

Transport Assessment

Janus Regional and National Distribution Facilities
SSD 5066 MOD 1 & SSD 7709 MOD 1, Moorebank Intermodal Precinct West

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Appendix A: Design Commentary and Swept Path Analysis

Glossary

Abbreviation	Description
CC	Construction Certificate
CoC	Conditions of Consent
CTAMP	Construction Traffic and Access Plan
CTMP	Construction Traffic Management Plan
DA	Development Application
DPIE	Department of Planning, Industry and Environment
EIS	Environmental Impact Statement
GFA	Gross Floor Area
HRVs	Heavy Rigid Vehicles
IMT	Intermodal Terminal
JN	Janus National Distribution Centre
JR	Janus Regional Distribution Centre
LGA	Liverpool City Government Area
LoS	Level of Service
MOD	Modification
MPE	Moorebank Precinct East
MPW	Moorebank Precinct West
OC	Occupation Certificate
RMS	Road and Martie Service of NSW
RtS	Response to Submissions
SSD	State Significant Development
TA	Transport Assessment

TCS	Traffic Control Signal
TEUs	Twenty-foot equivalent units
TfNSW	Transport for New South Wales
Trip	A movement with an origin and a destination
WAD	Works Authorisation Deed
MODs Proposal	Modifications 1 and 2, the subject of this TA

Reference Documents

Abbreviation	Document
AS 2890.1	Australian Standard 2890.1: Parking Facilities – Off-Street Car Parking (Standards Australia, 2004)
AS 2890.2	Australian Standard 2890.2: Parking Facilities – Off Street Commercial Vehicle Facilities (Standards Australia, 2018)
AS 2890.3	Australian Standard 2890.3: Parking Facilities – Bicycle Parking (Standards Australia, 2015)
AS 2890.6	Australian Standard 2890.6: Parking Facilities – Off Street Parking for People with Disabilities (Standards Australia, 2009)
CTIA	Moorebank Precinct West (MPW) – Stage 2 Proposal, Response to Submissions, Appendix C: Construction Traffic Impact Assessment (Arcadis, June 2017)
LDCP	Liverpool Development Control Plan (Liverpool City Council, 2008)
MPWS2 OTTIA	Moorebank Precinct West (MPW) – Stage 2 Proposal, Operational Traffic and Transport Impact Assessment (Arcadis, October 2016)
PB memo	Moorebank Intermodal Precinct: Traffic generation and underlying assumptions memorandum (Parsons Brinkerhoff, 01 September 2016)
RMS Guide	Guide to Traffic Generating Developments (RMS, October 2002)
RMS Guide Update	Guide to Traffic Generating Developments – Updated Traffic Surveys (RMS, August 2013)

1 Introduction

1.1 Project Description

Ason Group has been engaged SIMTA to prepare a Transport Assessment (TA) to assess the traffic and parking implications of the development of the proposed Janus Regional and National Distribution Facilities (the Proposal) to be located within the precinct referred to as Moorebank Precinct West (MPW or the Precinct) of the Moorebank Intermodal Terminal. The Site is located within the Liverpool City Council, Local Government Area (LGA) and therefore it is subject to Liverpool City Council's controls.

The following provides the official project description and outlines the 2 modification applications that are being submitted to facilitate the Proposal. It is noteworthy that there are concurrent modification applications pertaining to SSD 5066 and SSD 7709:

Modification 1: SSD 5066 MOD 1

- *Amendment to the Concept Plan originally approved, via means of adjustment to the internal Moorebank Precinct West (MPW) boundaries; and*
- *Amendment to the maximum building height established across selected portions of the Subject Site from approximately 21m up to and including 45m.*

The outcome of this modification is that the proposed development substantially remains unchanged.

Modification 2: SSD 7709 MOD 1

- *Amendment to the MPW Stage 2 internal operational boundaries, with respect to indicative built form proposed under SSD 7709, via means of reconfiguration of the MPW Stage 2 internal operational boundaries. Noting, this is consistent with the post-approvals provision for updated Development Layout Drawings to the NSW DPIE in relation to Condition B2 of SSD 7709;*
- *Amendment to the maximum building height established across selected portions of the Subject Site from approximately 21m up to and including 45m with respect to future built form under MPW Stage 2; and*
- *Construction and operation of two (2) Warehouse and Distribution Facilities (High Bay Warehouses) across the Subject Site, including:*
 - Ancillary hardstand;
 - Amenities;
 - Ancillary offices;

- Associated car parking; and
- Landscaping.

Each of the above elements is consistent with the development consent (SSD 7709) and post-approval documentation as approved. The outcome of this modification is that the Proposal is generally in accordance with the Consent Instrument, which is detailed and discussed in Section 2.

It is noteworthy that whilst the Proposal seeks to modify and increase the area of the recently approved MPW Stage 2 site, no additional building gross floor area (GFA) is proposed nor any modifications to the operational throughput of the interstate terminal proposed for MPW. However, whilst both of the Modification 1 amendments and the first 2 of 3 of the Modification 2 amendments can be considered high-level modifications to the respective concept plans, the final amendment proposed under SSD 7055 MOD 1 is of greater detail and it is this amendment – that proposes the construction and operation of the 2 warehouse buildings – which is the main focus of this TA.

1.2 Background

On 3 June 2016, the Planning Assessment Commission (PAC) approved State Significant Development application SSD 5066 for MPW. The following summarises the traffic relevant development components that were approved for the overall Concept Plan area of MPW:

- An Intermodal Terminal (IMT) facility to support a container freight throughput volume of 550,000 twenty-foot equivalent units (TEUs) per annum.
- A warehousing estate providing 300,000 m² of warehouse GFA.

The Concept Plan was approved on the basis of cumulative traffic generation analysis for the Concept Plans of MPW and Moorebank Precinct East (MPE – which proposed an IMT with a throughput of 500,000 TEUs per annum and 300,000 m² of warehouse GFA), which determined that the combined Precinct of MPW and MPE would generate on a daily basis:

- 9,337 light vehicle trips, and
- 10,798 heavy vehicle trips.

Analysis indicates that MPW would account for approximately 52% of the cumulative traffic generation (most likely due to the 50,000 TEUs of additional IMT throughput), which when applied to the figures above indicates that the Concept Plan development of MPW would be permitted to generate daily trips in the order of:

- 4,855 light vehicle trips, and

- 5,615 heavy vehicle trips.

For the purpose of this TA, this volume of traffic is referred to as the MPW Concept Plan traffic threshold.

On 11 November 2019, the Independent Planning Commission (IPC) approved State Significant Development application SSD 7709 for MPW Stage 2, which was associated with the IMT facility and the northern part of Precinct's proposed warehousing lands. The following provides a brief summary of the development components approved:

- An IMT facility to support a container freight throughput volume of 500,000 TEUs per annum.
- A warehousing estate on the northern part of the Precinct providing 300,000 m² of warehouse GFA.
- Intersection upgrades on Moorebank Avenue at the intersections with Anzac Road and with Bapaume Road.
- Construction works and temporary ancillary facilities.

The Environmental Impact Statement that supported the MPW Stage 2 application (the MPW Stage 2 EIS) – based on traffic analysis undertaken by Arcadis – indicated that MPW Stage 2 would generate the following volumes of daily traffic movements:

- 2,670 light vehicle trips, and
- 1,458 heavy vehicle trips.

For the purpose of this TA, this volume of traffic is referred to as the MPW Stage 2 traffic threshold.

MPW Stage 2 was approved subject to a number of conditions of consent. Of relevance is condition A3(c), which states:

A3. The development may only be carried out:

(c) in accordance with the EIS, Response to Submissions (RtS) and Consolidated assessment clarification responses

This condition recognises the predictive nature of the EIS and that as the development progresses, the predicted volumes will be refined with actual data. Accordingly, this condition – combined with a number of other conditions requiring continuous, detailed and ongoing monitoring and reporting of traffic generation to the Department of Planning, Industry and Environment (DPIE) – effectively 'sets' the MPW Stage 2 traffic generation threshold as an approved traffic generation threshold for the infrastructure upgrades attached to the MPW Stage 2 approval.

1.3 Study Objective

Based on planning advice provided to Ason Group, it is understood that the conditions of consent and the planning 'mechanisms' they provide are sufficient to permit the approval of a detailed application for specific development (such as this Proposal) provided it is demonstrated that forecast traffic generation for that development is equal to / less than the MPW Stage 2 traffic generation threshold. Accordingly, the key objective of this TA study is to demonstrate that the detailed components of this application – namely the development of the 2 warehouse facilities proposed as part of SSD 7709 MOD1 – generate traffic volumes that are equal to / less than the MPW Stage 2 traffic threshold volumes.

Secondary objectives of this TA include the undertaking of more standard TA tasks such as car parking provision analysis and assessments of the internal design layout.

2 Moorebank Precinct West

2.1 SSD 5066 Approved Concept Plan for MPW

2.1.1 MPW Concept Plan Details

The extent of MPW is shown in **Figure 1** presenting its context with regard to MPE, Moorebank Avenue and the M5 Motorway to the north.

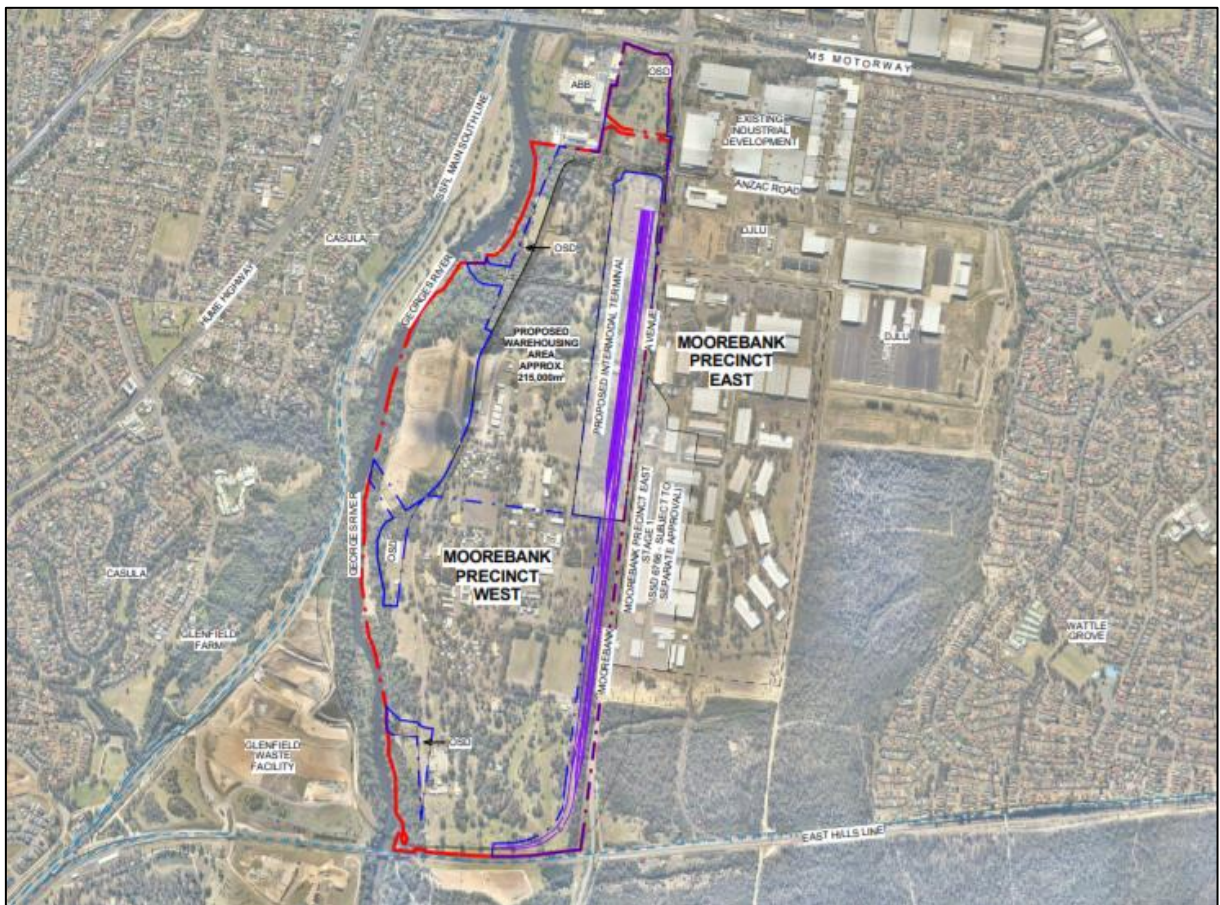


Figure 1: MPW Local Context

(Source: Moorebank Precinct West Stage 2 Proposal Response to Submissions - Appendix B: Architectural drawings)

As mentioned, on 3 June 2016 the PAC approved SSD 5066 for MPW, thereby approving:

- An IMT facility with a forecast container freight throughput volume of 550,000 TEUs per annum.
- A warehousing estate providing 300,000 m² of warehouse GFA.

2.2 SSD 7709 Approved Concept Plan for MPW – Stage 2

2.2.1 MPW Stage 2 Details

The MPW Stage 2 Development (SSD 7709) was determined on 11 November 2019 by the IPC and approved with number of Conditions of Consent (CoC). The approved Site Plan is presented in **Figure 2** demonstrating that Stage 2 focused on the northern part of the overall MPW precinct.

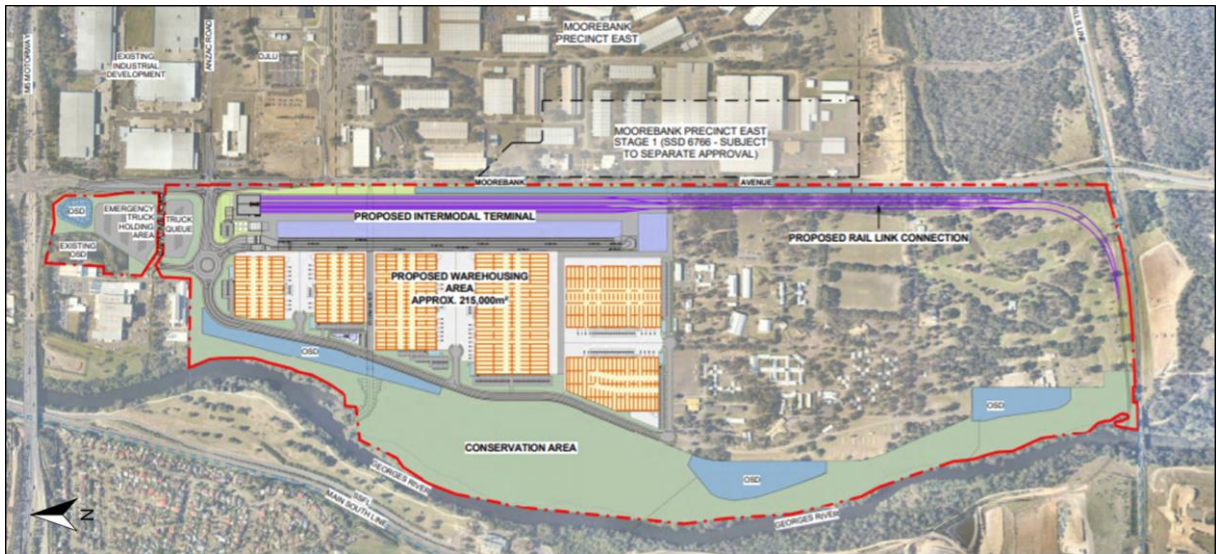


Figure 2: Approved MPW Stage 2 Concept Plan

(Source: Moorebank Precinct West Stage 2 Proposal Response to Submissions - Appendix B: Architectural drawings)

The following summarises the traffic relevant development components approved:

- Construction and 24/7 operation of an IMT facility to support a container freight throughput volume of 500,000 TEUs per annum.
- Construction and 24/7 operation of a warehousing estate on the northern part of the Precinct servicing the IMT facility and including:
 - 6 warehouses with a total GFA of 215,000 m² and, for each warehouse, associated offices, staff amenities, hardstands and truck and light vehicle parking.
 - 800 m² freight village (operating from 7.00AM to 6.PM, 7 days / week) including staff / visitor amenities.
 - internal roads, noise wall, landscaping, lighting and signage.

- Intersection upgrades on Moorebank Avenue at:
 - Anzac Road providing site access
 - Bapaume Road for left-turn only out of the site.
- Construction works and temporary ancillary facilities.

2.2.2 SSD 5066 Conditions of Consent

Traffic relevant conditions of the SSD 5066 approval are presented in **Table 1** along with the comments on how these conditions are addressed by these latest MOD applications.

Table 1: SSD 5066 Conditions (Schedule 4) and Ason Group Responses

Condition Number	Condition	Ason Group Comment
Schedule 4: Conditions to be met in future development applications		
Traffic		
E10	Development Applications for either the IMEX or interstate terminal shall include documentation demonstrating how Condition 14 of this approval has been satisfied. 14. Operations on the Subject Site cannot commence until a rail connection to the SSFL is operational.	This condition is not relevant to this MOD.
E11	All future Development Applications shall include a Traffic Assessment based on background growth models developed by RMS for the Liverpool/Moorebank area (if applicable).	This condition will not affect this MOD. As detailed in Section 4, traffic analysis indicates that during the road network AM and PM peak hours, the combined facility generates significantly less traffic (light and heavy) than corresponding approved thresholds.
E12	All future Development Application shall demonstrate how the main access to the Site has been designed to prevent heavy vehicles associated with the facility from using Moorebank Ave south, and should be accompanied by a detailed engineer drawing(s).	Noted. JR & JN access points are outlined in section 3.

2.2.3 SSD 7709 Conditions of Consent

Traffic relevant conditions of the SSD 7709 approval are presented in **Table 2** along with the comments on how these conditions are addressed by these latest MOD applications

Table 2: SSD 7709 Conditions and Ason Group Responses

Condition Number	Condition	Ason Group Comment															
Traffic Access																	
B84	<p>The Applicant is to undertake the following road infrastructure upgrades, in accordance with the specific timing requirements as set out in Table 1.</p> <table><tr><th colspan="4">Table 1: Required Upgrades and Specified Timing Requirements</th></tr><tr><th rowspan="2">Upgrade</th><th colspan="3">Specified Timing Requirements</th></tr><tr><th>Upgrade requirements</th><th>Required timing for 100% design approval by RMS</th><th>Required timing for completion of upgrade</th></tr><tr><td>Moorebank Avenue and Anzac Road intersection upgrades, road widening and road upgrade works, and associated civil works</td><td>Indicative layout plans (RIUW-ARC-CV-SKC-2003-P1 and RIUW-ARC-CV-SKC-1005-P2) included in Appendix 1, subject to design development and approval by RMS, and incorporating a bicycle/ pedestrian share path</td><td>To be obtained within 12 months of the date of this consent, or prior to the issue of the first Occupation Certificate for warehousing, whichever is the sooner.</td><td>Prior to issue of an Occupation Certificate for warehousing in excess of 100,000 m² of gross floor area</td></tr></table>	Table 1: Required Upgrades and Specified Timing Requirements				Upgrade	Specified Timing Requirements			Upgrade requirements	Required timing for 100% design approval by RMS	Required timing for completion of upgrade	Moorebank Avenue and Anzac Road intersection upgrades, road widening and road upgrade works, and associated civil works	Indicative layout plans (RIUW-ARC-CV-SKC-2003-P1 and RIUW-ARC-CV-SKC-1005-P2) included in Appendix 1 , subject to design development and approval by RMS, and incorporating a bicycle/ pedestrian share path	To be obtained within 12 months of the date of this consent, or prior to the issue of the first Occupation Certificate for warehousing, whichever is the sooner.	Prior to issue of an Occupation Certificate for warehousing in excess of 100,000 m ² of gross floor area	<p>This condition will not affect this MOD.</p> <p>Construction of the roads and intersections are expected to be completed as per the 2019 Approval and prior to this MOD.</p>
Table 1: Required Upgrades and Specified Timing Requirements																	
Upgrade	Specified Timing Requirements																
	Upgrade requirements	Required timing for 100% design approval by RMS	Required timing for completion of upgrade														
Moorebank Avenue and Anzac Road intersection upgrades, road widening and road upgrade works, and associated civil works	Indicative layout plans (RIUW-ARC-CV-SKC-2003-P1 and RIUW-ARC-CV-SKC-1005-P2) included in Appendix 1 , subject to design development and approval by RMS, and incorporating a bicycle/ pedestrian share path	To be obtained within 12 months of the date of this consent, or prior to the issue of the first Occupation Certificate for warehousing, whichever is the sooner.	Prior to issue of an Occupation Certificate for warehousing in excess of 100,000 m ² of gross floor area														
B85	<p>The swept path of the longest vehicle entering and exiting the subject site, must be in accordance with the Austroads requirements. Prior to commencement of the construction of permanent built surface works, a plan be submitted to the Planning Secretary and RMS for approval, which shows that the proposed development complies with this requirement.</p>	<p>Noted. Detailed design of the proposed warehouse hardstand areas and parking facilities can readily be addressed as part of the Construction Certificate (CC) stage of the project and in response to a suitable condition. However, Section 7 of this TA outlines the outcome of the design review related to the MOD in response to this condition. Furthermore, relevant swept path analysis of the Design Vehicle (26.0 m B-Double) has been included in the Appendix A of this TA.</p>															
B86	<p>The layout of the proposed car parking areas associated with the subject development (including driveways, turn paths, sight distance requirements in relation to the landscaping and / or fencing, aisle widths, aisle lengths, and parking bay dimensions) must be in accordance with the AS2890.1-2004 Parking Facilities Off-street car parking, AS2890.6-2009 Parking facilities Off-street Parking facilities for people with disabilities and AS2890.2-2002 Parking facilities Off-street commercial vehicle facilities for heavy vehicle usage.</p>	<p>Noted. Refer response to Condition B85.</p>															
B87	<p>Existing and future utility and service infrastructure must be located outside roadway being upgraded. The Applicant is to locate any drainage infrastructure to support the Stage 2 development entirely within the development site and not within the roadway, unless agreed by RMS.</p>	<p>This condition does not have any impact to this MOD.</p>															
B88	<p>Road design must incorporate structures for fauna movement between the Georges River riparian corridor and the Boot Land, either under or below the road.</p> <p><i>Note: See also conditions B2(i) and B152 (d)</i></p>	<p>This condition does not have any impact to this MOD.</p>															
B89	<p>Heavy vehicles used for haulage of imported fill or freight must not use Cambridge Avenue during construction and operation of the development.</p>	<p>It is noteworthy that the MOD is not intended to change the haulage routes or construction management protocols from the originally approved Construction Traffic Impact Assessment undertaken by Arcadis.</p> <p>However, a preliminary Construction Traffic Management Plan (CTMP) has been provided in Section 0 of this report which outlines a high-level construction management advice.</p>															
B90	<p>Access to the ABB site must be maintained throughout construction and operation of the development.</p>	<p>Noted. This condition does not have any impact to this MOD.</p>															

Condition Number	Condition	Ason Group Comment
B91	The Applicant must: (a) consult with owners/occupiers of the ABB site throughout construction and operation; (b) provide details of construction works adjacent to the ABB site prior those works occurring; and (c) ensure the proposal does not adversely impact overland flow paths or existing stormwater infrastructure.	Noted.
B92	The Applicant must ensure that the construction and operation of the proposed development will not prevent the public use of Moorebank Avenue to a standard commensurate to its use prior to the development. <i>Note: Temporary closure or part closure and changes to the operation of Moorebank Avenue may occur for limited periods during construction as detailed in the Construction Traffic and Management Plan.</i>	Noted.
B93	The development is to be designed and operated so that:	
	(a) all vehicles are wholly contained on-site before being required to stop;	Noted. Confirming that the proposed development layout has been designed to accommodate the design vehicles wholly within the site.
	(b) adequate parking for heavy vehicles is provided on-site to accommodate any potential delays in schedule time;	Provided. Refer Section 0 for more information.
	(c) heavy vehicles and bins associated with the development are not parked on local roads or footpaths in the vicinity of the site;	Noted. Heavy vehicles including waste collection trucks can satisfactorily enter, circulate and exit the Site in forward motion without having to unnecessarily stop on public roads.
	(d) all loading and unloading of materials is carried out on-site; and	Noted. Proposed warehouses as part of this MOD have been designed to readily allow for the loading / unloading activities on-site.
	(e) site roads accommodate buses, bus infrastructure and cyclist use for employee.	It is expected that the site roads are designed to accommodate 26 m B- Doubles and as such can inherently cater for buses in future if public transport becomes an available mode within the MPW. Furthermore, bicycle parking will also be provided on-site which is further discussed in Section 4.2.
RMS supplementary requirements		
B94	The civil design and Traffic Control Signal (TCS) plans for the upgrades identified in Table 1 of Condition B84 must be drawn by a suitably qualified person and endorsed by a suitably qualified practitioner. The design must be in accordance with Austroads Guides to Road Design in association with relevant RMS supplements (available on www.rms.nsw.gov.au). The certified copies of the TCS design and civil design plans must be submitted to RMS for approval before the issue of Construction Certificate and commencement of the road works.	Noted.
B95	All documentation required under Condition B94 must be sent to development.sydney@rms.nsw.gov.au .	Noted.

Condition Number	Condition	Ason Group Comment
B96	RMS fees for administration, plan packing, civil works inspections and project management must be paid by the applicant before the commencement of road upgrades identified in Table 1 of Condition B84 .	Noted.
B97	The applicant must enter into a Works Authorisation Deed (WAD) with RMS for the works identified in Table 1 of Condition B84 . The applicant must also dedicate a public road under the <i>Roads Act 1993</i> the parts of Lot 2 DP 1197707 (incorporating existing Moorebank Avenue). And any other land required to accommodate the roads and intersection upgrade works (including associated pathways and services) identified in Table 1 of Condition B84 . The WAD must provide for the dedication of the required land as public road under road under the Roads Act 1993 as a pre-condition to practical completion of the road and intersection upgrade works being achieved under WAD. A Construction Certificate cannot be issued for any part of the road and intersection upgrade works unless a WAD has been entered into a compliance with this condition. The road and intersection works identified in Table1 of Condition B84 cannot be opened for use by traffic unless all required land has been dedicated as public road in accordance with this condition.	Noted.
B98	The Applicant is required to dedicate land as public road for the maintenance of the Traffic Controls Signals and associated infrastructure; further details will be included as part of the WAD process.	Noted.
B99	Prior to any installation of temporary portable traffic signals and other traffic management measures on Moorebank Avenue or Anzac Road, the Applicant must obtain the relevant approval from RMS.	Noted. This condition does not have any impact to this MOD.
B100	All works associated with signposting along Moorebank Avenue must be approved by RMS.	Noted.
B101	The works associated with traffic signals and road upgrades works are to be designed and delivered at no cost to TfNSW or RMS.	Noted.
B102	The Applicant must pay all costs incurred by Council and/or RMS in relation to public road dedication of Commonwealth owned land.	Noted.
B103	The Applicant is required to negotiate and execute an Interface and Access Deed with RMS and M5 Operator (Interlink Roads Pty Ltd) prior to road construction works commencing, to address matters including interface works carried out on Lots 3 and 4 in Deposited Plan 1063765.	Noted.
B104	The Applicant is to ensure that the construction and operation of the proposed of the proposed development will not prevent the ongoing use of Moorebank Avenue as a public road to a standard commensurate to its current use prior to the development. A staging plan should be submitted to RMS for approval, as part of the WAD package to ensure adequate capacity is provided along Moorebank Avenue at all times, including a requirement to maintain two lanes open to traffic. The staging plan should provide details of how the road and intersection upgrade works tie into other road upgrades works approved under MPE Stage 1 and 2 SSD applications. Any temporary diversion works not located within the Moorebank Avenue roadway will require separate planning proposal.	Noted.
B105	There are to be no works undertaken by the Applicant within RMS (M5 Motorway) land and no impacts on RMS drainage infrastructure system or on adjoining Roads and Maritime assets, without the consent of the RMS and M5 Motorway Operators (Interlink).	Noted.
B106	The Applicant is to liaise with and obtain relevant approvals from RMS in relation to any proposed drainage and excavation works, erection of new and/or maintenance of existing fencing on the M5 Motorway	Noted.

Condition Number	Condition	Ason Group Comment
	boundary, erection of new noise attenuation infrastructure, and other construction works that may impact the M5 Motorway corridor. <i>Note: Contact to be made to Matthew Massina, Commercial Manager Motorway Partnership and Planning on 02 8588 4119.</i>	
B107	To ensure that Environment Work Health and Safety laws are fully implemented within and near the M5 Motorway corridor, the Applicant's staff/contractors must be inducted into the M5 Motorway operator's (Interlink) corridor and undertaken from the M5 Motorway side. The Applicant may be required to complete a commercial agreement or bank undertaking that sufficiently mitigates the M5 Operator's (Interlink) risk.	Noted.
B108	A Road Occupancy License is to be obtained from the Transport Management Centre for any works that may impact on traffic flows on Moorebank Avenue or the adjoining State road network during construction activities.	Noted.
B109	A construction zone will not be permitted on Moorebank Avenue without the express approval from RMS.	Noted.
B110	Access is denied across the M5 Motorway corridor boundary and all buildings and structures are to be located wholly within freehold property.	Noted. This MOD will not be directly accessed via M5 Motorway corridor.

It is noted that the relevant conditions regarding Construction Traffic and Access Management Plan will be addressed in section 6.3.

The other conditions regarding Operational Traffic and Access Management Plan and Workplace Travel Plan can be reviewed and addressed at later stages and as part of the Construction Certificate (CC) and Occupation Certificate (OC) phases of the project.

2.3 Approved Traffic Generation Thresholds

As mentioned, this TA relies on the previous SSD approvals in determining the inherently approved traffic generation for the MPW to form a threshold for the entire western precinct generation. This approach has been adopted to inform a comparative assessment between the previously approved thresholds and the likely traffic generation of the proposed JR and JN warehouses.

Accordingly, **Table 3** outlines the approved thresholds in accordance with the previous SSD approvals as detailed in Section 1.2.

Table 3: Approved Daily Traffic Generation Thresholds (under different SSDs)

SSD No.	Light Vehicle	Heavy Vehicle	Total ¹
Concept Plan Approval (SSD 5066)	9,337 (4855) ²	10,798 (5,615)	20,135 (10,470)
MPW Stage 2 Approval (SSD 7709)	2,670	1,458	4,128 ³

Note: 1) Above daily traffic flows are 2-ways (inbound + outbound).

2) Figures in bracket demonstrate the estimated MPW traffic generation (52% of the total).

3) The Concept Plan Approval figures represent the MPW site as a whole under a fully developed scenario and the MPW Stage 2 Approval represents a subset of the whole of site figure.

According to the above table the MPW Stage 2 is expected to generate approximately 2,670 light vehicle trips (2-way) and 1,458 heavy vehicle trips (2-way) to and from the precinct per weekday.

Additionally, hourly trip generation profiles for employee cars and heavy vehicles were sourced from the PB memo. In summary, **Table 4** below presents the approved traffic generation thresholds for MPW Stage 2.

Furthermore, to provide an opportunity for a like for like comparison between the approved threshold at MPW Stage 2 and the JR & JN traffic generation, the following table outlines the estimated approved threshold in terms of PCUs (Passenger Car Units). Standard practise assumes that – in terms of traffic impacts on the road network – 1 light vehicle (car) is equivalent to 1 PCU and 1 heavy vehicle (truck) is equivalent to 2 PCUs. In other words, 1 truck has a similar impact on the performance of the road network as 2 cars.

Table 4: MPW Stage 2 Traffic Generation Thresholds (Trips)

Time Period	Light Vehicle (LV)	Heavy Vehicle (HV)	Total (LV+HV)	PCU
AM Peak (08:00 - 09:00)	75	102	177	279
PM Peak (17:00 - 18:00)	27	94	121	215
Daily	2,670	1,458	4,128	5,586

Above table demonstrates that the approved MPW Stage 2 provides a threshold of 279 and 215 PCUs during the road network AM and PM peak hours respectively.

3 Modification Description

3.1 MODs Proposal Site Plan

Full details of the Modifications 1 and 2 (MODs Proposal) are provided in the Environmental Impact Statement (EIS) which this TA accompanies. A reduced scale of Site Plan further to the MODs is provided in **Figure 3**.

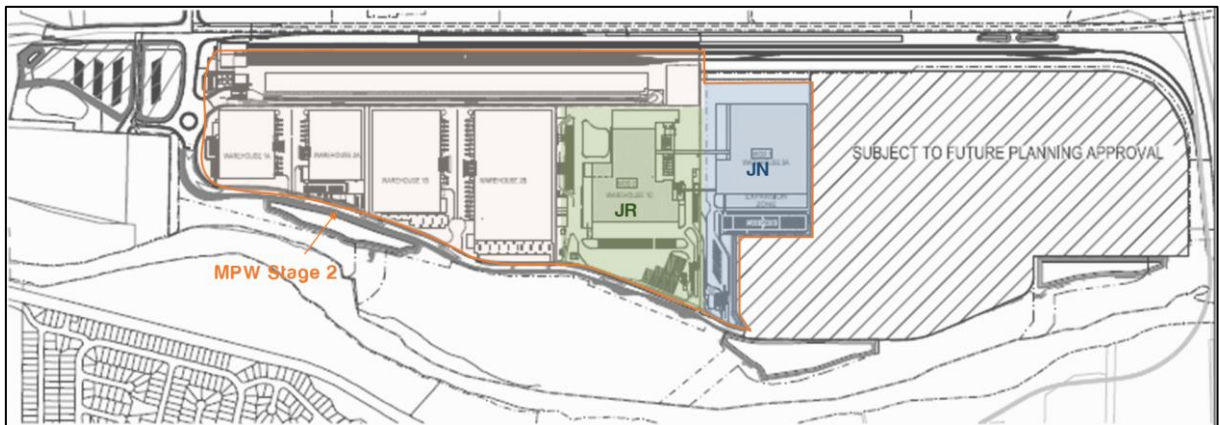


Figure 3: Site Plan (subsequent to the MODs Proposal)

As mentioned before, the key aspects of the MODs Proposal primarily relate to:

- Extended site boundary of the MPW Stage 2, and
- A proposed Regional (JR) and National (JN) combined distribution centre located within the MPW.

It should be emphasised again that these MODs propose no changes to the IMT facility located within the MPW.

For clarity, extent of the MODs Proposal when compared to the approved development plans is demonstrated in **Figure 4**. Site Plans for the proposed JR and JN are provided in **Figure 5**.

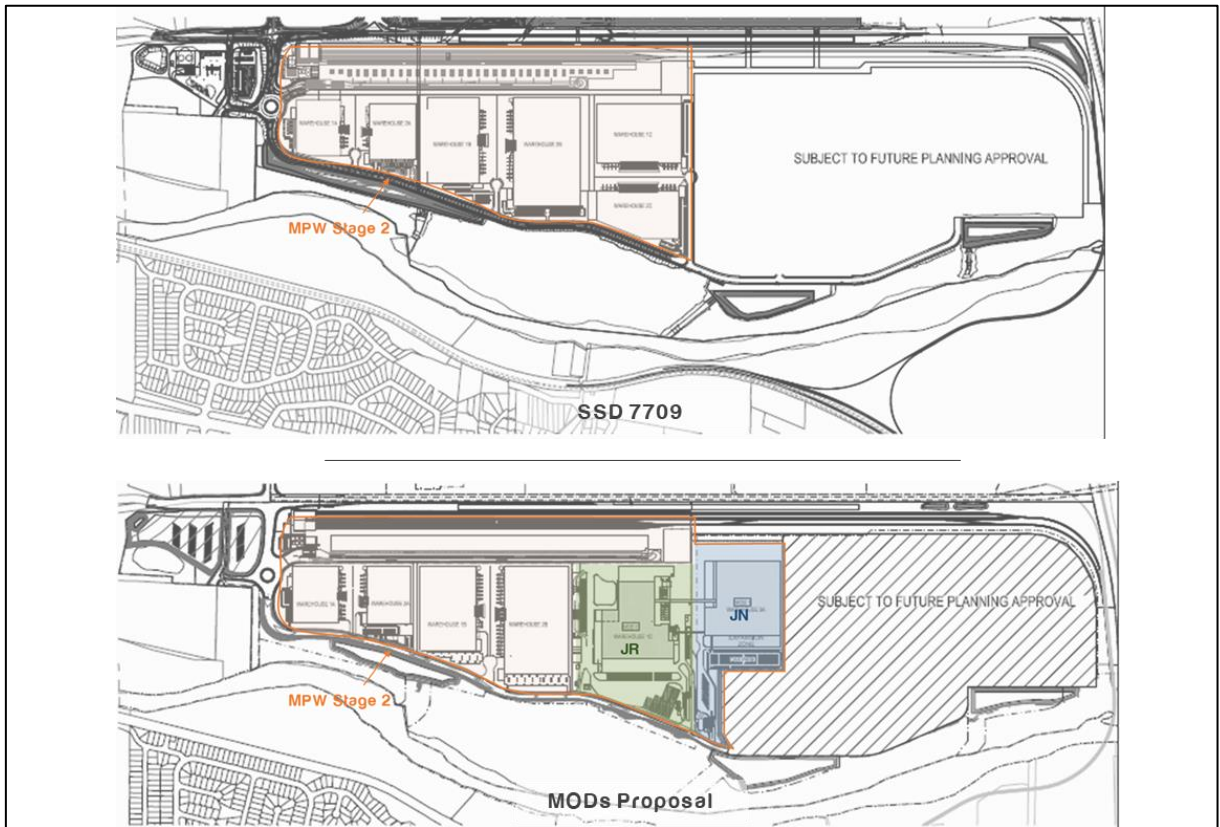


Figure 4: Site Plan Comparison (SSD 7709 Approval vs. the MODs Proposal)

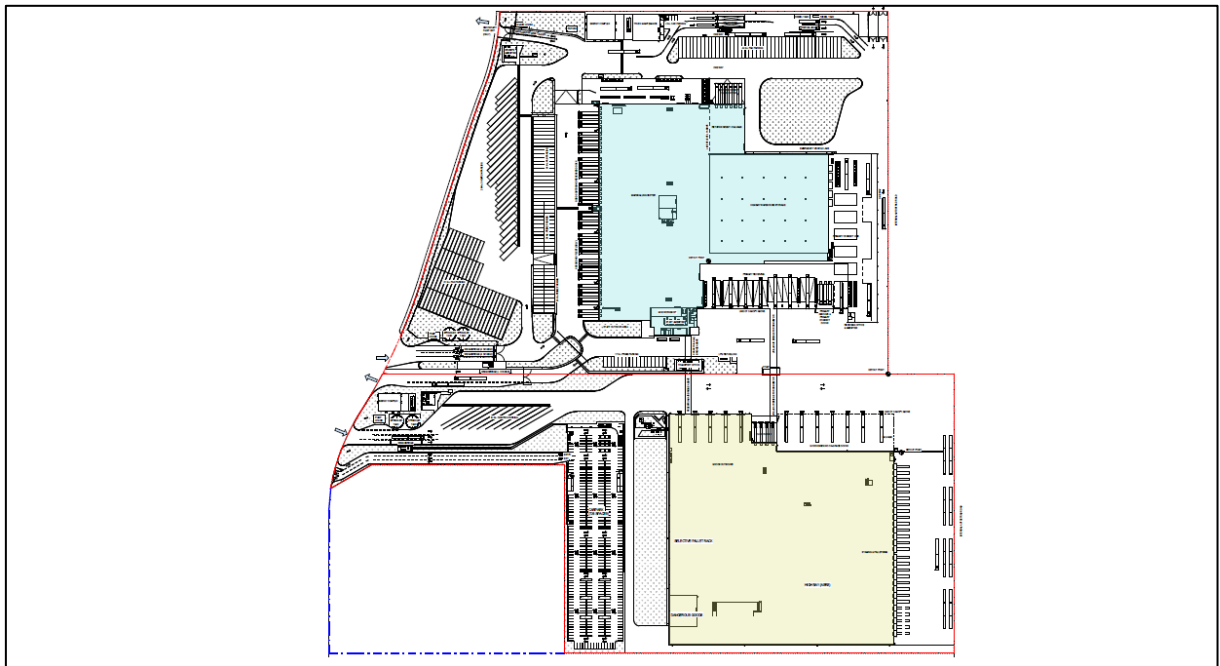


Figure 5: Warehouses JR and JN Site Plans

3.2 Proposed Building Characteristics

Table 5 outlines a comparison of warehouse schedules between the proposed Concept Plan MODs Proposal and the approved Concept Plan.

Table 5: Area Comparison (Warehouse)

Warehouse No.	SSD 7709 Approval (GFA m ²)	MODs Proposal (GFA m ²)
Warehouse 1A	21,000	21,000
Warehouse 2A	22,000	20,600
Warehouse 1B	38,000	39,500
Warehouse 2B	61,000	57,958
Warehouse 1C (JR)	43,000	33,721
Warehouse 2C	30,000	Deleted
Warehouse 3A (JN)	Not Applicable	42,221
Total	215,000	215,000

As indicated above, the MODs Proposal results in a warehousing GFA reduction of 24,158m² despite the extended site boundary.

Accordingly, it is apparent that the proposed built form envisaged for this MOD is less when compared to the 2019 Approval.

3.3 Anticipated Staffing Levels

The Following **Table 6** presents the projected staff numbers by shift for the combined distribution centre.

Table 6: Projected Staff Numbers by Shift for the Combined JR & JN Facility

Shift	JR	JN	Combined
Day Shift (06:00 - 14:00)	319	260	579
Evening Shift (14:00 - 20:00)	256	240	496
Night Shift (20:00 - 06:00)	30	-	30
Total	605	500	1,105

It is noted that the Client has indicated that only negligible levels of staff would be working a standard administration staff shift of 08:30AM to 5:00PM.

4 Traffic Assessment

4.1 Staff Traffic Generation (Light Vehicles)

4.1.1 Generic Moorebank Logistics Park Assumptions

The PB memo – which sets out the traffic generation assumptions adopted for the traffic assessments of the Moorebank IMT – provides the following in relation to light vehicle traffic:

- Total vehicle trip generation rate of 2.1 trips per 100 m² of GFA.
- 70% of trips to be related to light vehicle movements.
- 3 daily trips per staff member, generally consisting of:
 - Two-thirds of trips being arrival and departure trips at shift changeover, and
 - One-third of trips being generic light vehicle across the day and not all directly staff related.

Application of the assumptions to the 75,942 m² of GFA proposed for the combined facility indicates that the Proposal would generate 1,117 total daily light vehicle trips consisting of:

- 782 two-way commuter trips during the peak periods, and
- 335 two-way generic trips across the day.

In addition, the PB memo – based on surveys of warehouse developments in Eastern Creek – determined that whilst the majority of staff traffic occurred in the hour prior to and the hour following shift changeover, staff traffic associated with a specific shift changeover occurred (at some level) over a 6-hour period, basically the 3-hours prior to the shift changeover and the 3-hours following.

The adopted profile for staff traffic is presented on **Figure 6**, which has been extracted from the PB memo. The figure indicates that whilst 70% of shift changeover occurs in the 2-hour peak period – i.e. 1-hour either side of the shift changeover time – 30% generally occurs in the 2-hour periods either side of the peak period.

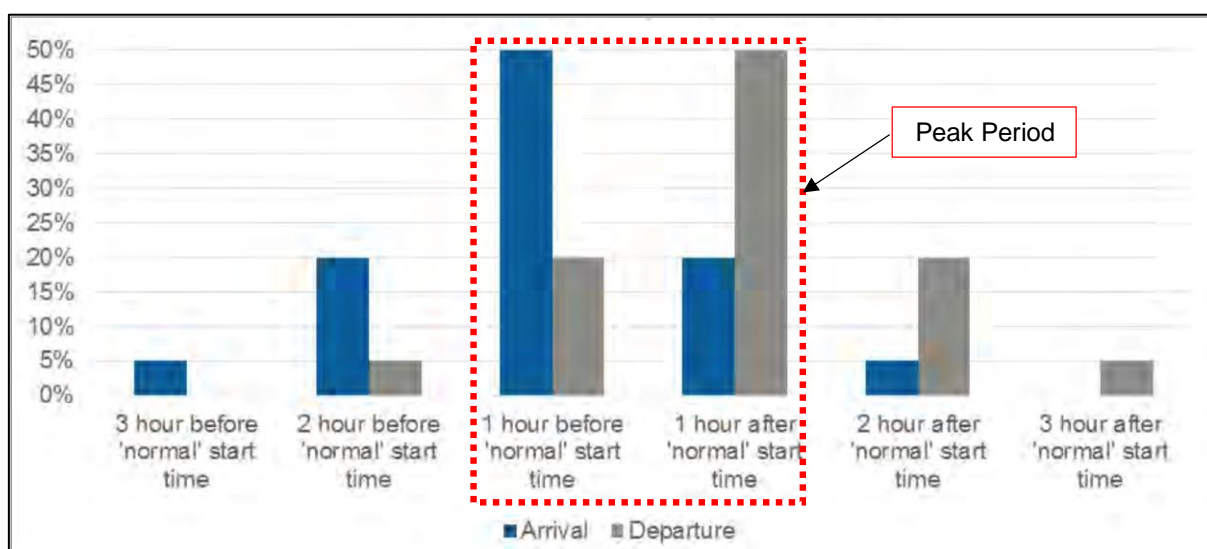


Figure 6: Warehouse Staff Profile (Source: PB Memo, Figure 4.1)

However, recognising the specific forecast staffing requirements for the Proposal, a first principles assessment of daily commuter trips has been undertaken and is presented in the following sections. The analysis above has only been adopted for the profile assumptions presented in Figure 6.

4.1.2 Commuter Light Traffic – First Principles Peak Period Traffic Generation

The light vehicle traffic generation has been undertaken on a first principles basis, based on the projected staffing numbers presented earlier in Table 6. By adopting a mode split of 90% of staff commuting as Car Drivers and applying that to the projected staff numbers, **Table 7** presents the forecast trips at shift changeover.

Table 7: Forecast Commuter Light Vehicle Trips at Shift Changeover

Staff Numbers	Entry	Exit	Two-Way
Night to Day Shift	521	27	548
Day to Evening Shift	446	521	967
Evening to Night Shift	27	446	473
DAILY TRIPS	994	994	1,988

In summary, the first principles analysis concludes that the Proposal would generate 1,988 two-way trips on an 'Average' weekday. This is significantly higher than the PB memo assumptions – which would have anticipated just 1,117 two-way trips – thereby reflecting the higher employee density (which includes fleet truck drivers) expected for the combined facility.

4.1.3 Commuter Light Traffic – Entry / Exit Profile

To provide a 24-hour profile of the light vehicle trips, the profile assumptions (Figure 6) from the PB memo have been applied to the forecast changeover volumes calculated in Table 7. **Table 8** presents the daily traffic forecasts for light vehicles generated by the MODs Proposal. It also shows the 3 profiles adopted for the 3 shift changeover periods.

Table 8: Forecast Hourly Light Vehicle Traffic Generation

TIME (hour starting)	PROFILE		TOTAL		
	Entry	Exit	Entry	Exit	Two-Way
0:00	-	5%	0	22	22
1:00	-	-	0	0	0
2:00	-	-	0	0	0
3:00	5%	-	26	0	26
4:00	20%	5%	104	1	105
5:00	50%	20%	261	5	266
6:00	20%	50%	104	15	119
7:00	5%	20%	26	5	31
8:00	-	5%	0	1	1
9:00	-	-	0	0	0
10:00	-	-	0	0	0
11:00	5%	-	22	0	22
12:00	20%	5%	89	26	115
13:00	50%	20%	224	104	328
14:00	20%	50%	89	261	350
15:00	5%	20%	22	104	126
16:00	-	5%	0	26	26
17:00	-	-	0	0	0
18:00	-	-	0	0	0
19:00	5%	-	1	0	1
20:00	20%	5%	5	22	27
21:00	50%	20%	15	89	104
22:00	20%	50%	5	224	229
23:00	5%	20%	1	89	90
TOTAL	-	-	994	994	1,988

The above analysis determines that the combined distribution centre is expected to generate the following peak hour and daily light vehicle traffic movements:

- AM Peak (8:00 – 9:00AM): 1 trip
- PM Peak (17:00 – 18:00PM): 0 trips
- Daily: 1,988 trips

4.2 Truck Traffic Generation (Heavy Vehicles)

4.2.1 Daily Truck Movements

The Client currently operates a number of existing distribution centres and has provided truck data from the following facilities to inform traffic generation and daily profile analysis for the Proposal:

- The Minchinbury facility for assumptions for the JR component.
- The Yennora facility for assumptions for the JN component.

Using this data – combined with target truck volumes for the new facility – **Table 9** provides details the adopted daily heavy vehicle traffic generation and the vehicle types assuming independent operation.

Table 9: Forecast Daily Truck Movements – Independent Operation

Traffic Generator	JR Component			JN Component		
	Total	B-Double	Semi-Trailer	Total	B-Double	Semi-Trailer
Primary	330 trucks	281 trucks	49 trucks	174 trucks	26 trucks	148 trucks
Primary Connect	30 trucks	15 trucks	15 trucks	17 trucks	17 trucks	-
Secondary	344 trucks	-	344 trucks	21 trucks	16 trucks	5 trucks

However, the Client provided the following in relation to truck traffic reductions that would occur if a combined facility was developed and located next to Moorebank IMT:

- For the JR component:
 - 5% reduction in Primary trucks.
 - 100% reduction in Primary Connect trucks.
- For the JN component:
 - 25% reduction in Primary trucks.

Having consideration for the above, **Table 10** provides details of the adopted daily heavy vehicle traffic generation and the vehicle types for the proposed combined facility.

Table 10: Forecast Daily Truck Movements – Combined Facility

Traffic Generator	JR Component			JN Component		
	Total	B-Double	Semi-Trailer	Total	B-Double	Semi-Trailer
Primary	314 trucks	267 trucks	47 trucks	131 trucks	20 trucks	111 trucks
Primary Connect	-	-	-	17 trucks	17 trucks	-
Secondary	344 trucks	-	344 trucks	21 trucks	16 trucks	5 trucks

4.2.2 JR Component Profile

Based on profile details provided for the existing Minchinbury site, **Table 11** presents the forecast daily truck trips in Table 10 across an 'average' weekday.

Table 11: Forecast Daily Truck Trips for the JR Component

TIME (hour starting)	PRIMARY				SECONDARY	
	Entry		Exit		Entry	Exit
	B-Double	Semi	B-Double	Semi	Semi	Semi
0:00	12	2	15	3	7	2
1:00	11	2	14	2	9	4
2:00	16	3	13	2	5	4
3:00	14	3	10	2	0	8
4:00	17	3	10	2	2	6
5:00	20	3	16	3	5	17
6:00	12	2	19	3	5	25
7:00	8	1	15	3	7	17
8:00	7	1	15	3	9	11
9:00	11	2	10	2	25	25
10:00	10	2	9	2	32	25
11:00	7	1	7	1	23	25
12:00	6	1	7	1	16	21
13:00	6	1	9	2	21	19
14:00	5	1	6	1	18	25
15:00	13	2	9	2	23	25
16:00	11	2	9	1	23	19
17:00	10	2	11	2	18	13
18:00	10	2	6	1	27	11
19:00	7	1	9	1	16	11
20:00	10	2	11	2	14	11
21:00	15	3	8	1	14	8
22:00	18	3	11	2	14	6
23:00	11	2	18	3	11	6
TOTAL	267	47	267	47	344	344

4.2.3 JN Component Profile

Based on profile details provided for their existing Yennora site, **Table 12** presents the forecast daily truck trips in Table 10 across an 'average' weekday.

Table 12: Forecast Daily Truck Trips for the JN Component

TIME (hour starting)	PRIMARY				SECONDARY				INTERSTATE	
	Entry		Exit		Entry		Exit		Entry	Exit
	B-Double	Semi	B-Double	Semi	B-Double	Semi	B-Double	Semi	B-Double	B-Double
0:00	0	0	0	0	0	0	0	0	0	0
1:00	0	1	0	1	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	0	0
3:00	0	1	0	1	0	0	0	0	0	0
4:00	0	1	0	1	0	0	0	0	0	0
5:00	1	6	0	1	0	0	2	1	0	0
6:00	0	4	0	3	0	0	0	1	1	1
7:00	1	4	1	4	1	0	1	0	1	1
8:00	1	4	1	6	1	0	1	0	1	1
9:00	1	8	1	7	1	0	1	0	1	1
10:00	2	11	1	8	1	0	1	0	1	1
11:00	2	10	2	11	1	1	1	1	1	1
12:00	2	8	2	9	1	1	1	0	1	1
13:00	2	10	2	8	1	0	1	0	1	1
14:00	2	9	2	10	1	0	1	0	1	1
15:00	2	9	2	10	1	0	0	0	1	1
16:00	2	8	2	11	1	1	1	0	1	1
17:00	1	4	1	4	2	0	0	0	1	1
18:00	1	7	1	4	1	1	1	0	1	1
19:00	0	2	1	4	2	1	1	1	1	1
20:00	0	2	0	3	1	0	1	1	1	1
21:00	0	1	1	4	0	0	1	0	1	1
22:00	0	1	0	1	0	0	1	0	1	1
23:00	0	0	0	0	0	0	0	0	0	0
TOTAL	20	111	20	111	16	5	16	5	17	17

4.3 Total Combined Facility Traffic Generation

Having regard to the above, a total traffic generation for the combined facility is presented in **Table 13**.

Table 13: Total Forecast Daily Traffic Generation

TIME (hour starting)	LIGHT VEHICLES		B-DOUBLES		SEMI-TRAILERS		TOTAL		
	Entry	Exit	Entry	Exit	Entry	Exit	Entry	Exit	Two-Way
0:00	0	22	12	15	9	5	21	42	63
1:00	0	0	11	14	12	7	23	21	44
2:00	0	0	16	13	8	6	24	19	43
3:00	26	0	14	10	4	11	44	21	65
4:00	104	1	17	10	6	9	127	20	147
5:00	261	5	21	18	14	22	296	45	341
6:00	104	15	13	20	11	32	128	67	195
7:00	26	5	11	18	12	24	49	47	96
8:00	0	1	10	18	14	20	24	39	63
9:00	0	0	14	13	35	34	49	47	96
10:00	0	0	14	12	45	35	59	47	106
11:00	22	0	11	11	35	38	68	49	117
12:00	89	26	10	11	26	31	125	68	193
13:00	224	104	10	13	32	29	266	146	412
14:00	89	261	9	10	28	36	126	307	433
15:00	22	104	17	12	34	37	73	153	226
16:00	0	26	15	13	34	31	49	70	119
17:00	0	0	14	13	24	19	38	32	70
18:00	0	0	13	9	37	16	50	25	75
19:00	1	0	10	12	20	17	31	29	60
20:00	5	22	12	13	18	17	35	52	87
21:00	15	89	16	11	18	13	49	113	162
22:00	5	224	19	13	18	9	42	246	288
23:00	1	89	11	18	13	9	25	116	141
TOTAL	994	994	320	320	507	507	1,821	1,821	3,642

4.4 Comparative Assessment of Proposal

4.4.1 The MODs Proposal versus MPW Stage 2 Threshold

With reference to the forecast JR+JN traffic volumes in Table 13 and the approved threshold traffic in Section 2.3, **Table 14** provides a comparative assessment of the traffic impacts of the MODs Proposal.

Table 14: MPW Approved Traffic Threshold versus JR+JN Forecast Traffic Generation

Time	MPW		JR+JN		Difference		
	LVs	HVs	LVs	HVs	LVs	HVs	Total
08.00-09.00	75	102	1	62	(-) 74	(-) 40	(-) 114
17.00-18.00	27	94	0	70	(-) 27	(-) 24	(-) 51
Daily	2,670	1,458	1,988	1,654	(-) 682	+ 196	(-) 486

The analysis indicates that during the standard AM and PM peak hours, the combined facility generates significantly less traffic (light and heavy) than corresponding approved thresholds, demonstrating that whilst the MODs Proposal might generate relatively more heavy vehicle traffic across the day compared with the developments assumed at the SSDA assessment stage, this traffic occurs outside of the critical morning and evening peak hour periods.

To better demonstrate the traffic implications of the MODs Proposal the above traffic estimates have been translated into PCU.

Table 15: MPW Stage 2 Approved PCU Threshold versus JR+JN Forecast PCU

Time Period	MPW Stage 2 Threshold PCU	MODs Proposal PCU	Difference
AM Peak (08:00 - 09:00)	279	125	-154
PM Peak (17:00 - 18:00)	215	140	-75
Daily	5,586	5,296	-290

The analysis above concludes that the JR+JN Proposal would generate traffic volumes that are below the approved traffic generation thresholds that have been set for MPW Stage 2. Accordingly, the road

network – subject to the infrastructure upgrades approved with MPW Stage 2 – would operate satisfactorily.

The MODs Proposal versus MPW Concept Plan Threshold

Similarly, the MODs Proposal traffic generation has been compared with the traffic generation estimated as part of the MPW concept plan approval and the outcomes are summarised in **Table 16**.

Table 16: MPW Concept Approval versus JR+JN Traffic Generation (Daily 2-way trips)

Time	Concept Approval		JR+JN		Difference		
	LVs	HVs	LVs	HVs	LVs	HVs	Total
Daily	4,855	5,615	1,988	1,654	(-) 2,867	(-) 3,961	(-) 6,828

Accordingly, it is evident from the above table that the proposed JR and JN warehouses will result in far less daily traffic generation when compared to the concept approval.

5 Parking Provisions

It is noted that no specific car parking rates were nominated in conditions of the SSD 7709 Approval, therefore the parking assessment for warehouses JR and JN has been undertaken against the Liverpool Development Control Plan (LDCP) 2008 and the estimated operational details.

Furthermore, the detailed parking assessment for other warehouses (not affected by this MOD) should be deferred to their respective DA assessment.

5.1 Car Parking

5.1.1 Nominal Council Requirement (LDCP requirement)

According to the LDCP Part 1 General Controls for All Development – Section 20.2 Table 13, the following car parking rate is applicable to the Site:

- Warehouse developments of GFA > 1000m²: 1 space per 250m² in GFA.

Application of the above parking rate to the proposed warehouse JR and JN results in a total car parking requirement of 304 spaces (135 spaces for Warehouse JR and 169 spaces for warehouse JN).

5.1.2 Tenant-Specific Parking Demand

By using the light vehicle traffic generation determined in Section 4.1.3 (and presented in Table 8), **Table 17** provides a cumulative assessment of the forecast hourly on-site parking demand.

Table 17: Forecast Hourly On-Site Parking Demand

Time (Hour Starting)	Light Vehicle		On-Site Parking Demand
	Entry	Exit	
0:00	0	22	0
1:00	0	0	0
2:00	0	0	0
3:00	26	0	26
4:00	104	1	129
5:00	261	5	385
6:00	104	15	474
7:00	26	5	495
8:00	0	1	494
9:00	0	0	494
10:00	0	0	494
11:00	22	0	516
12:00	89	26	579
13:00	224	104	699
14:00	89	261	527
15:00	22	104	445
16:00	0	26	419
17:00	0	0	419
18:00	0	0	419
19:00	1	0	420
20:00	5	22	403
21:00	15	89	329
22:00	5	224	110
23:00	1	89	22

As indicated in Table 17, the maximum on-site car parking demand is 699 parking spaces (starting at 1:00pm) based on the provided operational details for Warehouse JR and JN.

5.1.3 Car Parking Provision

Having regard to the above, a total of 725 car parking spaces (including 8 accessible parking spaces) are provided for the combined facility.

It should be noted that the maximum on-site parking demand is estimated conservatively based on the assumption that the light vehicle arrival and departure movements will occur at the start of every hour, while practically those movements will distribute throughout each hourly period.

Therefore, it is expected that the proposed car parking provision can comfortably accommodate the tenant specific requirement and no parking issue is anticipated for the proposed development.

5.1.4 Accessible Parking

LDCP Part 1 General Controls for All Development – Section 20.2 requires 1 accessible parking bays for every 100 car parking spaces to be provided for industry developments. Application of this rate to the proposed 725 car parking spaces results in a requirement of 8 accessible parking spaces.

In response, the proposed warehouse JR and JN car park includes 8 accessible parking spaces which meets this requirement.

5.2 Bicycle Parking

LDCP Part 1 General Controls for All Development – Section 20.2 Table 12 suggests that the applicant shall provide bicycle parking spaces at the following rates:

- Employee Parking: 1 per 10 staff (or 1 per 10 car spaces of staff numbers are undetermined)
- Visitor Parking: Nil

As stated before, the immediate future tenant is expected to have a maximum of 579 staff on Site at any time, which results in a bicycle parking requirement of 58 spaces. The current site plan includes 36 covered bicycle parking spaces on the ground floor. Furthermore, based on the advice provided by the project architect, there is bike parking space of 30 m² in the JR Operations and Administration Office at ground level (~15 spaces) and there is a similar sized space in the JN Staff Canteen area (~10spaces). Accordingly, a sum of 61 bicycle parking spaces can be provided on Site which meets and exceeds the

LDCP requirements. The detailed design of the bicycle parking areas can be reviewed as part of the Construction Certificate stage of the project. .

5.3 Truck Parking

LDCP does not provide specific requirements regarding truck parking provisions; however, based on the operational requirements of specific tenants, truck loading bays and parking spaces are provided as follows:

- Warehouse JR:
 - 41 Recessed docks
 - 11 Primary receiving docks
 - 6 Returns / indent flush docks
 - 137 Pan parking spaces
 - 26 Chevron parking spaces
 - 71 Prime parking spaces
- Warehouse JN:
 - 12 On-grade docks
 - 4 Flush docks
 - 10 Chevron parking spaces

6 Preliminary Construction Traffic Management

It is anticipated that a detailed CTMP will be required for the JR and JN warehouse developments as part of the CC stage of the project. However, this section presents high-level construction impact assessment for the Proposal in consideration of the approved SSD 7709.

6.1 Approved Construction Traffic Impact Assessment

A revised Construction Traffic Impact Assessment (CTIA) for the MPW Stage 2 has been developed by Arcadis in June 2017 (the CTIA). This document includes relevant information regarding construction hours, haulage routes and assessment of the estimated construction traffic volumes on the surrounding road network, having regard for the entire MPW Stage 2. Mitigation measures for construction works – as necessary – have also been included in that report.

6.1.1 Construction Vehicle Routes

The CTIA proposes the following routes for cars and trucks during construction:

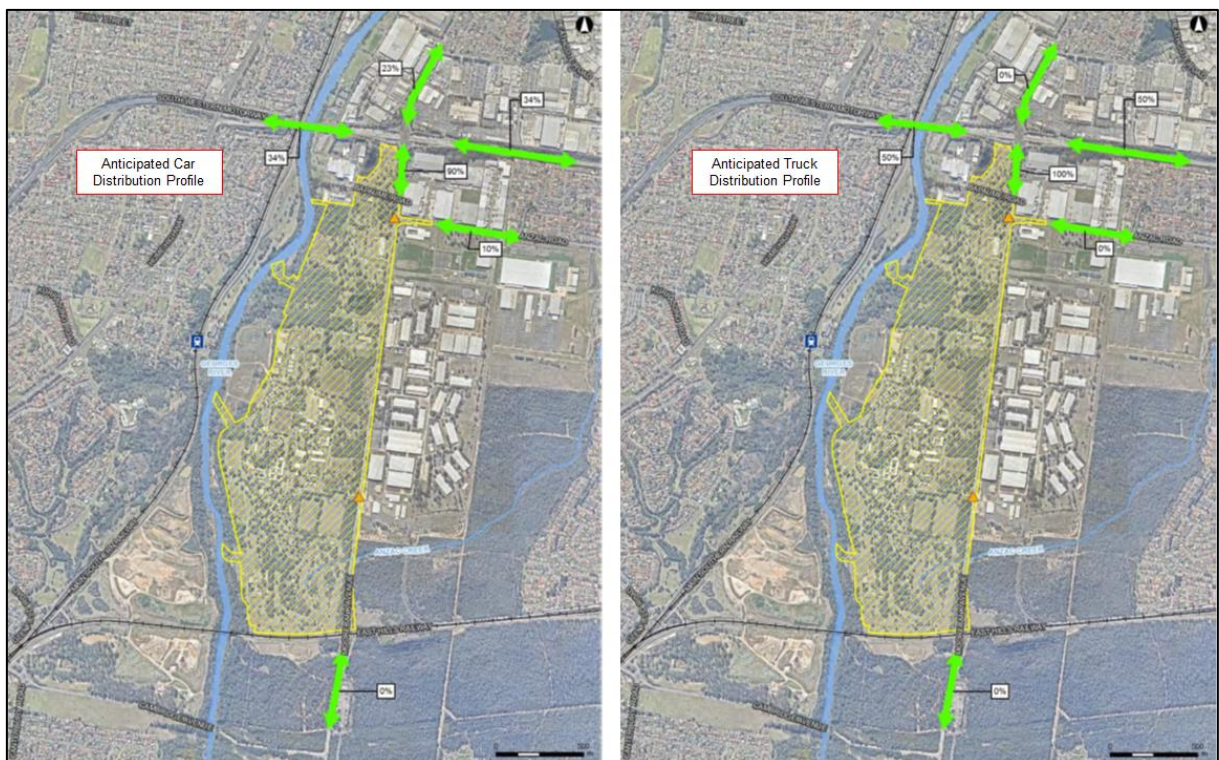


Figure 7: Construction Vehicle Distribution Profile

6.1.2 Hours of Operation

Following hours of operations have been indicated for the construction works:

- Monday to Friday 7:00AM to 6:00PM,
- Saturday 8:00AM to 1:00PM, and
- No works on Sundays or public holidays.

6.1.3 Network Performance

The Arcadis CTIA undertakes traffic modelling of the following critical intersections:

- M5 Motorway / Moorebank Avenue interchange,
- Anzac Road / Moorebank Avenue, and
- Chatham Avenue / Moorebank Avenue.

It is noteworthy that the modelling of the above intersections had been undertaken for scenarios with and without the MPE Stage 1. Accordingly, the worst-case scenario assessed involved assessment of MPW Stage 2 and MPE Stage 1.

In summary the results of the traffic modelling suggest that the road network performs at LoS 'C' or better during the morning and evening peak periods which is considered acceptable.

6.2 Implications of the MODs Proposal

The proposed haulage route and hours of operation is not anticipated to differ from what has previously been approved as part of the original approval for the MPW Stage 2.

Furthermore, Ason Group has been advised that the quantum of cut to fill anticipated to deliver the site plan and pad levels contemplated in this Modification will not exceed the previously approved CTIA. Accordingly, there will be no additional traffic impacts to the wider road network as a result of this MOD.

6.3 Response to Conditions

It is expected that a detailed site-specific CTMP would be required as part of the CC stage of the project, however, the following **Table 18** outlines Ason Group response to the relevant construction traffic conditions referred to in SSD 7709 concept approval.

Table 18: SSD 7709 Conditions and Ason Group Responses

Condition Number	Condition	Ason Response considering the MODs Proposal
Construction Traffic and Access Management Plan		
B113	Prior to commencement of construction, the Applicant must prepare a Construction Traffic and Access Plan (CTAMP) and submit it to the Planning Secretary for approval. The CTAMP must be prepared by a suitably qualified and experienced person(s) in consultation with Council, and must be endorsed by TfNSW and RMS.	Noted. A CTAMP will be prepared for the JR and KN developments in due course and will be submitted to the assessing authorities prior to construction of the MOD.
B114	The CTMP must form part of the CEMP required by Condition C2 and, in addition to the general management plan requirements listed in Condition C1 , the CEMP must:	
	a) detail the measures that are to be implemented to ensure road safety and network efficiency during construction:	Noted. The Arcadis CTIA readily provides some mitigation measures, however, once more specific details regarding the construction of the MOD is available a comprehensive CTMP will be prepared to address this comment.
	b) Include a Heavy Vehicle Route Plan detailing: <ul style="list-style-type: none"> i. Origin of imported fill, ii. destination of demolition material and spoil, iii. heavy vehicle routes to and from the site within Campbelltown and Liverpool Local Government Areas (LGAs), including compliance with the conditions of this consent including Condition B89, and iv. management system for oversized vehicles. 	Refer above response. However, the heavy vehicle routes are expected to be generally similar to what has been indicated in Figure 7 .
	c) access and parking arrangement; and	Construction vehicles access and parking will not be any different than what has already been approved. The proposed contractor shall insure that sufficient space will be provided on-site for car and truck parking during construction.
	d) detail procedures for notifying residents and the community of any potential traffic disruptions.	Proposed contractor will be in charge for undertaking necessary consultation with residents and other stakeholders.
B115	Two lanes (one in each direction) of traffic on Moorebank Avenue must be available at all times during construction, unless otherwise approved by RMS.	Noted.
B116	All construction vehicles must be contained wholly within the site and vehicles must enter the site before stopping.	Noted. Both warehouses (JR and JN) included within this MOD have been designed with sufficient site layout which can accommodate construction trucks of up to B-Doubles wholly within the site. The proposed contractor shall inform the drivers regarding the requirements for stopping after full entry to the site.
B117	All vehicles must enter and leave the site in forward direction.	Noted.

In summary, the proposed Modification will not have any material construction traffic impact from what has been originally assessed as part of the SSD 7709.

7 Design Commentary

7.1 Relevant Design Standards

The site access, car park and loading areas for both warehouses are expected to comply with the following relevant Australian Standards:

- AS 2890.1 for car parking areas,
- AS 2890.2 for commercial vehicle loading areas,
- AS 2890.3 for bicycle parking, and
- AS 2890.6 for accessible (disabled) parking.

7.2 Estate Roads

Modifications to Estate Roads and the internal roundabout thereof have not been changed from the original approval. Accordingly, the proposed Estate Road can accommodate trucks of up to 26 metres B- doubles.

NO PARKING and NO STOPPING restrictions are anticipated on all future public roads within MPWS 2.

7.3 Design Vehicle

Internal hardstand area for warehouses JR and JN have been designed to accommodate movements of 26.0 metre B-Double. In this regard, reference should be made to the swept path analysis undertaken and included at **Appendix A**.

7.4 Access Design

7.4.1 Truck Access

Separate entry access points have been provided for warehouses JR and JN, however, all truck exit movements are proposed to occur from JR exit point. In accordance with the anticipated truck movements for both warehouses, it is not anticipated that either of this access points would have any material operational issues. Swept path analysis undertaken for 26.0 metres B-Doubles demonstrates that the access crossovers have been designed with sufficient width and appropriate splays to accommodate the design vehicles (Refer Attachment A for more information).

7.4.2 Car Parking Access

JR and JN will be serviced via a single car parking facility which is to be located at the proposed Estate Road. Since this crossover will provide access to a sum of 725 car parking spaces on a 'Local Road' it is anticipated that a *Category 4 access driveway* is technically applicable to this access (in accordance with AS2890.1). Category 4 driveway requires a separate 6-8 metres entry and a 6-8 metres exit point.

In response, separated entry and exit points have proposed for the car parking facility. Detailed design of this access crossover can form part of the CoC which can readily be provided at CC stage of the project.

7.5 Internal Hardstand Area Circulation

Swept path analysis undertaken for the proposed hardstand areas suggest that the design generally accommodates the design vehicle. In this regard, reference should be made to the design comments and swept path analysis provided in Appendix A. Again, detailed design of the internal hardstand area can be further assessed as part of the CC.

7.6 Waste Collection

Waste collections will be undertaken onsite and during the pre-scheduled collection dates. Swept path analysis for 12.5 metres Heavy Rigid Vehicles (HRVs) have been undertaken which demonstrates a satisfactory simulation for waste trucks.

8 Conclusion

The key findings of this Transport Assessment are as follows:

- There are concurrent modification applications pertaining to SSD 5066 and SSD 7709:

Modification 1: SSD 5066 MOD 1

- Amendment to the Concept Plan originally approved, via means of adjustment to the internal Moorebank Precinct West (MPW) boundaries; and
- Amendment to the maximum building height established across selected portions of the Subject Site from approximately 21m up to and including 45m.
- The outcome of this modification is that the proposed development substantially remains unchanged.

Modification 2: SSD 7709 MOD 1

- Amendment to the MPW Stage 2 internal operational boundaries, with respect to indicative built form proposed under SSD 7709, via means of reconfiguration of the MPW Stage 2 internal operational boundaries. Noting, this is consistent with the post-approvals provision for updated Development Layout Drawings to the NSW DPIE in relation to Condition B2 of SSD 7709;
- Amendment to the maximum building height established across selected portions of the Subject Site from approximately 21m up to and including 45m with respect to future built form under MPW Stage 2; and
- Construction and operation of two (2) Warehouse and Distribution Facilities (High Bay Warehouses) across the Subject Site, including:
 - Ancillary hardstand;
 - Amenities;
 - Ancillary offices;
 - Associated car parking; and
 - Landscaping.

Each of the above elements is consistent with the development consent (SSD 7709) and post-approval documentation as approved

- The MPW Stage 2 approval has a number of conditions – some requiring continuous, detailed and ongoing monitoring and reporting of traffic generation to DPIE – that effectively sets the MPW Stage

2 traffic generation threshold as an approved traffic generation threshold for the infrastructure upgrades attached to the MPW Stage 2 approval.

- Traffic analysis indicates that during the standard AM and PM peak hours, the combined facility generates significantly less traffic (light and heavy) than corresponding approved thresholds, demonstrating that whilst the MODs Proposal might generate relatively more heavy vehicle traffic across the day compared with the developments assumed at the SSDA assessment stage, this traffic occurs outside of the critical morning and evening peak hour periods.
- The traffic analysis demonstrates that the MODs Proposal would generate traffic volumes that are below the approved traffic generation thresholds that have been set for MPW Stage 2 and therefore the road network – subject to the infrastructure upgrades approved with MPW Stage 2 – would operate satisfactorily.
- Car parking exceeds the minimum requirements of Council’s DCP. More importantly it satisfies the specific parking demands that are forecast for this use.
- The internal hardstand area, access and servicing facilities have been designed in accordance with relevant Australian Standards with any minor modifications able to be undertaken at a subsequent construction certification stage.

In summary, this Transport Assessment study concludes that:

- The outcome of SSD 5066 MOD 1 is that the proposed development substantially remains unchanged.
- The outcome of SSD 7709 MOD 1 is that the Proposal is generally in accordance with the Consent Conditions of both SSD 5066 Concept Plan Approval and SSD 7709 MPW Stage 2 Approval.
- The MODs Proposal is supportable on Traffic Engineering and Transport Planning grounds.