

Health Infrastructure

**Royal North Shore Hospital
Clinical Services Building**

Transport Report

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1 Introduction

1.1 Project Background

Arup was commissioned by Health Infrastructure (HI) to prepare a transport assessment as part of a Section 75W Application for the Clinical Services Building (CSB) at the Royal North Shore Hospital (RNSH). The CSB will house services currently located in the Douglas Building and provide improved connectivity to the new Acute Services Building (ASB), currently under construction. The CSB should be viewed as a component of the overall site development in terms of car parking provision, forecast traffic generation, loading requirements and public transport accessibility. The only transport requirement specific to the CSB is private vehicle and ambulance drop-off facilities for patients.

1.2 Description of Proposed Works

The application proposes:

- A total of 213 beds in the CSB, composed of:
 - 119 beds in the Women's, Children's and Burns Unit that are currently in the Douglas Building which are to be relocated to the CSB;
 - 34 beds in the Mental Health Unit (MHU) which were originally to be located in the ASB and are now to be relocated to the CSB; and
 - An additional 60 inpatient beds to be provided in the CSB
- An expansion of the footprint of the CSB to provide sufficient floor area to allow the Birthing Unit and Newborn Intensive Care Unit (NICU) to be located on the same floor level. This will necessitate the closure of the northern end of Red Road. This revised scheme also incorporates the Mental Health Unit (MHU) within the new CSB.

The proposed CSB now has four separate access points:

- Public access to Women's, Children's and Burns via Westbourne Street (level 2);
- Ambulance access to Women's, Children's and Burns via Westbourne Street (level 1);
- Ambulance and police access to the Mental Health Unit via the Kolling Building Access Road; and
- Front entry and public access to Mental Health Unit via Red Road.

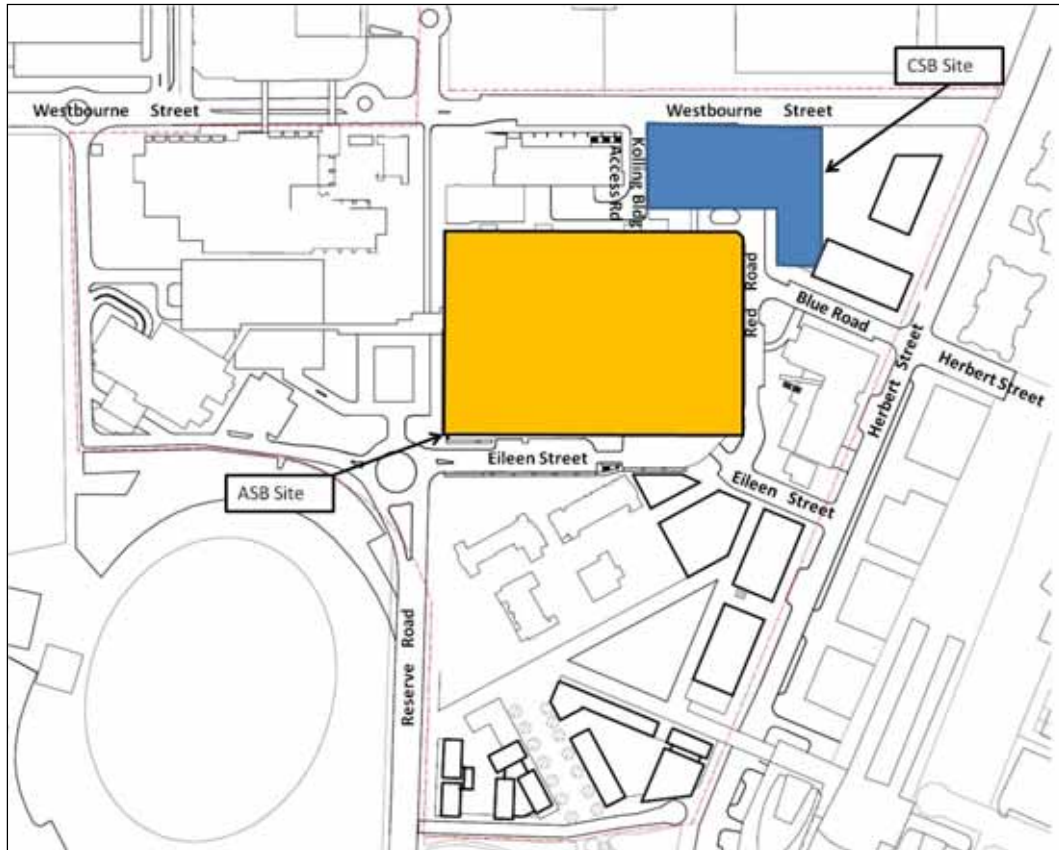


Figure 1 RNSH Site Context

1.3 Scope of Services

The following transport report analyses the transport impacts on the internal and external road network and impacts on car parking associated with the revised scheme. More specifically, it considers:

- The findings of the previous traffic studies relating to the RNSH development;
- The traffic distribution changes resulting from the closure of the northern end of Red Road;
- The transport and parking impacts associated with the additional beds in the CSB; and
- Impacts on the local pedestrian, cycling and public transport network

2 Review of Existing Documents

A number of previous traffic studies have been conducted investigating circulation, parking and traffic generation around the RNSH precinct. The key findings of these reports, which are still valid for use in this current study, are summarised in the sections below:

2.1 RNSH Proposed Masterplan – Transport Assessment (MWT, February 2006)

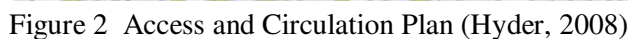
With respect to site vehicle circulation, this report makes two key recommendations relevant to this report:

- Traffic signals to be installed at the intersection of Westbourne Street and Herbert Street, when development traffic levels necessitate; and
- Entry and exit to the proposed intersections off Herbert Street (Eileen Street and Blue Road) to be left in/left out only, to avoid potential conflicts with vehicles queued from the Pacific Highway/Herbert Street traffic signals.

2.2 RNSH Transport Report (Hyder, November 2008)

Section 6.4 of the Royal North Shore Hospital Transport Report (Report no: REP.IC.CW.0001.T01, issued 11th November 2008), an appendix to the Preferred Project Report, details the future operation of Westbourne Street and Reserve Road, and is shown in Figure 2. A number of measures to restrict rat-running across the site were highlighted, including:

- Westbourne Street to operate as a bi-directional road between Reserve Road and Herbert Street (currently one way westbound);
- Through movements along Westbourne Street across Reserve Road restricted (right/left turns permitted to access public car parks); and
- Reserve Road (south) to act as a narrow one-way road along the front of the ASB



The report identified that future parking demand for the approved scheme indicated a total requirement of between 2,545 and 2,620 parking bays. The completed development will result in 2,550 on-site parking spaces which were considered to be satisfactory given the availability of alternative methods of transport with the objective to increase the public transport mode share. The report demonstrated that the hospital, by virtue of the good existing bus and rail services, already operates a minimalist car parking approach. The proposed provision of 2,550 parking spaces will support this existing policy. Based upon Willoughby Councils Parking Guidance, the hospital could request more car parking spaces than it currently provides.

3.3 Public Transport Access

The RNSH site is well served by public transport and the Metropolitan Strategy has earmarked the area for significant further development in the employment sector. St. Leonards Railway Station services both the North Shore and Northern railway lines, with between 10 and 15 services per hour passing through the station in each direction. The site is also well served by local bus access, with 13 bus routes located only a short walk from the campus.

It is an objective of the RNSH development to take advantage of the proximity of St. Leonards Train Station by reducing parking provision in new developments. The hospital already has a good service share to rail and bus, with approximately 30% of work trips to the precinct made by public transport. This can be further enhanced through a number of measures including providing good pedestrian and cycling connections and taking a minimalist approach to on-site car parking.

3.4 Pedestrian and Cycle Routes

A number of key pedestrian and cycle routes currently feed into the RNSH campus. This is reflected in the current pedestrian/cycle mode share of 7% to the site – well above the average for the Sydney region. Local pedestrian connections exist from Herbert Street to Red Road at the site of the CSB, with walking tracks around the Gore Hill Oval and through the Gore Hill Cemetery provided as routes to Pacific Highway. There is an overhead pedestrian link directly from St Leonards Station to the hospital part of the way up Herbert Street which facilitates good train and bus access.

An on-road cycleway exists on Herbert Street adjacent to the hospital campus which links St. Leonards station with Artarmon and further north to Chatswood. The proposed masterplan makes provision for a number of additional cycle routes through the RNSH campus, including providing a missing link between Westbourne Street and the Pacific Highway that was identified in the Willoughby City Council 2006 Bike Plan.

4 Traffic and Transport Analysis

4.1 Development Traffic and Intersection Operation

For the proposed amendment to the RNSH Concept Plan, traffic modelling was undertaken to determine the forecast traffic generation for the RNSH campus following the development of divestment lands.

Analysis of the future intersection performance was conducted based on these traffic generation forecasts, and are summarised in Table 2.

Table 2 Future Performance of Key Intersections (Halcrow, 2010)

Intersection	AM Peak		PM Peak	
	Level of Service	Delay (s)	Level of Service	Delay (s)
Pacific Hwy/Christie St	A	9	A	13
Pacific Hwy/Herbert St	B	16	B	21
Pacific Hwy/Reserve Rd	B	28	B	16
Pacific Hwy/Greenwich Rd	E	65	B	16
Pacific Hwy/Westbourne St (W)	A	4	B	19
Herbert St/Eileen St	B	22	C	40
Herbert St/Westbourne St (E)*	A	12	B	17
Herbert St/Frederick St	C	32	C	33

* Herbert St/Westbourne St (E) modelled to operate with traffic signals

The analysis forecasts all key intersections surrounding the site will operate satisfactorily during both morning and evening peak. Importantly, the Herbert Street / Westbourne Street intersection, which forms one of the key access routes for the CSB site, is forecast to operate efficiently at Level of Service A during the AM peak hour when the majority of staff arrive to work.

4.2 Additional Staff – CSB

It is proposed to increase the number of beds to be provided from that already approved as part of the campus masterplan by 60 additional inpatient beds in the CSB. It has been estimated that additional staff will be required to support these bed number increases.

CSB 60 Beds 15 staff AM shift, 9 PM shift and 6 night shift Total 30 staff

The start times for the shifts are as follows:

1. AM = 7am start
2. PM = 1.30 pm start
3. Night = 9.30 pm start

This staffing includes Nursing, Hotel Services and Admin staff. Based on these staffing numbers and shift time allocations, the maximum additional attendance on site will be 15 staff during the morning shift up to 1.30pm.

4.3 Parking Provision

The existing (as from April 2007) and proposed car parking allocation for the hospital as approved as part of the Acute Hospital Project Application is detailed in Table 3 below:

Table 3 Car Parking Allocation on the RNSH Site

Scenario	Staff	Visitor (inc. disabled)	Drop off/ Short stay	Other (pool cars, ambulances etc)	Total
Existing	1,672	471	38	16	2,179
Approved	1,333	1,160	27	30	2,550
Change	- 339 (-20%)	689 (146%)	11 (-29%)	14 (87%)	371 (17%)

The approved RNSH redevelopment will reduce the number of staff car parking spaces and encourage increased journey to work by public transport. This reduction in staff parking allows a significant increase in patient and visitor car parking which is currently constrained. The Director General's Economic Appraisal Report for the RNSH Concept Plan (April 2007) summarises the parking provision as follows:

"The application proposes total staff numbers to remain similar to existing levels, however the number of staff car parking spaces will be reduced. This is considered to demonstrate that the proponent has attempted to reduce the number of staff commuting to work by private vehicles. The number of visitor spaces has more than doubled, which is considered acceptable given mobility constraints of patients, and also reflects a move to increased outpatient services."

The RNSH precinct has a major car park for staff and visitors and an additional centralised car parking area is being constructed as part of the hospital works. The CSB will utilise the centralized parking facilities for all activity. The proposal includes an additional 60 beds which technically, based on Willoughby Council's Parking Guidance for health & community service developments, requires an additional 15 staff parking spaces and up to 30 visitor parking spaces.

A site plan of existing and proposed car parking is presented in Figure 3 and Figure 4.