

Appendix J Traffic statement

Prepared by GTA Traffic Consultants

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29 February 2016

Department of Planning & Environment
GPO Box 39
SYDNEY NSW 2001

Attention: Megan Fu

Dear Megan

RE: WESTMEAD REDEVELOPMENT, DARCY ROAD MULTI-STOREY CAR PARK (MSCP) – RESPONSE TO SUBMISSIONS

GTA has reviewed the submissions provided to-date in regards to the proposed Darcy Road Multi-Storey Car Park (MSCP) State Significant Development Application. In this regard, further information has been provided below to address comments raised by the following:

- Transport for NSW (TfNSW)
- Roads and Maritime Services (RMS)
- Parramatta City Council
- members of the community.

It is noted that through design development and in response to broader EIS submissions received, the following changes have been made to the proposed MSCP design:

- Automatic Number Plate Recognition (ANPR) will not be provided for access control of the MSCP, with traditional boom gate infrastructure and card access now included.
- To provide additional car park entry capacity, a second boom gate has been proposed at the Institute Road access to the MSCP, resulting in a total of four entry boom gates across the two access locations. Entry queuing has been recalculated and confirmed to be acceptable.
- Additional small car spaces associated with provision of fire services infrastructure.
- Minor geometrical changes and provision of pedestrian crossings at the access to the MSCP via Institute Road.

The above changes result in a minor reduction of one space, equating to a total supply of 1,253 spaces.

Transport for NSW

TfNSW has stated that whilst the overall proposal is supported, they wish to work collaboratively with Health Infrastructure to resolve the key issues, detailed as follows:

- *The proposed modification to the T-Way operation at the intersection of Darcy Road/Mons Road/Institute Road and the proposal to allow construction and staff access on to the northern end of Mons Road T-Way is not supported due to the impact on the operation of existing and future bus services.*

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- TfNSW supports the need for Health Infrastructure to develop, implement and monitor a travel plan. This is due to the increase in the number of trips associated with the proposal and the full Westmead Redevelopment Project, the demand for public transport is also expected to significantly increase.
- A comprehensive transport assessment should be developed to assess the transport impact of the full Westmead Redevelopment Project and develop an access strategy to facilitate future cumulative growth including surrounding developments. This assessment should be prepared as part of the next stage of the project in consultation with TfNSW and Roads and Maritime Services.

GTA has responded directly to the below Request for Further Information/ Clarification identified by TfNSW, with consultation to form part of an ongoing collaborative approach. The responses should be considered as initial responses and at times, a trigger for broader discussion as part of the Westmead Redevelopment.

It is also noted that the SSDA was focused on impacts directly attributable to the Darcy Road MSCP project and does not consider the impacts of the broader Westmead Redevelopment. Impacts associated with the proposed ASB and the broader Redevelopment will be addressed as part of a future application.

It is understood that many of the comments raised by TfNSW were presented with consideration for the broader Westmead Redevelopment and not the MSCP proposal.

Impacts on T-Way Bus Services

Issue

Westmead precinct is proposed for major growth and development. The provision of public transport services is a key requirement to facilitate this growth. Implementing bus priority measures are generally challenging and complex. Any impact on existing and future public transport infrastructure and services would not be appropriate.

T-way buses currently operate on Mons Road, Darcy Road and Hawkesbury Road. Bus movements run separately to general traffic under traffic signal control. Traffic modelling was undertaken using SIDRA to assess the impact of the proposed development at key intersections. Considering the importance of the operation of buses on the T-way, it is considered that the modelling should assess the impacts of the operation of T-way buses separately.

Section 8.4 of Transport Impact Assessment (TIA) outlines a number of suggested changes to the intersection of Darcy Road/Mons Road/Institute Road. The proposed left turn ban from the Darcy Road T-Way west approach in Darcy Road south approach is inappropriate. It is currently not possible or safe for several routes and school buses to join the general traffic lanes to turn left due to conflict with general traffic and the median creating an unsafe blind spot for drivers. In addition, if the routes were to merge with general traffic they would no longer be able to service Westmead Hospital T-way station, a vital patronage point for these services and a connection point between the two corridors.

The proposed right turn ban from Darcy Road into Institute Road requires further review. Although there are currently no bus services using this route, it may be required to access

the Children's Hospital in the future particularly during the construction of the Parramatta Light Rail.

Recommendation

It is requested that the applicant:

- *Update the SIDRA traffic modelling in consultation with Roads and Maritime Services. The operation of T-Way buses needs to be assessed separately;*
- *Identify appropriate measures to maintain the operation of bus services in the future scenarios; and*
- *Investigate alternate measures and models accordingly as the proposed removal of left turn ban for buses on Darcy Road T-Way south approach into Darcy Road west approach is not supported.*

GTA Response

While it is acknowledged that public transport is critical to the development of the Westmead Precinct and that implementing bus priority measures can be complex, the proposed measures aim to minimise the impact on the current and future public transport infrastructure and services, noting that the current network constraints make it difficult to limit impacts without improvements.

It is noted that further intersection modelling comments have been provided by RMS. We will continue to work with RMS and TfNSW to ensure appropriate intersection arrangements can be achieved to support the MSCP.

Notwithstanding the above, the requested separated SIDRA Intersection modelling results for the T-Way for the base case and post-development scenarios presented in the GTA Transport Impact Assessment are summarised in Table 1 and Table 2.

It is worth noting that SIDRA Intersection modelling does not accurately reflect the operation of the T-Way, noting that the traffic signals typically allocate an additional phase when necessary based on the demand of the T-Way buses (i.e. when they arrive in the traffic signal cycle).

Table 1: Base Case Operating Conditions – T-Way

Intersection	Peak	Leg	Degree of Saturation (DOS)	Average Delay (sec)	95th Percentile Queue (m)	Level of Service (LOS)
Darcy Road/ Mons Road/ Institute Road	AM	South	0.55	71	19	E
		North	0.09	48	12	D
	PM	South	0.51	71	28	F
		North	0.03	18	7	B
Darcy Road/ Hospital Access (Dental)	AM	South	0.03	5	3	A
		North	0.04	6	4	A
	PM	South	0.06	6	6	A
		North	0.05	6	5	A
Darcy Road/ Hospital Access (Main)	AM	South	0.01	10	1	A
		North	0.04	10	6	A
	PM	South	0.01	10	2	A
		North	0.06	10	8	A
Darcy Road/ Hawkesbury Road	AM	East	0.02	26	2	B
		North	0.05	66	10	E
		West	0.05	11	4	A
	PM	East	0.02	26	2	B
		North	0.05	66	8	E
		West	0.09	42	92	C

Table 2: Future Operating Conditions – T-Way

Intersection	Peak	Leg	Degree of Saturation (DOS)	Average Delay (sec)	95th Percentile Queue (m)	Level of Service (LOS)
Darcy Road/ Mons Road/ Institute Road	AM	South	0.73	75	20	F
		North	0.12	53	12	D
	PM	South	0.86	80	32	F
		North	0.05	34	10	C
Darcy Road/ Hospital Access (Dental)	AM	South	0.04	12	4	A
		North	0.06	13	5	A
	PM	South	0.07	12	8	A
		North	0.07	12	6	A
Darcy Road/ Hospital Access (Main)	AM	South	0.02	23	1	B
		North	0.12	24	8	B
	PM	South	0.02	40	3	C
		North	0.14	42	21	C
Darcy Road/ Hawkesbury Road	AM	East	0.3	31	2	C
		North	0.35	93	12	F
		West	0.04	9	3	A
	PM	East	0.02	19	2	B
		North	0.63	103	12	F
		West	0.11	19	14	B

The modelling results indicate that increased delays and queues for the T-Way could occur at the intersections of Darcy Road/ Mons Road/ Institute Road and Darcy Road/ Hawkesbury Road as a result of the cumulative impacts of the MSCP and University of Western Sydney (now WSU). However, as discussed this does not consider the priority measures implemented at the signals. As such, any additional queuing and delays on the T-Way would be minimal.

The GTA Transport Impact Assessment proposed several improvements for the intersection of Darcy Road/ Mons Road/ Institute Road to minimise the impact on the overall intersection. Table 3 shows the modelling results with these intersection improvements.

Table 3: Future Operating Conditions with Proposed Upgrades (T-Way)

Intersection	Peak	Leg	Degree of Saturation (DOS)	Average Delay (sec)	95th Percentile Queue (m)	Level of Service (LOS)
Darcy Road/ Mons Road/ Institute Road	AM	South	0.22	59	17	E
		North	0.06	37	10	C
	PM	South	0.55	67	28	E
		North	0.04	22	8	B

Table 3 indicates that the intersection of Darcy Road/ Mons Road/ Institute Road would experience improved vehicle queues and average delays (typically better than the base conditions) following implementation of the proposed intersection upgrades.

As noted by TfNSW, Section 8.4 of the GTA Transport Impact Assessment identifies the potential for a left turn ban from the Darcy Road T-Way in conjunction with a right turn ban from Darcy Road into Institute Road to improve the overall operation of the Darcy Road/ Mons Road/ Institute Road intersection. Figure 1 provides additional details relating to the proposed left turn ban and clarifying that the 'unsafe merging' at the Darcy Road/ Mons Road/ Institute Road intersection identified by TfNSW would not occur under these arrangements.

An indented bus stop along Darcy Road could be provided (see Figure 1) maintaining the vital patronage point. Interchanging could be accommodated via the signalised pedestrian crossing located immediately north of the proposed bus stop and the Westmead Hospital T-way stop.

Figure 1: Potential Arrangements to Accommodate the Proposed Left Turn Ban



Basemap source: Nearmap

A summary of the bus services which currently travel along Darcy Road is provided in Table 4. It is noted that the proposed left turn ban would affect three of the eight existing bus services (705, 708 and 711) that use the Darcy Road corridor. It is noted that the 818 service does not currently use the T-Way, instead turning left from the Darcy Road traffic lanes, as per the proposed arrangements.

Table 4: Existing Darcy Road Bus Services

Darcy Road Bus Services	Detail	Stop at Westmead Hospital T-Way	Stop at Mons T-Way	Stop at Darcy Road Before Bridge Road
705	Parramatta to Blacktown	✓	✗	✓
708	Parramatta to Constitution Hill	✓	✗	✓
711	Parramatta to Blacktown	✓	✗	✓
818	Westmead to Merrylands	✗	✗	✓
T60	Parramatta to Castle Hill	✓	✓	✗
T61	Parramatta to Blacktown	✓	✓	✗
T62	Parramatta to Castle Hill	✓	✓	✗
T63	Parramatta to Rouse Hill Town Centre	✓	✓	✗
T64	Parramatta to Rouse Hill Town Centre	✓	✓	✗
T65	Parramatta to Rouse Hill Town Centre	✓	✓	✗
T66	Parramatta to Rouse Hill Town Centre	✓	✓	✗

With consideration for the details provided above including the intersection modelling, it is recommended that TfNSW reconsider the proposed measures, noting that they offer benefits for the current and future public transport network, as well as the overall intersection operation. Notwithstanding this, the project team will continue to consult with TfNSW and RMS to ensure appropriate intersection arrangements can be achieved to support the MSCP and maintain travel time reliability on the T-Way.

Institute Road would carry any general through traffic in the future and has been designed as an ambulance priority route to service the Westmead Redevelopment. Any bus activity would use New Road, with access via Mons Road, which has been designed to cater for buses including indented bus stops.

Based on the above, the proposed right turn ban from Darcy Road to Institute Road is considered appropriate, noting that no through access would be available via Institute Road.

General Vehicular Access onto dedicated T-Way (Mons Road Bridge)

Issue

Section 4.7 of the Preliminary Construction Management Plan (PCTMP) and separate correspondence from GTA Consultants suggested that construction vehicles be permitted on the existing dedicated T-Way (Mons Road Bridge).

The route is a Rapid Bus Route Corridor between Hurstville and Rouse Hill under Sydney's Bus Future and is planned to undergo enhancements to service frequency and span of hours and running time reliability. Shared use of the T-Way at this location has the potential to affect the reliability of bus services. Further, TfNSW would like to maintain the exclusive use of the T-Way to ensure it could introduce additional bus routes along this part of the T-Way

without conflicting with general traffic and reducing the occurrence of incidence and disruptions.

Recommendation

The shared use of the existing dedicated T-Way (Mons Road Bridge), Westmead by construction vehicles or hospital staff vehicles is not supported. It is requested that:

- *An alternative access arrangement for the wider Westmead Hospital precinct be investigated in a regional context; and*
- *An access strategy be delivered that would facilitate development growth and support the delivery of future regional transport infrastructure. Further details are provided below under wider Regional Transport Impacts.*

GTA Response

The proposed access strategy for the broader Westmead Redevelopment will be addressed as part of the Acute Services Building (ASB) State Significant Development (SSD) application. However, Health Infrastructure and the project team are committed to consulting further with TfNSW to reach agreement on the future access strategy. It has been agreed between Health Infrastructure and TfNSW that permanent staff access to the T-Way does not form part of the MSCP SSDA.

It is also understood that Health Infrastructure and TfNSW have further discussed the potential for construction vehicles to use the T-Way, with any agreement to be reached separately to this application as part of the required consultation with TfNSW, RMS and Council during the preparation of the detailed Construction Traffic Management Plan (CTMP).

Travel Demand

Issue

Westmead Precinct is proposed for significant development and growth. It is identified as a growing specialised health and educational precinct in A Plan for Growing Sydney. In order to accommodate the future growth and development within Westmead, there needs to be a shift away from private vehicles to public and active transport. Regional studies discussed in Section 3.2 of the TIA indicate that mode share of 35% would be necessary to accommodate the growth within the precinct. Recent staff survey data indicate over 85% of staff use private vehicles.

It is important that the reasons for the high private vehicle use should be identified in order to tailor travel plan that would be effective in achieving the required shift to public and active transport. Section 9 of the TIA provides a comprehensive list of travel plan measures suggested for implementation.

Recommendation

It is requested that the applicant:

- *Undertake consultation with the hospital staff and visitors to obtain their views on existing and future public transport services to the hospital during the preparation of the travel plan;*
- *Implement the travel measures based on the outcome of the consultation to increase public transport patronage; and*

- Monitor the effectiveness of the travel plan measures using the appropriate reporting then identify any further improvements to achieve the required modal shift targets.

GTA Response

Implementation of a travel plan (with appropriate monitoring strategies) would be completed as part of the broader redevelopment in consultation with TfNSW. Notwithstanding this, feedback received as part of a staff travel mode survey completed in 2014 and specifically relating to public transport utilisation is summarised in Table 5.

Table 5: Staff Travel Mode Surveys

Use Public Transport	Don't Use Public Transport	Staff Recommendations
Convenient	Inconvenient/ weather	○ Shuttle buses for key centres without trains i.e. Baulkham Hills, Castle Hill ○ Shuttle buses for Parramatta Transport Interchange and Westmead Station ○ Shuttle bus services between hospitals ○ Blue Mountains trains should stop at Westmead ○ Increased recognition for those commuting to Westmead and Parramatta rather than focussing on Sydney CBD centric transport services ○ Services from the North-east, East and South-east direct to Westmead rather than changing at Parramatta ○ Transport services that reduce the walking distances for the CHW and Cumberland Hospital ○ More frequent public transport services ○ Sheltered walkways
Less stress	Parents – set-down/ pick-up	
Avoids congestion and parking issues	Significant walking distance	
Cheaper – no free parking	Long waiting times (particularly if changing services)	
Don't have access to a car	Shift workers	
No alternative	Networked hospital – transport patients	
Quicker	Safety concerns	
	Longer travel time	
	Expensive	
	Infrequent services during the PM/ evening	
	Indirect services	
	Not wheelchair accessible	
	Unreliable	
	Inconvenient/ weather	

Based on the staff survey results, the project team will work closely with TfNSW to improve public transport utilisation.

Regional Transport Impacts

Issue

The Early Works Project and proposed Multi-storey Car park project are the initial stages of the Westmead Redevelopment project. The TIA indicates that the Westmead Redevelopment Project would result in approximately 40% growth in number of staff and beds by end of 2020 as follows:

- Staff - from 9,987 to 13,873
- Beds - from 743 to 1,052

It is expected that this level of growth would have a regional transport impact. It would require the preparation of a comprehensive transport assessment. TfNSW and Roads and

Maritime Services would like to work with Health Infrastructure during the investigations and associated transport modelling for the next stage of the project. The assessment would review the cumulative impact of the projects and surrounding developments with consideration of regional transport infrastructure.

Recommendation

It is requested that a comprehensive transport assessment be developed, in consultation with TfNSW and Roads and Maritime Services, for the next stage of the Westmead Redevelopment project. This assessment should include the wider network, cumulative development and regional transport infrastructure to develop access and transport strategy to facilitate development growth in Westmead.

GTA Response

The project team will continue to consult with TfNSW and RMS during the preparation of the ASB SSD application. A whole-of-government approach to local and regional transport infrastructure is recommended, particularly in the context of the proposed Parramatta Light Rail and associated planning studies.

Intersection Modelling

Issue

Section 4.1 provides an assessment of the nearby intersection operations. Table 4.5 provides base case operating conditions which indicate that Darcy Road/Mons Road/Institute Road are operating well below capacity with minimal delays and queues. On site observation indicate extensive delays and queuing experienced during the AM and PM peak.

Several local intersections known to experience delays and congestion have not been modelled including Hawkesbury Road/Alexandra Avenue, Darcy Road/Briens Road, Darcy Road/Bridge Road and Alexandra Road/Bridge Road.

Recommendation

It is requested that the applicant:

- *Verify the results of the base modelling particularly for the intersection of Darcy Road/Mons Road/Institute Road; and*
- *Model surrounding local intersections experiencing congestion to the satisfaction of Council and Roads and Maritime Services. As previously noted the operation of bus services on the T-way should be assessed separately.*

GTA Response

Section 4.1 of the GTA Transport Impact Assessment indicates that the modelled intersections operate with an acceptable LOS during the weekday AM and PM peak hours during the base case scenario (post completion of the Stage 1 Early Works). However, queues of up to 140m were noted and are consistent with on-site observations. No statements indicating significant spare capacity are made as this would not be correct.

It is worth noting that the modelled AM peak period was 7:00am-8:00am, corresponding to the peak staff arrival, noting that the proposed car park would mostly be used by staff (80%).

The PM peak hour was 4:30pm-5:30pm, which corresponds to the road network peak, as well as the overlap of staff departures and visitor arrivals/ departures.

As discussed above, further intersection modelling comments have been provided by RMS. We will continue to work with RMS and TfNSW to ensure appropriate intersection arrangements can be achieved to support the MSCP.

As previously discussed with PCC, TfNSW and RMS in the context of the broader Westmead Redevelopment, Parramatta Light Rail and other projects in the local area, a cumulative regional transport model needs to be completed and managed by TfNSW and/ or RMS. With consideration for this, it is understood that this regional modelling would be/ is being completed as part of the Parramatta CBD Access Strategy, as well as modelling of the Parramatta Light Rail.

It is recognised that there are significant regional transport challenges, with further traffic related impacts expected as part of the Parramatta Light Rail and key proposed developments within the local area. Many of these will need to be resolved as part of the Parramatta CBD Access Strategy and/ or Parramatta Light Rail. The intention of this SSD is not to address/ solve regional issues, but rather assess access to the proposed MSCP and the operation of intersections in the immediate vicinity.

The project team will continue to consult with TfNSW and RMS in relation to the preparation of the ASB SSD, to ensure an agreed traffic modelling approach.

Car Park Access

Issue

It is important that the car park access is designed with entry capacity to ensure that queuing does not block through traffic on Darcy Road and Institute Road as this would have a significant impact on the operation of Darcy Road and the T-Way.

The car park access proposed includes two Entry lanes from Darcy Road, one Entry lane from Institute Road and two Exit lanes onto Institute Road. The TIA indicates that the number of access points has been reduced due to the implementation of Automatic Number Plate Recognition (ANPR) system. As a result, the service rate of 550 veh/h/lane has been used for assessment, which is close to free flow (i.e 600 veh/h/lane). It is unclear how such a high service rate can be achieved considering the system seems to indicate boom gates would still be required as shown in Figures 7.5 and 7.6.

Recommendation

It is requested that:

- *The operation of the ANPR system be further clarified with the claimed service rate justified by empirical data; and*
- *Appropriate measures be put in place aimed at ensuring queueing at the access point during peak events do not affect traffic and buses on the road network and the T-Way. The measures should be incorporated into a car park management plan.*

GTA Response

The queuing assessment presented in the GTA Transport Impact Assessment has been updated for the new access control, adopting a conservative service rate of 300 vehicles/ hour/ lane, noting the following typical service rates presented in AS 2890.1:2004:

- 400 vehicles/ hour/ lane for typical card reader – adopted for staff
- 300 vehicles/ hour/ lane for automatic ticket issue and boom gate – adopted for visitors.

Table 6: MSCP Queuing Assessment

	Entry Location		Exit Location
	Darcy Road	Institute Road	Institute Road
Approach Volume	400	250	390
Assumed Service Rate	300 vehicles/ lane/ hour		
Number of Lanes	2	2	2
95th Percentile Queue Length	4 vehicles / lane	2 vehicles / lane	4 vehicles / lane
	24 metres / lane	12 metres / lane	24 metres / lane
	8 vehicles (48m)	4 vehicles (24m)	8 vehicles (48m)
99th Percentile Queue Length	6 vehicles / lane	3 vehicles / lane	6 vehicles / lane
	36m/ lane	18m/ lane	36m/ lane
	12 vehicles (72m)	6 vehicles (36m)	12 vehicles (72m)
Total Available Storage Capacity	110m	50-55m	50m

Based on the above queuing assessment, the available storage is suitable to accommodate the 95th and 99th percentile queues, albeit with minor queuing back into the lower ground level of the car park during the afternoon peak.

As discussed within the GTA Transport Impact Assessment, a 40m long right turn bay is also proposed for Institute Road. This ensures a maximum queuing storage area of 95m before impacting on through traffic on Institute Road.

The MSCP access is designed with adequate entry capacity such that queuing would not block through traffic on Darcy Road, Institute Road and the T-Way. Appropriate linemarking and intersection controls would be implemented to minimise the risk of queuing across the westbound Institute Road travel lane.

Notwithstanding the above, a Campus-wide Car Park Management Plan is currently being prepared to ensure appropriate management of all new and existing car parks including ensuring vehicle queuing does not extend on to the internal and external road network.

Pedestrian and Cyclist Access

The Environmental Impact Statement (EIS) for the proposed car park includes provision for bicycle and motorcycle parking. The exact numbers are yet to be determined.

Measures to improve bicycle and pedestrian access and facilities require further assessment in the Traffic Impact Assessment.

It should be noted that the entrance to this development from Darcy Road crosses the T-Way separated cycleway. It appears that the documentation presented, does not include

measures to reduce potential conflict between car park users and cyclists traveling along the cycleway.

The provision of accessible car-parking spaces of 1% as outlined in Section 5.1 of the TIA is low.

Recommendation

The proposed development presents an opportunity to take advantage of the pedestrian and cycleway link. It is requested that:

- Bicycle parking and end of trip facilities for pedestrian and bicycle riders be provided in accordance with relevant standards and guidelines. Details of locations and number of spaces should be shown on the plans;
- The connectivity, safety (including security, covered lighting and walkway) and accessibility for pedestrians and bicycle riders to pedestrian and bicycle networks be provided within the hospital and public transport particularly during late night or early morning periods;
- The provision of pedestrian crossings on all legs of the intersection of Darcy Road/Mons Road/Institute Road and Darcy Road/Dental Building Access be investigated;
- Wayfinding signs be provided to increase the awareness of the walking and cycling routes;
- The potential for cars queuing to access the car park, which could block the cycleway should be investigated and suitable measures implemented to appropriately manage the issue; and
- The provision of accessible car parking spaces be reviewed in accordance with relevant standards and guidelines.

GTA Response

In response to this comment, it is important to reiterate that the MSCP is the focus of this submission. There is no requirement for bicycle parking under any planning control or guideline for this type of facility. In addition, connections to the external pedestrian network and public transport services are not required to support the MSCP.

Although, the provision of bicycle parking, internal wayfinding, pedestrian and cyclist connections and accessible car parking spaces have been considered as part of the MSCP design, a Campus-wide approach is required when assessing the suitability of the proposed quantum.

Details of the aforementioned Campus-wide approach would be documented as part of the ASB SSD, including consideration for the following:

- appropriate levels of bicycle parking and end-of-trip facilities, particularly in key locations for the various users
- pedestrian and cyclist connections between key locations across the Campus and surrounding facilities including infrastructure requirements
- Campus-wide wayfinding strategy to direct all users, including pedestrians, cyclists and motorists, to key locations across the Campus
- appropriate levels of accessible parking spaces, particularly in visitor car parks and at key locations/ public access points across the Campus.

Notwithstanding the above, the project team is committed to providing bicycle parking facilities within the MSCP. The quantum and design of the bicycle parking provided would be considered further during detailed design and with broader consideration for the bicycle parking provided as part of the broader Westmead Redevelopment. As such, bicycle parking has only been indicatively shown on the plans.

The provision of a covered elevated walkway between the MSCP and the Dental Building is considered a safe and convenient internal pedestrian connection. Figure 7.8 of the GTA Transport Impact Assessment shows the proposed shared path along the southern side of Institute Road, linking to the Darcy Road shared path.

The proposed MSCP does not create pedestrian demand such that investigation of additional pedestrian crossings at the intersections of Darcy Road/ Mons Road/ Institute Road and Darcy Road /Dental Building Access would be required. The potential for this would be investigated as part of the ASB SSD.

A Signage and Wayfinding Strategy for the MSCP was prepared by HDR Rice Daubney. Internal signage and wayfinding would be included to ensure users can appropriately navigate the MSCP. A Campus-wide wayfinding strategy would be considered as part of the ASB SSD, including provision of signage intended to increase the awareness of the internal and external walking and cycling routes.

As discussed above, the proposed storage capacity at the Darcy Road access to the MSCP is in excess of the 95th and 99th percentile queues. As such, there is limited potential for queuing across the signalised pedestrian/ cyclist crossing at the intersection of Darcy Road and the Dental access. No further management measures are considered necessary.

The proposed accessible parking provision is suitable given the intended use of the MSCP noting that it would be more beneficial for accessible parking to be provided in locations closer to key facilities, including near the proposed ASB. As such, the ASB SSD will review the accessible parking requirements for the Campus and ensure these are located in suitable locations.

Early Works Package

Issue

The TIA refers to the Early Works Package that includes additional parking, which has been approved separate to the Multi-Storey Car Park development. Section 2.4 indicates that the Early Works Package would only result minor net increase in on-site parking supply. However, Figure 2.10 indicates that it will be in the order of 2,000 additional car parking spaces.

Recommendation

It is requested that the number of car parking spaces proposed in the Early Works Package be clarified including the impact in terms of cumulative traffic and transport.

GTA Response

As discussed in the GTA Transport Impact Assessment, the broader Westmead Redevelopment is being designed, approved and constructed over multiple phases of work, with an overlap expected during most phases.

At this stage, it is expected that construction of the Stage 1 Early Works and the MSCP would overlap with enabling works for the proposed ASB; all of which include demolition of existing car parking. As such, the Stage 1 Early Works provides new and/ or reconfigured at-grade parking to replace those spaces being lost as part of the cumulative works.

The impacts of the Stage 1 Early Works were subject to a separate REF, which has been approved. The base case adopted as part of the GTA Transport Impact Assessment was based on the completion of the Stage 1 Early Works and the key traffic impact details were discussed in Section 4.1. As such, a cumulative assessment has been completed within the GTA Transport Impact Assessment.

The existing and proposed parking supply (post completion of the MSCP) is shown in Table 7. This includes any net change across the Campus as a result of the Stage 1 Early Works.

Table 7: Parking Supply Summary

Status	Westmead Health Campus Parking Supply	Relevant ADHC Parking Supply [1]	Total Parking Supply
Existing Parking Supply	4,377	145	4,522
Post Darcy Road MSCP Supply [2]	5,654	15	5,669
Net Change	+1,277	-130	+1,147

[1] Located on land to be incorporated into the Westmead Health Campus as part of the approved Stage 1 Early Works

[2] Includes demolition of car parks associated with future planned redevelopment works which are expected to occur prior to opening of the Darcy Road MSCP

Parramatta Light Rail

Issue

Parramatta Light Rail project has recently been announced and it includes a connection to Westmead Hospital.

Recommendation

It is recommended that Health Infrastructure communicates with TfNSW's Parramatta Light Rail project team to ensure the impacts of the current project (and future stages) on the light rail project are appropriately considered.

GTA Response

The Westmead Redevelopment project team has previously attempted to consult with TfNSW's Parramatta Light Rail team, as well as other TfNSW staff to discuss the broader Westmead Redevelopment project. However, given that the preferred Parramatta Light Rail route had not been announced, there was limited available information at the time. This has presented several challenges for the MSCP project and the broader Westmead Redevelopment.

Since receiving TfNSW's submission on the proposed MSCP (and concurrently with the route announcement), the project team has consulted with TfNSW's Parramatta Light Rail team, including providing a significant amount of project related information to assist in the planning of Parramatta Light Rail.

The project team will continue to consult with TfNSW and the Parramatta Light Rail team in order to achieve a collaborative outcome, offering significant benefits for the local and regional community.

Construction Traffic Management Plan

Issue

The proposed development has the potential to impact on traffic and transport operation in the vicinity of the hospital including pedestrian safety within and adjacent to the hospital during construction.

Recommendation

Prior to the commencement of any works on the site, a Construction Traffic Management Plan (CTMP) should be prepared by a suitably qualified person. It should be submitted to the Principal Certifying Authority (PCA). The Plan must be prepared in consultation with Parramatta City Council, Roads and Maritime Services and TfNSW. The CTMP should specify any potential impacts to traffic, pedestrian, cyclists and bus services within the vicinity of the proposed site from construction vehicles during construction. Any potential impacts to pedestrian access or public transport infrastructure including bus stops should also be specified in the CTMP.

The CTMP should include the cumulative construction impacts of all the projects adjacent to the site. The applicant should submit a copy of the CTMP to Parramatta City Council, prior to the commencement of work.

GTA Response

A CTMP would be prepared prior to construction of the MSCP, incorporating the above comments and in consultation with the abovementioned agencies.

Minor Issues on the Transport Impact Assessment

Issue

Further clarifications on the following minor issues relating to the Traffic Impact Assessment report:

- *Section 2.3 Paragraph 4 indicates the extent of works is illustrated in Figure 2.9 which may not be correct.*
- *Section 7.9 states 'A footpath along the northern side of Institute Road is also included as part of the Stage 1 Early Works scope. This is not clear from the drawings provided. This footpath would be important for establishing the pedestrian connection from the northern car park (at-grade) to the proposed multi-level car park and further on to the main buildings.*

Recommendation

TfNSW requests that the issues above are addressed and the Traffic Impact Assessment is updated accordingly.

GTA Response

The reference made to Figure 2.9 as part of Section 2.3 of the GTA Transport impact Assessment is correct. The purpose of Figure 2.9 (included again in Figure 2 of this letter) is to indicatively show the proposed location of the MSCP, the extent of works as depicted by the red line, as well as the extent of the Stage 1 Early Works (in green).

Figure 2: Extent of Works

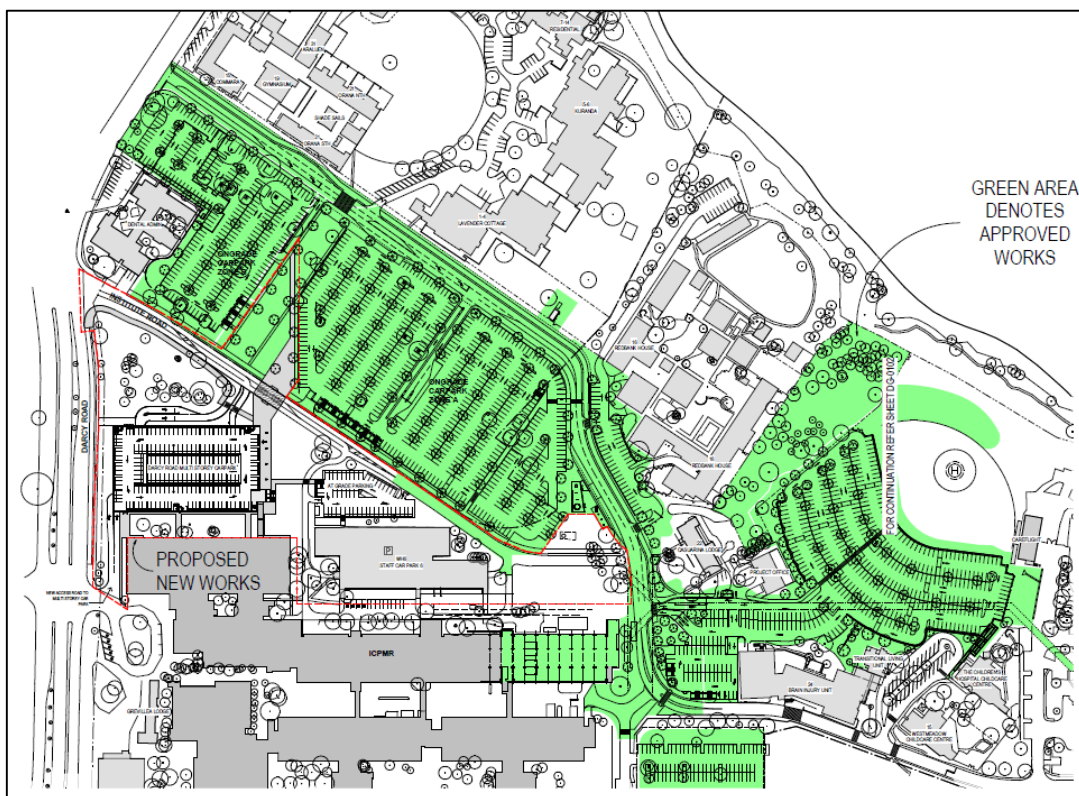


Image source: HDR Rice Daubney

The footpath being provided on the northern side of Institute Road as part of the Stage 1 Early Works is indicatively shown in Figure 3.

Figure 3: Stage 1 Early Works – Proposed Footpath

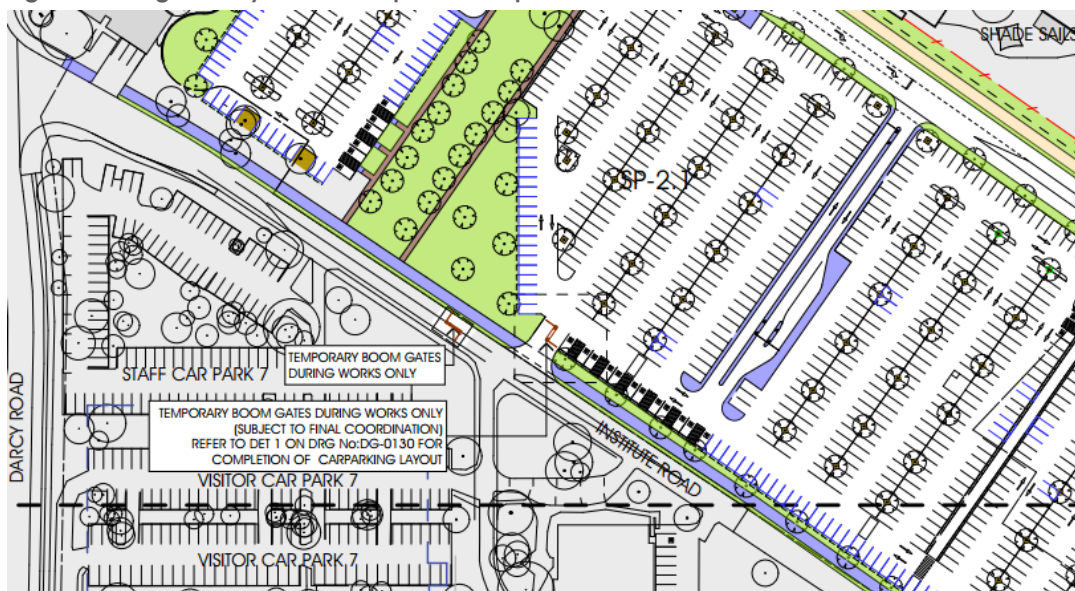


Image source: Fitzpatrick and Partners

Roads and Maritime Services

An initial response within the submissions period was provided as follows:

Roads and Maritime has reviewed the Environmental Assessment and advises that the issues that were of concern raised for inclusion in the Director General's Requirements have generally been adequately addressed. However, Roads and Maritime requires the Raw SIDRA 6 modelling files for review. In this regard, Roads and Maritime requires pre development modelling files and post development modelling files for assessment.

GTA provided the raw SIDRA Intersection modelling files to RMS on Tuesday 19 January 2016.

Additional Roads and Maritime Services Comments

Following a review of the GTA SIDRA modelling, a further response was provided as follows:

Further to our previous response dated 13 January 2016, Roads and Maritime has reviewed the submitted application and SIDRA modelling files and would like to continue to work with Health Infrastructure to resolve key issues associated with the proposal. Details of the key issues associated with the SIDRA traffic modelling are provided within Annexure A.

The RMS response then sets out a number of detailed conditions to be met prior to issue of Construction Certificate, Occupation/ Operation, as well as several general comments. Noting that the additional commentary relates to specific analysis and treatment details that do not impact consent to the SSDA, the project team will continue to work with RMS and TfNSW to ensure that all comments can be addressed prior to the specified milestones.

Parramatta City Council

Institute Road, near Darcy Road is proposed to be narrowed, although maintaining its 2 lane westbound configuration. However, Institute Road could be widened to 3 lanes for approximately 40m on its westbound approach to Darcy Road with little effect on the landscaped area. This work is recommended. Note that the forecast increase in the afternoon peak westbound volume at this location is from 113 vehicles to 499 vehicles.

GTA Response

It is appreciated that the eastern leg of the Darcy Road/ Mons Road/ Institute Road intersection could be reconfigured to provide some minor additional stop line capacity with an additional left turn lane. However, an additional turn lane would result in limited benefits to vehicle delays on the eastern approach and would have a negligible impact on the overall intersection operation.

The proposed intersection modifications present a balanced approach to improved pedestrian and cyclist amenity and improved traffic flow while enabling enhanced urban design outcomes for the adjacent green space. In particular, the proposed kerb realignment presents the following benefits:

- improved pedestrian safety as a result of the realigned pedestrian crossing in accordance with current RMS guidelines
- improved pedestrian and cyclist amenity as a result of the slightly reduced pedestrian crossing width
- safer intersection arrangement due to the realigned westbound traffic lanes, noting that the existing lanes direct westbound traffic south rather than west.

It is also worth noting that the Stage 1 Early Works currently being completed by Health Infrastructure will result in the reassignment of a significant proportion of existing traffic using Institute Road. This results in a temporary reduction in westbound traffic along Institute Road, as summarised in Table 8. As such, the future traffic volumes are not a significant increase from existing (2015) operation.

Table 8: Comparative Traffic Volumes on Institute Road

Period	PM Peak Westbound Traffic on Institute Road
Early 2015	352
Post - Stage 1 Early Works	113
Post – Darcy Road MSCP	499

1. *I am not sure of how the subsequent approvals, if any, are staged (e.g. Construction Certificate). Normally we would ask for design plans of proposed road works to our satisfaction before the CC is issued. It can get a bit complex when RMS approval is also required, as is the case for this DA due to the traffic signals. In any case the intersection upgrades would need to be completed prior to the car park being open.*

GTA Response

It is recognised that the proposed road works require approval from RMS and Parramatta City Council prior to construction. Further design progression of the road works is subject to RMS and TfNSW feedback. Subsequently, design plans would be prepared and provided to RMS and Council for approval.

Construction would be completed under a RMS Road Occupancy License (ROL) process to ensure works are completed in accordance with RMS processes and procedures.

2. *The EIS for this project does not provide the overall information regarding total increase in the amount of parking as a result of the other additional parking that is currently under construction or is planned for the near future.*

GTA Response

The existing and proposed parking supply (post completion of the MSCP) is shown in Table 9.

Table 9: Parking Supply Summary

Status	Westmead Health Campus Parking Supply	Relevant ADHC Parking Supply [1]	Total Parking Supply
Existing Parking Supply	4,377	145	4,522
Post Darcy Road MSCP Supply [2]	5,654	15	5,669
Net Change	+1,277	-130	+1,147

[3] Located on land to be incorporated into the Westmead Health Campus as part of the approved Stage 1 Early Works

[4] Includes demolition of car parks associated with future planned redevelopment works which are expected to occur prior to opening of the Darcy Road MSCP

As discussed within the GTA Transport Impact Assessment, the proposed MSCP aims to accommodate a significant proportion of forecast growth in short to medium term staff and visitor demand for parking, as well as reducing the extent of campus related parking on the surrounding road network.

Parking beyond completion of the Darcy Road MSCP is still in planning and does not form part of this application, however Council will be consulted with respect to any further increases in on-site parking supply.

3. *The EIS also does not consider intersections that are substantially effected by the increase in parking and traffic, but are not immediately adjacent to the site. In particular, it does not consider the intersections of Redbank Road and Briens Road, nor does it consider the intersection of Cumberland Highway and Darcy Road. There are currently delays at both these intersections in the peak periods, primarily due to the Medical Precinct. This will increase as a result of the increased parking. This information has been provided to Westmead Hospital and GTA previously, although it is noted that it has not been included in the consultation comments in the EIS. Council has identified works that can be undertaken at these intersections. It is considered that the project that is most directly related to the Medical Precinct,*

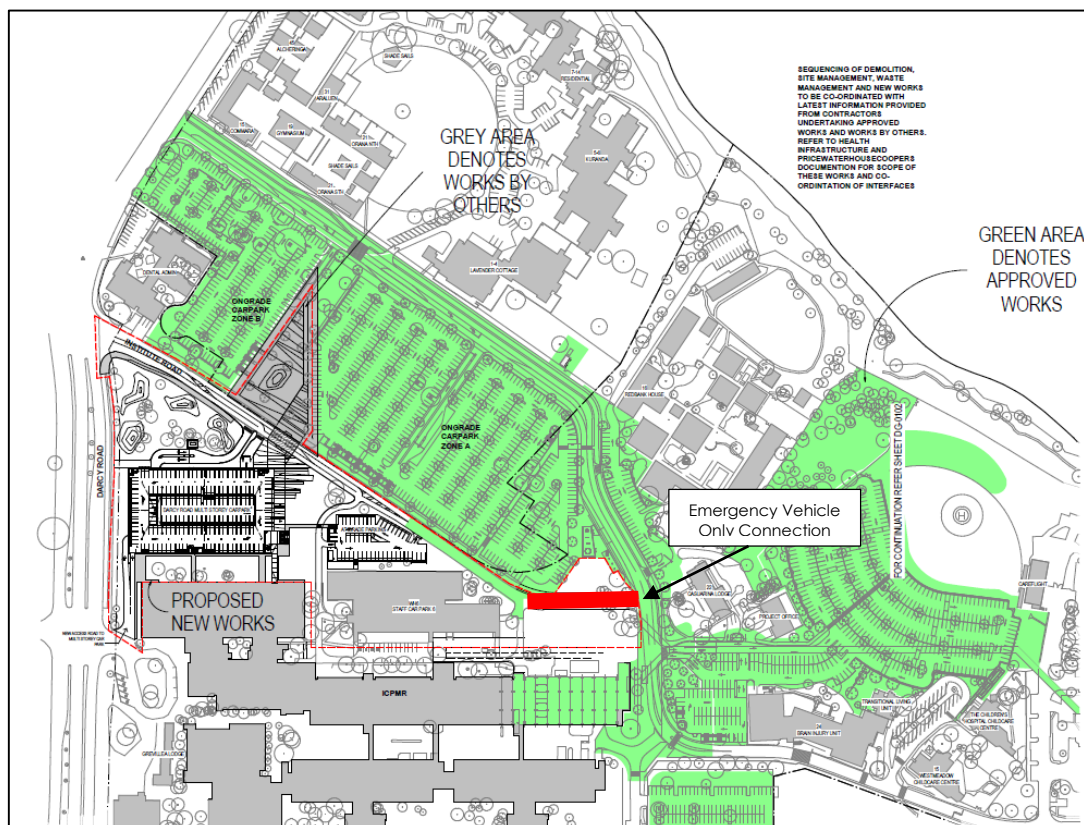
and would give the greatest benefit, is the widening of Darcy Road to the east of Cumberland Highway, to provide a westbound left turn lane. A plan of this proposal is attached. It is recommended that the design, land acquisition and construction for this project be undertaken as part of the increase in parking that is being undertaken by Health NSW.

GTA Response

The intersection of Briens Road and Redbank Road has been considered (with detailed SIDRA modelling) as part of the Stage 1 Early Works Review of Environmental Effects and will be considered further as part of future applications for the broader Redevelopment.

Notwithstanding the above, there will be no direct and convenient connection between the proposed Darcy Road MSCP and Redbank Road, as shown in Figure 4. As such, the impact of the proposed MSCP would be limited to additional through traffic along Briens Road, which would have minimal impact on the intersection noting the significant existing traffic volumes along the Briens Road corridor during the AM and PM peak periods.

Figure 4: Limited future Connection between Institute Road and Redbank Road



Basemap source: HDR Rice Daubney + MSJ

The project team confirms prior receipt of the plans that outline Parramatta City Council's proposed works at the intersection of Cumberland Highway and Darcy Road. However, it was not clear that Council recommended that these works be completed as part of the Westmead Redevelopment.

With consideration for the Journey to Work data presented in the GTA Transport Impact Assessment, it is conservatively estimated that up to 20% of the traffic generated by the Westmead Health Precinct would use the Cumberland Highway and Darcy Road intersection during the AM and PM peak periods. Application of this to the additional traffic generated by the proposed MSCP would result in approximately 115 additional vehicles during the AM peak and 65 additional vehicles during the PM peak. That is, 1-2 additional vehicles per minute.

Council's proposed intersection improvement works include providing a right turn bay and a continuous left turn lane. This could significantly reduce capacity for the right turn movement, while improving operation for the left turn movement, and represents a significant trade-off which may not offer significant improvements for future intersection operation when longer queues form.

Given the limited additional traffic expected to use this intersection as a result of the MSCP and the significant costs associated with land acquisition for Council's proposed intersection improvements, it is not considered feasible nor suitable for these works to be funded as part of the MSCP project. The network improvement works proposed as part of the MSCP project will present a significant public benefit to a key corridor which is directly affected by the proposed MSCP, as well as the proposed Western Sydney University project and several other proposed and/ or recently completed projects.

Notwithstanding the above, the Cumberland Highway corridor as a whole currently experiences lengthy delays and congestion during peak periods, including critical intersections such as the Cumberland Highway and Windsor Road and the Cumberland Highway and Old Windsor Road intersection. A regional solution, such as Council's proposed Western Sydney Regional Ring Road would likely be required as a long term solution to improve the traffic conditions along the corridor.

Further to this, it is understood that a Parramatta-wide traffic model is to be completed to understand the cumulative impacts of key projects, including the Westmead Redevelopment, Parramatta North Urban Transformation, Western Sydney University and Parramatta Light Rail. Such regional modelling and a whole-of-Government approach to transport infrastructure (including Light Rail) improvements is required to appropriately justify specific intersection works outside of the immediate Westmead Health Campus vicinity.

Public Submission

I have a limited 100 metres walking range that barely gets me from the University Clinic Front Door to the Reception Counter for regular appointments for Diabetes and Obesity.

Parking near that access is extremely limited and almost impossible if self driving.

The proposed Car Park is far beyond my walking range, so my question is: What provision will be made for those like myself who need some form of transport between the Car Park and distant parts of Westmead Hospital? Also, will pensioners get free use of the car park?

GTA Response

While the proposed MSCP would provide approximately 250 visitor spaces, these spaces would be provided for use by visitors to nearby facilities, including those located within the

adjacent Dental Building. On this basis it is not expected that the MSCP would typically service existing Hospital facilities adjacent to Hawkesbury Road, given there is existing alternate visitor parking located closer to these facilities.

As part of the broader Westmead Redevelopment additional visitor car parking is expected to be made available in convenient locations, with a particular focus on the Hawkesbury Road frontage. This would likely include a mixture of new spaces and/ or reallocated spaces.

It is assumed that the existing outpatient and visitor buggy service would continue to transport patients and visitors across Westmead Hospital via the pedestrian corridors. Additional transport facilities are also being investigated as part of the broader Westmead Redevelopment.

I trust the above appropriately responds to the comments received. Naturally, should you have any questions or require any further information, please do not hesitate to contact me in our Sydney office on (02) 8448 1800.

Yours sincerely

GTA CONSULTANTS

Brett Maynard
Director