aurecon

Project: Moorebank Intermodal Terminal – SIMTA Proposal

Independent Traffic Review of SIMTA Concept Plan

Reference: 236935

Prepared for: Planning & Infrastructure

Revision: 3

27 March 2014

Document Control Record

Document prepared by:

Aurecon Australia Pty Ltd
ABN 54 005 139 873
Level 2, 116 Military Road
Neutral Bay NSW 2089
PO Box 538
Neutral Bay NSW 2089
Australia

T +61 2 9465 5599
F +61 2 9465 5598
E sydney@aurecongroup.com
W aurecongroup.com

Document control						aurecon
Report Title		Independent Traffic Review of SIMTA Concept Plan				
Document ID			**Project Number**		236935	
File Path						
Client		Planning & Infrastructure	**Client Contact**			
Rev	**Date**	**Revision Details/Status**	**Prepared by**	**Author**	**Verifier**	**Approver**
0	4 November 2013	Draft	FL/GA	FL/GA	TN	GA
1	13 November 2013	Final	FL	FL/GA	GA	GA
2	11 March 2014	Draft Including Hyder Response	FL	FL	GA	GA
3	27 March 2014	Draft Including Hyder Response	FL	FL	GA	GA
Current Revision		**3**				

Approval			
Author Signature		Approver Signature	
Name	Felix Liu	Name	Gillian Austin
Title	Traffic Engineer	Title	Associate

Contents

Appendices

1. Introduction

1.1 Background

In 2005, the Freight Infrastructure Advisory Board highlighted the need for the development of an intermodal terminal at Moorebank, to achieve an increase in the rail mode share of port container freight movements.

In April 2012, the Australian Government committed to the development of the Moorebank Intermodal Terminal Project (ITP). The ITP involves the development of freight terminal facilities linking Port Botany and the interstate freight rail routes. The key aim of the Terminal would be to reduce road freight on Sydney's road network by facilitating a move to rail freight.

Two separate proposals have been prepared to date located on sites abutting Moorebank Avenue known as the SIMTA proposal and the MIT proposal. The two site locations are indicated within Figure 1 for information.

Figure 1 **SIMTA and MIT Proposal Sites**

A summary of the components of the latest proposals for each site is set out within Table 1.

Table 1 SIMTA and MIT Intermodal Proposals

	SIMTA Proposal Features	MIT Proposal Features
Total Site Area	83 hectares	220 hectares
Intermodal Terminal Capacity (imports and exports)	1M TEUs per annum	1.2M TEUs per annum
Interstate Terminal	None	302,000TEUs per annum
Empty Container Storage	TBA	TBA
Warehouse and Distribution Facilities	300,000sq.m	97,400sq.m
Freight Village	8000sq.m	
Employees	2260 on site at full development	664 associated with terminal plus warehousing staff
Rail Link	New connecting with the Southern Sydney Freight Line	New connection to the Main South Railway Line and SSFL

1.2 Director General's Requirements and the Assessment Process to Date

Both proposals require an Environmental Assessment that addresses the Director General's Requirements (DGRs). These documents are required to then be placed on public exhibition following which the proponent will be required to address and respond to submissions.

SIMTA Proposal

The SIMTA proposal was first exhibited to the public between 28 March and 28 May 2012, however Aurecon are advised that at this time the appropriate property ownership consent or notification process was not completed in accordance with the relevant legislation.

Since this time the appropriate ownership notification process has been completed.

In order to ensure that the planning process accords with the relevant legislation proposals a second exhibition period has been required. This occurred between 4th September and 21st October 2013.

The lodged submissions from government agencies and public are being review by the proponent and a response to the issues raised in the submissions is being prepared by SIMTA

Five DGRs were raised in relation to Transport and Traffic Issues for SIMTA proposal (it is noted that 12 points were raised against the MIT proposal). The SIMTA DGRs are set out below:

"(1) Transport and Access – including but not limited to:

(a) A Transport and Accessibility Impact Assessment demonstrating how the project will facilitate transport objectives, meet freight infrastructure requirements and address impacts to local and regional transport networks;
(b) Access to and from the project (including rail access to the Southern Sydney Freight Line), and interaction and integration with existing and planned transport infrastructure and services; and details of internal transport and logistic requirements to minimise external transport impacts and access to public transport for employees;
(c) The number of train and truck movements, origin and destination, types of road transport likely to be used (for example B-Doubles) and the capacity of existing and proposed road and rail routes to handle predicted increases in traffic, based on appropriate empirical analysis and strategic and project modelling; and identification of whether any road and rail infrastructure upgrades are required;
(d) Cumulative impacts, particularly with regard to existing and proposed freight distribution facilities in the locality and potential cumulative mitigation measures; and
(e) Taking into account the Guide to Traffic Generating Developments (RMS) and the Integrating Land Use and Transport Package.

MIT Proposal

The MIT proposal has at the time of preparing this report not been to public exhibition.

A total of 12 DGRs were set out in relation to Traffic, Transport and Access for MIT proposal

"(1) Transport and Access – including but not limited to:

a. a Transport and Accessibility Impact Assessment demonstrating how the development will facilitate freight transport objectives, meet freight infrastructure requirements and address impacts to local and regional road and rail transport networks;
b. access to and from the development (including truck routes and rail access to the Southern Sydney Freight Line), and interaction and integration with existing and planned transport infrastructure and services; and details of internal transport and logistic requirements to minimise external transport impacts and maximise access to public transport for employees;
c. the number of train and truck movements, origin and destination, time of movements, modal split targets, types of road transport likely to be used (for example B-Doubles) and the capacity of existing and proposed road and rail routes to handle predicted increases in traffic, based on appropriate empirical analysis and modelling, including freight and non-freight movements and vehicle utilisation;
d. a breakdown of the split of import and export container movements by rail, including the proportion of empty container movements;
e. proportion of port shuttle services, regional and interstate rail being serviced by the IMT, including predicted daily port shuttle movements;

f. demonstrate plans and capacity for an empty container storage within the site, including the transport of empty containers to regional areas (if required);

g. consideration of the cumulative impacts of this proposal with the adjacent SIMTA proposal and other existing and proposed freight distribution facilities in the locality and on local and regional road and rail networks;
h. identification of required road and rail infrastructure upgrades within proximity of the site, including the M5 and M7 motorways and Cambridge Avenue;
i. an analysis of potential traffic accidents;
j. identification of cycleway and pedestrian links between Liverpool, Holsworthy, Wattle Grove, Moorebank, M5 corridor, Casula and Macquarie Fields to maximise active transport options to the site;
k. impacts on users of the Georges River, including an assessment of bridge clearance to ensure safe passage of water vessels; and
l. taking into account the Guide to Traffic Generating Developments (RTA) and the Integrating Land Use and Transport Package (DUAP).

1.3 Scope of Services and Report

Aurecon has been commissioned by Planning & Infrastructure to undertake a peer review of the SIMTA transport planning assessment process at the following stages of assessment.

Based on the scope of works in the request for quote, the following activities have been undertaken in the peer review, which concentrated on traffic and transport matters only, :

- Attend inception meeting with Planning & Infrastructure;
- Collation of traffic and transport documents/submission in relation to the proposed development;
- Review all traffic and transport documents/submissions in relation to the proposed terminal facilities;
- Analyse the information included in the traffic and transport documents/submissions based on the NSW government and local government guidelines;
- Assess the access arrangements, traffic/transport impacts and safety implications;
- Comment on the recommendations to mitigate the identified impacts;
- Prepare peer review reports for the associated terminal facilities at progressive intervals;
- Review Hyder's response to Aurecon Peer Review.

SIMTA Review Points

- SIMTA 1A: Public Exhibition First Project Documents - Available

  Part 3A Concept Plan Application – Traffic and Transport (Appendix K of EIS), dated August 2011

- SIMTA 2A:Public Exhibition Second Project Documents - Available

  Part 3A Concept Plan Application – Traffic and Transport (Appendix F of EIS), dated August 2013

- SIMTA 1B: Review of First Project Submissions – prior to February 2014

- SIMTA 2B: Review of Second Project Submissions – prior to February 2014
- SIMTA 1C:Feedback on First Project PPR / RtS documentations – prior to February 2014
- Feedback on Second Project PPR / RtS documentations – prior to February 2014

In the course of preparing this stage of the peer review Aurecon have undertaken the following tasks:

- Site Inspection and review of the existing transport conditions – this has been documented for reference within Appendix A;
- Review of the following documents:
  - Transport and Accessibility Impact Assessment Vol 1, Part 3A Concept Plan Application, Hyder August 2011,
  - Transport and Accessibility Impact Assessment Vol 1, Part 3A Concept Plan Application, Hyder August 2013.
- Broad comparison of the general SIMTA assumptions with those within the Draft MIT EA where appropriate.

The report covering the above dot points was issued on 13th November 2013. Since this time Hyder have provided a short response to a number of areas of concern within the following document:

- SIMTA Submissions Report, dated December 2013, prepared by Urbis.

This Peer Review has now been updated to include the reference to the above comments.

It is noted that a review of other party submissions is set out within the following document:

- Review Report of 2012 and 2013 Public Exhibition Submission, prepared by Aurecon.

1.4 Report Structure

This report will firstly consider the assumptions set out within the Transport and Accessibility Impact Assessments covering major areas such as traffic generation, traffic distribution and traffic modelling.

Following this a review of compliance with the specific DGRs is provided.

2. Review of Documentation

The latest transport and traffic documentation is produced within the Hyder Report dated August 2013. This report has been compared against the early traffic assessment undertaken in August 2011 and a review of the assumptions has been undertaken.

2.1 Facility Operation

SIMTA Operation

From the documentation provided, Aurecon understand that the SIMTA proposal comprises an intermodal terminal with on-site warehousing which would have the ability to ultimately handle a throughput of 1MTEUs per annum.

The general operation of the facility is illustrated in Figure 2.

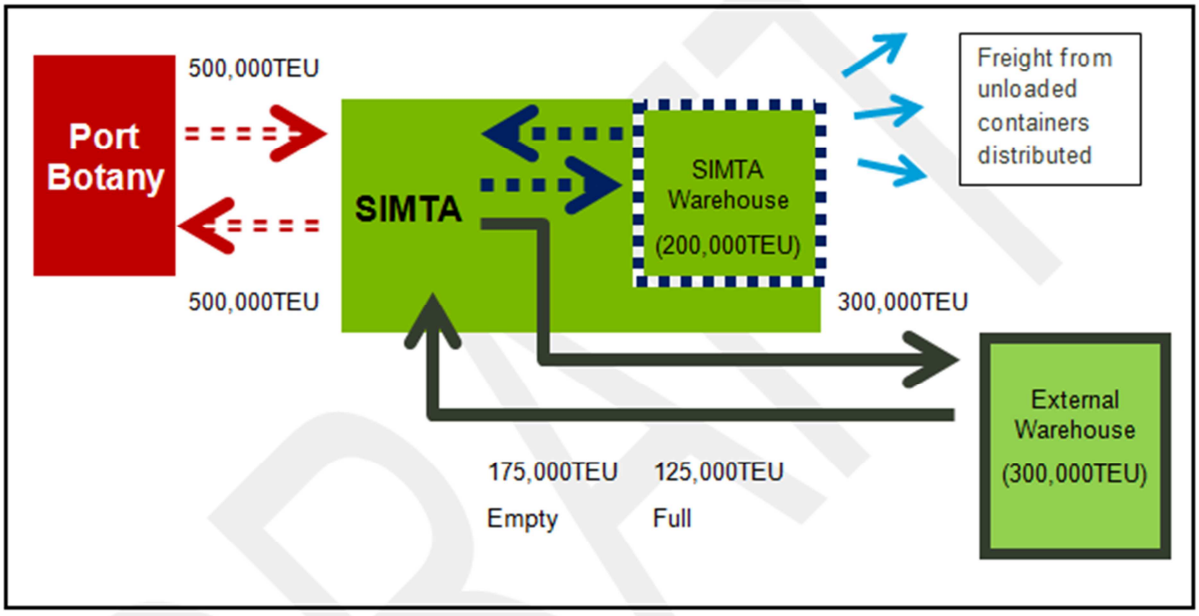

Figure 2 **SIMTA Operation**

These basic operational characteristics did not change from the August 2011 to the August 2013 proposal.

Difference with MIT Operation

It is considered that the SIMTA facility has a number of key differences to the MIT proposal in terms of the operation, these include:

- No interstate freight facility
- Significantly more on-site warehousing and distribution facilities

2.2 Traffic Generation Review

Traffic has been calculated on the basis of first principles. Table 2 sets out the assumptions adopted for this calculation and provides the associated comments.

Table 2 Traffic Generation Peer Review

	Hyder Assumption in 2013 report	As 2011 Report	Aurecon Comments
Articulated Truck Traffic – 1603 articulated truck movements			
1	A total of 600,000 TEU (two way total) would use semi articulated vehicles to be transported	✓	This equates to the amount of container freight that is transported from the SIMTA site and accords with the operational advice from SIMTA illustrated in the above diagram.
2	60% of containers will be 40ft containers (2TEU) 40% of containers will be 20ft containers (1TEU)	✓	This split will impact the B-double and semi-trailer proportions. It does not seem unreasonable but is not supported by any evidence
3	Terminal will operate 52 weeks of the year with 85% of containers being handled Monday to Friday and 15% at weekends	✓	This will impact the daily and hourly traffic movements. It does not seem unreasonable but the report does not confirm if this has been advised by operator or whether this is a similar business model to other sites
4	Semi-trailers will carry 1 x 40ft container and B-doubles 1 x 40ft plus 1 x 20ft containers A 70:30 split between semi-trailers and B-doubles has been adopted	✓	This will impact the total number of articulated vehicles generated The adopted split could be considered conservative as it is likely that B -double use would make for a more efficient business. It is noted that data from a logistics container park in Melbourne indicated that approximately 50% of containers were transported by Rigid vehicles with 50% by B-doubles and Super B-doubles.
5	30% of trucks will transport an empty container into the facility and then exit with a full container. The remaining trucks will either be transporting a full containing or returning an empty container and will therefore undertake one unloaded trip	✓	There is no evidence to support the figure that 30% trucks are loaded for both the movement to and from the facility. It is noted that advice provided to us from Port of Melbourne Corporation in relation to the movement of containers is that it is “very rare” for trucks to drop off a container and then pick up another. Typically we would adopt 10% but 30% maybe achievable if vehicle slotting system and terminal layout is configured. It is further noted that the Moorebank Assessment assumed that the percentage of vehicles that both arrive and depart with containers would be only 15%.

	Hyder Assumption in 2013 report	As 2011 Report	Aurecon Comments
			The total container truck traffic would equate to 2.67 truck movements per 1000TEU of container traffic that leaves or enters the facility. It should be noted that a review of container traffic movements for container parks in Melbourne suggested two way truck generation rate of 4.54 trucks per day, which is considerably higher than that calculated in the Hyder report (albeit it is noted that this relates to the turnover of empty containers).
Rigid Truck Traffic Generation – 1035 rigid truck movements			
5	A total of 200,000TEU will be processed through the SIMTA warehouses per year	✓	This will be freight which is unloaded at the SIMTA site and then transported via trucks to other destinations and accords with the operational advice from SIMTA illustrated in Figure 2 above.
6	Average containers	✓	As with the articulated trucks
7.	Each container will carry 12.66 tonnes of freight	✓	The total freight per container will impact on the number of trucks. No evidence has been provided to support this figure.
8	Rigid trucks will be used to transport the unloaded container freight. With 10 tonnes of freight per truck	✓	The load base of the trucks will dictate the number of truck movements required Rigid trucks can typically cater for 12t load so adopting 10t provides a conservative estimate
Hourly Total Truck Movements			
	The report assumes that these would equate to 7.7% in AM Peak and 9.3% in the PM Peak (AM Peak – 203 truck movements per hour) (PM Peak – 245 truck movements per hour) It is noted that the AM peak hour occurs between 7am and 8am but the PM peak hour occurs between 2pm and 3pm.	✓	It is noted that within the sensitivity test discussion sections, AM and PM peak hour movements are provided for Port Botany and Enfield (taken from and EIS and a traffic report). These assessments adopted a slightly lower AM peak hour percentage (6 and 7.3%) and a much significantly lower (3.7% and 5.4%) PM Peak. Other information available indicates the following: General industrial estates – AM peak < 4% of daily HV peak 12% of daily Container parks in VIC AM peak 7 to 8% Mid afternoon 10 to 11% PM peak (After 5pm) 1 to 2% The adopted SIMTA percentage will generally provide a more conservative estimate in the AM peak hour but potentially less conservative PM peak, assuming the peak is prior to 5pm. It is noted that the calculation of truck traffic has not been provided for the road network peak (and employee peak) typically 5pm to 6pm and 4pm respectively
Employee Traffic Generation – 3613 car movements per day			

	Hyder Assumption in 2013 report	As 2011 Report	Aurecon Comments
10	*Employee Numbers* A total of 2258 staff will be required to operate the facility on a weekday	✓	Other documents identify approximately 2800 staff – the report states that this higher value has been considered within a sensitivity test. It is noted that if the higher employee numbers eventuate this could increase employee traffic movements by 24% to 4480 vehicle movements per day.
11	*Employee Shifts* Staff shifts will be as follows: AM 07:00 – 16:00 PM 16:00 – Midnight Office – normal business hours	✓	It has been stated that the facility would operate 24 hours a day. The hours adopted would therefore suggest a conservative approach, as presumably there would be a third shift to cover midnight to 7am.
12	*Employee Modal Share* It has been assumed that employees would exhibit an 80% car modal share	✓	The adopted car modal share for employees is some 5% lower at 80% than the current Journey To Work modal share as identified within the census data. The adopted 5% reduction in car modal share would equate to approximately 226 vehicles over the day It is noted that current State policy aims to increase total journeys to work by public transport to 28% which is only a 4% increase. It is noted that Section 7.3 of the report indicates that the site would have a target public transport modal share of 30%. Which if achieved would mean that the 80% car modal share is extremely conservative.
13	*Peak hour* The report indicates that approximately 25% of trips (922) travel to and from the site between 7am and 9am, with 75% of movements occurring between 7am and 8am.	✓	As there are only two shifts and these do not overlap in the morning, 25% in the morning peak is not unreasonable. However the time period adopted is not consistent with earlier comments which states that “first shift” will start prior to 7am. A more appropriate 2-hour AM peak period may be 6am to 8am.
	The report indicates 1260 trips in the PM Peak 2-hour period occurring between 4pm and 6pm, with 50% of these trips occurring in each hour.	✓	The PM peak hour movements represent 35% of daily volumes. It is noted that the report states that the morning shift / afternoon shift changeover will occur at 4pm – assuming that shift workers make up the bulk of the workforce this would suggest that more traffic movements would be likely to occur between 3pm and 5pm. It is also noted that the truck movement peak hour occurs between 2pm and 3pm.

Traffic Generation Conclusion

The traffic generation and hence total traffic generation for the SIMTA proposal has not changed between the 2011 assessment and the current 2013 report which indicates that the SIMTA proposal would generate approximately 6250 vehicle movements per day on an average weekday (2638 trucks and 3613 cars).

Peak hour movements have not been summarised as totals within either report but have been estimated based on the profile assumptions set out within the report in the Table 3 below.

Table 3 Peak Hour Traffic Generation per Type of Vehicle as identified in Report

Heading	Trucks	Employees	Total
7am – 8am	203	692	895
8am – 9am	*201*	231	*432*
2pm – 3pm	245	*105*	*350*
3pm – 4pm	*208*	*288*	*496*
4pm – 5pm	*155*	630	*785*
5pm – 6pm	*112*	630	*742*

It is clear that the report only provides advice on the both truck and employee movements for one peak hour, that is 7am to 8am, and it is not clear what has been assumed for the assessment of the PM peak period.

In conclusion, the assumptions adopted to calculate the amount of truck traffic are not fully supported by evidence or documented as referred advice. The main concerns with the analysis are:

- Whether the adoption that 30% articulated trucks would deliver an empty container and then depart with a full container;
- What the PM peak hour movements are that have been adopted within the model;
- Whether the daily employee traffic generation is on the low side as both a reduced employee number and a lower car modal share have been adopted; and
- The peak hour employee traffic generation assumptions are not entirely consistent with earlier information about operation.

Further Information Requirements

It is suggested that further information should be sought as a minimum in relation to the following:

– Percentage of trucks that will be able to drop off a container and then pick up a container as part of the same trip; and
– Truck and employee traffic movements for the same hourly periods

Hyder's Response in relation to Traffic Generation

Truck Traffic

– The Sydney Port Corporation (SPC) Port Freight Logistics Plan (2008) was used as the reference of the proportion of 40ft and 20ft containers. The sensitivity testing in Appendix D of the SIMTA *Traffic and Transport Impact Assessment Report* (Hyder Consulting, 2013) (TATIA 2013), in line with SPC's Port Freight Logistics Plan (2008), indicates SIMTA's "business as usual" assumption on containers splits is conservative.

– The SIMTA's operation is based on observation derived from data reported in the Enfield Intermodal Terminal EIS.
– The 30% back-loading assumption is based on the Port Botany EIS and Enfield EIS reports.
– The average tonne per container (12.66 tonnes) is based on data from the SPC 2008/09 Trade and Logistics Report.

Employee Traffic

– The timing period assumption adopted in the employee traffic generation took into account the variability of employee shift and its impacts on the road network. The employee daily shift patterns can be found in Figure 2-6 of the Appendix D of the TATIA 2013.
– The daily employee traffic generation is a conservative high estimate.
– The supplemented traffic generation information, provided by Hyder's response, is presented in Table 3 in *Italic* font.

Summary of Aurecon's Review to Hyder's Response

Aurecon Peer Review Reference	Aurecon Comment on Hyder Response	Issue Resolved
2.2 – Truck Traffic Generation	The adoption of the ratio of 40ft and 20ft containers from 60%/40% outlined in the Sydney Ports Corporation (SPC) Port Freight Logistics Plan (2008) is considered reasonable.	✓
	It is reasonable to derive the operating parameters from data reported from the Enfield Intermodal Terminal EIS.	✓
	The 30% back-loading assumption, which is based on the Port Botany EIS and Enfield EIS report, is acceptable.	✓
	The average tonne per container (12.66 tonnes), based on data from the SPC 2008/09 Trade and Logistics Report, is considered reasonable.	✓
2.2 – Employee Traffic Generation	The Figure 2-6 of the Appendix D of the TATIA 2013 indicates car activity between the period of 2am-7am, which would suggest the operation of a night shift for warehousing and ancillary freight village land uses. However no information was reported for the night shift.	✘
	The supplemented traffic generation data is still insufficient to provide an overview of the total hourly trip generation (including truck and employee traffic)	✘

2.3 Traffic Distribution

The 2013 Hyder report adopts separate distributions for employee vehicles, container trucks and rigid trucks within the AM peak hour whilst the 2011 report adopts just two distributions: one for employee vehicles and one for all truck movements. These distributions are provided for information within Table 4.

Table 4 Hyder Traffic Distribution

Entry Road to Core Network	Distribution of Vehicle Movements in the AM Peak as within 2013 report			Distribution of Vehicle Movements in AM Peak As Within 2011 Report	
	Employee Arrivals	Container Trucks	Rigid Trucks	Employee Arrivals	Truck Movements
Moorebank Avenue North of M5	14%	14%	22% (All Trucks – 17%)	14%	18%
M5 east	29%	3%	3% (All Trucks – 3%)	29%	4%
Anzac Road	5%	0%	0% (All Trucks – 0%)	5%	0%
Moorebank Avenue South	5%	0%	5% (All Trucks – 2%)	5%	2%
Hume Highway South	13%	13%	10% (All Trucks – 12%)	13%	12%
M5 West	18%	41%	35% (All Trucks – 39%)	18%	38%
Hume Highway North	16%	28%	25% (All Trucks – 27%)	16%	27%

There are some minor discrepancies between the 2011 and 2013 adopted distributions for truck movements in the AM peak, however in terms of general traffic impact, given a total truck generation or 2638 movements per day, these are unlikely to have a material impact when considering the impact on an hourly basis (reflecting a difference of between 1 and 27 vehicles over the whole day).

A PM distribution is not documented within either reports and therefore it is assumed that this would be the same as for the AM period.

In terms of the validity of the adopted distribution assumptions the following comments have been made:

Table 5 Traffic Generation Peer Review

Assumption	Hyder Assumption	Aurecon Comments
Container Traffic Distribution		
1	Container Truck and Rigid Truck Distribution as given in Table 4	The distribution of container trucks would depend on the destination for individual containers and the location of truck depots (70% of articulated trucks would not include a container for one movement either into or out of the site) There is no discussion in relation as to why for instance 41% would use M5 east and 14% Moorebank Avenue north
2	Employer Traffic Distribution	As with the containers distribution it is unclear as to the basis of the employee distribution.

Traffic Distribution Conclusion

There is no supporting evidence or justifications as to why the assessed traffic distribution has been adopted and therefore it is no appropriate to comment as to whether this is reasonable or not. However it is noted that traffic distribution is flexible and may change to represent different constraints within local and regional networks.

Hyder's Response in relation to Traffic Distribution

– The traffic distribution in PM peak by approach routes follows the similar to AM peak distribution.
– The Container and Rigid truck distributions were based on freight catchment assessment documented in the Freight Demand Modelling, Appendix G1 of Environmental Assessment, Sydney Intermodal Terminal Alliance – Part 3A Concept Application, August 2013 documented freight catchment analysis.
– Employee traffic distribution was based on the Journey to Work (JTW) and House Travel Survey (HTS) data for the Moorebank catchment.

Summary of Aurecon's Review to Hyder's Response

Aurecon Peer Review Reference	Aurecon Comment on Hyder Response	Issue Resolved
2.3 – Traffic Distribution	The discrepancies between the 2011 and 2013 adopted distributions for truck movements were not clarified.	✗
	It does not seem unreasonable to adopt a similar percentage traffic distribution in the PM peak as within the AM peak.	✓
	It is considered acceptable that the container and rigid truck distributions were based on freight catchment assessment documented in the Freight Demand Modelling.	✓
	It is considered acceptable that the employee traffic distribution was based on the Journey to Work (JTW) and House Travel Survey (HTS) data for the Moorebank catchment.	✓

2.4 Traffic Impact Assessment

The Traffic Impact Assessment of the SIMTA proposal has been undertaken by using the Paramics micro-simulation model for local and regional areas and strategic model for wider area.

2.4.1 Existing Base Model

The 2013 Hyder report adopted a three-tiered approach to the assessment of road network impacts:

- "Core" area.
- "Inner" area.
- "Wider" area.

Paramics models were developed to assess the performance for the intersections and road network with both "core" area and "inner" area. A strategic traffic model was developed for the specific purpose of investigating traffic impact for SIMTA proposal.

"Core" area modelling

The "core" area Paramics model was developed to simulate the adjacent intersections on M5 Motorway, Hume Highway, Moorebank Avenue and Anzac Road for both AM and PM peak periods.

It is noted that the same results of the "core" area Paramics model were reported in both 2013 and 2011 documentation.

Table 6 Core Area Modelling

	Hyder Model in 2011/2013 report	Halcrow's Review	Aurecon Comments
Model development			
1	Temporal traffic profiles were developed for 15-minute periods across the two hour simulation period.	It is advised to have multiple arrival profiles for zones which are different in nature, provided data is available to substantiate this profiling.	The RMS Traffic Modelling Guidelines suggests that *it is preferable to develop profiles for as many zones as possible and for vehicle type where possible.* As traffic data is available from the traffic survey, multiple arrival profiles are recommended. This issue was identified in Halcrow's review, however single traffic profiles was still reported in the Hyder 2013 report.
2	In order to develop the demand matrices, available data sources in the study area were utilised. These data sets included Origin-Destination Surveys (between Hume Highway and Moorebank interchanges with M5 Motorway), intersection turning counts for the peak periods, and Mid-block counts. The data sets were further processed and used in matrix estimation models. The matrix estimation was performed using TransCAD transport planning software package.	It is documented in the technical note that the prior trip matrix and subsequent matrix estimation is undertaken using TransCAD transport planning software. Halcrow's review concluded that the demands appear to be reasonably distributed in the model, based on the anecdotal understanding of the travel pattern in the region.	In terms of Halcrow's review, it is assumed that the travel demand matrices are generally acceptable.
3	Three demand matrices were produced for three different vehicle classes: Light Vehicles, Trucks/Bus and Semi-Trailer & B-Doubles	The vehicles file is generally in accordance with the RTA standard file.	The M5 Motorway over the Georges River was recorded with a heavy vehicle proportion of 10% in years 2010/2011. Therefore it is a good practice to use separate demand matrices for different vehicle types.
Model calibration			
4	Link volumes and intersection turning volumes were calibrated satisfactorily against the criteria set out in RMS Traffic Modelling Guidelines.	The calibration summary indicates the models meet the calibration criteria at a satisfactory level. However, comparison of modelled traffic volume against observed count data is not shown.	The RMS Traffic Modelling Guidelines suggests the R^2 value to be included in graphical plots and to be >0.95 within the core modelling area.
Model validation			
5	The Paramics models were validated against observed queue length.	It is concluded that the modelled queue length appears to be in good correlation with the surveyed data. Although on a few approaches the modelled queue length on all traffic lanes are slightly shorter than observed lengths.	Table A6 and Table A7 of Appendix B indicate the queue length is in good correlation with the observed queue lengths.

"Inner" area modelling

Additional eight key intersections outside of the "core" area were considered in the "inner" area model for AM and PM peak hours. The "inner" area modelling network also includes, besides the "core" area,

Hume Highway & Campbelltown Road, Cambridge Avenue, Glenfield Road, Macquarie Street, Terminus Street, and Camden Valley Way.

It is noted that the same results of the "inner" area Paramics model were report in both 2013 and 2011 reports.

<table>
<tr><th></th><th>Hyder Model in 2011/2013 report</th><th>Aurecon Comments</th></tr>
<tr><td colspan="3">Model development</td></tr>
<tr><td>1</td><td>The Paramics demand matrix was estimated using Hyder's own Sydney Strategic Traffic Model (SSTM) via a sub-area modelling technique.</td><td>Due to lack of detailed information, the accuracy of the matrix development is unknown.</td></tr>
<tr><td>2</td><td>It is reported that the temporal traffic profiles for the inner area models were developed for 15-minute time slices for the entire simulation periods based on observed traffic flow data. About 28 directional traffic data sets were used to estimate sector-to-sector demand release profiles. About 13 sectors were identified for the modelling study area.</td><td>It is a good practice to have multiple traffic profiles for different sectors.</td></tr>
<tr><td colspan="3">Model calibration</td></tr>
<tr><td>3</td><td>Link volumes and intersection turning volumes were calibrated against the criteria set out in RMS Traffic Modelling Guidelines. The report advised both AM and PM peak models were calibrated adequately and models are fit for purpose.</td><td>Overall, the "inner" area models were calibrated except that the criteria of GEH value of less than 5 was 83%, which did not achieve the requirement of 85% in both AM and PM models.

The demand release is 99.2% in the PM model, which did not achieve the target of 100% set out in RMS Traffic Modelling Guidelines.</td></tr>
<tr><td colspan="3">Model validation</td></tr>
<tr><td>4</td><td>The Paramics models were validated against observed screenline flows, travel time, traffic profiles and queue length. An analytical model based on HCM 2000 was developed to assess the performance of the weaving section in AM and PM peak periods.</td><td>The RMS Traffic Modelling Guidelines set out the validation criteria for screenline as "each directional screenline or cordon total to have GEH<3, and individual links in screenlines / cordons to have GEH < 5 for 85 per cent of observations."

The GEH value was not reported in the documentation. Aurecon undertook a quick calculation according to the screenline flows tabulated in Table C7 and Table C8 of Appendix B. The calculation indicates that the screenline was not validated satisfactorily to the observation data. The GEH values are summarised below for AM and PM peak hours

AM Peak Hour
<table>
<tr><th>Screenline</th><th>NB/EB</th><th>SB/WB</th><th>Bidirectional</th></tr>
<tr><td>1</td><td>8.2</td><td>4.9</td><td>9.4</td></tr>
<tr><td>2</td><td>1.7</td><td>4.2</td><td>1.6</td></tr>
<tr><td>3</td><td>4.3</td><td>6.2</td><td>1.0</td></tr>
<tr><td>4</td><td>0.1</td><td>4.1</td><td>2.1</td></tr>
<tr><td>5</td><td>5.5</td><td>1.4</td><td>3.3</td></tr>
<tr><td>6</td><td>3.5</td><td>0.9</td><td>3.3</td></tr>
<tr><td>Total</td><td>1.9</td><td>0.8</td><td>2.0</td></tr>
</table>
PM Peak Hour
<table>
<tr><th>Screenline</th><th>NB/EB</th><th>SB/WB</th><th>Bidirectional</th></tr>
<tr><td>1</td><td>2.2</td><td>1.0</td><td>2.2</td></tr>
<tr><td>2</td><td>0.9</td><td>0.2</td><td>0.5</td></tr>
<tr><td>3</td><td>4.5</td><td>0.3</td><td>3.3</td></tr>
<tr><td>4</td><td>1.4</td><td>1.0</td><td>0.0</td></tr>
<tr><td>5</td><td>1.1</td><td>1.6</td><td>1.9</td></tr>
<tr><td>6</td><td>3.7</td><td>2.4</td><td>0.1</td></tr>
<tr><td>Total</td><td>3.1</td><td>2.0</td><td>3.6</td></tr>
</table></td></tr>
<tr><td>5</td><td>The comparison of travel times between the modelled and observed data is reported in the report.</td><td>The RMS Traffic Modelling Guidelines set out the travel time target validation criteria as "average modelled journey time to be within 15 per cent or one minute (whichever is greater) of average observed journey time for full length of route. "

The travel time was not validated against the criteria of RMS Traffic Modelling Guidelines.</td></tr>
</table>

Strategic modelling for "wider" area

The strategic traffic model for the "wider" area, covering Sydney Metropolitan Area, was developed for the specific purpose of investigating the traffic impact for the SIMTA proposal.

It is noted that the same results of the "wider" area strategic traffic model were reported in both 2013 and 2011 documents.

	Hyder Model in 2011/2013 report	Aurecon Comments
Model development		
1	Hyder's strategic traffic model was developed by using TransCAD, on the basis of RMS's Strategic Model (EMME2) network, BTS's 2006 travel zone and demand data from the Sydney-wide Strategic Travel Model (SSTM). Time period factors were applied to the model to expand and represent average weekday traffic.	The time period factor and the method of establishing the factor were not reported.
Model calibration & validation		
2	Screenline check and travel time were used for model calibration and validation against targets. It is concluded that Hyder's SSTM model was calibrated and validated appropriately in accordance with industry practice acceptance criteria.	The summary provided in the report indicates that the calibration and validation were achieved for both AM and PM peak period strategic models.

Existing modelling conclusion

In terms of the provided information, in conjunction with Halcrow's Paramics modelling audit, the base models of the "core" area network and "inner" area network were considered to provide a reasonable representation of the existing network conditions.

2.4.2 Future traffic impact assessment

A number of scenarios were assessed to identify the traffic impacts on the surrounding road network. These scenarios included the future 2031 year with and without the SIMTA proposal. The intersection delays and Level of Services extracted from the "core" area and "inner" area Paramics models were reported differently in the 2011 and 2013 report.

Impact without SIMTA proposal

Hyder Model in 2013 report			Hyder Model in 2011 report			Aurecon Comments
Intersection	**Delay**	**LoS**	**Intersection**	**Delay**	**LoS**	
AM Peak						It is reasonable to use the strategic model to estimate the future trip table for Paramics model. However the travel zone system is different between Paramics model and strategic model. It is unclear what methodology was used to undertake the trip estimation for future trip table in Paramics model. It is reported that the future base trip tables in the Paramics model was modified to solve the unrealised trip issues. However the intersection delay of M5 Motorway/ Hume Hwy reported in 2013 increased adversely from 40 seconds to 120 seconds, comparing to 2011 report. Further clarification is required to address the model modification.
Moorebank Ave/ Anzac Rd	49	D	Moorebank Ave/ Anzac Rd	33	C	
M5 Motorway/ Moorebank Ave	30	C	M5 Motorway/ Moorebank Ave	24	B	
M5 Motorway/ Hume Hwy	120	F	M5 Motorway/ Hume Hwy	40	C	
Moorebank Ave/ Heathcote Rd	103	F	Moorebank Ave/ Heathcote Rd	146	F	
Moorebank Ave/ Newbridge Rd	144	F	Moorebank Ave/ Newbridge Rd	114	F	
PM Peak						

Hyder Model in 2013 report			Hyder Model in 2011 report			Aurecon Comments
Intersection	**Delay**	**LoS**	**Intersection**	**Delay**	**LoS**	
Moorebank Ave/ Anzac Rd	37	C	Moorebank Ave/ Anzac Rd	34	C	
M5 Motorway/ Moorebank Ave	44	D	M5 Motorway/ Moorebank Ave	48	D	
M5 Motorway/ Hume Hwy	75	F	M5 Motorway/ Hume Hwy	86	F	
Moorebank Ave/ Heathcote Rd	205	F	Moorebank Ave/ Heathcote Rd	173	F	
Moorebank Ave/ Newbridge Rd	124	F	Moorebank Ave/ Newbridge Rd	117	F	
It is reported that the future unconstrained demand (trip table) estimated via the strategic model has formed the basis of demand used in Hyder's Paramics model. It is expected that the LoS on those key intersections would reduce in 2031 even without the SIMTA proposal. The benefit of M5 widening would be offset by the projected population and employment growth by 2031 in South-West Subregion. It is concluded that the intersection of Moorebank Ave/Heathcote Rd, Moorebank Ave/Newbridge Rd and M5 Motorway/Hume Hwy would require upgrading regardless of SIMTA development. The proposal of Defence National Storage and Distribution Centre (DNSDC) was considered in 2013 report and included in traffic modelling.						

Impact with SIMTA proposal

The impacts of the SIMTA proposal were assessed by the traffic growth at five key screenlines and intersection performance at both “core” area and “inner” area.

	Hyder Model in 2013 report			2011 report			Aurecon Comments
Screenline assessment							
1	Table 6-3 of the 2013 report identified the largest traffic growth percentage in peak hours would occur on Moorebank Ave southbound (4.8%) and northbound (4.9%) in AM and PM peak hour respectively per annum. Without the SIMTA development, the average background traffic growth rate of 1.6% to 1.8% on Moorebank Ave was predicted, including the growth rate of 0.3% generated by the DNSDC site.			The background growth rate of DNSDC site was not specified individually, although it is considered in the background growth analysis.			There is no supporting evidence used for the growth rate of DNSDC site. However the growth rate factors do not seem to be unreasonable.
Intersection performance							
2	**Intersection**	**Delay**	**LoS**	**Intersection**	**Delay**	**LoS**	Comparing the intersection results without SIMTA site, it is apparent that the intersection of Moorebank Ave/Anzac Rd and M5 Motorway/Moorebank Ave would experience significant traffic delays with LoS of F or E, due to the additional traffic generated by the SIMTA proposal in 2031. The model screenshots included in Table 6-6 of the Hyder’s report indicate that the Moorebank Ave/Anzac Rd intersection would be the bottleneck, which cause adverse queuing on all approaches. It is shown that the queue on northern approach also extend over the M5 off-ramp on both eastbound and westbound directions. It is uncertain, without being reported, whether these extended queues would affect the through traffic on M5 Motorway. The road network was also assessed with the infrastructure upgrades identified in the report. The intersections adjacent the SIMTA site on Moorebank Avenue would operate in an average of LOS C or D in 2031 during AM and PM peak hours.
AM	Moorebank Ave/ Anzac Rd	71	F	Moorebank Ave/ Anzac Rd	57	E	
	M5 Motorway/ Moorebank Ave	49	D	M5 Motorway/ Moorebank Ave	34	C	
	M5 Motorway/ Hume Hwy	124	F	M5 Motorway/ Hume Hwy	60	E	
	Moorebank Ave/ Heathcote Rd	152	F	Moorebank Ave/ Heathcote Rd	145	F	
	Moorebank Ave/ Newbridge Rd	147	F	Moorebank Ave/ Newbridge Rd	184	F	
PM	Moorebank Ave/ Anzac Rd	71	F	Moorebank Ave/ Anzac Rd	127	F	
	M5 Motorway/ Moorebank Ave	68	E	M5 Motorway/ Moorebank Ave	95	F	
	M5 Motorway/ Hume Hwy	111	F	M5 Motorway/ Hume Hwy	135	F	
	Moorebank Ave/ Heathcote Rd	255	F	Moorebank Ave/ Heathcote Rd	161	F	
	Moorebank Ave/ Newbridge Rd	134	F	Moorebank Ave/ Newbridge Rd	120	F	
	A number of infrastructure upgrades were identified in the Hyder’s report, including widening of Moorebank Avenue and M5 Motorway Moorebank Avenue off-ramps.						
3	Key roads surrounding the SIMTA site, including M5 Motorway, Moorebank Avenue, Cambridge Avenue, Newbridge Road and Hume Highway were predicted to carry a significant volume of regional and local traffic.						The Defence’s proposed West Wattle Grove site was identified in the report to contribute in the order of 0.3% annual growth to the Moorebank Avenue. It is unclear, without reporting, whether this traffic was included in the strategic model as part of the background traffic growth.

Future traffic impact and modelling conclusion

Assessment was undertaken for the scenarios both with and without SIMTA proposal. It is expected that the traffic generated by the SIMTA site would have significant impacts on the adjacent intersections along Moorebank Avenue.

In terms of the provided information and analysis, the assessment results appear to be reasonable and acceptable and cover the road network.

Paramics modelling assessment were also undertaken for the "inner" area network. It was concluded the SIMTA proposal would not have direct significant impacts on the already congested intersections outside the "core" area.

Hyder's Response in relation to Traffic Impact Assessment

- The travel zone concordance between strategic and Paramics models have been developed.
- The future unconstrained demand has resulted in unreleased trip issued in Paramics. The demand on M5 Motorway in 2031 PM peak model was "capped". The capped demand represents an equivalent of 2% growth rate per annum. No other modifications were made to the model.
- The congestion effect on the Hume Highway from both upstream and downstream adjacent traffic signals was considered in the 2013 report rather than 2011 report.
- The traffic contribution on Moorebank Avenue from the DNSDC site is estimated based on actual counts undertaken for the current operation of the DNSDC site.
- The traffic model incorporated impacts associated with the relocation of the existing DNSDC facilities to the north of the SIMTA site (West Wattle Grove site).

Summary of Aurecon's Review to Hyder's Response

Aurecon Peer Review Reference	Aurecon Comment on Hyder Response	Issue Resolved
2.4.1	Traffic modelling issues were not clarified	✗
2.4.2	The travel zone configuration between strategic and Paramics model and the modification from 2011 model to 2013 model were not clarified in details.	✗
	The clarification of miss-consideration of Hume Hwy from both upstream and downstream traffic signals is unclear. In modelling practice, if the intersections are included in the model, their operation will naturally have impacts on upstream and downstream intersection.	✗
	It is considered acceptable that the traffic contribution on Moorebank Avenue from the DNSDC site is estimated based on actual counts undertaken for the current operation of the DNSDC site.	✓

2.5 Conclusion of Peer Review

Based on the above discussion, it is the view of this report that whilst the Transport Assessment of the SIMTA proposal covers many areas there are a number of items that in our view require further information to provide a fully supportable assessment suitable for this stage of the development process.

The Hyder's responses to Aurecon's comment provide information of the reference source to most assumptions. However there are still a number of items in relation to traffic modelling issues unclarified.

3. Review of Reports Against DGRs

3.1 DGR 1a

The first DGR associated with transport planning is as follows:

> *A Transport and Accessibility Impact Assessment demonstrating how the project will facilitate transport objectives, meet freight infrastructure requirements and address impacts to local and regional transport networks;*

Aurecon have reviewed the documentation considered as part of this assessment against the above requirement and comment as follows.

Facilitating Transport Objectives

The Transport and Accessibility Impact Assessment refers to State Plan Targets for public transport and active transport mode usages within Section 2.4.

It is considered that the intention and objectives of State Policy in respect to transport usage are generally supported by the proposal by a number of measures including:

- Provision of public transport (bus) services through the site
- Shuttle bus services between the site and nearby rail stations
- Provision of public transport stop facilities
- Reduce on-site parking

It is noted that there is no information provided in relation to bicycle end of trip facilities, such as bike parking facilities and changing facilities (showers and lockers). It is recommended that these facilities should be included once the internal layout of the site is considered in more detail.

Freight Infrastructure Requirements

The Transport and Accessibility Impact Assessment per se does not specifically address how the proposal will meet freight infrastructure requirements. However Section 2.7 of the report refers to a PricewaterhouseCoopers (PwC) needs assessment. The findings and recommendations from the PwC report were summarised in June 2013 Strategic Needs for Intermodal Terminal (IMT) and Freight Demand Report prepared by Hyder.

In conclusion this report indicated that to meet the State Governments target for transporting 28% of container freight to and from the port by rail additional intermodal facilities will be required and that the ultimate capacity of the SIMTA proposal has the "*potential to support NSW freight policy objectives. It will provide enough capacity to allow the 28 per cent target to be met beyond 2025. . It will improve container throughput, thus increasing productivity of freight rail and eliminate a significant number of truck movements from major arterial roads around Port Botany".*

Addressing Local Impacts

A Paramics microsimulation model was developed to assess the immediate surrounding intersections and road network for AM and PM peak periods. The base model was audited by external consultants and considered fit for purpose. Future scenarios with and without the SIMTA proposal were also assessed in the model in details.

Infrastructure upgrades have been identified within Section 8 and these include:

- Widen Moorebank Avenue to four lanes between the M5 Motorway/Moorebank Avenue grade separated interchange and the Southern SIMTA site access;
- Localised improvements around the central and southern access points;
- Widening on the Moorebank Avenue approaches to Moorebank Avenue / Anzac Road intersection;
- A new traffic signal intersection at SIMTA's northern access to be shared with the new DNSDC site;
- A new traffic signal intersection at SIMTA's southern access; and
- Potential upgrading works at the M5 Motorway / Moorebank Avenue grade separated interchange.

Addressing Regional Impacts

Paramics modelling assessment was also undertaken for the "inner" area network. The reported modelling results indicated the SIMTA proposal would not have direct significant impacts on the already congested intersections outside the "core" area.

For the wider regional impacts the assessment has adopted a Strategic Transport Modelling methodology.

It is noted that the assessment indicates that there are currently capacity issues on the regional road network outside the core area with poor LoS (E or F) experienced at a number of intersections during peak periods.

The regional impact of the SIMTA site has been considered briefly in Section 6.9 which notes the following:

- SIMTA proposal would have the potential to reduce traffic volumes of heavy vehicle movements along the M5 corridor by approximately 2700 movements per day
- Beyond the core area, west of M5/Moorebank interchange in Liverpool and within the South-West and Industrial West of Sydney, heavy vehicle movements are anticipated to have a marginal increase and would be concentrated on key arterial roads such as M5 Motorway, Hume Highway and M7 Motorway

In conclusion the 2013 assessment found that whilst SIMTA contributed up to 2% increase in traffic on key intersections outside of the core area the congestion problem is primarily caused by the background traffic growth on the regional road network outside core area in the future results in the poor level of service and regional delays.

Whilst some delays increased, the LoS for all bar two intersections within the morning peak and one intersection in the afternoon peak remained the same with and without the SIMTA proposal.

The regional impacts have therefore been considered to be appropriately addressed.

Summary

Accordance with DGR1a	**Partially achieved within the report but further reference is required in support the DGR of:** ➢ **Recognition that Bicycle end of trip facilities will need to be provided**

Hyder's Response in relation to DGR1a

– The concept design of SIMTA will accommodate the provision of bike parking spaces of 3-5% staff.

Summary of Aurecon's Review to Hyder's Response

Aurecon Peer Review Reference	Aurecon Comment on Hyder Response	Issue Resolved
3.1	The provision of bike parking spaces is acceptable. However this information should be included in the Traffic and Transportation Assessment report.	✓

3.2 DGR 1b

DGR 1b states the following:

> *Access to and from the project (including rail access to the Southern Sydney Freight Line), and interaction and integration with existing and planned transport infrastructure and services; and details of internal transport and logistic requirements to minimise external transport impacts and access to public transport for employees;*

Aurecon have reviewed the documentation considered as part of this assessment against the above requirement and comment as follows.

Access to and from the project

Access to and from the project site is discussed within Section 6.1 of the report. This summarises the following access strategy:

- **Northern access** – entry and exit for the terminal for both cars and trucks. It is proposed to incorporate this access to the terminal within the new signals to be provided as part of the DNSDC relocation to control the northern access, however it would appear from the report that this is yet to be confirmed. It is understood that this access would permit all movements.
- **Central access** – entry and exit for the terminal for primarily trucks and will utilise the existing signalised intersection to the DNSDC site, which will be retained, to permit all movements.
- **Southern Access** – exit only for articulated trucks to travel northbound on Moorebank Avenue. This access will also be controlled by signals.

The performance of the access points is summarised within Table 8-2 of the report and indicates that these will generally operate within an acceptable manner with LOS between A and C in both the AM and PM peak periods. However there is limited information on queuing either inside the site or on the surrounding road network.

Rail Access to Southern Sydney Freight Line

Rail access is considered within the Rail Access Report, prepared by Hyder and dated June 2013 rather that the Transport and Accessibility Impact Assessment.

Interaction and Integration with Existing and Planned Infrastructure

The interaction and integration with existing and planned infrastructure has been considered within the Paramics and strategic modelling methodologies.

Internal transport and logistic requirements to minimise external transport impacts

There is no discussion regarding internal movements.

Access to public transport for employees

Access to public transport for employees has been addressed with both physical infrastructure features and non-infrastructure initiatives which are summarised below:

- Warehouse layout/design and road intersection design that is appropriate for non-motorised transport;
- Internal roads designed to accommodate buses and cycles;
- Construction of covered bus drop-off / pick up facilities in both the north and south areas of the site;
- Review and rationalise the locations of route 901 bus stops in the vicinity of the site to ensure convenient access to the facility;
- Monitor the need for additional bus priority at key intersections within and external to the site
- Constrain parking to accommodate public transport facilities;
- Provide peak period and shift change responsive shuttle buses between the site and Liverpool Station via Moorebank Avenue and Newbridge Roads;
- Provide peak period and shift change responsive shuttle buses between the site and Holsworthy rail station via Anzac Road, Wattle Grove Drive and Heathcote Road;
- Extend Route 901 bus through the site;
- Increase the peak period Route 901 service frequencies (through the site) to better match the locality and access needs of existing and future employees as the terminal development proceeds;
- Implement a travel behaviour change program for the terminal employees;
- Provide walkways and cycleways through the site linking with the proposed on-site bus facilities;
- Initiate a marketing and awareness campaign for all new employees to the site covering sustainable transport options for travel; and
- Adopt a proponent designed car funded car sharing scheme.

Summary

Accordance with DGR1b:	**Partially achieved but considered that further evidence is required in support of:** ➢ **Internal traffic movements** ➢ **Performance of the site accesses in terms of queuing and delays**

Hyder's Response in relation to DGR1b

– The *Urban Design and Landscape Report,* prepared for the SIMTA proposal, indicates the proposed internal road arrangements for the proposal. Internal road layout within SIMTA site will be developed through the detailed design process and subsequent planning approvals.
– The traffic modelling has considered the 3 key accesses to and from SIMTA site. The following table includes the queue length data on Moorebank Avenue.

Intersection	Approach	Maximum Queue Length (veh)	
		AM	PM
Moorebank Ave / Northern Access	North	14	18
	South	12	10
Moorebank Ave / Central Access	North	10	19
	South	11	7
Moorebank Ave / Southern Access	North	11	17
	South	8	5

3.3 DGR 1c

DGR 1c states the following:

> *The number of train and truck movements, origin and destination, types of road transport likely to be used (for example B-Doubles) and the capacity of existing and proposed road and rail routes to handle predicted increases in traffic, based on appropriate empirical analysis and strategic and project modelling; and identification of whether any road and rail infrastructure upgrades are required;*

Aurecon have reviewed the documentation considered as part of this assessment against the above requirement and comment as follows.

The Number of Train and Truck Movements

Train Movements

The Traffic and Transport documentation does not provided details of the number of train movements that will be associated with the proposed SIMTA development.

It is noted that this information is provided within the MIT draft EIS submission.

Truck Movements

The total Truck Movements have been estimated and are generally considered reasonable subject to the provision of further evidence to support the percentage of vehicles that are assumed to transport containers both as an “in” trip and an “out” trip.

Capacity of the Existing and Proposed Road and Rail Routes to handle Predicted Increases in Traffic

Rail Capacity

There is no discussion within the Transport and Accessibility Impact Assessment report in relation to the impact of the proposed development on rail capacity.

Road Routes

Subject to the traffic generation and distribution adopted the capacity of the road routes to handle the predicted traffic has been assessed using Paramics Modelling and Strategic Modelling for the wider area.

M5 Motorway, Hume Highway and Moorebank Avenue, including section north of M5 Motorway) were identified the key access route by both employment and truck traffic to and from the SIMTA site.

The distribution assumptions are considered generally reasonable subject to the provision of further evident to support the distribution proportion. However the existing excessive delays (>120 seconds) at Moorebank Avenue/Newbridge Road intersection might affect the distribution.

Identification of Any Road and Rail Upgrade Requirements

Rail Upgrades

The only rail upgrade that has been identified is the provision of a rail spur to access the site.

The documentation reviewed does not analyse rail capacity in any detail.

Road Upgrades

The existing road capacity of Moorebank Avenue, including intersections along Moorebank Avenue, would not be able to accommodate the additional traffic generated by the SIMTA site. A number of infrastructure upgrades were identified in the report, including widening of Moorebank Avenue and M5 Motorway off-ramps. These upgrading works would improve the LoS in 2031.

However due to the high proportions of employee and truck traffic that were distributed to Moorebank Avenue north of M5 Motorway, the traffic impact assessment indicated that traffic delays at Moorebank Avenue/Newbridge Road intersection and Moorebank Avenue/Heathcote Road intersection would be worse. Therefore further intersection upgrade should be investigated at these intersections after the M5 West widening project completed.

Summary

Accordance with DGR1c	**Partially achieved within the report but it is considered that further evidence and / or discussion should be provided in regard to:** ➢ **Train movements** ➢ **Container truck movements** ➢ **Rail capacity** ➢ **Additional intersection upgrades for Moorebank Ave/ Newbridge Road intersection and Moorebank Ave / Heathcote Road intersection.**

Hyder's Response in relation to DGR1c

– Train movements and rail capacity in relation to the SIMTA proposal have been documented in a report titled *Rail Access Report,* Hyder Consulting (2013).
– The timing and requirement for intersection upgrade at Moorebank Ave/Newbridge Rd would depend on the traffic redistribution effect of the M5 West widening. Further traffic monitoring and modelling is recommended following completion of these works to quantify the effects of the widening on traffic movements.

3.4 DGR 1d

DGR 1d states the following:

> *Cumulative impacts, particularly with regard to existing and proposed freight distribution facilities in the locality and potential cumulative mitigation measures; and*

Aurecon have reviewed the documentation considered as part of this assessment against the above requirement and comment as follows.

Cumulative Impacts

SIMTA / MIT

Aurecon understand that when originally proposed there was the possibility that both the SIMTA and MIT proposals could proceed to their full capacity.

Aurecon understand that due to the capacity of Port Botany there is a limited catchment that would not support the full development of both proposals. Therefore it is understood that at this stage the following options could occur:

- Only SIMTA proposal
- Only MIT proposal
- Reduced scale MIT & reduced scale SIMTA

Section 6.9 of the 2013 exhibition documents this and states:

> *"Any future proposal by the Moorebank Intermodal Company Limited (MICL), formerly known as the Moorebank Project Office (MPO) is expected to service the similar catchment area reducing the ability for the SIMTA to achieve full operational capacity."*

However it is noted that the MIT (or MICL proposal) includes an interstate facility. It is assumed that the throughput of this facility is not impacted by the Port Botany catchment and potentially could add to the cumulative impact. It is noted that the MIT draft EIS indicates that the interstate facility would generate 410 truck movements per day in 2030.

Given the above the following potential issues that should have been considered or discussed if both the MIT and SIMTA proposals progress include:

- Access arrangements between the two facilities; and
- Any additional impact of the interstate facility on the road network.

Other Cumulative Impacts

The cumulative impacts of the following have been considered within the analysis:

- General growth in traffic passing through the study area – achieved through using the strategic model;
- The relocated DNSDC has been considered in that the proposed new access to the site has been included within the traffic model.

Accordance with DGR1d	**Partially achieved within the report but it is considered that further evidence and / or discussion should be provided in regard to:** ➢ **The interaction of the access arrangements of the two facilities to ensure neither will impact the safety and operation of the other;** ➢ **Additional traffic impact associated with the MIT Interstate Facility**

Hyder's Response in relation to DGR1d

– The SIMTA proposal has been designed to service the entire freight catchment, with a throughput capacity of one million TEU per annum.

3.5 DGR 1e

DGR 1e states the following:

> *Taking into account the Guide to Traffic Generating Developments (RMS) and the Integrating Land Use and Transport Package.*

Guide to Traffic Generating Developments

The Guide to traffic Generating Developments outlines the requirements of a traffic impact study and provides guidance on traffic generation and assessment. The requirements of TIS as set out within the document and whether these have been covered are summarised within Table 3-1.

Existing proposals for improvements to the adjacent road network and hierarchy	Documented within the report.
Impact on road safety	Documents provide details of existing accident data. Section 6.12 discusses the impact of the development on road safety
Impact of traffic noise	Traffic noise is not considered within the Transport Accessibility Reports. However as the area is not primarily residential in nature and traffic is likely to be more regional (particularly heavy vehicles) noise and its impact on amenity are not considered to be a major issue.
AADT – annual average daily traffic	Existing daily traffic counts have been identified and documented
Examine volumes and historical trends on key adjacent roads	Section 2.2. includes discussion on key transport indicators including historical growth and trends on adjacent roads
Peak period traffic volumes and congestion levels at key intersections	Peak period traffic volumes have been provided and existing LoS documented around the site based on a modelled network
Existing parking supply and demand in the vicinity of the proposed development	Not documented. It is noted that parking is intended to be constrained to encourage employees to use modes other than the car.

Parking provisions appropriate to the development (in relation to demand and statutory requirements)	The statutory parking requirements have been documented and an alternative parking provision proposed However parking has not been justified and the report states: *"Further parking assessment should be undertaken as the development progresses stage by stage"*
Traffic generation / attraction and trip distribution of the proposed development	Documented
Safety and efficiency of internal road layout, including service and parking areas	Not Documented in any detail. This is something that may be considered in later stages of the development process as more details are available.
Impact of generated traffic on key adjacent intersections, streets in the neighbourhood of the development, the environment and other major traffic generating development sites in close proximity	Documented using Paramics and Strategic Modelling packages
Safety and efficiency of access between the site and the adjacent road network.	The accesses are separated in accordance with RMS minimum separation guidance. However with no access layouts there has been no discussion on either the safety or efficiency of access between the site and the adjacent road network. This is something that may be considered in later stages of the development process as more details are available.

Integrating Land Use and Transport Package

The Integrating Land Use and Transport Package (ILUTP) sets out and explains policy which has been recently developed to reduce car travel and provide more equitable access to jobs and services by promoting opportunities for walking, cycling and public transport.

Whilst the documentation does not specifically address the report it is considered that the intention of the ILUTP is achieved.

Summary

Accordance with DGR1e	**Achieved given the stage of the development process. Further work will be required to achieve all traffic impact assessment requirements of RMS Guide to Traffic Generating Developments as and when more details of site access and internal layout are identified.**

3.6 Conclusion

In conclusion the reviewed Transport and Accessibility Impact Assessment partially addresses the majority of DGR's. However there are some areas where further information is required or needs to be included from other documentation.

Appendices

Appendix A
Aurecon Site Inspection and Existing Transport Conditions Review

Existing Transport Conditions

Aurecon have undertaken a review of the existing transport conditions surrounding the SIMTA site. This appreciation of the existing network has been compiled through both site inspection and desktop review of documents and the internet.

Study area

The proposed terminal facilities are located south-west of Sydney, directly north of the Holsworthy Military Reserve. Figure A1 illustrates the locations of both terminal facilities in a regional and local context for the Sydney metropolitan area.

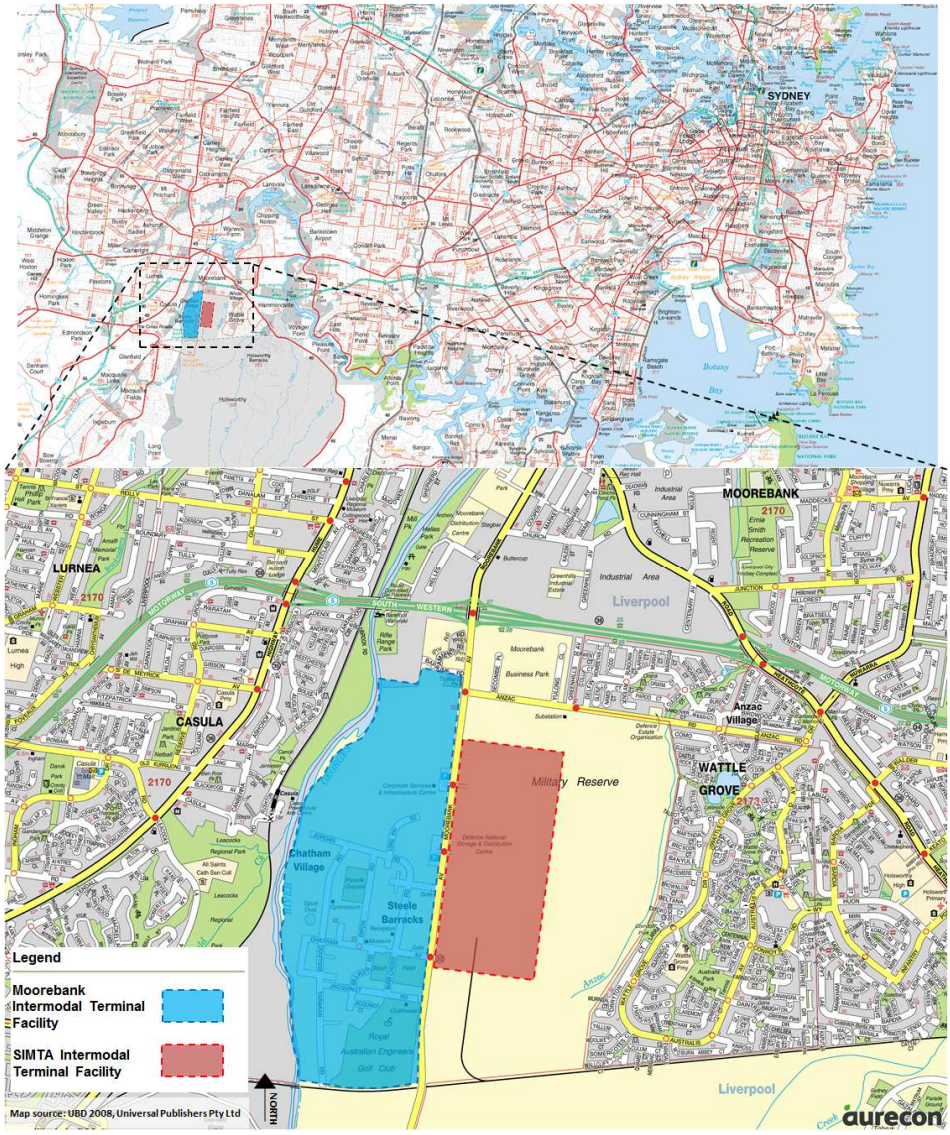

Figure A1 Proposed Moorebank and SIMTA Intermodal Terminal Facilities

The terminal facilities are located in the suburb of Moorebank, within the Local Government Area (LGA) of Liverpool City Council. As depicted in Figure A1, the terminal facility sites are bounded by the South Western Motorway (M5) to the north, the Airport, Inner West and South Railway lines to the south, the Georges River to the west and the Holsworthy Military Reserve to the east. Further afield to the west, the terminal sites are located within close proximity to the M5 and Westlink M7 Motorway Interchange, also known as the Sir Roden Cutler VC Memorial Interchange. This provides a major interchange to key employment and industrial land uses throughout western Sydney, by which is the expected destinations for the majority of the freight processed through the SIMTA facility.

Locally, the terminal sites are located adjacent to the existing industrial land use of Moorebank Business Park at Secombe Place. The closest residential land use area is Wattle Grove to the east of the Military Reserve.

Road hierarchy

Under the Roads Act 1993, roads are classified under a legal framework which divides them into three administrative categories. The NSW State, Regional and Local Road administrative system of road classification[1] generally aligns to the following model hierarchy:

- State Roads – Freeways and primary arterials
- Regional Roads – Secondary or sub-arterials
- Local Roads – Collector and local access roads

State Roads (SR) are the primary network of roads providing links within urban centres of Sydney, Newcastle, Wollongong, the Central Coast, and throughout NSW. State Roads generally include roads classified as Freeways, National/State Highways (SH) and Main Roads (MR) under the Roads Act. State Roads are the responsibility of the NSW Roads and Maritime Services (RMS) however the local governing council remains the owner, providing maintenance, for State Roads other than Freeways. RMS only exercises authority for the function of the road as a State Road (such as road pavement and structures).

Regional Roads (RR) are the secondary road network which, together with State Roads, provide for travel between towns and districts, performing a sub-arterial function within major urban centres. Regional Roads are the responsibility of the local governing council and generally include roads classified as Secondary Roads with some Main Roads.

Local Roads consist of those roads not classified under the Roads Act. Local Roads are collector and local access roads which provide linkages to State and Regional Roads as well as within developed areas. Local Roads are the responsibility of the local governing authority.

Alpha-numeric road numbering system

In conjunction with the road hierarchy system, from early 2013, the NSW government is phasing in a new alpha-numeric road numbering system to improve how motorists find their way across NSW, which aligns with Queensland and Victoria's nationally-agreed road numbering system.

The alpha-numeric road number system uses a combination of a letter and a number to identify a route. RMS has allocated the alphabetical character based on whether a road is considered a

[1] NSW Road Classification Review Panel – Final Report, August 2007, RMS

National or State significance from a guidance perspective and a number from 1 to 99. The letters are either:

- M – Meaning Motorway standard road of national significance. Motorways are generally major roadways with a divided carriageway of two or more traffic lanes in each direction, where opposing traffic is separated by a median strip with controlled entry and exits.
- A – Routes of National significance or important arterial roads in major urban areas.
- B – Routes of State significance.

Classified roads

The following describes the features of the classified roads within the vicinity of the proposed terminal facilities.

South Western Motorway, M5

The M5 is classified as a motorway of national significance and is generally a four-lane, two-way divided carriageway with a 100 km/h posted speed limit at the Moorebank Avenue interchange. The M5 carries approximately 91,850 vehicles per day, at the bridge over Georges River, according to the RMS Traffic Volume Data for Sydney Region 2005.

The M5 corridor provides an important connection part of the Sydney Orbital Network that vitally links western Sydney to Sydney Airport and Port Botany.

Hume Highway, A22

Hume Highway is classified as a State Road of national significance and is generally a six-lane, two-way divided carriageway with a 70 km/h posted speed limit at Casula. Hume Highway carries approximately 75,550 vehicles per day, according to the RMS Traffic Volume Data for Sydney Region 2005.

Moorebank Avenue

Moorebank Avenue is classified as a State Road (north of the M5) and a Local Road (south of the M5) and is generally a two-lane, two-way undivided carriageway with a 60 km/h posted speed limit. Moorebank Avenue carries approximately 16,500 vehicles per day, at the East Hills railway overbridge.

Anzac Road

Anzac Road is a local road and is generally a two-lane, two-way undivided carriageway with a 50 km/h posted speed limit. Anzac Road carries approximately 10,400 vehicles per day, at the eastern end near the Wattle Drove Drive roundabout.

Restricted Access Vehicle

RMS generally separate vehicles into two categories; ‘general access vehicles’ or ‘restricted access vehicles’ (RAVs). There are roads and zones throughout Sydney which are approved for RAV as well as Higher Mass Limits (HML) for certain heavy vehicles to travel along. The heavy vehicle types for the approved operation routes consist of, but are not limited to:

- Short combination vehicles (standard six-axle semi-trailers)

- B-doubles (19m B-Doubles operating greater than 50 tonnes, 23m B-Doubles and 25/26m B-Doubles)
- 4.6 metre high vehicles

Figure A2[2] is a screenshot from the online interactive RAV map source provided by RMS which outlines the approved RAV routes surrounding the Moorebank area.

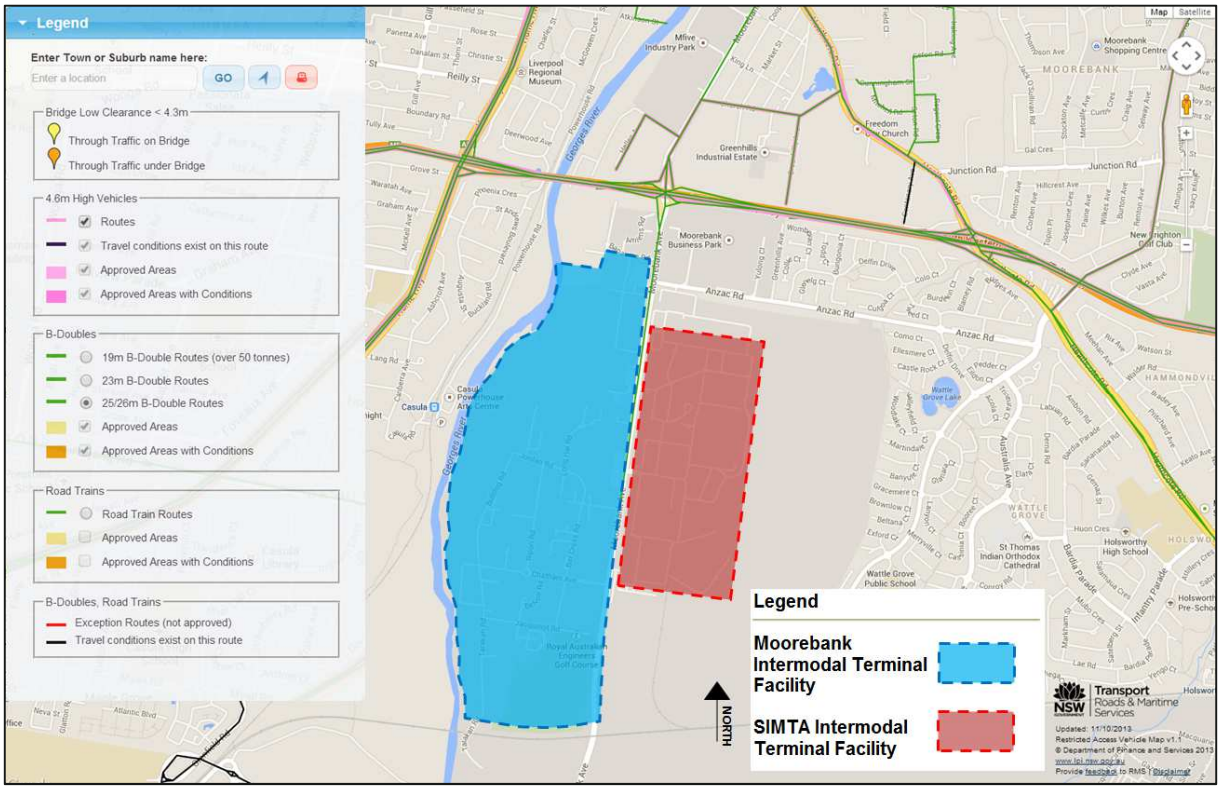

Figure A2 RAV approved routes around terminal facility sites

Site inspection findings

A site inspection was carried out in August 2013 to obtain an understanding of the road and traffic environs surrounding the proposed terminal sites. At the time of the site inspection, it was observed that the land to the east of the proposed SIMTA facility was under construction in relation to the Defence Logistics Transformation Program (DLTP) in which part of the existing Defence National Storage and Distribution Centre (DNSDC) is consolidated and upgraded.

Cycle network

It was observed on the southern footpath along Anzac Road that there are faded cycle pavement markings. Confirmation from Liverpool City Councils Cycleway map confirms that there is an existing off-road cycle path along Anzac Road and Moorebank Avenue, north of Anzac Road. Figure A3[3] is an extract from Council's cycle map which focuses around the Moorebank area for the proposed terminal facility sites.

[2] http://www.rms.nsw.gov.au/heavyvehicles/oversizeovermass/rav_maps.html, RMS, accessed October 2013
[3] http://www.liverpool.nsw.gov.au/services/roads,-traffic-and-parking/liverpool-bike-plan, accessed October 2013

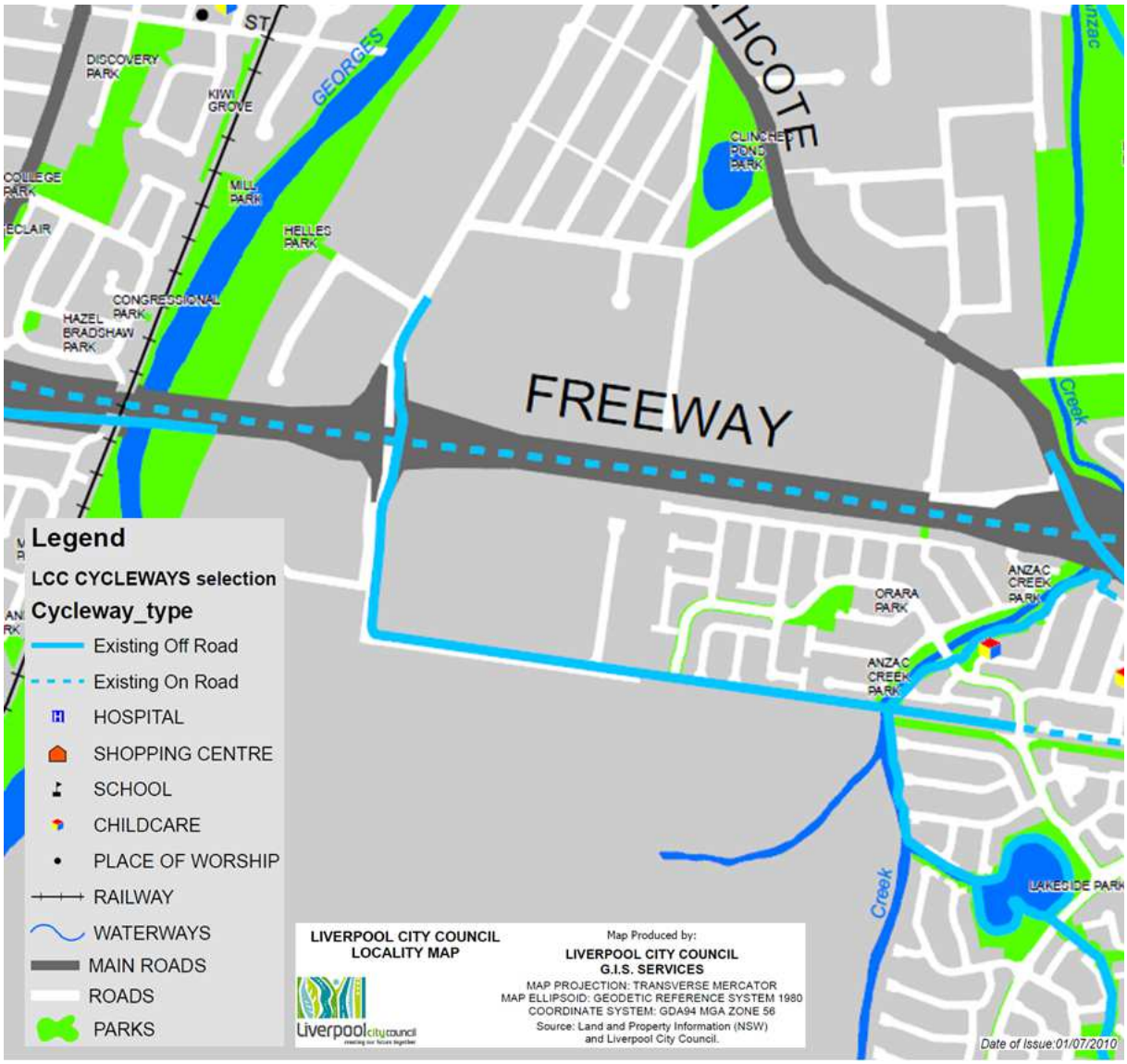

Figure A3: Liverpool City Council Cycleway map for Moorebank

Public transport

During the site inspection, the bus route 901 was observed to be travelling along Anzac Road. Confirmation from the 131 500 Transport Information source revealed that bus route 901 services between Liverpool and Holsworthy via Wattle Grove and is operated by Transdev NSW (formerly Veolia). Figure A4 is an extract from the bus network map that highlights bus route 901, in conjunction with other routes that operation around the Moorebank area.

Figure A4 Bus route 901 for Moorebank area

Appendix B
Hyder's Response to Aurecon's draft Peer Review Report

Aurecon Australia Pty Ltd
ABN 54 005 139 873
Level 2, 116 Military Road
Neutral Bay NSW 2089
PO Box 538
Neutral Bay NSW 2089
Australia
T +61 2 9465 5599
F +61 2 9465 5598
E sydney@aurecongroup.com
W aurecongroup.com

Aurecon offices are located in:
Angola, Australia, Botswana, China, Ethiopia, Hong Kong, Indonesia, Lesotho, Libya, Malawi, Mozambique, Namibia, New Zealand, Nigeria, Philippines, Singapore, South Africa, Swaziland, Tanzania, Thailand, Uganda, United Arab Emirates, Vietnam.