

## Gosford Regional Cancer Centre



### PART 3A PROJECT APPLICATION TRAFFIC & TRANSPORT REPORT

- Rev3 – FINAL REPORT
- 16 November 2010



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## Document history and status

Revision	Date issued	Reviewed by	Approved by	Date approved	Revision type
00	08.10.10				OUTLINE DRAFT (FORMAT)
01	14.10.10	David Lowe	David Lowe		
02	05.11.10	David Lowe	David Lowe		Final Draft
02a	12.11.2010	David Lowe	David Lowe		Final
03	16.11.2010	David Lowe	David Lowe		Final

## Distribution of copies

Revision	Copy no	Quantity	Issued to
Rev00	1		Coffey
Rev01	1		Coffey
Rev02	1		Coffey
Rev03	1		Coffey, Architectus

<b>Printed:</b>	17 November 2010
<b>Last saved:</b>	17 November 2010 10:59 AM
<b>File name:</b>	I:\NBIF\Projects\NB11302\Deliverables\2.2 - SKM Reports\Ph 4 - Development Application\Part 3A Gosford\2130 Traffic\Gosford Part 3A Project Application Traffic & Transport Report_Rev3.docx
<b>Author:</b>	Volker Buhl
<b>Project manager:</b>	Tim Eley
<b>Name of organisation:</b>	
<b>Name of project:</b>	Gosford Regional Cancer Centre
<b>Name of document:</b>	Part 3A Project Application Traffic & Transport Report
<b>Document version:</b>	R_03
<b>Project number:</b>	NB11302.2130



## 1. Introduction

The new Cancer Centre will be developed utilising space at the south-eastern side of the existing main hospital building off Holden Street. From a traffic perspective four issues required further detailed consideration and these are now addressed by the design team:

- Parking capacity and maintaining the existing balance of supply/demand. This included confirmation of patient/staff/visitor numbers required, and on site verification of the traffic reports from previous developments.
- Access to the hospital by patients, staff & visitors.
- Vehicle and pedestrian circulation.
- Requirements of a construction traffic management plan (CTMP)

This report gives an overview of the traffic study and summarises the findings and conclusions.



## **2. Existing Traffic & Transport Conditions**

### **2.1. Overview**

The Gosford Hospital is bounded by Racecourse Road to the north, Holden Street to the east, Ward Street to the south, and Cape Street North/Beane Street West to the west. The hospital main access is from Holden Street via a ramp leading up to the main entrance. Hospital Road provides additional access to hospital facilities including a multi-storey car park. A dedicated access for ambulances leads off Holden Street near the intersection with Racecourse Road.

All roads are extensively used with on-street parking and average speed is low with the exception of Racecourse Road. The on-street parking reduces road space and some parts of the road network feel narrow and congested.

### **2.2. Racecourse Road**

Racecourse Road is a two-way, two-lane road with a 60km/h speed limit connecting West Gosford to destinations north of Gosford. On-street parking is provided on either side of Racecourse Road, the number of total parking spaces between Holden Street and Batley Street is approximately 140 spaces. The section between Holden Street and Station Road is a 40-km/h zone due to the nearby school and also provides a signalised pedestrian crossing.

### **2.3. Holden Street**

Holden Street is a two-way, two-lane road with on-street parking between Racecourse Road and Ward Street. Holden Street provides access to the main entrance and a number of car parks and hospital units and facilities.

### **2.4. Ward Street**

Ward Street connects Holden Street and Cape Street North and forms the southern boundary of the hospital. It provides access to the hospital's southern car park and has on-street parking on either side of the road between Cape Street and the southern car park access and on the northern side only between the car park access and Holden Street (approximately 35 spaces in total).

### **2.5. Cape Street North/Beane Street West**

Cape Street North/Beane Street West is the main access road to the hospital's loading bay. On-street parking is allowed along the section between Sinclair Street and Racecourse Road providing approximately 50 parking spaces.



## 2.6. Public Transport

Gosford Hospital is located approximately 500m north of Gosford station with regular train services to Sydney and Newcastle. The hospital is also served by bus route 41 with eight Monday – Friday services between 6am and 5pm (one service every 1-2 hours) and three services on Saturdays.

## 2.7. Ambulance and Service Vehicles

Ambulances and service vehicles regularly use Holden Street and Cape Street to access individual units and facilities within the hospital campus. The main ambulance access is from Holden Street where a dedicated ramp leads to the Emergency Department. The main access point for service vehicles is from Cape Street.

## 2.8. Parking

Gosford Hospital provides a combination of on-street and off-street parking facilities for staff, patients and visitors. The current parking provision is shown in Table 1 and based on the 2008 ARUP ‘Gosford Hospital Mental Health Unit – Traffic and Car Parking’ report.

### ■ Table 1: Car Parking Provision at Gosford Hospital (2008)

Car Parks	Spaces
A - Holden Street	77
A1 - Ward Street	59
C - Rotary Lodge	19
D - HSB	87
E - Multi Storey Car Park	535
F - Cnr Hospital Road	30
J - Kiosk	18
B - Undercover Parking	30
O - VMO	10
Renal (A2)	15
Main Entry	11
I - Area Health & Nurses	17
Hospital Road (on street)	20
H - Cnr Holden Street	62
Mandala	12
Kullaroo	16
others	16
<b>Total</b>	<b>1034</b>



<b>On-Street Parking</b>	<b>Spaces</b>
Faunce Street	75
Ward Street	37
Beane Street	51
Sinclair Street	43
Batley Street	16
Cape Street	28
Holden Street	99
Racecourse Road	140
<b>Total</b>	<b>489</b>

In total, 1523 parking spaces are provided.



## 3. Assessment of Gosford RCC Proposal

### 3.1. Transport Strategies

The assessment of the Gosford RCC proposal was undertaken considering the following metropolitan planning and transport strategies as and when required:

- Metropolitan Transport Plan – Connecting the City of Cities,
- NSW State Plan
- NSW Planning Guidelines for Walking and Cycling,
- Integrated Land Use and Transport policy package
- RTA Guide to Traffic generating Development.

### 3.2. Proposed Staff, Patient and Visitor Numbers and Required Parking Spaces

The proposed parking space requirements in this report are based on Chapter 4.3 of the 2010 *Central Coast Radiotherapy Concept Design Report* by STH.

The RTA Guide to Traffic Generating Developments does not include cancer centre or day care facilities in hospitals for parking requirement calculations. So rates have been estimated from traffic engineering principles or other similar land uses.

For the purpose of this study the parking requirements at a cancer centre were calculated using the proposed staff and patient numbers and an expected mode share for car usage. From other hospitals and similar institutions we know that a car mode share of 80% to 90% is reasonable. Given the location of Gosford and the potentially longer staff commutes a mode share of 90% for car usage was used for staff.

*Number of required parking spaces = maximum number of staff on site at one time \* assumed mode share of car (90%) + maximum number of patients on site at one time \* assumed mode share of car (90%)*

For radiotherapy treatment it is expected that all patients arrive by car. Therefore, the required number of dedicated patient parking spaces equals the maximum number of patients.

In addition to the cancer centre radiotherapies, nine consult rooms are going to be set up. Four of those rooms will be relocated from other locations within the hospital and will not generate additional parking demand for Gosford Hospital. Five consult rooms will be newly created and those will generate parking demand for staff and patients.

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The RTA Guide to Traffic Generating Developments suggests that each consultant room generates demand for one staff parking space and three patient parking spaces. This is consistent with Gosford Council's *DCP No. 111- Car Parking, Chapter 3.2*. The five spaces for consultants have already been included in the staff parking numbers. The recommendations for patient parking are three spaces per consultant room, adding up to 15 additional spaces for patient parking.

Table 2 presents an overview of the additionally required parking spaces at Gosford Hospital due to the new cancer centre.

■ **Table 2: Additional Parking Demand at Gosford RCC**

<b>Additional RCC Parking</b>	<b>Parking Spaces</b>
Staff Parking	23
Patient Parking Bunkers	8
Patient Parking Consultant Rooms	15
<b>Total Parking</b>	<b>46</b>

### **3.3. Parking**

The new cancer centre will require approximately 23 additional staff parking spaces and 23 additional patient parking spaces.

#### **3.3.1. Patient Parking**

Patients arriving for treatment at the cancer centre are expected to have designated parking spots close to the cancer centre entrance. Those spots have to be freely accessible to minimise the effort of specifying them but at the same time need to be clearly designated for cancer centre patients. This can be done by a combination of sign posting (similar to disabled parking spots), display cards being given to cancer centre patients and parking enforcement.

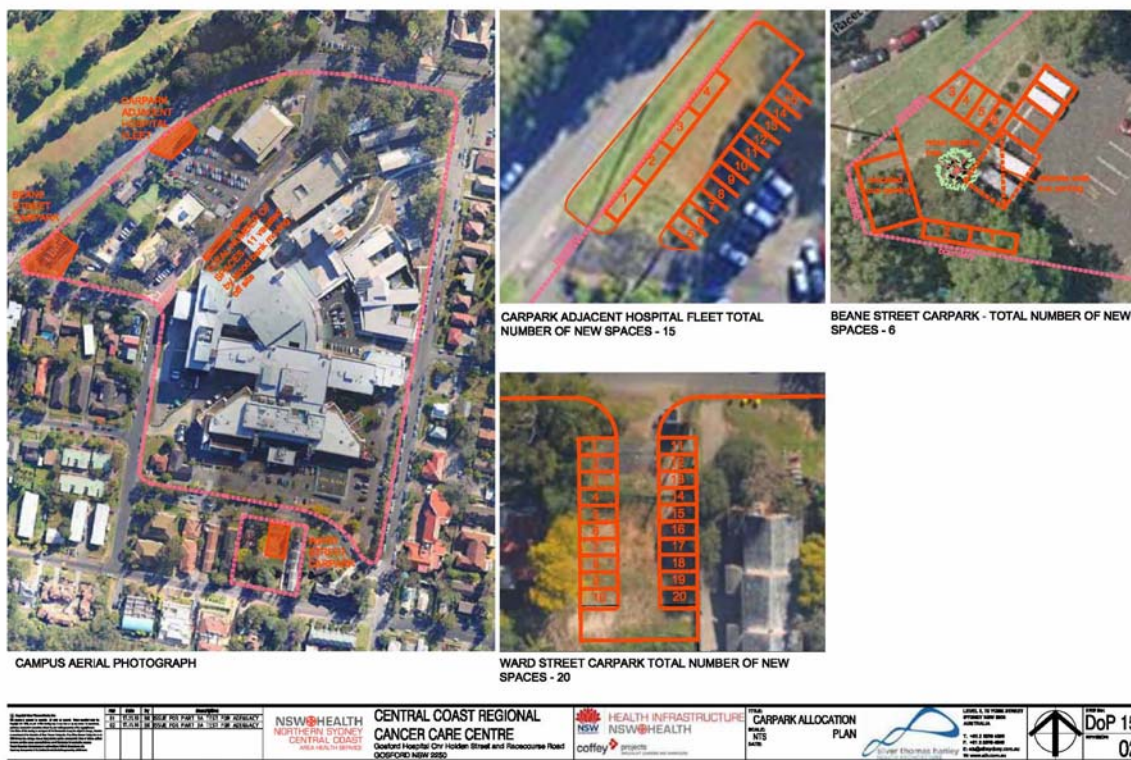
Dedicated parking is best achieved close to the cancer centre entrance using the parking spaces in the two rows closest to Holden Street. Those can be accessed separately, and by patients only, to avoid non-RCC patients using those spaces. In achieving 23 additional RCC patient parking spaces in the location of the existing car park, 23 existing patient/ staff parking spaces would have to be created.



### 3.3.2. Additional and Displaced Parking

The existing car park has no capacity to significantly increase the number of parking spaces within its current boundaries and limits. To ensure the additional 46 parking spaces (23 for staff and 23 that have been re-allocated to RCC patients) a number of additions have been made to existing car parks and a new car park is proposed at Ward Street. In total, 52 new spaces have been created in five different locations. Figure 1 shows the new parking spaces created.

■ **Figure 1: Newly Created Parking Spaces (Refer STH Drawing DoP15)**



The floor plan of the new cancer centre includes eleven existing parking spaces of which eight are reserved for disabled parking. Those were located close to the hospital main entrance, however, the main entrance has recently been moved to a new location. As part of this move, a new car park with 15 dedicated disabled parking spaces has been developed increasing the number of disabled parking spaces by seven.

The three non disabled parking spaces can be created in the existing car park by utilising space at the southern end of the second row.

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In addition, two disabled parking spaces have been provided close to the cancer centre entrance to ensure improved access for disabled patients.

The new proposed circulation route has a recommendation to displace two parking spaces outside the mortuary access for better manoeuvrability (see 3.6) and these two spaces could be accommodated within the newly created parking spaces as shown in Figure 1.

In summary, the new RCC creates demand for 46 new parking spaces (23 staff and 23 patient spaces) and 2 displaced parking spaces (circulation road). A total of 52 spaces will be created at different sites across the campus, so the future supply exceeds the future demand.

### **3.4. Road Access to Hospital**

The new RCC would generate additional trips to and from the hospital from the additional staff and visitor numbers. Access to the RCC would mainly be gained via Racecourse Road and Holden Street. These roads are well established and the estimated additional 24 staff trips in the morning peak hour are not likely to have a noticeable impact on network performance.

### **3.5. Public Transport Access**

The current public transport options are outlined in section 2.6. The opening of the RCC will not have an impact on public transport services. Public transport options were considered for both staff and patient access, however, it is unlikely that cancer centre patients will use public transport modes. Staff using public transport are limited by the services available at staff change-over times. As a consequence, whilst these travel options were considered, no changes to the proposed parking spaces were made.

### **3.6. Vehicle and Pedestrian Circulation**

The construction of the cancer centre utilises existing road/ car parking/ circulation space and reduces a two-way access road to one lane. As a consequence, the vehicle circulation was reviewed and a solution developed to provide for adequate vehicle access. This includes the relocation of the Holden Street exit point to Cape Street for ambulance vehicles and Ward Street for cars as the current Holden Street exit point becomes unavailable during and after construction of the cancer centre. From a traffic perspective it is preferable to provide a dedicated circulation route separate from pedestrian flows by guiding all vehicles along the existing service road but there has been concern about the traffic volumes along the service road if all vehicles were to use it. Therefore, an option was developed which guides all ambulance along the existing service road to the exit at Cape Street whilst guiding visitors and patients via the car park exit to Ward Street. This option requires minimal changes to the existing infrastructure and would retain all existing



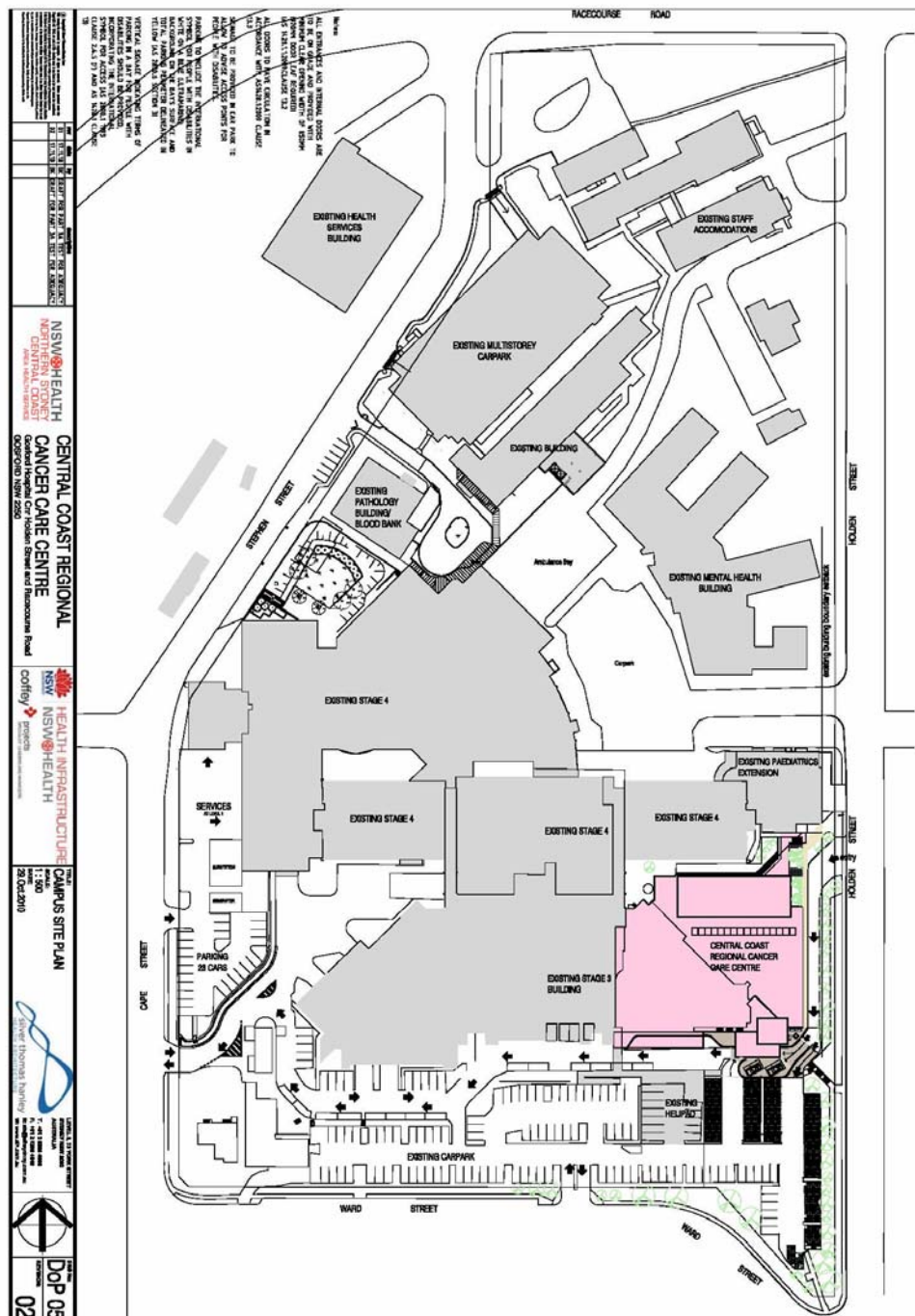
parking spaces on the car park. A swept path analysis was undertaken and confirmed that all vehicles can use the proposed route if the identified infrastructural changes are made.

Access to the mortuary and the adjacent loading bay would still be provided from Cape Street.

Gosford Hospital generates approximately 1,000 ambulance trips per month (around 30 per day). Of those, 60% will access the main entrance and 40% will access the new cancer centre entry. That will equate to around 1-2 ambulances accessing the circulation road per hour. Those ambulances will not be emergency vehicles but patient transfer ambulances.



■ **Figure 2: Vehicle Circulation at Cancer Centre Entrance (Refer to STH drawing DoP05)**



The changes to the existing infrastructure required include:

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- Two generators near the overhang of the Stage 3 building create a pinch point with an approximate width of 3.0m. To improve circulation the access road should have a minimum width of 4.0m. This will be achieved by relocating the western generator or the column.
- The southern side of the service road contains eight parking spaces parallel to the road. It is recommended that the two most western spaces be displaced in order to extend the usable road width and improve manoeuvrability for vehicles.
- A waste bin is located near the liquid gas container. This encroaches into the road space and it is recommended that the waste bin be relocated in order to extend the usable road width.
- The exit to Cape Street is narrow for parallel use of ambulances exiting and service vehicles accessing the loading docks of the Stage 4 building. It is recommended to widen the exit point.
- The direct access from the new cancer centre entry via the car park to the Ward Street exit is currently blocked by bollards near the helipad. These will need to be relocated to ensure direct access.

The proposed vehicle circulation would displace two parking spaces. Those can be relocated to one of the newly created car parks as current plans create five more spaces than required for RCC staff and visitors.

The service road to Cape Street will be signposted as 'Authorised Vehicles Only' and no public access will be allowed. The speed limit will be signposted to 10km/hr. Further signage will be provided to prevent general pedestrian thoroughfare through the service area.

The pedestrian access to the new cancer centre to and from the car park has been reviewed in order to achieve and ensure a safe and comfortable environment for pedestrians. Dedicated pedestrian crossing facilities across the circular road will be introduced where necessary. Sign posted or marked pedestrian walk ways along the car park and to and from the cancer centre entry will be implemented.

### **3.7. Impact on Existing Road Network**

The opening of the new cancer centre and the re-routing of ambulances will have an impact on the existing road network, in particular two locations are expected to see different traffic volumes:

- The access to the new cancer centre is via Holden Street and ambulance vehicles and cars will use it. There is no recent traffic count information available for Holden Street, however, the additional traffic volumes are expected to be low and the impact to be minimal. The exit point for those vehicles will be moved away from Holden Street (i.e. those vehicles will not be using Holden Street to exit). This will off-set the number of additional trips using Holden Street to



access the cancer centre and improve the Level of Service on Holden Street and adjoining intersections.

- Due to the re-routing along the service road more demand is expected to be on Beane Street towards Racecourse Road. The current traffic situation at the intersection of Beane Street and Racecourse Road makes right turn movements into Racecourse Road difficult due to high traffic volumes travelling along Racecourse Road. There is no recent traffic count information available for Beane Street and Racecourse Road, however, the additional traffic volumes are expected to be low (12-15 additional ambulance trips) and the impact to be negligible.

Previous modelling reports carried out for Gosford Hospital showed that all intersections around the hospital operated at a high level of service (LoS A or LoS B) and could accommodate additional growth of 10% without compromising the level of service. The new cancer centre will add no more than another 5% to those 10% growth and therefore it is assumed that the overall impact on the traffic network is likely to be negligible.

### **3.8. Potential Construction Traffic Impacts**

The potential impacts of construction activities and construction traffic with regard to traffic and parking include:

- Construction vehicle access arrangements:
  - Impact on adjacent properties and land uses:
  - Access to Gosford Hospital ;
- Temporarily degradation of amenity via construction traffic noise;
- Road network operation – temporary loss of intersection capacity with additional construction vehicles; and
- Safety implications for all road users as a result of additional heavy vehicle flows and new construction vehicle access arrangements.
- Potential temporary loss of available on-street parking:
  - Additional parking demand by construction workers;
  - Loss of on street parking to accommodate construction vehicle access.



### **3.8.1. Detailed Construction Traffic Management Plan**

A detailed construction traffic management plan (CTMP) will be prepared by the Contractor (when appointed) and approved prior to construction works to address the potential impacts identified above.

Essentially the CTMP sets out a plan to manage construction activities such that the potential implications are mitigated or appropriately managed.

This CTMP will need to include:

- Details of proposed works;
- Timing of proposed works;
- Hours of construction activities;
- Number of construction vehicles, particularly heavy vehicles to be used;
- Mitigation and management measures including use of stop / go signals, construction vehicle access arrangements and circulation; and
- Contact details for on-site construction personnel.

The CTMP will be prepared by the Contractor (when appointed) in accordance with RTA guidelines. The Contractor will develop the CTMP in a way that ambulance and emergency vehicles are not impeded by the construction works at any time.

### **3.8.2. Construction Vehicle Routes**

Vehicle access to and from the site will be generally restricted to the existing access routes to and from the site.

It is recommended that, to the maximum extent possible, materials delivered to or extracted from the site be undertaken via Holden Street/ Racecourse Road.

### **3.8.3. Amenity Impacts**

The amenity impacts associated with construction traffic are principally associated with noise, vibration and safety issues.

It is suggested that the hours of operation for construction vehicle movements be restricted to agreed hours so that the impacts of construction vehicle noise on amenity can be mitigated for sensitive times (ie. night time, weekends).

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#### **3.8.4. On Street Parking Impacts**

To further mitigate on street parking implications, strategies will be developed to minimise the number of parking spaces required by construction workers. Those strategies could include car pooling, use of public transport and off-site parking with a shuttle bus provision to the construction site.

#### **3.8.5. Site Access and Construction Vehicle Manoeuvring**

Construction vehicle access arrangements should be designed such that all construction vehicles can enter and exit the site in a forward direction.

This will require the provision of sufficient on site manoeuvring area to accommodate the large vehicle expected to access the site during the construction period.



## **4. Conclusions**

### **4.1. Parking**

The new RCC requires additional parking spaces for patients (23 spaces) and staff (23 spaces) and the newly proposed circulation route has a recommendation to displace two parking spaces. A plan has been developed to create 51 new parking spaces across the hospital campus.

### **4.2. Access to Hospital**

The new RCC will increase the number of trips to and from the hospital adding traffic to the existing road network. The additional traffic volumes would be in the order of 25 – 30 additional trips in the peak hour and are likely to have no material impact on the performance of adjacent roads and intersections.

### **4.3. Vehicle and Pedestrian Circulation**

The new RCC requires a new vehicle circulation route for cars and ambulances as an existing two-way road will become a one-way road. A new circulation route is proposed and changes to the existing infrastructure have been identified. The new circulation route includes the relocation of the Holden Street exit to Cape Street (ambulances) and Ward Street (cars) which will result in less vehicles using Holden Street.

### **4.4. Construction Traffic Management Plan**

A CTMP will be developed for the construction phases of the new RCC to address potential impacts on traffic and parking conditions and sets out a plan to manage construction activities such that the potential implications are mitigated or appropriately managed.