

8 ENVIRONMENTAL ASSESSMENT

The following is our assessment of the key environmental issues arising in relation to the Concept Plan, with particular regard to the matters raised in the Director General's EARs (see Section 5).

8.1 CONSISTENCY WITH RELEVANT ENVIRONMENTAL PLANNING INSTRUMENTS

All relevant Environmental Planning Instruments, circulars and the like are summarised at Section 3.5. While listing under Schedule 3 of SEPP Major Projects is required to permit the range of non-hospital-related uses proposed on the site, the project is otherwise consistent with relevant EPIs as detailed below.

State Environmental Planning Policy (Major Projects)

The project is consistent with SEPP Major Projects in that it involves the redevelopment of an existing hospital of significance to the State, and the orderly use, development and conservation of surplus transit oriented public land in direct accordance with the objectives and provisions of the Metro Strategy. It is primarily for a public purpose and includes the redevelopment of those parts of the site no longer required for that public purpose. State Environmental Planning Policy 55 – Remediation of Land

Preliminary contamination analysis has been undertaken to demonstrate that the site can be made suitable for its proposed purpose (see Section 8.13). The Statement of Commitments (see Section 9) includes commitment to implement and audit a Remediation Action Plan. The project is thereby **consistent** with SEPP 55.

State Environmental Planning Policy 11 – Traffic Generating Developments

It is assumed that the Minister will seek the views of the Roads and Traffic Authority, **consistent** with the aims and provisions of SEPP 11.

State Environmental Planning Policy 8 – Surplus Public Land

The project involves the co-ordinated, orderly and economic use of land in public ownership which is no longer required for its current public purpose, and the application in made to the Minister for Planning, in consultation with Willoughby City Council, **consistent** with SEPP 8.

Draft SEPP 66 – Integration of Land Use and Transport

The project is a strategic opportunity to help integrate land use and transport, and minimises the need to travel by private car. The project is thereby directly **consistent** with Draft SEPP 66.

Willoughby Local Environmental Plan 1995 (WLEP 1995)

The proposed hospital and related components that characterise the project are specifically permissible under the existing 5(a) Special Uses (Hospital) zoning. While the extent of proposed commercial, residential and retail uses are beyond the scope of ancillary hospital uses permitted in the existing zone, such high density mixed use development is not inconsistent with the use and built form provisions applicable in adjacent and comparable commercial zones, and is **permissible** pursuant to Part 3A of the EP&A Act, subject to Schedule 3 listing under SEPP Major project.

With regard to the specific provisions of WLEP 1995:

- Clause 11 – Project approval will be sought for any future subdivision of land.
- Clause 13c – Existing significant trees are preserved (see Section 7.6) and approval is sought for the removal of others.
- Clause 13D – Potential loss of views, privacy and sunlight are considered at Sections 8.5.2 and 8.6 respectively.
- Clauses 56-62 – No heritage items are currently listed on the site pursuant to WLEP 1995. In accordance with the objectives of Clauses 56-62, several local and state heritage items are proposed to be conserved in accordance with their heritage values and are identified for proposed statutory listing (see Appendix 3 and Section 7.14).

Section 117 Direction No. 3 - Business Zones

The project will increase the supply of business zoned land within the St Leonards commercial centre in direct accordance with the Metro Strategy, **consistent** with Direction 3

Section 117 Direction No. 17 - Integrating Land Use and Transport

The proposed density, mix and location of new residential and business uses adjacent to St Leonards Railway Station is directly **consistent** with 'Improving Transport Choice – guidelines for planning and development' (DUAP 2001), and 'The Right Place for Business and Services – Planning Policy' (DUAP 2001).

Section 117 Direction No. 21

Consistent with Direction 21: the site is already served by water and sewerage infrastructure, that will be augmented in consultation with the relevant utility provider as necessary to accommodate the project (see Section 7.11).

The project provides for a variety of housing forms and increases the permissible residential density on the land.

Section 117 Direction No. 26 – Special Area Zones and Recreation Zones

The Director General of Health has authorised the proposed reduction in the amount of land zoned Special Uses - Hospital. The proposed rezoning is therefore **consistent** with Direction 26.

8.2 STRATEGIC PLANNING AND SITE SUITABILITY

The development provided for in the Concept Plan is essentially the implementation of specific aspects of the State Government's 'Metro Strategy' and the locality specific refinement of that Strategy provided within the Draft St Leonards Strategy.

8.2.1 METRO STRATEGY

As discussed at Section 3.1, the Metro Strategy was released on 4 December 2005 and represents the State Governments latest strategic policy for the future development of greater metropolitan Sydney. The following extracts of the Metro Strategy are relevant to the RNS Hospital project.

Strategy A - Economy and Employment

The background section 'Health and Education' states that:

*"Major education and health facilities are clustered in or close to the centre of Sydney in particular around Sydney University and Royal Prince Alfred Hospital, St Vincent's Hospital, Garvan Institute, and around the University of NSW and Prince of Wales...Five of Sydney's six universities are in the global economic corridor. There are also concentrations of pharmaceutical companies around Ermington/ Rydalmere, Parramatta, Chatswood/Frenchs Forest and **a significant hospital and research precinct in the lower north shore.**"*

St Leonards is specifically identified as a specialised centre.



Figure 62: Metro Strategy Figure A13: Strategic Centres and Employment Lands, p52

The Lower North Shore (i.e. St Leonards and the surrounding district) is identified as containing a significant hospital and research precinct. The RNSH is identified as a major hospital.

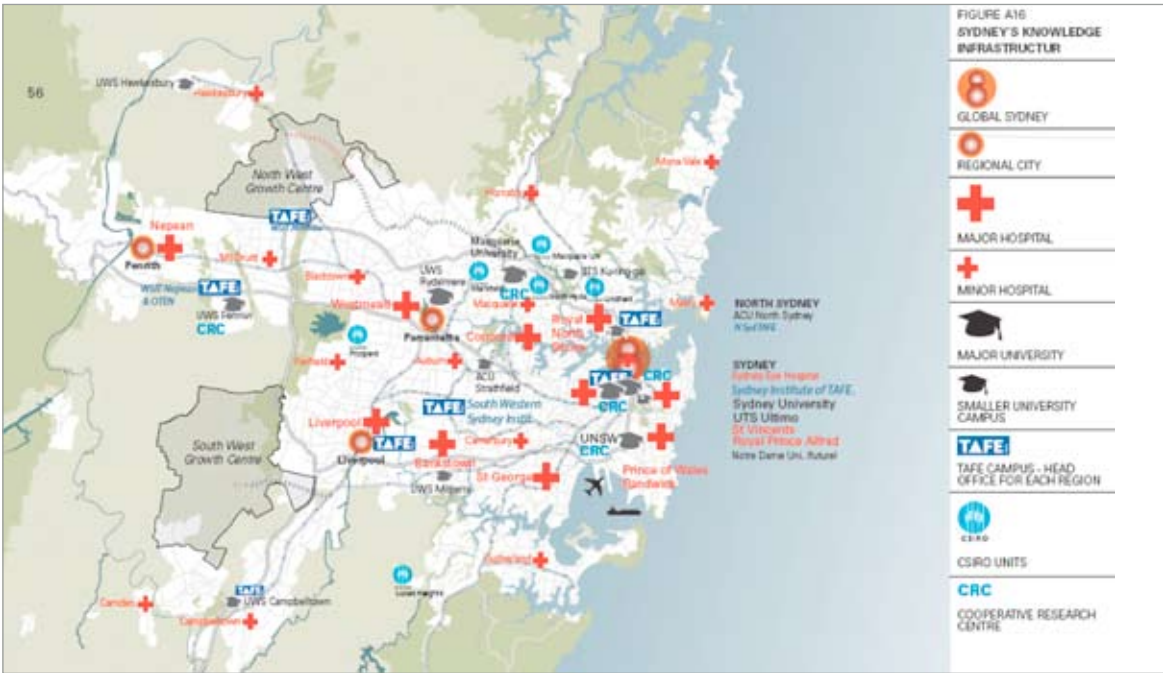


Figure 63: Metro Strategy Figure A16: Sydney's Knowledge Infrastructure, p56

The St Leonard's area is identified as containing employment lands and additional planned employment lands.

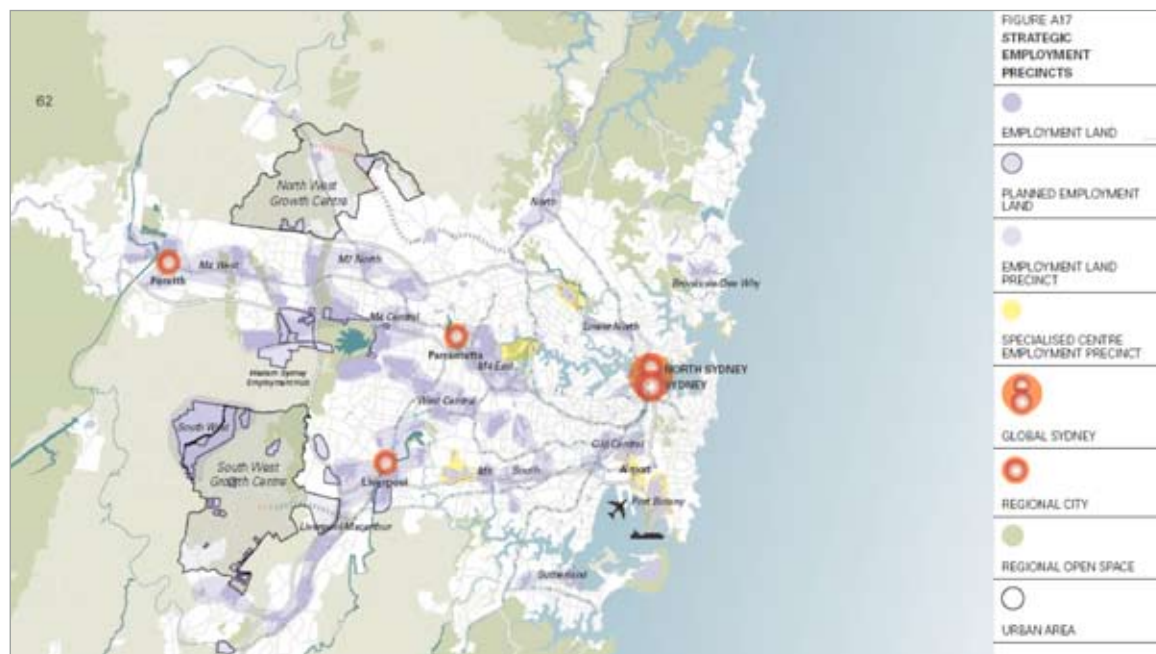


Figure 64: Metro Strategy Figure A17: Strategic Employment Precincts, p62

Objective A2 of the Metro Strategy highlights the need to increase opportunities for innovation and skills development, and states that:

“Strategic centres and magnet infrastructure associated with universities, hospitals and research institutions, provide the foundation for both public and private sector achievements that drive innovation and economic growth. These assets build the research base for advances in industry and can generate commercial success in the form of spin-off companies and new technologies. The State Government departments of State and Regional Development, Health, and Education and Training, and the Ministry of Science and Medical Research, are working with the Department of Planning to drive the increase in innovation and skills development around these strategic assets and hubs of knowledge.”

The Metro Strategy also identifies the need to provide affordable housing located near employment uses, and Objective A3.2 promotes the integration of the employment and housing markets:

“Analysis of Sydney’s job markets indicates discrepancies between some high growth jobs in certain subregions of Sydney and the skills of the local workforce.

Some areas of Sydney have difficulty in attracting workers because of high housing prices and rents. This gives rise to skill shortages or leads to extended journey to work distances and travel times. Examples include primary school teachers, childcare workers, retail and hospitality staff, and home care and nursing aides.”

In transport nodes and employment centres such as St Leonards, the Metro Strategy seeks to ensure a balance of both employment and proximate housing suitable to accommodate the employee demand generated, particularly given the high cost of existing local house stock, relative to the incomes of various categories of essential hospital staff.

Strategy B - Centres and Corridors

The Metro Strategy identifies St Leonards as being a ‘specialised centre’ within the ‘Global Economic Corridor’,



Figure 65: Metro Strategy Figure B3: Sydney's Strategic Centres, p93



Figure 66: Metro Strategy Figure B8: Types of Corridors, p107



Figure 67: Metro Strategy Figure B9: The Global Economic Corridor, p108

A major focus of the Metro Strategy is the establishment of employment targets for existing centres and along transport corridors. Objective B1.2.1 establishes employment targets as follows:

“The Metropolitan Strategy is planning for one million jobs to be located in the 27 existing strategic centres by 2031, an increase of 236,000 jobs.

The share of total jobs in strategic centres is expected to increase from just over 40 per cent to almost 45 per cent.

A growing proportion of jobs will be service based, aiding the shift to centres.”

Centre Type	Centre/Precinct	2001 Employment	2031 Capacity Target	Change 2001-2031
Specialised Centres	MACQUARIE PARK	32,308	55,000	70.0%
	ST LEONARDS	25,166	33,000	31.0%
	OLYMPIC PARK/RHODES	13,667	25,000	83.0%
	PORT BOTANY AND ENVIRONS	11,264	12,000	6.5%
	SYDNEY AIRPORT AND ENVIRONS	36,063	55,000	52.5%
	RANDWICK EDUCATION AND HEALTH	9,790	12,000	22.6%
	WESTMEAD	13,267	20,000	50.1%
	BANKSTOWN AIRPORT/MILPERRA	16,325	20,000	22.5%
	NORWEST	4,651	15,000	322.0%

Metro Strategy Table B3: extract from Sydney's Strategic Centres Employment Capacity Targets 2001-2031, p95

St Leonards is expected to accommodate an additional 7,834 jobs over the next thirty years, with the specialist medical facilities of the RNSH targeted to be a significant focus and driver of this growth.

Objective B3.3.4 provides that growth in specialised centres should support the core economic role of the centre, in this case the RNSH.

“The Metropolitan Strategy has identified nine specialised centres and precincts which are listed in Table B1. These centres, Global Sydney and the Regional Cities encompass a range of activities including high tech, business and office parks and major research areas, special use zones such as port and airports, and health and knowledge precincts that have significant economic and social implications for Metropolitan Sydney.

Planning in and around these centres needs to support and encourage their specialised function. This means ensuring that development controls (where appropriate) State Government business attraction and development initiatives, and the Government’s own investment activities are directed to reinforcing the specialities in these centres. It also means that transport planning should focus on increasing connectivity to these centres, particularly rail transport.”

Objective B2.1.1 - The Centres and Corridors Strategy states:

“Strategic centres will accommodate residential development compatible with the employment capacity targets set out in Tables B3 and B4. State led planning in strategic centres, and subregional planning will establish compatible housing targets in centres.

Local government will reflect these housing targets and provide a mix of housing types and densities based on a sound analysis of housing capacity and housing needs, including for the ageing population.

These targets will be incorporated in local planning instruments.”

Objective B3.4 seeks to ensure that sufficient commercial office sites are located in strategic centres. It states that:

“Current estimates suggest that up to 6.8 million square metres of additional commercial floorspace (about eight times the amount in North Sydney or ten times that in Parramatta) will be required to 2031 in Sydney.

Constraints on the supply of commercial land are likely to be most acutely felt in the centres through the global economic corridor, in particular the City, North Sydney and Chatswood. In these centres the emphasis will be on lifting development potential, redevelopment, refurbishment and high quality design.

In specialised centres there is generally sufficient land zoned for anticipated commercial development but the challenge is to orient these centres to more sustainable transport including reduced car dependence, while protecting and extending their unique advantages.”

The RNSH site provides a strategic opportunity to provide a significant supply of employment floorspace in the Global Employment Arc, within the St Leonards Specialist Centre, and within walking distance of St Leonards railway Station.

Objective B3.4.2 identifies the Global Economic Corridor as an opportunity to provide for the redevelopment of business space:

“In Sydney City and the global economic corridor, there are documented capacity constraints. The Government will ensure there are sufficient strategic sites available and infrastructure capacity to support the growth of these commercial office markets, particularly in North Sydney, Sydney City, East Darling Harbour, City South, Redfern and at rail stations in the City to Airport Corridor. The Property Disposal Assessment Panel will also prioritise the use of Government assets to increase land supply for commercial development consistent with other objectives.”

The RNSH site is an important strategic site with capacity to support commercial growth at an existing railway station within the Global Economic Arc.

Objective B3.4.3 of The Metro Strategy aims to identify, protect and promote sites for large scale development in strategic centres.

“In many centres development of key sites can act as a catalyst for additional development. Developers may be risk averse when it comes to being the first to undertake a significant development in a relatively untested market. As part of the Stronger Centres Initiative, sites which might have development potential will be identified.”

The RNSH has been identified as such a key site, and the Metro Strategy supports large scale development to complement the St Leonards Specialist Centre and the Global Economic Arc generally.

Objective B4 of the Metro Strategy aims to concentrate activities in centres served by public transport:

“Concentrating activities in centres has substantial environmental benefits by reducing travel times, pollution, congestion and car dependence, protecting the character of existing suburbs and supporting public transport. Public transport networks and other Government investment in services are concentrated in existing centres. Hence, strengthening the centres makes better use of existing infrastructure and services already in place.

People living within one kilometre of strategic centres are more than twice as likely to travel by public transport than those living outside centres. Furthermore, they own half the number of cars on average than those living outside centres. Even a marginal increase in the share of jobs in centres will significantly increase the share of trips by public transport. The benefit of even modestly more concentrated employment in Sydney has been modeled at almost \$5 billion of travel related savings over 16 years.”

As the RNSH site is located directly adjacent to St Leonards Railway Station and numerous bus services on the Pacific Highway, with the entire site being within one kilometre of the railway station and the St Leonards Strategic Centre, implementation of the Metro Strategy will clearly involve significant concentration of development on the site. Objective B4.1 Concentrate retail activities in centres, business development zones and enterprise corridors.

“More than any other Australian metropolitan city, Sydney has successfully limited out of centre retail development and this has strengthened centres. Clear guidance is required as to where retail and commercial office activities should be located with a critical determinant being good public transport and boosting activity and vitality in centres across the spectrum to encourage and sustain investment.”

The site is ideally positioned to reinforce the retail function of the St Leonards centre.

Objective B4.2.1 aims to carry out transport planning and align investment in rail and bus corridors to support the concentration of employment in that centre. The transport corridors need to be identified and employment concentrated along transport corridors.

“The transport sustainability of centres is at the heart of the Metropolitan Strategy and has underpinned the focus on concentrating development in centres.

This has been and will continue to be backed by a commitment of resources to rail and other public transport investments that support these concentrations. The Rail Clearways project and the bus reforms are examples of significant investments to strengthen centres and corridors. The recent announcement regarding the new rail lines connecting the North West and South West, and across the harbour through the global economic corridor, are all about strengthening the role of centres as locations for economic activity and connecting the labour force with jobs. Workers are more likely to use public transport if their home or job is located within easy reach of public transport.”

Strategy C - Housing

Objective C1 ensures that there will be an adequate supply of land and sites for residential development.

The Metro Strategy provides for an additional 29,744 dwellings in the ‘Inner North Area’ over the next 30 years. We are advised that officers of the Department of Planning envisage 2-5,000 of these dwellings being provided in St Leonards

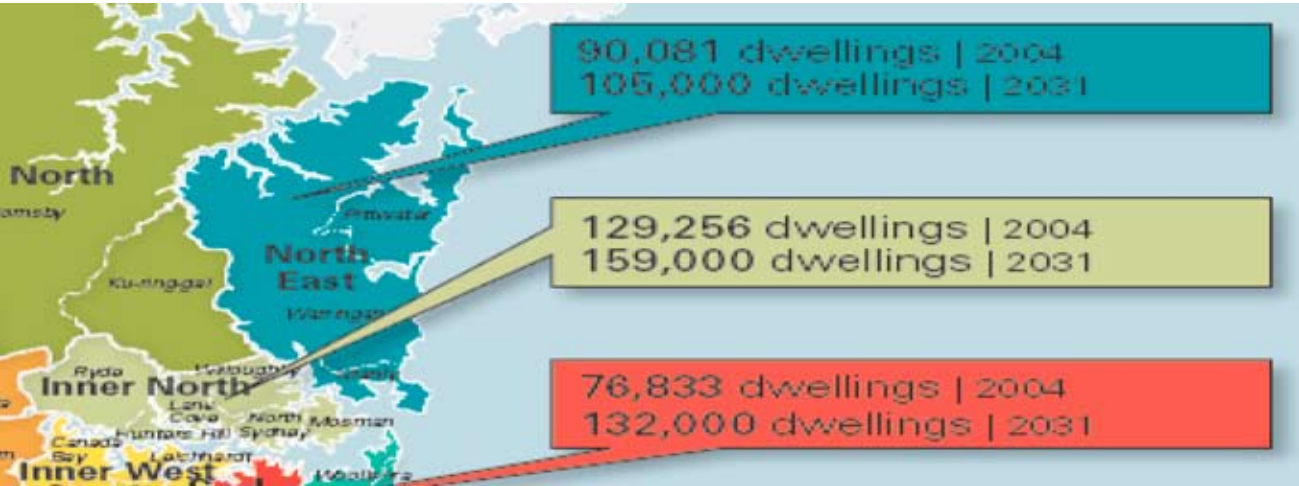


Figure 68: Metro Strategy Figure C9: extract from Subregional Housing Capacity Targets, p137

Objective C2 of the Metro Strategy identifies the need to provide a mix of housing types near jobs, transport and services. It states that:

“Feedback from the Metropolitan Strategy community forums was that people enjoy having good access to shops, restaurants and social services, and a sense of community, embodying feelings about their local area, their family connections, their neighbours and involvement in community groups and sporting activities.

Vibrant and successful places that have these qualities, such as Kogarah and Crows Nest, all have one thing in common — a large residential population within and close to the centre that supports local businesses and generally make the centre vibrant and safe. These places can be models for other centres.”

A mix of housing choices need to be available for a successful future development. The St Leonards centre already contains a high level of employment, transport and services infrastructure.

There is a need to focus residential development around centres, town centres, villages and neighbourhood centres. Objective C2.1.1 of the Metro Strategy requires the identification of locations for additional housing within centres:

“Local government will be required to provide a mix of housing types and densities based on a sound analysis of housing capacity and housing needs. Councils will need to incorporate the aims and objectives of the Metropolitan Strategy into their planning and in particular recognise the needs of the ageing population.

Whilst intensification of larger State strategic centres will be a major focus for the Metropolitan Strategy, the high land values in these areas generally mean that mid to high rise apartments are usually the only financially feasible built form. These types of dwellings are attractive to only part of the market. A strategy which relies entirely on high rise in one or two centres in a local area is not what the community said they wanted for Sydney during the community forums.”

While other types of housing will be required to provide the range of future options sought by the community, high density housing on the RNSH site will nevertheless be required to meet the housing targets of the Metro Strategy. Other housing options for other areas are canvassed in the Draft St Leonards Strategy.

8.2.2 DRAFT ST LEONARDS STRATEGY

As part of the Stronger Centres Initiative identified in the Metro Strategy, the Department of Planning in conjunction with Lane Cove, North Sydney and Willoughby City Council commissioned the preparation of the St Leonards strategy. This strategy was to provide an approach in achieving the required growth for the identified specialised centre.

The Draft St Leonards Strategy was prepared by David Lock and Associates and was released for public comment in April of 2006.

The following extracts of the Draft St Leonards Strategy are relevant to the RNS Hospital project.

Getting Around

The pedestrian network in and around St Leonards requires vast improvements. St Leonards currently presents many barriers to pedestrian and cycle movements. The strategies proposals for tackling these problems include:

- changes to traffic signal timings to maximise pedestrian crossing opportunities
- the bridge at 15/15a Herbert Street be linked to the east (sic) for pedestrians
- a new pedestrian route crossing the rail line on the line of Oxley Street
- a new, legible and permeable public street network within the RNS Hospital site
- enhanced pedestrian accessibility through the TAFE
- additional pedestrian entrances to and routes through the cemetery
- key improvements to the cycle network”

The RNSH is highlighted to provide a new public street network.

Section 0.3 One Identity

St Leonards has a number of different identities due to three Councils converging at St Leonards. The strategy states that:

“Streetscape improvements can also help to create a unified identity. North Sydney has recently prepared a streetscape strategy for St Leonards, and begun to implement it in Atchison Street. The works undertaken have created a high quality and distinctive identity for that area. Therefore, we propose that the streetscape character established by North Sydney be extended into the other council areas, including the hospital redevelopment.”

Any future developments should incorporate the North Sydney streetscape strategy.

Section 1.2 The Royal North Shore (RNS) Hospital, northwest of the station

The RNS Hospital is a major source of employment and a dominant use in the area. The Draft St Leonards Strategy provides background on the site:

“The hospital currently creates around 5000 full- and part-time jobs, along with a significant number of related jobs in the surrounding area. Its age means that there are some buildings of heritage significance. The need to provide easy access between facilities has led to the closure of Westbourne Street and Reserve Road where they pass through the hospital.”

The Draft St Leonards Strategy notes that at the time of its writing, the future development of surplus land on the RNSH site was envisaged to comprise:

- “approximately 59,000m² of new office space
- approximately 6,000m² of new research space
- approximately 8,000m² of new retail space
- a new ‘medi-hotel’ of approximately 200 beds (around 12,000m²)
- approximately 16,000m² of new nurses accommodation
- approximately 67,000m² of new apartments
- the refurbishment of half of Building 2 for non-hospital uses, including potentially other health-related uses, offices or aged care accommodation
- a new public street network providing improved access through the site
- new public open spaces
- the retention of heritage buildings and mature trees”

The Draft Strategy supports this intensity and mix of development and bases its recommendations for the rest of St Leonards on the assumption that development of this general type and intensity would occur on the RNSH site.

Section 2.2 Urban Structure

The urban structure of St Leonards requires some improvements. The Draft Strategy implements:

Royal North Shore Hospital	Northwest part of current hospital site	Consolidation of hospital functions and facilities, releasing land for new development (see Western Mixed Use Transition area below) that can take advantage of proximity to public transport services and other town centre amenities.
Western Mixed Use Transition area	Linking the Town Centre with the Royal North Shore Hospital	A mix of business space, residential accommodation and local shops and eateries along the key pedestrian route. In particular, this precinct will provide opportunities for hospital-related uses, such as medical research and clinics, and aged care, nurses and visitor accommodation. It may also offer the opportunity for student accommodation. Overall, the precinct will provide opportunities for a substantial number of workers and residents within a comfortable walking distance of the station, adding to the economic vitality and safety of the centre.

The Draft St Leonards Strategy states that the RNSH facilities should be consolidated. The western mixed use transitional area, which generally reflects the extent of surplus hospital land, is highlighted to provide a mix of business, residential and local shops.

Section 3.1 Is a medical speciality credible?

One of the major uses in the area is the RNS Hospital. The Draft Strategy examines whether the creation of a hospital based ‘medical specialty centre’ of employment growth around the hospital is likely to be feasible:

“Overall, there is likely to be less emphasis on finance and more on production, particularly design and product development. One area where it has been suggested that St Leonards can specialise is in medical research and product development (broadly defined – it may include service innovation and for the purpose of this discussion does not include additional research activity directly sponsored by the hospital). St Leonards has several potential strengths in this area:

- The RNS Hospital is large and research oriented.
- The Hospital is associated with two universities. There is also potential association with North Sydney TAFE in medical technology.
- There is an (albeit diminishing) IT industry base in St Leonards/ Artarmon that could develop in the area of medical IT.
- St Leonards’ workforce catchment area is rich in personnel qualified in medical research and development, and in allied fields including marketing.
- There would be scope for allied manufacturing to take place in Artarmon, close by.
- St Leonards is close to the CBD and hence to its financial expertise.”

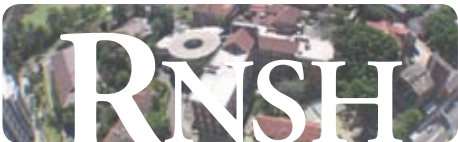
The Metro Strategy highlighted the location of additional jobs across Sydney, with approximately 8,000 jobs to be accommodated in St Leonards.

“A ‘strategic growth’ scenario in which the Metropolitan Strategy targets are achieved, including 8,000 additional jobs for St Leonards. The scenario thus assumes achievement of the targets in the rest of Sydney, and investigates how St Leonards might achieve its target.”

The development strategy identified for St Leonards is one of targeted change or strategic development. This involves:

Section 3.1B ‘Targeted change’

- “Key sites identified for statutory zoning changes to promote focused development opportunities
- Basis for chosen sites is a function of:
 - Significant development which promotes the desired urban structure for St Leonards
 - Sites that are currently significantly underdeveloped in broader CBD context of St Leonards
 - Sites that have potential to accommodate significant growth without adverse impacts upon adjoining lands.



- FSR increases applied to selected sites
- Development occurs on selected sites commensurate with new zoning + FSR changes
- Underlying development pattern continues on all other lands
- 25 year planning horizon

	A		B	C
	Unchanged planning		Targeted change	Maximum development
	No RNS	With RNS		
RNS redevelopment				
TOTAL NEW JOBS	-	3,250	3,250	3,250
Remainder of study area				
Take-up of vacant FS (m2)	28,500	28,500	28,500	28,500
New commercial FS (m2)	2,403	2,403	80,385	200,411
TOTAL NEW JOBS	1,236	1,236	4,355	9,156
Total new jobs	1,236	4,486	7,605	12,406

Figure 69: Draft St Leonards Strategy: p40

Given the opportunity to build high-quality space as part of the hospital and other redevelopments, St Leonards has the opportunity to achieve the ‘strategic development’ scenario.”

The RNS Hospital is identified as a key driver of the ‘strategic growth scenario’ and the creation of an additional 3250 jobs on surplus hospital land is a key assumption of all the scenarios modelled.

The Draft Strategy identifies the southern and eastern parts of the RNSH site (i.e. land surplus to hospital redevelopment requirements) as being within a future mixed use zone.



Figure 70: Draft St Leonards Strategy Figure 7: Scenario 2 Strategic Growth, p43

More Homes

The Draft Strategy notes that officers of the Department of Planning have advised of a target of between 2,000 and 5,000 more homes in St Leonards by 2031. The Draft Strategy envisages approximately 1,500 residents, including around 850 dwellings, accommodation for 450 nurses/ students and 200 hotel rooms, on the RNS Hospital site:

“The Department of Planning has given a target of between 2,000 and 5,000 more homes in St Leonards by 2031. An increase in housing in St Leonards would also be consistent with the NSROC Northern Sydney Sub-regional Planning Strategy.”

Housing type	Precinct	Reason
Apartments in mixed-use developments	The Centre & Mixed Use Transition areas, at upper levels only	Introducing dwellings into commercial areas increases the patronage for their services—particularly public transport and ‘evening economy’ uses such as bars and restaurants—and enhances their safety outside business hours. However, it should be limited to upper levels, to maintain an ‘active’ ground floor street frontage. Recent mixed-use developments in the North Sydney mixed use zone north of the Highway and east of the rail line indicate that there is a market for such development. However, it can have an adverse effect on the ‘prestige factor’ of a business area. Therefore, we propose that the Southern Business District remain purely commercial.
Nurses and student accommodation	Western Mixed Use Transition precinct	There is a shortage of nurses and student accommodation in the area. The redevelopment of the Royal North Shore Hospital offers an ideal opportunity to provide new nurses and student accommodation close to the hospital and TAFE, and within a comfortable walking distance of the amenities of the centre.
High and low-dependency aged care accommodation	Western Mixed Use Transition precinct	There is a shortage of aged-care accommodation in the area. The redevelopment of the Royal North Shore Hospital offers an ideal opportunity to provide new high and low-dependency aged-care accommodation within a comfortable walking distance of the amenities of the centre.
‘Medi-hotel’	Western Mixed Use Transition precinct	‘Medi-hotels’—visitor accommodation geared towards people needing to stay in the area for day surgery or visiting hospital patients—are another form of residential accommodation that would be appropriate close to the hospital.

The south and eastern parts of the RNSH site are identified as being within the ‘Western Mixed Use Transition Precinct’. This precinct is targeted to provide apartments in mixed use developments. The precinct is also targeted to provide nurses accommodation, student accommodation, aged care accommodation and hostels.

Residential development is encouraged to be provided on the upper floors to maintain the activation of the street at the ground floor.

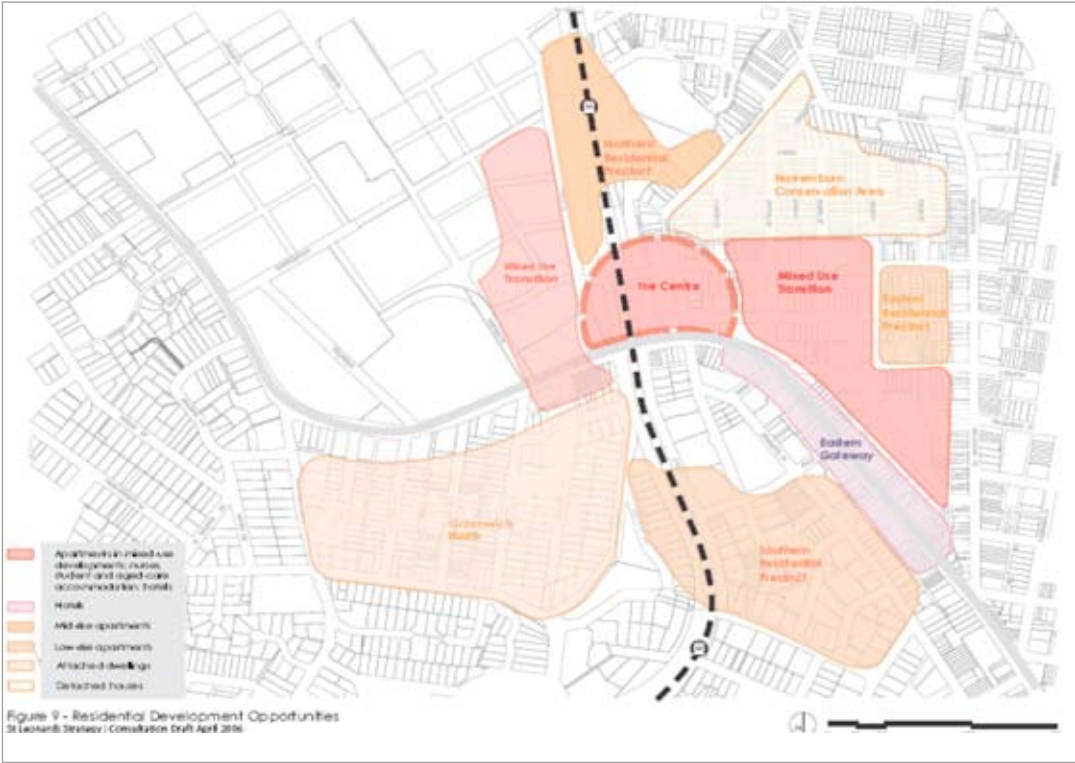


Figure 71: Draft St Leonards Strategy Figure 9: Residential development opportunities, p51

Section 3.3 More Shopping and leisure activities

The Draft includes provisions for retail development, including:

Uses	Location	Reason
Local shops, retail services, bars, cafes and restaurants	The Centre, along the key pedestrian routes of the two Mixed Use Transition areas & Eastern Gateway	St Leonards has been designated a specialised centre due to its existing and potential level of employment. It is not—and is not intended to be—a major comparison retailing centre. Therefore, we propose to limit retail uses to those that serve the local worker and resident population, such as convenience shops—including, potentially, a larger supermarket ² , small-scale specialty shops, retail services—such as banks, bars, cafes and restaurants in the centre and where needed to animate key pedestrian routes. This is to avoid rivalling the sub-regional retail role of North Sydney and Chatswood centres, and to maintain the viability and distinct village centre identity of Crows Nest.
Medium-size showrooms for household goods	Eastern Gateway	Showrooms are best located on highways adjoining town centres. This gives them the high profile location they rely on, facilitates trip combining with town centre functions and activates building frontages that are inappropriate for smaller retail outlets. We, therefore, propose to continue the role of the Eastern Gateway as a household goods showroom cluster.
Sandwich shops and cafes serving local working population	Remainder of the Mixed Use Transition areas, ‘Gateway’ & Southern Business District precincts	Coffee and lunch outlets are a crucial ingredient of an attractive business precinct. Therefore, we propose that cafes and sandwich shops scaled to serve the local working population be allowed throughout the business areas.

The scale and size of retail development is to be limited to including a possible supermarket, small scale specialty shops, convenience shops and retail services.

The RNSH site is also identified to provide public open space and community facilities.



Figure 72: Draft St Leonards Strategy Figure 10: Supporting services development opportunities, p51.

Proposed public transport improvements include an opportunity to provide a new bus service through the RNSH site on Reserve Road.

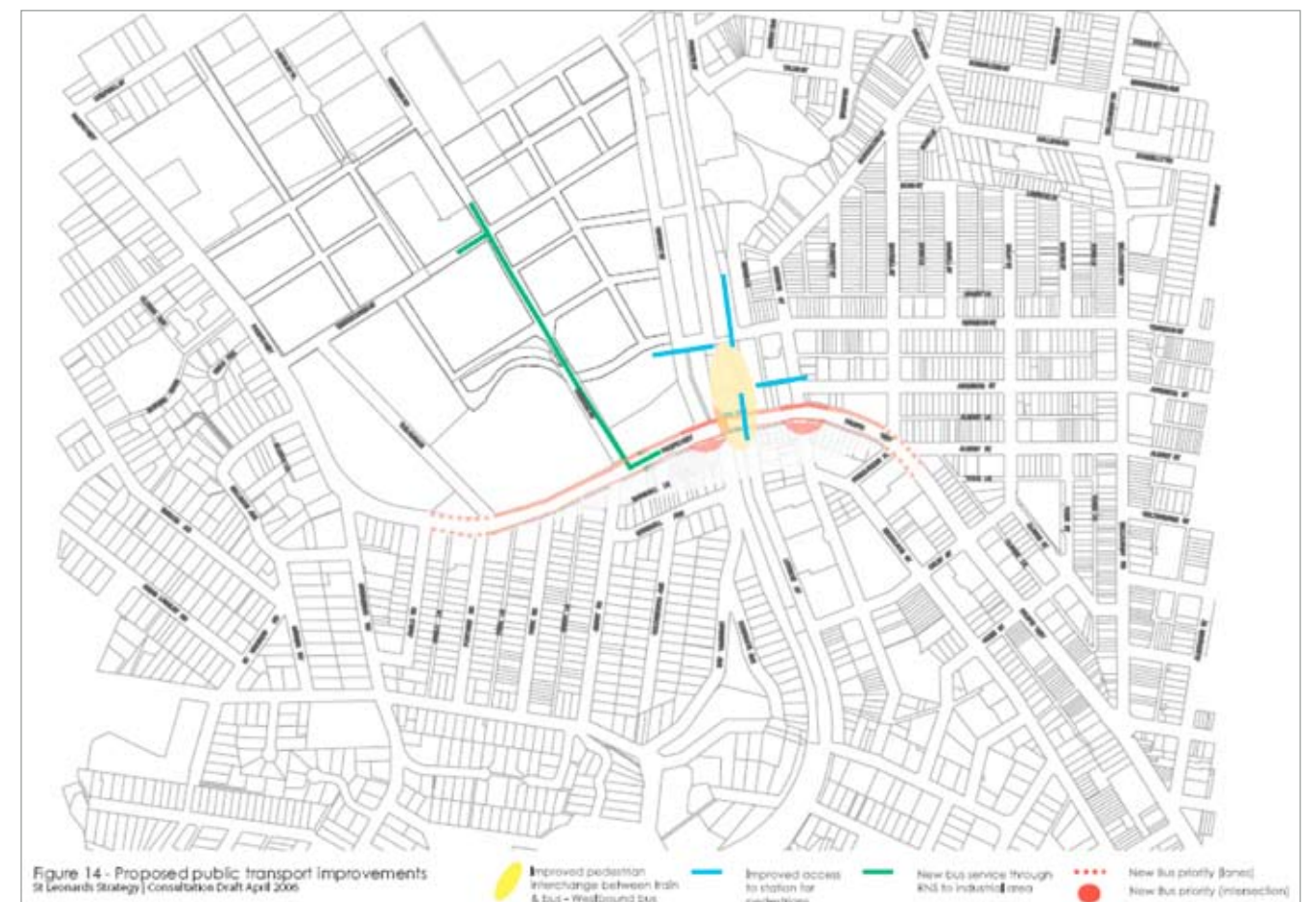


Figure 73: Draft St Leonards Strategy Figure 13: Proposed public transport improvements, p59

Section 3.5 Royal North Shore Hospital

The Draft Strategy also emphasises the need for an improved pedestrian network:

“The proposed consolidation of the hospital onto a smaller footprint and development of the remaining land for other uses presents the opportunity to create a new, legible and permeable public street network within the site. Indeed, the current master plan for the site proposes just such a network. We strongly support this, not only for the improved accessibility it would provide from the town centre to the hospital, but also for the improved connections it would facilitate to Gore Hill Park, Cemetery and the TAFE.

The new streets should provide for vehicular movement wherever possible, to contribute to the safety of the routes by providing ‘eyes on the street’ and ensuring buildings face them. However, care must be taken to avoid opportunities for ‘rat running’ between Herbert Street and Pacific Highway and adverse impacts of traffic movement on pedestrians and cyclists. Therefore, we recommend that the RNS redevelopment team work with Council to develop a network that improves accessibility for all modes without creating new traffic-related issues.

We also recommend that new development on the hospital site should be integrated with the existing pedestrian overpass on Herbert Street in order to facilitate higher levels of usage for this connection to the station."

Figure 14 of the Draft Startegy Identifies a potential new road , cycle and pedestrian network on the RNS site.

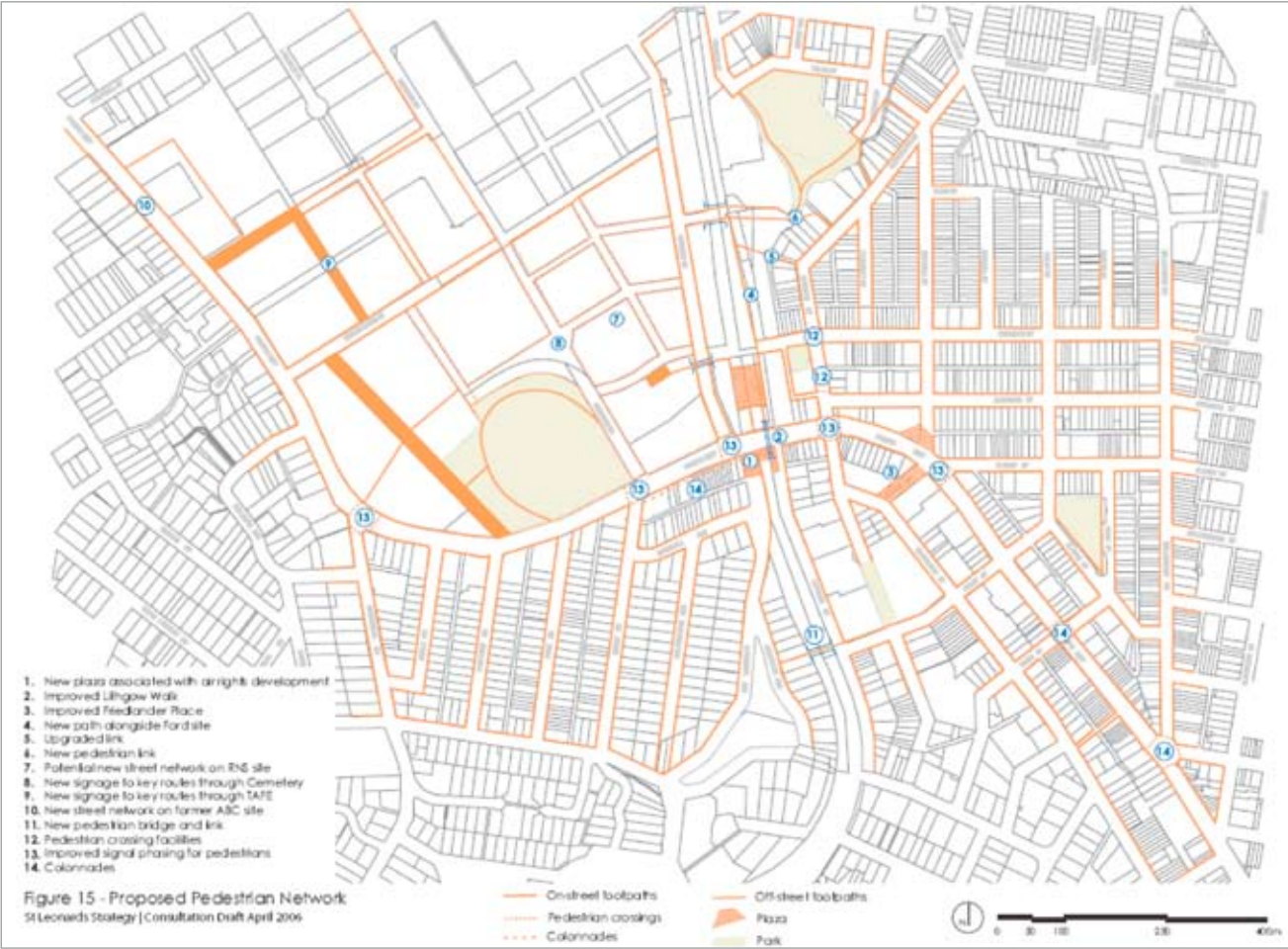


Figure 74: Draft St Leonards Strategy Figure 14: Proposed pedestrian network, p60

Section 5.3 Public Domain improvements

The Draft Strategy recommends various public domain improvements.

Action	Prerequisites	Key stakeholders	Primary responsibility
Advocate for a legible and permeable public street network as part of the redevelopment of the RNS site	-	RNS Hospital	Willoughby Council
Plan and install additional street tree planting along Herbert Street	-	RNS Hospital	Willoughby Council
Advocate the continuation of the North Sydney streetscape strategy in the redevelopment of the RNS site	-	RNS Hospital	Willoughby Council

The RNSH site is identified to continue the North Sydney Streetscape Strategy, Including additional street trees and a permeable public street network.



Figure 75: Draft St Leonards Strategy Figure 17: Proposed public domain improvements, p63

Section 4.7 Royal North Shore Hospital

In summary the Draft St Leonards Strategy recommends the following concepts which specifically relate to the RNSH site.

Concept	Recommendations	Reasons
More jobs	<ul style="list-style-type: none">Promote the development of mix of premium-quality business buildings with larger floorplates and B-grade office space, particularly close to the station.	<ul style="list-style-type: none">To attract export-oriented businesses such as electronics, information technologies and research industries, and provide for service businesses, respectively.
More homes	<ul style="list-style-type: none">Promote the development of a range of residential accommodation including nurses and student accommodation, aged care and a medi-hotel.	<ul style="list-style-type: none">To increase the number and range of homes in St Leonards.
More supporting services	<ul style="list-style-type: none">Promote convenience shops, small-scale specialty shops, retail services, bars, cafes and restaurants along key pedestrian routes.Prohibit large-scale comparison retail outlets.Provide new public open space and community facilities.	<ul style="list-style-type: none">To provide the ‘lifestyle ingredients’ needed to attract people to work and live in St Leonards and to create an active route to the hospital and TAFE.To maintain the sub-regional shopping roles of North Sydney and Chatswood.To provide for the new worker and resident populations.
Getting there	<ul style="list-style-type: none">Explore the potential for bus services to pass through the redeveloped hospital site.	<ul style="list-style-type: none">To increase the convenience of bus services.
Getting around	<ul style="list-style-type: none">Promote the development of a new public street network on the land released by the consolidation of the hospital (without encouraging rat-running).Provide an on-road cycle route between St Leonards and Artarmon via either Herbert or Reserve Road.	<ul style="list-style-type: none">To provide more direct, legible and safe routes through the area for pedestrians and cyclists.
One identity	<ul style="list-style-type: none">Promote stepping down of building heights from Highway and Herbert StreetIntroduce high quality streetscapes matching that in the North Sydney part of the centre.Introduce more tree planting along Herbert Street	<ul style="list-style-type: none">To create a more unified image for the centre.To enhance the ‘boulevard’ character of this important entrance to the centre.

8.2.3 SUMMARY

As discussed below, the amount and distribution of floor space for various land uses proposed in the Concept Plan, and the proposed built forms are consistent with the recommendations, and are in fact a direct implementation of the recommendations of the Metro Strategy and the Draft St Leonards Strategy.

8.3 DENSITY AND MIX OF LAND USE

The total floor space area, and hence the resultant employment and housing yields of the project have been determined in direct response to the employment, housing and other targets of the Metro Strategy and Draft St Leonards Strategy. However, as the entire site is likely to take numerous years to be fully developed, the flexibility of land use mix provided in Table 1 is intended to allow each precinct to positively respond to demographic and market conditions at the time that it is developed.

8.3.1 CONSISTENCY WITH HOUSING AND EMPLOYMENT TARGETS

With regard to employment, the Metro Strategy aims to achieve 8,000 jobs in St Leonards over the next 30 years and the St Leonards Strategy assumes that about 3,250 of these jobs will be provided on the RNSH site. Based upon a typical retail/commercial employment density of 25m² per employee, this would require 81,250m² of commercial/retail floorspace on the RNSH site.

With regard to housing, the Metro Strategy aims to create 2-5,000 more homes in St Leonards over the next 30 years and the St Leonards Strategy assumes that about 1,500 of these will be constructed on the RNSH site, comprising about 850 private apartments, 450 nurse/student rooms and 200 hotel rooms or serviced apartments.

Based on the transit oriented location of the site, we have assumed a typical private apartment size of 85m², and an average hotel, serviced apartment or nurse/student room of 50m², requiring 72,250m² of private residential floor space and 32,500m² of nurse/student and hotel/serviced apartment space.

Hence the explicit housing and employment targets in the Metro and Draft St Leonards Strategies translate to the provision of 186,000m² of non-hospital floor space. The Concept Plan proposes a maximum of only 176,000m², and therefore represents a density that is slightly lower than envisaged under the Metro Strategy.

Notwithstanding the mix of land uses specified above, these targets are the outcome of the proportional allocation of broad regional targets, scaled down to a local level. They are not intended to be exact or prescriptive, but rather to provide broad strategic direction, based upon long term estimates of future conditions. While the Concept Plan has been designed in direct response to these targets, the floor space allowances proposed at Table 1 to Section 7.5 have deliberately built in a degree of flexibility to allow development of the site to positively respond to changing demographic, social and economic circumstances over the numerous years it will take to fully redevelop the campus.

In order to determine the worst case scenarios in the event that future purchasers of the development precincts seek to maximise the proportion of a particular use, outlined below are four scenarios illustrating the impact of particular combinations of uses being optimised within the flexible ranges proposed. We note that for the purpose of showrooms, we have assumed an employment rate of 1 employee for every 100m² of floor space.

1. Maximum Residential & Temporary Accom

Precinct	Residential	Temp Accom	Retail	Showroom	Commercial	Total
3	Nil	Nil	50% 2,000m ²	Nil	50% 2,000 m ²	4,000 m ²
4	Nil	45% 21,992 m ²	5% 2,444 m ²	Nil	50% 24,435 m ²	48,870 m ²
5	Nil	Nil	12.5% 2,528 m ²	Nil	87.5 % 17,697 m ²	20,225 m ²
6	45% 16,814	35% 13,008 m ²	Nil	Nil	20% 7,473m ²	37,365 m ²
7	100% 65,740 m ²	Nil	Nil	Nil	Nil	65,740 m ²
Total	82,554 m ²	35,000 m ²	6,972 m ²	Nil	51,605 m ²	176,200 m ²

This scenario results in 971 dwellings, 700 nurse/student/motel rooms and 2,343 employees

2. Maximum Residential

(No temporary accommodation and favouring showrooms & offices over retail)

Precinct	Residential	Temp Accom	Retail	Showroom	Commercial	Total
3	Nil	Nil	5% 200m ²	Nil	95% 3,800 m ²	4,000 m ²
4	Nil	Nil	5% 2,444 m ²	Nil	95% 46,427 m ²	48,870 m ²
5	Nil	Nil	4% 809 m2	10% 2,023 m ²	86% 17,400 m ²	20,225 m ²
6	80% 29,892	Nil	Nil	5% 1,868 m ²	15% 5,605 m ²	37,365 m ²
7	100% 65,740 m ²	Nil	Nil	Nil	Nil	65,740 m ²
Total	95,000 m ²	Nil	3,500m ²	3,891 m ²	72,232 m ²	176,200 m ²

This scenario results in 1,122 dwellings, no nurse/student/motel rooms and 3,068 employees

3. Maximum Office

(Minimum residential and retail, with no temporary accommodation or showrooms)

Precinct	Residential	Temp Accom	Retail	Showroom	Commercial	Total
3	Nil	Nil	5% 2,00m ²	Nil	95% 3,800 m ²	4,000 m ²
4	Nil	Nil	5% 2,444 m ²	Nil	95% 46,427 m ²	48,870 m ²
5	Nil	Nil	4% 809 m ²	Nil	96% 19,416m ²	20,225 m ²
6	Nil	Nil	Nil	Nil	100% 37,365 m ²	37,365 m ²
7	50% 32,870 m ²	Nil	Nil	Nil	50% 32,870 m ²	65,740 m ²
Total	32,870 m ²	Nil	3,500m ²	Nil	139,878 m ²	176,200 m ²

This scenario results in 387 dwellings, no nurse/student/motel rooms and 5,735 employees

4. Maximum Office, with Maximum Retail and Showroom

(No temporary accommodation and minimum residential development)

Precinct	Residential	Temp Accom	Retail	Showroom	Commercial	Total
3	Nil	Nil	50% 2,000m ²	Nil	50% 2,000m ²	4,000 m ²
4	Nil	Nil	11% 5,400 m ²	Nil	89% 43,494 m ²	48,870 m ²
5	Nil	Nil	12.5% 2,528 m ²	10% 2,023 m ²	77.5% 15,674 m ²	20,225 m ²
6	Nil	Nil	1% 374 m ²	5% 1,868 m ²	94% 35,123 m ²	37,365 m ²
7	50% 32,870 m ²	Nil	1% 660 m ²	Nil	49% 32,213 m ²	65,740 m ²
Total	32,870 m ²	Nil	11,000 m ²	3,891 m ²	128,504m ²	176,200 m ²

This scenario results in 387 dwellings, no nurse/student/motel rooms and 5,619 employees

5. Strategic Target Distribution

(In accordance with Metro and Draft St Leonards Strategy targets)

Precinct	Residential	Temp Accom	Retail	Showroom	Commercial	Total
3	Nil	Nil	50% 2,000m ²	Nil	50% 2,000m ²	4,000 m ²
4	Nil	50% 24,435	11% 5,400 m ²	Nil	39% 19,035 m ²	48,870 m ²
5	Nil	Nil	12.5% 2,528 m ²	10% 2,023 m ²	77.5% 15,674 m ²	20,225 m ²
6	19% 7,170 m ²	21.5% 8,065	1% 374 m ²	5% 1,868 m ²	53.5% 19,888 m ²	37,365 m ²
7	99% 65,080 m ²	Nil	1% 660 m ²	Nil	Nil	65,740 m ²
Total	72,250 m ²	32,500 m ²	11,000 m ²	3,891 m ²	56,597 m ²	176,200 m ²

This scenario results in 850 dwellings, 650 nurse/student/motel rooms and 2,742 employees

As can be seen from the above, if the market were to strongly favour residential at the expense of all other uses, development within the proposed ‘mixed use’ zone would still generate 2,343 jobs (along with 971 dwellings and 700 temporary accomodation units), which is almost two thirds of the nominal employment target for the site, and over a quarter of the total jobs planned for the entire St Leonards Town Centre over the next 30 years.

Conversely, if the market were to strongly favour retail and/or commercial office development in favour of residential, the Concept Plan would still create 387 dwellings (along with 5,619 jobs), which is almost half of the nominal housing target for the site.

Therefore, in addition to the total quantum (or density) of development being directly related to the strategic targets identified for the site, albeit that there is not quite enough floor space proposed to fully satisfy all of the strategy targets, the range of flexibility in land use mix proposed is consistent with the range of growth targets contained in the Metro and Draft St Leonards strategies.

8.3.2 RETAIL USES

With specific regard to retailing, to determine the appropriate type and amount of retail floor space, the following five options were considered by Economic Researchers at UrbisJHD.

1. Convenience retailing

2,500 - 3,500m² of retail floor space, such as cafes and convenience stores scattered throughout each precinct, but concentrated within the ground level of the heritage precinct and within Precinct 4 adjacent to the elevated footbridge from the railway

Total 2,500 - 3,500m² of convenience.

Comparable centres:

- Milsons Point/Kirribilli – Broughton Street
- Artarmon – Hampden Road
- The Italian Forum, Leichhardt
- Pyrmont/Ultimo – Harris Street

This option is the smallest proposition in terms of retail floorspace, involving only convenience based shops to cater for people working on, living on or visiting the site. Assuming 5,700 people are employed on the site (80,000m² @ 25m²/employee = 3,200m² + 2,500 existing hospital staff) and 1,500 residents live on the site, on-site demand is likely to be adequate to support the Option 1 scale of retailing.

2. Convenience centre with small supermarket

Option 1 with a small (say 1,500 - 2,000m² supermarket) added

Total between 4,500m² - 6,000m² of mainly convenience retail.

Comparable centres:

- Rosebery – 767 Botany Road (New IGA)
- St Leonards – The Forum (Coles)
- Kingsgate centre, Kings Cross (Coles)
- Macleay Street, Kings Cross (Ikon Woolworths)

The key question regarding this scenario is whether there is sufficient demand to support a small supermarket in the development. The following considerations are pertinent:

- A small convenience supermarket would generally rely on the on-site population, but would also draw some business from the surrounding areas, particularly those within walking distance, such as the residential towers along Herbert Street.
- An existing Coles Express is located nearby in the Forum development.
- The provision of a small supermarket will allow the creation of a more focussed retail centre, with a mix of specialty shops, services and eateries. Such a centre may be externally oriented or based around an internal mall.

Such a centre would be very similar in its composition to the St Leonards Forum. Viability for this centre would be dependent on the supermarket turnover and the success of the physical layout, especially the exposure to customer traffic. A supermarket location adjacent to the Herbert Street Pedestrian Bridge would be preferable in this regard.

3. Supermarket based shopping centre with home and lifestyle offer

Option 2 with a further 2,000 - 4,000 m² comprising either a full line supermarket or larger floor plate lifestyle/homeware/bookshop – (e.g. Bay Swiss, Freedom Furniture) at the Herbert Street frontage of Precincts 4 and 5.

Comparable centres:

- Southpoint, Matraville
- Pacific Square, Maroubra
- West Ryde Marketplace
- Norwest Marketplace
- Newington Village
- Pittwater Place, Mona Vale
- World Square, Sydney
- Norton Plaza, Leichhardt

The provision of a full line supermarket of 3,500-4,000m² would create the potential to provide a neighbourhood shopping centre, which would be a destination retail centre serving the surrounding suburbs in addition to the on-site market. Key considerations are:

- The centre would be expected to draw customers from Artarmon, Naremburn, Greenwich and other nearby suburbs.
- The centre would require adequate and accessible car parking to serve these customers.
- As the Coles Express in the Forum has a very limited range of convenience groceries, residents of the area currently have to travel to centres such as Lane Cove or Northbridge to access a full line supermarket.

A successful supermarket based shopping centre would usually support around 15-20 specialty shops. These shops benefit from the customer activity generated by the supermarket, but also add to the overall appeal and critical mass of the centre. The specialty mix will be generally based on convenience food and non-food retailers and services.

The supermarket and specialty shops should be closely integrated, with the preferable configuration being an internal retail mall of specialty shops leading between the supermarket and the main access point(s). The concept of a home/lifestyle precinct would generally need to draw upon a larger catchment area, with these types of products generally being shopped for less often. The key considerations are:

- A successful precinct requires a critical mass of retailers to provide the opportunity for browsing and comparison shopping.

- The retail environment needs to be attractive and convenient in terms of accessibility.
- Main road exposure is important in order to create familiarity with the precinct in the minds of potential customers who don't shop there every week.
- The retail mix should include books, music, homewares, specialised furniture and gifts.
- A mix of national chains and quality independent retailers.
- A good provision of cafes and restaurants complements the home/leisure offer.

A good example of a successful lifestyle precinct is Willoughby Road in Crows Nest, which includes a strong food offer and an eclectic mix of non-food shops. Crows Nest also has a strong convenience retail component, together with a large homemaker retail strip along the Pacific Highway. While another such centre in close proximity may result in adverse economic impacts upon Crows Nest, compared to Sydney Metropolitan averages, the lower North Shore is significantly undersupplied with supermarket based retail floorspace, despite having significantly higher than average household incomes. A supermarket based centre on the RNSH site is therefore unlikely to have significant impacts on surrounding centres such as Crows Nest.

4. Sub regional centre

Discount Department Store, Supermarket and specialty centre - Max. sensible retail solution - 15,000 - 20,000m², plus some convenience shops.

Comparable Centres:

- Rockdale Plaza
- Victoria Gardens (Melbourne)
- Rhodes Waterside
- Auburn Central

These types of centres usually tend to locate in suburban or regional locations, where they provide a one-stop shopping environment for a wide range of retail needs. The retail mix of these centres tends to be mainstream and family-oriented, reflecting the market positioning of the DDS anchor store. There are few centres of this type in the inner suburbs of the metropolitan cities, where the local market tends to contain more single/couple households and incomes are higher.

Sub-regional centres also occupy large sites, including the big-box DDS stores and large car parks. The higher cost of land in the inner metropolitan areas therefore makes these centres difficult to justify from a land economics perspective. Consequently there is a very low provision of DDSs in many inner areas, such as the lower north shore.

Key considerations are:

- A sub-regional centre would draw from a wider area, extending into areas such as Lane Cove, North Sydney and Cammeray.
- The demographic of this area is not an ideal fit for a DDS, being oriented towards higher income families, professionals and single/couple households, notwithstanding a sizable available market.

- Some 700 or more car spaces would be required, with convenient vehicular access from surrounding streets being important, and potentially raising capacity problems on surrounding streets
- The established design of this retail format is to focus customer activity along a single internalised mall, linking the anchor DDS and supermarket.

Overall, subject to achieving a good design outcome and an efficient layout and vehicular access, a centre of this type may be viable from a retail perspective. However, it may raise issues of retail impact upon other centres, and feasibility in view of the cost of land and the spending patterns of the local demographic.

5. Regional Shopping Centre

A department store with a number of other major anchor stores and numerous specialties. Regional centres range in size from 50,000m² to over 120,000m² of retail floorspace.

Comparable Centres

- Chatswood Westfield
- Chatswood Chase
- Bondi Westfield
- Hornsby Westfield

Key considerations are:

- With both David Jones and Myer both located at both Chatswood and in the Sydney CBD, there does not appear to be a strong case for an additional store at St Leonards.
- Regional centres require large site areas and extensive car parking. Access needs to be excellent, given the very high traffic generation, which may be in the range 5-10 million visits per year. Very high traffic volumes are typically generated on surrounding streets.
- Regional centres take the form of large, generally unarticulated boxes, with extensive blank walls and large loading dock and parking structures. It would be difficult to locate such a facility without creating adverse urban design impacts and severing connectivity between the hospital and the railway station.
- The potential retail impacts upon existing centres would be significant.

In view of the above, the Concept Plan provides for a minimum of 3,500m² and a maximum of 11,500m² of general retail floor space, scattered throughout each precinct, with the largest allowable spaces being approximately 5,500m² in Precinct 4 and 2,500m² in Precinct 5, with a maximum allowance for an additional 3,800m² of space in Precincts 5 and 6 for lifestyle/homeware/bookshop (I.e showroom) uses fronting Herbert Street.

This retail floor space allowance essentially restricts retail development to Options 1, 2 or 3 above. Options 4 and 5 and the significant traffic and retail hierarchy impacts they would entail cannot be achieved within the proposed floor space allowances. Hence retail will be limited to local service shops, possibly a supermarket and possibly some lifestyle/homeware/bookshop uses located along

Herbert Street to activate this frontage. The Concept Plan will therefore deliver the local service and activity associated with retail uses that is sought in the Draft St Leonards Strategy, without generating any significant adverse retail or traffic impacts. It will also require active ground level uses in all significant buildings in the Mixed Use zone, as recommended in the Draft St Leonards Strategy.

8.4 TRANSPORT

The site is easily accessible from the Pacific Highway and is immediately adjacent to St Leonards Railway Station. Masson Wilson Twiney Traffic & Transport (MWT) have prepared a Traffic and Transport Report, which is included at Appendix 7.

8.4.1 TRAFFIC VOLUMES

MWT have estimated future traffic volumes on roads near the site, including estimates of increased traffic generation, effects of new or re-opened roads and estimates of traffic likely to be generated by the re-development of the nearby former ABC site at Gore Hill.

Road	Location	AM			PM		
		Historic	Current	Future	Historic	Current	Future
Pacific Highway	East of Herbert Street	5762	4914	5511	5913	4860	5463
Pacific Highway	West of Herbert Street	5215	4264	4769	5486	4185	4670
Pacific Highway	East of Reserve Road		4235	4719		4180	4630
Pacific Highway	West of Reserve Road		4005	4426		4052	4462
Pacific Highway	South of Westbourne St.		3321	3774		3480	3896
Pacific Highway	North of Westbourne St.		3326	3846		3408	3913
Herbert Street	North of Pacific Highway	1095	1420	1712	989	1335	1666
Herbert Street	North of Ella Street	1533	1645	1879	1564	1510	1879
Herbert Street	North of Frederick Street		1511	1561		1220	1273
Reserve Road	North of Pacific Highway		510	798		453	859
Reserve Road	South of Frederick Street		454	1029		508	1220
Westbourne Street	East of Pacific Highway		395	327		498	387
Frederick Street	West of Herbert Street		575	632		704	713

Source: MWT, with historic counts taken from Ove Arup Transportation Planning (March 1989) St. Leonards Traffic and Parking Study Final Report

Since the opening of the Gore Hill Freeway current traffic volumes along the Pacific Highway have dropped by between 15% and 24% during the peak hours. Along Herbert Street the reverse has occurred, traffic volumes have increased by as much as 35%, except north of Ella Street in the PM peak.

When the future traffic volumes are compared to the existing counts, there is between 11% and 24% increase. However, on Pacific Highway the difference between the future volumes and the historic volumes is even less and in fact there is actually a reduction in volumes. The trend for traffic volumes to increase on Herbert Street is expected to continue.

8.4.2 INTERSECTION OPERATIONS

Intersections surrounding the RNSH campus were analysed by MWT using SCATES modelling for the future scenario including traffic generated by the proposed development of RNSH and the Gore Hill Technology Park. This analysis shows that there would be a change in the level of service and delay at most intersections in the AM and PM peaks. In some cases the delay and LOS will be reduced, such as at Westbourne Street. However, this reduction will be minimal.

The most significant change would be the reduction in LOS at Pacific Highway/Reserve Road and Pacific Highway/Campbell Street from A to C in the PM peak, resulting in an increase in the average delay but still satisfactory operating conditions. The Pacific Highway/Greenwich Road intersection would continue to operate at the existing LOS F in the AM peak and D in the PM peak. However this existing LOS is not the result on the Concept Plan and the proposed opening up of Westbourne Street would allow additional traffic generated by the Concept Plan to avoid the intersection, such that traffic generated by the Concept Plan would not impact on its operation.

8.4.3 PUBLIC TRANSPORT

The capacity of the railway station was observed by MWT during morning and evening peak periods. These observations (see Appendix C of the MWT report) established that there is currently spare platform capacity, but notes that Railcorp needs to provide additional ticket barrier capacity and improved signage to the overhead walkway across Herbert Street.

In terms of future capacity, the Chatswood to Epping Line is due for completion in 2008, and will significantly improve services. The expansion of the North West Rail line is expected to be completed after 2017, and will include a 9 kilometre tunnel from Central to St. Leonards, under the CBD and Sydney Harbour and extra tracks between St/ Leonards and Chatswood. It will create the capacity for an additional 12,000 rail passengers daily and includes an extension to Rouse Hill via Castle Hill, thus providing rail connections to several new destinations.

MWT have reviewed the Environmental Impact Statement for the Parramatta Rail Link project and note the following key implications of that project upon the future capacity of the North Shore railway line to accommodate the hospital project:

- In 1999, the North Shore line south of Lindfield carried 13,700 passengers in 20 trains.
- Each train had an average loading of 690 passengers, notwithstanding a capacity limit of 1,200 persons per train (noting that it is not possible to sustain maximum capacities over an extended time).
- The line had a capacity of 40 trains per peak two hours and hence was only operating at 50 per cent of capacity.
- Projected demand will increase from 13,700 in 1999 to 19,200 in 2021.
- This growth would require 24 trains per two hours, requiring only 60 % of the 1999 operational capacity.

While the North Shore line has a spare capacity of 10 trains per hour each way at Chatswood, at present there is only capacity for an additional 8 trains per hour to travel through North Sydney to the Sydney CBD.

Thus, there is the potential to run 36 trains per two hour peak period through St Leonards and SRA forecasts indicate that allowing for North Shore passenger growth there will only be the need for 24 trains per peak period to cater for such demand.

There would thus be the potential to run an additional 12 trains per two hours to satisfy any additional passenger demand generated in St Leonards or other centres on the north shore.

This surplus capacity represents about 60 percent of the present supply on the North Shore line.

Thus, there is the potential to run 36 trains per two hour peak period through St Leonards and Railcorp forecasts indicate that allowing for North Shore passenger growth there will only be the need for 24 trains per peak period to cater for such demand.

In summary the railway has the capacity to carry twice its 1999 passenger loads.

The proposed Royal North Shore Hospital development with an expected 3,000 to 4,000 new jobs would at most generate about 700 additional passengers per direction per peak hour (4,000 jobs x 60% travel in peak hour x 50% by train x 60% in one direction).

There is thus more than sufficient rail system capacity to cater for the additional rail demand arising from the RNSH development.

Naturally Railcorp would need to progressively operate more trains as passenger demands were actually realised. This is the normal procedure for any public transport operator.

At present the 144 bus route has a stop at the front door of the hospital. This provides an important public transport connection from St Leonards Station to the hospital for mobility impaired persons. This service will be maintained and discussions have taken place with the Department of Transport and Sydney Buses, with the intent of encouraging additional bus routes to be diverted through or around the site, as indicated at Figure 76.

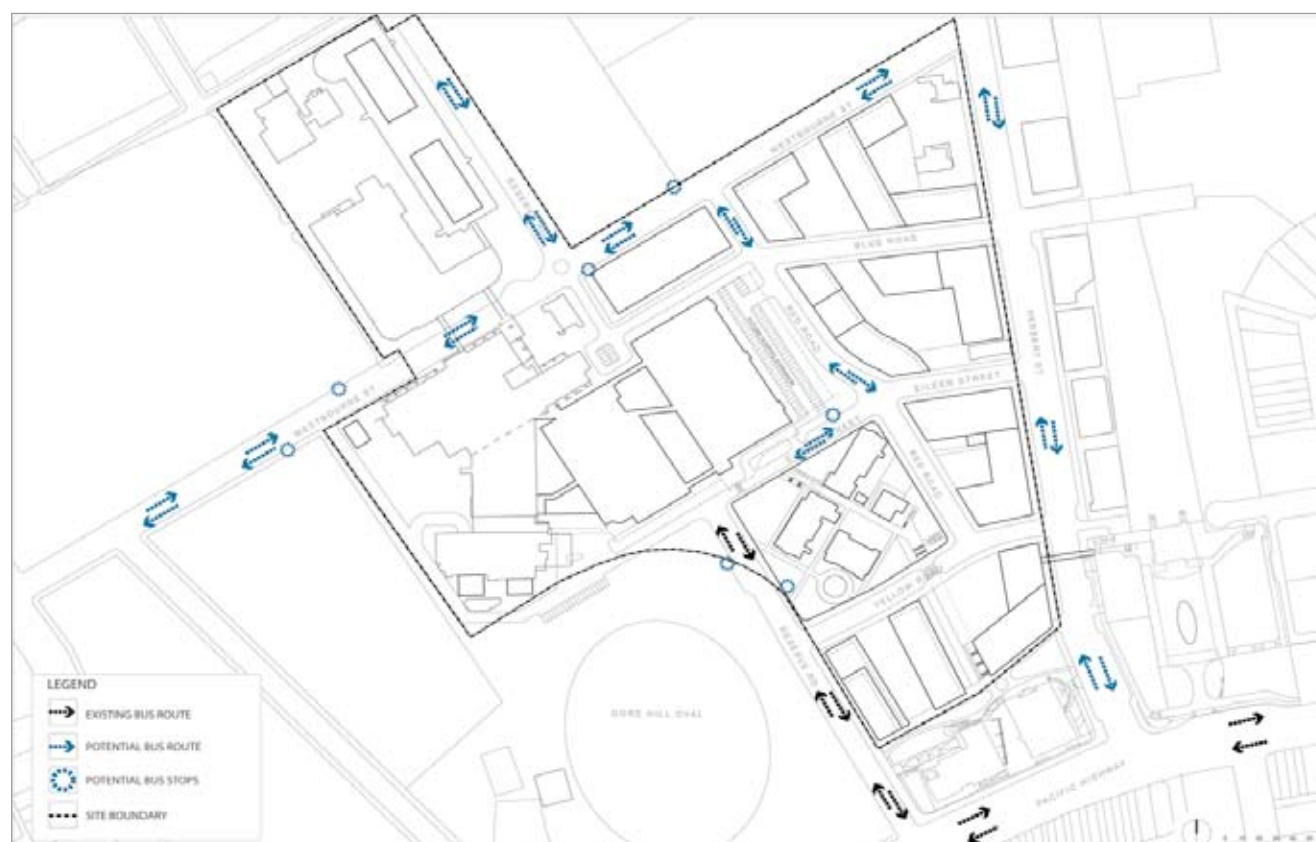


Figure 76: Illustrative Public Transport plan, prepared by Cox Richardson (Ref. C5.)

The combination of improved pedestrian access to the railway station, improved buses services into and around the campus and constraints on parking on the site will substantially enhance use of this significant existing, and additional future public transport capacity.

A 15% reduction in day time car usage for the hospital has therefore been targeted. This will be achieved through increased opportunities for employees to live locally, through more convenient and secure public transport access and the variety of other initiatives (e.g. car sharing staff rail ticketing) detailed in the Initial Transport Management and Accessibility Plan included at Appendix 8. A particular advantage of fostering public transport use by health related employees is the potential to increase public transport patronage outside of peak periods, when the public transport system has the greatest amount of spare capacity.

Constraints on parking for office employees in the Mixed Use Zone will mean that only about 22.5% of employees would travel by private car, compared to the 62% that would do so if RTA unconstrained parking rates of 1 parking space per 40m² of floor area were applied. This will result in substantial use of public transport.

RTA surveys of residential development have found that health related employees tend not to use their cars for travel to/from work. Many choose to live in such locations in order to be able to walk to/from work or public transport. Location of high density residential development on the site will therefore also reduce car dependence and encourage public, or non-vehicular transport use.

The Metropolitan Strategy provides for continued strong growth in the global economic arc from the airport through the city to Macquarie Park. Nationally, public transport services will need to be upgraded as necessary to accommodate the resultant increase in travel demand. This will be needed irrespective of the future of the RNSH site. However, the Concept Plan for the site will contribute to the viability of required service upgrading.

8.4.4 SUMMARY AND CONCLUSIONS

The site is very well served by public transport. One of the main transport focuses of the project is to provide a grid shaped road system and re-opening of existing dead end streets, to open up the site, making it more permeable to traffic and pedestrians, but managed to deter through traffic. The project seeks to take advantage of the proximity of St. Leonards Station through reduced parking provision. An initial Transport Management and Accessibility Plan to plan for and ensure sustainable travel outcomes for the project will be prepared and has been completed and implemented through subsequent approvals.

Intersection analysis results have shown that intersections within the vicinity of the site will operate satisfactorily or no worst than previously, upon completion of the project and the already approved Gore Hill Technology Park. Although traffic levels will increase on Pacific Highway, for the most part they will not reach levels experienced prior to the opening of the Gore Hill Freeway.

8.4.5 EMERGENCY SERVICES

The routes of emergency helicopters and ambulances are not proposed to change. The current helicopter pad is on top of the Douglas Building, the ground floor of this building being emergency.

It is proposed to move emergency to the new adjacent acute building. The helicopter pad will remain on the roof of the existing Douglas Building and the approach route will remain from the south across Gore Hill Oval, with all flights from the north continuing diverting east around the Forum Building or west around the broadcast tower.

All ambulances currently approach via the Pacific Highway. Again it is proposed that this continue. The proposal under the Concept Plan to reopen Reserve Road and create new roads throughout the campus will allow further options should the ambulance service and hospital believe this to be necessary or preferable.



Figure 77: Emergency ambulance, fire unit & helicopter plan (Flight Plan), prepared by Cox Richardson

8.5 HERITAGE

Godden Mackay Logan have prepared detailed archaeological investigations (see Appendix 5) and a Heritage Impact statement (HIS - see Appendix 10) in relation to the Concept Plan. Dominic Steele Consulting Archaeology has prepared an Aboriginal Archaeological and Cultural Heritage Assessment (see Appendix 9) The following analysis is drawn from these documents.

8.5.1 ARCHAEOLOGICAL POTENTIAL

The Archaeological Assessment (Non-Aboriginal) prepared by Godden Mackay Logan (see Appendix 5) concludes that:

“The potential historical archaeological resource at Royal North Shore Hospital is likely to relate primarily to the pre-Hospital early twentieth century suburban subdivision and cottage development of a portion of the site, and the truncated and disturbed landscape, services and ancillary building remains of the early Hospital phases of the site. There is a slight chance that deeper remains from Gore’s early nineteenth century occupation of the site could be retained in some areas, but their location and anticipated degree of survival is very uncertain. In general, the anticipated archaeological resource is unlikely to be of substantial heritage significance. Some remains, however, such as those associated with Gore’s occupation, or intact deposits relating to Building 7 (1910) and Building 9 (1908) (Lanceley family occupation) could be of Low—Medium Local significance if they have survived intact in undisturbed deposits. This, however, is unlikely. None of the potential archaeological resources are anticipated to be of State or High Local significance, and none, based on the assessments above, would be of sufficient integrity to warrant open area research archaeological investigation or conservation in situ.”

The Archaeological Assessment (Aboriginal) prepared by Domonic Steele (see Appendix 9) identified a low Aboriginal archaeological potential on the site.

8.5.2 STATUTORY LISTING

The Royal North Shore Hospital site is not included in whole or part on the State Heritage Register (SHR), or included in whole or part on the heritage schedule of Willoughby LEP 1995, or any other planning instrument. Two buildings within the Royal North Shore Hospital are listed on the Department of Health State Agency Heritage Register established under Section 170 the Heritage Act. They are the:

- Regional Diabetic Services Building (Building 7); and
- Lanceley Cottage (Building 9).

There are no statutory heritage listings that identify any archaeological relics or archaeological sites within the Royal North Shore Hospital and it is understood that the site has not been previously subject to an archaeological assessment. Notwithstanding this absence of specific archaeological statutory listings, historical archaeological remains over 50 years old surviving on the hospital site would be defined as relics under the Heritage Act.

8.5.3 HERITAGE IMPACT

The Concept Plan was prepared following detailed assessment of the significance of the various elements of the site by Godden Mackay Logan.

Godden Mackay Logan’s key recommendation was that all of the original hospital grouping be kept, including associated landscaping, circular driveway and spaces between buildings. This grouping has been retained in its entirety as a discrete heritage precinct (Precinct 3) that forms the central focus of the Concept Plan.



Figure 78 : Original Hospital Grouping

The two historic cottages fronting Herbert Street (Buildings 7 and 9) and their landscaped setting, as well as the former mortuary, where also identified by Godden Mackay Logan as being of heritage significance, and are retained within the Concept Plan, as is the chapel, which Godden Mackay Logan found to be of undoubted social significance.



Figure 79 : Herbert Street Frontage of the 'North Sydney Brick and Tile Co Building (Bldg 7 - Left) and Herbert Street Frontage of 'Lanceley Cottage' (Bldg 9 - Right)



Figure 80: Heritage – buildings, prepared by Cox Richardson

The concept plan also retains/reinstates, as far as possible, the alignment of the historically significant Reserve Road, and elements of early and original landscaping.

The Boiler House chimney (assessed as being of High significance at the local level) is proposed to be demolished, as are a small number of heritage buildings of Moderate-to-High significance and some areas of early landscaping. The removal of these elements is an adverse heritage impact. However, the degree of impact will be mitigated by archival recording of these elements and various opportunities for interpretation. Furthermore, given that the association of the site with health care uses is fundamental to its heritage significance, the demolition of some heritage buildings needs to be balanced with the need to maintain a hospital that is functional and efficient in the long term.

The construction of new buildings of increased scale and bulk in the vicinity of heritage buildings also has the potential to have an adverse heritage impact. However, this can be mitigated through the massing materials and details of new buildings at project application stage.

While the proposed works also have the potential to disturb or destroy potential archaeological relics, these relics have been assessed as not warranting in situ retention should they be exposed. Their archaeological investigation/excavation will, in fact, help to realise their research potential.

8.5.4 HERITAGE MANAGEMENT / MITIGATION MEASURES

The following heritage management / mitigation measures recommended by Godden Mackay Logan comprise part of the Concept Plan:

Built Elements

- Conservation Management Plans will be prepared in accordance with Heritage Office guidelines prior to the lodgment of any 'project applications' for the use or any works to the following items:
 - the 'Heritage Precinct' comprising the 'Original Pavilion Wing Building' (Building 29), the 'Second Pavilion Wing Building' (Building 30), the 'Vanderfield Building' (Building 31), the 'Ansto Building' (Building 32) and 'Orthotics/Dietetics Building' (Building 33).
 - The 'North Sydney Brick and Tile Co Building' (Building 7) and 'Lanceley Cottage' (Building 9)
- Buildings identified in the HIS as being of Moderate-to-Exceptional significance will be archivally recorded in accordance with Heritage Office guidelines prior to any demolition
- Elements or fabric of potential heritage significance contained within buildings to be demolished will be salvaged and stored on site for potential future re-instatement of missing components and/or for interpretation purposes in retained buildings or sections of buildings.
- Archival recording, in accordance with Heritage Council standards, will be undertaken for the whole site prior to the commencement of work.

Landscape Elements

- Conservation Management Plan/s will include landscaping policies prepared by a heritage landscape architect and a palette of plant species appropriate to the heritage values of the Heritage Precinct and other retained items.
- A survey of detail elements, such as significant sections of sandstone kerbs and pathways, will be undertaken, and recorded on a keyed plan to ensure that their specific location is identified, and policies can be developed accordingly.

Movable Heritage

- A Conservation Management Plan (CMP) for items of movable heritage at the RNSH site will be prepared to guide the future conservation management of identified items of potential movable heritage.

Site Interpretation

- An Interpretation Strategy will be prepared to detail the ways in which the heritage significance of the site can be interpreted.
- Existing building and street names will be retained for those buildings and streets to be retained.

The Road Network

- Historic kerbing/guttering will be identified and retained for use in appropriate locations elsewhere on the site.

The Archaeological Resource

- An excavation permit under Section 140 of the Heritage Act will be obtained for those areas identified in the Archaeological Assessment prepared by Godden Mackay Logan as having Medium (or higher) archaeological significance so that archaeological monitoring, recording and documentation can occur during site works.

8.6 URBAN DESIGN AND BUILT FORM

8.6.1 TOWNSCAPE

The proposed height and scale of development proposed for the RNSH site is compatible with the immediate townscape context of St Leonards. Proposed heights are reduced around major public open spaces on site, and around the adjacent Gore Hill Park. The dominant skyline building mass will still be the existing Forum development on the opposite side of Herbert Street, and nearby commercial developments to the east. The proposed St Leonards skyline, as it compares to those of North Sydney and Chatswood is illustrated at Figure 81.

8.6.2 STREETSCAPES AND VIEW CORRIDORS

The proposed street system is designed not only to facilitate a direct and efficient vehicular and pedestrian circulation network, but to contribute to place making in the public domain. To this end, the significant view corridors from the site and within the site have been enhanced. In particular,

- Views toward the Sydney CBD along Reserve Road are maintained along this important heritage axis
- Yellow Road establishes inviting views into the site from Herbert Street through to Gore Hill Park
- Eileen Street similarly invites arrival from Herbert Street with views right through to Gore Hill Cemetery landscaping
- Red Road provides both long-distance views to the south toward the Sydney CBD, as well as middle ground views of the heritage landscaping on Precinct 3
- The proposed plaza area on Precinct 4 continues the public walkway axis from the Pacific Highway to the heritage landscaping of Precinct 3. This is reinforced by the proposed continuation of the Canary Island Palm planting along this visual corridor.
- By opening up the corner site of Westbourne Street and Herbert Street, views into the curtilage of the two retained heritage properties are provided.
- The combined effect of the Westbourne Street corner park and the strong through-views created by Blue Road, Red Road and Yellow Road is to enhance Herbert Street as a significant streetscape.

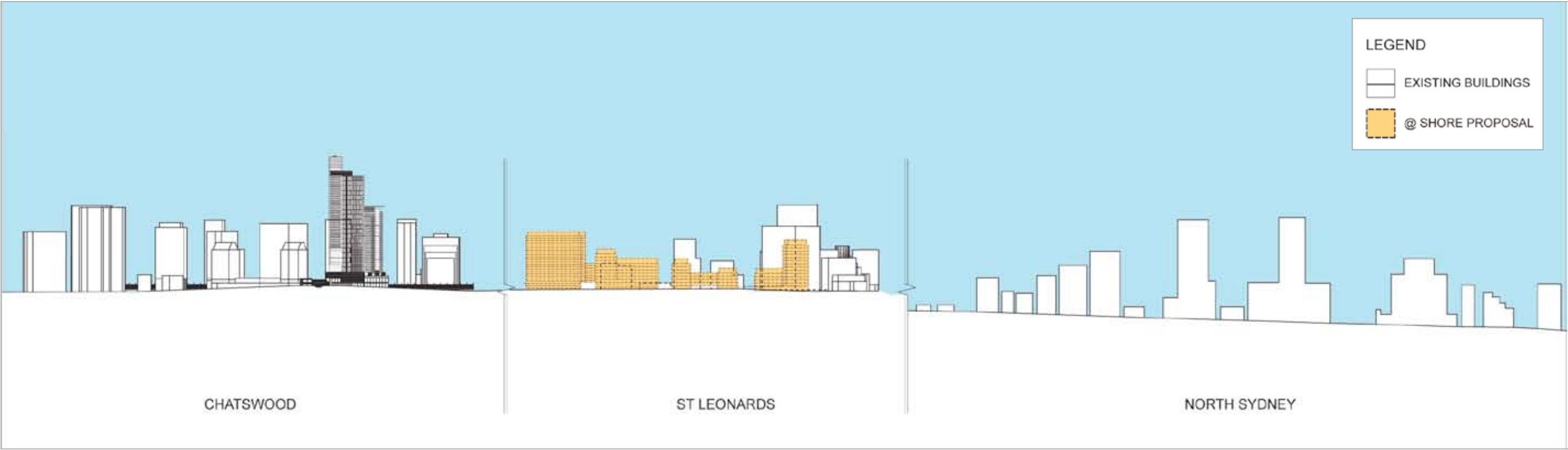


Figure 81: Lower North Shore CBD Skyline Study



Figure 82: Visual impact study - View North on Herbert Street



Figure 83: Visual impact study - North East from cricket pitch in Gore Hill Oval



Figure 84: Visual impact study - View North on Reserve Road



Figure 85: Visual impact study - North east from southern end of Gore Hill Oval



Figure 86: View between Precinct 4 and adjacent "Space 207" Development



Figure 87: Views and Vistas From Site, prepared by Cox Richardson

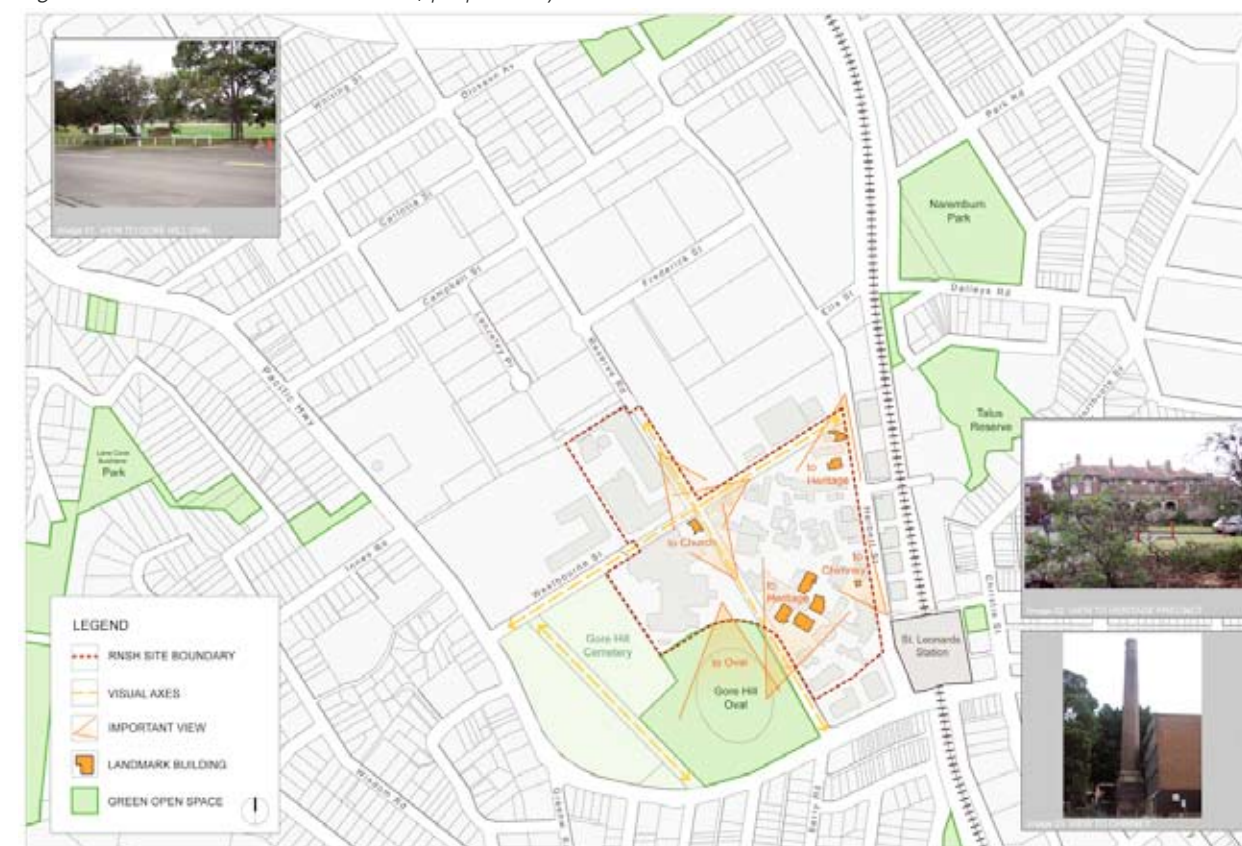


Figure 88: View analysis – views in and around site, prepared by Cox Richardson

8.6.3 PUBLIC/PRIVATE DOMAIN

Whilst the RNS campus is currently publicly owned, general public access to much of the site is limited. Public access will be maintained to the main hospital facilities and the proposed rationalisation of surplus public land will also create significant new public spaces, enhance and protect the public domain and provide new pedestrian connections through the site to the Gore Hill Oval, St Leonards Railway Station, North Sydney TAFE and north south links to other employment areas.

8.6.4 SAFETY AND SECURITY

An important consideration in the proposed Concept Plan is the creation of a safe and secure environment. Strategies adopted to ensure that pedestrian and cycle routes through the site are safe and secure are as follows:

Good visibility and surveillance

A significant strategy in the urban planning has been a high degree of permeability and visibility created by the street pattern. This ensures that pedestrians and cyclists moving to and from the site and between facilities can do so along highly visible circulation paths.

Street frontage activation

The shared ways proposed for the southern end of the site (Yellow Road and Red Road south) are the focus of the highest amount of pedestrian and cycle traffic, and are activated at street frontage level by proposed retail and commercial uses. This street activation will maximize actual and perceived security and safety of pedestrians and cyclists moving between the station and the proposed Hospital entry. Given the extended hours of hospital staff that will use this route, this is a most important consideration.

Lighting

The safety and security of pedestrians and cyclists on site will be enhanced by extensive street lighting – with relatively high levels of illumination and uniform coverage, particularly along key pedestrian routes. Potentially dark and obscure areas have been avoided in the street pattern, and the proposed activated street edges contribute spill lighting from retail and commercial building uses.

Pedestrian and Cyclist Priority

The proposed road layout achieves an effective separation of St Leonards vehicular through-traffic from traffic accessing the hospital and other development site Precincts. This greatly contributes to both vehicular and pedestrian/cycle traffic safety and security. Through the proposed shared ways, pedestrians and cyclists are given clear priority along the main desire lines both within the RNS site and those linking to adjacent sites

8.7 SUNLIGHT AND DAYLIGHT ACCESS

The Concept Plan is fundamentally configured to ensure adequate solar access to existing and proposed public open spaces all year round, by adoption of the provisions of the Central Sydney Local Environment Plan as a solar access benchmark. This benchmark is considered appropriate for the project by virtue of the location of the site within a high density urban environment. Height controls along the western edge of Herbert Street have also been developed to ensure that key living spaces within adjacent residential developments to the east are protected from excessive overshadowing.

As discussed at Section 7.9, solar access is maintained at the following key locations:

Gore Hill Park

No additional overshadowing of the playing surface of Gore Hill Oval between 10.00 am and 2.00 pm on any day of the year. This will be achieved by all buildings being located below the following sun access planes.

Major On-Site Public Open Spaces

Each of the following major on site public open spaces will maintain a minimum area of 40% in direct sun, averaged between the hours of 12.00 pm and 2.00 pm year round Heritage Precinct 3; Precinct 7 Park and Precinct 4 Plaza.

Properties on the eastern side of Herbert Street

Key living spaces within residential developments on the eastern side of Herbert Street will not be overshadowed between 10.00 am and 3.00pm above AHD 92. This level has been set on the basis that such shadowing does not impact in excess of 20% of existing property key living spaces, and is consistent with maintaining this limitation of impact on future residential buildings allowable under the current Willoughby City Council LEP. The 20% guideline (for existing residential key living spaces impact) is taken from Willoughby City Council DCP 15.

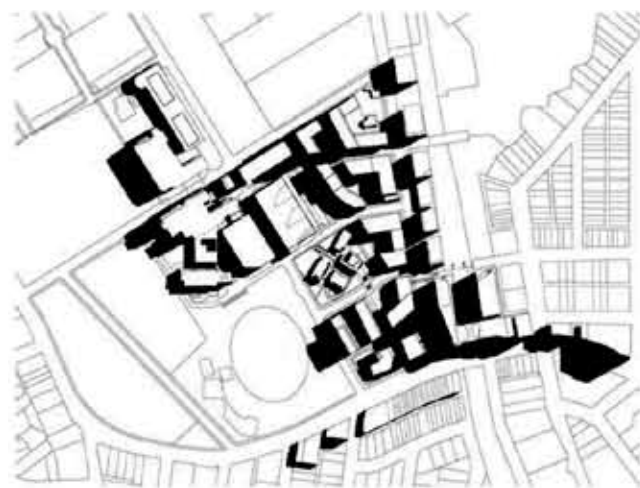
Existing shadow conditions on the winter solstice are indicated at Figure 89, and the proposed overshadowing and the winter solstice and equinoxes, as indicated at Figure 90 and 91 respectively.



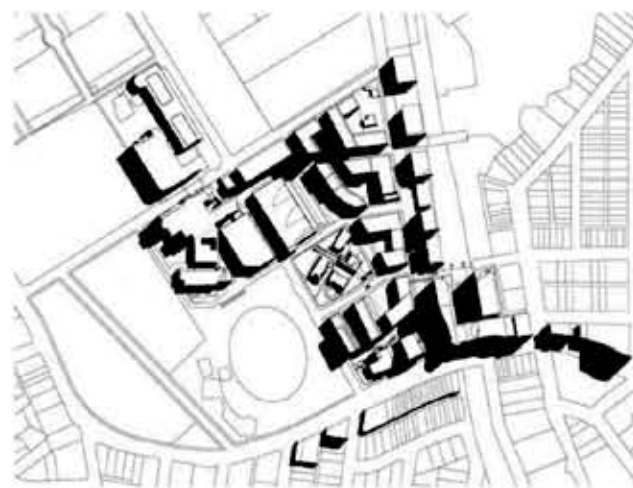
Figure 89: Existing overshadowing - Winter Solstice, prepared by Cox Richardson



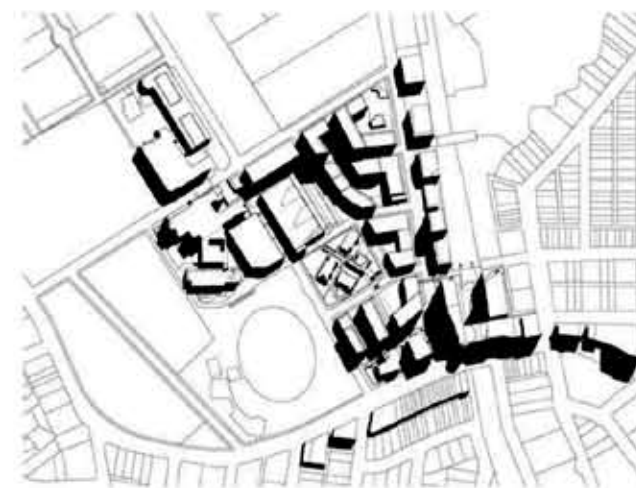
Figure 90: Proposed overshadowing – Winter Solstice, prepared by Cox Richardson



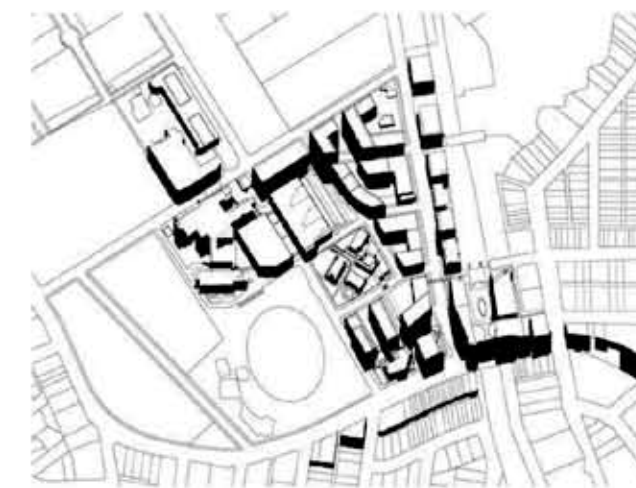
SHADOWS AT 9 AM, 21 MARCH



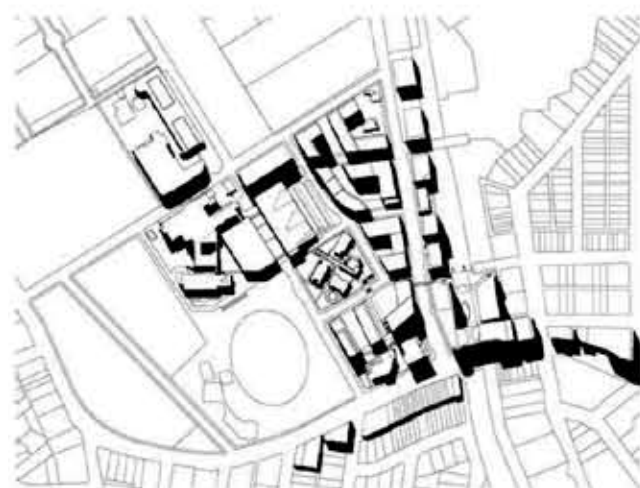
SHADOWS AT 10 AM, 21 MARCH



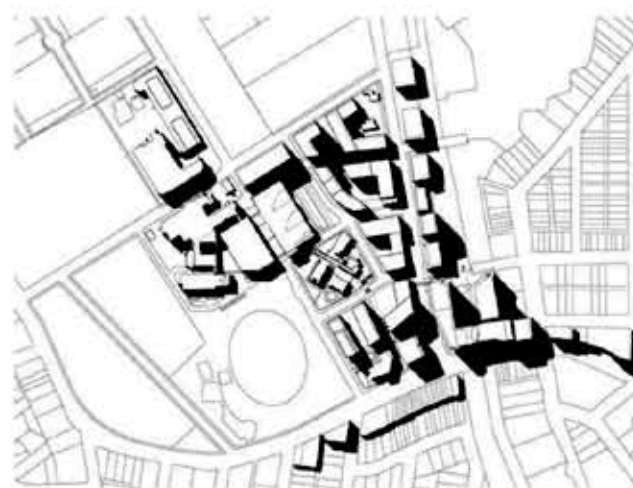
SHADOWS AT 11 AM, 21 MARCH



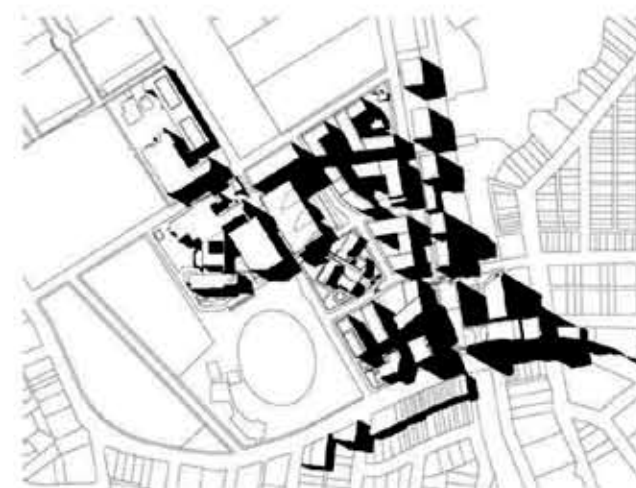
SHADOWS AT 12 PM, 21 MARCH



SHADOWS AT 1 PM, 21 MARCH



SHADOWS AT 2 PM, 21 MARCH



SHADOWS AT 3 PM, 21 MARCH

Figure 91: Proposed overshadowing – Equinox, prepared by Cox Richardson

8.8 RESIDENTIAL AMENITY

The areas proposed for residential development are generally located toward the quieter northern end of the site, with student / nurses accommodation and medi-hotel uses generally concentrated toward the more active southern end of the site. Underlying this approach are the following strategies to maximise residential amenity:

Maximize access to distant views from the higher section of the site for residential users

Maximize access to views over Gore Hill Park for student and nurses accommodation and medi-hotel type uses

Residential developments on site are largely shielded from significant train noise impacts by existing dense development on the eastern side of Herbert Street, and are all located well away from the proposed helipad.

Residential areas of the site are proposed to the north of the site, away from the Pacific Highway evening noise sources and enjoying high levels of solar access

Proposed residential areas of the site enjoy simple access and direct sight-lines to public open spaces

All proposed residential areas are within close walking distance of the station, existing and proposed retail shops

8.9 NOISE

Potential noise sources effecting the site include traffic on the Pacific Highway, trains on the North Shore Railway Line and helicopters and ambulances serving the hospital.

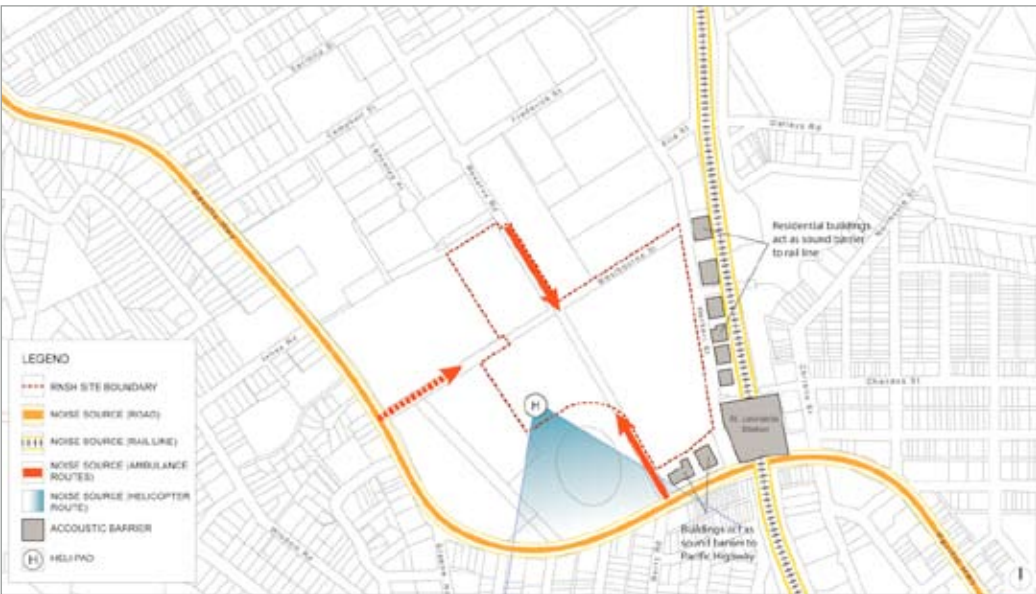


Figure 92: Existing noise source, prepared by Cox Richardson

Bassett Acoustics have prepared a noise report (see Appendix 11), which considers the ambient noise levels that were continuously monitored for a period of seven days at a location within the hospital campus to the north of Building 10. Based on these measurements and the consideration of relevant noise criteria detailed in their report, Bassett Acoustics have identified appropriate design noise criteria for the project.

The Noise Report specifies 'satisfactory' and 'maximum' noise levels to be achieved within the various components of the project, and compliance with all stated maximum noise levels will be documented at Project Application stage.

8.9.1 INTERNAL HOSPITAL NOISE

To protect hospital patients from helicopter noise intrusion from emergency flights a maximum noise criterion of 74 dB(A) is adopted. Despite exceeding the levels recommended in AS2021:2000 Acoustics – Aircraft Noise Intrusion – Building Siting and Construction, a design noise level of 55 dB(A) for wards, theatres, treatment and consulting rooms will minimise speech interference and sleep disturbance, and a design noise level of 60 dB(A) will be used for office areas. These recommendations equate to a 5 dB(A) relaxation of the criterion in AS 2021 and are justified on the basis that the flights are an essential service to the hospital.

8.9.2 EXISTING AND PROPOSED RESIDENTS

As there will be no significant changes to helicopter or ambulance operations arising from the project, (see Section 8.3.5) there will be no additional adverse effects upon nearby residents from these sources. Proposed new residential receivers within the site have been located so as to maximise the distance from the helipad and the ambulance route and as such are no more likely to be affected by noise from emergency vehicle movements than nearby existing residents. However at project application stage it will be necessary to give careful consideration to the orientation and layout of the residential buildings to achieve the specified standards.

8.10 SOCIAL AND ECONOMIC IMPACT

The project will facilitate the significant improvement of existing regional medical facilities on the site and create significant opportunities to establish new businesses/employment consistent with the identified role of St Leonards as a specialised centre for medical related employment and technology. It will also create opportunities for a range of associated educational, temporary accommodation, research and other development, along with a significant supply of housing to assist in the creation of a dynamic mixed use precinct and the attainment of the identified housing targets for the region. Limited retail development will also serve the existing and incoming worker and resident populations, and create activity and night lighting along identified pedestrian routes and within new public open spaces. A range of child care centre, community meeting and other community facilities will also cater to the broader social and economic needs of the precinct.

8.10.1 HOUSING AFFORDABILITY

The Metro Strategy recognises that some areas of Sydney have difficulty in attracting workers because of high housing prices and rents, leading to skill shortages in specific sectors or extended journey to work distances and travel times (see Section 8.2). Health care is an industry that is specifically identified.

This is a particular issue for RNS Hospital, which employs large numbers of medical support staff, including some essential lower paid workers, and is located in one of the more expensive residential districts in the country. The proposed provision of not less than 10,000m² of housing for students or lower income hospital/health employees, and the implementation of a 'TMAP' (see Section 8.3.3) to facilitate improved public transport options, will combine to provide lower cost transport/housing options for hospital staff and students.

The proposed development of a significant supply of private sector residential flat development will also make a significant contribution to the attainment of the Metro Strategy housing targets for the locality. Being one of only a limited number of large sites capable of supporting significant numbers of additional dwellings, a significant density of development on the site will reduce the likelihood of future demand in this sort after location outstripping limited supply. The Concept Plan will therefore have a positive impact upon affordability, both for workers and existing and future residents.

8.10.2 HOUSING FOR AN AGEING POPULATION

The Concept Plan will facilitate the development of a significant supply of housing within a short, relatively level walk of the Hospital, associated medical facilities, St Leonards bus and rail station, the St Leonards town centre and the range of retail, recreational, service and community facilities existing within the Town Centre and proposed within the site. Furthermore, all proposed housing will be in the form of multi-level apartment buildings, such that the majority of housing will be single level apartments served by elevators, with short, level access to all of the above facilities. Such housing will be very well suited to an ageing population, regardless of whether it is exclusively designed for that demographic. However, with not less than 40% of all apartments being designed to be 'adaptable' to meet the specific needs of less mobile people, this significant supply of new housing will include a significant proportion that is specifically suitable for less mobile older people.

8.11 CONSTRUCTION AND WASTE MANAGEMENT

Construction Management

Following design of the proposed buildings, fully detailed Construction Management Plans will be submitted for approval with the project application for each building. These plans will show all stages of construction including, details of building materials and waste management during the construction phase, traffic movements and management during construction. Associated effects on existing amenities (e.g. noise, dust etc) will be addressed and amelioration measures provided where appropriate.

These plans will adopt, as minimum standards, all the measures included in the recently approved Construction Management Plan for demolition of the Maternity Hospital that was recently approved by Willoughby City Council (see Appendix 12). This plan details construction management measures in relation to:

- Final Physical Character and External Appearance
- Demolition
- Removal of Hazardous Substances
- Security
- Construction traffic
- Excavation and earthworks
- Transport of materials on and offsite
- Waste disposal
- Construction compound (including storage of chemicals and hazardous materials, onsite amenities, storage of plant and equipment)
- Hours of Work
- Environmental Management Safeguards
- Construction Areas
- Plant and Equipment
- Waste Management and Contamination
- Erosion and Sediment Control
- Vibration
- Noise
- Air Quality
- Site clean up and landscaping
- Community Consultation

Hospital Waste Management

The proponent currently implements an ISO 9001 certified Waste Management and Resource Recovery Policy at RNSH (see Appendix 13), and is committed to develop, implement and maintain a waste management and resource recovery system throughout the hospital, which:

- Avoids waste production through purchasing strategies, reuse, maximised recycling and proper handling and disposal of the remaining refuse.
- Complies with all relevant legislation relating to waste and resource recover, environmental protection, and occupational health and safety, NSW Government Waste Reduction and Purchasing Policy, NSW DOH Infection Control Policy (02/45) and the NSW DOH Waste Management Guidelines for Health Care Facilities, Aug. 1998.
- Is based on measurable objectives and continual improvement methods, and will provide a safe work environment and protect the environment from damage.

Non-Hospital Waste Management

Following detailed design of the hospital buildings, a fully detailed Waste Management Plan prepared in accordance with the following objectives will be submitted for approval prior to occupation of the building:

- Maintain the standards set by relevant professional and statutory bodies, ISO 14001:1996, ISO 9001:2000 and other regulatory/legislative requirements
- Determine and meet the waste management requirements of all departments through structured and continued feedback
- Foster commitment from all staff and management to actively participate in waste avoidance, reduction, reuse and recycling programs
- Provide a continuing waste and resource management education program for staff to increase awareness of waste minimisation principles, Occupational Health and Safety issues and quality improvements ethics
- Establish and maintain effective mechanisms to monitor, review, analyse and evaluate the waste management system and enable its continual improvement
- Provide regular reports on the progress to Area Corporate Services Management, Hospital Executive Directors and Area Corporate Services Department Heads
- Establish systems for implementing and reporting progress of the NSW Waste Reduction and Purchasing Policy
- Develop benchmarking partnerships with facilities within and beyond Northern Sydney Health
- Provide a point of contact for Area Corporate Services quality improvement activities
- Promote a working relationship with preferred suppliers of Area Corporate Services and products and services
- Manage the services within available resources
- Implement the Waste Management and Resource Recovery Operating Procedures and Work Instructions, throughout each facility to minimise the environmental impact of waste treatment and disposal.

Waste Management Plans prepared in accordance with all relevant Council and EPA requirements will be submitted for approval with the project applications for each non-hospital building.

8.12 DRAINAGE

The drainage concept for the project involves four separate catchment, that will be drained as indicated below.

■ Western Catchment

This area comprises the land to the west of Reserve Road and south of Westbourne Street and forms part of a larger 14.6 ha catchment. It will be drained by a piped system into new rainwater storage tanks in Gore Hill Oval. Additional flows will be detained by Gore Hill Oval and then piped through the southern end of the site to connect to the Herbert Street drainage system, as currently occurs.

■ Herbert Street South Catchment

This area comprises the land to the south of Blue Road and east of Reserve Road to Herbert Street, and forms part of a larger 22.4 ha catchment. Drainage will connect to the Herbert Street drainage system through a series of main storm water lines constructed beneath the new roadway system. The southern area of this catchment will connect to the new storm water line that was recently constructed behind the buildings fronting the Pacific Highway.

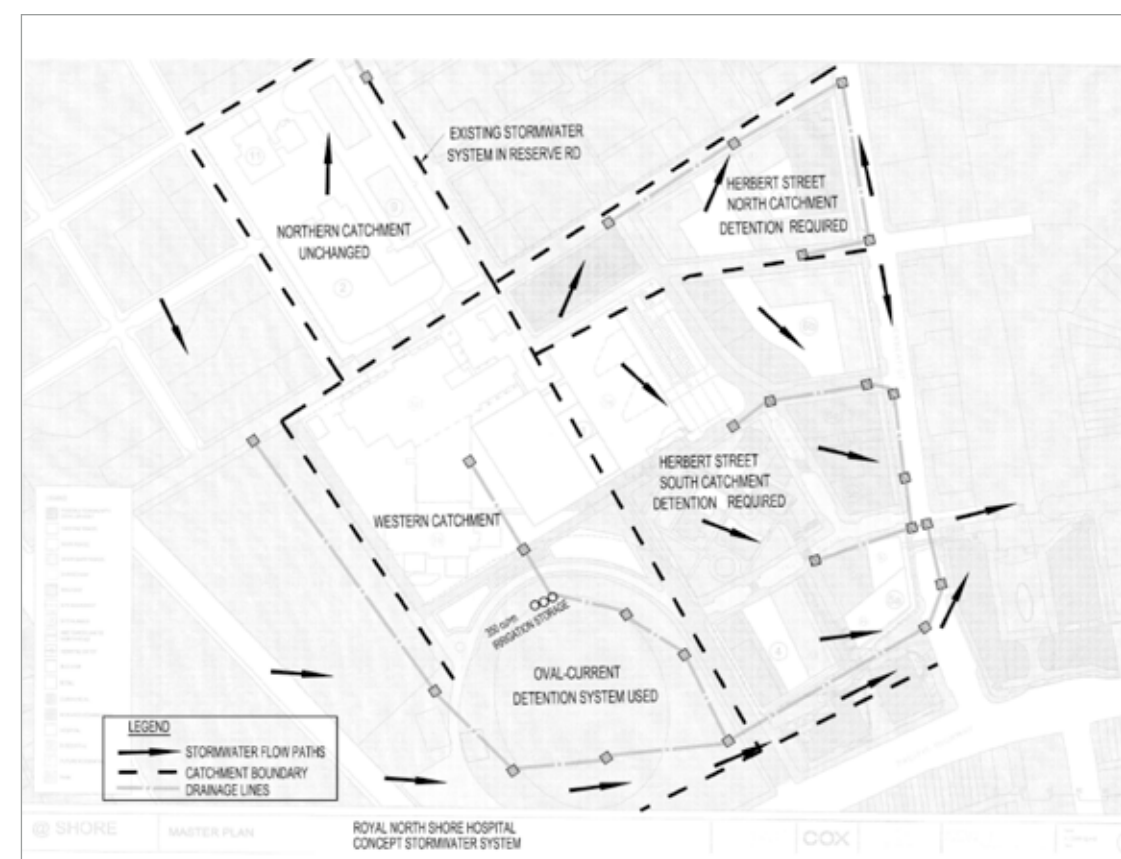


Figure 93: Concept Storm Water System, prepared by Taylor Thompson Whitting

■ Herbert Street North Catchment

This area comprises the northern end of the site from Blue Road to Westbourne Street, and east of Reserve Road to Herbert Street, and forms part of a larger 9.4 ha catchment. Drainage will be by a piped system below Westbourne Street and Blue Road, connecting to the drainage system that runs north in Herbert Street.

■ Northern Catchment

This catchment contains the North Shore Private Hospital and car park sites, and will be unchanged by the redevelopment.

An analysis of the existing system will be undertaken for various storm events to determine the existing system capacity, and the impact of any additional runoff from the above catchments. Any shortfall in downstream capacity will be offset by either storm water reuse or on-site detention. A comprehensive Drainage Co-ordination plan will be prepared for the entire site to demonstrate how the separate development of each precinct will be co-ordinated across the site. Detention is expected to be achieved predominantly by separate basement storm water storage tanks within each precinct. Details of reuse and detention infrastructure will be fully documented in accordance with the Willoughby City Council's standard requirements in the project applications for individual buildings.

8.12.1 WATER SENSITIVE URBAN DESIGN (WSUD)

Discussions with Council have indicated that they would be prepared to offset possible detention requirements with the use of WSUD principles on individual sites. WSUD principles will be used with the provision of rainwater reuse tanks for irrigation requirements on each site. Additional reuse activities for water use in cooling towers, and possibly toilet flushing and laundry water will be investigated.

Council has indicated their preference for approximately 350m³ storage for irrigation purposes on the Gore Hill Oval site, and the Statement of Commitments at Section 9n includes the installation of storage tanks of at least this capacity to supplement the current detention provided by the oval.

We understand that a Greenstar rating for Hospital buildings will be implemented in the future. The Hospital will comply with the rating requirements in force at the time of its final project approval.

8.13 UTILITIES AND SERVICES

Various utility services will require relocation, expansion or alteration to accommodate the project.

8.13.1 ENERGY AUSTRALIA

Energy Australia has advised that there is insufficient capacity in the local system for additional major development, including the new hospital building. In conjunction with Energy Australia, the proponent has identified potential sites that could accommodate a new zone substation. From the new zone substation 11kV cables will run to distribution substations associated with individual buildings on the site.

The new construction work over Reserve Road will require the relocation of existing Energy Australia cables out of the construction zone, via a dedicated Energy Australia cable tunnel to the east of Reserve Road, constructed as an extension of the underground car park of the new building. The cable tunnel shall be three-hour fire isolated from the building and will extend for approximately 120m. At the north and south ends of the tunnel in-ground 10m long jointing pits will be provided to make the connections to the existing cables. Energy Australia have been consulted and have given in-principle approval. The diversion works will take approximately 4 months after handover of the tunnel and before any construction work takes place within the Reserve Road carriageway. The load cycles of the transmission cables dictate that the diversion works cannot occur in summer or winter.



Figure 94: Site Services Plan, prepared by Cox Richardson

8.13.2 SYDNEY WATER

The Reserve Road construction work will require the diversion of a 500 diameter and a 100 diameter water main. Sydney Water Corporation have been consulted in both cases and have given approval in principle for the relocation and diversion of the two mains on the proviso that the continuity of water supply is not affected. As proposed by Sydney Water, the 500mm trunk main will be rerouted to the west along Westbourne Street and then to the east and south of the existing hospital's boundary prior to connecting to the 500mm main in Reserve Road. The new mains will be in place prior to the section of the 500mm and 100mm water mains being made redundant.

8.13.3 AGILITY GAS

The Reserve Road construction work will require the diversion of a high pressure and a low pressure gas main. Both gas mains will be relocated and amplified prior to commencement of work on the site. Agility has been consulted in both cases and has given approval in principle for the relocation and diversion of the two mains on the proviso that the continuity of the gas supply is not affected. As proposed by Agility, the gas mains will be rerouted around to the east along the new public roads that will be created as part of the sub-division of the existing properties prior to reconnection to the existing gas mains. The new mains will need be in place prior to the section of the existing gas mains being made redundant.

8.13.4 TELSTRA

Telstra have advised that the existing cabling may be reused where appropriate but that for the new hospital building and major new commercial subscribers, new network connections would be provided from St Leonards telephone exchange nearby. These are likely to be fibre run in existing ducts along the Pacific Highway and then via new dedicated conduits to the respective buildings.

8.13.5 BROADCAST AUSTRALIA TRANSMISSION TOWER

Liaison with Broadcast Australia, the owner of the transmission tower located to the north-west of the site has isolated its concerns to potential electro magnetic interference to new and existing hospital, research and residential buildings to the north of the site. Guidelines to minimise this are currently being discussed with Broadcast Australia.

8.14 CONTAMINATION

A preliminary contamination assessment of the site was carried out in 2004 (see Appendix 15). The investigation was for the main hospital area to the east of Reserve Road. Included in the investigation was a desktop review of available records and limited sampling and laboratory testing of the site.

Based on the limited data, it is unlikely that widespread soil contamination is present on the site. Some local areas of contamination were identified that will require remediation. However given the site history and limited contamination results, it is unlikely that contamination will pose any significant impediment to hospital, residential or commercial use. Additional testing in accordance with EPA guidelines will be required to determine the extent of remediation works required. This will be undertaken, in addition to any resultant remediation, and validation thereof that may be required, prior to the commencement of building work.

8.15 GEOTECHNICAL

A preliminary geotechnical investigation has been carried out by Coffey (see Appendix 16). The subsurface conditions indicated by limited boreholes indicated typical conditions that would be expected in this area. There should be no significant geotechnical constraints to the proposed developments. Further testing will be required during detailed design at Construction Certification stage.