

Technical Memorandum

Title	Wollongong Hospital Car Park - Revised Car Parking Supply		
Client	NSW Health Infrastructure	Project No	82013028-1
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Author	JOT	Discipline	Traffic and Transport
Reviewer	DCK	Office	Sydney

1 Introduction

This technical addendum has been prepared to address the change in the scale of the proposed car park at Wollongong Hospital. Cardno has previously prepared a Traffic Impact Assessment (TIA) (June 2013) in support of the Wollongong Hospital Car Park Major Project Approval. As part of this assessment, the development plans proposed a multi-storey car park consisting of 754 car parking spaces.

Following the submission of Section 75W modifications to the Approval, the scale of the car parking provision has increased to 788 car parking spaces. This technical memorandum has been prepared to address the Department of Planning and Environment comments to the Section 75W modification associated with the revised scale of the car park based on the analysis and conclusion within the TIA completed by Cardno. As part of this technical memorandum, the following aspects have been reviewed:

- > The scale of the parking provision; and
- > The impact of the variation to the car parking numbers on the road network.

2 Parking Provision

The car parking provision has been assessed against the Wollongong Council DCP, in combination with first-principles analysis.

2.1 Development Scale

2.1.1 Hospital Operation

As part of the TIA completed in June 2013, the following changes in staff and patient numbers were identified:

- > Medical Practitioners: + 44;
- > General Employees: + 367;
- > Inpatient Beds: + 80; and
- > Outpatients: +131.

It is understood that this increase in scale for the Hospital remains unchanged.

2.1.2 Car Park

The car park is proposed to increase in scale from 754 car parking spaces to 788 car parking spaces. This represents an additional provision of 34 car parking spaces compared to that assessed in the June 2013 TIA.

2.2 Wollongong DCP Requirements

The Wollongong Council DCP, Chapter E3, Schedule 1 identifies the following car parking requirements for a hospital:

- > 1 car parking space / medical practitioner;
- > 1 car parking space / 2 employees; and
- > 1 car parking space / 2 beds.

The DCP does not account for the car parking requirements associated with outpatient demand. The TIA completed in June 2013 utilised first-principles analysis to estimate the car parking demand for outpatients. This analysis assumed the following:

- > Arrival Rate: 6 vehicles / 30 minutes;
- > Proportion of Vehicle Trips: 80%; and
- > Average Duration of Stay: 1.50 hours.

This first-principles analysis identified a requirement of 18 car parking spaces to cater for outpatient demand.

On the basis of the proposed development scale, the requirements of the Wollongong Council DCP and the first-principles analysis, a total of 286 additional car parking spaces would be required.

2.3 Existing On-Street Parking Demand

The June 2013 TIA also noted that the existing on-street car parking demand for Wollongong Hospital is 236 car parking spaces within the vicinity of the Hospital. This represents car parking demand for the current services of the Hospital which have not been met by the existing car parking provision.

2.4 Parking Provision Conclusion

The proposed scale of the Wollongong Hospital Car Park is 788 car parking spaces. This car parking provision exceeds the requirements of the Wollongong Council DCP (for 286 parking spaces) and provides sufficient capacity to cater for the existing on-street car parking demand (236 car parking spaces). On this basis, there would remain a surplus of 266 car parking spaces to cater for future growth in the Hospital's operations.

2.5 Bicycle / Motorcycle Parking

The Wollongong Council DCP, Chapter E3, Schedule 1 identifies the following bicycle and motorcycle parking requirements for a hospital:

- > 1 bicycle space / 5 car parking spaces; and
- > 1 motorcycle space / 25 car parking spaces.

On the basis of the revised development plans consisting of 788 car parking spaces, of the following spaces are required:

- > 158 bicycle spaces; and
- > 32 motorcycle spaces.

The proposed development comprises of:

- > 30 bicycle spaces; and
- > 34 motorcycle spaces.

As a result, the proposed Wollongong Hospital Car Park meets the requirements of the Wollongong Council DCP in terms of the provision of motorcycle parking. However, the proposed facility does not meet the requirements for bicycle parking provision.

Given the location of the Hospital within a busy city centre location that lacks a dedicated bicycle network, alongside the potential for patients to have medical conditions that discourage physical activity it is considered unlikely that the Wollongong DCP requirement for bicycle parking is realistic for this particular site. It is noted that a review of the 2011 Journey to Work (JTW) Census data indicates that travel by bicycle accounts for less than 1% of all modes of travel within the Wollongong LGA for both Medical Professionals and the general public. Furthermore, the extensive public transport and pedestrian network would encourage other modes of travel to offset the reduced number of bicycle spaces. Consequently, the proposed number of bicycle spaces is deemed acceptable.

3 Road Network Impact

3.1 Traffic Generation & Impact

The provision of an additional 34 car parking spaces is not considered to have any significant impact upon the wider road network. This is because car parking facilities are not trip generators in their own right and are provided to meet the accumulated demand from an associated development (i.e. redevelopment of Wollongong Hospital).

3.2 Local Redistribution of Traffic

As a result of providing a total of 788 car parking spaces, it is anticipated that localised redistribution of traffic and Hospital-related vehicle trips will occur. This is related to the existing level of on-street car parking demand (of up to 236 parking spaces) which represent the intrusion of the Hospital demand into adjacent streets. The provision of a multi-storey car park to cater for the total demand of the Wollongong Hospital is expected to divert these existing trips to and from the proposed car park.

The redistribution of traffic that would be associated with the provision of an additional 34 car parking spaces is expected to be within the daily level of variation for traffic volumes. As a result, the conclusions of the June 2013 TIA continue to apply.

3.3 Boom Gate Queue Storage

The Technical Note prepared by Cardno in July 2013 identified that sufficient storage to cater for 18 vehicles was required at the entry boom gate at New Dapto Road, and storage space for four (4) vehicles was required at the entry boom gate at Dudley Street. This analysis of storage space was determined through the use of queuing theory, based on car park capacity and peak flow which has the potential to be varied by an increase in the number of parking spaces.

The increase of the car parking capacity by 34 spaces increases the 95th percentile queue length from 18 to 22 vehicles during the peak hour at the New Dapto Street entry (approximately 11 vehicles / lane). The design provides a queue storage capacity of approximately 20-21 vehicles in addition to the provision of an approximately 15 metre long deceleration lane on New Dapto Street for vehicles entering the car park. Therefore, there would be minimal impact upon through northbound traffic on New Dapto Street as a result of queuing associated with the operation of the boom gates at New Dapto Street. This is based upon the ability of the 21st and 22nd queued vehicles to wait in the deceleration lane without impacting through traffic.

In addition to this, it should be noted that the queue lengths reported are the 95th percentile queue lengths and therefore will only occur 5% of the time during the peak hour (approximately three minutes) and that the average queue is approximately four (4) vehicles / lane, or eight (8) vehicles in total. As a result, the queue at the boom gate will be contained within the perimeter of the car park facility for the majority of the time with no associated impact on the external network.

4 Conclusion

The Wollongong Hospital Car Park is proposed to increase in scale from 754 car parking spaces to 788 car parking spaces. Following a review of the revised development plans, the following conclusions are made:

- > The current proposal for the Wollongong Hospital Car Park continues to comply with the requirements of the Wollongong Council DCP in terms of car parking supply;
- > The impact on the road network is expected to be negligible and within the expected level of daily variation for traffic volumes; and
- > The conclusions of the June 2013 Traffic Impact Assessment continue to apply to the revised car park design.



Devinda KUMARASINGHE
Senior Traffic Engineer
For **Cardno NSW/ACT Traffic and Transport**