

View 1 -Looking north along Fox Valley Road from main entrance to hospital

Description

Due to its location on Fox Valley Road this view point would be open to a high number of passers by. Whilst most of the viewers are likely to be travelling in motor cars the speeds are likely to be relatively low.

Currently development visible from this location are the existing church buildings.

Fox Valley Road, as viewed from this location has a leafy tree lined character with buildings set back behind landscaped frontages.

Key considerations and Mitigation

It will be important that the proposed development respect the scale of the street and its leafy, tree lined character. New buildings should be set back from the street so to maintain its character and ensure the retention of existing mature trees.

Additional street tree planting and landscaping may be required to help mitigate the impact of new development and further enhance the character of the street.

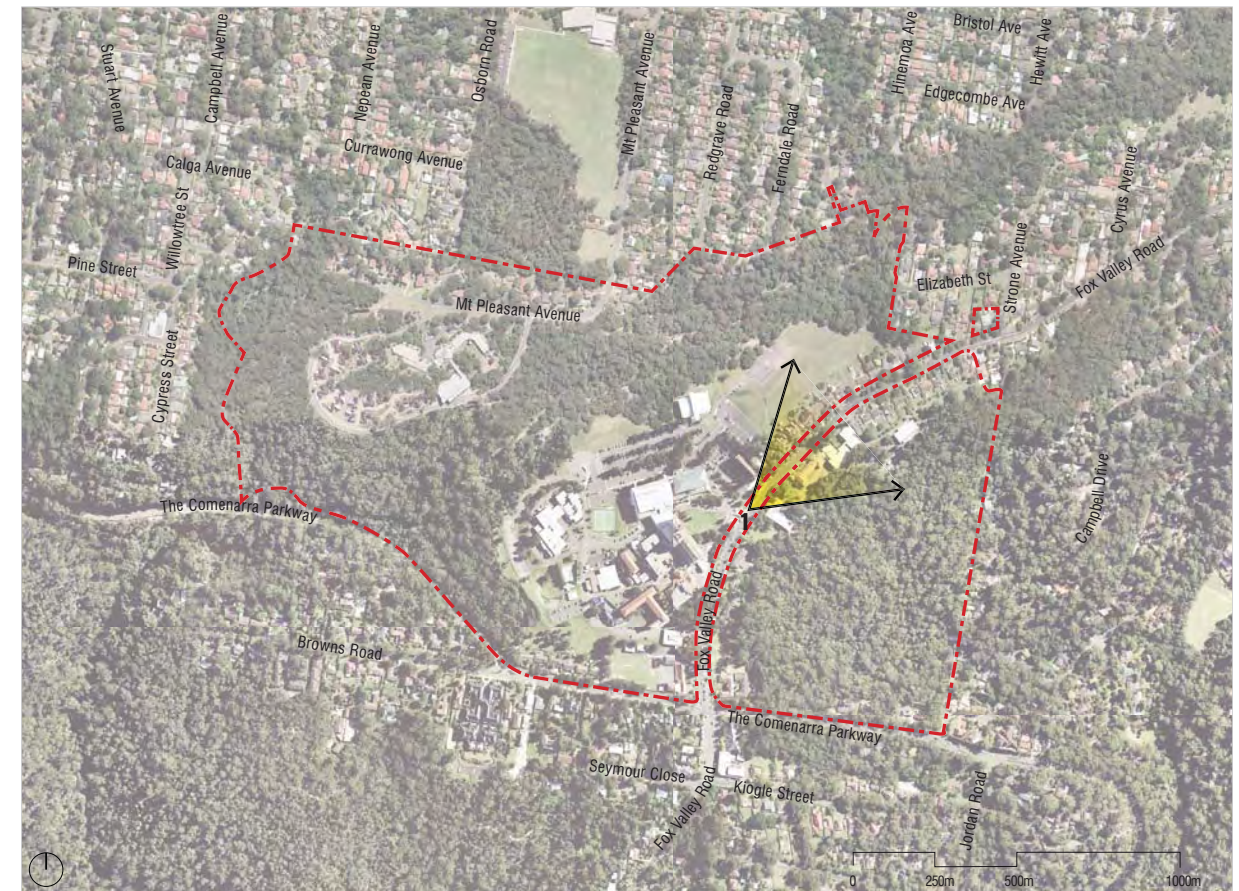


Figure 92 – Location of View 1



Figure 93 – View 1: Looking north along Fox Valley Road from main entrance to hospital

View 2 - Looking south along Fox Valley Road from entrance to 146 Fox Valley Road

Description

Due to its location on Fox Valley Road this view point would be open to a high number of passers by. Whilst most of the viewers are likely to be travelling in motor cars the speeds are likely to be relatively low.

Views of existing development on site include the main hospital building and administration building on Fox Valley Road.

Fox Valley Road, as viewed from this location has a leafy tree lined character with buildings set back behind landscaped frontages with views of the main hospital over the canopies of foreground trees.

Key considerations and Mitigation

Proposed built form should seek to create an appropriate sense of scale and should where possible retain higher quality mature trees. Additional street tree planting may also help to enhance the view from this location.



Figure 94 – Location of View 2



Figure 95 – View 2: Looking south along Fox Valley Road from entrance to 146 Fox Valley Road

View 3 - Looking south from Mt Pleasant Avenue

Description

This location represents the extent to which the residential areas to the immediate north may be able to view the site.

Views of existing development on site are restricted to the upper storeys of the existing Hospital building. The majority of the site is blocked from view by dense vegetation in the foreground.

Key considerations and Mitigation

Whilst the sensitivity of this view point is considered to be high it is expected to have a relatively low number of viewers.

Development proposals will need to ensure that built form minimises impact on this location. Built form should not exceed the height and mass of the existing hospital building.

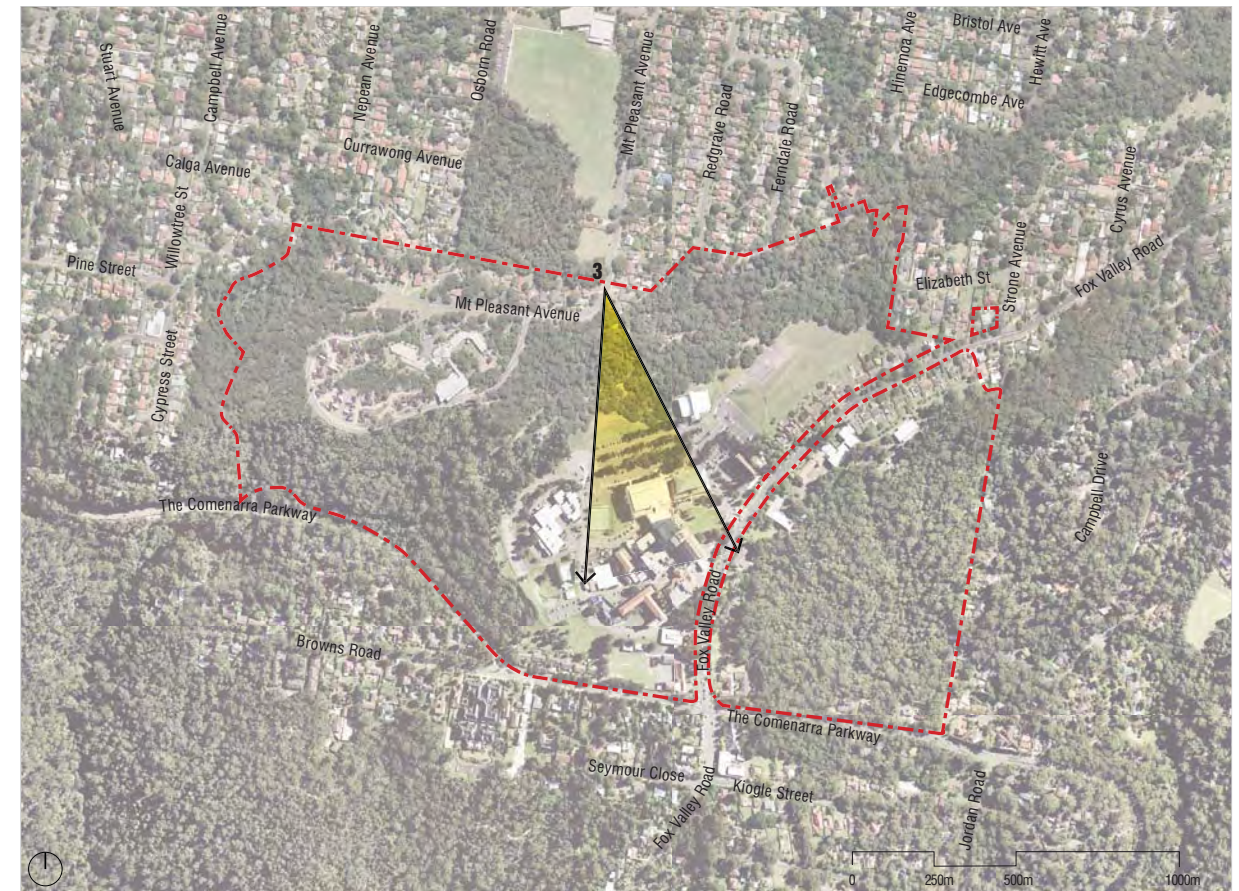


Figure 96 – Location of View 3



Figure 97 – View 3: View south from Mt Pleasant Avenue



Figure 98 – 9am Shadows

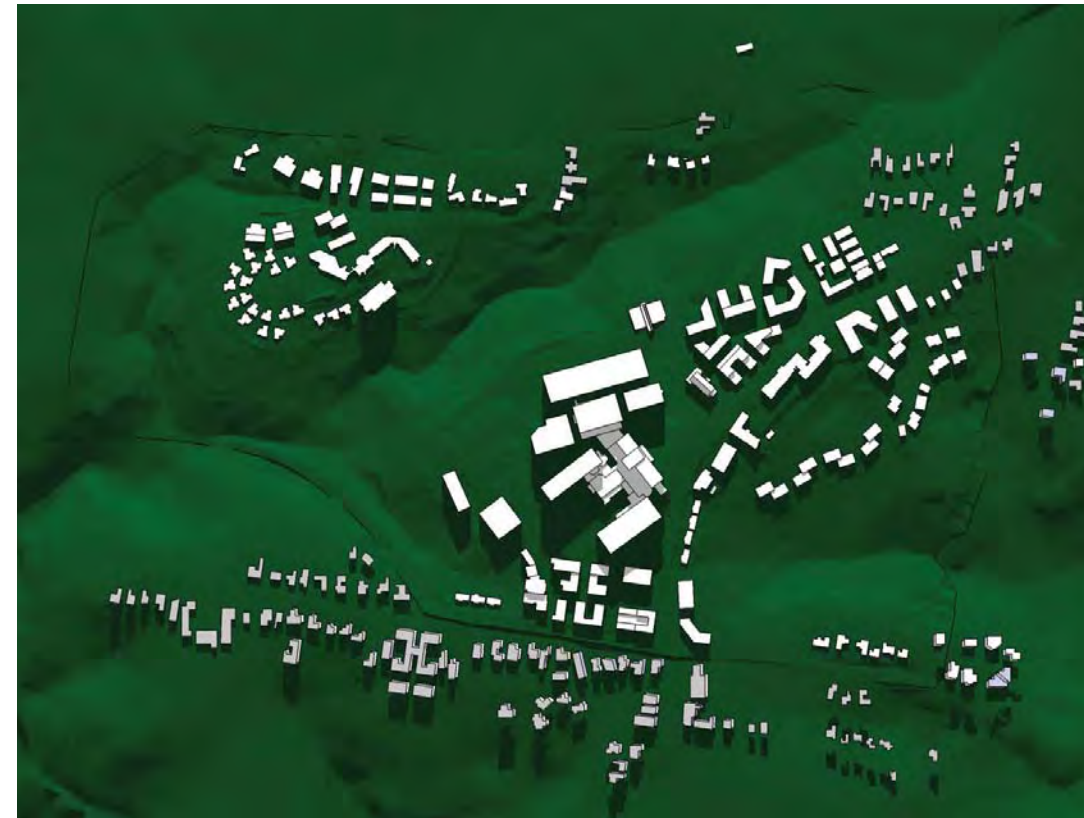


Figure 99 – Midday Shadows



Figure 100 – 3pm Shadows

9.4 Heritage

Australian Museum Business Services (AMBS) have prepared a Heritage Impact Assessment (refer **Appendix H**) in relation to the Concept Plan. The following analysis is drawn from this document.

In accordance with the DGRs the local Aboriginal community were consulted at all stages of the project. No new Aboriginal sites were located during the survey. However, Registered Site 45-6-2040 is located adjacent to Coups Creek. If development is to encroach on these areas, additional consultation with the local Aboriginal community groups and surveys will be required before any works are proposed.

Aboriginal Heritage

In accordance with the DGRs the local Aboriginal community were consulted at all stages of the project. The location of one registered site was verified (Registered Site 45-6-2040 adjacent to Coups Creek), and although no other sites were identified, areas of potential sensitivity have been identified.

Historic Heritage

The Adventist Administration Building is the only identified heritage item (local) within the Wahroonga Estate Redevelopment. However, the Director General Requirements (DGRs) and this study have identified additional potential heritage items.

Although this report has briefly addressed the impacts arising from the proposed development on those items identified by the DGRs, more detailed assessments or recording of the impacts arising from the Wahroonga Estate Redevelopment on these items will be prepared.

A Statement of Heritage Impact should be prepared to guide the process of removal of any timber framed cottages on Fox Valley Road and the use of elements from cottages to be demolished to contribute to refurbishment of cottages.

The Wahroonga Estate Redevelopment Master Plan has identified that a number of the buildings, which have been identified as having potential heritage significance, will be removed or relocated. In accordance with heritage best practice, an archival photographic recording will be prepared for these particular elements to Heritage branch standards to ensure that the contribution of these buildings to the historical development of the Sydney Adventists in Wahroonga is not lost.

The archival photographic recordings and any artefacts exposed during the demolition of buildings have the ability to make a significant contribution to the interpretation of the Sydney Adventist's in Wahroonga. The relocated 'Bethel' Museum would be an appropriate repository for this material and documentation. An Interpretation Strategy should be prepared to guide the appropriate themes, images and texts.

9.5 Social and economic impact

9.5.1 In general

Hill PDA's analysis of the Social and Economic Impacts of the proposed Wahroonga Estate Concept Plan (refer **Appendix I**) has identified a number of potential direct and indirect, economic and social impacts. The impacts have been identified following a detailed investigation of the proposed development, surveys of the site and surrounding centres, demographic research and the analysis of relevant government objectives and priorities for the North Subregion.

The proposed Wahroonga Estate development is supported and considered in accordance with State Government Objectives, the Draft North Subregional Strategy and the objectives of Ku-ring-gai and Hornsby Councils, given that the proposed development will:

- Provide an appropriate scale and range of social infrastructure and services to support the anticipated resident, employee and visitor population;
- Have an acceptable economic impact to existing centres surrounding the site;
- Improve the social vitality and character of the site and surrounding area;
- Enhance and extend the existing facilities, health and community services to the benefit of the north subregion and wider NSW;
- Provide local retail facilities and services to the benefit of local residents, workers and visitors;
- Generate new employment opportunities suited to a range of ages and skills;
- Provide a range of housing types and affordability;
- Create a sustainable community that reduces dependency on private car travel;
- Provide improved educational opportunities from a primary through to a tertiary level for local, Sydney and NSW residents to the benefit of their social and economic well being; and
- Have positive economic flow-on effects to the wider economy.

9.5.2 Retail impact

The Social and Economic Impact Assessment conducted for the project by Hill PDA (refer **Appendix I**) concluded that the subject site's trade areas have sufficient demand for an additional 2,000sqm of retail floorspace including 1,000sqm of supermarket and grocery space and 1,000sqm of specialty retail floorspace.

The Impact Assessment found that the provision of 2,000sqm of retail floorspace on the site would provide convenient retail options for households and employees in the site's defined trade area. It would still however allow for the vast majority of retail expenditure generated within the area to continue to be taken by centres in the wider locality.

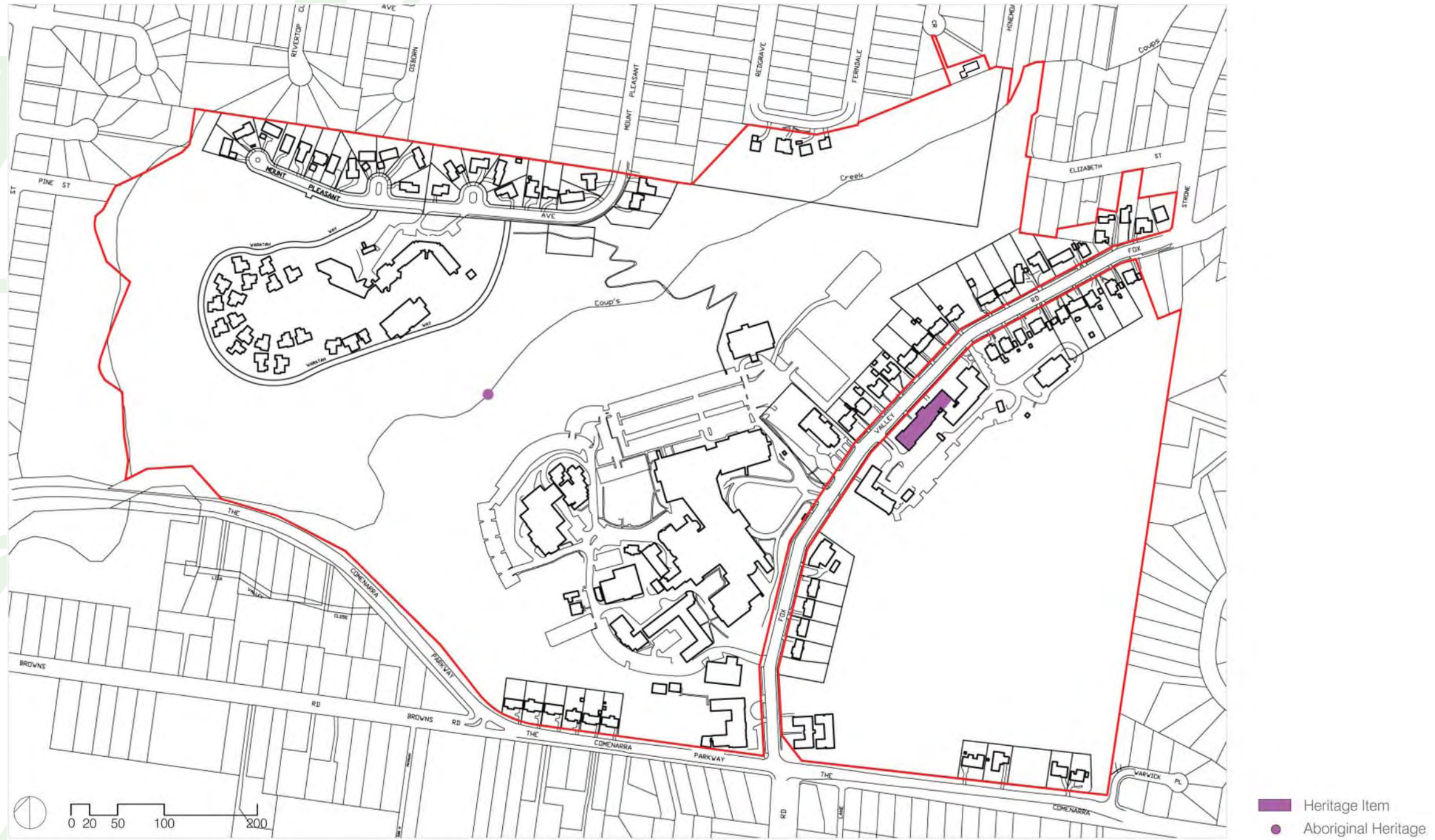


Figure 101 – Heritage

The Impact Assessment concluded that no one centre will be detrimentally impacted by the additional retail floor space proposed as part of this project. The proposal is responding to a current undersupply of retail floor space in the area and demand for retail services generated by the cluster of industries focused around the hospital. Accordingly it may be concluded that there are no reasonable grounds for refusal of the retail component of the proposal in relation to economic impact.

It is therefore considered that the proposed development should be supported on social and economic grounds.

9.6 Traffic, transport and car parking

9.6.1 Traffic impact

Halcrow MWT have prepared a Traffic and Transport Report, which is included at **Appendix J**. This report analysed the potential traffic impacts for the proposed development of the Wahroonga Estate. This report has also provided additional information and analysis, including stakeholder consultation, as requested in the Director General's requirements. Detailed responses to issues raised by each key stakeholder are provided in **Appendix E** of the Transport Report (**Appendix J**). The key findings of the report are:

The findings of the study are:

- *Recommended intersection upgrades would be sufficient to accommodate the demand generated by the proposed development of the estate including the expansion of the hospital.*
- *The hospital is a good example of a live-work community with a significantly high proportion of employees who live in the area either walking or cycling to work.*
- *To accommodate traffic flows on Fox Valley Road along the frontage of the site clearway or permanent kerbside parking restrictions are recommended.*
- *A dual lane roundabout is recommended at the intersection of the northern access road and Fox Valley Road.*
- *Dual lane (southbound) roundabouts are recommended in place of the single lane roundabouts at the intersections of Fox Valley Road-Ada Avenue and Fox Valley Road-Lucinda Avenue.*
- *Intersection capacity improvements are recommended at the following locations as detailed in this report:*
 - *Pennant Hills Road and Comenarra Parkway*
 - *Comenarra Parkway and Fox Valley Road*
 - *Comenarra Parkway and Kissing Point Road*
 - *Fox Valley Road and Pacific Highway*

9.6.2 Car parking

A comprehensive review of car parking has been undertaken. This review has considered Council's car parking rates and the nature of the development. The Transport Report includes a justification of the most appropriate car parking rates for the Estate, refer below:

- *The proposed parking provision rates for residential, commercial and retail uses are below those set in the Ku-ring-gai Council DCP for parking. However they are considered appropriate having regard to the high proportion of employees that will live on the site, a proposed car sharing scheme and the predominance of retail visitors from residents and employees of the site.*
- *The expansion of the Hospital facilities and accommodation would increase employee numbers, however many of these employees travel out of peak periods as they work in shifts. This reduces impacts during commuter peak periods.*
- *The car sharing scheme for all residential accommodation would build on the hospitals existing successful car pooling scheme and result in lower traffic generation than for a typical residential development.*
- *The redevelopment of the precinct will provide a range of facilities and services in close proximity to existing and new residents, reducing the need to travel by private vehicle for certain trips such as, education, retail, and employment.*

Overall traffic and parking aspects of the proposal are considered to be satisfactory as:

- *an appropriate amount of parking will be provided;*
- *provision of an on site employee accommodation, fostering of car pooling and implementation of a car sharing scheme will minimize traffic generation; and*
- *proposed intersection improvements will offset the effects of the additional traffic that would be added to the traffic using them.*

A draft TMAP has been prepared (refer **Appendix J**), that includes measure to encourage modal split throughout the Estate.

A number of commitments arise out of the assessment of transport matters, including the intention to enter into a Voluntary Planning Agreement for the provision of necessary amplifications and improvements, refer to **Section 10**.

9.7 Biodiversity

Cumberland Ecology Pty Ltd prepared a detailed Flora and Fauna Assessment of the site (refer **Appendix M**). The assessment incorporated feedback from the NSW Department of Environment and Climate Change (DECC) and built upon existing ecological information, including a report by Conacher Travers (2004). It identified that of the 37.08 ha of the native vegetation on the subject site approximately 5.77 ha is proposed to be cleared, 15.36 ha to be managed for asset protection zones (APZs) and 1.36 ha to be managed as bushfire fuel reduction zones. The report identified that the site contains a number of complex ecological issues including:

- *State and Commonwealth listed critically endangered ecological community Blue Gum High Forest [Blue Gum High Forest],*
- *State listed endangered ecological community Sydney Turpentine-Ironbark Forest,*
- *suspected nesting location for Powerful Owls,*
- *foraging / roosting habitat for Eastern False Pipistrelle, foraging / nesting habitat for Gang-gang Cockatoos,*
- *suitable foraging habitat for Greyheaded Flying-fox,*
- *suitable foraging habitat for a number of threatened species not recorded on the subject site such as microchiropteran bats and other birds, and*
- *No threatened flora has been detected on the subject site.*

Cumberland ecology assessed the following impacts of the proposed development:

- *It will impact upon the CEECs Blue Gum High Forest and Sydney Turpentine-Ironbark Forest.*
- *It will clear some forest and woodland habitat for threatened fauna species including the Grey-headed Flying Fox and the Powerful Owl.*
- *unlikely to cause a significant impact on TSC Act listed vulnerable species Eastern False Pipistrelle and Gang-gang Cockatoo because other equivalent or higher quality habitat exists for this species in nearby areas.*
- *Powerful Owls may relocate elsewhere without appropriate mitigation measures.*

Key recommendations of the report are:

- *Vegetation communities on the subject site can be enhanced through the implementation of a Biodiversity Management Plan (BMP) incorporating a Vegetation Management Plan (VMP) and a Powerful Owl Management Plan (POMP).*
- *BGHF and STIF should be managed under the VMP and appropriate offset and mitigation measures determined in consultation with relevant authorities.*
- *Impact upon Eastern False Pipistrelle and Gang-gang Cockatoo species can be mitigated through planting of suitable feed trees in site rehabilitation and landscaping.*

- *Mitigation against impacts on the Powerful Owls' (Vulnerable TSC Act) nesting site should include:*
 - *retention of a 100m buffer around the nest tree;*
 - *scheduling development and asset-protection activities to avoid the owls' breeding season (pre-laying to fledging, i.e. May to September);*
 - *provision of nest boxes at selected locations throughout Coups Creek and Lane Cove Valley;*
 - *provision of suitable foraging vegetation for Powerful Owl prey species such as the Ring-tail Possum during post site rehabilitation and landscaping;*
 - *Monitoring of the nest tree and nest boxes to determine the response of the owls to the impacts of the development; and*
 - *Hollow-bearing trees should be retained wherever possible or nesting boxes provided to minimise impacts on fauna habitat from removal of hollow-bearing trees.*

The proposed redevelopment was referred to the Commonwealth Department of Environment Heritage and Arts (DEWHA) and declared to be a controlled action under the EPBC Act. DEWHA indicated that, in its opinion, a significant impact on BGHF is likely to occur as a result of the proposed development. As described in the Flora and Fauna Assessment (refer **Appendix M**) the design evolution process has sought to minimise impacts on the BGHF while providing the necessary housing and facilities for hospital staff and local residents. Mitigation measures are outlined in Chapter 5 of the Flora and Fauna Assessment and the Statement of Commitments in **Section 10** includes various measures to ensure compliance with the relevant findings discussed above.

9.8 Bushfire

A Bushfire Protection Assessment has been undertaken by Australian Bushfire Protection Planners (ABPP, refer **Appendix L**). Given the widely varying characteristics of the land, the Wahroonga Estate was divided into three precincts for the purpose of the assessment and studies conducted to determine the level of fire hazard and devise mitigation measures accordingly. Key findings include:

- *The slope of the land provides an indication of the likely movement and direction of bushfires through the Estate. Slopes within the Estate range from zero degrees in developed areas to over 18 degrees in the riparian corridors surrounding Coups Creek. Such is the trend in surrounding areas also. Cliffs and escarpments of over 90 degrees have also been identified in the north-west precinct.*
- *With regards to vegetation, landscaped gardens are present in existing developed areas and contribute to Asset Protection Zones. The dominant natural vegetation is Wet Sclerophyll Open Forest in riparian corridors, and Dry Sclerophyll Open Forest in remaining areas. The most notable vegetated area beyond the Estate is the Low Open Forest adjoining the north-west precinct that constitutes a fire hazard.*

ABPP have reviewed the concept plan in light of these findings and have deemed the proposed development compliant with the DGRs as follows:

- *The Asset Protection Zones as depicted in **Figure 8** are accommodated in all new and existing residential developments through building setbacks, roads and controlled natural vegetation. Gardens and native vegetation will be actively maintained to reduce fire hazard through landscape design and the manual removal of flammable material. In instances where compliance with the RFS Asset Protection Zone provisions is not possible, development has been limited to 'infill' and evacuation plans will be prepared.*
- *The existing road network has been deemed sufficient for fire-fighting and evacuation purposes. New roads and extensions must comply with the relevant provisions of the RFS and thereby further improve evacuation and access routes.*
- *The width of the Asset Protection Zones to proposed Special Fire Protection purpose developments complies with Table A2.6 [Special Fire Protection Purpose Development of Planning for Bushfire Protection 2006 and improved bushfire mitigation and protection is proposed for existing Special Fire Protection development.*
- *Under the Concept Plan, all future development will be connected to water mains with sufficient capacity for fire fighting purposes. Furthermore, a 'fire service main' is currently provided within the central precinct and future development at the hospital will include extensions to this service. Fire hydrants will be provided in accordance with RFS guidelines.*
- *The construction of dwellings will consider the BCA and relevant Australian Standards, and ABPP have recommended appropriate levels of construction to respond to the bushfire threat..*
- *Each 'land use' within Estate will prepare a site specific Evacuation Plan and it has been recommended that an Emergency Liaison Committee also be established to coordinate the preparation and review of these plans.*

The Statement of Commitments in **Section 10** includes various measures to ensure compliance with the relevant bushfire provisions discussed above.

9.9 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 concept plan, 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. Individual elements contributing to the DGR are contained in the following paragraphs (refer **Appendix N**).

BASIX

Applications for residential development within the Wahroonga Estate have a legislative requirement to achieve compliance with BASIX. Details of the built form are not included in the concept plan approval but future residential development will respond to relevant targets at the time of development application and incorporate measures to comply with and ideally exceed BASIX requirements.

Water Sensitive Urban Design

Water Sensitive Urban Design (WSUD) principles have been considered in the Wahroonga Estate Flooding and Stormwater Master Plan prepared by Hyder Consulting including rainwater tanks, detention basins, rain gardens, wetlands and ponds. It demonstrates that future development is capable of implementing measures to meet current regulatory requirements, promote long term sustainability and reduce operating costs within the site.

Energy Efficiency

The concept plan has considered current guidelines and best practice for incorporating the components of ESD into non-residential development. Appropriate consideration has been given in the concept plan 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, minimising solar gain and improving thermal comfort and energy performance.*

Recycling and Waste Management

The Wahroonga Estate redevelopment incorporates adaptive reuse of buildings where practical and commercially viable. For new construction, demolition or excavation works a Waste Management Plan will be implemented as part of project applications to maximise recycling or reuse of waste materials.

Car Pooling & Car Sharing

The Wahroonga Estate development will also introduce a formal car sharing scheme within the estate. This scheme will reduce trip generation and distances travelled by private vehicles and provide access to vehicles without the high fixed costs of private vehicle ownership.

Light

Lighting within the Wahroonga Estate will utilise appropriate technology to minimise energy consumption and will comply with relevant Australian standards such as AS4282: The Control of the Obtrusive Effects of Outdoor Lighting.

Alternative Energy Options

Consultation with service providers, as detailed in the Wahroonga Estate Civil Engineering Utilities Report prepared by Hyder Consulting as part of the EA process, confirms the existence of high pressure natural gas in the eastern precincts of the site that may be utilised for steam boilers or cogeneration / tri-generation. It may also be viable given emerging technologies and the timeframe of the project, to incorporate renewable energy options within the estate.

Site coverage

The concept design for the Wahroonga Estate redevelopment retains significant vegetation and open space, with approximately 40% of the site to be retained for these purposes. Riparian corridors and EECs are largely protected within the estate and active and passive open space is provided throughout the site. Protection of the environmental qualities of the site is consistent with the ESD principle of inter-generational equity and conservation of biological diversity and ecological equity.

9.10 Geotechnical and Contamination

A Geotechnical Assessment has been undertaken by Douglas Partners (Refer **Appendix O**) for the purposes of determining the suitability of the site for development and devising mitigation measures where necessary. The Estate was divided into three study areas based on the dominant geological character – the Glenorie Landscape, the Hawkesbury Landscape and the West Pennant Hills Landscape – and assessed with regard to soil character, slope, stability and potential contamination.

The prevailing gradient across the Estate is between 5 and 35 degrees and all three study areas contain soils prone to instability and erosion. However, the majority of existing and proposed development is concentrated in the flatter areas of the Estate where slope stability is not of great concern. Any potential hazards in these areas can be adequately addressed through batters and retaining walls. Douglas Partners have advised that the degree and type of mitigation measures should be established at a later stage in light of site specific assessments for each development site.

Likewise, specific site preparation and foundation works should be determined for each individual development. Douglas Partners have provided the general advice that some cut and fill techniques will be required to level the Estate for the construction of buildings and roads, and that subject to further investigation, excavated material may be reused as filling. All such works are to be undertaken in consideration of the relevant Australian Standards.

A Phase 1 Contamination Assessment has been completed for the site by Douglas Partners (refer **Appendix P**). Given the large proportion of residential development and preserved bushland within the Estate, land contamination is limited, despite the wide variety of land uses that have existed in the area in the past. The primary areas of concern are pest control, building and waste management practices and the use of fill from other locations that may potentially be contaminated. Although studies have confirmed that the hazard is low, Douglas Partners recommend that site specific tests and necessary remediation works be undertaken at a later stage. In all, the Estate is deemed suitable for the proposed development and complies with SEPP 55.

9.11 Utilities and Social Infrastructure

9.11.1 Utilities

Hyder Consulting Pty Ltd has been engaged by Johnson Property Group to undertake a Civil Engineering Utilities Report to service investigation report for the Wahroonga Estate (refer to **Appendix Q**). This report identifies the following asset owners located within the vicinity of the site and/or surrounding road reserves:

- Sewer - Sydney Water
- Water - Sydney Water
- Gas - Agility
- Electrical - Energy Australia
- Telecommunications – Telstra

And made the following assessment of Utility capability:

Sewer

The site is located in the East West Lane Cove waste water system and is currently serviced from a number of sewer mains as indicated below:

The Hospital is currently serviced by the 400mm diameter carrier main which drains south along Coups Creek.

- *The precincts west of Coups Creek are currently serviced by a number of 150mm diameter lines that connect into a 225mm diameter main which drains south along Lane Cover River and connects into the 400mm diameter Carrier at the junction of Coups Creek and Lane Cover River.*
- *The precincts east of Fox Valley Road are currently serviced by a number of 150mm diameter lines which drain east toward Browns Field then south towards Lane Cove River.*

Sydney Water have formalised a response to the feasibility application indicating that the wastewater system does not have sufficient capacity to cater for the proposed development. Hence, there is a requirement to upgrade/duplicate existing sewers to ensure that there is sufficient capacity in the local sewers.

Water

The site is located within the Wahrenonga water supply system. Water Infrastructure in the area consists of:

- 1200mm diameter Steel Cement Lined (SCL) main traversing the site in an east west direction. Refer attached SKC003 in **Appendix A**.
- 200 diameter Cast Iron Cement Lined (CICL) main running along the eastern side of Fox Valley Road tapering to a 150mm diameter CICL main. Refer attached SKC003 in **Appendix A**;
- 150mm diameter CICL main running along the centre of Fox Valley Road. Refer attached SKC003 in **Appendix A**; and
- 150mm diameter CICL main running along the northern side of Mount Pleasant Road. Refer attached SKC003 in **Appendix A**;

Sydney Water have formalised a response to the feasibility application indicating that the water system does not have sufficient capacity to cater for the proposed development. Hence, there is a requirement to upgrade existing mains to ensure that there is sufficient capacity.

Gas

Gas infrastructure in the area consists of:

- 100mm diameter high pressure secondary main (1050 kPa) at the corner of Fox Valley Road and Comenarra Parkway. Refer attached sketch SKC004 in **Appendix A**.
- 75mm diameter medium pressure nylon main (210 kPa) running along the eastern side of Fox Valley Road. Refer attached sketch SKC004 in **Appendix A**.
- 32mm diameter medium pressure nylon main (210 kPa) running along the southern side of Mt Pleasant Avenue. Refer attached sketch SKC004 in **Appendix A**.

Alinta Assets Management has indicated via email on 23 May 2008 that, the eastern precincts (including the hospital) have the ability to be serviced either by the medium pressure main in Fox Valley Road or the high pressure main in Comenarra Parkway. The high pressure network may be utilised for steam boilers or cogeneration. The north-western precincts have the ability to be serviced by the medium pressure main in Mt Pleasant. At this stage there are no major supply constraints in the area, however, Alinta do not reserve capacity.

Electricity

Energy Australia has confirmed via email on 10 June 2008 that, the area is principally serviced by the Turramurra zone substation (Turramurra Ave) which is near full capacity. However, Energy Australia currently have projects in development to increase capacity at Turramurra zone substation, Pymble zone substation and St Ives zone substation with tentative completion schedules ranging from 2010 to 2012.

Energy Australia further advised that to service the completed development there would be a requirement for at least one new 11kV feeder which may need to connect to one of the above zone substations. The timing of the construction of this feeder will be dependent on the staging and rate of development. It is our experience that for essential services such as Hospitals cross feeder ties to substations are often required for network security and switching flexibility.

The developer will be required to fund connection from the site to the existing zone substation. The connection to the site will be via underground feeder. Refer attached SKC005 in **Appendix A**. The developer will be required to supply the 11kV feeder, distribution kiosk/substation, low voltage distribution cables and street lighting. The cost and method of supply for the development will depend on the final electrical load requirement. An application for Load Connection should be submitted to Energy Australia prior to making any financial commitments.

Telecommunications

Telecommunications Infrastructure in the area consists of:

- Optical fibre currently running along Fox Valley Road and Mt Pleasant Avenue servicing the hospital and surrounding residents. Refer attached SKC006 in **Appendix A**;
- Local cable currently running along Fox Valley Road and Mt Pleasant Avenue servicing the hospital and surrounding residents. Refer attached SKC006 in **Appendix A**;

Telstra has indicated via email on 19 May 2008 that, the existing network is currently not sufficient to meet the likely demand of the proposed development. However, he further advised that service to the site will be supplied when required.

To accommodate the proposed redevelopment, the telecommunications network would require upgrade. To achieve this, Telstra may require:

- Upgrading the conduit network along Fox Valley Road and Comenarra Parkway;
- Hauling new copper cable and optical fibre cable to the site from the north along Fox Valley Road.

The technology and services provided would be determined closer to the time of development commencement, depending on Telstra deployment policy and any negotiations based on a commercial agreement.

9.11.2 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.

Hill PDA's analysis of the Social and Economic Impacts of the proposed Wahrenonga Estate Concept Plan (refer **Appendix I**) identified that:

The proposed redevelopment will support Ku-ring-gai and Hornsby Council's objectives to meet the needs of the North Subregion's community through the provision of a range of services and facilities. Facilities and services provided by the proposed development include a 350 seat community hall, two churches, a child care centre, a medical and dental centre, aged care and sporting facilities.

These facilities as identified in the proposed Concept Plan as part outlined in **Section 8** of this report.

The proposed development aims to provide over 3,200sqm of community floor space centrally located on the site and available to all members of the public. The facilities will be maintained and operated by the ACA.

Detailed social planning undertaken by Ku-ring-gai Council has however identified a range of additional social facilities and infrastructure required to meet the needs of the LGA's future population. The Social and Economic Impact Assessment conducted by Hill PDA addresses these key issues in light of the additional facilities proposed by the redevelopment, these include:

Child Care

The redevelopment of the hospital and community facilities proposes an extension to the existing child care facilities on site. The proposed extension will be to a scale that is commensurate with demand generated by the extended hospital and associated services. It is also intended that the centre will provide a range of services including long day care, family day care, out of school hour's care (in association with the proposed primary and secondary school), vacation care and occasional care. In this way the proposed development will support working families and avoid any greater strain on existing facilities in the North Subregion. Furthermore should the child care centre have additional capacity, it may help to meet some of the latent demand for these services in the North Subregion

Community Centres and Halls

The proposed development supports this need the retention of the high quality community centre on the site. Given the good economic life of the building and its suitability for a range of community uses, it is proposed to be retained as part of the Subject Site's proposed redevelopment. This facility provides a 350 seat hall with ancillary amenities (kitchen, toilets etc) and may be used as a place of worship. The facility is currently available (and will remain available) to the wider community for casual hire.

In addition to the new community hall located on the site, the existing church will also be retained. Together these facilities could provide over 3,200sqm of community floorspace centrally located on the site and available to all members of the public.

Private Medical Facilities

As part of the proposed redevelopment, 11,000sqm of commercial floorspace (a net increase of 8,000sqm) has been proposed for a range of uses that will be complementary to the hospital. This floorspace is likely to be attractive to a mix of private medical facilities including medical centres, dentists, physiotherapists, dieticians, chiropractors and pathologists. Whilst this will have a significant positive economic effect through the creation of jobs and by supporting the medical cluster, it will also provide significant social benefit by extending the availability of services and the public's awareness of them.

Open Space

The amount of open space per person provided by the proposal is greater than for many parts of NSW. Although the average amount of open space per person for the proposal is less than the average for Ku-ring-gai LGA, the Subject Site is only small in comparison to the LGA. The amount of easily accessible open space is far greater than much of the open space in other parts of Ku-ring-gai LGA and is considered to be an excellent provision of open space.

9.11.3 Proposed extension of the school

Hill PDA has undertaken an assessment of the appropriate footprint for the proposed school with the support of key government departments and consultation bodies. Outlined below are the key matters reviewed for the assessment, which is addressed in detail in the Social and Economic Impact Assessment included in **Appendix I**.

As part of this assessment two different scenarios were modelled. The first was for a student population of 1152 based on preliminary enrolment forecasts provided by the school for future expansion but subsequently reduced due to a student population of approx 800, (420 primary students and 360 secondary students) based on a school site of approx 9000m² to be consistent with the design constraints of the Concept Plan. It has been assumed based on these figures that the Primary School will have 3 classes of 20 students for each year, Kindergarten to 2, and 2 classes of 30 students for each year, 3 to 6. The Primary School will have a total of 17 classes and is therefore classified as a Core 14 school under the Primary School Facilities Standard.

It has been assumed that the Secondary School will have 60 students for each year, 7 to 12. The Secondary School will have a total of 360 students. This student size is classified as Stream 3 under the Secondary School Facilities Standard.

Although the absolute minimum floor area for the school has been calculated as approximately 5,130sqm a number of additional facilities will be required in order to ensure a high standard of learning and a positive environment. This is particularly the case for the Secondary School. It is considered likely that many of the facilities listed as optional would be desirable to provide the students with the best opportunities. Hill PDA's calculations have therefore identified that a primary and secondary school in the order of 9,107sqm would be appropriate for approximately 800 students.

For the reasons given above and in light of the floor space requirements, the proposed 8,800sqm of built floor space for the school is considered appropriate. The proposed 8,800sqm is considered sufficient space to provide for not only the minimum area of school facilities but also facilities that will enhance the student's educational experience in accordance with both the Primary School Facility Standard and the Secondary School Facility Standard.

9.12 Drainage, Stormwater and Groundwater Management

A Stormwater Management Master Plan (SMMP) has been prepared in respect of the proposed development by Hyder Consulting (**Appendix R**). The report addresses the following matters:

Integrated water cycle management strategy

The proposed integrated water cycle management strategy demonstrates the means and adequacy of managing stormwater within the site in accordance with Ku-ring-gai Council's Water Management Development Control Plan (herein referred to as DCP 47).

Stormwater treatment and water conservation measures

The proposed stormwater treatment measures act as a WSUD framework incorporated into the stormwater infrastructure and landscape design of the proposed development and includes the following treatment measures: Rainwater Tanks; Gross Pollutant Traps; Rain gardens (Bio-retention systems); and Ponds in order to control flooding, stormwater pollution and conserve water on the site.

- *Key conclusions are as follows:*
 - *Rainwater tank volumes and reuse should be provided for the various development types proposed at the site (refer **Appendix R**).*
 - *On Site Detention (OSD) basins are required to control peak stormwater runoff from the site to acceptable levels. The location and size of these basins are presented in Drawing SKC007.*
 - *Rain gardens fitted into the base of the OSD basins were found to be the most effective means to meet the pollutant reduction targets for the proposed development.*
 - *A significant portion of harvested stormwater will be used for open space irrigation by fitting ponds to the base of the OSD basins close to the designated areas of public open space to be used for stormwater treatment and irrigation of the public open space (refer Drawing SKC008). This option also meets the pollutant reduction targets for the proposed development.*
 - *Sewer mining to supply recycled water for non-potable use within the site such as irrigation, toilet flushing and washdown can be investigated once Sydney Water provide their assessment in relation to the costs associated with upgrading the sewerage system within the site (or downstream of the site) to cater for the proposed development.*

Potential Flood Risk and On Site Detention Proposals

The principles of on-site detention for flood control according to Ku-ring-gai Council's DCP 47 requirements are adopted to control the rate of stormwater runoff and reduce peak discharges during storm events and thus minimise flood events and pressure on the downstream stormwater infrastructure.

To minimise the adverse impact of a development on downstream properties and drainage systems, On Site Detention (OSD) is enforced by Ku-ring-gai council. Also mandatory to the site is the use of rainwater tanks which in some cases could reduce the OSD storage requirements.

The site drains to two main catchments areas, Coups Creek and Fox Valley with the dividing crest along Fox Valley Road. The area of the site to the west of Fox Valley Road drains to Coups Creek, which runs south leaving the site through a culvert crossing Comenarra Parkway. The area of the site to the east of Fox Valley Road drains to the Fox Valley Catchment. Only a small area at the south of the site discharges to the Lane Cove River catchment.

*According to the Water Management Development Control Plan 47 (DCP 47) the minimum storage volume and permissible site discharge (PSD) are calculated in accordance to the catchment location. The permissible site discharge and the minimum OSD volume requirements for the three catchments located within the site are based on DCP 47 and are summarised in **Table 12**.*

Table 12 – Catchment permissible site discharge and storage volume

Catchment Area	Permitted Site Discharge (l/s/ha)	Equivalent Minimum OSD Storage Volume (m3/ha)
Coups Creek (CC)	132	325
Fox Valley (FV1)	129	332
Lane Cove River (LC)	166	241

9.13 Developer contributions

In accordance with Ku-ring-gai Council's Section 94 Contributions Plan 2004 - 2009 - Residential Development - Amendment No.1 and Section 94 Development Contributions Plan 2007-2011, a levy will be applied to all new developments which will, or are likely to, require the provision of additional or upgraded public facilities or works. These Section 94 Plans facilitate developer funding for a range of community and recreation facilities; provision of additional open space, local traffic improvements, pedestrian and cycleway facilities; and other works in the public domain such as street tree planting within the surrounding area. Noting that some of these facilities will be provided within the development, the proponent is intending to provide contributions under the framework of Council's existing Section 94 plans which contains provision for monetary levies, works in kind, or separate voluntary planning agreement.

The current rates per dwelling are outlined in the following tables:

Table 13 - Hornsby LGA:

Development type	Occupancy rate / work space ratio	Contribution rates per person/tourist bed/worker
Residential		
Residential flats and other attached dwellings		
Studios or 1 bedroom	1.5 persons / dwelling	\$8,853
2 bedroom	1.8 persons / dwelling	\$10,624
3 bedroom	2.3 persons / dwelling	\$13,575
>3 bedroom	3.1 persons / dwelling	\$18,296
Detached dwelling/Additional allotment	3.1 persons / dwelling	\$18,296
Seniors housing	1.5 persons / dwelling	\$8,853
Tourist and visitor accommodation	1 bed per person	\$5,902
Commercial / Retail development	1 worker / 30 sqm GFA	\$2,154.25
Industrial	1 worker / 50 sqm GFA	\$2,154.25
Extractive Industry	per tonne	\$0.75
Car Parking – Hornsby Town Centre	per space	\$22,000

Table 14 - Ku-ring-gai Council (Wahroonga):

	Per Person	Bedsits and one bedroom	Two bedroom dwelling	Three bedroom dwelling	Four bedroom dwelling	Five+ bedroom dwelling	Seniors Living Dwellings	New Lot Subdivision
Separate Houses	\$9,225.44	\$14,576.20	\$17,620.60	\$24,170.66	\$29,982.69	\$35,517.95	\$11,937.37	\$32,104.54
	Per Person	Bedsit dwellings	One bedroom dwelling	Two bedroom dwelling	Three bedroom dwelling	Four+ bedroom dwelling		
Medium Density Dwellings	\$9,225.44	\$9,225.44	\$10,793.77	\$15,314.24	\$19,096.67	\$30,351.71		
High Density Dwellings	\$9,225.44	\$9,594.46	\$11,255.04	\$15,867.76	\$19,004.41	\$26,569.28		

Table 15 below outlines the total contributions required based on rates outlined in Council's Section 94 contributions Plan based on specified dwelling types. The total contribution required to meet Hornsby and Ku-ring-gai Council's infrastructure needs for the proposed development using these formulae is \$11,909,653.

Table 15 - Contributions

	Mount Pleasant (Hornsby)	Mount Pleasant (Ku ring gai)	Central Precinct (Ku ring gai)	Fox Valley Precinct (Ku-ring-gai)	Residential East Precinct (Ku ring gai)	Total Cost
Houses (4 bed)	0	15	10	3	5	\$989,429
Townhouses (3 bed)	0	20			16	\$1,278,646
Units	0	69	393	88	72	622
1 bed	0	17	98	22	18	\$1,744,531
2 bed	0	35	197	44	36	\$4,950,741
3 bed	0	17	98	22	18	\$2,945,684
Total						\$11,909,653

Appropriate arrangements will also be negotiated, via planning agreement or other suitable mechanism, for the provision of State infrastructure and services to support the proposed development. This will address such requirements as transport infrastructure, utilities and service upgrades, and possible environmental mitigation measures.

10 DRAFT STATEMENT OF COMMITMENTS

Subject	Commitment	Approval authority (where applicable)	Timing
Infrastructure Contributions	Appropriate arrangements, such as a Voluntary Planning Agreement (VPA), will be negotiated to ensure the provision of state infrastructure and services.	DoP	Prior to determination of the first project / development application
	Local contributions will be in accordance with Council Section 94 Contribution plans, including provision for: <ul style="list-style-type: none"> - levies, - works in kind, or - voluntary planning agreement. 	Council	Prior to determination or in accordance with conditions of any project / development application
Transport	A TMAP will be prepared to promote modal shift from private to public transport. Measures may include: <ul style="list-style-type: none"> - bus infrastructure and service improvements, including school services; - bicycle facilities including secure bicycle parking and end of trip facilities; and - information dissemination promoting public transport options. 	MoT	Prior to determination of the first project / development application
Construction Traffic Management	Construction Management Plans will be prepared to take account of: <ul style="list-style-type: none"> - construction access requirements; - temporary parking for construction contractors / staff; and - other construction traffic related matters. 	Consent authority (DoP or Council)	To accompany individual project / development applications
Car parking	Final car parking design is to be included with development applications. Design shall comply with the relevant Australia Standards including AS2890.1 and AS 2890.2 and be generally in accordance with <i>Section 8.7 Access, Circulation and Parking</i> of the approved concept plan.	Consent authority (DoP or Council)	To accompany individual project / development applications
Stormwater and water quality management	Water sensitive urban design measures will be provided generally in accordance with the recommendations of the Wahroonga Estate Flooding and Stormwater Master Plan (Hyder Consulting, February 2009) and the approved concept plan.	Consent authority (DoP or Council)	To accompany individual project / development applications
	Sewer mining opportunities will be investigated during precinct development proposals and as part of negotiations with Sydney Water for on-site water and sewer servicing.		Prior to any significant upgrade in the existing sewer network capacity
Waste Management	A Waste Management Plan addressing demolition, construction and on-going waste management will be included with applications for development.	Consent authority (DoP or Council)	To accompany individual project / development applications

Subject	Commitment	Approval authority (where applicable)	Timing
Heritage	An interpretation strategy is to be prepared for the Sydney Adventist Hospital and associated buildings. It is to refer to identified historic themes and provide guidance in the development of a meaningful interpretation for the site. Contributing interpretive elements, including archival photographic recording and recovered relics, are to be housed on site, preferably in the 'Bethel' Museum.	DoP – Heritage Branch	Prior to or accompanying the first project / development application within the Central Hospital precinct
	Statements of Heritage Impact (SHI) will be prepared for development affecting: <ul style="list-style-type: none"> - the Adventist Administration Building, - 'Bethel' House, - Shannon wing, - Maternity wing, - California-style Bungalow at 179 Fox valley Road, - 1930s Villa at 175 Fox Valley Road, and - timber-framed cottages fronting Fox Valley Road. 	DoP – Heritage Branch	To accompany individual project / development applications affecting these buildings
	An archival recording will be prepared to ensure the different phases in the historical development of the Sydney Adventists in Wahroonga are recorded prior to important buildings ('Bethel', the Shannon wing, Maternity wing, California-style Bungalow at 179 Fox valley Road and 1930s Villa at 175 Fox Valley Road, timber frame cottages) being relocated or removed. The recording should be undertaken in accordance with Heritage Branch guidelines and include the physical context, setting, gardens and landscaping of each building.	DoP – Heritage Branch	To accompany individual project / development applications for the demolition, removal or relocation of these buildings
	Clearance works associated with the: <ul style="list-style-type: none"> - Adventist Administration Building, - 'Bethel' House, Shannon wing, - Maternity wing, - California-style Bungalow at 179 Fox valley Road, - 1930s Villa at 175 Fox Valley Road, and - timber-framed cottages fronting Fox Valley Road <p>will be supervised and recorded by an excavation director in accordance with Heritage Branch requirements.</p>	Consent authority (DoP or Council)	Throughout the nominated clearance works
	If development is proposed that will affect Registered Site 45-6-2040 and the adjacent Zone E2 conservation areas on Coups Creek, an Aboriginal Heritage Impact Assessment, in consultation with the local Aboriginal community groups is required.	DECC	Prior to any development affecting Registered Site 45-6-2040 and the adjacent Zone E2 conservation areas on Coups Creek

Subject	Commitment	Approval authority (where applicable)	Timing
Ecology	<p>Biodiversity Management Plan (BMP)</p> <p>A BMP will be adopted for the site. It will incorporate:</p> <ul style="list-style-type: none"> • a Vegetation Management Plan for: <ul style="list-style-type: none"> - maintenance of site vegetation including endangered ecological communities (EECs); - protection of riparian corridors; - retention / replacement of hollow-bearing trees; - fencing and / or signposting for the protection of threatened species and critical habitats • a Weed Management Plan including measures to comply with the NSW Noxious Weeds Act 1993; • an Erosion and Sediment Control Plan to mitigate construction impacts; • a revegetation and landscaping plan including the provision of suitable habitat for the following threatened fauna species: <ul style="list-style-type: none"> - Powerful Owl; - Grey-headed Flying-fox; and - Swift Parrot. • EEC monitoring to determine the impacts of construction and development upon the EECs and provision, as required, of mitigation measures; and • management measures and restrictions to minimise the impacts of feral animals and domestic cats and dogs. 		Prior to or accompanying the first project / development application or bushfire management works affecting existing vegetation
	<p>Powerful Owl Management Plan (POMP)</p> <p>A POMP will be incorporated into the BMP to promote the sustained breeding and foraging of Powerful Owls on site. Referencing the Recovery Plan for Large Forest Owls (DEC 2006), the POMP will:</p> <ul style="list-style-type: none"> - identify appropriate feed trees for the owl's preferred prey species, - establish the number and location of nest boxes, - establish construction protocols for the Residential East Precinct to mitigate impacts on the owl's breeding, and - detail a monitoring program, of fixed duration, to determine the response of the owls to construction, development and alternate nest boxes. 		Prior to or accompanying the first project / development application within the Residential East precinct (<i>Figure 33 - Precinct Plan</i>)

Subject	Commitment	Approval authority (where applicable)	Timing
Bushfire	Bushfire protection measures are to be provided in accordance with ABPPs <i>Bushfire Protection Assessment</i> (November 2008), <i>Figure 8 – Residential and Special Uses APZ</i> of the concept approval, or where not specified, in accordance with <i>Planning for Bushfire Protection 2006</i> (PFBP).	Consent authority (DoP or Council)	Prior to or accompanying individual project / development application
	<p>Fire Management</p> <p>The existing Estate Fire Management Plan will be progressively updated to address the provision of APZs, vegetation and fuel management within the Estate. It will include :</p> <ul style="list-style-type: none"> - establishment and management of vegetation within APZs as landscaped gardens or where it extends into existing bushland, providing crown separation and a managed, discontinuous understorey; - specifying ownership and management of APZs and residual vegetation to either the Australian Conference Association; or on non-ACA retained land, the owners of the land under an 88B Easement provision. 		Prior to or accompanying individual project / development applications
	<p>Emergency Planning</p> <p>An Emergency Liaison Committee (ELC) will be established by the Australian Conference Association (ACA) with a requirement that:</p> <ul style="list-style-type: none"> - The ELC Chair Person is to attend the Local Emergency Management Committee (LEMC) meetings. - The ELC is to provide the LEMC and the Emergency Service Combat Agencies / Support Welfare Agencies with the emergency planning protocols and issues related to land uses within the Estate. - The ELC Chair Person is to coordinate annual inspections of Estate facilities by the Emergency Service Combat Agencies. <p>A Fire Emergency / Evacuation Plan will be developed for the Estate.</p>		Prior to occupation of buildings within the first stage of development
Utilities	Direct liaison is to occur to determine utility and service requirements for each stage of development. Augmentation to ensure adequate capacity must be provided to support proposed development, as required.	Utility and service providers	Prior to construction of any subsequent stage of development
Geotechnical	A detailed, intrusive, geotechnical assessment is to be undertaken prior to detailed design of proposed development.		Prior to or accompanying project / development applications
Transfer of lands	An appropriate public authority or community based organisation must be identified, as part of environmental offset arrangements, for the transfer ownership of conservation lands within the Estate.		Prior to or accompanying the first project / development application or bushfire management works affecting existing vegetation
Residential car share scheme	A residential car share scheme will be established and levies applied to future medium and high density residential dwellings.		Prior to occupation of any subsequent stage of residential development
Staging	Detailed staging plans will be provided for each precinct identified in <i>Figure 33 – Precinct Plan</i> of the concept approval.	Consent authority (DoP or Council)	Prior to or accompanying the first project / development application within each precinct, but excluding that development identified in Section 8.8 and Figure 89 of the concept plan.

11 CONCLUSION

In summary, the environmental assessment finds that proposal is an appropriate redevelopment of a specialised health employment hub. The proposal is of significance to the economy of the State and the upgrading of the health facilities together with additional residential accommodation is good planning and justifiable in an environmental sense.

It is recommended that the proposal be approved and that the site be listed as State Significant in Schedule 3 of the Major Projects SEPP as per the draft listing and study included with this report.



LATER