ARCADIS Design & Consultancy for natural and built assets

Moorebank Precinct East - Concept Plan Modification 2

(MP10_0193_MOD2)

Traffic Memorandum

SIMTA

SYDNEY INTERMODAL TERMINAL ALLIANCE

November 2016

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MEMO

ARCADIS Design & Consultancy for natural and built assets

Date	23/11/2016
To	Westley Owers (Arcadis)
From	Michael Yong (Arcadis), Stuart Hill (Arcadis)
Copy to	Nathan Cairney (Tactical Group)
Subject	Moorebank Precinct East Intermodal Facility – Concept Plan Approval Modification (10_0193_MOD2) – Review of Traffic and Transport Impacts

Report Purpose

This memorandum has been prepared to address the potential construction traffic impacts associated with a modification to the Concept Plan Approval (MP 10_0193) for an intermodal terminal (IMT) facility, warehousing and freight village at Moorebank, NSW (the Moorebank Precinct East Project (MPE Project) (formerly the SIMTA Project)). This report supports an application to modify the MPE Concept Plan Approval under section 75W (now repealed) of the *Environmental Planning and Assessment Act 1979* (EP&A Act), which continues to apply pursuant transitional Part 3A provisions.

Modification Proposal

Since the MPE Concept Plan Approval, a number of design refinements have been made in relation to matters which were not contemplated at the time the approval was granted. The following changes to the MPE Project are now proposed (herein referred to as the Modification Proposal):

- Extend the land to which the MPE Concept Plan Approval applies to recognise works on Moorebank Avenue and drainage works to the south of the MPE site
- Moorebank Avenue upgrade including modifications to the existing lane configuration, raising of the vertical alignment, some widening and the provision of ancillary services and infrastructure such as stormwater drainage on the western side of Moorebank Avenue
- Provision of an interim MPE site access to the warehousing from Moorebank Avenue
- Reconfiguration of the internal road network within the MPE site and use of all internal roads by both light and heavy vehicles, rather than light vehicles only for internal road No.2
- Importation of clean general fill (approximately 600,000m^3) material for bulk earthworks as part of the Moorebank Avenue upgrade works and integrated drainage solution for the site
- Change to the location of and land uses within the freight village and provision of warehousing along the Moorebank Avenue northern frontage
- Changes to the staging of development including construction of all warehouses as part of Stage 2 of the MPE project
- Subdivision of the MPE site.

Concept Plan Approval

Several studies were undertaken to support the MPE Concept Plan Approval EA with a focus on operational traffic and transport; these included:

- *Strategic Needs for Intermodal Terminal and Freight Demand* (Hyder Consulting, 2013)
- *Transport and Accessibility Impact Assessment* (Hyder Consulting, 2013)

The Strategic Needs for Intermodal Terminal and Freight Demand report established trends in the overall movement of freight containers to and from Port Botany and defined the freight catchment that the MPE Project would service; identifying that the MPE Project would service a catchment area with a total demand of 1 million TEU throughput in the Liverpool Local Government Area, the South West Region of Sydney and parts of Sydney's Industrial West.

The Transport and Accessibility Impact Assessment assessed the performance of the road network with and without the MPE development in both 'core' and 'inner' areas. The core and inner areas are those areas which the MPE Project is predicted to contribute to traffic growth. The core area focuses on those parts of the network that are of critical significance to the project, includes twelve intersections and is generally bounded by the following roads:

- M5 Motorway between Hume Highway and Heathcote Road (east and west)
- Hume Highway (north and south)
- Moorebank Avenue between Newbridge Road and Cambridge Avenue (north and south)
- Anzac Road (east).

The inner area includes 21 intersections covering following roads:

- Hume Highway and Campbelltown Road from Macquarie Street to Glenfield Road.
- Camden Valley Way from M5/M7 Interchange to Hume Highway. The intersection of M5 off-ramp and Beech Road is also included.
- Macquarie Street, Terminus Street and Newbridge Road from Hume Highway to Nuwarra Road.
- Heathcote Road from Nuwarra Road to Macarthur Drive

A total of 13 intersections were identified as potentially being impacted by future traffic growth, both with or without the MPE Project, within the core and inner areas. Traffic modelling and analysis found that eight intersections outside the core area would operate with an unacceptable level of service during the AM and PM peak regardless of the MPE Project, meaning that the intersections require upgrades to support the existing background traffic demand without the MPE Project. The study found that additional traffic impact from the MPE Project would be largely confined within the boundary of core area. Outside the core area, there is no significant adverse impact on key roads following the introduction of the MPE Project.

Analysis showed that in 2031, combined with background traffic growth, the MPE Project would reduce the level of service at five key intersections within the core area.

These being:

- Moorebank Avenue / Anzac Road
- M5 Motorway / Moorebank Avenue
- M5 Motorway / Hume Highway
- Moorebank Avenue / Heathcote Road
- Newbridge Road / Moorebank Avenue.

Mitigation measures to limit the deterioration in level of service were identified and modelled and showed that road capacity improvements would mitigate the forecast impacts from the MPE Project operating at peak assessed capacity of 1 million twenty-foot equivalent unit (TEU) and 300,000m^2 Gross Floor Area (GFA) of warehousing. Acknowledging that the MPE Project will be developed in stages a road upgrade staging plan, along with timings for the upgrades, was proposed. This staging plan indicated that the following upgrades may potentially be required (subject to further detailed assessments) at the following locations:

- Moorebank Avenue from the MPE site to the M5 interchange
- Moorebank Avenue / Anzac Road intersection; and
- M5 Motorway / Moorebank Avenue grade separated interchange

These upgrades are included in the Statement of Commitments (SoCs) as subject to further detailed assessment with future applications.

MPE Concept Plan Approval Construction Traffic

The Transport and Accessibility Impact Assessment for the MPE Concept Plan Approval did not directly address construction traffic impacts on the basis that:

- Construction traffic impacts are temporary
- Construction traffic impacts are a short-term consequence of works needed for upgrades to the local road network as well as the development of the MPE Project.

A construction traffic impact assessment has been conducted to support the Modification Proposal. The construction traffic impacts of the Modification Proposal are consistent with the items noted above being short-term and not permanent, while also supporting upgrades to the local road network to improve network efficiency once complete.

Assessment approach

This memorandum relies on investigations, modelling and analysis undertaken for the detailed assessment of the MPE Stage 2 Project, which includes the extent of works the subject of the Modification Proposal and then compares those results to those previously considered in the MPE Concept Plan Approval.

The analysis of the construction impacts was undertaken giving consideration to capacity of affected intersections, access/egress during construction and restrictions and/or closures on the road network as a result of construction traffic impacts. The performance of the intersections was evaluated using SIDRA (Version 7 at the time of undertaking the assessment) traffic modelling software.

For the assessment of operational impacts, future traffic growth and modelling data was sourced from Roads and Maritime's wider Liverpool Moorebank Arterial Road Investigations (LMARI) model built in AIMSUN modelling software version 8.0.9 (R35843). The LMARI AIMSUN traffic model has been developed, calibrated and validated by Jacobs and subsequently updated by GTA consultants (GTA).

Roads and Maritime provided the 2026 and 2036 future based model (Do Minimum) on 20 June 2016. For project specific traffic modelling, Arcadis used the AIMSUN traffic model provided by Roads and Maritime dated 20 June 2016. Arcadis supplemented this assessment with SIDRA Network version 7.

Intersection performance was assessed in terms of Level of Services (LoS) and Table 1 below shows the LoS criteria used for intersection assessment as per the "*Guide to Traffic Generating Developments*" published by the Roads and Traffic Authority (RTA) of New South Wales, Australia (draft version 2.2 of October 2002).

Table 1 Level of Service Criteria for Intersection Capacity Analysis

Level of Service (LoS)	Average Delay per Vehicle (sec/veh)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	<14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity and accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays. Roundabouts require other control mode	At capacity, requires other control mode
F	>70	Unsatisfactory with excessive queuing	Unsatisfactory with excessive queuing

Potential impacts

Construction

Construction traffic generation

The daily construction vehicle movements (two-way) for the Modification Proposal were assumed for the peak construction period, for both heavy and light vehicles, and the movements presented are considered a worst-case scenario:

- Heavy vehicles: approximately 1030 two-way trips per day
- Light vehicles: approximately 430 two-way trips per day

The estimated number of hourly two-way truck movements varies between 44 and 67 truck trips (2-way) depending on the time of day, with the highest number of truck trips expected to be between 7am and 6pm. The estimated highest number of light vehicle two-way trips is expected to be 120 light vehicle trips per hour and falls between 6am and 7am.

Construction traffic distribution

The majority of staff cars, approximately 90%, would access and egress the site from the north via Moorebank Avenue and the M5 Interchange. About 10% are expected to use Anzac Road.

All trucks are expected to access and egress the site from the north via Moorebank Avenue. No construction trucks would travel via Anzac Road. It is anticipated that heavy vehicles would use the gazetted heavy vehicle routes to access the MPE site. There may be a small number of truck movements via Cambridge Avenue for disposal of unsuitable material at the Glenfield Waste Facility, if required.

Construction traffic impacts

The results of the Construction Traffic Impact Assessment indicate that the construction traffic associated with the Modification Proposal would not have an adverse impact on the performance of key intersections near the MPE site and would operate at an acceptable LoS during the AM and PM peak periods.

Temporary construction traffic impacts would be managed with the implementation of a Construction Traffic Management Plan, which would document management controls to be implemented during construction to avoid or minimise impacts to traffic, pedestrian and cyclist access, and the amenity of the surrounding environment. The traffic management plans would be implemented to ensure through traffic would not be unduly delayed and that safe and efficient passage is provided throughout the construction period.

Operation

The Modification Proposal would not alter the overall operational traffic associated with the MPE Project, as considered by the MPE Concept Plan Approval.

The Modification Proposal does however, include provision of an interim MPE site access to warehousing. Modelling indicates that both the existing Moorebank Avenue / DJLU Access Road and proposed Moorebank Avenue / interim MPE site access intersections are expected to perform satisfactorily with the addition of the MPE Project traffic in 2019 and 2029.

The broader road network in the study area does however need to be upgraded to provide increased capacity to cater for the forecast increases in traffic volumes which will result from the general growth in background traffic and cumulative development (i.e. not due to the Modification Proposal). An area wide network improvement strategy is needed to ensure the desired functionality of the network of motorways, arterials, collector and local roads in the study area is achieved and provide safe and efficient traffic dispersal. These wider network improvements are required to provide an adequate LoS across the road network to meet the predicted growth in traffic demand in the opening year 2019 and 10-year horizon of 2029

Review of Concept Plan Approval

Mitigation measures identified within the MPE Concept Plan Approval and associated Statement of Commitments that are applicable to the traffic and transport, and which would apply to the Modification Proposal, are listed in Table 2 below.

Table 2 MPE Concept Plan Conditions of Approval – Traffic and transport

Reference	Statement of Commitment	Timing
Transport and Access	The Proponent commits to negotiating with the relevant agencies/authorities as required to facilitate the staged delivery of the following road infrastructure upgrades in accordance with the Transport Accessibility Impact Assessment: • Provide a new traffic signal at SIMTA's northern access with Moorebank Avenue.	Prior to exceeding 250,000 TEU terminal (rail side) throughput
	• Provide a new traffic signal approximately 750 metres south of SIMTA Central access.	Prior to exceeding 250,000 TEU terminal (rail side) throughput
	• Widen Moorebank Avenue to four lanes between the M5 Motorway/Moorebank Avenue grade separated interchange and the southern SIMTA site access. Some localised improvements will be required around central access and southern access points • Concurrent with four lane widening on Moorebank Avenue, the Moorebank Avenue/Anzac Road signal will require some form of widening at the approach roads.	Address within 24 months of operating at 300,000 TEU throughput per annum
	• Potential upgrading works at the M5 Motorway/Moorebank Avenue grade separated interchange to cater for both background and additional SIMTA traffic growth as outlined in Table 9-1 of the Transport Accessibility Impact Assessment (and Table 6 of the Environmental Assessment report).	Address within 24 months of operating at 500,000 TEU throughput per annum
	The Proponent commits to negotiating with the relevant agencies/authorities as required to facilitate the staged delivery of the public transport infrastructure in accordance with the Transport Accessibility Impact Assessment: • Designing and constructing the central spine road and other site roads to accommodate buses, bus infrastructure and cyclist use for employees • Construction of a covered bus drop off/pick up facility within the site to encourage the use of buses for employees. • Review and rationalisation of the locations of Route 901 bus stops in the vicinity of the site to match the proposed northern terminal entry location and enhance accessibility • Providing peak period and SIMTA shift work responsive express buses to/from the site and Liverpool Station via Moorebank Avenue and Newbridge Roads with frequency dependant on the development of the site.	Throughout the detailed planning, construction and operation stages of the SIMTA proposal

Reference	Statement of Commitment	Timing
	• Providing peak period express buses to/from the site and Holsworthy rail station via Anzac Road, Wattle Grove Drive and Heathcote Road with frequency dependant on the development of the site. • Consulting with relevant bus provider(s) regarding the potential to extend the Route 901 bus through the site via the light vehicle road and increasing peak period bus service frequencies to better match the needs of existing and future employees of the locality with frequency dependent on the development of the site. • Consulting with relevant bus providers regarding changes to existing bus stop location and the identification of new bus stop locations if required.	
	The Proponent shall encourage walking and cycling by the inclusion of appropriate facilities including under cover bike storage, showers and change facilities.	Address in the planning applications for the three major stages of the Concept Plan, where relevant, taking into account employee numbers
	The Proponent commits to undertaking an actual truck trip generation survey after 24 months of operation and then progressively as the SIMTA site is developed.	Address after 24 months of commencing operation and within 24 months of operating at an annual throughput of 500,000 TEU and 1,000,000 TEU
	The Proponent commits to developing a Construction Traffic Management Plan to minimise the potential impacts of the construction stage(s), including: • Heavy vehicle access routes • Location of construction worker parking • Mitigation measures to avoid any unacceptable impacts on the surrounding land uses. • Mitigation measures to avoid any unacceptable impacts on regular bus services and school bus services operating on roads within the vicinity of the site and pedestrian and cyclist access.	Prior to construction

Reference	Statement of Commitment	Timing
	The Proponent commits to developing a Traffic Site Management Plan prior to the commencement of operations at the site to minimise the potential impacts, including: • Management measures to avoid trucks parking and idling either within or outside of the site boundaries • Provision of adequate parking for heavy vehicles to accommodate any potential delays in schedule times	Address prior to commencement of operation for each of the three major stages of the Concept Plan

Transport and access issues associated with the construction and operation of the MPE Project would be managed in accordance with the MPE Concept Plan Approval and associated SoCs referred to above. These are considered adequate to address the potential impacts of the Modification Proposal.