• Water sensitive design has been incorporated. Refer to BASIX report.
Objective 4V-2 Urban stormwater is treated on site before being discharged to receiving waters	• Water sensitive design has been incorporated. Refer to BASIX and stormwater reports.
Objective 4V-3 Flood management systems are integrated into site design	• Stormwater design has been incorporated. Refer to stormwater report.
4W Waste management [p.131]	
Objective 4W-1 Waste storage facilities are designed to minimise impacts on the streetscape, building entry and amenity of residents	• The garbage chutes discharge at level B2. This is below ground, and connects with the loading dock in Lot 104 by way of the tunnel under Retail Street. Refer to waste report.
Objective 4W-2 Domestic waste is minimised by providing safe and convenient source separation and recycling	• The kitchen design in each unit will incorporate waste storage. • The waste chutes are located within separate rooms on each level, minimising the effects of odour in the corridors. • Retail waste is separate, utilising a dedicated lift at street level to access the tunnel below Retail Street. Refer to waste report.