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ARCHITECTURAL AND URBAN DESIGN REPORT

SPD Residential

Wahroonga

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1.0 EXECUTIVE SUMMARY

The proposed development under this application will provide student and key-worker accommodation crucial for the function and future of a key health care facility by providing ancillary services for education as well as affordable accommodation and amenity for both the precinct and the users of the estate (refer Wahroonga Final Preferred Project Report 2010 8.10.4).

This development will provide 130 student – and 60 key-worker apartments, with future stages completing the precinct masterplan providing additional accommodation, commercial and retail.

The design team has taken great care in meeting or exceeding all the objectives set out in the FPPR and has translated the low resolution indicative concepts of 2010 into an urban- and building design solution that does not only consider the broad ideas of the FPPR, but delivers on regulatory requirements and design guidelines.

The translation from the broad scale of the FPPR and Concept Plan to a detailed design at the DA stage has been demonstrated through an appropriate scale, building form and urban design function. The design provides extensive resolution at a scale ten times to that of the FPPR and Concept Plan, and addresses all matters raised by Ku-ring-gai Council during Pre-DA meetings.

This report, in conjunction with the DA drawings and reports by other consultants provides a comprehensive analysis of the design developed from the FPPR to the DA submission. It proves that all objectives of the FPPR have been met with the proposed development, delivering the first stage of a precinct with outstanding urban design quality and amenity for residents and neighbours alike. In addition, this DA provides a detailed master plan that identifies how the buildings, the subject of this application, fit into and create the essential back-bone of the Precinct C masterplan, it demonstrates a vehicle-free, landscaped urban environment that creates a range of clearly defined urban spaces, outlining with great attention to detail, scale and amenity for the mixed demographic of the Precinct. It expands into showing how this master plan will extend into the neighbourhood centre mixed use on the corner of Fox Valley Road and The Comenarra Parkway to create a coherent urban design tailored to the needs and use of the area.

Discussions with Ku-Ring-Gai Council, at two separate pre-DA meetings over the last two months, have crystallized matters to be addressed by the design team. We are very confident that the design team has delivered on all aspects of urban design and compliance with standards and guidelines, and with this document provides the required evidence.

2.0 INTRODUCTION

This document has been compiled as part of the development application for the SPD Residential Development Proposal. Its aims are;

1. Provide and document an urban design interpretation of the Wahroonga Final Preferred Project Report 2010 nad Conceptual Approval which applies to the Wahroonga Estate.
2. Address good urban design principles relevant to the proposed development and opposing uses.
3. Explain how SEPP65 and the Residential Flat Design Code is applied to the proposed development.

This report is accompanied by development application drawings and a newly proposed masterplan which provides an important interpretative link between the high level concept drawings and DA drawings for the SPD Residential project.

In response to Pre-DA meetings with Ku-ring-gai Council urban design practices and RFDC guides are compared with the design in detail. This is outlined in a SEPP65 Design Statement, summary position of RFDC design guides and summary of the relationship with the Wahroonga FPPR.

3.0 WAHROONGA FINAL PREFFERRED PROJECT REPORT 2010.

"The proposal is for the comprehensive redevelopment of the Wahroonga Estate, incorporating the Sydney Adventist Hospital, to accommodate the expansion of the Hospital together with the provision of new educational and community facilities, residential dwellings (for both private residents and employees within Wahroonga Estate) and a small village centre. The concept plan seeks approval for the use of the site and broad development parameters including building envelope and yield. As the application is for a Concept Plan, detailed site operation, design and elevation details will be provided with the subsequent Project Applications." (FPPR 2010, pg)5

This development application is for the student accommodation and key-worker accommodation located in Precinct C of the Concept Plan. Specific key development controls of the proposed development are discussed in the following sections and summarised in the section 'SUMMARY OF RELATIONSHIP WITH THE WAHROONGA FINAL PREFERRED PROJECT REPORT'.

4.0 BACKGROUND TO THE RESIDENTIAL FLAT DESIGN CODE.

The Residential Flat Design Code (RFDC) was released as a guide for Local Councils to evaluate the design performance of the proposed development.

The Residential Flat Design Code was never intended to be an explicit technical reference but a guideline document that should be taken into consideration in the determination of development consent.

"Relationship to SEPP65..... This Design Code provides additional detail and guidance for applying the design quality principles outlined in SEPP 65 to a specific locality." (RFDC 2002, pg 2)

"The State Environmental Planning Policy 65 – Design Quality of Residential Flat Development (SEPP 65) was introduced in 2002. It aims to improve the design quality of residential flat buildings in NSW. It contains principles for good design and provides guidance for evaluating the performance of design solutions." . NSW Planning and Infrastructure, http://www.planning.nsw.gov.au/design-quality-of-residential-flat-buildings.

" 30 Determination of development applications

(2) In determining a development application for consent to carry out residential flat development, a consent authority is to take into consideration (in addition to any other matters that are required to be, or may be, taken into consideration):

(a) the advice (if any) obtained in accordance with subclause (1), and

(b) the design quality of the residential flat development when evaluated in accordance with the design quality principles, and

(c) the publication Residential Flat Design Code (a publication of the Department of Planning, September 2002)." (Sepp65, Clause 30)

It is on this basis, as a guide, the Residential Flat Design Code (RFDC) has informed the proposed developments' design.

5.0 BUILDING SEPARATION – A CASE STUDY: PEDESTRIAN THROUGH-LINK

This section analyses building separation in terms of the intent of the Residential Flat Design Code(RFDC) and secondly using good urban design practice. Under both assessments scenarios the proposed development is consistent with the RFDC recommendations.

Under Building Separation, the RFDC states;

"For buildings over three storeys, it is recommended that building separation increase in proportion to building height to ensure appropriate urban form, adequate amenity and privacy for building occupants. Suggested dimensions within a development, for internal courtyards and between adjoining sites are:

up to four storeys/12 metres

- *12 metres between habitable rooms/balconies*
- *9 metres between habitable/balconies and non-habitable rooms*
- *6 metres between non-habitable rooms*

five to eight storeys/up to 25 metres

- *18 metres between habitable rooms/balconies*
- *13 metres between habitable rooms/balconies and non-habitable rooms*
- *9 metres between non-habitable rooms*

nine storeys and above/ over 25 metres

- *24 metres between habitable rooms/balconies*

- *18 metres between habitable rooms/balconies and non-habitable rooms*
- *12 metres between non-habitable rooms".*
  'RFDC 2002', pg 28.

  "- Building separation controls may be varied in response to site and context constraints.

  - *Developments that propose less than the recommended distances apart must demonstrate that daylight access, urban form and visual and acoustic privacy has been satisfactorily achieved (see Daylight Access, Visual Privacy and Acoustic Privacy)."*

  (RFDC 2002, pg 29)

As stated in the above extract, the building set back guidelines are to ensure appropriate urban form, amenity and privacy. Further, the RFDC allows variation to these controls on a performance basis. The proposed development meets the building separation controls in the majorityof areas and where this is not the case it can be demonstrated that the three principles can be satisfactorily achieved.

Firstly, it is appropriate to define the context in which the RFDC uses the words 'habitable'.

> *"any room or area used for normal domestic activities, including living, dining, family, lounge, bedrooms, study, kitchen, sun room and play room." (RFDC 2002, pg 118)*

The RFDC separation controls are defined to allow appropriate privacy and amenity based on whether the relevant room is habitable or non-habitable. What it does not clearly state is how this applies to amenity at ground level (i.e. landscaping/communal space), and when the habitable rooms do not have any outlook towards each other (i.e. it has a solid wall or screen and/or high level windows). A habitable room that has no outlook in the direction in question has no amenity or privacy concerns. It is evident the building separation controls should be applied on a performance basis in these cases.

To derive a building separation distance, one logical approach is to start from the minimum (non-habitable to non-habitable) separation distance and then increase as required based on the 3 RFDC principles of urban form, amenity and privacy. This methodology can be applied to the pedestrian through connection between Buildings C & D and Buildings A & B.

- Urban Form. It is logical to assume the RFDC sets its minimum non-habitable to non-habitable distance based on a figure that achieves good building separation in terms of urban form. This could therefore be used as a starting point. In the case of the pedestrian through connection this would be 6m.

- Occupant Amenity & Privacy. High level windows and screening (e.g. louvers) are used to maintain privacy between buildings. The main outlook is towards the east and west, away from the pedestrian through connection, therefore daylight access is not required from this direction. However soft, secondary light would be desirable from this direction, hence high level screened windows are provided. Logically the minimum 6m could therefore apply.

- Ground Level Amenity & Privacy. As the separation space is intended to be used as a pedestrian through connection, a wider than required building separation as per the RFDC, has been chosen. In this case increasing the separation from 6m to between 10-12m (4-6m over the minimum) allows large tree planting on one side, a generous 4m pathway through the middle and low level planting on the other side. Privacy is not a concern as high level windows are used on the units.

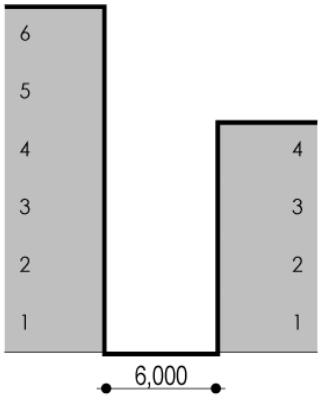
By applying this simple methodology of the 3 principles; urban form, amenity, and privacy, separation distance between buildings can be calculated based on performance. The alternative is to base the separation distances based on room use, for example, in the case above, habitable to habitable distance of 12m when it is clear that although the spaces are habitable behind the wall, there is no outlook in this direction from these apartments. It would be illogical to use these distances as a control in this circumstance.

The 3 principles listed in the RFDC are examined more closely under the following relevant headings.

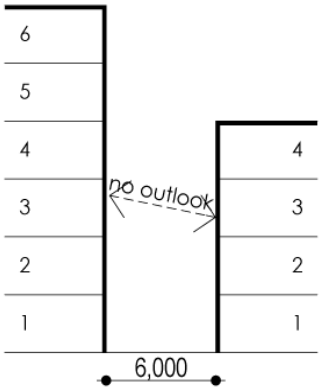
5.1 PRINCIPLE 1: URBAN FORM

Figure 2 illustrates a few selected options that were examined in relation to urban form. Each option has advantages and disadvantages.

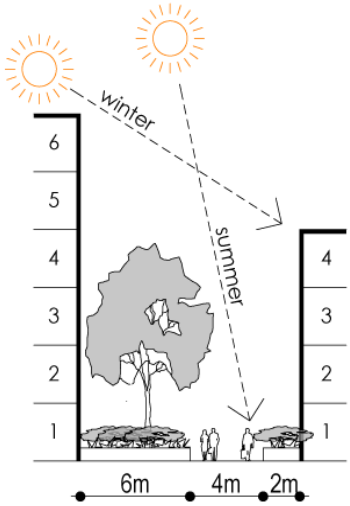
From an 'urban form' perspective, it can be clearly seen that 'type 2' has the most gentle gradient shown as a dashed line linked to the tops of the buildings. Type 2 represents the proposed development.



URBAN FORM



OCCUPANT AMENITY & PRIVAC'



GROUND LEVEL
AMENITY & PRIVACY

Studies.

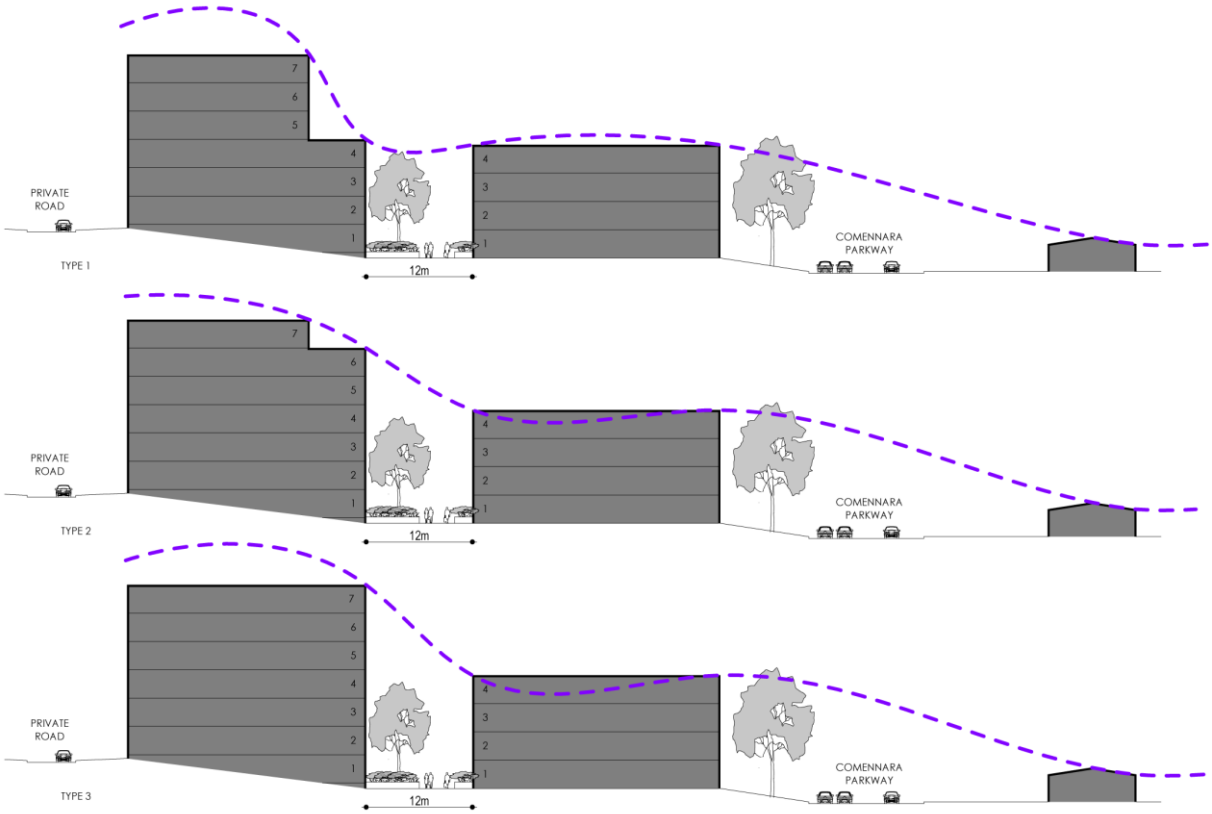


Figure 2. Urban Form examples.

Type 1 Illustrates a gentle height gradient up to the point where it steps sharply up to 6/part 7 storeys. The gradient then turns sharply back down to the private road. This option would be more successful if there was another taller building close to its left side. Further, the level at which the setback is situated results in a undesirable built form with odd proportions.

Type 2: Illustrates a gentle height gradient along its entirety. From an overall urban form perspective, it is very successful in carefully graduating the heights of the buildings from 1 to 6 storeys.

Type 3: The building forms in this example are clean and obvious. Although the height gradient is not as gradual as Type 2 it is an improvement over Type 1 and produces built forms with strong, clean architectural forms.

5.2 PRINCIPLE 2: UNIT AND GROUND LEVEL AMENITY

Using the same building forms examined in the previous section the following 3 examples illustrate how access to daylight at 12.00pm would be impacted by the building form.

Ground amenity

In all 3 options of different built forms it is clear that winter sun (during the winter equinox) will not reach the pedestrian through-site connection. However the pedestrian link is not formed by a continuous wall on both sides, but by several buildings, common open spaces and visual corridors. The pedestrian link is

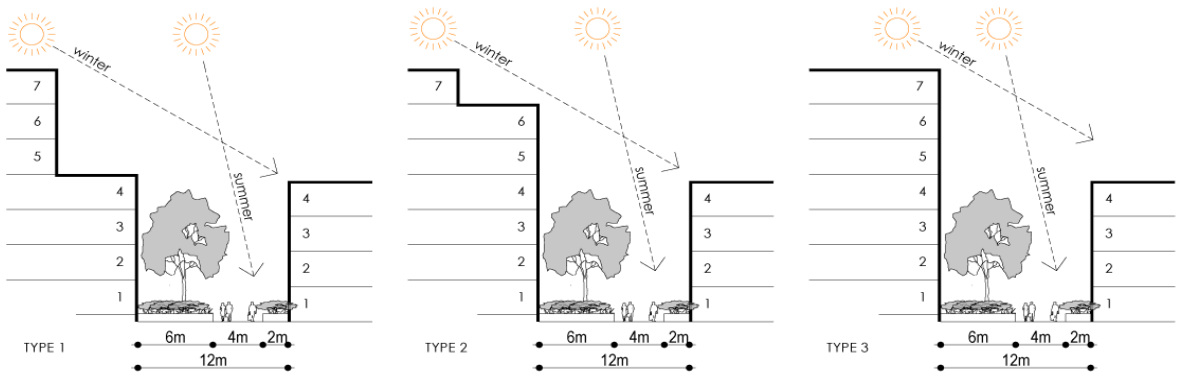


Figure 3. Sun access to pedestrian through-site connection for 3 options with 12m separation.

therefore a transition space connecting buildings and public spaces, and as such does not rely on direct sun access.

Sun from the north in summer penetrates deep in to the pedestrian through-site connection. Various setbacks to the top 3 levels will have nominal impact on sun access.

Morning and afternoon sun in both winter and summer will be largely unaffected in all options as its direction will be parallel with the pedestrian through connection.

The setback of the top 3 storeys will have an impact during spring and autumn but this will be only a minor adjustment to the available amount of daylight, particularly when comparing type 1 and 2.

Looking at the same urban form with an increased pedestrian through connection up to 15m (Refer Figure 4), there is little benefit in terms of sun access. Perhaps if the through connection was widened to 20, 25, 30m there may be a distinct improvement in sun access during spring and autumn but still no improvement during winter. Enlarging the through connection to 30m would not be in keeping with the original FPPR, nor would it make the development economically viable. It would also degrade the feeling and purpose of the space as a through-connection. Without the option to flip the buildings, with the highest building to the south, the amenity is better addressed not by the size of the space but by the quality of the space.

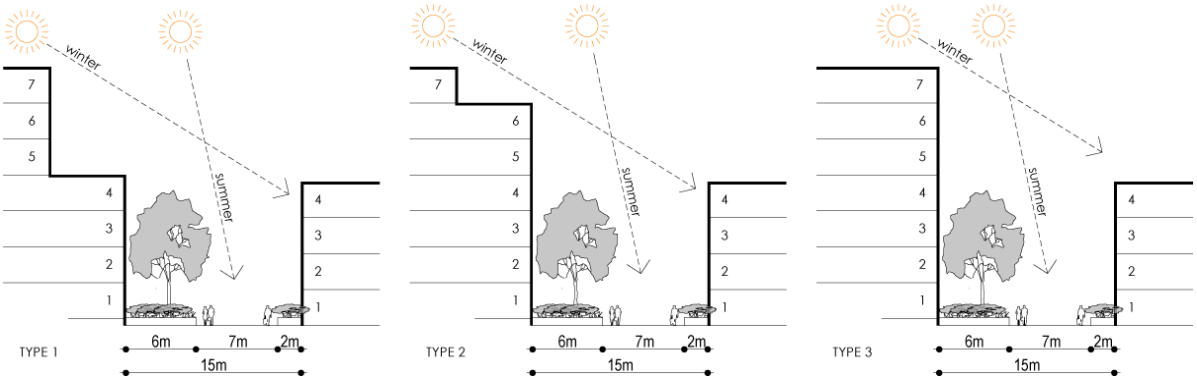


Figure 4. Sun access to pedestrian through-site connection for 3 options with 15m separation.

The proposed pedestrian through connection consists of 4-6m of landscaping including deep root planting, 4m of pathway and 2m of low level landscaping. Pockets of seating/resting areas are provided along the route. For the intended pedestrian use of the through-site connection as a transition zone between the education, residential and future mixed use buildings, 4m of circulation space is a generous width to accommodate expected pedestrian traffic levels.

The through connection does not have a continuous wall along its length but rather, purposely, the architecture of the buildings is articulated along its full length. The buildings also allow visual corridors running north-south through the middle of site where it connects to the entries of the buildings, allowing light at different times of the day to penetrate the space. The through connection is a reasonabley small walkable distance and opening to a wider at each end near the education and future mixed use developments.

The 6m zone provides a majority of 1.5m depth of soil as per RFDC requirements for large trees. Refer to the Landscape Architect drawings for further details.

Unit amenity

Direct sun access to the dwellings (adjacent to the pedestrian through connection) is provided east to west in accordance with the recommendation of the RFDC. Although not required by the RFDC, additional light will be achieved through high level screened windows to the north and south. It is therefore not required for direct sun to fall onto these windows. Refer Figure 5.

Figure 5. Pedestrian through-site connection between typical levels, Building C&D.

5.3 PRINCIPLE 3: ACOUSTIC AND VISUAL PRIVACY

Acoustic and visual privacy can easily be controlled through the use of high level windows, screening/louvers and walls with acoustic properties.

Visual privacy

Visual privacy will be controlled not only from opposing apartments on the same storey but also opposing apartments on stories above or below. In this particular case vertical louvers are used and angled to allow sun penetration from directions where building separation is over the RFDC controls.

Acoustic Privacy

Acoustic privacy between opposing apartments will be controlled by the inherit properties of the walls and windows. High level windows will also be effective, more so if the window remains closed should sound be a concern.

Where balcony separation is below the RFDC recommendation, the balcony is screened by a solid wall.

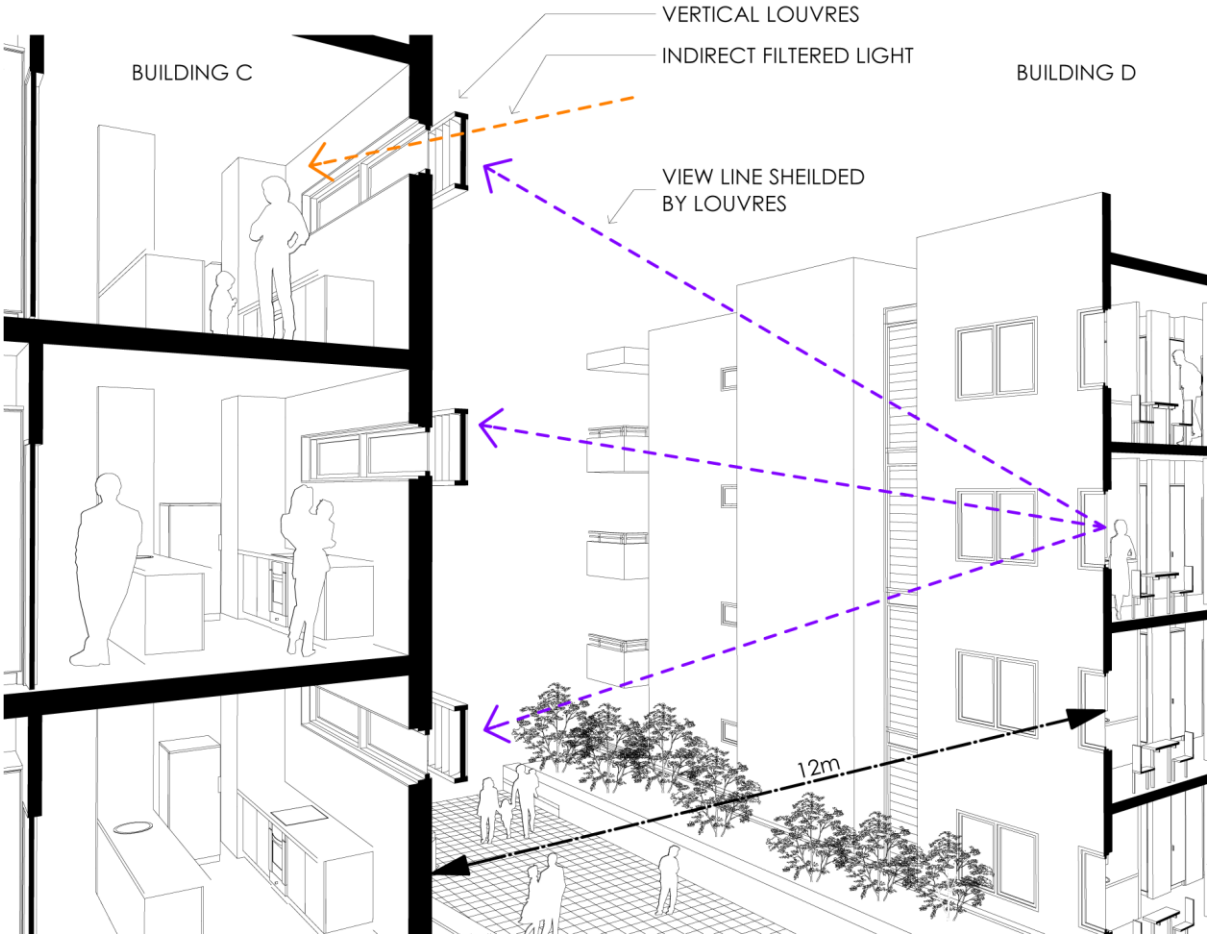


Figure 6. Visual Privacy to Pedestrian through-site connection, Building C&D.

6.0 BUILDING SEPARATION – WHOLE SITE

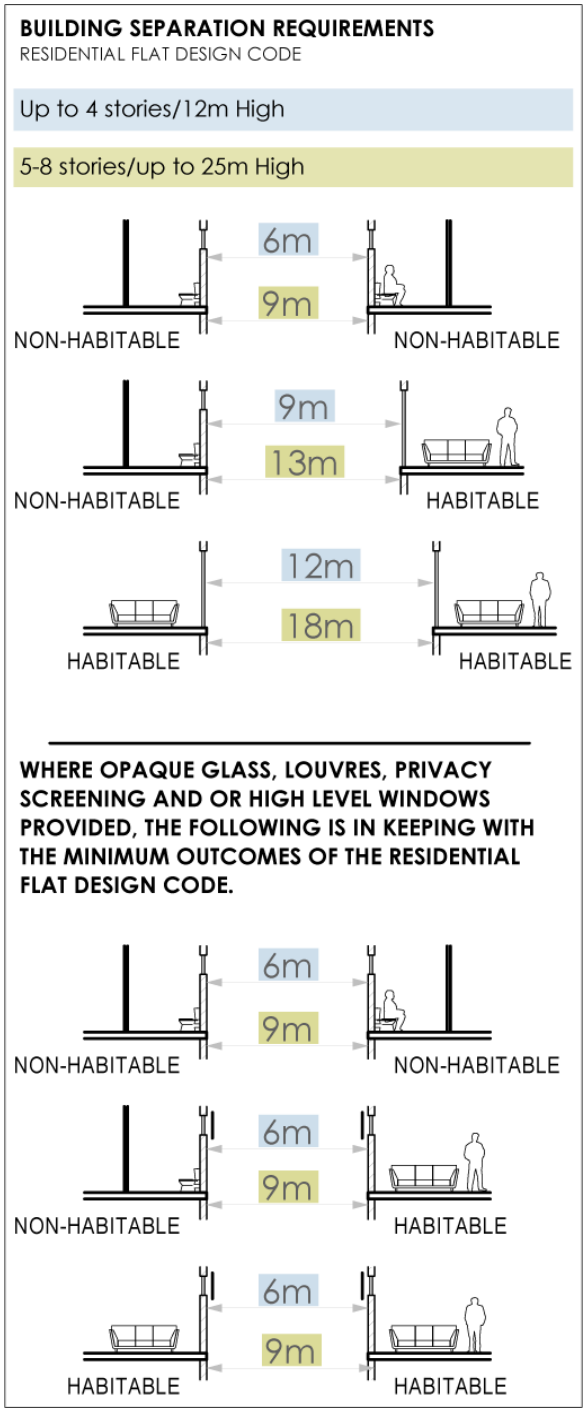


Figure 7. Graphical Illustration of RFDC building separation.

The 3 principles of urban form, amenity and privacy can be applied to all areas within the development, particularly where the building separation does not meet the minimum RFDC controls. Typical examples are listed on the following pages.

Figure 7 graphically illustrates the RFDC building separation controls for buildings 1-4 storeys high (12m high) and up to 8 stories (25m high). The figure is split into two sections;

- The upper section is a direct illustration of the RFDC.
- The lower section demonstrates a performance based outcome that could be achieved having regard for the 3 key design principles.

The separation controls are colour coded and should be referenced when reviewing figure 8.

Refer to Figure 8 for where the following building separation examples are referenced. The column on the left of each example represents an accumulative building separation increased as each principle is evaluated.

EXAMPLE 1:

Space Separating: Bedroom to Bedroom.
RFDC Control: Habitable to Habitable = 13m
6 **Urban Form**: Non-Habitable to Non-Habitable achieved. Req min 6m.
9 **Unit Amenity:** Outlook in one direction. Req min 9m to receive sun.
10.5 **Ground Level Amenity:** Increase to cater for amenity of Pedestrian Link by 1.5m.
10.5 **Visual Privacy:** High level windows, Northern window screened. Req min 9m.
10.5 **Acoustic Privacy:** High level windows, acoustic walls. Req min 9m.
10.5 **Performance based outcome:** Width increased 1.5m over above RFDC requirement (when screening taken into account) to increase ground amenity.

EXAMPLE 2: *Proposed Setback: 11.6m*

Space Separating: Balcony to Living
RFDC Control: Habitable to Habitable = 18m
9 **Urban Form**: Non-Habitable to Non-Habitable achieved.
11 **Unit Amenity:** No outlook from western unit. Eastern unit has outlook, is a corner unit with generous amenity to North. Increase by half requirement (2m) to 11m.
11 **Ground Level Amenity:** Generous amenity achieved with full northern daylight access to garden area. As above, increase to 11m.
11 **Visual Privacy:** High level screened windows to western unit. As above, increase to 11m.
11 **Acoustic Privacy:** High level windows to western unit. Req min 9m.
11.6 **Performance based outcome:** One unit is sufficiently screened and the other is a corner unit with ample amenity and privacy to the North. Ground level received generous amenity from the north.

EXAMPLE 3: *Proposed Setback: 13.15m*

Space Separating: Balcony to Living
RFDC Control: Habitable to Habitable = 18m
9 **Urban Form**: 9m Non-Habitable to Non-Habitable achieved.
13 **Unit Amenity:** No outlook from western units to balcony. Balcony from east, increase to 13m to receive sun. Req 13m.
13 **Ground Level Amenity:** Ground level requires sun access, provide Req 13m.
13 **Visual Privacy:** No outlook from western units to balcony. Retain 13m for eastern unit.
13 **Acoustic Privacy:** No windows to western units facing balcony. Req min 9m.
13.2 **Performance based outcome:** Complies with Habitable to Non-Habitable = 13m. Where Non-habitable is applied to western wall.

EXAMPLE 4: *Proposed Setback: 11.3m*

Space Separating: Balcony to Living
RFDC Control: Habitable to Habitable = 12m
6 **Urban Form**: 6m Non-Habitable to Non-Habitable achieved, Req 6m.
9 **Unit Amenity:** No outlook from northern units to southern balcony. Req 9m.
10.5 **Ground Level Amenity:** Increase to cater for amenity of Pedestrian Link by 1.5m.
10.5 **Visual Privacy:** No outlook from northern units to balcony. Req 9m min.
10.5 **Acoustic Privacy:** No windows to northern units facing balcony. Req 9m min.
11.3 **Performance based outcome:** Width increased 2.3m over RFDC requirement (when screening taken into account) to increase ground amenity.

EXAMPLE 5: *Proposed Setback: 10.05m*

Space Separating: Bedroom to Kitchen
RFDC Control: Habitable to Habitable = 12m
6 **Urban Form**: 6m Non-Habitable to Non-Habitable achieved.
6 **Unit Amenity:** No outlook from either unit. No sun access required.
7.5 **Ground Level Amenity:** Increase to cater for amenity of Pedestrian Link by 1.5m.
7.5 **Visual Privacy:** No outlook from either unit. Req 6 min.
7.5 **Acoustic Privacy:** No windows. Req 6 min.
10 **Performance based outcome:** Width increased 4m over RFDC requirement (when screening taken into account) to increase ground amenity.

Figure 8. Proposed Building separation distances. Below each distance is the RFDC guiding control highlighted in a colour to match Figure 7 for 'up to 4' or '5-8' stories .

7.0 RELATIONSHIP TO THE WAHROONGA FINAL PREFERRED PROJECT REPORT

Figure 9 illustrates the design of residential and student accommodation outlined in the FPPR and Concept Plan, in comparison to the proposed development. The FPPR was developed for the submission to the Department of Planning and should be viewed as a design concept that can be refined as detailed studies commence on the site for development application.

Desirable concepts within the existing masterplan are:

- central landscaped transition linking to Fox Valley Road rather than using Comenarra Parkway due to no footpath or bus stops along this road.
- precincts and their hierarchy, from education to residential to commercial(mixed use).
- commercial buildings are provided with an arrival landscaped area.

Undesirable concepts within the existing masterplan are:

- Roads and parking are the central focus for the residential buildings that face the mixed use commercial/residential buildings.
- 'U' shaped residential buildings have a predominately east and west orientated shared communal areas that will receive minimal sun. These spaces are small and somewhat limited in terms of potential use.

Key existing conditions that have changed since the FPPR was developed:

- Comenarra Parkway has widened causing the removal of some existing vegetation (southern side of the proposed site). This has occurred due to the RMS works.

The new proposed design successfully addresses the above points and is discussed in detail in the following sections. As part of the design process a number of masterplan options were looked at with some selected examples have been shown on the following pages.

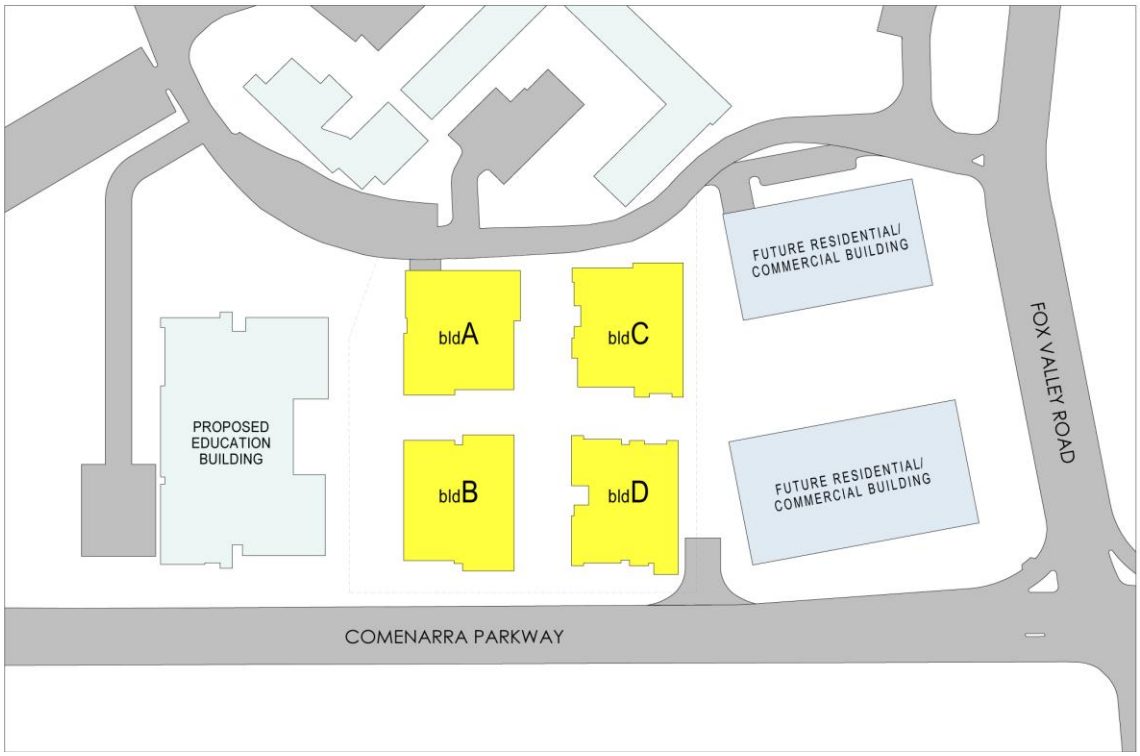
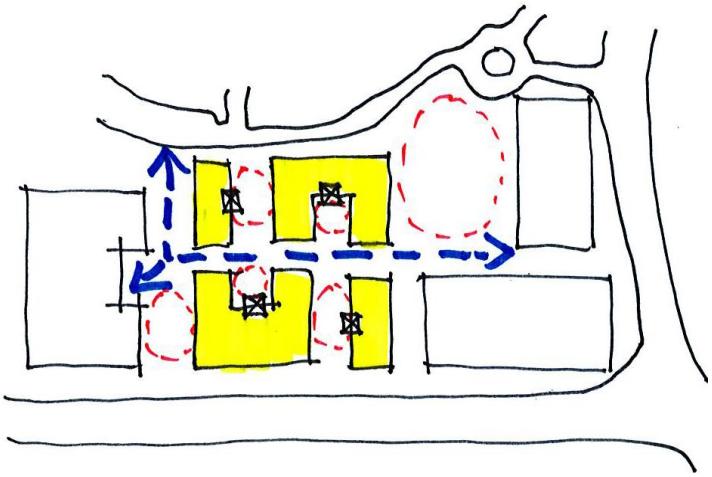
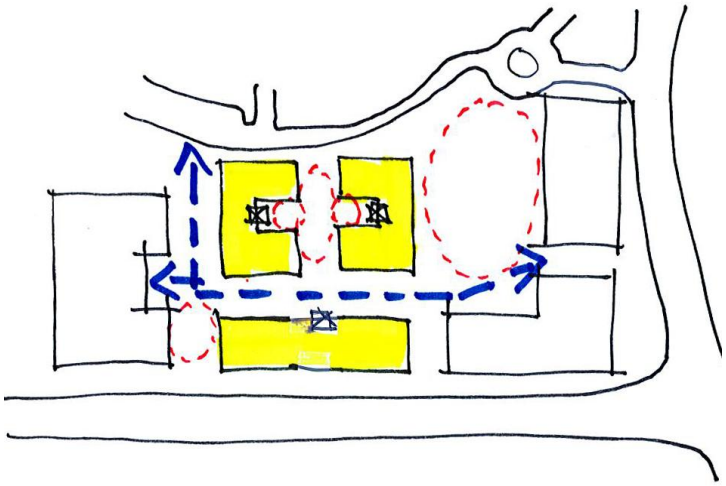


Figure 9. Approved and Proposed Concept Masterplan. (FPPR pg63)



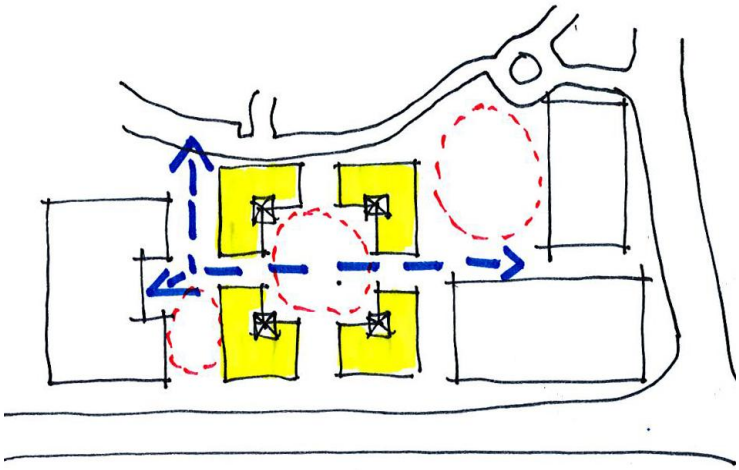
Option 1:

- Communal spaces inside the U-shaped building are small and open to one side only. This limits varied uses and sun access (in one instance south facing only).
- Limited ability to provide visual and acoustic privacy across tight courtyard.
- Too many internal corners resulting in poor residential layout.



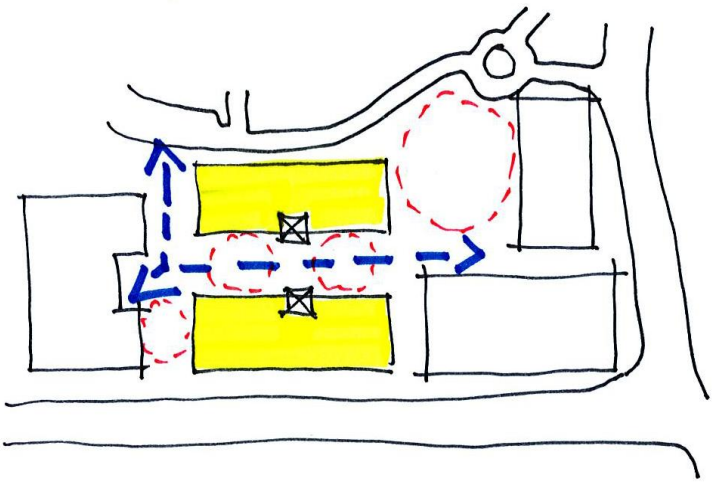
Option 2:

- Communal spaces inside the U-shaped building are small and open to one side only. This limits varied uses and sun access (in one instance south facing only).
- The long building will result in long access corridors, increasing unit loading to corridors.
- The southern building addresses transition space, the building doesn't 'own' a space nor have any privacy to the entry.
- The southern building will have problems accessing northern sun.



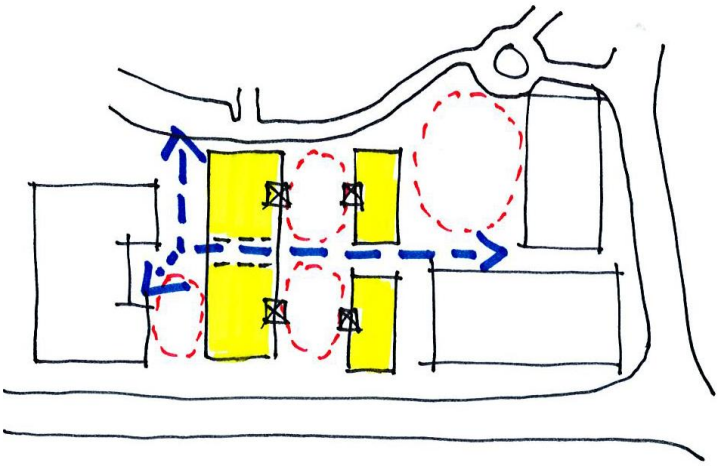
Option 3:

- Footprint is well under allowable FSR which questions the financial viability of such a development
- Excessive communal open space.
- Building define a space that is both public and private, there is no distinction.
- Position of the core will result in some southern single aspect units.



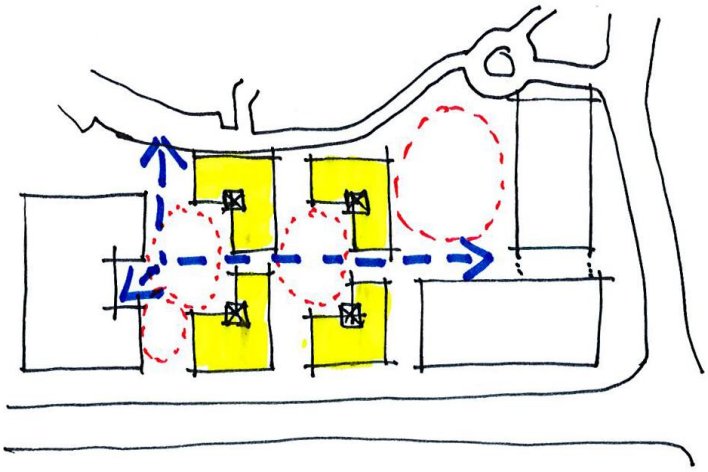
Option 4:

- Long northern building will significantly overshadow southern building due to height controls which allow a higher building to the north.
- No separation between transition space and communal open space.
- Will result in some single southern aspect units.



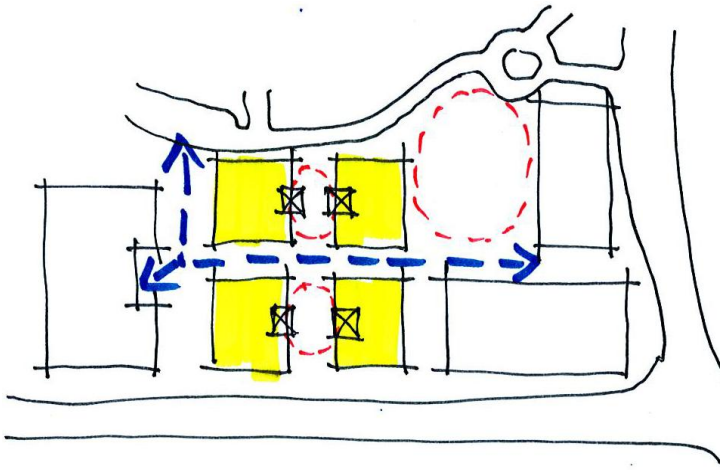
Option 5:

- Western long building successfully shields the education space from the residential/student accommodation space.
- Breaks the strong central transition concept.
- Provides good north-south visual corridors through the site.



Option 6:

- Footprint is well under allowable FSR which questions the financial viability of such a development.
- Excessive communal open space.
- Residential and student open space is separated and does not encourage mixing of these different social groups.
- Position of the core will result in some southern single aspect units.
- Student accommodation entries are mixed with the noisy and busy entry to the education centre.



Option 7: 'Proposed Option'

- Communal open space located off the main pedestrian through link. Space is open to 2 sides including north for sun access.
- Entries located off the communal open space rather than off the main pedestrian through link.
- Ordered and logical urban fabric strengthens pedestrian through link whilst allowing view corridors between buildings along its length.
- Reflects desirable development density in FPPR, whilst achieving desirable ground and unit amenity.
- No southern single aspect units.
- Maximises units access to northern, easterly and westerly light within site constraints.
- Length of facades reduced along Comenarra Parkway reducing visual impact.

8.0 HIERARCHY OF SPACES, ZONES AND OPEN SPACE

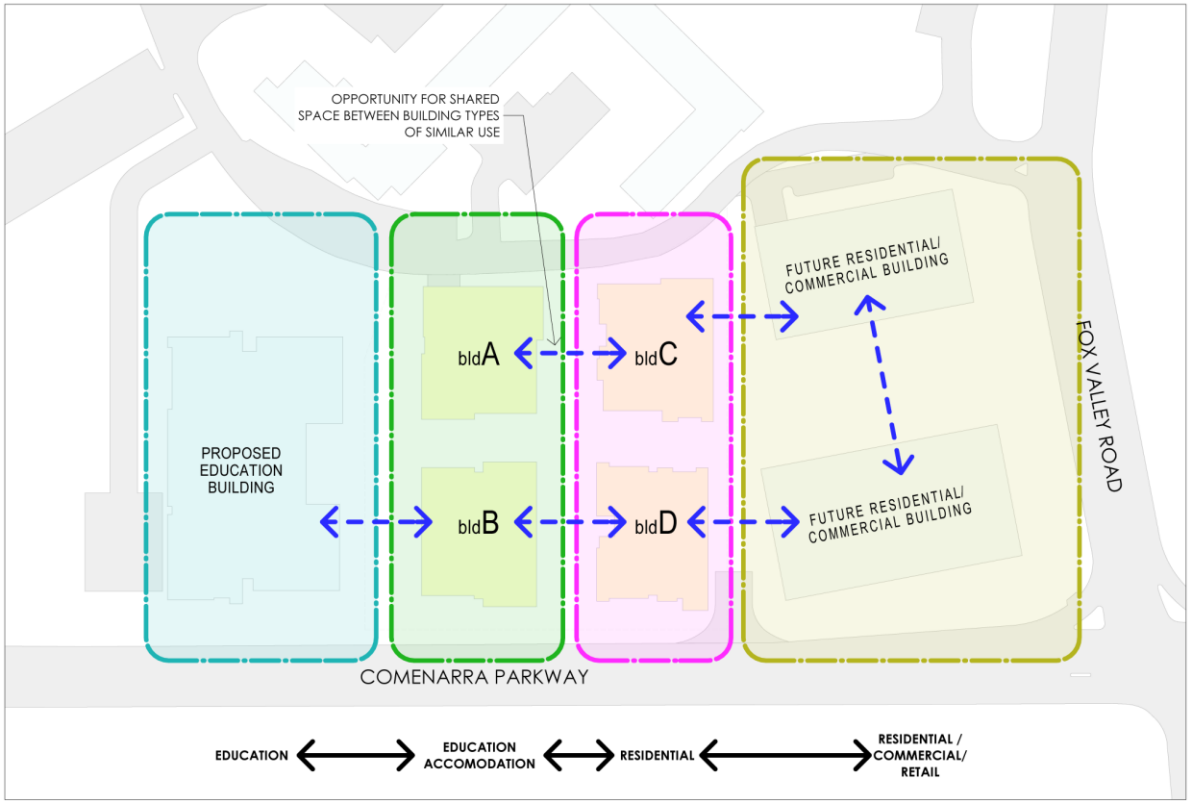


Figure 10. Proposed Concept Masterplan Precincts.

A principle of the proposed arrangement of buildings is

- shared space allowing housing occupants to share ground level space,
- to move between commercial/retail development, and
- to enjoy the hospital grounds for walking and exercising purposes.

The proposed FPPR divides the area into 4 uses within the Precinct. Refer Figure 10. The uses are ordered in a hierarchy with complimentary uses adjacent to each other. Starting from the left (west) the Education Centre is adjacent the student accommodation where the students will be the main users of this building. This also provides the opportunity for mixed breakout spaces between the accommodation and education uses.

Next in the hierarchy are the residential buildings. As this is also a residential use it is logical for this to be located next to the student accommodation whilst separated from the education precinct. Mixed spaces can be provided between the residential and student accommodation to encourage interaction between different social groups, whilst at the same time more 'loud' and energetic events can take place in the space between the Education Centre and the student accommodation.

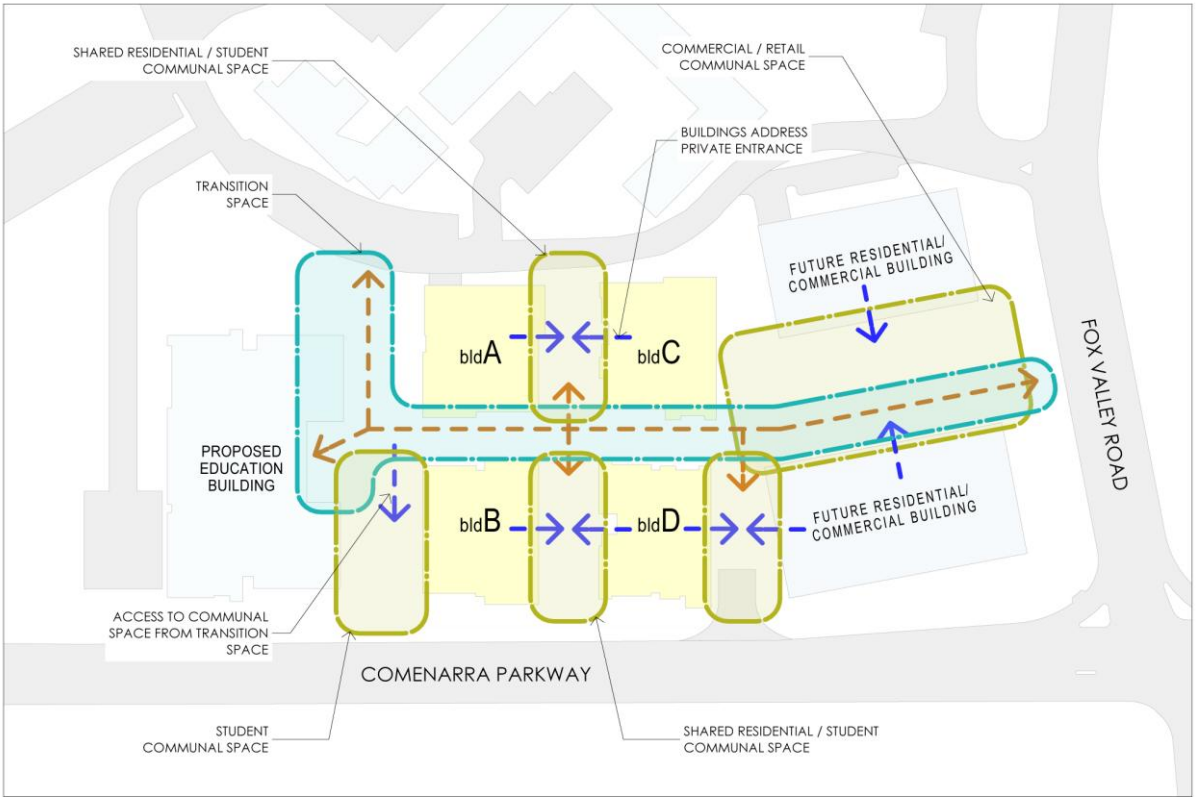


Figure 11. Proposed Concept Masterplan Access and Transition spaces.

Opposite to the residential development is a mixed use residential/commercial development. This will most probably take the form of 1 storey commercial with 3 storey residential above. However it will be subject to a future separate development application. The lower commercial level will predominately face the street and the northern space will be used for at grade parking access and landscaped areas. Building C in the residential development will also have views out to this landscaped space.

The buildings are accessed from a central pedestrian transition link that runs east-west and then turns north towards the Hospital on its western end. (Refer Figure 11). This transition will allow access to all uses, including the hospital precinct to the north, the central hospital precinct containing student, residential and commercial uses, the existing neighbourhood centre and future development in the Fox Valley Road East Precinct.

The residential buildings A,B,C & D, enter off a shared area located off the main transition link to provide a structured layering of space in keeping with the FPPR. The building's main outlooks to the east, west and north are directed away from this transition to reduce the crossover between private communal uses and the busy public transition used to access all uses.

The main transition link opens to become part of a larger commercial/retail open space to the east. This will be a highly active area with cafes, offices and shops.

The arrangement of the buildings in combination with landscaping; define the private and public domains. Pathways reduce in size as they enter into student and residential communal open space and give the feeling of a more private space. Residential and student accommodation buildings also

address this space through orientation of balconies. Extensive glass will further define the intent of the space as private communal space.

The alignment of the 4 residential buildings into a grid like arrangement allows open space to be aligned, and the opportunity to create visual corridors running north-south through the site. This is a highly desirable attribute that was not achieved in the FPPR.

The use provides a logical hierarchy layering from education to residential to commercial, whilst appropriate shared and private communal open space provision encourages the mixing of people from different social groups and generations. A central transition link successfully connects the uses and open spaces, with secondary 'branches' off this space to allow different levels of privacy.

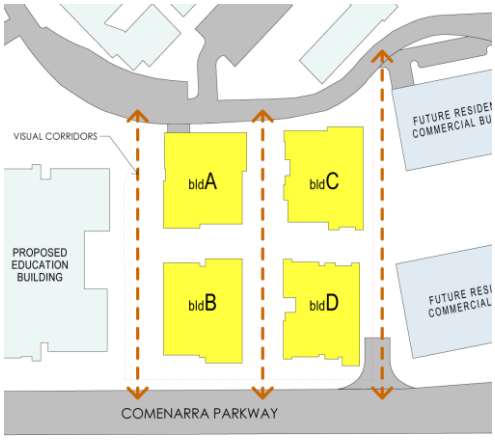


Figure 12. Visual Corridors

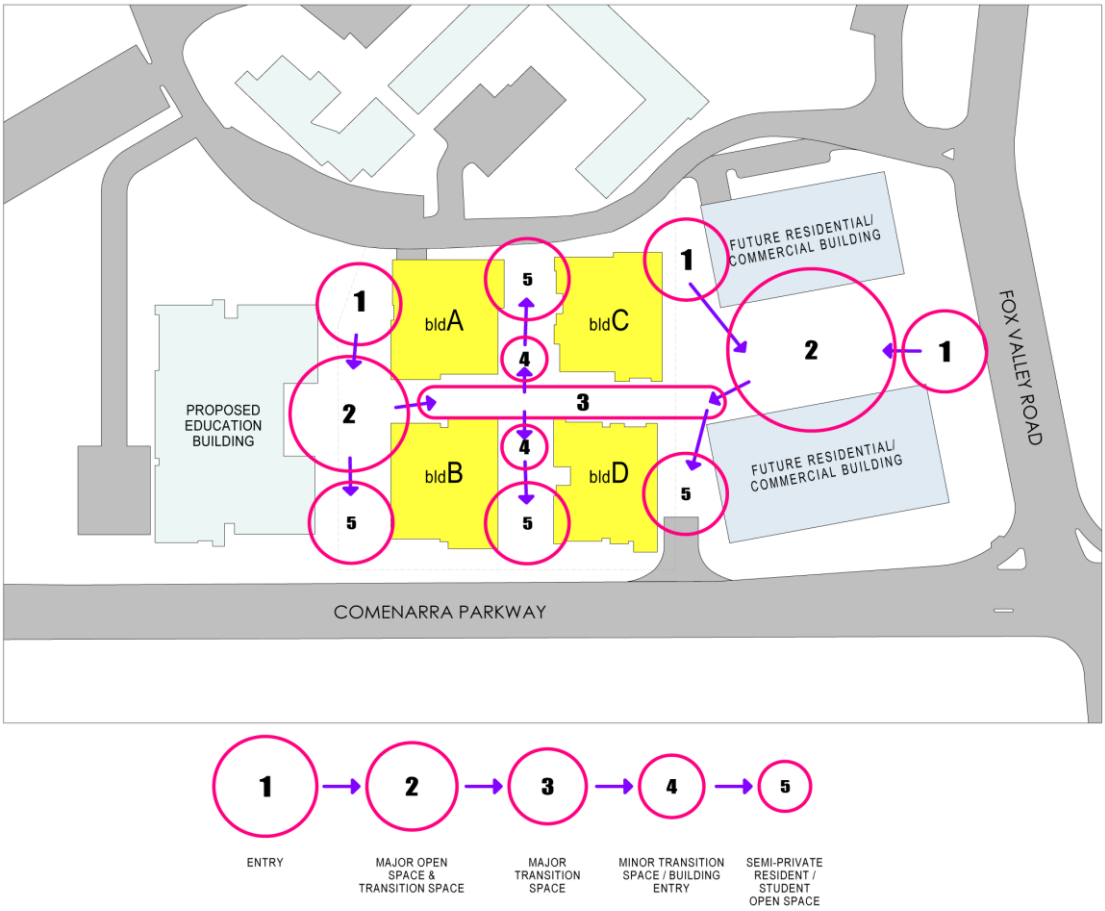


Figure 13. Proposed Concept Masterplan Hierarchy of Space

9.0 BUILDING RESPONSE TO SPACE

The buildings have been designed to respond to the spaces they address;

Response to central transition. (Figure 14)

- High level windows and screening to provide visual and acoustic privacy
- Non-habitable rooms are largely orientated into this space. Where habitable rooms are orientated adjacent to this space, the high levels windows provide secondary light. No living space is orientated to the central transition.

Response to communal open space. (Figure 15)

- Large balconies and living space orientated towards these spaces.
- Solid balconies provide acoustic and visual privacy to open space whilst still allowing surveillance of the spaces by the residents.
- All building entries are accessed of this space to provide a semi-private entry.
- The student accommodation is a highly articulated facade broken down through 'pod' like structures that address the open space.
- In contrasted the residential building is a streamlined modern facade with floating balconies.
- The contrasting facades define the boundaries of the open space and positively add to the feeling and character of the space.

Response to Comenarra Parkway. (Figure 16-17)

- There is no footpath or bus stops along Comenarra Parkway in the vicinity of

Figure 14. Balconies and living areas to common open space, semi-closed to pedestrian link.

Figure 15. Balconies and living areas to common open space, semi-closed to pedestrian link.

Figure 16. High level windows to Comenarra Parkways. Facade largely screened by significant tree planting.

the site. Orientation of units to the street is not ideal as units should preferably not be orientated towards busy roads to reduce noise and take advantage of more appropriate views

- The buildings street front facade provides articulation with semi enclosed windows whilst maintaining most balcony and living area outlooks away from the street.
- Facade is heavily screen by landscaping.

Response to Mixed Use Commercial (Figure 17)

- Strong lineal balconies dominant the facade with generous glazed areas.
- A mixture of ground level terraces and floating balconies at ground level will interact with the future communal open space to this elevation.

Response to the Education Centre (Figure 18-19)

- The western facade of the Education Centre is broken down in scale through the use angled pods projecting from the building. The pods create a highly active facade that complements the highly active ground level space that is the pedestrian entrance to the student accommodation and education building off the street.
- The Education Centrre flows out from the centre atrium of the building towards the student education building through a large glazed wall that frames the articulated student accommodation building beyond.

Figure 17. Open balconies and living to east (right of page), Semi-closed spaces to Comenarra Parkway (left of page) screened by landscaping

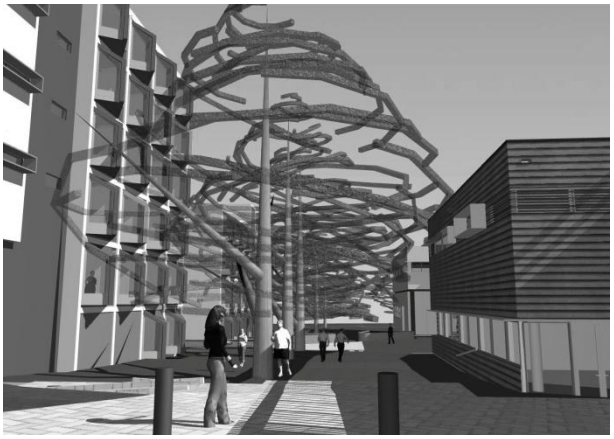


Figure 18. Highly active facade to student accommodation (left of page) addressing a major access and landscaped route.

Figure 19. View from inside the education centre towards active student accommodation facade.

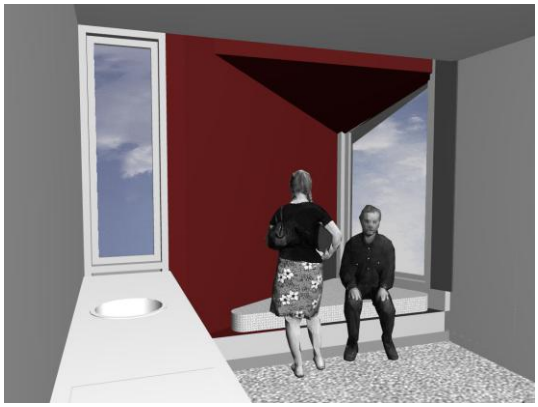
10.0 AMENITY & UNIT/BUILDING DEPTHS

10.1 STUDENT ACCOMMODATION

Each proposed student accommodation dwelling on average is 36m². This is well above the average accommodation size of 25m² for similar type developments. The Boarding House SEPP 2009 defines room size to be a minimum of 12m². The clients brief was for larger unit sizes in order to provide a greater level of usable living space for students of the hospital.

The larger units provide greater living space/study space, own bathroom, and bedroom space for a double bed whilst separate communal study spaces are provided on each level and at ground level to encourage interaction between students.

Unique to most of the units is a study 'pod' located at the window line. The 'pod' is a space to sit, relax or study with its orientation towards to the north. Internally the pod provides adequate sun penetration into the unit with windows being 5.35m from the back of the living area. This is not a deep space. As a comparison this is well under the 8m minimum requirement for the back of kitchen in the RFDC.



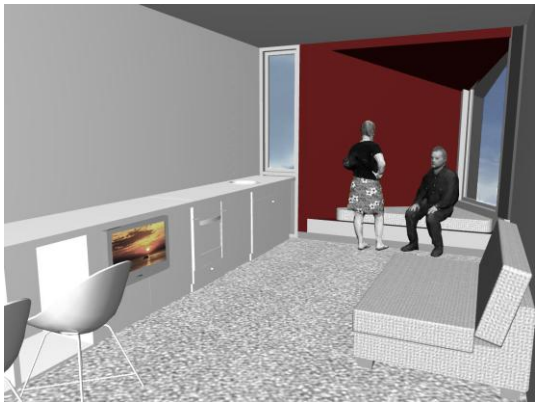


Figure 20. View from inside student accommodation.

If the windows along the front of the pods were combined into one, they would measure 2m x 2m, a good sized window. The windows are also fully operable for natural ventilation. The proposed feature study 'pod' adds interest to the space with the added benefit of glazing orientated towards the north, maximising direct sun access. Ceiling heights have been increased from 2.7m to 2.8m in the student accommodation to increase amenity.

The unit is essentially a studio apartment with a curtain division between the bedroom and the living. The bedroom therefore uses borrowed light and as such there is no RFDC or other guide as to what a satisfactory dimension would be. With the back of the bedroom 8.45m from the window it is considered appropriate for the type of unit.

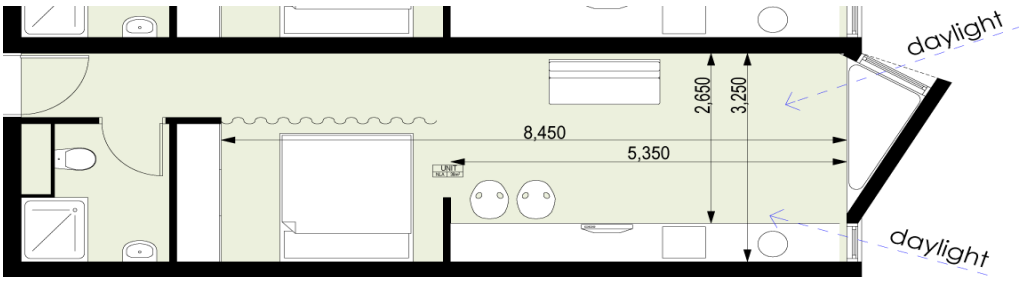


Figure 21. Typical student accommodation unit.

10.2 STUDENT ACCOMODATION COMMON ROOMS AND CIRCULATION

- Uninterrupted large windows to quality landscaped communal open space.
- Corridors and Common Rooms are naturally ventilated.
- The larger ground floor common room is physically separated from the Laundry room but arranged and designed to encourage social interaction between the users of each space.

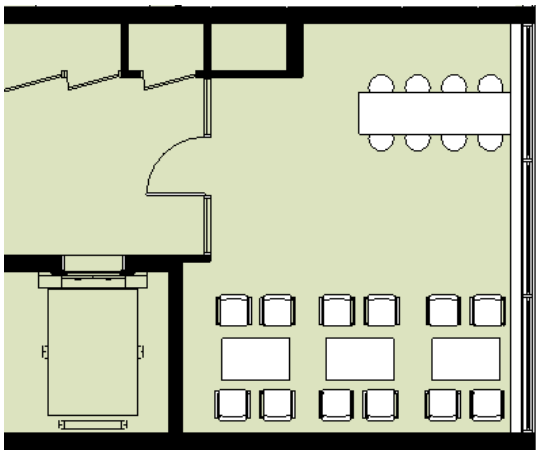


Figure 22. Typical Student Accommodation

- Corridors are generously proportioned to improve feeling of space, maximise sunlight penetration and allow accessible visitation to all units.
- All corridors have natural light.
- 2 lifts serve each building to cater for possible redundancy.

10.3 RESIDENTIAL ACCOMODATION

- Buildings are as long as they are wide to suit the shape of the site, maximise through-site visual corridors and maximise usable ground level amenity.
- 4 units out of 6 units (67%) are corner units which offer excellent amenity and cross ventilation and access to external windows. I.e. dual orientation. The remaining 2 units out of 6 (33%) have north or east orientation.
- All units receive required hours of sunlight during winter as per SEPP65 requirements.
- No southerly facing units
- No long corridors.

Figure 23. Typical Residential Accommodation

- Corridors are generously proportioned to improve feeling of space, maximise natural light penetration and allow accessible visitation to all units
- Unit plan types are consistent, with those approved for Precinct C under the FPPR and Concept Plan. It is worth noting no student types are shown which have different planning and amenity constraints.
- 2 lifts serve each building to cater for possible redundancy.
- Generous private open space opening off living spaces to units above and at ground level. This maximises usability, functionality and amenity of the spaces provided.

11.0 SEPP65 DESIGN STATEMENT

11.1 INTRODUCTION

The site is described as SPD Residential, 185 Fox Valley Rd, Wahroonga, Lot 621 in DP 1128314. It is located on the south-east corner of the Wahroonga Estate. The sites southern boundary in defined by the Comenarra Parkway and to the north is a private internal road. To the east is a primary school and to the west is a site currently under construction, comprising of a new Education Centre.

The site is currently occupied by the school oval and school ancillary demountable shed.

The proposed development is comprised of 2 student accommodation buildings on the western side and 2 key-worker accommodation buildings to the east. Three levels of basement parking are provided for residents and visitors.

This purpose of this report is to review the proposed development against the ten "**Design Quality Principles**" identified in the State Environmental Planning Policy NO.65 (Appendix 1) – Design Quality of Residential Flat Building (SEPP 65) including; context, scale, built form, density, resource, energy + water efficiency, landscape, amenity, safety + security, social dimensions and aesthetics. The proposed development will provide student and key-worker accommodation which is crucial for the function and future of the hospital as a key health care facility. This is acheived by providing ancillary services for education as well as affordable accommodation and amenity for both the precinct and the users of the estate.

This design was developed to meet the Wahroonga Estate Redevelopment FPPR and Concept Plan as approved by the Department of Planning, urban design principles and SEPP 65 outcomes for the site.

The proposal successfully meets these requirements.

The SEPP65 RFDC is largely written around the assumption that the buildings being assessed are of a typical residential design. The SEPP 65 is currently under review to examine just this and in particular address how student and boarding housing should be assessed under SEPP65 RFDC. The proposed design of the student accommodation has largely addressed the RFDC code but where this is not possible due to the configuration of the significantly smaller unit sizes the intent of the RFDC has been appropriately applied.

Morris Bray Martin Ollmann Architects are currently also involved in the expansion of the Sydney Adventist Hospital, the Education Centre to the west of the site, the future mixed use commercial site to the east, the masterplanning for Precinct C and the whole Hospital Estate. The development has been designed to respect the aim of the masterplan, to complement adjacent buildings under construction or currently in design, and to further develop the aim of the masterplan into quality and viable developments.

11.2 DESIGN QUALITY PRINCIPALS

Principle 1: Context

"Good design responds and contributes to its context. Context can be defined as the key natural and built features of an area. Responding to its context involves identifying the desirable elements of a location's current character or, in the case of precincts undergoing transition, the desired future character as stated in planning and design policies. New buildings will thereby contribute to the quality and identify of an area". (RFDC, p98) The proposal responds to Principal 1 as follows:

- The Wahroonga Estate exists as a significant living working community and represents an excellent example of planning to reduce dependency on car related travel. The proposed accommodation will further develop this principle.
- The proposal will provide student and key-worker accommodation for the Sydney Adventist Hospital and the Education Centre to the west, currently under construction. The Wahroonga Estate exists as one of the major health care employment hubs in Sydney and is recognised as such in the Draft North Sub-Regional Strategy. The area is set to grow significantly as the staged FPPR and Concept Plan unfolds. The use of the development will respond directly to the intermediate and future needs of the area.
- Future mixed use developments (including a retail component) to the east and existing retail development to the south-east will be supported by developments such as this proposal which includes 190 student and key-worker accommodation dwellings.
- The development includes a pedestrian through-link connecting the Education Centre to the future mixed use development to the east. The development proposes to provide a high quality space as a means of transitioning between the two, contributing to the overall aim of the FPPR for the precinct and the Wahroonga Estate.
- The development forms a transition of scale through stepped 4 & 6 storey buildings, as defined by the FPPR between the residential to the south (across the Comenarra Parkway) and to the Hospital to the North which is reflected in the form, mass and scale of the proposal.

Principle 2: Scale

"Good design provides an appropriate scale in terms of the bulk and height that suits the scale of the street and the surrounding buildings. Establishing an appropriate scale requires a considered response to the scale of existing development. In precincts undergoing a transition, proposed bulk and heights needs to achieve the scale identified for the future desired character of the area" (RFDC, p98). The proposal responds to Principal 2 as follows:

- The scale of the development is in keeping with the proposed bulk and scale as proposed by the FPPR.
- The proposal consists of 4 buildings that are square like in their footprint to minimise the length of the buildings, reducing the overall scale of the development.
- The buildings are 6 stories to the north and 4 stories to the south complementing the low density scale of the residential buildings to the south on the opposite side of the Comenarra Parkway and the higher buildings to the north, comprising of the main Hospital Building and its ancillary buildings.
- To the west will be the Education Centre which will also have a future 6 storey component on the Northern part of the site and 4 stories to the South, complimenting this proposed development.
- The future mixed development to the east will be 4 stories which will appropriately step the scale of the overall precinct heights down towards Fox Valley Road.
- The scale of the buildings are within the Wahroonga FPPR height limits with the exception of some lift-overuns and plantroom at roof level. The plant rooms are behind a louvred screen, are set well back from the street and are only visible from a great distance at which point they become too small to be noticeable.

Principle 3: Built Form

"Good design achieves an appropriate built form for a site and the building's purpose, in terms of building alignments, proportions, building type and the manipulation of building elements. Appropriate built form defines the public domain, contributes to the character of streetscape and parks, including their views and vistas, and provides internal amenity and outlook" (RFDC, p98) The proposal responds to Principal 3 as follows:

- The proposed built form aims to respond to the existing and desired future character of Sydney Adventist Hospital Estate and Precinct.
- The proposed built form footprints are as long as they are wide to provide good amenity to the units. This allows 4 buildings (as per the FPPR) to efficiently sit on the site, maximising unit amenity to the east, west and north, eliminating all southern facing units and removing any need for substantially long corridors that are prevalent in long narrow buildings. The FPPRs typical unit and precinct illustrations propose long u-shaped buildings that have long internal corridors. This allows for minimal natural light access to corridors, single aspect southern units, east and west units that are overshadowed easily by the bending of the building to the north, and courtyards that would receive little sun access due to being enclosed on 3 sides.

With a different shaped site, i.e. not square, and a different proposed density, long narrow buildings may well be suitable. However, through design development the proposed buildings effectively use a reconfigured floor plate, achieve a better layout, good energy efficiency and desirable densities.

The illustrations in the FPPR are not meant to be set footprints but rather 'concepts' as to how the buildings can be arranged to achieve a desirable outcome. It is always the intention of the Concept Plan to be tested during design development. The intentions of the FPPR are successfully addressed through the proposed appropriate built form.

- The transition in scale from the proposed 6 storey building on the north-east of the proposed site, down to the future 4 storey mixed use development to the east is addressed through treatment of the topmost floor.

- The built form of the residential buildings feature large balconies that allow outlook to the east, west and north, solid balustrades reduce sound from the road, intermediate use of the eastern parcel of land as a school, and its future use as a mixed development comprising retail and cafe activities. The built form successfully visually informs the surrounding context of its use as a multi-unit development with variable apartment layouts and internal spaces.

- Being a different style of use, the student accommodation buildings use a 'pod' like facade element to capture the northern sun and double as a functional study space internally. In comparison to long-term residential units, student accommodation requires a smaller living space, is highly efficient and contains short-term users. This is illustrated on the facade through a literal visual expression of the internal planning, engaging pedestrian and users of the surrounding gardens and hardscapes.

- The 4 buildings define the public through connection east-west through the site and private communal area to the north and south. The strong building forms are appropriately semi-closed to the public through connection while open to the communal area. This has been provided without compromising the quality of the simple and modern architectural forms proposed. This style is in keeping with the architectural style of the Hospital expansion and Education Centre currently under construction.

- Along the south elevation of the southern buildings, the built form is semi-enclosed by limiting balconies and windows. This allows some engagement with the road, whilst recognising that the majority of units require noise control from traffic and limited southern sun to improve passive solar design.

- To the north, the buildings open to the private road, this being the developments main approach. The student accommodation 'pods' on this elevation have a much more open appearance with solid spandrels to reduce noise. The residential buildings have balconies to this facade with solid balustrades to limit noise. The 2 differing styles emphasize their different uses and engage with the main entrance road successfully.

Principle 4: Density

"Good design has a density appropriate for a site and context, in terms of floor space yields (or number of units or residents). Appropriate densities are sustainable and consistent with the existing density in an area, or in precincts undergoing a transition, are consistent with the stated desired future density. Sustainable densities respond to the regional context, availability of infrastructure, public transport, community facilities and environment quality" (RFDC p98). The proposal responds to Principal 4 as follows:

- The proposed density and building envelope corresponds with the FPPR and Concept Plan.
- The proposed development has a density appropriate for its site and context allowing visual through links from the Comenarra Parkway right through to the private road and also east-west along the pedestrian through connection. This is an improvement over the FPPR which only has a east-west visual corridor.
- The development lies within a major health care hub which includes good access to public transport, community facilities, hospital, specialist, swimming pool, existing and future retail and commercial uses, and growing infrastructure.
- The residential and student accommodation density responds to this context with a strong mix of dwelling configurations and orientations.

Principle 5: Resource, energy and water efficiency

"Good design makes efficient use of natural resources, energy and water throughout its full life cycle, including construction. Sustainability is integral to the design process. Aspects include demolition of existing structures, recycling of materials, selection of appropriate and sustainable materials, adaptability and re use of old buildings, layouts and built form, passive solar design principals, efficient appliances and mechanical services, soil zones for vegetation and re-use of water" (RFDC, p98) The proposal responds to principal 5 by providing:

- Energy efficiency and sustainability standards have been met throughout the development. The proposed apartments have been designed around a central core with outward facing bedrooms and living spaces. The large number of corner units allows for natural cross ventilation. The student accommodation has extruded 'pods' to capture the northern sun while still allowing a functional planning layout suitable for this type of development. This, combined with solar shading by balconies and sun shades will reduce the requirement for air conditioning. Also through the use of concrete construction, the thermal mass will be maximised within the building
- Living spaces within each apartment are orientated towards the external facades of the development to maximise exposure to solar access for living spaces and outdoor private open

space. This will reduce the requirement for heating in the winter months and enhance the amenity of the development.

- Appliances and mechanical services with a high-energy efficient usage/rating for their intended use.

- The incorporation of a rainwater harvesting system to an onsite storage tank has been utilised, being located in the basement. Part of the on-site storage will be recycled for landscape irrigation and where achievable other methods of water re-use.

- Extensive provision of deep soil areas for planting across the whole site will maximise the amount of landscaping on site.

Principle 6: Landscape

"Good design recognizes that together landscape and buildings operate as an integrated and sustainable system, resulting in greater aesthetic quality and amenity for both occupants and the adjoining public domain. Landscape design builds on the existing site's natural and cultural features in responsible and creative ways. It enhances the development's natural environmental performance by co-ordinating water and soil management, solar access, micro climate, tree canopy and habitat values. It contributes to the positive image and contextual fit of development through respect for streetscape and neighbourhood character, or desired future character. Landscape design should optimise usability, privacy and social opportunity, equitable access and respect for neighbour's amenity, and provide for practical establishment and long term management" (RFDC, p99) The proposal recognizes principal 6 by providing:

- An integrated and sustainable system of landscaping through water harvesting from the roof and hard surfaces which is used to irrigate the landscape within the development.

- Communal areas separated from the active and public pedestrian through connection will be landscaped to maximise useability and also encourage interaction between residents and students, by providing communal activities such as BBQ's and seating areas.

- Extensive raised planter beds with sufficient soil depth, drainage and water provisions to ensure that the landscape is sustainable and will mature to be a dramatic and strong component of the development with over 70% of the landscaping being native to the area.

- Landscaping at Ground and Level 1 will ensure that privacy and respect for neighbours amenity is maintained.

- Garden spaces to the common open space will offer strong amenity through appropriate planting and finishes. These have been selected for their ability to complement the architecture and there locality. The landscape is designed to contribute to both private and public domains.

- Existing established trees along the western side of the site will be retained. Trees along the southern boundary, along Comenarra Parkway, are to be removed due to the road widening (RMS Works) but will be replaced with substantial trees for both amenity to the surrounding properties.

- Large trees will be provided along the pedestrian through connection to contribute to the high landscape and hardscape quality of this transition space.

Principle 7: Amenity

"Good design provides amenity through the physical, spatial and environmental quality of a development. Optimising amenity requires appropriate room dimensions and shapes, access to sunlight, natural ventilation, visual and acoustic privacy, storage, indoor and outdoor space, efficient layouts and service areas, outlook and ease of access for all age groups and degrees of mobility." (RFDC, p99) The proposal addresses Principal 7 by providing:

- A development which optimises amenity through appropriate room dimensions, planning, access via lifts or level entry and offering a percentage of adaptable units catering for all age groups and degrees of mobility
- Apartment layouts positioned around a core space with their primary living spaces facing outward to improve privacy and also provide sunlight into living spaces, bedrooms and private open space.
- Where possible decks have been positioned in the northern corner of each unit to maximise natural light penetrating the units.
- An open plan design increasing access to natural light and ventilation in living spaces and bedrooms. In addition, living spaces have been arranged around decks allowing most units direct access to deck areas from kitchens, living spaces and dining areas.
- Courtyards and decks of adequate depth (min 2.4m) to accommodate tables and chairs, thereby promoting the opportunity for outdoor living.
- A development built using concrete construction meeting the BCA requirements for acoustic privacy between dwellings.
- Dwellings which are stacked to allow for efficient layout of services
- The required amount of storage within the apartments as identified in SEPP 96 and additional storage is also provided in the basement.
- Suitable planning and facade treatment of units adjoining the pedestrian through connection has been achieved using high-level windows and screening elements.

Principle 8: Safety and Security

Good design optimizes safety and security, both integral to the development and for the public domain. This is achieved by maximising overlooking of public and communal spaces while maintaining internal privacy, avoiding

dark and non-visible areas, maximising activity on streets, providing clear, safe access points, providing quality public spaces that cater for desired recreational uses, providing lighting appropriate to the location and desired activities, and clear definition between public and private spaces." (RFDC 99). The proposal responds to the principal 8 by providing:

- A development which has been designed to be safe and secure, and complies with the principles that consist of passive surveillance, active surveillance, access control, territorial reinforcement and space management. A crime risk assessment report accompanies this application.

- A development which incorporates clear sight lines to and from the public and private open spaces. The proposed landscaping does not have potential dead ends or spaces where offenders can hide.

- The residential entry is clearly identifiable through the architectural forms and a direct pathway system. The entries are also well lit and have passive surveillance from opposite units.

- An intercom or similar security system will be installed in the development to control access to all residential areas of the building.

- Visitor and residential car parking areas which will be separated from the public domain where possible by security gates, an intercom system, and boom gates.

Principle 9: Social Dimensions

"Good design responds to the social context and needs of the local community in terms of lifestyles, affordability, and access to social facilities. New developments should optimize the provision of housing to suit the social mix and needs in the neighbourhood or, in the case of precincts undergoing transition, provide for the desired future community". (RFDC, p99). The proposal responds to Principal 9 by providing:

- The development is located within the Wahroong Estate and will provide residents and visitors with easy access to nearby social facilities. The development lies within a major health care hub which includes good access to public transport, community facilities, hospital, specialist, swimming pool, a Church, existing and future retail and commercial uses, and growing infrastructure.

- The development is in proximity to several primary schools, along with a primary school to be relocated to the Northern part of the Estate. In addition, several parks and ovals are located within 1km from the site.

- A dwelling mix which aims to address the diverse range of the social mix and needs of the neighbourhood and education facilities which are characteristic of the Estate and area as a whole through varied floor areas, orientation and mix of one and two bed dwellings.

- A variety of dwelling layouts and sizes which allow the development to cater to many levels of affordability within the community.

Principle 10: Aesthetics

Quality aesthetics require the appropriate composition of building elements, textures, materials and colours and reflect the use, internal design and structure of the development. Aesthetics should respond to the environment and context, particularly to desirable elements of the existing streetscape or, in precincts undergoing transition, contribute to the desired future character of the area" (RFDC, p99)
To respond to Principal 10, the proposal provides:

- A composition of building elements, textures, materials and colours which respond to the desirable future environment outlined within the FPPR and Concept Plan.

- Student accommodation buildings using a light base colour palette with striking colours located selectively on the 'pod' elements that extrude out of a rigid framework of concrete. The framework purposely informs the use and planning of the building, engaging with the environment. To the north the 'pods' change shape in response to its northern aspect while still using striking colours selectively to emphasize the framework. In combination the 'pods', framework and use of colours create a sense of movement along the facade.

- The residential buildings use long cantilevered balconies and extensive glass in combination with solid balconies to create a strong horizontal appearance to the buildings. Soft whites and greys contrast with the white balconies to create a floating and light appearance. The overall form and aesthetic is a simple and quality architectural composition, not to be misunderstood with a unarticulated under-designed surface, a modern and readable facade that will contribute to the high quality of design that is evident in buildings currently under construction in the Estate.

- The colour palette designed to blend and contrast with the existing and future character of the site.

- An overall aesthetic of building elements which will engage with the streetscape and urban fabric of the desirable future character of the Wahroonga Estate.

- A considered and appropriate forward looking style for this area consistent within growing, active and changing part of Wahroonga.

11.3 DESIGN STATEMENT QUALIFICATION

I am a qualified designer and am registered with the Board of Architects (MBMO Nominate Registration Number 3354) and verify that:

(a) I have designed and directed the design of the proposed Student and Residential Development consisting of 130 Student accommodations and 60 one and two and bedroom apartments in 6 levels over a 3 level basement catering for 184 cars.

(b) The design quality principles set out in Part 2 of *State Environmental Planning Policy No 65—Design Quality of Residential Flat Development* are achieved for this residential development.

Yours Faithfully

Sven Ollmann

Director

11.4 SUMMARY OF COMPLIANCE WITH SEPP 65 RECOMMENDATIONS

Building Depth

In general apartment buildings is to have a maximum depth of 18 metres.

- A floor plate wider than 18m that is as long as it is wide has been selected in contrast to a long narrow building. The shape is seen as suitable to this site to achieve, appropriate private open space, visual corridors through the site from all directions, defining a pedestrian through connection in the heart of the development, eliminating southern facing units, maximising living areas facing north and secondarily east and west, and maximising number of dwellings with cross ventilation.

Building Separation

For buildings of 1-4 stories, 12m is recommended between habitable rooms/balconies; 19m in between habitable rooms/balconies and non-habitable rooms; and 6m between non-habitable rooms. For buildings of 5-8 stories, 18m is recommended between habitable rooms/balconies; 13m in between habitable rooms/balconies and non-habitable rooms; and 9m between non-habitable rooms.

- Building separation complies in majority of cases. Where habitable space adjoin any area where the building separation is under the required distance, planning and screening is used to effectively eliminate any amenity, privacy or acoustic concerns both in the dwellings and at ground level.

Site Analysis

A detailed site analysis is to accompany development proposals.

- A detailed site analysis is included as part of the proposal. Refer DA-53

Deep Soil Zones

A minimum of 25% of the open space shall be deep soil zones. Exemptions may be made in urban areas where sites are built out and there is no capacity for water infiltration.

- A significant portion of the open space is able to provide deep soil planting both on and off the basement podium structure. Refer DA-59

Fences and Walls

Fences and walls should be designed to define the boundaries between the developments, provide privacy and security and contribute positively to the public domain.

- The development is part of the larger Wahroonga Estate development and therefore does not have fencing. Spaces are defined through the use of low level planter walls and landscaping.

Landscape Design

A landscape design should improve the amenity of the open space; contribute to streetscape character; improve the energy efficiency and solar efficiency of the public domain; contribute to the site's character; contribute to the water and storm water efficiency; provide a sufficient depth of soil for planting; and minimise maintenance.

- A quality landscape proposal. Refer Landscape Architect Drawings.

Open Space Configuration

Area of open space should be 25-30% of the site. Where developments are unable to achieve this, they must demonstrate that the residential amenity is provided in the form of increased private open space. Minimum area of private open space at ground level shall be 25m2.

- The site achieves 32% communal open space. Refer DA-58.
- All residential units have a generous amount of private open space over the requirement, at ground level and above ground level.

Orientation

In order to achieve better design practice, plan the site to optimize solar access; select building types or layouts that respond to streetscape by optimising solar access; optimize solar access to living spaces; and detail building elements to modify environmental considerations.

- Building form has been planned to maximise number of units facing north and secondly facing east and west. No units have a single aspect to the south.

Planting on Structures

- Deep soil zones have been achieved both off and on the podium to provide a generous amount of deep soil. Where deep soil cannot be achieve, i.e. below 1.5m, suitable soil depths have been used and approved by the landscape architect.

Building Entry

Building entries should create entries that provide a desirable residential amenity; orientate visitors; and contribute positively to the streetscape or building façade design.

- A pedestrian through link running east-west and a main entry between the Education Centre and Building A provide a clear means to access the site. Building entries are positioned on clearly defined pathways from the main pedestrian through connection. The entries are clearly defined through the architectural treatment of the surrounding elements.
- Car access is located near the front entry in the form of a ramp leading down to the carpark. This is clearly expressed in the composition of the surrounding architectural forms.

Pedestrian Access

Identify the access requirements from the street or car parking area to apartment access. Follow the accessibility standard set out in the Australian Standard 1428 (parts 1 and 2) as a minimum. Provide barrier free access to at least 20% of the dwellings in the development.

- 10% of the total yield of dwellings are adaptable or accessible.
- All dwellings are visitable
- Refer to accessibility report prepared by Access Associates Sydney.

Vehicle Access

Generally limit the width of driveways to a maximum of six metres; locate vehicle entries away from main pedestrian entries and on secondary frontages.

- Refer to traffic report by TTPA.
- Position of car access is significantly impacted by the site topography and the amount of pedestrian routes through the site. The position chosen, at the north-west corner, allows cars to access the basement without crossing the pedestrian east-west through link and has been designed to be integral to the architectural composition at this corner of the building.

Apartment Layout

Single Aspect Apartments should be limited in depth to 8 metres from a window. The back of a kitchen should be no more than 8 metres from a window. The width of a cross over or cross through apartment over fifteen metres deep should be 4 metres or greater in width to avoid deep narrow apartment layouts.

- 184 dwellings out of 190 have the back of the kitchen within 8m of the glass line. This represents 97% of units.

Balconies

Provide primary balconies for all apartments with a minimum depth of 2 metres.

- All residential dwellings have balconies with a minimum 2.4m
- Safety is a concern for the hospital (risk of suicide) and as such no student accommodation have balconies.

Ceiling Heights

In residential flat buildings, 2.7m high ceilings are required for habitable rooms; while 2.40m high ceilings is the preferred minimum for non habitable rooms, 2.25m high ceilings are permitted.

- All dwellings have 2.7m high ceilings or above and minimum 2.4m in non-habitable rooms.

Ground Floor Apartments

Optimise the number of ground floor apartments with separate entries and consider requiring an appropriate percentage of accessible units. Provide ground floor apartments with access to private open space, preferably as a terrace or a garden.

- Majority of dwellings have been purposely lifted above ground level to improve privacy. Ground level dwellings have separate entries. Dwellings to the west, facing the future mixed use development will be provided entries as part of the design development of this area.
- A mix of accessible dwelling types are provide on each floor of the buildings.
- Student accommodation do not have separate entries at ground level to provide a central access point for safety and management.

Internal Circulation

In general, where units are arranged off a double loaded corridor, the number of units accessible forma single core / loaded corridor should be limited to eight. Exceptions may be allowed for adaptive reuse buildings; where developments can demonstrate the achievement of the desired streetscape character and entry response; or where developments can demonstrate a high level of amenity for common lobbies and units.

- No more than 8 residential dwellings are accessed off one corridor.
- Student accommodation have more than 8 off the same corridor but have no more than 7 per lift, ie 2 lifts per building.

Storage

In addition to kitchen cupboards and wardrobes, provide accessible facilities at the following rates: 6 m^3 for 1B units; 8 m^3 for 2B units and 10 m^3 for 3B units.

- Storage is provided in dwellings and in the basement to comply with these requirements.

Daylight Access

Living rooms and private open spaces for at least 70% of apartments in a development should receive a minimum of three hours direct sunlight between 9am and 3pm in mid winter. In dense urban areas, a minimum of two hours may be acceptable. Limit the number of single aspect apartments with a southerly aspect to 10% of the total number proposed. Developments which seek to vary from the minimum standards must demonstrate how site constraints and orientation prohibit the achievement of these standards and how energy efficiency is addressed.

- 83% of dwellings achieve 2 hours of sunlight as per the above guidelines. Refer DA-42 to 52.
- There are no dwellings with a Southerly Aspect.

Natural Ventilation

SEPP 65 recommends that 60% naturally cross ventilate

- 67% of residential dwellings provide cross ventilation. Refer DA-56.

- The planning of student accommodation types does not easily allow cross ventilation however each room is small in comparison to residential dwellings with the back of the kitchen only 5.35m from the front glazing.

12.0 SUMMARY OF RELATIONSHIP WITH THE WAHROONGA FINAL PREFERRED PROJECT REPORT

The Wahroonga FPPR contains the following key development controls. Sections 9.2 to 9.12 are addressed specifically as requested in the Pre-DA minutes

Setbacks

6m + 2m Verge from Comenarra Parkway. (FPPR p74)

- Provided, see DA-04.

Floorspace and number of dwellings

Central Hospital precinct to accommodate 108 private residential dwellings and 301 student accommodation consisting of 13,000m² of floor space. (FPPR p50)

- 130 student accommodations and 60 dwellings in this development with the balance proposed for the future mixed use development to the east.

SEPP 65

The proposed layout will generally allow the requirements of SEPP 65 to be met. (FPPR p90)

- The proposed development meets or exceeds the requirements of the SEPP65 for the residential component and where possible meets or exceeds when applied to a non-residential use, the student accommodation. Refer section in this report on SEPP65 and RFDC.

Envelope

The proposed building envelopes are located to maximise solar access for both existing and proposed buildings as well as open space. The proposed building envelopes also ensure an appropriate urban form is maintained within the Ku-Ring-Gai setting with the provision of significant deep soil planting opportunities and building setbacks, providing adequate amenity and privacy for building occupants.

The proposed envelopes demonstrate that daylight access and natural ventilation can be maximised, providing high levels of amenity to residents and workers. (FPPR p90)

- The proposed buildings are located within the FPPR defined building envelope. The development meets or exceeds RFDC requirements for sun access, amenity, visual and acoustic privacy.

- Significant deep soil planting is provided along the pedestrian through connection, common areas and surrounding the buildings, exceeding RFDC requirements

- The building complies with all setbacks as defined in the FPPR to maximise amenity

Height

The proposed development allows hospital buildings up to 12 storeys (42 metres) and residential buildings of up to 6 storeys (21 metres). Importance is placed on providing a scale of building which is sympathetic to the surrounding environment. (FPPR p90)

- The proposed buildings are 6 stories to the north and 4 stories to the south in compliance with the FPPR. These heights are sympathetic with the residential housing opposite and the taller hospital buildings to the north.

Carparking

Car parking is proposed to be provided below ground and under croft in locations where level changes allow, to reduce the bulk and scale of the proposed envelopes. (FPPR p90)

- Carparking is provided underground with some critical drop-off areas at ground level. Locating the carparking underground reduces the bulk and scale of the envelopes.

Deep soil

The provision of areas to retain the existing landscape characteristic in the form of significant plantings in deep soil zones also provide an effective visual separation between buildings as well as framing and softening the scale of the building. (FPPR p90)

- Established trees along the western boundaries are retained. The building is appropriately setback, as per the accompanying arborist report. Trees along the southern boundary which are being removed as part of the Comenarra Parkway widening (RMS works) will be replaced with similar scaled trees to re-establish a green edge to the street and provide screening inside and from outside of the site.

Long walls

Limitation of long walls along visually prominent locations such as along Fox Valley Road has been avoided. (FPPRP p92)

- The FPPR concept building footprints for this site have wall lengths along Comenarra Parkway up to 41m. The proposed development using 2 equally proportioned building with varying architectural treatments and articulation, facing Comenarra Parkway which are up to 24m. This provides a substantially better outcome. As discussed in previous sections, where the floor plates are discussed in detail, this proposed arrangement also has several other advantages including visual corridors through the site and no southern facing dwellings.

Density

The bulk and scale of the building envelopes are limited in areas of visual prominence including along Fox Valley Road which demonstrates a suitable residential and employment density.

The density interface has been addressed through the placement of lower density buildings along the edges of the site, with higher densities placed towards the centre of the site. (FPPR p92)

- As per the FPPR, the proposed development has 4 story buildings along Comenarra Parkway, appropriately stepping down from the 6 story building to the north to recognise the density of residential buildings to the south.

Water and energy efficiency

Energy efficient design and building response has been developed through allowing passive design and sun controlling elements. Solar access, natural ventilation and thermal massing requirements are achieved through the proposed building envelopes, achieving high personal comfort and low energy consumption. (FPPR pg 92)

- The development will be of block and concrete construction allowing a high thermal mass
- Sun shades have been provided to meet Basix requirements for all buildings
- Generously proportioned balconies also provide sun shading to much of the residential development
- Over 70% of the student accommodation and residential units achieve a minimum of 2 hours of sunlight between 9am and 3pm on the 21st of June as per RFDC guidelines.
- Student accommodation windows have a 'pod' projecting structure allowing all windows to orientate north.
- Typical residential floor plates have 4 corner dwellings out of a possible 6 allowing best cross ventilation.

Landscape

The proposed development addresses the need for vegetation connectivity in the regional context. The landscape on the site has been sensitively broken into landscape units to provide residents and visitors with a variety of useable spaces, as well as providing a landscape setting to the buildings. Landscaped elements such as formally landscaped frontages including hedgerow and specimen tree planting, provision of a series of interaction spaces. (FPPR p92)

- The attached landscape plans document an extensive quality landscape proposal designed to encompass varying levels of open, communal and private space uses.
- The development has created extensive areas of deep soil planting over a podium and on ground around the building despite the development containing a large basement carpark.

Amenity

Buildings receive excellent solar access, cross ventilation, contain quality indoor and outdoor spaces, visual and acoustic privacy, efficient layouts, and outlook. Adequate parking is provided in each part of the proposed development for resident and visitor use. (FPPR p92)

- The residential and student accommodation layouts are designed to be efficient and highly usable spaces. There are no south facing dwellings in all buildings and over 70% of student accommodation have achieved a minimum of 2hours of sunlight between 9am and 3pm on the 21st of June as per RFDC guidelines.

- Visual and acoustic privacy design is effectively implemented through the use of window sizes, high level windows, screening, balconies and orientation to the differing ground level uses and opposing units.

Safety and security

Safety and security has been considered so that it can be achieved to an adequate level both internally to development as well as externally particularly on the entry approach and from the street. (FPPR p93)

- A Crime Risk Assessment report is provided with this development application. The development provides for a safe and secure environment.

Social dimensions

The proposed development will provide a high quality mix of student accommodation, residential, seniors living, employment and retail opportunity development to allow demographic diversity interaction in the setting of the proposed development and Ku-Ring-Gai LGA. (FPPR p93)

- The development provides 130 student accommodation and 60 key-worker accommodation dwellings. The student accommodation provides one type of apartment to ensure all students can pay the same rent, treated equally, and receive the same services with the exception of accessible dwellings that are larger. Key worker housing varies between 1 bed, 2 bed and accessible units of varying types to allow for a varying demographic.

Aesthetics

The proposed development expresses a contemporary aesthetic to articulate the aspirations of the development within the environmental setting. The building envelopes and spaces in the proposed development are designed to address the nature of the precinct to which they are located. The Central Precinct maintains a campus form with the other precincts adopting a building in the landscape approach. (FPPR p93)

- The proposed design proposes a extensive landscape treatment to all internal and external edges of the buildings to create what will be a high quality usable space and appearance.

- A composition of building elements, textures, materials and colours which respond to the desirable future environment outlined within the FPPR and Concept Plan.

- The residential(key-worker) and student accommodation buildings apply different styles of contemporary modern architecture to identify their differences while still being complimentary. The aesthetics relationship to the landscaping and shared communal space encourages interaction between the 2 differing social groups.

- Balconies and 'pod' like expressions break down the facades to relate to people using the spaces surrounding the buildings.

Social and economic impact

(FPPR p99)

- The development proposes a mix of uses in compliance with the FPPR.

Traffic, transport and car parking

(FPPR pg 101)

- The developments' car parking numbers are based on carparking rates as provided in the FPPR.

Biodiversity

(FPPR p 102)

- A arborist report and seven part test accompanies this development application and is in keeping with the FPPR and associated reports.

Bushfire

(FPPR p 102)

- A bushfire report accompanies this development application and is in keeping with the FPPR and associated reports.

Ecologically sustainable development

The Wahroonga Estate Redevelopment is a valuable opportunity to deliver a compact, sustainable urban community centred on the Sydney Adventist Hospital and existing local centre of Fox Valley. Improved access, mobility and public transport; the provision of affordable, onsite employee housing; a holistic WSUD strategy; upgraded and improved utility service provision; and, appropriate protection, rehabilitation and management of environmental values combine to deliver an outcome consistent with the principles of ESD and with the DGRs issued for the environmental assessment.

While design and construction details are not incorporated into the FPPR, the site configuration and development controls incorporate appropriate flexibility to allow future development to be designed and constructed in accordance with ESD principles and regulatory requirements. (FPPR 104)

- The developments building planning, unit design, orientation, engineering and proximity to surrounding existing and future developments, provide residents with good amenity, privacy, passive solar design, private and communal space, transport access, services and facilities . These are examined in detail in previous sections within this report.

- This development has built upon the foundation of the FPPR, improving on the footprints of the buildings resulting in a quality development while meeting the accommodation needs of the area.

Basix

Applications for residential development within the Wahroonga Estate have a legislative requirement to achieve compliance with BASIX. (FPPR p104)

- The development has a complying BASIX certificate accompanying the submission.

Energy efficiency

The FPPR has considered current guidelines and best practice for incorporating the components of ESD into non-residential development. Appropriate consideration has been given in the FPPR to the site configuration to enable future development to implement design measures such as:

Appropriate building orientation to promote solar passive design opportunities;

— Narrow building floor plates (12-16m) to optimise daylight penetration.

— Maximise external views using narrow floor plates to provide outdoor connection and improve IEQ.

— Flexible floor plate design to enable cross or mixed mode ventilation including façade structural frames to allow operable windows catering for mixed mode operation, cross ventilation and night flush, reducing the need for mechanical cooling and heating and improving fresh and clean air supply for indoor spaces.

— Using light shelves etc to increase natural lighting, decrease lighting loads and improve internal comfort.

— Utilise reflective blinds to prevent low angle sun from entering buildings during early mornings and late afternoons thereby avoiding glare (FPPR p104)

- The building floor plates are as long as they are wide to provide good amenity to the dwellings. This allows 4 buildings (as per the FPPR) to efficiently sit on the site. This maximises dwelling amenity to the east, west and north, eliminating all southern facing dwellings and removing any need for substantially long corridors that are prevalent in long narrow buildings. The FPPRs typical dwelling and precinct illustrations propose long U-shaped buildings that have long internal corridors. This allows for minimal natural light access to corridors, single aspect southern units, east and west units that are overshadowed easily by the bending of the building to the north, and courtyards that would receive little sun access due to being enclosed on 3 sides.

  With a different shaped site, i.e. not square, and a different proposed density, long narrow buildings may well be suitable, however through design development the buildings demonstrate a different floor plate achieves a better outcome, it also achieves good energy efficiency and desirable densities.

- All dwellings are orientated towards communal open space to the east and west or have views to the north towards the hospital. Views to the Comenarra Parkway to the south have been purposely restricted.

- All dwellings have living areas to the front facades to allow maximum light penetration.

- Typical residential floor plates have 4 corner dwellings out of a possible 6 (67%) allowing best cross ventilation.

- Sun shades have been provided to meet Basix requirements for all buildings.

- Generously proportioned balconies also provide sun shading to much of the residential development.

Geotechnical contamination

(FPPR p105)

- The accompanying contamination reports concludes there is no contaminates.

Utilities and social infrastructure

(FPPR p 105)

- Civil drawings accompany this development application documents a onsite detention system for stormwater.
- Water and Gas will be accessed off Fox Valley Road along the private internal road.
- A substation is proposed on site for electricity shown on architectural drawings.

Social infrastructure

The proposed development will provide an appropriate scale and range of social infrastructure and services to support the anticipated resident, employee and visitor population. (FPPR p106)

- The proposed development under this application will provide student and key-worker accommodation crucial for the function and future of a key health care facility by providing ancillary services for education as well as affordable accommodation and amenity for both the precinct and the users of the estate. This is line with the FPPR and Concept Plan.
- This development will provide 130 student – and 60 key-worker dwellings, with future stages of the precinct masterplan, providing additional mixed use accommodation and a neighbourhood centre.

Proposed extension of the school

(FPPR p107)

- The school relocation has commenced with the first stage of relocation of a demountable located on this site to the new northern site. Within the short term, the second stage will see the complete relocation of the school
- During construction of this project appropriate safety measure will be implemented to ensure the safety of student and staff at the school including temporary hoarding and/or fencing. Details will be provided at CC stage.
- When the school is fully relocated the new mixed use retail/commercial and residential developments will begin at which point landscaping along this edge will be implemented and integrated into the new development.

13.0 CONCLUSION

This report demonstrates the developments response to the FPPR and concept plan, urban designing principles and the Residential Design Flat Design Code book. The development successfully employs a number of performance based solutions to achieve compliance of these codes.

Through the application of these codes and good architectural design the proposed development will create a unique student accommodation and residential environment that encourages interaction between social groups, will contribute positively to the urban character of the locality and will be a quality architectural development with positive functional and aesthetic outcomes.