

Aerotropolis Construction Traffic Management Plan All Phases of Works

Sydney Metro Western Sydney Airport Station Boxes and Tunnelling Works

Project number	WSA-200-SBT
Document number	SMWSASBT-CPG-AEC-SN450-TF-PLN-000001
Revision date	9 June 2022
Revision	00

Document approval

Rev	Date	Prepared by	Reviewed by	Approved by
А	30 Mar			
В	26 April			
С	16 May			
D.01	27 May			
00	7 June			
Signature				



Details of Revision Amendments

Document Control

The Project Director is responsible for ensuring that this plan is reviewed and approved. The Project Traffic Manager is responsible for updating this plan to reflect changes to construction, legal and other requirements, as required.

Amendments

Any revisions or amendments must be approved by the Project Traffic Manager and/or client before being distributed/implemented.

Revision Details

Revision	Details	
A.01	For external stakeholder review	
B.01	For approval	
C.01	For approval	
D.01	For approval	
00	Approved version for construction	

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1.Introduction

1.1. Project and location

The Project forms part of the broader Sydney Metro network. It involves the construction and operation of a 23km new metro rail line that extends from the existing Sydney Trains suburban T1 Western Line (at St Marys) in the north and the Aerotropolis (at Bringelly) in the south. The alignment includes a combination of tunnels and civil structures, including viaduct, bridges, surface and open-cut troughs between the two tunnel sections (Figure 1).

The Project will be delivered through a number of works packages including the Station Boxes and Tunnelling Works (SBT Works). The SBT Works includes the design and construction of:

- Two sections of twin tunnels with a total combined length of approximately 9.8km, plus associated portal structures, one from Orchard Hills to St Marys and the other under Western Sydney International (WSI) airport to the new Aerotropolis Station in New South Wales (NSW)
- Excavations at either end to enable trains to turn back and stub tunnels to enable future extensions
- Station box excavations with temporary ground support for four stations at St Marys, Orchard Hills, Airport Terminal and Aerotropolis
- Excavations for two intermediate service facilities, one in each of the tunnel sections at Claremont and Bringelly.



Figure 1: Project location





1.2. Purpose

This Aerotropolis site specific Construction Traffic Management Plan (CTMP or this plan) has been developed by CPB Contractors Ghella Joint Venture (CPBG) to identify the traffic management measures at the Aerotropolis worksite for site establishment, site operations and site demobilisation associated with the Sydney Metro Western Sydney Airport Station Boxes and Tunnelling Works (SBT Works).

This plan sets out the traffic management initiatives that will be deployed to minimise disruption and ensure the safety of the wide range of stakeholders potentially affected by the SBT works including but not limited to motorists, pedestrians, cyclists, public transport users, local residents, property owners, business owners and workers/ staff.

This plan has been prepared in accordance with the Construction Traffic Management Framework, SSI 10051 Planning Approval Condition E103 and will be submitted to the Planning Secretary of the NSW Department of Planning and Environment for information.





2. Locality and existing conditions

This plan has been prepared assuming that the works to be undertaken by other contractors as identified in Table 1 have been implemented.

Table 1: Works undertaken by others

Location	Activity
Badgerys Creek Road	Aero access road from Badgerys Creek Road including roundabout – refer to Figure 2
D / / /	Real Man Martin -
	- All All All
146 - 200	
- 20 - 3	
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Jack.	
10-1-1 400	
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Figure 2: TfNSW Sydney Metro design excerpt



The site is located on the east side of Badgerys Creek Road, approximately 1.4km north of The Northern Road and is within the Liverpool City Council Local Government Area (LGA). The site and its location is shown on Figure 3.



Figure 3: Site and locality

2.1. Badgerys Creek Road

Badgerys Creek Road is classified as a regional road. Regional roads typically fall under Council care with control of the road exercised between Liverpool City Council and TfNSW, with TfNSW agreement required for any changes. Badgerys Creek Road commences at The Northern Road and terminates at Elizabeth Drive to the north. The current speed limit is 80km/hr.

Badgerys Creek Road has been upgraded in a number of locations but generally has a traffic lane in each direction with unsealed shoulders in the non-upgraded sections with no footpaths provided, refer to Figure 4. Footpaths and street lighting are provided in the northern upgraded section north of the deviation through to Elizabeth Street drive. Street lighting is also the southern tie in to The Northern Road. No other street lighting is provided, refer to Figure 5.







Figure 4: Badgerys Creek Road not upgraded typical view



Figure 5: Upgraded section of Badgerys Creek Road



3.Site establishment

Duration: Approximately 3 months

Timing: May to July 2022

3.1. Works required

Works to be undertaken during the site establishment phase of works include the low impact works and pre-CEMP approval works as defined in the Ministerial Conditions of Approval and as noted below:

- Installation of fencing and hoarding around the site
- Clearing and grubbing including site levelling
- Installation of environmental controls within the site including run off protection
- Installation of site services including power, potable water and storm water
- Site investigation works
- Service relocations
- Excavation for piling pad installation
- Construction of internal access roads
- Installation of site sheds and amenities
- Earthworks including stockpiling
- Local area work adjustments

Traffic generating activities during the works involve the movement of light and heavy vehicles such as concrete trucks, tippers, bin trucks and single unit trucks and truck and dogs. Machinery includes excavators, mobile and truck mounted cranes, concrete pumps and miscellaneous small machinery.

Works will generally be undertaken during standard construction hours of 7AM to 6PM Monday to Friday and 8AM to 1PM on Saturdays in accordance with SSI Planning Approval Condition E38.

3.2. Operating Conditions

Vehicles would enter the site from Badgerys Creek Road via the newly constructed access/ egress road and roundabout by the Early Works Contractor.

3.2.1. Impact on traffic flow

There will be minimal impact on traffic flows as the vehicle numbers are significantly less for the site establishment phase of works, in comparison to the site operations. A listing of the anticipated vehicle numbers associated with each of the site establishment tasks is provided in Table 2.

Table 2: Indicative vehicle numbers

Activity	Number of heavy vehicles
Installation of fencing	5 vehicles over 3 weeks
Installation of noise hoarding	5 vehicles over 3 weeks
Delivery of site amenities	5 vehicles over 3 weeks
Delivery of machinery	15 vehicles over 3 weeks



Activity	Number of heavy vehicles
Site maintenance	3 vehicles per week
Vacuum trucks to service amenities	4 vehicles per week

3.2.2. Impact on public transport

There is no impact on public transport during these works, as no public transport operates in this area.

3.2.3. Impact on active transport users

There are no existing footpaths or cycles routes provided along Badgerys Creek Road in the nonupgraded sections. In the upgraded sections, no existing footpaths or shared use paths will be blocked during the works. Where pedestrians/ cyclists use the road, CPG drivers will be instructed to reduce their speed to allow the pedestrians/ cyclists safe passage.

3.2.4. Impact on property and utility access

Access to the resident-rural properties will be retained during the site establishment works. Access for utility providers/ maintainers will not be impacted.

3.2.5. Cumulative impacts

A number of contractors are within close proximity of the site. These contractors are predominately associated with the construction works for the Western Sydney Airport and/ or Sydney Metro. The contractors performing works on first building and precinct roads and utilities may be present during the SBT works. CPBG will liaise with other contractors including the following through Sydney Metro's TTLG and TCG forums in addition to periodic interface meetings.

- Abergeldie Contractors Advanced Early Works contractor for Sydney Metro
- Quickway Construction Utilities Contractor for Sydney Metro
- Western Parkland City Authority

3.3. Staff and labour parking and transportation to site

It is anticipated that there will be up to 50 personnel on site. There will be ample room on site to cater for this demand.

3.4. Traffic Guidance Scheme/ Road Occupancy License identified works

No works have been identified as requiring a Traffic Guidance Scheme (TGS).

3.4.1. Required Council approvals

Works that have been identified as requiring Council approval include:

1. Delivery of oversize and/ or over mass plant/ equipment

3.4.2. Road occupation and openings

For any works that involve an occupation of the road/ footpath, a Road Occupancy Licence (ROL) will be sought from the Transport Management Centre (TMC), through OpLinc (electronic lodgement portal). The ROL will be applied for a minimum of 10 business days from the proposed start date.





Council permits will be lodged electronically in accordance with the City of Liverpool Council's requirements. For any road opening required, the relevant Road Opening Permit (ROP) will be applied for through the existing City of Liverpool Council website. The ROP will also be accompanied by a ROL. Details on the permits required are found at <u>City of Liverpool Council permits</u>.

A register of permits/ licenses will be maintained through the works period and can be tabled at the TCG, if requested.





4. Site operations

Duration: Approximately 26 months

Timing: August 2022 to October 2024

4.1. Works required

Works to be undertaken during the site operations phase of works include:

- Construction of the new station box, station structures and finishes
- Construction of the crossover
- Construction of stub tunnels
- Spoil handling, storage and transport
- Temporary TBM retrieval shaft excavation
- TBM retrieval note that this will be subject to a separate CTMP approval.
- Station precinct works

Works will occur during standard construction hours of 7am to 6pm Monday to Friday and 8am to 1pm on Saturdays.. Spoil will not be removed from site outside of standard construction hours..

4.2. Operating Conditions

Vehicles would enter the site from Badgerys Creek Road via the newly constructed access/ egress constructed by the Early Works Contractor. The indicative site layout is shown on Figure 6 and is provided in Appendix 1.



Figure 6: Indicative site layout



4.2.1. Impact on traffic flow

The EIS indicative peak hour vehicle numbers associated with the site operations phase of works is provided in Table 3.

Table 3: EIS peak construction numbers

Vehicle type	Peak construction movements						
	AM Peak			PM Peak			
	In	Out	Total	In	Out	Total	
Light vehicle staff	110	0	110	0	110	110	
Light vehicle deliveries	1	1	2	1	1	2	
Heavy vehicles	13	13	26	12	13	26	

The CPBG peak hour vehicle numbers associated with the site operations phase of works is provided in Table 4. Movements during peak periods will be minimised through scheduling.

Table 4: CPBG peak construction vehicle numbers

Vehicle type	Peak construction movements					
	AM Peak			PM Peak		
	In	Out	Total	In	Out	Total
Light vehicle staff	110	0	110	0	110	0
Light vehicle deliveries	1	1	2	1	1	2
Heavy vehicles	13	13	26	13	13	26

As can be seen from the tables, CPBG vehicle movements will be similar to those nominated in the EIS.

The EIS also reviewed the operation of the site based on three scenarios for the year (2023/2024) being the peak year of all construction activities in the Western Sydney Parkland area, where the Aerotropolis site is located. The results of this analysis is provided in Figure 7.

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Table 24-4 Peak construction year (2023/2024) cumulative intersection performance

	Future year without construction scenario (2023/2024)			Future year with project construction scenario (2023/2024)				Future year with cumulative construction scenario (2023/2024)					
Intersection ¹	AM Pe	ak	PM Pe	PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
intersection	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS	Average delay (sec)	LoS	
Luddenham Road/Elizabeth Drive (P)	10	А	12	А	15	в	16	В	16	в	21	в	
Elizabeth Drive/Adams Road (P)	9	А	16	в	13	А	32	С	18	в	53	D	
Elizabeth Drive/Badgerys Creek Road (R)	13	А	14	А	17	в	28	в	25	в	48	D	
Badgerys Creek Road/Badgerys Creek Site Access (P)	-	-	-	-	33	С	36	С	60	E	50	D	
Badgerys Creek Road/Aerotropolis Site Access (P)	-	-	-	-	43	D	42	С	46	D	50	D	
Badgerys Creek Road/The Northern Road (S)	34	С	28	В	53	D	32	С	56	D	33	С	
The Northern Road/Derwent Road (S)	6	А	6	А	7	А	6	А	7	А	6	А	

Notes: Intersection control type as indicated against each (P - priority-controlled, R - roundabout, S - signalised) Cumulative construction scenario includes the project, the future M12 Motorway and Western Sydney International For traffic signals, the average movement delay and level of service over all movements is used. For roundabouts and priority control intersections (with stop and give way signs), the critical movement for level of service assessment with the worst movement delay is used Dashes indicate new construction site accesses that would only be constructed and used by construction vehicles and hence would not exist during the base year scenario

Figure 7: EIS modelling of cumulative impacts (Chapter 24: Cumulative impacts)

eak	Approach	Option 1 – T- intersection		Option 2 - Signalised		Option 3 - Roundabout	
-		Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
	Badgerys Creek Road (S)	9	А	19	в	9	A
A	New Access Road (E)	203	F	22	в	15	в
М	Badgerys Creek Road (N)	7	Α	4	A	7	A
	Intersection	203	F	15	в	15	в
	Badgerys Creek Road (S)	96	F	4	Α	12	A
Ρ	New Access Road (E)	464	F	31	C	24	в
м	Badgerys Creek Road (N)	9	Α	16	в	8	A
	Intersection	464	F	14	A	24	В

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Figure 8: ESC Traffic Modelling of Badgerys Creek Road/ Aerotropolis Site Access

As noted in Figure 7, Badgerys Creek Road and Aerotropolis Site Access was modelled as a priority-controlled intersection in the EIS, however, Easing Sydney's Congestion completed a Traffic Assessment Report post EIS exhibition. The report – attached in Appendix 8 – was an assessment of three different options for Badgerys Creek Road and Aerotropolis Site Access Intersection. As shown in Figure 8, traffic modelling included in the ESC report concluded a roundabout will perform best in in terms of Level of Service (LoS). Considering the findings, the current design implemented by Sydney Metro's AEW contractors is a roundabout.

4.2.2. Impact on public transport

There is no impact on public transport during these works, as no public transport operates in this area.

4.2.3. Impact on active transport users

There are no existing footpaths or cycles routes provided along Badgerys Creek Road in the nonupgraded sections of Badgerys Creek Road. Footpaths do exist in the upgraded sections however;



no existing footpaths or shared use paths will be blocked during the works. Where pedestrians/ cyclists use the road, CPG drivers will be instructed to reduce their speed to allow the pedestrians/ cyclists safe passage.

4.2.4. Impact on property and utility access

Access to the resident-rural properties will be retained during the site operations works. Access for utility providers/ maintainers will not be impacted.

4.2.5. Cumulative impacts

A number of contractors are within close proximity of the site. These contractors are predominately associated with the construction works for the Western Sydney Airport and/ or Sydney Metro. The contractors performing works on first building and precinct roads and utilities may be present during the SBT works. CPBG will liaise with other contractors including the following through Sydney Metro's TTLG and TCG forums in addition to periodic interface meetings.

- Abergeldie Contractors Advanced Early Works contractor for Sydney Metro
- Quickway Construction Utilities Contractor for Sydney Metro
- Western Parkland City Authority

The cumulative impacts of the various projects were modelled during the development of the Environmental Impact Statement and the results of this modelling is provided on Figure 7 and 8 above.

4.3. Staff and labour parking and transportation to site

It is anticipated that there will be 150 personnel on site. There will be ample room on site to cater for this demand. The use of carpooling and the fact that this is a 24 hour site, will ensure that all vehicles will be catered for on site.

4.4. Traffic Guidance Scheme/ Road Occupancy License identified works

No works have been identified as requiring a Traffic Guidance Scheme (TGS)

4.4.1. Required Council approvals

Works that have been identified as requiring Council approval include:

1. Delivery of oversize and/ or over mass plant/ equipment

4.4.2. Road occupation and openings

For any works that involve an occupation of the road/ footpath, a Road Occupancy Licence (ROL) will be sought from the Transport Management Centre (TMC), through OpLinc (electronic lodgement portal). The ROL will be applied for a minimum of 10 business days from the proposed start date.

Council permits will be lodged electronically in accordance with the City of Liverpool Council's requirements. For any road opening required, the relevant Road Opening Permit (ROP) will be applied for through the existing City of Liverpool Council website. The ROP will also be accompanied by a ROL. Details on the permits required are found at <u>City of Liverpool Council permits</u>.

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A register of permits/ licenses will be maintained through the works period and can be tabled at the TCG, if requested.





5.Site demobilisation

Duration: Approximately 1 month

Timing: December 2024

5.1. Works required

Works to be undertaken during the site demobilisation phase of works include:

• Removal of plant/ equipment - no other works are required,

Works will generally be undertaken during standard construction hours of 7AM to 6PM Monday to Friday and 8AM to 1PM on Saturdays in accordance with SSI Planning Approval Condition E38.

5.2. Operating Conditions

Vehicles would enter the site from Badgerys Creek Road via the existing access/ egress.

5.2.1. Impact on traffic flow

Vehicle numbers are significantly lower than those nominated for the site establishment works.

5.2.2. Impact on public transport

There is no impact on public transport during these works, as no public transport operates in this area.

5.2.3. Impact on active transport users

There are no existing footpaths or cycles routes provided along Badgerys Creek Road in the nonupgraded sections of Badgerys Creek Road. Footpaths do exist in the upgraded sections however; no existing footpaths or shared use paths will be blocked during the works. Where pedestrians/ cyclists use the road, CPG drivers will be instructed to reduce their speed to allow the pedestrians/ cyclists safe passage.

5.2.4. Impact on property and utility access

Access to the resident-rural properties will be retained during the site demobilisation works. Access for utility providers/ maintainers will not be impacted.

5.2.5. Cumulative impacts

A number of contractors are within close proximity of the site. These contractors are predominately associated with the construction works for the Western Sydney Airport and/ or Sydney Metro. The contractors performing works on first building and precinct roads may be present during the SBT works. CPBG will liaise with other contractors including the following through Sydney Metro's TTLG and TCG forums in addition to periodic interface meetings.

• Western Parkland City Authority

The cumulative impacts of the various projects were modelled during the development of the Environmental Impact Statement and the results of this modelling is provided on Figure 7 and 8 above.

5.3. Staff and labour parking and transportation to site

It is anticipated that there will be 25 personnel on site. There will be ample room on site to cater for this demand.



5.4. Traffic Guidance Scheme/ Road Occupancy License identified works

Works that have been identified as requiring a Traffic Guidance Scheme (TGS) are listed below:

1. Removal of oversize and/ or over mass plant/ equipment

5.4.1. Required Council approvals

Works that have been identified as requiring Council approval include:

1. Removal of oversize and/ or over mass plant/ equipment

5.4.2. Road occupation and openings

For any works that involve an occupation of the road/ footpath, a Road Occupancy Licence (ROL) will be sought from the Transport Management Centre (TMC), through OpLinc (electronic lodgement portal). The ROL will be applied for a minimum of 10 business days from the proposed start date.

Council permits will be lodged electronically in accordance with the City of Liverpool Council's requirements. For any road opening required, the relevant Road Opening Permit (ROP) will be applied for through the existing City of Liverpool Council website. The ROP will also be accompanied by a ROL. Details on the permits required are found at <u>City of Liverpool Council permits</u>.

A register of permits/ licenses will be maintained through the works period and can be tabled at the TCG, if requested.





6.Fleet management

Trucks to be used for the delivery of the SBT works will be compliant with NSW legislation and standards including Heavy Vehicle National Legislation (HVNL). All heavy vehicle operations will be conducted in accordance with CPBG's Chain of Responsibility (CoR) Management Plan and the Principal Contractors Safety Standard, as noted in the Project Wide CTMP.

A combination of truck types will be used during the SBT works including single unit trucks, semitrailers, truck and dog combinations and low loaders, for example.

The location of all heavy vehicles used for spoil haulage will be monitored in real time and these records of monitoring will be made available electronically to the Planning Secretary and the Environmental Protection Authority (EPA) upon request for a period of no less than one (1) year following the completion of construction.

There is sufficient room on site to provide for all heavy vehicles required for the works, therefore, marshalling facilities are not proposed for this site. Heavy vehicles will not idle on roads surrounding the site.

6.1. Haulage routes

Generally, the haulage routes will be via arterial roads, freeways or Tollways. The routes included in the EIS have been adopted for this site, refer to Figure 9. The routes include Badgerys Creek Road and the newly constructed Aero access road. Motorway access will be from The Northern Road to the Hume Highway or M4 Motorway and Elizabeth Drive to access the M7. The Heavy vehicles will carry spoil to the primary spoil sites On Airport. Non reusable spoil will be disposed offsite at approved EPA/ Council tip sites.



Figure 9: EIS haulage routes



6.2. Road dilapidation report

Before any local road is used by Heavy Vehicles, a Road Dilapidation Report will be prepared. A copy of that report will be provided to Liverpool City Council within three (3) weeks of completion of the survey and no later than one (1) month before the road is used by Heavy Vehicles associated with the project. Note that it is not anticipated that there is a requirement to use any local road to gain access or to egress the site for any heavy vehicles.

If damage to local roads occurs as a result of the construction of the project CPBG will either (at Liverpool City Council's discretion):

- Compensate Liverpool City Council for the damage so caused or
- Rectify the damage to restore the road to at least the condition it was in pre-work as identified in the Road Dilapidation Report

6.3. Permits for Over Dimensional vehicles

Permits for vehicles greater than 4.5t are through the National Heavy Vehicle Regulator (NHVR). This applies to particular special purpose vehicles (SPV) such as mobile cranes and other oversize/ over mass (OSOM) vehicles. TfNSW is currently undertaking this permit issue.

For over dimensional vehicles generally vehicles that are greater than 25m in length of 3.5m wide require a pilot(s). Extremely long or wide vehicles will require an escort, fee payable. Permits ware generally applied for by the transport operator.

There is a requirement for over mass/ oversize vehicles during the works identified in this CTMP. The Tunnel Boring Machine removal will be the subject of a separate CTMP.





7. Other matters

7.1. Road safety audits

Road safety audits will be undertaken during the development and implementation of the CTMP. The audit will be undertaken as noted in the section 10 of the Construction Traffic Management Framework. A copy of the road safety audit is provided in Appendix 5.

7.2. Communications and the community

CPBG will be responsible for the dissemination of information to the community including affected residents, relevant Councils, businesses and the public.

7.2.1. Proposed communications

Typical timelines for the various notifications are:

- Community Notices (Notifications) issued at least 7 days prior to:
 - o start of work
 - new work with a new activity that has the potential to impact on stakeholders and the community
 - o handover of a construction site to a new contractor
 - activities requiring notification to comply with relevant Environmental Protection Licence (EPL) usually out of hours work.
- Precinct updates/e-update (Newsletters) published 2x/year and for changes to planning approvals
- Email and internet updates done with publication and delivery to letterboxes of Notifications and Newsletters.
- Advertisements published in advance of significant traffic management changes, detours, traffic disruptions
- Advance warning sign as noted in the CTMP, where required

Table 5 provides the proposed communications to be implemented for this CTMP.

Notification	Site establishment	Site operations	Site demobilisation
Community Notice	Yes	Yes	Yes
Precinct update/ e-update	Yes	Yes	Yes
Email	Yes	Yes	Yes
Internet	Yes	Yes	Yes
Print advertising	No	No	No
Advance warning sign	No	No	No

Table 5: Proposed communications

7.2.2. Travelling public

Where the SBT works will impact on the travelling public, CPBG will undertake the following communications:

- Public transport interruptions will be communicated via on site signage
- Motoring public will be forewarned of any changes including road closures, road changes and lane changes well in advance using appropriate signs including Variable Message Signs (VMS)
- Active transport users will be provided with advance warning signs.



7.3. Stakeholders

There are a number of stakeholders consulted during the development of this CTMP. A copy of their review comments are provided in Appendix 4. Table 6 provides an overview of the consultation undertaken for this CTMP.

Table 6: Consultation undertaken

Stakeholder	Consultation type	Date
Traffic Control Group	Presentation	
Traffic and Transport Liaison Group	Presentation	
Customer Journey Planning	Submission of CTMP	30 th March 2022
Sydney Metro project team	Submission of CTMP	30 th March 2022
Liverpool City Council	Submission of CTMP	30 th March 2022
Customer Journey Planning	Resubmission of CTMP	26th April 2022
Sydney Metro project team	Resubmission of CTMP	26th April 2022
Liverpool City Council	Resubmission of CTMP	26th April 2022
Customer Journey Planning	Resubmission of CTMP	16 May 2022
Sydney Metro project team	Resubmission of CTMP	16 May 2022
Liverpool City Council	Resubmission of CTMP	16 May 2022

7.3.1. Traffic and Transport Liaison Group

The Traffic and Transport Liaison Group (TTLG) has been established by Sydney Metro Western Sydney Airport for the project, as required under MCoA E116. The TTLG consists of members from Sydney Metro Western Sydney Airport project team, Liverpool City Council, Penrith City Council, Customer Journey Planning, Western Sydney Airport Corporation (WSA Co), Western Parkland City Authority (WPCA), TfNSW's Planning and Programs, other contractors associated with the project and Emergency Services.

Further development of this CTMP will occur in consultation with this group. It is noted that the TTLG meets monthly.

Supplementary analysis and modelling as required by Sydney Metro Western Sydney Airport and/ or the TTLG will be undertaken to demonstrate that construction traffic can be managed to minimise disruption to traffic network operations including changes to the management of pedestrians, cyclists and public transport networks and services. Any revised traffic management measures will be incorporated into the CTMP.

7.3.2. Traffic Control Group

The Traffic Control Group (TCG) has been established by Sydney Metro Western Sydney Airport for the project. The TCG consists of members from Sydney Metro Western Sydney Airport project team Liverpool City Council, Penrith City Council, Customer Journey Planning, Western Sydney Airport Corporation (WSA Co), Western Parkland City Authority (WPCA), TfNSW's Planning and Programs and other contractors associated with the project. The TCG meets fortnightly.

The purpose of the TCG is for open and honest technical discussion on contractor proposed works methodologies and traffic management plans. The TCG will:





- Provide feedback on proposals;
- Guide CTMP and other document finalisation prior to submission for review/ approval;
- Guide coordination of works and traffic management activities on and off-airport (local, regional and state roads).
- Assist in transport impact mitigation.

7.4. Special events

When planning the works, CPBG will identify special events which directly impact the worksites or haulage activities and will continue to interrogate event websites that provide details on forthcoming events such as:

- NSW and Sydney Events Destination NSW
- NSW Events and Festivals Visit NSW and
- Upcoming Events Liverpool City Council

7.5. Training

CPBG will ensure that all personnel, including sub-contractors are aware of the specific requirements of TfNSW customers, general public, residents and businesses, prior to attending site through the induction process and regular updates through tool-box talks. Specific training will be provided to heavy vehicle drivers regarding the increased risk of high speed run off the road and head on collision types due to the narrow road widths, high speeds and little to no shoulder availability.

7.6. Inspections and monitoring

The site will be monitored by the site supervisor. Any changes to signs and lines that impact on the public will be recorded. Daily monitoring will be undertaken during site operating hours.

Traffic control used for pedestrian management, lane closures etc will need to provide records of the traffic control implemented. Any changes required to the traffic control set up will be authorised by a holder of a SafeWork NSW "Prepare a Work Zone Traffic Management Plan" or equivalent.

Checklists for monitoring of the implemented CTMP are provided in Appendix 7.

7.7. Environmental maintenance

All works will be undertaken in accordance with the SBT works NSW Site Establishment Management Plan and associated procedures and the Construction Environmental Management Plan and associated sub plans. The SBT works are regulated by the NSW Environment Protection Authority and works to be undertaken outside of standard construction hours will need to comply with the requirements of the Environmental Protection License (EPL)

7.8. Site contacts

Table 7 provides the contact details for the works identified in this CTMP

Table 7: Site contacts

Name	Position	Contact details
Abbas Abbas	Project Manager	0402 114 114

7.9. References

The following documents were used in the development of this CTMP



- Construction Traffic Management Framework Sydney Metro West and Sydney Metro Western Sydney Airport Construction
- Traffic Control at Worksites Manual v6
- Relevant AustRoads Guides and TfNSW Supplements
- Sydney Metro Principal Contractor Health and Safety Standards



Appendix 1 Indicative site layout





Appendix 2 Compliance Tables

Table 8: Ministerial Conditions of Approval

MCoA #	Requirement	Where addressed
E103	Construction Traffic Management Plans (CTMPs) must be prepared in accordance with the Construction Traffic Management Framework. A copy of the CTMPs must be submitted to the Planning Secretary for information before the commencement of any construction in the area identified and managed within the relevant CTMP	This plan and section 2
E104	The location of all Heavy Vehicles used for spoil haulage must be monitored in real time and the records of monitoring be made available electronically to the Planning Secretary and the EPA upon request for a period of no less than one (1) year following the completion of construction	Section 6
E105	Local roads proposed to be used by Heavy Vehicles to directly access ancillary facilities/construction sites that are not identified in the documents listed in Condition A1 must be approved by the Planning Secretary and be included in the CTMP	Not applicable to this CTMP as all roads are as per the EIS
E106	 All requests to the Planning Secretary for approval to use local roads under Condition E105 above must include the following: a) A swept path analysis b) Demonstration that the use of local roads by Heavy Vehicles for the CSSI will not compromise the safety of pedestrians and cyclists of the safety of two way traffic flow on two way roadways c) Details as the date of completion of the road dilapidation surveys for the subject local roads and d) Measures that will be implemented to avoid where practicable the sue of local roads past schools, aged care facilities and child care facilities during their peak operation times and Written advice from an appropriately qualified professional on the suitability of the proposed Heavy Vehicle route which takes into consideration items a) to d) of this condition 	Not applicable to this CTMP as all roads are as per the EIS
E107	Before any local road is used by a Heavy Vehicle for the purposes of construction of the CSSI, a Road Dilapidation Report must be prepared for the road. A copy of the Road Dilapidation Report must be provided to the Relevant Road Authority(s) within three (3) weeks of completion of the survey and at no later than one (1) month before the road being used by Heavy Vehicles associated with the construction of the CSSI	Section 6.2

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MCoA #	Requirement	Where addressed
E108	If damage to roads occurs as a result of the construction of the CSSI, the Proponent must either (at the Relevant Road Authority's discretion):	Section 6.2
	 Compensate the Relevant road Authority for the damage so caused or 	
	Rectify the damage to restore the road to at least the condition it was in pre-work as identified in the Road Dilapidation Report	
E109	Vehicles associated with the project workforce (including light vehicles and Heavy Vehicles) must be managed to:	Sections 3.3, 4.3 and 5.3
	a) Minimise parking on public roads	
	 b) Minimise idling and queuing on state and regional roads 	Section 6
	 Not carry out marshalling of construction vehicles near sensitive land use(s) 	Section 6
	 d) Not block or disrupt access across pedestrian or shared use paths at any time unless alternative access is provided and 	Sections 3.2.3, 4.2.3 and 5.2.3
	 e) Ensure spoil haulage vehicle adhere to the nominated haulage routes identified in the CTMP 	Section 6.1
E110	Access to all utilities and properties must be maintained during works unless otherwise agreed with the relevant utility owner, landowner or occupier	Sections 3.2.4, 4.2.4 and 5.2.4
E111	The proponent must maintain access to properties during the entirety of the works unless an alternative access is agreed in writing with the landowner(s) whose access is impacted by the CSSI works	Sections 3.2.4, 4.2.4 and 5.2.4
E112	Where construction of the CSSI restricts a property's access to a public road, the Proponent must, until their primary access is reinstated, provide the property, with temporary alternate access to an agreed road decided through construction with the landowner, at no cost to the property landowner, unless agreed with the landowner	Sections 3.2.4, 4.2.4 and 5.2.4
E113	Any property access physically affected by the CSSI must be reinstated to at least an equivalent standard, unless agreed by the landowner or occupier. Property access must be reinstated within one (1) month of the work that physically affected the access is completed or in any other timeframe agreed with the landowner or occupier	Sections 3.2.4, 4.2.4 and 5.2.4
E114	During construction, all reasonably practicable measures must be implemented to maintain pedestrian, cyclist and vehicular access to, and parking in the vicinity of businesses and affected properties. Disruptions are to be avoided, and	Sections 3.2.3, 4.2.3 and 5.2.3



MCoA #	Requirement	Where addressed
	where avoidance is not possible, minimised. Where disruption cannot be avoided, alternate pedestrian, cyclist and vehicular access, and parking arrangements must be developed in consultation with affected businesses and landowners and implemented before the disruption. Adequate signage and directions to businesses must be provided before, and for the duration of any disruption	
E115	Safe pedestrian and cyclist access must be maintained around the St Marys construction site during construction. In circumstances where pedestrian and cyclist access is restricted or removed due to construction activities, a proximate alternate route which complies with the relevant standards, must be provided and signposted before the restriction or removal of the impacted access	Not applicable to this CTMP
E116	A Traffic and Transport Liaison Group(s) must be established in accordance with the Construction Traffic Management Framework to inform the development of the CTMP	Section 7.3.1
E117	Supplementary analysis and modelling as required by TfNSW and/ or the Traffic and Transport Liaison Group(s) must be undertaken to demonstrate that construction and operational traffic can be managed to minimise disruption to traffic network operations, including changes to and the management of pedestrian, bicycle and public transport networks, public transport services and pedestrian and cyclist movements. Revised traffic management measures must be incorporated into the CTMP	Section 7.3.1

Table 9: Revised Environmental Management Measures

REMM#	Requirement	Where addressed
T1	Construction Traffic Management Plans would be prepared in accordance with the Construction Traffic Management Framework	This Plan
T2	The Construction Traffic Management Plan for St Marys would be developed in consultation with the Traffic and Transport Liaison Group to ensure existing transport interchange infrastructure continues to operate effectively within the St Marys station precinct	Applicable to the St Marys construction site only
Т3	Coordination with Western Sydney Airport and Transport for NSW would be undertaken through the Traffic and Transport Liaison Group to manage potential cumulative construction traffic impacts with M12 Motorway and Elizabeth Drive	Section 7.3.1
T4	Road Safety Audits would be carried out to address vehicular access and egress, and pedestrian, cyclists and	Section 7.1

All Phases of Works | Page 25

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REMM#	Requirement	Where addressed
	public transport safety. Road Safety Audits would be carried out as per the guidelines outlined in Section 10 of the Construction Traffic Management Framework.	
Τ5	Maintain access for pedestrians and cyclists around construction sites as per the guidelines outlined in the Construction Traffic Management Framework. Appropriate signage and line marking would be provided to guide pedestrians and cyclists past construction sites and on the surrounding network to allow access be maintained	Sections 3.2.3, 4.2.3 and 5.2.3
Т6	Access for construction vehicles to be planned as per the guidelines outlined in the Construction Traffic Management Framework. Construction site traffic would be managed to minimise movements during peak periods. Vehicle access to and from construction sites would be managed to maintain pedestrian, cyclists and motorist safety	Section 6
Τ7	Temporary relocation of bus stops and the bus layovers at the Station Street car park in St Marys would be implemented prior to the commencement of construction works that impacts on the existing bus facilities. The temporary relocation of bus stops and the bus layover at St Marys would be carried out in consultation with the Transport for NSW, Penrith City Council and bus operators. Wayfinding and customer information would guide customers to temporary bus stop locations.	Applicable to the St Marys construction site only
Т8	Transport for NSW would be consulted to discuss opportunities for their delivery of intersection upgrades at Mamre Road/ M4 Western Motorway on and off ramps prior to the peak year of construction	TfNSW is the responsible entity
Т9	A construction worker car parking strategy for St Marys would be prepared in consultation with Penrith City Council and Transport for NSW prior to the commencement of construction. The strategy would seek to:	Applicable to the St Marys construction site only
	 Minimise overall demand for construction worker car parking through initiatives such as use of other project construction worksites in combination with shuttle buses, car pooling and encouraging the use of public transport Minimise potential use of on street ca parking by construction workers 	
	The construction worker car parking strategy would be implemented throughout construction	

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Appendix 3 TGS/ VMP/ PMP¹

¹ Where relevant



Appendix 3 TGS/ VMP/ PMP¹

Table 10: TGS/ VMP/ PMP

Plan #	Location	From	То	Time	Traffic control	Works	Impacts
AEC-00001	Aero Access Road	Badgerys Creek Road	Site	Day	NA	Vehicle Movement Plan	NA

¹ Where relevant







All phases of works | Page 0



Appendix 4 Drawings

The design drawings provided by Sydney Metro Western Sydney Airport are provided in this Appendix. It is assumed that road safety audits were undertaken during the design development and post construction of the works by Sydney Metro.

Table 10: Sydney Metro provided drawings

Drawing #	Description
SHT-GE-000001	Aerotropolis Access Road and Derwent Road Access
SHT-GE-000011	Aerotropolis Access Road and Derwent Road Access Drawing index
SHT-GE-000051	Aerotropolis Access Road and Derwent Road Access Typical Cross Sections Aerotropolis Access
SHT-MS-002001	Aerotropolis Access Road and Derwent Road Access Aerotropolis Vehicle Tracking Roundabout Option
SHT-RD-001201	Aerotropolis Access Road and Derwent Road Access Aerotropolis General Arrangement Plan Aerotropolis Access
SHT-RL-003001	Aerotropolis Access Road and Derwent Road Access Aerotropolis




LIVERPOOL CITY COUNCIL SYDNEY METRO WESTERN SYDNEY AIRPORT ENABLING WORKS BADGERYS CREEK ROAD AEROTROPOLIS ACCESS ROAD AND DERWENT ROAD ACCESS

STRATEGIC DESIGN



DRAWINGS ISSUED FOR INFORMATION ONLY AND SUBJECT TO FURTHER DESIGN DEVELOPMENT AND INTERNAL VERIFICATION

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	DRAWING INDEX
COVER SHEET	
SHT-GE-000001	COVER SHEET SHEET 1 OF 1
DRAWING INDEX	
SHT-GE-000011	DRAWING INDEX SHEET 1 OF 1
TYPICAL CROSS SECTIONS	
SHT-GE-000051	TYPICAL CROSS SECTIONS-AEROTROPOLIS ACCESS SHEET 1 OF 1
SHT-GE-000052	TYPICAL CROSS SECTIONS-DERWENT ROAD ACCESS SHEET 1 OF 1
GENERAL ARRANGEMENT PLAN	
SHT-RD-001201	GENERAL ARRANGEMENT PLAN-AEROTROPOLIS ACCESS SHEET 1 OF 1
SHT-RD-001202	GENERAL ARRANGEMENT PLAN-DERWENT ROAD ACCESS SHEET 1 OF 1
LONGITUDINAL SECTION - MCA01	
SHT-RL-003001	LONGITUDINAL SECTION - MCA01 SHEET 1 OF 1
LONGITUDINAL SECTION - MCB01	
SHT-RL-003101	LONGITUDINAL SECTION - MCB01 SHEET 1 OF 2
SHT-RL-003102	LONGITUDINAL SECTION - MCB01 SHEET 2 OF 2
STORMWATER MANAGEMENT PLAN	
SHT-SM-001001	STORMWATER MANAGEMENT PLAN-AEROTROPOLIS ACCESS SHEET 1 OF 1
SHT-SM-001002	STORMWATER MANAGEMENT PLAN-DERWENT ROAD ACCESS SHEET 1 OF 1
UTILITIES IMPACT ASSESSMENT PLAN	
SHT-UT-001001	UTILITIES IMPACT ASSESSMENT PLAN-AEROTROPOLIS ACCESS SHEET 1 OF 1
SHT-UT-001002	UTILITIES IMPACT ASSESSMENT PLAN-DERWENT ACCESS ROAD SHEET 1 OF 1
TURNING PATH PLAN	
SHT-MS-002001	AEROTROPOLIS VEHICLE TRACKING - ROUNDABOUT INTERSECTION OPTION SHEET 1 OF 2
SHT-MS-002002	AEROTROPOLIS VEHICLE TRACKING - T-INTERSECTION OPTION SHEET 2 OF 2
SHT-MS-002003	DERWENT ROAD VEHICLE TRACKING-OPTIONS 1 & 2 SHEET 1 OF 1

CODE INDEX
NAME
GENERAL
ROAD WORKS
ROAD LONGITUDINAL SECTIONS
ROAD CROSS SECTIONS
UTILITIES
STORMWATER MANAGEMENT
PAVEMENT
ROAD LIGHTING
INTELLIGENT TRANSPORT SYSTEMS
SITE CLEARING AND SPOIL SITE
LANDSCAPING AND SIGHT ENVELOPES
STRUCTURAL DETAILS
PROPERTY WORKS
CONSTRUCTION STAGING
MISCELLANEOUS / SUPPLEMENTARY
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SYDNEY METRO - WESTERN SYDNEY AIRPORT STATION BOXES AND TUNNELLING WORKS

Appendix 5 Road Safety Audit report



Road Safety Audits

ABN: 96 647 479 016



TECHNICAL MEMORANDUM

RSA Ref: 12471



Date: 4 May 2022

Subject: Sydney Metro West Sydney Airport Station - Aerotropolis CTMP

I refer to your request for a road safety audit to be conducted on the construction management plan (CTMP) for Aerotropolis worksite for site establishment, site operations and site demobilisation.

The following document was supplied to facilitate the audit:

 Aerotropolis CTMP – document number SWMSASBT-CPG-AEC-SN450-TF-PLN-000001 Rev B.01 dated April 2022.

Road Safety Audit Findings/Comments

Having assessed the CTMP, it is noted that routes for the movement of construction traffic to and from the site have already been established and is noted that be such movements will be mainly confined to the arterial road network.

It is noted that the Badgery Creek Roundabout can accommodate the required turning movements for articulated vehicles (turning movement swept path shown in the CTMP). Site access for trucks will be facilitated at Badgery Creek Road via a newly constructed access/egress by the Early Works contractor.





It is understood that public transport will not be affected by the works. Bicycle and footpath networks include the road network are not impacted by the works.

No road safety issues are identified with the CTMP. It should be noted that specific TGS's have not been assessed as part of this audit.







SYDNEY METRO - WESTERN SYDNEY AIRPORT STATION BOXES AND TUNNELLING WORKS

Appendix 6 Review comments



SYDNEY METRO - WESTERN SYDNEY AIRPORT STATION BOXES AND TUNNELLING WORKS

Appendix 7 Inspection checklists

E.4 Shift / Daily TTM inspection checklist

Shift Inspections must be undertaken by a person holding the PWZTMP or ITCP qualification when a TGS is installed, changed or updated, to ensure the TGS is implemented as designed. This includes at a minimum, twice per shift (recommended every 2 hours). This form can also be used for inspecting 'Aftercare' arrangements.

Completed b	y:					
Name:			Signature:			
TMP Reference:			TGS Reference:			
				Inspection 1	Inspection 2	Inspection 3
Date:			Time/s	00-00		00-00
Drive throug	h TGS inspec	tion		Inspection 1	Inspection 2	Inspection 3
Have any adjustments been made to the appro			ved TGS?		□ Yes	□ Yes
lf yes,	provide details:	Are changes withir	n tolerances?			
		If no, TGS mu	st be reviewed by a PWZTMP			
		Have changes bee	en approved?	□ Yes	□ Yes	□ Yes
			If no, TGS must be approved	🗆 No	🗆 No	□ No
Comn	nents or details			1		
	of action taken:					
Have all signs	and devices b	een installed in ac	cordance with			
approved TGS	57			∣ ⊔ Yes	∣ □ Yes	🗆 Yes
		lf no, j	provide detail of action taken	🗆 No	│ □ No	│ □ No
Comn	nents or details			1		
	or action taken:					

Drive through TGS inspec	tion	Inspection 1	Inspection 2	Inspection 3
Are PTCD positioned as pres	cribed in TGS?	□ Yes	□ Yes	□ Yes
	If no, provide detail of action taken	🗆 No	□ No	🗆 No
		□ N/A	□ N/A	□ N/A
Comments or details of action taken:				
Are manual traffic controllers	s clear of travel lane, have suitable	□ Yes	□ Yes	□ Yes
If no, pro	vide detail and reposition manual traffic controllers	□ No	🗆 No	🗆 No
		□ N/A	□ N/A	□ N/A
Comments or details of action taken:			1	I
Are sign and devices in good	I condition, clearly visible to road users?	□ Yes	□ Yes	□ Yes
	If no, provide detail of action taken	🗆 No	□ No	🗆 No
Comments or details of action taken:			1	1
Are all signs mounted level a	nd suitably clear of travel lanes?	□ Yes	□ Yes	□ Yes
	If no, provide detail of action taken	🗆 No	□ No	🗆 No
Comments or details of action taken:				
Are conflicting or non-applic	able signs covered or removed?	□ Yes	□ Yes	□ Yes
	If no, provide detail and remove or cover signs	🗆 No	🗆 No	🗆 No
		□ N/A	□ N/A	□ N/A
Comments or details of action taken:			·	·

Drive through TGS inspec	tion	Inspection 1	Inspection 2	Inspection 3
Is temporary delineation inst	alled as prescribed i.e. straight line	□ Yes	□ Yes	□ Yes
	If no provide details and rectify delineation	🗆 No	🗆 No	□ No
Comments or details of action taken:				
Have site conditions change	d due to shade, park vehicles, glare etc.	□ Yes	□ Yes	□ Yes
	If yes provide details and note if action is required	🗆 No	🗆 No	🗆 No
Comments or details of action taken:				
Are registered trailers i.e. VN lanes and delineated?	IS / light towers; suitably clear of travel	□ Yes	□ Yes	□ Yes
	If no provide details and rectify location	□ No	🗆 No	🗆 No
		□ N/A	□ N/A	□ N/A
Comments or details of action taken:				
Are temporary speed zones of	operating as prescribed?	□ Yes	□ Yes	□ Yes
lf n	o provide details and discuss with work supervisor	□ No	🗆 No	🗆 No
		□ N/A	□ N/A	□ N/A
Comments or details of action taken:				
Are workers on foot / plant c	learances been applied / observed?	□ Yes	□ Yes	□ Yes
If i	no provide details and implement controls to rectify	□ No	🗆 No	🗆 No
		□ N/A	□ N/A	□ N/A
Comments or details of action taken:			·	·

Post drive through confirm	nation	Inspection 1	Inspection 2	Inspection 3
Is TGS valid for the site activ	ity and operating safely as intended?	□ Yes □ No	□ Yes □ No	□ Yes □ No
Comments or details of action taken:				
Is TGS is appropriate for the	current traffic conditions?	□ Yes	□ Yes	□ Yes
lf ne	o provide details and implement controls to rectify	🗆 No	🗆 No	🗆 No
Comments or details of action taken:				
Have potential hazards ident	ified in TGS been addressed? i.e. end-			
If no provide	details of additional hazards and controls required			
Comments or details of action taken:				

Additional comments:

1		

E.5 Post completion inspection checklist

Completed by:					
Name:		Road name/Staging Plan number:			
Signature:		Date / time:			
ITCP or PWZTMP card number					
Drive through post completed ins	spection				
Item		Comments / Action			
Have all work activities been	□ Yes				
completed?	□ No				
Has all plant and equipment been	□ Yes				
removed?	□ No				
Have all TTM signs and devices been	□ Yes				
removed?	□ No				
Has all TTM linemarking been	□ Yes				
obliterated?	□ No				
Have existing permanent speed limits	□ Yes				
been reinstated?	□ No				
Have all TTM site hazards been	□ Yes				
removed?	□ No				
Other	□ Yes				
	□ No				

Desktop post completion inspection			
Have all TGSs for completed tasks been retained?	Yes No		
Have all TMP required documents been placed in relevant folders?	Yes No		
Has TMP/TGS designer requested addition information post TTM removal?	□ Yes □ No		
Is the road safe for opening to road users?	□ Yes □ No		

Additional comments:

E.3 Weekly TTM inspection checklist

Weekly inspections must only be carried out by a PWZTMP qualified person. Weekly inspections must be carried out when a site is first open and at least once every week thereafter.

Completed b	y:					
Name:			Signature:			
TMP Reference:			TGS Reference:			
Date:			Inspection type	Pre-opening		Veekly
Desktop revi	ew					
Is a copy of the	e location TMP	and relevant TGS ava	ilable?			
		lf no inspe	ection must not be undertal	ken until documents are	obtained	
Details of TMP	and TGS:					
Are the location	on TMP and rele	evant TGS approved?				
			lf no, work must be stopp	ed until documents are a	approved	□ Yes □ No
Comn	nents or details of action taken:					
Site Inspection	on	·				
Inspection cor	npleted:	□During the day	\Box During the night			
Signs and dev	ices positioned	d as prescribed and co	ommanding attention?)		□ Yes
			lf no	provide details and rec	tify signs	□ No
Comn	nents or details					

Site Inspection		
Sign sizes as prescribed?		
	If no provide details and rectify signs	□ Tes
Comments or details of action taken:		
Signs are mounted level and	suitably clear of travel lanes?	□ Yes
	If no provide details and rectify signs	
Comments or details of action taken:		
Has temporary delineation be	een applied as prescribed, with permanent markings obliterated?	□ Yes
	If no provide details of action required to rectify delineation	
Comments or details of action taken:		
Are registered trailers i.e. VM	S / light towers; suitably clear of travel lanes and delineated?	
	If no provide details and rectify location	
Comments or details of action taken:		
Are temporary speed zones of	operating as prescribed?	
	If no provide details and discuss with work supervisor	
Comments or details of action taken:		
Are PTCD positioned as pres	cribed in TGS?	🗆 Yes
	If no provide details of action required to rectify	
Comments or details of action taken:		

Site Inspection				
Are manual traffic controllers clear of travel lane, have suitable escape route?				
	If no provide details of action required to rectify			
Comments or details of action taken:				
Are site accesses and egress	es well defined and safe for work vehicles?	□ Yes		
	If no provide details of action required to rectify	🗆 No		
Comments or details of action taken:				
Termination signs are suitabl	y located? i.e. D downstream of last activity.	□ Yes		
	If no provide details of action required to rectify	🗆 No		
Comments or details of action taken:				

Post site inspection confirmation				
Is worksite layout operating safely	v as intended?			
is workshe layout operating saler	y do interfaced.	□ Yes		
	If no provide details and implement controls to rectify	🗆 No		
Comments or details of action taken:				
Has TMP identified and addressed	d key TTM risks?	□ Yes		
	If no provide details and implement controls to rectify	□ No		
Comments or details of action taken:				
Have key TTM risks been address	sed on site?	□ Yes		
	If no provide details of additional hazards and controls required	🗆 No		
Comments or details of action taken:				
Have copies of Shift Inspections I	been sighted as completed as required?			
		□ Yes		
	If no provide details and discuss with nominated rep completing Shift Inspections	🗆 No		
		□ N/A		
Comments or details of action taken:				

Additional comments:



SYDNEY METRO - WESTERN SYDNEY AIRPORT STATION BOXES AND TUNNELLING WORKS

Appendix 8 Easing Sydney's Congestion Intersection Options Assessment



Sydney Metro Western Sydney Airport Enabling Works: Badgerys Creek Road/ Aerotropolis Access Road

Intersection Options Assessment

April 2021 | Version: 1

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Document Information

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Table 1. Document Registration

Document Title	Sydney Metro Western Sydney Airport Enabling Works: Badgerys Creek Road/ Aerotropolis Access Road Intersection Options Assessment
Responsible Business Unit	Greater Sydney Planning and Programs Network Solutions
Project Number	P.0058361
Document Number	02-002-P0058361-REP-TE-001
Document Author	Adeline Sim
Project Traffic Engineering Lead	Cameron Ward
Project Manager	Toufique Rasul

Table 2.Document History and Status

Ver.	Date	Description	Written	Checked	Approved
1	08/04/2021	Final	Adeline Sim	Cameron Ward	Toufique Rasul

1 Introduction

1.1 Background

The Easing Sydney's Congestion Program Office (ESC) has been engaged by Sydney Metro to develop enabling works designs for the Sydney Metro Western Sydney Airport Project (SMWSA), to facilitate the establishment of the project's construction sites. The southern most of these sites is the Aerotropolis Station site, located approximately 1.5km north of The Northern Road/ Badgerys Creek Road intersection at 215 Badgerys Creek Road, Bringelly.

This traffic report documents the assessment of the proposed design of Badgerys Creek Road/ Aerotropolis Access Road based on the strategic design report developed by ESCPO – "Sydney Metro Western Sydney Airport Enabling Works : Badgerys Creek Road – Aerotropolis Access Road and Derwent Road Access – Strategic Design Report" (02-001-P0054028-REP-CV-000).

As part of the strategic stage of this engagement, three options have been evaluated for the proposed intersections and are documented in this memo. The options consist of:

- Option 1: Priority controlled T-intersection
- Option 2: Signalised T-intersection
- Option 3: Roundabout

This report assesses the operation of the intersections during the SMWSA construction activities and does not include an assessment of the construction of the intersections itself.

1.2 Purpose of this Report

This report sets out an assessment of the intersection operation and options development, including consideration of the following:

- 1. existing traffic surrounding the subject segment of Badgerys Creek Road
- 2. proposed intersection operation that result from three proposed concept designs
- 3. impact of SMWSA construction on Badgerys Creek Road

1.3 Study Area

Aerotropolis site access is located at 215 Badgerys Creek Road in the suburb of Bringelly and falls within the jurisdiction of City of Liverpool Local Government Area (LGA). The site is located south of the proposed Western Sydney Airport and will provide access to the Aerotropolis Station during construction, which is located at the completion/ final stop of the proposed SMWSA Metro Line. The site is accessed by either The Northern Road from the south, or Elizabeth Drive from the north. Figure 1 shows the project location and Figure 2 shows aerial image showing the location of the proposed intersection in relation to the indicative footprint of the proposed construction site.



Figure 1. Location of the proposed intersection



Figure 2. Indicative layout of the proposed works

2 Existing Conditions

2.1 Road Network

Badgerys Creek Road is a rural road aligned in north-south direction. It has one lane each direction, with posted speed limit of 80 km/h with no kerbside parking. It connects The Northern Road on the south, and Elizabeth Drive on the north, which function as the main transport corridors in the area.

The road is rural design in nature with now kerb and gutter, and limited formed verges. There is a crest on the northbound direction near the proposed New access Road. Street view of existing Badgerys Creek Road is shown in Figure 3.



Figure 3. Street view of northbound and southbound Badgerys Creek Road (Source: Google Maps)



Figure 4 illustrates the existing driveway which will be upgraded to meet the needs of the construction site. It is currently gated and not accessible to general traffic.

Figure 4. Street view of the proposed access road (Source: Google Maps)

The Aerotropolis Access Road to the construction site aligns perpendicular to Badgerys Creek Road. Figure 5 is the aerial view of Badgerys Creeks Road/ Aerotropolis Access Road and the existing land use around the intersection.



Figure 5. Badgerys Creek Road/ New Access Road (Source: NearMap)

Currently there is no public transport that serves Badgerys Creek Road. Active transport network is not present along the road.

2.2 Traffic Volume

The most recent survey at Badgerys Creek Road/ Aerotropolis Access Road is conducted in 26 June 2019, commissioned by Arup. The volume during peak hours is shown in Table 3. There is no traffic volume at the new access road as it is currently not accessible by general traffic.

Table 3. Existing traffic volume at the proposed location of new intersection

Movements	AM peak	PM peak
Badgerys Creek Road (S)	366	157
Badgerys Creek Road (N)	184	345
New Access Road (E)	0	0

Source: SMGW-ARP-SWD-CE-REP-000191, 19 February 2020, Arup

From the existing traffic count, it is observed that the traffic condition along Badgerys Creek Road is considered light with no congestion issue present.

3 SMWA Construction Impacts

3.1 Construction Site Access

The works under this commission, to enable SMWSA contractors to access the Aerotropolis Station construction site, will be to construct a new intersection on Badgerys Creek Road.

This intersection will be temporary and for the use of the SMWSA construction site only. It is understood that at the completion of the construction works it will be removed and Badgerys Creek Road returned to its previous state.

It is understood as part of the Aerotropolis City Centre Master Planning, undertaken by others, that Badgerys Creek Road could be upgraded, and new intersections constructed, both north and south of the SMWSA temporary construction access. As the details of these works are currently unknown, they have not been included in this assessment. With this intersection removed at the completion of SMWSA construction it is not expected to have a long-term impact on the changes to the road network.

3.2 Badgerys Creek Road Traffic Volumes

To appropriately assess the impact of the SMWA Aerotropolis construction traffic to Badgerys Creek Road it is important to consider wider traffic changes in the region. During the construction period, other major infrastructure projects will also be under construction. These include Western Sydney Airport, M12 Motorway, Elizabeth Drive upgrade and the Aerotropolis precinct. As a result, traffic volumes on Badgerys Creek Road are anticipated to increase.

The anticipated traffic volumes on Badgerys Creek Road in the 2023/ 2024 peak time periods are presented in Table 4. These volumes include all the estimated traffic demand generated by the Sydney Metro Western Airport construction sites that travel along Badgerys Creek Road. They were converted to common vehicular volume following the ratio of Light Vehicle, Heavy Vehicles observed from base year traffic data.

Movements	AM peak	PM peak
Badgerys Creek Road (S)	1061	384
Badgerys Creek Road (N)	321	1195

Table 4. Badgerys Creek Road traffic volume 2023/2024 (with construction traffic)

Source: SMWSA EIS

Comparing the traffic volumes in Table 3 and Table 4, it is observed that the volumes on Badgerys Creek Road are anticipated to nearly triple when construction vehicles from the broader construction activity is added. Traffic performance under the existing intersection configuration is therefore anticipated to fail without any physical upgrade.

As the volume in Table 4 include the construction traffic of all sites, Aerotropolis construction traffic (discussed in the next section) is to be deducted from the through traffic to form the "background traffic" for the northbound and southbound Badgerys Creek Road through movements.

3.3 SMWSA Construction Traffic Generation and Distribution

The SMWSA Aerotropolis site is anticipated to have three main construction traffic movements. They are:

- Light vehicles (construction staff) from all over Sydney.
- Heavy vehicle movements between the Aerotropolis site and Western Sydney Airport Site.
- Heavy vehicle movements for delivery of materials/ etc. from all over Sydney.

Estimated construction traffic volumes from the SMWSA Aerotropolis site have been sourced from the traffic data previously outlines in the Sydney Metro – Western Sydney Airport Environmental Impact Statement (EIS). In particular, Chapter 9 "Transport" and the supplementary Technical Paper 1 "Transport". The estimate peak hour construction volumes are presented in Table 5.

	AM	l peak	PM peak		
venicie rype	Inbound	Outbound	Inbound	Outbound	
LV Staff	110	0	0	110	
LV Deliveries	1	1	1	1	
HV	13	13	13	13	
Total	124	14	14	124	

Table 5. Aerotropolis Station construction traffic volume

Source: SMWSA EIS

[1] LV= light vehicle, HV= heavy vehicle

[2] Peak construction volumes per hour per shift

The construction traffic in Table 5 are estimated to distribute mainly from the north and south of Badgerys Creek Road. The percentage split is referenced to Section 4.1.2 of "Technical Paper – Transport". It is documented that 40% of traffic would be from/ to north, and 60% of traffic would be from/ to south.

Based on the estimated traffic generations and distribution for Aerotropolis site, and the through movements described in Section 3.2, the AM and PM peaks traffic volumes at the proposed intersection are shown in Figure 6 and Figure 7 respectively.



Figure 6. AM Peak traffic volumes (with construction traffic)

construction traffic)

4 Option Assessment

4.1 **Options Overview**

As part of the strategic design phase, three options have been assessed to identify the preferred access strategy and intersection type for progression into the next design stage.

Access to the construction site is to be provided from either of the three options.

- Option 1 Priority controlled T-intersection
- Option 2 Signalised T-intersection
- Option 3 Roundabout

4.1.1 Option 1 – T-intersection

The main features of the priority-controlled T-intersection design include the following and is shown in Figure 8.

- Priority controlled intersection with the main movements at northern/ southern approaches
- · Eastern approach gives way to northern/ southern movements
- Channelised left turn at Badgerys Creek Road (N)
- Channelised left turn at Badgerys Creek Road (S)
- High angle left turn lane at Aerotropolis Access Road (E)



Figure 8. Option 1 – Priority controlled T-intersection layout

4.1.2 Option 2 – Signalised T-intersection

The main features of the signalised T-intersection design include the following and is shown in Figure 9.

T-intersection controlled by traffic signal

- Similar lane configurations as Option 1 Priority controlled T-intersection
- No provision of pedestrian crossings on any leg of slip lane, given road environment and temporary nature of design.



Figure 9. Proposed Option 2 – Signalised T-intersection Layout

4.1.3 Option 3 – Roundabout

The main features of the roundabout design include the following and is shown in Figure 10.

- Three-leg roundabout
- Single lane approach and departures on each leg.



4.2 Traffic Model Specification

The model specifications and assumptions listed below were considered during the model development and assessment processes

- This assessment has been undertaken using SIDRA INTERSECTION 8, a deterministic traffic modelling package which calculates intersection performance.
- Modelled traffic volumes based on the estimation documented in the EIS trip generation assumptions
- A future 2023/2024 construction year has been developed to assess the impact of background traffic and construction vehicle volumes
- 2019 traffic survey data has been used to determine the ratio of Heavy Vehicle and Light Vehicle in conversion of the background PCU volumes into common vehicular volume.
- Gap acceptance parameters for priority T-intersection were applied in accordance with Appendix E of the RMS Modelling Guidelines for give-way and right turn filter movements.
- The signal timing in Option 2 is optimised in SIDRA to obtain the most optimal results based on the traffic demand
- Values for all other parameters and settings are SIDRA INTERSECTION defaults

4.3 Intersection Assessment Criteria

The commonly used measure of intersection performance, as defined by the TfNSW, is vehicle delay. SIDRA INTERSECTION (SIDRA) determines the average delay that vehicles encounter and provides a measure of the level of service (LOS).

LOS ranges from A (good operation) to F (over capacity) as set out in Table 6.

LOS	Average Delay per vehicle (secs/ veh)	Traffic Signals and Roundabouts	Give Way & Stop Sign
А	< 14	Good operation	Good operation
В	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
С	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity, accident study required
E	57 to 70	At capacity	At capacity, requires other control mode
F	>70	Over capacity	Extreme delay, major treatment required

Table 6.Level of service criteria

Source: Roads and Maritime Services Guide to Trip Generating Development (version 2.2, October 2002)

4.4 Intersection Performance

The traffic performance results of the proposed Option 1, 2 & 3 are summarised and compared in Table 7.

Table 7.Summary of traffic results

eak	Approach	Option 1 intersec	– T- tion	Option Signali	2 - sed	Optior Rounda	n 3 - Ibout
		Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
A M	Badgerys Creek Road (S)	9	А	19	В	9	А
	New Access Road (E)	203	F	22	В	15	В
	Badgerys Creek Road (N)	7	А	4	А	7	А
	Intersection	203	F	15	В	15	В
P M	Badgerys Creek Road (S)	96	F	4	А	12	А
	New Access Road (E)	464	F	31	С	24	В
	Badgerys Creek Road (N)	9	А	16	В	8	А
	Intersection	464	F	14	Α	24	В

Note: For priority-controlled intersections, the LOS is determined by the average delay encountered by the worst movement.

From the result outputs shown in above table, the following are observed:

- Traffic volume on Badgerys Creek Road are anticipated to be near mid-block capacity in during the modelled construction period. With dominant northbound being the critical movement during the AM peak, and southbound during the PM peak
- The priority-controlled T-intersection configuration in Option 1 allows free flow conditions along Badgerys Creek Road, maintaining its operation. This however, results in insufficient gaps in the flow of traffic to allow vehicles turning at Aerotropolis Access Road to turn. The right turn movement from the access road suffers in both peaks, performing at LOS F.
- In comparing to priority-controlled arrangement, the signalised configuration in Option 2 impacts the traffic on Badgerys Creek Road to allow for turning movements. Optimisation by SIDRA determined that approximately 20% phase time split provided to the Aerotropolis Access Road catered for anticipated traffic volumes, based on 70 seconds cycle time.
- Performance of the signalised configuration in Option 2 is anticipated to be in the range of LOS A and B in the AM And PM peaks respectively. This indicates that the impact to Badgerys Creek Road, because of the introduction of a signalised intersection, is anticipated to be acceptable.
- The roundabout operation in Option 3 is also anticipated to perform well on all approaches, with overall intersection delay of 15 seconds, at LOS B in the AM peak; and delay of 24 seconds and LOS B in the PM peak. It is noted that the north/ south movements along Badgerys Creek Road are anticipated to perform at LOS A at all periods with a slight increase delay for the Aerotropolis Access Road in the PM peak. This is due to a reduction in vehicles turning into the Aerotropolis Access Road which creates gaps for vehicles to turn onto Badgerys Creek Road.

4.5 Mid-block Assessment

In determining the impact of the Aerotropolis construction traffic to the Badgerys Creek Road, a mid-block assessment was undertaken. The through movements
along Badgerys Creek Road and the site traffic was assessed at the sections north and south of the Access Road.

The methodologies as set out in "Austroads Guide to Traffic Management Part 3" was adopted in assessing the mid-block capacity (uninterrupted flow). The guideline was referring to the "Highway Capacity Manual 2016" (HCM) which is commonly used in Australia.

The assessment for uninterrupted flow has been used, given the existing rural nature of the road, with minimal driveways and minimal intersections.

As described in the Section 4.2 of the guideline, Badgerys Creek Road generally fits in the criteria of a two-lane two-way road, with the function of Class I Highway. To criteria to assess include:

- Average travel speed (ATS)
- Percent time spent following (PTSF)

With these two criteria used, the LOS of the mid-block of Badgerys Creek Road can be determined with the criteria set out in Table 8.

Table 8.Mid-block assessment LOS criteria

LOS	ATS (km/hr)	PTSF (%)
А	> 90	≤ 35
В	> 80 - 90	> 35 - 50
С	> 70 - 80	> 50 - 65
D	> 60 - 70	> 65 - 80
E	≤ 60	> 80
F	Demand exc	ceeds capacity

Source: Austroads Guide to Traffic Management Part 3

With the peak hour volumes of Badgerys Creek Road and the Aerotropolis site, the results are shown in Table 9.

Table 9. Badgerys Creek Road mid-block assessment

Poak	Section	Direction				
reak	Section	NB	SB			
ΔN/	Badgerys Creek Road – north of Access Road	LOS D	LOS C			
AM	Badgerys Creek Road – south of Access Road	LOS D	LOS C			
DM	Badgerys Creek Road – north of Access Road	LOS C	LOS D			
	Badgerys Creek Road – south of Access Road	LOS C	LOS D			

According to the assessment, the northbound and southbound movements along Badgerys Creek Road at the north and south of the Aerotropolis site access are anticipated to perform at LOS C and D during the AM and PM peaks within the 2023/2024 peak construction traffic period. This is within the acceptable range of traffic performance.

5 Conclusion

Sydney Metro proposes to establish a construction site for the new Sydney Metro Western Sydney Airport (SMWSA) Aerotropolis Station on the eastern side of Badgerys Creek Road. A new intersection is to be proposed to form the access to the construction site.

During the construction period, the Badgerys Creek Road is estimated to carry approximately 1,300 and 1,500 vehicles in AM and PM peaks respectively; and the Aerotropolis construction site is anticipated to generate up to 138 construction vehicle movements in each peak hour.

A traffic modelling assessment has been undertaken using SIDRA INTERSECTION 9 to assess the proposed intersection of Badgerys Creek Road and Aerotropolis Access Road intersection. Three intersection configurations were tested namely priority-controlled T-intersection, signalised T-intersection, and roundabout.

Comparing the three intersection configurations, the roundabout configuration (Option 3) performs the best. The north/ south main movements along Badgerys Creek Road performs at LOS A during both peaks, indicate the most optimal intersection design from traffic performance perspective.

The priority controlled T-intersection (Option 1) performs the worst especially in the PM peak, due to the challenge for right-turn movement at Aerotropolis Access Road finding gaps to join the free-flowing movements at Badgerys Creek Road.

Signalised intersection (Option 2) operates at acceptable criteria at both Badgerys Creek Road and the New Access Road due to the optimised phased time given to all approaches. Outside the peak hours, the traffic signal operation however might not provide the most efficient traffic operation for the intersection due to the wait time at all approaches under the relatively lighter traffic volume condition.

Mid-block assessment at the north and south of the Aerotropolis site access road is also undertaken to determine the capacity of Badgerys Creek Road during the construction period. The assessment shows LOS within the range of C and D during the 2023/2024 peak construction period, which is within the acceptable range of traffic performance.

Appendix A SIDRA Intersection Results

V Site: 102 [Badgerys Creek Rd | New Access Rd_AM (Site Folder: 2023 - SM Traffic)]

New Site Site Category: (None) Give-Way (Two-Way)

Vehi	Vehicle Movement Performance													
Mov	Turn	INF	TUY	DEM	AND	Deg.	Aver.	Level of	95% BA	ACK OF	Prop.	Effective	Aver.	Aver.
ID		VOLU	JMES	FLC	WS	Satn	Delay	Service	QUI	EUE	Que	Stop	No.	Speed
		[Total	HV]	[Total	HV]				[Veh.	Dist]		Rate	Cycles	
		veh/h	veh/h	veh/h	%	V/C	sec		veh	m				km/h
Sout	h: Bad	gerys Cre	ek Rd (S	5)										
2	T1	982	129	1034	13.1	0.578	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	79.3
3	R2	75	8	79	10.7	0.090	9.0	LOS A	0.4	2.7	0.46	0.71	0.46	56.2
Appr	oach	1057	137	1113	13.0	0.578	0.8	NA	0.4	2.7	0.03	0.05	0.03	77.0
East:	Aeroti	opolis Ac	ccess											
4	L2	9	8	9	88.9	0.312	28.8	LOS C	0.8	10.4	0.90	0.98	1.01	24.5
6	R2	5	5	5	100.0	0.312	202.9	LOS F	0.8	10.4	0.90	0.98	1.01	24.1
Appr	oach	14	13	15	92.9	0.312	91.0	LOS F	0.8	10.4	0.90	0.98	1.01	24.4
North	n: Badg	gerys Cre	ek Rd (N	I)										
7	L2	49	5	52	10.2	0.030	7.1	LOS A	0.0	0.0	0.00	0.63	0.00	62.0
8	T1	311	41	327	13.2	0.182	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
Appr	oach	360	46	379	12.8	0.182	1.0	NA	0.0	0.0	0.00	0.09	0.00	76.9
All Vehic	cles	1431	196	1506	13.7	0.578	1.8	NA	0.8	10.4	0.03	0.07	0.03	75.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab). Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akcelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

V Site: 102 [Badgerys Creek Rd | New Access Rd_PM (Site Folder: 2023 - SM Traffic)]

New Site Site Category: (None) Give-Way (Two-Way)

Vehi	Vehicle Movement Performance													
Mov ID	Turn	INF VOLU	PUT JMES	DEM FLC	AND WS	Deg. Satn	Aver. Delay	Level of Service	95% B/ QU	ACK OF EUE	Prop. Que	Effective Stop	Aver. No.	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m		Rate	Cycles	km/h
Sout	h: Bad	gerys Cre	eek Rd (S	S)										
2	T1	375	29	395	7.7	0.214	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
3	R2	9	8	9	88.9	0.221	96.3	LOS F	0.6	7.5	0.97	1.00	1.01	23.4
Appr	oach	384	37	404	9.6	0.221	2.3	NA	0.6	7.5	0.02	0.02	0.02	75.6
East:	New	Access R	d											
4	L2	75	8	79	10.7	1.426	442.2	LOS F	29.2	223.0	1.00	2.82	8.81	7.0
6	R2	49	5	52	10.2	1.426	463.9	LOS F	29.2	223.0	1.00	2.82	8.81	7.0
Appr	oach	124	13	131	10.5	1.426	450.8	LOS F	29.2	223.0	1.00	2.82	8.81	7.0
North	n: Badg	gerys Cre	ek Rd (N	l)										
7	L2	5	5	5	100.0	0.005	8.8	LOS A	0.0	0.0	0.00	0.63	0.00	50.3
8	T1	1120	86	1179	7.7	0.635	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	79.1
Appr	oach	1125	91	1184	8.1	0.635	0.3	NA	0.0	0.0	0.00	0.00	0.00	78.9
All Vehic	cles	1633	141	1719	8.6	1.426	35.0	NA	29.2	223.0	0.08	0.22	0.67	44.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab). Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Site: 102v [Badgerys Creek Rd | New Access Rd_AM - Signalized (Site Folder: 2023 - SM Traffic)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Practical Cycle Time)

Vehi	Vehicle Movement Performance													
Mov ID	Turn	INP VOLU [Total veh/h	PUT IMES HV] veh/h	DEM FLO [Total veh/h	AND WS HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BA QUI [Veh. veh	ACK OF EUE Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South	n: Badg	gerys Cre	ek Rd (S	5)										
2	T1	982	129	1034	13.1	*0.885	19.0	LOS B	31.0	241.6	0.77	0.86	1.00	56.4
3	R2	75	8	79	10.7	0.127	11.6	LOS A	0.9	7.2	0.42	0.72	0.42	54.0
Appro	bach	1057	137	1113	13.0	0.885	18.5	LOS B	31.0	241.6	0.74	0.85	0.96	56.3
East:	Aerotr	opolis Ac	cess											
4	L2	9	8	9	88.9	0.068	22.1	LOS B	0.3	3.5	0.79	0.69	0.79	45.5
6	R2	5	5	5	100.0	0.068	22.0	LOS B	0.3	3.5	0.79	0.69	0.79	44.2
Appro	bach	14	13	15	92.9	0.068	22.1	LOS B	0.3	3.5	0.79	0.69	0.79	45.1
North	: Badg	jerys Cre	ek Rd (N	I)										
7	L2	49	5	52	10.2	*0.037	7.8	LOS A	0.2	1.3	0.21	0.66	0.21	57.8
8	T1	311	41	327	13.2	0.260	3.5	LOS A	3.5	27.3	0.39	0.34	0.39	74.2
Appro	bach	360	46	379	12.8	0.260	4.1	LOS A	3.5	27.3	0.37	0.38	0.37	71.4
All Vehic	les	1431	196	1506	13.7	0.885	14.9	LOS B	31.0	241.6	0.65	0.73	0.81	59.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab). Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

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Site: 102v [Badgerys Creek Rd | New Access Rd_PM - Signalized (Site Folder: 2023 - SM Traffic)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 70 seconds (Site Practical Cycle Time)

Vehi	Vehicle Movement Performance													
Mov ID	Turn	INP VOLU [Total veh/h	PUT IMES HV] veh/h	DEM FLO [Total veh/h	AND WS HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BA QUI [Veh. veh	ACK OF EUE Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South	n: Badg	gerys Cre	ek Rd (S	5)										
2	T1	375	29	395	7.7	0.292	3.5	LOS A	4.6	34.4	0.37	0.32	0.37	74.3
3	R2	9	8	9	88.9	0.095	32.1	LOS C	0.3	3.4	0.79	0.72	0.79	40.0
Appro	bach	384	37	404	9.6	0.292	4.2	LOS A	4.6	34.4	0.38	0.33	0.38	72.8
East:	New A	Access R	d											
4	L2	75	8	79	10.7	0.561	31.1	LOS C	3.7	28.2	0.98	0.86	1.00	40.6
6	R2	49	5	52	10.2	*0.561	31.0	LOS C	3.7	28.2	0.98	0.86	1.00	40.3
Appro	bach	124	13	131	10.5	0.561	31.0	LOS C	3.7	28.2	0.98	0.86	1.00	40.5
North	: Badg	jerys Cre	ek Rd (N)										
7	L2	5	5	5	100.0	0.006	9.3	LOS A	0.0	0.2	0.18	0.64	0.18	52.2
8	T1	1120	86	1179	7.7	*0.875	16.1	LOS B	38.0	283.7	0.81	0.85	0.94	59.1
Appro	bach	1125	91	1184	8.1	0.875	16.1	LOS B	38.0	283.7	0.81	0.85	0.94	59.1
All Vehic	les	1633	141	1719	8.6	0.875	14.4	LOS A	38.0	283.7	0.72	0.73	0.81	59.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab). Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

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V Site: 101 [Badgerys Creek Rd | New Access Rd_AM (Site Folder: 2023 - SM Traffic)]

New Site Site Category: (None) Roundabout

Vehi	Vehicle Movement Performance													
Mov	Turn	INF	TUY	DEM	AND	Deg.	Aver.	Level of	95% BA	ACK OF	Prop.	Effective	Aver.	Aver.
ID		VOLU	JMES	FLC	WS	Satn	Delay	Service	QUE	EUE	Que	Stop	No.	Speed
		[lotal	HV J	[lotal	HV J	vla			[Veh.	Dist J		Rate	Cycles	km/b
Sout	h [.] Badi	ven/n nervs Cre	eek Rd (S	S)	70	V/C	sec	_	ven	111	_	_	_	K[[]/[]
- Cour				-,										
2	T1	982	129	1034	13.1	0.700	6.7	LOS A	10.1	78.7	0.15	0.50	0.15	62.2
3	R2	75	8	79	10.7	0.700	8.6	LOS A	10.1	78.7	0.15	0.50	0.15	59.2
Appr	oach	1057	137	1113	13.0	0.700	6.9	LOS A	10.1	78.7	0.15	0.50	0.15	62.0
East:	Aeroti	ropolis Ac	ccess											
4	L2	9	8	9	88.9	0.024	8.3	LOS A	0.1	1.4	0.52	0.64	0.52	49.9
6	R2	5	5	5	100.0	0.024	15.4	LOS B	0.1	1.4	0.52	0.64	0.52	40.2
Appr	oach	14	13	15	92.9	0.024	10.8	LOS A	0.1	1.4	0.52	0.64	0.52	45.9
North	n: Badg	gerys Cre	ek Rd (N	1)										
7	L2	49	5	52	10.2	0.298	6.5	LOS A	1.8	14.1	0.28	0.53	0.28	58.3
8	T1	311	41	327	13.2	0.298	7.2	LOS A	1.8	14.1	0.28	0.53	0.28	62.3
Appr	oach	360	46	379	12.8	0.298	7.1	LOS A	1.8	14.1	0.28	0.53	0.28	61.8
All Vehic	cles	1431	196	1506	13.7	0.700	7.0	LOS A	10.1	78.7	0.18	0.51	0.18	61.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab). Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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V Site: 101 [Badgerys Creek Rd | New Access Rd_PM (Site Folder: 2023 - SM Traffic)]

New Site Site Category: (None) Roundabout

Vehi	Vehicle Movement Performance													
Mov ID	Turn	INF VOLL	PUT JMES	DEM FLO	AND WS	Deg. Satn	Aver. Delay	Level of Service	95% BA QUE	ACK OF EUE	Prop. Que	Effective Stop	Aver. No.	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m		Rate	Cycles	km/h
Sout	n: Bad	gerys Cre	eek Rd (S	S)										
2	T1	375	29	395	7.7	0.300	6.9	LOS A	2.3	17.4	0.27	0.51	0.27	63.8
3	R2	9	8	9	88.9	0.300	12.3	LOS A	2.3	17.4	0.27	0.51	0.27	55.4
Appr	oach	384	37	404	9.6	0.300	7.0	LOS A	2.3	17.4	0.27	0.51	0.27	63.5
East:	New A	Access R	d											
4	L2	75	8	79	10.7	0.332	19.8	LOS B	2.3	17.2	0.95	0.98	0.95	45.4
6	R2	49	5	52	10.2	0.332	23.9	LOS B	2.3	17.2	0.95	0.98	0.95	45.8
Appr	oach	124	13	131	10.5	0.332	21.4	LOS B	2.3	17.2	0.95	0.98	0.95	45.6
North	n: Badg	gerys Cre	ek Rd (N)										
7	L2	5	5	5	100.0	0.739	7.7	LOS A	11.0	82.4	0.20	0.48	0.20	55.0
8	T1	1120	86	1179	7.7	0.739	6.8	LOS A	11.0	82.4	0.20	0.48	0.20	64.2
Appr	oach	1125	91	1184	8.1	0.739	6.8	LOS A	11.0	82.4	0.20	0.48	0.20	64.1
All Vehic	les	1633	141	1719	8.6	0.739	7.9	LOS A	11.0	82.4	0.28	0.52	0.28	62.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab). Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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To: Toufique Rasul (Project Manager - Metro Enabling Works)

FROM: Cameron Ward

DATE: 28 May 2021

PRIORITY: ROUTINE

Aerotropolis Station Construction Access Revised Assessment

Introduction

It is proposed to construct a new intersection on Badgerys Creek Road, approximately 1.4 kilometres north of The Northern Road. This intersection is part an enabling works package for the Sydney Metro Western Sydney Airport (SMWSA) project. The intersection would provide access to the Aerotropolis Station construction site, which is located east of Badgerys Creek Road.

It is understood that the intersection would only be used using the construction stage of the SMWSA project, and at completion of construction the intersection is to be removed. Access to Aerotropolis Station in operation would be via the new road network currently being developed as part of the Bradfield City Centre master plan. Details on this road network and timing of construction is not currently know.

An Intersection Options Assessment report was prepared as part of the concept deign development for the intersection. The report outlines the existing road environment, proposed intersection operation of the assessed options and the impact of SMWSA construction of Badgerys Creek Road in the vicinity of the site.

Following the submission of the assessment report, Network Solutions requested that an additional assessment be undertaken based on 2021 traffic data (SCATS detector counts) and strategic corridor growth rates. This memo outlines this assessment of potential intersection performance in the following time periods:

- 2023 Peak SMWSA construction
- 2026 Year of SMWSA opening (operation)
- 2031 5 years post opening

As noted above, the intersection is not anticipated to be precent during SMWSA operation. However, as assessment of the intersection in the 2026/2031 time periods has been provided for completeness.

Traffic Volumes

SCATS Data

To obtain an estimate of existing traffic volumes on Badgerys Creek Road, at the approximate location of the intersection, SCATS detector count data for the intersection of Badgerys Creek Road and The Northern Road (TCS 4481) has been reviewed. Data from this intersection is considered appropriate given the small number of properties between it at the future intersection.

The traffic volumes for Thursday 6 May 2021 were reviewed to represent a "typical weekday", with the daily profile the hourly profile presented in Figure 1.





Source: SCATS Detector Data - TCS 4481

The peak direction follows on Badgerys Creek Road is northbound in the AM peak and southbound in the PM peak. The peak hours are:

- AM 7:00-8:00am
- PM 5:00-6:00pm

Total vehicle volumes were converted to common vehicular volumes following the ratio of Light Vehicle, Heavy Vehicles observed within a traffic survey on Badgerys Creek Road conducted in 26 June 2019, commissioned by Arup. The estimated 2021 typical weekday traffic volumes on Badgerys Creek Road is presented in Table 1.

Table 1.2021 Traffic Volumes (from SCATS)

Dook Hour		Northbound		Southbound				
Peak nour	Light Veh.	Heavy Veh.	Total	Light Veh.	Heavy Veh.	Total		
AM	469	70	539	121	11	132		
PM	137	12	149	342	30	372		

STFM Data

To provide an estimate for growth in traffic volumes on Badgerys Creek Road exports for the 2021, 2026 and 2031 forecast periods where compared from the Strategic Traffic Forecasting Model (STFM).

The standard practice is to compare the two-hour perk period volumes produced by the model for the forecast periods to obtain estimate growth rates. The estimated yearly growth rates for Badgerys Creek Road are presented in Table 2.

Table 2. Growth Rate per year – STFM

Dook Hour	North	bound	South	bound
Peak nour	2021-2026.	2026-2031	2021-2026.	2026-2031
AM	5.9%	-0.1%	-3.7%	3.9%
PM	2.5%	-3.7%	0.3%	0.9%

As can be seen, Badgerys Creek Road is anticipated to generally increase for the northbound direction in the 2021-2026 period, then stay flat or decrease in the 2026-2031 inline with the completion of the Eastern Ring Road (future main north south link).

Future Traffic volumes

Based on the 2021 SCATS detector volumes and the STFM yearly growth rates an estimate of future background traffic volumes can be obtained. The background traffic volumes for the three assessment time periods are presented in Table 3 to Table 5.

It is noted that STFM forecasts incorporates land use uplifts based on known future zoning and high-level traffic generation values. These generation estimates could change as planning for land releases progresses. Details associated with the Bradfield City Centre master plan is currently not available and may affect future traffic volume son the corridor.

Dook Hour		Northbound			Southbound	
Feak Hour	Light Veh.	Heavy Veh.	Total	Light Veh.	Heavy Veh.	Total
AM	524	78	603	127	11	139
PM	127	11	138	369	32	401

Table 3. 2023 Traffic Volumes – General Traffic

Table 4. 2026 Traffic Volumes – General Traffic

Dook Hour		Northbound		Southbound				
Peak nour	Light Veh.	Heavy Veh.	Total	Light Veh.	Heavy Veh.	Total		
AM	607	91	698	136	12	148		
PM	112	10	121	408	36	444		

Table 5. 2031 Traffic Volumes – General Traffic

Rook Hour Northbound			Southbound			
Feak Hour	Light Veh.	Heavy Veh.	Total	Light Veh.	Heavy Veh.	Total
AM	605	90	695	114	10	124
PM	114	10	124	423	37	460

Sydney Metro Western Sydney Airport Generation

Estimated construction traffic volumes from the SMWSA Aerotropolis site have been sourced from the traffic data outlines in the Sydney Metro – Western Sydney Airport Environmental Impact Statement (EIS). In particular, Chapter 9 "Transport" and the supplementary Technical Paper 1 "Transport".

Construction

The estimated peak hour construction volumes on Badgerys Creek Road, between The Northern Road and the Aerotropolis Station construction site intersection are presented in Table 6. These volumes are relevant to the peak construction period of 2023/2024 and incorporates traffic generated by all SMWSA construction sites anticipated to use this section of road. The volumes with the EIS where presented as Passenger Car Units (PCU), this was converted to common vehicular volumes following the ratio of Light Vehicle, Heavy Vehicles observed within a traffic survey on Badgerys Creek Road conducted in 26 June 2019, commissioned by Arup.

Table 6. SMW Constuction Traffic volumes -2023/2024

Pook Hour	Northbound			Southbound		
Feak Hour	Light Veh.	Heavy Veh.	Total	Light Veh.	Heavy Veh.	Total
AM	572	85	658	84	13	96
PM	80	7	87	655	57	712
Courses adapted from CNNA/CA EIC						

Source: adapted from SMWSA EIS

The SMWSA Aerotropolis construction site is anticipated to have three main construction traffic movements. They are:

- Light vehicles (construction staff) from all over Sydney.
- Heavy vehicle movements between the Aerotropolis site and Western Sydney Airport Site.
- Heavy vehicle movements for delivery of materials/ etc. from all over Sydney.

The estimate peak hour construction site volumes are presented in Table 7.

 Table 7.
 SMW Consultation Traffic volumes - Aerotropolis Construction Site -2023/2024

Table 8 Vehicle Type	AM P	AM Peak Hour		eak Hour
rubio o. romoto rype	Inbound	Outbound	Inbound	Outbound
LV Staff	110	0	0	110
LV Deliveries	1	1	1	1
HV	13	13	13	13
Total	124	14	14	124

Source: SMWSA EIS

[1] LV= light vehicle, HV= heavy vehicle

[2] Peak construction volumes per hour per shift

The construction traffic in Table 7 are estimated to distribute mainly from the north and south of Badgerys Creek Road. The percentage split is referenced to Section 4.1.2 of "Technical Paper – Transport". It is documented that 40% of traffic would be from/ to north, and 60% of traffic would be from/ to south. The volumes from/ to the south are also included in the two-way volumes on Badgerys Creek Road as documented in Table 6.

Operation

The Sydney Metro Western Sydney Airport EIS outlines anticipated impacts on traffic volumes on the road network post the construction of the project. Table 9 summaries the anticipated operational traffic generation of the SMWSA in the 2026 time period on Badgerys Creek Road, north of The Northern Road. For the purposes of this assessment all traffic generation by the project operation of the project has been assumed to be light vehicles (set-down/ pick-up activity, etc.), with servicing operations outside of peak periods.

Table 9.SMW Operational Traffic volumes

Dook Hour	Northbound			Southbound		
Feak Hour	Light Veh.	Heavy Veh.	Total	Light Veh.	Heavy Veh.	Total
AM	60	0	60	50	0	50
PM	40	0	40	70	0	70

Source: adapted from SMWSA EIS

Other known Construction activity

During the construction period, other major infrastructure projects will also be under construction. These include Western Sydney Airport, M12 Motorway, Elizabeth Drive upgrade and the Aerotropolis precinct. As a result, traffic volumes on Badgerys Creek Road are anticipated to increase.

Table 10 outlines the anticipated increase in traffic volumes in the 2023/2024 time period on Badgerys Creek Road, north of The Northern Road, from the above construction projects.

Table 10. Construction Traffic Volumes from related projects

Dook Hour	Northbound			Southbound		
Peak nour	Light Veh.	Heavy Veh.	Total	Light Veh.	Heavy Veh.	Total
AM	28	4	32	7	1	8
PM	8	1	9	40	3	43

Source: adapted from SMWSA EIS

Intersection Turing Movements

With consideration for the above estimated traffic volumes on Badgerys Creek Road and the SMWSA Aerotropolis construction site, the anticipated movements at the proposed intersection can be developed. The anticipated peak hour movements in the for the three assessment time periods are included as Attachment 1.

Modelling Results

The future operational performance on the intersection was assessed using SIDRA INTERSECTION version 9, a deterministic traffic modelling package which calculates intersection performance. Values for all other parameters and settings are SIDRA INTERSECTION defaults.

2023 Construction Operations

The traffic performance results of the proposed intersection in the 2023 period (construction operations) are summarised and compared in Table 11.

Dook Hour	Approach	Roundabout		
reak noul	Approach	Delay (s)	LOS	DoS
	Badgerys Creek Road (S)	6.9	Α	0.85
A N/	New Access Road (E)	9.9	Α	0.02
AW	Badgerys Creek Road (N)	6.9	Α	0.23
	Intersection	7.0	Α	0.85
	Badgerys Creek Road (S)	7.0	Α	0.19
РМ	New Access Road (E)	19.8	В	0.31
	Badgerys Creek Road (N)	6.7	Α	0.71
	Intersection	7.9	Α	0.71

Table 11. Summary of traine results -2025 Construction 1 end	Table 11.	Summary	of traffic results -	2023	Construction Period
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From the result outputs shown in above table, the following are observed:

- The intersection is anticipated to perform well on all approaches, with overall intersection delay of 8 seconds, at LOS A in both the AM and PM peaks
- The north/ south movements along Badgerys Creek Road are anticipated to perform at LOS A at all periods with a slight increase delay for the Aerotropolis Access Road in the PM peak. This is due to a reduction in vehicles turning into the Aerotropolis Access Road which creates gaps for vehicles to turn onto Badgerys Creek Road.

2026 SMW Operations

The traffic performance results of the proposed intersection in the 2026 period (station operations) are summarised and compared in Table 12.

Dook Hour	Approach	Roundabout		
Peak nour	Approach	Delay (s)	LOS	DoS
	Badgerys Creek Road (S)	7.1	Α	0.55
A 1.4	New Access Road (E)	7.3	Α	0.07
AW	Badgerys Creek Road (N)	6.7	Α	0.13
	Intersection	7.0	Α	0.55
	Badgerys Creek Road (S)	7.7	Α	0.13
РМ	New Access Road (E)	8.6	Α	0.14
	Badgerys Creek Road (N)	6.8	Α	0.35
	Intersection	7.3	Α	0.35

 Table 12.
 Summary of traffic results - 2026 Operational Period

From the result outputs shown in above table, the following are observed:

- The intersection is anticipated to perform well on all approaches, with overall intersection delay of 7 seconds, at LOS A in both the AM and PM peaks.
- The delays for each leg is close to the basic geometric delays associated with the provision of a roundabout.
- The reduced volumes on Badgerys Creek Road results in increased gaps in traffic for vehicles on the new access road to enter intersection. This is particularly notable in the PM peak where the heavy movement is southbound on Badgerys Creek Road.

It is noted that the proposed intersection is not anticipated to still be precent in the road network during this time period.

2031 SMW Operations

The traffic performance results of the proposed intersection in the 2031 period (station operations) are summarised and compared in Table 13. It is noted that due to relatively flat growth rate between 2026 and 2031 the results for this period are similar to the 2026 period.

Dook Hour	Approach	Roundabout		
Feak nour	Approach	Delay (s)	LOS	DoS
	Badgerys Creek Road (S)	7.1	Α	0.54
Λ Μ	New Access Road (E)	7.2	Α	0.07
AW	Badgerys Creek Road (N)	6.7	Α	0.13
	Intersection	7.0	Α	0.54
	Badgerys Creek Road (S)	7.7	Α	0.13
РМ	New Access Road (E)	8.7	Α	0.14
	Badgerys Creek Road (N)	6.8	Α	0.36
	Intersection	7.3	Α	0.36

Table 13. Summary of traffic results - 2031 Operational Period

It is noted that the proposed intersection is not anticipated to still be precent in the road network during this time period.

Summary

Sydney Metro proposes to establish a construction site for the new Sydney Metro Western Sydney Airport (SMWSA) Aerotropolis Station on the eastern side of Badgerys Creek Road. A new intersection is to be proposed to form the access to the construction site. It is understood that the intersection would only be used using the construction stage of the SMWSA project, and at completion of construction the intersection is to be removed.

As assessment of the impact of the proposed intersection on Badgerys Creek Road has been completed using a combination of SCATS detector count data, STFM growth rates and estimated construction volumes as documented in the SMWSA EIS. Operation performance of the intersection has been assessed using SIDRA INTERSECTION in 2023, 2026 and 2031 periods.

The intersection is anticipated to perform well in the three assessed periods, with overall intersection delay of 8 seconds, at LOS A in both the AM and PM peaks. The 2023 period during SMWSA construction activities is anticipated to have the worst performance, however, still within acceptable range.

ATTACHEMENT 1

Turning Movement Volumes (2021, 2026, 2031)

Vehicles and pedestrians per 60 minutes Vehicles and pedestrians per 60 minutes Site: 101 [Badgerys Creek Rd | New Access Rd_AM (Site Folder: 2023 - SM Constuction)]

New Site Site Category: (None) Roundabout

Volume Display Method: Separate



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Badgerys Creek Rd (S)	1292	1124	168
E: Aerotropolis Access	14	1	13
N: Badgerys Creek Rd (N)	283	261	22
Total	1589	1386	203

Vehicles and pedestrians per 60 minutes Vehicles and pedestrians per 60 minutes Site: 101 [Badgerys Creek Rd | New Access Rd_PM (Site Folder: 2023 - SM Constuction)]

New Site Site Category: (None) Roundabout

Volume Display Method: Separate



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Badgerys Creek Rd (S)	233	214	19
E: New Access Rd	124	111	13
N: Badgerys Creek Rd (N)	1086	997	89
Total	1443	1322	121

Vehicles and pedestrians per 60 minutes Vehicles and pedestrians per 60 minutes Site: 101 [Badgerys Creek Rd | New Access Rd_AM (Site Folder: 2026 - SM Operation Only)]

New Site Site Category: (None) Roundabout

Volume Display Method: Separate



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Badgerys Creek Rd (S)	758	667	91
E: Aerotropolis Access	83	83	0
N: Badgerys Creek Rd (N)	188	176	12
Total	1029	926	103

Vehicles and pedestrians per 60 minutes Vehicles and pedestrians per 60 minutes Site: 101 [Badgerys Creek Rd | New Access Rd_PM (Site Folder: 2026 - SM Operation Only)]

New Site Site Category: (None) Roundabout

Volume Display Method: Separate



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Badgerys Creek Rd (S)	162	152	10
E: New Access Rd	117	117	0
N: Badgerys Creek Rd (N)	471	435	36
Total	750	704	46

Vehicles and pedestrians per 60 minutes Vehicles and pedestrians per 60 minutes Site: 101 [Badgerys Creek Rd | New Access Rd_AM (Site Folder: 2031 - SM Operation Only)]

New Site Site Category: (None) Roundabout

Volume Display Method: Separate



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Badgerys Creek Rd (S)	755	665	90
E: Aerotropolis Access	83	83	0
N: Badgerys Creek Rd (N)	164	154	10
Total	1002	902	100

Vehicles and pedestrians per 60 minutes Vehicles and pedestrians per 60 minutes Site: 101 [Badgerys Creek Rd | New Access Rd_PM (Site Folder: 2031 - SM Operation Only)]

New Site Site Category: (None) Roundabout

Volume Display Method: Separate



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Badgerys Creek Rd (S)	164	154	10
E: New Access Rd	117	117	0
N: Badgerys Creek Rd (N)	487	450	37
Total	768	721	47

ATTACHEMENT 2

SIDRA INTERSECTION OUTPUTS

Site: 101 [Badgerys Creek Rd | New Access Rd_PM (Site Folder: 2031 - SM Operation Only)]

New Site Site Category: (None) Roundabout

Vehicle	Moveme	ent Perform	ance											
Mov ID	Turn	INPUT V [Total veh/h	OLUMES HV] veh/h	DEMAND [Total veh/h	FLOWS HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK [Veh. veh	OF QUEUE Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Ba	adgerys C	Creek Rd (S)												
2	T1	124	10	131	8.1	0.130	6.8	LOS A	0.8	5.6	0.20	0.55	0.20	63.3
3	R2	40	0	42	0.0	0.130	10.4	LOS A	0.8	5.6	0.20	0.55	0.20	59.4
Approach	h	164	10	173	6.1	0.130	7.7	LOS A	0.8	5.6	0.20	0.55	0.20	62.3
East: Nev	w Access	Rd												
4	L2	70	0	74	0.0	0.137	7.0	LOS A	0.7	5.2	0.59	0.70	0.59	56.1
6	R2	47	0	49	0.0	0.137	11.2	LOS A	0.7	5.2	0.59	0.70	0.59	56.9
Approach	h	117	0	123	0.0	0.137	8.7	LOS A	0.7	5.2	0.59	0.70	0.59	56.4
North: Ba	adgerys C	creek Rd (N)												
7	L2	27	0	28	0.0	0.357	6.1	LOS A	2.4	18.0	0.20	0.51	0.20	59.1
8	T1	460	37	484	8.0	0.357	6.8	LOS A	2.4	18.0	0.20	0.51	0.20	64.2
Approach	h	487	37	513	7.6	0.357	6.8	LOS A	2.4	18.0	0.20	0.51	0.20	63.9
All Vehicl	les	768	47	808	6.1	0.357	7.3	LOS A	2.4	18.0	0.26	0.55	0.26	62.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement. Intersection and Approach LOS values are based on average delay for all vehicle movements. Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D). HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [Badgerys Creek Rd | New Access Rd_AM (Site Folder: 2023 - SM Constuction)]

New Site Site Category: (None) Roundabout

Vehicle	Moveme	ent Perform	ance											
Mov ID	Turn	INPUT V [Total veh/h	OLUMES HV] veh/h	DEMANE [Total veh/h	D FLOWS HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK [Veh. veh	OF QUEUE Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Ba	adgerys C	Creek Rd (S)												
2	T1	1217	160	1281	13.1	0.852	6.8	LOS A	23.7	184.5	0.25	0.46	0.25	61.8
3	R2	75	8	79	10.7	0.852	8.7	LOS A	23.7	184.5	0.25	0.46	0.25	58.8
Approach	n	1292	168	1360	13.0	0.852	6.9	LOS A	23.7	184.5	0.25	0.46	0.25	61.6
East: Aer	otropolis	Access												
4	L2	9	8	9	88.9	0.022	7.4	LOS A	0.1	1.3	0.46	0.60	0.46	50.4
6	R2	5	5	5	100.0	0.022	14.4	LOS A	0.1	1.3	0.46	0.60	0.46	40.5
Approach	n	14	13	15	92.9	0.022	9.9	LOS A	0.1	1.3	0.46	0.60	0.46	46.4
North: Ba	adgerys C	reek Rd (N)												
7	L2	49	5	52	10.2	0.231	6.5	LOS A	1.3	10.0	0.26	0.53	0.26	58.4
8	T1	234	17	246	7.3	0.231	7.0	LOS A	1.3	10.0	0.26	0.53	0.26	64.1
Approach	n	283	22	298	7.8	0.231	6.9	LOS A	1.3	10.0	0.26	0.53	0.26	63.0
All Vehicl	les	1589	203	1673	12.8	0.852	7.0	LOS A	23.7	184.5	0.25	0.48	0.25	61.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement. Intersection and Approach LOS values are based on average delay for all vehicle movements. Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D). HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [Badgerys Creek Rd | New Access Rd_PM (Site Folder: 2023 - SM Constuction)]

New Site Site Category: (None) Roundabout

Vehicle	Moveme	ent Perform	ance											
Mov ID	Turn	INPUT V [Total veh/h	OLUMES HV] veh/h	DEMANE [Total veh/h	D FLOWS HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK [Veh. veh	OF QUEUE Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: B	adgerys (Creek Rd (S)												
2	T1	224	11	236	4.9	0.186	6.8	LOS A	1.3	9.4	0.24	0.51	0.24	64.8
3	R2	9	8	9	88.9	0.186	12.3	LOS A	1.3	9.4	0.24	0.51	0.24	55.5
Approacl	h	233	19	245	8.2	0.186	7.0	LOS A	1.3	9.4	0.24	0.51	0.24	64.3
East: Ne	w Access	Rd												
4	L2	75	8	79	10.7	0.309	18.2	LOS B	2.1	15.8	0.93	0.97	0.93	46.3
6	R2	49	5	52	10.2	0.309	22.3	LOS B	2.1	15.8	0.93	0.97	0.93	46.8
Approact	h	124	13	131	10.5	0.309	19.8	LOS B	2.1	15.8	0.93	0.97	0.93	46.5
North: Ba	adgerys C	creek Rd (N)												
7	L2	5	5	5	100.0	0.714	7.7	LOS A	9.7	72.4	0.19	0.48	0.19	55.0
8	T1	1081	84	1138	7.8	0.714	6.7	LOS A	9.7	72.4	0.19	0.48	0.19	64.2
Approact	h	1086	89	1143	8.2	0.714	6.7	LOS A	9.7	72.4	0.19	0.48	0.19	64.2
All Vehic	les	1443	121	1519	8.4	0.714	7.9	LOS A	9.7	72.4	0.26	0.53	0.26	62.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement. Intersection and Approach LOS values are based on average delay for all vehicle movements. Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D). HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [Badgerys Creek Rd | New Access Rd_AM (Site Folder: 2026 - SM Operation Only)]

New Site Site Category: (None) Roundabout

Vehicle	Moveme	ent Perform	ance											
Mov ID	Turn	INPUT V([Total veh/h	OLUMES HV] veh/h	DEMAND [Total veh/h	FLOWS HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK [Veh. veh	OF QUEUE Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Ba	adgerys (Creek Rd (S)												
2	T1	698	91	735	13.0	0.545	6.9	LOS A	5.1	39.1	0.24	0.51	0.24	61.6
3	R2	60	0	63	0.0	0.545	8.6	LOS A	5.1	39.1	0.24	0.51	0.24	59.1
Approach	n	758	91	798	12.0	0.545	7.1	LOS A	5.1	39.1	0.24	0.51	0.24	61.4
East: Aer	otropolis	Access												
4	L2	50	0	53	0.0	0.074	5.0	LOS A	0.4	2.6	0.33	0.58	0.33	54.7
6	R2	33	0	35	0.0	0.074	10.9	LOS A	0.4	2.6	0.33	0.58	0.33	60.8
Approach	n	83	0	87	0.0	0.074	7.3	LOS A	0.4	2.6	0.33	0.58	0.33	57.0
North: Ba	adgerys C	creek Rd (N)												
7	L2	40	0	42	0.0	0.151	6.1	LOS A	0.8	6.0	0.21	0.52	0.21	59.1
8	T1	148	12	156	8.1	0.151	6.9	LOS A	0.8	6.0	0.21	0.52	0.21	64.2
Approach	ı	188	12	198	6.4	0.151	6.7	LOS A	0.8	6.0	0.21	0.52	0.21	63.1
All Vehicl	les	1029	103	1083	10.0	0.545	7.0	LOS A	5.1	39.1	0.24	0.52	0.24	61.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement. Intersection and Approach LOS values are based on average delay for all vehicle movements. Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D). HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [Badgerys Creek Rd | New Access Rd_PM (Site Folder: 2026 - SM Operation Only)]

New Site Site Category: (None) Roundabout

Vehicle	Moveme	ent Perform	ance											
Mov ID	Turn	INPUT V [Total veh/h	OLUMES HV] veh/h	DEMAND [Total veh/h	FLOWS HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK [Veh. veh	OF QUEUE Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: B	adgerys C	Creek Rd (S)												
2	T1	122	10	128	8.2	0.128	6.8	LOS A	0.7	5.5	0.20	0.55	0.20	63.2
3	R2	40	0	42	0.0	0.128	10.4	LOS A	0.7	5.5	0.20	0.55	0.20	59.4
Approact	h	162	10	171	6.2	0.128	7.7	LOS A	0.7	5.5	0.20	0.55	0.20	62.2
East: Ne	w Access	Rd												
4	L2	70	0	74	0.0	0.135	6.9	LOS A	0.7	5.1	0.58	0.70	0.58	56.2
6	R2	47	0	49	0.0	0.135	11.0	LOS A	0.7	5.1	0.58	0.70	0.58	57.0
Approact	h	117	0	123	0.0	0.135	8.6	LOS A	0.7	5.1	0.58	0.70	0.58	56.5
North: Ba	adgerys C	creek Rd (N)												
7	L2	27	0	28	0.0	0.346	6.1	LOS A	2.3	17.2	0.20	0.51	0.20	59.1
8	T1	444	36	467	8.1	0.346	6.8	LOS A	2.3	17.2	0.20	0.51	0.20	64.2
Approacl	h	471	36	496	7.6	0.346	6.8	LOS A	2.3	17.2	0.20	0.51	0.20	63.8
All Vehic	les	750	46	789	6.1	0.346	7.3	LOS A	2.3	17.2	0.26	0.55	0.26	62.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement. Intersection and Approach LOS values are based on average delay for all vehicle movements. Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D). HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 101 [Badgerys Creek Rd | New Access Rd_AM (Site Folder: 2031 - SM Operation Only)]

New Site Site Category: (None) Roundabout

Vehicle	Moveme	ent Perform	ance											
Mov ID	Turn	INPUT V([Total veh/h	OLUMES HV] veh/h	DEMAND [Total veh/h	FLOWS HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK [Veh. veh	OF QUEUE Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Ba	adgerys C	Creek Rd (S)												
2	T1	695	90	732	12.9	0.542	6.9	LOS A	5.0	38.4	0.24	0.51	0.24	61.6
3	R2	60	0	63	0.0	0.542	8.6	LOS A	5.0	38.4	0.24	0.51	0.24	59.1
Approach	ו	755	90	795	11.9	0.542	7.1	LOS A	5.0	38.4	0.24	0.51	0.24	61.4
East: Aer	otropolis	Access												
4	L2	50	0	53	0.0	0.073	4.9	LOS A	0.4	2.5	0.30	0.58	0.30	54.8
6	R2	33	0	35	0.0	0.073	10.8	LOS A	0.4	2.5	0.30	0.58	0.30	60.9
Approach	ı	83	0	87	0.0	0.073	7.2	LOS A	0.4	2.5	0.30	0.58	0.30	57.1
North: Ba	adgerys C	Creek Rd (N)												
7	L2	40	0	42	0.0	0.133	6.1	LOS A	0.7	5.2	0.21	0.52	0.21	59.2
8	T1	124	10	131	8.1	0.133	6.9	LOS A	0.7	5.2	0.21	0.52	0.21	64.3
Approach	ı	164	10	173	6.1	0.133	6.7	LOS A	0.7	5.2	0.21	0.52	0.21	63.0
All Vehicl	es	1002	100	1055	10.0	0.542	7.0	LOS A	5.0	38.4	0.24	0.52	0.24	61.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement. Intersection and Approach LOS values are based on average delay for all vehicle movements. Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D). HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

FW: Conditional Approval: SMWSA - SBT - Aerotropolis CTMP All Phases of Works (Rev. D)
Approval: SMWSA - SBT - Aerotropolis CTMP All Phases of Works (Rev. D)
omer Journey Planning approve the following Construction Traffic and Transport Management Plan:
ydney Metro Western Sydney Airport – Station Boxes and Tunnelling (SBT) erotropolis CTMP – All Phases of Works MWSASBT-CPG-AEC-SN450-TF-PLN-000001 0.01
to the following requirements being met:
btain approval from TMC for ROLs for any required lane closures and/or Speed Zone Authorisations as .;
ane closures to be implemented in accordance with Transport for NSW Traffic Control at Worksites ual Issue No.6;
d Safety Audit post implementation of each phase of works and address any issues identified in the Road nd Risk Assessment;
itor the implemented arrangements, traffic queues, and road conditions to identify any fety issues and rectify in consultation with all relevant stakeholders as required, including CJP;
aison with CJP post implementation of this TMP and each phase of works to allow for a coordinated of traffic impacts;
uirements of the Communication Strategy in the TMP, in consultation with CJP, are fulfilled prior to the n of each phase of works;
nges to the existing road environment and/or network conditions throughout the duration of works may CTMP and/or addendum to be submitted;
dum will be required should use of Reserve Rd and Putland St be required at any stage during works;
nd to have an impact on public transport will require additional liaison and approval from CJP. A 28-day be required.

Subject: Attachments:	FW: Sydney Metro WSA - SBT – Aerotropolis Construction Traffic Management Plan (CTMP) All Phases of Works - Rev D - SM Comment Close out & CJP Approval SMWSA1 - Feedback on Document Comments or Responses.xlsx
Subject: Sydney Me - Rev D - SM Comm	etro WSA - SBT – Aerotropolis Construction Traffic Management Plan (CTMP) All Phases of Works ent Close out & CJP Approval
CAUTION: This email of	originated from outside of the Organisation.
Document	Australian Government Sydney Sydney Metro - Western Sydney Airport
Transmittal No: Contract No: Sub Contract: Date:	SMWSASBT-SMD-TX-001046 SBT - Station Boxes and Tunnelling 08 June 2022, 10:33 AM
Issued	Name
for Issue	Issued for Information
Subject	Sydney Metro WSA - SBT – Aerotropolis Construction Traffic Management Plan (CTMP) All Phases of Works - Rev D - SM Comment Close out & CJP Approval
Dear CPBG,	
References:	

(1) SBT Contractor's Transmittal, TeamBinder reference SMWSASBT-CPG-TX-000088, dated 31 March 2022
 (2) Principal's Transmittal, TeamBinder reference SMWSASBT-SMD-TX-000504, dated 13 April 2022
 (3) SBT Contractor's Transmittal, TeamBinder reference SMWSASBT-CPG-TX-000159, dated 29 April 2022
 (4) Principal's Transmittal, TeamBinder reference SMWSASBT-SMD-TX-000696, dated 06 May 2022
 (5) SBT Contractor's Transmittal, TeamBinder reference SMWSASBT-CPG-TX-000236, dated 16 May 2022
 (6) Principal's Transmittal, TeamBinder reference SMWSASBT-SMD-TX-000865, dated 24 May 2022
 (7) SBT Contractor's Transmittal, TeamBinder reference SMWSASBT-CPG-TX-000288, dated 27 May 2022

Further to the SBT contractor's transmittal (Reference (7) above), the Principal attaches the approval email notice received via email from Customer Journey Planning for the Sydney Metro WSA - SBT – Aerotropolis Construction Traffic Management Plan (CTMP) All Phases of Works rev D.

Note: The approved document notice is attached in **Comment No. 51** within the comment sheet in Teambinder.

Click here to download all Transmittal files.

Item	Document No	Title	Rev	Sts	Туре	Design Lots	Alt Doc No
1	SMWSASBT-CPG-AEC- SN450-TF-PLN-000001	Sydney Metro WSA - SBT – Aerotropolis Construction Traffic Management Plan (CTMP) All Phases of Works	D. 02	S 3	PLN		

