ARCADIS Design & Consultancy for natural and built assets

Moorebank Precinct West Stage 2 Proposal
Response to Submissions

Appendix C: Operational Traffic Impact Assessment

SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

Part 4, Division 4.1, State Significant Development

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MOOREBANK PRECINCT WEST - STAGE 2 PROPOSAL

Operational Traffic and Transport Impact Assessment – Addendum

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Revision F

REVISIONS

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A	24/02/2017	Draft OTTIA Addendum	JX, LG	MY
B	06/03/2017	Draft 2 OTTIA Addendum	JX, LG	MY
C	13/02/2017	OTTIA Addendum for Client Review	JX, LG	MY
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E	25/05/2017	Draft Final Revised OTTIA	JX, LG	MY
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CONTENTS

1 INTRODUCTION

SIMTA are seeking approval for the construction and operation of Stage 2 of the Moorebank Precinct West (MPW) Proposal (the Proposal) as part of the second stage of development under the MPW Concept Approval (SSD 5066).

An Environmental Impact Statement (EIS) was prepared for the Proposal seeking approval under Part 4, Division 4.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). In particular, the EIS was prepared to address, and be consistent with, the following:

- The Secretary's Environmental Assessment Requirements (SEARs) (SSD 16-7709) for the Proposal, which were issued on 14 July 2016
- The relevant requirements of the MPW Concept Approval (SSD 5066) granted by the Planning Assessment Commission (PAC) on 3 June 2016
- The relevant requirements of the approval under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) (No. 2011/6086).

The EIS was publicly exhibited, in accordance with clause 83 of the *Environmental Planning and Assessment Regulations 2000* (EP&A Regulations), between 26 October 2016 and 25 November 2016. During this exhibition period submissions were invited from all stakeholders including members of the community and government stakeholders. In response to the submissions received, and also to respond to design progression, amendments have been made to the Proposal (the Amended Proposal), as detailed below.

1.1 Report purpose

The purpose of this report is to provide further assessment of the traffic and transport impacts of the Amended Proposal and serve as an addendum to the Operational Traffic and Transport Impact Assessment (OTTIA) provided as Appendix M to the EIS. A summary of the works included in the Amended Proposal is provided in Section 1.1.1 below.

1.1.1 Amended Proposal

The MPW Stage 2 Proposal (the Proposal) involves the construction and operation of an intermodal terminal (IMT) facility to support a container freight throughput volume of 500,000 twenty-foot equivalent units (TEUs) per annum. The Proposal also includes the construction and operation of approximately 215,000 m^2 GFA of warehousing, freight village (800 m^2) and associated infrastructure.

The Amended Proposal alters the Proposal based on submissions received during exhibition of the EIS, consultation with key stakeholders and design development. A summary of the amendments to the Proposal is as follows:

- Alignment of the operational hours for warehouses to the IMT facility and Port freight operations to enable freight movements outside of peak traffic times.
- Alterations to the drainage design, including:
  - Inclusion of the OSD (Basin 10) and relocation of another OSD (Basin 3) along the eastern boundary of the operational area, adjacent to the western verge of Moorebank Avenue
  - Re-sizing of OSD basins along the western boundary of the operational area
  - Reduction to the widths of selected OSD outlet channels

  - Provision of an additional covered drain within the Endeavour Energy easement
- Establishment of a container wash-down facility with de-gassing area within the IMT facility
- Illuminated backlit signage within the warehousing area
- Inclusion of an upgraded layout for the Moorebank Avenue/Anzac Road intersection

The amendments to the Proposal are shown in Figure 1-1.

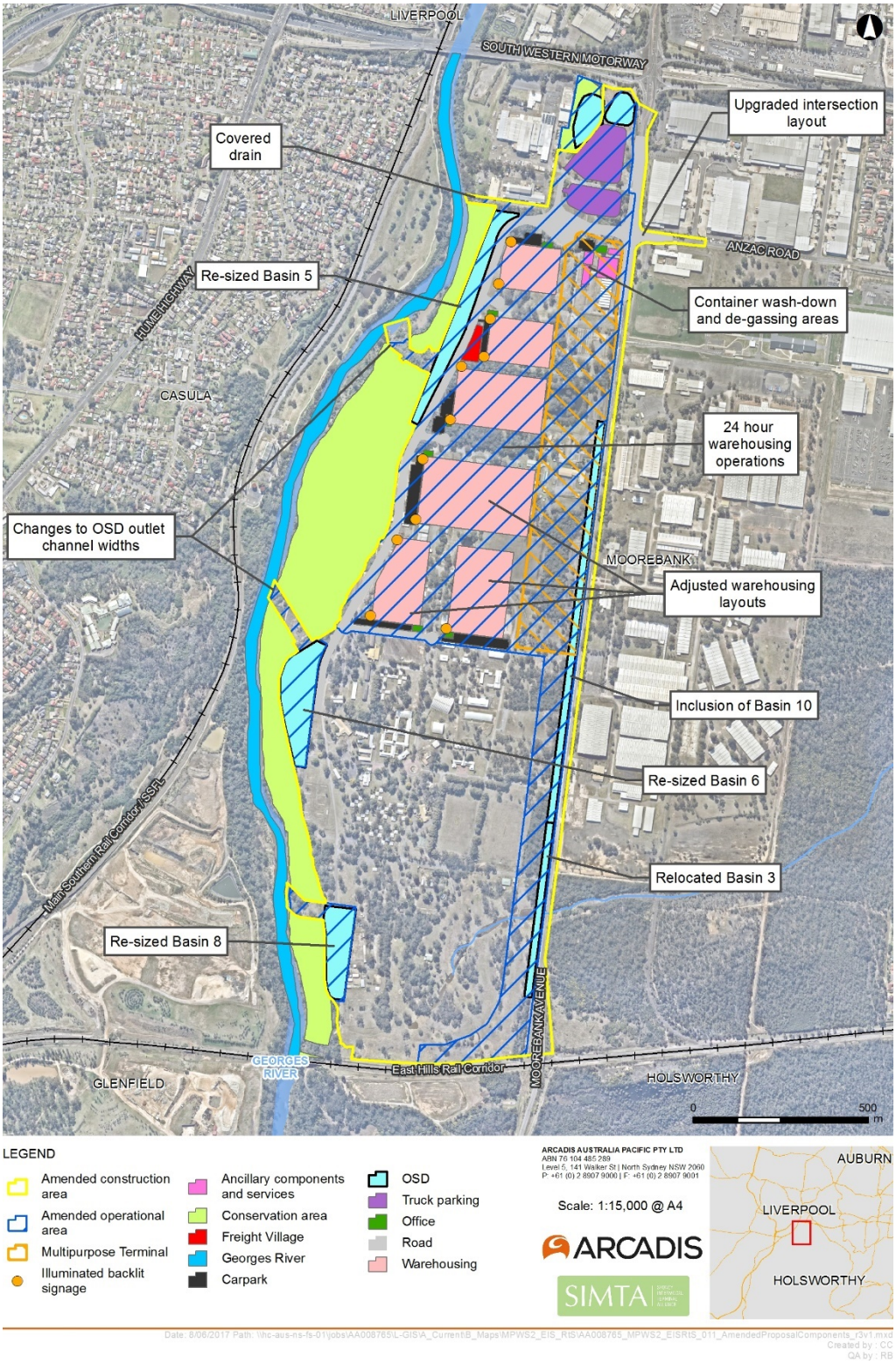

Figure 1-1: Amendments to the Proposal

2 IMPACT ASSESSMENT

2.1 MPW Stage 2 EIS Proposal Assessment

The Operational Traffic and Transport Impact Assessment Report (OTTIA) of the MPW Stage 2 Proposal Assessment included in Appendix M of the EIS was prepared by Arcadis to support the Proposal. The assessment included undertaking network modelling to identify the traffic impacts and required improvements to mitigate the impact on the safety and operation of the adjacent road network.

Eight intersections were assessed consistent with the SEARs requirements including:

- Moorebank Avenue / Anzac Road
- M5 Motorway / Moorebank Avenue
- M5 Motorway / Hume Highway
- Moorebank Avenue / Newbridge Road
- Moorebank Avenue / Heathcote Road
- M5 Motorway / Heathcote Road
- Cambridge Avenue and two associated intersections at Cambridge Avenue / Glenfield Road and Cambridge Avenue / Canterbury Road.

Existing Network Performance

The modelling results indicated that the existing Moorebank Avenue / Newbridge Road, and Moorebank Avenue / Heathcote Road intersections are operating at capacity with LoS E in the peak periods. Upgrades are needed at these intersections to cater for existing peak background traffic demand. Future growth in peak demand is expected to worsen the performance of these intersections.

The M5 Motorway/ Hume Highway and M5 Motorway/ Heathcote Road intersections are currently operating close to capacity in the peak periods. The performance of the remaining intersections is satisfactory in the peak periods at LoS D or better.

Network Performance in the Opening Year 2019 and 2029 (without the Proposal and without upgrades)

The analysis showed that the existing Moorebank Avenue / Newbridge Road, and Moorebank Avenue / Heathcote Road, M5 Motorway / Heathcote Road and M5 Motorway / Hume Highway intersections are expected to operate at/above capacity at LoS E/F in the peak periods in 2019. Upgrades are needed at these intersections to cater for the growth in background traffic demand in 2019. The performance of these intersections are expected to worsen in 2029.

In the opening year 2019, the M5 Motorway / Moorebank Avenue intersection is expected to satisfactorily at LoS D and operate unsatisfactorily at LoS F by 2029 without the Proposal. The Moorebank Avenue / Anzac Road intersection is expected to operate satisfactorily in 2019 but performs unsatisfactorily in 2029 at LoS F.

As described in the ‘network improvement and mitigation measures’ section below and Section 6 of the EIS OTTIA, a suggested network improvement has been included for this location, which would cater for background traffic demand and improve the future operation of the local road network.

Proposal Traffic Generation

The Proposal is expected to generate approximately 1,458 truck trips (2-way) and 2,670 car trips (2-way) to and from the precinct each week day. In the cumulative development scenario with the addition of traffic from MPE Stage 1, approximately 2,778 truck trips (2-way) and 2,815 car trips (2-way) are estimated to and from the precinct each week day.

Proposal Site Access

Two access/egress points are proposed for the Proposal site. The primary access/egress for the Proposal site will be via an upgraded Moorebank Avenue/Anzac Road signalised intersection. The Moorebank Avenue/Bapaume Road intersection will be changed from an all-movement three-leg priority controlled intersection to a left-out only intersection and will be used for ABB traffic to exit onto Moorebank Avenue and for trucks utilising the emergency parking area, if required. Additional detail regarding the operational traffic movements at these locations would be included in the Operational Traffic Management Plan (OTMP) for the Proposal.

Trucks would enter the Proposal site via the main entrance at the upgraded Moorebank Avenue/Anzac Road intersection and continue along the internal road on the western perimeter of the MPW Stage 2 Proposal site.

Once in the warehouse, trucks would be loaded/unloaded via manual handling equipment. Once loaded the trucks would then head to intended markets via the nearby major road network, or transported to the adjacent terminal on the MPE Stage 1 site, or transported directly to the IMT facility for dispatch to interstate, intrastate or port shuttle via rail.

The Moorebank Avenue/ Bapaume

Impact at Key Road Sections

The OTTIA noted that in the opening year (2019), the highest traffic increase attributable to the Proposal is forecast on Moorebank Avenue (north of Anzac Road) with an increase of 17%. The Proposal traffic would also increase traffic on Anzac Road (east of Moorebank Avenue) by approximately 1.9%. The analysis indicates minor traffic increase (less than 0.5%) along Moorebank Avenue (south of Anzac Road) and Cambridge Avenue attributable to the MPW Stage 2 Proposal.

In the 10-year design horizon (2029), the traffic increase attributable to the Proposal is expected to be reduced to 14% on Moorebank Avenue (north of Anzac Road) and 1.6% on Anzac Road (east of Moorebank Avenue). This is due to the growth in background traffic between 2019 and 2029. The analysis indicates minor traffic increase (less than 0.5 %) along Moorebank Avenue (south of Anzac Road) and Cambridge Avenue attributable to the Proposal by 2029.

Network improvement and mitigation measures

The road network will need to be improved to cater for the forecast increase in traffic volumes which will result from both the Proposal and general growth in background traffic passing through the study area. The OTTIA identified road network improvements to ensure that satisfactory intersection performance could be achieved.

In addition to the recommended improvements at the eight key intersections, improvements are also recommended for the wider road network to provide sufficient capacity to meet the anticipated demand from the Proposal.

A number of key intersections are currently operating at an unsatisfactory level of service as a result of background traffic and anticipated background traffic growth, i.e. without the Proposal. These intersections would need to be upgraded by Roads and Maritime to ensure that the network operates sufficiently and that local traffic in the area does not continue to decline in performance.

It is noted that some intersections are directly impacted by the Proposal and therefore upgrades, either in full or part, are to be undertaken as part of the Proposal subject to further negotiations with Roads and Maritime and the Precinct Modelling.

The OTTIA recommended that as part of the Proposal, the Moorebank Avenue/ Anzac Road intersection be upgraded (indicative timing of 2019) to mitigate Proposal-generated traffic, including:

1. Upgrade Moorebank Avenue/Anzac Road signalised intersection to include lane capacity improvements on the northern and southern approaches, and the construction of a new access road into the Proposal site (new western approach). The current configuration on Anzac Road (eastern approach) will be retained.
2. Implement vehicle actuated signals
3. Upgraded intersection to comply with relevant RMS design standards

In addition, the OTTIA for the Proposal included an analysis of the traffic impacts of future traffic demand on the surrounding road network from both background traffic growth and the additional traffic generated by the Proposal when the Proposal site is fully developed. This investigation reviewed the existing infrastructure and then identified the required road and intersection improvements needed to mitigate the additional traffic generated by the Proposal under the cumulative development scenario. It was identified as part of the OTTIA that the road network will need to be improved to cater for the forecast increase in traffic volumes which will result from both the general growth in background traffic and operational vehicles from the Proposal passing through the study area.

A summary of the intersections which would operate at a level of service which is unsatisfactory without the Proposal are provided below. As included in the OTTIA, we would recommend that Roads and Maritime consider these solutions to improve the existing and future operation of the local road network. These are presented as potential road network solutions in Table 2-1 below; however are not nominated for delivery for the Proposal.

Table 2-1 Recommendations for Network Improvements due to background traffic

ID	Intersection	Recommended Network Improvements due to Background Traffic	Indicative Timing
I-2	M5 Motorway / Moorebank Avenue	1. Provide additional capacity on M5 westbound on-ramp. 2. Provide additional capacity on M5 eastbound off-ramp 3. Increase the storage lengths of the existing (two-lane) right turn bay on Moorebank Avenue northern approach 4. Widen Moorebank Avenue to four lanes between the M5 Motorway/Moorebank Avenue intersection and Moorebank Avenue/Anzac Road intersection 5. Change the signal to vehicle actuated to improve west and north approaches (See Figure 6-1). 6. Upgraded intersection to comply with relevant RMS design standards	Staged upgrading starting from 2019
I-3	M5 Motorway / Hume Highway	Change the signal to vehicle actuation in the PM peak to improve traffic signal operations	2019
I-4	Moorebank Avenue / Newbridge Road	1. Add an additional right turn lane from Moorebank Avenue south approach and change the signal to	2019

ID	Intersection	Recommended Network Improvements due to Background Traffic	Indicative Timing
		vehicle actuation in the PM peak to improve traffic signal operations. 2. Upgraded intersection to comply with relevant RMS design standards	
I-5	Moorebank Avenue / Heathcote Road	1. Extend right turn lane from Moorebank Avenue south approach and change the signal to vehicle actuation in the PM peak to improve traffic signal operations. 2. Upgraded intersection to comply with relevant RMS design standards	2019
I-6	M5 Motorway / Heathcote Road	Change the signal to vehicle actuated in PM peak to improve traffic signal operations.	2019
I-7	Cambridge Avenue / Glenfield Road	No improvements required	
I-8	Cambridge Avenue / Canterbury Road	No improvements required	

Network Performance in the Opening Year 2019 and 2029 (with the Proposal and with upgrades)

The recommended intersection improvements (to mitigate the traffic impacts of the Proposal) are adequate and perform within an acceptable LoS with no-worsening of the performance without the Proposal.

Summary Findings

- The upgraded Moorebank Avenue / Anzac Road signalised intersection will adequately cater for the Proposal in 2019 and 2029
- The Proposal would likely exceed the current capacity at the M5 Motorway / Moorebank Avenue intersection and upgrading of the intersection is required as a result of existing (background) traffic not only on at the intersection but also the M5 motorway and associated on-ramps
- Capacity improvements are required at the signalised intersections of Moorebank Avenue / Newbridge Road and Moorebank Avenue / Heathcote Road at approximately 2019 due to an existing operational network problem, without consideration of the Proposal. These intersections need to be upgraded to cater for the growth in background traffic demand (i.e. not due to the Proposal)
- Capacity improvements are required at the M5 Motorway / Hume Highway and M5 Motorway / Heathcote Road signalised intersections at approximately 2019 to cater for the growth in background traffic. These intersections need to be upgraded to cater for the growth in background traffic demand (i.e. not due to the Proposal)
- The analysis identified minor impact to roundabouts of Glenfield Road and Canterbury Road with Cambridge Avenue attributable to the Proposal. No upgrades are required at the existing roundabouts.

Car Parking Provision

Based on the Roads and Maritime parking standards and the proposed warehouse, and office gross floor areas for the Proposal, a total of 983 car parking spaces are proposed to be provided.

Bicycle Facilities Provision

Based on the proposed warehouse and office GFAs for the Proposal, an indicative total of 127 bicycle parking spaces, 127 lockers and 15 shower/change cubicles are proposed to be included in the Proposal. Notwithstanding this, the specific number would be confirmed as part of detail design for the Proposal in accordance with the *City of Sydney Section 3 – General Provisions*.

Public Transport and Active Transport Provision

In terms of the public transport and active transport provision that is required to cater for the Proposal, that the following mitigation measures are considered suitable:

- SIMTA to undertake consultation with relevant bus provider(s) regarding the potential to extend the 901 bus service and additional bus stops to ensure adequate accessibility to and within the Proposal site
- Consultation with TfNSW will be conducted regarding the provision for active transport to/from the Proposal site and along the internal perimeter road, as part of detailed design for the Proposal.

Regional Network Impacts

The Proposal would partly help to reduce the potential increase in regional freight movements along the M5 Motorway between Port Botany and Moorebank Avenue. From a strategic perspective, the Moorebank Intermodal Terminal Project Environmental Impact Statement (EIS), 2014, identified that the introduction of the Precinct (and the Proposal) would result in wider regional benefits including:

- Transfer of road haulage between Port Botany and Western Sydney to rail freight for redistribution thereby helping to reduce traffic congestion and providing speed benefits for the Sydney road network
- Easing the Port Botany bottleneck to enable the Port to cope with future growth and provide largescale freight capacity
- Reductions in articulated truck volumes through the Sydney CBD and inner city suburbs, on the M4 Motorway and the M5 Motorway east of the Moorebank Avenue interchange. The changes in articulated truck volumes on the regional Sydney road network would be reductions in heavy vehicle movements between Port Botany and Moorebank, thereby relieving the regional Sydney road network of articulated vehicular traffic.
- An increase in articulated truck flows, particularly on the M7, Hume Highway and Mamre Road south of the M4 Motorway as well as the M5 Motorway between Moorebank Avenue interchange and the M7 Motorway. It should be noted that traffic flow refers to the rate at which vehicles pass a given point on the roadway, whereas volume refers simply to the number of vehicles that pass a given point on the roadway at a specific period of time. It is stated in Section 5.3 of the OTTIA that wider regional benefits of the Proposal would include an increase in articulated truck flows, generated by a reduction in truck volumes.

Reductions in vehicle operating costs for heavy vehicles (i.e. vehicle-kilometres-travelled (VKT) and vehicle –hours travelled (VHT)) on the regional road network

2.2 Amended Proposal Assessment

2.2.1 Methodology

An assessment of operational traffic and transport impacts has been undertaken for all amendments to the Proposal as identified below:

- Hours of warehousing operations
- Drainage works
- Container wash-down facilities and degassing facility within the Proposal site
- Illuminated backlit signage
- Upgraded layout for the Moorebank Avenue / Anzac Road intersection
- Adjustments to warehouse layouts

A breakdown of the assessment methodology for all of the amendments to the Proposal is provided below.

Hours of warehousing operations

The OTTIA included as Appendix M of the EIS considered the impacts of 24-hour warehousing operations on the Proposal site.

As such, the proposed changes to the hours of warehousing operations would not alter the operational traffic impacts of the Proposal, and has therefore not been assessed as part of this report.

Drainage works

Inclusion of the western OSD

Inclusion of the western OSD as part of the Amended Proposal would not change the operational traffic impacts of the Proposal as described in the EIS as they do not contribute to operational trip generation of the Proposal and has therefore not been assessed as part of this report.

Container wash-down facilities and de-gassing areas

To determine the potential operational traffic and transport impacts associated with the Amended Proposal, a high-level qualitative assessment was undertaken to identify any potential generation of trips as a result of the container wash-down facilities and de-gassing areas and their likely impact on the safety and operation of the road network. Details of the assessment are provided in Section 2.2.2.

Illuminated backlit signage

Illuminated backlit signage as part of the Amended Proposal would not change the operational traffic impacts of the Proposal as described in the EIS. Illuminated signage does not contribute to the operational trip generation of the Proposal and has therefore not been assessed as part of this report.

Upgraded layout for the Moorebank Avenue / Anzac Road intersection

Additional traffic modelling using the AIMSUM modelling software was undertaken to identify the potential impacts of the upgraded layout for the Moorebank Avenue / Anzac Road intersection on the road network performance for the following scenarios:

- Scenario 1 – "With Proposal + Upgrades" (i.e. as per MPW Stage 2 EIS)
  - 2019 (opening year) AM and PM Peak
  - 2029 (10-years after opening year) AM and PM Peak
- Scenario 2 – "With Cumulative Development + Upgrades" (same scenario as assessed in the MPW Stage 2 EIS, i.e. MPW Stage 2 and MPE Stage 1)
  - 2019 (opening year) AM and PM Peak
  - 2029 (10-years after opening year) AM and PM Peak

For the purpose of assessing the upgraded layout, the AIMSUM model used to assess traffic and transport impacts in the EIS have been adapted, and modified to include the upgraded layout. The modelling assumptions included in the model used for the EIS remained unchanged for this assessment with the exception of the Moorebank Avenue / Anzac Road intersection layout.

The upgraded Moorebank Avenue / Anzac Road layout adopted for this assessment is shown in Figure 2-1. The upgraded layout for the Moorebank Avenue / Anzac Road intersection layout provides additional capacity to this intersection by adding an additional right-turn lane on Anzac Road (east approach).The main difference between the Anzac Road / Moorebank Avenue intersection layout adopted for the EIS and the proposed upgraded Moorebank Avenue / Anzac Road intersection layout is that the upgraded layout has two right-turn lanes with a short through lane and a short left lane on Anzac Road (east approach); whereas, the intersection modelled in the EIS comprised one right-turn lane and one left turn lane on Anzac Road (east approach).

Amended warehouse layout

To determine the potential operational traffic and transport impacts associated with the amended warehouse layout, a high-level qualitative assessment was undertaken to determine any potential generation of trips as a result of the amended warehouse layout and their likely impact on the safety and operation of the road network. Details of the assessment are provided in Section 2.2.2.

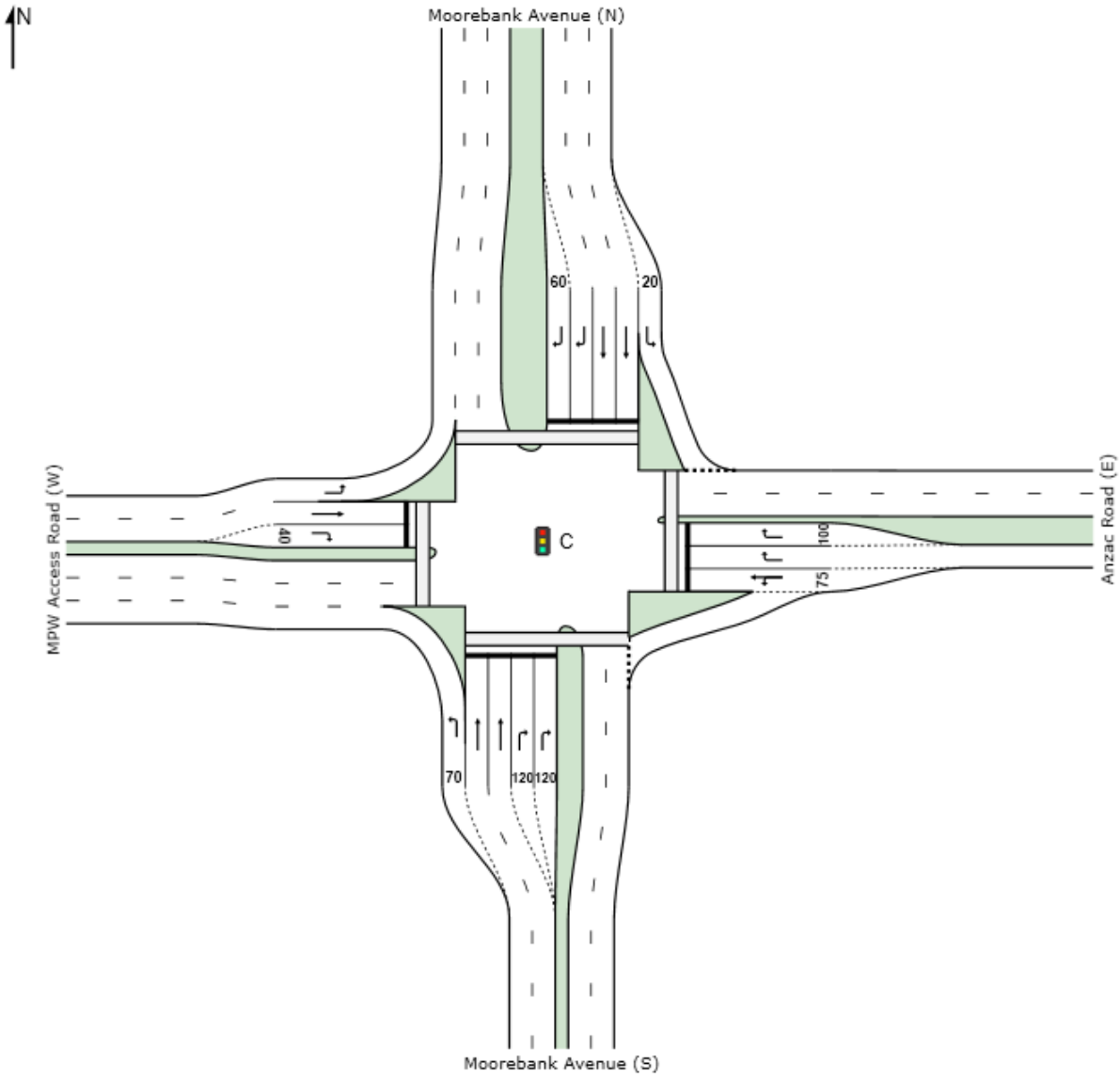

Figure 2-1 Upgraded Moorebank Avenue / Anzac Road intersection layout

2.2.2 Results

Container wash-down facilities and de-gassing areas

It is envisaged that there would be vehicle movements through the MPW site for access and egress into the wash-down and de-gassing facility as part of standard site operations. The alteration in vehicle circulation within the Proposal site would not change traffic impacts, rather it would be a deviation in the way traffic moves within the site and would be managed through the Operational Traffic Management Plan for the Proposal, where necessary.

Upgraded layout for the Moorebank Avenue / Anzac Road intersection

The predicted intersection performance (i.e. delay (in seconds) and level of service (LoS)) of the eight key intersections in the core traffic study area with the Amended Proposal under Scenario 1 and Scenario 2 for the 2019 and 2029 AM and PM peak periods, both with and without the Proposal, based on the revised traffic modelling to include the upgraded Moorebank Avenue/ Anzac Road intersection layout, are described in Table 2-2 to Table 2-5 below.

The proposed upgraded layout for the Moorebank Avenue / Anzac Road intersection is predicted to increase intersection capacity and either improve or maintain the intersection performance when compared to the intersection layout adopted in the EIS.

In 2019 and 2029 under Scenario 2, the intersection performance of a number of intersections is reduced. As the only modification to the operational traffic model was the inclusion of the upgraded Moorebank Avenue/ Anzac Road intersection layout, worsening in the LoS at these intersections is a result of variability in the operational traffic model in the 2029 under both Scenario 1 and Scenario 2. Variability in the traffic modelling analysis for 2029 is indicative of a heavily congested road network and insufficient network-wide capacity, where there is any capacity changes in one part of the network, re-distribution occurs across the network resulting in inconsistent results at intersections that have otherwise would not experience any actual changes in performance, as described in the EIS.

The following key findings have been identified from the revised traffic modelling and analysis:

Scenario 1 (operation of the Proposal only, with the amendments)

- In 2019 under Scenario 1, all intersections would continue to operate at an acceptable LoS in the AM and PM peak, consistent with the operational traffic and transport impact assessment prepared for the EIS.
- In 2029 under Scenario 1, all intersections would continue to operate at an acceptable LoS in the AM and PM peak, consistent with the operational traffic and transport impact assessment prepared for the EIS, with the exception of the following two intersections, where intersection performance would improve from a LoS F to a LoS E:
  - The M5 Motorway/ Hume Highway in the AM peak
  - The M5 Motorway/ Heathcote Road in the PM peak.

Scenario 2 (cumulative operational scenario, with the amendments)

- In 2019 under Scenario 2, all intersections would continue to operate at an acceptable LoS in the AM and PM peak, consistent with the operational traffic and transport impact assessment prepared for the EIS, with the exception of the following intersections:
  - The M5 Motorway/ Hume Highway, where the intersection performance would reduce from a LoS D to a LoS E in the AM peak. As shown in Table 2-4, the delay of 56 seconds at this intersection without the Proposal is at the threshold point between LoS D and LoS E (i.e. threshold of up to 56 seconds for LoS D and over 57 seconds for LoS E) i.e. Any minor increase in delay would result in the LoS at this intersection reducing to a LoS E.
  - Moorebank Avenue / Heathcote Road, where intersection performance would improve from a LoS F to a LoS E in the AM peak.
  - Moorebank Avenue/ Anzac, where the intersection performance would improve from a LoS E to a LoS C in the AM and PM peak.
- In 2029 under Scenario 2, all intersections would continue to operate at an acceptable LoS in the AM and PM peak, consistent with the operational traffic and transport impact assessment prepared for the EIS, with the exception of the following intersections in the PM peak:
  - The M5 Motorway/ Moorebank Avenue, where intersection performance would reduce from a LoS D to a LoS E.
  - The M5 Motorway/ Hume Highway, where intersection performance would reduce from a LoS C to a LoS E.
  - The M5 Motorway/ Heathcote Road, where intersection performance would reduce from a LoS E to a LoS F.
  - Moorebank Avenue/ Anzac Road where intersection performance would improve from a LoS E to a LoS C.

    As detailed above, as the only modification to the operational traffic model was the inclusion of the upgraded Moorebank Avenue/ Anzac Road intersection layout, worsening in the LoS at these intersections is a result of variability in the operational traffic model in the 2029 under both Scenario 1 and Scenario 2. Variability in the traffic modelling analysis for 2029 is indicative of a heavily congested road network and insufficient network-wide capacity, where there is any capacity changes in one part of the network, re-distribution occurs across the network resulting in inconsistent results at intersections that have otherwise would not experience any actual changes in performance, as described in the EIS.

Table 2-2 2019 with and Without Proposal Development (Existing Layout, EIS Layout and Upgraded Intersection Layout) – Scenario 1

ID	Intersection	2019 without Proposal Development (Existing Layout at Moorebank Avenue / Anzac Road intersection)				2019 with Proposal Development (EIS Layout at Moorebank Avenue / Anzac Road intersection)				2019 with Proposal Development (Upgraded Layout at Moorebank Avenue / Anzac Road intersection)			
		AM Peak (8-9am)		PM Peak (5-6pm)		AM Peak (8-9am)		PM Peak (5-6pm)		AM Peak (8-9am)		PM Peak (5-6pm)	
		Delay (sec)	LoS	Delay (sec)	LoS	Delay (sec)	LoS	Delay (sec)	LoS	Delay (sec)	LoS	Delay (sec)	LoS
I-1	Moorebank Avenue / Anzac Road / MPW access road	24	B	16	B	41	C	42	C	39	C	31	C
I-2	M5 Motorway / Moorebank Avenue	49	D	28	B	20	B	20	B	20	B	20	B
I-3	M5 Motorway / Hume Highway	134	F	32	C	56	E	28	B	59	E	28	B
I-4	Moorebank Avenue / Newbridge Road	44	D	31	C	47	D	37	C	55	D	33	C
I-5	Moorebank Avenue / Heathcote Road	53	D	44	D	75	F	34	C	74	F	31	C
I-6	M5 Motorway / Heathcote Road	78	F	69	E	31	C	36	C	37	C	35	C
I-7	Cambridge Avenue / Glenfield Road	8	A	12	A	8	A	12	A	8	A	10	A
I-8	Cambridge Avenue / Canterbury Road	10	A	7	A	8	A	7	A	9	A	6	A

Table 2-3 - 2029 with and Without Proposal Development (Existing Layout, EIS Layout and Upgraded Intersection Layout) – Scenario 1

ID	Intersection	2029 without Proposal Development (Existing Layout at Moorebank Avenue / Anzac Road intersection)				2029 with Proposal Development (MPW Stage 2 Proposal EIS Layout at Moorebank Avenue / Anzac Road intersection)				2029 with Proposal Development (Upgrade Layout at Moorebank Avenue / Anzac Road intersection)			
		AM Peak (8-9am)		PM Peak (5-6pm)		AM Peak (8-9am)		PM Peak (5-6pm)		AM Peak (8-9am)		PM Peak (5-6pm)	
		Delay (sec)	LoS	Delay (sec)	LoS	Delay (sec)	LoS	Delay (sec)	LoS	Delay (sec)	LoS	Delay (sec)	LoS
I-1	Moorebank Avenue / Anzac Road / MPW access road	52	D	95	F	53	D	45	D	47	D	33	C
I-2	M5 Motorway / Moorebank Avenue	74	F	125	F	30	C	38	C	33	C	37	C
I-3	M5 Motorway / Hume Highway	155	F	129	F	73	F	38	C	68	E	39	C
I-4	Moorebank Avenue / Newbridge Road	48	D	94	F	50	D	42	C	46	D	47	D
I-5	Moorebank Avenue / Heathcote Road	66	E	153	F	70	E	78	F	68	E	80	F
I-6	M5 Motorway / Heathcote Road	46	D	336	F	38	C	77	F	40	C	70	E
I-7	Cambridge Avenue / Glenfield Road	10	A	7	A	9	A	8	A	8	A	8	A
I-8	Cambridge Avenue / Canterbury Road	14	B	10	A	20	B	7	A	18	B	8	A

Table 2-4 - 2019 with and Without Cumulative Development (Existing Layout, EIS Layout and Upgraded Intersection Layout) – Scenario 2

ID	Intersection	2019 without Proposal Development (Existing Layout at Moorebank Avenue / Anzac Road intersection)				2019 with Cumulative Development (MPW Stage 2 Proposal EIS Layout at Moorebank Avenue / Anzac Road intersection)				2019 with Cumulative Development (Upgraded Layout at Moorebank Avenue / Anzac Road intersection)			
		AM Peak (8-9am)		PM Peak (5-6pm)		AM Peak (8-9am)		PM Peak (5-6pm)		AM Peak (8-9am)		PM Peak (5-6pm)	
		Delay (sec)	LoS	Delay (sec)	LoS	Delay (sec)	LoS	Delay (sec)	LoS	Delay (sec)	LoS	Delay (sec)	LoS
I-1	Moorebank Avenue / Anzac Road / MPW access road	24	B	16	B	42	D	44	D	39	C	37	C
I-2	M5 Motorway / Moorebank Avenue	49	D	28	B	21	B	36	C	20	B	38	C
I-3	M5 Motorway / Hume Highway	134	F	32	C	56	D	29	C	63	E	30	C
I-4	Moorebank Avenue / Newbridge Road	44	D	31	C	42	D	35	C	46	D	34	C
I-5	Moorebank Avenue / Heathcote Road	53	D	44	D	71	F	33	C	67	E	32	C
I-6	M5 Motorway / Heathcote Road	78	F	69	E	32	C	35	C	30	C	36	C
I-7	Cambridge Avenue / Glenfield Road	8	A	12	A	8	A	12	A	8	A	13	A
I-8	Cambridge Avenue / Canterbury Road	10	A	7	A	8	A	7	A	8	A	7	A

Table 2-5 - 2029 with and Without Cumulative Development (Existing Layout, EIS Layout and Upgraded Intersection Layout) – Scenario 2

ID	Intersection	2029 without Proposal Development (Existing Layout at Moorebank Avenue / Anzac Road intersection)				2029 with Cumulative Development (MPW Stage 2 Proposal EIS Layout at Moorebank Avenue / Anzac Road intersection)				2029 with Cumulative Development (Upgraded Layout at Moorebank Avenue / Anzac Road intersection)			
		AM Peak (8-9am)		PM Peak (5-6pm)		AM Peak (8-9am)		PM Peak (5-6pm)		AM Peak (8-9am)		PM Peak (5-6pm)	
		Delay (sec)	LoS	Delay (sec)	LoS	Delay (sec)	LoS	Delay (sec)	LoS	Delay (sec)	LoS	Delay (sec)	LoS
I-1	Moorebank Avenue / Anzac Road / MPW access road	52	D	95	F	52	D	57	E	47	D	37	C
I-2	M5 Motorway / Moorebank Avenue	74	F	125	F	35	C	53	D	33	C	60	E
I-3	M5 Motorway / Hume Highway	155	F	129	F	75	F	39	C	74	F	56	E
I-4	Moorebank Avenue / Newbridge Road	48	D	94	F	43	D	51	D	45	D	51	D
I-5	Moorebank Avenue / Heathcote Road	66	E	153	F	62	E	85	F	61	E	83	F
I-6	M5 Motorway / Heathcote Road	46	D	336	F	34	C	69	E	35	C	109	F
I-7	Cambridge Avenue / Glenfield Road	10	A	7	A	8	A	8	A	9	A	7	A
I-8	Cambridge Avenue / Canterbury Road	14	B	10	A	15	B	8	A	18	B	7	A

Amended warehouse layout

Warehouse sizes and their layout on the Proposal site have been changed as part of the Proposal amendment (i.e. amalgamation and de-amalgamation of GFAs); however, the resulting warehouse GFA remains unchanged at 215,000 m^2 (i.e. as per assumptions in the EIS) and therefore the traffic and trip generation assumptions remain the same as used in the EIS. Therefore, this amendment would not change the operational traffic impacts of the Proposal, and has therefore not been assessed as part of this report.

Access to the warehouses will be from three main entrances off the internal access road compared to two main entrances proposed in the EIS. The increased number of entrances to warehouses from the internal road network would facilitate better traffic dispersal within the Proposal site. The northernmost entrance will provide access to Warehouse 1 and 2, while the middle entrance provides access to Warehouses 3 and 4 and the southern entrance will provide access to Warehouses 5 and 6.

The proposed changes to the warehouse layout does not have an impact on the traffic generation, impact assessment and findings, as submitted in the EIS.

2.2.3 Mitigation measures

As the reduction in broader intersection performance in 2019 and 2029 under scenario 2 is a result of model variability (i.e. due to the congestion of the existing road network), no additional mitigation measures are required for the operation of the Amended Proposal.

2.3 Conclusion

This assessment concludes that the Amended Proposal would result in consistent impacts to those already identified and assessed as part of the existing OTTIA. Therefore, the outcomes and recommendations of the assessment undertaken for the OTTIA are still relevant and appropriate for the assessment of the Amended Proposal.